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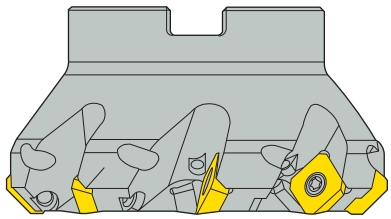
Type	Page

Milling cutters

In milling Seco uses product specific designation systems- there is no ISO system available for cutters.
See example below.



Code key for face milling cutter 217/220.53

217 = With shank
220 = For arbor mounting

Cutter diameter

Effective
No. teeth (Z_c)

R 220.53-0100-12-7 A

Right -hand rotation

Cutter system

Insert size

A = Holes for internal coolant supply

W = Insert locking with wedge

G = Coarse pitch version for low power machines

T = Close pitch version for high feed rates in powerful machines

C = With adjustable cassettes

Note that parts of the code key can vary for different cutter systems.
The specific code keys are found in the cutter selection guidelines.

Diameter of back face for arbor mounted cutters

Arbor hole mm	Diameter of back face
16	35
22	47
27***	62
32	77
40	90
60*	130
60**	225

* For cutter diameter 160–250 mm the back face diameter = 130 mm.
** For cutter diameter 315–500 mm the back face diameter = 225 mm.
*** For cutter 220.69-0063-12 and -18 the back face diameter = 52 mm.

Type 0 – Cylindrical

Ex.: R217.69-2525.0-12-3AN

Type 2 – Morse taper ISO 296

Ex.: R217.69-**03**025-16
alt. R217.69-**03**25.2-09
Morse taper No. 3

Type 3 – Weldon®

Tool chucks acc. to
ISO 5414
DIN 1835

Ex.: R217.69-2525.**3**-09A

Type 3S – Seco/Weldon®

Tool chucks acc. to
ISO 5414
DIN 1835

Ex.: R217.69-2532.3S-12-4AN

Type 3P – Weldon®/bayonet

For use in Weldon holder
or collet chuck with
bayonet fitting.

Ex.: R218.20-2.0050.3P-70.120

Type VDI 2814

Type ISO-297/DIN 2080

Ex.: R215.59-50.080.077-12.4

Type CV

ISO 7388
DIN 69871 Form A
ANSI-B5.50
JIS B6339

Ex.: R215.59-CV500500.072-12.3K

Type MAS BT

Ex.: R215.59-BT50.050.059-12.4A

Type Seco-Capto

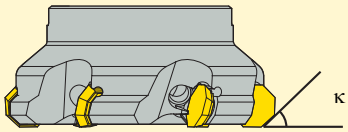
R217.69-**C6**-040-12-4A

Type HSK

R217.69-**HSK63A**.32-044-12.3A

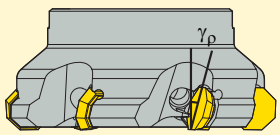
* Weldon is a registered trade mark.

Cutter geometries

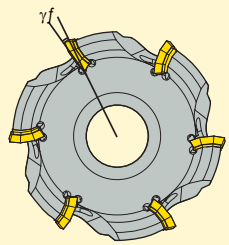


Tool cutting edge angle

κ = Major cutting edge angle
γ_o = Cutting rake
γ_ρ = Axial rake
γ_f = Radial rake



Axial rake



Radial rake

Examples of different pitch

R220.53-8160-12-**10C**

Cutter dia = 160mm
No. of inserts = 10
Normal pitch cutter

R220.53-8160-12-**7C**

Cutter dia = 160mm
No. of inserts = 7
Coarse pitch cutter for low power machines

R220.53-8160-12-**14C**

Cutter dia = 160mm
No. of inserts = 14
Close pitch cutter for high feed rates in powerful machines

Insert clamping system

Clamping by S - screw

The inserts are clamped by an inclined screw which holds the insert in position in its seat.

Clamping by a wedge

The inserts are held in position by a wedge and a screw which clamps the insert onto the seat.
(Example shows milling cutter with cassettes).

Centre lock clamping

The inserts are secured through a centre hole by means of a screw which clamps the insert firmly against the bottom and side of its seat.

Clamping by spring action

The inserts are retained by a clamping/spring action into a fixed insert seat

Minimaster clamping

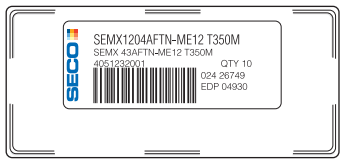
The insert is clamped in position by means of a finger-shaped clamping screw which draws the insert into a cone

Minimaster Plus clamping

The inserts is clamped in position by a thread and fastened by a hook key

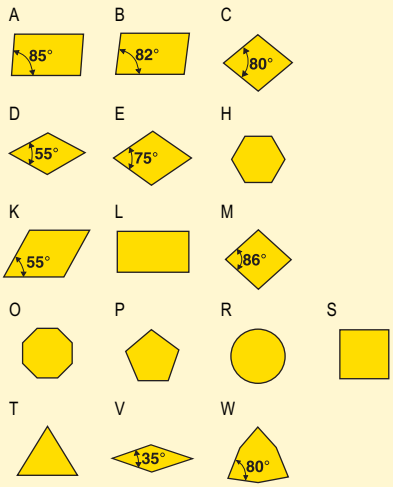
Inserts-Metric series, Extract from ISO 1832—1991

Dimensions refer to theoretical measurements. Nominal dimensions and tolerances on Seco inserts may differ from the table below. Actual tolerances for each insert type are shown in the insert section in the catalogue.

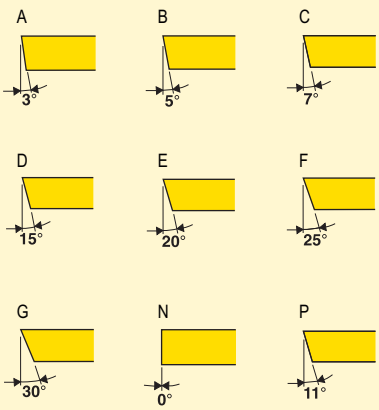


S	E	M	X	12	04	AF	T	N	-	ME12
1	2	3	4	5	6	7	8	9		10

1. Shape



2. Side clearance angle



0 = Special

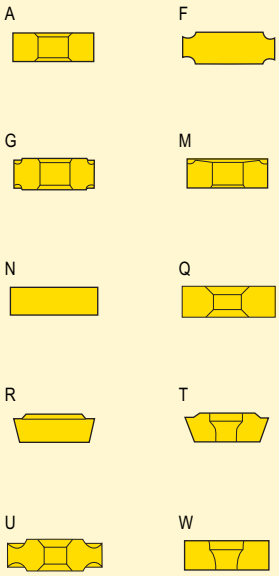
3. Tolerances

Tol.-class	Tolerance +/- mm			For d, dimension mm									
	m	s	d	3,175*	4,76	6,35	9,525	12,7	15,875	19,05	25,4	31,75	38,1*
A	0,005	0,025	0,025	•	•	•	•	•	•	•	•	•	•
E	0,025	0,025	0,025	•	•	•	•	•	•	•	•	•	•
F	0,005	0,025	0,013	•	•	•	•	•	•	•	•	•	•
G	0,025	0,13	0,025	•	•	•	•	•	•	•	•	•	•
H	0,013	0,025	0,013	•	•	•	•	•	•	•	•	•	•
J	0,005	0,025	0,05	•	•	•	•						
	0,005	0,025	0,08					•					
	0,005	0,025	0,10						•	•			
	0,005	0,025	0,13								•		
	0,005	0,025	0,15									•	•
K	0,013	0,025	0,05	•	•	•	•						
	0,013	0,025	0,08					•					
	0,013	0,025	0,10						•	•			
	0,013	0,025	0,13								•		
	0,013	0,025	0,15									•	•
M	0,08	0,13	0,05	•	•	•	•						
	0,13	0,13	0,08					•					
	0,15	0,13	0,10						•	•			
	0,18	0,13	0,13								•		
	0,20	0,13	0,15									•	•
U	0,13	0,13	0,08	•	•	•	•						
	0,20	0,13	0,13					•					
	0,27	0,13	0,18						•	•			
	0,38	0,13	0,25								•	•	•

*Not ISO

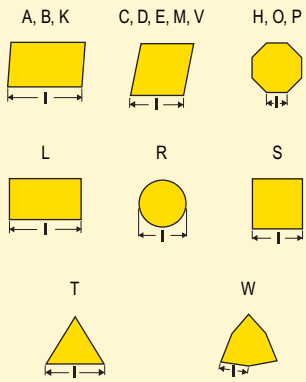
Inserts

4. Type

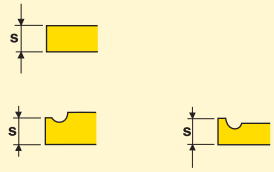


X = Special

5. Cutting edge length



6. Thickness



01 = 1,59 mm
T1 = 1,98 mm
02 = 2,38 mm
03 = 3,18 mm
T3 = 3,97 mm
04 = 4,76 mm
05 = 5,56 mm
06 = 6,35 mm
07 = 7,94 mm
08 = 8,00 mm
09 = 9,52 mm

7. Insert with corner chamfer/nose radius

1st letter

A = 45°
D = 60°
E = 75°
F = 85°
P = 90°
Z = Special

2nd letter

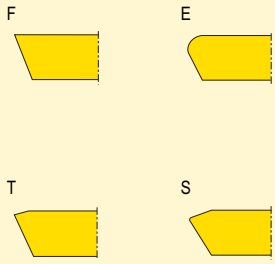
A = 3°
B = 5°
C = 7°
D = 15°
E = 20°
F = 25°
G = 30°
N = 0°
P = 11°
Z = Special

Nose radius

M0* = round inserts
00 = sharp
01 = 0,1 mm
02 = 0,2 mm
04 = 0,4 mm
08 = 0,8 mm
12 = 1,2 mm
etc

*Metric version

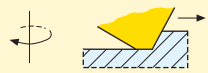
8. Cutting edge designation



Not mandatory information

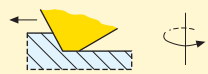
9. Direction of cutting

R



Right-rotated

L



Left-rotated

N

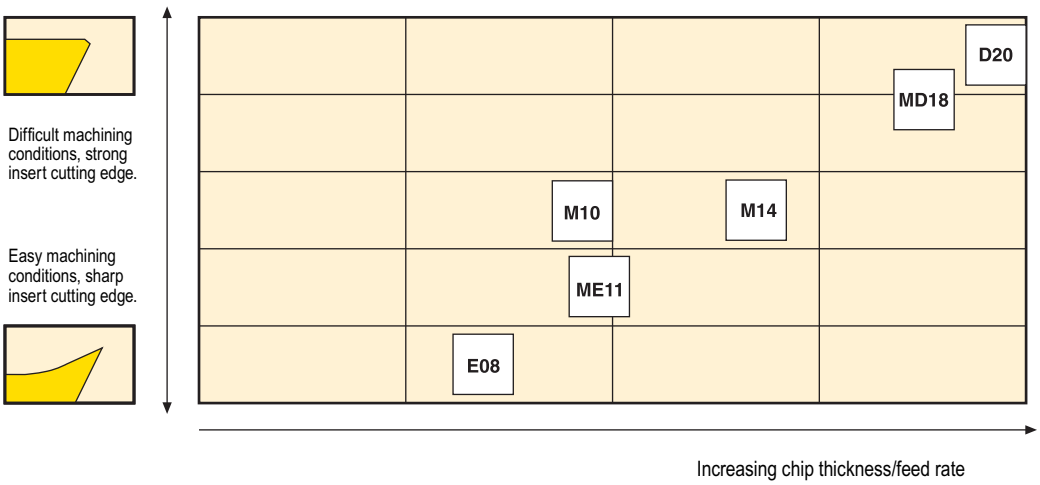
Neutral
(R- and L-rotated)

10. Internal designation

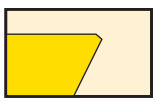
Machining conditions
E = Easy
M = Medium
D = Difficult

Designation system

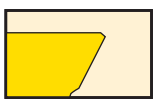
The Seco designation system for milling inserts has been developed to provide the user with better guidance concerning the fields of application for the various insert geometries



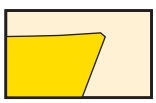
Examples of different insert geometries for a specific insert type



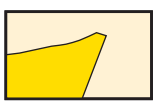
..AFTN-D20 Negative and very protected cutting edge



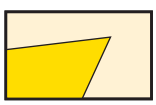
..AFTN-MD18 Negative and protected cutting edge



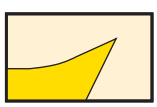
..AFTN-M14 Positive and protected cutting edge



..AFTN-ME11 Very positive and protected cutting edge



..AFN-M10 Positive and sharp cutting edge

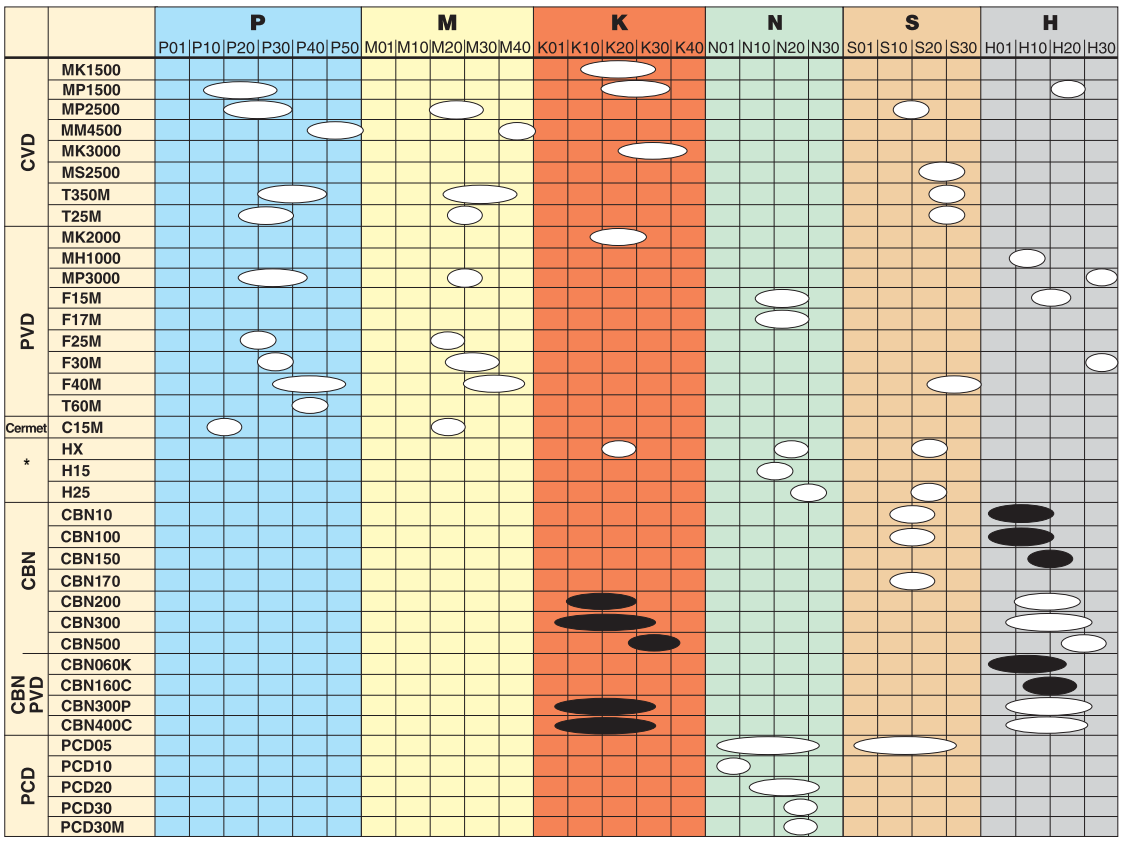


..AFN-E08 Very positive and very sharp cutting edge

Grades

Cemented carbide is an alloy of tungsten carbide (WC) and cobalt (Co). Cubic carbides like tantalum carbide (TaC), titanium carbide (TiC) and niobium carbide (NbC) can also be added. Tungsten carbide is the main component and gives the hardness. Cobalt is the binder phase and gives the toughness. Cubic carbides are added in order to affect properties like hot hardness, deformation resistance and chemical wear resistance.

Most modern grades are coated with either CVD (Chemical Vapour Deposition) or PVD (Physical Vapour Deposition) technique. The coating improves the wear resistance of the grade.
With CVD-technique layers of titanium carbide (TiC), titanium nitride (TiN), titanium carbonitride (Ti(C,N)) and alumina (Al2O3) can be made. CVD-coated grades are suitable for wear resistance in demanding applications with high feed rates and intermediate to high cutting speed.
The common coating materials made by PVD-technique are titanium nitride (TiN), titanium carbonitride (Ti(C,N)) and titanium aluminium nitride ((Ti, AL)N). PVD-coated grades are recommended for applications with low feed rate where high edge toughness is required. PVD-coated grades are suitable for applications with low to intermediate cutting speed.



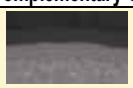
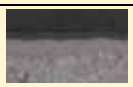
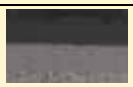
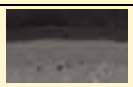
* Uncoated

Insert grades

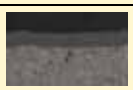
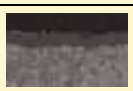
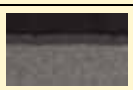
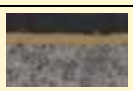
Basic grades

	MK1500	CVD-coated grade based on Duratomic ™ coating. Basic grade for milling cast iron and nodular cast iron, with or without coolant. Ti (C, N) – Al_2O_3
	MP2500	CVD-coated grade based on Duratomic ™ coating. Basic grade for milling steel and easy/medium difficult stainless steel, with or without coolant.
	F40M	PVD-coated grade for fine to medium rough milling. First choice for milling with small feeds and/or low cutting speeds. Excellent for milling when there is a risk of vibrations and when coolant is used. Recommended for machining superalloys. (Ti, Al) N – TiN

Complementary CVD coated grades

	**MP1500**	Grade for medium rough milling under stable conditions at high cutting speeds and for milling hardened steel. Excellent grade for roughing grey and nodular cast iron. Ti (C, N) – Al_2O_3
	**T350M**	CVD-coated grade as basic choice for difficult stainless steel and an alternative in difficult operations in steel. Ti (C, N) – Al_2O_3
	**MK3000**	Optimization grade in soft to medium hard steel under stable conditions, with or without coolant. Ti (C, N) – Al_2O_3
	**MS2500**	Optimization grade for super alloy materials, also suitable for rough milling in tool steel. Ti (C, N) – Al_2O_3
	MM4500	Extremly tough grade for duplex stainless steel. Can also be used for a wide range of materials when cutting conditions are unstable.

Complementary PVD coated grades

	MH1000	Extremely hard grade for milling hard steel but also favourable in finishing operations in cast iron.
	MK2000	Complementary grade for difficult operations in square shoulder and slot milling in cast iron and nodular cast iron.
	**MP3000**	Highly wear resistant optimized grade for milling in steel. (Ti, Al) N
	F15M	Hard and wear resistant grade for milling in aluminium and non-ferrous alloys. Excellent grade, in combination with protected cutting edges, for high speed machining in hardened steel.
	**F25M**	Tough grade for rough milling in tool steel. (Ti, Al) N – TiN
	**F30M**	Basic grade for Minimaster inserts and thread milling inserts. Also suitable for milling stainless steel, hardened steel and superalloys.
	**T60M**	Tough grade for Minimaster inserts. Suitable for milling in soft and medium hard steel. (Ti, Al) N – TiN

Insert grades

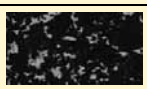
Uncoated grades

	HX	Wear resistant grade for milling in cast iron and non-ferrous alloys.
	H15	Hard, wear resistant grade for milling in aluminium.

Cermet

	C15M	Cermet grade for fine to medium rough milling of steel at high cutting speed and for finishing in austenitic stainless steel. First choice for high demand on surface finishes.

Diamond (PCD)

	PCD05	This grade with an average grain size of 1 micron has a well sintered, homogeneous structure.
	**PCD20**	PCD20 is the first choice grade for general purposes. It has a 10 microns grain size.
	PCD30	When machining very abrasive workpieces, this coarse grade of 25 microns grain size will make the difference.

Insert grades

CBN060K	Solid, brazed tips (single and double sided) • First choice for continuous to moderate interrupted cuts in hardened steel (a_p <0,5 mm). • New (Ti,Si,Al)N PVD coating developed for high speed machining. • New unique superalloy binder.
CBN10	Brazed tips (single sided) or sintered layer • For light continuous to moderate interrupted cuts in hardened steel (a_p <0,5 mm).
CBN100	Solid insert • For light continuous to moderate interrupted cuts in hardened steel (a_p <0,5 mm).
CBN150	Brazed tips (single sided) or sintered layer • Ideal for high surface requirements. • Tougher but slightly less wear resistant alternative to CBN10 and CBN100. • For interrupted cuts in hardened steel (ap <0,5 mm).

Insert grades

CBN160C	Brazed tips (single sided) or sintered layer • For aggressive interrupted cuts in hardened steel (a_p<0,5 mm). • (Ti,Si)N PVD coating developed for high speed machining.

CBN170	Solid and brazed tips (double sided) • For high speed continuous cuts in nickel based superalloys (a_p <0,5 mm). • New unique whisker reinforced binder.

CBN200	Solid, brazed tips (single sided) or sintered layer • For medium rough machining of hardened steel (a_p = 0,5–1,0 mm). • For finishing and roughing of pearlitic and white/chilled cast iron. • For finishing of sintered iron. • For roughing and finishing of powder metal (iron).

CBN300 **CBN300P**	Solid insert • For roughing of hardened steel. • For finishing and roughing of manganese steel. • For finishing and roughing of pearlitic, chilled and white cast iron. Coated (PVD) (Ti,Al)N + TiN • Equal or improved tool life. • Easy to identify edge wear.

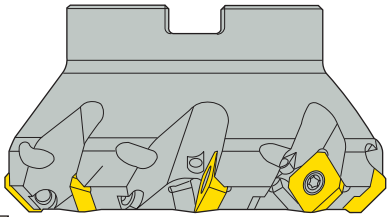
Insert grades

CBN400C	Solid insert • Fine grain high CBN grade, for machining of pearlitic grey cast iron. • New (Ti,Si)N PVD coating.

CBN500	Solid insert • Tougher than CBN300 resulting in reduced chipping and edge flaking in aggressive workpiece material. • For roughing of hardened steel. • For finishing and roughing of manganese steel. • For finishing and roughing of chilled and white cast iron.

Code key

Note that parts of the code can vary for different cutter systems



217 = With shank
220 = For arbor mounting

Cutter diameter

Effective
No. of teeth (Z_c)

R 220.53-0100-12-7 A

Right -hand rotation

Cutter system

Insert size

A = Holes for internal coolant supply

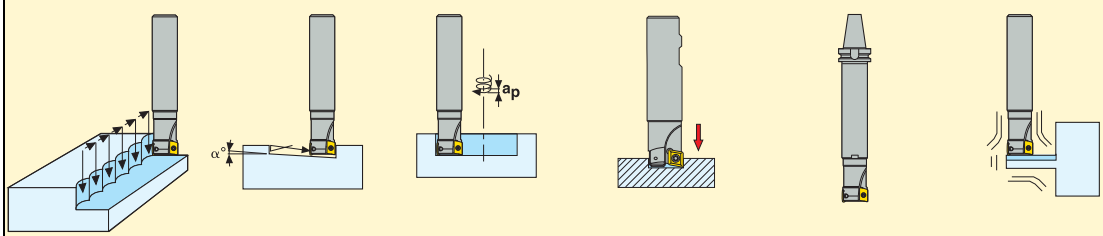
W = Insert locking with wedge

G = Coarse pitch version for low power machines

T = Close pitch version for high feed rates in powerful machines

C = With adjustable cassettes

Types of operation

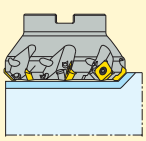


1	2	3	4	5	6
Plunging	Ramping	Helical interpolation ramping	Drilling	Long overhangs	Unstable conditions

First choice general purpose, small depth of cut

Quattromill-09
217/220.53-09

Types of operation
2 5 6

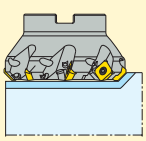


- Dia range Ø 20-500 mm, See pages 26 - 33
- General purpose light cutting face milling cutter for mixed production in all materials.
- Fixed pockets, and cassettes normal and close pitch
- Insert types SEEX09T3, SEMX09T3
- Insert size 09 mm
- Max a_p 4,5 mm

First choice general purpose

Quattromill-12
217/220.53-12

Types of operation
2 5 6

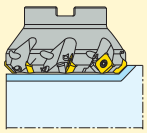


- Dia range Ø 40-500 mm, See pages 34-40
- General purpose light cutting face milling cutter for mixed production in all materials.
- Fixed pockets and cassettes, normal,coarse and close pitch.
- Insert types SEEX1204, SEMX1204
- Insert size 12 mm
- Max a_p 6 mm

First choice general purpose

Quattromill-15
220.53-15

Types of operation
2 5 6

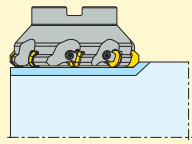


- Dia range Ø 63-500 mm, See pages 41 - 46
- General purpose light cutting face milling cutter for mixed production in all materials.
- Fixed pockets and cassettes, normal,coarse and close pitch
- Insert types SEEX1505, SEMX1505
- Insert size 15 mm
- Max a_p 7,5 mm

First choice, versatile cutter solution

Octomill-07
220.43-07

Types of operation
1 2 3

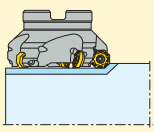


- Dia range Ø 50-500 mm, See pages 47 - 50
- Versatile face milling cutter which can be used for many types of operations, in all materials.
- Fixed pockets and cassettes, normal, coarse and close pitch
- Insert types OFE. 070405
- Insert size 07 mm
- Max a_p 5 mm

First choice. versatile cutter solution

Octomill-05
220.43-05

Types of operation
1 2 3

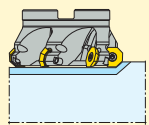


- Dia range Ø 24-500 mm, See pages 53 - 57
- Versatile face milling cutter which can be used for many types of operations, in all materials.
- Fixed pockets and cassettes, normal, coarse and close pitch
- Insert types OFEX 05T305
- Insert size 05 mm
- Max a_p 3,5 mm

First choice, versatile cutter solution

Octomill-07S
220.43-07S

Types of operation
1 2 3

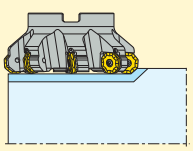


- Dia range Ø 51-125 mm, See page 58
- Versatile cutter wich can be used for both face and square shoulder operations, in all materials.
- Fixed pockets and normal pitch.
- Insert types OF.T/W 070405
- Insert size 07 mm
- Max a_p 5 mm

First choice in cast iron

Double Octomill
220.48-09

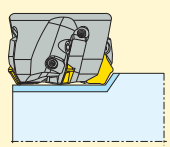
Types of operation
5 6



- Dia range Ø 80-315 mm, See pages 59 - 63
- Face milling cutter for depth of cut up to 6 mm for cast iron materials.
- Fixed pockets, close and super close pitch
- Seco-Capto™
- Insert types ON..09..
- Insert size 09 mm
- Max a_p 6 mm

First choice large depth of cut

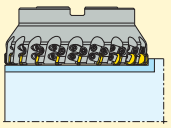
Hexamill-12CM
220.66-12



- Dia range Ø 63-250 mm , See pages 65 - 68
- Face milling cutter for depth of cut up to 8 mm for mixed production in all materials.
- Fixed pockets and cassettes, normal, coarse and close pitch.
- Insert types HPM_1206ZE..
- Insert size 12 mm
- Max a_p 8 mm

First choice for finishing in cast iron

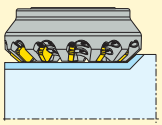
220.30-12ST
220.30 C



- Dia range Ø 80-355 mm, See pages 69 - 70 and 77 - 78
- Face milling cutter for finishing in cast iron and other materials.
- Adjustable pocket seat, arbor or CAP mounting, super close pitch
- Insert types SEEX1203AFTN
- Insert size 12 mm
- Max a_p 1 mm

First choice for roughing in cast iron

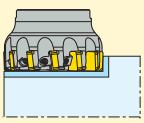
220.44-15



- Dia range Ø 80-500 mm, See pages 71 - 75.
- Face milling cutter for roughing in cast iron materials.
- Fixed or adjustable pocket seat, Arbor or CAP mounting, close and super close pitch.
- Insert types SNHF1504.
- Insert size 15 mm.
- Max a_p 7 mm .

Economical solution

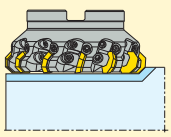
220.88-15M



- Dia range Ø 63-160 mm, See pages 79 - 80
- Face milling cutter for roughing in cast iron materials.
- Fixed pocket seat, Arbor or CAP mounting, close and super close pitch
- Insert types SNH.15
- Insert size 15 mm
- Max a_p 12 mm

Economical solution

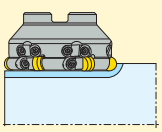
Octomill-07T
220.43-07T



- Dia range Ø 63-125 mm, See page 51
- Face milling cutter with eight cutting edges for all around use in cast iron materials.
- Adjustable pocket seat, super close pitch
- Insert types OFE_070405
- Insert size 07 mm
- Max a_p 5 mm

Economical solution, mass production

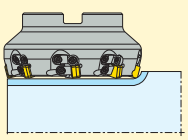
217/220.70-06/09



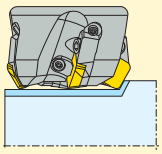
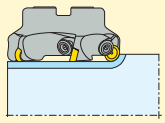
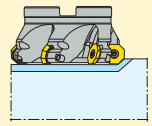
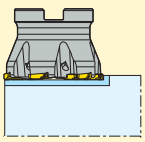
- Dia range Ø 20-63 (06 size) Ø 63-200 mm (09 size), See pages 81 - 83
- Face milling cutter for roughing with high speed in cast iron materials.
- Fixed pocket (06 size) or adjustable pocket seat (09 size), normal pitch
- Insert types RN..060300 or RN..09/ SNEX12
- Insert size 06 or 09 mm
- Max a_p 3 or 4,5 mm

Economical solution, mass production

220.74-09



- Dia range Ø 63-200 mm, See page 84
- Face milling cutter for finishing and roughing with high speed in cast iron materials.
- Adjustable pocket seat, normal pitch.
- Insert types SN..09/SNEX12.
- Insert size 09 mm
- Max a_p 8 mm

220.60-19CM k = 60° Page 85  Ø 63 – 315 mm For large depth of cut Max a_p 12 mm Insert type SP..19	**220.23-16** Page 87  Ø 50 – 100 mm For machining hard materials – fixed pockets Max ap 8 mm Insert type REHR16	**Powerocto 220.42** k = 42° Page 64  Ø 40 – 100 mm Optimised for power generation and aerospace segment Max ap 3,5 mm Insert type ODMT05
230.19 Page 76.  ∅ 30 – 100 Face milling cutter for finishing in all materials Fixed pockets seat Max a_p 2,6-3,1 Insert type SNHQ		

Choice of cutter, inserts and cutting data

1 • **Select cutter**
Use the previous pages to choose a suitable cutter.

2 • **Select cutter diameter**
The ideal cutter diameter for a favourable cutting process is 1,25 x the width of the workpiece. (See figure 1.)

2a • Look up the pages for the selected cutter and choose a suitable diameter in the tool data table.

3 • **Select inserts.**
Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

3a • Use the insert selection table to choose suitable inserts.

3b • Use the tool data table to find out the number of inserts needed.

4 • **Select cutting data**

4a • Maximum recommended cutting depth is found in the tool data table. (See figure 2.)

4b • Minimum and maximum feed per tooth recommendations are found in the insert selection table.
Choose a value in the middle for normal operations.

4c • The feed per revolution must be smaller than the wiper flat width of the selected insert if a good surface finish is to be achieved. (The wiper flat width can be found in the insert size table.)
If the feed per revolution is larger than the wiper flat width of the selected insert, one or more specific wiper inserts can be used to achieve a good surface finish.

4d • Cutting speed recommendations are in the cutting data table.
Maximum rpm that for safety reasons should never be exceeded, are shown on each product page.
Formulae for cutting data calculation are on page 597.

5 • **Power requirement**
See page 601 for power requirement calculation

6 • Molykote 1000 is recommended for insert locking screws.
Part No. MOLYKOTE 1000-50G.

Figure 1

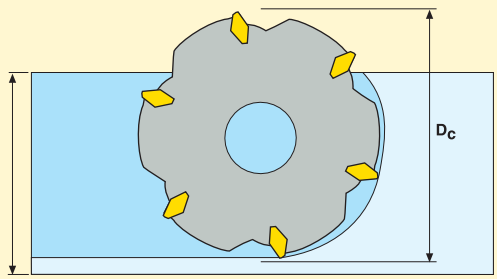
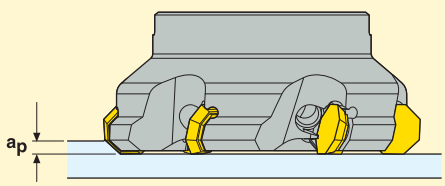


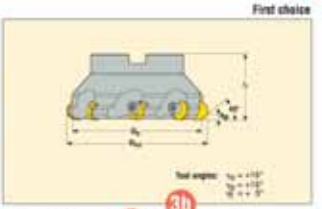
Figure 2



Face milling cutters

Octomill 220.43-07W

First choice



- For insert selection and cutting data recommendations, see page
- For complete insert programme, see page
- For ramping, see page

Pitch	Part No.	Dimensions in mm						
		D_c	D_{cf}	L	a_p		KUD	
Normal	R220.43 -0050-07W	50	60	50	5	4	0,4	DFE.070400
	-0063-07W	63	75	63	5	4	0,6	DFE.070400
	-0080-07W	80	92	80	5	5	1,0	DFE.070400
	-0100-07W	100	112	80	5	8	1,8	DFE.070400
	-0125-07W	125	137	63	5	8	3,0	DFE.070400
	-0160-07W	160	172	63	5	10	4,7	DFE.070400

Spare parts

For cutter	Wedge	Wedge	Wedge screw	Key	Arbor screw
R220.43-0050	334.3-040	-	L250018	T25-4	220.17-006
R220.43-0063	-	CW08010	L250020	T25-4	M5SE 15x40
R220.43-0080	-	CW08010	L250020	T25-4	M6SE 15x35
R220.43-0100-0160	-	CW08010	L250020	T25-4	-

In earlier milling cutters without W in the designation such as R220.43-0160-07 the insert is locked by means of screw SLM6007 instead of wedge and wedge screw

Dimensions of mounting

For cutter	Dimensions in mm				For arbor	For spindle-nose
R220.43-0050	22	13,4	6,3	-	22	-
R220.43-0063	27	13,4	6,3	-	27	-
R220.43-0080	27	13,4	7	-	27	-
R220.43-0100	32	14,4	8	-	32	-
R220.43-0125	40	16,4	9	-	40	-
R220.43-0160	40	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Face milling cutters

Insert selection – Octomill 220.43-07

Universal insert: DFMR 070405TR-M15 T250M

Seco Material group No.	Recom. feed f_z inch/tooth	Alternatives: Fine choice	Difficult operations	Easy operations
1	0,10–0,40	DFMR 070405TR-M13 F40M	DFER 070405TR-M16 T350M	DFMR 070405TR-M13 T350M
2	0,10–0,40	DFMR 070405TR-M13 F40M	DFER 070405TR-M16 T350M	DFMR 070405TR-M13 T350M
3	0,10–0,35	DFMR 070405TR-M13 T350M	DFER 070405TR-M16 T350M	DFMR 070405TR-M13 T350M
4	0,10–0,35	DFMR 070405TR-M13 T350M	DFER 070405TR-M16 T350M	DFMR 070405TR-M13 T350M
5	0,10–0,30	DFMR 070405TR-M13 T350M	DFER 070405TR-M16 T350M	DFMR 070405TR-M13 T350M
6	0,10–0,30	DFMR 070405TR-M13 T350M	DFER 070405TR-D18 T350M	DFMR 070405TR-M13 T350M
7	0,10–0,15	DFER 070405TR-D18 T350M	DFER 070405TR-D18 T350M	DFER 070405R-M18 T350M
8	0,10–0,40	DFMR 070405TR-M13 T350M	DFER 070405TR-M16 T350M	DFMR 070405TR-M13 F40M
9	0,10–0,35	DFMR 070405TR-M13 T350M	DFER 070405TR-M16 T350M	DFMR 070405TR-M13 F40M
10	0,10–0,25	DFER 070405TR-M16 T350M	DFMR 070405TR-M13 F40M	DFMR 070405TR-M13 T350M
11	0,10–0,30	DFMR 070405TR-M13 F40M	DFMR 070405TR-M13 F40M	DFMR 070405TR-M13 T350M
12	0,10–0,40	DFMR 070405TR-M13 T100M	DFER 070405TR-M16 T350M	DFER 070405R-M18 T350M
13	0,10–0,35	DFMR 070405TR-M13 T350M	DFER 070405TR-M16 T350M	DFER 070405R-M18 T350M
14	0,10–0,30	DFMR 070405TR-M13 T350M	DFER 070405TR-M16 T350M	DFER 070405R-M18 T350M
15	0,10–0,25	DFMR 070405TR-M13 T100M	DFER 070405TR-D18 T350M	DFER 070405R-M18 T350M
16	0,15–0,40	DFER 070405R-D27 H15	DFER 070405R-D27 F15M	DFER 070405R-D27 H15
17	0,10–0,40	DFER 070405R-D27 H15	DFER 070405R-D27 F15M	DFER 070405R-D27 H15
20	0,10–0,20	DFMR 070405TR-M13 T350M	DFMR 070405TR-M13 F40M	DFMR 070405TR-M13 T350M
21	0,10–0,20	DFMR 070405TR-M13 F40M	DFER 070405TR-D18 T350M	DFMR 070405TR-M13 T350M
22	0,10–0,20	DFMR 070405TR-M13 F40M	DFMR 070405TR-M13 F40M	DFER 070405R-M18 T350M

Cutting data

Seco Material group No.	Grades: T150M	T350M/T150M*	T350M/T250M	T350M/T350M	T250M	F40M	H15
	Feed, f_z (mm/tooth): 0,10	0,20	0,40	0,20	0,40	0,10	0,20	0,40	0,10	0,20	0,40	0,10	0,20	0,40	0,10	0,20	0,40
	Cutting speed, v_c (m/min)																
1	-	-	-	365	275	205	315	235	200	285	215	160	295	225	190	270	205	170	-	-	-
2	-	-	-	305	230	170	270	200	170	250	190	150	250	190	150	230	170	140	190	150	-
3	-	-	-	215	205	175	230	175	140	210	160	130	205	160	140	200	150	130	-	-	-
4	-	-	-	230	190	160	210	160	135	190	140	125	200	150	130	180	140	120	-	-	-
5	-	-	-	210	150	130	190	130	115	160	125	105	170	130	110	150	120	100	-	-	-
6	-	-	-	160	125	-	140	100	-	125	95	-	130	100	-	120	90	-	-	-	-
7	-	-	-	80	45	-	50	35	-	45	35	-	45	35	-	45	35	-	-	-	-
8	-	-	-	205	225	190	255	190	160	230	175	150	240	180	150	220	160	140	-	-	-
9	-	-	-	200	150	130	220	170	140	200	150	130	210	160	135	190	140	120	-	-	-
10	-	-	-	220	170	-	190	140	-	170	130	-	180	130	110	160	120	100	-	-	-
11	-	-	-	170	130	-	140	110	-	130	100	-	140	105	-	130	95	80	-	-	-
12	300	230	180	245	190	150	255	195	150	190	140	100	180	130	125	160	130	110	190	140	120
13	290	210	160	250	170	140	190	140	120	170	130	110	160	120	110	150	120	100	170	130	110
14	250	190	150	200	150	130	170	130	110	150	120	-	150	120	-	130	100	90	160	120	-
15	200	150	-	150	120	-	140	100	-	120	90	-	120	100	-	120	80	-	-	-	-
16	-	-	-	1210	840	600	1000	810	660	870	730	605	1010	775	655	930	750	595	1000	750	640
17	-	-	-	1000	780	640	860	650	550	780	590	505	820	620	525	740	565	480	805	610	520
20	-	-	-	-	-	-	50	30	-	40	40	-	40	30	-	30	40	-	-	-	-
21	-	-	-	-	-	-	40	30	-	30	30	-	40	30	-	30	30	-	-	-	-
22	-	-	-	-	-	-	60	50	-	60	40	-	60	50	-	50	40	-	-	-	-

*For grade T150M only use values in material groups 12-14 and 16-17. For T350M only use values in groups 1-10.

Surface finish

Type of insert	Feed/rev mm ≈	R_a µm
DFE.070400	1,0	≈ 1,0
DFE.070422	2,0	0,5
	0,0	0,7

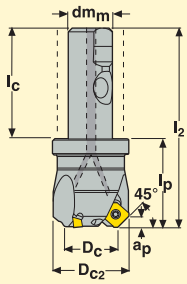
Finish of the milled surface is determined by feed/rev used. Wiper insert DFE.070422 should not be used for cutters up to 100 mm dia.

Dimension in mm

Insert size	Max D.O.C. a_p	Wiper insert
T	0,1(0)	- (T)

Quattromill® 217.53-09

- For insert selection and cutting data recommendations, see pages 88 - 89.
- For complete insert programme, see pages 537 - 538.



Tool angles:

$\gamma o = +10°$
$\gamma p = +20°$
$\gamma f = -7° – -5°$

Part No.	Dimensions in mm D_c	D_{c2}	dm_m	l_2	l_p	l_c	a_p		KG	Type of mounting		
R217.53 -2020.3S-09-2A	20	30	20	90	40	50	4,5	2	0,2	Seco/Weldon	25100	SE..09T3
-2025.3S-09-3A	25	35	20	90	40	50	4,5	3	0,3	Seco/Weldon	22400	SE..09T3
-2032.3S-09-4A	32	42	20	90	40	50	4,5	4	0,4	Seco/Weldon	19800	SE..09T3

Spare parts

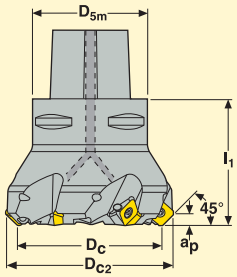
For cutter	Locking screw	Key *
R217.53-..	C03008-T09P	T09P-3

Please check availability in current price and stock-list.

*** Torque value 2,0** Dynamomentic keys, see page 590.

Quattromill® 217.53-09-C5

- For insert selection and cutting data recommendations, see pages 88 - 89.
- For complete insert programme, see pages 537 - 538.



Tool angles:

$\gamma o = +10°$
$\gamma p = +20°$
$\gamma f = - 5°$

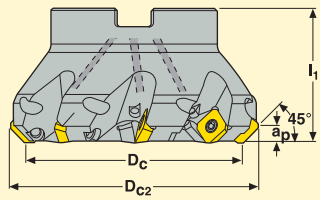
Part No.	Dimensions in mm D_c	D_{c2}	D_{5m}	l_1	a_p		KG		Type of mounting	
C5-R217.53 -040-09-4A	40	50	50	55	4,5	4	0,7	17700	Seco-Capto C5	SE..09T3
-050-09-5A	50	60	50	55	4,5	5	0,8	15800	Seco-Capto C5	SE..09T3
-063-09-6A	63	73	50	55	4,5	6	1,0	14100	Seco-Capto C5	SE..09T3
-080-09-6A	80	90	50	55	4,5	6	1,2	12500	Seco-Capto C5	SE..09T3

Spare parts

For cutter	Locking screw	Key *
R217.53	C03008-T09P	T09P-3

Please check availability in current price and stock-list.
*** Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

Quattromill® 220.53-09



Tool angles: γo = +10°
γp = +20°
γf = - 5°

- For insert selection and cutting data recommendations, see pages 88 - 89.
- For complete insert programme, see pages 537 - 537.

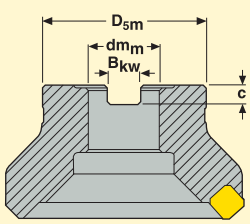
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.53 -0032-09-4A	32	42	40	4,5	4	0,2	19800	SE..09T3
	-0040-09-4A	40	50	40	4,5	4	0,4	17700	SE..09T3
	-0050-09-5A	50	60	40	4,5	5	0,4	15800	SE..09T3
	-0063-09-6A	63	73	40	4,5	6	0,6	14100	SE..09T3
	-0080-09-6A	80	90	50	4,5	6	1,2	12500	SE..09T3
	-0100-09-7A	100	110	50	4,5	7	1,8	11200	SE..09T3

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.53-0032	C03008-T09P	T09P-3	220.17-690
R220.53-0040–0063	C03008-T09P	T09P-3	220.17-696
R220.53-0080–0100	C03008-T09P	T09P-3	–

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

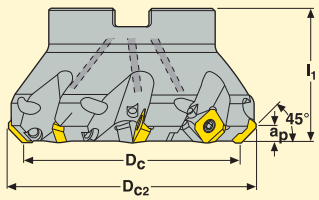
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.53-0032	16	35	8,4	5,6	16
R220.53-0040–0063	22	47	10,4	6,3	22
R220.53-0080	27	62	12,4	7	27
R220.53-0100	32	77	14,4	8	32

Please check availability in current price and stock-list.

Quattromill® 220.53-09



Tool angles: $\gamma o = +10°$, $\gamma p = +20°$, $\gamma f = -5°$

- **For insert selection and cutting data recommendations, see pages 88 - 89.**
- **For complete insert programme, see pages** 537 - 538.

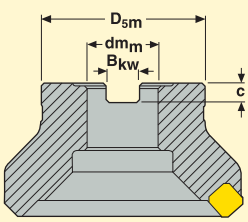
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.53 -0040-09-5A	40	50	40	4,5	5	0,4	17700	SE..09T3
	-0050-09-6A	50	60	40	4,5	6	0,4	15800	SE..09T3
	-0063-09-7A	63	73	40	4,5	7	0,6	14100	SE..09T3
	-0080-09-8A	80	90	50	4,5	8	1,2	12500	SE..09T3
	-0100-09-10A	100	110	50	4,5	10	1,8	11200	SE..09T3

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.53-0040–0063	C03008-T09P	T09P-3	220.17-696
R220.53-0080–0100	C03008-T09P	T09P-3	–

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

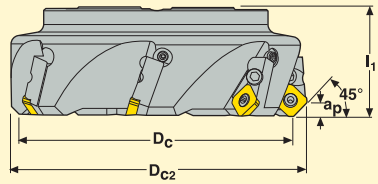


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.53-0040–0063	22	42	10,4	6,3	22
R220.53-0080	27	62	12,4	7	27
R220.53-0100	32	77	14,4	8	32

Please check availability in current price and stock-list.

Quattromill® 220.53-09C

- For insert selection and cutting data recommendations, see pages 88 - 89 .
- For complete insert programme, see pages 537 - 538.



Tool angles: γo = +10°
γp = +20°
γf = - 5°

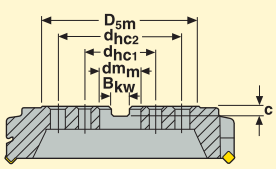
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.53 -0080-09-5C	80	90	50	4,5	5	1,7	7400	SE..09T3
	-0100-09-6C	100	110	50	4,5	6	2,6	6600	SE..09T3
	-0125-09-8C	125	135	63	4,5	8	4,2	5900	SE..09T3
	-8160-09-10C	160	170	63	4,5	10	6,6	5200	SE..09T3
	-8200-09-12C	200	210	63	4,5	12	9,6	4700	SE..09T3
	-8250-09-16C	250	260	63	4,5	16	17,3	4200	SE..09T3
	-8315-09-18C	315	325	80	4,5	18	32,8	3700	SE..09T3

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
R220.53-..	SE09AR-53	FS96018	C03007-T09P	T09P-3	AU1114T-T15P

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

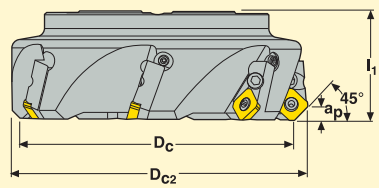
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-0080	27	62	12,4	7	–	–	27	–
R220.53-0100	32	77	14,4	8	–	–	32	–
R220.53-0125	40	90	16,4	9	–	–	40	–
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.53-8200-8250	60	130	25,7	14	101,6	–	–	ISO50
R220.53-8315	60	225	25,7	14	101,6	117,8	–	ISO50, ISO60

Please check availability in current price and stock-list.

Quattromill® 220.53-09C



Tool angles: $\gamma o = +10°$, $\gamma p = +20°$, $\gamma f = -5°$

- For insert selection and cutting data recommendations, see pages 88 - 89.
- For complete insert programme, see pages 537 - 537.

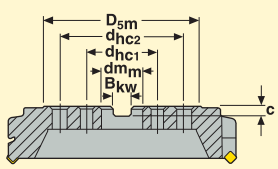
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Coarse									
	R220.53 -8160-09-7C	160	170	63	4,5	7	6,6	5200	SE..09T3
	-8200-09-8C	200	210	63	4,5	8	9,4	4700	SE..09T3
	-8250-09-10C	250	260	63	4,5	10	17,1	4200	SE..09T3
	-8315-09-12C	315	325	80	4,5	12	32,8	3700	SE..09T3
	-8400-09-16C	400	410	80	4,5	16	51,3	3300	SE..09T3
	-8500-09-20C	500	510	80	4,5	20	80,7	2900	SE..09T3

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
R220.53-..	SE09AR-53	FS96018	C03007-T09P	T09P-3	AU1114T-T15P

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

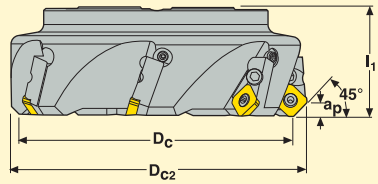
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.53-8200-8250	60	130	25,7	14	101,6	–	–	ISO50
R220.53-8315-8500	60	225	25,7	14	101,6	177,8	–	ISO50,ISO60

Please check availability in current price and stock-list.

Quattromill® 220.53-09C



Tool angles: $\gamma o = +10°$, $\gamma p = +20°$, $\gamma f = -5°$

- For insert selection and cutting data recommendations, see pages 88 - 89.
- For complete insert programme, see pages 537 - 538.

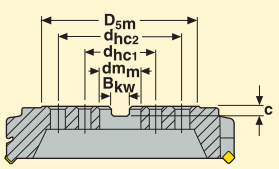
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.53 -0080-09-6C	80	90	50	4,5	6	1,7	7400	SE..09T3
	-0100-09-8C	100	110	50	4,5	8	2,6	6600	SE..09T3
	-0125-09-10C	125	135	63	4,5	10	4,2	5900	SE..09T3
	-8160-09-14C	160	170	63	4,5	14	6,6	5200	SE..09T3

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
R220.53-..	SE09AR-53	FS96018	C03007-T09P	T09P-3	AU1114T-T15P

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

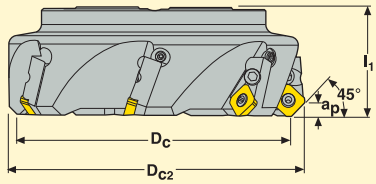
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-0080	27	62	12,4	7	–	–	27	–
R220.53-0100	32	77	14,4	8	–	–	32	–
R220.53-0125	40	90	16,4	9	–	–	40	–
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40

Please check availability in current price and stock-list.

Quattromill® 220.53-AL-09-CA



- **For insert selection and cutting data recommendations, see page 94.**
- **For complete insert programme, see pages 537, 569.**

Tool angles: γo = +10°
γp = +20°
γf = - 5°

Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.53 -0080AL-09-6CA	80	90	50	0,2-4,5*	6	0,8	8400	SEE.09T3
	-0100AL-09-8CA	100	110	50	0,2-4,5*	8	1,2	7500	SEE.09T3
	-0125AL-09-12CA	125	135	63	0,2-4,5*	12	1,9	6700	SEE.09T3
	-8160AL-09-14CA	160	170	63	0,2-4,5*	14	2,9	6000	SEE.09T3
	-8200AL-09-16CA	200	210	63	0,2-4,5*	16	4,1	5300	SEE.09T3
	-8250AL-09-20CA	250	260	63	0,2-4,5*	20	7,0	4800	SEE.09T3
	-8315AL-09-22CA	315	325	80	0,2-4,5*	22	13,0	3700	SEE.09T3

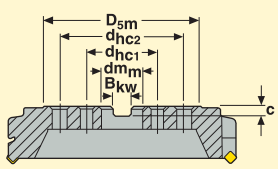
* SEEX inserts a_p Max= 0,2 mm PCD insert, SEEW inserts a_p Max= 1,5mm, a_p Max 4,5mm for carbide inserts.

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
R220.53-..	SE09AR-53	FS96020	C03007-T09P	T09P-3	AU1114T-T15P

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

Dimensions of mounting

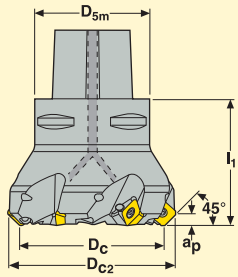


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-0080	27	62	12,4	7	–	–	27	–
R220.53-0100	32	77	14,4	8	–	–	32	–
R220.53-0125	40	90	16,4	9	–	–	40	–
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.53-8200-8250	60	130	25,7	14	101,6	–	–	ISO50
R220.53-8315	60	225	25,7	14	101,6	177,8	–	ISO50,ISO60

Please check availability in current price and stock-list.

Quattromill® 217.53-12-C5/C6

- For insert selection and cutting data recommendations, see pages 90 - 91.
- For complete insert programme, see page 539.



Tool angles:

$\gamma o = +10°$
$\gamma p = +20°$
$\gamma f = - 5°$

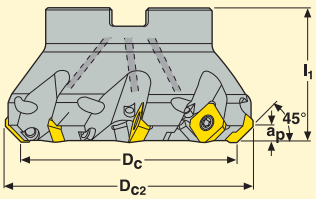
Part No.		Dimensions in mm D_c	D_{c2}	D_{5m}	l_1	a_p		KG		Type of mounting	
C5-R217.53	-040-12-3A	40	52	50	55	6	3	0,8	16500	Seco-Capto C5	SE.X1204
	-050-12-4A	50	62	50	55	6	4	0,9	14800	Seco-Capto C5	SE..X1204
	-063-12-5A	63	75	50	55	6	5	1,0	13200	Seco-Capto C5	SE.X1204
	-080-12-6A	80	92	50	55	6	6	1,3	11700	Seco-Capto C5	SE.X1204
C6-R217.53	-040-12-3A	40	52	63	63	6	3	1,2	16500	Seco-Capto C6	SE.X1204
	-050-12-4A	50	62	63	63	6	4	1,3	14800	Seco-Capto C6	SE.X1204
	-063-12-5A	63	75	63	63	6	5	1,6	13200	Seco-Capto C6	SE.X1204
	-080-12-6A	80	92	63	63	6	6	1,9	11700	Seco-Capto C6	SE.X1204

Spare parts

For cutter	Locking screw	Key *
R217.53-12	C04011-T15P	T15P-4

Please check availability in current price and stock-list
*** Torque values 3,5 Nm.** Dynamomentic keys, see page 590.

Quattromill® 220.53-12



Tool angles: $\gamma o = +10°$, $\gamma p = +20°$, $\gamma f = -5°$

- For insert selection and cutting data recommendations, see pages 90 - 91.
- For complete insert programme, see page 539.

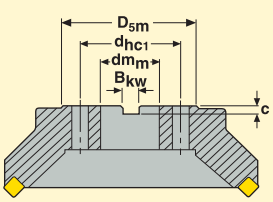
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.53 -0040-12-3A	40	52	40	6	3	0,4	16500	SE.X1204
	-0050-12-4A	50	62	40	6	4	0,4	14800	SE.X1204
	-0063-12-5A	63	75	40	6	5	0,5	13200	SE.X1204
	-0080-12-6A	80	92	50	6	6	1,1	11700	SE.X1204
	-0100-12-7A	100	112	50	6	7	1,7	10500	SE.X1204
	-0125-12-8A	125	137	63	6	8	3,2	9400	SE.X1204
	-8160-12-10	160	172	63	6	10	4,6	8300	SE.X1204
	-8200-12-12	200	212	63	6	12	7,6	7400	SE.X1204

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.53-0040–0063	C04011-T15P	T15P-4	220.17-696
R220.53-0080–8200	C04011-T15P	T15P-4	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

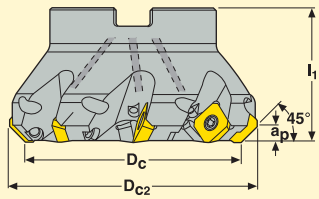


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.53-0040–0063	22	47	10,4	6,3	–	22	–
R220.53-0080	27	62	12,4	7	–	27	–
R220.53-0100	32	77	14,4	8	–	32	–
R220.53-0125	40	90	16,4	9	–	40	–
R220.53-8160	40	90	16,4	9	66,7	40	ISO40
R220.53-8200	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.

Quattromill® 220.53-12

- For insert selection and cutting data recommendations, see pages 90 - 91.
- For complete insert programme, see page 539.

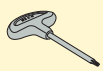


Tool angles: γo = +10°
γp = +20°
γf = - 5°

Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Coarse									
	R220.53 -0100-12-5A	100	112	50	6	5	1,7	10500	SE.X1204
	-0125-12-6A	125	137	63	6	6	3,1	9400	SE.X1204
	-8160-12-7	160	172	63	6	7	4,6	8300	SE.X1204

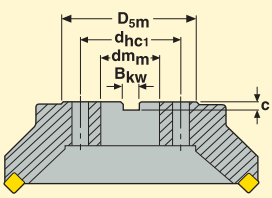
Spare parts

For cutter	Locking screw	Key *
R220.53-..	C04011-T15P	T15P-4



*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

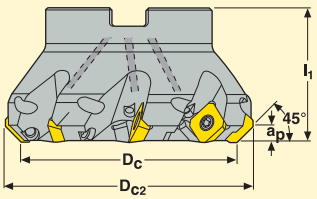
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.53-0100	32	77	14,4	8	–	32	–
R220.53-0125	40	90	16,4	9	–	40	–
R220.53-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Quattromill® 220.53-12



- For insert selection and cutting data recommendations, see pages 90 - 91.
- For complete insert programme, see page 539.

Tool angles: γo = +10°
γp = +20°
γf = - 5°

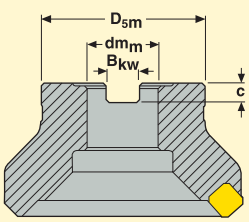
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.53 -0040-12-4A	40	52	40	6	4	0,3	16500	SE.X1204
	-0050-12-5A	50	62	40	6	5	1,2	14800	SE.X1204
	-0063-12-6A	63	75	40	6	6	1,8	13200	SE.X1204
	-0080-12-8A	80	92	50	6	8	3,3	11700	SE.X1204
	-0100-12-10A	100	112	50	6	10	1,7	10500	SE.X1204
	-0125-12-12A	125	137	63	6	12	3,1	9400	SE.X1204

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.53-0040–0063	C04011-T15P	T15P-4	220.17-696
R220.53-0080–0125	C04011-T15P	T15P-4	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

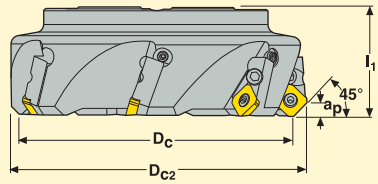


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.53-0040–0063	22	47	10,4	6,3	22
R220.53-0080	27	62	12,4	7	27
R220.53-0100	32	77	14,4	8	32
R220.53-0125	40	90	16,4	9	40

Please check availability in current price and stock-list.

Quattromill® 220.53-12C

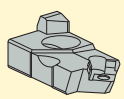
- For insert selection and cutting data recommendations, see pages 90 - 91.
- For complete insert programme, see page 539 .



Tool angles: γo = +10°
γp = +20°
γf = - 5°

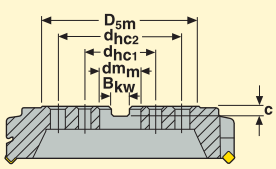
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.53 -0080-12-5C	80	92	50	6	5	1,7	7400	SE.X1204
	-0100-12-6C	100	112	50	6	6	2,6	6600	SE.X1204
	-0125-12-8C	125	137	63	6	8	4,2	5900	SE.X1204
	-8160-12-10C	160	172	63	6	10	6,6	5200	SE.X1204
	-8200-12-12C	200	212	63	6	12	9,6	4700	SE.X1204
	-8250-12-16C	250	262	63	6	16	17,3	4200	SE.X1204
	-8315-12-18C	315	327	80	6	18	32,8	3700	SE.X1204

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
					
R220.53-..	SE12AR-53	FS96018	C04011-T15P	T15P-4	AU1114T-T15P

Cassette SE12AL-53 for left-hand cutters
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

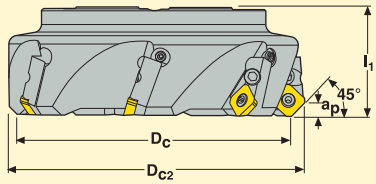
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-0080	27	62	12,4	7	–	–	27	–
R220.53-0100	32	77	14,4	8	–	–	32	–
R220.53-0125	40	90	16,4	9	–	–	40	–
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.53-8200-8250	60	130	25,7	14	101,6	–	–	ISO50
R220.53-8315	60	225	25,7	14	101,6	117,8	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Quattromill® 220.53-12C



- For insert selection and cutting data recommendations, see pages 90 - 91.
- For complete insert programme, see page 539.

Tool angles: γo = +10°
γp = +20°
γf = - 5°

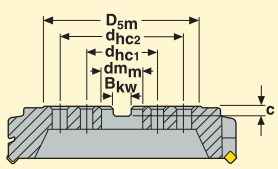
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Coarse									
	R220.53 -8160-12-7C	160	172	63	6	7	6,6	5200	SE.X1204
	-8200-12-8C	200	212	63	6	8	9,4	4700	SE.X1204
	-8250-12-10C	250	262	63	6	10	17,1	4200	SE.X1204
	-8315-12-12C	315	327	80	6	12	32,8	3700	SE.X1204
	-8400-12-16C	400	412	80	6	16	51,3	3300	SE.X1204
	-8500-12-20C	500	512	80	6	20	80,7	2900	SE.X1204

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
R220.53-..	SE12AR-53	FS96018	C04011-T15P	T15P-4	AU1114T-T15P

Cassette SE12AL-53 for left-hand cutters
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

Dimensions of mounting

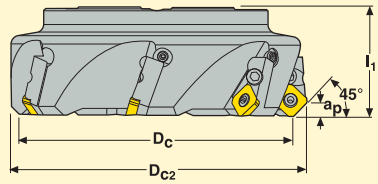


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.53-8200-8250	60	130	25,7	14	101,6	–	–	ISO50
R220.53-8315-8500	60	225	25,7	14	101,6	177,8	–	ISO50,ISO60

Please check availability in current price and stock-list.
*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Quattromill® 220.53-12C

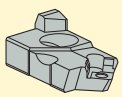
- For insert selection and cutting data recommendations, see pages 90 - 91.
- For complete insert programme, see page 539.



Tool angles: γo = +10°
γp = +20°
γf = - 5°

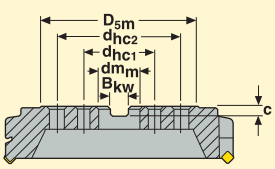
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.53 -0080-12-6C	80	92	50	6	6	1,7	7400	SE.X1204
	-0100-12-8C	100	112	50	6	8	2,6	6600	SE.X1204
	-0125-12-10C	125	137	63	6	10	4,3	5900	SE.X1204
	-8160-12-14C	160	172	63	6	14	6,7	5200	SE.X1204

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
					
R220.53-..	SE12AR-53	FS96018	C04011-T15P	T15P-4	AU1114T-T15P

Cassette SE12AL-53 for left-hand cutters
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

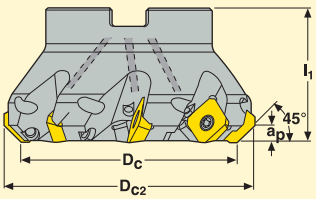
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-0080	27	62	12,4	7	–	–	27	–
R220.53-0100	32	77	14,4	8	–	–	32	–
R220.53-0125	40	90	16,4	9	–	–	40	–
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40

Please check availability in current price and stock-list.
*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Quattromill® 220.53-15



Tool angles: $\gamma o = +10°$, $\gamma p = +20°$, $\gamma f = -5°$

- For insert selection and cutting data recommendations, see pages 92 - 93.
- For complete insert programme, see page 540.

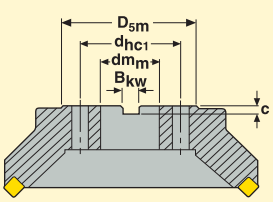
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.53 -0063-15-5A	63	78	40	7,5	5	0,5	8300	SE..1505
	-0080-15-6A	80	96	50	7,5	6	1,1	7400	SE..1505
	-0100-15-7A	100	116	50	7,5	7	1,7	6600	SE..1505
	-0125-15-8A	125	141	63	7,5	8	3,2	5900	SE..1505
	-8160-15-10	160	176	63	7,5	10	4,7	5200	SE..1505
	-8200-15-12	200	216	63	7,5	12	7,6	4700	SE..1505

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.53-0063	C05013-T20P	T20P-4	220.17-696
R220.53-0080-8200	C05013-T20P	T20P-4	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

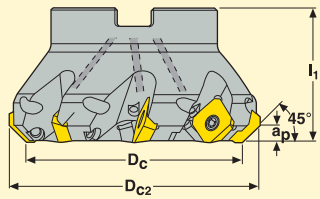


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.53–0063	22	47	10,4	6,3	–	22	–
R220.53-0080	27	62	12,4	7	–	27	–
R220.53-0100	32	77	14,4	8	–	32	–
R220.53-0125	50	90	16,4	9	–	40	–
R220.53-8160	40	90	16,4	9	66,7	40	ISO40
R220.53-8200	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.

Quattromill® 220.53-15

- For insert selection and cutting data recommendations, see pages 92 - 93.
- For complete insert programme, see page 540.



Tool angles: γo = +10°
γp = +20°
γf = - 5°

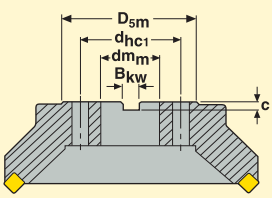
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Coarse									
	R220.53 -0100-15-5A	100	116	50	7,5	5	1,7	6600	SE..1505
	-0125-15-6A	125	141	63	7,5	6	3,2	5900	SE..1505

Spare parts

For cutter	Locking screw	Key *
R220.53-0100-0125	C05013-T20P	T20P-4

* **Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

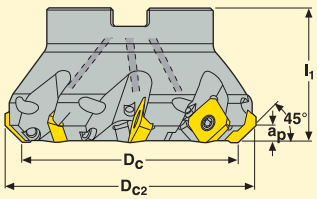
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.53-0100	32	77	14,4	8	–	32	–
R220.53-0125	40	90	16,4	9	–	40	–

Please check availability in current price and stock-list.

Quattromill® 220.53-15



Tool angles: γo = +10°
γp = +20°
γf = - 5°

- For insert selection and cutting data recommendations, see pages 92 - 93.
- For complete insert programme, see page 540.

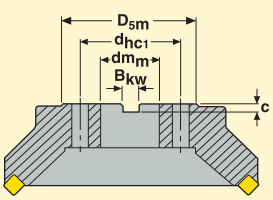
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.53 -0063-15-6A	63	78	40	7,5	6	0,5	8300	SE..1505
	-0080-15-7A	80	96	50	7,5	7	1,1	7400	SE..1505
	-0100-15-9A	100	116	50	7,5	9	1,8	6600	SE..1505
	-0125-15-10A	125	141	63	7,5	10	3,2	5900	SE..1505
	-8160-15-14	160	176	63	7,5	14	4,6	5200	SE..1505

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.53-0063	C05013-T20P	T20P-4	220.17-696
R220.53-0080-8160	C05013-T20P	T20P-4	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

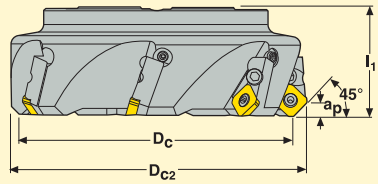


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.53–0063	22	47	10,4	6,3	–	22	–
R220.53-0080	27	62	12,4	7	–	27	–
R220.53-0100	32	77	14,4	8	–	32	–
R220.53-0125	40	90	16,4	9	–	40	–
R220.53-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Quattromill® 220.53-15C

- For insert selection and cutting data recommendations, see pages 92 - 93.
- For complete insert programme, see page 540.



Tool angles: γo = +10°
γp = +20°
γf = - 5°

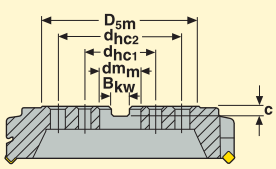
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.53 -0080-15-5C	80	96	50	7,5	5	1,7	7400	SE..1505
	-0100-15-6C	100	116	50	7,5	6	2,6	6600	SE..1505
	-0125-15-8C	125	141	63	7,5	8	4,2	5900	SE..1505
	-8160-15-10C	160	176	63	7,5	10	6,6	5200	SE..1505
	-8200-15-12C	200	216	63	7,5	12	9,6	4700	SE..1505
	-8250-15-16C	250	266	63	7,5	16	17,3	4200	SE..1505
	-8315-15-18C	315	331	80	7,5	18	31,4	3700	SE..1505

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
R220.53-..	SE15AR-53	FS96018	C05010-T20P	T20P-4	AU1114T-T15P

Cassette SE15AL-53 for left-hand cutters
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

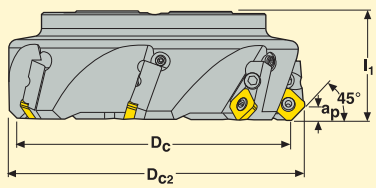
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-0080	27	62	12,4	7	–	–	27	–
R220.53-0100	32	77	14,4	8	–	–	32	–
R220.53-0125	40	90	16,4	9	–	–	40	–
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.53-8200-8250	60	130	25,7	14	101,6	–	–	ISO50
R220.53-8315	60	225	25,7	14	101,6	117,8	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Quattromill® 220.53-15C



- For insert selection and cutting data recommendations, see pages 92 - 93.
- For complete insert programme, see page 540.

Tool angles: γo = +10°
γp = +20°
γf = - 5°

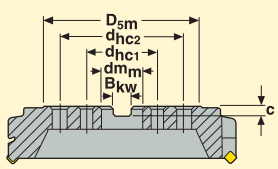
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Coarse									
	R220.53 -8160-15-7C	160	176	63	7,5	7	6,6	5200	SE..1505
	-8200-15-8C	200	216	63	7,5	8	9,5	4700	SE..1505
	-8250-15-10C	250	266	63	7,5	10	17,2	4200	SE..1505
	-8315-15-12C	315	331	80	7,5	12	32,8	3700	SE..1505
	-8400-15-16C	400	416	80	7,5	16	51,4	3300	SE..1505
	-8500-15-20C	500	516	80	7,5	20	80,8	2900	SE..1505

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
R220.53-..	SE15AR-53	FS96018	C05010-T20P	T20P-4	AU1114T-T15P

Cassette SE15AL-53 for left-hand cutters
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

Dimensions of mounting

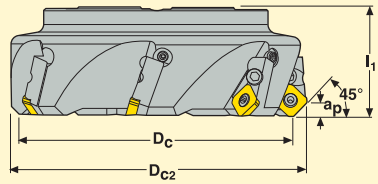


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.53-8200-8250	60	130	25,7	14	101,6	–	–	ISO50
R220.53-8315-8500	60	225	25,7	14	101,6	177,8	–	ISO50,ISO60

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Quattromill® 220.53-15C

- For insert selection and cutting data recommendations, see pages 92 - 93.
- For complete insert programme, see page 540.



Tool angles: γo = +10°
γp = +20°
γf = - 5°

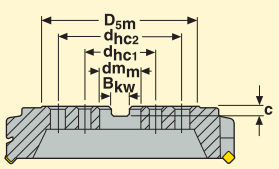
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.53 -0080-15-6C	80	96	50	7,5	6	1,7	7400	SE..1505
	-0100-15-8C	100	116	50	7,5	8	2,6	6600	SE..1505
	-0125-15-10C	125	141	63	7,5	10	4,3	5900	SE..1505
	-8160-15-14C	160	176	63	7,5	14	6,7	5200	SE..1505

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Key *	Setting gauge
R220.53-..	SE15AR-53	FS96018	C05010-T20P	T20P-4	AU1114T-T15P

Cassette SE15AL-53 for left-hand cutters
Key T15P-3 for setting gauge and Key H04-4 for cassette screw to be ordered separately

Dimensions of mounting

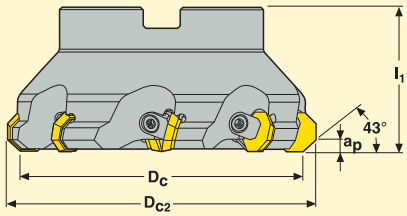


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.53-0080	27	62	12,4	7	–	–	27	–
R220.53-0100	32	77	14,4	8	–	–	32	–
R220.53-0125	40	90	16,4	9	–	–	40	–
R220.53-8160	40	90	16,4	9	66,7	–	40	ISO40

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-07W

First choice



Tool angles: γo = +15°
γp = +15°
γf = + 5°

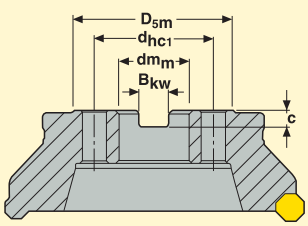
- **For insert selection and cutting data recommendations, see pages 95 - 96.**
- **For complete insert programme, see page 522.**
- For ramping see pages 593.

Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.43 -0050-07W	50	62	60	5	4	0,4	6300	OFE.070405
	-0063-07W	63	75	40	5	4	0,5	5600	OFE.070405
	-0080-07W	80	92	50	5	5	1,2	5000	OFE.070405
	-0100-07W	100	112	50	5	6	1,8	4400	OFE.070405
	-0125-07W	125	137	63	5	8	3,0	4000	OFE.070405
	-8160-07W	160	172	63	5	10	4,7	3500	OFE.070405

Spare parts

For cutter	Wedge	Wedge	Wedge screw	Key *	Arbor screw
R220.43-0050	334.5-640	–	LD8018-T25P	T25P-4	220.17-696
R220.43-0063	–	CW0810	LD8020-T25P	T25P-4	MF6S 10x40
R220.43-0080	–	CW0810	LD8020-T25P	T25P-4	MC6S 12x35
R220.43-0100–8160	–	CW0810	LD8020-T25P	T25P-4	–

Dimensions of mounting



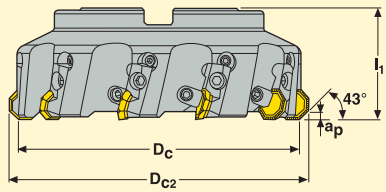
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.43-0050	22	47	10,4	6,3	–	22	–
R220.43-0063	22	47	10,4	6,3	–	22	–
R220.43-0080	27	62	12,4	7	–	27	–
R220.43-0100	32	77	14,4	8	–	32	–
R220.43-0125	40	90	16,4	9	–	40	–
R220.43-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.
*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-07C

First choice

- For insert selection and cutting data recommendations, see pages 95 - 96.
- For complete insert programme, see page 522.



Tool angles: $\gamma o = +15°$, $\gamma p = +15°$, $\gamma f = +5°$

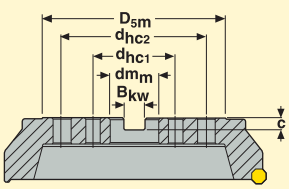
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.43 -0080-07C	80	92	50	5	5	1,7	4800	OFE.070405
	-0100-07C	100	112	50	5	6	2,6	4300	OFE.070405
	-0125-07C	125	137	63	5	8	4,2	3800	OFE.070405
	-8160-07C	160	172	63	5	10	6,3	3300	OFE.070405
	-8200-07C	200	212	63	5	12	8,9	3000	OFE.070405
	-8250-07C	250	262	63	5	16	17,2	2700	OFE.070405
	-8315-07C	315	327	80	5	20	28,0	2400	OFE.070405

Spare parts

For cutter	Cassette	Cassette screw	Wedge	Wedge screw	Key *	Arbor screw	Setting gauge
R220.43-0080	OF07AR	FS96018	CW0810	LD8020-T25P	T25P-4	MC6S12x35	AU1114T-T15P
R220.43-0100	OF07AR	FS96018	CW0810	LD8020-T25P	T25P-4	220.17-694	AU1114T-T15P
R220.43-0125–8315	OF07AR	FS96018	CW0810	LD8020-T25P	T25P-4	–	AU1114T-T15P

Cassette OF07AL for left-hand cutters.
Key T15P-3 for setting gauge and key H05-4 for cassette screw to be ordered separately.

Dimensions of mounting

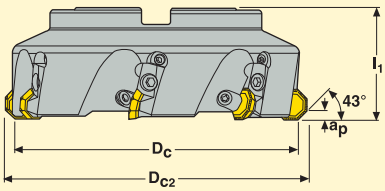


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.43-0080	27	62	12,4	7	–	–	27	–
R220.43-0100	32	77	14,4	8	–	–	32	–
R220.43-0125	40	90	16,4	9	–	–	40	–
R220.43-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.43-8200–8250	60	130	25,7	14	101,6	–	–	ISO50
R220.43-8315	60	225	25,7	14	101,6	177,8	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-07CG

First choice



- For insert selection and cutting data recommendations, see pages 95 - 96.
- For complete insert programme, see page 522 .

Tool angles: γo = +15°
γp = +15°
γf = + 5°

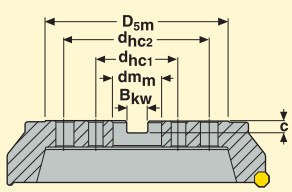
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Coarse									
	R220.43 -8160-07CG	160	172	63	5	7	6,4	3300	OFE.070405
	-8200-07CG	200	212	63	5	8	9,0	3000	OFE.070405
	-8250-07CG	250	262	63	5	10	17,3	2700	OFE.070405
	-8315-07CG	315	327	80	5	12	28,0	2400	OFE.070405
	-8400-07CG	400	412	80	5	16	44,0	2100	OFE.070405
	-8500-07CG	500	512	80	5	20	82,0	1800	OFE.070405

Spare parts

For cutter	Cassette	Cassette screw	Wedge	Wedge screw	Key *	Setting gauge
R220.43-..	OF07AR	FS96018	CW0810	LD8020-T25P	T25P-4	AU1114T-T15P

Cassette OF07AL for left-hand cutters.
Key T15P-3 for setting gauge and key H05-4 for cassette screw to be ordered separately.

Dimensions of mounting



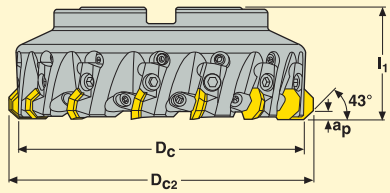
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.43-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.43-8200	60	130	25,7	14	101,6	–	–	ISO50
R220.43-8250	60	130	25,7	14	101,6	–	–	ISO50
R220.43-8315-8500	60	225	25,7	14	101,6	177,8	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-07CT

First choice

- For insert selection and cutting data recommendations, see pages 95 - 96.
- For complete insert programme, see page 522 .



Tool angles: γo = +15°
γp = +15°
γf = + 5°

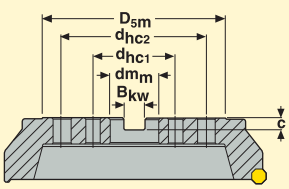
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.43 -0080-07CT	80	92	50	5	6	1,6	4800	OFE.070405
	-0100-07CT	100	112	50	5	8	2,4	4300	OFE.070405
	-0125-07CT	125	137	63	5	10	3,7	3800	OFE.070405
	-8160-07CT	160	172	63	5	14	5,7	3300	OFE.070405
	-8200-07CT	200	212	63	5	18	8,3	3000	OFE.070405
	-8250-07CT	250	262	63	5	22	18,3	2700	OFE.070405
	-8315-07CT	315	327	80	5	28	27,4	2400	OFE.070405

Spare parts

For cutter	Cassette	Cassette screw	Wedge	Wedge screw	Key *	Arbor screw	Setting gauge
R220.43-0080	OF07AR	FS96018	334.5-640	LD8020-T25P	T25P-4	MC6S12x35	AU1114T-T15P
R220.43-0100	OF07AR	FS96018	334.5-640	LD8020-T25P	T25P-4	220.17-694	AU1114T-T15P
R220.43-0125–8315	OF07AR	FS96018	334.5-640	LD8020-T25P	T25P-4	–	AU1114T-T15P

Cassette OF07AL for left-hand cutters.
Key T15P-3 for setting gauge and key H05-4 for cassette screw to be ordered separately.

Dimensions of mounting

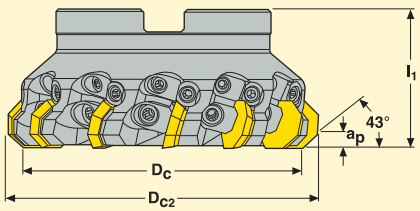


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.43-0080	27	62	12,4	7	–	–	27	–
R220.43-0100	32	77	14,4	8	–	–	32	–
R220.43-0125	40	90	16,4	9	–	–	40	–
R220.43-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.43-8200–8250	60	130	25,7	14	101,6	–	–	ISO50
R220.43-8315	60	225	25,7	14	101,6	177,8	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-07T

For short chipping materials



Tool angles: γo = +15°
γp = +15°
γf = + 5°

- For insert selection and cutting data recommendations, see pages 95 - 96.
- For complete insert programme, see page 522.

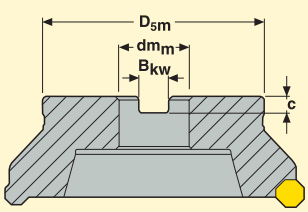
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Super-close									
	R220.43 -0063-07-6T	63	75	50	5	6	0,6	5600	OFE.070405
	-0080-07-9T	80	92	50	5	9	1,3	5000	OFE.070405
	-0100-07-12T	100	112	50	5	12	1,9	4400	OFE.070405
	-0125-07-15T	125	137	63	5	15	3,1	4000	OFE.070405

Spare parts

For cutter	Wedge	Wedge screw	Key *	Setting gauge	Setting gauge screw	Wedge	Wedge screw	Arbor screw
R220.43-0063	334.5-640	LD8020-T25P	T25P-4	AS6011	LD6019-T15P	CW0608	LD6018T-T15P	MF6S 10x40
R220.43-0080	334.5-640	LD8020-T25P	T25P-4	AS6011	LD6019-T15P	CW0608	LD6018T-T15P	MC6S 12x35
R220.43-0100–8125	334.5-640	LD8020-T25P	T25P-4	AS6011	LD6019-T15P	CW0608	LD6018T-T15P	–

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.
** Key T15P-4ST for setting gauge to be ordered separately.

Dimensions of mounting

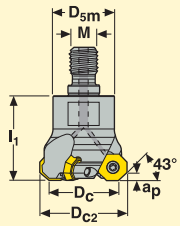


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.43-0063	22	47	10,4	6,3	22
R220.43-0080	27	62	12,4	7	27
R220.43-0100	32	77	14,4	8	32
R220.43-0125	40	90	16,4	9	40

Please check availability in current price and stock-list.

Octomill® 217.43-05A

For small depth of cut



- **For insert selection and cutting data recommendations, see page 97.**
- **For complete insert programme, see page 523.**
- For ramping and helical interpolation, see pages 592 - 595.

Tool angles:
γo = +15°
γp = +15°
γf = + 5°

Part No.	Dimension in mm D_c	D_{c2}	D_{5m}	l_1	M	a_p		KG		Type of mounting	
R217.43 -1624.RE-05.2A	24	32	30	40	M16	3,5	2	0,2	17200	Combimaster*	OFEX05T305/OFMT050405
-1632.RE-05.3A	32	40	30	40	M16	3,5	3	0,2	14800	Combimaster*	OFEX05T305/OFMT050405
-1642.RE-05.3A	42	50	30	40	M16	3,5	3	0,3	13000	Combimaster*	OFEX05T305/OFMT050405

*For shanks and dimensions, see pages 498 - 510.

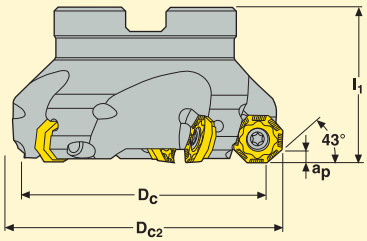
Spare parts

For cutter	Locking screw	Key *
R217.43-..	C04008-T15P	T15P-3

Please check availability in current price and stock-list.
*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-05

For small depth of cut



Tool angles: γo = +15°
γp = +15°
γf = + 5°

- **For insert selection and cutting data recommendations, see page 97.**
- **For complete insert programme, see page 523.**
- For ramping and helical interpolation, see pages 592 - 595.

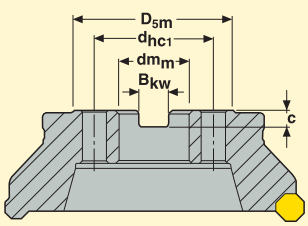
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.43 -0032-05	32	41	40	3,5	3	0,2	14800	OFEX05T305/OFMT050405
	-0040-05	40	49	40	3,5	3	0,3	13200	OFEX05T305/OFMT050405
	-0050-05	50	59	40	3,5	4	0,4	11900	OFEX05T305/OFMT050405
	-0063-05	63	72	40	3,5	5	0,5	10600	OFEX05T305/OFMT050405
	-0080-05	80	89	50	3,5	6	1,0	9400	OFEX05T305/OFMT050405
	-0100-05	100	109	50	3,5	7	1,7	8400	OFEX05T305/OFMT050405
	-0125-05	125	134	63	3,5	8	3,1	7500	OFEX05T305/OFMT050405
	-8160-05	160	169	63	3,5	10	5,7	6600	OFEX05T305/OFMT050405

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.43-0032	C04008-T15P	T15P-3	220.17-690
R220.43-0040	C04008-T15P	T15P-3	TCEI0825
R220.43-0050–0063	C04008-T15P	T15P-3	220.17-692
R220.43-0080–8160	C04008-T15P	T15P-3	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

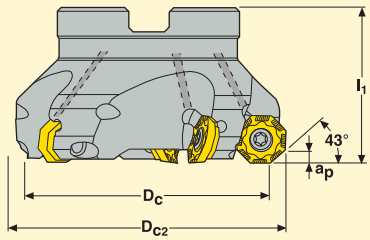
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.43-0032–0040	16	35	8,4	5,6	–	16	–
R220.43-0050–0063	22	47	10,4	6,3	–	22	–
R220.43-0080	27	62	12,4	7	–	27	–
R220.43-0100	32	77	14,4	8	–	32	–
R220.43-0125	40	90	16,4	9	–	40	–
R220.43-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Octomill® 220.43-05/A



Tool angles: γo = +15°
γp = +15°
γf = + 5°

- **For insert selection and cutting data recommendations, see page 97.**
- **For complete insert programme, see page 523 .**
- For ramping and helical interpolation, see pages 592 - 595.

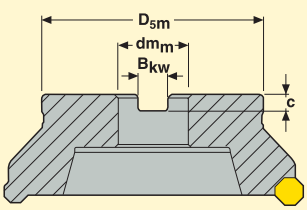
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.43 -0040-05-4A	40	49	40	3,5	4	0,3	13200	OFEX05T305/OFMT050405
	-0050-05-5A	50	59	40	3,5	5	0,4	11900	OFEX05T305/OFMT050405
	-0063-05-6A	63	72	40	3,5	6	0,5	10600	OFEX05T305/OFMT050405
	-0080-05-8A	80	89	50	3,5	8	1,0	9400	OFEX05T305/OFMT050405
	-0100-05-10A	100	109	50	3,5	10	1,7	8400	OFEX05T305/OFMT050405

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.43-0040	C04008-T15P	T15P-3	TCEI0825
R220.43-0050–0063	C04008-T15P	T15P-3	220.17-692
R220.43-0080–0100	C04008-T15P	T15P-3	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

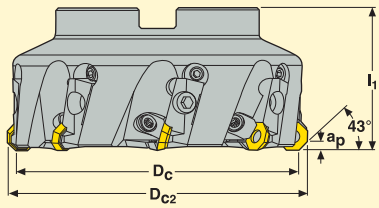


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.43-0040	16	35	8,4	5,6	16
R220.43-0050–0063	22	47	10,4	6,3	22
R220.43-0080	27	62	12,4	7	27
R220.43-0100	32	77	14,4	8	32

Please check availability in current price and stock-list.

Octomill® 220.43-05C

For small depth of cut



Tool angles: $\gamma o = +15°$, $\gamma p = +15°$, $\gamma f = +5°$

- For insert selection and cutting data recommendations, see page 97.
- For complete insert programme, see page523.

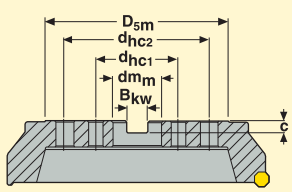
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.43 -0080-05C	80	89	50	3,5	5	1,6	4800	OFEX05T305
	-0100-05C	100	109	50	3,5	6	2,4	4300	OFEX05T305
	-0125-05C	125	134	63	3,5	8	3,7	3800	OFEX05T305
	-8160-05C	160	169	63	3,5	10	5,8	3300	OFEX05T305
	-8200-05C	200	209	63	3,5	12	9,0	3000	OFEX05T305
	-8250-05C	250	259	63	3,5	16	17,3	2700	OFEX05T305
	-8315-05C	315	324	80	3,5	20	28,0	2400	OFEX05T305

Spare parts

For cutter	Cassette	Cassette screw	Wedge	Wedge screw	Key *	Arbor screw	Setting gauge
R220.43-0080	OF05AR	FS96018	CW0810	LD8020-T25P	T25P-4	MC6S12x35	AU1114T-T15P
R220.43-0100	OF05AR	FS96018	CW0810	LD8020-T25P	T25P-4	220.17-694	AU1114T-T15P
R220.43-0125–8315	OF05AR	FS96018	CW0810	LD8020-T25P	T25P-4	–	AU1114T-T15P

Cassette OF05AL for left-hand cutters.
Key T15P-3 for setting gauge and key H05-4 for cassette screw to be ordered separately.

Dimensions of mounting

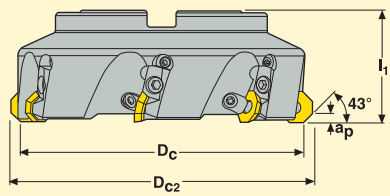


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.43-0080	27	62	12,4	7	–	–	27	–
R220.43-0100	32	77	14,4	8	–	–	32	–
R220.43-0125	40	90	16,4	9	–	–	40	–
R220.43-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.43-8200–8250	60	130	25,7	14	101,6	–	–	ISO50
R220.43-8315	60	225	25,7	14	101,6	177,8	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-05CG

For small depth of cut



Tool angles: $\gamma o = +15°$, $\gamma p = +15°$, $\gamma f = +5°$

- For insert selection and cutting data recommendations, see page 97.
- For complete insert programme, see page 523.

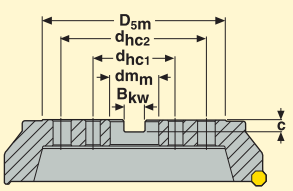
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Coarse									
	R220.43 -8160-05CG	160	169	63	3,5	7	6,4	3300	OFEX05T305
	-8200-05CG	200	209	63	3,5	8	8,9	3000	OFEX05T305
	-8250-05CG	250	259	63	3,5	10	17,5	2700	OFEX05T305
	-8315-05CG	315	324	80	3,5	12	28,0	2400	OFEX05T305
	-8400-05CG	400	409	80	3,5	16	44,4	2100	OFEX05T305
	-8500-05CG	500	509	80	3,5	20	82,0	1800	OFEX05T305

Spare parts

For cutter	Cassette	Cassette screw	Wedge	Wedge screw	Key *	Setting gauge
R220.43-..	OF05AR	FS96018	CW0810	LD8020-T25P	T25P-4	AU1114T-T15P

Cassette OF05AL for left-hand cutters.
Key T15P-3 for setting gauge and key H05-4 for cassette screw to be ordered separately.

Dimensions of mounting

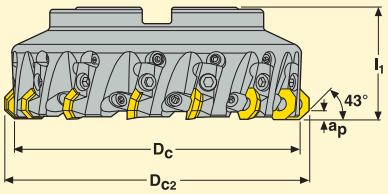


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.43-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.43-8200–8250	60	130	25,7	14	101,6	–	–	ISO50
R220.43-8315	60	225	25,7	14	101,6	177,8	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-05CT

For small depth of cut



Tool angles: $\gamma o = +15°$, $\gamma p = +15°$, $\gamma f = +5°$

- For insert selection and cutting data recommendations, see page 97.
- For complete insert programme, see page 523 .

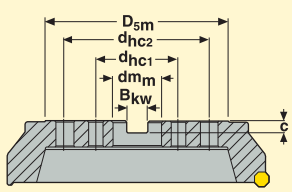
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.43 -0080-05CT	80	89	50	3,5	6	1,5	4800	OFEX05T305
	-0100-05CT	100	109	50	3,5	8	2,4	4300	OFEX05T305
	-0125-05CT	125	134	63	3,5	10	3,9	3800	OFEX05T305
	-8160-05CT	160	169	63	3,5	14	5,6	3300	OFEX05T305
	-8200-05CT	200	209	63	3,5	18	8,1	3000	OFEX05T305
	-8250-05CT	250	259	63	3,5	22	18,3	2700	OFEX05T305
	-8315-05CT	315	324	80	3,5	28	27,5	2400	OFEX05T305

Spare parts

For cutter	Cassette	Cassette screw	Wedge	Wedge screw	Key *	Arbor screw	Setting gauge
R220.43-0080	OF05AR	FS96018	334.5-640	LD8020-T25P	T25P-4	MC6S12x35	AU1114T-T15P
R220.43-0100	OF05AR	FS96018	334.5-640	LD8020-T25P	T25P-4	220.17-694	AU1114T-T15P
R220.43-0125–8315	OF05AR	FS96018	334.5-640	LD8020-T25P	T25P-4	–	AU1114T-T15P

Cassette OF05AL for left-hand cutters.
Key T15P-3 for setting gauge and key H05-4 for cassette screw to be ordered separately.

Dimensions of mounting

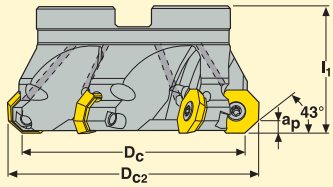


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.43-0080	27	62	12,4	7	–	–	27	–
R220.43-0100	32	77	14,4	8	–	–	32	–
R220.43-0125	40	90	16,4	9	–	–	40	–
R220.43-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.43-8200–8250	60	130	25,7	14	101,6	–	–	ISO50
R220.43-8315	60	225	25,7	14	101,6	177,8	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Octomill® 220.43-07S

Also suitable for rough copy milling operations



Tool angles: γo = +15°
γp = +15°
γf = + 5°

- **For insert selection and cutting data recommendations, see page 99.**
- **For complete insert programme, see page 522.**
- For ramping and helical interpolation, see pages 592 - 595.

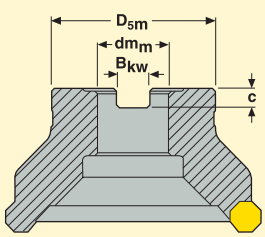
Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
R220.43 -0051-07S	51	63	40	5	4	0,4	7300	OF.T/W070405
-0063-07SA	63	75	40	5	4	0,6	6800	OF.T/W070405
-0068-07S	68	80	50	5	5	0,9	6400	OF.T/W070405
-0080-07SA	80	92	50	5	5	1,0	6200	OF.T/W070405
-0088-07S	88	100	50	5	6	1,3	5800	OF.T/W070405
-0100-07SA	100	112	50	5	6	1,6	5600	OF.T/W070405
-0125-07S	125	137	63	5	8	3,0	5100	OF.T/W070405

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.43-0051-0063	C05013-T20P	T20P-4	220.17-692
R220.43-0068-0125	C05013-T20P	T20P-4	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

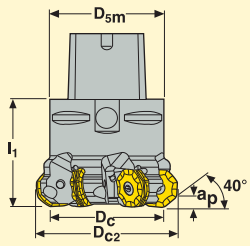


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.43-0051-0063	22	47	10,4	6,3	22
R220.43-0068-0080	27	62	12,4	7	27
R220.43-0088-0100	32	77	14,4	8	32
R220.43-0125	40	90	16,4	9	40

Please check availability in current price and stock-list.

Double Octomill™ 217.48-09 Seco-Capto™

- For insert selection and cutting data recommendations, see page 100.
- For complete insert programme, see page 525.



Tool angles: γo = -11°
γp = - 8°
γf = - 8°

Pitch	Part No.	Dimensions in mm D_c	D_{c2}	D_{5m}	l_1	a_p		KG		Type of mounting	
Normal											
	C6-R217.48 -063-09-05SA	63	78	63	63	6	5	1,6	4900	Seco-Capto C6	ON.U09
	-080-09-06SA	80	95	63	63	6	6	1,9	4400	Seco-Capto C6	ON.U09
	-100-09-07SA	100	115	63	80	6	7	3,1	3900	Seco-Capto C6	ON.U09
	C8-R217.48 -100-09-07SA	100	115	80	80	6	7	3,9	3900	Seco-Capto C8	ON.U09
Normal +											
	C6-R217.48 -063-09-06SA	63	78	63	63	6	6	1,6	4900	Seco-Capto C6	ON.U09
	-080-09-07SA	80	95	63	63	6	7	1,9	4400	Seco-Capto C6	ON.U09
	C8-R217.48 -100-09-08SA	100	115	80	80	6	8	4,0	3900	Seco-Capto C8	ON.U09
Close											
	C6-R217.48 -080-09-09M	80	95	63	63	6	9	2,2	4400	Seco-Capto C6	ON.U09*
	C8-R217.48 -100-09-12M	100	115	80	80	6	12	4,4	3900	Seco-Capto C8	ON.U09*

*Only M14/M15 ,MD16/MD17 geometries

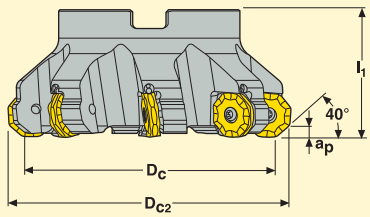
Spare parts

For cutter	Wedge	Wedge screw	Key *	Locking screw
C6-R217.48..SA	–	–	T20P-4	C05013-T20P
C6-R217.48..M	CW0616	LD68023F-T20P	T20P-4	–

*** Torque values 6,0 Nm.** Dynamomentic keys, see page 590.
Please check availability in current price and stock-list.

Double Octomill™ 220.48-09

- For insert selection and cutting data recommendations, see page 100.
- For complete insert programme, see page 525.



Tool angles: γo = -11°
γp = - 8°
γf = - 8°

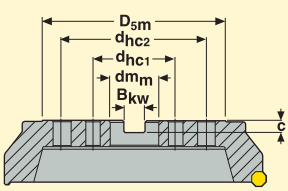
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.48 -0063-09-05SA	63	78	40	6	5	0,6	4900	ON.U09
	-0080-09-06SA	80	95	50	6	6	1,1	4400	ON.U09
	-0100-09-07SA	100	115	50	6	7	1,8	3900	ON.U09
	-0125-09-08SA	125	140	63	6	8	3,0	3500	ON.U09
	-8160-09-10S	160	175	63	6	10	4,4	3100	ON.U09
	-8200-09-12S	200	215	63	6	12	6,2	2700	ON.U09
	-8250-09-16S	250	265	63	6	16	13,5	2500	ON.U09
	-8315-09-20S	315	330	80	6	20	27,8	2200	ON.U09

Spare parts

For cutter	Locking screw	Key *
R220.48..	C05013-T20P	T20P-4

*** Torque values 6,0 Nm.** Dynamomentic keys, see page 590.

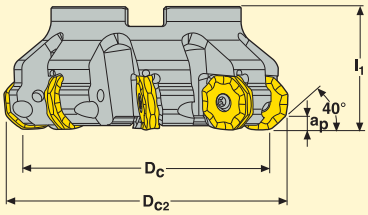
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.48-0063	22	47	10,4	7	–	–	22	–
R220.48-0080	27	62	12,4	7	–	–	27	–
R220.48-0100	32	77	14,4	8	–	–	32	–
R220.48-0125	40	90	16,4	9	–	–	40	–
R220.48-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.48-8200	60	130	25,7	14	101,6		–	ISO50
R220.48-8250	60	130	25,7	14	101,6	177,8	–	ISO50
R220.48-8315	60	225	25,7	14	101,6	177,8	–	ISO50,ISO60

Please check availability in current price and stock-list.

Double Octomill™ 220.48-09



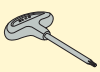
Tool angles: γo = -11°
γp = - 8°
γf = - 8°

- For insert selection and cutting data recommendations, see page 100.
- For complete insert programme, see page 525.

Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal +									
	R220.48 -0063-09-06SA	63	78	40	6	6	0,6	4900	ON.U09
	-0080-09-07SA	80	95	50	6	7	1,1	4400	ON.U09
	-0100-09-08SA	100	115	50	6	8	1,9	3900	ON.U09
	-0125-09-10SA	125	140	63	6	10	3,3	3500	ON.U09
	-8160-09-12S	160	175	63	6	12	4,7	3100	ON.U09

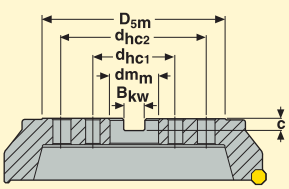
Spare parts

For cutter	Locking screw	Key *
R220.48..	C05013-T20P	T20P-4



* **Torque values 6,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

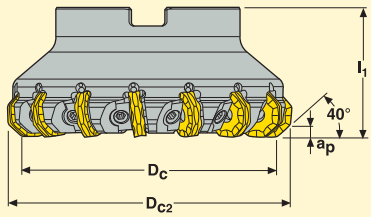


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.48-0063	22	47	10,4	7	–	–	22	–
R220.48-0080	27	62	12,4	7	–	–	27	–
R220.48-0100	32	77	14,4	8	–	–	32	–
R220.48-0125	40	90	16,4	9	–	–	40	–
R220.48-8160	40	90	16,4	9	66,7	–	40	ISO40

Please check availability in current price and stock-list.

Double Octomill™ 220.48-09

- For insert selection and cutting data recommendations, see page 100.
- For complete insert programme, see page 525.



Tool angles: γo = -11°
γp = - 8°
γf = - 8°

Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.48 -0080-09-09M	80	95	50	6	9	1,4	4400	ON.U09*
	-0100-09-12M	100	115	50	6	12	2,2	3900	ON.U09*
	-0125-09-15M	125	140	63	6	15	3,8	3500	ON.U09*
	-8160-09-20M	160	175	63	6	20	5,4	3100	ON.U09*
	-8200-09-24M	200	215	63	6	24	7,0	2700	ON.U09*
	-8200-09-28M	200	215	63	6	28	6,0	2700	ON.U09*
	-8250-09-30M	250	265	63	6	30	15,1	2500	ON.U09*
	-8315-09-40M	315	330	80	6	40	30,1	2200	ON.U09*

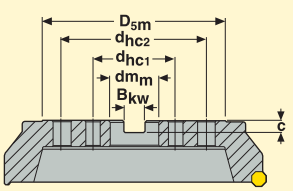
*Only M14/M15 ,MD16/MD17 geometries

Spare parts

For cutter	Wedge	Wedge screw	Key *
R220.48..	CW0616	LD68023F-T20P	T20P-4

*** Torque values 6,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

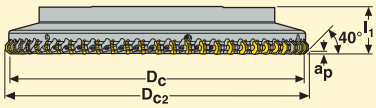


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.48-0080	27	62	12,4	7	–	–	27	–
R220.48-0100	32	77	14,4	8	–	–	32	–
R220.48-0125	40	90	16,4	9	–	–	40	–
R220.48-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.48-8200	60	130	25,7	14	101,6		–	ISO50
R220.48-8250	60	130	25,7	14	101,6	177,8	–	ISO50
R220.48-8315	60	225	25,7	14	101,6	177,8	–	ISO50,ISO60

Please check availability in current price and stock-list.

Double Octomill™ 220.48-09 CAP

- For insert selection and cutting data recommendations, see page 100.
- For complete insert programme, see page 525.



Tool angles: γo = -11°
γp = - 8°
γf = -8°

Pitch	Part No.	Dimension in mm D_c	D_{c2}	l_1	a_p	Support body Part No.		KG		
Close										
	R220.48 -9250-09-30M	250	265	63	6	260-425M-1	30	10,6	2500	ON.U09*
	-9315-09-40M	315	330	63	6	260-431M-1	40	17,0	2200	ON.U09*
	-9315-09-50M	315	330	63	6	260-431M-1	50	16,0	2200	ON.U09*
	-9355-09-50M	355	370	63	6	260-435M-1	50	20,5	2000	ON.U09*
	-9400-09-50M	400	415	63	6	260-440M-1	50	24,0	1900	ON.U09*
	-9500-09-60M	500	515	63	6	260-450M-1	60	33,7	1700	ON.U09*

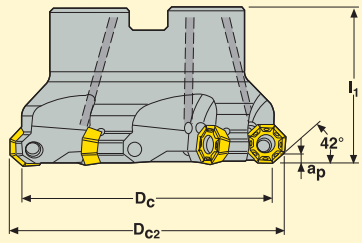
*Only M14/M15 ,MD16/MD17 geometries

Spare parts

For cutter	Wedge	Wedge screw	Key *
R220.48	CW0616	LD68023F-T20P	T20P-4

*** Torque values 6,0 Nm.** Dynamomentic keys, see page 590.

Powerocto 220.42-05/A



Tool angles: γo = - 5°
γp = +5°
γf = -5°

- **For insert selection and cutting data recommendations, see page 102.**
- **For complete insert programme, see page 524.**
- For ramping and helical interpolation, see pages 592 - 595.

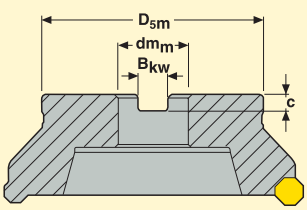
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.42 -0040-05-3A	40	49	40	3,5	3	0,2	15000	ODMT050408
	-0050-05-4A	50	59	40	3,5	4	0,3	13500	ODMT050408
	-0063-05-5A	63	72	40	3,5	5	0,5	12000	ODMT050408
	-0080-05-6A	80	89	50	3,5	6	1,0	10700	ODMT050408
	-0100-05-7A	100	109	50	3,5	7	1,7	9500	ODMT050408
Close									
	R220.42 -0040-05-4A	40	49	40	3,5	4	0,2	15000	ODMT050408
	-0050-05-5A	50	59	40	3,5	5	0,3	13500	ODMT050408
	-0063-05-6A	63	72	40	3,5	6	0,5	12000	ODMT050408
	-0080-05-7A	80	89	50	3,5	7	1,0	10700	ODMT050408

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.42-0040	C04011-T15P	T15P-3	TCEI0825
R220.42-0050-0063	C04011-T15P	T15P-3	220.17-692
R220.42-0080	C04011-T15P	T15P-3	–
R220.42-0100	C04011-T15P	T15P-3	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

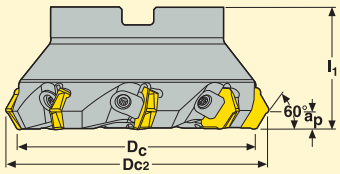
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.42-0040	16	35	8,4	5,6	16
R220.42-0050-0063	22	47	10,4	6,3	22
R220.42-0080	27	62	12,4	7	27
R220.42-0100	32	77	14,4	8	32

Please check availability in current price and stock-list.

Hexamill® 220.66-12



Tool angles: γo = - 2°
γp = + 14°
γf = -11°

- For insert selection and cutting data recommendations, see page 103.
- For complete insert programme, see page 518.

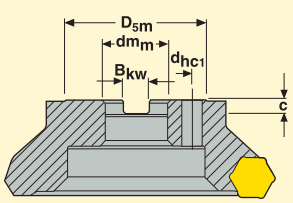
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.66 -0063-12-4	63	75,7	50	8	4	1,2	3700	HP..1206..
	-0080-12-5	80	92,7	50	8	5	1,8	3300	HP..1206..
	-0100-12-6	100	112,7	50	8	6	2,7	2900	HP..1206..
	-0125-12-8	125	137,7	63	8	8	4,2	2600	HP..1206..
	-8160-12-10	160	172,7	63	8	10	6,7	2300	HP..1206..

Spare parts

For cutter	Wedge	Wedge screw	Key *	Arbor screw
R220.66-0063	CW0813	LD8020-T25P	T25P-4	220.17-691
R220.66-0080	CW0813	LD8020-T25P	T25P-4	MC6S12x35
R220.66-0100-8160	CW0813	LD8020-T25P	T25P-4	–

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

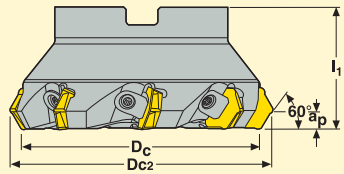


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.66-0063	22	47	10,4	7	–	22	–
R220.66-0080	27	62	12,4	7	–	27	–
R220.66-0100	32	77	14,4	8	–	32	–
R220.66-0125	40	90	16,4	9	–	40	–
R220.66-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Hexamill® 220.66-12

- For insert selection and cutting data recommendations, see page 103.
- For complete insert programme, see page 518 .



Tool angles: $\gamma o = -2°$, $\gamma p = +14°$, $\gamma f = -11°$

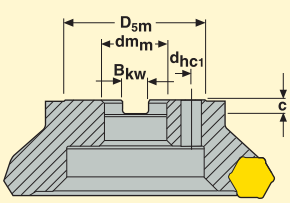
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Coarse									
	R220.66 -0063-12-3	63	75,7	50	8	3	1,2	3700	HP..1206..
	-0080-12-4	80	92,7	50	8	4	1,8	3300	HP..1206..
	-0100-12-5	100	112,7	50	8	5	2,7	2900	HP..1206..
	-0125-12-6	125	137,7	63	8	6	4,2	2600	HP..1206..
	-8160-12-7	160	172,7	63	8	7	6,7	2300	HP..1206..

Spare parts

For cutter	Wedge	Wedge screw	Key *	Arbor screw
R220.66-0063	CW0813	LD8020-T25P	T25P-4	220.17-691
R220.66-0080	CW0813	LD8020-T25P	T25P-4	MC6S12x35
R220.66-0100-8160	CW0813	LD8020-T25P	T25P-4	–

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

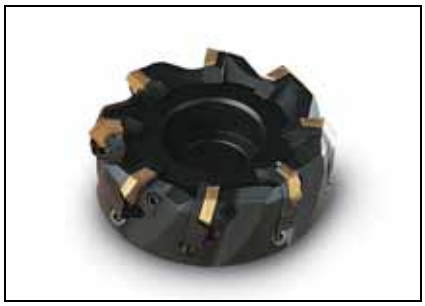


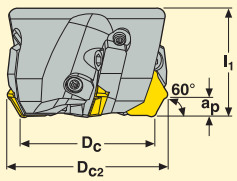
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.66-0063	22	47	10,4	7	–	22	–
R220.66-0080	27	62	12,4	7	–	27	–
R220.66-0100	32	77	14,4	8	–	32	–
R220.66-0125	40	90	16,4	9	–	40	–
R220.66-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Hexamill® 220.66-12CM

For large depth of cut





- For insert selection and cutting data recommendations, see page103 .
- For complete insert programme, see page 518.

Tool angles: $\gamma o = -2°$, $\gamma p = +14°$, $\gamma f = -11°$

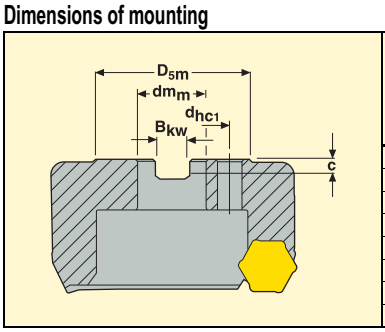
Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
R220.66 -0063-12-4CM	63	75,7	50	8	4	1,2	3700	HP.1206ZETR
-0080-12-5CM	80	92,7	50	8	5	1,8	3300	HP.1206ZETR
-0100-12-6CM	100	112,7	50	8	6	2,7	2900	HP.1206ZETR
-0125-12-8CM	125	137,7	63	8	8	4,2	2600	HP.1206ZETR
-8160-12-10CM	160	172,7	63	8	10	6,7	2300	HP.1206ZETR
-8200-12-12CM	200	212,7	63	8	12	9,7	2000	HP.1206ZETR
-8250-12-16CM	250	262,7	63	8	16	17,1	1800	HP.1206ZETR

Spare parts

For cutter	Cassette	Cassette screw	Wedge**	Wedge screw	Key *	Arbor screw	Setting gauge
R220.66-0063	HP12DRM	FS96018	CW0813	LD8020-T25P	T25P-4	220.17-692	AU1114T-T15P
R220.66-0080	HP12DRM	FS96018	CW0813	LD8020-T25P	T25P-4	MC6S12x35	AU1114T-T15P
R220.66-0100-8250	HP12DRM	FS96018	CW0813	LD8020-T25P	T25P-4	–	AU1114T-T15P

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and key 5SMS795 for cassette screw to be ordered separately.

Dimensions of mounting

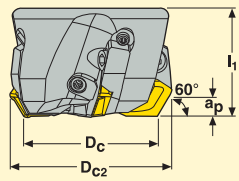


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.66-0063	22	47	10,4	7	–	22	–
R220.66-0080	27	62	12,4	7	–	27	–
R220.66-0100	32	77	14,4	8	–	32	–
R220.66-0125	40	90	16,4	9	–	40	–
R220.66-8160	40	128	16,4	9	66,7	40	ISO40
R220.66-8200	60	168	25,7	14	101,6	–	ISO50
R220.66-8250	60	218	25,7	14	101,6	–	ISO50, ISO60

Please check availability in current price and stock-list.
**Wedge CW0810 for cutters manufactured earlier than July 2007

Hexamill® 220.66-12CMXZ

For large depth of cut



Tool angles: γo = - 2°
γp = +14°
γf = -11°

- **For insert selection and cutting data recommendations, see page 103.**
- **For complete insert programme, see pages 518, 548.**
- Also suitable for turn-milling operations.

Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG			
R220.66 -0063-12-4CMXZ*	63	77,6	50	8	4	1,2	3700	HP.1206..	SP.1906ZZTR
-0080-12-5CMXZ*	80	94,6	50	8	5	1,8	3300	HP.1206..	SP.1906ZZTR
-0100-12-6CMXZ*	100	114,6	50	8	6	2,7	2900	HP.1206..	SP.1906ZZTR
-0125-12-8CMXZ*	125	139,6	63	8	8	4,2	2600	HP.1206..	SP.1906ZZTR
-8160-12-10CMXZ*	160	174,6	63	8	10	6,7	2300	HP.1206..	SP.1906ZZTR
-8200-12-12CMXZ*	200	214,6	63	8	12	9,7	2000	HP.1206..	SP.1906ZZTR
-8250-12-16CMXZ*	250	264,6	63	8	16	17,1	1800	HP.1206..	SP.1906ZZTR

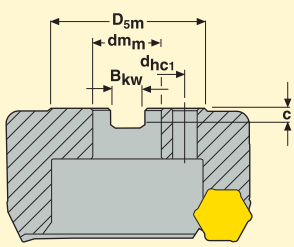
*When ordering, please state number of wiper cassettes needed. Ordering example: R220.66-8160-12-10CM2Z (2 wiper cassettes).

Spare parts

For cutter	Cassette	Wiper Cassette	Cassette screw	Wedge**	Wedge screw	Key *	Arbor screw	Setting gauge
R220.66-0063	HP12DRM	SP19DZRM	FS96018	CW0813	LD8020-T25P	T25P-4	220.17-692	AU1114T-T15P
R220.66-0080	HP12DRM	SP19DZRM	FS96018	CW0813	LD8020-T25P	T25P-4	MC6S12x35	AU1114T-T15P
R220.66-0100-8250	HP12DRM	SP19DZRM	FS96018	CW0813	LD8020-T25P	T25P-4	–	AU1114T-T15P

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and key 5SMS795 for cassette screw to be ordered separately.

Dimensions of mounting

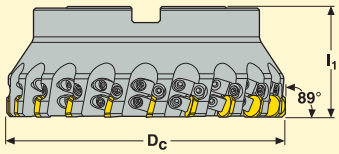


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.66-0063	22	47	10,4	7	–	22	–
R220.66-0080	27	62	12,4	7	–	27	–
R220.66-0100	32	77	14,4	8	–	32	–
R220.66-0125	40	90	16,4	9	–	40	–
R220.66-8160	40	128	16,4	9	66,7	40	ISO40
R220.66-8200	60	168	25,7	14	101,6	–	ISO50
R220.66-8250	60	218	25,7	14	101,6	–	ISO50, ISO60

Please check availability in current price and stock-list.
**Wedge CW0810 for cutters manufactured earlier than July 2007

220.30-12ST

For finishing operations in short chipping materials



- **For insert selection and cutting data recommendations, see page 104.**
- **For complete insert programme, see page 537.**

Tool angles: γo = + 5°
γp = +15°
γf = + 5°

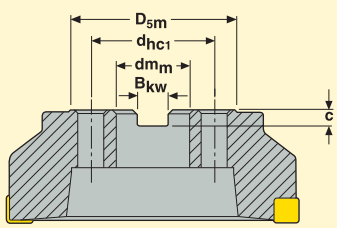
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Super close								
	R220.30 -0080-12ST	80	50	1	9	1,6	5300	SEEX1203..
	-0100-12ST	100	50	1	12	2,0	4800	SEEX1203..
	-0125-12ST	125	63	1	15	3,8	4300	SEEX1203..
	-8160-12ST	160	63	1	20	5,1	3800	SEEX1203..
	-8200-12ST	200	63	1	25	8,1	3300	SEEX1203..

Spare parts

For cutter	Wedge	Wedge screw	Setting gauge	Wedge screw	Key *	Arbor screw
R220.30-0080	CW0608	LD6018T-T15P	AS6011	LD6019-T15P	T15P-4ST	MC6S 12x40
R220.30-0100	CW0608	LD6018T-T15P	AS6011	LD6019-T15P	T15P-4ST	220.17-694
R220.30-0125–8200	CW0608	LD6018T-T15P	AS6011	LD6019-T15P	T15P-4ST	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



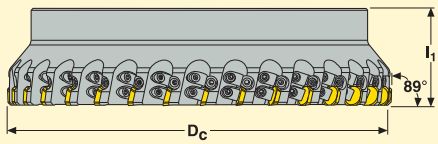
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.30-0080	27	62	12,4	7	–	27	–
R220.30-0100	32	77	14,4	8	–	32	–
R220.30-0125	40	90	16,4	9	–	40	–
R220.30-8160	40	90	16,4	9	66,7	40	ISO40
R220.30-8200	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.

220.30-12ST CAP

For finishing operations in short chipping materials

- **For insert selection and cutting data recommendations, see page 104.**
- **For complete insert programme, see page 537.**



Tool angles:
γo = + 5°
γp = +15°
γf = + 5°

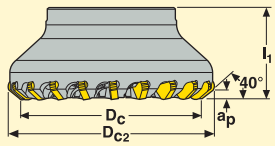
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p	Support body Part No.		KG		
Super close									
	R220.30 -9250-12ST	250	63	1	260-425M-1	32	8,5	3000	SEEX1203..
	-9315-12ST	315	63	1	260-431M-1	40	15,9	2700	SEEX1203..
	-9355-12ST	355	63	1	260-435M-1	44	20,0	2500	SEEX1203..

Spare parts

For cutter	Wedge	Wedge screw	Setting gauge	Wedge screw	Key *
R220.30-9250–9355	CW0608	LD6018T-T15P	AS6011	LD6019-T15P	T15P-4ST

Please check availability in current price and stock-list.
*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

220.44-15

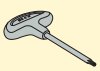


Tool angles: γo = - 7°
γp = - 8°
γf = -2°

- For insert selection and cutting data recommendations, see page 105.
- For complete insert programme, see page 541.

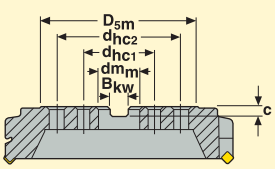
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Close									
	R220.44 -0080-15-09	80	97	50	7	9	1,3	3200	SNH.15..
	-0100-15-12	100	117	50	7	12	1,9	2900	SNH.15..
	-0125-15-15	125	142	63	7	15	3,4	2600	SNH.15..
	-8160-15-20	160	177	63	7	20	5,6	2300	SNH.15..
	-8200-15-25	200	217	63	7	25	7,7	2000	SNH.15..
	-8250-15-32	250	267	63	7	32	14,0	1800	SNH.15..
	-8315-15-40	315	332	80	7	40	30,0	1600	SNH.15..

Spare parts

For cutter	Wedge	Wedge screw	Key * 
R220.44..	CW0608S	LD6018T-T15P	T15P-4

* **Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

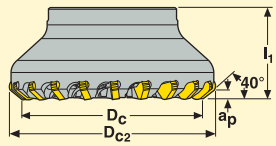


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.44-0080	27	62	12,4	7	–	–	27	–
R220.44-0100	32	77	14,4	8	–	–	32	–
R220.44-0125	40	90	16,4	9	–	–	40	–
R220.44-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.44-8200	60	130	25,7	14	101,6	–	60	ISO50
R220.44-8250	60	130	25,7	14	101,6	–	60	ISO50
R220.44-8315	60	225	25,7	14	101,6	177,8	60	ISO50, ISO60

Please check availability in current price and stock-list.

220.44-15

- For insert selection and cutting data recommendations, see page 105.
- For complete insert programme, see page 541.



Tool angles: γo = - 7°
γp = - 8°
γf = -2°

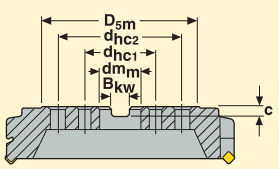
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Super close									
	R220.44 -0080-15-12	80	97	50	7	12	1,3	3200	SNH.15..
	-0100-15-16	100	117	50	7	16	1,9	2900	SNH.15..
	-0125-15-20	125	142	63	7	20	3,4	2600	SNH.15..
	-8160-15-25	160	177	63	7	25	5,6	2300	SNH.15..
	-8200-15-32	200	217	63	7	32	7,6	2000	SNH.15..
	-8250-15-40	250	267	63	7	40	13,9	1800	SNH.15..
	-8315-15-50	315	332	80	7	50	29,8	1600	SNH.15..

Spare parts

For cutter	Wedge	Wedge screw	Key *
R220.44-	CW0608S	LD6018T-T15P	T15P-4

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

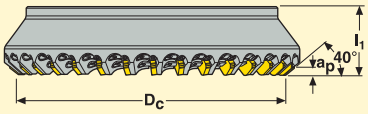
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	d_{hc2}	For arbor	For spindle-nose
R220.44-0080	27	62	12,4	7	–	–	27	–
R220.44-0100	32	77	14,4	8	–	–	32	–
R220.44-0125	40	90	16,4	9	–	–	40	–
R220.44-8160	40	90	16,4	9	66,7	–	40	ISO40
R220.44-8200	60	130	25,7	14	101,6	–	60	ISO50
R220.44-8250	60	130	25,7	14	101,6	–	60	ISO50
R220.44-8315	60	225	25,7	14	101,6	177,8	60	ISO50, ISO60

Please check availability in current price and stock-list.

220.44-15 CAP



- For insert selection and cutting data recommendations, see page 105.
- For complete insert programme, see page 541.

Tool angles: γo = - 7°
γp = - 8°
γf = -2°

Pitch	Part No.	Dimension in mm D_c	D_{c2}	l_1	a_p	Support body part No.		KG		
Close										
	R220.44 -9250-15-32	250	267	63	7	260-425M-1	32	10,3	1800	SNH.15..
	-9315-15-40	315	332	63	7	260-431M-1	40	17,0	1600	SNH.15..
	-9400-15-50	400	417	63	7	260-440M-1	50	24,0	1400	SNH.15..
	-9500-15-64	500	517	63	7	260-450M-1	64	34,0	1200	SNH.15..
Super close										
	R220.44 -9250-15-40	250	267	63	7	260-425M-1	40	10,3	1800	SNH.15..
	-9315-15-50	315	332	63	7	260-431M-1	50	17,0	1600	SNH.15..
	-9400-15-64	400	417	63	7	260-440M-1	64	24,0	1400	SNH.15..
	-9500-15-80	500	517	63	7	260-450M-1	80	34,0	1200	SNH.15..

Spare parts

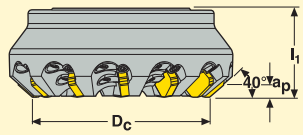
For cutter	Wedge	Wedge screw	Key *
R220.44..	CW0608S	LD6018T-T15P	T15P-4

* **Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

220.44-15ST

For roughing operations in short chipping materials

- **For insert selection and cutting data recommendations, see page 105.**
- **For complete insert programme, see page 541 .**



Tool angles: γo = - 7°
γp = - 8°
γf = - 2°

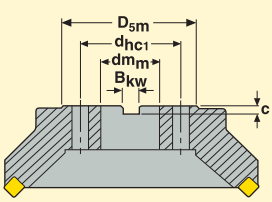
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Super close								
	R220.44 -0080-15ST	80	50	7	9	2,0	3200	SNHF1504
	-0100-15ST	100	50	7	12	2,9	2900	SNHF1504
	-0125-15ST	125	63	7	15	4,8	2600	SNHF1504
	-8160-15ST	160	63	7	20	7,1	2300	SNHF1504
	-8200-15ST	200	63	7	25	14,0	2000	SNHF1504

Spare parts

For cutter	Wedge	Wedge screw	Setting gauge	Setting gauge screw	Key *
R220.44-..	CW0608	LD6018T-T15P	AS6011	LD6019-T15P	T15P-4ST

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



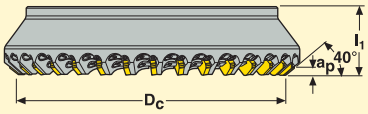
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.44-0080	27	62	12,4	7	–	27	–
R220.44-0100	32	77	14,4	8	–	32	–
R220.44-0125	40	90	16,4	9	–	40	–
R220.44-8160	40	90	16,4	9	66,7	40	ISO40
R220.44-8200	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.

220.44-15ST CAP

For roughing operations in short chipping materials

- **For insert selection and cutting data recommendations, see page 105.**
- **For complete insert programme, see page 541 .**



Tool angles: γo = - 7°
γp = - 8°
γf = - 2°

Pitch	Part No.	Dimension in mm D_c	l_1	a_p	Support body Part No		KG		
Super close									
	R220.44 -9250-15ST	250	63	7	260-425M-1	32	16,0	1800	SNHF1504
	-9315-15ST	315	63	7	260-431M-1	40	22,0	1600	SNHF1504
	-9355-15ST	355	63	7	260-435M-1	44	26,0	1500	SNHF1504
	-9400-15ST	400	63	7	260-440M-1	50	28,0	1400	SNHF1504
	-9500-15ST	500	63	7	260-450M-1	64	40,0	1200	SNHF1504

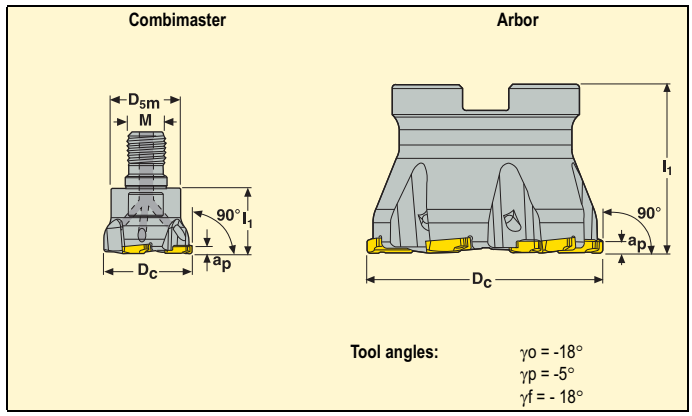
Spare parts

For cutter	Wedge	Wedge screw	Setting gauge	Setting gauge screw	Key *
R220.44-..	CW0608	LD6018T-T15P	AS6011	LD6019-T15P	T15P-4ST

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

R230.19

- For insert selection and cutting data recommendations, see pages 106.
- For complete insert programme, see pages 542 - 544.



Part No.	Dimensions in mm D_c	l_1	M	D_{5m}	a_p	z_c	Type of mounting		KG		Insert*
R230.19 -1030.RE-SN1103-3A	30	20	M10	18,5	2,6	3	Combimaster	3	0,1	18900	SNHQ1103xx R
-1232.RE-SN1103-3A	32	20	M12	23	2,6	3	Combimaster	3	0,1	18300	SNHQ1103xx R
-1640.RE-SN1203-3A	40	28	M16	30	3,1	3	Combimaster	3	0,2	16700	SNHQ1203xx R
R230.19 -0050-SN1203-5A	50	40	–	42	3,1	5	Arbor	5	0,3	12300	SNHQ1203xx R
-0063-SN1203-6A	63	45	–	50	3,1	6	Arbor	6	0,5	10900	SNHQ1203xx R
-0080-SN1203-8A	80	45	–	50	3,1	8	Arbor	8	1,0	9700	SNHQ1203xx R
-0100-SN1203-10A	100	50	–	77	3,1	10	Arbor	10	1,7	8700	SNHQ1203xx R

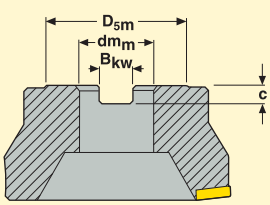
* Only use 4 cutting edges SNHQ inserts, recommended corner radius = 0,8 mm

Spare parts

For cutter	Locking screw	Key	Arbor screw	Torque value Nm
R230.19-SN1103	C93505-T09P	T09P-3	–	2,0
R230.19-SN1203	C94006-T15P	T15P-3	–	3,5
R230.19-SN1203 ∅50	C94006-T15P	T15P-3	220.17-692M	3,5
R230.19-SN1203 ∅63-80	C94006-T15P	T15P-3	MC6S 12x35	3,5
R230.19-SN1203 ∅100	C94006-T15P	T15P-3	MC6S 16x40	3,5

Dynamomentic keys, see page 590.

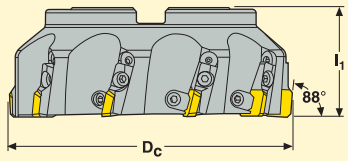
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R230.19-0050-SN1203-5A	22	42	10,4	6,3	22
R230.19-0063-SN1203-6A	27	50	12,4	7	27
R230.19-0080-SN1203-8A	27	50	12,4	7	27
R230.19-0100-SN1203-10A	32	77	14,4	8	32

Please check availability in current price and stock-list.

220.30-12C



Tool angles: γo = +5°
γp = +15°
γf = +5°

- For insert selection and cutting data recommendations, see page 107.
- For complete insert programme, see page 537.

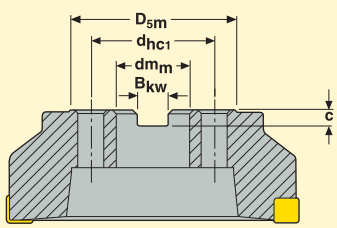
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.30 -0080-12C	80	50	1	5	1,3	4800	SEEX1203AFTN
	-0100-12C	100	50	1	6	2,2	4300	SEEX1203AFTN
	-0125-12C	125	63	1	8	3,1	3800	SEEX1203AFTN
	-8160-12C	160	63	1	10	5,5	3300	SEEX1203AFTN
	-8200-12C	200	63	1	12	8,0	3000	SEEX1203AFTN

Spare parts

For cutter	Cassette	Cassette screw	Wedge**	Wedge screw	Key *	Arbor screw	Setting gauge
R220.30-0080	SE12PRC	FS95018	CW0810	268-650	H04-4	MF6S 12x45	AU1114T-T15P
R220.30-0100	SE12PRC	FS95018	CW0810	268-650	H04-4	220.17-694	AU1114T-T15P
R220.30-0125-200	SE12PRC	FS95018	CW0810	268-650	H04-4	–	AU1114T-T15P

*** Torque values 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

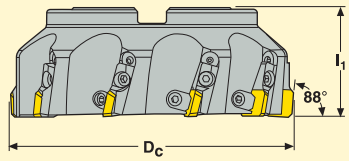


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.30-0080	27	56	12,4	7	–	27	–
R220.30-0100	32	77	14,4	8	–	32	–
R220.30-0125	40	90	16,4	9	–	40	–
R220.30-8160	40	90	16,4	9	66,7	40	ISO40
R220.30-8200	60	130	25,7	14	101,6	–	ISO40

Please check availability in current price and stock-list.

220.30-12C

- For insert selection and cutting data recommendations, see page 107.
- For complete insert programme, see page 537.



Tool angles: γo = +5°
γp = +15°
γf = +5°

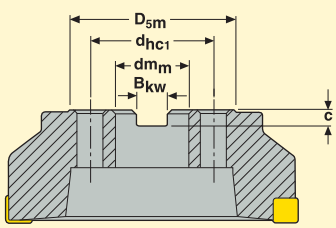
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Close								
	R220.30 -0080-12CT	80	50	1	6	1,3	4800	SEEX1203AFTN
	-0100-12CT	100	50	1	8	2,1	4300	SEEX1203AFTN
	-0125-12CT	125	63	1	10	3,5	3800	SEEX1203AFTN
	-8160-12CT	160	63	1	14	6,0	3300	SEEX1203AFTN
	-8250-12CT	250	63	1	22	16,4	2700	SEEX1203AFTN

Spare parts

For cutter	Cassette	Cassette screw	Wedge	Wedge screw	Key *	Arbor screw	Setting gauge
R220.30-0080	SE12PRC	FS95018	334.5-640	268-650	H04-4	MF6S 12x45	AU1114T-T15P
R220.30-0100	SE12PRC	FS95018	334.5-640	268-650	H04-4	220.17-694	AU1114T-T15P
R220.30-0125-0250	SE12PRC	FS95018	334.5-640	268-650	H04-4	–	AU1114T-T15P

*** Torque values 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

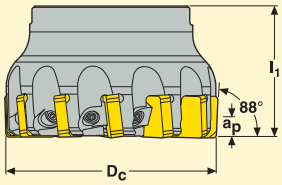


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.30-0080	27	56	12,4	7	–	27	–
R220.30-0100	32	77	14,4	8	–	32	–
R220.30-0125	40	90	16,4	9	–	40	–
R220.30-8160	40	90	16,4	9	66,7	40	ISO40
R220.30-8250	60	130	25,7	14	101,6	–	ISO40

Please check availability in current price and stock-list.

220.88-15

- For insert selection and cutting data recommendations, see page 107.
- For complete insert programme, see page 541.



Tool angles: γo = -7°
γp = -7°
γf = -7°

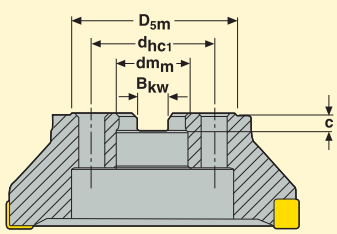
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Close								
	R220.88 -0063-15-5M	63	40	12	5	0,6	3600	SNH.15..
	-0080-15-8M	80	50	12	8	1,2	3200	SNH.15..
	-0100-15-10M	100	50	12	10	1,8	2900	SNH.15..
	-0125-15-14M	125	63	12	14	3,3	2600	SNH.15..
	-8160-15-18M	160	63	12	18	5,5	2300	SNH.15..

Spare parts

For cutter	Wedge	Wedge screw	Key *	Arbor screw
R220.88-0063	CW0608S	LD6018T-T15P	T15P-4	220.17-691
R220.88-0080	CW0608S	LD6018T-T15P	T15P-4	MC6S12X40
R220.88-0100	CW0608S	LD6018T-T15P	T15P-4	–
R220.88-0125	CW0608S	LD6018T-T15P	T15P-4	–
R220.88-8160	CW0608S	LD6018T-T15P	T15P-4	–

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

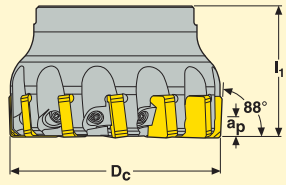


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.88-0063	22	47	10,4	6,3	–	22	–
R220.88-0080	27	62	12,4	7	–	27	–
R220.88-0100	32	77	14,4	8	–	32	–
R220.88-0125	40	90	16,4	9	–	40	–
R220.88-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

220.88-15

- For insert selection and cutting data recommendations, see page 107.
- For complete insert programme, see page 541.



Tool angles: γo = -7°
γp = -7°
γf = -7°

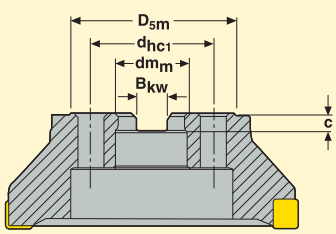
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Super close								
	R220.88 -0063-15-7M	63	40	12	7	0,6	3600	SNH.15..
	-0080-15-12M	80	50	12	12	1,2	3200	SNH.15..
	-0100-15-14M	100	50	12	14	1,7	2900	SNH.15..
	-0125-15-18M	125	63	12	18	3,2	2600	SNH.15..
	-8160-15-24M	160	63	12	24	5,4	2300	SNH.15..

Spare parts

For cutter	Wedge	Wedge screw	Key *	Arbor screw
R220.88-0063	CW0608S	LD6018T-T15P	T15P-4	220.17-691
R220.88-0080	CW0608S	LD6018T-T15P	T15P-4	MC6S12X40
R220.88-0100	CW0608S	LD6018T-T15P	T15P-4	–
R220.88-0125	CW0608S	LD6018T-T15P	T15P-4	–
R220.88-8160	CW0608S	LD6018T-T15P	T15P-4	–

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.88-0063	22	47	10,4	6,3	–	22	–
R220.88-0080	27	62	12,4	7	–	27	–
R220.88-0100	32	77	14,4	8	–	32	–
R220.88-0125	40	90	16,4	9	–	40	–
R220.88-8160	40	90	16,4	9	66,7	40	ISO40

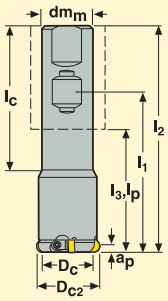
Please check availability in current price and stock-list.

217.70-06

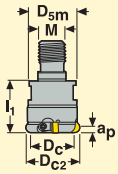
For PCBN inserts

- **For insert selection and cutting data recommendations, see page 108.**
- **For complete insert programme, see page 571.**

Cyl/Weldon



Combimaster



Tool angles: γo = -20° – -15°
γp = - 6°
γf = -20° – -15°

Part No.	Dimension in mm D_c	D_{c2}	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG	Type of mounting		
R217.70 -2020.3-06-3	20	26,35	20	75	100	50	50	70	–	3	3	0,2	Cyl/Weldon	31800	RN..060300
-2525.3-06-4	25	31,35	25	78	110	78	78	70	–	3	4	0,2	Cyl/Weldon	25500	RN..060300
-3232.3-06-5	32	38,35	32	84	120	84	84	70	–	3	5	0,4	Cyl/Weldon	19900	RN..060300
R217.70 -1220.RE-06-3	20	26,35	23	25	–	–	–	–	M12	3	3	0,1	Combimaster*	31800	RN..060300
-1625.RE-06-4	25	31,35	30	30	–	–	–	–	M16	3	4	0,2	Combimaster*	25500	RN..060300
-1632.RE-06-5	32	38,35	30	35	–	–	–	–	M16	3	5	0,3	Combimaster*	19900	RN..060300

*For shanks and dimensions, see pages 498 - 510.

Spare parts

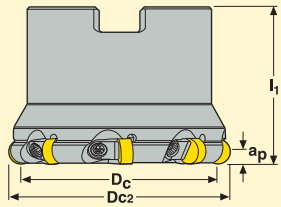
For cutter	Wedge	Wedge screw	Key *
R217.70-..	CW0405	LD4012-T08P	T08P-3

Please check availability in current price and stock-list.
*** Torque value 1,5 Nm.** Dynamomentic keys, see page 590.

220.70-06

For PCBN inserts

- For insert selection and cutting data recommendations, see page 108.
- For complete insert programme, see page 571.



Tool angles: γo = -15°
γp = - 6°
γf = -15°

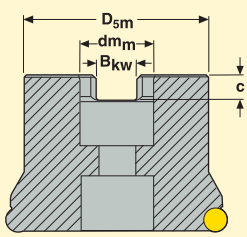
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.70 -0040-06-6	40	46,35	40	3	6	0,3	15900	RN..060300
	-0050-06-8	50	56,35	40	3	8	0,4	12700	RN..060300
	-0063-06-12	63	69,35	40	3	12	0,5	10100	RN..060300

Spare parts

For cutter	Wedge	Wedge screw	Key *	Arbor screw
R220.70-0040	CW0405	LD4012-T08P	T08P-3	TCEI0825
R220.70-0050	CW0405	LD4012-T08P	T08P-3	220.17.692
R220.70-0063	CW0405	LD4012-T08P	T08P-3	–

*** Torque value 1,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

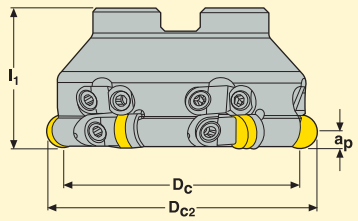


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.70-0040	16	35	8,4	5,6	16
R220.70-0050	22	47	10,4	6,3	22
R220.70-0063	27	62	12,4	7	27

Please check availability in current price and stock-list.

220.70-09

For PCBN inserts



Tool angles: γo = - 6°
γp = - 6°
γf = - 9°– - 6°

- **For insert selection and cutting data recommendations, see page 108.**
- **For complete insert programme, see page 571 - 572.**

Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
R220.70 -0063-09-6	63	72,5	40	4,5	6	1,0	10200	RN..09
-0080-09-6	80	89,5	50	4,5	6	1,1	9100	RN..09
-0100-09-8	100	109,5	50	4,5	8	2,1	8100	RN..09
-0125-09-8	125	134,5	63	4,5	8+1*	4,2	7200	RN..09/SNEX12*
-8160-09-10	160	169,5	63	4,5	10+1*	5,7	6400	RN..09/SNEX12*
-8200-09-12	200	209,5	63	4,5	12+1*	8,5	5700	RN..09/SNEX12*

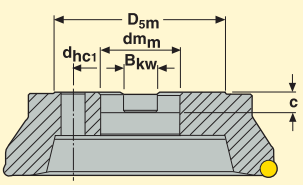
*Wiper insert.

Spare parts

For cutter	Anvil	Anvil screw	Setting gauge	Setting gauge screw	Wedge	Wedge screw	Anvil	Anvil screw
R220.70-0063–0100	117.10-620	174.10-652-T07P	AS6011F	LD6019-T15P	CW0608M	LD6018T-T15P	–	–
R220.70-0125–8200	117.10-620	174.10-652-T07P	AS6011F	LD6019-T15P	CW0608M	LD6018T-T15P	268-621	F94009-T09P

Arbor screw 220.17-692 for cutter R220.70-0063-09-6. Wedge CW0608S for wiper insert.
Key T15P-4ST* for insert locking screw, key T07P-3 for anvil screw, key T09P-3 for wiper anvil screw.

Dimensions of mounting



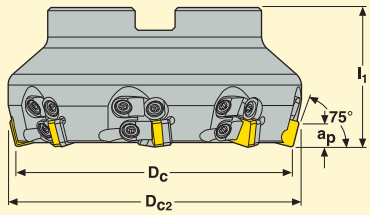
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.70-0063	22	47	10,4	7	–	22	–
R220.70-0080	27	62	12,4	7	–	27	–
R220.70-0100	32	77	14,4	8	–	32	–
R220.70-0125	40	90	16,4	9	–	40	–
R220.70-8160	40	90	16,4	9	66,7	40	ISO40
R220.70-8200	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.
*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

220.74-09

For PCBN inserts

- **For insert selection and cutting data recommendations, see page 108.**
- **For complete insert programme, see pages 572.**



Tool angles:
γo = - 6°
γp = - 6°
γf = - 7,5°– - 7°

Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
R220.74 -0063-09-6	63	65,3	40	8	6	0,8	10200	SN..09
-0080-09-6	80	82,3	50	8	6	1,4	9100	SN..09
-0100-09-8	100	102,3	50	8	8	2,1	8100	SN..09
-0125-09-8	125	127,3	63	8	8+1*	4,0	7200	SN..09/SNEX12*
-8160-09-10	160	162,3	63	8	10+1*	6,3	6400	SN..09/SNEX12*
-8200-09-12	200	202,3	63	8	12+1*	9,1	5700	SN..09/SNEX12*

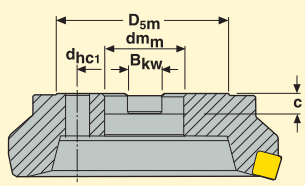
*Wiper insert.

Spare parts

For cutter	Anvil	Anvil screw	Setting gauge	Setting gauge screw	Wedge	Wedge screw	Anvil	Anvil screw
R220.74-0063–0100	174.10-620	174.10-652-T07P	AS6011	LD6019-T15P	CW0608M	LD6018T-T15P	–	–
R220.74-0125–8200	174.10-620	174.10-652-T07P	AS6011	LD6019-T15P	CW0608M	LD6018T-T15P	268-621	F94009-T09P

Arbor screw 220.17-692 for cutter R220.70-0063-09-6. Wedge CW0608S for wiper insert.
Key T15P-4ST* for insert locking screw, key T07P-3 for anvil screw, key T09P-3 for wiper anvil screw.

Dimensions of mounting

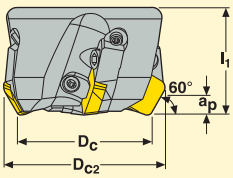


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.74-0063	22	47	10,4	7	–	22	–
R220.74-0080	27	62	12,4	7	–	27	–
R220.74-0100	32	77	14,4	8	–	32	–
R220.74-0125	40	90	16,4	9	–	40	–
R220.74-8160	40	90	16,4	9	66,7	40	ISO40
R220.74-8200	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.
*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

220.60-19CM

For large depth of cut



- For insert selection and cutting data recommendations, see page 110.
- For complete insert programme, see page 548.

Tool angles: γo = - 2°, γp = +14°, γf = -11°

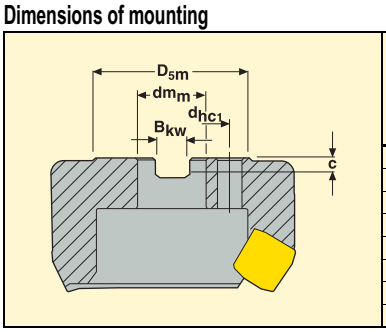
Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
R220.60 -0063-19-4CM	63	78	50	12	4	1,0	3700	SP..1906ZETR/L
-0080-19-5CM	80	95	50	12	5	1,7	3300	SP..1906ZETR/L
-0100-19-6CM	100	115	50	12	6	2,5	2900	SP..1906ZETR/L
-0125-19-8CM	125	140	63	12	8	3,9	2600	SP..1906ZETR/L
-8160-19-10CM	160	175	63	12	10	6,0	2300	SP..1906ZETR/L
-8200-19-12CM	200	215	63	12	12	9,3	2000	SP..1906ZETR/L
-8250-19-16CM	250	265	63	12	16	20,0	1800	SP..1906ZETR/L

Spare parts

For cutter	Cassette	Cassette screw	Wedge	Wedge screw	Key *	Arbor screw	Setting gauge
R220.60-0063	SP19DRM	FS96018	CW0813	LD8020-T25P	T25P-4	220.17-692	AU1114T-T15P
R220.60-0080	SP19DRM	FS96018	CW0813	LD8020-T25P	T25P-4	MC6S12x35	AU1114T-T15P
R220.60-0100-8250	SP19DRM	FS96018	CW0813	LD8020-T25P	T25P-4	–	AU1114T-T15P

Cassette SP19DLM for left-hand cutters. Key T15P-3 for setting gauge and key 5SMS795 for cassette screw to be ordered separately.
** Wedge CW0810 for cutters manufactured earlier than July 2007

Dimensions of mounting

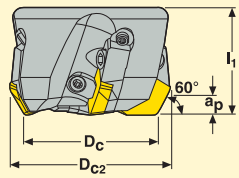


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.60-0063	22	47	10,4	7	–	22	–
R220.60-0080	27	62	12,4	7	–	27	–
R220.60-0100	32	77	14,4	8	–	32	–
R220.60-0125	40	90	16,4	9	–	40	–
R220.60-8160	40	128	16,4	9	66,7	40	ISO40
R220.60-8200	60	168	25,7	14	101,6	–	ISO50
R220.60-8250	60	218	25,7	14	101,6	–	ISO50, ISO60

Please check availability in current price and stock-list.
*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.

220.60-19CMXZ

For large depth of cut



- **For insert selection and cutting data recommendations, see page 110.**
- **For complete insert programme, page 548.**
- Also suitable for turn-milling operations.

Tool angles: γo = - 2°
γp = +14°
γf = -11°

Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG			
R220.60 -0063-19-4CMXZ*	63	78	50	12	4	1,0	3700	SP.1906ZETR	SP.1906ZZTR
-0080-19-5CMXZ*	80	95	50	12	5	1,7	3300	SP.1906ZETR	SP.1906ZZTR
-0100-19-6CMXZ*	100	115	50	12	6	2,5	2900	SP.1906ZETR	SP.1906ZZTR
-0125-19-8CMXZ*	125	140	63	12	8	3,9	2600	SP.1906ZETR	SP.1906ZZTR
-8160-19-10CMXZ*	160	175	63	12	10	6,0	2300	SP.1906ZETR	SP.1906ZZTR
-8200-19-12CMXZ*	200	215	63	12	12	9,0	2000	SP.1906ZETR	SP.1906ZZTR
-8250-19-16CMXZ*	250	265	63	12	16	20,0	1800	SP.1906ZETR	SP.1906ZZTR

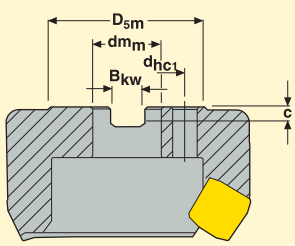
*When ordering, please state number of wiper cassettes needed. Ordering example: R220.60-8160-19-10CM2Z (2 wiper cassettes).

Spare parts

For cutter	Cassette	Wiper Cassette	Cassette screw	Wedge**	Wedge screw	Key *	Arbor screw	Setting gauge
R220.60-0063	SP19DRM	SP19DZRM	FS96018	CW0813	LD8020-T25P	T25P-4	217.17-692	AU1114T-T15P
R220.60-0080	SP19DRM	SP19DZRM	FS96018	CW0813	LD8020-T25P	T25P-4	MC6S12x35	AU1114T-T15P
R220.60-0100-8150	SP19DRM	SP19DZRM	FS96018	CW0813	LD8020-T25P	T25P-4	–	AU1114T-T15P

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and key 5SMS795 for cassette screw to be ordered separately. ** Wedge CW0810 for cutters manufactured earlier than July 2007

Dimensions of mounting



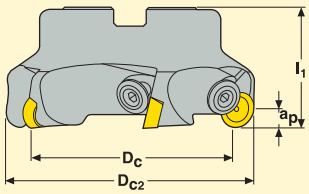
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.60-0063	22	47	10,4	7	–	22	–
R220.60-0080	27	62	12,4	7	–	27	–
R220.60-0100	32	77	14,4	8	–	32	–
R220.60-0125	40	90	16,4	9	–	40	–
R220.60-8160	40	128	16,4	9	66,7	40	ISO40
R220.60-8200	60	168	25,7	14	101,6	–	ISO50
R220.60-8250	60	218	25,7	14	101,6	–	ISO50, ISO60

Please check availability in current price and stock-list.

220.23-16

Cutters with round inserts for very difficult operations

- **For insert selection and cutting data recommendations, see page 111.**
- **For complete insert programme, see page 528.**



Tool angles: $\gamma\rho$ = +14°
γf = +5°

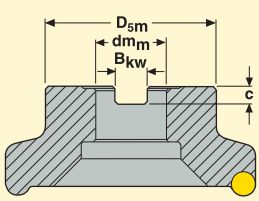
Pitch	Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		
Normal									
	R220.23 -0050-16	50	66	50	8	4	0,8	6300	REHR1605MOT
	-0063-16	63	79	50	8	4	1,0	5600	REHR1605MOT
	-0080-16	80	96	50	8	5	1,2	5000	REHR1605MOT
	-0100-16	100	116	50	8	6	1,6	4400	REHR1605MOT

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.23-0050	269.2-649	H04-4	220.17-691
R220.23-0063	269.2-649	H04-4	220.17-692
R220.23-0080–0100	269.2-649	H04-4	–

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.
Locking screw 269.2-648 for left-hand cutters.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.23-0050	22	47	10,4	6,3	22
R220.23-0063	22	62	10,4	6,3	22
R220.23-0080	27	77	12,4	7,0	27
R220.23-0100	32	90	14,4	8,0	32

Please check availability in current price and stock-list.

Insert selection – Quattromill 217/220.53-09

Universal insert: SEMX 09T3AFTN-ME06 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,09–0,16	SEMX09T3AFTN-ME06 MP2500	SEMX09T3AFTN-M08 T350M	
2	0,09–0,16	SEMX09T3AFTN-ME06 MP2500	SEMX09T3AFTN-M08 T350M	
3	0,09–0,14	SEMX09T3AFTN-ME06 MP2500	SEMX09T3AFTN-M08 T350M	
4	0,09–0,14	SEMX09T3AFTN-ME06 MP2500	SEMX09T3AFTN-M08 T350M	
5	0,06–0,11	SEMX09T3AFTN-M08 MP2500	SEEX09T3AFTN-D09 MP1500	
6	0,06–0,11	SEMX09T3AFTN-M08 MP2500	SEEX09T3AFTN-D09 MP1500	
7	0,06–0,08	SEEX09T3AFTN-D09 MP1500	SEEX09T3AFN-M05 MP3000	
8	0,09–0,16	SEEX09T3AFTN-ME07 MP2500	SEEX09T3AFTN-M08 T350M	
9	0,09–0,14	SEEX09T3AFTN-ME07 MP2500	SEEX09T3AFTN-M08 T350M	
10	0,09–0,11	SEEX09T3AFTN-M08 T350M	SEEX09T3AFTN-M08 MM4500	
11	0,07–0,10	SEEX09T3AFTN-M08 T350M	SEEX09T3AFTN-M08 MM4500	
12	0,09–0,14	SEEX09T3AFTN-M08 MK1500	SEEX09T3AFTN-M08 MK3000	
13	0,09–0,14	SEEX09T3AFTN-M08 MK1500	SEEX09T3AFTN-M08 MK3000	
14	0,06–0,11	SEEX09T3AFTN-M08 MK1500	SEEX09T3AFTN-M08 MK3000	
15	0,06–0,11	SEEX09T3AFTN-M08 MK3000	SEEX09T3AFTN-D09 MP1500	
16	0,09–0,16	SEEX09T3AFN-E04 H15	SEEX09T3AFN-E04 F40M	
17	0,09–0,16	SEEX09T3AFN-E04 H15	SEEX09T3AFN-E04 F40M	
18	0,09–0,16	SEEX09T3AFN-E04 H15	SEEX09T3AFN-E04 F40M	
19	0,06–0,08	SEEX09T3AFTN-ME07 T350M	SEEX09T3AFTN-M08 F40M	
20	0,06–0,08	SEEX09T3AFTN-ME07 T350M	SEEX09T3AFTN-M08 F40M	
21	0,06–0,08	SEEX09T3AFTN-M08 F40M	SEEX09T3AFN-M05 MP3000	
22	0,07–0,10	SEEX09T3AFTN-ME07 F40M	SEEX09T3AFTN-M08 F40M	

Cutting data

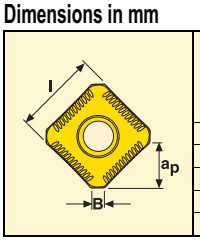
SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			F15M			MM4500		
	f_z (mm/tooth)																				
	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16
	v_c (m/min)																				
1	625	550	480	555	490	425	525	460	405	480	425	370	420	370	325	–	–	–	340	300	260
2	530	465	410	470	415	360	445	390	345	410	360	315	355	315	275	–	–	–	290	255	220
3	435	385	335	385	340	300	365	325	285	335	300	260	295	260	225	–	–	–	235	210	185
4	375	330	290	330	290	255	315	275	240	290	255	220	250	220	195	–	–	–	205	180	155
5	310	275	240	275	245	215	260	230	200	240	210	185	210	185	160	–	–	–	170	150	130
6	270	240	–	240	215	–	230	200	–	210	185	–	185	160	–	–	–	–	150	130	115
7	75	65	–	60	55	–	60	50	–	60	50	–	50	44	–	–	–	–	–	–	–
8	425	375	330	340	300	260	330	295	255	315	280	245	285	255	–	–	–	–	245	220	190
9	335	295	260	265	235	205	260	230	200	250	220	190	225	200	–	–	–	–	195	170	150
10	275	240	210	215	190	170	215	190	165	205	180	155	185	165	–	–	–	–	160	140	125
11	205	180	–	160	140	–	160	140	–	150	135	–	135	120	–	–	–	–	120	105	90
12	325	285	250	290	255	225	275	240	210	250	220	195	220	195	170	260	230	200	155	135	120
13	285	250	220	255	225	195	240	210	185	220	195	170	190	170	150	230	205	180	135	120	105
14	240	210	185	215	190	165	200	180	155	185	165	145	160	140	125	195	170	–	115	100	90
15	200	175	–	175	155	–	165	145	–	155	135	–	135	120	–	–	–	–	95	85	75
16	1615	1425	1250	1430	1265	1105	1355	1195	1045	1245	1100	965	1085	955	835	1300	1150	1005	–	–	–
17	1305	1150	1010	1155	1020	895	1095	965	845	1005	890	780	875	775	675	1050	930	810	–	–	–
18	995	875	770	880	775	680	835	735	645	765	675	595	665	590	515	800	705	620	–	–	–
19	–	–	–	75	65	–	–	–	–	65	60	–	60	55	–	–	–	–	42	37	33
20	–	–	–	60	55	–	–	–	–	55	47	–	48	43	–	–	–	–	34	30	26
21	–	–	–	50	45	–	–	–	–	46	40	–	42	37	–	–	–	–	29	26	23
22	–	–	–	125	110	–	–	–	–	110	95	–	100	90	–	–	–	–	70	60	55

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SEEX09T3..	1,5	1,0

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
9	4,5	1,5

Insert selection – Quattromill 217/220.53-09

Universal insert: SEMX 09T3AFTN-ME06 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,09–0,16	SEMX09T3AFTN-ME06 MP2500	SEMX09T3AFTN-M08 T350M	
2	0,09–0,16	SEMX09T3AFTN-ME06 MP2500	SEMX09T3AFTN-M08 T350M	
3	0,09–0,14	SEMX09T3AFTN-ME06 MP2500	SEMX09T3AFTN-M08 T350M	
4	0,09–0,14	SEMX09T3AFTN-ME06 MP2500	SEMX09T3AFTN-M08 T350M	
5	0,06–0,11	SEMX09T3AFTN-M08 MP2500	SEEX09T3AFTN-D09 MP1500	
6	0,06–0,11	SEMX09T3AFTN-M08 MP2500	SEEX09T3AFTN-D09 MP1500	
7	0,06–0,08	SEEX09T3AFTN-D09 MP1500	SEEX09T3AFN-M05 MP3000	
8	0,09–0,16	SEEX09T3AFTN-ME07 MP2500	SEEX09T3AFTN-M08 T350M	
9	0,09–0,14	SEEX09T3AFTN-ME07 MP2500	SEEX09T3AFTN-M08 T350M	
10	0,09–0,11	SEEX09T3AFTN-M08 T350M	SEEX09T3AFTN-M08 MM4500	
11	0,07–0,10	SEEX09T3AFTN-M08 T350M	SEEX09T3AFTN-M08 MM4500	
12	0,09–0,14	SEEX09T3AFTN-M08 MK1500	SEEX09T3AFTN-M08 MK3000	
13	0,09–0,14	SEEX09T3AFTN-M08 MK1500	SEEX09T3AFTN-M08 MK3000	
14	0,06–0,11	SEEX09T3AFTN-M08 MK1500	SEEX09T3AFTN-M08 MK3000	
15	0,06–0,11	SEEX09T3AFTN-M08 MK3000	SEEX09T3AFTN-D09 MP1500	
16	0,09–0,16	SEEX09T3AFN-E04 H15	SEEX09T3AFN-E04 F40M	
17	0,09–0,16	SEEX09T3AFN-E04 H15	SEEX09T3AFN-E04 F40M	
18	0,09–0,16	SEEX09T3AFN-E04 H15	SEEX09T3AFN-E04 F40M	
19	0,06–0,08	SEEX09T3AFTN-ME07 T350M	SEEX09T3AFTN-M08 F40M	
20	0,06–0,08	SEEX09T3AFTN-ME07 T350M	SEEX09T3AFTN-M08 F40M	
21	0,06–0,08	SEEX09T3AFTN-M08 F40M	SEEX09T3AFN-M05 MP3000	
22	0,07–0,10	SEEX09T3AFTN-ME07 F40M	SEEX09T3AFTN-M08 F40M	

Cutting data

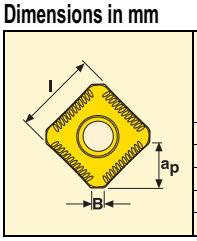
SMG	Grades												
	MK1500			MK3000			H15						
	f_z (mm/tooth)												
	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16				
	v_c (m/min)												
1	–	–	–	505	445	390	–	–	–				
2	–	–	–	430	380	330	–	–	–				
3	–	–	–	355	315	275	–	–	–				
4	–	–	–	305	265	235	–	–	–				
5	–	–	–	250	225	195	–	–	–				
6	–	–	–	220	195	–	–	–	–				
7	–	–	–	60	55	–	–	–	–				
8	–	–	–	330	295	255	–	–	–				
9	–	–	–	260	230	200	–	–	–				
10	–	–	–	215	190	165	–	–	–				
11	–	–	–	160	140	–	–	–	–				
12	410	360	315	265	235	205	205	185	160				
13	360	315	275	230	205	180	180	160	140				
14	300	265	235	195	170	150	155	135	–				
15	250	220	–	160	145	–	–	–	–				
16	–	–	–	1310	1160	1015	1030	910	795				
17	–	–	–	1060	935	820	830	735	645				
18	–	–	–	805	715	625	635	560	490				
19	–	–	–	70	60	–	–	–	–				
20	–	–	–	55	50	–	–	–	–				
21	–	–	–	48	43	–	–	–	–				
22	–	–	–	115	100	–	–	–	–				

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SEEX09T3..	1,5	1,0

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
9	4,5	1,5

Insert selection – Quattromill 220.53-12

Universal insert: SEMX1204AFTN-M15 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,15–0,35	SEMX1204AFTN-M15 MP2500	SEMX1204AFTN-M15 T350M	
2	0,15–0,35	SEMX1204AFTN-M15 MP2500	SEMX1204AFTN-M15 T350M	
3	0,15–0,30	SEMX1204AFTN-M15 MP2500	SEMX1204AFTN-M15 T350M	
4	0,15–0,30	SEMX1204AFTN-M15 MP2500	SEMX1204AFTN-M15 T350M	
5	0,10–0,25	SEMX1204AFTN-M15 MP2500	SEEX1204AFTN-MD18 MP1500	
6	0,10–0,20	SEMX1204AFTN-M15 MP2500	SEEX1204AFTN-MD18 MP1500	
7	0,10–0,15	SEEX1204AFTN-MD18 MP1500	SEEX1204AFTN-MD18 MP3000	
8	0,15–0,30	SEEX1204AFTN-M14 MP2500	SEEX1204AFN-M10 T350M	
9	0,15–0,30	SEEX1204AFTN-M14 MP2500	SEEX1204AFN-M10 T350M	
10	0,15–0,20	SEEX1204AFN-M10 T350M	SEEX1204AFN-M10 MM4500	
11	0,10–0,20	SEEX1204AFN-M10 T350M	SEEX1204AFN-M10 MM4500	
12	0,15–0,35	SEMX1204AFTN-M15 MK1500	SEMX1204AFTN-M15 MK3000	
13	0,15–0,30	SEMX1204AFTN-M15 MK1500	SEMX1204AFTN-M15 MK3000	
14	0,10–0,25	SEMX1204AFTN-M15 MK1500	SEMX1204AFTN-M15 MK3000	
15	0,10–0,20	SEMX1204AFTN-M15 MK3000	SEEX1204AFTN-MD18 MP1500	
16	0,15–0,40	SEEX1204AFN-E08 H25	SEEX1204AFN-E08 F40M	
17	0,15–0,35	SEEX1204AFN-E08 H25	SEEX1204AFN-E08 F40M	
18	0,15–0,35	SEEX1204AFN-E08 H25	SEEX1204AFN-E08 F40M	
19	0,10–0,20	SEEX1204AFTN-ME11 T350M	SEEX1204AFN-M10 F40M	
20	0,10–0,20	SEEX1204AFTN-ME11 T350M	SEEX1204AFN-M10 F40M	
21	0,10–0,15	SEEX1204AFN-M10 F40M	SEEX1204AFN-M10 MP3000	
22	0,10–0,20	SEEX1204AFTN-ME11 F40M	SEEX1204AFN-M10 F40M	

Cutting data

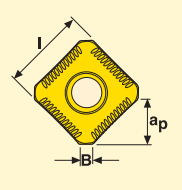
SMG	Grades																		
	MP1500			MP2500			MP3000			T350M			F40M			MM4500			
	f_z (mm/tooth)																		
	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	
	v_c (m/min)																		
1	505	380	320	445	340	285	425	320	270	390	295	250	340	255	215	275	210	175	
2	430	325	275	380	285	240	360	270	230	330	250	210	285	215	185	235	175	150	
3	355	265	225	315	235	200	295	225	190	275	205	175	235	180	150	190	145	125	
4	300	230	195	265	200	170	255	190	160	235	175	150	200	155	130	165	125	105	
5	250	190	160	225	170	140	210	160	135	195	145	125	170	130	110	135	105	85	
6	220	165	–	195	150	–	185	140	–	170	130	–	150	110	–	120	90	75	
7	60	46	–	49	37	–	47	36	–	47	35	–	40	31	–	–	–	–	
8	345	260	220	275	205	175	270	205	170	255	195	165	230	175	150	200	150	130	
9	270	205	175	215	165	135	210	160	135	200	150	130	180	140	115	155	120	100	
10	220	170	140	175	135	110	175	130	110	165	125	105	150	115	95	130	95	80	
11	165	125	–	130	100	–	130	95	–	120	90	–	110	85	–	95	70	60	
12	265	200	170	235	175	150	220	165	140	205	155	130	175	135	115	125	95	80	
13	230	175	150	205	155	130	195	145	125	180	135	115	155	115	100	110	85	70	
14	195	145	125	170	130	110	165	125	105	150	115	95	130	100	85	95	70	60	
15	160	120	–	145	110	–	135	100	–	125	95	–	110	80	–	75	60	49	
16	1305	990	835	1160	875	740	1095	830	700	1010	765	645	875	665	560	–	–	–	
17	1055	800	675	935	705	595	885	670	565	815	615	520	710	535	450	–	–	–	
18	805	610	515	715	540	455	675	510	430	620	470	395	540	410	345	–	–	–	
19	–	–	–	60	45	–	55	43	–	55	40	–	49	37	–	34	26	22	
20	–	–	–	48	36	–	45	34	–	43	33	–	39	30	–	28	21	18	
21	–	–	–	42	31	–	39	30	–	37	28	–	34	26	–	24	18	15	
22	–	–	–	100	75	–	95	70	–	90	65	–	80	60	–	55	43	36	

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SE.. 1204..	1,5	1,5
SEEX1204ZZTN	2,0 6,0	0,5 0,7

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
12	6	1,6

Insert selection – Quattromill 220.53-12

Universal insert: SEMX1204AFTN-M15 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,15–0,35	SEMX1204AFTN-M15 MP2500	SEMX1204AFTN-M15 T350M	
2	0,15–0,35	SEMX1204AFTN-M15 MP2500	SEMX1204AFTN-M15 T350M	
3	0,15–0,30	SEMX1204AFTN-M15 MP2500	SEMX1204AFTN-M15 T350M	
4	0,15–0,30	SEMX1204AFTN-M15 MP2500	SEMX1204AFTN-M15 T350M	
5	0,10–0,25	SEMX1204AFTN-M15 MP2500	SEEX1204AFTN-MD18 MP1500	
6	0,10–0,20	SEMX1204AFTN-M15 MP2500	SEEX1204AFTN-MD18 MP1500	
7	0,10–0,15	SEEX1204AFTN-MD18 MP1500	SEEX1204AFTN-MD18 MP3000	
8	0,15–0,30	SEEX1204AFTN-M14 MP2500	SEEX1204AFN-M10 T350M	
9	0,15–0,30	SEEX1204AFTN-M14 MP2500	SEEX1204AFN-M10 T350M	
10	0,15–0,20	SEEX1204AFN-M10 T350M	SEEX1204AFN-M10 MM4500	
11	0,10–0,20	SEEX1204AFN-M10 T350M	SEEX1204AFN-M10 MM4500	
12	0,15–0,35	SEMX1204AFTN-M15 MK1500	SEMX1204AFTN-M15 MK3000	
13	0,15–0,30	SEMX1204AFTN-M15 MK1500	SEMX1204AFTN-M15 MK3000	
14	0,10–0,25	SEMX1204AFTN-M15 MK1500	SEMX1204AFTN-M15 MK3000	
15	0,10–0,20	SEMX1204AFTN-M15 MK3000	SEEX1204AFTN-MD18 MP1500	
16	0,15–0,40	SEEX1204AFN-E08 H25	SEEX1204AFN-E08 F40M	
17	0,15–0,35	SEEX1204AFN-E08 H25	SEEX1204AFN-E08 F40M	
18	0,15–0,35	SEEX1204AFN-E08 H25	SEEX1204AFN-E08 F40M	
19	0,10–0,20	SEEX1204AFTN-ME11 T350M	SEEX1204AFN-M10 F40M	
20	0,10–0,20	SEEX1204AFTN-ME11 T350M	SEEX1204AFN-M10 F40M	
21	0,10–0,15	SEEX1204AFN-M10 F40M	SEEX1204AFN-M10 MP3000	
22	0,10–0,20	SEEX1204AFTN-ME11 F40M	SEEX1204AFN-M10 F40M	

Cutting data

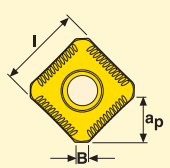
SMG	Grades												
	MK1500			MK3000			H25						
	f_z (mm/tooth)												
	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40				
	v_c (m/min)												
1	–	–	–	410	310	260	–	–	–				
2	–	–	–	350	265	220	–	–	–				
3	–	–	–	285	215	185	–	–	–				
4	–	–	–	245	185	155	–	–	–				
5	–	–	–	205	155	130	–	–	–				
6	–	–	–	180	135	–	–	–	–				
7	–	–	–	49	37	–	–	–	–				
8	–	–	–	270	205	170	–	–	–				
9	–	–	–	210	160	135	–	–	–				
10	–	–	–	175	130	110	–	–	–				
11	–	–	–	130	95	–	–	–	–				
12	330	250	210	215	160	135	170	125	105				
13	290	220	185	190	140	120	145	110	95				
14	245	185	155	160	120	100	125	95	80				
15	200	155	–	130	100	–	105	80	–				
16	–	–	–	1060	805	675	835	630	530				
17	–	–	–	855	650	545	675	510	430				
18	–	–	–	655	495	415	515	390	325				
19	–	–	–	55	43	–	–	–	–				
20	–	–	–	45	34	–	–	–	–				
21	–	–	–	39	30	–	–	–	–				
22	–	–	–	95	70	–	–	–	–				

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SE.. 1204..	1,5	1,5
SEEX1204ZZTN	2,0 6,0	0,5 7,0

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
12	6	1,6

Insert selection – Quattromill 220.53-15

Universal insert:SEMX1505AFTN-M18 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,20–0,40	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-M18 T350M	
2	0,20–0,40	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-M18 T350M	
3	0,20–0,40	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-M18 T350M	
4	0,20–0,35	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-M18 T350M	
5	0,15–0,35	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-MD20 MP1500	
6	0,15–0,25	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-MD20 MP1500	
7	0,10–0,20	SEMX1505AFTN-MD20 MP1500	SEMX1505AFTN-MD20 MP3000	
8	0,20–0,35	SEEX1505AFTN-M17 MP2500	SEEX1505AFN-M12 T350M	
9	0,20–0,35	SEEX1505AFTN-M17 MP2500	SEEX1505AFN-M12 T350M	
10	0,15–0,30	SEEX1505AFN-M12 T350M	SEEX1505AFTN-M17 MM4500	
11	0,10–0,25	SEEX1505AFN-M12 T350M	SEEX1505AFTN-M17 MM4500	
12	0,20–0,40	SEMX1505AFTN-M18 MK1500	SEMX1505AFTN-M18 MK3000	
13	0,20–0,35	SEMX1505AFTN-M18 MK1500	SEMX1505AFTN-M18 MK3000	
14	0,15–0,30	SEMX1505AFTN-M18 MK1500	SEMX1505AFTN-M18 MK3000	
15	0,15–0,25	SEMX1505AFTN-M18 MK3000	SEMX1505AFTN-MD20 MP1500	
16	0,15–0,45	SEEX1505AFN-E10 H25	SEEX1505AFN-E10 F40M	
17	0,15–0,45	SEEX1505AFN-E10 H25	SEEX1505AFN-E10 F40M	
18	0,15–0,45	SEEX1505AFN-E10 H25	SEEX1505AFN-E10 F40M	
19	0,10–0,25	SEEX1505AFN-M12 T350M	SEEX1505AFN-M12 F40M	
20	0,10–0,25	SEEX1505AFN-M12 T350M	SEEX1505AFN-M12 F40M	
21	0,10–0,20	SEEX1505AFN-M12 F40M	SEEX1505AFN-M12 MP3000	
22	0,10–0,25	SEEX1505AFTN-M17 F40M	SEEX1505AFN-M12 F40M	

Cutting data

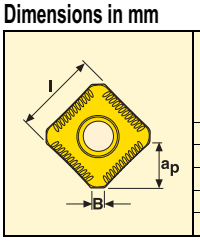
SMG	Grades																		
	MP1500			MP2500			MP3000			T350M			F40M			MM4500			
	f_z (mm/tooth)																		
	0,10	0,25	0,45	0,10	0,25	0,45	0,10	0,25	0,45	0,10	0,25	0,45	0,10	0,25	0,45	0,10	0,25	0,45	
	v_c (m/min)																		
1	510	385	310	455	340	275	430	325	260	395	300	240	345	260	210	280	210	170	
2	435	325	265	385	290	235	365	275	220	335	250	205	290	220	175	235	180	145	
3	360	270	220	315	240	195	300	225	185	275	210	170	240	180	145	195	145	120	
4	305	230	185	270	205	165	255	195	155	235	180	145	205	155	125	165	125	100	
5	255	190	155	225	170	135	215	160	130	195	150	120	170	130	105	140	105	85	
6	225	170	–	200	150	–	185	140	–	170	130	–	150	115	–	120	90	75	
7	60	46	–	49	37	–	48	36	–	47	36	–	41	31	–	–	–	–	
8	350	265	215	275	210	170	270	205	165	260	195	155	235	175	145	200	155	125	
9	275	205	165	220	165	130	215	160	130	205	155	125	185	140	110	160	120	95	
10	225	170	–	180	135	–	175	130	–	165	125	–	150	115	–	130	100	80	
11	165	125	–	130	100	–	130	100	–	125	95	–	110	85	–	95	75	60	
12	265	200	160	235	180	145	225	170	135	205	155	125	180	135	110	125	95	80	
13	235	175	140	205	155	125	195	150	120	180	135	110	155	120	95	110	85	70	
14	195	150	–	175	130	–	165	125	–	150	115	–	130	100	–	95	70	55	
15	165	125	–	145	110	–	135	105	–	125	95	–	110	85	–	80	60	47	
16	1325	1000	805	1170	885	715	1110	840	675	1020	770	620	890	670	540	–	–	–	
17	1070	805	650	945	715	575	895	675	545	825	625	500	715	540	435	–	–	–	
18	815	615	495	720	545	440	685	515	415	630	475	380	545	415	335	–	–	–	
19	–	–	–	60	46	–	55	43	–	55	41	–	49	37	–	35	26	21	
20	–	–	–	49	37	–	46	35	–	44	33	–	40	30	–	28	21	17	
21	–	–	–	42	32	–	40	30	–	38	28	–	34	26	–	24	18	15	
22	–	–	–	100	75	–	95	70	–	90	70	–	80	60	–	60	44	35	

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SE..1505	1,8	1,5
SEEX1505ZZTN	2,0 6,0	0,5 0,7

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
15	7,5	1,8

Insert selection – Quattromill 220.53-15

Universal insert:SEMX1505AFTN-M18 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,20–0,40	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-M18 T350M	
2	0,20–0,40	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-M18 T350M	
3	0,20–0,40	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-M18 T350M	
4	0,20–0,35	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-M18 T350M	
5	0,15–0,35	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-MD20 MP1500	
6	0,15–0,25	SEMX1505AFTN-M18 MP2500	SEMX1505AFTN-MD20 MP1500	
7	0,10–0,20	SEMX1505AFTN-MD20 MP1500	SEMX1505AFTN-MD20 MP3000	
8	0,20–0,35	SEEX1505AFTN-M17 MP2500	SEEX1505AFN-M12 T350M	
9	0,20–0,35	SEEX1505AFTN-M17 MP2500	SEEX1505AFN-M12 T350M	
10	0,15–0,30	SEEX1505AFN-M12 T350M	SEEX1505AFTN-M17 MM4500	
11	0,10–0,25	SEEX1505AFN-M12 T350M	SEEX1505AFTN-M17 MM4500	
12	0,20–0,40	SEMX1505AFTN-M18 MK1500	SEMX1505AFTN-M18 MK3000	
13	0,20–0,35	SEMX1505AFTN-M18 MK1500	SEMX1505AFTN-M18 MK3000	
14	0,15–0,30	SEMX1505AFTN-M18 MK1500	SEMX1505AFTN-M18 MK3000	
15	0,15–0,25	SEMX1505AFTN-M18 MK3000	SEMX1505AFTN-MD20 MP1500	
16	0,15–0,45	SEEX1505AFN-E10 H25	SEEX1505AFN-E10 F40M	
17	0,15–0,45	SEEX1505AFN-E10 H25	SEEX1505AFN-E10 F40M	
18	0,15–0,45	SEEX1505AFN-E10 H25	SEEX1505AFN-E10 F40M	
19	0,10–0,25	SEEX1505AFN-M12 T350M	SEEX1505AFN-M12 F40M	
20	0,10–0,25	SEEX1505AFN-M12 T350M	SEEX1505AFN-M12 F40M	
21	0,10–0,20	SEEX1505AFN-M12 F40M	SEEX1505AFN-M12 MP3000	
22	0,10–0,25	SEEX1505AFTN-M17 F40M	SEEX1505AFN-M12 F40M	

Cutting data

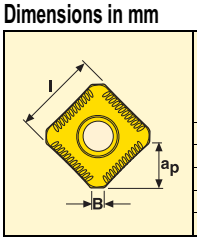
	Grades												
	MK1500			MK3000			H25						
	f_z (mm/tooth)												
	0,10	0,25	0,45	0,10	0,25	0,45	0,10	0,25	0,45				
	v_c (m/min)												
1	–	–	–	415	315	255	–	–	–				
2	–	–	–	350	265	215	–	–	–				
3	–	–	–	290	220	175	–	–	–				
4	–	–	–	250	185	150	–	–	–				
5	–	–	–	205	155	125	–	–	–				
6	–	–	–	180	135	–	–	–	–				
7	–	–	–	50	37	–	–	–	–				
8	–	–	–	270	205	165	–	–	–				
9	–	–	–	215	160	130	–	–	–				
10	–	–	–	175	130	–	–	–	–				
11	–	–	–	130	100	–	–	–	–				
12	335	250	205	215	165	130	170	130	105				
13	295	220	180	190	145	115	150	115	90				
14	245	185	–	160	120	–	125	95	–				
15	205	155	–	130	100	–	–	–	–				
16	–	–	–	1075	810	655	845	635	515				
17	–	–	–	870	655	530	680	515	415				
18	–	–	–	660	500	400	520	390	315				
19	–	–	–	55	43	–	–	–	–				
20	–	–	–	46	35	–	–	–	–				
21	–	–	–	40	30	–	–	–	–				
22	–	–	–	95	70	–	–	–	–				

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SE..1505	1,8	1,5
SEEX1505ZZTN	2,0 6,0	0,5 0,7

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
15	7,5	1,8

Insert selection – 220.53-AL-09-CA

The cutting speeds and feed rates shown in the table are often large. This is due to PCD's unique characteristics of unsurpassed hardness coupled with toughness which allows PCD cutting tools to be effective in a wide cutting speed range.

Cutting speed: Machining at the low end of the cutting speed recommendation will give optimum tool life, but will reduce productivity. Machining at the high end of the cutting speed recommendation will reduced tool life but give the optimum productivity.
Feed rate: Machining at the low end of the feed rate recommendation will give optimum surface finish, but will reduce productivity and tool life due to the increased contact time. Machining at the high end of the feed rate recommendation will give increased tool life and productivity, but the risk of edge chipping is increased.
Coolant: Where the component or operation requires no coolant, PCD can be effectively employed providing excessive heat is not generated in the cutting zone during machining. Heat build up can be controlled by limiting cutting speeds, feed rates and depth of cuts. Too much heat generated when machining will reduce PCD tool life and increase the risk of the PCD tip de-brazing. The most effective way to reduce heat during machining is to employ coolant. Therefore, coolant is always recommended when ever possible.

Aluminium alloys	**v_c (m/min)**	**f (mm/rev)[2]**	**a_p (mm) [3]**	**First choice**
< 8 % Si	600–3500	0,05-0,30	0,5-5,0	PCD20
8–15 % Si	400–2500	0.05–0.20	0.2–5,0	PCD20
> 15 % Si	300–1000	0,05-0,10	0.2–3,0	PCD30M
MMC materials, aluminium based	**v_c (m/min)**	**f (mm/rev)[2]**	**a_p (mm) [3]**	**First choice**
SiC particles	200–500	0.10–0.30	0.2–3,0	PCD30M
Bi–metal	**v_c (m/min)**	**f (mm/rev)[2]**	**a_p (mm) [3]**	**First choice**
Aluminium/Grey cast iron	100–500	0.08–0.20	0,1-0,5	PCD30M
Plastics	**v_c (m/min)**	**f (mm/rev)[2]**	**a_p (mm) [3]**	**First choice**
Soft plastic	100–1500	0.10–0.40	0.2–3,0	PCD20
Fibre composities	100-800	0,05-0,20	0,2-3,0	PCD05
Other materials	**v_c (m/min)**	**f (mm/rev)[2]**	**a_p (mm) [3]**	**First choice**
Copper, brass, bronze	600–1200	0.1–0.5	0.2–3,0	PCD20
Bronze/beryllium	150–500	0.05–0.30	0.2–3,0	PCD30M
Graphite	100–1500	0.1–0.2	0.2–3,0	PCD05
Titanium alloys	50–300	0.1–0.2	0.2–0.5	PCD05
Green carbide	80–200	0.1–0.5	0.1–0.5	PCD20
Cemented carbide	10–40	0.02–0.2	0.1–0.5	PCD30M
Green ceramic	100–600	0.1–0.2	0.1–0,2	PCD20
Fired ceramic	30–100	0.1–0.2	0.1–0,2	PCD30M

1 Cutting parameters to adjust according to reinforcement type, size, and content.

2 For milling operations, feed is expressed in mm/tooth

3 Adjust feed / depth of cut to optimise insert load. For larger depth of cuts, adjust tip size.

		P						M					K					N				S				H			
		P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	H30
	PCD05																												
	PCD10																												
	PCD20																												
	PCD30																												
	PCD30M																												

Insert selection – Octomill 220.43-07

Universal insert: OFMR070405TR-M15 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,15–0,40	OFMR070405TR-ME13 MP2500	OFER070405TN-M16 T350M	
2	0,15–0,40	OFMR070405TR-ME13 MP2500	OFER070405TN-M16 T350M	
3	0,15–0,35	OFMR070405TR-M15 MP2500	OFER070405TN-M16 T350M	
4	0,15–0,35	OFMR070405TR-M15 MP2500	OFER070405TN-M16 T350M	
5	0,10–0,30	OFMR070405TR-M15 MP2500	OFER070405TN-M16 T350M	
6	0,10–0,20	OFMR070405TR-M15 MP2500	OFEN070405TN-D18 MP1500	
7	0,10–0,15	OFEN070405TN-D18 MP1500	OFEN070405TN-D18 MP3000	
8	0,15–0,40	OFMR070405TR-ME13 MP2500	OFER070405TN-M16 T350M	
9	0,15–0,35	OFMR070405TR-ME13 MP2500	OFER070405TN-M16 T350M	
10	0,15–0,25	OFER070405TN-M16 MP2500	OFMR070405TR-M15 F40M	
11	0,15–0,20	OFMR070405TR-M15 F40M	OFMR070405TR-M15 F40M	
12	0,15–0,40	OFMR070405TR-M15 MK1500	OFER070405TN-M16 MK3000	
13	0,15–0,35	OFMR070405TR-M15 MK1500	OFER070405TN-M16 MK3000	
14	0,10–0,30	OFMR070405TR-M15 MK1500	OFER070405TN-M16 MK3000	
15	0,10–0,25	OFMR070405TR-M15 MK1500	OFEN070405TN-D18 MP1500	
16	0,15–0,40	OFER070405N-E07 H15	OFER070405N-E07 F15M	
17	0,15–0,40	OFER070405N-E07 H15	OFER070405N-E07 F15M	
18	0,15–0,40	OFER070405N-E07 H15	OFER070405N-E07 F15M	
19	0,10–0,20	OFMR070405TR-ME13 T350M	OFMR070405TR-M15 F40M	
20	0,10–0,20	OFMR070405TR-ME13 T350M	OFMR070405TR-M15 F40M	
21	0,10–0,20	OFMR070405TR-M15 F40M	OFEN070405TN-D18 MP3000	
22	0,10–0,25	OFMR070405TR-ME13 F40M	OFMR070405TR-M15 F40M	

Cutting data

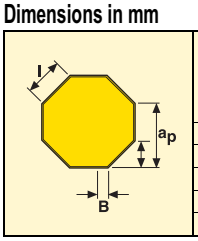
SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			F15M			MS2500		
	f_z (mm/tooth)																				
	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40
	v_c (m/min)																				
1	500	380	320	440	335	285	420	315	270	385	290	245	335	255	215	–	–	–	480	365	310
2	420	320	270	375	285	240	355	270	225	325	245	210	285	215	180	–	–	–	410	310	260
3	350	265	225	310	235	200	290	220	190	270	205	175	235	180	150	–	–	–	335	255	215
4	300	225	190	265	200	170	250	190	160	230	175	150	200	150	130	–	–	–	290	220	185
5	250	190	160	220	165	140	210	160	135	190	145	125	165	125	105	–	–	–	240	180	155
6	220	165	–	195	145	–	180	140	–	170	125	–	145	110	–	–	–	–	210	160	–
7	60	45	–	48	36	–	47	35	–	46	35	–	40	30	–	–	–	–	50	39	–
8	340	260	220	270	205	175	265	200	170	250	190	160	230	175	145	–	–	–	295	220	190
9	270	205	170	210	160	135	210	160	135	200	150	125	180	135	115	–	–	–	230	175	150
10	220	165	–	175	130	–	170	130	–	160	125	105	145	110	95	–	–	–	190	145	–
11	160	125	–	130	100	–	125	95	–	120	90	–	110	85	–	–	–	–	140	105	–
12	260	195	165	230	175	150	220	165	140	200	150	130	175	130	110	210	160	135	250	190	160
13	230	175	145	200	155	130	190	145	125	175	135	115	155	115	100	185	140	120	220	165	140
14	190	145	–	170	130	–	160	120	–	150	115	95	130	100	85	155	115	–	185	140	–
15	160	120	–	140	105	–	135	100	–	125	95	–	105	80	–	–	–	–	155	115	–
16	–	–	–	1140	870	735	1080	820	695	995	755	640	865	655	555	1040	790	665	1245	945	800
17	–	–	–	925	700	595	875	665	560	805	610	515	700	530	450	840	635	540	1005	765	645
18	–	–	–	705	535	450	665	505	430	610	465	395	535	405	340	640	485	410	765	580	495
19	–	–	–	60	45	–	55	42	–	55	40	–	48	36	–	–	–	–	65	49	–
20	–	–	–	47	36	–	45	34	–	42	32	–	39	29	–	–	–	–	50	39	–
21	–	–	–	41	31	–	39	29	–	37	28	–	33	25	–	–	–	–	45	34	–
22	–	–	–	100	75	–	95	70	–	90	65	–	80	60	–	–	–	–	105	80	–

*For grade F15M only use values in material groups 12-14 and 16-17. For T200M only use values in groups 1-15.

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
OFE.070405	1,5	<1,0
OFE.0704ZZ	2,0 6,0	0,5 0,7

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
7	5 (12)	~ 1,7

Finish of the milled surface is determined by feed/rev used. Wiper insert OFE. 0704ZZ should not be used for cutters up to 100 mm dia.

Insert selection – Octomill 220.43-07

Universal insert: OFMR070405TR-M15 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,15–0,40	OFMR070405TR-ME13 MP2500	OFER070405TN-M16 T350M	
2	0,15–0,40	OFMR070405TR-ME13 MP2500	OFER070405TN-M16 T350M	
3	0,15–0,35	OFMR070405TR-M15 MP2500	OFER070405TN-M16 T350M	
4	0,15–0,35	OFMR070405TR-M15 MP2500	OFER070405TN-M16 T350M	
5	0,10–0,30	OFMR070405TR-M15 MP2500	OFER070405TN-M16 T350M	
6	0,10–0,20	OFMR070405TR-M15 MP2500	OFEN070405TN-D18 MP1500	
7	0,10–0,15	OFEN070405TN-D18 MP1500	OFEN070405TN-D18 MP3000	
8	0,15–0,40	OFMR070405TR-ME13 MP2500	OFER070405TN-M16 T350M	
9	0,15–0,35	OFMR070405TR-ME13 MP2500	OFER070405TN-M16 T350M	
10	0,15–0,25	OFER070405TN-M16 MP2500	OFMR070405TR-M15 F40M	
11	0,15–0,20	OFMR070405TR-M15 F40M	OFMR070405TR-M15 F40M	
12	0,15–0,40	OFMR070405TR-M15 MK1500	OFER070405TN-M16 MK3000	
13	0,15–0,35	OFMR070405TR-M15 MK1500	OFER070405TN-M16 MK3000	
14	0,10–0,30	OFMR070405TR-M15 MK1500	OFER070405TN-M16 MK3000	
15	0,10–0,25	OFMR070405TR-M15 MK1500	OFEN070405TN-D18 MP1500	
16	0,15–0,40	OFER070405N-E07 H15	OFER070405N-E07 F15M	
17	0,15–0,40	OFER070405N-E07 H15	OFER070405N-E07 F15M	
18	0,15–0,40	OFER070405N-E07 H15	OFER070405N-E07 F15M	
19	0,10–0,20	OFMR070405TR-ME13 T350M	OFMR070405TR-M15 F40M	
20	0,10–0,20	OFMR070405TR-ME13 T350M	OFMR070405TR-M15 F40M	
21	0,10–0,20	OFMR070405TR-M15 F40M	OFEN070405TN-D18 MP3000	
22	0,10–0,25	OFMR070405TR-ME13 F40M	OFMR070405TR-M15 F40M	

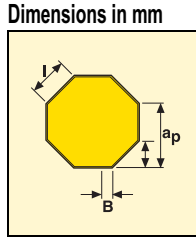
Cutting data

SMG	Grades														
	MK1500			MK3000			H15			MM4500					
	f_z (mm/tooth)														
	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40			
	v_c (m/min)														
1	–	–	–	405	305	260	–	–	–	270	205	175			
2	–	–	–	345	260	220	–	–	–	230	175	145			
3	–	–	–	285	215	180	–	–	–	190	145	120			
4	–	–	–	240	185	155	–	–	–	160	125	105			
5	–	–	–	200	155	130	–	–	–	135	100	85			
6	–	–	–	175	135	–	–	–	–	120	90	–			
7	–	–	–	48	37	–	–	–	–	–	–	–			
8	–	–	–	265	200	170	–	–	–	195	150	125			
9	–	–	–	210	160	135	–	–	–	155	120	100			
10	–	–	–	170	130	–	–	–	–	125	95	80			
11	–	–	–	125	95	–	–	–	–	95	70	–			
12	325	245	210	210	160	135	165	125	105	125	95	80			
13	285	215	185	185	140	120	145	110	95	110	85	70			
14	240	185	155	155	120	100	120	95	–	90	70	60			
15	200	150	–	130	100	–	–	–	–	75	60	–			
16	–	–	–	1045	795	675	820	625	530	–	–	–			
17	–	–	–	845	640	545	665	505	425	–	–	–			
18	–	–	–	645	490	415	505	385	325	–	–	–			
19	–	–	–	55	42	–	–	–	–	34	26	–			
20	–	–	–	45	34	–	–	–	–	27	21	–			
21	–	–	–	39	29	–	–	–	–	23	18	–			
22	–	–	–	95	70	–	–	–	–	55	43	–			

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
OFE.070405	1,5	<1,0
OFE.0704ZZ	2,0 6,0	0,5 0,7

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
7	5 (12)	~ 1,7

Finish of the milled surface is determined by feed/rev used. Wiper insert OFE. 0704ZZ should not be used for cutters up to 100 mm dia.

Insert selection – Octomill 220.43-05

Universal insert: OFMT 050405TR-M14 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,09–0,18	OFMT050405TR-ME12 MP2500	OFMT050405TR-ME12 T350M	
2	0,09–0,18	OFMT050405TR-ME12 MP2500	OFMT050405TR-ME12 T350M	
3	0,09–0,15	OFMT050405TR-M14 MP2500	OFMT050405TR-M14 T350M	
4	0,09–0,15	OFMT050405TR-M14 MP2500	OFMT050405TR-M14 T350M	
5	0,06–0,12	OFMT050405TR-M14 MP2500	OFMT050405TR-M14 T350M	
6	0,06–0,12	OFMT050405TR-M14 MP2500	OFEX05T305TN-D09 MP1500	
7	0,06–0,09	OFEX05T305TN-D09 MP1500	OFEX05T305TN-D09 MP1500	
8	0,09–0,18	OFMT050405TR-ME12 MP2500	OFMT050405TR-M14 T350M	
9	0,09–0,15	OFMT050405TR-ME12 MP2500	OFMT050405TR-M14 T350M	
10	0,09–0,12	OFMT050405TR-ME12 T350M	OFMT050405TR-ME12 MM4500	
11	0,07–0,11	OFMT050405TR-M14 F40M	OFMT050405TR-ME12 MM4500	
12	0,09–0,15	OFMT050405TR-M14 MK1500	OFEX05T305TN-D09 MP1500	
13	0,09–0,15	OFMT050405TR-M14 MK1500	OFEX05T305TN-D09 MP1500	
14	0,06–0,12	OFMT050405TR-M14 MK1500	OFEX05T305TN-D09 MP1500	
15	0,06–0,12	OFMT050405TR-M14 MK1500	OFEX05T305TN-D09 MP1500	
16	0,09–0,18	OFEX05T305N-E04 H15	OFEX05T305N-E04 F15M	
17	0,09–0,18	OFEX05T305N-E04 H15	OFEX05T305N-E04 F15M	
18	0,09–0,18	OFEX05T305N-E04 H15	OFEX05T305N-E04 F15M	
19	0,07–0,09	OFMT050405TR-ME12 T350M	OFMT050405TR-M14 F40M	
20	0,07–0,09	OFMT050405TR-ME12 T350M	OFMT050405TR-M14 F40M	
21	0,07–0,09	OFMT050405TR-M14 F40M	OFEX05T305N-M05 MP3000	
22	0,07–0,11	OFMT050405TR-ME12 F40M	OFMT050405TR-M14 F40M	

Cutting data

SMG	Grades																		
	MP1500			MP2500			MP3000			T350M			F40M			F15M			
	f_z (mm/tooth)																		
	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18	
	v_c (m/min)																		
1	610	515	460	540	455	405	515	435	385	470	400	355	410	345	310	–	–	–	
2	520	435	390	460	385	345	435	365	325	400	335	300	350	295	260	–	–	–	
3	430	360	320	380	320	285	360	305	270	330	280	245	285	240	215	–	–	–	
4	365	310	275	325	275	240	305	260	230	280	240	210	245	205	185	–	–	–	
5	305	255	–	270	225	–	255	215	–	235	200	–	205	170	–	–	–	–	
6	265	225	–	235	200	–	225	190	–	205	175	–	180	150	–	–	–	–	
7	75	60	–	60	50	–	55	48	–	55	48	–	49	41	–	–	–	–	
8	420	355	315	330	280	250	325	275	245	310	260	230	280	235	210	–	–	–	
9	330	275	245	260	220	195	255	215	190	245	205	180	220	185	165	–	–	–	
10	270	225	–	215	180	–	210	175	155	200	165	–	180	150	135	–	–	–	
11	200	170	–	160	135	–	155	130	–	145	125	–	135	115	100	–	–	–	
12	320	270	240	280	240	210	265	225	200	245	205	185	215	180	160	255	215	190	
13	280	235	210	250	210	185	235	200	175	215	180	160	190	160	140	225	190	170	
14	235	200	175	210	175	155	200	165	150	180	155	135	160	135	120	190	160	–	
15	195	165	–	175	145	–	165	140	–	150	125	–	130	110	–	–	–	–	
16	–	–	–	1405	1180	1050	1330	1120	995	1220	1030	915	1065	895	795	1275	1075	955	
17	–	–	–	1135	955	850	1075	905	805	985	830	740	860	725	645	1030	870	770	
18	–	–	–	865	730	645	820	690	610	750	635	565	655	550	490	785	660	590	
19	–	–	–	70	60	–	70	60	–	65	55	–	60	50	–	–	–	–	
20	–	–	–	60	49	–	55	46	–	50	44	–	47	40	–	–	–	–	
21	–	–	–	50	42	–	47	40	–	45	38	–	41	34	–	–	–	–	
22	–	–	–	120	100	–	115	95	–	110	90	–	100	85	–	–	–	–	

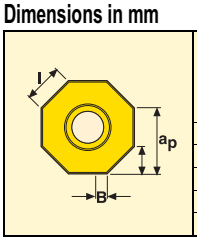
*For grade F15M only use values in material groups 12-14 and 16-17. For T200M only use values in groups 1-15.

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
OFEX 05T305	1,5	<1,0

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
5	3,5 (8,5)	~ 1,5

Insert selection – Octomill 220.43-05

Universal insert: OFMT 050405TR-M14 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,09–0,18	OFMT050405TR-ME12 MP2500	OFMT050405TR-ME12 T350M	
2	0,09–0,18	OFMT050405TR-ME12 MP2500	OFMT050405TR-ME12 T350M	
3	0,09–0,15	OFMT050405TR-M14 MP2500	OFMT050405TR-M14 T350M	
4	0,09–0,15	OFMT050405TR-M14 MP2500	OFMT050405TR-M14 T350M	
5	0,06–0,12	OFMT050405TR-M14 MP2500	OFMT050405TR-M14 T350M	
6	0,06–0,12	OFMT050405TR-M14 MP2500	OFEX05T305TN-D09 MP1500	
7	0,06–0,09	OFEX05T305TN-D09 MP1500	OFEX05T305TN-D09 MP1500	
8	0,09–0,18	OFMT050405TR-ME12 MP2500	OFMT050405TR-M14 T350M	
9	0,09–0,15	OFMT050405TR-ME12 MP2500	OFMT050405TR-M14 T350M	
10	0,09–0,12	OFMT050405TR-ME12 T350M	OFMT050405TR-ME12 MM4500	
11	0,07–0,11	OFMT050405TR-M14 F40M	OFMT050405TR-ME12 MM4500	
12	0,09–0,15	OFMT050405TR-M14 MK1500	OFEX05T305TN-D09 MP1500	
13	0,09–0,15	OFMT050405TR-M14 MK1500	OFEX05T305TN-D09 MP1500	
14	0,06–0,12	OFMT050405TR-M14 MK1500	OFEX05T305TN-D09 MP1500	
15	0,06–0,12	OFMT050405TR-M14 MK1500	OFEX05T305TN-D09 MP1500	
16	0,09–0,18	OFEX05T305N-E04 H15	OFEX05T305N-E04 F15M	
17	0,09–0,18	OFEX05T305N-E04 H15	OFEX05T305N-E04 F15M	
18	0,09–0,18	OFEX05T305N-E04 H15	OFEX05T305N-E04 F15M	
19	0,07–0,09	OFMT050405TR-ME12 T350M	OFMT050405TR-M14 F40M	
20	0,07–0,09	OFMT050405TR-ME12 T350M	OFMT050405TR-M14 F40M	
21	0,07–0,09	OFMT050405TR-M14 F40M	OFEX05T305N-M05 MP3000	
22	0,07–0,11	OFMT050405TR-ME12 F40M	OFMT050405TR-M14 F40M	

Cutting data

SMG	Grades												
	MK1500			H15			MM4500						
	f_z (mm/tooth)												
	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18				
	v_c (m/min)												
1	–	–	–	–	–	–	335	280	250				
2	–	–	–	–	–	–	280	240	210				
3	–	–	–	–	–	–	235	195	175				
4	–	–	–	–	–	–	200	170	150				
5	–	–	–	–	–	–	165	140	–				
6	–	–	–	–	–	–	145	120	–				
7	–	–	–	–	–	–	–	–	–				
8	–	–	–	–	–	–	240	205	180				
9	–	–	–	–	–	–	190	160	145				
10	–	–	–	–	–	–	155	130	115				
11	–	–	–	–	–	–	115	95	85				
12	400	335	300	205	170	150	155	130	115				
13	350	295	265	180	150	135	135	115	100				
14	295	250	220	150	125	–	115	95	85				
15	245	205	–	–	–	–	95	80	–				
16	–	–	–	1010	850	755	–	–	–				
17	–	–	–	815	685	610	–	–	–				
18	–	–	–	620	525	465	–	–	–				
19	–	–	–	–	–	–	42	35	–				
20	–	–	–	–	–	–	33	28	–				
21	–	–	–	–	–	–	29	24	–				
22	–	–	–	–	–	–	70	60	–				

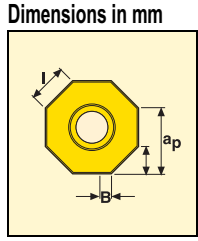
*For grade F15M only use values in material groups 12-14 and 16-17. For T200M only use values in groups 1-15.

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
OFEX 05T305	1,5	<1,0

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
5	3,5 (8,5)	~ 1,5

Insert selection – Octomill 217/220.43-07S

Universal insert: OFMT 070405TR-M15 MP2500

SMG	f_z mm/tooth full engagem.	First choice	Difficult operations	
1	0,10–0,35	OFMT070405TR-ME13 MP2500	OFMT070405TR-M15 T350M	
2	0,10–0,35	OFMT070405TR-ME13 MP2500	OFMT070405TR-M15 T350M	
3	0,10–0,35	OFMT070405TR-M15 MP2500	OFMT070405TR-M15 T350M	
4	0,10–0,35	OFMT070405TR-M15 MP2500	OFMT070405TR-M15 T350M	
5	0,10–0,30	OFMT070405TR-M15 MP2500	OFEW070405TN-D18 MP1500	
6	0,10–0,25	OFMT070405TR-M15 MP2500	OFEW070405TN-D18 MP1500	
7	0,10–0,15	OFEW070405TN-D18 MP1500	OFEW070405TN-D18 MP1500	
8	0,10–0,30	OFMT070405TR-ME13 MP2500	OFMT070405TR-ME13 T350M	
9	0,10–0,30	OFMT070405TR-ME13 MP2500	OFMT070405TR-ME13 T350M	
10	0,10–0,25	OFMT070405TR-ME13 MP2500	OFMT070405TN-ME13 MM4500	
11	0,10–0,20	OFMT070405TR-M15 F40M	OFMT070405TN-ME13 MM4500	
12	0,10–0,40	OFET070405TN-M16 MK1500	OFEW070405TN-D18 MP1500	
13	0,10–0,35	OFET070405TN-M16 MK1500	OFEW070405TN-D18 MP1500	
14	0,10–0,30	OFET070405TN-M16 MK1500	OFEW070405TN-D18 MP1500	
15	0,10–0,25	OFEW070405TN-D18 MP1500	OFEW070405TN-D18 MP1500	
16	0,10–0,40	OFMT070405TR-ME13 F40M	OFMT070405TR-ME13 F40M	
17	0,10–0,40	OFMT070405TR-ME13 F40M	OFMT070405TR-ME13 F40M	
18	0,10–0,40	OFMT070405TR-ME13 F40M	OFMT070405TR-ME13 F40M	
19	0,10–0,20	OFMT070405TR-ME13 T350M	OFMT070405TR-M15 F40M	
20	0,10–0,20	OFMT070405TR-ME13 T350M	OFMT070405TR-M15 F40M	
21	0,10–0,20	OFMT070405TR-M15 F40M	OFMT070405TR-M15 F40M	
22	0,10–0,25	OFMT070405TR-ME13 F40M	OFMT070405TR-M15 F40M	

Cutting data

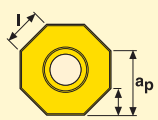
SMG	Grades																		
	MP1500			MP2500			T350M			F40M			MK1500			MM4500			
	f_z (mm/tooth)																		
	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	0,10	0,25	0,40	
SMG	v_c (m/min)																		
1	545	415	350	485	365	310	420	320	270	365	280	235	–	–	–	295	225	190	
2	460	350	295	410	310	260	355	270	230	310	235	200	–	–	–	250	190	160	
3	380	290	245	340	255	215	295	225	190	255	195	165	–	–	–	205	155	135	
4	325	245	210	290	220	185	250	190	160	220	165	140	–	–	–	175	135	115	
5	270	205	175	240	180	155	210	160	135	180	140	115	–	–	–	150	110	95	
6	240	180	–	210	160	–	185	140	–	160	120	–	–	–	–	130	100	–	
7	65	49	–	50	40	–	50	38	–	44	33	–	–	–	–	–	–	–	
8	375	285	240	295	225	190	275	210	175	250	190	160	–	–	–	215	165	140	
9	295	220	190	230	175	150	215	165	140	195	150	125	–	–	–	170	130	110	
10	240	180	–	190	145	–	175	135	–	160	120	–	–	–	–	140	105	–	
11	180	135	–	140	105	–	130	100	–	120	90	–	–	–	–	105	80	–	
12	285	215	180	250	190	160	220	165	140	190	145	120	355	270	230	135	105	85	
13	250	190	160	220	170	140	195	145	125	170	125	105	315	240	200	120	90	75	
14	210	160	135	185	140	120	160	125	105	140	105	90	265	200	170	100	75	65	
15	175	130	–	155	115	–	135	100	–	115	90	–	220	165	–	85	65	–	
16	1410	1070	905	1250	950	800	1090	825	700	945	720	605	–	–	–	–	–	–	
17	1140	865	730	1010	765	650	880	665	565	765	580	490	–	–	–	–	–	–	
18	870	660	555	770	585	495	670	510	430	585	440	375	–	–	–	–	–	–	
19	–	–	–	65	49	–	60	44	–	50	40	–	–	–	–	37	28	–	
20	–	–	–	50	39	–	46	35	–	42	32	–	–	–	–	30	23	–	
21	–	–	–	45	34	–	40	30	–	36	28	–	–	–	–	26	20	–	
22	–	–	–	110	80	–	95	75	–	85	65	–	–	–	–	60	47	–	

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
OFEX 070405	1,5	<1,0

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	
7	5 (12)	

Insert selection – Double Octomill™ 220.48

Universal insert: ONMU090520ANTN-M14 MP2500

SMG	f_z mm/tooth (a_p = 8 mm)	First choice	Difficult operations	
1	0,15–0,35	ONMU095020ANTN-M13 MP2500	ONMU095020ANTN-M14 T350M	
2	0,15–0,35	ONMU095020ANTN-M13 MP2500	ONMU095020ANTN-M14 T350M	
3	0,15–0,35	ONMU095020ANTN-M13 MP2500	ONMU095020ANTN-M14 T350M	
4	0,15–0,35	ONMU095020ANTN-M14 MP2500	ONMU095020ANTN-M14 T350M	
5	0,10–0,30	ONMU095020ANTN-M14 MP2500	ONMU095020ANTN-M14 T350M	
6	0,10–0,20	ONMU095020ANTN-M14 MP1500	ONMU095020ANTN-MD16 MP1500	
7	0,10–0,15	ONMU095020ANTN-M14 MP1500	ONMU095020ANTN-MD16 MP3000	
8	0,15–0,30	ONMU095020ANTN-ME12 MM4500	ONMU095020ANTN-M14 T350M	
9	0,15–0,30	ONMU095020ANTN-ME12 MM4500	ONMU095020ANTN-M14 T350M	
10	0,15–0,25	ONMU095020ANTN-M14 T350M	ONMU095020ANTN-M12 MM4500	
11	0,15–0,20	ONMU095020ANTN-MD16 T350M	ONMU095020ANTN-M12 MM4500	
12	0,15–0,35	ONMU095020ANTN-M14 MK1500	ONMU095020ANTN-M14 MK3000	
13	0,15–0,35	ONMU095020ANTN-M14 MK1500	ONMU095020ANTN-M14 MK3000	
14	0,10–0,30	ONMU095020ANTN-MD16 MK1500	ONMU095020ANTN-MD16 MK3000	
15	0,10–0,25	ONMU095020ANTN-MD16 MP1500	ONMU095020ANTN-MD16 MK3000	
16	0,10–0,25	ONMU095020ANTN-ME12 MP1500	ONMU095020ANTN-ME12 F40M	
17	0,10–0,25	ONMU095020ANTN-ME12 MP1500	ONMU095020ANTN-ME12 F40M	
18	0,10–0,25	ONMU095020ANTN-ME12 MP1500	ONMU095020ANTN-ME12 F40M	
19	0,10–0,25	ONMU095020ANTN-ME12 T350M	ONMU095020ANTN-ME12 F40M	
20	0,10–0,25	ONMU095020ANTN-ME12 T350M	ONMU095020ANTN-ME12 F40M	
21	0,10–0,25	ONMU095020ANTN-ME12 MP3000	ONMU095020ANTN-ME12 F40M	
22	0,10–0,25	ONMU095020ANTN-ME12 F40M	ONMU095020ANTN-M12 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

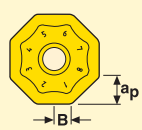
SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			MM4500			MS2500		
	f_z (mm/tooth)																				
	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35
	v_c (m/min)																				
1	430	365	325	380	325	290	360	305	275	330	280	250	285	245	220	235	200	175	415	355	315
2	365	310	275	320	275	245	305	260	230	280	240	215	245	210	185	195	170	150	350	300	265
3	300	255	230	265	225	200	250	215	190	230	195	175	200	170	155	165	140	125	290	245	220
4	255	220	195	225	195	170	215	185	165	195	170	150	170	145	130	140	120	105	245	210	190
5	215	180	160	190	160	145	180	155	135	165	140	125	145	120	110	115	100	90	205	175	155
6	185	160	140	165	140	125	155	135	120	145	125	110	125	105	95	100	85	75	180	155	135
7	50	44	–	41	35	–	40	34	–	39	34	–	34	29	–	–	–	–	45	38	–
8	295	250	225	230	200	175	230	195	175	215	185	165	195	170	150	170	145	130	250	215	190
9	230	195	175	180	155	140	180	155	135	170	145	130	155	130	115	135	115	100	200	170	150
10	190	160	145	150	125	115	145	125	110	140	120	105	125	110	95	110	95	85	160	140	125
11	140	120	–	110	95	–	110	95	–	105	90	–	95	80	–	80	70	–	120	100	–
12	225	190	170	200	170	150	185	160	140	170	145	130	150	130	115	105	90	80	215	185	165
13	195	165	150	175	150	130	165	140	125	150	130	115	130	110	100	95	80	70	190	160	145
14	165	140	125	145	125	110	140	120	105	125	110	95	110	95	85	80	65	60	160	135	120
15	135	115	–	120	105	–	115	100	–	105	90	–	90	80	–	65	55	–	130	115	–
16	1110	945	840	980	840	745	930	795	705	855	730	650	745	635	565	–	–	–	1070	915	815
17	895	765	680	795	675	605	750	640	570	690	590	525	600	515	455	–	–	–	865	740	660
18	680	580	520	605	515	460	570	490	435	525	450	400	460	390	350	–	–	–	660	565	500
19	–	–	–	50	43	–	48	41	–	45	39	–	41	35	–	29	25	–	55	47	–
20	–	–	–	41	35	–	38	33	–	36	31	–	33	28	–	23	20	–	44	38	–
21	–	–	–	35	30	–	33	28	–	31	27	–	29	24	–	20	17	–	38	33	–
22	–	–	–	85	70	–	80	70	–	75	65	–	70	60	–	48	41	–	90	80	–

Surface finish

Type of insert geometry	Feed mm/ rev < =	R_a µm
M14/M12/ME12	0,45	1,0
M15/M13/ME13	2,1	0,8
MD16	0,45	1,0
MD17	2,1	0,8
ZZTN4-M14	6,2	0,7

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert geometry	Max D.O.C. a_p	Wiper flat width B
M14/ME12	6	0,45
ZZTN4-M14	6	6,2
M15/M13/ME13	4,5	2,1
MD16/M12	6	0,45
MD17	4,5	2,1

Insert selection – Double Octomill™ 220.48

Universal insert: ONMU090520ANTN-M14 MP2500

SMG	f_z mm/tooth (a_p = 8 mm)	First choice	Difficult operations	
1	0,15–0,35	ONMU095020ANTN-M13 MP2500	ONMU095020ANTN-M14 T350M	
2	0,15–0,35	ONMU095020ANTN-M13 MP2500	ONMU095020ANTN-M14 T350M	
3	0,15–0,35	ONMU095020ANTN-M13 MP2500	ONMU095020ANTN-M14 T350M	
4	0,15–0,35	ONMU095020ANTN-M14 MP2500	ONMU095020ANTN-M14 T350M	
5	0,10–0,30	ONMU095020ANTN-M14 MP2500	ONMU095020ANTN-M14 T350M	
6	0,10–0,20	ONMU095020ANTN-M14 MP1500	ONMU095020ANTN-MD16 MP1500	
7	0,10–0,15	ONMU095020ANTN-M14 MP1500	ONMU095020ANTN-MD16 MP3000	
8	0,15–0,30	ONMU095020ANTN-ME12 MM4500	ONMU095020ANTN-M14 T350M	
9	0,15–0,30	ONMU095020ANTN-ME12 MM4500	ONMU095020ANTN-M14 T350M	
10	0,15–0,25	ONMU095020ANTN-M14 T350M	ONMU095020ANTN-M12 MM4500	
11	0,15–0,20	ONMU095020ANTN-MD16 T350M	ONMU095020ANTN-M12 MM4500	
12	0,15–0,35	ONMU095020ANTN-M14 MK1500	ONMU095020ANTN-M14 MK3000	
13	0,15–0,35	ONMU095020ANTN-M14 MK1500	ONMU095020ANTN-M14 MK3000	
14	0,10–0,30	ONMU095020ANTN-MD16 MK1500	ONMU095020ANTN-MD16 MK3000	
15	0,10–0,25	ONMU095020ANTN-MD16 MP1500	ONMU095020ANTN-MD16 MK3000	
16	0,10–0,25	ONMU095020ANTN-ME12 MP1500	ONMU095020ANTN-ME12 F40M	
17	0,10–0,25	ONMU095020ANTN-ME12 MP1500	ONMU095020ANTN-ME12 F40M	
18	0,10–0,25	ONMU095020ANTN-ME12 MP1500	ONMU095020ANTN-ME12 F40M	
19	0,10–0,25	ONMU095020ANTN-ME12 T350M	ONMU095020ANTN-ME12 F40M	
20	0,10–0,25	ONMU095020ANTN-ME12 T350M	ONMU095020ANTN-ME12 F40M	
21	0,10–0,25	ONMU095020ANTN-ME12 MP3000	ONMU095020ANTN-ME12 F40M	
22	0,10–0,25	ONMU095020ANTN-ME12 F40M	ONMU095020ANTN-M12 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

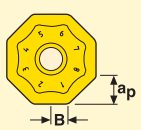
SMG	Grades												
	MK1500			MK2000			MK3000						
	f_z (mm/tooth)												
	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35				
SMG	v_c (m/min)												
1	–	–	–	375	320	285	350	295	265				
2	–	–	–	315	270	240	295	250	225				
3	–	–	–	260	225	200	245	210	185				
4	–	–	–	225	190	170	210	175	160				
5	–	–	–	185	160	140	175	150	130				
6	–	–	–	165	140	125	150	130	115				
7	–	–	–	45	38	–	42	35	–				
8	–	–	–	255	220	195	230	195	175				
9	–	–	–	200	170	155	180	155	135				
10	–	–	–	165	140	125	145	125	110				
11	–	–	–	120	105	–	110	95	–				
12	280	240	215	195	165	150	180	155	140				
13	245	210	185	170	145	130	160	135	120				
14	205	175	155	145	125	110	135	115	100				
15	170	145	–	120	100	–	110	95	–				
16	1390	1185	1055	965	825	735	900	770	685				
17	1125	960	855	780	665	595	725	620	555				
18	855	730	650	595	510	450	555	475	420				
19	–	–	–	–	–	–	–	–	–				
20	–	–	–	–	–	–	–	–	–				
21	–	–	–	–	–	–	–	–	–				
22	–	–	–	–	–	–	–	–	–				

Surface finish

Type of insert geometry	Feed mm/ rev < =	R_a µm
M14/M12/ME12	0,45	1,0
M15/M13/ME13	2,1	0,8
MD16	0,45	1,0
MD17	2,1	0,8
ZZTN4-M14	6,2	0,7

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert geometry	Max D.O.C. a_p	Wiper flat width B
M14/ME12	6	0,45
ZZTN4-M14	6	6,2
M15/M13/ME13	4,5	2,1
MD16/M12	6	0,45
MD17	4,5	2,1

Insert selection – Octomill 220.42

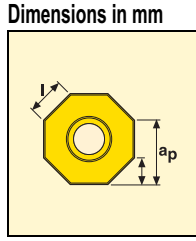
Universal insert: ODMT 050408TN-MD20 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,10–0,22	ODMT050408TN-MD20 MP2500	ODMT050408TN-MD20 MP1500	
2	0,10–0,22	ODMT050408TN-MD20 MP2500	ODMT050408TN-MD20 MP1500	
3	0,10–0,20	ODMT050408TN-MD20 MP2500	ODMT050408TN-MD20 MP1500	
4	0,09–0,18	ODMT050408TN-MD20 MP2500	ODMT050408TN-MD20 MP1500	
5	0,08–0,15	ODMT050408TN-MD20 MP2500	ODMT050408TN-MD20 MP1500	
6	0,08–0,15	ODMT050408TN-MD20 MP2500	ODMT050408TN-MD20 MP1500	
7	0,08–0,12	ODMT050408TN-MD20 MP1500	ODMT050408TN-MD20 MP3000	
8	0,10–0,22	ODMT050408TN-MD20 MP2500	ODMT050408TN-MD20 MP1500	
9	0,10–0,18	ODMT050408TN-MD20 MP2500	ODMT050408TN-MD20 MP1500	
10	0,10–0,14	ODMT050408TN-MD20 F40M	ODMT050408TN-MD20 F40M	
11	0,09–0,12	ODMT050408TN-MD20 F40M	ODMT050408TN-MD20 F40M	
12	0,10–0,20	ODMT050408TN-MD20 MK3000	ODMT050408TN-MD20 MP2500	
13	0,10–0,20	ODMT050408TN-MD20 MK3000	ODMT050408TN-MD20 MP2500	
14	0,09–0,18	ODMT050408TN-MD20 MK3000	ODMT050408TN-MD20 MP2500	
15	0,09–0,18	ODMT050408TN-MD20 MK3000	ODMT050408TN-MD20 MP2500	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	0,07–0,09	ODMT050408TN-MD20 F40M	ODMT050408TN-MD20 MK3000	
20	0,07–0,09	ODMT050408TN-MD20 F40M	ODMT050408TN-MD20 MK3000	
21	0,07–0,09	ODMT050408TN-MD20 F40M	ODMT050408TN-MD20 MK3000	
22	0,09–0,15	ODMT050408TN-MD20 F40M	ODMT050408TN-MD20 MK3000	

Cutting data

SMG	Grades																		
	MP1500			MP2500			MP3000			F40M			MS2500			MK3000			
	f_z (mm/tooth)																		
	0,08	0,15	0,22	0,08	0,15	0,22	0,08	0,15	0,22	0,08	0,15	0,22	0,08	0,15	0,22	0,08	0,15	0,22	
	v_c (m/min)																		
1	530	445	400	470	395	350	445	375	335	355	300	265	510	430	385	430	365	325	
2	445	380	335	395	335	300	375	320	285	300	255	225	430	365	325	365	305	275	
3	370	315	280	325	275	245	310	260	235	250	210	185	355	300	270	300	255	225	
4	315	265	235	280	235	210	265	225	200	210	180	160	305	260	230	255	215	195	
5	265	220	–	235	195	–	220	185	–	175	150	–	255	215	–	215	180	–	
6	230	195	–	205	175	–	195	165	–	155	130	–	225	190	–	185	160	–	
7	65	55	–	50	43	–	50	42	–	42	36	–	55	47	–	50	43	–	
8	360	305	270	285	240	215	280	240	210	240	205	185	310	265	235	280	240	210	
9	285	240	215	225	190	170	220	185	165	190	160	145	245	205	185	220	185	165	
10	230	195	–	185	155	–	180	155	–	155	130	–	200	170	–	180	155	–	
11	170	145	–	135	115	–	135	115	–	115	100	–	150	125	–	135	115	–	
12	275	235	205	245	205	185	230	195	175	185	155	140	265	225	200	225	190	170	
13	240	205	180	215	180	160	205	170	155	160	135	120	235	200	175	195	165	150	
14	205	170	155	180	155	135	170	145	130	135	115	105	195	165	150	165	140	–	
15	170	145	–	150	125	–	140	120	–	115	95	–	165	140	–	–	–	–	
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
19	–	–	–	60	55	–	60	50	–	50	43	–	70	60	–	–	–	–	
20	–	–	–	50	43	–	47	40	–	41	35	–	55	46	–	–	–	–	
21	–	–	–	43	37	–	41	35	–	35	30	–	47	40	–	–	–	–	
22	–	–	–	105	90	–	100	85	–	85	70	–	115	95	–	–	–	–	

Dimensions in mm



Insert size l	Max D.O.C. a_p	
5	3,5 (8,5)	

Insert selection – Hexamill 220.66-12

Universal insert: HPMR1206ZETR-M17 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,25–0,50	HPMR1206ZETR-ME15 MP2500	HPMR1206ZETR-M17 T350M	
2	0,25–0,50	HPMR1206ZETR-ME15 MP2500	HPMR1206ZETR-M17 T350M	
3	0,25–0,50	HPMR1206ZETR-ME15 MP2500	HPMR1206ZETR-M17 T350M	
4	0,25–0,50	HPMR1206ZETR-M17 MP2500	HPMR1206ZETR-M17 T350M	
5	0,25–0,50	HPMR1206ZETR-M17 MP2500	HPMN1206ZETR-MD20 MP2500	
6	0,25–0,50	HPMN1206ZETR-MD20 MP2500	HPMN1206ZETR-D25 MP1500	
7	0,25–0,35	HPMN1206ZETR-D25 MP3000	HPMN1206ZETR-D25 MP1500	
8	0,25–0,50	HPMR1206ZETR-ME15 MP2500	HPMR1206ZETR-ME15 T350M	
9	0,25–0,50	HPMR1206ZETR-ME15 MP2500	HPMR1206ZETR-ME15 T350M	
10	0,25–0,50	HPMR1206ZETR-ME15 T350M	HPMR1206ZETR-M17 MM4500	
11	0,25–0,50	HPMR1206ZETR-ME15 T350M	HPMR1206ZETR-M17 MM4500	
12	0,25–0,50	HPMN1206ZETR-MD20 MK1500	HPMN1206ZETR-D25 MK3000	
13	0,25–0,50	HPMN1206ZETR-MD20 MK1500	HPMN1206ZETR-D25 MK3000	
14	0,25–0,50	HPMN1206ZETR-MD20 MK1500	HPMN1206ZETR-D25 MK3000	
15	0,25–0,50	HPMN1206ZETR-D25 MP1500	HPMN1206ZETR-D25 MP1500	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	0,25–0,35	HPMR1206ZETR-M17 T350M	HPMR1206ZETR-M17 F40M	
20	0,25–0,35	HPMR1206ZETR-M17 T350M	HPMR1206ZETR-M17 F40M	
21	0,25–0,35	HPMR1206ZETR-M17 F40M	HPMN1206ZETR-D25 MP3000	
22	0,25–0,35	HPMR1206ZETR-ME15 F40M	HPMR1206ZETR-M17 F40M	

Cutting data

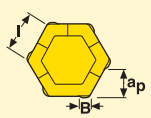
	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			MK1500			MK3000		
	f_z (mm/tooth)																				
	0,25	0,50	0,75	0,25	0,50	0,75	0,25	0,50	0,75	0,25	0,50	0,75	0,25	0,50	0,75	0,25	0,50	0,75	0,25	0,50	0,75
SMG	v_c (m/min)																				
1	475	365	310	420	325	275	400	305	260	370	280	240	320	245	205	–	–	–	385	295	250
2	405	310	260	360	275	230	340	260	220	310	240	200	270	210	175	–	–	–	330	250	210
3	335	255	215	295	225	190	280	215	180	255	195	165	225	170	145	–	–	–	270	210	175
4	285	220	185	250	195	165	240	185	155	220	170	140	190	145	125	–	–	–	230	175	150
5	235	180	155	210	160	135	200	155	130	185	140	120	160	120	105	–	–	–	195	150	125
6	210	160	135	185	140	120	175	135	115	160	125	105	140	105	90	–	–	–	170	130	110
7	55	44	–	46	35	–	45	34	–	44	34	–	38	29	–	–	–	–	46	35	–
8	325	250	210	260	200	165	255	195	165	240	185	155	220	170	140	–	–	–	255	195	165
9	255	195	165	205	155	130	200	155	130	190	145	120	170	130	110	–	–	–	200	155	130
10	210	160	135	165	125	105	165	125	105	155	120	100	140	110	90	–	–	–	165	125	105
11	155	120	–	125	95	–	120	95	–	115	90	–	105	80	–	–	–	–	120	95	–
12	250	190	160	220	170	140	210	160	135	190	145	125	165	130	110	310	240	200	200	155	130
13	220	165	140	195	150	125	185	140	120	170	130	110	145	110	95	275	210	175	175	135	115
14	185	140	120	165	125	105	155	120	100	140	110	90	125	95	80	230	175	150	150	115	95
15	150	115	–	135	105	–	130	100	–	115	90	–	100	80	–	190	145	–	125	95	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
19	–	–	–	55	43	–	55	41	–	50	39	–	46	35	–	–	–	–	55	41	–
20	–	–	–	45	35	–	43	33	–	41	31	–	37	28	–	–	–	–	43	33	–
21	–	–	–	39	30	–	37	28	–	35	27	–	32	24	–	–	–	–	37	28	–
22	–	–	–	95	70	–	90	70	–	85	65	–	75	60	–	–	–	–	90	70	–

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
HPMR 1206	0,8	1,5

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
12	8	0,8

Insert selection – 220.30-12

Universal insert: SEEX1203AFTN-M13 MP1500

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,15–0,30	SEEX1203AFTN-M13 MP1500		
2	0,15–0,30	SEEX1203AFTN-M13 MP1500		
3	0,15–0,25	SEEX1203AFTN-M13 MP1500		
4	0,15–0,25	SEEX1203AFTN-M13 MP1500		
5	0,10–0,20	SEEX1203AFTN-M13 MP1500		
6	0,10–0,20	SEEX1203AFTN-MD14 F15M		
7	0,10–0,15	SEEX1203AFTN-MD14 F15M		
8	0,15–0,30	SEEX1203AFTN-M13 T350M		
9	0,15–0,25	SEEX1203AFTN-M13 T350M		
10	0,15–0,20	SEEX1203AFTN-M13 T350M		
11	0,12–0,18	SEEX1203AFTN-M13 T350M		
12	0,15–0,30	SEEX1203AFTN-MD14 MH1000		
13	0,15–0,25	SEEX1203AFTN-MD14 MH1000		
14	0,10–0,20	SEEX1203AFTN-MD14 MK1500		
15	0,10–0,20	SEEX1203AFTN-MD14 MK1500		
16	–	–		
17	–	–		
18	–	–		
19	0,10–0,15	SEEX1203AFTN-M13 T350M		
20	0,10–0,15	SEEX1203AFTN-M13 T350M		
21	0,10–0,15	SEEX1203AFTN-MD14 H15		
22	0,10–0,15	SEEX1203AFTN-MD14 H15		

Cutting data

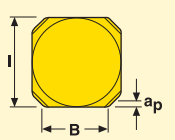
SMG	Grades																		
	MP1500			T350M			F15M			MH1000			MK1500			H15			
	f_z (mm/tooth)																		
	0,10	0,20	0,30	0,10	0,20	0,30	0,10	0,20	0,30	0,10	0,20	0,30	0,10	0,20	0,30	0,10	0,20	0,30	
	v_c (m/min)																		
1	405	345	310	315	265	240	–	–	–	–	–	–	–	–	–	–	–	–	
2	345	290	260	265	225	200	–	–	–	–	–	–	–	–	–	–	–	–	
3	285	240	215	220	185	165	–	–	–	–	–	–	–	–	–	–	–	–	
4	240	205	185	185	160	140	–	–	–	–	–	–	–	–	–	–	–	–	
5	200	170	155	155	130	120	–	–	–	–	–	–	–	–	–	–	–	–	
6	175	150	–	135	115	105	–	–	–	–	–	–	–	–	–	–	–	–	
7	48	41	–	37	32	–	–	–	–	–	–	–	–	–	–	–	–	–	
8	280	235	210	205	175	155	–	–	–	–	–	–	–	–	–	–	–	–	
9	220	185	165	160	135	125	–	–	–	–	–	–	–	–	–	–	–	–	
10	180	150	–	130	110	100	–	–	–	–	–	–	–	–	–	–	–	–	
11	130	110	–	100	85	–	–	–	–	–	–	–	–	–	–	–	–	–	
12	210	180	160	165	140	125	170	145	130	205	175	155	265	225	200	135	115	105	
13	185	155	140	145	120	110	150	125	115	180	155	140	235	195	180	120	100	90	
14	155	130	120	120	100	90	125	105	95	150	130	115	195	165	150	100	85	75	
15	130	110	–	100	85	–	105	90	80	125	105	–	165	135	–	85	70	–	
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
19	–	–	–	43	36	–	–	–	–	–	–	–	–	–	–	21	18	–	
20	–	–	–	35	29	–	–	–	–	–	–	–	–	–	–	17	15	–	
21	–	–	–	30	25	–	–	–	–	–	–	–	–	–	–	15	13	–	
22	–	–	–	70	60	–	–	–	–	–	–	–	–	–	–	36	30	–	

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SEEX 1203..	5,0	0,5
	8,0	1,0

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
12	1	8,0

Insert selection – 220.44-15

Universal insert: SNHF 1504XNN-M14 MP1500

SMG	Recom. feed f_z mm/tooth	First choice*	Difficult operations	
1	0,15–0,35	SNHF1504XNN-M14 MP1500	SNHF1504XNN-M14 MK3000	
2	0,15–0,35	SNHF1504XNN-M14 MP1500	SNHF1504XNN-M14 MK3000	
3	0,15–0,35	SNHF1504XNN-M14 MP1500	SNHF1504XNN-M14 MK3000	
4	0,15–0,35	SNHF1504XNN-M14 MP1500	SNHF1504XNN-M14 MK3000	
5	0,10–0,30	SNHF1504XNN-M14 MP1500	SNHF1504XNN-M14 MK3000	
6	0,10–0,20	SNHF1504XNN-M14 MP1500	SNHF1504XNN-M14 MK3000	
7	0,10–0,15	SNHF1504XNN-M14 MP1500	SNHF1504XNN-MD15 MP3000	
8	0,15–0,30	SNHF1504XNN-M14 MK3000	SNHF1504XNN-MD15 MK3000	
9	0,15–0,30	SNHF1504XNN-M14 MK3000	SNHF1504XNN-MD15 MK3000	
10	0,15–0,25	SNHF1504XNN-M14 MK3000	SNHF1504XNN-MD15 MK3000	
11	0,15–0,20	SNHF1504XNN-M14 MK3000	SNHF1504XNN-MD15 MK3000	
12	0,15–0,35	SNHF1504XNN-M14 MK1500	SNHF1504XNN-MD15 MK3000	
13	0,15–0,35	SNHF1504XNN-M14 MK1500	SNHF1504XNN-MD15 MK3000	
14	0,10–0,30	SNHF1504XNN-M14 MK1500	SNHF1504XNN-MD15 MK3000	
15	0,10–0,25	SNHF1504XNN-M14 MK3000	SNHF1504XNN-MD15 MK3000	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	–	–	–	
20	–	–	–	
21	–	–	–	
22	–	–	–	

*Select SNHF 1504XNN-ME10 for milling thin-wall parts and if there is a risk of edge breakdown of component.

Cutting data

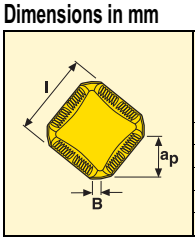
SMG	Grades														
	MP1500			MP3000			MK1500			MK3000					
	f_z (mm/tooth)														
	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35			
	v_c (m/min)														
1	435	370	330	365	310	275	–	–	–	355	300	265			
2	370	315	280	310	265	235	–	–	–	300	255	225			
3	305	260	230	255	215	195	–	–	–	245	210	185			
4	260	220	195	220	185	165	–	–	–	210	180	160			
5	215	185	165	180	155	135	–	–	–	175	150	135			
6	190	160	145	160	135	120	–	–	–	155	130	115			
7	50	44	–	41	35	–	–	–	–	42	36	–			
8	300	255	225	230	195	175	–	–	–	230	195	175			
9	235	200	175	180	155	140	–	–	–	180	155	140			
10	190	165	145	150	125	115	–	–	–	150	125	115			
11	140	120	–	110	95	–	–	–	–	110	95	–			
12	225	195	170	190	160	145	285	240	215	185	155	140			
13	200	170	150	165	140	125	250	215	190	160	140	120			
14	170	145	125	140	120	105	210	180	160	135	115	105			
15	140	120	–	115	100	–	175	150	–	115	95	–			
16	–	–	–	–	–	–	–	–	–	–	–	–			
17	–	–	–	–	–	–	–	–	–	–	–	–			
18	–	–	–	–	–	–	–	–	–	–	–	–			
19	–	–	–	–	–	–	–	–	–	–	–	–			
20	–	–	–	–	–	–	–	–	–	–	–	–			
21	–	–	–	–	–	–	–	–	–	–	–	–			
22	–	–	–	–	–	–	–	–	–	–	–	–			

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SNHF 1504XNN	1,4	1,0
SNHF1504ZZN	4,0 7,0	0,6 0,8

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
15	7	1,4

Insert selection (R)230.19

SMG	f_z mm/tooth (a_p = 8 mm)	First choice	Difficult operations	
1	0,20–0,38	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
2	0,20–0,38	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
3	0,20–0,32	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
4	0,20–0,32	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
5	0,16–0,30	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
6	0,16–0,25	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
7	0,13–0,20	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
8	0,20–0,38	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
9	0,20–0,32	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
10	0,16–0,25	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
11	0,16–0,25	SNHQ....-M07 F40M	SNHQ....-M07 F40M	
12	0,20–0,38	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
13	0,20–0,32	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
14	0,20–0,30	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
15	0,16–0,25	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
16	0,20–0,38	SNHQ....-E05 H25	SNHQ....-E05 F40M	
17	0,20–0,38	SNHQ....-E05 H25	SNHQ....-E05 F40M	
18	0,20–0,38	SNHQ....-E05 H25	SNHQ....-E05 F40M	
19	0,20–0,25	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
20	0,20–0,25	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
21	0,13–0,20	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
22	0,16–0,25	SNHQ....-M07 F40M	SNHQ....-E05 F40M	

Cutting data – 100% engagement width (a_e/D_c = 100%)

SMG	Grades														
	F30M			F40M			H25			MM4500					
	f_z (mm/tooth)														
	0,13	0,25	0,38	0,13	0,25	0,38	0,13	0,25	0,38	0,13	0,25	0,38			
	v_c (m/min)														
1	290	235	200	275	220	190	–	–	–	220	180	155			
2	245	200	170	230	190	160	–	–	–	190	155	130			
3	200	165	140	190	155	135	–	–	–	155	125	110			
4	170	140	120	165	135	115	–	–	–	135	110	95			
5	145	115	100	135	110	95	–	–	–	110	90	75			
6	125	100	–	120	95	–	–	–	–	95	80	–			
7	34	–	–	33	–	–	–	–	–	–	–	–			
8	195	160	140	185	150	130	–	–	–	160	130	115			
9	155	125	110	145	120	105	–	–	–	125	105	90			
10	125	105	90	120	100	85	–	–	–	105	85	75			
11	95	75	–	90	70	–	–	–	–	75	65	55			
12	150	120	105	145	115	100	135	110	95	100	85	70			
13	130	105	90	125	100	90	120	95	85	90	75	65			
14	110	90	80	105	85	75	100	80	70	75	60	55			
15	90	75	–	85	70	–	85	65	–	60	50	–			
16	745	605	520	710	575	495	675	545	470	–	–	–			
17	600	490	420	570	465	400	545	440	380	–	–	–			
18	460	370	320	435	355	305	415	335	290	–	–	–			
19	41	33	–	39	32	–	22	18	–	28	22	–			
20	33	27	–	32	26	–	17	14	–	22	18	–			
21	29	–	–	27	–	–	15	–	–	19	–	–			
22	70	55	–	65	55	–	36	29	–	46	37	–			

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SNHQ110304/08	0,30	0,3 - 0,6
SNHQ120308	0,75	0,5 - 1,0

For optimal surface finish, use depth of cut $a_p \approx$ 0,5 mm

Type of insert

Insert size	a_p max mm
1103	2,6
1203	3,1

Insert selection – 220.88-15

Universal insert: SNHF150412TN-M14 MP1500

SMG	Recom. feed fz mm/tooth	First choice	Difficult operations	Alternatives
1	0,15–0,35	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	
2	0,15–0,35	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	
3	0,15–0,35	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	
4	0,15–0,35	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	SNHF1504XNN-M14 MK1500
5	0,10–0,30	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	SNHF1504XNN-M14 MK3000
6	0,10–0,20	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	SNHF1504XNN-M14 MP1500
7	0,10–0,15	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP3000	SNHF1504XNN-ME10 MK1500
8	0,15–0,30	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	SNHF1504XNN-MD15 MK1500
9	0,15–0,30	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	SNHF1504XNN-MD15 MK3000
10	0,15–0,25	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	
11	0,15–0,20	SNHF150412TN-M14 MP1500	SNHN150412TN-MD15 MP1500	
12	0,15–0,35	SNHF150412TN-M14 MK1500	SNHN150412TN-MD15 MK3000	
13	0,15–0,35	SNHF150412TN-M14 MK1500	SNHN150412TN-MD15 MK3000	
14	0,10–0,30	SNHF150412TN-M14 MK1500	SNHN150412TN-MD15 MK3000	
15	0,10–0,25	SNHN150412TN-MD15 MK1500	SNHN150412TN-MD15 MK3000	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	–	–	–	
20	–	–	–	
21	–	–	–	
22	–	–	–	

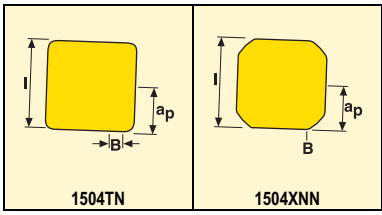
Cutting data

SMG	Grades														
	MP1500			MP3000			MK1500			MK3000					
	f_z (mm/tooth)														
	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35	0,15	0,25	0,35			
	v_c (m/min)														
1	410	345	300	345	290	255	–	–	–	335	280	245			
2	350	290	255	290	245	215	–	–	–	285	235	210			
3	290	240	210	240	200	175	–	–	–	235	195	170			
4	245	205	180	205	170	150	–	–	–	200	165	145			
5	205	170	150	170	145	125	–	–	–	165	140	120			
6	180	150	130	150	125	110	–	–	–	145	120	105			
7	49	41	–	39	32	–	–	–	–	40	33	–			
8	280	235	205	220	185	160	–	–	–	220	185	160			
9	220	185	165	170	145	125	–	–	–	170	145	125			
10	180	150	135	140	120	105	–	–	–	140	120	105			
11	135	110	–	105	85	–	–	–	–	105	85	–			
12	215	180	160	180	150	130	270	225	200	175	145	130			
13	190	160	140	160	130	115	235	200	175	155	130	110			
14	160	135	115	135	110	100	200	165	145	130	110	95			
15	130	110	–	110	90	–	165	140	–	105	90	–			
16	–	–	–	–	–	–	–	–	–	–	–	–			
17	–	–	–	–	–	–	–	–	–	–	–	–			
18	–	–	–	–	–	–	–	–	–	–	–	–			
19	–	–	–	–	–	–	–	–	–	–	–	–			
20	–	–	–	–	–	–	–	–	–	–	–	–			
21	–	–	–	–	–	–	–	–	–	–	–	–			
22	–	–	–	–	–	–	–	–	–	–	–	–			

Surface finish

Type of insert	Feed mm/rev < =	R_a µm
SNH.150412	1,2	1,5

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
150412TN	12	1,2
1504XNN	12	–

Finish of the milled surface is determined by feed/rev used.

Suitable workpiece materials

Secomax CBN10/CBN100/CBN100P/CBN150 inserts are suitable for:
- Finishing and roughing in Seco material group 7 with hardness of 52-63 HRc, for example cold work steel.
- Hardened steel can also be machined with these grades.
- When working in Seco material group 7 use CBN inserts with protected chamfer (S) for best possible tool life.

Secomax CBN200/CBN300/CBN300P inserts are suitable for:
- Finishing and roughing operations in pearlitic grey cast iron with a free ferrite content of less than 5%.
- Roughing in Seco material group 7

			SMG
Hardened steel			7
Grey cast iron materials			
SS	DIN 1691	ASTM A48-76	SMG
0125	GG25	35B/40B	13
0130	GG30	45B	14
0135	GG35	50B	15
0140	GG40	60B	15

Feed and cutting speed recommendations

SMG	Feed f_z mm/tooth	Cutting speed v_c m/min
7	0,1 - 0,2	250 - 500
13	0,1 - 0,4	800 - 2000
14	0,1 - 0,4	800 - 2000
15	0,1 - 0,4	500 - 2000

Points to consider when milling with PCBN

- Do not use coolant
- Apply conventional (up cut) milling.
- Use chamfered and honed cutting edges.

Suitable workpiece materials

PCD inserts can machine all non-ferrous materials. The productivity of these tools is especially highlighted in aluminium alloys. Depending on PCD tip size, depth of cut can vary from 1,5 to 5,5 in roughing operations. (Depth of cut should never exceed 65% of the Total Tip Length TTL). You can machine dry or with coolant.

Secomax PCD inserts are suitable for:
- Milling in SECO material group 16 and 17
- Milling of MMC
- Face milling of bi-metal (Al/GCI)
- Milling of plastics
- Milling of various non ferrous materials

SMG	
16	Free cutting non-ferrous materials Aluminium with <16%Si Brass, Zinc, Magnesium
17	Non-ferrous materials Aluminium with >16%Si Bronze, Cupro-Nickel

Feed and cutting speed recommendations

SMG	Feed f_z mm/tooth	Cutting speed V_c m/min
16	0,05-0,2	400-2500
17	0,05-0,1	300-1000
MMC	0,1-0,3	200-500
Bi-metal	0,08-0,2	100-500
Plastic soft	0,1-0,4	100-1500
Plastic hard	0,05-0,3	100-800

Points to consider when milling with PCD
- Grade PCD20 is the basic recommendation for general milling operations.
- For higher surface finishes, grade PCD05 will be the optimised choice.
- PCD can be used without coolant, but cutting parameters must be reduced in order to prevent BUE on soft workpiece materials.
- Coolant must be used in machining bi-metal workpieces to prevent graphitisation of PCD cutting edge.
- More details in the PCD brochure (page 12)

Insert selection – 220.60-19

Universal insert: SPEN 1906ZETR-MD20 MP2500

SMG	Recom. feed f_z mm/tooth	First choice	Difficult operations	
1	0,25–0,50	SPER1906ZETR-M17 MP2500	SPEN1906ZETR-MD20 T350M	
2	0,25–0,50	SPER1906ZETR-M17 MP2500	SPEN1906ZETR-MD20 T350M	
3	0,25–0,50	SPER1906ZETR-M17 MP2500	SPEN1906ZETR-MD20 T350M	
4	0,25–0,50	SPEN1906ZETR-MD20 MP2500	SPEN1906ZETR-MD20 T350M	
5	0,25–0,50	SPEN1906ZETR-MD20 MP2500	SPEN1906ZETR-D25 MP1500	
6	0,25–0,50	SPEN1906ZETR-MD20 MP2500	SPEN1906ZETR-D25 MP1500	
7	0,25–0,35	SPEN1906ZETR-D25 MP1500	SPEN1906ZETR-D25 MP1500	
8	0,25–0,50	SPER1906ZETR-M17 MP2500	SPEN1906ZETR-MD20 T350M	
9	0,25–0,50	SPER1906ZETR-M17 MP2500	SPEN1906ZETR-MD20 T350M	
10	0,25–0,50	SPER1906ZETR-M17 T350M	SPEN1906ZETR-MD20 T350M	
11	0,25–0,50	SPER1906ZETR-M17 T350M	SPEN1906ZETR-MD20 T350M	
12	0,25–0,50	SPEN1906ZETR-MD20 MK1500	SPEN1906ZETR-D25 MP1500	
13	0,25–0,50	SPEN1906ZETR-MD20 MK1500	SPEN1906ZETR-D25 MP1500	
14	0,25–0,50	SPEN1906ZETR-MD20 MK1500	SPEN1906ZETR-D25 MP1500	
15	0,25–0,50	SPEN1906ZETR-D25 MP1500	SPEN1906ZETR-D25 MP1500	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	–	–	–	
20	–	–	–	
21	–	–	–	
22	–	–	–	

Cutting data

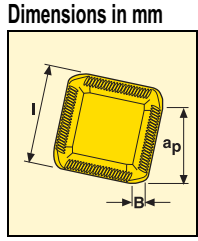
SMG	Grades																
	MP1500			MP2500			T350M			MK1500			MM4500				
	f_z (mm/tooth)																
	0,25	0,50	0,75	0,25	0,50	0,75	0,25	0,50	0,75	0,25	0,50	0,75	0,25	0,50	0,75		
	v_c (m/min)																
1	455	350	295	405	310	260	350	270	230	–	–	–	250	190	160		
2	385	295	250	340	265	220	300	230	195	–	–	–	210	160	135		
3	320	245	205	280	215	185	245	190	160	–	–	–	175	135	110		
4	270	210	175	240	185	155	210	160	135	–	–	–	150	115	95		
5	225	175	145	200	155	130	175	135	115	–	–	–	125	95	80		
6	200	155	130	175	135	115	155	120	100	–	–	–	110	85	70		
7	55	42	–	44	34	–	42	32	–	–	–	–	–	–	–		
8	310	240	200	245	190	160	230	175	150	–	–	–	180	140	115		
9	245	190	160	195	150	125	180	140	115	–	–	–	140	110	90		
10	200	155	130	160	120	105	150	115	95	–	–	–	115	90	75		
11	150	115	95	120	90	75	110	85	70	–	–	–	85	65	55		
12	235	180	155	210	160	135	185	140	120	300	230	195	115	85	75		
13	210	160	135	185	140	120	160	125	105	260	200	170	100	75	65		
14	175	135	115	155	120	100	135	105	90	220	170	145	85	65	55		
15	145	110	–	130	100	–	110	85	–	180	140	–	70	55	–		
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
19	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		

Surface finish

Type of insert	Feed mm/ rev < =	R_a µm
SPE. 1906..	1,0	1,5

Finish of the milled surface is determined by feed/rev used.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
19	12	1,0

Insert selection – 220.23-16

Universal insert: REHR 1605M0T-M14 T350M

SMG	Recom. feed f_z mm/tooth (a_p = 8 mm)	First choice	Difficult operations	
1	0,12–0,20	REHR 1605M0T-M14 T350M	REHR 1605M0T-MD15 MP1500	
2	0,12–0,20	REHR 1605M0T-M14 T350M	REHR 1605M0T-MD15 MP1500	
3	0,12–0,20	REHR 1605M0T-M14 T350M	REHR 1605M0T-MD15 MP1500	
4	0,10–0,18	REHR 1605M0T-M14 T350M	REHR 1605M0T-MD15 MP1500	
5	0,10–0,18	REHR 1605M0T-M14 T350M	REHR 1605M0T-MD15 MP1500	
6	0,10–0,16	REHR 1605M0T-MD15 MP1500	REHR 1605M0T-MD15 MP1500	
7	0,08–0,14	REHR 1605M0T-MD15 MP1500	REHR 1605M0T-MD15 MP1500	
8	0,12–0,18	REHR 1605M0T-M14 T350M	REHR 1605M0T-M14 T350M	
9	0,12–0,16	REHR 1605M0T-M14 T350M	REHR 1605M0T-M14 T350M	
10	0,12–0,14	REHR 1605M0T-M14 T350M	REHR 1605M0T-MD15 MP1500	
11	0,12–0,14	REHR 1605M0T-M14 T350M	REHR 1605M0T-MD15 MP1500	
12	0,15–0,20	REHR 1605M0T-M14 MK1500	REHR 1605M0T-MD15 MP1500	
13	0,10–0,18	REHR 1605M0T-M14 MK1500	REHR 1605M0T-MD15 MP1500	
14	0,10–0,17	REHR 1605M0T-M14 MK1500	REHR 1605M0T-MD15 MP1500	
15	0,10–0,15	REHR 1605M0T-M14 MK1500	REHR 1605M0T-MD15 MP1500	
16	0,12–0,20	REHR 1605M0T-M14 HX	REHR 1605M0T-M14 HX	
17	0,12–0,20	REHR 1605M0T-M14 HX	REHR 1605M0T-M14 HX	
20	0,10–0,14	REHR 1605M0T-M14 T350M	REHR 1605M0T-M14 HX	
21	0,08–0,12	REHR 1605M0T-M14 T350M	REHR 1605M0T-M14 HX	
22	0,10–0,14	REHR 1605M0T-M14 T350M	REHR 1605M0T-M14 HX	

Cutting data D.O.C. = 8 mm

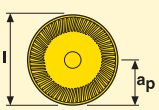
SMG	Grades														
	MP1500			T350M			MK1500			HX					
	Feed, f_z (mm/tooth)														
	0,08	0,14	0,20	0,08	0,14	0,20	0,08	0,14	0,20	0,08	0,14	0,20			
	Cutting speed, v_c (m/min)														
1	525	455	405	430	370	330	–	–	–	–	–	–			
2	460	395	355	375	325	290	–	–	–	–	–	–			
3	385	330	295	315	270	240	–	–	–	–	–	–			
4	350	305	270	285	245	220	–	–	–	–	–	–			
5	285	245	220	230	200	180	–	–	–	–	–	–			
6	210	180	–	170	145	–	–	–	–	–	–	–			
7	65	55	–	55	45	–	–	–	–	–	–	–			
8	340	295	265	265	230	205	–	–	–	–	–	–			
9	295	255	230	230	200	180	–	–	–	–	–	–			
10	250	215	195	195	170	150	–	–	–	–	–	–			
11	195	170	–	155	135	–	–	–	–	–	–	–			
12	305	265	240	250	215	195	405	350	315	205	180	160			
13	275	235	210	225	195	175	365	315	280	185	160	145			
14	250	215	195	205	175	160	335	290	260	170	145	130			
15	205	175	160	165	145	130	270	235	210	135	120	105			
16	–	–	–	1160	1000	900	–	–	–	960	830	745			
17	–	–	–	940	810	725	–	–	–	775	670	600			
20	–	–	–	70	60	–	–	–	–	35	30	–			
21	–	–	–	45	35	–	–	–	–	20	20	–			
22	–	–	–	70	60	–	–	–	–	35	30	–			

Cutting data other D.O.C.

D.O.C. mm	Rec. feed mm/tooth		
8	0,08	0,14	0,20
6	0,09	0,16	0,24
4	0,11	0,20	0,30
2	0,16	0,28	0,41
1	0,23	0,39	0,59
Aver. chip thickn.	0,05	0,09	0,13

Choose suitable feed. Use speed from basic cutting data.

Dimensions in mm



Insert size l	Max D.O.C. a_p	
16	8	

Code key

Note that parts of the code can vary for different cutter systems

216,217 = With shank
220 = For arbor mounting

Shank diameter

Shank type

Effective No. of teeth (Z_c)

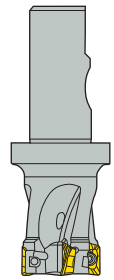
R	217	.	69	-	25	32	.	3S	-	12	-	4	A

Right -hand rotation

Cutter system

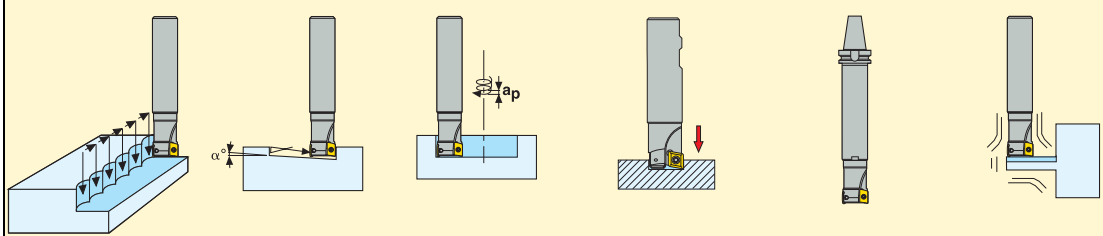
Cutter diameter

Insert size



A = With 'through' coolant supply
AD = Anti vibration matrial with 'through' coolant supply
G = Coarse pitch version for low power machines
T = Close pitch version for contouring operations
C = With adjustable cassettes

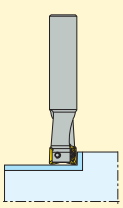
Types of operation



Very small depth of cut

Nano Turbo 217.69-06

Types of operation 1 2 3

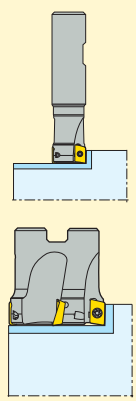


- Dia range Ø 10-40 mm, see pages 117 - 119
- General purpose light cutting square shoulder milling cutter for mixed production in all materials
- Fixed pockets, normal and close pitch
- Insert types XO..0602
- Insert size 06 mm
- Max a_p 5 mm

Small depth of cut

Micro Turbo 217/220.69-09

Types of operation 1 2 3



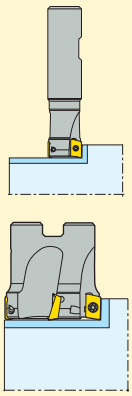
- Dia range Ø 12-100 mm, see pages 120 - 123
- General purpose light cutting square shoulder milling cutter for mixed production in all materials.
- Fixed pockets, normal and close pitch
- Seco-Capto
- Insert types XO..0903
- Insert size 09 mm
- Max a_p 8 mm

First choice Square shoulder and slot milling

Small depth of cut

217/220.69-10

Types of operation
1 2 3

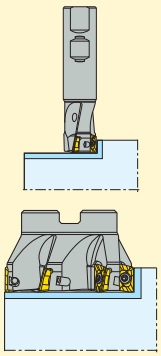


- Dia range Ø 16-100 mm, see pages 120 - 123
- General purpose light cutting square shoulder milling cutter for mixed production in all materials.
- Fixed pockets, normal and close pitch
- Insert types XO..10T3
- Insert size 10 mm
- Max a_p 9 mm

Versatile cutter solution

Super Turbo
217/220.69-12

Types of operation
1 2 3

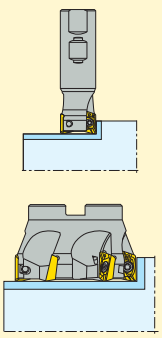


- Dia range Ø 20-250 mm, See pages 127 - 131
- General purpose light cutting square shoulder milling cutter for mixed production in all materials.
- Fixed pockets and cassettes, normal and close pitch.
- Seco-Capto
- Insert types XO..1204
- Insert size 12 mm
- Max a_p 11 mm

Large depth of cut

Power Turbo
217/220.69-18

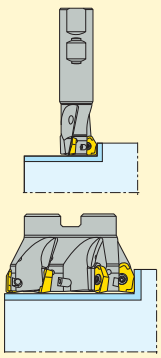
Types of operation
1 2 3



- Dia range Ø 32-250 mm, see pages 132 - 137
- General purpose light cutting square shoulder milling cutter for mixed production in all materials.
- Fixed pockets and cassettes, normal and close pitch
- Seco-Capto
- Insert types XO..1806
- Insert size 18 mm
- Max a_p 17 mm

Economical, small depth of cut

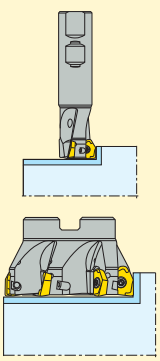
Square 6™
217/220.96-04



- Dia range Ø 20-63qq mm, see pages 140 - 144
- Combined face and square shoulder milling cutter for mixed production in all materials.
- Fixed pockets, normal, close and coarse pitch
- Insert types XNEX0403
- Insert size 08 mm
- Max a_p 4 mm

Economical, large depth of cut

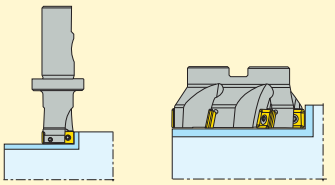
Square 6™
217/220.96-08A



- Dia range Ø 40-160 mm, see pages 140 - 144
- Combined face and square shoulder milling cutter for mixed production in all materials.
- Fixed pockets, normal, close and coarse pitch
- Insert types XNEX0806
- Insert size 08 mm
- Max a_p 7,5 mm

Mini Square
217/220.99-09

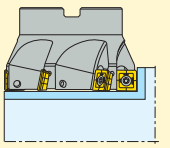
Pages 145 - 146



Ø 25-100 mm
For mixed production in all materials.
Fixed pockets, normal and close pitch
Insert types SONX09T3
Max a_p 8

Midi Square
220.99-12

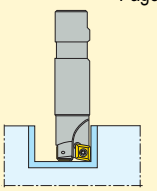
Pages 147 - 148



Ø 50-160 mm
For mixed production in all materials.
Fixed pockets, normal and close pitch
Insert types SONX1205
Max a_p 11 mm

216.19

Pages 149 - 151

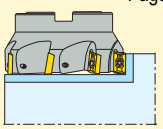


Ø 12-50 mm
For multiple operations in mixed production.
Fixed pockets and coarse pitch
Insert types. Depending on tool diameter
Insert size 05-15 mm

217/220.69-16/16G..

κ = 90°

Pages 152 - 154

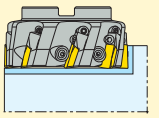


Ø 25 – 125 mm
For large depth of cut–
normal and coarse pitch versions
Insert type AP..16
Max a_p 15 mm

220.90-26C

κ = 90°

Page 156

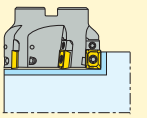


Ø 80 – 200 mm
For very large depth of cut –
cassette version,normal pitch
Insert type AB..26
Max a_p 20 mm

220.69-15H

κ = 90°

Page 157

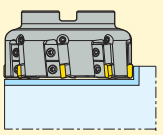


Ø 50 – 125 mm
For very difficult operations
Insert type ACE..15
Max a_p 14 mm

R220.68-T11C

κ = 90°

Page 158

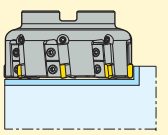


Cassette version – for triangular inserts
in CBN grades
Insert type TNGN1103
Max a_p 6 mm

R220.68-T16C

κ = 90°

Page 159



Ø 50 – 125 mm
For very difficult operations
Insert type ACE..15
Max a_p 14 mm

Choice of cutter, inserts and cutting data

1 Select cutter

- Use the previous pages to choose a suitable cutter.

2 Select cutter diameter

2a • Look up the pages for the selected cutter and choose a suitable diameter in the tool data table.

2b • For end mills use the tool data table to check that the required mounting type is available.

3 Select inserts.

- Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

3a • Use the insert selection table to choose suitable inserts.

3b • Use the tool data table to find out the number of inserts needed.

4 Select cutting data

4a • Maximum recommended axial cutting depth can be found in the tool data table. (See figure 1.)

4b • Minimum and maximum feed per tooth recommendations are in the insert selection table. Choose a value in the middle for normal operations where the cutter is fully engaged. (See figure 2.)

4c • Cutting speed recommendations are in the cutting data table
- Maximum rpm that for safety reasons should never be exceeded, are shown on each product page.
- Formulae for cutting data calculation are on page 597

4d • When side milling the feed per tooth and the cutting speed should be increased compared to the recommendations for a fully engaged cutter. The reason for that is to keep the chip thickness and the working temperature in the cutting zone at the same value as for a fully engaged cutter. Recommendations for suitable increases are found in the (limited) side milling cutting data table. Divide the radial cutting depth with the cutter diameter and use the calculated percentage to get the appropriate cutting data. (a_e/D_c%) (See figure 3.)

Figure 1

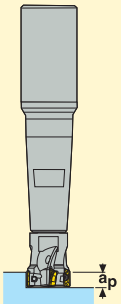
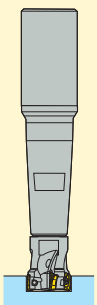


Figure 2



4
- Extended tables and formulae for calculating cutting data for side milling are on page 599.
- Notice that there will be a deterioration of the surface finish on the workpiece when the feed rate is increased. (See figure 4.)

5 Power requirement

- See page 601 for power requirement calculation.

6 Molykote 1000 is recommeded for insert locking screws. Part No. MOLYKOTE 1000-50G.

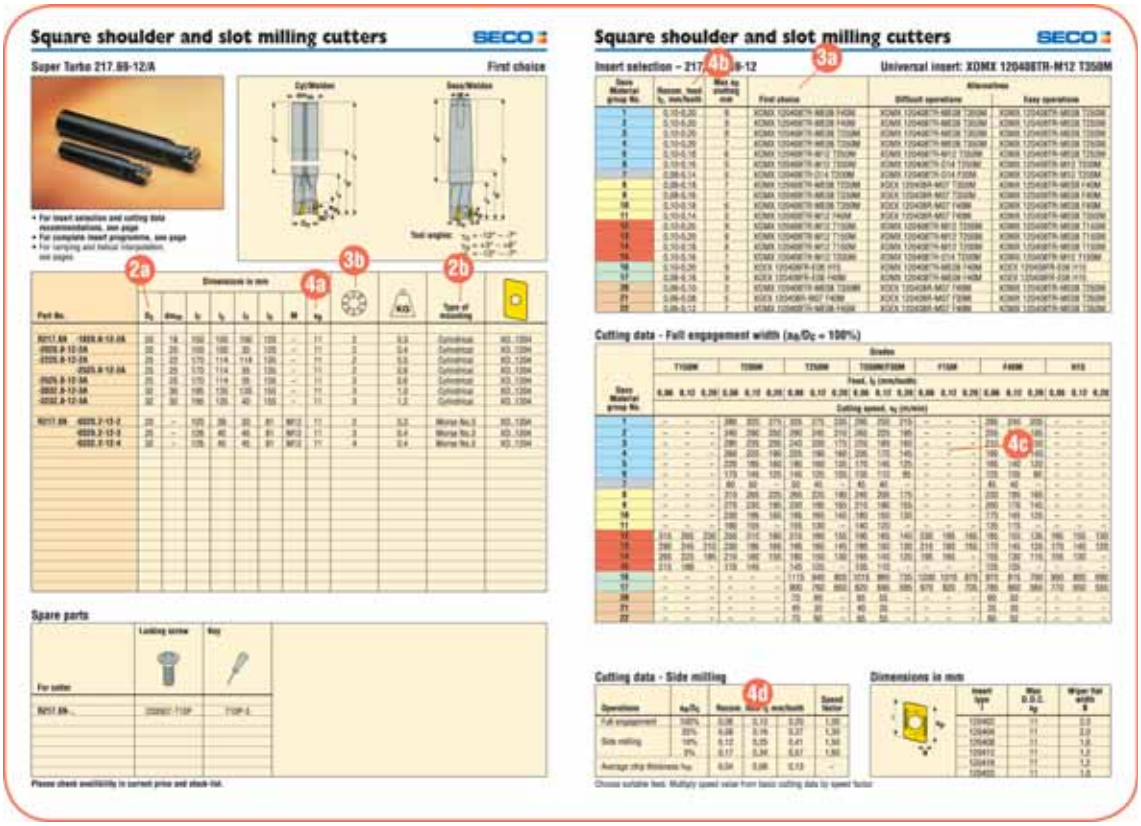


Figure 3

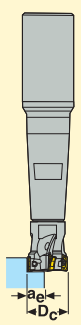
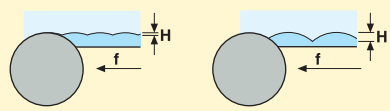
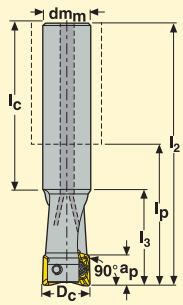


Figure 4



Nano Turbo 217.69-06

- **For insert selection and cutting data recommendations, see page 160.**
- **For complete insert programme, see page 553.**
- For ramping and helical interpolation, see pages 592 - 595.



Tool angles:

γo = -12° – - 5°
γp = + 3° – + 8°
γf = -12° – - 5°

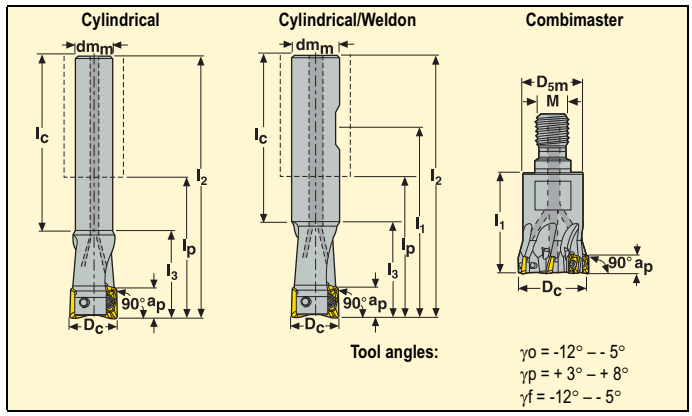
Part No.	Dimension in mm D_c	dm_m	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.69 -1010.0-06-2AN	10	10	55	15	16	38	5	2	0,1	60000	Cylindrical	XO..0602
-1010.0-06-2AD	10	10	55	15	16	38	5	2	0,1	60000	Cylindrical	XO..0602
-1212.0-06-2AN	12	12	80	35	17	62	5	2	0,1	54400	Cylindrical	XO..0602
-1212.0-06-3AN	12	12	60	15	17	42	5	3	0,1	54400	Cylindrical	XO..0602
-1212.0-06-3AD	12	12	80	35	17	62	5	3	0,1	54400	Cylindrical	XO..0602
-1616.0-06-3AN	16	16	90	42	19	70	5	3	0,1	48000	Cylindrical	XO..0602
-1616.0-06-4AN	16	16	90	42	19	70	5	4	0,1	48000	Cylindrical	XO..0602
-1616.0-06-4AD	16	16	90	42	19	70	5	4	0,3	48000	Cylindrical	XO..0602
-2020.0-06-4AN	20	20	105	55	17	85	5	4	0,2	44000	Cylindrical	XO..0602
-2020.0-06-5AN	20	20	105	55	17	85	5	5	0,2	44000	Cylindrical	XO..0602
-2020.0-06-5AD	20	20	105	55	20	85	5	5	0,5	44000	Cylindrical	XO..0602
-2025.0-06-7AN	25	20	115	65	–	95	5	7	0,2	37600	Cylindrical	XO..0602
-2532.0-06-8AN	32	25	130	74	–	105	5	8	0,5	33600	Cylindrical	XO..0602
-3240.0-06-10AN	40	32	140	80	–	115	5	10	0,9	28000	Cylindrical	XO..0602
R217.69 -0810.0-06-2N	10	8	100	64	–	82	5	2	0,1	60000	Cylindrical	XO..0602
-1010.0-06-2N	10	10	100	62	18	82	5	2	0,1	60000	Cylindrical	XO..0602
-1012.0-06-2N	12	10	120	80	–	102	5	2	0,1	54400	Cylindrical	XO..0602
-1212.0-06-2N	12	12	120	75	18	102	5	2	0,1	54400	Cylindrical	XO..0602

Spare parts

For cutter	Locking screw	Key *
R217.69-..	C01804-T06P	T06P-3

Please check availability in current price and stock-list.
*** Torque value 0,5 Nm.** Dynamomentic keys, see page 590.

Nano Turbo 217.69-06



- **For insert selection and cutting data recommendations, see page 160.**
- **For complete insert programme, see page 553.**
- For ramping and helical interpolation, see pages 592 - 595

Part No.	Dimension in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.69 -0810.0-06-2AN	10	8	–	100	64	–	82	–	5	2	0,1	60000	Cylindrical	XO..0602
-1012.0-06-2AN	12	10	–	120	80	–	102	–	5	2	0,1	54400	Cylindrical	XO..0602
-1214.0-06-3AN	14	12	–	140	95	–	122	–	5	3	0,1	51200	Cylindrical	XO..0602
-1416.0-06-3AN	16	14	–	160	115	–	140	–	5	3	0,2	48000	Cylindrical	XO..0602
-1618.0-06-4AN	18	16	–	180	132	–	160	–	5	4	0,3	45600	Cylindrical	XO..0602
-1820.0-06-4AN	20	18	–	200	150	–	180	–	5	4	0,4	44000	Cylindrical	XO..0602
R217.69 -1616.3-06-3AN	16	16	46	70	22	20	50	–	3	3	0,1	48000	Cyl/Weldon	XO..0602
-1616.3-06-4AN	16	16	46	70	22	20	50	–	5	4	0,1	48000	Cyl/Weldon	XO..0602
-2020.3-06-4AN	20	20	55	80	30	20	60	–	5	4	0,2	44000	Cyl/Weldon	XO..0602
-2020.3-06-5AN	20	20	60	85	35	20	65	–	5	5	0,2	44000	Cyl/Weldon	XO..0602
-2025.3-06-7AN	25	20	65	90	40	–	70	–	5	7	0,2	37600	Cyl/Weldon	XO..0602
R217.69 -0816.RE-06-4AN	16	13,5	23	–	–	–	–	M8	5	4	0,1	48000	Combimaster*	XO..0602
-1020.RE-06-5AN	20	18	28	–	–	–	–	M10	5	5	0,1	44000	Combimaster*	XO..0602
-1225.RE-06-7AN	25	21	30	–	–	–	–	M12	5	7	0,1	37600	Combimaster*	XO..0602
-1632.RE-06-8AN	32	28	35	–	–	–	–	M16	5	8	0,2	33600	Combimaster*	XO..0602
-1640.RE-06-10AN	40	28	35	–	–	–	–	M16	5	10	0,3	28000	Combimaster*	XO..0602

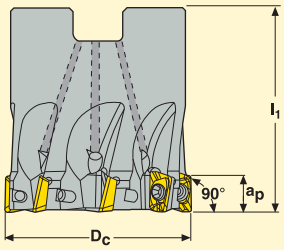
*For shanks and dimensions, see pages 498 - 510.

Spare parts

For cutter	Locking screw	Key *
R217.69-..	C01804-T06P	T06P-3

Please check availability in current price and stock-list.
*** Torque value 0,5 Nm.** Dynamomentic keys, see page 590.

Nano Turbo 220.69-06



Tool angles: γo = - 5° – - 4°
γp = + 8°
γf = - 5° – - 4°

- **For insert selection and cutting data recommendations, see page 160.**
- **For complete insert programme, see page 553.**
- For ramping and helical interpolation, see pages 592 - 595.

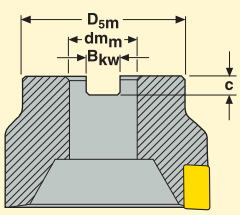
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.69 -0032-06-8AN	32	35	5	8	0,2	33600	XO..0602
	-0040-06-10AN	40	35	5	10	0,2	28000	XO..0602

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0032	C01804-T06P	T06P-3	TCEI 0825
R220.69-0040	C01804-T06P	T06P-3	TCEI 0825

*** Torque value 0,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

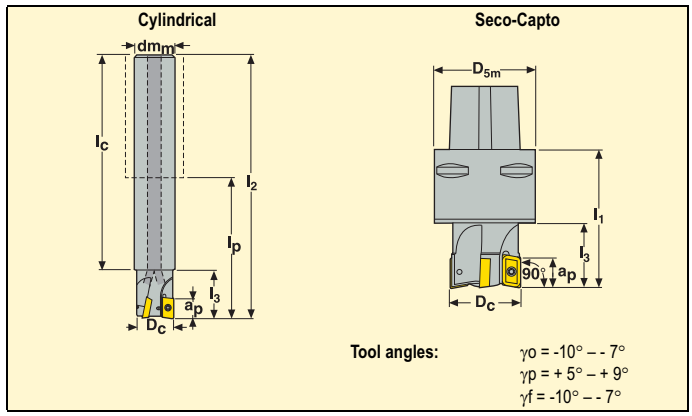


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0032	16	30	8,4	5,6	16
R220.69-0040	16	35	8,4	5,6	16

Please check availability in current price and stock-list.

Micro Turbo 217.69-09

For small depth of cut



- **For insert selection and cutting data recommendations, see pages 161 - 162.**
- **For complete insert programme, see page 554.**
- For ramping and helical interpolation, see pages 592 - 595.

Part No.	Dimensions in mm D_c	dm_m	D_{5m}	l_1	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.69 -1612.0-09-1AN	12	16	–	–	135	87	22	105	8	1	0,2	37500	Cylindrical	XO..0903
-1616.0-09-2AN	16	16	–	–	135	87	24	105	8	2	0,2	32400	Cylindrical	XO..0903
-2020.0-09-2AN	20	20	–	–	150	100	29	115	8	2	0,4	29000	Cylindrical	XO..0903
-2020.0-09-3AN	20	20	–	–	150	100	29	115	8	3	0,4	29000	Cylindrical	XO..0903
-2525.0-09-3AN	25	25	–	–	170	114	29	130	8	3	0,6	26000	Cylindrical	XO..0903
-3232.0-09-3AN	32	32	–	–	195	135	31	155	8	3	1,2	22900	Cylindrical	XO..0903
-3232.0-09-5AN	32	32	–	–	195	135	31	155	8	5	1,2	22900	Cylindrical	XO..0903
R217.69 -1416.0-09-2AN	16	14	–	–	160	112	–	133,5	8	2	0,3	32400	Cylindrical	XO..0903
-1820.0-09-2AN	20	18	–	–	200	150	–	170	8	2	0,4	29000	Cylindrical	XO..0903
-2225.0-09-3AN	25	22	–	–	200	144	–	170	8	3	0,6	26000	Cylindrical	XO..0903
-3032.0-09-3AN	32	30	–	–	200	140	–	168	8	3	1,0	22900	Cylindrical	XO..0903
C5-R217.69 -040-09-6AN	40	–	50	80	–	–	57	–	8	6	0,9	20500	Seco-Capto C5	XO..0903
-054-09-7AN	54	–	50	60	–	–	60	–	8	7	1,0	17700	Seco-Capto C5	XO..0903
-063-09-8AN	63	–	50	60	–	–	60	–	8	8	1,1	16300	Seco-Capto C5	XO..0903

Spare parts

For cutter	Locking screw	Key *
R217.69-..	C02505-T08P	T08P-3

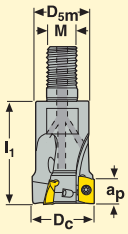
Please check availability in current price and stock-list.
*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

Micro Turbo 217.69-09

For small depth of cut

- **For insert selection and cutting data recommendations, see pages 161 - 162.**
- **For complete insert programme, see page 554 .**
- For ramping and helical interpolation, see pages 592 - 595.

Combimaster



Tool angles:

γo = - 9° – - 6°
γp = + 7° – + 9°
γf = - 9° – - 6°

Part No.	Dimensions in mm D_c	D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.69 -1020.RE-09.2AN	20	18	28	–	–	–	–	M10	8	2	0,1	29000	Combimaster	XO..0903
-1020.RE-09.3AN	20	18	28	–	–	–	–	M10	8	3	0,1	29000	Combimaster	XO..0903
-1225.RE-09.2AN	25	23	30	–	–	–	–	M12	8	2	0,2	26000	Combimaster	XO..0903
-1225.RE-09.3AN	25	23	30	–	–	–	–	M12	8	3	0,2	26000	Combimaster	XO..0903
-1225.RE-09.4AN	25	23	30	–	–	–	–	M12	8	4	0,2	26000	Combimaster	XO..0903
-1632.RE-09.3AN	32	30	40	–	–	–	–	M16	8	3	0,3	22900	Combimaster	XO..0903
-1632.RE-09.5AN	32	30	40	–	–	–	–	M16	8	5	0,3	22900	Combimaster	XO..0903

*For shanks and dimensions, see pages 498 - 510.

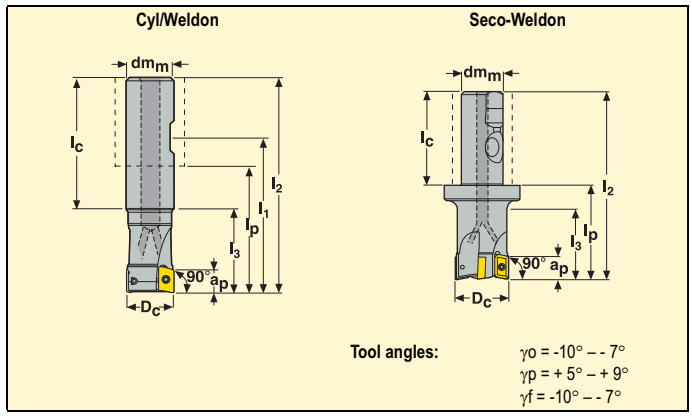
Spare parts

For cutter	Locking screw	Key *
R217.69-..	C02505-T08P	T08P-3

Please check availability in current price and stock-list.
*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

Micro Turbo 217.69-09

For small depth of cut



- **For insert selection and cutting data recommendations, see pages 161 - 162.**
- **For complete insert programme, see page 554.**
- For ramping and helical interpolation, see pages 592 - 595.

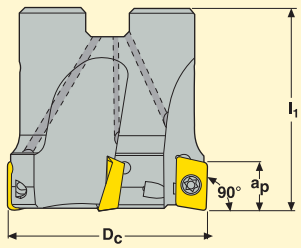
Part No.	Dimensions in mm D_c	dm_m	l_1	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.69 -1612.3-09-1AN	12	16	54	78	30	24	54	8	1	0,1	37500	Cyl/Weldon	XO..0903
-1616.3-09-2AN	16	16	54	78	30	24	54	8	2	0,1	32400	Cyl/Weldon	XO..0903
-2018.3-09-2AN	18	20	60	85	35	29	56	8	2	0,2	30600	Cyl/Weldon	XO..0903
-2020.3-09-2AN	20	20	65	90	40	29	61	8	2	0,2	29900	Cyl/Weldon	XO..0903
-2020.3-09-3AN	20	20	65	90	40	29	61	8	3	0,2	29900	Cyl/Weldon	XO..0903
-2525.3-09-3AN	25	25	69	101	45	34	67	8	3	0,4	26000	Cyl/Weldon	XO..0903
-2525.3-09-4AN	25	25	69	101	45	34	67	8	4	0,4	26000	Cyl/Weldon	XO..0903
R217.69 -2025.3S-09-3AN	25	20	–	100	50	36	50	8	3	0,3	26000	Seco-Weldon	XO..0903
-2025.3S-09-4AN	25	20	–	100	50	36	50	8	4	0,3	26000	Seco-Weldon	XO..0903
-2532.3S-09-3AN	32	25	–	111	55	41	56	8	3	0,5	22900	Seco-Weldon	XO..0903
-2532.3S-09-5AN	32	25	–	111	55	41	56	8	5	0,5	22900	Seco-Weldon	XO..0903

Spare parts

For cutter	Locking screw	Key *
R217.69-..	C02505-T08P	T08P-3

Please check availability in current price and stock-list.
*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

Micro Turbo 220.69-09



Tool angles: γo = - 5°
γp = + 9°
γf = - 5°

- **For insert selection and cutting data recommendations, see pages 161 - 162.**
- **For complete insert programme, see page 554.**
- For ramping and helical interpolation, see pages 592 - 595.

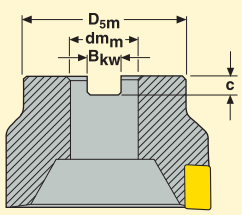
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.69 -0040-09-4AN	40	40	8	4	0,3	20500	XO..0903
	-0050-09-5AN	50	40	8	5	0,4	18300	XO..0903
	-0063-09-5AN	63	40	8	5	0,8	16300	XO..0903
	-0080-09-8AN	80	50	8	8	1,2	14400	XO..0903
Close								
	R220.69 -0040-09-6AN	40	40	8	6	0,3	20500	XO..0903
	-0050-09-7AN	50	40	8	7	0,4	18300	XO..0903
	-0063-09-8AN	63	40	8	8	0,5	16300	XO..0903
	-0080-09-10AN	80	50	8	10	1,0	14400	XO..0903
	-0100-09-12AN	100	50	8	12	1,6	12300	XO..0903

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0040	C02505-T08P	T08P-3	MC6S 8x30
R220.69-0050–0063	C02505-T08P	T08P-3	220.17-692
R220.69-0080–0100	C02505-T08P	T08P-3	–

*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

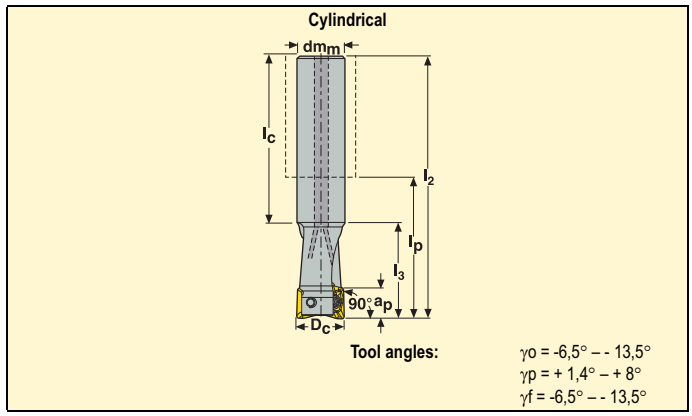


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0040	16	35	8,4	5,6	16
R220.69-0050–0063	22	42	10,4	6,3	22
R220.69-0080	27	62	12,4	7	27
R220.69-0100	32	77	14,4	8	32

Please check availability in current price and stock-list.

Turbo 10 217.69-10

- **For insert selection and cutting data recommendations, see page 160.**
- **For complete insert programme, see page 556.**
- For ramping and helical interpolation, see pages 592 - 595.



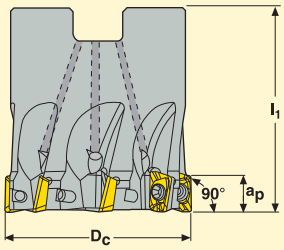
Part No.	Dimension in mm D_c	dm_m	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.69 -1616.0-10-2A	16	16	135	87	–	–	9	2	0,2	29400	Cylindrical	XOMX10T3..
-2020.0-10-2A	20	20	150	100	–	–	9	2	0,4	26300	Cylindrical	XOMX10T3..
-2020.0-10-3A	20	20	150	100	–	–	9	3	0,4	26300	Cylindrical	XOMX10T3..
-2525.0-10-3A	25	25	170	114	–	–	9	3	0,6	23500	Cylindrical	XOMX10T3..
-2525.0-10-4A	25	25	170	114	–	–	9	4	0,7	23500	Cylindrical	XOMX10T3..
-3232.0-10-3A	32	32	195	135	–	–	9	3	1,1	20800	Cylindrical	XOMX10T3..
-3232.0-10-5A	32	32	195	135	–	–	9	5	1,1	20800	Cylindrical	XOMX10T3..
R217.69 -1416.0-10-2A	16	14	160	112	25,8	134	9	2	0,2	29400	Cylindrical	XOMX10T3..
-1618.0-10-2A	18	16	160	112	25,8	134	9	2	0,3	27800	Cylindrical	XOMX10T3..
-1820.0-10-2A	20	18	200	150	29,3	170	9	2	0,4	26300	Cylindrical	XOMX10T3..
-2225.0-10-3A	25	22	200	150	28,4	170	9	3	0,6	23500	Cylindrical	XOMX10T3..

Spare parts

For cutter	Locking screw	Key *
R217.69-..	C02506-T07P	T07P-3

Please check availability in current price and stock-list.
*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

Turbo 220.69-10



Tool angles:
γo = - 3,9° – -5,7°
γp = + 8°
γf = - 3,9° – -5,7°

- **For insert selection and cutting data recommendations, see pages 161 - 162.**
- **For complete insert programme, see page 554.**
- For ramping and helical interpolation, see pages 592 - 595.

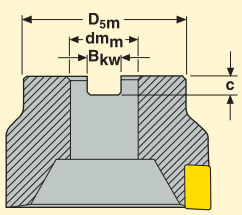
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.69 -0040-10-4A	40	40	9	4	0,2	18600	XOMX10T3..
	-0050-10-5A	50	40	9	5	0,4	16600	XOMX10T3..
	-0063-10-5A	63	40	9	5	0,6	14800	XOMX10T3..
	-0080-10-8A	80	50	9	8	1,1	13200	XOMX10T3..
	-0100-10-12A	100	50	9	12	1,7	11800	XOMX10T3..
Close								
	R220.69 -0040-10-6A	40	40	9	4	0,2	18600	XOMX10T3..
	-0050-10-7A	50	40	9	7	0,4	16600	XOMX10T3..
	-0063-10-8A	63	40	9	8	0,6	14800	XOMX10T3..
	-0080-10-10A	80	50	9	10	1,1	13200	XOMX10T3..

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0040	C02506-T07P	T07P-3	MC6S 8x30
R220.69-0050	C02506-T07P	T07P-3	220.17-692
R220.69-0063	C02506-T07P	T07P-3	220.17-693
R220.69-0080–0100	C02506-T07P	T07P-3	–

*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

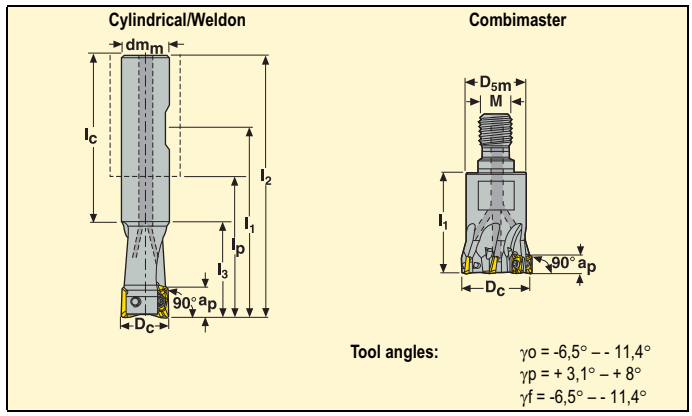
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0040	16	35	8,4	5,6	16
R220.69-0050	22	47	10,4	6,3	22
R220.69-0063	27	62	12,4	7	27
R220.69-0080	27	62	12,4	7	27
R220.69-0100	32	77	12,4	8	32

Please check availability in current price and stock-list.

Turbo 10 217.69-10



- **For insert selection and cutting data recommendations, see pages 161 - 162.**
- **For complete insert programme, see page 554.**
- For ramping and helical interpolation, see pages 592 - 595.

Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.69 -1616.3-10-2A	16	16	54	78	30	23	54	–	9	2	0,1	29400	Cyl/Weldon	XOMX10T3..
-2018.3-10-2A	20	18	60	85	35	26	56	–	9	2	0,2	26300	Cyl/Weldon	XOMX10T3..
-2020.3-10-2A	20	20	65	90	40	28	61	–	9	2	0,2	26300	Cyl/Weldon	XOMX10T3..
-2020.3-10-3A	20	20	65	90	40	28	61	–	9	3	0,2	26300	Cyl/Weldon	XOMX10T3..
-2525.3-10-3A	25	25	69	101	45	33	67	–	9	3	0,3	23500	Cyl/Weldon	XOMX10T3..
-2525.3-10-4A	25	25	69	101	45	33	67	–	9	4	0,3	23500	Cyl/Weldon	XOMX10T3..
-3232.3-10-3A	32	32	74	110	50	34	75	–	9	3	0,6	20800	Cyl/Weldon	XOMX10T3..
-3232.3-10-5A	32	32	74	110	50	34	75	–	9	5	0,6	20800	Cyl/Weldon	XOMX10T3..
R217.69 -0816.RE-10-2A	16	14	28	–	–	–	–	M08	9	2	0,1	29400	Combimaster*	XOMX10T3..
-1020.RE-10-2A	20	19	28	–	–	–	–	M10	9	2	0,1	26300	Combimaster*	XOMX10T3..
-1020.RE-10-3A	20	19	28	–	–	–	–	M10	9	3	0,1	26300	Combimaster*	XOMX10T3..
-1225.RE-10-3A	25	23	30	–	–	–	–	M12	9	3	0,1	23500	Combimaster*	XOMX10T3..
-1225.RE-10-4A	25	23	30	–	–	–	–	M12	9	4	0,1	23500	Combimaster*	XOMX10T3..
-1632.RE-10-3A	32	30	40	–	–	–	–	M16	9	3	0,2	20800	Combimaster*	XOMX10T3..
-1632.RE-10-5A	32	30	40	–	–	–	–	M16	9	5	0,2	20800	Combimaster*	XOMX10T3..

For shanks and dimensions, see pages 498-510.

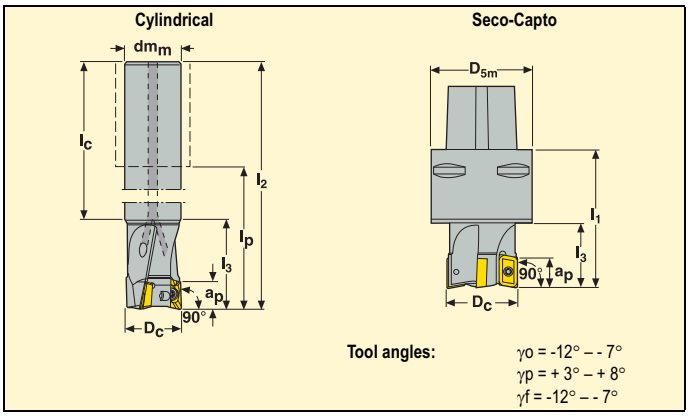
Spare parts

For cutter	Locking screw	Key *
R217.69-..	C02506-T07P	T07P-3

Please check availability in current price and stock-list.
*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

Super Turbo 217.69-12

First choice



- **For insert selection and cutting data recommendations, see pages 165 - 166.**
- **For complete insert programme, see page 556.**
- For ramping and helical interpolation, see pages 592 - 595.

Part No.	Dimensions in mm											KG		Type of mounting	
	D_c	dm_m	D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p					
R217.69 -2020.0-12-2AN	20	20	–	–	150	100	30	120	–	11	2	0,4	23200	Cylindrical	XO..1204
-2525.0-12-2AN	25	25	–	–	170	114	35	135	–	11	2	0,6	20800	Cylindrical	XO..1204
-2525.0-12-3AN	25	25	–	–	170	114	35	135	–	11	3	0,6	20800	Cylindrical	XO..1204
-3232.0-12-3AN	32	32	–	–	195	135	40	155	–	11	3	1,2	18400	Cylindrical	XO..1204
-3232.0-12-4AN	32	32	–	–	195	135	40	155	–	11	4	1,2	18400	Cylindrical	XO..1204
R217.69 -1820.0-12-2AN	20	18	–	–	150	100	–	120	–	11	2	0,3	23200	Cylindrical	XO..1204
-2225.0-12-2AN	25	22	–	–	170	114	–	135	–	11	2	0,5	20800	Cylindrical	XO..1204
-3032.0-12-3AN	32	30	–	–	195	135	–	155	–	11	3	1	18400	Cylindrical	XO..1204
C5-R217.69 -040-12-4AN	40	–	50	80	–	–	57	–	–	11	4	0,8	16400	Seco-Capto C5	XO..1204
-054-12-5AN	54	–	50	60	–	–	60	–	–	11	5	0,9	14200	Seco-Capto C5	XO..1204
-063-12-6AN	63	–	50	60	–	–	60	–	–	11	6	1	13200	Seco-Capto C5	XO..1204
-080-12-7AN	80	–	50	60	–	–	60	–	–	11	7	1,3	11600	Seco-Capto C5	XO..1204
C6-R217.69 -040-12-4AN	40	–	63	80	–	–	55	–	–	11	4	1,2	16400	Seco-Capto C6	XO..1204
-050-12-5AN	50	–	63	60	–	–	36	–	–	11	5	1,2	14200	Seco-Capto C6	XO..1204
-066-12-6AN	66	–	63	60	–	–	60	–	–	11	6	1,5	13200	Seco-Capto C6	XO..1204
-080-12-7AN	80	–	63	60	–	–	60	–	–	11	7	1,7	11600	Seco-Capto C6	XO..1204

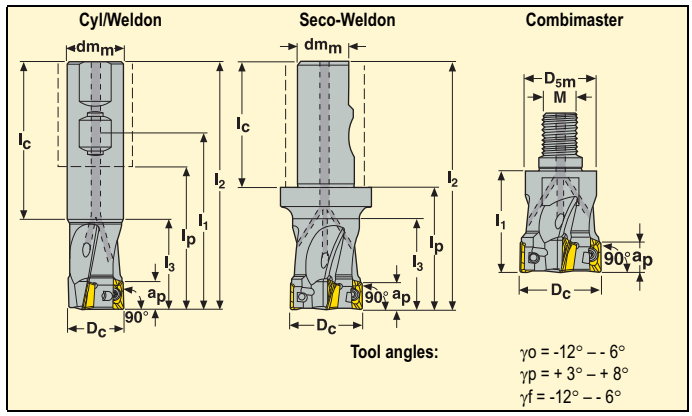
Spare parts

For cutter	Locking screw	Key *
R217.69- ∅ 20–32	C03507-T10P	T10P-3
R217.69- ∅ 40–80	C03509-T10P	T10P-3

Please check availability in current price and stock-list.
*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

Super Turbo 217.69-12

First choice



- **For insert selection and cutting data recommendations, see pages 165 - 166.**
- **For complete insert programme, see page 556.**
- For ramping and helical interpolation, see pages 592 - 595.

Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2 M	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.69 -2020.3-12-2AN	20	20	60	85	35	30	55	11	2	0,2	23200	Cyl/Weldon	XO..1204
-2525.3-12-3AN	25	25	63	95	39	32	60	11	3	0,4	20800	Cyl/Weldon	XO..1204
-3232.3-12-3AN	32	32	69	105	45	37	65	11	3	0,6	18400	Cyl/Weldon	XO..1204
-3232.3-12-4AN	32	32	69	105	45	37	65	11	4	0,6	18400	Cyl/Weldon	XO..1204
R217.69 -2025.3S-12-3AN	25	20	–	100	50	36	50	11	3	0,3	20800	Seco-Weldon	XO..1204
-2532.3S-12-4AN	32	25	–	110	54	40	56	11	4	0,5	18400	Seco-Weldon	XO..1204
-3240.3S-12-5AN	40	32	–	120	60	46	60	11	5	0,8	16400	Seco-Weldon	XO..1204
R217.69 -1020.RE-12-2AN	20	18	28	M10	–	–	–	11	2	0,1	23200	Combimaster*	XO..1204
-1225.RE-12-3AN	25	23	30	M12	–	–	–	11	3	0,1	20800	Combimaster*	XO..1204
-1632.RE-12-3AN	32	30	40	M16	–	–	–	11	3	0,2	18400	Combimaster*	XO..1204
-1632.RE-12-4AN	32	30	40	M16	–	–	–	11	4	0,2	18400	Combimaster*	XO..1204
-1640.RE-12-4AN	40	30	40	M16	–	–	–	11	4	0,3	16400	Combimaster*	XO..1204
-1640.RE-12-5AN	40	30	40	M16	–	–	–	11	5	0,3	16400	Combimaster*	XO..1204

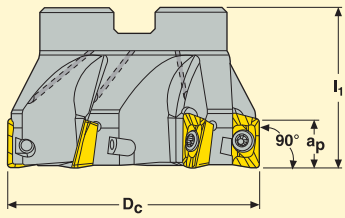
*For shanks and dimensions, see pages 498 - 510.

Spare parts

For cutter	Locking screw	Key *
R217.69- ∅ 20–32	C03507-T10P	T10P-3
R217.69- ∅ 40	C03509-T10P	T10P-3

Please check availability in current price and stock-list.
*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

Super Turbo 220.69-12



Tool angles: γo = - 7° – - 4°
γp = + 8°
γf = - 7° – - 4°

- **For insert selection and cutting data recommendations, see pages 165 - 166.**
- **For complete insert programme, see page 556.**
- For ramping and helical interpolation, see pages 592 - 595.

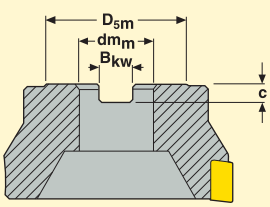
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.69 -0040-12-4AN	40	40	11	4	0,3	16400	XO..1204
	-0050-12-5AN	50	40	11	5	0,4	14800	XO..1204
	-0063-12-6AN	63	40	11	6	0,6	13200	XO..1204
	-0080-12-7AN	80	50	11	7	1,0	11600	XO..1204
	-0100-12-8AN	100	50	11	8	1,7	10400	XO..1204
	-0125-12-10AN	125	63	11	10	3,0	9200	XO..1204

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0040	C03509-T10P	T10P-3	MC6S 8x30
R220.69-0050	C03509-T10P	T10P-3	220.17-692
R220.69-0063	C03509-T10P	T10P-3	220.17-693
R220.69-0080–0125	C03509-T10P	T10P-3	–

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

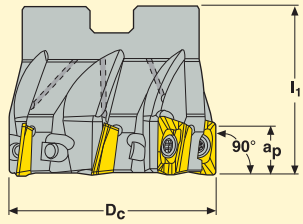
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0040	16	35	8,4	5,6	16
R220.69-0050	22	47	10,4	6,3	22
R220.69-0063	27	52	12,4	7	27
R220.69-0080	27	62	12,4	7	27
R220.69-0100	32	77	14,4	8	32
R220.69-0125	40	90	16,4	9	40

Please check availability in current price and stock-list.

Super Turbo 220.69-12



Tool angles: γo = - 7° – - 4°
γp = + 8°
γf = - 7° – - 4°

- **For insert selection and cutting data recommendations, see pages 165 - 166.**
- **For complete insert programme, see page 556.**
- For ramping and helical interpolation, see pages 592 - 595.

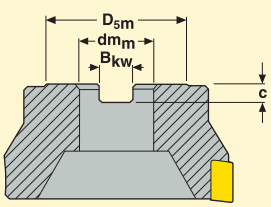
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Close								
	R220.69 -0040-12-5AN	40	40	11	5	0,3	16400	XO..1204
	-0050-12-7AN	50	40	11	7	0,4	14800	XO..1204
	-0063-12-8AN	63	40	11	8	0,6	13200	XO..1204
	-0080-12-10AN	80	50	11	10	1,0	11600	XO..1204
	-0100-12-12AN	100	50	11	12	1,7	10400	XO..1204
	-0125-12-14AN	125	63	11	14	3,0	9200	XO..1204

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0040	C03509-T10P	T10P-3	MC6S 8x30
R220.69-0050	C03509-T10P	T10P-3	220.17-692
R220.69-0063	C03509-T10P	T10P-3	220.17-693
R220.69-0080–0125	C03509-T10P	T10P-3	–

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

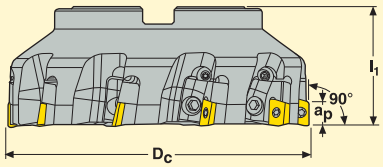
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0040	16	35	8,4	5,6	16
R220.69-0050	22	47	10,4	6,3	22
R220.69-0063	27	52	12,4	7	27
R220.69-0080	27	62	12,4	7	27
R220.69-0100	32	77	14,4	8	32
R220.69-0125	40	90	16,4	9	40

Please check availability in current price and stock-list.

Super Turbo 220.69-12C



Tool angles: γo = - 4°
γp = - 8°
γf = - 4°

- For insert selection and cutting data recommendations, see pages 165 - 166.
- For complete insert programme, see page 556.

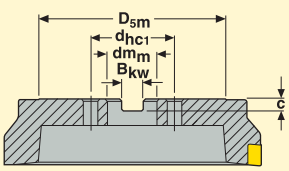
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.69 -0125-12-8CN	125	63	11	8	3,1	9200	XO..1204
	-8160-12-10CN	160	63	11	10	5,0	8200	XO..1204
	-8200-12-12CN	200	63	11	12	7,5	7300	XO..1204
	-8250-12-16CN	250	63	11	16	13,0	6500	XO..1204

Spare parts

For cutter	Cassette*	Cassette screw	Key	Setting gauge	Key**
R220.69-0125-8250	XO12PRN	FS96018	H05-4	AU1114T-T15P	T15P-3

*Locking screw C03509-T10P and insert locking key T10P-3 included.
Torque value 2,0 Nm. Dynamomentic keys, see page 590.

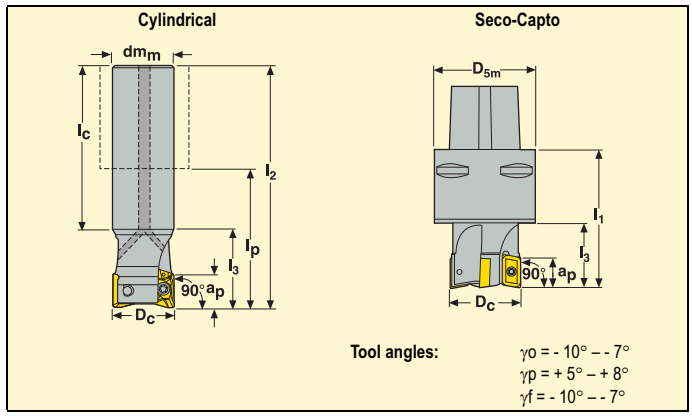
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.69-0125	40	90	16,4	9	–	40	–
R220.69-8160	40	90	16,4	9	66,7	40	ISO40
R220.69-8200-8250	60	130	25,7	14	101,6	–	ISO60

Please check availability in current price and stock-list.

Power Turbo 217.69-18



- **For insert selection and cutting data recommendations, see pages 167 - 168.**
- **For complete insert programme, see page 557.**
- For ramping and helical interpolation, see pages 592 - 595.

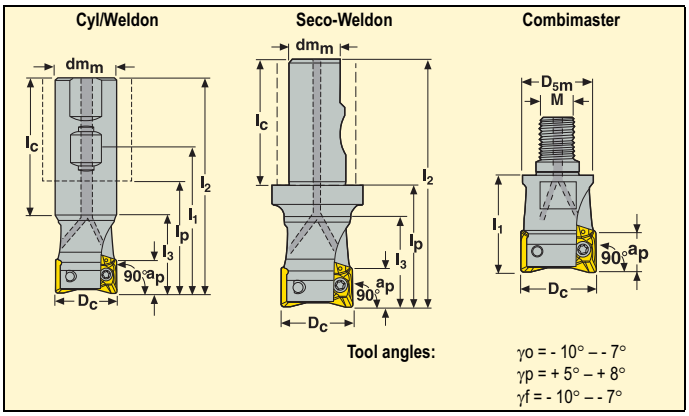
Part No.	Dimensions in mm D_c	dm_m	D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.69 -3032.0-18-2AN	32	30	–	–	210	150	–	170	–	17	2	1	11100	Cylindrical	XO..1806
R217.69 -3232.0-18-2AN	32	32	–	–	210	150	38	170	–	17	2	1,1	11100	Cylindrical	XO..1806
-3232.0-18-3AN	32	32	–	–	210	150	38	170	–	17	3	1,1	11100	Cylindrical	XO..1806
-3240.0-18-3AN	40	32	–	–	210	150	–	165	–	17	3	1,2	9900	Cylindrical	XO..1806
-3240.0-18-4AN	40	32	–	–	210	150	–	165	–	17	4	1,2	9900	Cylindrical	XO..1806
C6-R217.69 -040-18-3AN	40	–	63	80	–	–	55	–	–	17	3	1,0	9900	Seco-Capto C6	XO..1806
-050-18-4AN	50	–	63	80	–	–	55	–	–	17	4	1,3	8900	Seco-Capto C6	XO..1806
-066-18-5AN	66	–	63	60	–	–	60	–	–	17	5	1,5	7700	Seco-Capto C6	XO..1806
-080-18-6AN	80	–	63	60	–	–	60	–	–	17	6	1,8	7000	Seco-Capto C6	XO..1806

Spare parts

For cutter	Locking screw	Key *
R217.69-..	C04510-T20P	T20P-3

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Power Turbo 217.69-18



- **For insert selection and cutting data recommendations, see pages 167 - 168.**
- **For complete insert programme, see page 557.**
- For ramping and helical interpolation, see pages 592 - 595.

Part No.	Dimension in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.69 -3232.3-18-2AN	32	32	74	110	50	38	70	–	17	2	0,6	11100	Cyl/Weldon	XO..1806
-3232.3-18-3AN	32	32	74	110	50	38	70	–	17	3	0,6	11100	Cyl/Weldon	XO..1806
R217.69 -2532.3S-18-2AN	32	25	–	109,5	54	40	55,5	–	17	2	0,5	11100	Seco/Weldon	XO..1806
-3240.3S-18-3AN	40	32	–	119,5	60	46	59,5	–	17	3	0,8	9900	Seco/Weldon	XO..1806
R217.69 -1632.RE-18-2AN	32	30	45	–	–	–	–	M16	17	2	0,2	11100	Combimaster*	XO..1806
-1632.RE-18-3AN	32	30	45	–	–	–	–	M16	17	3	0,2	11100	Combimaster*	XO..1806
-1640.RE-18-3AN	40	30	45	–	–	–	–	M16	17	3	0,3	9900	Combimaster*	XO..1806
-1640.RE-18-4AN	40	30	45	–	–	–	–	M16	17	4	0,3	9900	Combimaster*	XO..1806

*For shanks and dimensions, see pages 498 - 510.

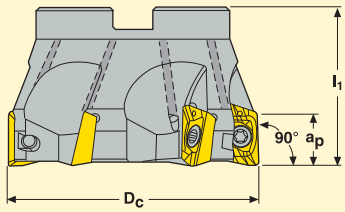
Spare parts

For cutter	Locking screw	Key *
R217.69-..	C04510-T20P	T20P-3

Please check availability in current price and stock-list.

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Power Turbo 220.69-18



Tool angles: γo = - 8° – - 4°
γp = + 8°
γf = - 8° – - 4°

- **For insert selection and cutting data recommendations, see pages 167 - 168.**
- **For complete insert programme, see page 557.**
- For ramping and helical interpolation, see pages 592 - 595.

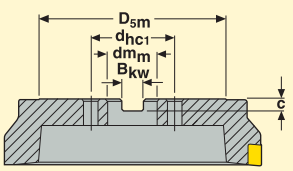
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.69 -0050-18-4AN	50	40	17	4	0,3	8900	XO..1806
	-0063-18-5AN	63	40	17	5	0,5	7900	XO..1806
	-0080-18-6AN	80	50	17	6	1,0	7000	XO..1806
	-0100-18-7AN	100	50	17	7	1,7	6300	XO..1806
	-0125-18-8AN	125	63	17	8	3,1	5600	XO..1806
	-8160-18-12N	160	63	17	12	5,2	5000	XO..1806

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0050	C04510-T20P	T20P-4	220.17-692
R220.69-0063	C04510-T20P	T20P-4	220.17-693
R220.69-0080–8160	C04510-T20P	T20P-4	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

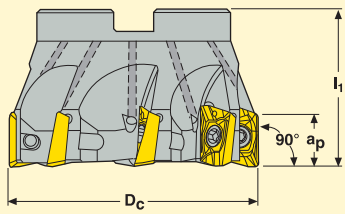
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.69-0050	22	47	10,4	6,3	–	22	–
R220.69-0063	27	52	12,4	7	–	27	–
R220.69-0080	27	62	12,4	7	–	27	–
R220.69-0100	32	77	14,4	8	–	32	–
R220.69-0125	40	90	16,4	9	–	40	–
R220.69-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Power Turbo 220.69-18



Tool angles: γo = - 8° – - 4°
γp = + 8°
γf = - 8° – - 4°

- **For insert selection and cutting data recommendations, see pages 167 - 168.**
- **For complete insert programme, see page 557.**
- For ramping and helical interpolation, see pages 592 - 595.

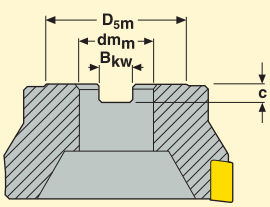
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Close								
	R220.69 -0050-18-5AN	50	40	17	5	0,3	8900	XO..1806
	-0063-18-6AN	63	40	17	6	0,5	7900	XO..1806
	-0080-18-8AN	80	50	17	8	1	7000	XO..1806
	-0100-18-9AN	100	50	17	9	1,7	6300	XO..1806
	-0125-18-11AN	125	63	17	11	3,1	5600	XO..1806

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0050	C04510-T20P	T20P-4	220.17-692
R220.69-0063	C04510-T20P	T20P-4	220.17-693
R220.69-0080–0125	C04510-T20P	T20P-4	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

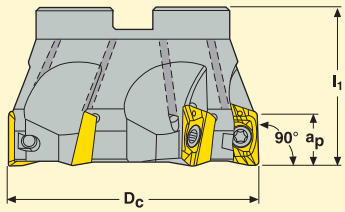
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0050	22	47	10,4	6,3	22
R220.69-0063	27	52	12,4	7	27
R220.69-0080	27	62	12,4	7	27
R220.69-0100	32	77	14,4	8	32
R220.69-0125	40	90	16,4	9	40

Please check availability in current price and stock-list.

Power Turbo 220.69-18



Tool angles: γo = - 8° – - 4°
γp = + 8°
γf = - 8° – - 4°

- **For insert selection and cutting data recommendations, see pages 167 - 168.**
- **For complete insert programme, see page 557.**
- For ramping and helical interpolation, see pages 592 - 595.

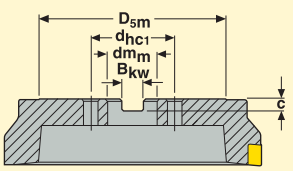
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Coarse								
	R220.69 -0063-18-4AN	63	40	17	4	0,5	7900	XO..1806
	-0080-18-5AN	80	50	17	5	1	7000	XO..1806
	-0100-18-6AN	100	50	17	6	1,7	6300	XO..1806
	-0125-18-7AN	125	63	17	7	3,1	5600	XO..1806
	-8160-18-7N	160	63	17	7	4,6	5000	XO..1806
	-8160-18-9N	160	63	17	9	4,7	5000	XO..1806

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0063	C04510-T20P	T20P-4	220.17-693
R220.69-0080–8160	C04510-T20P	T20P-4	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

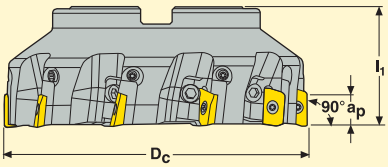
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.69-0063	27	52	12,4	7	–	27	–
R220.69-0080	27	62	12,4	7	–	27	–
R220.69-0100	32	77	14,4	8	–	32	–
R220.69-0125	40	90	16,4	9	–	40	–
R220.69-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Power Turbo 220.69-18C



- For insert selection and cutting data recommendations, see pages 167 - 168.
- For complete insert programme, see page 557.

Tool angles: γo = -4°, γp = + 8°, γf = - 4°

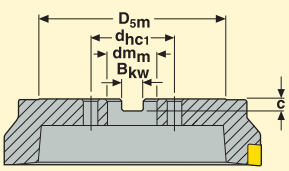
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.69 -0125-18-8CN	125	63	17	8	3,1	5600	XO..1806
	-8160-18-10CN	160	63	17	10	5,0	5000	XO..1806
	-8200-18-12CN	200	63	17	12	7,5	4400	XO..1806
	-8250-18-16CN	250	63	17	16	13,0	3900	XO..1806

Spare parts

	Cassette*	Cassette screw	Key	Setting gauge	Key**
R220.69-0125-8250	XO18PRN	FS96018	H05-4	AU1114T-T15P	T15P-3

*Locking screw C04510-T20P and insert locking key T20P-4 included.
Torque value 5,0 Nm. Dynamomentic keys, see page 590.

Dimensions of mounting

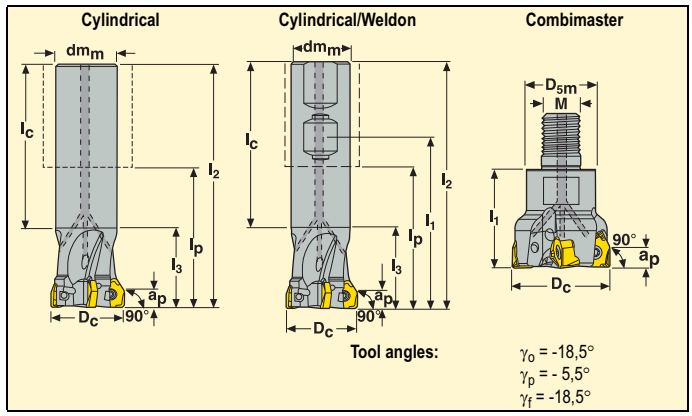


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.69-0125	40	90	16,4	9	–	40	–
R220.69-8160	40	90	16,4	9	66,7	40	ISO40
R220.69-8200-8250	60	130	25,7	14	101,6	–	ISO60

Please check availability in current price and stock-list.

Square 6™ - 217.96-04

- For insert selection and cutting data recommendations, see pages
- For complete insert programme, see page .



Part No.	Dimension in mm D_c	D_{5m} dm_m	l_1	M l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.96 -2020.0-04-2A	20	20	–	150	100	29	121	4	2	0,7	29400	Cylindrical	XNEX04
-2020.0-04-3A	20	20	–	150	100	29	121	4	3	0,7	29400	Cylindrical	XNEX04
-2525.0-04-4A	25	25	–	170	114	29	141	4	4	0,6	26300	Cylindrical	XNEX04
-2525.0-04-5A	25	25	–	170	114	29	141	4	5	0,6	26300	Cylindrical	XNEX04
-3232.0-04-5A	32	32	–	195	135	31	164	4	5	1,2	23200	Cylindrical	XNEX04
-3232.0-04-6A	32	32	–	195	135	31	164	4	6	1,2	23200	Cylindrical	XNEX04
R217.96 -2020.3-04-2A	20	20	65	90	40	29	61	4	2	0,2	29400	Cyl/Weldon	XNEX04
-2020.3-04-3A	20	20	65	90	40	29	61	4	3	0,2	29400	Cyl/Weldon	XNEX04
-2525.3-04-4A	25	25	69	101	45	34	67	4	4	0,3	26300	Cyl/Weldon	XNEX04
-2525.3-04-5A	25	25	69	101	45	34	67	4	5	0,3	26300	Cyl/Weldon	XNEX04
-3232.3-04-5A	32	32	69	105	45	37	68	4	5	0,6	23200	Cyl/Weldon	XNEX04
-3232.3-04-6A	32	32	69	105	45	37	68	4	6	0,6	23200	Cyl/Weldon	XNEX04
R217.96 -1020.RE-04-2A	20	18,3	28	M10	–	–	–	4	2	0,1	29400	Combimaster*	XNEX04
-1020.RE-04-3A	20	18,3	28	M10	–	–	–	4	3	0,1	29400	Combimaster*	XNEX04
-1225.RE-04-4A	25	23	30	M12	–	–	–	4	4	0,2	26300	Combimaster*	XNEX04
-1225.RE-04-5A	25	23	30	M12	–	–	–	4	5	0,2	26300	Combimaster*	XNEX04
-1632.RE-04-5A	32	30	40	M16	–	–	–	4	5	0,3	23200	Combimaster*	XNEX04
-1632.RE-04-6A	32	30	40	M16	–	–	–	4	6	0,3	23200	Combimaster*	XNEX04

For shanks and dimensions, see pages 498 - 510.

Spare parts

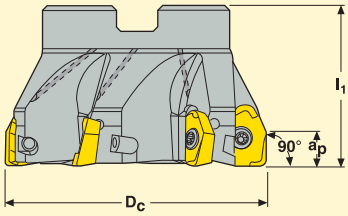
For cutter	Locking screw	Key *
R217.96..	C02506-T08P	T08P-3

*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

Please check availability in current price and stock-list.

Square 6™ – 220.96-04

- **For insert selection and cutting data recommendations, see pages**
- **For complete insert programme, see page 552.**
- For plunging, see page 596.



Tool angles: γo = -18,5°
γp = - 5,5°
γf = -18,5°

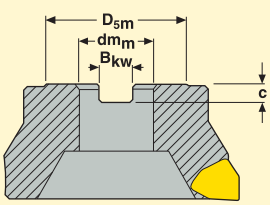
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.96 -0040-04-6A	40	40	4	6	0,2	20700	XNEX04
	-0050-04-8A	50	40	4	8	0,4	18600	XNEX04
	-0063-04-9A	63	40	4	9	0,7	16500	XNEX04
Close	R220.96 -0040-04-7A	40	40	4	7	0,2	20700	XNEX04
	-0050-04-9A	50	40	4	9	0,4	18600	XNEX04
	-0063-04-10A	63	40	4	10	0,7	16500	XNEX04

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.96-0040	C02506-T08P	T08P-3	TCEI0825
R220.96-0050	C02506-T08P	T08P-3	220.17-692
R220.96-0063	C02506-T08P	T08P-3	–

*** Torque value 1,2 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

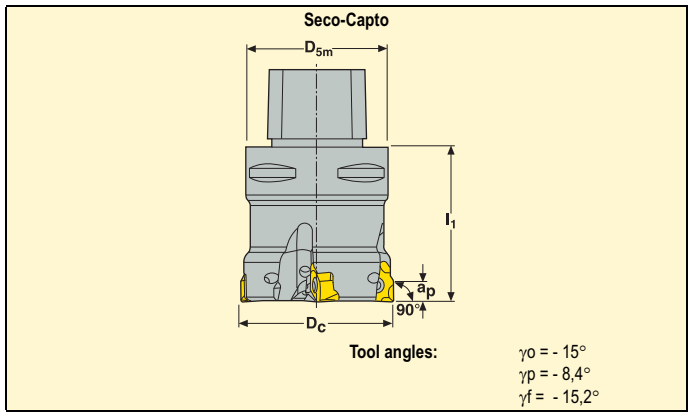


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.96-0040..	16	35	8,4	5,6	16
R220.96-0050..	22	47	10,4	6,3	22
R220.96-0063..	27	52	12,4	7	27

Please check availability in current price and stock-list.

Square 6™ – 217.96-08-Seco-Capto™

- **For insert selection and cutting data recommendations, see pages 171 - 172.**
- **For complete insert programme, see page 552.**
- For plunging, see page 596.



Part No.		Dimension in mm D_c	D_{5m}	l_1	a_p		KG		Type of mounting	
C4-R217.96	**-044-08-3A**	44	40	60	7,5	3	0,5	11300	Seco-Capto C4	XNEX0806
	-044-08-4A	44	40	60	7,5	4	0,5	11300	Seco-Capto C4	XNEX0806
C5-R217.96	**-054-08-4A**	54	50	60	7,5	4	0,9	10200	Seco-Capto C5	XNEX0806
	-054-08-5A	54	50	60	7,5	5	0,9	10200	Seco-Capto C5	XNEX0806
	-063-08-6A	63	50	60	7,5	6	1,0	9400	Seco-Capto C5	XNEX0806
	-063-08-7A	63	50	60	7,5	7	1,0	9400	Seco-Capto C5	XNEX0806
C6-R217.96	**-080-08-9A**	80	63	60	7,5	9	1,7	8400	Seco-Capto C6	XNEX0806
	-080-08-7A	80	63	60	7,5	7	1,7	8400	Seco-Capto C6	XNEX0806

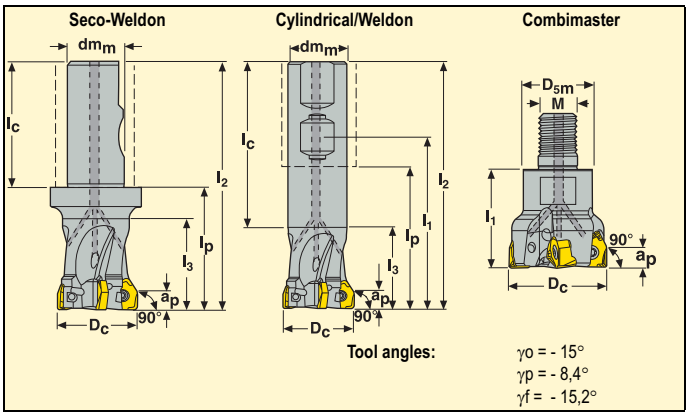
Spare parts

For cutter	Locking screw	Key *
R217.96..	C04011-T15P	T15P-4

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.
Please check availability in current price and stock-list.

Square 6™ – 217.96-08

- **For insert selection and cutting data recommendations, see pages 171 - 172.**
- **For complete insert programme, see page 552.**
- For plunging, see page 596.



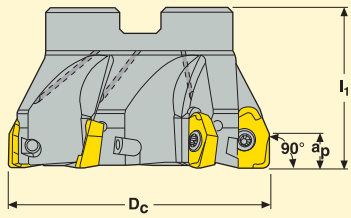
Part No.	Dimension in mm D_c	D_{5m} dm_m	l_1	M l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.96 -3240.3S-08-3A	40	32	–	120	60	50	60	7,5	3	0,8	11800	Seco/Weldon	XNEX0806
-3240.3S-08-4A	40	32	–	120	60	50	60	7,5	4	0,8	11800	Seco/Weldon	XNEX0806
R217.96 -3240.3-08-3A	40	32	84	120	60	35	85	7,5	3	0,6	11800	Cyl/Weldon	XNEX0806
-3240.3-08-4A	40	32	84	120	60	35	85	7,5	4	0,6	11800	Cyl/Weldon	XNEX0806
R217.96 -1640.RE-08-3A	40	28	40	M16	–	–	–	7,5	3	0,2	11800	Combimaster	XNEX0806
-1640.RE-08-4A	40	28	40	M16	–	–	–	7,5	4	0,2	11800	Combimaster	XNEX0806

Spare parts

For cutter	Locking screw	Key *
R217.96..	C04011-T15P	T15P-4

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.
Please check availability in current price and stock-list.

Square 6™ – 220.96-08



- **For insert selection and cutting data recommendations, see pages 171 - 172.**
- **For complete insert programme, see page 552.**
- For plunging, see page 596.

Tool angles:
γo = -11,15° – - 13,2°
γp = - 6,3° – -6,9°
γf = -11,15° – - 13,2°

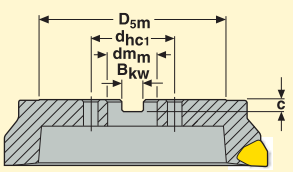
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.96 -0050-08-4A	50	40	7,5	4	0,3	10600	XNEX0806
	-0063-08-6A	63	40	7,5	6	0,4	9400	XNEX0806
	-0063-08-6A-27	63	40	7,5	6	0,4	9400	XNEX0806
	-0080-08-7A	80	50	7,5	7	1,0	8400	XNEX0806
	-0100-08-8A	100	50	7,5	8	1,5	7500	XNEX0806
	-0125-08-11A	125	63	7,5	11	2,8	6700	XNEX0806
	-8160-08-12	160	63	7,5	12	4,8	5900	XNEX0806

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.96-0050	C04011-T15P	T15P-4	220.17-696
R220.96-0063	C04011-T15P	T15P-4	220.17-692
R220.96-0080-8160	C04011-T15P	T15P-4	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

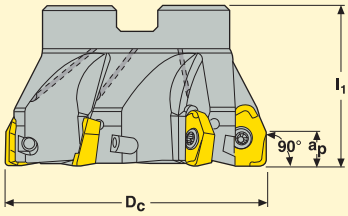
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor
R220.96-0050-0063	22	47	10,4	6,3	–	22
R220.96-0063-08-6A-27	27	62	12,4	7	–	27
R220.96-0080	27	62	12,4	7	–	27
R220.96-0100	32	77	14,4	8	–	32
R220.96-0125	40	90	16,4	9	–	40
R220.96-8160	40	90	16,4	9	66,7	40

Please check availability in current price and stock-list.

Square 6™ – 220.96-08



Tool angles: γo = -11,15° – - 13,2°
γp = - 6,3° – -6,9°
γf = -11,15° – - 13,2°

- **For insert selection and cutting data recommendations, see pages 171 - 172.**
- **For complete insert programme, see page 552.**
- For plunging, see page 596.

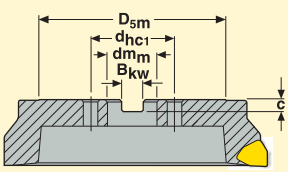
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Close								
	R220.96 -0050-08-5A	50	40	7,5	5	0,3	10600	XNEX0806
	-0063-08-7A	63	40	7,5	7	0,4	9400	XNEX0806
	-0063-08-7A-27	63	40	7,5	7	0,4	9400	XNEX0806
	-0080-08-9A	80	50	7,5	9	1,0	8400	XNEX0806
	-0100-08-11A	100	50	7,5	11	1,5	7500	XNEX0806
	-0125-08-14A	125	63	7,5	14	2,8	6700	XNEX0806
	-8160-08-16	160	63	7,5	16	4,8	5900	XNEX0806

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.96-0050	C04011-T15P	T15P-4	220.17-696
R220.96-0063	C04011-T15P	T15P-4	220.17-692
R220.96-0080-8160	C04011-T15P	T15P-4	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

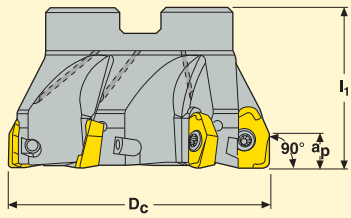
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor
R220.96-0050-0063	22	47	10,4	6,3	–	22
R220.96-0063-08-7A-27	27	47	10,4	6,3	–	27
R220.96-0080	27	62	12,4	7	–	27
R220.96-0100	32	77	14,4	8	–	32
R220.96-0125	40	90	16,4	9	–	40
R220.96-8160	40	90	16,4	9	66,7	40

Please check availability in current price and stock-list.

Square 6™ – 220.96-08



- **For insert selection and cutting data recommendations, see pages 171 - 172.**
- **For complete insert programme, see page 552 .**
- For plunging, see page 596.

Tool angles:
γo = -11,15° – - 13,2°
γp = - 6,3° – -6,9°
γf = -11,15° – - 13,2°

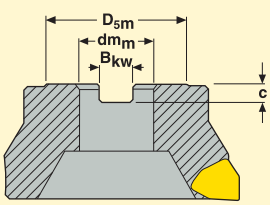
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Coarse								
	R220.96 -0063-08-4A	63	40	7,5	4	0,4	9400	XNEX0806
	-0080-08-5A	80	50	7,5	5	1	8400	XNEX0806
	-0100-08-6A	100	50	7,5	6	1,5	7500	XNEX0806
	-0125-08-7A	125	63	7,5	7	2,8	6700	XNEX0806

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.96-0063	C04011-T15P	T15P-4	220.17-692
R220.96-0080-0125	C04011-T15P	T15P-4	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

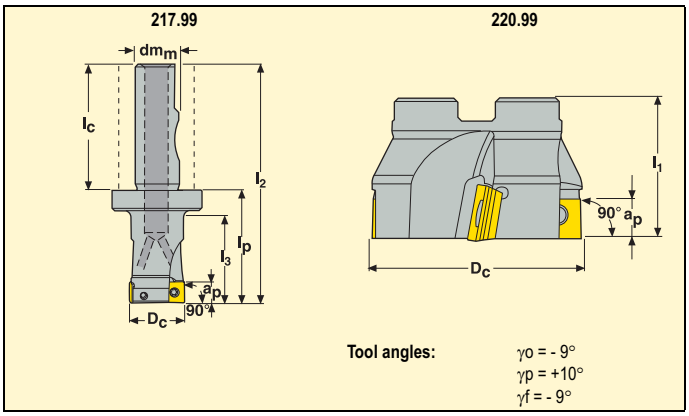


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.96-0063	22	47	10,4	6,3	22
R220.96-0080	27	62	12,4	7	27
R220.96-0100	32	77	14,4	8	32
R220.96-0125	40	90	16,4	9	40

Please check availability in current price and stock-list.

Mini Square 217/220.99-09

- For insert selection and cutting data recommendations, see page 173.
- For complete insert programme, see page 547.



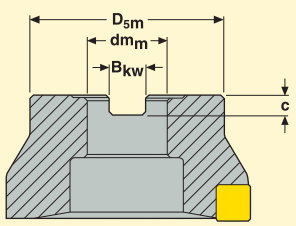
Pitch	Part No.	Dimensions in mm D_c	dm_m	l_1	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
Normal														
	R217.99 -2025.3S-09-2A	25	20	–	100	50	37	50	8	2	0,4	21100	Seco/Weldon	SONX09T3
	-2532.3S-09-3A	32	25	–	111	56	43	55	8	3	0,6	18600	Seco/Weldon	SONX09T3
	R220.99 -0040-09-3	40	–	40	–	–	–	–	8	3	0,3	16600	Arbor	SONX09T3
	-0050-09-4	50	–	40	–	–	–	–	8	4	0,4	14800	Arbor	SONX09T3
	-0063-09-4	63	–	40	–	–	–	–	8	4	0,6	13200	Arbor	SONX09T3
	-0080-09-6	80	–	50	–	–	–	–	8	6	1,3	11700	Arbor	SONX09T3
	-0100-09-8	100	–	50	–	–	–	–	8	8	1,7	10500	Arbor	SONX09T3

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R217.99-2025–2532	C03006-T09P	T09P-3	–
R220.99-0040	C03006-T09P	T09P-3	MC6S 8x30
R220.99-0050–0063	C03006-T09P	T09P-3	220.17-692
R220.99-0080	C03006-T09P	T09P-3	–
R220.99-0100	C03006-T09P	T09P-3	–

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

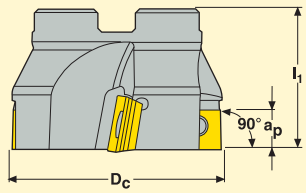


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.99-0040	16	35	8,4	5,6	16
R220.99-0050–0063	22	47	10,4	6,3	22
R220.99-0080	27	62	12,4	7	27
R220.99-0100	32	77	14,4	8	32

Please check availability in current price and stock-list.

Mini Square 220.99-09

- For insert selection and cutting data recommendations, see page 173.
- For complete insert programme, see page 547.



Tool angles: γo = - 9°
γp = +10°
γf = - 9°

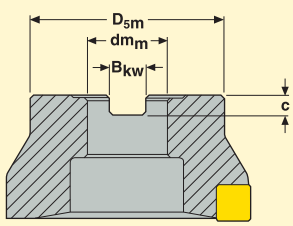
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Close								
	R220.99 -0040-09-4T	40	40	8	4	0,3	16600	SONX09T3
	-0050-09-6T	50	40	8	6	0,4	14800	SONX09T3
	-0063-09-7T	63	40	8	7	0,6	13200	SONX09T3
	-0080-09-9T	80	50	8	9	1,2	11700	SONX09T3

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.99-0040	C03006-T09P	T09P-3	MC6S 8x30
R220.99-0050–0063	C03006-T09P	T09P-3	220.17-692
R220.99-0080	C03006-T09P	T09P-3	–

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

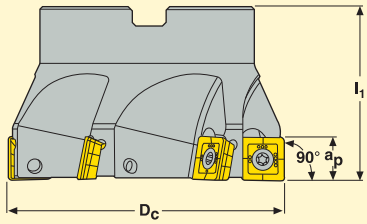


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.99-0040	16	35	8,4	5,6	16
R220.99-0050–0063	22	47	10,4	6,3	22
R220.99-0080	27	62	12,4	7	27

Please check availability in current price and stock-list.

Midi Square 220.99-12

- For insert selection and cutting data recommendations, see page 174.
- For complete insert programme, see page 547.



Tool angles: γo = - 6°
γp = +10°
γf = - 6°

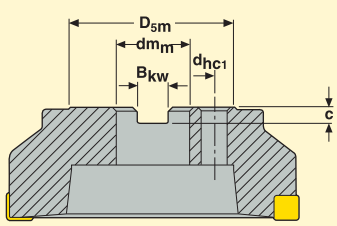
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.99 -0050-12-4	50	40	11	4	0,4	10800	SONX1205
	-0063-12-4	63	40	11	4	0,6	9600	SONX1205
	-0080-12-6	80	50	11	6	1,2	8400	SONX1205
	-0100-12-8	100	50	11	8	1,5	7600	SONX1205

Spare parts

For cutter	Locking screw	Key	Arbor screw
R220.99-0050–0063	C04011-T15P	T15P-4	220.17-692
R220.99-0080	C04011-T15P	T15P-4	MC6S 12x40
R220.99-0100	C04011-T15P	T15P-4	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

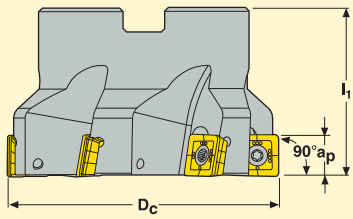


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.99-0050–0063	22	47	10,4	6,3	–	22	–
R220.99-0080	27	62	12,4	7	–	27	–
R220.99-0100	32	77	14,4	8	–	32	–

Please check availability in current price and stock-list.

Midi Square 220.99-12

- For insert selection and cutting data recommendations, see page 174.
- For complete insert programme, see page 547.



Tool angles: γo = - 6°
γp = +10°
γf = - 6°

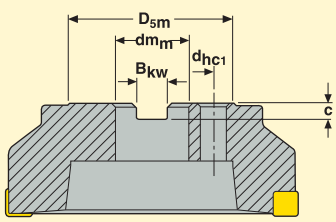
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Close								
	R220.99 -0050-12-5T	50	40	11	5	0,4	10800	SONX1205
	-0063-12-6T	63	40	11	6	0,6	9600	SONX1205

Spare parts

For cutter	Locking screw	Key	Arbor screw
R220.99-0050–0063	C04011-T15P	T15P-4	220.17-692

* **Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



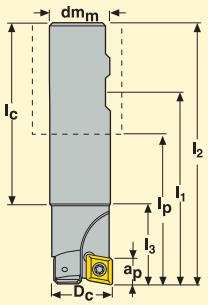
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.99-0050–0063	22	47	10,4	6,3	–	22	–

Please check availability in current price and stock-list.

R216.19

Also suitable for drilling operations

- **For insert selection and cutting data recommendations, see pages 176 - 177.**
- **For complete insert programme, see pages 517, 549, 551.**



Tool angles:

γo = -10° – - 5°
γp = + 2°
γf = -10° – - 5°

Part No.	Dimensions in mm D_c	dm_m	l_2	l_1	l_p	l_3	l_c	a_p		z_c*	KG		Type of mounting	Insert ( ) = No. of inserts ..MX	SPMX
R216.19 -1612.3-06	12	16	80	56	32	20	48	5	1	1	0,1	51000	Cyl/Weldon	CO..0601 (1)	–
-2015.3-06	15	20	95	70	45	18	60	5	2	1	0,2	43000	Cyl/Weldon	XC..0502 (1)	0602 (1)
-2018.3-06	18	20	100	75	50	23	65	5	2	1	0,2	34000	Cyl/Weldon	CC..0602 (1)	0602 (1)
-2020.3-08	20	20	120	95	70	28	70	7	2	1	0,3	22800	Cyl/Weldon	CC..0803 (1)	0602 (1)
-2525.3-09	25	25	130	98	74	43	85	8	2	1	0,4	18500	Cyl/Weldon	CC..09T3 (1)	0903 (1)
-3232.3-12	32	32	130	94	70	40	80	11	2	1	0,7	12900	Cyl/Weldon	CC..1204 (1)	12T3 (1)
-3240.3-12	40	32	135	99	75	75	85	11	2	1	0,8	11600	Cyl/Weldon	CC..1204 (1)	12T3 (1)
-3250.3-12	50	32	140	104	80	80	85	11	3	1	1,0	8700	Cyl/Weldon	CC..1204 (2)	0903 (1)

*Effective number of teeth.

Spare parts

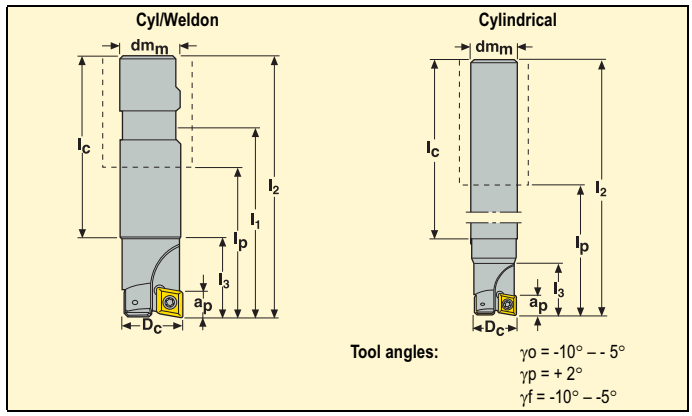
For cutter	Locking screw	Key	Torque value (Nm)
R216.19-1612–2018	C02205-T07P	T07P-3	0,9
R216.19-2020	C02506-T07P, C02205-T07P	T07P-3	0,9
R216.19-2525	C03007-T09P	T09P-3	2,0
R216.19-3232–3240	C03510-T15P	T15P-3	3,0
R216.19-3250	C03510-T15P, C03007-T09P	T15P-3, T09P-3	3,0/2,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

R216.19

Also suitable for drilling operations

- **For insert selection and cutting data recommendations, see pages 176 - 177.**
- **For complete insert programme, see pages 517, 549.**



	Part No.	Dimensions in mm D_c	dm_m	l_2	l_1	l_p	l_3	l_c	a_p		z_c*	KG		Insert ( ) = No. of inserts CCMX	SPMX
Large cutting depth Cyl/Weldon															
	R216.19 -2520.3-17	20	25	130	105	74	27	90	17	4	1	0,4	22800	CCMX0803 (1)	0602 (3)
	-2525.3-18	25	25	130	98	74	27	90	18	4	1	0,4	15000	CCMX09T3 (1)	0602 (3)
	-3232.3-24	32	32	130	94	70	36	85	24	4	1	0,8	10800	CCMX1204 (1)	0903 (3)
Extra long shank Cylindrical															
	R216.19 -2020.0-08/200	20	20	200	–	150	28	145	8	2	1	0,5	22800	CCMX0803 (1)	0602 (1)
	-2525.0-09/220	25	25	220	–	164	43	190	9	2	1	0,9	18500	CCMX09T3 (1)	0903 (1)
	-3232.0-12/235	32	32	235	–	175	40	190	12	2	1	1,4	12900	CCMX1204 (1)	12T3 (1)
	-3240.0-12/240	40	32	240	–	180	180	195	12	2	1	1,5	11600	CCMX1204 (1)	12T3 (1)

*Effective number of teeth.

Spare parts

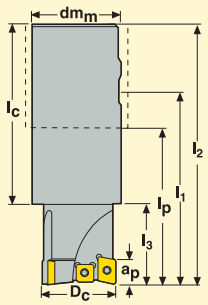
For cutter	Locking screw	Key	Torque value (Nm)
R216.19-2020.0	C02506-T07P, C02205-T07P	T07P-3	0,9
R216.19-2520.3	C02506-T07P, C02205-T07P	T07P-3	0,9
R216.19-2525.0	C03007-T09P	T09P-3	2,0
R216.19-2525.3	C03007-T09P, C02205-T07P	T09P-3, T07P-3	2,0/0,9
R216.19-3232.0	C03510-T15P	T15P-3	3,0
R216.19-3232.3	C03510-T15P, C03007-T09P	T15P-3, T09P-3	2,0/0,9
R216.19-3240.0	C03510-T15P	T15P-3	3,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

R216.19

Also suitable for drilling operations

- **For insert selection and cutting data recommendations, see pages 178 - 179.**
- **For complete insert programme, see pages 517, 549, 551.**



Tool angles:

γo = -10° – - 5°
γp = + 2°
γf = -11° – - 5°

	Part No.	Dimension in mm D_c	dm_m	l_2	l_1	l_p	l_3	l_c	a_p		z_c*	KG		Insert ( ) = No. of inserts .CMX	CCMX	SPMX
High table feeds Cyl/Weldon																
	R216.19 -2525.3-08.3	25	25	120	88	64	35	80	7	4	3**	0,4	20400	CCMX0602 (2)	0803 (1)	0602 (1)
	-3232.3-09.3	32	32	120	84	60	35	80	8	4	3**	0,7	14600	CCMX0803 (2)	09T3 (1)	0703 (1)
	-3240.3-12.3	40	32	125	89	65	65	80	12	4	3**	0,8	9700	XCMX1204 (2)	1204 (1)	0903 (1)
	-3250.3-12.3	50	32	130	94	70	70	80	12	4	3**	1,0	7600	XCMX1204 (1)	1204 (2)	1504 (1)

*Effective number of teeth. **Drilling = 1.

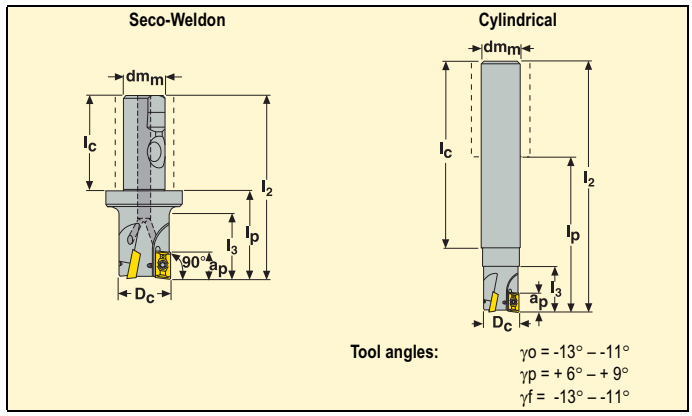
Spare parts

For cutter	Locking screw	Key	Torque value (Nm)
R216.19-2525.3	C02506-T07P, C02205-T07P	T07P-3	0,9
R216.19-3232.3	C03007-T09P, C02506-T07P	T09P-3, T07P-3	2,0/0,9
R216.19-3240.3	C03510-T15P, C03007-T09P	T15P-3, T09P-3	3,0/2,0
R216.19-3250.3	C04011-T15P, C03510-T15P	T15P-3	3,5

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

217.69-16

- For insert selection and cutting data recommendations, see page 180.
- For complete insert programme, see pages 515 - 516.



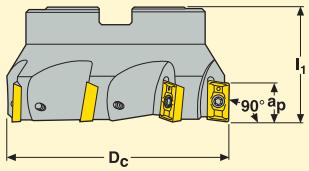
Part No.	Dimensions in mm D_c	dm_m	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.69 -2025.3S-16A	25	20	100	50	35	50	–	15	2	0,4	18400	Seco-Weldon	AP..1604
-2532.3S-16A	32	25	111	55	40	56	–	15	3	0,6	16300	Seco-Weldon	AP..1604
-3240.3S-16A	40	32	120	60	45	60	–	15		0,9	14600	Seco-Weldon	AP..1604
R217.69 -2525.0-16	25	25	165	109	45	120	–	15	2	0,7	18400	Cylindrical	AP..1604
-3232.0-16	32	32	195	135	45	150	–	15	3	1,2	16300	Cylindrical	AP..1604
-3240.0-16	40	32	200	140	45	155	–	15	4	1,3	14600	Cylindrical	AP..1604

Spare parts

For cutter	Locking screw	Key *
R217.69-2025–2525	C04008-T15P	T15P-3
R217.69-2532–3240	C04011-T15P	T15P-3
R217.69-03025	C04008-T15P	T15P-3
R217.69-03032–04040	C04011-T15P	T15P-3

Please check availability in current price and stock-list.
*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

220.69-16



Tool angles: γo = -12° – - 6°
γp = + 6° – + 9°
γf = -12° – - 6°

- For insert selection and cutting data recommendations, see page 180.
- For complete insert programme, see pages 515 - 516.

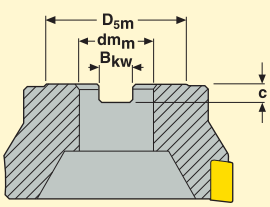
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.69 -0040-16	40	40	15	4	0,3	14500	AP..1604
	-0050-16	50	40	15	5	0,4	13000	AP..1604
	-0063-16	63	40	15	6	0,7	11600	AP..1604
	-0080-16	80	50	15	7	1,0	10300	AP..1604
	-0100-16	100	50	15	8	1,6	9200	AP..1604

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0040	CO4011-T15P	T15P-3	220.17-690
R220.69-0050–0063	CO4011-T15P	T15P-3	220.17-692
R220.69-0080–0100	CO4011-T15P	T15P-3	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

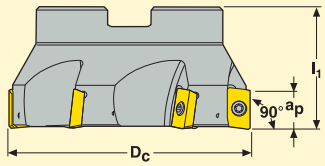


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0040	16	35	8,4	5,6	16
R220.69-0050–0063	22	47	10,4	6,3	22
R220.69-0080	27	62	12,4	7	27
R220.69-0100	32	77	14,4	8	32

Please check availability in current price and stock-list.

220.69-16G

- For insert selection and cutting data recommendations, see page 180.
- For complete insert programme, see pages 515 - 516.



Tool angles:
γo = -12° – - 6°
γp = + 6° – + 9°
γf = -12° – - 6°

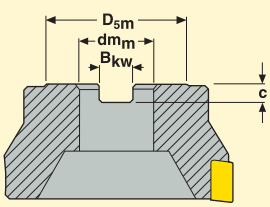
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Coarse								
	R220.69 -0050-16G	50	40	15	4	0,4	13000	AP.1604
	-0063-16G	63	40	15	4	0,7	11600	AP.1604
	-0080-16G	80	50	15	6	1,0	10300	AP.1604
	-0100-16G	100	50	15	6	1,6	9200	AP.1604
	-0125-16G	125	63	15	6	2,7	8200	AP.1604

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-0050–0063	CO4011-T15P	T15P-3	220.17-692
R220.69-0080–0125	CO4011-T15P	T15P-3	–

*** Torque value 3,5 Nm.** Dynamomentic keys, see page 590.

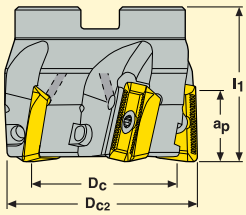
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0050–0063	22	47	10,4	6,3	22
R220.69-0080	27	62	12,4	7	27
R220.69-0100	32	77	14,4	8	32
R220.69-0125	40	90	16,4	9	40

Please check availability in current price and stock-list.

220.90-ABEX



Tool angles: γo = - 8° – - 4°
γp = + 8°
γf = - 8° – - 4°

- **For insert selection and cutting data recommendations, see pages 167 - 168.**
- **For complete insert programme, see page 557.**
- For ramping and helical interpolation, see pages 592 - 595.

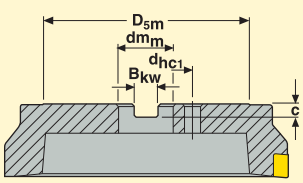
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Coarse	R220.90 -0063-26-4AM	63	50	20	4	0,7	6700	ABEX26…
Normal	-0063-26-5AM	63	50	20	5	0,7	6700	ABEX26…
Close	-0063-26-6AM	63	50	20	6	0,8	6700	ABEX26…
Coarse	-0080-26-5AM	80	50	20	5	1,1	5900	ABEX26…
Normal	-0080-26-7AM	80	50	20	7	1,2	5900	ABEX26…
Coarse	-0100-26-6AM	100	50	20	6	1,7	5300	ABEX26…
Normal	-0100-26-8AM	100	50	20	8	1,8	5300	ABEX26…
Normal	-0125-26-7AM	125	63	20	7	3,2	4700	ABEX26…
Normal	-8160-26-10AM	160	63	20	10	5,7	4200	ABEX26…

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.90-0063-0080	C05013-T20P	T20P-4	MC6S 12x35
R220.90-0100–0125	C05013-T20P	T20P-4	–
R220.90-8160	C05013-T20P	T20P-4	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

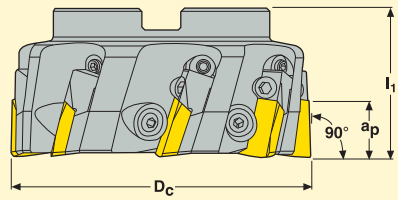
Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.90-0063	27	55	12,4	7	–	27	–
R220.90-0080	27	62	12,4	7	–	27	–
R220.90-0100	32	77	14,4	8	–	32	–
R220.90-0125	40	90	16,4	9	–	40	–
R220.90-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

220.90-26C



Tool angles:
γo = -12° – - 9,5°
γp = +17° – +18°
γf = -12° – - 9,5°

- For insert selection and cutting data recommendations, see page 181.
- For complete insert programme, see page 512.

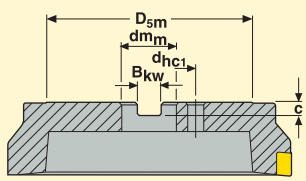
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Normal								
	R220.90 -0063-26	63	50	20	4	0,7	4600	AB..2606
	-0080-26C	80	55	20	5	1,5	4100	AB..2606
	-0100-26C	100	50	20	6	2,2	3600	AB..2606
	-0125-26C	125	63	20	7	3,4	3200	AB..2606
	-8160-26C	160	63	20	8	5,6	2800	AB..2606
	-8200-26C	200	63	20	10	8,2	2600	AB..2606

Spare parts

For cutter	Cassette	Cassette screw	Locking screw	Arbor screw	Key *	Setting gauge
R220.90-0063	–	–	SL48013	220.17-696	H04-4	–
R220.90-0080	AB26PR	FS96018	SL48013	MC6S 12x40	H04-4	AU1114T-T15P
R220.90-0100	AB26PR	FS96018	SL48013	220.17-694	H04-4	AU1114T-T15P
R220.90-0125–8200	AB26PR	FS96018	SL48013	–	H04-4	AU1114T-T15P

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge to be ordered separately.

Dimensions of mounting

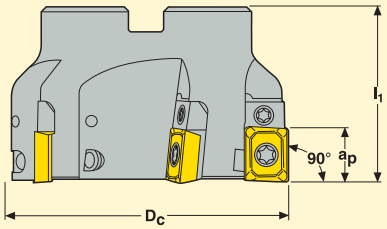


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.90-0063	22	47	10,4	6,3	–	22	–
R220.90-0080	27	62	12,4	7	–	27	–
R220.90-0100	32	77	14,4	8	–	32	–
R220.90-0125	40	90	16,4	9	–	40	–
R220.90-8160	40	90	16,4	9	66,7	40	ISO40
R220.90-8200	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.

220.69-15H

For very difficult operations



Tool angles:
γo = - 6,5° – - 4,5°
γp = + 5° – + 7°
γf = - 6,5° – - 4,5°

- **For insert selection and cutting data recommendations, see page 183.**
- **For complete insert programme, see page 514.**
- For ramping and helical interpolation, see pages 592 - 595.

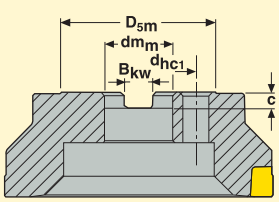
Pitch	Part No.	Dimensions in mm D_c	l_1	a_p		KG		
Coarse								
	R220.69 -0050-15H	50	45	14	3	0,5	8300	ACE.1506
	-0063-15H	63	40	14	4	0,6	7400	ACE.1506
	-0080-15H	80	50	14	5	1,4	6500	ACE.1506
	-0100-15H	100	50	14	6	1,5	5800	ACE.1506
	-0125-15H	125	63	14	6	2,9	5200	ACE.1506

Spare parts

For cutter	Locking screw	Key *	Axial support	Axial support screw	Axial support key	Arbor screw
R220.69-0050	C45011-T20P	T20P-4	–	–	–	220.17-691
R220.69-0063	C45011-T20P	T20P-4	–	–	–	220.17-693
R220.69-0080	C45011-T20P	T20P-4	R215.59-611	C03510-T15P	T15P-3	220.17-694
R220.69-0100–0125	C45011-T20P	T20P-4	R215.59-611	C03510-T15P	T15P-3	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

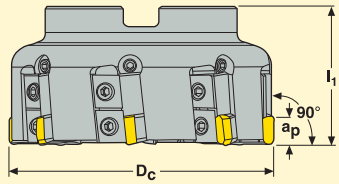


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.69-0050	22	47	10,4	6,3	–	22	–
R220.69-0063	27	62	12,4	7	–	27	–
R220.69-0080	32	77	14,4	8	–	32	–
R220.69-0100–0125	40	90	16,4	9	–	40	–

Please check availability in current price and stock-list.

220.68-T11C

For PCBN inserts



Tool angles: γo = - 6°
γp = - 6°
γf = - 6°

- For insert selection and cutting data recommendations, see page 184.
- For complete insert programme, see page 574.

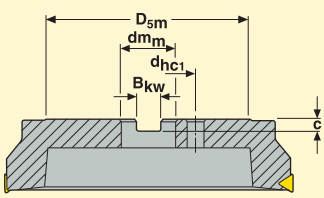
Part No.	Dimensions in mm D_c	l_1	a_p		KG		
R220.68 -0063-T11C-4	63	63	6	4	1,2	20600	TN..1103..
-0080-T11C-5	80	63	6	5	1,7	16700	TN..1103..
-0100-T11C-6	100	63	6	6	2,4	13400	TN..1103..
-0125-T11C-8	125	63	6	8	3,5	10400	TN..1103..
-8160-T11C-10	160	63	6	10	4,7	8400	TN..1103..

Spare parts

For cutter	Cassette	Cassette Wedge	Insert Wedge	Wedge screw	Setting gauge	Arbor screw
R220.68-0063	TN11PR	L257.9-120M	L257.9-120-T11	LD8020-T25P	AU1114T-T15P	220.17-696
R220.68-0080	TN11PR	L257.9-120M	L257.9-120-T11	LD8020-T25P	AU1114T-T15P	MC6S 12x40
R220.68-0100	TN11PR	L257.9-120M	L257.9-120-T11	LD8020-T25P	AU1114T-T15P	220.17-694
R220.68-0125	TN11PR	L257.9-120M	L257.9-120-T11	LD8020-T25P	AU1114T-T15P	–
R220.68-8160	TN11PR	L257.9-120M	L257.9-120-T11	LD8020-T25P	AU1114T-T15P	–

*** Torque value 6,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and key H04-4 for wedge screw.

Dimensions of mounting

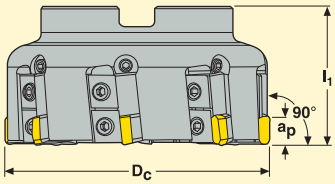


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.68-0063	22	47	10,4	6,3	–	22	–
R220.68-0080	27	62	12,4	7	–	27	–
R220.68-0100	32	77	14,4	8	–	32	–
R220.68-0125	40	90	16,4	9	–	40	–
R220.68-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

220.68-T16C

For PCBN inserts



Tool angles: $\gamma o = -6°$, $\gamma p = -6°$, $\gamma f = -6°$

- For insert selection and cutting data recommendations, see page 184.
- For complete insert programme, see page 574.

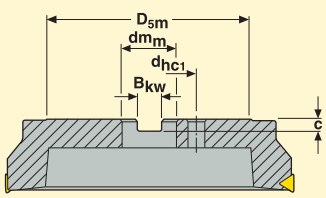
Part No.	Dimensions in mm D_c	l_1	a_p		KG		
R220.68 -0063-T16C-4	63	63	14	4	1,2	12000	TNGN1604..
-0080-T16C-5	80	63	14	5	1,7	9600	TNGN1604..
-0100-T16C-6	100	63	14	6	2,4	7600	TNGN1604..
-0125-T16C-8	125	63	14	8	3,5	6100	TNGN1604..
-8160-T16C-10	160	63	14	10	4,7	4800	TNGN1604..

Spare parts

For cutter	Cassette	Cassette Wedge	Insert Wedge	Wedge screw	Setting gauge	Arbor screw
R220.68-0063	TN16PR	L257.9-120M	L257.9-120-T16	LD8020-T25P	AU1114T-T15P	220.17-696
R220.68-0080	TN16PR	L257.9-120M	L257.9-120-T16	LD8020-T25P	AU1114T-T15P	MC6S 12x40
R220.68-0100	TN16PR	L257.9-120M	L257.9-120-T16	LD8020-T25P	AU1114T-T15P	220.17-694
R220.68-0125	TN16PR	L257.9-120M	L257.9-120-T16	LD8020-T25P	AU1114T-T15P	–
R220.68-8160	TN16PR	L257.9-120M	L257.9-120-T16	LD8020-T25P	AU1114T-T15P	–

* **Torque value 6,0 Nm.** Dynamomentic keys, see page 590.
Key T15P-3 for setting gauge and key H04-4 for wedge screw.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.68-0063	22	47	10,4	6,3	–	22	–
R220.68-0080	27	62	12,4	7	–	27	–
R220.68-0100	32	77	14,4	8	–	32	–
R220.68-0125	40	90	16,4	9	–	40	–
R220.68-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Insert selection – 217/220.69-06

Universal insert: XOMX 060204R-M05 F40M

SMG	f_z mm/tooth a_e/D_c = 100%	Max a_p slotting mm	First choice		
1	0,04–0,10	4	XOMX060204R-M05 F40M		
2	0,04–0,09	4	XOMX060204R-M05 F40M		
3	0,04–0,09	3,5	XOMX060204R-M05 F40M		
4	0,04–0,09	3	XOMX060204R-M05 F40M		
5	0,03–0,08	2,5	XOMX060204R-M05 F40M		
6	0,03–0,07	2	XOMX060204R-M05 MP3000		
7	–	–	–		
8	0,04–0,09	3	XOMX060204R-M05 F40M		
9	0,03–0,08	3	XOMX060204R-M05 F40M		
10	0,03–0,07	2,5	XOMX060204R-M05 F40M		
11	0,03–0,07	2	XOMX060204R-M05 MM4500		
12	0,04–0,10	4	XOMX060204R-M05 MP3000		
13	0,04–0,09	4	XOMX060204R-M05 MP3000		
14	0,04–0,09	3,5	XOMX060204R-M05 MP3000		
15	0,03–0,07	3	XOMX060204R-M05 MP3000		
16	0,05–0,13	4	XOEX060204R-E03 H15		
17	0,05–0,11	4	XOEX060204R-E03 F40M		
18	0,05–0,11	4	XOEX060204R-E03 H15		
19	0,02–0,05	2	XOMX060204R-M05 F40M F40M		
20	0,02–0,05	2	XOMX060204R-M05 F40M F40M		
21	0,02–0,05	2	XOMX060204R-M05 F40M F40M		
22	0,03–0,07	3	XOMX060204R-M05 F40M F40M		

Cutting data – Full engagement width (a_e /D_c = 100%)

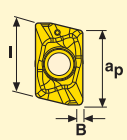
SMG	Grades																
	MP3000			F40M			F15M			H15			MM4500				
	f_z (mm/tooth)																
	0,02	0,07	0,12	0,02	0,07	0,12	0,02	0,07	0,12	0,02	0,07	0,12	0,02	0,07	0,12		
	v_c (m/min)																
1	600	480	420	480	385	335	–	–	–	–	–	–	385	310	270		
2	505	405	355	405	325	285	–	–	–	–	–	–	330	265	230		
3	420	335	290	335	270	235	–	–	–	–	–	–	270	215	190		
4	355	285	250	285	230	200	–	–	–	–	–	–	230	185	160		
5	295	240	210	240	190	165	285	230	200	–	–	–	195	155	135		
6	260	210	–	210	165	–	250	200	–	–	–	–	170	135	–		
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
8	380	305	265	325	260	230	–	–	–	–	–	–	280	225	195		
9	300	240	210	255	205	180	–	–	–	–	–	–	220	180	155		
10	245	195	–	210	170	–	–	–	–	–	–	–	180	145	–		
11	180	145	–	155	125	–	–	–	–	–	–	–	135	110	–		
12	310	250	220	250	200	175	300	240	–	–	–	–	–	–	–		
13	275	220	190	220	175	155	265	210	–	–	–	–	–	–	–		
14	230	185	160	185	150	130	220	175	–	–	–	–	–	–	–		
15	190	155	–	150	120	–	185	145	–	–	–	–	–	–	–		
16	–	–	–	1235	990	865	1485	1190	1040	1175	940	820	–	–	–		
17	–	–	–	1000	800	700	1200	960	840	950	760	665	–	–	–		
18	–	–	–	760	610	530	915	730	640	725	580	505	–	–	–		
19	80	65	–	70	55	–	–	–	–	–	–	–	48	39	–		
20	65	50	–	55	44	–	–	–	–	–	–	–	39	31	–		
21	55	44	–	48	38	–	–	–	–	–	–	–	34	27	–		
22	130	105	–	115	90	–	–	–	–	–	–	–	80	65	–		

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,02	0,07	0,12	1,00
Side milling	25%	0,03	0,09	0,16	1,30
	10%	0,04	0,14	0,25	1,50
	5%	0,06	0,20	0,34	1,60
Average chip thickness h_m		0,01	0,04	0,08	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type	Max D.O.C. a_p	Wiper flat width B
060202	5	1,1
060204	5	0,9
060208	5	0,5
060216	5	0,7

Insert selection – 217/220.69-09

Universal insert: XOMX 090308TR-ME06 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	Max ap slotting mm	First choice	Difficult operations	
1	0,08–0,14	6	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
2	0,08–0,14	6	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
3	0,08–0,14	6	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 T350M	
4	0,08–0,14	5	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 T350M	
5	0,06–0,12	4	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
6	0,06–0,12	3	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
7	0,05–0,09	3	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 MP3000	
8	0,08–0,14	5	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
9	0,06–0,12	5	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
10	0,06–0,12	4	XOMX090308TR-M08 T350M	XOMX090308TR-M08 MM4500	
11	0,05–0,10	3	XOMX090308TR-M08 T350M	XOMX090308TR-M08 MM4500	
12	0,08–0,14	6	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
13	0,06–0,12	6	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
14	0,06–0,12	6	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
15	0,06–0,12	5	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 MK2000	
16	0,08–0,14	6	XOEX090308FR-E05 H15	XOEX090308FR-E05 F40M	
17	0,08–0,14	6	XOEX090308FR-E05 F40M	XOMX090308TR-ME06 F40M	
18	0,08–0,14	6	XOEX090308FR-E05 H15	XOEX090308FR-E05 F40M	
19	0,04–0,08	3	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 MP3000	
20	0,04–0,08	3	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
21	0,04–0,07	3	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MP3000	
22	0,06–0,10	5	XOMX090308TR-ME06 F40M	XOMX090308TR-ME06 T350M	

Cutting data – Full engagement width (a_e /D_c = 100%)

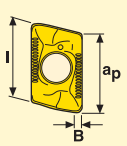
SMG	Grades																		
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			
	f_z (mm/tooth)																		
	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	
	v_c (m/min)																		
1	650	565	485	575	500	430	545	470	410	500	435	375	355	305	265	435	380	325	
2	550	475	410	490	425	365	465	400	345	425	370	320	300	260	225	370	320	275	
3	455	395	340	405	350	300	380	330	285	350	305	260	250	215	185	305	265	230	
4	390	335	290	345	300	255	325	280	245	300	260	225	210	185	160	260	225	195	
5	325	280	240	285	250	215	270	235	205	250	215	185	175	150	130	215	190	160	
6	285	245	–	250	220	–	240	205	–	220	190	–	155	135	–	190	165	–	
7	80	65	–	65	55	–	60	55	–	60	50	–	–	–	–	50	45	–	
8	445	385	330	355	305	265	345	300	260	330	285	245	260	225	190	300	260	225	
9	350	305	260	275	240	205	270	235	205	260	225	195	205	175	150	235	205	175	
10	285	250	215	225	195	170	225	195	165	210	185	160	165	145	125	190	165	145	
11	210	185	–	170	145	–	165	145	–	155	135	–	125	105	90	140	125	–	
12	340	295	255	300	260	225	285	245	210	260	225	195	160	140	120	230	195	170	
13	300	260	225	265	230	195	250	215	185	230	200	170	145	125	105	200	175	150	
14	250	215	185	220	190	165	210	180	155	195	165	145	120	105	90	170	145	125	
15	210	180	–	185	160	–	175	150	–	160	140	–	100	85	–	140	120	105	
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
19	–	–	–	75	65	–	75	65	–	70	60	–	44	38	–	65	55	–	
20	–	–	–	60	55	–	60	50	–	55	48	–	36	31	–	50	44	–	
21	–	–	–	55	46	–	50	44	–	48	41	–	31	27	–	43	38	–	
22	–	–	–	130	110	–	120	105	–	115	100	–	75	65	–	105	90	–	

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,04	0,08	0,14	1,00
Side milling	25%	0,05	0,11	0,19	1,30
	10%	0,08	0,16	0,29	1,50
	5%	0,11	0,23	0,40	1,60
Average chip thickness h_m		0,03	0,05	0,09	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type l	Max D.O.C. a_p	Wiper flat width B
090304	8	0,8
090308	8	0,4
090312	8	0,8
090316	8	0,4
090320	8	–
090324	8	–

Insert selection – 217/220.69-09

Universal insert: XOMX 090308TR-ME06 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	Max ap slotting mm	First choice	Difficult operations	
1	0,08–0,14	6	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
2	0,08–0,14	6	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
3	0,08–0,14	6	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 T350M	
4	0,08–0,14	5	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 T350M	
5	0,06–0,12	4	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
6	0,06–0,12	3	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
7	0,05–0,09	3	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 MP3000	
8	0,08–0,14	5	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
9	0,06–0,12	5	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
10	0,06–0,12	4	XOMX090308TR-M08 T350M	XOMX090308TR-M08 MM4500	
11	0,05–0,10	3	XOMX090308TR-M08 T350M	XOMX090308TR-M08 MM4500	
12	0,08–0,14	6	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
13	0,06–0,12	6	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
14	0,06–0,12	6	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
15	0,06–0,12	5	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 MK2000	
16	0,08–0,14	6	XOEX090308FR-E05 H15	XOEX090308FR-E05 F40M	
17	0,08–0,14	6	XOEX090308FR-E05 F40M	XOMX090308TR-ME06 F40M	
18	0,08–0,14	6	XOEX090308FR-E05 H15	XOEX090308FR-E05 F40M	
19	0,04–0,08	3	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 MP3000	
20	0,04–0,08	3	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
21	0,04–0,07	3	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MP3000	
22	0,06–0,10	5	XOMX090308TR-ME06 F40M	XOMX090308TR-ME06 T350M	

Cutting data – Full engagement width (a_e/D_c = 100%)

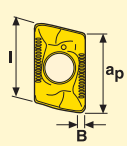
SMG	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14			
	v_c (m/min)														
1	630	545	470	–	–	–	570	490	425	–	–	–			
2	535	460	400	–	–	–	480	415	360	–	–	–			
3	440	380	330	–	–	–	395	345	295	–	–	–			
4	375	325	280	–	–	–	340	295	255	–	–	–			
5	315	270	235	–	–	–	285	245	210	–	–	–			
6	275	240	205	–	–	–	250	215	–	–	–	–			
7	70	60	–	–	–	–	70	60	–	–	–	–			
8	385	330	285	–	–	–	390	335	290	–	–	–			
9	300	260	225	–	–	–	305	265	230	–	–	–			
10	245	215	185	–	–	–	250	215	185	–	–	–			
11	180	160	–	–	–	–	185	160	–	–	–	–			
12	330	285	245	425	370	320	295	255	220	215	185	160			
13	290	250	215	375	325	280	260	225	195	190	165	140			
14	240	210	180	315	270	235	220	190	165	160	140	120			
15	200	175	–	260	225	195	180	155	135	130	115	100			
16	–	–	–	–	–	–	–	–	–	1075	930	800			
17	–	–	–	–	–	–	–	–	–	870	750	650			
18	–	–	–	–	–	–	–	–	–	660	570	495			
19	85	75	–	–	–	–	80	70	–	–	–	–			
20	70	60	–	–	–	–	65	55	–	–	–	–			
21	60	50	–	–	–	–	55	49	–	–	–	–			
22	140	120	–	–	–	–	135	115	–	–	–	–			

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,04	0,08	0,14	1,00
Side milling	25%	0,05	0,11	0,19	1,30
	10%	0,08	0,16	0,29	1,50
	5%	0,11	0,23	0,40	1,60
Average chip thickness h_m		0,03	0,05	0,09	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type l	Max D.O.C. a_p	Wiper flat width B
090304	8	0,8
090308	8	0,4
090312	8	0,8
090316	8	0,4
090320	8	–
090324	8	–

Insert selection – 217/220.69-10

Universal insert: XOMX 10T308TR-ME07 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	Max a_p slotting mm	First choice	Difficult operations	
1	0,09–0,16		XOMX10T308TR-ME07 F40M	XOMX10T308TR-ME07 T350M	
2	0,09–0,16		XOMX10T308TR-ME07 F40M	XOMX10T308TR-ME07 T350M	
3	0,09–0,16		XOMX10T308TR-ME07 MP2500	XOMX10T308TR-M09 T350M	
4	0,09–0,16		XOMX10T308TR-ME07 MP2500	XOMX10T308TR-M09 T350M	
5	0,07–0,14		XOMX10T308TR-M09 MP2500	XOMX10T308TR-M09 T350M	
6	0,07–0,14		XOMX10T308TR-M09 MP2500	XOMX10T308TR-M09 T350M	
7	0,06–0,11		XOMX10T308TR-M09 MP1500	XOMX10T308TR-M09 MP3000	
8	0,09–0,16		XOMX10T308TR-ME07 F40M	XOMX10T308TR-ME07 T350M	
9	0,07–0,14		XOMX10T308TR-ME07 F40M	XOMX10T308TR-ME07 T350M	
10	0,07–0,14		–	–	
11	0,06–0,12		–	–	
12	0,09–0,16		XOMX10T308TR-M09 MK1500	XOMX10T308TR-M09 MK2000	
13	0,07–0,14		XOMX10T308TR-M09 MK1500	XOMX10T308TR-M09 MK2000	
14	0,07–0,14		XOMX10T308TR-M09 MK1500	XOMX10T308TR-M09 MK2000	
15	0,07–0,14		XOMX10T308TR-M09 MP1500	XOMX10T308TR-M09 MK2000	
16	0,09–0,16		XOMX100408TR-ME07 F40M	XOMX100408TR-ME07 F40M	
17	0,09–0,16		XOMX100408TR-ME07 F40M	XOMX10T308TR-ME07 F40M	
18	0,09–0,16		XOMX100408TR-ME07 F40M	XOMX100408TR-ME07 F40M	
19	0,05–0,10		–	–	
20	0,05–0,10		–	–	
21	0,05–0,09		–	–	
22	0,07–0,12		–	–	

Cutting data – Full engagement width (a_e /D_c = 100%)

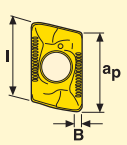
SMG	Grades																		
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			
	f_z (mm/tooth)																		
	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16	
	v_c (m/min)																		
1	620	530	465	550	470	410	520	445	390	480	410	360	340	290	255	415	355	310	
2	525	450	395	465	395	350	440	375	330	405	345	305	285	245	215	355	300	265	
3	435	370	325	385	330	290	365	310	270	335	285	250	235	200	175	290	250	220	
4	370	315	275	330	280	245	310	265	235	285	245	215	200	170	150	250	210	185	
5	310	265	230	275	235	205	260	220	195	240	205	180	170	145	125	210	175	155	
6	270	230	205	240	205	180	230	195	170	210	180	155	–	–	–	180	155	135	
7	75	65	–	60	50	–	60	50	–	55	49	–	–	–	–	50	42	–	
8	425	360	320	335	285	250	330	280	245	315	265	235	245	210	185	285	245	215	
9	335	285	250	265	225	200	260	220	195	245	210	185	195	165	145	225	190	165	
10	275	235	205	215	185	160	215	180	160	200	170	150	160	135	120	185	155	135	
11	200	175	–	160	135	–	160	135	–	150	125	–	115	100	–	135	115	–	
12	325	275	240	285	245	215	270	230	205	250	215	185	155	130	115	215	185	160	
13	285	240	215	250	215	190	240	205	180	220	185	165	135	115	100	190	165	145	
14	240	205	180	210	180	160	200	170	150	185	155	140	115	100	85	160	135	120	
15	200	170	150	175	150	130	165	140	125	155	130	115	95	80	70	135	115	100	
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1080	920	805	
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	870	745	650	
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	665	565	495	
19	–	–	–	75	65	–	70	60	–	65	55	–	42	36	–	60	50	–	
20	–	–	–	60	50	–	55	48	–	55	45	–	34	29	–	48	41	–	
21	–	–	–	50	44	–	48	41	–	46	39	–	29	25	–	42	35	–	
22	–	–	–	125	105	–	115	100	–	110	95	–	70	60	–	100	85	–	

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,12	0,20	1,00
Side milling	25%	0,08	0,16	0,27	1,30
	10%	0,12	0,25	0,41	1,50
	5%	0,17	0,34	0,57	1,60
Average chip thickness h_m		0,04	0,08	0,13	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type l	Max D.O.C. a_p	Wiper flat width B
120402	11	2,0
120404	11	2,0
120408	11	1,6
120412	11	1,2
120416	11	1,2
120408ZZ	11	6,6

Insert selection – 217/220.69-10

Universal insert: XOMX 10T308TR-ME07 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	Max a_p slotting mm	First choice	Difficult operations	
1	0,09–0,16		XOMX10T308TR-ME07 F40M	XOMX10T308TR-ME07 T350M	
2	0,09–0,16		XOMX10T308TR-ME07 F40M	XOMX10T308TR-ME07 T350M	
3	0,09–0,16		XOMX10T308TR-ME07 MP2500	XOMX10T308TR-M09 T350M	
4	0,09–0,16		XOMX10T308TR-ME07 MP2500	XOMX10T308TR-M09 T350M	
5	0,07–0,14		XOMX10T308TR-M09 MP2500	XOMX10T308TR-M09 T350M	
6	0,07–0,14		XOMX10T308TR-M09 MP2500	XOMX10T308TR-M09 T350M	
7	0,06–0,11		XOMX10T308TR-M09 MP1500	XOMX10T308TR-M09 MP3000	
8	0,09–0,16		XOMX10T308TR-ME07 F40M	XOMX10T308TR-ME07 T350M	
9	0,07–0,14		XOMX10T308TR-ME07 F40M	XOMX10T308TR-ME07 T350M	
10	0,07–0,14		–	–	
11	0,06–0,12				
12	0,09–0,16		XOMX10T308TR-M09 MK1500	XOMX10T308TR-M09 MK2000	
13	0,07–0,14		XOMX10T308TR-M09 MK1500	XOMX10T308TR-M09 MK2000	
14	0,07–0,14		XOMX10T308TR-M09 MK1500	XOMX10T308TR-M09 MK2000	
15	0,07–0,14		XOMX10T308TR-M09 MP1500	XOMX10T308TR-M09 MK2000	
16	0,09–0,16		XOMX100408TR-ME07 F40M	XOMX100408TR-ME07 F40M	
17	0,09–0,16		XOMX100408TR-ME07 F40M	XOMX10T308TR-ME07 F40M	
18	0,09–0,16		XOMX100408TR-ME07 F40M	XOMX100408TR-ME07 F40M	
19	0,05–0,10		–	–	
20	0,05–0,10		–	–	
21	0,05–0,09		–	–	
22	0,07–0,12		–	–	

Cutting data – Full engagement width (a_e /D_c = 100%)

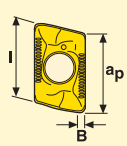
SMG	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16			
	v_c (m/min)														
1	600	510	450	–	–	–	540	460	405	–	–	–			
2	510	435	380	–	–	–	460	390	345	–	–	–			
3	420	360	315	–	–	–	380	325	285	–	–	–			
4	360	305	270	–	–	–	325	275	240	–	–	–			
5	300	255	225	–	–	–	270	230	200	–	–	–			
6	260	225	195	–	–	–	235	200	–	–	–	–			
7	65	55	–	–	–	–	65	55	–	–	–	–			
8	365	310	275	–	–	–	370	315	275	–	–	–			
9	285	245	215	–	–	–	290	250	220	–	–	–			
10	235	200	175	–	–	–	240	205	180	–	–	–			
11	175	150	–	–	–	–	175	150	–	–	–	–			
12	315	265	235	405	345	305	280	240	210	205	175	155			
13	275	235	205	355	305	265	250	210	185	180	155	135			
14	230	195	175	300	255	225	210	180	155	155	130	115			
15	190	165	–	250	210	185	175	145	130	125	110	95			
16	–	–	–	–	–	–	–	–	–	1025	875	765			
17	–	–	–	–	–	–	–	–	–	830	705	620			
18	–	–	–	–	–	–	–	–	–	630	540	470			
19	80	70	–	–	–	–	80	65	–	–	–	–			
20	65	55	–	–	–	–	65	55	–	–	–	–			
21	55	47	–	–	–	–	55	46	–	–	–	–			
22	135	115	–	–	–	–	130	110	–	–	–	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,12	0,20	1,00
Side milling	25%	0,08	0,16	0,27	1,30
	10%	0,12	0,25	0,41	1,50
	5%	0,17	0,34	0,57	1,60
Average chip thickness h_m		0,04	0,08	0,13	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type l	Max D.O.C. a_p	Wiper flat width B
120402	11	2,0
120404	11	2,0
120408	11	1,6
120412	11	1,2
120416	11	1,2
120408ZZ	11	6,6

Insert selection – 217/220.69-12

Universal insert: XOMX 120408TR-ME08 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	Max a_p slotting mm	First choice	Difficult operations	
1	0,10–0,20	9	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,10–0,20	9	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,10–0,20	8	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,10–0,20	7	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,10–0,18	6	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,10–0,16	5	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7	0,08–0,14	5	XOMX120408TR-D14 MP1500	XOMX120408TR-D14 MP3000	
8	0,08–0,18	7	XOMX120408TR-ME08 F40M	XOEX120408R-M07 T350M	
9	0,08–0,16	7	XOMX120408TR-ME08 F40M	XOEX120408R-M07 T350M	
10	0,10–0,18	6	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,10–0,14	5	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,10–0,25	9	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,10–0,20	9	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,10–0,18	8	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,10–0,16	7	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,10–0,20	9	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,08–0,18	9	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,10–0,20	9	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,06–0,10	5	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,06–0,10	5	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,06–0,08	5	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,06–0,12	7	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

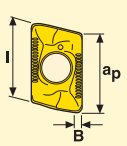
SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20
	v_c (m/min)																				
1	600	505	435	530	450	385	505	425	365	465	390	335	325	275	235	405	340	290	–	–	–
2	510	430	370	450	380	325	425	360	310	395	330	285	275	235	200	340	285	245	–	–	–
3	420	355	305	370	315	270	350	295	255	325	275	235	230	190	165	280	235	205	–	–	–
4	360	300	260	320	270	230	300	255	215	275	235	200	195	165	140	240	205	175	–	–	–
5	300	250	215	265	225	190	250	210	180	230	195	165	165	135	120	200	170	145	–	–	–
6	260	220	190	230	195	170	220	185	160	200	170	145	–	–	–	175	150	125	–	–	–
7	70	60	–	60	49	–	55	47	–	55	47	–	–	–	–	48	41	–	–	–	–
8	410	345	295	325	275	235	320	270	230	305	255	220	240	200	170	275	230	200	–	–	–
9	325	270	235	255	215	185	250	210	180	240	200	170	185	155	135	215	180	155	–	–	–
10	265	220	190	210	175	150	205	175	150	195	165	140	155	130	110	175	150	130	–	–	–
11	195	165	–	155	130	–	150	130	–	145	120	–	115	95	–	130	110	–	–	–	–
12	315	265	225	275	235	200	260	220	190	240	205	175	150	125	110	210	175	150	250	210	180
13	275	230	200	245	205	175	230	195	165	210	180	155	130	110	95	185	155	135	220	185	160
14	230	195	165	205	175	150	195	165	140	180	150	130	110	95	80	155	130	110	185	155	135
15	190	160	140	170	145	125	160	135	115	150	125	105	90	75	65	130	110	95	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1045	880	755	1250	1055	905
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	840	710	610	1010	850	730
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	640	540	465	770	650	555
19	–	–	–	70	60	–	65	55	–	65	55	–	41	34	–	60	49	–	–	–	–
20	–	–	–	55	48	–	55	45	–	50	43	–	33	28	–	47	39	–	–	–	–
21	–	–	–	49	42	–	47	39	–	44	37	–	28	24	–	40	34	–	–	–	–
22	–	–	–	120	100	–	110	95	–	105	90	–	70	55	–	95	80	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,12	0,20	1,00
Side milling	25%	0,08	0,16	0,27	1,30
	10%	0,12	0,25	0,41	1,50
	5%	0,17	0,34	0,57	1,60
Average chip thickness h_m		0,04	0,08	0,13	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type l	Max D.O.C. a_p	Wiper flat width B
120402	11	2,0
120404	11	2,0
120408	11	1,6
120412	11	1,2
120416	11	1,2
120408ZZ	11	6,6

Insert selection – 217/220.69-12

Universal insert: XOMX 120408TR-ME08 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	Max a_p slotting mm	First choice	Difficult operations	
1	0,10–0,20	9	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,10–0,20	9	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,10–0,20	8	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,10–0,20	7	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,10–0,18	6	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,10–0,16	5	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7	0,08–0,14	5	XOMX120408TR-D14 MP1500	XOMX120408TR-D14 MP3000	
8	0,08–0,18	7	XOMX120408TR-ME08 F40M	XOEX120408R-M07 T350M	
9	0,08–0,16	7	XOMX120408TR-ME08 F40M	XOEX120408R-M07 T350M	
10	0,10–0,18	6	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,10–0,14	5	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,10–0,25	9	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,10–0,20	9	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,10–0,18	8	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,10–0,16	7	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,10–0,20	9	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,08–0,18	9	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,10–0,20	9	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,06–0,10	5	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,06–0,10	5	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,06–0,08	5	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,06–0,12	7	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

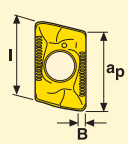
SMG	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20			
	v_c (m/min)														
1	580	490	420	–	–	–	525	440	380	–	–	–			
2	490	415	355	–	–	–	445	375	320	–	–	–			
3	405	340	295	–	–	–	365	310	265	–	–	–			
4	345	290	250	–	–	–	315	265	225	–	–	–			
5	290	245	210	–	–	–	260	220	190	–	–	–			
6	255	215	185	–	–	–	230	195	165	–	–	–			
7	65	55	–	–	–	–	65	55	–	–	–	–			
8	355	295	255	–	–	–	360	300	260	–	–	–			
9	275	235	200	–	–	–	280	235	205	–	–	–			
10	225	190	165	–	–	–	230	195	165	–	–	–			
11	170	140	–	–	–	–	170	145	–	–	–	–			
12	300	255	220	395	330	285	275	230	195	200	170	145			
13	265	225	190	345	290	250	240	200	175	175	150	125			
14	225	190	160	290	245	210	200	170	145	145	125	105			
15	185	155	135	240	200	175	165	140	120	120	105	90			
16	–	–	–	–	–	–	–	–	–	990	835	715			
17	–	–	–	–	–	–	–	–	–	800	675	580			
18	–	–	–	–	–	–	–	–	–	610	515	440			
19	75	65	–	–	–	–	75	65	–	–	–	–			
20	60	55	–	–	–	–	60	50	–	–	–	–			
21	55	45	–	–	–	–	50	44	–	–	–	–			
22	130	110	–	–	–	–	125	105	–	–	–	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,12	0,20	1,00
Side milling	25%	0,08	0,16	0,27	1,30
	10%	0,12	0,25	0,41	1,50
	5%	0,17	0,34	0,57	1,60
Average chip thickness h_m		0,04	0,08	0,13	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type l	Max D.O.C. a_p	Wiper flat width B
120402	11	2,0
120404	11	2,0
120408	11	1,6
120412	11	1,2
120416	11	1,2
120408ZZ	11	6,6

Insert selection – 217/220.69-18

Universal insert: XOMX 180608TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	Max a_p slotting mm	First choice	Difficult operations	
1	0,15–0,30	13	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
2	0,15–0,30	13	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
3	0,15–0,25	12	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
4	0,15–0,25	11	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
5	0,12–0,21	9	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
6	0,12–0,19	8	XOMX180608TR-MD15 MP1500	XOMX180608TR-D16 MP2500	
7	0,12–0,16	8	XOMX180608TR-MD15 MP1500	XOMX180608TR-D16 MP1500	
8	0,09–0,21	11	XOMX180608TR-M14 F40M	XOMX180608TR-M14 T350M	
9	0,09–0,19	11	XOMX180608TR-M14 F40M	XOMX180608TR-M14 T350M	
10	0,12–0,19	9	XOMX180608R-M10 T350M	XOMX180608R-M10 MM4500	
11	0,12–0,16	8	XOMX180608R-M10 T350M	XOMX180608R-M10 MM4500	
12	0,12–0,30	13	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
13	0,12–0,25	13	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
14	0,12–0,21	12	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
15	0,12–0,19	11	XOMX180608TR-M14 MP1500	XOMX180608TR-MD15 MP1500	
16	0,14–0,35	13	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
17	0,11–0,25	13	XOEX180608FR-E10 F40M	XOEX180608FR-E10 F40M	
18	0,14–0,35	13	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
19	0,09–0,14	8	XOMX180608R-M10 T350M	XOMX180608R-M10 F40M	
20	0,09–0,14	8	XOMX180608R-M10 T350M	XOMX180608R-M10 F40M	
21	0,08–0,12	8	XOMX180608R-M10 F40M	XOMX180608R-M10 MP3000	
22	0,09–0,17	11	XOMX180608R-M10 F40M	XOMX180608R-M10 F40M	

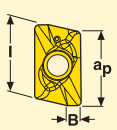
Cutting data – Full engagement width (a_e/D_c = 100%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35
	v_c (m/min)																				
1	515	420	345	455	375	305	435	355	290	400	325	270	280	230	190	345	280	235	–	–	–
2	435	355	295	385	315	260	365	300	245	335	275	225	240	195	160	295	240	195	–	–	–
3	360	295	245	320	260	215	305	245	205	280	225	185	195	160	130	240	200	165	–	–	–
4	310	250	205	275	225	185	260	210	175	240	195	160	170	135	115	205	170	140	–	–	–
5	255	210	–	225	185	–	215	175	–	200	160	–	140	115	–	170	140	–	–	–	–
6	225	185	–	200	165	–	190	155	–	175	140	–	120	100	–	150	125	–	–	–	–
7	60	50	–	50	40	–	48	39	–	48	39	–	–	–	–	41	34	–	–	–	–
8	355	290	–	280	230	–	275	225	–	260	215	–	205	165	135	235	195	–	–	–	–
9	275	225	–	220	180	–	215	175	–	205	165	–	160	130	110	185	150	–	–	–	–
10	225	185	–	180	145	–	175	145	–	165	135	–	130	105	90	150	125	–	–	–	–
11	170	135	–	135	110	–	130	105	–	125	100	–	95	80	65	115	90	–	–	–	–
12	270	220	180	240	195	160	225	185	150	205	170	140	130	105	85	180	145	120	215	175	145
13	235	195	160	210	170	140	200	160	135	180	150	125	115	90	75	160	130	105	190	155	130
14	200	160	–	175	145	–	165	135	–	155	125	–	95	80	–	135	110	–	160	130	110
15	165	135	–	145	120	–	140	115	–	125	105	–	80	65	–	110	90	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	895	730	605	–	–	–
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	725	590	485	–	–	–
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	550	450	370	–	–	–
19	–	–	–	60	–	–	60	–	–	55	–	–	35	–	–	50	–	–	–	–	–
20	–	–	–	49	–	–	46	–	–	44	–	–	28	–	–	40	–	–	–	–	–
21	–	–	–	42	–	–	40	–	–	38	–	–	24	–	–	34	–	–	–	–	–
22	–	–	–	100	–	–	95	–	–	90	–	–	60	48	–	85	–	–	–	–	–

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,20	0,35	1,00
Side milling	25%	0,13	0,27	0,47	1,30
	10%	0,20	0,41	0,72	1,50
	5%	0,29	0,57	1,01	1,60
Average chip thickness h_m		0,06	0,13	0,22	–

Dimensions in mm



Insert type l	Max D.O.C. a_p	Wiper flat width B
180604	17	2,4
180608	17	2,4
180612	17	2,4
180616	17	2,3
180620	17	2,2
180624	17	2,2
180631	17	2,2

Insert selection – 217/220.69-18

Universal insert: XOMX 180608TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	Max a_p slotting mm	First choice	Difficult operations	
1	0,15–0,30	13	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
2	0,15–0,30	13	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
3	0,15–0,25	12	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
4	0,15–0,25	11	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
5	0,12–0,21	9	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
6	0,12–0,19	8	XOMX180608TR-MD15 MP1500	XOMX180608TR-D16 MP2500	
7	0,12–0,16	8	XOMX180608TR-MD15 MP1500	XOMX180608TR-D16 MP1500	
8	0,09–0,21	11	XOMX180608TR-M14 F40M	XOMX180608TR-M14 T350M	
9	0,09–0,19	11	XOMX180608TR-M14 F40M	XOMX180608TR-M14 T350M	
10	0,12–0,19	9	XOMX180608R-M10 T350M	XOMX180608R-M10 MM4500	
11	0,12–0,16	8	XOMX180608R-M10 T350M	XOMX180608R-M10 MM4500	
12	0,12–0,30	13	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
13	0,12–0,25	13	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
14	0,12–0,21	12	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
15	0,12–0,19	11	XOMX180608TR-M14 MP1500	XOMX180608TR-MD15 MP1500	
16	0,14–0,35	13	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
17	0,11–0,25	13	XOEX180608FR-E10 F40M	XOEX180608FR-E10 F40M	
18	0,14–0,35	13	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
19	0,09–0,14	8	XOMX180608R-M10 T350M	XOMX180608R-M10 F40M	
20	0,09–0,14	8	XOMX180608R-M10 T350M	XOMX180608R-M10 F40M	
21	0,08–0,12	8	XOMX180608R-M10 F40M	XOMX180608R-M10 MP3000	
22	0,09–0,17	11	XOMX180608R-M10 F40M	XOMX180608R-M10 F40M	

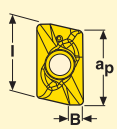
Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades												
	MK1500			MK2000			H25						
	f_z (mm/tooth)												
	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35				
	v_c (m/min)												
1	–	–	–	450	365	305	–	–	–				
2	–	–	–	380	310	255	–	–	–				
3	–	–	–	315	255	210	–	–	–				
4	–	–	–	270	220	180	–	–	–				
5	–	–	–	225	185	–	–	–	–				
6	–	–	–	195	160	–	–	–	–				
7	–	–	–	55	44	–	–	–	–				
8	–	–	–	310	250	–	–	–	–				
9	–	–	–	240	195	–	–	–	–				
10	–	–	–	200	160	–	–	–	–				
11	–	–	–	145	120	–	–	–	–				
12	335	275	225	235	190	160	170	140	115				
13	295	240	200	205	170	140	150	125	100				
14	250	205	–	175	140	–	125	105	–				
15	205	170	–	145	115	–	105	85	–				
16	–	–	–	–	–	–	850	695	570				
17	–	–	–	–	–	–	685	560	460				
18	–	–	–	–	–	–	525	425	350				
19	–	–	–	65	–	–	–	–	–				
20	–	–	–	50	–	–	–	–	–				
21	–	–	–	45	–	–	–	–	–				
22	–	–	–	105	90	–	–	–	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,20	0,35	1,00
Side milling	25%	0,13	0,27	0,47	1,30
	10%	0,20	0,41	0,72	1,50
	5%	0,29	0,57	0,01	1,60
Average chip thickness h_m		0,06	0,13	0,22	–

Dimensions in mm



Insert type l	Max D.O.C. a_p	Wiper flat width B
180604	17	2,4
180608	17	2,4
180612	17	2,4
180616	17	2,3
180620	17	2,2
180624	17	2,2
180631	17	2,2

Insert selection – 217/220.96-04

Universal insert: XNEX 040304TR-M08 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,07–0,15	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
2	0,07–0,15	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
3	0,07–0,13	XNEX040304TR-M08 MP2500	XNEX040304TR-M08 F40M	
4	0,07–0,13	XNEX040304TR-M08 MP2500	XNEX040304TR-M08 F40M	
5	0,07–0,12	XNEX040304TR-M08 MP2500	XNEX040304TR-M08 F40M	
6	0,07–0,11	XNEX040304TR-M08 MP1500	XNEX040304TR-M08 MP2500	
7	0,05–0,10	XNEX040304TR-M08 MP1500	XNEX040304TR-M08 MP3000	
8	0,07–0,12	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
9	0,07–0,10	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
10	0,07–0,11	XNEX040304TR-M08 F40M	XNEX040304TR-M08 MM4500	
11	0,07–0,10	XNEX040304TR-M08 F40M	XNEX040304TR-M08 MM4500	
12	0,07–0,17	XNEX040304TR-M08 MK1500	XNEX040304TR-M08 MK2000	
13	0,07–0,16	XNEX040304TR-M08 MK1500	XNEX040304TR-M08 MK2000	
14	0,07–0,13	XNEX040304TR-M08 MK1500	XNEX040304TR-M08 MK2000	
15	0,07–0,12	XNEX040304TR-M08 MP1500	XNEX040304TR-M08 MP1500	
16	0,07–0,13	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
17	0,07–0,13	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
18	0,07–0,13	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
19	0,05–0,08	XNEX040304TR-M08 T350M	XNEX040304TR-M08 F40M	
20	0,05–0,08	XNEX040304TR-M08 T350M	XNEX040304TR-M08 F40M	
21	0,05–0,07	XNEX040304TR-M08 F40M	XNEX040304TR-M08 MP3000	
22	0,05–0,09	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

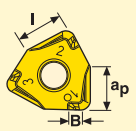
SMG	Grades																		
	MP1500			MP2500			MP3000			MM4500			F40M			F15M			
	f_z (mm/tooth)																		
	0,05	0,10	0,15	0,05	0,10	0,15	0,05	0,10	0,15	0,05	0,10	0,15	0,05	0,10	0,15	0,05	0,10	0,15	
SMG	v_c (m/min)																		
1	605	515	460	535	455	410	505	430	385	330	280	250	405	345	310	–	–	–	
2	510	435	390	455	385	345	430	365	325	280	235	210	345	295	260	–	–	–	
3	420	360	320	375	320	285	355	300	270	230	195	175	285	240	215	–	–	–	
4	360	305	275	320	270	245	300	260	230	195	165	150	240	205	185	–	–	–	
5	300	255	230	265	225	205	250	215	190	165	140	125	200	170	155	–	–	–	
6	265	225	200	235	200	180	220	190	170	–	–	–	175	150	135	–	–	–	
7	70	60	–	60	50	–	55	48	–	–	–	–	48	41	–	–	–	–	
8	415	350	315	325	280	250	320	275	245	240	205	180	275	235	210	–	–	–	
9	325	275	250	255	220	195	255	215	195	190	160	145	220	185	165	–	–	–	
10	265	225	205	210	180	160	205	175	160	155	130	115	180	150	135	–	–	–	
11	195	170	–	155	135	–	155	130	–	115	95	85	130	115	–	–	–	–	
12	315	270	240	280	240	215	265	225	200	150	130	115	210	180	160	255	215	195	
13	275	235	210	245	210	185	230	200	175	130	115	100	185	160	140	225	190	170	
14	230	200	175	205	175	155	195	165	150	110	95	85	155	135	120	185	160	145	
15	190	165	145	170	145	130	160	140	125	90	80	70	130	110	100	–	–	–	
16	–	–	–	–	–	–	–	–	–	–	–	–	1050	895	800	1260	1075	960	
17	–	–	–	–	–	–	–	–	–	–	–	–	845	720	645	1015	865	775	
18	–	–	–	–	–	–	–	–	–	–	–	–	645	550	490	775	660	590	
19	–	–	–	70	60	–	65	55	–	41	35	–	60	50	–	–	–	–	
20	–	–	–	60	49	–	55	46	–	33	28	–	47	40	–	–	–	–	
21	–	–	–	50	42	–	47	40	–	28	24	–	40	34	–	–	–	–	
22	–	–	–	120	100	–	110	95	–	70	60	–	95	85	–	–	–	–	

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,07	0,18	0,30	1,00
Side milling	25%	0,09	0,24	0,40	1,30
	10%	0,14	0,37	0,61	1,50
	5%	0,20	0,52	0,86	1,60
Average chip thickness h_m		0,04	0,11	0,19	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type	Max D.O.C. a_p	Wiper flat width B
080608	7,5	1,3
080612	7,5	0,9
080616	7,5	0,5

Insert selection – 217/220.96-04

Universal insert: XNEX 040304TR-M08 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,07–0,15	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
2	0,07–0,15	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
3	0,07–0,13	XNEX040304TR-M08 MP2500	XNEX040304TR-M08 F40M	
4	0,07–0,13	XNEX040304TR-M08 MP2500	XNEX040304TR-M08 F40M	
5	0,07–0,12	XNEX040304TR-M08 MP2500	XNEX040304TR-M08 F40M	
6	0,07–0,11	XNEX040304TR-M08 MP1500	XNEX040304TR-M08 MP2500	
7	0,05–0,10	XNEX040304TR-M08 MP1500	XNEX040304TR-M08 MP3000	
8	0,07–0,12	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
9	0,07–0,10	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
10	0,07–0,11	XNEX040304TR-M08 F40M	XNEX040304TR-M08 MM4500	
11	0,07–0,10	XNEX040304TR-M08 F40M	XNEX040304TR-M08 MM4500	
12	0,07–0,17	XNEX040304TR-M08 MK1500	XNEX040304TR-M08 MK2000	
13	0,07–0,16	XNEX040304TR-M08 MK1500	XNEX040304TR-M08 MK2000	
14	0,07–0,13	XNEX040304TR-M08 MK1500	XNEX040304TR-M08 MK2000	
15	0,07–0,12	XNEX040304TR-M08 MP1500	XNEX040304TR-M08 MP1500	
16	0,07–0,13	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
17	0,07–0,13	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
18	0,07–0,13	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	
19	0,05–0,08	XNEX040304TR-M08 T350M	XNEX040304TR-M08 F40M	
20	0,05–0,08	XNEX040304TR-M08 T350M	XNEX040304TR-M08 F40M	
21	0,05–0,07	XNEX040304TR-M08 F40M	XNEX040304TR-M08 MP3000	
22	0,05–0,09	XNEX040304TR-M08 F40M	XNEX040304TR-M08 F40M	

Cutting data – Full engagement width (a_e/D_c = 100%)

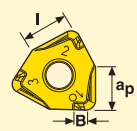
SMG	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,05	0,10	0,15	0,05	0,10	0,15	0,05	0,10	0,15	0,05	0,10	0,15			
	v_c (m/min)														
1	585	495	445	–	–	–	525	450	400	–	–	–			
2	495	420	375	–	–	–	445	380	340	–	–	–			
3	410	350	310	–	–	–	370	315	280	–	–	–			
4	350	295	265	–	–	–	315	270	240	–	–	–			
5	290	250	220	–	–	–	260	225	200	–	–	–			
6	255	215	195	–	–	–	230	195	175	–	–	–			
7	65	55	–	–	–	–	65	55	–	–	–	–			
8	355	300	270	–	–	–	360	305	275	–	–	–			
9	280	240	215	–	–	–	285	240	215	–	–	–			
10	230	195	175	–	–	–	230	200	175	–	–	–			
11	170	145	–	–	–	–	170	145	–	–	–	–			
12	305	260	230	395	335	300	275	235	210	200	170	155			
13	265	230	205	345	295	265	240	205	185	175	150	135			
14	225	190	170	290	250	225	205	175	155	150	125	115			
15	185	160	140	240	205	185	170	145	130	125	105	95			
16	–	–	–	–	–	–	–	–	–	995	850	760			
17	–	–	–	–	–	–	–	–	–	805	685	615			
18	–	–	–	–	–	–	–	–	–	615	525	470			
19	80	65	–	–	–	–	75	65	–	–	–	–			
20	65	55	–	–	–	–	60	50	–	–	–	–			
21	55	46	–	–	–	–	50	45	–	–	–	–			
22	130	110	–	–	–	–	125	105	–	–	–	–			

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,07	0,18	0,30	1,00
Side milling	25%	0,09	0,24	0,40	1,30
	10%	0,14	0,37	0,61	1,50
	5%	0,20	0,52	0,86	1,60
Average chip thickness h_m		0,04	0,11	0,19	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type	Max D.O.C. a_p	Wiper flat width B
080608	7,5	1,3
080612	7,5	0,9
080616	7,5	0,5

Insert selection – 217/220.96-08

Universal insert: XNEX080608-M13 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,10–0,25	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 T350M	
2	0,10–0,25	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 T350M	
3	0,10–0,23	XNEX080608TR-M13 MP2500	XNEX080608TR-M13 T350M	
4	0,10–0,21	XNEX080608TR-M13 MP2500	XNEX080608TR-M13 T350M	
5	0,10–0,19	XNEX080608TR-M13 MP2500	XNEX080608TR-M13 T350M	
6	0,10–0,17	XNEX080608TR-MD15 MP1500	XNEX080608TR-MD15 MP2500	
7	0,08–0,15	XNEX080608TR-MD15 MP1500	XNEX080608TR-MD15 MP3000	
8	0,10–0,20	XNEX080608TR-ME09 F40M	XNEX080608TR-M13 T350M	
9	0,10–0,17	XNEX080608TR-ME09 F40M	XNEX080608TR-M13 T350M	
10	0,10–0,18	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 MM4500	
11	0,10–0,15	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 MM4500	
12	0,10–0,30	XNEX080608TR-M13 MK1500	XNEX080608TR-MD15 MK2000	
13	0,10–0,25	XNEX080608TR-M13 MK1500	XNEX080608TR-MD15 MK2000	
14	0,10–0,20	XNEX080608TR-M13 MK1500	XNEX080608TR-MD15 MK2000	
15	0,10–0,18	XNEX080608TR-M13 MP1500	XNEX080608TR-MD15 MP1500	
16	0,10–0,20	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 F40M	
17	0,10–0,19	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 F40M	
18	0,10–0,19	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 F40M	
19	0,07–0,12	XNEX080608TR-ME09 T350M	XNEX080608TR-ME09 F40M	
20	0,07–0,12	XNEX080608TR-ME09 T350M	XNEX080608TR-ME09 F40M	
21	0,07–0,09	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 MP3000	
22	0,07–0,13	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

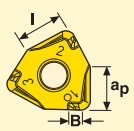
	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20
SMG	v_c (m/min)																				
1	560	475	405	495	420	360	470	395	340	435	365	315	305	255	220	375	315	275	–	–	–
2	475	400	345	420	355	305	400	335	290	365	310	265	260	220	185	320	270	230	–	–	–
3	390	330	285	345	295	250	330	275	240	305	255	220	215	180	155	265	220	190	–	–	–
4	335	280	245	295	250	215	280	235	205	260	220	185	180	155	130	225	190	165	–	–	–
5	280	235	200	245	210	180	235	195	170	215	180	155	150	130	110	185	160	135	–	–	–
6	245	205	175	215	185	155	205	175	150	190	160	135	–	–	–	165	140	120	–	–	–
7	65	55	–	55	45	–	55	44	–	50	44	–	–	–	–	45	38	–	–	–	–
8	385	325	280	305	255	220	300	250	215	285	240	205	220	185	160	255	215	185	–	–	–
9	300	255	220	240	200	175	235	200	170	220	190	160	175	145	125	200	170	145	–	–	–
10	245	210	180	195	165	140	190	160	140	180	155	130	145	120	105	165	140	120	–	–	–
11	185	155	–	145	120	–	140	120	–	135	115	–	105	90	75	125	105	–	–	–	–
12	290	245	210	260	220	185	245	205	180	225	190	165	140	120	100	195	165	140	235	200	170
13	255	215	185	225	190	165	215	180	155	200	165	145	125	105	90	170	145	125	205	175	150
14	215	180	155	190	160	140	180	155	130	165	140	120	105	85	75	145	120	105	175	145	125
15	180	150	130	160	135	115	150	125	110	140	115	100	85	70	60	120	100	85	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	975	820	705	1170	985	845
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	785	665	570	945	795	685
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	600	505	435	720	605	520
19	–	–	–	65	55	–	65	55	–	60	50	–	38	32	–	55	45	–	–	–	–
20	–	–	–	55	45	–	50	42	–	48	40	–	31	26	–	43	37	–	–	–	–
21	–	–	–	46	39	–	43	37	–	41	35	–	26	22	–	37	32	–	–	–	–
22	–	–	–	110	95	–	105	90	–	100	85	–	65	55	–	90	75	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,07	0,18	0,30	1,00
Side milling	25%	0,09	0,24	0,40	1,30
	10%	0,14	0,37	0,61	1,50
	5%	0,20	0,52	0,86	1,60
Average chip thickness h_m		0,04	0,11	0,19	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type	Max D.O.C. a_p	Wiper flat width B
080608	7,5	1,3
080612	7,5	0,9
080616	7,5	0,5

Insert selection – 217/220.96-08

Universal insert: XNEX080608-M13 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,10–0,25	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 T350M	
2	0,10–0,25	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 T350M	
3	0,10–0,23	XNEX080608TR-M13 MP2500	XNEX080608TR-M13 T350M	
4	0,10–0,21	XNEX080608TR-M13 MP2500	XNEX080608TR-M13 T350M	
5	0,10–0,19	XNEX080608TR-M13 MP2500	XNEX080608TR-M13 T350M	
6	0,10–0,17	XNEX080608TR-MD15 MP1500	XNEX080608TR-MD15 MP2500	
7	0,08–0,15	XNEX080608TR-MD15 MP1500	XNEX080608TR-MD15 MP3000	
8	0,10–0,20	XNEX080608TR-ME09 F40M	XNEX080608TR-M13 T350M	
9	0,10–0,17	XNEX080608TR-ME09 F40M	XNEX080608TR-M13 T350M	
10	0,10–0,18	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 MM4500	
11	0,10–0,15	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 MM4500	
12	0,10–0,30	XNEX080608TR-M13 MK1500	XNEX080608TR-MD15 MK2000	
13	0,10–0,25	XNEX080608TR-M13 MK1500	XNEX080608TR-MD15 MK2000	
14	0,10–0,20	XNEX080608TR-M13 MK1500	XNEX080608TR-MD15 MK2000	
15	0,10–0,18	XNEX080608TR-M13 MP1500	XNEX080608TR-MD15 MP1500	
16	0,10–0,20	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 F40M	
17	0,10–0,19	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 F40M	
18	0,10–0,19	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 F40M	
19	0,07–0,12	XNEX080608TR-ME09 T350M	XNEX080608TR-ME09 F40M	
20	0,07–0,12	XNEX080608TR-ME09 T350M	XNEX080608TR-ME09 F40M	
21	0,07–0,09	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 MP3000	
22	0,07–0,13	XNEX080608TR-ME09 F40M	XNEX080608TR-ME09 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

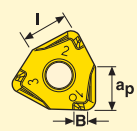
SMG	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20			
	v_c (m/min)														
1	540	455	395	–	–	–	490	410	355	–	–	–			
2	460	385	335	–	–	–	415	350	300	–	–	–			
3	380	320	275	–	–	–	340	290	250	–	–	–			
4	325	275	235	–	–	–	290	245	210	–	–	–			
5	270	225	195	–	–	–	245	205	175	–	–	–			
6	235	200	170	–	–	–	215	180	155	–	–	–			
7	60	49	–	–	–	–	60	49	–	–	–	–			
8	330	280	240	–	–	–	335	280	240	–	–	–			
9	260	220	190	–	–	–	265	220	190	–	–	–			
10	210	180	155	–	–	–	215	180	155	–	–	–			
11	155	130	–	–	–	–	160	135	–	–	–	–			
12	280	240	205	365	310	265	255	215	185	185	155	135			
13	250	210	180	320	270	235	225	190	160	165	140	120			
14	210	175	150	270	230	195	190	160	135	140	115	100			
15	175	145	125	225	190	165	155	130	115	115	95	85			
16	–	–	–	–	–	–	–	–	–	925	780	670			
17	–	–	–	–	–	–	–	–	–	745	630	540			
18	–	–	–	–	–	–	–	–	–	570	480	410			
19	70	60	–	–	–	–	70	60	–	–	–	–			
20	60	49	–	–	–	–	55	48	–	–	–	–			
21	50	42	–	–	–	–	49	41	–	–	–	–			
22	120	100	–	–	–	–	115	100	–	–	–	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,07	0,18	0,30	1,00
Side milling	25%	0,09	0,24	0,40	1,30
	10%	0,14	0,37	0,61	1,50
	5%	0,20	0,52	0,86	1,60
Average chip thickness h_m		0,04	0,11	0,19	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert type	Max D.O.C. a_p	Wiper flat width B
080608	7,5	1,3
080612	7,5	0,9
080616	7,5	0,5

Insert selection – 217/220.99-09

Universal insert: SONX 09T304TR-M10 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,06–0,18	SONX09T304TR-ME06 F40M	SONX09T304TR-M10 T350M	
2	0,06–0,18	SONX09T304TR-ME06 F40M	SONX09T304TR-M10 T350M	
3	0,08–0,18	SONX09T304TR-M10 MP2500	SONX09T304TR-M10 T350M	
4	0,08–0,18	SONX09T304TR-M10 MP2500	SONX09T304TR-M10 T350M	
5	0,08–0,15	SONX09T304TR-M10 MP2500	SONX09T304TR-M10 T350M	
6	0,08–0,15	SONX09T304TR-M10 MP2500	SONX09T304TR-M10 T350M	
7	0,06–0,12	SONX09T304TR-M10 MP1500	SONX09T308TR-M10 MP1500	
8	0,06–0,15	SONX09T304TR-M10 MP2500	SONX09T304TR-M10 T350M	
9	0,06–0,15	SONX09T304TR-M10 MP2500	SONX09T304TR-M10 T350M	
10	0,08–0,12	SONX09T304TR-M10 T350M	SONX09T308TR-M10 F40M	
11	0,08–0,12	SONX09T304TR-M10 F40M	SONX09T308TR-M10 F40M	
12	0,08–0,18	SONX09T304TR-M10 MK1500	SONX09T308TR-M10 MK2000	
13	0,08–0,18	SONX09T304TR-M10 MK1500	SONX09T308TR-M10 MK2000	
14	0,08–0,16	SONX09T304TR-M10 MK1500	SONX09T308TR-M10 MK2000	
15	0,08–0,12	SONX09T304TR-M10 MP1500	SONX09T308TR-M10 MK2000	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	0,06–0,12	SONX09T304TR-M10 T350M	SONX09T308TR-M10 F40M	
20	0,06–0,12	SONX09T304TR-M10 T350M	SONX09T308TR-M10 F40M	
21	0,06–0,12	SONX09T304TR-M10 F40M	SONX09T308TR-M10 F40M	
22	0,06–0,12	SONX09T304TR-ME06 F40M	SONX09T308TR-M10 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

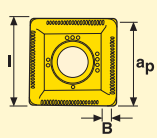
	Grades																		
	MP1500			MP2500			T350M			F40M			MK1500			MK2000			
	f_z (mm/tooth)																		
	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18	0,06	0,12	0,18	
SMG	v_c (m/min)																		
1	560	470	420	495	420	370	430	365	325	375	315	280	–	–	–	490	410	365	
2	475	400	355	420	355	315	365	310	275	320	270	240	–	–	–	415	350	310	
3	390	330	295	345	290	260	300	255	225	265	220	195	–	–	–	340	290	255	
4	335	280	250	295	250	220	260	215	195	225	190	170	–	–	–	290	245	220	
5	280	235	210	245	210	185	215	180	160	185	160	140	–	–	–	245	205	180	
6	245	205	185	215	180	160	190	160	140	165	140	125	–	–	–	215	180	160	
7	65	55	–	55	45	–	50	43	–	45	38	–	–	–	–	60	49	–	
8	385	325	285	305	255	225	280	240	210	255	215	190	–	–	–	335	280	250	
9	300	255	225	240	200	180	220	185	165	200	170	150	–	–	–	260	220	195	
10	245	205	–	195	165	–	180	155	–	165	140	–	–	–	–	215	180	–	
11	180	155	–	145	120	–	135	115	–	120	105	–	–	–	–	160	135	–	
12	290	245	220	260	220	195	225	190	170	195	165	145	365	310	275	255	215	190	
13	255	215	190	225	190	170	200	165	150	170	145	130	320	270	240	225	190	165	
14	215	180	160	190	160	145	165	140	125	145	120	110	270	230	205	190	160	140	
15	180	150	–	160	135	–	140	115	–	120	100	–	225	190	–	155	130	–	
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
19	80	70	–	65	55	–	60	50	–	55	45	–	–	–	–	70	60	–	
20	65	55	–	55	45	–	48	40	–	43	37	–	–	–	–	55	47	–	
21	55	47	–	46	39	–	41	35	–	37	31	–	–	–	–	49	41	–	
22	135	115	–	110	95	–	100	85	–	90	75	–	–	–	–	115	100	–	

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,12	0,18	1,00
Side milling	25%	0,08	0,16	0,24	1,30
	10%	0,12	0,25	0,37	1,50
	5%	0,17	0,34	0,52	1,60
Average chip thickness h_m		0,04	0,08	0,11	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
9	8	1,3

Insert selection – 220.99-12

Universal insert: SONX 120508TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,08–0,23	SONX120508TR-ME08 F40M	SONX120508TR-M12 T350M	
2	0,08–0,23	SONX120508TR-ME08 F40M	SONX120508TR-M12 T350M	
3	0,10–0,23	SONX120508TR-M12 MP2500	SONX120508TR-M12 T350M	
4	0,10–0,20	SONX120508TR-M12 MP2500	SONX120508TR-M12 T350M	
5	0,10–0,18	SONX120508TR-M12 MP2500	SONX120508TR-M12 T350M	
6	0,10–0,17	SONX120508TR-M12 MP2500	SONX120508TR-M12 MP1500	
7	0,08–0,12	SONX120508TR-M12 MP1500	SONX120508TR-M12 MP1500	
8	0,10–0,20	SONX120508TR-M12 MP2500	SONX120508TR-M12 T350M	
9	0,10–0,16	SONX120508TR-M12 MP2500	SONX120508TR-M12 T350M	
10	0,08–0,14	SONX120508TR-M12 MP2500	SONX120508TR-M12 F40M	
11	0,08–0,14	SONX120508TR-M12 F40M	SONX120508TR-M12 F40M	
12	0,10–0,23	SONX120508TR-M12 MK1500	SONX120508TR-M12 MK2000	
13	0,10–0,18	SONX120508TR-M12 MK1500	SONX120508TR-M12 MK2000	
14	0,10–0,16	SONX120508TR-M12 MK1500	SONX120508TR-M12 MK2000	
15	0,10–0,14	SONX120508TR-M12 MP1500	SONX120508TR-M12 MP1500	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	0,10–0,14	SONX120508TR-M12 T350M	SONX120508TR-M12 F40M	
20	0,10–0,14	SONX120508TR-M12 T350M	SONX120508TR-M12 F40M	
21	0,10–0,14	SONX120508TR-M12 F40M	SONX120508TR-M12 T350M	
22	0,10–0,14	SONX120508TR-M12 F40M	SONX120508TR-M12 F40M	

Cutting data – Full engagement width (a_e/D_c = 100%)

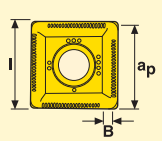
SMG	Grades																		
	MP1500			MP2500			T350M			F40M			MK1500			MK2000			
	f_z (mm/tooth)																		
	0,08	0,15	0,23	0,08	0,15	0,23	0,08	0,15	0,23	0,08	0,15	0,23	0,08	0,15	0,23	0,08	0,15	0,23	
SMG	v_c (m/min)																		
1	550	465	405	485	410	360	425	360	315	370	310	270	–	–	–	480	405	355	
2	465	390	345	410	350	305	360	305	265	310	265	230	–	–	–	405	340	300	
3	385	325	285	340	285	250	295	250	220	260	220	190	–	–	–	335	285	245	
4	330	275	240	290	245	215	255	215	185	220	185	160	–	–	–	285	240	210	
5	275	230	200	240	205	180	210	180	155	185	155	135	–	–	–	240	200	175	
6	240	200	–	210	180	–	185	155	–	160	135	–	–	–	–	210	175	–	
7	65	55	–	55	45	–	50	43	–	44	37	–	–	–	–	55	48	–	
8	375	315	275	295	250	220	275	235	205	250	215	185	–	–	–	330	275	240	
9	295	250	220	235	195	170	220	185	160	200	165	145	–	–	–	255	215	190	
10	240	205	–	190	160	140	180	150	130	160	135	120	–	–	–	210	180	155	
11	180	150	–	140	120	–	130	110	–	120	100	–	–	–	–	155	130	–	
12	285	240	210	255	215	185	220	185	165	190	160	140	360	305	265	250	210	185	
13	250	210	185	225	190	165	195	165	145	170	140	125	315	265	235	220	185	160	
14	210	180	155	185	160	140	165	140	120	140	120	105	265	225	195	185	155	135	
15	175	150	–	155	130	–	135	115	–	115	100	–	220	185	–	155	130	–	
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
19	80	65	–	65	55	–	60	49	–	55	45	–	–	–	–	70	60	–	
20	65	55	–	50	44	–	47	39	–	43	36	–	–	–	–	55	47	–	
21	55	46	–	45	38	–	40	34	–	37	31	–	–	–	–	48	40	–	
22	130	110	–	110	90	–	95	80	–	90	75	–	–	–	–	115	95	–	

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,08	0,15	0,23	1,00
Side milling	25%	0,11	0,20	0,31	1,30
	10%	0,16	0,31	0,47	1,50
	5%	0,23	0,43	0,66	1,60
Average chip thickness h_m		0,05	0,10	0,15	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
12	11	1,0

Insert selection – 220.99-15

Universal insert: SONX 150508TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,08–0,25	SONX150508TR-ME10 F40M	SONX150508TR-M14 T350M	
2	0,08–0,25	SONX150508TR-ME10 F40M	SONX150508TR-M14 T350M	
3	0,10–0,25	SONX150508TR-M14 MP2500	SONX150508TR-M14 T350M	
4	0,10–0,22	SONX150508TR-M14 MP2500	SONX150508TR-M14 T350M	
5	0,10–0,20	SONX150508TR-M14 MP2500	SONX150508TR-M14 T350M	
6	0,10–0,18	SONX150508TR-M14 MP2500	SONX150508TR-M14 MP1500	
7	0,08–0,12	SONX150508TR-M14 MP1500	SONX150508TR-M14 MP1500	
8	0,10–0,22	SONX150508TR-M14 MP2500	SONX150508TR-M14 T350M	
9	0,10–0,18	SONX150508TR-M14 MP2500	SONX150508TR-M14 T350M	
10	0,08–0,15	SONX150508TR-M14 MP2500	SONX150508TR-M14 F40M	
11	0,08–0,15	SONX150508TR-M14 F40M	SONX150508TR-M14 F40M	
12	0,10–0,25	SONX150508TR-M14 MK1500	SONX150508TR-M14 MK2000	
13	0,10–0,20	SONX150508TR-M14 MK1500	SONX150508TR-M14 MK2000	
14	0,10–0,18	SONX150508TR-M14 MK1500	SONX150508TR-M14 MK2000	
15	0,10–0,15	SONX150508TR-M14 MP1500	SONX150508TR-M14 MP1500	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	0,10–0,15	SONX150508TR-M14 T350M	SONX150508TR-M14 F40M	
20	0,10–0,15	SONX150508TR-M14 T350M	SONX150508TR-M14 F40M	
21	0,10–0,15	SONX150508TR-M14 F40M	SONX150508TR-M14 T350M	
22	0,10–0,15	SONX150508TR-M14 F40M	SONX150508TR-M14 F40M	

Cutting data – Full engagement width (a_e/D_c = 100%)

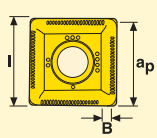
SMG	Grades																		
	MP1500			MP2500			T350M			F40M			MK1500			MK2000			
	f_z (mm/tooth)																		
	0,08	0,15	0,25	0,08	0,15	0,25	0,08	0,15	0,25	0,08	0,15	0,25	0,08	0,15	0,25	0,08	0,15	0,25	
SMG	v_c (m/min)																		
1	525	445	380	465	395	335	405	345	290	355	300	255	–	–	–	460	390	330	
2	445	375	320	395	335	285	345	290	245	300	255	215	–	–	–	390	330	280	
3	370	310	265	325	275	235	285	240	205	245	210	175	–	–	–	320	270	230	
4	315	265	225	280	235	200	245	205	175	210	180	150	–	–	–	275	230	195	
5	260	220	190	230	195	165	200	170	145	175	150	125	–	–	–	230	195	165	
6	230	195	165	205	170	145	180	150	125	155	130	110	–	–	–	200	170	145	
7	65	55	–	50	43	–	49	41	–	42	36	–	–	–	–	55	46	–	
8	360	305	260	285	240	205	265	225	190	240	205	175	–	–	–	315	265	225	
9	285	240	205	225	190	160	210	175	150	190	160	135	–	–	–	245	210	175	
10	230	195	–	185	155	–	170	145	–	155	130	–	–	–	–	200	170	–	
11	170	145	–	135	115	–	125	105	–	115	95	–	–	–	–	150	125	–	
12	275	230	195	245	205	175	210	180	150	185	155	130	345	290	245	240	200	170	
13	240	205	175	215	180	155	185	155	135	160	135	115	305	255	215	210	180	150	
14	205	170	145	180	150	130	155	130	110	135	115	100	255	215	185	175	150	125	
15	170	140	–	150	125	–	130	110	–	115	95	–	210	180	–	145	125	–	
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
19	75	65	–	60	55	–	55	47	–	50	43	–	–	–	–	65	55	–	
20	60	50	–	50	42	–	45	38	–	41	34	–	–	–	–	55	45	–	
21	50	44	–	43	37	–	39	33	–	35	30	–	–	–	–	46	39	–	
22	125	105	–	105	90	–	95	80	–	85	70	–	–	–	–	110	95	–	

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,08	0,15	0,25	1,00
Side milling	25%	0,11	0,20	0,33	1,30
	10%	0,16	0,31	0,51	1,50
	5%	0,23	0,43	0,72	1,60
Average chip thickness h_m		0,05	0,10	0,16	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
15	14	2,0

Insert selection – 216.19 ∅ 12 - 20 mm

SMG	∅ = 12 Feed mm/tooth	First choice		∅= 15 Feed mm/tooth	First choice	
1-3	0,05-0,08	COMX 060104T-MD05 S60M		0,06-0,10	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
4-5	0,05-0,08	COMX 060104T-MD05 S60M		0,06-0,10	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
6-7	0,04-0,06	COMX 060104T-MD05 S60M		0,04-0,07	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
8	0,05-0,08	COMX 060104T-MD05 S60M		0,06-0,10	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
9	0,04-0,07	COMX 060104T-MD05 S60M		0,06-0,10	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
10-11	0,04-0,06	COMX 060104T-MD05 S60M		0,05-0,09	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
12	0,05-0,08	COMX 060104T-MD05 S60M		0,06-0,10	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
13-14	0,05-0,08	COMX 060104T-MD05 S60M		0,05-0,10	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
15	0,04-0,06	COMX 060104T-MD05 S60M		0,05-0,08	XCMX 050204T-MD05 S60M	SPMX 0602AP-75 S60M
	∅ = 18	First choice		∅ = 20	First choice	
1-3	0,07-0,12	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,08-0,14	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
4-5	0,07-0,12	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,08-0,13	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
6-7	0,05-0,08	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,06-0,10	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
8	0,08-0,12	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,10-0,14	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
9	0,07-0,10	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,08-0,12	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
10-11	0,06-0,10	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,07-0,11	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
12	0,07-0,12	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,10-0,14	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
13-14	0,06-0,10	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,08-0,12	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
15	0,06-0,10	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,07-0,12	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
16-18	0,07-0,12	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,10-0,14	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
19-21	0,05-0,08	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,07-0,10	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
22	0,06-0,10	CCMX 060204T-MD06 F40M	SPMX 0602AP-75 F40M	0,08-0,10	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M

Cutting data – Full engagement (a_e /D_c = 100%)

SMG	Grades										
	F40M			S60M							
	f_z (mm/tooth)										
	0,04	0,08	0,14	0,04	0,08	0,14					
	v_c (m/min)										
1	320	275	240	255	220	190					
2	270	235	200	215	185	160					
3	225	195	165	180	155	135					
4	190	165	140	155	130	115					
5	160	135	120	125	110	95					
6	140	120	105	110	95	85					
7	38	33	–	31	26	–					
8	220	190	165	175	150	130					
9	170	150	130	140	120	100					
10	140	120	105	115	95	85					
11	105	90	–	85	70	–					
12	165	145	125	135	115	100					
13	145	125	110	115	100	85					
14	125	105	90	100	85	75					
15	100	90	75	80	70	–					
16	830	715	615	665	570	490					
17	670	575	495	535	460	395					
18	510	440	380	410	350	305					
19	46	40	–	37	32	–					
20	37	32	–	30	25	–					
21	32	27	–	25	22	–					
22	75	65	–	60	55	–					

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,04	0,08	0,14	1,00
Side milling	25%	0,05	0,11	0,19	1,30
	10%	0,08	0,16	0,29	1,50
	5%	0,11	0,23	0,40	1,60
Average chip thickness h_m		0,03	0,05	0,09	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Insert selection – 216.19 ∅ 25 - 50 mm

SMG	∅ = 25 f_z mm/tooth	First choice		∅ = 32 f_z mm/tooth	First choice	
1-3	0,10-0,16	CCMX 09T308T-ME09 F40M	SPMX 0903AP-75* F40M	0,10-0,18	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75** F40M
4-5	0,10-0,15	CCMX 09T308T-MD09 F40M	SPMX 09T3AP-75* F40M	0,10-0,16	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75** F40M
6-7	0,06-0,10	CCMX 09T308T-MD09 F40M	SPMX 0903AP-75* F40M	0,08-0,12	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75** F40M
8	0,10-0,14	CCMX 09T308T-ME09 F40M	SPMX 0903AP-75* F40M	0,10-0,16	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75** F40M
9	0,08-0,12	CCMX 09T308T-ME09 F40M	SPMX 0903AP-75* F40M	0,09-0,14	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75** F40M
10-11	0,08-0,12	CCMX 09T308T-MD09 F40M	SPMX 0903AP-75* F40M	0,08-0,12	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75** F40M
12	0,10-0,16	CCMX 09T308T-MD09 F40M	SPMX 0903AP-75* F40M	0,10-0,18	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75** F40M
13-14	0,09-0,13	CCMX 09T308T-MD09 F40M	SPMX 0903AP-75* F40M	0,10-0,16	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75** F40M
15	0,08-0,12	CCMX 09T308T-MD09 F40M	SPMX 0903AP-75* F40M	0,08-0,14	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75** F40M
16-17	0,10-0,16	CCMX 09T308T-ME09 F40M	SPMX 0903AP-75* F40M	0,10-0,18	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75** F40M
20-21	0,10-0,12	CCMX 09T308T-ME09 F40M	SPMX 0903AP-75* F40M	0,10-0,12	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75** F40M
22	0,10-0,14	CCMX 09T308T-ME09 F40M	SPMX 0903AP-75* F40M	0,10-0,14	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75** F40M
	∅ = 40	First choice		∅ = 50	First choice	
1-3	0,10-0,18	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75 F40M	0,10-0,18	CCMX 120412T-ME11 F40M	SPMX 0903AP-75 F40M
4-5	0,10-0,16	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75 F40M	0,10-0,16	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
6-7	0,08-0,12	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75 F40M	0,08-0,12	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
8	0,10-0,16	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75 F40M	0,10-0,16	CCMX 120412T-ME11 F40M	SPMX 0903AP-75 F40M
9	0,09-0,14	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75 F40M	0,09-0,14	CCMX 120412T-ME11 F40M	SPMX 0903AP-75 F40M
10-11	0,08-0,12	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75 F40M	0,08-0,12	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
12	0,10-0,18	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75 F40M	0,10-0,18	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
13-14	0,10-0,16	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75 F40M	0,10-0,16	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
15	0,08-0,14	CCMX 120412T-MD11 F40M	SPMX 12T3AP-75 F40M	0,08-0,14	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
16-18	0,10-0,18	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75 F40M	0,10-0,18	CCMX 120412T-ME11 F40M	SPMX 0903AP-75 F40M
19-21	0,10-0,12	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75 F40M	0,10-0,12	CCMX 120412T-ME11 F40M	SPMX 0903AP-75 F40M
22	0,10-0,14	CCMX 120412T-ME11 F40M	SPMX 12T3AP-75 F40M	0,10-0,14	CCMX 120412T-ME11 F40M	SPMX 0903AP-75 F40M

*Cutter 216.19-2525.3-18 has insert SPMX0602AP-75. **Cutter 216.19-3232.3-24 has insert SPMX0903AP-75.

Cutting data – Full engagement (a_e /D_c = 100%)

SMG	Grades								
	F40M								
	f_z (mm/tooth)								
	0,06	0,12	0,18						
	v_c (m/min)								
1	295	250	220						
2	250	210	190						
3	210	175	155						
4	175	150	135						
5	150	125	110						
6	130	110	95						
7	35	30	–						
8	205	170	150						
9	160	135	120						
10	130	110	100						
11	95	80	–						
12	155	130	115						
13	135	115	100						
14	115	95	85						
15	95	80	70						
16	770	650	575						
17	620	525	465						
18	475	400	355						
19	43	36	–						
20	34	29	–						
21	30	25	–						
22	70	60	–						

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,12	0,18	1,00
Side milling	25%	0,08	0,16	0,24	1,30
	10%	0,12	0,25	0,37	1,50
	5%	0,17	0,34	0,52	1,60
Average chip thickness h_m		0,04	0,08	0,11	–

Insert selection – 216.19-xx.3 ∅ 25 - 32 mm

SMG	∅ = 25 f_z mm/tooth	First choice		
1-3	0,07-0,12	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
4-5	0,07-0,12	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
6-7	0,05-0,08	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
8	0,08-0,12	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
9	0,07-0,10	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
10-11	0,06-0,10	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
12	0,07-0,12	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
13-14	0,06-0,10	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
15	0,06-0,10	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
16-17	0,07-0,12	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
20-21	0,05-0,08	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
22	0,06-0,10	CCMX 060204T-MD06 F40M	CCMX 080308T-MD07 F40M	SPMX 0602AP-75 F40M
	∅ = 32		First choice	
1-3	0,08-0,14	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
4-5	0,08-0,13	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
6-7	0,06-0,10	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
8	0,10-0,14	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
9	0,08-0,12	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
10-11	0,07-0,11	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
12	0,10-0,14	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
13-14	0,08-0,12	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
15	0,07-0,12	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
16-18	0,10-0,14	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
19-21	0,07-0,10	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M
22	0,08-0,12	CCMX 080308T-MD07 F40M	CCMX 09T308T-MD09 F40M	SPMX 0703AP-75 F40M

Cutting data – Full engagement (a_e /D_c = 100%)

SMG	Grades							
	F40M							
	f_z (mm/tooth)							
	0,05	0,10	0,14					
	v_c (m/min)							
1	300	255	230					
2	255	215	195					
3	210	180	160					
4	180	150	140					
5	150	125	115					
6	130	110	100					
7	36	30	–					
8	205	175	160					
9	160	135	125					
10	130	110	100					
11	100	85	–					
12	155	135	120					
13	135	115	105					
14	115	100	90					
15	95	80	75					
16	775	660	600					
17	625	535	485					
18	480	405	370					
19	43	37	–					
20	35	29	–					
21	30	25	–					
22	70	60	–					

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,05	0,10	0,14	1,00
Side milling	25%	0,07	0,13	0,19	1,30
	10%	0,10	0,20	0,29	1,50
	5%	0,14	0,29	0,40	1,60
Average chip thickness h_m		0,03	0,06	0,09	–

Insert selection – 216.19-xx.3 ∅ 40 - 50 mm

SMG	∅ = 40 f_z mm/tooth	First choice		
1-3	0,07-0,12	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
4-5	0,07-0,12	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
6-7	0,05-0,08	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
8	0,08-0,12	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
9	0,07-0,10	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
10-11	0,06-0,10	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
12	0,07-0,12	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
13-14	0,06-0,10	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
15	0,06-0,10	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
16-17	0,07-0,12	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
20-21	0,05-0,08	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 0903AP-75 F40M
22	0,06-0,10	XCMX 120408T-MD11 F40M	CCMX 120412T-ME11 F40M	SPMX 0903AP-75 F40M
	∅ = 50		First choice	
1-3	0,10-0,18	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
4-5	0,10-0,16	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
6-7	0,08-0,12	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
8	0,10-0,16	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
9	0,09-0,14	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
10-11	0,08-0,12	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
12	0,10-0,18	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
13-14	0,10-0,16	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
15	0,08-0,14	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
16-18	0,10-0,18	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
19-21	0,10-0,12	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M
22	0,10-0,14	XCMX 120408T-MD11 F40M	CCMX 120412T-MD11 F40M	SPMX 1504AP-75 F40M

Cutting data – Full engagement (a_e /D_c = 100%)

SMG	Grades							
	F40M							
	f_z (mm/tooth)							
	0,05	0,10	0,14					
	v_c (m/min)							
1	300	255	235					
2	255	220	200					
3	210	180	165					
4	180	155	140					
5	150	130	115					
6	130	110	100					
7	36	31	–					
8	205	175	160					
9	160	140	125					
10	135	115	105					
11	100	85	–					
12	155	135	120					
13	140	120	105					
14	115	100	90					
15	95	80	75					
16	780	665	605					
17	630	535	490					
18	480	410	375					
19	43	37	–					
20	35	30	–					
21	30	26	–					
22	70	60	–					

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,05	0,10	0,18	1,00
Side milling	25%	0,07	0,13	0,24	1,30
	10%	0,10	0,20	0,37	1,50
	5%	0,14	0,29	0,52	1,60
Average chip thickness h_m		0,03	0,06	0,11	–

Insert selection 217/220.69-16

Universal insert: APMX 160408TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,12–0,20	APKX1604PDR-ME12 MP2500	APMX160408TR-M14 T350M	
2	0,12–0,20	APKX1604PDR-ME12 MP2500	APMX160408TR-M14 T350M	
3	0,12–0,20	APMX160408TR-M14 MP2500	APMX160408TR-M14 T350M	
4	0,12–0,20	APMX160408TR-M14 MP2500	APMX160408TR-M14 T350M	
5	0,10–0,18	APMX160408TR-M14 MP2500	APMX160408TR-M14 T350M	
6	0,10–0,16	APMX160408TR-M14 MP1500	APFT1604PDTR-D15 MP1500	
7	0,10–0,15	APFT1604PDTR-D15 MP1500	APFT1604PDTR-D15 MP3000	
8	0,12–0,18	APKX1604PDR-ME12 MP2500	APMX160408TR-M14 T350M	
9	0,12–0,16	APKX1604PDR-ME12 MP2500	APMX160408TR-M14 T350M	
10	0,12–0,14	APMX160408TR-M14 T350M	APMX160408TR-M14 F40M	
11	0,10–0,14	APMX160408TR-M14 F40M	APMX160408TR-M14 F40M	
12	0,12–0,20	APMX160408TR-M14 MK1500	APFT1604PDTR-D15 MP1500	
13	0,10–0,20	APMX160408TR-M14 MK1500	APFT1604PDTR-D15 MP1500	
14	0,10–0,20	APMX160408TR-M14 MK1500	APFT1604PDTR-D15 MP1500	
15	0,10–0,15	APMX160408TR-M14 MP1500	APFT1604PDTR-D15 MP1500	
16	0,12–0,20	APEX160408FR-E08 H15	APMX160408TR-ME11 F40M	
17	0,12–0,20	APEX160408FR-E08 H15	APMX160408TR-ME11 F40M	
18	0,12–0,20	APEX160408FR-E08 H15	APMX160408TR-ME11 F40M	
19	0,10–0,14	APKX1604PDR-ME12 T350M	APMX160408TR-M14 F40M	
20	0,10–0,14	APKX1604PDR-ME12 T350M	APMX160408TR-M14 F40M	
21	0,10–0,12	APMX160408TR-M14 F40M	APMX160408TR-M14 T350M	
22	0,10–0,14	APMX160408TR-ME11 F40M	APMX160408TR-M14 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			MK1500			H15		
	f_z (mm/tooth)																				
	0,10	0,15	0,20	0,10	0,15	0,20	0,10	0,15	0,20	0,10	0,15	0,20	0,10	0,15	0,20	0,10	0,15	0,20	0,10	0,15	0,20
	v_c (m/min)																				
1	500	445	410	445	395	365	420	375	345	385	345	315	335	300	275	–	–	–	–	–	–
2	425	380	345	375	335	305	355	320	290	325	290	270	285	255	235	–	–	–	–	–	–
3	350	315	285	310	275	255	295	260	240	270	240	220	235	210	190	–	–	–	–	–	–
4	300	265	245	265	235	215	250	225	205	230	205	190	200	180	165	–	–	–	–	–	–
5	250	220	205	220	195	180	210	185	170	190	170	155	165	150	135	–	–	–	–	–	–
6	220	195	–	195	175	–	185	165	–	170	150	–	145	130	–	–	–	–	–	–	–
7	60	55	–	48	43	–	47	42	–	46	41	–	40	36	–	–	–	–	–	–	–
8	340	305	280	270	240	220	265	240	220	255	225	205	230	205	190	–	–	–	–	–	–
9	270	240	220	215	190	175	210	185	170	200	175	160	180	160	150	–	–	–	–	–	–
10	220	195	–	175	155	–	170	155	–	160	145	–	150	130	–	–	–	–	–	–	–
11	165	145	–	130	115	–	125	115	–	120	105	–	110	100	–	–	–	–	–	–	–
12	260	235	215	230	205	190	220	195	180	200	180	165	175	155	145	325	290	270	165	150	135
13	230	205	185	205	180	165	190	170	155	175	160	145	155	135	125	285	255	235	145	130	120
14	195	170	160	170	155	140	160	145	130	150	135	120	130	115	105	240	215	200	125	110	100
15	160	145	–	140	125	–	135	120	–	125	110	–	105	95	–	200	180	–	100	90	–
16	–	–	–	–	–	–	–	–	–	–	–	–	870	775	710	–	–	–	825	735	675
17	–	–	–	–	–	–	–	–	–	–	–	–	700	625	575	–	–	–	665	595	545
18	–	–	–	–	–	–	–	–	–	–	–	–	535	480	435	–	–	–	510	455	415
19	–	–	–	60	55	–	–	–	–	55	47	–	48	43	–	–	–	–	26	24	–
20	–	–	–	48	43	–	–	–	–	43	38	–	39	35	–	–	–	–	21	19	–
21	–	–	–	41	37	–	–	–	–	37	33	–	33	30	–	–	–	–	18	16	–
22	–	–	–	100	90	–	–	–	–	90	80	–	80	70	–	–	–	–	44	39	–

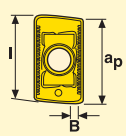
* For grade F15M/H15 only use values in material groups 12-14 and 16-17. For T200M only use values in groups 1-15.

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,15	0,20	1,00
Side milling	25%	0,13	0,20	0,27	1,30
	10%	0,20	0,31	0,41	1,50
	5%	0,29	0,43	0,57	1,60
Average chip thickness h_m		0,06	0,10	0,13	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
1604	15	1,5

Insert selection – 220.90-26

Universal insert: ABER 2606ZFFR T350M

SMG	f_z mm/tooth a_e/D_c = 100%	First choice		
1	0,15–0,35	ABER2606ZFFR-M15 T350M		
2	0,15–0,35	ABER2606ZFFR-M15 T350M		
3	0,12–0,30	ABER2606ZFFR-M15 T350M		
4	0,12–0,30	ABER2606ZFFR-M15 T350M		
5	0,10–0,30	ABER2606ZFFR-M15 MP1500		
6	0,10–0,28	ABER2606ZFFR-M15 MP1500		
7	0,10–0,25	ABER2606ZFFR-M15 MP1500		
8	0,12–0,30	ABER2606ZFFR-M15 T350M		
9	0,10–0,30	ABER2606ZFFR-M15 T350M		
10	0,10–0,28	ABER2606ZFFR-M15 T350M		
11	0,10–0,28	ABER2606ZFFR-M15 T350M		
12	0,15–0,35	ABER2606ZFFR-M15 MK1500		
13	0,15–0,30	ABER2606ZFFR-M15 MK1500		
14	0,10–0,30	ABER2606ZFFR-M15 MK1500		
15	0,10–0,25	ABER2606ZFFR-M15 MP1500		
16	–	–		
17	–	–		
18	–	–		
19	–	–		
20	–	–		
21	–	–		
22	–	–		

Cutting data – Full engagement width (a_e /D_c = 100%)

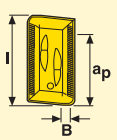
SMG	Grades												
	MP1500			T350M			MK1500						
	f_z (mm/tooth)												
	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35				
SMG	v_c (m/min)												
1	475	390	320	370	300	250	–	–	–				
2	405	330	275	310	255	210	–	–	–				
3	335	275	225	260	210	175	–	–	–				
4	285	235	190	220	180	150	–	–	–				
5	235	195	160	185	150	125	–	–	–				
6	210	170	140	160	130	110	–	–	–				
7	55	47	–	44	36	–	–	–	–				
8	325	265	220	240	195	160	–	–	–				
9	255	210	175	190	155	130	–	–	–				
10	210	170	140	155	125	105	–	–	–				
11	155	125	105	115	95	75	–	–	–				
12	250	205	170	190	155	130	310	255	210				
13	220	180	145	170	140	115	275	225	185				
14	185	150	125	140	115	95	230	190	155				
15	150	125	105	115	95	80	190	155	130				
16	–	–	–	–	–	–	–	–	–				
17	–	–	–	–	–	–	–	–	–				
18	–	–	–	–	–	–	–	–	–				
19	–	–	–	–	–	–	–	–	–				
20	–	–	–	–	–	–	–	–	–				
21	–	–	–	–	–	–	–	–	–				
22	–	–	–	–	–	–	–	–	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,20	0,35	1,00
Side milling	25%	0,13	0,27	0,47	1,30
	10%	0,20	0,41	0,72	1,50
	5%	0,29	0,57	1,01	1,60
Average chip thickness h_m		0,06	0,13	0,22	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
26	20	2,0

Insert selection – 220.90-26 ABEX26

Universal insert: ABEX 2606ZFFR T350M

SMG	f_z mm/tooth a_e/D_c = 100%	First choice		
1	0,15–0,35	ABEX2606ZFFR-M15 T350M		
2	0,15–0,35	ABEX2606ZFFR-M15 T350M		
3	0,12–0,30	ABEX2606ZFFR-M15 T350M		
4	0,12–0,30	ABEX2606ZFFR-M15 T350M		
5	0,10–0,30	ABEX2606ZFFR-M15 MP1500		
6	0,10–0,28	ABEX2606ZFFR-M15 MP1500		
7	0,10–0,25	ABEX2606ZFFR-M15 MP1500		
8	0,12–0,30	ABEX2606ZFFR-M15 T350M		
9	0,10–0,30	ABEX2606ZFFR-M15 T350M		
10	0,10–0,28	ABEX2606ZFFR-M15 T350M		
11	0,10–0,28	ABEX2606ZFFR-M15 MM4500		
12	0,15–0,35	ABEX2606ZFFR-M15 MK1500		
13	0,15–0,30	ABEX2606ZFFR-M15 MK1500		
14	0,10–0,30	ABEX2606ZFFR-M15 MK1500		
15	0,10–0,25	ABEX2606ZFFR-M15 MP1500		
16	–	–		
17	–	–		
18	–	–		
19	–	–		
20	–	–		
21	–	–		
22	–	–		

Cutting data – Full engagement width (a_e /D_c = 100%)

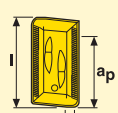
SMG	Grades																
	MP1500			T350M			MM4500			F40M			MK1500				
	f_z (mm/tooth)																
	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35	0,10	0,20	0,35		
	v_c (m/min)																
1	475	390	320	370	300	250	260	210	175	320	260	215	–	–	–		
2	405	330	275	310	255	210	220	180	150	270	220	185	–	–	–		
3	335	275	225	260	210	175	180	150	120	225	185	150	–	–	–		
4	285	235	190	220	180	150	155	125	105	190	155	130	–	–	–		
5	235	195	160	185	150	125	130	105	85	160	130	105	–	–	–		
6	210	170	140	160	130	110	115	95	–	140	115	–	–	–	–		
7	55	47	–	44	36	–	–	–	–	38	31	–	–	–	–		
8	325	265	220	240	195	160	190	155	125	220	180	150	–	–	–		
9	255	210	175	190	155	130	150	120	100	170	140	115	–	–	–		
10	210	170	140	155	125	105	120	100	80	140	115	95	–	–	–		
11	155	125	105	115	95	75	90	75	60	105	85	70	–	–	–		
12	250	205	170	190	155	130	120	95	80	165	135	115	310	255	210		
13	220	180	145	170	140	115	105	85	70	145	120	100	275	225	185		
14	185	150	125	140	115	95	90	70	60	125	100	85	230	190	155		
15	150	125	105	115	95	80	75	60	49	100	85	70	190	155	130		
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
19	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,20	0,35	1,00
Side milling	25%	0,13	0,27	0,47	1,30
	10%	0,20	0,41	0,72	1,50
	5%	0,29	0,57	1,01	1,60
Average chip thickness h_m		0,06	0,13	0,22	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
26	20	2,0

Insert selection – 220.69-15H

Universal insert: ACET 150612TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,15–0,25	ACET150612TR-M14 F40M	ACET150612TR-M11 T350M	
2	0,15–0,25	ACET150612TR-M14 F40M	ACET150612TR-M11 T350M	
3	0,14–0,22	ACMT150612TR-M14 MP2500	ACET150612TR-M11 T350M	
4	0,14–0,22	ACET150612TR-M11 MP2500	ACET150612TR-M11 T350M	
5	0,12–0,20	ACET150612TR-M11 MP2500	ACET150612TR-M11 T350M	
6	0,12–0,18	ACET150612TR-MD15 MP1500	ACET150612TR-MD15 MP1500	
7	0,10–0,15	ACET150612TR-MD15 MP1500	ACET150612TR-MD15 MP3000	
8	0,14–0,22	ACET150612TR-M14 MP2500	ACET150612TR-M14 T350M	
9	0,14–0,22	ACET150612TR-M14 MP2500	ACET150612TR-M14 T350M	
10	0,12–0,20	ACET150612TR-M14 T350M	ACMT150612TR-M14 F40M	
11	0,10–0,18	ACET150612TR-M14 F40M	ACMT150612TR-M14 F40M	
12	0,14–0,22	ACET150612TR-M11 MK1500	ACET150612TR-M11 MP1500	
13	0,14–0,22	ACET150612TR-M11 MK1500	ACET150612TR-M11 MP1500	
14	0,12–0,20	ACET150612TR-M11 MK1500	ACET150612TR-MD15 MP1500	
15	0,12–0,18	ACET150612TR-MD15 MP1500	ACET150612TR-MD15 MP1500	
16	–	–	–	
17	–	–	–	
18	–	–	–	
19	0,10–0,20	ACET150612TR-M14 T350M	ACMT150612TR-M14 F40M	
20	0,10–0,20	ACET150612TR-M14 T350M	ACMT150612TR-M14 F40M	
21	0,10–0,15	ACET150612TR-M14 F40M	ACET150612TR-MD15 T350M	
22	0,12–0,18	ACET150612TR-M14 F40M	ACMT150612TR-M14 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			MK1500			HX		
	f_z (mm/tooth)																				
	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25
	v_c (m/min)																				
1	500	445	380	445	395	340	420	375	320	385	345	295	335	300	255	–	–	–	–	–	–
2	425	380	325	375	335	285	355	320	270	325	295	250	285	255	215	–	–	–	–	–	–
3	350	315	265	310	275	235	295	265	225	270	240	205	235	210	180	–	–	–	–	–	–
4	300	265	230	265	235	200	250	225	190	230	205	175	200	180	155	–	–	–	–	–	–
5	250	225	190	220	195	170	210	185	160	190	170	145	165	150	125	–	–	–	–	–	–
6	220	195	–	195	175	–	185	165	–	170	150	–	145	130	–	–	–	–	–	–	–
7	60	55	–	48	43	–	47	42	–	46	41	–	40	36	–	–	–	–	–	–	–
8	340	305	260	270	240	205	265	240	205	255	225	190	230	205	175	–	–	–	–	–	–
9	270	240	205	215	190	160	210	185	160	200	180	150	180	160	135	–	–	–	–	–	–
10	220	195	170	175	155	135	170	155	130	160	145	125	150	130	110	–	–	–	–	–	–
11	165	145	–	130	115	–	125	115	–	120	110	–	110	100	–	–	–	–	–	–	–
12	260	235	200	230	205	175	220	195	165	200	180	155	175	155	135	325	295	250	165	150	125
13	230	205	175	205	180	155	190	170	145	175	160	135	155	135	115	290	255	220	145	130	110
14	195	170	145	170	155	130	160	145	125	150	135	115	130	115	100	240	215	185	125	110	95
15	160	145	–	140	125	–	135	120	–	125	110	–	105	95	–	200	180	–	100	90	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
19	–	–	–	60	55	–	55	50	–	55	47	–	48	43	–	–	–	–	26	24	–
20	–	–	–	48	43	–	45	40	–	43	38	–	39	35	–	–	–	–	21	19	–
21	–	–	–	41	37	–	39	35	–	37	33	–	33	30	–	–	–	–	18	16	–
22	–	–	–	100	90	–	95	85	–	90	80	–	80	70	–	–	–	–	44	39	–

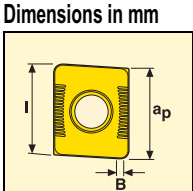
* For grade F15M only use values in material groups 12-14 and 16-17. For T200M only use values in groups 1-15.

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,15	0,25	1,00
Side milling	25%	0,13	0,20	0,33	1,30
	10%	0,20	0,31	0,51	1,50
	5%	0,29	0,43	0,72	1,60
Average chip thickness h_m		0,06	0,10	0,16	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Dimensions in mm



Insert size l	Max D.O.C. a_p	Wiper flat width B
15	14	1,7

Suitable workpiece materials

Secomax CBN200 inserts are suitable for:
• Finishing and roughing in Seco material group 7 with hardness of 52-63 HRc, for example cold work steel.
• Bearing steel can also be machined with CBN200.
• When working in Seco material group 7 use CBN inserts with protected chamfer (S) for best possible tool life.

Secomax CBN200 and CBN300 inserts are suitable for:
• Finishing and roughing operations in pearlitic grey cast iron with a free ferrite content of less than 5%.
• Note! When machining in Seco material groups 13-15 conventional milling should be used.

			SMG
Hardened steel			7
Grey cast iron materials			
SS	DIN 1691	ASTM A48-76	SMG
0125	GG25	35B/40B	13
0130	GG30	45B	14
0135	GG35	50B	15
0140	GG40	60B	15

Feed and cutting speed recommendations

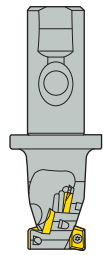
SMG	Feed f_z mm/tooth	Cutting speed v_c m/min	a_p mm
7	0,05 - 0,2	250 - 500	0,05 - 10*
13	0,05 - 0,3	500 - 3000	0,05 - 12*
14	0,05 - 0,3	500 - 3000	0,05 - 12*
15	0,05 - 0,3	500 - 3000	0,05 - 12*

* Depending on power in the machine.

Code key

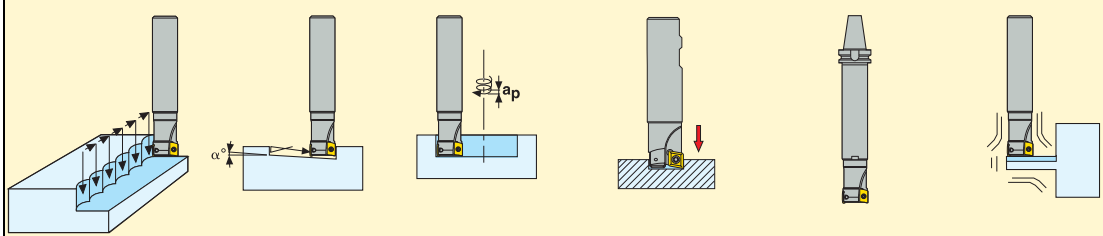
Note that parts of the code can vary for different cutter systems

R	217	.	69	-	25	32	.	3S	-	024	-	09	.	3	A
Right -hand rotation	216,217 = With shank 220 = For arbor mounting		Cutter system		Shank diameter	Cutter diameter		Shank type		Maximum axial cutting depht		Insert size		Effective No. of teeth (Z_c)	'Through' coolant supply



Molykote 1000 is recommended for insert locking screws. Part No.MOLYKOTE 1000-50G

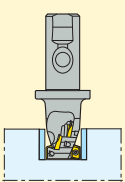
Types of operation



Small machines/workpieces for slotting and contouring

Helical Nano Turbo 217.69-06

Types of operation 1 2

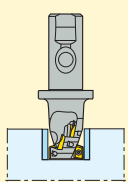


- Dia range ∅ 12-20 mm see page 189
- General purpose helical milling cutter intended for slotting and contouring in mixed productions in all materials except hardened steel.
- Fixed pockets, normal pitch
- Insert types XO..0602
- Insert size 06 mm
- Max a_p 10-25 mm

Small machines/ workpieces for contouring only

Helical Micro Turbo 217.69-09

Types of operation 1 2



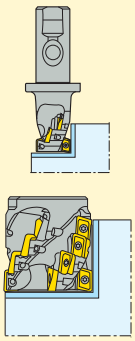
- Dia range ∅ 20-32 mm see page 190
- General purpose helical milling cutter intended for slotting and contouring in mixed productions in all materials except hardened steel.
- Fixed pockets, normal pitch
- Insert types XO..0903
- Insert size 09 mm
- Max a_p 24 mm

First choice Helical milling cutters

Small machines/ workpieces for contouring only

Helical Micro Turbo
217/220.69-09

Types of operation
1 2

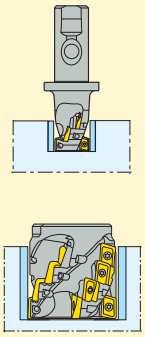


- Dia range ∅ 20-40 mm
  see pages 191 - 192
- General purpose helical milling cutter intended only for contouring in mixed production in all materials except hardened steel.
- Fixed pockets, close pitch
- Insert types XO..0903
- Insert size 09 mm
- Max a_p 16-47 mm

Medium machines/workpieces for slotting and contouring

Helical Super Turbo
217/220.69-12

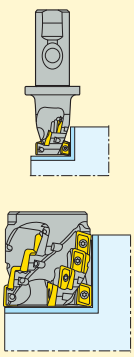
Types of operation
1 2



- Dia range ∅ 25-66 mm,
  see pages 193 - 194
- General purpose helical milling cutter intended for slotting and contouring in mixed production in all materials except hardened steel.
- Fixed pockets, normal pitch
- Seco-Capto™
- Insert types XO..1204
- Insert size 12 mm
- Max a_p 22-55 mm

Medium machines/workpieces for contouring only

Helical Super Turbo
217/220.69-12

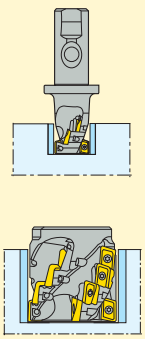


- Dia range ∅ 32-63 mm
  see pages 195 - 197
- General purpose helical milling cutter intended only for contouring in mixed production in all materials except hardened steel.
- Fixed pockets, close pitch
- Seco-Capto™
- Insert types XO..1204
- Insert size 12 mm
- Max a_p 44-55

Medium machines/workpieces for slotting and contouring

Helical Power Turbo
217/220.69-18

Types of operation
1 2

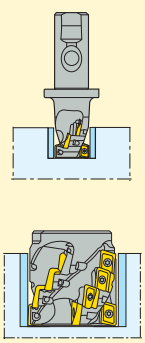


- Dia range ∅ 40-100 mm,
  see pages 198 - 199
- General purpose helical milling cutter intended for slotting and contouring in mixed production in all materials.
- Fixed pockets, normal pitch
- Seco-Capto™
- Insert types XO..1806
- Insert size 18 mm
- Max a_p 47-62 mm

Medium machines/workpieces for contouring only

Helical Power Turbo
217/220.69-18

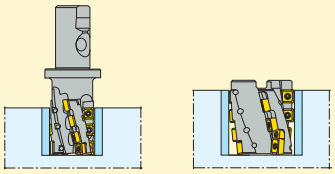
Types of operation
1 2



- Dia range ∅ 50-100 mm,
  see pages 198 - 199
- General purpose helical milling cutter intended for only contouring in mixed production in all materials.
- Fixed pockets, normal pitch
- Seco-Capto™
- Insert types XO..1806
- Insert size 18 mm
- Max a_p 77 mm

215/220.59-12.X

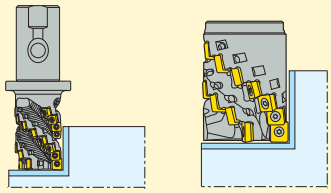
κ = 90° Page 203



∅ 50-80 mm
Slotting and contouring in mixed productions
Max a_p 50-77 mm
Insert type SCE.1206/ACE.1506

215/220.59-12.XK

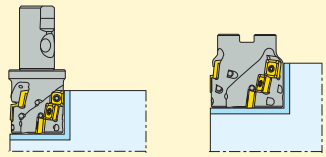
κ = 90° Pages 204 - 206.



∅ 50-100 mm
Contouring only in mixed productions
Max a_p 63-120 mm
Insert type SCE.1206/ACE.1506

220.69-15XH

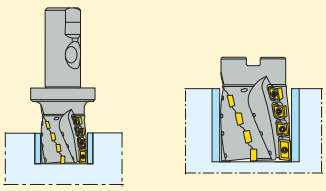
κ = 90° Pages 207 - 208.



Ø 50 – 125 mm
For slotting and contouring at high feed rates
Max a_p 38-50 mm
Insert type ACE.15

215.59-06/08

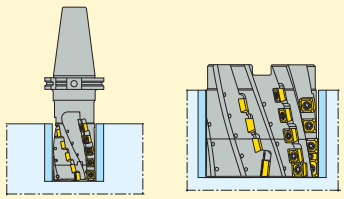
κ = 90° Pages 209 - 211.



Ø 20 – 50 mm
For slotting and contouring
Max a_p 25-48 mm
Insert type CCMX/XC..

215/220.59-12xS/R6

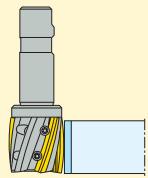
κ = 90° Pages 212 - 216.



Ø 63 – 100 mm
For slotting and contouring
with replaceable ends.
Max a_p 77-160 mm Insert type ACE./SCE.

235.15

κ = 90° Page 217.



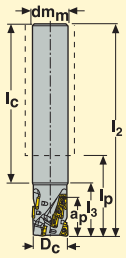
Ø 32 – 80 mm
For finishing operation
Max ap 40-90 mm
Insert type R235.15-..

Helical Nano Turbo 217.69-06

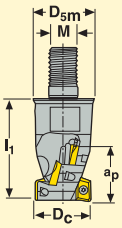
For slotting and contouring

- For insert selection and cutting data recommendations, see page 218.
- For complete insert programme, see page 553.

Cylindrical



Combimaster



Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p	z_c*	No. of flutes	Type of mounting		KG		
R217.69 -1612.0-10-06.2N	12	16	–	98	53	23	66	–	10	2	2	Cylindrical	4	0,2	54400	XO..06
-1616.0-15-06.3N	16	16	–	110	62	30	80	–	15	3	3	Cylindrical	9	0,2	48000	XO..06
-1616.0-20-06.2N	16	16	–	110	62	30	80	–	20	2	2	Cylindrical	8	0,2	48000	XO..06
-2020.0-25-06.3N	20	20	–	120	70	35	85	–	25	3	3	Cylindrical	15	0,3	44000	XO..06
R217.69 -1212.0-10-06.2E	12	12	–	135	90	55	80	–	10	2	2	Cylindrical	4	0,2	54400	XO..06
-1616.0-15-06.3E	16	16	–	165	117	50	115	–	15	3	3	Cylindrical	9	0,5	48000	XO..06
R217.69 -0814.RE-15-06.2N	14	13,2	25	–	–	–	–	M8	15	2	2	Combimaster**	6	0,1	51200	XO..06
-0816.RE-15-06.2N	16	13,5	25	–	–	–	–	M8	15	2	2	Combimaster**	6	0,1	48000	XO..06
-0816.RE-15-06.3N	16	13,5	25	–	–	–	–	M8	15	3	3	Combimaster**	9	0,1	48000	XO..06
-1020.RE-20-06.3AN	20	18,5	35	–	–	–	–	M10	20	3	3	Combimaster**	12	0,1	44800	XO..06

Suffix E in part No. = Solid carbide shank with brazed cutting head.

*Effective number of teeth

Spare parts

For cutter	Locking screw	Key *
R217.69-06	C01804-T06P	T06P-3

Please check availability in current price and stock-list.

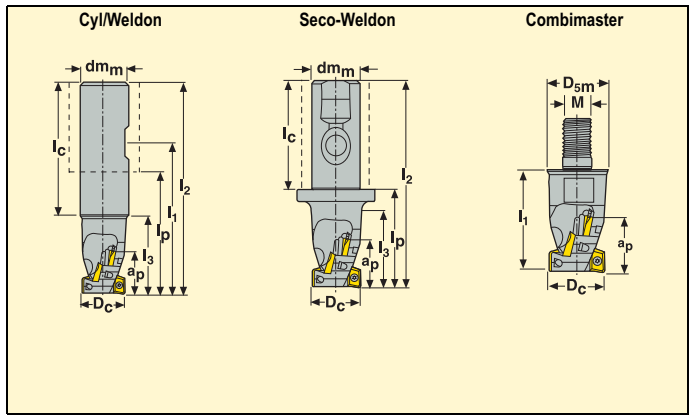
***Torque values 0,5 Nm.** Dynamomentic keys, see page 590.

**For shanks and dimensions, see pages 498 - 510.

Helical Micro Turbo 217.69-09/09A

For slotting and contouring

- **For insert selection and cutting data recommendations, see pages 219 - 220.**
- **For complete insert programme, see page 554.**



Part No.	Dimension in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p	z_c*	No. of flutes	Type of mounting		KG		
R217.69 -2020.3-024-09.1N	20	20	65	90	40	39,5	50	–	24	1	1	Cyl/Weldon	3	0,3	29000	XO..0903
R217.69 -2525.3S-024-09.2N	25	25	–	105	50	40	55	–	24	2	2	Seco-Weldon	6	0,5	26000	XO..0903
-2532.3S-024-09.3AN	32	25	–	110	55	47	55	–	24	3	3	Seco-Weldon	9	0,5	22900	XO..0903
R217.69 -1225.RE-024-09.2N	25	23	35	–	–	–	–	M12	24	2	2	Combimaster**	6	0,1	26000	XO..0903
-1632.RE-024-09.3AN	32	30	40	–	–	–	–	M16	24	3	3	Combimaster**	9	0,2	22900	XO..0903

*Effective number of teeth.

**For shanks and dimensions, see pages 498 - 510.

Spare parts

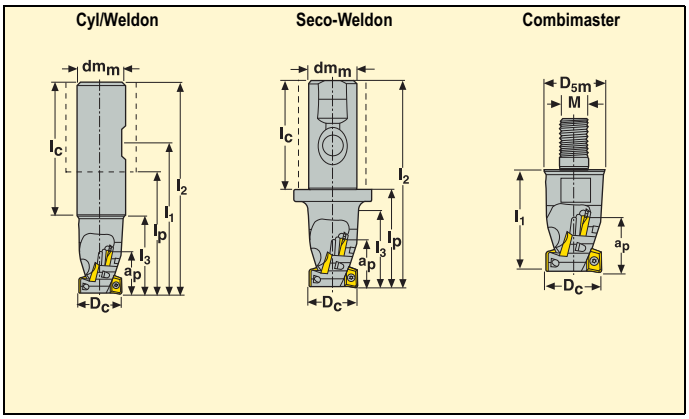
For cutter	Locking screw	Key *
R217.69-∅ 20	C02555-T08P	T08P-3
R217.69-∅ 25–32	C02506-T08P	T08P-3

Please check availability in current price and stock-list.

***Torque values 1,2 Nm.** Dynamomentic keys, see page 590.

Helical Micro Turbo 217.69-09/09A

For contouring only



- **For insert selection and cutting data recommendations, see pages 221 - 222.**
- **For complete insert programme, see page 554.**

Part No.	Dimension in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p	z_c*	No. of flutes	Type of mounting		KG		
R217.69 -2020.3-016-09.2N	20	20	60	85	35	34,5	50	–	16	2	2	Cyl/Weldon	4	0,2	29000	XO..0903
R217.69 -2025.3S-031-09.3N	25	20	–	100	50	43	50	–	31	3	3	Seco-Weldon	12	0,4	26000	XO..0903
-2525.3S-039-09.2N	25	25	–	120	65	55	55	–	39	2	2	Seco-Weldon	10	0,5	26000	XO..0903
-2525.3S-031-09.3N	25	25	–	110	55	46	55	–	31	3	3	Seco-Weldon	12	0,4	26000	XO..0903
-2532.3S-047-09.3AN	32	25	–	120	65	57	55	–	47	3	3	Seco-Weldon	18	0,5	22900	XO..0903
-2532.3S-031-09.4AN	32	25	–	115	60	51	55	–	31	4	4	Seco-Weldon	16	0,5	22900	XO..0903
R217.69 -1020.RE-016-09.2N	20	18,5	28	–	–	–	–	M10	16	2	2	Combimaster***	4	0,1	29000	XO..0903
-1632.RE-031-09.4AN	32	30	45	–	–	–	–	M16	31	4**	4	Combimaster***	14	0,3	22900	XO..0903

*Effective number of teeth. **z_c = 2 when a_p > 24 mm.

***For shanks and dimensions, see pages 498 - 510.

Spare parts

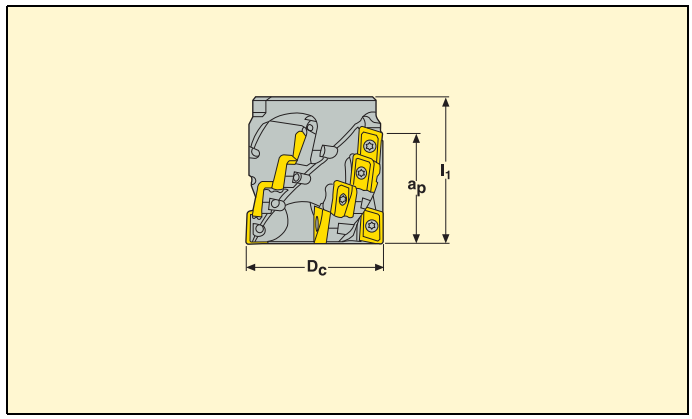
For cutter	Locking screw	Key *
R217.69-∅ 20	C02555-T08P	T08P-3
R217.69-∅ 25–32	C02506-T08P	T08P-3

Please check availability in current price and stock-list.

***Torque values 1,2 Nm.** Dynamomentic keys, see page 590.

Helical Micro Turbo 220.69-09

For contouring only



- For insert selection and cutting data recommendations, see pages 221 - 222.
- For complete insert programme, see page 554.

Part No.	Dimensions in mm			z_c*	No. of flutes		KG		
	D_c	l_1	a_p						
R220.69 -00040-031-09.4N	40	43	31	4	4	16	0,3	20500	XO..0903..

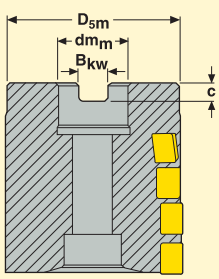
*Effective number of teeth.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-00040	C02506-T08P	T08P-3	MC6S 8x30

***Torque values 1,2 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



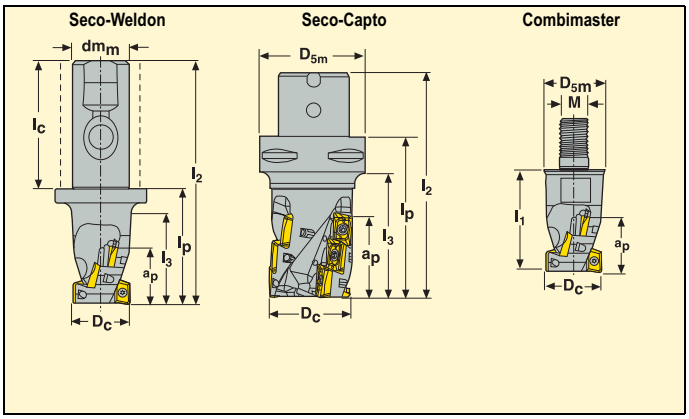
For cutter	Dimensions in mm				For arbor
	dm_m	D_{5m}	B_{kw}	c	
R220.69-00040	16	35	8,4	5,6	16

Please check availability in current price and stock-list.

Helical Super Turbo 217.69-12

For slotting and contouring

- For insert selection and cutting data recommendations, see pages 223 - 224.
- For complete insert programme, see page 556.



Part No.	Dimensions in mm D_c	M/ dm_m	l_1	l_2	D_{5m}	l_p	l_3	l_c	a_p	z_c*	No. of flutes	Type of mounting		KG		
R217.69 -2025.3S-022-12.2AN	25	20	–	99,5	–	50	38	50	22	2	2	Seco/Weldon	4	0,3	20800	XO..1204**
-2525.3S-033-12-2AN	25	25	–	115,5	–	60	47	56	33	2	2	Seco/Weldon	6	0,4	20800	XO..1204**
-2532.3S-033-12.2AN	32	25	–	115,5	–	60	47	56	33	2	2	Seco/Weldon	6	0,5	18400	XO..1204**
-2532.3S-033-12.3AN	32	25	–	115,5	–	60	48	56	33	3	3	Seco/Weldon	9	0,4	18400	XO..1204**
-3240.3S-033-12.3AN	40	32	–	119,5	–	60	49	60	33	3	3	Seco/Weldon	9	0,8	16400	XO..1204**
-3240.3S-055-12.3AN	40	32	–	139,5	–	80	69	60	55	3	3	Seco/Weldon	15	0,7	16400	XO..1204**
R217.69 -1225.RE-022-12.2AN	25	M12	35	–	23	–	–	–	22	2	2	Combimaster***	4	0,1	20800	XO..1204**
-1632.RE-022-12.3AN	32	M16	40	–	30	–	–	–	22	3	3	Combimaster***	6	0,2	18400	XO..1204**
C5-R217.69 -032-044-12.3AN	32	50	–	109	50	79	56	–	44	3	3	Seco-Capto C5	12	0,6	18400	XO..1204**
C6-R217.69 -040-055-12.3AN	40	–	–	130	63	92	67	–	55	3	3	Seco-Capto C6	15	1,1	16400	XO..1204**
C4-R217.69 -044-033-12.3AN	44	–	–	92	40	68	48	–	33	3	3	Seco-Capto C4	9	0,6	15500	XO..1204**
C6-R217.69 -050-055-12.4AN	50	63	–	130	63	92	67	–	55	4	4	Seco-Capto C6	20	1,4	14800	XO..1204**
C5-R217.69 -054-044-12.4AN	54	–	–	109	50	79	59	–	44	4	4	Seco-Capto C5	16	1,2	13900	XO..1204**
C6-R217.69 -066-044-12.5AN	66	–	–	119	63	81	59	–	44	5	5	Seco-Capto C6	20	1,9	12000	XO..1204**
R217.69 -HSK63A.32-044-12.3AN	32	–	–	122	63	90	52	–	44	3	3	HSK63A	12	1,0	18400	XO..1204**

*Effective number of teeth.

**Inserts with max. corner radius 6.0 mm can be used. For radius > 3,1 the cutter must be modified.

Spare parts

For cutter	Locking screw	Key *
R217.69- ∅ 25–32	C03507-T10P	T10P-3
R217.69- ∅ 40–50	C03509-T10P	T10P-3

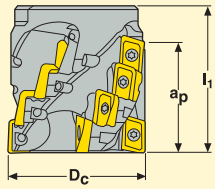
Please check availability in current price and stock-list.

***Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

***For shanks and dimensions, see pages 498 - 510.

Helical Super Turbo 220.69-12

For slotting and contouring



- For insert selection and cutting data recommendations, see pages 223 - 224.
- For complete insert programme, see page 556.

Part No.	Dimensions in mm D_c	l_1	a_p	z_c*	No. of flutes		KG		
R220.69 -00050-033-12.4AN	50	55	33	4	4	12	0,8	14800	XO..1204**
-00063-033-12.5AN	63	63	33	5	5	15	0,9	13200	XO..1204**

*Effective number of teeth.

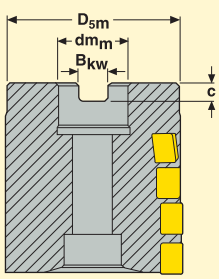
**Inserts with max. corner radius 6.3 mm can be used. For radius > 3,1 the cutter must be modified.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-00050	C03509-T10P	T10P-3	MC6S12X40
R220.69-00063	C03509-T10P	T10P-3	MC6S12X50

***Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

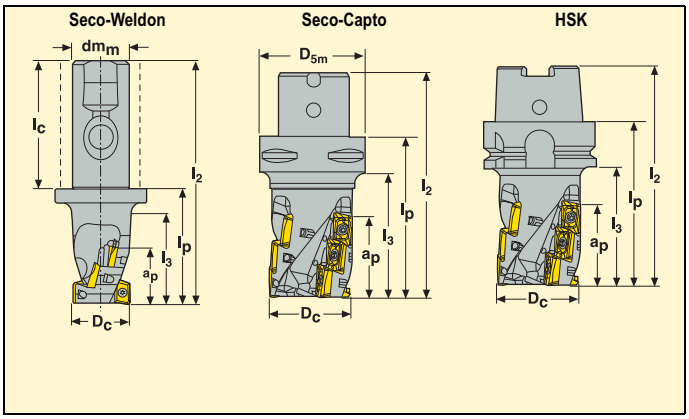


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-00050	27	48	12,4	7	27
R220.69-00063	27	62	12,4	7	27

Please check availability in current price and stock-list.

Helical Super Turbo 217.69-12

For contouring only



- For insert selection and cutting data recommendations, see pages 225 - 226.
- For complete insert programme, see page 556.

Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_2	l_p	l_3	l_c	M	a_p	z_c*	No. of flutes	Type of mounting		KG		
R217.69 -2532.3S-044-12.3AN	32	25	125,5	70	58	56	–	44	3	3	Seco-Weldon	12	0,5	18400	XO..1204**
-3240.3S-044-12.4AN	40	32	129,5	70	57	60	–	44	4	4	Seco-Weldon	16	0,8	16400	XO..1204**
-3250.3S-055-12.4AN	50	32	139,5	80	67	60	–	55	4	4	Seco-Weldon	20	0,9	14800	XO..1204**
C5-R217.69 -032-044-12.3AN	32	50	109	79	56	–	–	44	3	3	Seco-Capto C5	12	0,6	18400	XO..1204**
C6-R217.69 -050-055-12.4AN	50	63	130	92	67	–	–	55	4	4	Seco-Capto C6	20	1,4	14800	XO..1204**
R217.69 -HSK63A.32-044-12.3AN	32	–	122	90	52	–	–	44	3	3	HSK63A	12	1,0	18400	XO..1204**

*Effective number of teeth.

**Inserts with max. corner radius 1.2 mm can be used.

Spare parts

For cutter	Locking screw	Key *
R217.69 Ø 32	C03507-T10P	T10P-3
R217.69 Ø 40-50	C03509-T10P	T10P-3

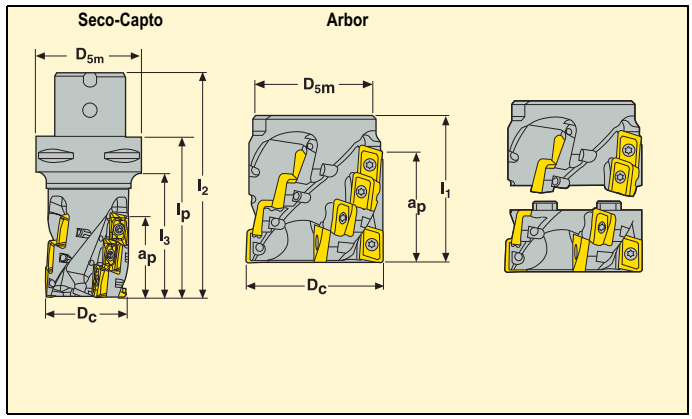
Please check availability in current price and stock-list.

***Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

Helical Super Turbo 217/220.69-12

For contouring only

- For insert selection and cutting data recommendations, see pages 225 - 226.
- For complete insert programme, see page 556.



Part No.	Dimensions in mm								z_c*	No. of flutes	Type of mounting		KG		
	D_c	l_1	l_2	l_p	l_3	D_{5m}	dm_m	a_p							
C6-R217.69 -050-066-12.4SAN	50	–	139	101	76	63	–	66	4	4	Seco-Capto	24	1,4	14800	XO..1204**
R220.69 -00063-077-12.4SAN	63	102	–	–	–	60	27	77	4	4	Arbor	28	1,2	13200	XO..1204**

*Effective number of teeth.

**Inserts with max. corner radius 1.2 mm can be used.

Spare parts

For cutter	Locking screw	Key *	Retaining Screw
R217.69	C03509-T10P	T10P-3	MC6S10x40
R220.69	C03509-T10P	T10P-3	MP6S12x80

***Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

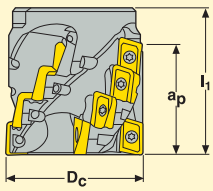
Assembly alternatives/Standard parts

Part No.	Standard parts	
	Cutter body Part No.	Replaceable end Part No.
R220.69-00063-077-12.4SAN	R220.69-00063-044-12.4BAN	R220.69-RE063033-12.4AN

Please check availability in current price and stock-list.

Helical Super Turbo 220.69-12

For contouring only



- For insert selection and cutting data recommendations, see pages 225 - 226.
- For complete insert programme, see page 556.

Part No.	Dimensions in mm D_c	l_1	a_p	z_c*	No. of flutes		KG		
R220.69 -00050-044-12.4AN	50	65	44	4	4	16	0,6	14800	XO..1204**
-00050-044-12.5AN	50	65	44	5	5	20	0,6	14800	XO..1204**
-00063-055-12.5AN	63	75	55	5	5	25	1,0	13200	XO..1204**

*Effective number of teeth.

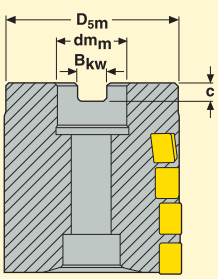
**Inserts with max. corner radius 1.2 mm can be used.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-00050	C03509-T10P	T10P-3	MC6S12X50
R220.69-00063	C03509-T10P	T10P-3	MC6S12X60

***Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

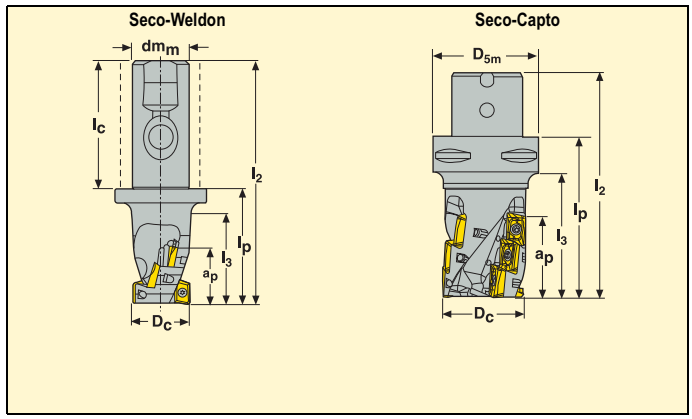


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-00050	27	48	12,4	7	27
R220.69-00063	27	60	12,4	7	27

Please check availability in current price and stock-list.

Helical Power Turbo 217.69-18

For slotting and contouring



- **For insert selection and cutting data recommendations, see pages 227 - 228.**
- **For complete insert programme, see page 557.**

Part No.	Dimension in mm D_c	dm_m	D_{5m}	l_2	l_p	l_3	l_c	M	a_p	z_c*	No. of flutes	Type of mounting		KG		
R217.69 -3240.3S-047-18.2AN	40	32	–	130	70	57	60	–	47	2	2	Seco-Weldon	6	0,8	9900	XO..1806..
-3250.3S-047-18.3AN	50	32	–	134,5	75	65	60	–	47	3	3	Seco-Weldon	9	1,0	8900	XO..1806..
C5-R217.69 -040-047-18.2AN	40	–	50	112	82	58	–	–	47	2	2	Seco-Capto C5	6	0,8	9900	XO..1806..
-054-047-18.3AN	54	–	50	112	82	62	–	–	47	3	3	Seco-Capto C5	9	1,0	8600	XO..1806..
C6-R217.69 -050-062-18.3AN	50	–	63	137	99	73	–	–	62	3	3	Seco-Capto C6	12	1,5	8900	XO..1806..
-066-047-18.4AN	66	–	63	122	84	62	–	–	47	4	4	Seco-Capto C6	12	1,0	7700	XO..1806..

*Effective number of teeth.

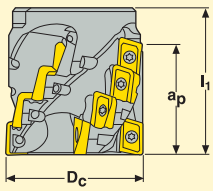
Spare parts

For cutter	Locking screw	Key *
R217.69-..	C04510-T20P	T20P-4

Please check availability in current price and stock-list.
*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Helical Power Turbo 220.69-18

For slotting and contouring



- For insert selection and cutting data recommendations, see pages 227 - 228.
- For complete insert programme, see page 557.

Part No.	Dimensions in mm D_c	l_1	a_p	z_c*	No. of flutes		KG		
R220.69 -00063-047-18.4AN	63	70	47	4	4	12	0,8	7900	XO..1806..
-00063-062-18.3AN	63	85	62	3	3	12	1,1	7900	XO..1806..
-00063-062-18.4AN	63	85	62	4	4	16	1	7900	XO..1806..
-00080-047-18.5AN	80	70	47	5	5	15	1,5	7000	XO..1806..
-00080-062-18.5AN	80	85	62	5	5	20	1,8	7000	XO..1806..
-00100-062-18.6AN	100	85	62	6	6	24	3	6300	XO..1806..

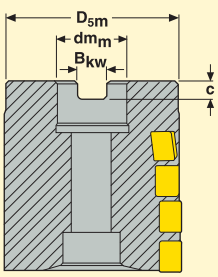
*Effective number of teeth.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.69-00063	C04510-T20P	T20P-4	MC6S12X60
R220.69-00080	C04510-T20P	T20P-4	MC6S16X70
R220.69-00100	C04510-T20P	T20P-4	MC6S20X70

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

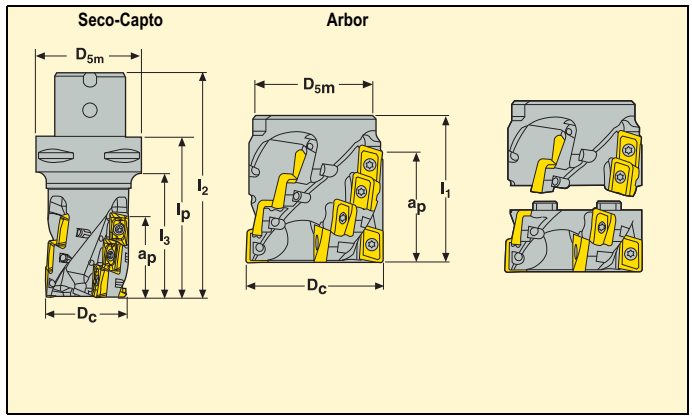


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-00063	27	60	12,4	7	27
R220.69-00080	32	77	14,4	8	32
R220.69-00100	40	90	16,4	9	40

Please check availability in current price and stock-list.

Helical Power Turbo 217/220.69-18

For contouring only.



- For insert selection and cutting data recommendations, see pages 229 - 230.
- For complete insert programme, see page 557 .

Part No.	Dimension in mm								z_c*	No. of flutes	Type of mounting		KG		
	D_c	l_1	l_2	l_p	l_3	D_{5m}	dm_m	a_p							
C6-R217.69 -050-077-18.2SAN	50	–	152	114	89	63	–	77	2	2	Seco-Capto C6	10	1,5	8900	XO..1806..
R220.69 -00063-077-18.4SAN	63	100	–	–	–	60	27	77	4	4	Arbor	20	1,2	7900	XO..1806..
-00080-077-18.4SAN	80	100	–	–	–	77	32	77	4	4	Arbor	20	1,3	7000	XO..1806..
-00100-077-18.5SAN	100	100	–	–	–	90	40	77	5	5	Arbor	25	1,4	6300	XO..1806..

*Effective number of teeth.

Spare parts

For cutter	Locking screw	Key *	Retaining Screw
R217.69 ∅ 50	C04510-T20P	T20P-4	MC6S10x55
R220.69 ∅ 63	C04510-T20P	T20P-4	MP6S12x80
R220.69 ∅ 80	C04510-T20P	T20P-4	MP6S16x80
R220.69 ∅ 100	C04510-T20P	T20P-4	MP6S20x80

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Assembly alternatives/Standard parts

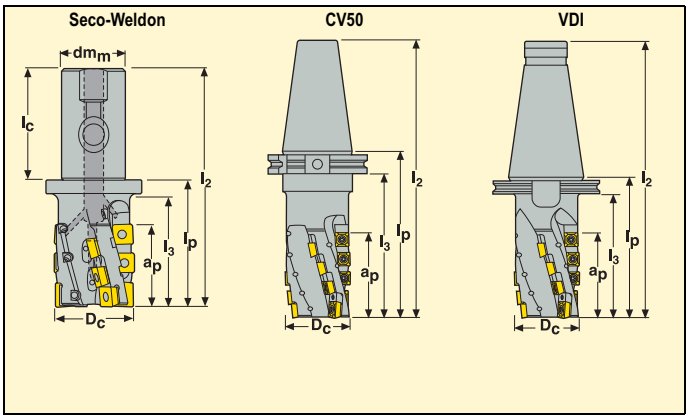
Part No.	Standard parts	
	Cutter body Part No.	Replaceable end Part No.
R220.69-00063-077-18.4SAN	R220.69-00063046-18.4BAN	R220.69-RE063031-18.4AN
R220.69-00080-077-18.4SAN	R220.69-00080046-18.4BAN	R220.69-RE080031-18.4AN
R220.69 -00100-077-18.5SAN	R220.69-00100046-18.5BAN	R220.69-RE100031-18.5AN

Please check availability in current price and stock-list.

215.59-12.4/A

For slotting and contouring

- For insert selection and cutting data recommendations, see page 231.
- For complete insert programme, see pages 514, 533.



Part No.	Dimension in mm D_c	dm_m	l_2	l_p	l_3	l_c	a_p	No. of flutes	z_c*	KG		Type of mounting	No. of inserts SCE.	ACE.
R215.59 -4050.3S-050-12.4A	50	40	150	80	66	70	50	4	2	3,6	8300	Seco-Weldon	10	2
R215.59 -CV50050.077-12.4A	50	–	252	150	109	–	77	4	2	3,8	8300	CV50-DIN	16	2
-CV50063077-12.4	63	–	252	150	115	–	77	4	2	4,3	7400	CV50-DIN	16	2
R215.59 -50.080.077-12.4	80	–	257	130	115	–	77	4	2	5,7	6500	VDI 2814 50	16	2

*Effective number of teeth.

Plunging: Max radial depth of cut 10 mm.

Spare parts

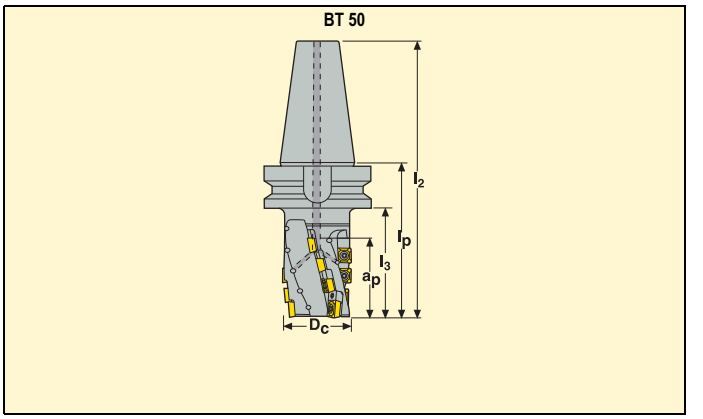
For cutter	Locking screw	Key *
R215.59-12.4A	C45011-T20P	T20P-4

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

215.59-12.4A

For slotting and contouring

- **For insert selection and cutting data recommendations, see page 231.**
- **For complete insert programme, see pages 514, 533.**



Part No.	Dimensions in mm D_c	l_2	l_p	l_3	a_p	No. of flutes	z_c*	KG		Type of mounting	No. of inserts SCE.	ACE.
R215.59 -BT50.050.059-12.4A	50	237	135	97	59	4	2	4,4	8300	BT 50	12	2
-BT50.050.077-12.4A	50	250	148	110	77	4	2	4,5	8300	BT 50	16	2

*Effective number of teeth.

Plunging: Max radial depth of cut 10 mm.

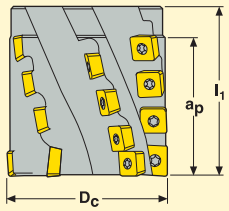
Spare parts

For cutter	Locking screw	Key *
R215.59-..	C45011-T20P	T20P-4

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

220.59-12.X

For slotting and contouring



- For insert selection and cutting data recommendations, see page 231.
- For complete insert programme, see pages 514, 533.

Part No.	Dimensions in mm			No. of flutes	z_c*	KG		No. of inserts	
	D_c	l_1	a_p					SCE.	ACE.
R220.59 -00063.059-12.4	63	70	59	4	2	0,8	7400	12	2
-00080.068-12.4	80	85	68	4	2	1,9	6500	14	2
-00080.068-12.6	80	85	68	6	3	2,2	6500	21	3

*Effective number of teeth.

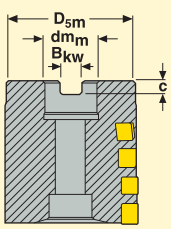
Plunging: Max radial depth of cut 10 mm.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.59-00063	C45011-T20P	T20P-4	MC6S 12X50
R220.59-00080	C45011-T20P	T20P-4	MC6S 16X70

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

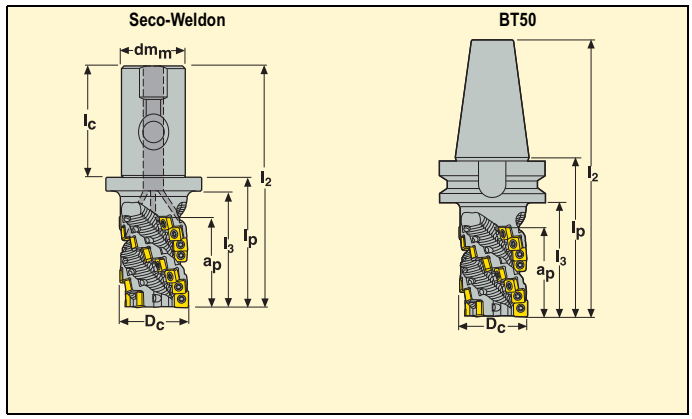


For cutter	Dimensions in mm				For arbor
	dm_m	D_{5m}	B_{kw}	c	
R220.59-00063	27	62	12,4	7	27
R220.59-00080	32	77	14,4	8	32

Please check availability in current price and stock-list.

215.59-12.XK

For contouring only



- **For insert selection and cutting data recommendations, see page 232.**
- **For complete insert programme, see pages 514, 533.**

Part No.	Dimensions in mm D_c	dm_m	l_2	l_p	l_3	l_c	a_p	M	No. of flutes	z_c*	KG		Type of mounting	No. of inserts SCE.	ACE.
R215.59 -4050.3S-063-12.3K	50	40	160	90	78	70	63	–	3	3	1,4	8300	Seco-Weldon	15	3
R215.59 -BT50050072-12.3K	50	–	247	145	103	–	72	–	3	3	4,5	8300	BT 50	18	3
-BT50063110-12.3K	63	–	282	180	138	–	110	–	3	3	4,7	7400	BT 50	30	3
-BT50080120-12.4K	80	–	292	190	148	–	120	–	4	4	7,8	6500	BT 50	44	4

*Effective number of teeth.

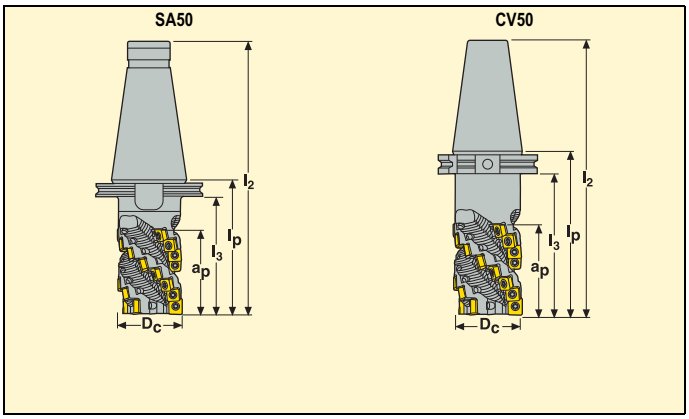
Spare parts

For cutter	Locking screw	Key *
R215.59-12.xK	C45011-T20P	T20P-4

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

215.59-12.XK

For contouring only



- For insert selection and cutting data recommendations, see page 232.
- For complete insert programme, see pages 514, 533.

Part No.	Dimensions in mm D_c	l_2	l_p	l_3	a_p	z_c*	No. of flutes	KG		Type of mounting	No. of inserts SCE.	ACE.
R215.59 -50050072-12.3K	50	257	130	85	72	3	3	3,7	8300	SA50-DIN 2080	18	3
-CV50050072-12.3K	50	232	130	85	72	3	3	3,7	8300	CV50-DIN 69871	18	3
-50063110-12.3K	63	292	165	126	110	3	3	4,7	7400	SA50-DIN 2080	30	3
-50080120-12.4K	80	302	175	155	120	4	4	6,4	6500	SA50-DIN 2080	44	4
-CV50080120-12.4K	80	277	175	155	120	4	4	6,4	6500	CV50-DIN 69871	44	4

*Effective number of teeth.

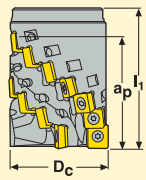
Spare parts

For cutter	Locking screw	Key *
R215.59-12.xK	C45011-T20P	T20P-4

Please check availability in current price and stock-list.
*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

220.59-12.XK

For contouring only



- For insert selection and cutting data recommendations, see page 232.
- For complete insert programme, see pages 514, 533.

Part No.	Dimensions in mm D_c	l_1	a_p	No. of flutes	z_c*	KG		No. of inserts SCE.	ACE.
R220.59 -00063.072-12.4K	63	90	72	4	4	1,1	7400	24	4
-00080.072-12.5K	80	100	72	5	5	2,3	6500	30	5
-00100.072-12.6K	100	110	72	6	6	4,2	5800	36	6

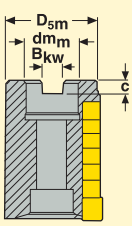
*Effective number of teeth.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.59-00063	C45011-T20P	T20P-4	MC6S 12X80
R220.59-00080	C45011-T20P	T20P-4	MC6S 16X80
R220.59-00100	C45011-T20P	T20P-4	MC6S 20X80

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



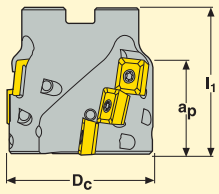
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.59-00063	27	62	12,4	7	27
R220.59-00080	32	77	14,4	8	32
R220.59-00100	40	90	16,4	9	40

Please check availability in current price and stock-list.

220.69-15.XH

For slotting and contouring at high feed rates

- **For insert selection and cutting data recommendations, see page 233.**
- **For complete insert programme, see page 514.**



Tool angles:
γo= - 8,5°– - 4,5°
γp= + 7°– +14°
γf= - 8,5°– - 4,5°

Part No.	Dimensions in mm D_c	l_1	a_p	z_c*	No. of flutes		KG		
R220.69 -0063038-15.4H	63	63	38	4	4	12	0,8	7400	ACE.1506
-0080038-15.5H	80	63	38	5	5	15	1,2	6500	ACE.1506
-0080050-15.5H	80	75	50	5	5	20	1,5	6500	ACE.1506

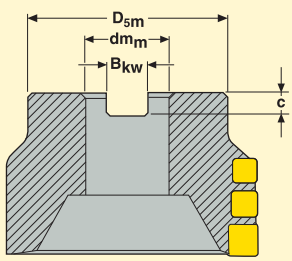
*Effective number of teeth.

Spare parts

For cutter	Locking screw	Axial support**	Key *	Axial support key	Arbor screw
R220.69-0063	C45011-T20P	CH9411-T09P	T20P-4	T09P-3	MC6S 12X50
R220.69-0080	C45011-T20P	CH9411-T09P	T20P-4	T09P-3	MC6S 16X50

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.
**For inserts with 3.0 or 6.0 radius, the axial support must be replaced by CH94R3-T09P or CH94R6-T09P.

Dimensions of mounting



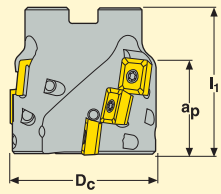
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-0063	27	62	12,4	7	27
R220.69-0080	32	77	14,4	8	32

Please check availability in current price and stock-list.

220.69-15.XH

For slotting and contouring at high feed rates

- **For insert selection and cutting data recommendations, see page 233.**
- **For complete insert programme, see page 514.**



Tool angles:

γo= - 8,5°– - 4,5°
γp= + 7°– +14°
γf= - 8,5°– - 4,5°

Part No.	Dimensions in mm D_c	l_1	a_p	z_c*	No. of flutes		KG		
R220.69 -0100038-15.6H	100	63	38	6	6	18	2,1	5800	ACE.1506
-0100050-15.6H	100	75	50	6	6	24	2,6	5800	ACE.1506
-00125050-15.7H	125	75	50	7	7	28	3,5	5200	ACE.1506

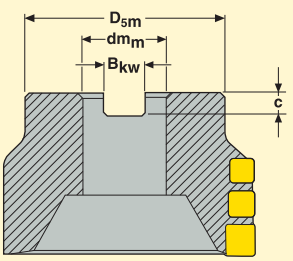
*Effective number of teeth.

Spare parts

For cutter	Locking screw	Axial support**	Key *	Axial support key	Arbor screw
R220.69-00100	C45011-T20P	CH9411-T09P	T20P-4	T09P-3	MC6S 20X50
R220.69-00125	C45011-T20P	CH9411-T09P	T20P-4	T09P-3	–

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.
**For inserts with 3.0 or 6.0 radius, the axial support must be replaced by CH94R3-T09P or CH94R6-T09P.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.69-00100	40	90	16,4	9	40
R220.69-00125	40	90	16,4	9	40

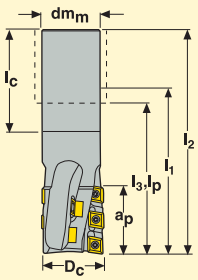
Please check availability in current price and stock-list.

215.59-06/08

For slotting and contouring

- For insert selection and cutting data recommendations, see pages 234 - 235.
- For complete insert programme, see page 517.

Cyl/Weldon



Part No.	Dimensions in mm									z_c*	No. of flutes	Type of mounting		KG		
	D_c	dm_m	l_1	l_2	l_p	l_3	l_c	M	a_p							
R215.59 -2520.3.025-06	20	25	69	101	45	45	56	–	25	1,5	3	Cyl/Weldon	8	0,3	31800	CCMX0603.
-2525.3.025-06	25	25	74	106	50	50	56	–	25	2	4	Cyl/Weldon	10	0,4	28400	CCMX0603.
R215.59 -3232.3.036-08	32	32	76	112	62	62	60	–	36	2	4	Cyl/Weldon	12	0,6	19800	CCMX08T3.

*Effective number of teeth.

Spare parts

For cutter	Locking screw	Key *
R215.59-06	C02507-T08P	T08P-3
R215.59-08	C03007-T09P	T09P-3

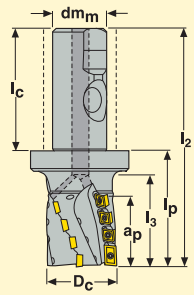
Please check availability in current price and stock-list.
*** Torque value T08P-3 = 1,2 Nm, T09P-3 = 2,0 Nm.** Dynamomentic keys, see page 590.

215.59-08.4/A

For slotting and contouring

- **For insert selection and cutting data recommendations, see page 236.**
- **For complete insert programme, see pages 517, 583.**

Seco-Weldon



Part No.	Dimensions in mm								No. of flutes	z_c*	KG		Type of mounting	No. of inserts	
	D_c	dm_m	l_2	l_p	l_3	l_c	M	a_p						XC..	CCMX
R215.59 -3239.3S.048-08.4A	39	32	140	80	60	60	–	48	4	2	1,1	13400	Seco-Weldon	2	14

*Effective number of teeth.

Plunging: Max radial depth of cut 6 mm.

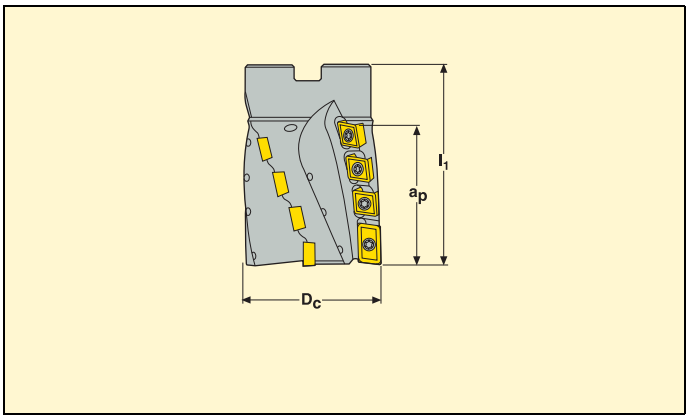
Spare parts

For cutter	Locking screw	Key *
R215.59-..	C03007-T09P	T09P-3

Please check availability in current price and stock-list.
*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

220.59-08.4

For slotting and contouring



- For insert selection and cutting data recommendations, see page 236.
- For complete insert programme, see pages 517, 583.

Part No.	Dimensions in mm			No. of flutes	z_c*	KG		No. of inserts	
	D_c	l_1	a_p					XC..	CCMX
R220.59 -00050.048-08.4	50	70	48	4	2	0,7	8300	2	14

*Effective number of teeth.

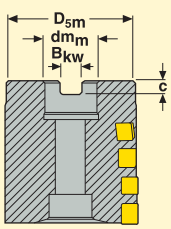
Plunging: Max radial depth of cut 6 mm.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.59-08.4	C03007-T09P	T09P-3	MC6S 12X40

*** Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

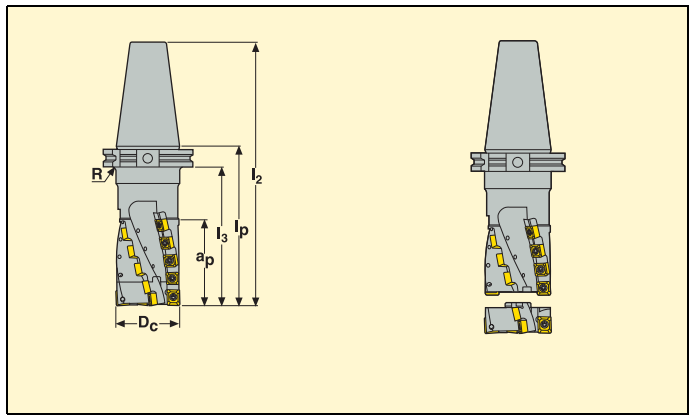


For cutter	Dimensions in mm				For arbor
	dm_m	D_{5m}	B_{kw}	c	
R220.59-08.4	27	62	12,4	7	27

Please check availability in current price and stock-list.

215.59-12.XS/R6

For slotting and contouring



- **For insert selection and cutting data recommendations, see page 237.**
- **For complete insert programme, see pages 514, 533.**
- With replaceable ends.

Part No.	Dimensions in mm D_c	l_2	l_p	l_3	R	a_p	No. of flutes	z_c*	KG		Type of mounting	No. of inserts SCE.	SCEX	ACE.
R215.59 -CV50063086-12.4S	63	261	160	120	4,0	86	4	2	4,3	7400	CV50-DIN 69871	18	–	2
-CV50080095-12.4S	80	252	150	131	0,8	95	4	2	5,0	6500	CV50-DIN 69871	20	–	2
-CV50080095-12.6S	80	252	150	131	0,8	95	6	3	5,5	6500	CV50-DIN 69871	30	–	3
R215.59 -CV50063086-12.4SR6	63	261	160	120	4,0	86	4	2	4,3	7400	CV50-DIN 69871	16	2	2
-CV50080095-12.4SR6	80	252	150	131	0,8	95	4	2	5,0	6500	CV50-DIN 69871	18	2	2
-CV50080095-12.6SR6	80	252	150	131	0,8	95	6	3	5,5	6500	CV50-DIN 69871	27	3	3

*Effective number of teeth.

Plunging: Max radial depth of cut 10 mm.

Spare parts

For cutter	Locking screw	Key *	Retaining Screw	Tenon	Tenon screw
R215.59-CV50063086-..	C45011-T20P	T20P-4	215.59-691	–	–
R215.59-CV50080095-..	C45011-T20P	T20P-4	215.59-692S	DK1010	TCEI0412

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Assembly alternatives/Standard parts

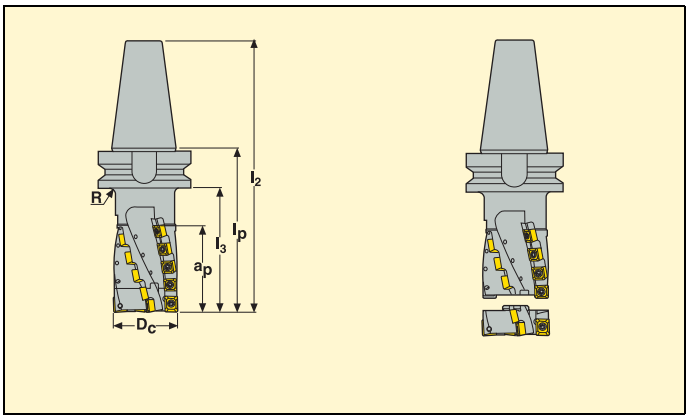
Part No.	Standard parts: Cutter body Part No.	Replaceable end Part No.
R215.59-CV50063086-12.4SR6	R215.59-CV50063062-12.4B	R220.59-RE063024-12.4R6*
R215.59-CV50063086-12.4S	R215.59-CV50063062-12.4B	R220.59-RE063024-12.4
R215.59-CV50080095-12.4S	R215.59-CV50080061-12.4B	R220.59-RE080034-12.4
R215.59-CV50080095-12.4SR6	R215.59-CV50080061-12.4B	R220.59-RE080034-12.4R6*
R215.59-CV50080095-12.6S	R215.59-CV50080061-12.6B	R220.59-RE080034-12.6
R215.59-CV50080095-12.6SR6	R215.59-CV50080061-12.6B	R220.59-RE080034-12.6R6*

Please check availability in current price and stock-list.

*Replaceable end for radius inserts.

215.59-12.XS/R6

For slotting and contouring



- **For insert selection and cutting data recommendations, see page 237.**
- **For complete insert programme, see pages 514, 533.**
- With replaceable ends.

Part No.	Dimensions in mm D_c	l_2	l_p	l_3	R	a_p	No. of flutes	z_c*	KG		Type of mounting	No. of inserts SCE.	SCEX	ACE.
R215.59 -BT50.063.086-12.4S	63	265	163	125	5	86	4	2	4,3	7400	BT 50	18	–	2
-BT50.080.095-12.4S	80	275	173	135	5	95	4	2	5,5	6500	BT 50	20	–	2
R215.59 -BT50.063.086-12.4SR6	63	265	163	125	5	86	4	2	4,3	7400	BT 50	16	2	2
-BT50.080.095-12.4SR6	80	275	173	135	5	95	4	2	5,5	6500	BT 50	18	2	2

*Effective number of teeth.

Plunging: Max radial depth of cut 10 mm.

Spare parts

For cutter	Locking screw	Key *	Retaining Screw	Tenon	Tenon screw
R215.59-BT50.063.086-..	C45011-T20P	T20P-4	215.59-691	–	–
R215.59-BT50.080.095-..	C45011-T20P	T20P-4	215.59-692S	DK1010	TCEI0412

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Assembly alternatives/Standard parts

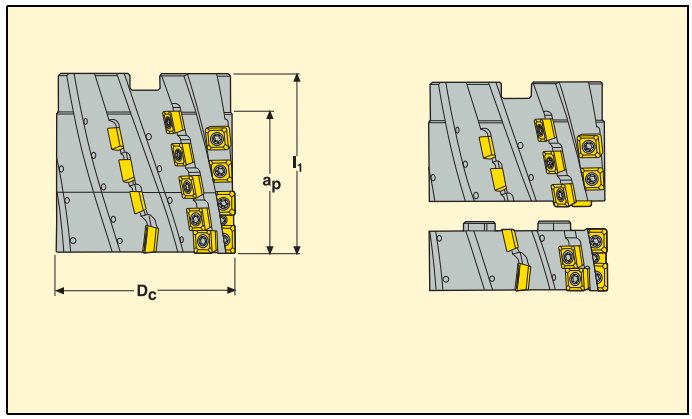
Part No.	Standard parts: Cutter body Part No.	Replaceable end Part No.
R215.59-BT50.063-12.4S	**R215.59-BT50.063.062-12.4B**	**R220.59-RE063024-12.4**
R215.59-BT50.063-12.4SR6	**R215.59-BT50.063.062-12.4B**	**R220.59-RE063024-12.4R6**
R215.59-BT50.080-12.4SR6	**R215.59-BT50.080.061-12.4B**	**R220.59-RE080034-12.4R6**
R215.59-BT50.080-12.4S	**R215.59-BT50.080.061-12.4B**	**R220.59-RE080034-12.4**

Please check availability in current price and stock-list.

*Replaceable end for radius inserts.

220.59-12.XS/R6

For slotting and contouring



- **For insert selection and cutting data recommendations, see page 237.**
- **For complete insert programme, see pages 514, 533.**
- With replaceable ends.

Part No.	Dimensions in mm D_c	l_1	a_p	No. of flutes	z_c*	KG		No. of inserts SCE.	ACE.
R220.59 -00100077-12.6S	100	100	77	6	3	3,9	5800	24	3
-00100077-12.8S	100	100	77	8	4	3,8	5800	32	4
R220.59 -00100077-12.6SR6	100	100	77	6	3	3,9	5800	21	3
-00100077-12.8SR6	100	100	77	8	4	3,8	5800	28	4

*Effective number of teeth.

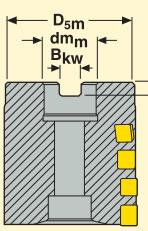
Plunging: Max radial depth of cut 10 mm.

Spare parts

For cutter	Locking screw	Key *	Retaining screw	Tenon	Tenon screw
R220.59-..	C45011-T20P	T20P-4	215.59-693S	DK1210	TCEI0412

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c
R220.59-..	40	90	16,4	9

Please check availability in current price and stock-list.

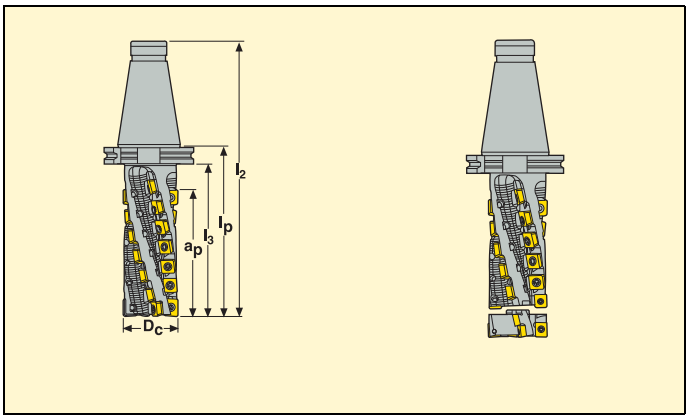
Assembly alternative/ Standard parts

Assembled milling cutter Part No.	Standard parts Cutter body Part No.	Replaceable end Part No.
R220.59-..-12.6S	R220.59-00100043-12.6B	R220.59-RE100034-12.6
-..-12.8S	-00100043-12.8B	-RE100034-12.8
R220.59-..-12.6SR6	R220.59-00100043-12.6B	R220.59-RE100034-12.6R6*
-..-12.8SR6	-00100043-12.8B	-RE100034-12.8R6*

*Replaceable end for radius inserts.

215.59-12

For large depths of cut



- For insert selection and cutting data recommendations, see page 237.
- For complete insert programme, see pages 514, 533.

Part No.	Dimensions in mm D_c	l_2	l_p	l_3	a_p	No. of flutes	z_c*	KG		Type of mounting	No.of inserts SCE.	SCEX	ACE.
R215.59 -50050120-12.4	50	307	180	145	120	4	2	4,5	8300	SA50-DIN 2080	26	–	2
R215.59 -50063120-12.4S	63	327	200	165	120	4	2	5,2	7400	SA50-DIN 2080	26	–	2
-50063160-12.4S	63	377	235	200	160	4	2	5,9	7400	SA50-DIN 2080	34	–	2
R215.59 -50063120-12.4SR6	63	327	200	165	120	4	2	5,2	7400	SA50-DIN 2080	24	2	2
-50063160-12.4SR6	63	377	235	200	160	4	2	5,9	7400	SA50-DIN 2080	32	2	2

*Effective number of teeth.

Spare parts

For cutter	Locking screw	Key *	Retaining Screw
R215.59-50050..	C45011-T20P	T20P-4	–
R215.59-50063..	C45011-T20P	T20P-4	215.59-691

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Assembly alternatives/Standard parts

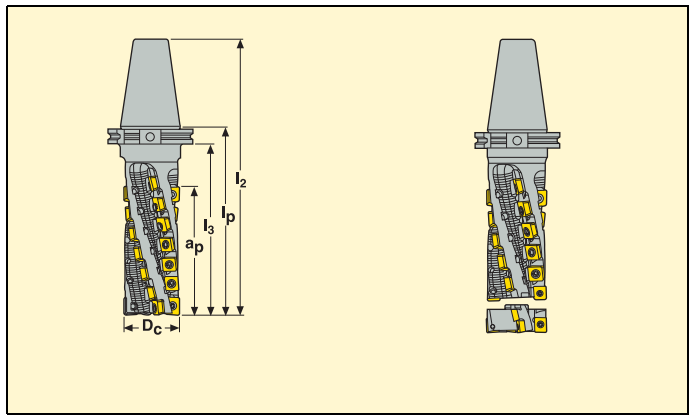
Part No.	Standard parts: Cutter body Part No.	Replaceable end Part No.
R215.59-50050120-12.4S	R215.59-CV50/50050120-12.4	–
R215.59-50063120-12.4S	R215.59-CV50/50063096-12.4B	R220.59-RE063024-12.4
R215.59-50063160-12.4S	R215.59-CV50/50063134-12.4B	R220.59-RE063024-12.4
R215.59-50063120-12.4SR6	R215.59-CV50/50063096-12.4B	R220.59-RE063024-12.4R6*
R215.59-50063160-12.4SR6	R215.59-CV50/50063134-12.4B	R220.59-RE063024-12.4R6*

Please check availability in current price and stock-list.

*Replaceable end for radius inserts.

215.59-12

For large depths of cut



- For insert selection and cutting data recommendations, see page 237.
- For complete insert programme, see pages 514, 533.

Part No.	Dimensions in mm					No. of flutes	z_c*	KG		Type of mounting	No.of inserts		
	D_c	l_2	l_p	l_3	a_p						SCE.	SCEX	ACE.
R215.59 -CV50050120-12.4	50	282	180	145	120	4	2	4,5	8300	CV50-DIN 69871	26	–	2
R215.59 -CV50063120-12.4S	63	302	200	165	120	4	2	5,2	7400	CV50-DIN 69871	26	–	2
-CV50063160-12.4S	63	352	235	200	160	4	2	5,9	7400	CV50-DIN 69871	34	–	2
R215.59 -CV50063120-12.4SR6	63	302	200	165	120	4	2	5,2	7400	CV50-DIN 69871	24	2	2
-CV50063160-12.4SR6	63	352	235	200	160	4	2	5,9	7400	CV50-DIN 69871	32	2	2

*Effective number of teeth.

Spare parts

For cutter	Locking screw	Key *	Retaining Screw
R215.59-CV50050..	C45011-T20P	T20P-4	–
R215.59-CV50063..	C45011-T20P	T20P-4	215.59-691

*** Torque value 5,0 Nm.** Dynamomentic keys, see page 590.

Assembly alternatives/Standard parts

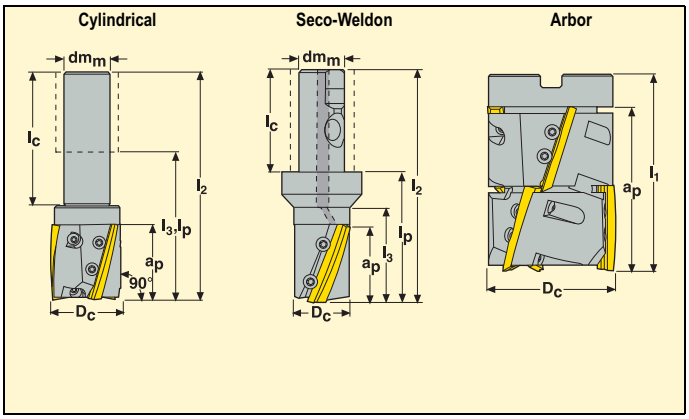
Part No.	Standard parts	
	Cutter body Part No.	Replaceable end Part No.
R215.59-CV50063120-12.4S	R215.59-CV50/50063096-12.4B	R220.59-RE063024-12.4
R215.59-CV50063160-12.4S	R215.59-CV50/50063134-12.4B	R220.59-RE063024-12.4
R215.59-CV50063120-12.4SR6	R215.59-CV50/50063096-12.4B	R220.59-RE063024-12.4R6*
R215.59-CV50063160-12.4SR6	R215.59-CV50/50063134-12.4B	R220.59-RE063024-12.4R6*

Please check availability in current price and stock-list.

*Replaceable end for radius inserts.

235.15

For finishing operations



- For insert selection and cutting data recommendations, see page 238.
- For complete insert programme, see page 526.

Pockets	Part No.	Dimensions in mm D_c	dm_m	l_1	l_2	l_p	l_3	l_c	a_p	a_e*		KG		Type of mounting	
Fixed															
	R235.15 -2532.0-40	32	25	–	140	84	84	71	40	1	2	0,6	8000	Cylindrical	R235.15-032
	-2532.3S-40A	32	25	–	125	69	50	56	40	1	2	0,7	8000	Seco-Weldon	R235.15-032
Adjustable															
	R235.15A -3250.0-50	50	32	–	155	95	95	95	50	1	3	1,2	5500	Cylindrical	R235.15-050
	-3250.3S-50A	50	32	–	120	60	60	70	50	1	3	1,3	5500	Seco-Weldon	R235.15-050
Adjustable															
	R235.15A -0080-90	80	–	120	–	–	–	–	90	1	6**	3,4	4400	Arbor	R235.15-080

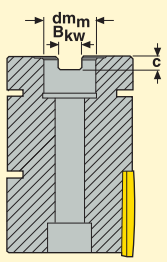
*Max radial depth of cut. **Effective number of teeth = 3.

Spare parts

For cutter	Locking screw	Setting gauge	Key *	Key	Arbor screw
R235.15-2532-..	CL85012-T25P	–	T25P-3	–	–
R235.15A-3250-..	CL85012-T25P	AU8019-T15P	T25P-3	T15P-2	–
R235.15A-0080-..	CL85012-T25P	AU8019-T15P	T25P-3	T15P-2	MC6S 16X100

* Torque value 5,0 Nm.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	B_{kw}	c	For arbor
R235.15A-0080	32	14,4	8	32

Please check availability in current price and stock-list.

Insert selection – 217.69-06 – Slotting/Contouring

Universal insert: XOMX 060204R-M05 F40M

SMG	f_z mm/tooth a_e/D_c = 100%	Max a_p slotting mm	First choice		
1	0,04–0,09	0,4xDc	XOMX060204R-M05 F40M		
2	0,04–0,08	0,4xDc	XOMX060204R-M05 F40M		
3	0,04–0,08	0,3xDc	XOMX060204R-M05 F40M		
4	0,04–0,07	0,3xDc	XOMX060204R-M05 F40M		
5	0,03–0,05	0,2xDc	XOMX060204R-M05 F40M		
6	0,03–0,05	0,1xDc	XOMX060204R-M05 MP3000		
7	–	–	–		
8	0,04–0,07	0,3xDc	XOMX060204R-M05 F40M		
9	0,03–0,07	0,3xDc	XOMX060204R-M05 F40M		
10	0,03–0,06	0,2xDc	XOMX060204R-M05 F40M		
11	0,03–0,06	0,1xDc	XOMX060204R-M05 F40M		
12	0,04–0,09	0,4xDc	XOMX060204R-M05 MP3000		
13	0,04–0,08	0,4xDc	XOMX060204R-M05 MP3000		
14	0,04–0,08	0,3xDc	XOMX060204R-M05 MP3000		
15	0,03–0,06	0,2xDc	XOMX060204R-M05 MP3000		
16	0,05–0,11	0,5xDc	XOEX060204R-E03 H15		
17	0,05–0,10	0,5xDc	XOEX060204R-E03 F40M		
18	0,05–0,11	0,5xDc	XOEX060204R-E03 H15		
19	0,03–0,05	0,3xDc	XOMX060204R-M05 F40M		
20	0,03–0,05	0,3xDc	XOMX060204R-M05 F40M		
21	0,02–0,05	0,2xDc	XOMX060204R-M05 F40M		
22	0,03–0,06	0,3xDc	XOMX060204R-M05 F40M		

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades																
	MP3000			F40M			F15M			H15			MM4500				
	f_z (mm/tooth)																
	0,02	0,06	0,10	0,02	0,06	0,10	0,02	0,06	0,10	0,02	0,06	0,10	0,02	0,06	0,10		
	v_c (m/min)																
1	485	405	360	390	325	285	–	–	–	–	–	–	315	260	230		
2	415	345	305	330	275	245	–	–	–	–	–	–	270	220	195		
3	340	285	250	275	225	200	–	–	–	–	–	–	220	185	160		
4	290	240	215	235	195	170	–	–	–	–	–	–	190	155	140		
5	245	200	180	195	160	145	235	195	170	–	–	–	155	130	115		
6	215	175	–	170	140	–	205	170	–	–	–	–	140	115	–		
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
8	310	255	225	265	220	195	–	–	–	–	–	–	230	190	170		
9	245	200	180	210	175	155	–	–	–	–	–	–	180	150	135		
10	200	165	–	170	140	–	–	–	–	–	–	–	150	125	–		
11	145	120	–	125	105	–	–	–	–	–	–	–	110	90	–		
12	255	210	185	205	170	150	245	200	–	–	–	–	–	–	–		
13	225	185	165	180	150	130	215	180	–	–	–	–	–	–	–		
14	190	155	140	150	125	110	180	150	–	–	–	–	–	–	–		
15	155	130	–	125	105	–	150	125	–	–	–	–	–	–	–		
16	–	–	–	1010	835	740	1210	1005	890	960	795	705	–	–	–		
17	–	–	–	815	675	600	980	810	720	775	640	570	–	–	–		
18	–	–	–	620	515	455	745	620	545	590	490	435	–	–	–		
19	65	55	–	55	46	–	–	–	–	–	–	–	39	33	–		
20	50	43	–	45	37	–	–	–	–	–	–	–	32	26	–		
21	45	37	–	39	32	–	–	–	–	–	–	–	27	23	–		
22	110	90	–	95	75	–	–	–	–	–	–	–	65	55	–		

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,02	0,06	0,10	1,00
Side milling	25%	0,03	0,08	0,13	1,30
	10%	0,04	0,12	0,20	1,50
	5%	0,06	0,17	0,29	1,60
Average chip thickness h_m		0,01	0,04	0,06	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2	■	■
0,4	■*	■*
0,8-1,6	■	–

*** Basic Choice**

Insert selection – 217/220.69-09 – Slotting/Contouring

Universal insert: XOMX 090308TR-M08 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,08–0,13	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
2	0,08–0,12	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
3	0,08–0,12	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 T350M	
4	0,08–0,12	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
5	0,06–0,10	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
6	0,06–0,10	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 T350M	
7	–	–	–	
8	0,08–0,12	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 F40M	
9	0,06–0,10	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 F40M	
10	0,06–0,10	XOMX090308TR-M08 T350M	XOMX090308TR-M08 MM4500	
11	0,06–0,08	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MM4500	
12	0,09–0,13	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
13	0,08–0,12	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
14	0,08–0,12	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
15	0,06–0,10	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 MK2000	
16	0,08–0,12	XOEX090308FR-E05 H15	XOMX090308TR-ME06 F40M	
17	0,08–0,12	XOEX090308FR-E05 F40M	XOMX090308TR-ME06 F40M	
18	0,08–0,12	XOEX090308FR-E05 H15	XOMX090308TR-ME06 F40M	
19	0,06–0,10	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
20	0,06–0,10	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
21	0,05–0,08	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MP3000	
22	0,06–0,09	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 F40M	

Cutting data – Full engagement width (a_e/D_c = 100%)

	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12
SMG	v_c (m/min)																				
1	465	425	390	415	375	345	390	355	330	360	325	300	255	230	215	315	285	265	–	–	–
2	395	360	330	350	315	295	330	300	280	305	275	255	215	195	180	265	240	225	–	–	–
3	325	295	275	290	260	245	275	250	230	250	230	210	175	160	150	220	200	185	–	–	–
4	280	255	235	245	225	205	235	210	195	215	195	180	150	135	125	185	170	155	–	–	–
5	230	210	–	205	185	175	195	175	165	180	160	150	125	115	105	155	140	130	–	–	–
6	205	185	–	180	165	–	170	155	–	155	140	–	110	100	–	135	125	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	320	290	270	250	230	210	250	225	210	235	215	200	185	165	155	215	195	–	–	–	–
9	250	225	210	200	180	165	195	175	165	185	170	155	145	130	120	170	155	–	–	–	–
10	205	185	170	160	145	135	160	145	135	150	135	125	120	110	100	140	125	–	–	–	–
11	150	140	–	120	110	–	120	105	–	110	100	–	90	80	75	100	90	–	–	–	–
12	245	220	205	215	195	180	205	185	170	185	170	155	115	105	100	165	150	135	195	175	165
13	215	195	180	190	170	160	180	160	150	165	150	140	100	95	85	145	130	120	170	155	145
14	180	165	150	160	145	135	150	135	125	140	125	115	85	80	70	120	110	100	145	130	–
15	150	135	–	130	120	–	125	115	–	115	105	–	70	65	–	100	90	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	810	735	680	970	880	815
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	655	595	550	785	710	660
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	500	450	420	600	540	500
19	–	–	–	55	50	–	50	47	–	49	45	–	32	29	–	45	41	–	–	–	–
20	–	–	–	44	40	–	42	38	–	40	36	–	25	23	–	36	33	–	–	–	–
21	–	–	–	38	35	–	36	33	–	34	31	–	22	20	–	31	28	–	–	–	–
22	–	–	–	90	85	–	85	80	–	80	75	–	55	48	–	75	70	–	–	–	–

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,09	0,13	1,00
Side milling	25%	0,08	0,13	0,17	1,30
	10%	0,13	0,19	0,26	1,50
	5%	0,18	0,27	0,36	1,60
Average chip thickness h_m		0,04	0,06	0,08	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2-0,4	■	■
0,8	■*	■*
1,2	■	–

*Basic Choice

Insert selection – 217/220.69-09 – Slotting/Contouring

Universal insert: XOMX 090308TR-M08 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,08–0,13	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
2	0,08–0,12	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
3	0,08–0,12	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 T350M	
4	0,08–0,12	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
5	0,06–0,10	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
6	0,06–0,10	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 T350M	
7	–	–	–	
8	0,08–0,12	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 F40M	
9	0,06–0,10	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 F40M	
10	0,06–0,10	XOMX090308TR-M08 T350M	XOMX090308TR-M08 MM4500	
11	0,06–0,08	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MM4500	
12	0,09–0,13	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
13	0,08–0,12	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
14	0,08–0,12	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
15	0,06–0,10	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 MK2000	
16	0,08–0,12	XOEX090308FR-E05 H15	XOMX090308TR-ME06 F40M	
17	0,08–0,12	XOEX090308FR-E05 F40M	XOMX090308TR-ME06 F40M	
18	0,08–0,12	XOEX090308FR-E05 H15	XOMX090308TR-ME06 F40M	
19	0,06–0,10	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
20	0,06–0,10	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
21	0,05–0,08	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MP3000	
22	0,06–0,09	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12			
	v_c (m/min)														
1	450	410	380	–	–	–	405	370	340	–	–	–			
2	380	345	320	–	–	–	345	315	290	–	–	–			
3	315	285	265	–	–	–	285	260	240	–	–	–			
4	270	245	225	–	–	–	245	220	205	–	–	–			
5	225	205	190	–	–	–	200	185	170	–	–	–			
6	195	180	–	–	–	–	175	160	–	–	–	–			
7	–	–	–	–	–	–	–	–	–	–	–	–			
8	275	250	230	–	–	–	280	250	235	–	–	–			
9	215	195	180	–	–	–	220	200	185	–	–	–			
10	175	160	150	–	–	–	180	160	150	–	–	–			
11	130	120	–	–	–	–	130	120	–	–	–	–			
12	235	215	195	305	275	255	210	190	180	155	140	130			
13	205	185	175	270	245	225	185	170	155	135	125	115			
14	175	155	145	225	205	190	155	140	130	115	105	–			
15	145	130	–	185	170	–	130	120	–	–	–	–			
16	–	–	–	–	–	–	–	–	–	770	700	645			
17	–	–	–	–	–	–	–	–	–	620	565	520			
18	–	–	–	–	–	–	–	–	–	475	430	395			
19	60	55	–	–	–	–	60	55	–	–	–	–			
20	48	44	–	–	–	–	47	43	–	–	–	–			
21	42	38	–	–	–	–	40	37	–	–	–	–			
22	100	90	–	–	–	–	95	90	–	–	–	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,09	0,13	1,00
Side milling	25%	0,08	0,13	0,17	1,30
	10%	0,13	0,19	0,26	1,50
	5%	0,18	0,27	0,36	1,60
Average chip thickness h_m		0,04	0,06	0,08	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2-0,4	■	■
0,8	■*	■*
1,2	■	–

*Basic Choice

Insert selection – 217/220.69-09 – Contouring only

Universal insert: XOMX 090308TR-M08 MP2500

SMG	f_z mm/tooth a_e/D_c = 30%	First choice	Difficult operations	
1	0,10–0,15	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
2	0,10–0,14	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
3	0,10–0,14	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 T350M	
4	0,10–0,14	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
5	0,08–0,12	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
6	0,08–0,12	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 T350M	
7	–	–	–	
8	0,10–0,14	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 F40M	
9	0,08–0,12	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 F40M	
10	0,08–0,12	XOMX090308TR-M08 T350M	XOMX090308TR-M08 MM4500	
11	0,08–0,10	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MM4500	
12	0,09–0,15	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
13	0,10–0,14	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
14	0,10–0,14	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
15	0,08–0,12	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 MK2000	
16	0,10–0,14	XOEX090308FR-E05 H15	XOMX090308TR-ME06 F40M	
17	0,10–0,14	XOEX090308FR-E05 F40M	XOMX090308TR-ME06 F40M	
18	0,08–0,12	XOEX090308FR-E05 H15	XOMX090308TR-ME06 F40M	
19	0,06–0,10	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
20	0,08–0,12	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
21	0,07–0,10	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MP3000	
22	0,08–0,10	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 F40M	

Cutting data – 30% engagement width (a_e/D_c = 30%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,07	0,11	0,15	0,07	0,11	0,15	0,07	0,11	0,15	0,07	0,11	0,15	0,07	0,11	0,15	0,07	0,11	0,15	0,07	0,11	0,15
	v_c (m/min)																				
1	605	540	500	535	480	440	505	455	420	465	420	385	330	295	270	405	365	335	–	–	–
2	510	460	425	455	405	375	430	385	355	395	355	325	280	250	230	345	310	285	–	–	–
3	420	380	350	375	335	310	355	320	295	325	295	270	230	205	190	285	255	235	–	–	–
4	360	325	300	320	285	265	300	270	250	280	250	230	195	175	160	240	215	200	–	–	–
5	300	270	–	265	240	220	250	225	210	230	210	190	165	145	135	200	180	165	–	–	–
6	265	235	–	235	210	–	220	200	–	205	185	–	145	130	–	175	160	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	415	370	340	325	295	270	320	290	265	305	275	250	240	215	200	275	250	–	–	–	–
9	325	290	270	255	230	210	255	225	210	240	215	200	190	170	155	220	195	–	–	–	–
10	265	240	220	210	190	175	205	185	170	195	175	160	155	140	125	180	160	–	–	–	–
11	195	175	–	155	140	–	155	140	–	145	130	–	115	100	95	130	120	–	–	–	–
12	315	285	260	280	250	230	265	235	220	245	220	200	150	135	125	210	190	175	255	230	210
13	275	250	230	245	220	200	230	210	190	215	190	175	130	120	110	185	165	155	225	200	185
14	235	210	190	205	185	170	195	175	160	180	160	150	110	100	90	155	140	130	185	170	–
15	195	175	–	170	155	–	160	145	–	150	135	–	90	85	–	130	115	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1050	940	865	1260	1130	1040
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	845	760	700	1015	915	840
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	645	580	535	775	695	640
19	–	–	–	70	65	–	–	–	–	65	55	–	41	37	–	60	50	–	–	–	–
20	–	–	–	60	50	–	–	–	–	50	46	–	33	30	–	47	42	–	–	–	–
21	–	–	–	50	45	–	–	–	–	44	40	–	28	26	–	40	36	–	–	–	–
22	–	–	–	120	105	–	–	–	–	105	95	–	70	60	–	95	85	–	–	–	–

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,06	0,09	0,13	0,80
Side milling	30%	0,08	0,12	0,15	1,00
	20%	0,09	0,14	0,19	1,05
	15%	0,11	0,16	0,21	1,10
	10%	0,13	0,19	0,26	1,15
	5%	0,18	0,27	0,36	1,25
Average chip thickness h_m		0,04	0,06	0,08	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2-0,4	■	■
0,8	■*	■*
1,2	■	–

*Basic Choice

Insert selection – 217/220.69-09 – Contouring only

Universal insert: XOMX 090308TR-M08 MP2500

SMG	f_z mm/tooth a_e/D_c = 30%	First choice	Difficult operations	
1	0,10–0,15	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
2	0,10–0,14	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 T350M	
3	0,10–0,14	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 T350M	
4	0,10–0,14	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
5	0,08–0,12	XOMX090308TR-M08 MP2500	XOMX090308TR-M08 T350M	
6	0,08–0,12	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 T350M	
7	–	–	–	
8	0,10–0,14	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 F40M	
9	0,08–0,12	XOMX090308TR-ME06 MP2500	XOMX090308TR-M08 F40M	
10	0,08–0,12	XOMX090308TR-M08 T350M	XOMX090308TR-M08 MM4500	
11	0,08–0,10	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MM4500	
12	0,09–0,15	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
13	0,10–0,14	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
14	0,10–0,14	XOMX090308TR-M08 MK1500	XOMX090308TR-M08 MK2000	
15	0,08–0,12	XOMX090308TR-M08 MP1500	XOMX090308TR-M08 MK2000	
16	0,10–0,14	XOEX090308FR-E05 H15	XOMX090308TR-ME06 F40M	
17	0,10–0,14	XOEX090308FR-E05 F40M	XOMX090308TR-ME06 F40M	
18	0,08–0,12	XOEX090308FR-E05 H15	XOMX090308TR-ME06 F40M	
19	0,06–0,10	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
20	0,08–0,12	XOMX090308TR-ME06 T350M	XOMX090308TR-M08 F40M	
21	0,07–0,10	XOMX090308TR-M08 F40M	XOMX090308TR-M08 MP3000	
22	0,08–0,10	XOMX090308TR-ME06 F40M	XOMX090308TR-M08 F40M	

Cutting data – 30% engagement width (a_e /D_c = 30%)

	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,07	0,11	0,15	0,07	0,11	0,15	0,07	0,11	0,15	0,07	0,11	0,15			
SMG	v_c (m/min)														
1	585	525	480	–	–	–	525	475	435	–	–	–			
2	495	445	410	–	–	–	445	400	370	–	–	–			
3	410	365	335	–	–	–	370	330	305	–	–	–			
4	350	315	290	–	–	–	315	285	260	–	–	–			
5	290	260	240	–	–	–	260	235	215	–	–	–			
6	255	230	–	–	–	–	230	205	–	–	–	–			
7	–	–	–	–	–	–	–	–	–	–	–	–			
8	355	320	295	–	–	–	360	325	300	–	–	–			
9	280	250	230	–	–	–	285	255	235	–	–	–			
10	230	205	190	–	–	–	230	210	190	–	–	–			
11	170	150	–	–	–	–	170	155	–	–	–	–			
12	305	275	250	395	355	325	275	245	225	200	180	165			
13	265	240	220	345	310	285	240	215	200	175	160	145			
14	225	200	185	290	260	240	205	180	170	150	135	–			
15	185	165	–	240	215	–	170	150	–	–	–	–			
16	–	–	–	–	–	–	–	–	–	995	895	825			
17	–	–	–	–	–	–	–	–	–	805	725	665			
18	–	–	–	–	–	–	–	–	–	615	550	505			
19	80	70	–	–	–	–	75	70	–	–	–	–			
20	65	55	–	–	–	–	60	55	–	–	–	–			
21	55	49	–	–	–	–	50	47	–	–	–	–			
22	130	115	–	–	–	–	125	115	–	–	–	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,06	0,09	0,13	0,80
Side milling	30%	0,08	0,12	0,15	1,00
	20%	0,09	0,14	0,19	1,05
	15%	0,11	0,16	0,21	1,10
	10%	0,13	0,19	0,26	1,15
	5%	0,18	0,27	0,36	1,25
Average chip thickness h_m		0,04	0,06	0,08	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2-0,4	■	■
0,8	■*	■*
1,2	■	–

*Basic Choice

Insert selection – 217/220.69-12 – Slotting/Contouring

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,10–0,18	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,10–0,18	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,10–0,16	XOMX120408TR-ME08 MP2500	XOMX120408TR-ME08 T350M	
4	0,10–0,16	XOMX120408TR-M12 MP2500	XOMX120408TR-MD13 T350M	
5	0,08–0,15	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
6	0,07–0,12	XOMX120408TR-MD13 MP1500	XOMX120408TR-D14 MP3000	
7				
8	0,08–0,15	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,08–0,13	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,08–0,13	XOMX120408TR-ME08 T350M	XOEX120408R-M07 MM4500	
11	0,07–0,12	XOMX120408TR-M12 F40M	XOEX120408R-M07 MM4500	
12	0,10–0,20	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,09–0,16	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,09–0,14	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,08–0,13	XOMX120408TR-MD13 MP1500	XOMX120408TR-D14 MP1500	
16	0,10–0,18	XOEX120408FR-E06 H15	XOMX120408TR-ME08 F40M	
17	0,10–0,15	XOEX120408FR-E06 F40M	XOMX120408TR-ME08 F40M	
18	0,10–0,18	XOEX120408FR-E06 H15	XOMX120408TR-ME08 F40M	
19	0,06–0,09	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,06–0,09	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,06–0,08	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,09–0,13	XOEX120408R-M07 F40M	XOMX120408TR-ME08 F40M	

Cutting data – Full engagement width (a_e/D_c = 100%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12
	v_c (m/min)																				
1	435	390	365	385	350	320	365	330	305	335	305	280	235	215	200	290	265	245	–	–	–
2	365	335	310	325	295	275	305	280	260	285	255	235	200	180	165	245	225	205	–	–	–
3	305	275	255	270	245	225	255	230	215	235	210	195	165	150	140	205	185	170	–	–	–
4	260	235	215	230	210	190	215	195	180	200	180	165	140	125	120	175	155	145	–	–	–
5	215	195	–	190	175	160	180	165	150	165	150	140	115	105	100	145	130	120	–	–	–
6	190	170	–	165	150	–	160	145	–	145	130	–	105	95	–	125	115	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	295	270	250	235	215	195	230	210	195	220	200	185	170	155	145	200	180	–	–	–	–
9	235	210	195	185	165	155	180	165	150	170	155	145	135	120	115	155	140	–	–	–	–
10	190	175	160	150	135	125	150	135	125	140	125	120	110	100	90	130	115	–	–	–	–
11	140	130	–	110	100	–	110	100	–	105	95	–	80	75	70	95	85	–	–	–	–
12	225	205	190	200	180	170	190	170	160	175	160	145	110	100	90	150	135	125	180	165	150
13	200	180	165	175	160	145	165	150	140	155	140	130	95	85	80	135	120	110	160	145	135
14	165	150	140	150	135	125	140	125	115	130	115	110	80	70	65	110	100	95	135	120	–
15	140	125	–	120	110	–	115	105	–	105	95	–	65	60	–	95	85	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	750	680	630	900	820	755
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	605	550	510	730	660	610
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	460	420	390	555	505	465
19	–	–	–	50	46	–	48	44	–	46	42	–	29	27	–	42	38	–	–	–	–
20	–	–	–	41	37	–	39	35	–	37	33	–	24	21	–	34	30	–	–	–	–
21	–	–	–	36	32	–	34	30	–	32	29	–	20	19	–	29	26	–	–	–	–
22	–	–	–	85	75	–	80	75	–	75	70	–	49	44	–	70	65	–	–	–	–

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,10	0,18	1,00
Side milling	25%	0,08	0,13	0,24	1,30
	10%	0,12	0,20	0,37	1,50
	5%	0,17	0,29	0,52	1,60
Average chip thickness h_m		0,04	0,06	0,11	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2-0,4	■	■
0,8	■*	■*
1,2-3,1	■	–
4,0-6,3	■**	–

*Basic Choice **Cutter body must be modified.

Insert selection – 217/220.69-12 – Slotting/Contouring

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,10–0,18	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,10–0,18	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,10–0,16	XOMX120408TR-ME08 MP2500	XOMX120408TR-ME08 T350M	
4	0,10–0,16	XOMX120408TR-M12 MP2500	XOMX120408TR-MD13 T350M	
5	0,08–0,15	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
6	0,07–0,12	XOMX120408TR-MD13 MP1500	XOMX120408TR-D14 MP3000	
7	–	–	–	
8	0,08–0,15	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,08–0,13	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,08–0,13	XOMX120408TR-ME08 T350M	XOEX120408R-M07 MM4500	
11	0,07–0,12	XOMX120408TR-M12 F40M	XOEX120408R-M07 MM4500	
12	0,10–0,20	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,09–0,16	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,09–0,14	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,08–0,13	XOMX120408TR-MD13 MP1500	XOMX120408TR-D14 MP1500	
16	0,10–0,18	XOEX120408FR-E06 H15	XOMX120408TR-ME08 F40M	
17	0,10–0,15	XOEX120408FR-E06 F40M	XOMX120408TR-ME08 F40M	
18	0,10–0,18	XOEX120408FR-E06 H15	XOMX120408TR-ME08 F40M	
19	0,06–0,09	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,06–0,09	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,06–0,08	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,09–0,13	XOEX120408R-M07 F40M	XOMX120408TR-ME08 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12	0,06	0,09	0,12			
	v_c (m/min)														
1	420	380	350	–	–	–	375	340	315	–	–	–			
2	355	320	295	–	–	–	320	290	270	–	–	–			
3	290	265	245	–	–	–	265	240	220	–	–	–			
4	250	225	210	–	–	–	225	205	190	–	–	–			
5	210	190	175	–	–	–	190	170	160	–	–	–			
6	185	165	–	–	–	–	165	150	–	–	–	–			
7	–	–	–	–	–	–	–	–	–	–	–	–			
8	255	230	215	–	–	–	260	235	215	–	–	–			
9	200	180	170	–	–	–	205	185	170	–	–	–			
10	165	150	135	–	–	–	165	150	140	–	–	–			
11	120	110	–	–	–	–	125	110	–	–	–	–			
12	220	200	185	285	255	235	195	180	165	145	130	120			
13	190	175	160	250	225	210	175	155	145	125	115	105			
14	160	145	135	210	190	175	145	130	120	105	95	–			
15	135	120	–	175	155	–	120	110	–	–	–	–			
16	–	–	–	–	–	–	–	–	–	715	650	600			
17	–	–	–	–	–	–	–	–	–	575	525	485			
18	–	–	–	–	–	–	–	–	–	440	400	370			
19	55	50	–	–	–	–	55	49	–	–	–	–			
20	45	41	–	–	–	–	44	40	–	–	–	–			
21	39	35	–	–	–	–	38	34	–	–	–	–			
22	95	85	–	–	–	–	90	80	–	–	–	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,10	0,18	1,00
Side milling	25%	0,08	0,13	0,24	1,30
	10%	0,12	0,20	0,37	1,50
	5%	0,17	0,29	0,52	1,60
Average chip thickness h_m		0,04	0,06	0,11	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2-0,4	■	■
0,8	■*	■*
1,2-3,1	■	–
4,0-6,3	■**	–

***Basic Choice **Cutter body must be modified.**

Insert selection – 217/220.69-12 – Contouring only

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 30%	First choice	Difficult operations	
1	0,12–0,22	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,12–0,22	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,12–0,20	XOMX120408TR-ME08 MP2500	XOMX120408TR-ME08 T350M	
4	0,12–0,20	XOMX120408TR-M12 MP2500	XOMX120408TR-MD13 T350M	
5	0,10–0,18	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
6	0,09–0,15	XOMX120408TR-MD13 MP1500	XOMX120408TR-D14 MP3000	
7	–	–	–	
8	0,10–0,18	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,10–0,16	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,10–0,16	XOMX120408TR-ME08 T350M	XOEX120408R-M07 MM4500	
11	0,09–0,15	XOMX120408TR-M12 F40M	XOEX120408R-M07 MM4500	
12	0,12–0,25	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,11–0,22	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,11–0,20	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,10–0,16	XOMX120408TR-MD13 MP1500	XOMX120408TR-D14 MP1500	
16	0,12–0,22	XOEX120408FR-E06 H15	XOMX120408TR-ME08 F40M	
17	0,12–0,18	XOEX120408FR-E06 F40M	XOMX120408TR-ME08 F40M	
18	0,12–0,22	XOEX120408FR-E06 H15	XOMX120408TR-ME08 F40M	
19	0,07–0,10	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,07–0,10	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,07–0,10	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,11–0,16	XOEX120408R-M07 F40M	XOMX120408TR-ME08 F40M	

Cutting data – 30% engagement width (a_e/D_c = 30%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,07	0,12	0,22	0,07	0,12	0,22	0,07	0,12	0,22	0,07	0,12	0,22	0,07	0,12	0,22	0,07	0,12	0,22	0,07	0,12	0,22
	v_c (m/min)																				
1	555	485	410	490	430	360	465	410	340	430	375	315	300	265	220	370	325	275	–	–	–
2	470	410	345	415	365	305	395	345	290	365	320	265	255	225	190	315	275	230	–	–	–
3	390	340	285	345	300	255	325	285	240	300	265	220	210	185	155	260	230	190	–	–	–
4	330	290	245	295	255	215	280	245	205	255	225	190	180	160	130	220	195	165	–	–	–
5	275	240	–	245	215	180	230	205	170	215	185	155	150	130	110	185	165	135	–	–	–
6	240	210	–	215	190	–	205	180	–	185	165	–	130	115	–	160	145	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	380	335	280	300	265	220	295	260	215	280	245	205	220	195	160	255	225	–	–	–	–
9	300	260	220	235	205	175	230	205	170	220	195	160	175	150	125	200	175	–	–	–	–
10	245	215	180	195	170	140	190	165	140	180	160	130	140	125	105	165	145	–	–	–	–
11	180	160	–	145	125	–	140	125	–	135	115	–	105	90	75	120	105	–	–	–	–
12	290	255	210	255	225	190	240	215	180	225	195	165	140	120	100	195	170	145	235	205	170
13	255	225	185	225	195	165	215	185	155	195	170	145	120	105	90	170	150	125	205	180	150
14	215	185	155	190	165	140	180	155	130	165	145	120	100	90	75	145	125	105	170	150	–
15	175	155	–	155	140	–	150	130	–	135	120	–	85	75	–	120	105	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	965	845	710	1155	1015	850
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	780	685	570	935	820	685
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	595	520	435	710	625	525
19	–	–	–	65	60	–	–	–	–	60	50	–	38	33	–	55	47	–	–	–	–
20	–	–	–	55	46	–	–	–	–	47	41	–	30	27	–	43	38	–	–	–	–
21	–	–	–	46	40	–	–	–	–	41	36	–	26	23	–	37	33	–	–	–	–
22	–	–	–	110	95	–	–	–	–	100	85	–	65	55	–	90	80	–	–	–	–

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,06	0,10	0,18	0,80
Side milling	30%	0,07	0,12	0,22	1,00
	20%	0,09	0,15	0,27	1,05
	15%	0,10	0,17	0,30	1,10
	10%	0,12	0,20	0,37	1,15
	5%	0,17	0,29	0,52	1,25
Average chip thickness h_m		0,04	0,06	0,11	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2-0,4	■	■
0,8	■*	■*
1,2	■	–

*Basic Choice

Insert selection – 217/220.69-12 – Contouring only

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 30%	First choice	Difficult operations	
1	0,12–0,22	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,12–0,22	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,12–0,20	XOMX120408TR-ME08 MP2500	XOMX120408TR-ME08 T350M	
4	0,12–0,20	XOMX120408TR-M12 MP2500	XOMX120408TR-MD13 T350M	
5	0,10–0,18	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
6	0,09–0,15	XOMX120408TR-MD13 MP1500	XOMX120408TR-D14 MP3000	
7	–	–	–	
8	0,10–0,18	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,10–0,16	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,10–0,16	XOMX120408TR-ME08 T350M	XOEX120408R-M07 MM4500	
11	0,09–0,15	XOMX120408TR-M12 F40M	XOEX120408R-M07 MM4500	
12	0,12–0,25	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,11–0,22	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,11–0,20	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,10–0,16	XOMX120408TR-MD13 MP1500	XOMX120408TR-D14 MP1500	
16	0,12–0,22	XOEX120408FR-E06 H15	XOMX120408TR-ME08 F40M	
17	0,12–0,18	XOEX120408FR-E06 F40M	XOMX120408TR-ME08 F40M	
18	0,12–0,22	XOEX120408FR-E06 H15	XOMX120408TR-ME08 F40M	
19	0,07–0,10	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,07–0,10	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,07–0,10	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,11–0,16	XOEX120408R-M07 F40M	XOMX120408TR-ME08 F40M	

Cutting data – 30% engagement width (a_e /D_c = 30%)

	Grades														
	MS2500			MK1500			MK2000			H15					
	f_z (mm/tooth)														
	0,07	0,12	0,22	0,07	0,12	0,22	0,07	0,12	0,22	0,07	0,12	0,22			
SMG	v_c (m/min)														
1	535	470	395	–	–	–	485	425	355	–	–	–			
2	455	400	335	–	–	–	410	360	300	–	–	–			
3	375	330	275	–	–	–	340	295	250	–	–	–			
4	320	280	235	–	–	–	290	255	210	–	–	–			
5	265	235	195	–	–	–	240	210	175	–	–	–			
6	235	205	–	–	–	–	210	185	–	–	–	–			
7	–	–	–	–	–	–	–	–	–	–	–	–			
8	325	285	240	–	–	–	330	290	245	–	–	–			
9	255	225	190	–	–	–	260	230	190	–	–	–			
10	210	185	155	–	–	–	215	185	155	–	–	–			
11	155	135	–	–	–	–	160	140	–	–	–	–			
12	280	245	205	365	320	265	250	220	185	185	160	135			
13	245	215	180	320	280	235	220	195	165	160	140	120			
14	205	180	150	270	235	195	185	165	135	135	120	–			
15	170	150	–	220	195	–	155	135	–	–	–	–			
16	–	–	–	–	–	–	–	–	–	915	805	675			
17	–	–	–	–	–	–	–	–	–	740	650	545			
18	–	–	–	–	–	–	–	–	–	565	495	415			
19	70	65	–	–	–	–	70	60	–	–	–	–			
20	60	50	–	–	–	–	55	49	–	–	–	–			
21	50	44	–	–	–	–	48	42	–	–	–	–			
22	120	105	–	–	–	–	115	100	–	–	–	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,06	0,10	0,18	0,80
Side milling	30%	0,07	0,12	0,22	1,00
	20%	0,09	0,15	0,27	1,05
	15%	0,10	0,17	0,30	1,10
	10%	0,12	0,20	0,37	1,15
	5%	0,17	0,29	0,52	1,25
Average chip thickness h_m		0,04	0,06	0,11	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,2-0,4	■	■
0,8	■*	■*
1,2	■	–

*Basic Choice

Insert selection – 217/220.69-18 – Slotting/Contouring

Universal insert: XOMX 180608TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,15–0,25	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
2	0,15–0,25	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
3	0,15–0,22	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
4	0,15–0,22	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
5	0,12–0,20	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
6	0,12–0,18	XOMX180608TR-MD15 MP1500	XOMX180608TR-D16 MP1500	
7	0,12–0,15	XOMX180608TR-D16 MP1500	XOMX180608TR-D16 MP3000	
8	0,09–0,21	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
9	0,09–0,19	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
10	0,12–0,19	XOMX180608TR-M14 T350M	XOMX180608R-M10 MM4500	
11	0,12–0,16	XOMX180608TR-M14 F40M	XOMX180608R-M10 MM4500	
12	0,12–0,25	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
13	0,12–0,22	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
14	0,12–0,20	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
15	0,12–0,18	XOMX180608TR-MD15 MP1500	XOMX180608TR-MD15 MP1500	
16	0,14–0,30	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
17	0,11–0,25	XOEX180608FR-E10 F40M	XOEX180608FR-E10 F40M	
18	0,14–0,30	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
19	0,09–0,14	XOMX180608TR-M14 T350M	XOMX180608R-M10 F40M	
20	0,09–0,14	XOMX180608TR-M14 T350M	XOMX180608R-M10 F40M	
21	0,08–0,12	XOMX180608R-M10 F40M	XOMX180608R-M10 T350M	
22	0,09–0,17	XOMX180608TR-M14 F40M	XOMX180608R-M10 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25
	v_c (m/min)																				
1	360	320	270	315	280	240	300	265	225	275	245	210	195	175	145	240	215	180	–	–	–
2	305	270	230	270	240	205	255	225	190	235	210	175	165	145	125	205	180	155	–	–	–
3	250	225	190	220	200	165	210	185	160	195	170	145	135	120	105	170	150	125	–	–	–
4	215	190	160	190	170	145	180	160	135	165	145	125	115	105	90	145	130	110	–	–	–
5	180	160	–	160	140	–	150	135	–	140	120	–	95	85	–	120	105	–	–	–	–
6	155	140	–	140	125	–	130	115	–	120	105	–	85	75	–	105	95	–	–	–	–
7	43	38	–	34	31	–	34	30	–	33	29	–	–	–	–	29	26	–	–	–	–
8	245	220	185	195	175	145	190	170	145	180	160	135	140	125	105	165	145	125	–	–	–
9	190	170	145	150	135	115	150	135	115	140	125	105	110	100	85	130	115	95	–	–	–
10	155	140	120	125	110	95	125	110	90	115	105	90	90	80	70	105	95	80	–	–	–
11	115	105	–	90	80	–	90	80	–	85	75	–	70	60	50	80	70	–	–	–	–
12	185	165	140	165	145	125	155	140	120	145	130	110	90	80	65	125	110	95	150	135	115
13	165	145	125	145	130	110	135	120	105	125	115	95	80	70	60	110	100	85	130	120	100
14	140	125	–	120	110	–	115	105	–	105	95	–	65	60	–	95	80	–	110	100	–
15	115	100	–	100	90	–	95	85	–	90	80	–	55	49	–	75	70	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	620	555	470	–	–	–
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	500	445	380	–	–	–
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	385	340	290	–	–	–
19	–	–	–	42	–	–	40	–	–	38	–	–	24	–	–	34	–	–	–	–	–
20	–	–	–	34	–	–	32	–	–	31	–	–	20	–	–	28	–	–	–	–	–
21	–	–	–	29	–	–	28	–	–	26	–	–	17	–	–	24	–	–	–	–	–
22	–	–	–	70	65	–	65	60	–	65	55	–	41	36	–	55	50	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,15	0,25	1,00
Side milling	25%	0,13	0,20	0,33	1,30
	10%	0,20	0,31	0,51	1,50
	5%	0,29	0,43	0,72	1,60
Average chip thickness h_m		0,06	0,10	0,16	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,4	■	■
0,8	■*	■*
1,2	■*	■*
1,6-4,0	■	–
5,0-6,3	■**	–

***Basic Choice **Cutter body must be modified.**

Insert selection – 217/220.69-18 – Slotting/Contouring

Universal insert: XOMX 180608TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,15–0,25	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
2	0,15–0,25	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
3	0,15–0,22	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
4	0,15–0,22	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
5	0,12–0,20	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
6	0,12–0,18	XOMX180608TR-MD15 MP1500	XOMX180608TR-D16 MP1500	
7	0,12–0,15	XOMX180608TR-D16 MP1500	XOMX180608TR-D16 MP3000	
8	0,09–0,21	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
9	0,09–0,19	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
10	0,12–0,19	XOMX180608TR-M14 T350M	XOMX180608R-M10 MM4500	
11	0,12–0,16	XOMX180608TR-M14 F40M	XOMX180608R-M10 MM4500	
12	0,12–0,25	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
13	0,12–0,22	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
14	0,12–0,20	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
15	0,12–0,18	XOMX180608TR-MD15 MP1500	XOMX180608TR-MD15 MP1500	
16	0,14–0,30	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
17	0,11–0,25	XOEX180608FR-E10 F40M	XOEX180608FR-E10 F40M	
18	0,14–0,30	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
19	0,09–0,14	XOMX180608TR-M14 T350M	XOMX180608R-M10 F40M	
20	0,09–0,14	XOMX180608TR-M14 T350M	XOMX180608R-M10 F40M	
21	0,08–0,12	XOMX180608R-M10 F40M	XOMX180608R-M10 T350M	
22	0,09–0,17	XOMX180608TR-M14 F40M	XOMX180608R-M10 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades												
	MK1500			MK2000			H25						
	f_z (mm/tooth)												
	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25				
	v_c (m/min)												
1	–	–	–	310	280	235	–	–	–				
2	–	–	–	265	235	200	–	–	–				
3	–	–	–	220	195	165	–	–	–				
4	–	–	–	185	165	140	–	–	–				
5	–	–	–	155	140	–	–	–	–				
6	–	–	–	135	120	–	–	–	–				
7	–	–	–	37	33	–	–	–	–				
8	–	–	–	215	190	160	–	–	–				
9	–	–	–	170	150	125	–	–	–				
10	–	–	–	135	120	105	–	–	–				
11	–	–	–	100	90	–	–	–	–				
12	235	210	175	165	145	125	120	105	90				
13	205	185	155	145	125	110	105	95	80				
14	175	155	–	120	105	90	90	80	–				
15	145	130	–	100	90	–	–	–	–				
16	–	–	–	–	–	–	590	525	445				
17	–	–	–	–	–	–	475	425	360				
18	–	–	–	–	–	–	365	325	275				
19	–	–	–	45	–	–	–	–	–				
20	–	–	–	36	–	–	–	–	–				
21	–	–	–	31	–	–	–	–	–				
22	–	–	–	75	65	–	–	–	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,15	0,25	1,00
Side milling	25%	0,13	0,20	0,33	1,30
	10%	0,20	0,31	0,51	1,50
	5%	0,29	0,43	0,72	1,60
Average chip thickness h_m		0,06	0,10	0,16	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,4	■	■
0,8	■*	■*
1,2	■*	■*
1,6-4,0	■	–
5,0-6,3	■**	–

***Basic Choice **Cutter body must be modified.**

Insert selection – 217/220.69-18 – Contouring only

Universal insert: XOMX 180608TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 30%	First choice	Difficult operations	
1	0,18–0,30	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
2	0,18–0,30	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
3	0,18–0,25	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
4	0,18–0,25	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
5	0,15–0,23	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
6	0,15–0,23	XOMX180608TR-MD15 MP1500	XOMX180608TR-D16 MP1500	
7	0,15–0,20	XOMX180608TR-D16 MP1500	XOMX180608TR-D16 MP3000	
8	0,12–0,23	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
9	0,12–0,22	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
10	0,15–0,22	XOMX180608TR-M14 T350M	XOMX180608R-M10 MM4500	
11	0,15–0,18	XOMX180608TR-M14 F40M	XOMX180608R-M10 MM4500	
12	0,15–0,30	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
13	0,15–0,25	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
14	0,15–0,23	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
15	0,15–0,20	XOMX180608TR-MD15 MP1500	XOMX180608TR-MD15 MP1500	
16	0,17–0,34	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
17	0,14–0,30	XOEX180608FR-E10 F40M	XOEX180608FR-E10 F40M	
18	0,17–0,34	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
19	0,12–0,17	XOMX180608TR-M14 T350M	XOMX180608R-M10 F40M	
20	0,12–0,17	XOMX180608TR-M14 T350M	XOMX180608R-M10 F40M	
21	0,11–0,15	XOMX180608R-M10 F40M	XOMX180608R-M10 T350M	
22	0,12–0,18	XOMX180608TR-M14 F40M	XOMX180608R-M10 F40M	

Cutting data – 30% engagement width (a_e/D_c = 30%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,12	0,18	0,30	0,12	0,18	0,30	0,12	0,18	0,30	0,12	0,18	0,30	0,12	0,18	0,30	0,12	0,18	0,30	0,12	0,18	0,30
	v_c (m/min)																				
1	460	410	345	405	360	305	385	340	290	355	315	265	250	220	190	305	275	230	–	–	–
2	390	345	295	345	305	260	325	290	245	300	265	225	210	190	160	260	230	195	–	–	–
3	320	285	240	285	255	215	270	240	205	245	220	185	175	155	130	215	190	160	–	–	–
4	275	245	205	240	215	185	230	205	175	210	190	160	150	135	110	185	165	140	–	–	–
5	230	205	–	200	180	–	190	170	–	175	155	–	125	110	–	155	135	–	–	–	–
6	200	180	–	175	160	–	170	150	–	155	140	–	110	95	–	135	120	–	–	–	–
7	55	49	–	44	39	–	43	38	–	42	38	–	–	–	–	37	33	–	–	–	–
8	315	280	235	250	220	185	245	215	185	230	205	175	180	160	135	210	185	160	–	–	–
9	245	220	185	195	175	145	190	170	145	180	160	135	140	125	110	165	145	125	–	–	–
10	200	180	150	160	140	120	155	140	120	150	130	110	115	105	90	135	120	100	–	–	–
11	150	135	–	120	105	–	115	105	–	110	100	–	85	75	65	100	90	–	–	–	–
12	240	215	180	210	190	160	200	180	150	185	165	140	115	100	85	160	145	120	190	170	145
13	210	185	160	185	165	140	175	155	135	160	145	120	100	90	75	140	125	105	170	150	130
14	175	155	–	155	140	–	150	130	–	135	120	–	85	75	–	120	105	–	140	125	–
15	145	130	–	130	115	–	120	110	–	115	100	–	70	60	–	100	85	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	795	710	600	955	850	720
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	640	570	485	770	685	585
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	490	435	370	585	525	445
19	–	–	–	55	–	–	50	–	–	48	–	–	31	–	–	44	–	–	–	–	–
20	–	–	–	44	–	–	41	–	–	39	–	–	25	–	–	35	–	–	–	–	–
21	–	–	–	38	–	–	35	–	–	34	–	–	22	–	–	31	–	–	–	–	–
22	–	–	–	90	80	–	85	75	–	80	70	–	50	46	–	75	65	–	–	–	–

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			
Radial infeed	–	0,10	0,15	0,24	0,80
Side milling	30%	0,12	0,18	0,30	1,00
	20%	0,15	0,22	0,36	1,05
	15%	0,17	0,25	0,41	1,10
	10%	0,20	0,31	0,50	1,15
	5%	0,29	0,43	0,70	1,25
Average chip thickness h_m		0,06	0,10	0,16	-

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,4	■	■
0,8	■*	■*
1,2	■*	■*
1,6-4,0	■	–
5,0-6,3	■**	–

*Basic Choice **Cutter body must be modified.

Insert selection – 217/220.69-18 – Contouring only

Universal insert: XOMX 180608TR-M14 MP2500_1

SMG	f_z mm/tooth a_e/D_c = 30%	First choice	Difficult operations	
1	0,18–0,30	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
2	0,18–0,30	XOMX180608TR-ME13 F40M	XOMX180608TR-M14 MP2500	
3	0,18–0,25	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
4	0,18–0,25	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
5	0,15–0,23	XOMX180608TR-M14 MP2500	XOMX180608TR-MD15 T350M	
6	0,15–0,23	XOMX180608TR-MD15 MP1500	XOMX180608TR-D16 MP1500	
7	0,15–0,20	XOMX180608TR-D16 MP1500	XOMX180608TR-D16 MP3000	
8	0,12–0,23	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
9	0,12–0,22	XOMX180608TR-M14 MP2500	XOMX180608TR-M14 T350M	
10	0,15–0,22	XOMX180608TR-M14 T350M	XOMX180608R-M10 MM4500	
11	0,15–0,18	XOMX180608TR-M14 F40M	XOMX180608R-M10 MM4500	
12	0,15–0,30	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
13	0,15–0,25	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
14	0,15–0,23	XOMX180608TR-M14 MK1500	XOMX180608TR-MD15 MK2000	
15	0,15–0,20	XOMX180608TR-MD15 MP1500	XOMX180608TR-MD15 MP1500	
16	0,17–0,34	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
17	0,14–0,30	XOEX180608FR-E10 F40M	XOEX180608FR-E10 F40M	
18	0,17–0,34	XOEX180608FR-E10 H25	XOEX180608FR-E10 F40M	
19	0,12–0,17	XOMX180608TR-M14 T350M	XOMX180608R-M10 F40M	
20	0,12–0,17	XOMX180608TR-M14 T350M	XOMX180608R-M10 F40M	
21	0,11–0,15	XOMX180608R-M10 F40M	XOMX180608R-M10 T350M	
22	0,12–0,18	XOMX180608TR-M14 F40M	XOMX180608R-M10 F40M	

Cutting data – 30% engagement width (a_e /D_c = 30%)

SMG	Grades												
	MK1500			MK2000			H25						
	f_z (mm/tooth)												
	0,12	0,18	0,30	0,12	0,18	0,30	0,12	0,18	0,30				
	v_c (m/min)												
1	–	–	–	400	355	300	–	–	–				
2	–	–	–	340	300	255	–	–	–				
3	–	–	–	280	250	210	–	–	–				
4	–	–	–	240	215	180	–	–	–				
5	–	–	–	200	175	–	–	–	–				
6	–	–	–	175	155	–	–	–	–				
7	–	–	–	48	43	–	–	–	–				
8	–	–	–	275	245	205	–	–	–				
9	–	–	–	215	190	160	–	–	–				
10	–	–	–	175	155	135	–	–	–				
11	–	–	–	130	115	–	–	–	–				
12	300	265	225	210	185	155	150	135	115				
13	265	235	200	185	165	140	135	120	100				
14	220	195	–	155	135	115	110	100	–				
15	185	165	–	125	115	–	–	–	–				
16	–	–	–	–	–	–	755	675	570				
17	–	–	–	–	–	–	610	545	460				
18	–	–	–	–	–	–	465	415	350				
19	–	–	–	55	–	–	–	–	–				
20	–	–	–	46	–	–	–	–	–				
21	–	–	–	40	–	–	–	–	–				
22	–	–	–	95	85	–	–	–	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			
Radial infeed	–	0,10	0,15	0,24	0,80
Side milling	30%	0,12	0,18	0,30	1,00
	20%	0,15	0,22	0,36	1,05
	15%	0,17	0,25	0,41	1,10
	10%	0,20	0,31	0,50	1,15
	5%	0,29	0,43	0,70	1,25
Average chip thickness h_m		0,06	0,10	0,16	-

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Radii insert alternatives

Radius	End Row	Other Rows
0,4	■	■
0,8	■*	■*
1,2	■*	■*
1,6-4,0	■	–
5,0-6,3	■**	–

*Basic Choice **Cutter body must be modified.

Insert selection – 215/220.59-12

Universal insert: ACMT 150612TR-M14, SCET 120612T-M14 MP2500

SMG.	f_z mm/tooth a_e/D_c = 100%	First choice		Difficult operations	
1	0,15–0,25	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M11 MP2500	SCET 120612T-11 MP2500
2	0,15–0,25	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M11 MP2500	SCET 120612T-M11 MP2500
3	0,14–0,22	ACMT 150612TR-M14 MP2500	SCET 120612T-M14 MP2500	ACET 150612TR-M11 T350M	SCET 120612T-M11 T350M
4	0,14–0,22	ACMT 150612TR-M14 MP2500	SCET 120612T-M14 MP2500	ACET 150612TR-M11 T350M	SCET 120612T-M11 T350M
5	0,12–0,20	ACMT 150612TR-M14 MP2500	SCET 120612T-M14 MP2500	ACET 150612TR-M11 T350M	SCET 120612T-M11 T350M
6	0,12–0,18	ACET 150612TR-MD15 MP1500	SCET 120612T-MD15 MP1500	ACET 150612TR-MD15 MP1500	SCET 120612T-MD15 MP1500
7	0,10–0,15	ACET 150612TR-MD15 MP1500	SCET 120612T-MD15 MP1500	ACET 150612TR-MD15 MP1500	SCET 120612T-MD15 MP1500
8	0,14–0,22	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M14 T350M	SCET 120612T-M14 T350M
9	0,14–0,22	ACMT 150612TR-M14 T350M	SCET 120612T-M14 T350M	ACET 150612TR-M14 T350M	SCET 120612T-M14 T350M
10	0,12–0,20	ACMT 150612TR-M14 T350M	SCET 120612T-M14 T350M	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M
11	0,10–0,18	ACMT 150612TR-M14 MP2500	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M
12	0,14–0,22	ACET 150612TR-M14 MK1500	SCET 120612T-M14 MK1500	ACET 150612TR-M11 MP1500	SCET 120612T-M11 MP1500
13	0,14–0,22	ACET 150612TR-M14 MK1500	SCET 120612T-M14 MK1500	ACET 150612TR-M11 MP1500	SCET 120612T-M11 MP1500
14	0,12–0,20	ACET 150612TR-M14 MK1500	SCET 120612T-M14 MK1500	ACET 150612TR-M11 MP1500	SCET 120612T-M11 MP1500
15	0,12–0,18	ACET 150612TR-M14 MK1500	SCET 120612T-M14 MK1500	ACET 150612TR-MD15 MP1500	SCET 120612T-MD15 MP1500
16	0,15–0,25	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M14 HX	SCET 120612T-M14 HX
17-18	0,15–0,25	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M14 HX	SCET 120612T-M14 HX
19-20	0,10–0,20	ACET 150612TR-M14 T350M	SCET 120612T-M14 T350M	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M
21	0,10–0,15	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M	ACET 150612TR-MD15 T350M	SCET 120612T-MD15 T350M
22	0,12–0,18	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			MK1500			HX		
	f_z (mm/tooth)																				
	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25
	v_c (m/min)																				
1	440	395	330	390	350	295	370	330	280	340	305	255	295	265	225	–	–	–	–	–	–
2	375	335	280	330	295	250	315	280	235	290	255	215	250	225	190	–	–	–	–	–	–
3	310	275	235	275	245	205	260	230	195	240	210	180	205	185	155	–	–	–	–	–	–
4	265	235	200	235	210	175	220	195	165	205	180	155	175	155	135	–	–	–	–	–	–
5	220	195	165	195	175	145	185	165	140	170	150	130	145	130	110	–	–	–	–	–	–
6	190	170	–	170	150	–	160	145	–	150	130	–	130	115	–	–	–	–	–	–	–
7	55	47	–	42	38	–	41	37	–	41	36	–	35	31	–	–	–	–	–	–	–
8	300	270	225	240	215	180	235	210	175	225	200	170	200	180	155	–	–	–	–	–	–
9	235	210	180	190	165	140	185	165	140	175	155	130	160	140	120	–	–	–	–	–	–
10	195	175	145	155	135	115	150	135	115	145	125	110	130	115	100	–	–	–	–	–	–
11	145	130	–	115	100	–	110	100	–	105	95	–	95	85	–	–	–	–	–	–	–
12	230	205	175	205	180	155	195	170	145	175	160	135	155	135	115	290	255	215	145	130	110
13	200	180	150	180	160	135	170	150	130	155	140	115	135	120	100	255	225	190	130	115	95
14	170	150	130	150	135	115	140	125	105	130	115	100	115	100	85	215	190	160	110	95	80
15	140	125	–	125	110	–	120	105	–	110	95	–	95	85	–	175	155	–	90	80	–
16	–	–	–	–	–	–	–	–	–	–	–	–	765	680	575	–	–	–	725	650	550
17	–	–	–	–	–	–	–	–	–	–	–	–	620	550	465	–	–	–	585	525	445
18	–	–	–	–	–	–	–	–	–	–	–	–	470	420	355	–	–	–	450	400	340
19	–	–	–	50	46	–	–	–	–	47	42	–	42	38	–	–	–	–	23	21	–
20	–	–	–	42	37	–	–	–	–	38	33	–	34	30	–	–	–	–	19	17	–
21	–	–	–	36	32	–	–	–	–	32	29	–	29	26	–	–	–	–	16	14	–
22	–	–	–	85	75	–	–	–	–	80	70	–	70	65	–	–	–	–	39	35	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,15	0,25	1,00
Side milling	25%	0,13	0,20	0,33	1,30
	10%	0,20	0,31	0,51	1,50
	5%	0,29	0,43	0,72	1,60
Average chip thickness h_m		0,06	0,10	0,16	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of inserts

AC..

SC..

Insert selection – 215/220.59-12..K – Contouring only

Universal insert: ACMT 150612TR-M14, SCET 120612T-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 30%	First choice		Difficult operations	
1	0,18–0,31	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M11 MP2500	SCET 120612T-M11 MP2500
2	0,18–0,31	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M11 MP2500	SCET 120612T-M11 MP2500
3	0,17–0,27	ACMT 150612TR-M14 MP2500	SCET 120612T-M14 MP2500	ACET 150612TR-M11 T350M	SCET 120612T-M11 T350M
4	0,17–0,27	ACMT 150612TR-M14 MP2500	SCET 120612T-M14 MP2500	ACET 150612TR-M11 T350M	SCET 120612T-M11 T350M
5	0,15–0,25	ACMT 150612TR-M14 MP2500	SCET 120612T-M14 MP2500	ACET 150612TR-M11 T350M	SCET 120612T-M11 T350M
6	0,15–0,22	ACET 150612TR-MD15	SCET 120612T-MD15 MP1500	ACET 150612TR-MD15	SCET 120612T-MD15 MP1500
7	0,12–0,18	ACET 150612TR-MD15	SCET 120612T-MD15 MP1500	ACET 150612TR-MD15	SCET 120612T-MD15 MP1500
8	0,17–0,27	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M14 T350M	SCET 120612T-M14 T350M
9	0,17–0,27	ACMT 150612TR-M14 T350M	SCET 120612T-M14 T350M	ACET 150612TR-M14 T350M	SCET 120612T-M14 T350M
10	0,15–0,25	ACMT 150612TR-M14 T350M	SCET 120612T-M14 T350M	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M
11	0,12–0,22	ACMT 150612TR-M14 MP2500	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M
12	0,17–0,27	ACET 150612TR-M14 MK1500	SCET 120612T-M14 MK1500	ACET 150612TR-M11 MP1500	SCET 120612T-M11 MP1500
13	0,17–0,27	ACET 150612TR-M14 MK1500	SCET 120612T-M14 MK1500	ACET 150612TR-M11 MP1500	SCET 120612T-M11 MP1500
14	0,15–0,25	ACET 150612TR-M14 MK1500	SCET 120612T-M14 MK1500	ACET 150612TR-M11 MP1500	SCET 120612T-M11 MP1500
15	0,15–0,22	ACET 150612TR-M14 MK1500	SCET 120612T-M14 MK1500	ACET 150612TR-MD15	SCET 120612T-MD15 MP1500
16	0,18–0,31	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M14 HX	SCET 120612T-M14 HX
17-18	0,18–0,31	ACET 150612TR-ME10 F40M	SCET 120612T-ME10 F40M	ACET 150612TR-M14 HX	SCET 120612T-M14 HX
19-20	0,12–0,25	ACET 150612TR-M14 T350M	SCET 120612T-M14 T350M	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M
21	0,12–0,18	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M	ACET 150612TR-MD15 T350M	SCET 120612T-MD15 T350M
22	0,15–0,22	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M	ACMT 150612TR-M14 F40M	SCET 120612T-M14 F40M

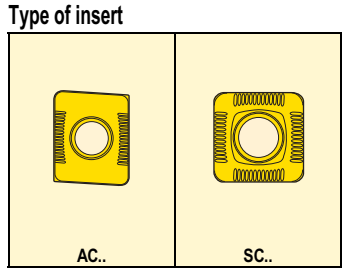
Cutting data – 30% engagement width (a_e /D_c = 30%)

	Grades																				
	MK1500			T200M			MP2500			T350M			F25M			F40M			HX		
	f_z (mm/tooth)																				
	0,12	0,19	0,31	0,12	0,19	0,31	0,12	0,19	0,31	0,12	0,19	0,31	0,12	0,19	0,31	0,12	0,19	0,31	0,12	0,19	0,31
SMG	v_c (m/min)																				
1	–	–	–	485	430	365	475	420	355	410	365	310	395	350	295	–	–	–	–	–	–
2	–	–	–	410	365	310	400	355	300	350	310	265	335	295	250	–	–	–	–	–	–
3	–	–	–	340	300	255	330	295	250	290	255	215	275	245	210	–	–	–	–	–	–
4	–	–	–	290	255	220	285	250	215	245	220	185	235	210	175	–	–	–	–	–	–
5	–	–	–	240	215	180	235	210	180	205	185	155	195	175	150	–	–	–	–	–	–
6	–	–	–	210	190	–	205	185	–	180	160	–	170	155	–	–	–	–	–	–	–
7	–	–	–	60	50	–	50	46	–	49	44	–	47	42	–	–	–	–	–	–	–
8	–	–	–	330	295	250	290	255	220	270	240	205	270	240	205	–	–	–	–	–	–
9	–	–	–	260	230	195	225	200	170	210	190	160	210	190	160	–	–	–	–	–	–
10	–	–	–	215	190	160	185	165	140	175	155	130	175	155	130	–	–	–	–	–	–
11	–	–	–	160	140	–	140	125	–	130	115	–	130	115	–	–	–	–	–	–	–
12	350	310	265	250	225	190	245	220	185	215	190	160	205	185	155	185	165	140	175	160	135
13	305	275	230	220	195	165	215	195	165	190	170	140	180	160	135	165	145	125	155	140	120
14	260	230	195	185	165	140	180	160	135	160	140	120	150	135	115	140	125	105	130	115	100
15	215	190	–	155	135	–	150	135	–	130	115	–	125	110	–	115	100	–	110	95	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	925	825	700	880	785	665
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	750	665	565	710	635	535
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	570	510	430	540	480	410
19	–	–	–	70	60	–	–	–	–	55	50	–	55	50	–	–	–	–	28	25	–
20	–	–	–	55	50	–	–	–	–	46	41	–	46	41	–	–	–	–	23	20	–
21	–	–	–	48	43	–	–	–	–	39	35	–	39	35	–	–	–	–	20	17	–
22	–	–	–	115	105	–	–	–	–	95	85	–	95	85	–	–	–	–	47	42	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,10	0,15	0,25	0,80
Side milling	30%	0,12	0,18	0,31	1,00
	20%	0,15	0,22	0,37	1,05
	15%	0,17	0,25	0,42	1,10
	10%	0,20	0,31	0,51	1,15
	5%	0,29	0,43	0,72	1,25
Average chip thickness h_m		0,06	0,10	0,16	–

Type of insert



Insert selection – 217/220.69-15.XH

Universal insert: ACET150612TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,15–0,25	ACET150612TR-ME10 F40M	ACET150612TR-M11 MP2500	
2	0,15–0,25	ACET150612TR-ME10 F40M	ACET150612TR-M11 MP2500	
3	0,14–0,22	ACMT150612TR-M14 MP2500	ACET150612TR-M11 T350M	
4	0,14–0,22	ACMT150612TR-M14 MP2500	ACET150612TR-M11 T350M	
5	0,12–0,20	ACMT150612TR-M14 MP2500	ACET150612TR-M11 T350M	
6	0,12–0,18	ACET150612TR-MD15 MP1500	ACET150612TR-MD15 MP1500	
7	0,10–0,15	ACET150612TR-MD15 MP1500	ACET150612TR-MD15 MP1500	
8	0,14–0,22	ACET150612TR-ME10 F40M	ACET150612TR-M14 T350M	
9	0,14–0,22	ACMT150612TR-M14 T350M	ACET150612TR-M14 T350M	
10	0,12–0,20	ACMT150612TR-M14 T350M	ACMT150612TR-M14 F40M	
11	0,10–0,18	ACMT150612TR-M14 MP2500	ACMT150612TR-M14 F40M	
12	0,14–0,22	ACET150612TR-M14 MK1500	ACET150612TR-M11 MP1500	
13	0,14–0,22	ACET150612TR-M14 MK1500	ACET150612TR-M11 MP1500	
14	0,12–0,20	ACET150612TR-M14 MK1500	ACET150612TR-M11 MP1500	
15	0,12–0,18	ACET150612TR-M14 MK1500	ACET150612TR-MD15 MP1500	
16	0,15–0,25	ACET150612TR-ME10 F40M	ACET150612TR-M14 HX	
17	0,15–0,25	ACET150612TR-ME10 F40M	ACET150612TR-M14 HX	
18	0,15–0,25	ACET150612TR-ME10 F40M	ACET150612TR-M14 HX	
19	0,10–0,20	ACET150612TR-M14 T350M	ACMT150612TR-M14 F40M	
20	0,10–0,20	ACET150612TR-M14 T350M	ACMT150612TR-M14 F40M	
21	0,10–0,15	ACMT150612TR-M14 F40M	ACET150612TR-MD15 T350M	
22	0,12–0,18	ACMT150612TR-M14 F40M	ACMT150612TR-M14 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			MK1500			HX		
	f_z (mm/tooth)																				
	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25
	v_c (m/min)																				
1	405	360	305	360	320	270	340	305	255	315	280	235	270	245	205	–	–	–	–	–	–
2	345	305	260	305	270	230	290	255	220	265	235	200	230	205	175	–	–	–	–	–	–
3	285	255	215	250	225	190	240	210	180	220	195	165	190	170	145	–	–	–	–	–	–
4	240	215	185	215	190	160	205	180	155	185	165	140	165	145	125	–	–	–	–	–	–
5	200	180	150	180	160	135	170	150	130	155	140	120	135	120	100	–	–	–	–	–	–
6	175	160	–	155	140	–	150	130	–	135	120	–	120	105	–	–	–	–	–	–	–
7	48	43	–	39	35	–	38	34	–	37	33	–	33	29	–	–	–	–	–	–	–
8	275	245	210	220	195	165	215	190	165	205	185	155	185	165	140	–	–	–	–	–	–
9	220	195	165	175	155	130	170	150	130	160	145	120	145	130	110	–	–	–	–	–	–
10	180	160	135	140	125	105	140	125	105	130	115	100	120	105	90	–	–	–	–	–	–
11	130	120	–	105	95	–	105	90	–	100	85	–	90	80	–	–	–	–	–	–	–
12	210	190	160	185	165	140	175	160	135	165	145	125	140	125	105	265	235	200	135	120	100
13	185	165	140	165	145	125	155	140	120	145	130	110	125	110	95	235	210	175	120	105	90
14	155	140	120	140	125	105	130	115	100	120	105	90	105	95	80	195	175	150	100	90	75
15	130	115	–	115	100	–	110	95	–	100	90	–	85	75	–	160	145	–	80	75	–
16	–	–	–	–	–	–	–	–	–	–	–	–	705	630	530	–	–	–	670	595	505
17	–	–	–	–	–	–	–	–	–	–	–	–	570	505	430	–	–	–	540	480	410
18	–	–	–	–	–	–	–	–	–	–	–	–	435	385	325	–	–	–	410	365	310
19	–	–	–	48	43	–	–	–	–	43	38	–	39	35	–	–	–	–	21	19	–
20	–	–	–	39	34	–	–	–	–	35	31	–	31	28	–	–	–	–	17	15	–
21	–	–	–	33	30	–	–	–	–	30	27	–	27	24	–	–	–	–	15	13	–
22	–	–	–	80	70	–	–	–	–	70	65	–	65	60	–	–	–	–	36	32	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,15	0,25	1,00
Side milling	25%	0,13	0,20	0,33	1,30
	10%	0,20	0,31	0,51	1,50
	5%	0,29	0,43	0,72	1,60
Average chip thickness h_m		0,06	0,10	0,16	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert

ACE.1506

Insert selection – 215.59-06

Universal insert: CCMX 060304T-M07 F40M

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,08–0,13	CCMX060304-E06 F40M	CCMX060304-E06 F40M	
2	0,08–0,13	CCMX060304-E06 F40M	CCMX060304-E06 F40M	
3	0,08–0,12	CCMX060304-E06 F40M	CCMX060304T-M07 F40M	
4	0,07–0,12	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
5	0,07–0,10	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
6	0,07–0,09	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
7	0,06–0,08	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
8	0,08–0,13	CCMX060304-E06 F40M	CCMX060304T-M07 F40M	
9	0,08–0,12	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
10	0,08–0,12	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
11	0,07–0,10	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
12	0,08–0,13	CCMX060304-E06 HX	CCMX060304-E06 F40M	
13	0,08–0,13	CCMX060304-E06 HX	CCMX060304T-M07 F40M	
14	0,07–0,12	CCMX060304-E06 HX	CCMX060304T-M07 F40M	
15	0,06–0,10	CCMX060304-E06 HX	CCMX060304T-M07 F40M	
16	0,08–0,13	CCMX060304-E06 HX	CCMX060304-E06 F40M	
17	0,08–0,13	CCMX060304-E06 HX	CCMX060304-E06 F40M	
18	0,08–0,13	CCMX060304-E06 HX	CCMX060304-E06 F40M	
19	0,06–0,09	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
20	0,06–0,09	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
21	0,06–0,07	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	
22	0,06–0,09	CCMX060304T-M07 F40M	CCMX060304T-M07 F40M	

Cutting data – Full engagement width (a_e /D_c = 100%)

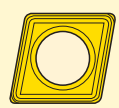
SMG	Grades										
	F40M			HX							
	f_z (mm/tooth)										
	0,06	0,09	0,13	0,06	0,09	0,13					
	v_c (m/min)										
1	300	270	250	–	–	–					
2	250	230	210	–	–	–					
3	210	190	175	–	–	–					
4	180	160	150	–	–	–					
5	150	135	125	–	–	–					
6	130	120	–	–	–	–					
7	36	32	–	–	–	–					
8	205	185	170	–	–	–					
9	160	145	135	–	–	–					
10	130	120	110	–	–	–					
11	95	90	–	–	–	–					
12	155	140	130	145	135	125					
13	135	125	115	130	115	110					
14	115	105	95	110	100	–					
15	95	85	–	90	80	–					
16	770	700	645	730	665	610					
17	620	565	520	590	535	495					
18	475	430	395	450	410	375					
19	43	39	–	–	–	–					
20	34	31	–	–	–	–					
21	30	27	–	–	–	–					
22	70	65	–	39	35	–					

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,09	0,13	1,00
Side milling	25%	0,08	0,13	0,17	1,30
	10%	0,13	0,19	0,26	1,50
	5%	0,18	0,27	0,36	1,60
Average chip thickness h_m		0,04	0,06	0,08	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert



CCMX 0603..

Insert selection – 215.59-08

Universal insert: CCMX 08T308T-M08 F40M

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,10–0,16	CCMX08T308-E07 F40M	CCMX08T308T-M08 F40M	
2	0,10–0,16	CCMX08T308-E07 F40M	CCMX08T308T-M08 F40M	
3	0,09–0,14	CCMX08T308-E07 F40M	CCMX08T308T-M08 F40M	
4	0,09–0,14	CCMX08T308T-M08 F40M	CCMX08T308T-M08 F40M	
5	0,08–0,14	CCMX08T308T-M08 F40M	CCMX08T308T-M08 F40M	
6	0,07–0,12	CCMX08T308T-M08 MP2500	CCMX08T308T-M08 MP2500	
7	0,06–0,09	CCMX08T308T-M08 MP2500	CCMX08T308T-M08 MP2500	
8	0,10–0,16	CCMX08T308-E07 F40M	CCMX08T308T-M08 MP2500	
9	0,08–0,12	CCMX08T308T-M08 F40M	CCMX08T308T-M08 MP2500	
10	0,08–0,12	CCMX08T308T-M08 F40M	CCMX08T308T-M08 MP2500	
11	0,08–0,10	CCMX08T308T-M08 F40M	CCMX08T308T-M08 MP2500	
12	0,10–0,16	CCMX08T308-E07 HX	CCMX08T308-E07 F40M	
13	0,09–0,14	CCMX08T308-E07 HX	CCMX08T308T-M08 MP2500	
14	0,08–0,12	CCMX08T308-E07 HX	CCMX08T308T-M08 MP2500	
15	0,07–0,12	CCMX08T308-E07 HX	CCMX08T308T-M08 MP2500	
16	0,10–0,16	CCMX08T308-E07 HX	CCMX08T308-E07 F40M	
17	0,10–0,16	CCMX08T308-E07 HX	CCMX08T308-E07 F40M	
18	0,10–0,16	CCMX08T308-E07 HX	CCMX08T308-E07 F40M	
19	0,08–0,10	CCMX08T308T-M08 F40M	CCMX08T308T-M08 MP2500	
20	0,08–0,10	CCMX08T308T-M08 F40M	CCMX08T308T-M08 MP2500	
21	0,06–0,09	CCMX08T308T-M08 F40M	CCMX08T308T-M08 MP2500	
22	0,08–0,10	CCMX08T308T-M08 F40M	CCMX08T308T-M08 MP2500	

Cutting data – Full engagement width (a_e/D_c = 100%)

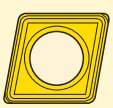
SMG	Grades																
	MP2500			MP3000			T350M			F40M			HX				
	f_z (mm/tooth)																
	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16		
	v_c (m/min)																
1	470	420	365	445	400	350	410	365	320	355	320	280	–	–	–		
2	400	355	310	380	335	295	350	310	270	305	270	235	–	–	–		
3	330	295	255	310	280	245	285	255	225	250	225	195	–	–	–		
4	280	250	220	265	240	210	245	220	190	215	190	165	–	–	–		
5	235	210	185	220	200	175	205	180	160	180	160	140	–	–	–		
6	205	185	–	195	175	–	180	160	–	155	140	–	–	–	–		
7	50	46	–	50	45	–	49	44	–	43	38	–	–	–	–		
8	290	255	225	285	255	220	270	240	210	245	220	190	–	–	–		
9	225	200	175	225	200	175	210	190	165	190	170	150	–	–	–		
10	185	165	145	180	165	140	175	155	135	155	140	120	–	–	–		
11	135	125	–	135	120	–	130	115	–	115	105	–	–	–	–		
12	245	220	190	235	210	180	215	190	165	185	165	145	175	160	140		
13	215	195	170	205	180	160	190	170	145	165	145	125	155	140	120		
14	180	160	140	170	155	135	160	140	125	140	125	105	130	115	100		
15	150	135	–	140	125	–	130	115	–	115	100	–	110	95	–		
16	–	–	–	–	–	–	–	–	–	925	825	720	880	785	685		
17	–	–	–	–	–	–	–	–	–	745	665	580	710	635	555		
18	–	–	–	–	–	–	–	–	–	570	510	445	540	480	420		
19	65	55	–	60	55	–	55	50	–	50	46	–	–	–	–		
20	50	45	–	48	43	–	45	40	–	41	37	–	–	–	–		
21	44	39	–	41	37	–	39	35	–	36	32	–	–	–	–		
22	105	95	–	100	90	–	95	85	–	85	75	–	47	42	–		

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,10	0,16	1,00
Side milling	25%	0,08	0,13	0,21	1,30
	10%	0,13	0,20	0,33	1,50
	5%	0,18	0,29	0,46	1,60
Average chip thickness h_m		0,04	0,06	0,10	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert



CCMX 08T3..

Insert selection – 215/220.59-08.4

Universal insert: CCMX 08T308T-M08 T350M, XCMX 13T308TR-M11 T350M

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,10–0,16	CCMX08T308-E07 F40M	XCKX13T308R-ME10 F40M	
2	0,10–0,16	CCMX08T308-E07 F40M	XCKX13T308R-ME10 F40M	
3	0,09–0,14	CCMX08T308-E07 F40M	XCKX13T308R-ME10 F40M	
4	0,09–0,14	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	
5	0,08–0,14	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	
6	0,07–0,12	CCMX08T308T-M08 MP2500	XCKX13T308R-ME10 MP2500	
7	0,06–0,09	CCMX08T308T-M08 MP2500	XCKX13T308R-ME10 MP2500	
8	0,10–0,16	CCMX08T308-E07 F40M	XCKX13T308R-ME10 F40M	
9	0,08–0,12	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	
10	0,08–0,12	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	
11	0,08–0,10	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	
12	0,10–0,16	CCMX08T308-E07 HX	XCMX13T308TR-M11 HX	
13	0,09–0,14	CCMX08T308-E07 HX	XCMX13T308TR-M11 HX	
14	0,08–0,12	CCMX08T308-E07 HX	XCMX13T308TR-M11 HX	
15	0,07–0,12	CCMX08T308-E07 HX	XCMX13T308TR-M11 HX	
16	0,10–0,16	CCMX08T308-E07 HX	XCMX13T308TR-M11 F40M	
17	0,10–0,16	CCMX08T308-E07 HX	XCMX13T308TR-M11 F40M	
18	0,10–0,16	CCMX08T308-E07 HX	XCMX13T308TR-M11 F40M	
19	0,08–0,10	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	
20	0,08–0,10	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	
21	0,06–0,09	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	
22	0,08–0,10	CCMX08T308T-M08 T350M	XCMX13T308TR-M11 T350M	

Cutting data – Full engagement width (a_e /D_c = 100%)

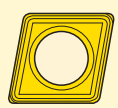
SMG	Grades														
	MP2500			T350M			F40M			HX					
	f_z (mm/tooth)														
	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16	0,06	0,10	0,16			
	v_c (m/min)														
1	495	440	385	430	385	335	375	335	290	–	–	–			
2	420	375	325	365	325	285	320	285	245	–	–	–			
3	345	310	270	300	270	235	260	235	205	–	–	–			
4	295	265	230	255	230	200	225	200	175	–	–	–			
5	245	220	190	215	190	165	185	165	145	–	–	–			
6	215	195	–	190	170	–	165	145	–	–	–	–			
7	55	48	–	50	46	–	45	40	–	–	–	–			
8	305	270	235	280	250	220	255	230	200	–	–	–			
9	240	210	185	220	200	175	200	180	155	–	–	–			
10	195	175	150	180	160	140	165	145	130	–	–	–			
11	145	130	–	135	120	–	120	110	–	–	–	–			
12	260	230	200	225	200	175	195	175	150	185	165	145			
13	225	200	175	195	175	155	170	155	135	165	145	125			
14	190	170	150	165	150	130	145	130	110	135	120	105			
15	160	140	–	140	125	–	120	105	–	115	100	–			
16	–	–	–	–	–	–	970	865	755	920	820	720			
17	–	–	–	–	–	–	785	700	610	745	665	580			
18	–	–	–	–	–	–	595	530	465	565	505	440			
19	65	60	–	60	55	–	55	48	–	–	–	–			
20	55	47	–	48	42	–	43	39	–	–	–	–			
21	46	41	–	41	37	–	37	33	–	–	–	–			
22	110	100	–	100	90	–	90	80	–	49	44	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,10	0,16	1,00
Side milling	25%	0,08	0,13	0,21	1,30
	10%	0,13	0,20	0,33	1,50
	5%	0,18	0,29	0,46	1,60
Average chip thickness h_m		0,04	0,06	0,10	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of inserts



CCMX

XC..

Insert selection – 215/220.59-12.xS/xSR6

SMG	f_z mm/tooth a_e /D_c = 100%	First choice		SCEX120660-/ ACET150660TR-
1	0,15–0,25	SCET 120612T-ME10 F40M	ACET 150612TR-ME10 F40M	M14 T350M*
2	0,15–0,25	SCET 120612T-ME10 F40M	ACET 150612TR-ME10 F40M	M14 T350M*
3	0,14–0,22	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 MP2500	M14 T350M
4	0,14–0,22	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 MP2500	M14 T350M
5	0,12–0,20	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 MP2500	M14 T350M*
6	0,12–0,18	SCET 120612T-MD15 MP1500	ACET 150612TR-MD15 MP1500	M14 T350M*
7	0,10–0,15	SCET 120612T-MD15 MP1500	ACET 150612TR-MD15 MP1500	M14 T350M*
8	0,14–0,22	SCET 120612T-ME10 F40M	ACET 150612TR-ME10 F40M	M14 T350M*
9	0,14–0,22	SCET 120612T-M14 T350M	ACMT 150612TR-M14 T350M	M14 T350M
10	0,12–0,20	SCET 120612T-M14 T350M	ACMT 150612TR-M14 T350M	M14 T350M
11	0,10–0,18	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 MP2500	M14 T350M*
12	0,14–0,22	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 MP2500	M14 T350M*
13	0,14–0,22	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 MP2500	M14 T350M*
14	0,12–0,20	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 MP2500	M14 T350M*
15	0,12–0,18	SCET 120612T-M14 MP2500	ACMT 150612TR-M14 MP2500	M14 T350M*
16	0,15–0,25	SCET 120612T-ME10 F40M	ACET 150612TR-ME10 F40M	M14 T350M*
17	0,15–0,25	SCET 120612T-ME10 F40M	ACET 150612TR-ME10 F40M	M14 T350M*
20	0,10–0,20	SCET 120612T-M14 T350M	ACET 150612TR-M14 T350M	M14 T350M
21	0,10–0,15	SCET 120612T-M14 F40M	ACMT 150612TR-M14 F40M	M14 T350M*
22	0,12–0,18	SCET 120612T-M14 F40M	ACMT 150612TR-M14 F40M	M14 T350M*

* For xSR6 version use inserts on the end row. Cutting data, see grade for insert SCET.

Cutting data – Full engagement width (a_e /D_c = 100%)

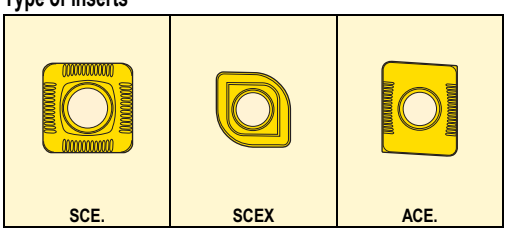
SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			MK1500			HX		
	f_z (mm/tooth)																				
	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25
	v_c (m/min)																				
1	415	370	315	370	330	280	350	310	265	320	285	245	280	250	210	–	–	–	–	–	–
2	355	315	265	315	280	235	295	265	225	270	245	205	235	210	180	–	–	–	–	–	–
3	290	260	220	260	230	195	245	220	185	225	200	170	195	175	150	–	–	–	–	–	–
4	250	220	190	220	195	165	210	185	160	190	170	145	165	150	125	–	–	–	–	–	–
5	205	185	155	185	165	140	175	155	130	160	145	120	140	125	105	–	–	–	–	–	–
6	180	160	–	160	145	–	155	135	–	140	125	–	120	110	–	–	–	–	–	–	–
7	50	44	–	40	36	–	39	35	–	38	34	–	33	30	–	–	–	–	–	–	–
8	285	255	215	225	200	170	220	200	170	210	190	160	190	170	–	–	–	–	–	–	–
9	225	200	170	175	160	135	175	155	130	165	145	125	150	135	–	–	–	–	–	–	–
10	185	165	140	145	130	110	145	125	110	135	120	100	125	110	–	–	–	–	–	–	–
11	135	120	–	110	95	–	105	95	–	100	90	–	90	80	–	–	–	–	–	–	–
12	215	195	165	190	170	145	180	160	140	170	150	125	145	130	110	270	245	205	140	125	105
13	190	170	145	170	150	130	160	145	120	145	130	110	130	115	95	240	215	180	120	110	90
14	160	145	120	140	125	105	135	120	100	125	110	95	110	95	80	200	180	150	100	90	75
15	135	120	–	120	105	–	110	100	–	105	90	–	90	80	–	165	150	–	85	75	–
16	–	–	–	–	–	–	–	–	–	830	740	630	725	645	545	–	–	–	690	615	520
17	–	–	–	–	–	–	–	–	–	670	600	510	585	520	440	–	–	–	555	495	420
18	–	–	–	–	–	–	–	–	–	510	455	385	445	395	335	–	–	–	425	375	320
19	–	–	–	49	44	–	46	41	–	44	39	–	40	36	–	–	–	–	22	20	–
20	–	–	–	40	35	–	37	33	–	36	32	–	32	29	–	–	–	–	18	16	–
21	–	–	–	34	31	–	32	29	–	31	27	–	28	25	–	–	–	–	15	14	–
22	–	–	–	80	75	–	75	70	–	75	65	–	65	60	–	–	–	–	37	33	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,15	0,25	1,00
Side milling	25%	0,13	0,20	0,33	1,30
	10%	0,20	0,31	0,51	1,50
	5%	0,29	0,43	0,72	1,60
Average chip thickness h_m		0,06	0,10	0,16	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of inserts



Insert selection – R235.15

SMG	First choice Ø32	First choice Ø50	First choice Ø80
1	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
2	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
3	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
4	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
5	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
6	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
7	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
8	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
9	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
10	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
11	R235.15-032-E05 F30M	R235.15-050-E05 F30M	R235.15-080-E05 F30M
12	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
13	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
14	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
15	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
16	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
17	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
18	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
19	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
20	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
21	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX
22	R235.15-032-E05 F30M	R235.15-050-E05 HX	R235.15-080-E05 HX

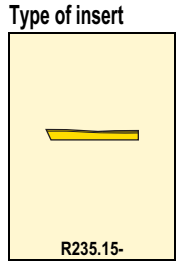
Cutting data – Max radial depth of cut a_e = 1 mm

	Grades										
	F30M			HX							
	f_z (mm/tooth)										
	0,13	0,20	0,23	0,13	0,20	0,23					
SMG	v_c (m/min)										
1	420	395	385	–	–	–					
2	355	335	325	–	–	–					
3	295	275	270	–	–	–					
4	250	235	230	–	–	–					
5	210	195	190	–	–	–					
6	185	170	170	–	–	–					
7	50	47	46	–	–	–					
8	290	270	265	–	–	–					
9	225	210	205	–	–	–					
10	185	175	170	–	–	–					
11	135	130	125	–	–	–					
12	220	205	200	200	185	180					
13	195	180	175	175	165	160					
14	160	150	150	145	140	135					
15	135	125	125	120	115	110					
16	1090	1020	995	985	925	900					
17	880	825	805	795	745	725					
18	670	630	615	605	570	555					
19	60	55	55	32	30	29					
20	49	46	44	25	24	23					
21	42	39	38	22	21	20					
22	100	95	90	55	49	48					

Surface finish

Cutter dia mm	Feed/rev f mm/rev	Ra µm
32	0,4	< 0,7
50	0,6	< 0,7
80	0,7	< 0,7

Type of insert

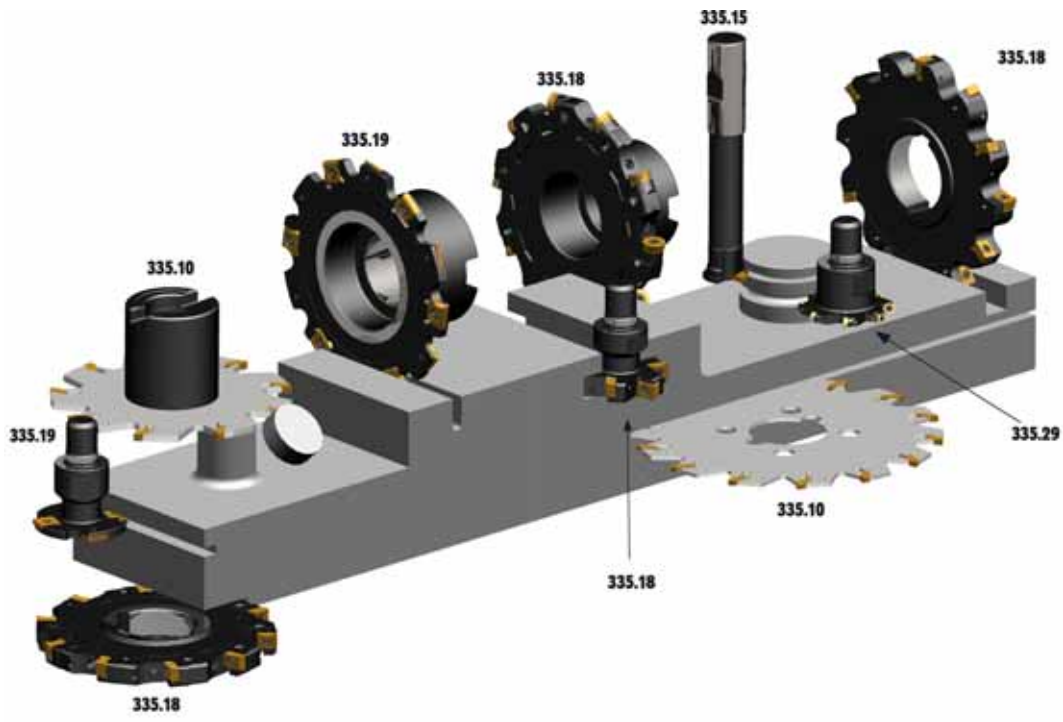


A full range of disc mills for all kind of disc milling operations

Disc mills, available in diameters from 24 - 320 mm, offer a wide choice of grades/insert geometries allowing you to machine most material types. Insert radii up to 8 mm are available.

The complete standard range of disc milling cutters consists of 5 families:

- For circlip grooves 1,6 - 5,15 mm:Seco disc mill type 335.15
- For width 2,25 - 4,1 mm: Seco disc mill type 335.10
- For width 4 - 14 mm: Seco disc mill type 335.19 (SNHQ - Inserts)
- For width 8 - 20 mm: Seco disc mill type 335.18 (LNK. - Inserts)
- For width 14-30 mm: Seco disc mill type 335.18 (335.18, AP..16, AC..15 - Inserts)
- Seco disc mill type 335.29 with round inserts ∅ 5, 6, 7, 8, 10 and 12 mm



Note: Maximum rpm that for safety reasons should never be exceeded, are shown on each product page.

Seco can provide 'custom' tools designed to suit your specific requirements.

For fixed pocket disc milling cutters

-Arbor type (A or B-type)

For stub arbor mounting /right hand rotation | System | Cutter width | 4 = z_c value

R 335 . 19 - 080 . 06 . 22 - 4

Disc milling cutters | Cutter diameter | Dimension of arbor bore

-Shank type (Cylindrical or Combimaster type)

Right hand rotation | System | Cutter diameter | Cutting width | N=Three side cutting

R 335 . 18 - 16 50 . RE - 10 . 3 - N

Disc milling cutter | -Dm_m value for Cyl. version -M value (thread) for Combimaster version | -RE for Combimaster -.0 for Cyl. shanks | 3=Z_c Value

For adjustable disc milling cutters

For stub arbor mounting/ right hand rotation | System | Minimum cutter width (adjustable cassettes) | Enlarged chip space | Dimension of arbor bore | Insert radius if round inserts used

R 335 . 18 - 200 . 12 15 XL . 40 - 8N - R6

Disc milling cutters | Cutter diameter | Maximum cutter width (adjustable cassettes)

8 = z_c value
N = Three side cutting
R = Right hand version for two side cutting
L = Left hand version for two side cutting

Full side and face - Fixed pocket design - Selection

Width = a_p (mm)	Application	Diameters (mm)											
		24	32/34	40	50	63	80	100	125	160	200	250	315
1,6 ↓ 5,15		Cyl/Wel. a_p 1,60-2,65 mm											
		335.15				B Type	a_p 1,60-5,15mm						
2,25 ↓ 4,1					RE a_p 2,25/2,5-3,1-4,1 mm								
		335.10					A Type a_p 2,25/2,5-3,1-4,1 mm						
						B Type a_p 2,25/2,5-3,1-4,1 mm							
4 5 6 7		335.19		RE/Cyl. a_p 4-5-6 mm									
						B Type a_p 4-5-6-7							
						A Type a_p 4-5-6-7 mm							
8 10 12		335.18 LNK	RE/Cyl. a_p 8-10-12 mm										
						B Type a_p 8-10-12 mm							
						A Type a_p 8-10-12 mm							
		335.19				B Type a_p 8-10-12 mm							
							A Type a_p 8-10-12 mm						
14 17 20		335.18 LNK				B Type a_p 14-17-20 mm							
									A Type a_p 14-17-20 mm				

Full side and face for radius profile - Fixed pocket design - Selection

Width= a_p (mm)	Application	Diameter (mm)											
		25	32	40	50	63	80	100	125	160	200	250	315
4 5 6 7 8	Full radius	335.19		RE/Cyl. a_p 4, 6 mm									
						B Type a_p 4, 6-7-8-10-12 mm							
						A Type a_p 4, 6-7-8-10-12 mm							
10 12		RE a_p 6-12 mm Cyl a_p 5-8 mm											
		335.29				B Type a_p 6-12 mm							

Full side and face - Fixed pocket design - Selection

Type	Insert tech	Radii available (mm)	See page
Cyl/Wel. R335.15 B Type	335.15		250
B Type (R)335.10 A Type	150.10		251 - 252
Cyl. R335.19 RE B Type (R)335.19 A Type	335.19/SNHQ	0,20 - **0,40** 0,80 - 1,00 1,20 1,60 - 2,00 2,40 - 3,00 3,10 - 3,50	255 - 258
RE R335.18 Cyl. B Type (R)335.18 A Type	LNK 05/06	0,40 - **0,80** 1,60 - 2,00 2,40 - 3,10 4,00	261 - 268
B Type (R)335.19 A Type	335.19/SNHQ	0,20 - 0,40 **0,80** - 1,20 1,60 - 2,00, 2,40 3,10 - 4,00 5,00 - 6,00	258 - 259
B Type (R)335.18 A Type	LNK 06/08	0,40 - **0,80** 1,60 - 2,00 2,40 - 3,10 4,0	261 - 268

Full side and face for radius profile - Fixed pocket design - Selection

Type	Insert tech.	Radii available (mm)	See page
RE R335.19 Cyl. B Type (R)335.19 A Type	SNHQ	2,0 3,0-3,5-4, 0-5,0-6,0	255 - 259
RE R335.29 B Type	∅ 5/6/7/8/10/12	2,5 - 3,0 - 3,5, 4,0-5,0 6,0	271 - 274

Main application

Possible application

1) Grooving

2) Sawing

3) Full side and face

4) Full radius profile

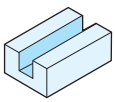
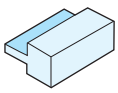
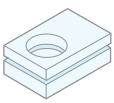
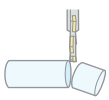
5) Half side and face

6) Half radius profile

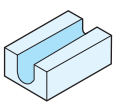
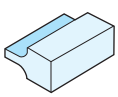
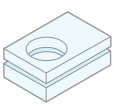
Basic choice

Alternative choice

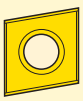
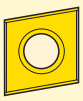
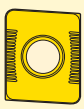
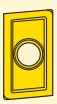
Full side and face - Adjustable design - Selection

Width = a_p (mm)	Application	Diameters (mm)						
		80	100	125	160	200	250	315
8 ↓ 10		B Type						
			A Type					
10 ↓ 15		B Type						
			A Type					
14 ↓ 18		B Type						
				A Type				
		B Type						
18 ↓ 31			A Type					
					B Type			
					A Type			
					B Type			
					A Type			

Full side and face for radius profile - Adjustable design - Selection

Width= a_p (mm)	Application	Diameters (mm)						
		80	100	125	160	200	250	315
8 ↓ 10	Full radius 	B Type a_p min ∅ 8						
			A Type a_p min ∅ 8					
10 – 12		B Type a_p min ∅ 10/12						
12 – 15			B Type ap min ∅ 10/12					
16 ↓ 18			B Type ap min ∅ 16					
			A Type a_p min ∅ 16					

Full side and face - Adjustable design - Selection

Cassette type	Insert tech	Radii available (mm)	See page
R/L335.18..05	LNK 05	0,4-**0,8** 1,6-2,0 2,4-3,1	263, 275, 280
R/L335.18..06/08	LNK 06/08	0,4-**0,8** 1,6-2,4 3,1-4,0	265 - 267, 275 - 276, 281 - 280
R/L335.18..1418	335.18-1005 	CH-R 0,8	269, 277, 282
R/L335.18..1927/2530	335.18-1305/1606 	CH-R 0,8	269 - 270, 277 - 278 282, 283
R/L335.18..15H	AC 1506 	1,2-3,0 3,1-6,0	269 - 270, 277, 282
R/L335.18..16	AP 1604 	0,4-0,8 1,6-2,4 3,0-3,1 4,0-4,8	270, 278, 283

CH = corner chamfer

Full side and face for radius profile - Adjustable design - Selection

Cassette type	Insert tech.	Radii available (mm)	See page
R/L335.18..R4	RD ∅ 8	4,0	272
R/L335.18..R5/6	RD ∅10/RP ∅12	5,0-6,0	273 - 274, 279, 284
R/L335.18..R8-D5	RP ∅16	8,0	274, 279, 284

Main application

Possible application

1) Grooving

2) Sawing

3) Full side and face

4) Full radius profile

5) Half side and face

6) Half radius profile

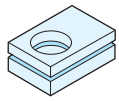
Basic choice

Alternative choice 1

Alternative choice 2

335.15... First choice for circlip grooves and narrow slotting

Application



Cylindrical: 24 and 34 mm

B Type: 63 mm

Basic choice for grooving.

Dia 24-63 mm

2 cutting edges per insert.

a_p = 1,1-5,15 mm.

Insert designation:

R335.15-13..
R335.15-18..

Edge form: Chamfer

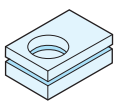
Product page: 250

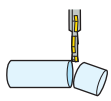
Insert pages: 527

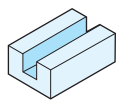
Cutting data: 289

335.10... First choice for cutting-off and narrow slotting

Applications







Cylindrical: 63-80 mm

A Type: 80-315 mm

B Type: 63-160 mm

Combimaster: 63-80 mm

Basic choice for grooving, sawing, full side and face

Can also be used for halfside and face.

Dia 63-315 mm.

1 cutting edge per insert.

a_p = 2,25-4,1 mm.

Insert designation:
150.10-..

Product pages: 251 - 252

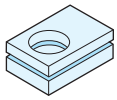
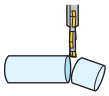
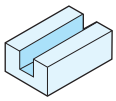
Insert page: 559

Cutting data: 290

Add. information: 253 - 254

335.19... First choice for slotting up to 12 mm

Applications

Combimaster ∅ 40/50/63 mm | **Cylindrical ∅ 50/63/80 mm** | **A Type ∅ 63-250 mm** | **B Type: ∅ 63-160 mm**

Basic choice for grooving, sawing, full side and face.

Can be used for full and half radius profile with radii inserts.

Dia 40-250 mm

2 or 4 cutting edges per insert depending on radii.
a_p = 4-14 mm.

Insert designation:

SNHQ inserts are the first choice.
335.19 inserts are alternative choice.

Edge form:
Corner radii 0,2-6 mm – Full radius 2-6 mm. Chamfer

335.19 cutter with SNHQ inserts

For full side and face use left and right hand inserts

For half side and face use only left or right hand inserts

Product pages: 255 - 259.

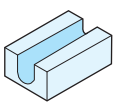
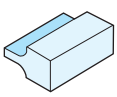
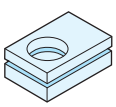
Insert pages: 542 - 546, 564

Cutting data: 291 - 292

Add. information: 260

335.29/335.18... Equipped with cassettes for round inserts

Applications

Combimaster ∅ 25-50 mm Fixed pocket | **B Type ∅ 63-80 mm Fixed pocket** | **A Type ∅ 102-320 mm Adjustable** | **B Type ∅ 82-320 mm Adjustable**

Basic choice for full radius profiling, half radius profile and grooving.

Dia 25-320 mm

a_p = 5-16 mm.

Insert designation:
RD..05..
RD..06T1M0
RD..07..
RD..0803M0
RD..10T3M0
RP..1204M0
RP..1605

Edge form: Full radius 2,5-8 mm

Product pages: 271 - 274, 279, 284

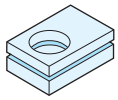
Insert pages: 529 - 532

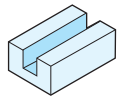
Cutting data: 294 - 303

Add. information: 286 - 288

335.18 LNK – Fixed pocket design. First choice for slotting up to 20 mm wide

Applications





Combimaster ∅ 50 mm

Cylindrical ∅ 32-80 mm.

A Type ∅ 80-160 mm Fixed pocket

B Type: ∅ 63-160mm Fixed pocket

Fixed pocket version

Basic choice for full side and face

Dia 32-160 mm

1 to 4 cutting edges per insert depending on radii.
a_p = 8-20 mm

Insert designation:
LNK..05..
LNK..06..
LNK..08..

Edge form: Corner radii 0,4-4,0

Product pages: 261 - 269

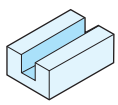
Insert pages: 519 - 520

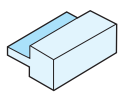
Cutting data: 293

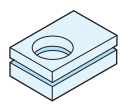
Add. information: 261, 286 - 288

335.18 LNK/335.18/AC..15/AP..16 – Adjustable design

Applications







A Type ∅ 100-315 mm Adjustable

B Type ∅ 80-315 mm Adjustable

Adjustable cassette version

Basic choice for full side and face, half side

Dia 80-315 mm

1 or 4 cutting edges per insert depending on radii
a_p = 8-31 mm

Insert designation:
LNK..05..
LNK..06..
LNK..08..
335.18
AC..15
AP..16

Edge form: Corner radii 0,4-6,0 mm
Corner chamfer

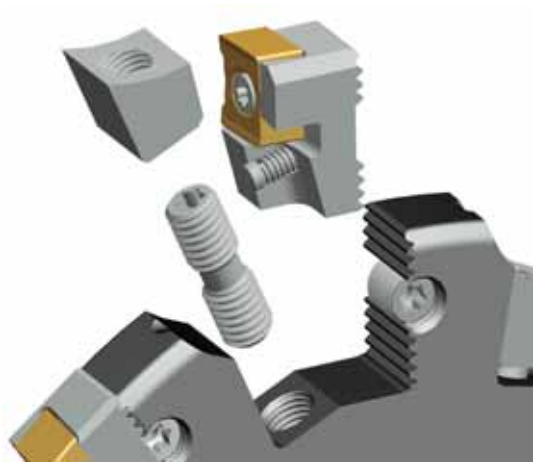
Product pages: 263, 265, 267, 269 - 270, 275 - 278, 280 -

Insert pages: 519 - 520, 514 - 516, 563

Cutting data: 293, 302 - 307

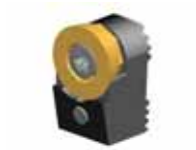
Add. information: 261, 286 - 287

335.18: Adjustable disc milling cutters



335.18 Cassette family

LNK insert
Width 08-15 mm



Round insert
∅ 08, 10, 12, 16 mm

335.18 insert
Width 14-30,5 mm

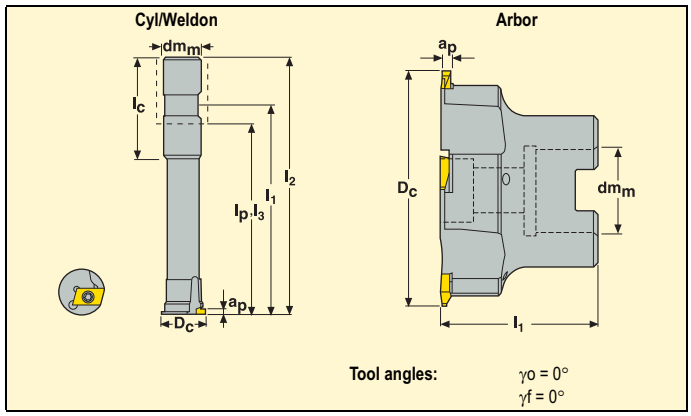
AC..1506 insert
Width 20-29,2 mm

AP..1604 insert
Width 22-31 mm

For circlip grooves milling cutter R335.15

Width 1,1-5,15 mm

- **For insert selection and cutting data recommendations, see page 289.**
- **For complete insert programme, see pages 527.**



a_p*	Part No.	Dimensions in mm D_c	dm_m	l_1	l_2	l_p	l_3	l_c		KG		Type of mounting	
1,10-2,65	**R335.15 -20024.3-03-1**	24	20	–	130	80	80	50	1	0,5	28200	Cyl/Weldon	R335.15-13..
1,10-2,65	**-25034.3-03-2**	34	25	–	130	74	74	56	2	0,5	23600	Cyl/Weldon	R335.15-13..
1,10-2,65	**R335.15 -063-03.22-5**	63	22	40	–	–	–	–	5	0,5	17300	Arbor	R335.15-13..
3,15-5,15	**-063-05.22-5**	63	22	40	–	–	–	–	5	0,5	17300	Arbor	R335.15-18..

*Depends on the insert width.

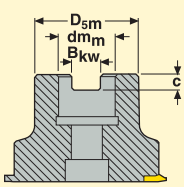
For groove depth (a_e), please see insert page 527.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R335.15-20024-25034	C03509-T15P	T15P-3	–
R335.15-063-..	C03509-T15P	T15P-3	220-17-692

*** Torque value 3,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



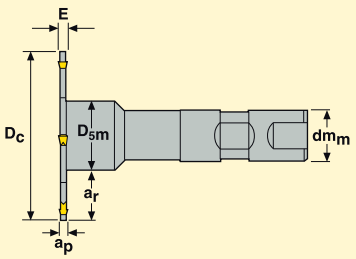
For cutter	Dimensions in mm dm_m	d_{5m}	B_{kw}	c
R335.15-063-..	22	40	10,4	6,3

Please check availability in current price and stock-list.

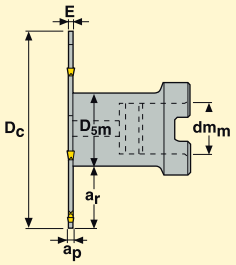
Cutter 335.10–Insert 150.10

Width 2,25-4,1 mm, full side

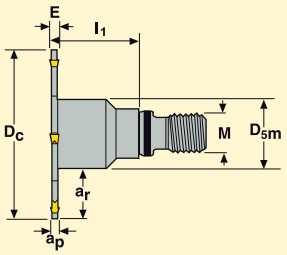
Type B_1 for Cylindrical/Weldon shank



Type B_2 for stub Arbor



Type B_4 For Combimaster



For insert selection and cutting data recommendations, see page 290.
For complete insert programme, see page 559.
For spare parts, see pages 253 - 254.

Tool angles: γo = -20°

Drawings for type A and B3, see page 252.

Type	a_p	a_r	Part No.	Dimension in mm D_c	M	dm_m	E	D_{5m}		KG		Insert 150.10-..
Type B_1	2,25/2,5	15,5	R335.10 -25063.3-02-5	63	–	25	1,9	32	5	0,5	4000	-2,25N/2,5N
Type B_2	2,25/2,5	15,5	-063-02.22-5	63	–	22	1,9	40	5	0,5	4000	-2,25N/2,5N
Type B_4	2,25/2,5	16,0	-1663.RE-02-5	63	M16	–	1,1	30	5	0,5	4000	-2,25N/2,5N
Type B_1	2,25/2,5	20,0	R335.10 -32080.3-02-6	80	–	32	1,9	40	6	1,1	3500	-2,25N/2,5N
Type B_2	2,25/2,5	20,0	-080-02.22-6	80	–	22	1,9	40	6	0,8	3500	-2,25N/2,5N
Type A*	2,25/2,5	22,0	335.10 -080-02.22-6	80	–	22	1,9	–	6	0,2	3500	-2,25N/2,5N
Type B_4	2,25/2,5	19,5	R335.10 -1680.RE-02-6	80	M16	–	1,9	30	6	0,8	3500	-2,25N/2,5N
Type B_3	2,25/2,5	26,0	R335.10 -100-02.27-7	100	–	27	1,9	48	7	0,7	3200	-2,25N/2,5N
Type A*	2,25/2,5	29,0	335.10 -100-02.27-7	100	–	27	1,9	–	7	0,2	3200	-2,25N/2,5N
Type B_3	2,25/2,5	33,5	R335.10 -125-02.32-9	125	–	32	1,9	58	9	1,3	2800	-2,25N/2,5N
Type A*	2,25/2,5	34,0	335.10 -125-02.32-9	125	–	32	1,9	–	9	0,3	2800	-2,25N/2,5N
Type B_3	2,25/2,5	40,0	R335.10 -160-02.40-12	160	–	40	1,9	80	12	2,4	2400	-2,25N/2,5N
Type A*	2,25/2,5	40,0	335.10 -160-02.40-12	160	–	40	1,9	–	12	0,4	2400	-2,25N/2,5N
Type B_1	3,1	15,5	R335.10 -25063.3-03-5	63	–	25	2,4	32	5	0,7	4000	-3N
Type B_2	3,1	15,5	-063-03.22-5	63	–	22	2,4	40	5	0,6	4000	-3N
Type B_4	3,1	16,0	-1663.RE-03-5	63	M16	–	2,4	30	5	0,6	4000	-3N
Type B_1	3,1	20,0	R335.10 -32080.3-03-6	80	–	32	2,4	40	6	1,2	3500	-3N
Type B_2	3,1	20,0	-080-03.22-6	80	–	22	2,4	40	6	0,8	3500	-3N
Type A*	3,1	22,0	335.10 -080-03.22-6	80	–	22	2,4	–	6	0,2	3500	-3N
Type B_4	3,1	19,5	R335.10 -1680.RE-03-6	80	M16	–	2,4	30	6	0,8	3500	-3N
Type B_3	3,1	26,0	R335.10 -100-03.27-7	100	–	27	2,4	48	7	0,8	3200	-3N
Type A*	3,1	29,0	335.10 -100-03.27-7	100	–	27	2,4	–	7	0,2	3200	-3N
Type B_3	3,1	33,5	R335.10 -125-03.32-9	125	–	32	2,4	58	9	1,4	2800	-3N
Type A*	3,1	34,0	335.10 -125-03.32-9	125	–	32	2,4	–	9	0,3	2800	-3N
Type B_3	3,1	40,0	R335.10 -160-03.40-12	160	–	40	2,4	80	12	2,5	2400	-3N
Type A*	3,1	40,0	335.10 -160-03.40-12	160	–	40	2,4	–	12	0,4	2400	-3N
Type A*	3,1	60,0	335.10 -200-03.40-14	200	–	40	2,4	–	14	0,6	2200	-3N
Type A*	3,1	85,0	-250-03.40-18	250	–	40	2,4	–	18	0,7	2000	-3N
Type A*	3,1	117,0	-315-03.40-24	315	–	40	2,4	–	24	1,3	1700	-3N

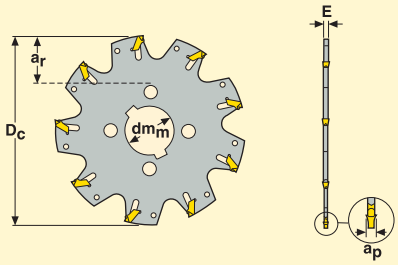
Please check availability in current price and stock-list.

* Cutter dia 80-100 mm with spacer collars DIN2084/B. Cutter dia > 100 mm refers to Seco drive rings, see page 253.

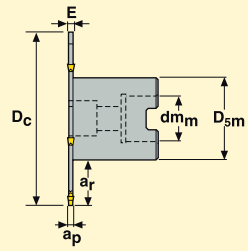
335.10/R335.10

Width 2,25-4,1 mm, full side

Type A for milling Arbor



Type B_3 for stub Arbor



For insert selection and cutting data recommendations, see page 290.
For complete insert programme, see page 559.
For spare parts, see pages 253 - 254.

Tool angles: γo = -20°

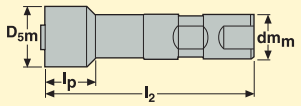
Drawings for Type B_1, B_2 and B_4, see page 251.

Type	a_p	a_r	Part No.	Dimensions in mm D_c	M	dm_m/l_1	E	D_{5m}		KG		Insert 150.10-..
Type B_1	4,1	15,5	R335.10 -25063.3-04-5	63	–	25	3,4	32	5	0,9	4000	-4N
Type B_2	4,1	15,5	-063-04.22-5	63	–	22	3,4	32	5	0,6	4000	-4N
Type B_4	4,1	16,0	-1663.RE-04-5	63	M16	–	3,4	30	5	0,6	4000	-4N
Type B_1	4,1	20,0	R335.10 -32080.3-04-6	80	–	32	3,4	40	6	1,5	3500	-4N
Type B_2	4,1	20,0	-080-04.22-6	80	–	22	3,4	40	6	0,8	3500	-4N
Type A*	4,1	22,0	335.10 -080-04.22-6	80	–	22	3,4	–	6	0,2	3500	-4N
Type B_4	4,1	19,5	R335.10 -1680.RE-04-6	80	M16	–	3,4	30	6	0,8	3500	-4N
Type B_3	4,1	26,0	R335.10 -100-04.27-7	100	–	27	3,4	48	7	0,8	3200	-4N
Type A*	4,1	29,0	335.10 -100-04.27-7	100	–	27	3,4	–	7	0,2	3200	-4N
Type B_3	4,1	33,5	R335.10 -125-04.32-9	125	–	32	3,4	58	9	1,4	2800	-4N
Type A*	4,1	34,0	335.10 -125-04.32-9	125	–	32	3,4	–	9	0,3	2800	-4N
Type B_3	4,1	40,0	R335.10 -160-04.40-12	160	–	40	3,4	80	12	2,5	2400	-4N
Type A*	4,1	40,0	335.10 -160-04.40-12	160	–	40	3,4	–	12	0,5	2400	-4N
Type A*	4,1	60,0	335.10 -200-04.40-14	200	–	40	3,4	–	14	0,7	2200	-4N
Type A*	4,1	85,0	-250-04.40-18	250	–	40	3,4	–	18	0,8	2000	-4N
Type A*	4,1	117,0	-315-04.40-24	315	–	40	3,4	–	24	1,4	1700	-4N

*Cutter dia 80 and 100 mm with spacer collars DIN2084/B. Cutter dia >100 mm refers to Seco drive rings, see page 253.
Please check availability in current price and stock-list.

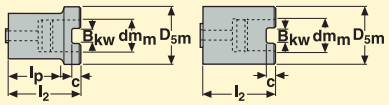
Disc milling cutters 335.10 - Spare parts

Holder for type B_1



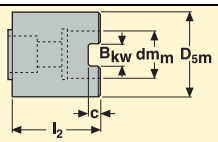
Part No.	dm_m	D_{5m}	l_2	l_p
335.10-25.3	25	32	106	25
335.10-32.3	32	40	150	30

Holder for type B_2



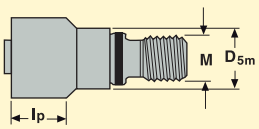
Part No.	dm_m	D_{5m}	l_2	l_p	B_{kw}	c
335.10-2232	22	40	50	36	10,4	6,3
335.10-2240	22	40	50	–	10,4	6,3

Holder for type B_3



Part No.	dm_m	D_{5m}	l_2	B_{kw}	c
335.10-2748	27	48	50	12,4	7
335.10-3258	32	58	63	14,4	8
335.10-4080	40	80	63	16,4	9

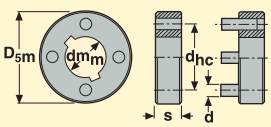
Holder for type B_4



Part No.	l_p	M	D_{5m}
335.10-16RE-10	28	M16	30
335.10-16RE-18	28	M16	30

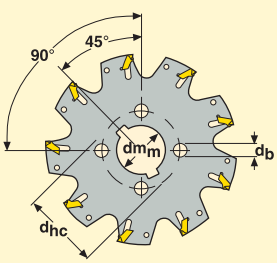
Drive ring to be ordered separately.

Drive rings for type A



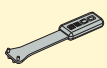
Part No.	D_{5m}	dm_m	d_{hc}	d	s
335.10-14532	55	32	45	6	10
335.10-16340	80	40	63	11	12

Dimensions of mounting



For cutter	Dimensions in mm		
	dm_m	d_{hc}	d_b
335.10-080	22	–	–
335.10-100	27	–	–
335.10-125	32	45	6
335.10-160-315	40	63	11

Spare parts

For cutter	Insert removal key 
R335.10-..	150.10-150

Please check availability in current price and stock-list.

Key to be ordered separately.

Assembly alternatives/Standard parts for type B_1

Part No.		Standard parts: Cutter body Part No.	Standard parts: Holder Part no.
R335.10	-25063.3-02-5	B-R335.10-063.10-02	335.10-25.3
	-32080.3-02-6	B-R335.10-080.18-02	335.10-32.3
	-25063.3-03-5	B-R335.10-063.10-03	335.10-25.3
	-32080.3-03-6	B-R335.10-080.18-03	335.10-32.3
	-25063.3-04-5	B-R335.10-063.10-04	335.10-25.3
	-32080.3-04-6	B-R335.10-080.18-04	335.10-32.3

Spare parts

Assembly screw	Key/Torque value
3 x 335.10-0516-T15P	T15P-3 / 6,5 Nm

Key to be ordered separately.

Assembly alternatives/Standard parts for type B_2

Part No.		Standard parts: Cutter body Part No.	Standard parts: Holder Part no.
R335.10	-063-02.22-5	B-R335.10-063.10-02	335.10-2232
	-080-02.22-6	B-R335.10-080.18-02	335.10-2240
	-063-03.22-5	B-R335.10-063.10-03	335.10-2232
	-080-03.22-6	B-R335.10-080.18-03	335.10-2240
	-063-04.22-5	B-R335.10-063.10-04	335.10-2232
	-080-04.22-6	B-R335.10-080.18-04	335.10-2240

Spare parts

Assembly screw	Key/Torque value	Arbor screw
3 x 335.10-0516-T15P	T15P-3 / 6,5 Nm	220.17-696

Key to be ordered separately

Assembly alternatives/Standard parts for type B_3

Part No.		Standard parts: Cutter body Part No.	Standard parts: Holder Part no.
R335.10	-100-02.27-7	B-R335.10-100.27-02	335.10-2748
	-100-03.27-7	B-R335.10-100.27-03	335.10-2748
	-100-04.27-7	B-R335.10-100.27-04	335.10-2748
	-125-02.32-9	B-R335.10-125.32-02	335.10-3258
	-125-03.32-9	B-R335.10-125.32-03	335.10-3258
	-125-04.32-9	B-R335.10-125.32-04	335.10-3258
	-160-02.40-12	B-R335.10-160.40-02	335.10-4080
	-160-03.40-12	B-R335.10-160.40-03	335.10-4080
	-160-04.40-12	B-R335.10-160.40-04	335.10-4080

Spare parts

Assembly screw	Key/Torque value	Arbor screw
4 x 335.10-0516-T15P	T15P-3 / 6,5 Nm	MC6S 12x40 220.17-694
4 x 335.10-1030-T30P	T30P-4 / 8 Nm	MC6S 20x40

Key to be ordered separately

Assembly alternatives/Standard parts for type B_4/Combimaster

Part No.		Standard parts: Cutter body Part No.	Standard parts: Holder Part no.
R335.10-1663.RE-02-5		B-335.10-063.10-02	335.10-16RE-10
R335.10-1680.RE-02-6		B-335.10-063.18-02	335.10-16RE-18
R335.10-1663.RE-03-5		B-335.10-063.10-03	335.10-16RE-10
R335.10-1680.RE-03-6		B-335.10-063.18-03	335.10-16RE-18
R335.10-1663.RE-04-5		B-335.10-063.10-04	335.10-16RE-10
R335.10-1680.RE-04-6		B-335.10-063.18-04	335.10-16RE-18

Please check availability in current price and stock-list.

Spare parts

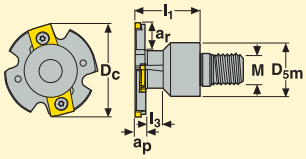
Assembly screw	Key/Torque value
3 x 335.10-0516-T15P	T15P-3 / 6,5 Nm

Key to be ordered separately

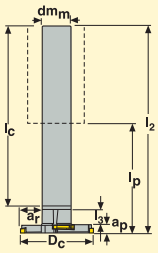
Cutter 335.19 – Insert 335.19/SNHQ

Width 4 – Full side

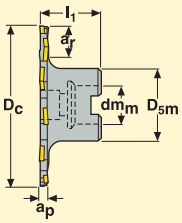
Combimaster



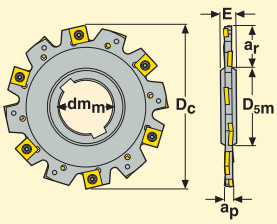
Cylindrical



Type B for stub Arbor



Type A for milling Arbor



For insert selection and cutting data recommendations, see pages 291 - 292
For complete insert programme, see pages 542 - 546, 564
For spare parts, see page 260

Tool angles: γ_o = -12°
Tool angles: γ_o = -17°

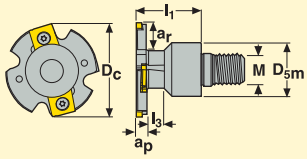
Type	a_p	a_r	Part No.	Dimension in mm D_C	dm_m	E/l_2	l_1/l_p	D_{5M}	l_3/l_c	M		Z_C	KG		()=No. of inserts Inserts Right hand SNHQ1102	Inserts Left hand SNHQ1102
RE	4	12,4	**R335.19 -1040.RE-04.2**	40	–	–	23	18,5	–	M10	4	2	0,1	21000	...R4(2)	...L4(2)
Cyl	4	13,9	**R335.19 -2550.0-04.2**	50	25	150	94	–	11/132	–	4	2	0,6	19100	...R4 (2)	...L4 (2)
RE	4	13,9	**-1650.RE-04.2**	50	–	–	35	30	11	M16	4	2	0,2	19100	...R4 (2)	...L4 (2)
Cyl	4	13,9	**R335.19 -3263.0-04.4**	63	32	170	110	–	17/148	–	8	4	1,1	17100	...R4 (4)	...L4 (4)
RE	4	13,9	**-1663.RE-04.4**	63	–	–	35	33	–	M16	8	4	0,3	17100	...R4 (4)	...L4 (4)
B	4	13,9	**-063.04.16-4**	63	16	–	35	33	–	–	8	4	0,3	17100	...R4 (4)	...L4 (4)
B	4	13,9	**-063.04.22-3**	63	22	–	50	40	11	–	6	3	0,4	17100	...R4 (3)	...L4 (3)
A	4	13,5	**335.19 -063.04.22-4**	63	22	8	–	33	–	–	8	4	0,1	17100	...R4 (4)	...L4 (4)
Cyl	4	22,5	**R335.19 -3280.0-04.5**	80	32	170	110	–	17/148	–	10	5	1,2	15200	...R4 (5)	...L4 (5)
B	4	22,4	**-080.04.22-4**	80	22	–	50	40	11	–	8	4	0,6	15200	...R4 (4)	...L4 (4)
B	4	22,4	**-080.04.22-5**	80	22	–	50	40	11	–	10	5	0,6	15200	...R4 (5)	...L4 (5)
A	4	18,6	**335.19 -080.04.22-4**	80	22	12	–	33	–	–	8	4	0,2	15200	...R4 (4)	...L4 (4)
A	4	20,0	**-080.04.22-5**	80	22	12	–	33	–	–	10	5	0,2	15200	...R4 (5)	...L4 (5)
B	4	22,1	**R335.19 -100.04.27-6**	100	27	–	50	48	–	–	12	6	0,7	13500	...R4 (6)	...L4 (6)
A	4	24,6	**335.19 -100.04.27-6**	100	27	12	–	41	–	–	12	6	0,2	13500	...R4 (6)	...L4 (6)
B	4	29,6	**R335.19 -125.04.32-7**	125	32	–	50	58	–	–	14	7	1,0	12200	...R4 (7)	...L4 (7)
A	4	30,1	**335.19 -125.04.40-7**	125	40	12	–	55	–	–	14	7	0,4	12200	...R4 (7)	...L4 (7)
B	4	41,1	**R335.19 -160.04.40-9**	160	40	–	50	70	–	–	18	9	1,2	10700	...R4 (9)	...L4 (9)
A	4	42,6	**335.19 -160.04.40-9**	160	40	12	–	65	–	–	18	9	0,6	10700	...R4 (9)	...L4 (9)

Please check availability in current price and stock-list.
*Effective number of teeth
For shanks and dimensions, see Combimaster chapter.

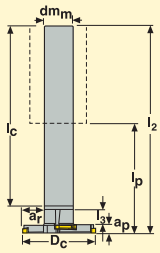
Cutter 335.19 – Insert 335.19/SNHQ

Width 5 – Full side

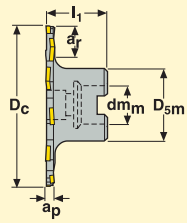
Combimaster



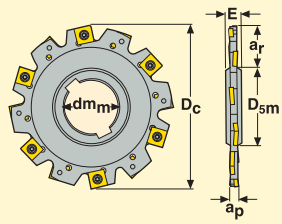
Cylindrical



Type B for stub Arbor



Type A for milling Arbor



For insert selection and cutting data recommendations, see pages 291 - 292
For complete insert programme, see pages 542 - 546, 564
For spare parts, see page 260

Tool angles: γ_o = -12°
Tool angles: γ_o = -17°

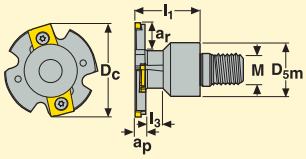
Type	a_p	ar	Part No.	Dimenson in mm D_C	dm_m	E/l_2	l_1/l_p	D_{5m}	l_3/l_c	M		z_C	KG		()=No. of inserts Insert Right hand SNHQ1103	Insert Left hand SNHQ1103
RE	5	12,4	R335.19 -1040.RE-05.2	40	–	–	23	18,5	–	M10	4	2				
Cyl	5	13,9	R335.19 -2550.0-05.2	50	25	150	94	–	10/132	–	4	2	0,6	16800	...R4 (2)	...L4 (2)
RE	5	13,9	-1650.RE-05.2	50	–	–	35	30	10	M16	4	2	0,2	16800	...R4 (2)	...L4 (2)
RE	5	13,9	R335.19 -1663.RE-05.4	63	–	–	35	33	–	M16	8	4	0,3	14900	...R4 (4)	...L4 (4)
B	5	13,9	-063.05.16-4	63	16	–	35	33	–	–	8	4	0,3	14900	...R4 (4)	...L4 (4)
B	5	13,9	-063.05.22-3	63	22	–	50	40	10	–	6	3	0,4	14900	...R4 (3)	...L4 (3)
A	5	13,5	335.19 -063.05.22-4	63	22	8	–	33	–	–	8	4	0,1	14900	...R4 (4)	...L4 (4)
Cyl	5	22,5	R335.19 -3280.0-05.5	80	32	170	110	–	16/148	–	10	5	1,2	13200	...R4 (5)	...L4 (5)
B	5	22,4	-080.05.22-4	80	22	–	50	40	10	–	8	4	0,6	13200	...R4 (4)	...L4 (4)
B	5	22,4	-080.05.22-5	80	22	–	50	40	10	–	10	5	0,6	13200	...R4 (5)	...L4 (5)
A	5	19,6	335.19 -080.05.22-4	80	22	12	–	33	–	–	8	4	0,2	13200	...R4 (4)	...L4 (4)
A	5	20,0	-080.05.22-5	80	22	12	–	33	–	–	10	5	0,2	13200	...R4 (5)	...L4 (5)
B	5	22,1	R335.19 -100.05.27-6	100	27	–	50	48	–	–	12	6	0,7	11800	...R4 (6)	...L4 (6)
A	5	24,6	335.19 -100.05.27-6	100	27	12	–	41	–	–	12	6	0,3	11800	...R4 (6)	...L4 (6)
B	5	29,6	R335.19 -125.05.32-7	125	32	–	50	58	–	–	14	7	1,0	10700	...R4 (7)	...L4 (7)
A	5	30,1	335.19 -125.05.40-7	125	40	12	–	55	–	–	14	7	0,4	10700	...R4 (7)	...L4 (7)
B	5	41,1	R335.19 -160.05.40-9	160	40	–	50	70	–	–	18	9	1,2	9300	...R4 (9)	...L4 (9)
A	5	42,6	335.19 -160.05.40-9	160	40	12	–	65	–	–	18	9	0,7	9300	...R4 (9)	...L4 (9)

Please check availability in current price and stock-list.
*Effective number of teeth
For shanks and dimensions, see Combimaster chapter.

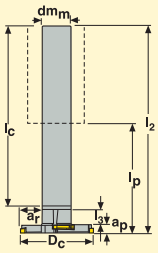
Cutter 335.19 – Insert 335.19/SNHQ

Width 6 – Full side

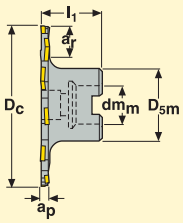
Combimaster



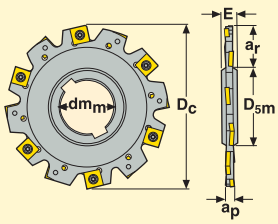
Cylindrical



Type B for stub Arbor



Type A for milling Arbor



For insert selection and cutting data recommendations, see pages 291 - 292
For complete insert programme, see pages 542 - 546, 564
For spare parts, see page 260

Tool angles: γ_o = -12°
Tool angles: γ_o = -17°

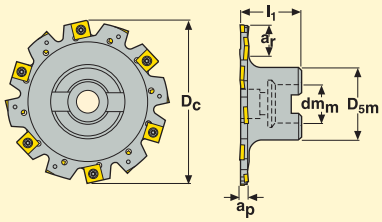
Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}	l_3/l_c	M		z_c*	KG		() = No. Of inserts Inserts Right Hand SNHQ1203	Inserts Left Hand SNHQ1203
RE	6	13,9	R335.19 -1650.RE-06.2	50	–	–	35	30	9	M16	4	2	0,2	12300	...R (2)	...L (2)
Cyl	6	13,9	-2550.0-06.2	50	25	150	94	–	9/132	–	4	2	0,6	12300	...R (2)	...L (2)
Cyl	6	13,9	R335.19 -3263.0-06.3	63	32	170	110	–	15/148	–	6	3	1,2	10900	...R (3)	...L (3)
RE	6	13,9	-1663.RE-06.3	63	–	–	35	33	–	M16	6	3	0,3	10900	...R (3)	...L (3)
B	6	13,9	-063.06.16-3	63	16	–	35	33	–	–	6	3	0,3	10900	...R (3)	...L (3)
B	6	13,9	-063.06.22-3	63	22	–	50	40	–	–	6	3	0,5	10900	...R (3)	...L (3)
A	6	13,5	335.19- 063.06.22-3	63	22	12	–	33	–	–	6	3	0,1	10900	...R (3)	...L (3)
Cyl	6	22,5	R335.19 -3280.0-06.4	80	32	170	110	–	15/148	–	8	4	1,2	9700	...R (4)	...L (4)
B	6	22,4	-080.06.22-4	80	22	–	50	40	9	–	8	4	0,6	9700	...R (4)	...L (4)
A	6	19,6	335.19 -080.06.22-4	80	22	12	–	32	–	–	8	4	0,2	9700	...R (4)	...L (4)
B	6	22,0	R335.19 -100.06.27-5	100	27	–	50	48	–	–	10	5	0,7	8700	...R (5)	...L (5)
A	6	25,6	335.19 -100.06.27-5	100	27	12	–	41	–	–	10	5	0,3	8700	...R (5)	...L (5)
B	6	29,0	R335.19 -125.06.32-6	125	32	–	50	58	–	–	12	6	1,1	7700	...R (6)	...L (6)
B	6	23,0	-125.06.40-6	125	40	–	50	70	–	–	12	6	1,1	7700	...R (6)	...L (6)
A	6	31,0	335.19 -125.06.40-6	125	40	12	–	55	–	–	12	6	0,4	7700	...R (6)	...L (6)
B	6	40,5	R335.19 -160.06.40-8	160	40	–	50	70	–	–	16	8	1,4	6800	...R (8)	...L (8)
A	6	43,0	335.19 -160.06.40-8	160	40	12	–	65	–	–	16	8	0,8	6800	...R (8)	...L (8)
A	6	61,0	335.19 -200.06.50-9	200	50	12	–	69	–	–	18	9	1,2	6300	...R (9)	...L (9)
A	6	86,0	-250.06.50-12	250	50	12	–	69	–	–	24	12	1,8	5600	...R (12)	...L (12)

Please check availability in current price and stock-list.
*Effective number of teeth
For shanks and dimensions, see Combimaster chapter.

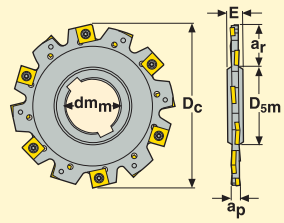
Cutter 335.19 – Insert 335.19/SNHQ

Width 7 - 10 – Full side

Type B for stub Arbor



Type A for milling Arbor



For insert selection and cutting data recommendations, see pages 291 - 292
For complete insert programme, see pages 542 - 546, 260
For spare parts, see page 260

Tool angles: γ_o -12°
Tool angles: γ_o -15°

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		Z_C	KG		() = No. of inserts Inserts Right hand SNHQ	Inserts Left hand SNHQ
B	7/8**	13,8	R335.19 -063.07.16-3	63	16	–	35/35,5	33	6	3	0,3	9400	1204/12045...R (3)	1204/12045...L (3)
B	7/8**	13,8	-063.07.22-3	63	22	–	50/50,5	40	6	3	0,4	9400	1204/12045...R (3)	1204/12045...L (3)
B	7/8**	22,0	R335.19 -080.07.22-4	80	22	–	50/50,5	40	8	4	0,5	8400	1204/12045...R (4)	1204/12045...L (4)
A	7/8**	20,5	335.19 -080.07.22-4	80	22	12	–	33	8	4	0,2	8400	1204/12045...R (4)	1204/12045...L (4)
B	7/8**	22,0	R335.19 -100.07.27-5	100	27	–	50/50,5	48	10	5	0,8	7500	1204/12045...R (5)	1204/12045...L (5)
A	7/8**	26,5	335.19 -100.07.27-5	100	27	12	–	41	10	5	0,3	7500	1204/12045...R (5)	1204/12045...L (5)
B	7/8**	29,5	R335.19 -125.07.32-6	125	32	–	50/50,5	58	12	6	1,9	6700	1204/12045...R (6)	1204/12045...L (6)
B	7/8**	23,5	-125.07.40-6	125	40	–	50/50,5	70	12	6	1,2	6700	1204/12045...R (6)	1204/12045...L (6)
A	7/8**	32,0	335.19 -125.07.40-6	125	40	12	–	55	12	6	0,5	6700	1204/12045...R (6)	1204/12045...L (6)
B	7/8**	41,0	R335.19 -160.07.40-8	160	40	–	50/50,5	70	16	8	1,5	5900	1204/12045...R (8)	1204/12045...L (8)
A	7/8**	44,5	335.19 -160.07.40-8	160	40	12	–	65	16	8	0,9	5900	1204/12045...R (8)	1204/12045...L (8)
A	7/8**	62,5	335.19 -200.07.50-9	200	50	12	–	69	18	9	1,3	5200	1204/12045...R (9)	1204/12045...L (9)
A	7/8**	87,5	-250.07.50-12	250	50	12	–	69	24	12	2,1	4700	1204/12045..R(12)	1204/12045..L(12)
B	10	22,0	R335.19 -100.10.27-5	100	27	–	50	48	10	5	0,8	6600	1205...R (5)	1205...L (5)
A	10	27,5	335.19 -100.10.27-5	100	27	12	–	41	10	5	0,4	6600	1205...R (5)	1205...L (5)
B	10	29,5	R335.19 -125.10.32-6	125	32	–	50	58	12	6	1,3	6000	1205...R (6)	1205...L (6)
B	10	23,5	-125.10.40-6	125	40	–	50	70	12	6	1,2	6000	1205...R (6)	1205...L (6)
A	10	32,0	335.19 -125.10.40-6	125	40	12	–	55	12	6	0,5	6000	1205...R (6)	1205...L (6)
B	10	41,0	R335.19 -160.10.40-8	160	40	–	50	70	16	8	1,8	5200	1205...R (8)	1205...L (8)
A	10	44,6	335.19 -160.10.40-8	160	40	12	–	65	16	8	0,9	5200	1205...R (8)	1205...L (8)
A	10	63,5	335.19 -200.10.50-9	200	50	12	–	69	18	9	1,8	4700	1205...R (9)	1205...L (9)
A	10	88,5	-250.10.50-12	250	50	12	–	69	24	12	3,0	4200	1205...R (12)	1205...L (12)

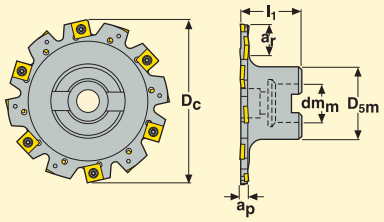
Please check availability in current price and stock-list.
* Effective number of teeth.
For shanks and dimensions, see Combimaster chapter.

** For a_p = 7 mm use insert SNHQ 1204..., l_1= 50 mm and 35 mm
For a_p =8 mm use insert SNHQ 12045..., l_1= 50,5 mm and 35,5 mm

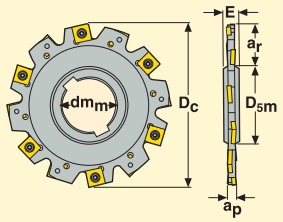
Cutter 335.19 – Insert 335.19/SNHQ

Width 12 - 14 – Full side

Type B for stub Arbor



Type A for milling Arbor



For insert selection and cutting data recommendations, see pages 291 - 292
For complete insert programme, see pages 542 - 546, 564
For spare parts, see page 260

Tool angles: γ_0 = -12°

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		() = No. of inserts Inserts Right hand SNHQ	Inserts Left hand SNHQ
B	12	22,0	R335.19 -100.12.27-5	100	27	–	50	48	10	5	0,9	6000	1207...R (5)	1207...L (5)
A	12	27,8	335.19 -100.12.27-5	100	27	12	–	41	10	5	0,4	6000	1207...R (5)	1207...L (5)
B	12	29,5	R335.19 -125.12.32-6	125	32	–	50	58	12	6	1,3	5300	1207...R (6)	1207...L (6)
B	12	23,5	-125.12.40-6	125	40	–	50	70	12	6	1,3	5300	1207...R (6)	1207...L (6)
A	12	33,8	335.19 -125.12.40-6	125	40	12	–	55	12	6	0,7	5300	1207...R (6)	1207...L (6)
B	12	41,0	R335.19 -160.12.40-8	160	40	–	50	70	16	8	1,8	4700	1207...R (8)	1207...L (8)
A	12	45,8	335.19 -160.12.40-8	160	40	12	–	65	16	8	1,3	4700	1207...R (8)	1207...L (8)
A	12	64,0	335.19 -200.12.50-9	200	50	12	–	69	18	9	2,1	4200	1207...R (9)	1207...L (9)
A	12	89,1	-250.12.50-11	250	50	12	–	69	22	11	3,6	3700	1207...R (11)	1207...L (11)
A	14	45,8	335.19 -160.14.40-5	160	40	14	–	65	15	5	1,6	6300	335.19-1205	335.19-1205
A	14	63,8	-200.14.50-6	200	50	14	–	69	18	6	2,5	4700	335.19-1205	335.19-1205

Please see availability in current price and stock-list.
* Effective number of teeth.

Inserts	a_p	R 0,2	R 0,4	R 0,8	R1,0	R 1,2	R 1,6	R 2,0	R 2,4	R 3,0	R 3,1	R 3,5	R 4,0	R 5,0	R 6,0
SNHQ 1102	4	x	x	x		x	x	■							
SNHQ 1103	5	x	x	x		x	x	x							
SNHQ 1203	6	x	x	x	x	x	x	x	x	■					
SNHQ 1204	7	x	x	x		x	x	x	x		o	■			
SNHQ 12045	8	x	x	x		x	x	x	x		o		■		
SNHQ 1205	10	x	x	x	x	x	x	x	x		o		o	■	
SNHQ 1207	12	x	x	x		x	x	x	x		o		o	o	■

x = SNHQ 4 edges
o = SNHQ 2 edges
■= Full radius possibillities

Locking screw/Key

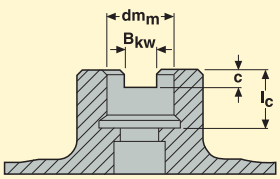
For a_p	Locking screw	Key*	Torque value Nm
4	C93504-T09P	T09P-3	2,0
5	C93505-T09P	T09P-3	2,0
6	C94005-T15P	T15P-3	3,5
7/8	C94006-T15P	T15P-3	3,5
10	C94008-T15P	T15P-3	3,5
12	C94010-T15P	T15P-3	3,5
14	C94008-T15P	T15P-3	3,5

*Dynamomentic keys, see page 590.

Arbor screw for type B

For cutter ∅	Arbor screw	dm_m
63 mm	TCEI0825	16
63 mm	MC6S 10x40	22
80 mm	MC6S 10x40	22
100 mm	MC6S 12x35	27
125 mm	220.17-694	32
125 mm	–	40
160 mm	–	40

Dimensions of mounting



For cutter	Dimensions in mm			
	dm_m	B_{kw}	c	l_c
R335.19-063	16	8,4	5,6	18
R335.19-063	22	10,4	6,3	20
R335.19-080	22	10,4	6,3	20
R335.19-100	27	12,4	7	22
R335.19-125	32	14,4	8	25
R335.19-125	40	16,4	9	30
R335.19-160	40	16,4	9	30

Please check availability in current price and stock-list.

LNK 05/06/08 inserts

LNK.05
For width 8-10

LNK.06
For width 10-12

LNK.08
For width 12-15

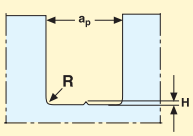
LNK.06 and LNK.08 have the same size, but LNK.06 have a reduced cutting length (6mm) to decrease cutting forces for a_p = 12-12 mm.
LNK.08 have a cutting length = 7,5 mm for width 12-15 mm.

Radius possibilities/Number of cutting edges

			Fixed pocket version: a_p =						Adjustable version: a_p range =			
		R	8	10	12	14	17	20	8	10	12	15
4 cutting edges												
	LNK.050404	0,4	x	x					x	x		
	LNK.050408	0,8	x	x					x	x		
	LNK.050416	1,6	x	x					x	x		
	LNK.050420	2,0	x	x					x	x		
	LNK.060504	0,4		x	x		x			x	x	
	LNK.060508	0,8		x	x		x			x	x	
	LNK.060516	1,6		x	x		x			x	x	
	LNK.080504	0,4		■	■	x	■	x		■	■	x
	LNK.080508	0,8		■	■	x	■	x		■	■	x
	LNK.080516	1,6		■	■	x	■	x		■	■	x
	LNK.080520	2,0		x	x	x	x	x		x	x	x
	LNK.080524	2,4		x	x	x	x	x		x	x	x
2 cutting edges												
	LNK.050424	2,4	x	x					x	x		
	LNK.060531	3,1		x	x		x			x	x	
	LNK.080531	3,1		■	■	x	■	x		■	■	x
1 cutting edge (L and R insert)												
	LNK.050431	3,1	x	x					x	x		
	LNK.060540	4,0		x	x		x			x	x	
	LNK.080540	4,0		■	■	x	■	x		■	■	x

x = First choice ■ = Alternative choice

Width and profile generated with LNK.06/08 radii R1,6/R2,0 and R2,4

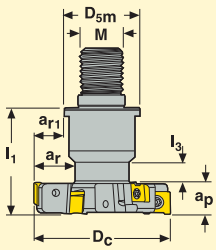


a_p (mm)	H (mm) Radius 1,6	H (mm) Radii 2 and 2,4
13,4	–	0
14	–	0,03
14,2	0	0,07
14,5	0,01	0,13
15	0,1	0,3

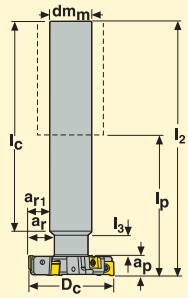
Cutter 335.18 – Insert LNK.

Width 8-10– Full side

For Combimaster (Type RE)



Cylindrical (Type Cyl)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 519.
For spare parts, see pages 286.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	M dm_m	l_1 E	l_2	l_p	l_3	l_c D_{5m}		z_c*	KG		Insert
Cyl	8	9,0	8,0	R335.18 -1632.0-08.1N	32	16	–	140	80	23	108	2	1	0,2	17300	LNK..05
Cyl	8	12,0	10,0	R335.18 -2040.0-08.2N	40	20	–	140	90	22	108	4	2	0,4	15400	LNK..05
Cyl	8	15,0	12,5	R335.18 -2550.0-08.3N	50	25	–	150	94	29,5	110	6	3	0,7	13800	LNK..05
RE	8	15,0	11,0	-1650.RE-08.3N	50	M16	35	–	–	12	28	6	3	0,3	13800	LNK..05
Cyl	8	15,5	15,5	R335.18 -3263.0-08.3N	63	32	–	170	110	–	162	6	3	1,2	12300	LNK..05

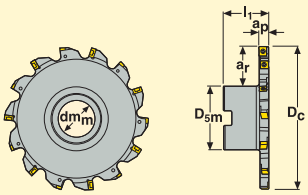
Please check availability in current price and stock-list
For shanks and dimensions, see pages 498 - 510.

*Effective number of teeth.

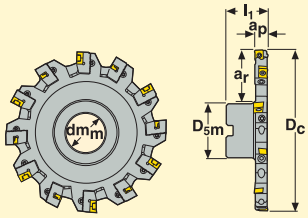
Cutter 335.18 – Insert LNK.

Width 8-10 – Full side

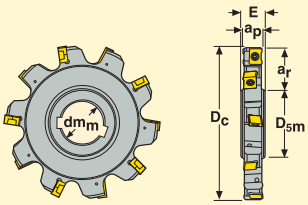
Type B for stub arbor-Fixed pockets (Type B FP)



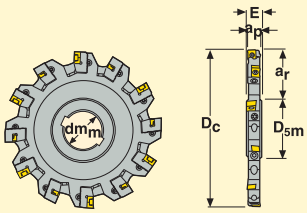
Type B for stub arbor-Adjustable (Type B adj)



Type A for milling arbor-Fixed pockets (Type A FP)



Type A for milling arbor-Adjustable (type A adj)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 519.
For spare parts see pages 286 - 287.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	M dm_m	l_1 E	l_3	l_c D_{5m}		z_c*	KG		Insert
B FP	8	15,0	11,5	R335.18 -063.08.22-3N	63	22	50	28,9	40	6	3	0,5	12300	LNK..05
B FP	8	23,5	20,0	R335.18 -080.08.22-4N	80	22	50	28,9	40	8	4	0,5	10900	LNK..05
B adj	8-10	19,2	–	-080.0810.27-3N	80	27	50	–	48	6	3	0,6	10900	LNK..05
A FP	8	19,2	–	335.18 -080.08.27-4N	80	27	15	–	41	8	4	0,3	10900	LNK..05
B FP	8	25,0	–	R335.18 -100.08.27-5N	100	27	50	–	48	10	5	0,8	9700	LNK..05
B adj	8-10	26,0	–	-100.0810.27-4N	100	27	50	–	48	8	4	0,9	9400	LNK..05
A adj	8-10	27,5	–	335.18 -100.0810.27-4N	100	27	15	–	41	8	4	0,5	9400	LNK..05
A FP	8	27,9	–	-100.08.27-5N	100	27	15	–	41	10	5	0,3	9700	LNK..05
B FP	8	34,0	–	R335.18 -125.08.32-6N	125	32	50	–	58	12	6	1,0	8400	LNK..05
B adj	8-10	33,0	–	-125.0810.32-5N	125	32	50	–	58	10	5	0,9	8400	LNK..05
A FP	8	33,4	–	335.18 -125.08.40-6N	125	40	15	–	55	12	6	0,7	8400	LNK..05
A adj	8-10	33,0	–	-125.0810.40-5N	125	40	15	–	55	10	5	0,5	8400	LNK..05
B adj	8-10	44,0	–	R335.18 -160.0810.40-6N	160	40	50	–	70	12	6	1,5	7500	LNK..05
A adj	8-10	50,5	–	335.18 -160.0810.40-6N	160	40	15	–	55	12	6	0,9	7500	LNK..05
B adj	8-10	53,0	–	R335.18 -200.0810XL.40-7N	200	40	50	–	90	14	7	2,6	6700	LNK..05
A adj	8-10	61,0	–	335.18- 200.0810XL.50-7N	200	50	15	–	69	14	7	1,4	6700	LNK..05
B adj	8-10	78,0	–	R335.18 -250.0810XL.40-9N	250	40	50	–	90	18	9	3,7	6000	LNK..05
A adj	8-10	86,0	–	335.18 -250.0810XL.50-9N	250	50	15	–	69	18	9	2,4	6000	LNK..05
A adj	8-10	118,5	–	335.18 -315.0810XL.50-12N	315	50	15	–	69	24	12	3,5	5300	LNK..05

Please check availability in current price and stock-list

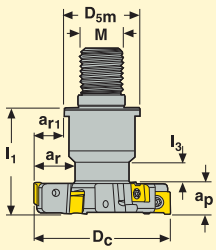
*Effective number of teeth.

Adjustable cutter may be ordered with the cutting width set to any value within its range, see page 288.
All adj. cutters are set to the minimum cutter width, +/- 0,02 mm.

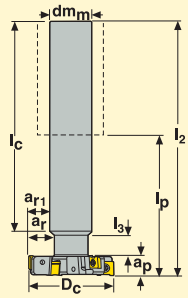
Cutter 335.18 – Insert LNK.

Width 10-12 – Full side

For Combimaster (Type RE)



Cylindrical (Type Cyl)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 520.
For spare parts, see pages 286.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	M dm_m	l_1 E	l_2	l_3	l_c D_{5m}	l_p		z_c*	KG		Insert
Cyl.	10	9,0	8,0	R335.18 -1632.0-10.1N-LN05	32	16	–	140	21	108	92	2	1	0,3	17300	LNK.05..
Cyl.	10	12,0	10,0	-2040.0-10.2N-LN05	40	20	–	140	20	108	90	4	2	0,4	15400	LNK.05..
Cyl.	10	12,0	10,0	-2040.0-10.2N	40	20	–	140	20	108	90	4	2	0,4	14900	LNK.06..
RE	10	15,0	11,0	R335.18 -1650.RE-10.3N	50	M16	35	–	10	28	–	6	3	0,3	13400	LNK.06..
Cyl.	10	15,0	12,5	-2550.0-10.3N	50	25	–	150	27,5	110	94	6	3	0,7	13400	LNK.06..
Cyl.	10	15,5	15,5	R335.18 -3263.0-10.3N	63	32	–	170	–	160	110	6	3	1,3	11900	LNK.06..
Cyl.	10	24,0	24,0	R335.18 -3280.0-10.4N	80	32	–	170	–	160	110	8	4	2,3	10500	LNK.06..

Please check availability in current price and stock-list
For shanks and dimensions, see pages 498 - 510.

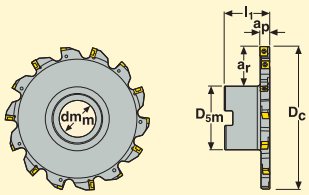
*Effective number of teeth.

Disc milling cutters 335.18 - 335.29

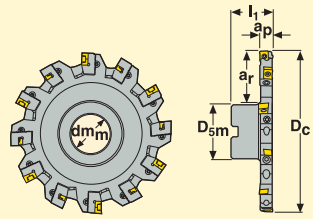
Cutter 335.18 – Insert LNK.

Width 10-12 – Full side

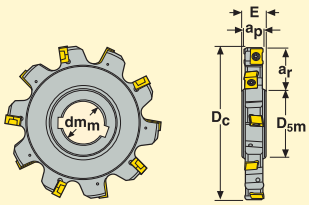
Type B for stub arbor-Fixed pockets (Type B FP)



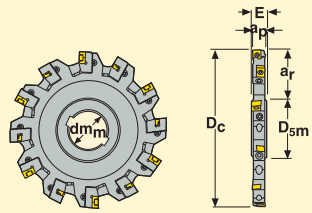
Type B for stub arbor-Adjustable (Type B adj)



Type A for milling arbor-Fixed pockets (Type A FP)



Type A for milling arbor-Adjustable (type A adj)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 520.
For spare parts see page 286.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	M dm_m	l_1 E	l_3	l_c D_{5m}		z_c*	KG		Insert
B FP	10	15,0	11,5	R335.18 -063.10.22-3N	63	22	50	27	40	6	3	0,5	11900	LNK.06..
B FP	10	23,5	20,0	R335.18 -080.10.22-4N	80	22	50	27	40	8	4	0,6	10500	LNK.06..
B adj.	10–12	15,0	–	-080.1012.27-3N	80	27	50	–	48	6	3	0,6	10500	LNK.06..
A FP	10	19,0	–	335.18 -080.10.27-4N	80	27	15	–	41	8	4	0,3	10500	LNK.06..
B FP	10	26,0	–	R335.18 -100.10.27-5N	100	27	50	–	48	10	5	0,9	9400	LNK.06..
B adj.	10–12	25,0	–	-100.1012.27-4N	100	27	50	–	48	8	4	0,8	9400	LNK.06..
A FP	10	28,0	–	335.18 -100.10.27-5N	100	27	15	–	41	10	5	0,5	9400	LNK.06..
A adj.	10–12	26,0	–	-100.1012.27-4N	100	27	15	–	41	8	4	0,4	9400	LNK.06..
B FP	10	34,0	–	R335.18 -125.10.32-6N	125	32	50	–	58	12	6	1,1	8400	LNK.06..
B adj.	10–12	33,0	–	-125.1012.32-5N	125	32	50	–	58	10	5	1,0	8400	LNK.06..
A FP	10	33,0	–	335.18 -125.10.40-6N	125	40	15	–	55	12	6	0,8	8400	LNK.06..
A adj.	10–12	32,0	–	-125.1012.40-5N	125	40	15	–	55	10	5	0,6	8400	LNK.06..
B adj.	10–12	44,0	–	R335.18 -160.1012.40-6N	160	40	50	–	70	12	6	1,6	7500	LNK.06..
A adj.	10–12	49,0	–	335.18 -160.1012.40-6N	160	40	15	–	55	12	6	1,1	7500	LNK.06..
B adj.	10-12	53,0	–	R335.18 -200.1012XL.40-7N	200	40	50	–	90	14	7	2,8	6700	LNK.06..
A adj.	10-12	61,0	–	335.18 -200.1012XL.50-7N	200	50	15	–	69	14	7	1,7	6700	LNK.06..
B adj.	10-12	78,0	–	R335.18 -250.1012XL.40-9N	250	40	50	–	90	18	9	4,3	6000	LNK.06..
A adj.	10-12	86,0	–	335.18 -250.1012XL.50-9N	250	50	15	–	69	18	9	2,9	6000	LNK.06..
A adj.	10-12	118,5	–	335.18 -315.1012XL.50-12N	315	50	15	–	69	24	12	4,3	5300	LNK.06..

Please check availability in current price and stock-list

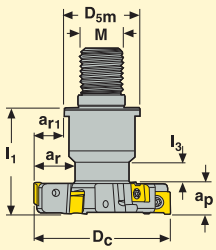
*Effective number of teeth.

Adjustable cutter may be ordered with the cutting width set to any value within its range, see page 288 for more info.
All adj. cutters are set to the minimum cutter width, +/- 0,02 mm.

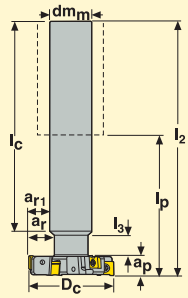
Cutter 335.18 – Insert LNK.

Width 12-15 – Full side

For Combimaster (Type RE)



Cylindrical (Type Cyl)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 520.
For spare parts, see pages 286.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	M dm_m	l_1 E	l_2	l_3	l_c D_{5m}	l_p		z_c*	KG		Insert
RE	12	15,0	11,0	R335.18 -1650.RE-12.3N	50	M16	35	–	8	28	–	6	3	0,3	13400	LNK.06..
Cyl.	12	15,0	12,5	-2550.0-12.3N	50	25	–	150	25,5	110	94	6	3	0,7	13400	LNK.06..
Cyl.	12	15,5	15,5	R335.18 -3263.0-12.3N	63	32	–	170	–	158	110	6	3	1,3	11900	LNK.06..
Cyl	12	24,0	24,0	R335.18 -3280.0-12.4N	80	32	–	170	–	158	110	8	4	1,1	10500	LNK.06..

Please check availability in current price and stock-list

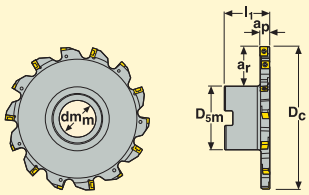
*Effective number of teeth.

For shanks and dimensions, see pages 498 - 510.

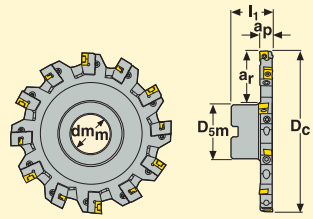
Cutter 335.18 – Insert LNK.

Width 12-15 – Full side

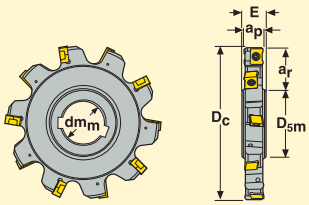
Type B for stub arbor-Fixed pockets (Type B FP)



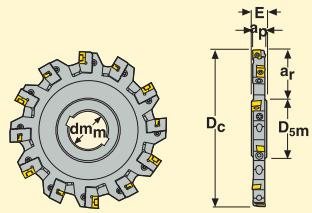
Type B for stub arbor-Adjustable (Type B adj)



Type A for milling arbor-Fixed pockets (Type A FP)



Type A for milling arbor-Adjustable (type A adj)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 520.
For spare parts see pages 286.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	M dm_m	l_1 E	l_3	l_c D_{5m}		z_c*	KG		Insert
B FP	12	15,0	11,5	R335.18 -063.12.22-3N	63	22	50	25	40	6	3	0,5	11900	LNK.06..
B FP	12	23,5	20,0	R335.18 -080.12.22-4N	80	22	50	24,9	40	8	4	0,6	10500	LNK.06..
B adj.	12-15	15,0	–	-080.1215.27-3N	80	27	50	–	48	6	3	0,6	10500	LNK.08..
A FP	12	19,0	–	335.18 -080.12.27-4N	80	27	15	–	41	8	4	0,4	10500	LNK.06..
B FP	12	26,0	–	R335.18 -100.12.27-5N	100	27	50	–	48	10	5	1,0	9400	LNK.06..
B adj.	12-15	25,0	–	-100.1215.27-4N	100	27	50	–	48	8	4	0,8	9400	LNK.08..
A FP	12	28,0	–	335.18 -100.12.27-5N	100	27	15	–	41	10	5	0,5	9400	LNK.06..
A adj.	12-15	27,0	–	-100.1215.27-4N	100	27	15	–	41	8	4	0,4	9400	LNK.08..
B FP	12	33,0	–	R335.18 -125.12.32-6N	125	32	50	–	58	12	6	1,1	8400	LNK.06..
B adj.	12-15	33,5	–	-125.1215.32-5N	125	32	50	–	58	10	5	1,1	8400	LNK.08..
A FP	12	33,0	–	335.18 -125.12.40-6N	125	40	15	–	55	12	6	0,8	8400	LNK.06..
A adj.	12-15	33,0	–	-125.1215.40-5N	125	40	15	–	55	10	5	0,7	8400	LNK.08..
B adj	12-15	44,0	–	R335.18 -160.1215.40-6N	160	40	50	–	70	12	6	1,8	7500	LNK.08..
A adj.	12-15	49,0	–	335.18 -160.1215.40-6N	160	40	15	–	55	12	6	1,2	7500	LNK.08..
B adj	12-15	53,0	–	R335.18 -200.1215XL.40-7N	200	40	50	–	90	14	7	3,1	6700	LNK.08..
A adj.	12-15	61,0	–	335.18 -200.1215XL.50-7N	200	50	15	–	69	14	7	2,0	6700	LNK.08..
B adj.	12-15	78,0		R335.18 -250.1215XL.40-9N	250	40	50	–	90	18	9	4,9	6000	LNK.08..
A adj.	12-15	86,0	–	335.18 -250.1215XL.50-9N	250	50	15	–	69	18	9	3,4	6000	LNK.08..
A adj.	12-15	118,5	–	335.18 -315.1215XL.50-12N	315	50	15	–	69	24	12	5,2	5300	LNK.08..

Please check availability in current price and stock-list

*Effective number of teeth.

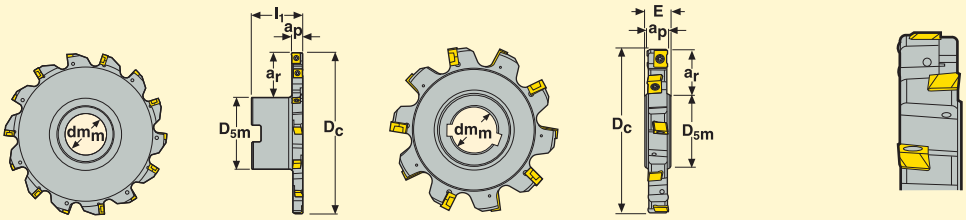
A cutter may be ordered with the cutting width set to any value within its range, see page 288 for more info.

All adj. cutters are set to the minimum cutter width, +/- 0,02 mm.

Cutter 335.18 – Insert LNK

Width 14-20 – Full side

Type B for stub arbor-Fixed pockets (Type B FP) **Type A for milling arbor-Fixed pockets (Type A FP)** **a_p 17, 20 mm**



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 520.
For spare parts, see pages 286.

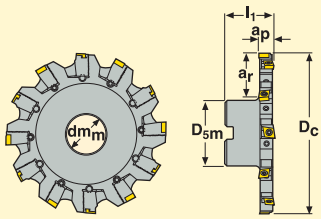
Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	dm_m	E	l_1	l_3	D_{5m}		z_c*	KG		Insert1
B FP	14	15,0	11,5	R335.18 -063.14.22-3N	63	22	–	50	23	40	6	3	0,6	11900	LNK.08..
B FP	14	23,5	20,0	-080.14.22-4N	80	22	–	50	23	40	8	4	0,7	10500	LNK.08..
B FP	14	26,0	–	-100.14.27-5N	100	27	–	50	–	48	10	5	1,0	9400	LNK.08..
B FP	14	34,0	–	-125.14.32-6N	125	32	–	50	–	58	12	6	1,3	8400	LNK.08..
A FP	14	34,0	–	335.18 -125.14.40-6N	125	40	15	–	–	55	12	6	0,9	8400	LNK.08..
A FP	14	51,0	–	-160.14.40-7N	160	40	15	–	–	55	14	7	1,6	7500	LNK.08..
B FP	17	24,0	20,0	R335.18 -080.17.22-3N	80	22	–	50	20	40	9	3	0,7	10500	LNK.06..
B FP	17	26,0	–	-100.17.27-3N	100	27	–	50	–	48	9	3	1,1	9400	LNK.06..
B FP	17	33,5	–	-125.17.32-4N	125	32	–	50	–	58	12	4	1,5	8400	LNK.06..
B FP	17	45,0	–	-160.17.40-5N	160	40	–	50	–	70	15	5	2,5	7500	LNK.06..
A FP	17	33,0	–	335.18 -125.17.40-4N	125	40	20	–	–	55	12	4	1,1	8400	LNK.06..
A FP	17	50,7	–	-160.17.40-5N	160	40	20	–	–	55	15	5	2,2	7500	LNK.06..
B FP	20	24,0	20,0	R335.18 -080.20.22-4N	80	22	–	50	17	40	12	4	0,7	10500	LNK.08..
B FP	20	26,0	–	-100.20.27-5N	100	27	–	50	–	48	15	5	1,3	9400	LNK.08..
B FP	20	33,5	–	-125.20.32-6N	125	32	–	50	–	58	18	6	1,7	8400	LNK.08..
B FP	20	45,0	–	-160.20.40-7N	160	40	–	50	–	70	21	7	2,8	7500	LNK.08..
A FP	20	34,0	–	335.18 -125.20.40-6N	125	40	20	–	–	55	18	6	1,4	8400	LNK.08..
A FP	20	51,2	–	-160.20.40-7N	160	40	20	–	–	55	21	7	2,5	7500	LNK.08..

Please check availability in current price and stock-list.
*Effective number of teeth.

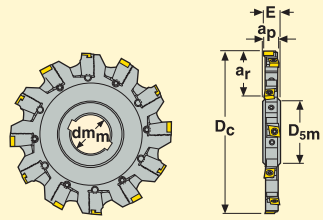
Cutter 335.18 – Insert 335.18/AC..1506/AP..1604

Width 14-24,5 – Full side

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 304, 307.
For complete insert programme, see pages 514, 563.
For spare parts, see pages 287.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Inserts
B	14–17	13	R335.18 -080.1416.27-3N**	80	27	–	50	48	6	3	0,7	9800	335.18-1005
B	14–17	24	-100.1416.27-4N**	100	27	–	50	48	8	4	0,9	8800	335.18-1005
B	14–18,5	25	R335.18 -125.1418.40-4N	125	40	–	50	70	8	4	1,2	7800	335.18-1005
A	14–18,5	34	335.18 -125.1418.40-4N	125	40	18	–	55	8	4	0,7	7800	335.18-1005
B	14–18,5	44	R335.18 -160.1418.40-6N	160	40	–	50	70	12	6	2,8	6900	335.18-1005
A	14–18,5	50	335.18 -160.1418.40-6N	160	40	18	–	56	12	6	1,2	6900	335.18-1005
B	14–18,5	52	R335.18 -200.1418.40-7N	200	40	–	50	90	14	7	3,3	6100	335.18-1005
A	14–18,5	60	335.18 -200.1418.50-7N	200	50	18	–	69	14	7	2,2	6100	335.18-1005
B	14–18,5	58	R335.18 -250.1418.60-9N	250	60	–	50	130	18	9	6,5	5500	335.18-1005
A	14–18,5	85	335.18 -250.1418.50-9N	250	50	18	–	69	18	9	3,7	5500	335.18-1005
B	14–18,5	90	R335.18 -315.1418.60-12N	315	60	–	50	130	24	12	8,3	4900	335.18-1005
A	14–18,5	110	335.18 -315.1418.50-12N	315	50	18	–	69	24	12	7,4	4900	335.18-1005
B	18,5–21	13	R335.18 -080.1820.27-3N**	80	27	–	55	48	6	3	0,7	8400	335.18-1305
B	18,5–21	24	-100.1820.27-4N**	100	27	–	50	48	8	4	2,1	7600	335.18-1305
B	18,5–24,3	44	R335.18 -160.1924.40-5N	160	40	–	50	70	10	5	3,1	5200	335.18-1305
A	18,5–24,3	50	335.18 -160.1924.40-5N	160	40	24	–	55	10	5	1,7	5200	335.18-1305
B	18,5–24,3	52	R335.18 -200.1924.40-6N	200	40	–	50	90	12	6	4,6	4700	335.18-1305
A	18,5–24,3	60	335.18 -200.1924.50-6N	200	50	24	–	69	12	6	3,7	4700	335.18-1305
B	18,5–24,3	58	R335.18 -250.1924.60-8N	250	60	–	50	130	16	8	8,2	4200	335.18-1305
A	18,5–24,3	85	335.18 -250.1924.50-8N	250	50	24	–	69	16	8	6,1	4200	335.18-1305
B	18,5–24,3	90	R335.18 -315.1924.60-10N	315	60	–	50	130	20	10	11,4	3700	335.18-1305
A	18,5–24,3	110	335.18 -315.1924.50-10N	315	50	24	–	69	20	10	9,6	3700	335.18-1305
B	20-24,5	45	R335.18 -160.1924.40-5N-15H	162	40	–	51,5	70	10	5	3,1	5200	AC..1506R/L
A	20–24,5	51	335.18 -160.1924.40-5N-15H	162	40	24	–	55	10	5	1,7	5200	AC..1506R/L
B	20-24,5	54	R335.18 -200.1924.40-6N-15H	202	40	–	51,5	90	12	6	4,6	4700	AC..1506R/L
A	20-24,5	61	335.18 -200.1924.50-6N-15H	202	50	24	–	69	12	6	3,7	4700	AC..1506R/L
B	20–24,5	58	R335.18 -250.1924.60-8N-15H	252	60	–	51,5	130	16	8	8,2	4200	AC..1506R/L
A	20–24,5	86	335.18 -250.1924.50-8N-15H	252	50	24	–	69	16	8	6,1	4200	AC..1506R/L
B	20–24,5	91	R335.18 -315.1924.60-10N-15H	317	60	–	51,5	130	20	10	11,4	3700	AC..1506R/L
A	20–24,5	111	335.18 -315.1924.50-10N-15H	317	50	24	–	69	20	10	9,5	3700	AC..1506R/L

Please check availability in current price and stock-list.

The cutter is set to the minimum cutter width 14/18,5/20/22 mm +/-0,02 mm

*Effective number of teeth

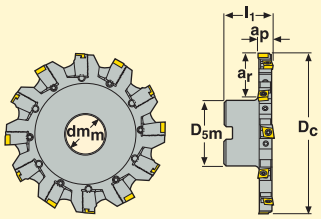
**Cutters ∅ 80 and 100 mm have 3 and 4 fixed right hand pockets respectively.

A cutter may be ordered with the cutting width set to any value within its range, see page 288 for more information.

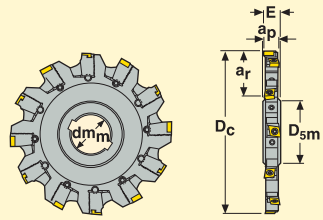
Cutter 335.18 – Insert 335.18/AC..1506/AP..1604

Width 22-31 – Full side

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 304 - 305, 307.
For complete insert programme, see pages 514, 515 - 516, 563.
For spare parts, see page 287.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l1	D_{5m}		z_c*	KG		Insert
B	22–25	44	R335.18 -160.1924.40-5N-16C	160	40	–	51	70	10	5	3,1	5200	AP..1604R/L
A	22–25	50	335.18 -160.1924.40-5N-16C	160	40	24	–	55	10	5	1,7	5200	AP..1604R/L
B	22–25	52	R335.18 -200.1924.40-6N-16C	200	40	–	51	90	12	6	4,6	4700	AP..1604R/L
A	22–25	60	335.18 -200.1924.50-6N-16C	200	50	24	–	69	12	6	3,7	4700	AP..1604R/L
B	22–25	58	R335.18 -250.1924.60-8N-16C	250	60	–	51	130	16	8	8,2	4200	AP..1604R/L
A	22–25	85	335.18 -250.1924.50-8N-16C	250	50	24	–	69	16	8	6,1	4200	AP..1604R/L
B	22–25	90	R335.18 -315.1924.60-10N-16C	315	60	–	51	130	20	10	12,1	3700	AP..1604R/L
A	22–25	110	335.18 -315.1924.50-10N-16C	315	50	24	–	69	20	10	9,6	3700	AP..1604R/L
B	24,3–30,5	34	R335.18 -200.2530.60-6N	200	60	–	50	130	12	6	5,9	4000	335.18-1606
A	24,3–30,5	60	335.18 -200.2530.50-6N	200	50	30	–	69	12	6	4,8	4000	335.18-1606
B	24,3–30,5	58	R335.18 -250.2530.60-8N	250	60	–	50	130	16	8	8,7	3600	335.18-1606
A	24,3–30,5	85	335.18 -250.2530.50-8N	250	50	30	–	69	16	8	8,0	3600	335.18-1606
B	24,3–30,5	90	R335.18 -315.2530.60-10N	315	60	–	50	130	20	10	12,1	3200	335.18-1606
A	24,3–30,5	110	335.18 -315.2530.60-10N	315	60	30	–	84	20	10	12,7	3200	335.18-1606
B	24,5–29,2	35	R335.18 -200.2530.60-6N-15H	202	60	–	51	130	12	6	5,9	4000	AC..1506R/L
A	24,5–29,2	61	335.18 -200.2530.50-6N-15H	202	50	30	–	71	12	6	4,8	4000	AC..1506R/L
B	24,5–29,2	59	R335.18 -250.2530.60-8N-15H	252	60	–	51	130	16	8	8,7	3600	AC..1506R/L
A	24,5–29,2	86	335.18- 250.2530.50-8N-15H	252	50	30	–	71	16	8	8,0	3600	AC..1506R/L
B	24,5–29,2	91	R335.18 -315.2530.60-10N-15H	317	60	–	51	130	20	10	12,1	3200	AC..1506R/L
A	24,5–29,2	111	335.18 -315.2530.60-10N-15H	317	60	30	–	85	20	10	12,7	3200	AC..1506R/L
B	25–31	34	R335.18 -200.2530.60-6N-16C	200	60	–	51	130	12	6	5,9	4000	AP..1604R/L
A	25–31	80	335.18 -200.2530.50-6N-16C	200	50	30	–	71	12	6	4,8	4000	AP..1604R/L
B	25–31	58	R335.18 -250.2530.60-8N-16C	250	60	–	51	130	16	8	8,7	3600	AP..1604R/L
A	25–31	85	335.18 -250.2530.50-8N-16C	250	50	30	–	71	16	8	8,0	3600	AP..1604R/L
B	25–31	90	R335.18 -315.2530.60-10N-16C	315	60	–	51	130	20	10	12,1	3200	AP..1604R/L
A	25–31	110	335.18 -315.2530.60-10N-16C	315	60	30	–	84	20	10	12,7	3200	AP..1604R/L

Please check availability in current price and stock-list.

The cutter is set to the minimum cutter width 22/24,3/24,5/25 mm +/-0,02 mm

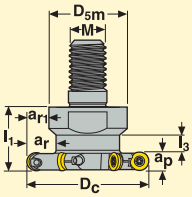
*Effective number of teeth

A cutter may be ordered with the cutting width set to any value within its range, see page 288 for more information.

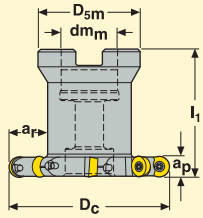
Cutters 335.29 with round inserts 05/06/07

Width 5-7 – Full radius profiling

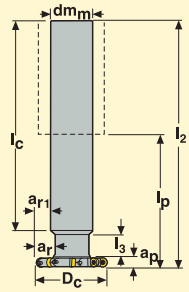
Combimaster (Type RE)



Type B for stub arbor (Type B FP)



Cylindrical



For insert selection and cutting data recommendations, see pages 294 - 296.
For complete insert programme, see page 529.
For spare parts, see pages 286.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	dm_m M	l_1	l_2	l_3	l_c D_{5m}	l_p		z_c	KG		Insert
Cyl	5	6,9	6,5	R335.29 -1225.0-05.4N-R25A	25	12	–	110	10	94	65	4	4	0,1	44800	RD..0501
Cyl	5	8,4	8	-1632.0-05.5N-R25A	32	16	–	130	10	114	82	5	5	0,3	39600	RD..0501
Cyl	5	10,4	10	-2040.0-05.6N-R25A	40	20	–	140	10	124	90	6	6	0,5	35400	RD..0501
Cyl	5	12,9	12,5	-2550.0-05.8N-R25A	50	25	–	150	10	134	94	8	8	0,7	31700	RD..0501
Cyl	6	6,9	6,5	R335.29 -1225.0-06.4N-R3A	25	12	–	110	10	93	65	4	4	0,1	20600	RD..06T1
Cyl	6	8,4	8	-1632.0-06.5N-R3A	32	16	–	130	10	113	82	5	5	0,3	18700	RD..06T1
RE	6	10	8,5	-1240.RE-06.6N-R3A	40	M12	28	–	10	23	–	6	6	0,2	17600	RD..06T1
Cyl	6	10,4	10	-2040.0-06.6N-R3A	40	20	–	140	10	123	90	6	6	0,2	16300	RD..06T1
RE	6	12,5	10	-1650.RE-06.8N-R3A	50	M16	28	–	9	30	–	8	8	0,3	25300	RD..06T1
Cyl	6	12,9	12,5	-2550.0-06.8N-R3A	50	25	–	150	10	133	94	8	8	0,7	17300	RD..06T1
B	6	15	11,5	-063.06.22-10N-R3A	63	22	50	–	30,7	40	–	10	10	0,4	13900	RD..06T1
Cyl	7	8,4	8	R335.29 -1632.0-07.5N-R35A	32	16	–	130	10	112	82	5	5	0,3	31600	RD..0702
RE	7	10	8,5	-1240.RE-07.6N-R35A	40	M12	28	–	9	23	–	6	6	0,2	28200	RD..0702
RE	7	12,5	10	-1650.RE-07.7N-R35A	50	M16	28	–	8	30	–	7	7	0,3	25300	RD..0702
B	7	15	11,5	-063.07.22-10N-R35A	63	22	50	–	29,7	40	–	10	10	0,4	22500	RD..0702

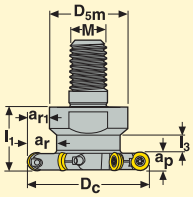
Please check availability in current price and stock-list

Disc milling cutters 335.18 - 335.29

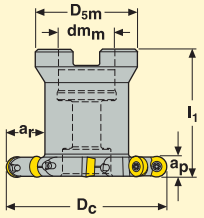
Cutters 335.29 and 335.18 with round inserts 08

Width 8-10 – Full radius profiling

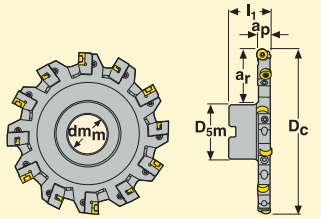
Combimaster (Type RE)



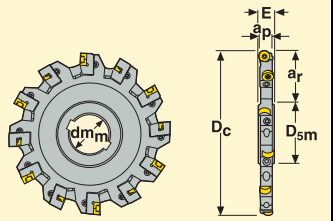
Type B for stub arbor (Type B FP)



Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)

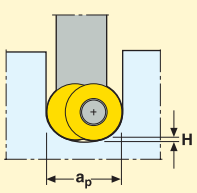


For insert selection and cutting data recommendations, see page 297.
For complete insert programme, see page 529.
For spare parts, see pages 286.

For cylindrical type, see previous page

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	dm_m M	l_1 E	l_2	l_3	l_c D_{5m}	l_p		z_c	KG		Insert
Cyl	8	8,4	8	R335.29 -1632.0-08.4N-R4A	32	16	–	130	10	111	82	4	4	0,2	23300	RD..08..
RE	8	10	8,5	-1240.RE-08.5N-R4A	40	M12	28	–	8	23	–	5	5	0,2	18800	RD..08..
Cyl	8	10,4	10	-2040.0-08.5N-R4A	40	20	–	140	10	121	90	5	5	0,4	18800	RD..08..
RE	8	12,5	10	-1650.RE-08.6N-R4A	50	M16	28	–	7	30	–	6	6	0,3	17300	RD..08..
Cyl	8	12,9	12,5	-2550.0-08.6N-R4A	50	25	–	150	10	131	94	6	6	0,7	17300	RD..08..
B	8	15	11,5	-063.08.22-8N-R4A	63	22	50	–	28,7	40	–	8	8	0,4	15600	RD..08..
B	8	20	16	-080.08.27-10N-R4A	80	27	50	–	26,8	48	–	10	10	0,6	13700	RD..08..
B adj	8–10	15	–	R335.18 -080.0810.27-6N-R4	80	27	50	–	–	48	–	6	3	0,6	10500	RD..08..
A adj	8–10	28,5	–	335.18 -100.0810.27-8N-R4	102	27	15	–	–	41	–	8	4	0,5	9400	RD..08..
B adj	8–10	27	–	R335.18 -100.0810.27-8N-R4	102	27	48	–	–	48	–	8	4	0,9	9400	RD..08..
A adj	8–10	34	–	335.18 -125.0810.40-10N-R4	127	40	15	–	–	55	–	10	5	0,7	8400	RD..08..
B adj	8–10	34	–	R335.18 -125.0810.32-10N-R4	127	32	50	–	–	58	–	10	5	1,1	8400	RD..08..
A adj	8–10	51,5	–	335.18 -160.0810.40-12N-R4	162	40	15	–	–	55	–	12	6	0,9	7500	RD..08..
B adj	8–10	45	–	R335.18 -160.0810.40-12N-R4	162	40	70	–	–	70	–	12	6	1,5	7500	RD..08..
A adj	8–10	61	–	335.18 -200.0810XL.50-14N-R4	200	50	15	–	–	69	–	14	7	1,4	6700	RD..08..
B adj	8–10	53	–	R335.18 -200.0810XL.40-14N-R4	200	40	50	–	–	90	–	14	7	2,6	6700	RD..08..
A adj	8–10	86	–	335.18 -250.0810XL.50-18N-R4	250	50	15	–	–	69	–	18	9	2,4	6000	RD..08..
B adj	8–10	78	–	R335.18 -250.0810XL.40-18N-R4	250	40	50	–	–	90	–	18	9	3,7	6000	RD..08..
A adj	8–10	118,5	–	335.18 -315.0810XL.50-24N-R4	315	50	15	–	–	69	–	24	12	3,5	5300	RD..08..

Profile machined round inserts



a_p min

a_p max

Round 8	
a_p mm	Profile height H mm
8,03	0
8,50	0
9,00	0,03
9,50	0,07
10,00	0,13
Recom. min setting width is 8,03 mm	

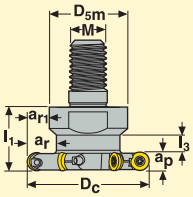
Please check availability in current price and stock-list

Disc milling cutters 335.18 - 335.29

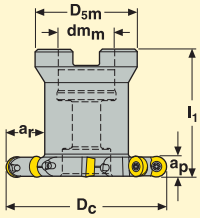
Cutters 335.29 and 335.18 with round inserts 10

Width 10-12 – Full radius profiling

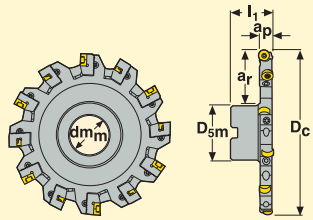
Combimaster (Type RE)



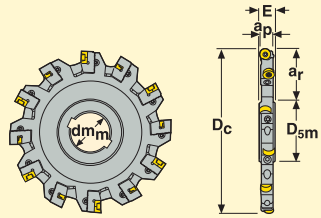
Type B for stub arbor (Type B FP)



Type B for stub arbor (Type B adj.)



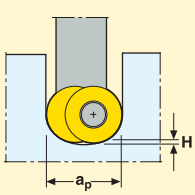
Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 298 - 299.
For complete insert programme, see page 529.
For spare parts, see pages 286.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	dm_m M	l_1 E	l_3	D_{5m}		z_c	KG		Insert
RE	10	12,5	10	R335.29 -1650.RE-10.6N-R5A	50	M16	28	4,3	30	6	6	0,3	15800	RD..10T3
B	10	15	11,5	-063.10.22-6N-R5A	63	22	50	26,7	40	6	6	0,5	13500	RD..10T3
B	10	20	16	-080.10.27-8N-R5A	80	27	50	24,7	48	8	8	0,6	12000	RD..10T3
B adj	10–12	17	–	R335.18 -080.1012.27-3N-R5	82	27	50	–	48	6	3	0,6	10500	RD..10T3
B adj	10–12	26	–	R335.18 -100.1012.27-4N-R5	102	27	50	–	48	8	4	0,8	9400	RD..10T3
A adj	10–12	27	–	335.18 -100.1012.27-4N-R5	102	27	15	–	41	8	4	0,4	9400	RD..10T3
B adj	10–12	34	–	R335.18 -125.1012.32-5N-R5	127	32	50	–	58	10	5	1,0	8400	RD..10T3
A adj	10–12	33	–	335.18 -125.1012.40-5N-R5	127	40	15	–	55	10	5	0,6	8400	RD..10T3
B adj	10–12	45	–	R335.18 -160.1012.40-6N-R5	162	40	50	–	70	12	6	1,6	7500	RD..10T3
A adj	10–12	50	–	335.18 -160.1012.40-6N-R5	162	40	15	–	55	12	6	1,1	7500	RD..10T3
B adj	10–12	53	–	R335.18 -200.1012XL.40-7N-R5	200	40	50	–	90	14	7	2,8	6700	RD..10T3
A adj	10–12	61	–	335.18 -200.1012XL.50-7N-R5	200	50	15	–	69	14	7	1,7	6700	RD..10T3
B adj	10–12	78	–	R335.18 -250.1012XL.40-9N-R5	250	40	50	–	90	18	9	4,3	6000	RD..10T3
A adj	10–12	86	–	335.18 -250.1012XL.50-9N-R5	250	50	15	–	69	18	9	3,1	6000	RD..10T3
A adj	10–12	118,5	–	335.18 -315.1012XL.50-12N-R5	315	50	15	–	69	24	12	4,3	5300	RD..10T3

Profile machined with round inserts



a_p min

a_p max

Round 10	
a_p mm	Profile height H mm
10,03	0
10,50	0
11,00	0,025
11,50	0,060
12,00	0,100
Recom. min setting width is 10,03 mm	

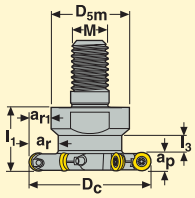
Please check availability in current price and stock-list

Disc milling cutters 335.18 - 335.29

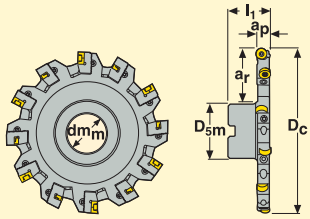
Cutter 335.29 and 335.18 with round inserts 12/16

Width 12-16 – Full radius profiling

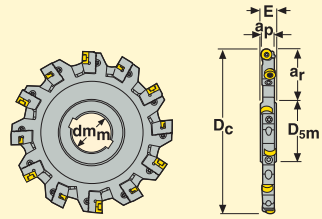
Combimaster (Type RE)



Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)

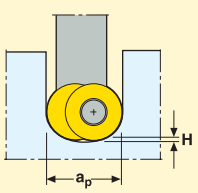


For insert selection and cutting data recommendations, see pages 300 - 303.

For complete insert programme, see pages 531 - 532.
For spare parts, see pages 286 - 287.

Type	a_p	a_r	a_{r1}	Part No.	Dimension in mm D_c	dm_m M	E	l_1	l_3	D_{5m}		z_c	KG		Insert
RE	12	12,5	10	R335.29 -1650.RE-12.4N-R6A	50	M16	–	28	4,3	30	4	4	0,2	11200	RP..1204
B	12	15	11,5	-063.12.22-6N-R6A	63	22	–	50	24,6	40	6	6	0,4	10200	RP..1204
B	12	20	16	-080.12.27-8N-R6A	80	27	–	50	22,7	48	8	8	0,6	10000	RP..1204
B adj.	12–15	16	–	R335.18 -080.1215.27-3N-R6	82	27	–	50	–	48	6	3	0,6	10000	RP..1204
B adj	12–15	26	–	-100.1215.27-4N-R6	102	27	–	50	–	48	8	4	0,8	9400	RP..1204
A adj	12–15	28	–	335.18 -100.1215.27-4N-R6	102	27	15	–	–	41	8	4	0,4	9400	RP..1204
B adj	12–15	34	–	R335.18 -125.1215.32-5N-R6	127	32	–	50	–	58	10	5	1,1	8400	RP..1204
A adj	12–15	34	–	335.18 -125.1215.40-5N-R6	127	40	15	–	–	55	10	5	0,7	8400	RP..1204
B adj	12–15	46	–	R335.18 -160.1215.40-6N-R6	162	40	–	50	–	70	12	6	1,8	7500	RP..1204
A adj	12–15	50	–	335.18 -160.1215.40-6N-R6	162	40	15	–	–	55	12	6	1,2	7500	RP..1204
B adj	12–15	53	–	R335.18 -200.1215XL.40-7N-R6	200	40	–	50	–	90	14	7	3,1	6700	RP..1204
A adj	12–15	61	–	335.18 -200.1215XL.50-7N-R6	200	50	15	–	–	69	14	7	2,0	6700	RP..1204
B adj	12–15	78	–	R335.18 -250.1215XL.40-9N-R6	250	40	–	50	–	90	18	9	4,9	6000	RP..1204
A adj	12–15	86	–	335.18 -250.1215XL.50-9N-R6	250	50	15	–	–	69	18	9	3,4	6000	RP..1204
A adj	12–15	118,5	–	-315.1215XL.50-12N-R6	315	50	15	–	–	69	24	12	4,3	5300	RP..1204
B adj	16–18	27,5	–	R335.18 -125.1418.40-4N-R8	130	40	–	51	–	70	8	4	1,3	7800	RP..1605
A adj	16–18	36,5	–	335.18- 125.1418.40-4N-R8	130	40	18	–	–	55	8	4	0,7	7800	RP..1605
B adj	16–18	46,5	–	R335.18 -160.1418.40-6N-R8	165	40	–	51	–	70	12	6	2,8	6900	RP..1605
A adj	16–18	52,5	–	335.18 -160.1418.40-6N-R8	165	40	18	–	–	55	12	6	1,6	6900	RP..1605
B adj	16–18	54,5	–	R335.18 -200.1418.40-7N-R8	205	40	–	51	–	90	14	7	3,3	6100	RP..1605
A adj	16–18	62,5	–	335.18 -200.1418.50-7N-R8	205	50	18	–	–	69	14	7	2,1	6100	RP..1605
B adj	16–18	60,5	–	R335.18 -250.1418.60-9N-R8	255	60	–	51	–	130	18	9	6,5	5500	RP..1605
A adj	16–18	87,5	–	335.18 -250.1418.50-9N-R8	255	50	18	–	–	69	18	9	3,7	5500	RP..1605
B adj	16–18	92,5	–	R335.18 -315.1418.60-12N-R8	320	60	–	51	–	130	24	12	8,3	4900	RP..1605
A adj	16–18	112,5	–	335.18- 315.1418.50-12N-R8	320	50	18	–	–	69	24	12	7,4	4900	RP..1605

Profile machined with round inserts



a_p min

a_p max

Round 12 a_p mm	Profile height H mm
12,03	0
12,50	0,01
13,00	0,02
14,00	0,08
15,00	0,19
Recom. min setting width is 12,03 mm	

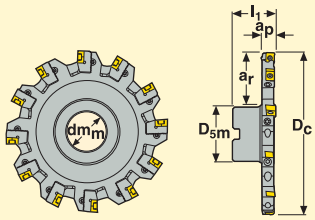
Round 16 a_p mm	Profile height H mm
16,03	0
16,50	0
17,00	0,02
18,00	0,06
18,50	0,10
Recom. min setting width is 16,03 mm	

Please check availability in current price and stock-list

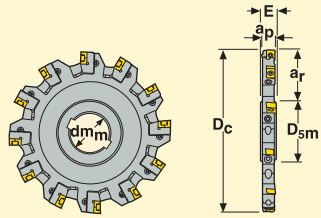
Cutter 335.18 – Insert LNK

Width max 7,5 mm – Half side – Right hand

Type B for stub arbor (Type B adj)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see pages 519 - 520.
For spare parts, see pages 286.

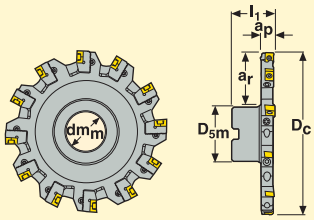
Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Inserts
B	5	15,0	R335.18 -080.0810.27-6R	80	27	–	50	48	6	6	0,6	10500	LNK.05..
B	5	26,0	-100.0810.27-8R	100	27	–	50	48	8	8	0,9	9400	LNK.05
A	5	27,5	335.18 -100.0810.27-8R	100	27	15	–	41	8	8	0,5	9400	LNK.05
B	5	33,0	R335.18 -125.0810.32-10R	125	32	–	50	58	10	10	0,9	8400	LNK.05
A	5	33,0	335.18 -125.0810.40-10R	125	40	15	–	55	10	10	0,5	8400	LNK.05
B	5	44,0	R335.18 -160.0810.40-12R	160	40	–	50	70	12	12	1,5	7500	LNK.05
A	5	50,5	335.18 -160.0810.40-12R	160	40	15	–	55	12	12	0,9	7500	LNK.05
B	5	53,0	R335.18 -200.0810XL.40-14R	200	40	–	50	90	14	14	2,6	6700	LNK.05..
A	5	61,0	335.18 -200.0810XL.50-14R	200	50	15	–	69	14	14	1,4	6700	LNK.05..
A	5	86,0	-250.0810XL.50-18R	250	50	15	–	69	18	18	2,4	6000	LNK.05..
B	5	78,0	R335.18 -250.0810XL.40-18R	250	40	–	50	90	18	18	3,7	6000	LNK.05..
A	5	118,5	335.18 -315.0810XL.50-24R	315	50	15	–	69	24	24	3,5	5300	LNK.05..
B	6	15,0	R335.18 -080.1012.27-6R	80	27	–	50	48	6	6	0,6	10500	LNK.06..
B	6	25,0	-100.1012.27-8R	100	27	–	50	48	8	8	0,8	9400	LNK.06..
A	6	26,0	335.18 -100.1012.27-8R	100	27	15	–	41	8	8	0,4	9400	LNK.06..
B	6	33,0	R335.18 -125.1012.32-10R	125	32	–	50	58	10	10	1,0	8400	LNK.06..
A	6	32,0	335.18 -125.1012.40-10R	125	40	15	–	55	10	10	0,6	8400	LNK.06..
B	6	44,0	R335.18 -160.1012.40-12R	160	40	–	50	70	12	12	1,6	7500	LNK.06..
A	6	49,0	335.18 -160.1012.40-12R	160	40	15	–	55	12	12	1,1	7500	LNK.06..
B	6	53,0	R335.18 -200.1012XL.40-14R	200	40	–	50	90	14	14	2,8	6700	LNK.06..
A	6	61,0	335.18 -200.1012XL.50-14R	200	50	15	–	69	14	14	1,7	6700	LNK.06..
B	6	78,0	R335.18 -250.1012XL.40-18R	250	40	–	50	90	18	18	4,3	6000	LNK.06..
A	6	86,0	335.18 -250.1012XL.50-18R	250	50	15	–	69	18	18	2,9	6000	LNK.06..
A	6	118,5	-315.1012XL.50-24R	315	50	15	–	69	24	24	4,3	5300	LNK.06..

Please check availability in current price and stock-list
*Effective number of teeth

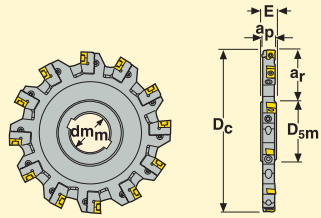
Cutter 335.18 – Insert LNK

Width max 7,5 mm – Half side – Right hand

Type B for stub arbor (Type B adj)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 520.
For spare parts, see pages 286.

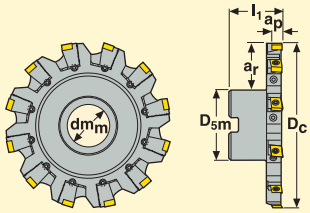
Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Inserts
B	7,5	15,0	R335.18 -080.1215.27-6R	80	27	–	50	48	6	6	0,6	10500	LNK.08..
B	7,5	25,0	-100.1215.27-8R	100	27	–	50	48	8	8	0,8	9400	LNK.08..
A	7,5	27,0	335.18 -100.1215.27-8R	100	27	15	–	41	8	8	0,4	9400	LNK.08..
B	7,5	33,0	R335.18 -125.1215.32-10R	125	32	–	50	58	10	10	1,1	8400	LNK.08..
A	7,5	33,0	335.18 -125.1215.40-10R	125	40	15	–	55	10	10	0,7	8400	LNK.08..
B	7,5	44,0	R335.18 -160.1215.40-12R	160	40	–	50	70	12	12	1,8	7500	LNK.08..
A	7,5	49,0	335.18 -160.1215.40-12R	160	40	15	–	55	12	12	1,2	7500	LNK.08..
B	7.5	53,0	R335.18 -200.1215XL.40-14R	200	40	–	50	90	14	14	3,1	6700	LNK.08..
A	7.5	61,0	335.18 -200.1215XL.50-14R	200	50	15	–	69	14	14	2,0	6700	LNK.08..
B	7.5	78,0	R335.18 -250.1215XL.40-18R	250	40	–	50	90	18	18	4,9	6000	LNK.08..
A	7.5	86,0	335.18 -250.1215XL.50-18R	250	50	15	–	69	18	18	3,4	6000	LNK.08..
A	7.5	118,5	-315.1215XL.50-24R	315	50	15	–	69	24	24	5,2	5300	LNK.08..

Please check availability in current price and stock-list
*Effective number of teeth

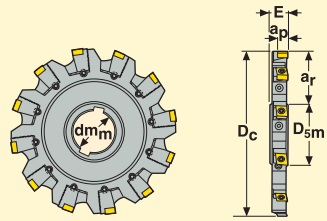
Cutter 335.18 – Insert 335.18/AC..1506

Width max 14,6 mm – Half side – Right hand

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 304, 308.
For complete insert programme, see pages 514, 563.
For spare parts, see pages 287.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Insert
B	9	13,0	R335.18 -080.1416.27-6R**	80	27	–	50	48	6	6	0,7	9800	335.18-1005
B	9	24,0	-100.1416.27-8R**	100	27	–	50	48	8	8	0,9	8800	335.18-1005
B	9	25,0	-125.1418.40-8R	125	40	–	50	70	8	8	1,2	7800	335.18-1005
A	9	34,0	335.18 -125.1418.40-8R	125	40	18	–	55	8	8	0,7	7800	335.18-1005
B	9	44,0	R335.18 -160.1418.40-12R	160	40	–	50	70	12	12	1,2	6900	335.18-1005
A	9	50,0	335.18 -160.1418.40-12R	160	40	18	–	55	12	12	2,8	6900	335.18-1005
B	9	52,0	R335.18 -200.1418.40-14R	200	40	–	50	90	14	14	3,3	6100	335.18-1005
A	9	60,0	335.18 -200.1418.50-14R	200	50	18	–	69	14	14	2,2	6100	335.18-1005
B	9	58,0	R335.18 -250.1418.60-18R	250	60	–	50	130	18	18	6,5	5300	335.18-1005
A	9	85,0	335.18 -250.1418.50-18R	250	50	18	–	69	18	18	3,7	5300	335.18-1005
B	9	90,0	R335.18 -315.1418.60-24R	315	60	–	50	130	24	24	8,3	4800	335.18-1005
A	9	110,0	335.18 -315.1418.50-24R	315	50	18	–	69	24	24	7,4	4800	335.18-1005
B	12	13,0	R335.18 -080.1820.27-6R**	80	27	–	55	48	6	6	0,7	8400	335.18-1305
B	12	24,0	-100.1820.27-8R**	100	27	–	50	48	8	8	2,1	7600	335.18-1305
B	12	44,0	-160.1924.40-10R	160	40	–	50	70	10	10	3,1	6000	335.18-1305
A	12	50,0	335.18 -160.1924.40-10R	160	40	24	–	55	10	10	1,7	6000	335.18-1305
B	12	52,0	R335.18 -200.1924.40-12R	200	40	–	50	90	12	12	4,6	5300	335.18-1305
A	12	60,0	335.18 -200.1924.50-12R	200	50	24	–	69	12	12	3,7	5300	335.18-1305
B	12	58,0	R335.18 -250.1924.60-16R	250	60	–	50	130	16	16	8,2	4800	335.18-1305
A	12	85,0	335.18 -250.1924.50-16R	250	50	24	–	69	16	16	6,1	4800	335.18-1305
B	12	90,0	R335.18 -315.1924.60-20R	315	60	–	50	130	20	20	11,4	4200	335.18-1305
A	12	110,0	335.18 -315.1924.50-20R	315	50	24	–	69	20	20	9,6	4200	335.18-1305
B	14,6	45,0	R335.18 -160.1924.40-10R-15H	162	40	–	51,5	70	10	10	3,1	6000	AC..1506R
A	14,6	51,0	335.18 -160.1924.40-10R-15H	162	40	24	–	55	10	10	1,7	6000	AC..1506R
B	14,6	54,0	R335.18 -200.1924.40-12R-15H	202	40	–	51,5	90	12	12	4,6	5300	AC..1506R
A	14,6	61,0	335.18 -200.1924.50-12R-15H	202	50	24	–	69	12	12	3,7	5300	AC..1506R
B	14,6	58,0	R335.18 -250.1924.60-16R-15H	252	60	–	51,5	130	16	16	8,2	4800	AC..1506R
A	14,6	86,0	335.18 -250.1924.50-16R-15H	252	50	24	–	69	16	16	6,1	4800	AC..1506R
B	14,6	91,0	R335.18 -315.1924.60-20R-15H	317	60	–	51,5	130	20	20	11,4	4200	AC..1506R
A	14,6	111,0	335.18 -315.1924.50-20R-15H	317	50	24	–	69	20	20	9,5	4200	AC..1506R
B	14,6	35,0	R335.18 -200.2530.60-12R-15H	202	60	–	50	130	12	12	5,9	4000	AC..1506R
A	14,6	61,0	335.18 -200.2530.50-12R-15H	202	50	30	–	69	12	12	4,8	4000	AC..1506R
B	14,6	54,0	R335.18 -250.2530.60-16R-15H	252	60	–	50	130	16	16	8,7	3600	AC..1506R
A	14,6	86,0	335.18 -250.2530.50-16R-15H	252	50	30	–	69	16	16	8,0	3600	AC..1506R
B	14,6	91,0	R335.18 -315.2530.60-20R-15H	317	60	–	50	130	20	20	12,1	3200	AC..1506R
A	14,6	111,0	335.18 -315.2530.60-20R-15H	317	60	30	–	84	20	20	12,7	3200	AC..1506R

Please check availability in current price and stock-list

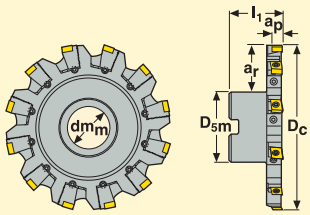
*Effective number of teeth

**Cutters Ø 80 and Ø 100 have 3 and 4 fixed right hand pockets respectively.

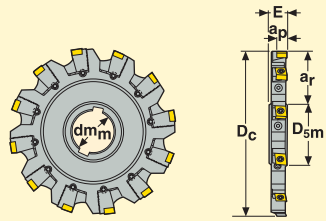
Cutter 335.18 – Inserts 335.18/AP..1604

Width max 15 mm – Half side – Right hand

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 304, 305.
For complete insert programme, see pages 515 - 516, 563.
For spare parts, see page 287.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Insert
B	15	44	R335.18 -160.1924.40-10R-16C	160	40	–	51,5	70	10	10	3,1	6000	AP..1604R
A	15	50	335.18 -160.1924.40-10R-16C	160	40	24	–	55	10	10	1,7	6000	AP..1604R
B	15	52	R335.18 -200.1924.40-12R-16C	200	40	–	51,5	90	12	12	4,6	5300	AP..1604R
A	15	60	335.18 -200.1924.50-12R-16C	200	50	24	–	69	12	12	3,7	5300	AP..1604R
B	15	58	R335.18 -250.1924.60-16R-16C	250	60	–	51,5	130	16	16	8,2	4800	AP..1604R
A	15	85	335.18 -250.1924.50-16R-16C	250	50	24	–	69	16	16	6,1	4800	AP..1604R
B	15	90	R335.18 -315.1924.60-20R-16C	315	60	–	51,5	130	20	20	12,1	4200	AP..1604R
A	15	120	335.18 -315.1924.50-20R-16C	315	50	24	–	69	20	20	9,6	4200	AP..1604R
B	15	34	R335.18 -200.2530.60-12R	200	60	–	50	130	12	12	5,9	4000	335.18-1606
A	15	60	335.18 -200.2530.50-12R	200	50	30	–	69	12	12	4,8	4000	335.18-1606
B	15	58	R335.18 -250.2530.60-16R	250	60	–	50	130	16	16	8,7	3600	335.18-1606
A	15	85	335.18 -250.2530.50-16R	250	50	30	–	69	16	16	8,0	3600	335.18-1606
B	15	90	R335.18 -315.2530.60-20R	315	60	–	50	130	20	20	12,1	3200	335.18-1606
A	15	110	335.18 -315.2530.60-20R	315	60	30	–	84	20	20	12,7	3200	335.18-1606
B	15	35	R335.18 -200.2530.60-12R-16C	200	60	–	50	130	12	12	5,9	6000	AP..1604R
A	15	61	335.18 -200.2530.50-12R-16C	200	50	30	–	69	12	12	4,8	6000	AP..1604R
B	15	59	R335.18 -250.2530.60-16R-16C	250	60	–	50	130	16	16	8,7	3600	AP..1604R
A	15	86	335.18 -250.2530.50-16R-16C	250	50	30	–	69	16	16	8,0	3600	AP..1604R
B	15	91	R335.18 -315.2530.60-20R-16C	315	60	–	50	130	20	20	12,1	3200	AP..1604R
A	15	111	335.18 -315.2530.60-20R-16C	315	60	30	–	84	20	20	12,7	3200	AP..1604R

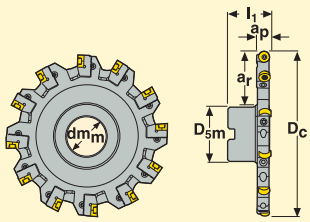
Please check availability in current price and stock-list

*Effective number of teeth

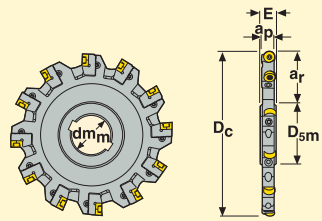
Cutter 335.18 Round Insert ∅ 10/12/16

Width max 8 mm – Half side – Right hand

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 298 - 303.
For complete insert programme, see pages 529, 531 - 532.
For spare parts, see pages 286 - 287.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Insert
B	5	16,0	R335.18 -080.1012.27-6R-R5	82	27	–	50	48	6	6	0,6	10500	RD..10T3..
B	5	26,0	R335.18 -100.1012.27-8R-R5	102	27	–	50	48	8	8	0,8	9400	RD..10T3..
A	5	27,0	335.18 -100.1012.27-8R-R5	102	27	15	–	41	8	8	0,4	9400	RD..10T3..
B	5	34,0	R335.18 -125.1012.32-10R-R5	127	32	–	50	58	10	10	1,0	8400	RD..10T3..
A	5	34,0	335.18 -125.1012.40-10R-R5	127	40	15	–	55	10	10	0,6	8400	RD..10T3..
B	5	45,0	R335.18 -160.1012.40-12R-R5	162	40	–	50	70	12	12	1,6	7500	RD..10T3..
A	5	50,0	335.18 -160.1012.40-12R-R5	162	40	15	–	55	12	12	1,1	7500	RD..10T3..
B	5	53,0	R335.18 -200.1012XL.40-14R-R5	200	40	–	50	90	14	14	2,8	6700	RD..10T3
A	5	61,0	335.18 -200.1012XL.50-14R-R5	200	50	15	–	69	14	14	1,7	6700	RD..10T3
B	5	78,0	R335.18 -250.1012XL.40-18R-R5	250	40	–	50	90	18	18	4,3	6000	RD..10T3
A	5	86,0	335.18 -250.1012XL.50-18R-R5	250	50	15	–	69	18	18	3,1	6000	RD..10T3
A	5	118,5	-315.1012XL.50-24R-R5	315	50	15	–	69	24	24	4,3	5300	RD..10T3
B	6	16,0	R335.18 -080.1215.27-6R-R6	82	27	–	50	48	6	6	0,6	10500	RP..1204..
B	6	26,0	-100.1215.27-8R-R6	102	27	–	50	48	8	8	0,8	9400	RP..1204..
A	6	28,0	335.18 -100.1215.27-8R-R6	102	27	15	–	41	8	8	0,4	9400	RP..1204..
B	6	34,0	R335.18 -125.1215.32-10R-R6	127	32	–	50	58	10	10	1,1	8400	RP..1204..
A	6	33,0	335.18 -125.1215.40-10R-R6	127	40	15	–	55	10	10	0,7	8400	RP..1204..
B	6	46,0	R335.18 -160.1215.40-12R-R6	162	40	–	50	70	12	12	1,8	7500	RP..1204..
A	6	50,0	335.18 -160.1215.40-12R-R6	162	40	15	–	55	12	12	1,2	7500	RP..1204..
B	6	53,0	R335.18 -200.1215XL.40-14R-R6	200	40	–	50	90	14	14	3,1	6700	RP..1204
A	6	61,0	335.18 -200.1215XL.50-14R-R6	200	50	15	–	69	14	14	2,0	6700	RP..1204
B	6	78,0	R335.18 -250.1215XL.40-18R-R6	250	40	–	50	90	18	18	4,9	6000	RP..1204
A	6	86,0	335.18 -250.1215XL.50-18R-R6	250	50	15	–	69	18	18	3,4	6000	RP..1204
A	6	118,5	-315.1215XL.50-24R-R6	315	50	15	–	69	24	24	5,2	5300	RP..1204
B	8	27,5	R335.18 -125.1418.40-8R-R8	130	40	–	51	70	8	8	1,3	7800	RP..1605
A	8	36,5	335.18 -125.1418.40-8R-R8	130	40	18	–	55	8	8	0,7	7800	RP..1605
B	8	46,5	R335.18 -160.1418.40-12R-R8	165	40	–	50	70	12	12	2,8	6900	RP..1605
A	8	52,5	335.18 -160.1418.40-12R-R8	165	40	18	–	55	12	12	1,6	6900	RP..1605
B	8	54,5	R335.18 -200.1418.40-14R-R8	205	40	–	51	90	14	14	3,3	6100	RP..1605
A	8	62,5	335.18 -200.1418.50-14R-R8	205	50	18	–	69	14	14	2,1	6100	RP..1605
B	8	60,5	R335.18 -250.1418.60-18R-R8	255	60	–	51	130	18	18	6,5	5500	RP..1605
A	8	87,5	335.18 -250.1418.50-18R-R8	255	50	18	–	69	18	18	3,7	5500	RP..1605
B	8	92,5	R335.18 -315.1418.60-24R-R8	320	60	–	51	130	24	24	8,3	4900	RP..1605
A	8	112,5	335.18 -315.1418.50-24R-R8	320	50	18	–	69	24	24	7,4	4900	RP..1605

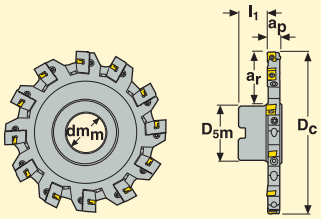
Please check availability in current price and stock-list

*Effective number of teeth

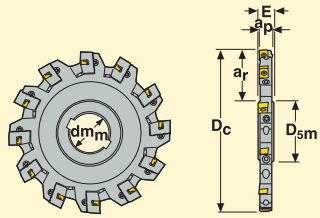
Cutter 335.18 – Insert LNK

Width max 7,5 mm – Half side – Left hand

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see pages 519 - 520.
For spare parts, see pages 286.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Insert
B	5	26,0	R335.18 -100.0810.27-8L	100	27	–	42	48	8	8	0,9	9400	LNK05
A	5	27,5	335.18 -100.0810.27-8L	100	27	15	–	41	8	8	0,5	9400	LNK05
B	5	33,0	R335.18 -125.0810.32-10L	125	32	–	42	58	10	10	0,9	8400	LNK05
A	5	33,0	335.18 -125.0810.40-10L	125	40	15	–	55	10	10	0,5	8400	LNK05
B	5	44,0	R335.18 -160.0810.40-12L	160	40	–	42	70	12	12	1,5	7500	LNK05
A	5	50,5	335.18 -160.0810.40-12L	160	40	15	–	55	12	12	0,9	7500	LNK05
B	5	53,0	R335.18 -200.0810XL.40-14L	200	40		42	90	14	14	2,6	6700	LNK.05..
A	5	61,0	335.18 -200.0810XL.50-14L	200	50	15	–	69	14	14	1,4	6700	LNK.05..
B	5	78,0	R335.18 -250.0810XL.40-18L	250	40	–	42	90	18	18	3,7	6000	LNK.05..
A	5	86,0	335.18 -250.0810XL.50-18L	250	50	15	–	69	18	18	2,4	6000	LNK.05..
A	5	118,5	-315.0810XL.50-24L	315	50	15	–	69	24	24	3,5	5300	LNK.05..
B	6	15,0	R335.18 -080.1012.27-6L	80	27	–	40	48	6	6	0,6	10500	LNK.06..
B	6	25,0	-100.1012.27-8L	100	27	–	40	48	8	8	0,8	9400	LNK.06..
A	6	26,0	335.18 -100.1012.27-8L	100	27	15	–	41	8	8	0,4	9400	LNK.06..
B	6	33,0	R335.18 -125.1012.32-10L	125	32	–	40	58	10	10	1,0	8400	LNK.06..
A	6	32,0	335.18 -125.1012.40-10L	125	40	15	–	55	10	10	0,6	8400	LNK.06..
B	6	44,0	R335.18 -160.1012.40-12L	160	40	–	40	70	12	12	1,6	7500	LNK.06..
A	6	49,0	335.18 -160.1012.40-12L	160	40	15	–	55	12	12	1,1	7500	LNK.06..
B	6	53,0	R335.18 -200.1012XL.40-14L	200	40	–	40	90	14	14	2,8	6700	LNK.06..
A	6	61,0	335.18 -200.1012XL.50-14L	200	50	15	–	69	14	14	1,7	6700	LNK.06..
B	6	78,0	R335.18 -250.1012XL.40-18L	250	40	–	40	90	18	18	4,3	6000	LNK.06..
A	6	86,0	335.18 -250.1012XL.50-18L	250	50	15	–	69	18	18	2,9	6000	LNK.06..
A	6	118,5	-315.1012XL.50-24L	315	50	15	–	69	24	24	4,3	5300	LNK.06..

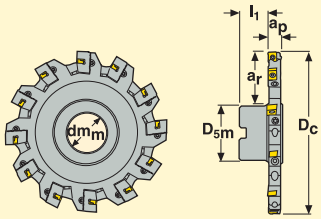
Please check availability in current price and stock-list

*Effective number of teeth

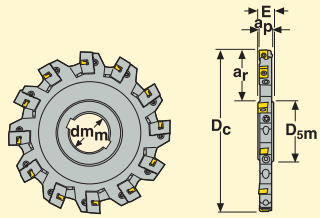
Cutter 335.18 – Insert LNK

Width max 7,5 mm – Half side – Left hand

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see page 293.
For complete insert programme, see page 520.
For spare parts, see pages 286.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Insert
B	7,5	15,0	R335.18 -080.1215.27-6L	80	27	–	38	48	6	6	0,6	10500	LNK.08..
B	7,5	25,0	-100.1215.27-8L	100	27	–	38	48	8	8	0,8	9400	LNK.08..
A	7,5	27,0	335.18 -100.1215.27-8L	100	27	15	–	41	8	8	0,4	9400	LNK.08..
B	7,5	33,0	R335.18 -125.1215.32-10L	125	32	–	38	58	10	10	1,1	8400	LNK.08..
A	7,5	33,0	335.18 -125.1215.40-10L	125	40	15	–	55	10	10	0,7	8400	LNK.08..
B	7,5	44,0	R335.18 -160.1215.40-12L	160	40	–	38	70	12	12	1,8	7500	LNK.08..
A	7,5	49,0	335.18 -160.1215.40-12L	160	40	15	–	55	12	12	1,2	7500	LNK.08..
B	7.5	53,0	R335.18 -200.1215XL.40-14L	200	40	–	38	90	14	14	3,1	6700	LNK.08..
A	7.5	61,0	335.18 -200.1215XL.50-14L	200	50	15	–	69	14	14	2,0	6700	LNK.08..
B	7.5	78,0	R335.18 -250.1215XL.40-18L	250	40	–	38	90	18	18	4,9	6000	LNK.08..
A	7.5	86,0	335.18 -250.1215XL.50-18L	250	50	15	–	69	18	18	3,4	6000	LNK.08..
A	7.5	118,5	-315.1215XL.50-24L	315	50	15	–	69	24	24	5,2	5300	LNK.08..

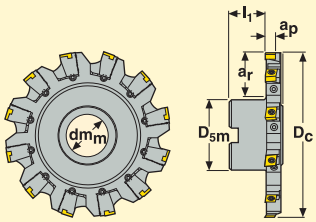
Please check availability in current price and stock-list

*Effective number of teeth

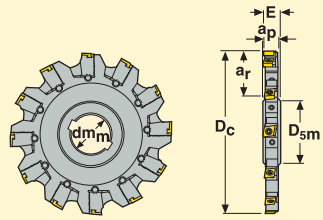
Cutter 335.18 – Insert 335.18/AC..1506

Width max 14,6 mm – Half side – Left hand

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 304, 307.
For complete insert programme, see pages 514, 563.
For spare parts, see pages 286.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Insert
B	9	13,0	R335.18 -080.1416.27-3L	80	27	–	36	48	3	3	0,7	9800	335.18-1005
B	9	24,0	-100.1416.27-4L	100	27	–	36	48	4	4	0,9	8800	335.18-1005
B	9	25.0	-125.1418.40-8L	125	40	–	36	70	8	8	1,2	6900	335.18-1005
A	9	34.0	335.18 -125.1418.40-8L	125	40	18	–	55	8	8	0,7	7800	335.18-1005
B	9	44.0	R335.18 -160.1418.40-12L	160	40	–	36	70	12	12	1,2	6900	335.18-1005
A	9	50.0	335.18 -160.1418.40-12L	160	40	18	–	55	12	12	2,8	6900	335.18-1005
B	9	52.0	R335.18 -200.1418.40-14L	200	40	–	36	90	14	14	3,3	6100	335.18-1005
A	9	60.0	335.18 -200.1418.50-14L	200	50	18	–	69	14	14	2,2	6100	335.18-1005
B	9	58.0	R335.18 -250.1418.60-18L	250	60	–	36	130	18	18	6,5	5300	335.18-1005
A	9	85.0	335.18 -250.1418.50-18L	250	50	18	–	69	18	18	3,7	5300	335.18-1005
B	9	90.0	R335.18 -315.1418.60-24L	315	60	–	36	130	24	24	8,3	4800	335.18-1005
A	9	110.0	335.18 -315.1418.50-24L	315	50	18	–	69	24	24	7,4	4800	335.18-1005
B	12	13,0	R335.18 -080.1820.27-3L	80	27	–	31,5	48	3	3	0,7	8400	335.18-1305
B	12	24,0	-100.1820.27-4L	100	27	–	31,5	48	4	4	2,1	7600	335.18-1305
B	12	44,0	-160.1924.40-10L	160	40	–	31,5	70	10	10	3,1	6000	335.18-1305
A	12	50,0	335.18 -160.1924.40-10L	160	40	24	–	55	10	10	1,7	6000	335.18-1305
B	12	52,0	R335.18 -200.1924.40-12L	200	40	–	31,5	90	12	12	4,6	5300	335.18-1305
A	12	60,0	335.18 -200.1924.50-12L	200	50	24	–	69	12	12	3,7	5300	335.18-1305
B	12	58,0	R335.18 -250.1924.60-16L	250	60	–	31,5	130	16	16	8,2	4800	335.18-1305
A	12	85,0	335.18 -250.1924.50-16L	250	50	24	–	69	16	16	6,1	4800	335.18-1305
B	12	90,0	R335.18 -315.1924.60-20L	315	60	–	31,5	130	20	20	11,4	4200	335.18-1305
A	12	110,0	335.18 -315.1924.50-20L	315	50	24	–	69	20	20	9,6	4200	335.18-1305
B	14,6	45,0	R335.18 -160.1924.40-10L-15H	162	40	–	31,5	70	10	10	3,1	6000	AC..1506L
A	14,6	51,0	335.18- 160.1924.40-10L-15H	162	40	24	–	55	10	10	1,7	6000	AC..1506L
B	14,6	54,0	R335.18 -200.1924.40-12L-15H	202	40	–	31,5	90	12	12	4,6	5300	AC..1506L
A	14,6	61,0	335.18- 200.1924.50-12L-15H	202	50	24	–	69	12	12	3,7	5300	AC..1506L
B	14,6	58,0	R335.18 -250.1924.60-16L-15H	252	60	–	31,5	130	16	16	8,2	4800	AC..1506L
A	14,6	86,0	335.18- 250.1924.50-16L-15H	252	50	24	–	69	16	16	6,1	4800	AC..1506L
B	14,6	91,0	R335.18 -315.1924.60-20L-15H	317	60	–	31,5	130	20	20	11,4	4200	AC..1506L
A	14,6	111,0	335.18- 315.1924.50-20L-15H	317	50	24	–	69	20	20	9,5	4200	AC..1506L
B	14,6	35,0	R335.18 -200.2530.60-12L-15H	202	60	–	25,5	130	12	12	5,9	4000	AC..1506L
A	14,6	61,0	335.18- 200.2530.50-12L-15H	202	50	30	–	69	12	12	4,8	4000	AC..1506L
B	14,6	54,0	R335.18 -250.2530.60-16L-15H	252	60	–	25,5	130	16	16	8,7	3600	AC..1506L
A	14,6	86,0	335.18- 250.2530.50-16L-15H	252	50	30	–	69	16	16	8,0	3600	AC..1506L
B	14,6	91,0	R335.18 -315.2530.60-20L-15H	317	60	–	25,5	130	20	20	12,1	3200	AC..1506L
A	14,6	111,0	335.18- 315.2530.60-20L-15H	317	60	30	–	85	20	20	12,7	3200	AC..1506L

Please check availability in current price and stock-list

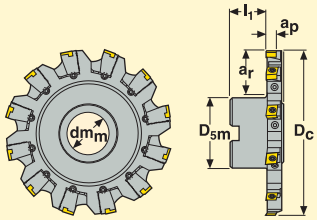
*Effective number of teeth

Disc milling cutters 335.18 - 335.29

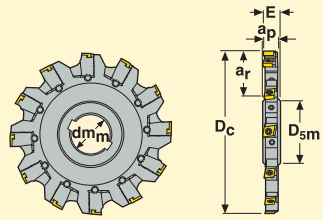
Cutter 335.18 – Insert 335.18/AP..1604

Width max 15 mm – Half side – Left hand

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 304 - 305.
For complete insert programme, see pages 515 - 516, 563.
For spare parts, see pages 287.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Insert
B	15	44,0	R335.18 -160.1924.40-10L-16C	160	40	–	29,5	70	10	10	3,1	6000	AP..1604L
A	15	50,0	335.18 -160.1924.40-10L-16C	160	40	24	–	55	10	10	1,7	6000	AP..1604L
B	15	52,0	R335.18 -200.1924.40-12L-16C	200	40	–	29,5	90	12	12	4,6	5300	AP..1604L
A	15	60,0	335.18 -200.1924.50-12L-16C	200	50	24	–	69	12	12	3,7	5300	AP..1604L
B	15	58,0	R335.18 -250.1924.60-16L-16C	250	60	–	29,5	130	16	16	8,2	4800	AP..1604L
A	15	85,0	335.18 -250.1924.50-16L-16C	250	50	24	–	69	16	16	6,1	4800	AP..1604L
B	15	90,0	R335.18 -315.1924.60-20L-16C	315	60	–	29,5	130	20	20	12,1	4200	AP..1604L
A	15	120,0	335.18 -315.1924.50-20L-16C	315	50	24	–	69	20	20	9,6	4200	AP..1604L
B	15	34,0	R335.18 -200.2530.60-12L	200	60	–	25,7	130	12	12	5,9	4000	335.18-1606
A	15	60,0	335.18 -200.2530.50-12L	200	50	30	–	69	12	12	4,8	4000	335.18-1606
B	15	58,0	R335.18 -250.2530.60-16L	250	60	–	25,7	130	16	16	8,7	3600	335.18-1606
A	15	85,0	335.18 -250.2530.50-16L	250	50	30	–	69	16	16	8,0	3600	335.18-1606
B	15	90,0	R335.18 -315.2530.60-20L	315	60	–	25,7	130	20	20	12,1	3200	335.18-1606
A	15	110,0	335.18 -315.2530.60-20L	315	60	30	–	84	20	20	12,7	3200	335.18-1606
B	15	35,0	R335.18 -200.2530.60-12L-16C	200	60	–	25	130	12	12	5,9	6000	AP..1604L
A	15	61,0	335.18 -200.2530.50-12L-16C	200	50	30	–	69	12	12	4,8	6000	AP..1604L
B	15	59,0	R335.18 -250.2530.60-16L-16C	250	60	–	25	130	16	16	8,7	3600	AP..1604L
A	15	86,0	335.18 -250.2530.50-16L-16C	250	50	30	–	69	16	16	8,0	3600	AP..1604L
B	15	91,0	R335.18 -315.2530.60-20L-16C	315	60	–	25	130	20	20	12,1	3200	AP..1604L
A	15	111,0	335.18 -315.2530.60-20L-16C	315	60	30	–	84	20	20	12,7	3200	AP..1604L

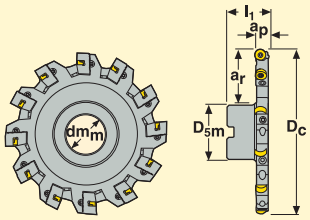
*Effective number of teeth

Please check availability in current price and stock-list

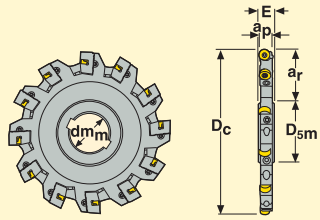
Cutter 335.18 Round Insert ∅ 10/12/16

Width max 8 mm – Half side – Left hand

Type B for stub arbor (Type B adj.)



Type A for milling arbor (Type A adj.)



For insert selection and cutting data recommendations, see pages 298 - 303.
For complete insert programme, see pages 529, 531 - 532.
For spare parts, see pages 286 - 287.

Type	a_p	a_r	Part No.	Dimension in mm D_c	dm_m	E	l_1	D_{5m}		z_c*	KG		Insert
B	5	17,0	R335.18 -080.1012.27-6L-R5	82	27	–	40	48	6	6	0,6	10500	RD..10T3..
B	5	26,0	-100.1012.27-8L-R5	102	27	–	40	48	8	8	0,8	9400	RD..10T3..
A	5	27,0	335.18 -100.1012.27-8L-R5	102	27	15	–	41	8	8	0,4	9400	RD..10T3..
B	5	34,0	R335.18 -125.1012.32-10L-R5	127	32	–	40	58	10	10	1,0	8400	RD..10T3..
A	5	33,0	335.18 -125.1012.40-10L-R5	127	40	15	–	55	10	10	0,6	8400	RD..10T3..
B	5	45,0	R335.18 -160.1012.40-12L-R5	162	40	–	40	70	12	12	1,6	7500	RD..10T3..
A	5	50,0	335.18 -160.1012.40-12L-R5	162	40	15	–	55	12	12	1,1	7500	RD..10T3..
B	5	53,0	R335.18 -200.1012XL.40-14L-R5	200	40	–	40	90	14	14	2,8	6700	RD..10T3..
A	5	61,0	335.18 -200.1012XL.50-14L-R5	200	50	15	–	69	14	14	1,7	6700	RD..10T3..
B	5	78,0	R335.18 -250.1012XL.40-18L-R5	250	40	–	40	90	18	18	4,3	6000	RD..10T3..
A	5	86,0	335.18 -250.1012XL.50-18L-R5	250	50	15	–	69	18	18	3,1	6000	RD..10T3..
A	5	118,5	-315.1012XL.50-24L-R5	315	50	15	–	69	24	24	4,3	5300	RD..10T3..
B	6	16,0	R335.18 -080.1215.27-6L-R6	82	27	–	38	48	6	6	0,6	10500	RP..1204..
B	6	26,0	-100.1215.27-8L-R6	102	27	–	38	48	8	8	0,8	9400	RP..1204..
A	6	28,0	335.18 -100.1215.27-8L-R6	102	27	15	–	41	8	8	0,4	9400	RP..1204..
B	6	34,0	R335.18 -125.1215.32-10L-R6	127	32	–	38	58	10	10	1,1	8400	RP..1204..
A	6	34,0	335.18 -125.1215.40-10L-R6	127	40	15	–	55	10	10	0,7	8400	RP..1204..
B	6	46,0	R335.18 -160.1215.40-12L-R6	162	40	–	38	70	12	12	1,8	7500	RP..1204..
A	6	50,0	335.18 -160.1215.40-12L-R6	162	40	15	–	55	12	12	1,2	7500	RP..1204..
B	6	53,0	R335.18 -200.1215XL.40-14L-R6	200	40	–	38	90	14	14	3,1	6700	RP..1204..
A	6	61,0	335.18 -200.1215XL.50-14L-R6	200	50	15	–	69	14	14	2,0	6700	RP..1204..
B	6	78,0	R335.18 -250.1215XL.40-18L-R6	250	40	–	38	90	18	18	4,9	6000	RP..1204..
A	6	86,0	335.18 -250.1215XL.50-18L-R6	250	50	15	–	69	18	18	3,4	6000	RP..1204..
A	6	118,5	-315.1215XL.50-24L-R6	315	50	15	–	69	24	24	5,2	5300	RP..1204..
B	8	27,5	R335.18 -125.1418.40-8L-R8	130	40	–	34	70	8	8	1,3	7800	RP..1605
A	8	36,5	335.18 -125.1418.40-8L-R8	130	40	18	–	55	8	8	0,7	7800	RP..1605
B	8	46,5	R335.18 -160.1418.40-12L-R8	165	40	–	34	70	12	12	2,8	6900	RP..1605
A	8	52,5	335.18 -160.1418.40-12L-R8	165	40	18	–	55	12	12	1,6	6900	RP..1605
B	8	54,5	R335.18 -200.1418.40-14L-R8	205	40	–	34	90	14	14	3,3	6100	RP..1605
A	8	62,5	335.18 -200.1418.50-14L-R8	205	50	18	–	69	14	14	2,1	6100	RP..1605
B	8	60,5	R335.18 -250.1418.60-18L-R8	255	60	–	34	130	18	18	6,5	5500	RP..1605
A	8	87,5	335.18 -250.1418.50-18L-R8	255	50	18	–	69	18	18	3,7	5500	RP..1605
B	8	92,5	R335.18 -315.1418.60-24L-R8	320	60	–	34	130	24	24	8,3	4900	RP..1605
A	8	112,5	335.18 -315.1418.50-24L-R8	320	50	18	–	69	24	24	7,4	4900	RP..1605

Please check availability in current price and stock-list

*Effective number of teeth

12

Spare parts for (R) 335.18 - 335.29 – For fixed and adjustable cutters

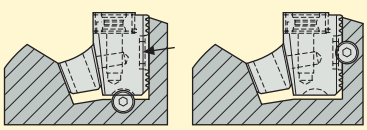
For cutter R335.18	Insert type	Locking screw/Nm	Key	Wedge	Wedge screw	Key	Adjusting screw*	Cassettes Right R335.18-..	Cassettes Left L335.18-..
0810	LNK.05..	C02508-T08P/ 1,2Nm	T08P-3	335.18-607	LD5018F-T15P	T15P-3	SH6004-T08P	0810-05	0810-05
0810XL				335.18-XL607				0810XL-05	0810XL-05
0810	RD..08..	C02506-T08P/ 1,2Nm	T08P-3	335.18-607	LD5018F-T15P	T15P-3	SH6004-T08P	N335.18-08-R4	
0810XL				335.18-XL607				N335.18-08XL-R4	
1012	LNK.06..	C73007-T09P/ 2,0Nm	T09P-3	335.18-609	LD6018F-T20P	T20P-4	SH6005-T09P	1012-06	1012-06
1012XL				335.18-XL609				1012XL-06	1012XL-06
1012	RD..10T3	C03007-T09P/ 2,0Nm	T09P-3	335.18-609	LD6018F-T20P	T20P-4	SH6005-T09P	10-R5	10-R5
1012XL				335.18-XL609				10XL-R5	10XL-R5
1215	LNK.08..	C73007-T09P/ 2,0Nm	T09P-3	335.18-611	LD6018F-T20P	T20P-4	SH6005-T09P	1215-08	1215-08
1215XL				335.18-XL611				1215XL-08	1215XL-08
1215	RP..12..	C03508-T15P/ 3,0 Nm	T15P-3	335.18-611	LD6018F-T20P	T20P-4	SH6005-T09P	12-R6	12-R6
1215XL				335.18-XL611				12XL-R6	12XL-R6
For cutter 335.29	**Insert type**	**Locking screw/Nm**	**Key**						
	RD..05..	C02035-T06P/ 0,5Nm	T06P-3	–	–	–	–	–	–
	RD..06..	C02205-T07P/ 0,9Nm	T07P-3	–	–	–	–	–	–
	RD..07..	C02545-T07P/ 0,9Nm	T07P-3	–	–	–	–	–	–

Spare parts for (R) 335.18 – For adjustable cutters

For cutter R335.18	Insert type	Locking screw/Nm	Key	Wedge	Wedge screw	Key	Adjusting screw	Cassettes Right R335.18-..	Cassettes Left L335.18-..
1416 and 1418	335.18-1005..	C04011-T15P/ 3,5Nm	T15P-3	335.18-613F	LD6018F-T20P	T20P-4	SH6005-T09P (Key T09P-3)	1418	1418
1418	RP..1605	C05010-T20P/ 5,0Nm	T20P-4	335.18-613F	LD6018F-T20P	T20P-4	SH6005-T09P (Key T09P-3)	16-R8-D5	16-R8-D5
1820 and 1924	335.18-1305	C04011-T15P/ 3,5Nm	T15P-3	335.18-617M	268-650	4SMS795	SH6005-T09P (Key T09P-3)	1924	1924
1924	AC..1506..	C45011-T20P/ 5,0Nm	T20P-4	335.18-617M	268-650	4SMS795	SH6005-T09P (Key T09P-3)	2024-15H	2024-15H
1924	AP..1604..	C04008-T15P/ 3,5Nm	T15P-3	335.18-617M	268-650	4SMS795	SH6005-T09P (Key T09P-3)	1924-16	1924-16
2530	335.18-1606..	C05012-T15P/ 5,0Nm	T15P-3	335.18-623M	268-650	4SMS795	SH6005-T09P (Key T09P-3)	2530	2530
2530	AC..1506..	C45011-T20P/ 5,0Nm	T20P-4	335.18-623M	268-650	4SMS795	SH6005-T09P (Key T09P-3)	2529-15H	2529-15H
2530	AP..1604..	C04008-T15P/ 3,5Nm	T15P-3	335.18-623M	268-650	4SMS795	SH6005-T09P (Key T09P-3)	2530-16	2530-16

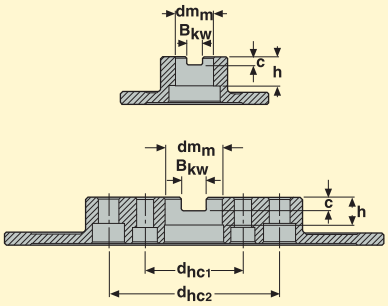
Wedge 335.18- 613M and wedge screw LD6018 for old cutter bodies 1416 and 1418 having tapped holes for wedge screw with normal pitch = 1mm.
*Adjusting screw key T09P-3. Dynamomentic keys, see page 590.
Arbor screw for type B – Cutter (R) 335.18 dia 63 mm, use arbor screw **MC6S 10x40** for dia 80 and 100 mm, use arbor screw **MC6S 12x40**

Body	Width 1418 and 1416		Width 1924		Width 2530	
	Old design	New design	Old design	New design	Old design	New design
Adjusting screw	SH6007	SH6005-T09P	SH6007	SH6005-T09P	SH8012	SH6005-T09P
Key for adjusting screw	3SMS795	T09P-3	3SMS795	T09P-3	4SMS795	T09P-3



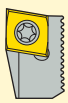
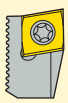
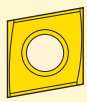
Old design – New design

Dimension of mounting Type B – R335.18



Cutter dia mm	Dimensions in mm						For spindle-nose
	dm_m	h	d_{hc1}	d_{hc2}	B_{kw}	c	
80	22	20	-	-	10,4	6,3	-
80	27	22	-	-	12,4	7	-
100	27	22	-	-	12,4	7	-
125	32	25	-	-	14,4	8	ISO40
125	40	30	-	-	16,4	9	ISO40
160	40	30	-	-	16,4	9	ISO50
200	40	28/30	66,7	-	16,4	9	ISO50
200	60	32	101,6	-	25,7	14	ISO50
250	60	32	101,6	-	25,7	14	ISO50
315	60	32	101,6	-	25,7	14	ISO50
400	60	32	101,6	177,8	25,7	14	ISO60

Cassettes for wiper inserts

For slot width (a_p) mm	Cassette right  Part No.	Cassette left  Part No.	Wiper insert  Part No.
14 - 17	R335.18-1418F	L335.18-1418F	335.18-1005ZZ
14 - 18,5	-1418F	-1418F	-1005ZZ
18,5 - 21	-1924F	-1924F	-1005ZZ
18,5 - 24,3	-1924F	-1924F	-1005ZZ
24,3 - 30,5	-2530F	-2530F	-1005ZZ

When high surface finish is required it is possible to use wiper inserts, type 335.18-1005ZZ.

For full side and face version use one right hand and one left hand cassette mounted at 180°. The cassette must be adjusted 0,05 mm outside the other cassettes.

To order a standard adjustable disc mill 335.18 full side set to a specific width.

To obtain an adjustable disc mill set to your required dimension add "/ADJ" at the end of the reference and specify your required width which will be set with a tolerance of +/- 0,03 mm. Without specification the standard disc mill is set to the minimum cutting width.

Ordering example: 335.18-200-2530.50-6N-16C/ADJ and specify on your order your width to any value within its range, for example specify a cutting width of 27,35 mm in your order. The disc mill will be set to 27,35 +/- 0,03 mm.

The delivery time is approx. 3 days for a set adjustable disc mill.

Insert selection – R335.15

SMG	f_z mm/tooth a_e/D_c = 5%	First choice	First choice	
1	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	
2	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	
3	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	
4	0,20–0,45	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
5	0,20–0,35	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
6	0,20–0,35	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
7	0,20–0,30	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
8	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	
9	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	
10	0,20–0,35	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
11	0,20–0,35	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
12	0,20–0,45	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
13	0,20–0,45	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
14	0,20–0,45	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
15	0,20–0,45	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
16	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	
17	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	
18	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	
19	0,20–0,45	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
20	0,20–0,40	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
21	0,20–0,35	R335.15-13..FG-M10 F40M	R335.15-18..FG-M12 F40M	
22	0,20–0,45	R335.15-13..FG-E08 F40M	R335.15-18..FG-M12 F40M	

Cutting data – 5% engagement width (a_e /D_c = 5%)

	Grades								
	F40M								
	f_z (mm/tooth)								
	0,20	0,30	0,45						
SMG	v_c (m/min)								
1	350	315	280						
2	295	265	240						
3	245	220	195						
4	210	190	170						
5	175	155	140						
6	150	140	125						
7	42	38	34						
8	240	215	190						
9	190	170	150						
10	155	140	125						
11	115	105	90						
12	180	165	145						
13	160	145	130						
14	135	120	110						
15	110	100	90						
16	905	815	725						
17	730	660	585						
18	555	500	445						
19	50	45	40						
20	40	36	32						
21	35	31	28						
22	85	75	65						

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,07	0,11	0,16	0,60
Side milling	2%	0,32	0,48	0,71	1,10
	5%	0,20	0,30	0,45	1,00
	10%	0,14	0,22	0,32	0,90
	20%	0,10	0,16	0,23	0,85
	30%	0,09	0,13	0,19	0,80
Average chip thickness h_m		0,04	0,07	0,10	–

Type of insert

Insert size	Width of slot mm
13160–	1,60–
18515	5,15

Insert selection – (R)335.10

SMG	f_z mm/tooth a_e/D_c = 10%	Insert 150.10-2.25N	Insert 150.10-2.5N	Insert 150.10-3N	Insert 150.10-4N
1	0,14–0,30	150.10-2.25N-14 CP600	150.10-2.5N-12 CP600	150.10-3N-12 CP600	150.10-4N-12 CP600
2	0,14–0,25	150.10-2.25N-14 CP600	150.10-2.5N-12 CP600	150.10-3N-12 CP600	150.10-4N-12 CP600
3	0,14–0,22	150.10-2.25N-14 CP600	150.10-2.5N-14 CP600	150.10-3N-14 CP600	150.10-4N-14 CP600
4	0,14–0,22	150.10-2.25N-14 CP600	150.10-2.5N-14 CP600	150.10-3N-14 CP600	150.10-4N-14 CP600
5	0,14–0,20	150.10-2.25N-16 T25M	150.10-2.5N-16 T25M	150.10-3N-16 T25M	150.10-4N-14 T25M
6	0,10–0,15	150.10-2.25N-16 T25M	150.10-2.5N-16 T25M	150.10-3N-16 MP1500	150.10-4N-16 MP1500
7	0,10–0,13	150.10-2.25N-16 T25M	150.10-2.5N-16 T25M	150.10-3N-16 MP1500	150.10-4N-16 MP1500
8	0,14–0,25	150.10-2.25N-14 CP600	150.10-2.5N-14 CP600	150.10-3N-14 CP600	150.10-4N-14 CP600
9	0,14–0,22	150.10-2.25N-14 CP600	150.10-2.5N-14 CP600	150.10-3N-14 CP600	150.10-4N-14 CP600
10	0,14–0,20	150.10-2.25N-14 CP600	150.10-2.5N-14 CP600	150.10-3N-14 CP600	150.10-4N-14 CP600
11	0,10–0,15	150.10-2.25N-14 CP600	150.10-2.5N-14 CP600	150.10-3N-14 CP600	150.10-4N-14 CP600
12	0,14–0,30	150.10-2.25N-16 T25M	150.10-2.5N-14 T25M	150.10-3N-14 MP1500	150.10-4N-14 MP1500
13	0,14–0,22	150.10-2.25N-16 T25M	150.10-2.5N-14 T25M	150.10-3N-14 MP1500	150.10-4N-14 MP1500
14	0,14–0,20	150.10-2.25N-16 T25M	150.10-2.5N-14 T25M	150.10-3N-14 MP1500	150.10-4N-14 MP1500
15	0,10–0,15	150.10-2.25N-16 HX	150.10-2.5N-16 HX	150.10-3N-16 HX	150.10-4N-16 HX
16	0,16–0,30	150.10-2.25N-14 CP500	150.10-2.5N-12 CP500	150.10-3N-12 CP500	150.10-4N-12 CP500
17	0,16–0,25	150.10-2.25N-14 CP500	150.10-2.5N-12 CP500	150.10-3N-12 CP500	150.10-4N-12 CP500
18	0,16–0,25	150.10-2.25N-14 CP500	150.10-2.5N-12 CP500	150.10-3N-12 CP500	150.10-4N-12 CP500
19	0,14–0,20	150.10-2.25N-14 T350M	150.10-2.5N-14 T350M	150.10-3N-14 T350M	150.10-4N-14 T350M
20	0,14–0,20	150.10-2.25N-14 T350M	150.10-2.5N-14 T350M	150.10-3N-14 T350M	150.10-4N-14 T350M
21	0,10–0,13	150.10-2.25N-14 T350M	150.10-2.5N-14 T350M	150.10-3N-14 T350M	150.10-4N-14 T350M
22	0,14–0,20	150.10-2.25N-14 CP600	150.10-2.5N-14 CP600	150.10-3N-14 CP600	150.10-4N-14 CP600

Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades																	
	T350M			T25M			MP1500			CP600			CP500			HX		
	f_z (mm/tooth)																	
	0,10	0,20	0,30	0,10	0,20	0,30	0,10	0,20	0,30	0,10	0,20	0,30	0,10	0,20	0,30	0,10	0,20	0,30
	v_c (m/min)																	
1	470	400	360	450	385	340	610	520	465	410	350	310	430	365	325	–	–	–
2	400	340	305	380	325	290	515	440	395	345	295	265	365	310	275	–	–	–
3	330	280	250	315	270	240	425	365	325	285	245	220	300	255	230	–	–	–
4	280	240	215	270	230	205	365	310	275	245	210	185	255	220	195	–	–	–
5	235	200	180	225	190	170	305	260	230	205	175	155	215	180	165	–	–	–
6	205	175	–	195	165	–	265	225	–	180	150	–	190	160	–	–	–	–
7	55	48	–	55	46	–	75	60	–	49	42	–	50	44	–	–	–	–
8	310	260	235	310	260	235	415	355	315	280	240	215	295	250	225	–	–	–
9	240	205	185	240	205	185	330	280	250	220	185	165	230	195	175	–	–	–
10	200	170	150	200	170	150	270	230	205	180	155	135	190	160	145	–	–	–
11	145	125	–	145	125	–	200	170	–	135	115	–	140	120	–	–	–	–
12	245	210	185	235	200	180	320	270	240	215	180	160	225	190	170	205	170	155
13	215	185	165	205	175	155	280	240	210	185	160	140	195	165	150	180	150	135
14	180	155	140	175	150	130	235	200	180	160	135	120	165	140	125	150	125	115
15	150	130	–	145	120	–	195	165	–	130	110	–	135	115	–	125	105	–
16	1220	1035	925	1165	990	885	–	–	–	1060	900	805	1110	945	845	1005	855	765
17	985	835	750	940	800	715	–	–	–	855	730	650	900	765	685	815	690	620
18	750	640	570	715	610	545	–	–	–	650	555	495	685	580	520	620	525	470
19	65	55	–	65	55	–	–	–	–	60	50	–	60	50	–	–	–	–
20	50	44	–	50	44	–	–	–	–	47	40	–	50	42	–	–	–	–
21	45	38	–	45	38	–	–	–	–	41	35	–	43	36	–	–	–	–
22	110	90	–	110	90	–	–	–	–	100	85	–	105	85	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,05	0,10	0,14	0,65
Side milling	2%	0,21	0,44	0,65	1,20
	5%	0,14	0,28	0,41	1,10
	10%	0,10	0,20	0,30	1,00
	20%	0,07	0,14	0,21	0,90
	30%	0,06	0,12	0,18	0,85
Average chip thickness h_m		0,03	0,06	0,09	–

Type of insert

Style	Width of slot mm
-2,25N-	2,25
-2,5N-	2,5
-3N-	3,1
-4N-	4,1

Insert selection (R)335.19

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,20–0,38	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
2	0,20–0,38	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
3	0,20–0,32	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
4	0,20–0,32	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
5	0,16–0,30	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
6	0,16–0,25	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
7	0,13–0,20	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
8	0,20–0,38	SNHQ....-M07 F40M	SNHQ....-E05 F40M	
9	0,20–0,32	SNHQ....-M07 F40M	SNHQ....-E05 F40M	
10	0,16–0,25	SNHQ....-M07 F40M	SNHQ....-E05 F40M	
11	0,16–0,25	SNHQ....-M07 F40M	SNHQ....-E05 F40M	
12	0,20–0,38	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
13	0,20–0,32	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
14	0,20–0,30	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
15	0,16–0,25	SNHQ....-M07 F30M	SNHQ....-M07 F40M	
16	0,20–0,38	SNHQ....-E05 H25	SNHQ....-E05 F40M	
17	0,20–0,38	SNHQ....-E05 H25	SNHQ....-E05 F40M	
18	0,20–0,38	SNHQ....-E05 H25	SNHQ....-E05 F40M	
19	0,20–0,25	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
20	0,20–0,25	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
21	0,13–0,20	SNHQ....-M07 F40M	SNHQ....-M07 F30M	
22	0,16–0,25	SNHQ....-M07 F40M	SNHQ....-E05 F40M	

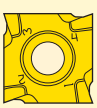
Cutting data – 10% engagement width (a_e/D_c = 10%)

SMG	Grades												
	F30M			F40M			H25						
	f_z (mm/tooth)												
	0,13	0,25	0,38	0,13	0,25	0,38	0,13	0,25	0,38				
	v_c (m/min)												
1	335	285	250	320	270	240	–	–	–				
2	285	240	215	270	230	205	–	–	–				
3	235	200	175	225	190	170	–	–	–				
4	200	170	150	190	160	145	–	–	–				
5	165	140	125	160	135	120	–	–	–				
6	145	125	–	140	120	–	–	–	–				
7	40	34	–	38	32	–	–	–	–				
8	230	195	170	220	185	165	–	–	–				
9	180	155	135	170	145	130	–	–	–				
10	150	125	110	140	120	105	–	–	–				
11	110	95	–	105	90	–	–	–	–				
12	175	150	130	165	140	125	160	135	120				
13	155	130	115	145	125	110	140	120	105				
14	130	110	95	125	105	90	115	100	90				
15	105	90	–	100	85	–	95	80	–				
16	870	735	650	825	700	620	785	665	590				
17	700	595	525	670	565	500	635	540	475				
18	535	455	400	510	430	380	485	410	360				
19	48	41	–	46	39	–	–	–	–				
20	39	33	–	37	31	–	–	–	–				
21	33	28	–	32	27	–	–	–	–				
22	80	70	–	75	65	–	–	–	–				

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,06	0,12	0,19	0,65
Side milling	2%	0,28	0,55	0,84	1,20
	5%	0,18	0,35	0,53	1,10
	10%	0,13	0,25	0,38	1,00
	20%	0,09	0,18	0,27	0,90
	30%	0,08	0,15	0,23	0,85
Average chip thickness h_m		0,04	0,08	0,12	–

Type of insert



Insert size	a_p max mm
1102	4
1103	5
1203	6
1204	7
12045	8
1205	10, 14
1207	12

Insert selection – (R)335.19

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,20–0,38	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
2	0,20–0,38	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
3	0,20–0,32	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
4	0,20–0,32	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
5	0,16–0,30	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
6	0,16–0,25	335.19-....T-MD09 T25M	335.19-....T-MD09 F40M	
7	0,13–0,20	335.19-....T-MD09 T25M	335.19-....T-MD09 F40M	
8	0,20–0,38	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
9	0,20–0,32	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
10	0,16–0,25	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
11	0,16–0,25	335.19-....-M08 F40M	335.19-....T-MD09 F40M	
12	0,20–0,38	335.19-....T-MD09 T25M	335.19-....-M08 F40M	
13	0,20–0,32	335.19-....T-MD09 T25M	335.19-....-M08 F40M	
14	0,20–0,30	335.19-....T-MD09 T25M	335.19-....-M08 F40M	
15	0,16–0,25	335.19-....T-MD09 T25M	335.19-....-M08 F40M	
16	0,20–0,38	335.19-....-M08 F40M	335.19-....-M08 F40M	
17	0,20–0,38	335.19-....-M08 F40M	335.19-....-M08 F40M	
18	0,20–0,38	335.19-....-M08 F40M	335.19-....-M08 F40M	
19	0,20–0,25	335.19-....-M08 F40M	335.19-....T-MD09 T25M	
20	0,20–0,25	335.19-....-M08 F40M	335.19-....T-MD09 T25M	
21	0,13–0,20	335.19-....-M08 F40M	335.19-....T-MD09 T25M	
22	0,16–0,25	335.19-....-M08 F40M	335.19-....-M08 F40M	

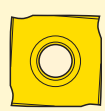
Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades														
	F40M			MP2500			T25M			HX					
	f_z (mm/tooth)														
	0,13	0,25	0,38	0,13	0,25	0,38	0,13	0,25	0,38	0,13	0,25	0,38			
	v_c (m/min)														
1	305	255	225	400	340	300	335	285	250	–	–	–			
2	255	220	190	340	285	255	285	240	210	–	–	–			
3	215	180	160	280	235	210	235	200	175	–	–	–			
4	180	155	135	240	205	180	200	170	150	–	–	–			
5	150	130	115	200	170	150	165	140	125	–	–	–			
6	135	110	–	175	150	–	145	125	–	–	–	–			
7	36	31	–	44	37	–	40	–	–	–	–	–			
8	210	175	155	245	205	185	230	195	170	–	–	–			
9	165	140	120	195	165	145	180	150	135	–	–	–			
10	135	115	100	160	135	120	145	125	110	–	–	–			
11	100	85	–	115	100	–	110	90	–	–	–	–			
12	160	135	120	210	175	155	175	145	130	150	125	110			
13	140	120	105	185	155	135	155	130	115	130	110	100			
14	115	100	85	155	130	115	130	110	95	110	95	85			
15	95	80	–	130	110	–	105	90	–	90	80	–			
16	785	665	585	1040	880	775	865	730	645	745	630	555			
17	635	535	475	840	710	625	700	590	520	605	510	450			
18	485	410	360	640	540	475	530	450	395	460	390	345			
19	44	37	–	55	45	–	48	41	–	–	–	–			
20	35	30	–	43	36	–	39	33	–	–	–	–			
21	30	26	–	37	31	–	33	28	–	–	–	–			
22	75	60	–	90	75	–	80	70	–	–	–	–			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,06	0,12	0,19	0,65
Side milling	2%	0,28	0,55	0,84	1,20
	5%	0,18	0,35	0,53	1,10
	10%	0,13	0,25	0,38	1,00
	20%	0,09	0,18	0,27	0,90
	30%	0,08	0,15	0,23	0,85
Average chip thickness h_m		0,04	0,08	0,12	–

Type of insert



Insert size	Width of slot mm
1102	4
1103	5
1203	6
1204	7
12045	8
1205	10, 14
1207	12

Insert selection – (R)335.18-08/-20

Universal insert: LNK..-M06 F40M

SMG	f_z mm/tooth a_e/D_c= 10%	First choice				Optimization – Stable operations			
		LNK.05		LNK.06/08		LNK.05		LNK.06/08	
1	0,20–0,32	-M06	F40M	-M06	F40M	-M06	T350M	-M06	T350M
2	0,20–0,32	-M06	F40M	-M06	F40M	-M06	T350M	-M06	T350M
3	0,20–0,32	-M06	F40M	-M06	F40M	-M06	T350M	-M06	T350M
4	0,20–0,32	-M06	F40M	-M06	F40M	-M06	T350M	-M06	T350M
5	0,15–0,25	-M06	MP3000	-M06	MP3000	-MD07	MP3000	-MD08	MP3000
6	0,15–0,20	-M06	MP3000	-M06	MP3000	-MD07	MP3000	-MD08	MP3000
7	0,13–0,18	-MD07	MP1500	-MD08	MP3000	-M06	MP3000	-M06	MP3000
8	0,12–0,25	-M06	F40M	-M06	F40M	-M06	MM4500	-M06	MM4500
9	0,12–0,25	-M06	F40M	-M06	F40M	-M06	MM4500	-M06	MM4500
10	0,12–0,20	-M06	F40M	-M06	F40M	-M06	MM4500	-M06	MM4500
11	0,12–0,20	-M06	F40M	-M06	F40M	-M06	MM4500	-M06	MM4500
12	0,20–0,32	-M06	MP3000	-M06	MK1500	-M06	T350M	-M06	MP3000
13	0,20–0,32	-M06	MP3000	-M06	MK1500	-M06	T350M	-M06	MP3000
14	0,15–0,25	-MD07	MP3000	-MD08	MK1500	-MD07	T350M	-MD08	MP3000
15	0,15–0,25	-MD07	MP3000	-MD08	MK1500	-MD07	T350M	-MD08	MP3000
16	0,12–0,32	-E05	H25	-E05	H25	-E05	F40M	-E05	H25
17	0,12–0,32	-E05	H25	-E05	H25	-E05	F40M	-E05	H25
18	0,12–0,32	-E05	H25	-E05	H25	-E05	F40M	-E05	H25
19	0,12–0,20	-M06	F40M	-M06	F40M	-M06	T350M	-M06	T350M
20	0,12–0,20	-M06	F40M	-M06	F40M	-M06	T350M	-M06	T350M
21	0,12–0,20	-M06	F40M	-M06	F40M	-M06	T350M	-M06	T350M
22	0,12–0,20	-M06	F40M	-M06	F40M	-M06	F40M	-M06	T350M

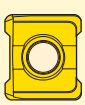
Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades																				
	MM4500			MP2500			MP3000			T350M			F40M			MK1500			H25		
	f_z (mm/tooth)																				
	0,12	0,20	0,32	0,12	0,20	0,32	0,12	0,20	0,32	0,12	0,20	0,32	0,12	0,20	0,32	0,12	0,20	0,32	0,12	0,20	0,32
	v_c (m/min)																				
1	260	230	200	425	375	325	400	355	310	370	325	285	320	285	250	–	–	–	–	–	–
2	220	195	170	360	315	275	340	300	260	310	275	240	270	240	210	–	–	–	–	–	–
3	180	160	140	295	260	230	280	250	215	260	230	200	225	200	175	–	–	–	–	–	–
4	155	135	120	250	225	195	240	210	185	220	195	170	190	170	150	–	–	–	–	–	–
5	130	115	100	210	185	165	200	175	155	185	160	140	160	140	125	–	–	–	–	–	–
6	115	100	–	185	165	–	175	155	–	160	140	–	140	125	–	–	–	–	–	–	–
7	–	–	–	46	41	–	45	40	–	44	39	–	38	34	–	–	–	–	–	–	–
8	190	165	145	260	230	200	255	225	195	240	215	185	220	195	170	–	–	–	–	–	–
9	150	130	115	205	180	155	200	175	155	190	165	145	170	150	135	–	–	–	–	–	–
10	120	105	95	165	145	130	165	145	125	155	135	120	140	125	110	–	–	–	–	–	–
11	90	80	70	125	110	95	120	105	95	115	100	90	105	90	80	–	–	–	–	–	–
12	120	105	90	220	195	170	210	185	160	190	170	150	165	145	130	310	275	240	160	140	125
13	105	90	80	195	170	150	185	160	140	170	150	130	145	130	115	275	240	210	140	125	110
14	90	80	70	165	145	125	155	135	120	140	125	110	125	110	95	230	205	180	115	105	90
15	75	65	–	135	120	–	130	115	–	115	105	–	100	90	–	190	170	–	95	85	–
16	–	–	–	1095	965	845	1035	915	800	955	840	735	830	730	640	–	–	–	785	695	610
17	–	–	–	885	780	685	835	740	645	770	680	595	670	590	520	–	–	–	635	560	490
18	–	–	–	675	595	520	640	565	495	585	520	455	510	450	395	–	–	–	485	430	375
19	32	29	–	55	50	–	55	47	–	50	45	–	46	41	–	–	–	–	25	22	–
20	26	23	–	45	40	–	43	38	–	41	36	–	37	33	–	–	–	–	20	18	–
21	22	20	–	39	35	–	37	33	–	35	31	–	32	28	–	–	–	–	18	15	–
22	55	48	–	95	85	–	90	80	–	85	75	–	75	70	–	–	–	–	42	37	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,06	0,10	0,16	0,65
Side milling	2%	0,26	0,44	0,71	1,20
	5%	0,17	0,28	0,45	1,10
	10%	0,12	0,20	0,32	1,00
	20%	0,09	0,14	0,23	0,90
	30%	0,07	0,12	0,19	0,85
Average chip thickness h_m		0,04	0,06	0,10	–

Type of insert



Insert size	Width of slot mm
05	8–10
06	10-12, 17
08	12–15, 20

Insert selection – 335.29-R25

Universal insert: RDHW0501M0-MD01 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,08–0,16	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
2	0,08–0,16	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
3	0,08–0,16	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
4	0,06–0,14	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
5	0,06–0,14	RDHW0501M0-MD01 MP3000	RDHW0501M0-MD01 F15M	
6	0,06–0,14	RDHW0501M0-MD01 MP3000	RDHW0501M0-MD01 F15M	
7	0,06–0,14	RDHW0501M0-MD01 MP3000	RDHW0501M0-MD01 F15M	
8	0,04–0,13	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
9	0,04–0,13	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
10	0,03–0,10	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
11	0,03–0,10	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
12	0,10–0,17	RDHW0501M0-MD01 F15M	RDHW0501M0-MD01 MP3000	
13	0,10–0,17	RDHW0501M0-MD01 F15M	RDHW0501M0-MD01 MP3000	
14	0,10–0,17	RDHW0501M0-MD01 F15M	RDHW0501M0-MD01 MP3000	
15	0,10–0,17	RDHW0501M0-MD01 F15M	RDHW0501M0-MD01 MP3000	
16	0,08–0,20	RDHW0501M0-MD01 MP3000	RDHW0501M0-MD01 F40M	
17	0,08–0,20	RDHW0501M0-MD01 MP3000	RDHW0501M0-MD01 F40M	
18	0,08–0,20	RDHW0501M0-MD01 MP3000	RDHW0501M0-MD01 F40M	
19	0,06–0,14	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
20	0,06–0,14	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
21	0,04–0,10	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	
22	0,06–0,14	RDHW0501M0-MD01 F40M	RDHW0501M0-MD01 MP3000	

Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades												
	MP3000			F40M			F15M						
	f_z (mm/tooth)												
	0,04	0,10	0,17	0,04	0,10	0,17	0,04	0,10	0,17				
	v_c (m/min)												
1	485	430	390	390	345	310	465	415	375				
2	410	365	330	330	290	265	395	350	315				
3	340	300	270	270	240	220	325	290	260				
4	290	255	235	230	205	185	280	245	225				
5	240	215	195	195	170	155	230	205	185				
6	210	190	–	170	150	–	205	180	–				
7	55	48	–	46	41	–	55	49	–				
8	310	275	245	265	235	215	–	–	–				
9	240	215	195	210	185	165	–	–	–				
10	200	175	160	170	150	135	–	–	–				
11	145	130	120	125	110	100	–	–	–				
12	250	225	205	200	180	160	240	215	195				
13	220	195	180	175	160	145	215	190	170				
14	185	165	150	150	135	120	180	160	145				
15	155	135	–	125	110	–	150	130	–				
16	1255	1115	1010	1005	890	805	1205	1070	970				
17	1015	900	815	810	720	650	970	865	780				
18	770	685	620	615	550	495	740	660	595				
19	65	55	–	55	49	–	–	–	–				
20	50	46	–	45	40	–	–	–	–				
21	45	40	–	39	34	–	–	–	–				
22	105	95	–	95	80	–	–	–	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,01	0,04	0,08	0,65
Side milling	2%	0,07	0,20	0,35	1,20
	5%	0,04	0,13	0,22	1,10
	10%	0,03	0,09	0,16	1,00
	20%	0,02	0,06	0,12	0,90
	30%	0,02	0,05	0,10	0,85
Average chip thickness h_m		0,009	0,03	0,05	–

Type of insert

Insert size	Width of slot mm
05	5

Insert selection – (R)335.29-R03

Universal insert: RDHT 06T1M0-E02 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,08–0,16	RDHT06T1M0-E02 F40M	RDHW06T1M0-MD02 F40M	
2	0,08–0,16	RDHT06T1M0-E02 F40M	RDHW06T1M0-MD02 F40M	
3	0,08–0,16	RDHT06T1M0-E02 F40M	RDHW06T1M0-MD02 F40M	
4	0,06–0,14	RDHW06T1M0-MD02 F40M	RDHW06T1M0-MD02 MP3000	
5	0,06–0,14	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 F15M	
6	0,06–0,14	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 F15M	
7	0,06–0,14	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 F15M	
8	0,04–0,13	RDHW06T1M0-MD02 F40M	RDHT06T1M0-E02 F40M	
9	0,04–0,13	RDHW06T1M0-MD02 F40M	RDHT06T1M0-E02 F40M	
10	0,03–0,10	RDHW06T1M0-MD02 F40M	RDHW06T1M0-MD02 MP3000	
11	0,03–0,10	RDHW06T1M0-MD02 F40M	RDHW06T1M0-MD02 MP3000	
12	0,10–0,17	RDHW06T1M0-MD02 MK2000	RDHW06T1M0-MD02 MP3000	
13	0,10–0,17	RDHW06T1M0-MD02 MK2000	RDHW06T1M0-MD02 MP3000	
14	0,10–0,17	RDHW06T1M0-MD02 MK2000	RDHW06T1M0-MD02 MP3000	
15	0,10–0,17	RDHW06T1M0-MD02 MK2000	RDHW06T1M0-MD02 MP3000	
16	0,08–0,20	RDHT06T1M0-E02 H25	RDHT06T1M0-E02 F40M	
17	0,08–0,20	RDHT06T1M0-E02 H25	RDHT06T1M0-E02 F40M	
18	0,08–0,20	RDHT06T1M0-E02 H25	RDHT06T1M0-E02 F40M	
19	0,06–0,14	RDHW06T1M0-MD02 F40M	RDHT06T1M0-E02 F40M	
20	0,06–0,14	RDHW06T1M0-MD02 F40M	RDHT06T1M0-E02 F40M	
21	0,03–0,10	RDHW06T1M0-MD02 F40M	RDHT06T1M0-E02 F40M	
22	0,06–0,14	RDHT06T1M0-E02 F40M	RDHW06T1M0-MD02 F40M	

Cutting data – 10% engagement width (a_e/D_c = 10%)

	Grades																				
	MP3000			F40M			F25M			F15M			F30M			MK2000			H25		
	f_z (mm/tooth)																				
	0,04	0,10	0,17	0,04	0,10	0,17	0,04	0,10	0,17	0,04	0,10	0,17	0,04	0,10	0,17	0,04	0,10	0,17	0,04	0,10	0,17
SMG	v_c (m/min)																				
1	470	420	380	375	335	300	415	370	330	450	400	365	395	350	315	–	–	–	–	–	–
2	400	355	320	320	285	255	350	310	280	380	340	305	335	295	270	–	–	–	–	–	–
3	330	290	265	265	235	210	290	255	235	315	280	255	275	245	220	–	–	–	–	–	–
4	280	250	225	225	200	180	245	220	200	270	240	215	235	210	190	–	–	–	–	–	–
5	235	210	190	185	165	150	205	185	165	225	200	180	195	175	160	–	–	–	–	–	–
6	205	180	–	165	145	–	180	160	–	195	175	–	170	155	–	–	–	–	–	–	–
7	55	47	–	45	40	–	49	44	–	55	48	–	47	42	–	–	–	–	–	–	–
8	300	265	240	255	230	205	285	250	225	–	–	–	270	240	215	–	–	–	–	–	–
9	235	210	190	200	180	160	220	200	180	–	–	–	210	190	170	–	–	–	–	–	–
10	190	170	155	165	145	135	180	160	145	–	–	–	175	155	140	–	–	–	–	–	–
11	140	125	115	120	110	100	135	120	110	–	–	–	130	115	105	–	–	–	–	–	–
12	245	220	195	195	175	155	215	190	175	235	210	190	205	185	165	255	225	205	185	165	150
13	215	190	175	170	155	140	190	170	150	205	185	165	180	160	145	225	200	180	165	145	130
14	180	160	145	145	130	115	160	140	130	175	155	140	150	135	120	190	165	150	140	120	110
15	150	135	–	120	105	–	130	115	–	145	130	–	125	110	–	155	140	–	115	100	–
16	1215	1080	980	975	865	780	1070	950	860	1170	1040	940	1020	910	820	–	–	–	925	820	745
17	980	875	790	785	700	630	865	770	695	945	840	760	825	735	665	–	–	–	745	665	600
18	750	665	600	600	535	480	660	585	530	720	640	580	630	560	505	–	–	–	570	505	455
19	65	55	–	55	48	–	60	55	–	–	–	–	55	50	–	–	–	–	–	–	–
20	50	45	–	43	39	–	48	42	–	–	–	–	46	41	–	–	–	–	–	–	–
21	43	39	–	37	33	–	41	37	–	–	–	–	39	35	–	–	–	–	–	–	–
22	105	95	–	90	80	–	100	90	–	–	–	–	95	85	–	–	–	–	–	–	–

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,02	0,05	0,08	0,65
Side milling	2%	0,09	0,22	0,37	1,20
	5%	0,06	0,14	0,24	1,10
	10%	0,04	0,10	0,17	1,00
	20%	0,03	0,07	0,12	0,90
	30%	0,02	0,06	0,10	0,85
Average chip thickness h_m		0,01	0,03	0,05	–

Type of insert

Insert size	Width of slot mm
06	6

Insert selection – 335.29-R35

Universal insert: RDHT0702M0-E03 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,10–0,18	RDHT0702M0-E03 F40M	RDHW0702M0-MD03 F40M	
2	0,10–0,18	RDHT0702M0-E03 F40M	RDHW0702M0-MD03 F40M	
3	0,10–0,18	RDHT0702M0-E03 F40M	RDHW0702M0-MD03 MP3000	
4	0,10–0,16	RDHW0702M0-MD03 F40M	RDHW0803M0-MD03 MP3000	
5	0,10–0,16	RDHW0702M0-MD03 MP3000	RDHW0702M0-MD03 F40M	
6	0,10–0,16	RDHW0702M0-MD03 MP3000	RDHW0702M0T-MD04 F15M	
7	0,10–0,16	RDHW0702M0-MD03 MP3000	RDHW0702M0T-MD04 F15M	
8	0,08–0,16	RDHT0702M0-E03 F40M	RDHW0702M0-MD03 F40M	
9	0,08–0,16	RDHT0702M0-E03 F40M	RDHW0702M0-MD03 F40M	
10	0,06–0,14	RDHW0702M0-MD03 F40M	RDHW0702M0T-MD04 F40M	
11	0,06–0,14	RDHW0702M0-MD03 F40M	RDHW0702M0T-MD04 F40M	
12	0,12–0,20	RDHW0702M0T-MD04 MK2000	RDHW0702M0-MD03 MP3000	
13	0,12–0,20	RDHW0702M0T-MD04 MK2000	RDHW0702M0-MD03 MP3000	
14	0,12–0,20	RDHW0702M0T-MD04 MK2000	RDHW0702M0-MD03 MP3000	
15	0,12–0,20	RDHW0702M0T-MD04 MK2000	RDHW0702M0-MD03 MP3000	
16	0,10–0,20	RDHT0702M0-E03 H25	RDHT0702M0-E03 F40M	
17	0,10–0,20	RDHT0702M0-E03 H25	RDHT0702M0-E03 F40M	
18	0,10–0,20	RDHT0702M0-E03 H25	RDHT0702M0-E03 F40M	
19	0,10–0,16	RDHW0702M0-MD03 F40M	RDHW0702M0T-MD04 F40M	
20	0,10–0,16	RDHW0702M0-MD03 F40M	RDHW0702M0T-MD04 F40M	
21	0,06–0,14	RDHW0702M0-MD03 F40M	RDHW0702M0T-MD04 F40M	
22	0,10–0,16	RDHT0702M0-E03 F40M	RDHW0702M0-MD03 F40M	

Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades																				
	MP3000			MK2000			F40M			F15M			F25M			MS2500			H25		
	f_z (mm/tooth)																				
	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20
	v_c (m/min)																				
1	460	415	370	–	–	–	370	330	300	440	395	355	405	365	325	530	475	430	–	–	–
2	390	350	315	–	–	–	310	280	250	375	335	305	345	310	275	450	405	365	–	–	–
3	320	290	260	–	–	–	255	230	210	310	275	250	285	255	230	370	335	300	–	–	–
4	275	245	220	–	–	–	220	195	180	265	235	215	240	215	195	315	285	255	–	–	–
5	230	205	185	–	–	–	185	165	150	220	195	180	200	180	165	265	235	215	–	–	–
6	200	180	–	–	–	–	160	145	–	195	175	–	175	160	–	230	210	–	–	–	–
7	50	46	–	–	–	–	44	39	–	55	47	–	48	43	–	55	50	–	–	–	–
8	290	260	235	–	–	–	250	225	205	–	–	–	275	250	225	320	290	260	–	–	–
9	230	205	185	–	–	–	200	180	160	–	–	–	215	195	175	255	225	205	–	–	–
10	190	170	150	–	–	–	160	145	130	–	–	–	180	160	145	205	185	165	–	–	–
11	140	125	110	–	–	–	120	110	95	–	–	–	130	120	105	155	140	125	–	–	–
12	240	215	195	250	225	200	190	170	155	230	205	185	210	190	170	275	250	225	180	165	145
13	210	190	170	220	195	175	170	150	135	200	180	165	185	165	150	240	220	195	160	145	130
14	175	160	145	185	165	150	140	125	115	170	155	140	155	140	125	205	185	165	135	120	–
15	145	130	–	150	135	–	115	105	–	140	125	–	130	115	–	170	150	–	110	100	90
16	1190	1070	965	–	–	–	950	855	770	1140	1025	925	1045	940	845	1370	1230	1110	905	815	730
17	960	865	775	–	–	–	770	690	620	920	830	745	845	760	685	1105	995	895	730	655	590
18	730	660	590	–	–	–	585	525	475	705	630	570	645	580	520	845	760	680	555	500	450
19	60	55	–	–	–	–	55	47	–	–	–	–	60	50	–	70	65	–	–	–	–
20	49	44	–	–	–	–	42	38	–	–	–	–	47	42	–	55	50	–	–	–	–
21	42	38	–	–	–	–	37	33	–	–	–	–	40	36	–	49	44	–	–	–	–
22	100	90	–	–	–	–	90	80	–	–	–	–	95	85	–	120	105	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,02	0,05	0,09	0,65
Side milling	2%	0,09	0,24	0,42	1,20
	5%	0,06	0,15	0,27	1,10
	10%	0,04	0,11	0,19	1,00
	20%	0,03	0,08	0,14	0,90
	30%	0,02	0,07	0,11	0,85
Average chip thickness h_m		0,012	0,03	0,06	–

Type of insert

Insert size	Width of slot mm
07	7

Insert selection – (R)335.29-R04

Universal insert: RDHT 0803M0-E03 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,10–0,18	RDHT0803M0-E03 F40M	RDHW0803M0-MD03 F40M	
2	0,10–0,18	RDHT0803M0-E03 F40M	RDHW0803M0-MD03 F40M	
3	0,10–0,18	RDHT0803M0-E03 F40M	RDHW0803M0-MD03 F40M	
4	0,10–0,16	RDHW0803M0-MD03 F40M	RDHW0803M0-MD03 MP3000	
5	0,10–0,16	RDHW0803M0-MD03 MP3000	RDHW0803M0-MD03 F40M	
6	0,10–0,16	RDHW0803M0-MD03 MP3000	RDKW0803M0T-MD05 F15M	
7	0,10–0,16	RDHW0803M0-MD03 MP3000	RDKW0803M0T-MD05 F15M	
8	0,08–0,16	RDHT0803M0-E03 F40M	RDHW0803M0-MD03 F40M	
9	0,08–0,16	RDHT0803M0-E03 F40M	RDHW0803M0-MD03 F40M	
10	0,06–0,14	RDHW0803M0-MD03 F40M	RDKW0803M0T-MD05 F40M	
11	0,06–0,14	RDHW0803M0-MD03 F40M	RDKW0803M0T-MD05 F40M	
12	0,12–0,20	RDKW0803M0T-MD05 MK2000	RDHW0803M0-MD03 MP3000	
13	0,12–0,20	RDKW0803M0T-MD05 MK2000	RDHW0803M0-MD03 MP3000	
14	0,12–0,20	RDKW0803M0T-MD05 MK2000	RDHW0803M0-MD03 MP3000	
15	0,12–0,20	RDKW0803M0T-MD05 MK2000	RDHW0803M0-MD03 MP3000	
16	0,10–0,20	RDHT0803M0-E03 H25	RDHT0803M0-E03 F40M	
17	0,10–0,20	RDHT0803M0-E03 H25	RDHT0803M0-E03 F40M	
18	0,10–0,20	RDHT0803M0-E03 H25	RDHT0803M0-E03 F40M	
19	0,10–0,16	RDHW0803M0-MD03 F40M	RDKW0803M0T-MD05 F40M	
20	0,10–0,16	RDHW0803M0-MD03 F40M	RDKW0803M0T-MD05 F40M	
21	0,06–0,14	RDHW0803M0-MD03 F40M	RDKW0803M0T-MD05 F40M	
22	0,10–0,16	RDHT0803M0-E03 F40M	RDHW0803M0-MD03 F40M	

Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades																				
	F40M			MP3000			F15M			MK2000			MP2500			T350M			H25		
	f_z (mm/tooth)																				
	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20
SMG	v_c (m/min)																				
1	370	330	300	460	415	370	440	395	355	–	–	–	485	435	395	425	380	340	–	–	–
2	310	280	250	390	350	315	375	335	300	–	–	–	410	370	335	360	320	290	–	–	–
3	255	230	210	320	290	260	310	275	250	–	–	–	340	305	275	295	265	240	–	–	–
4	220	195	180	275	245	220	265	235	215	–	–	–	290	260	235	250	225	205	–	–	–
5	185	165	150	230	205	185	220	195	180	–	–	–	240	215	195	210	190	170	–	–	–
6	160	145	–	200	180	–	195	175	–	–	–	–	210	190	–	185	165	–	–	–	–
7	44	39	–	50	46	–	55	47	–	–	–	–	55	47	–	50	45	–	–	–	–
8	250	225	205	290	260	235	–	–	–	–	–	–	295	265	240	275	250	225	–	–	–
9	200	180	160	230	205	185	–	–	–	–	–	–	235	210	190	215	195	175	–	–	–
10	160	145	130	190	170	150	–	–	–	–	–	–	190	170	155	180	160	145	–	–	–
11	120	110	95	140	125	110	–	–	–	–	–	–	140	125	115	130	120	105	–	–	–
12	190	170	155	240	215	195	230	205	185	250	225	200	255	225	205	220	200	180	180	165	145
13	170	150	135	210	190	170	200	180	165	220	195	175	220	200	180	195	175	155	160	145	130
14	140	125	115	175	160	145	170	155	140	185	165	150	185	170	150	165	145	130	135	120	–
15	115	105	–	145	130	–	140	125	–	150	135	–	155	140	–	135	120	–	110	100	90
16	950	855	770	1190	1070	965	1140	1025	925	–	–	–	1255	1130	1015	1095	985	885	905	810	730
17	770	690	620	960	865	775	920	830	745	–	–	–	1015	910	820	885	795	715	730	655	590
18	585	525	475	730	660	590	705	630	570	–	–	–	775	695	625	675	605	545	555	500	450
19	55	47	–	60	55	–	–	–	–	–	–	–	65	60	–	60	50	–	–	–	–
20	42	38	–	49	44	–	–	–	–	–	–	–	50	47	–	47	42	–	–	–	–
21	37	33	–	42	38	–	–	–	–	–	–	–	45	40	–	40	36	–	–	–	–
22	90	80	–	100	90	–	–	–	–	–	–	–	110	95	–	95	85	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,03	0,06	0,10	0,65
Side milling	2%	0,13	0,26	0,44	1,20
	5%	0,08	0,17	0,28	1,10
	10%	0,06	0,12	0,20	1,00
	20%	0,04	0,09	0,14	0,90
	30%	0,04	0,07	0,12	0,85
Average chip thickness h_m		0,02	0,04	0,06	–

Type of insert

Insert size	Width of slot mm
08	8

Insert selection – (R)335.18/29-R05

Universal insert: RDHT10T3M0T-M05 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0-E04 F40M	
2	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0-E04 F40M	
3	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M07 F40M	
4	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M07 F40M	
5	0,15–0,20	RDKW10T3M0T-MD04 MP3000	RDKW10T3M0T-MD06 F15M	
6	0,15–0,20	RDKW10T3M0T-MD04 MP3000	RDKW10T3M0T-MD06 F15M	
7	0,15–0,20	RDKW10T3M0T-MD04 MP3000	RDKW10T3M0T-MD06 F15M	
8	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 MM4500	
9	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 MM4500	
10	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 MM4500	
11	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 MM4500	
12	0,15–0,25	RDKW10T3M0T-MD06 MK2000	RDKW10T3M0T-MD04 MP3000	
13	0,15–0,25	RDKW10T3M0T-MD06 MK2000	RDKW10T3M0T-MD04 MP3000	
14	0,15–0,25	RDKW10T3M0T-MD06 MK2000	RDKW10T3M0T-MD04 MP3000	
15	0,15–0,25	RDKW10T3M0T-MD06 MK2000	RDKW10T3M0T-MD04 MP3000	
16	0,12–0,25	RDHT10T3M0-E04 H25	RDHT10T3M0-E04 F40M	
17	0,12–0,25	RDHT10T3M0-E04 H25	RDHT10T3M0-E04 F40M	
18	0,12–0,25	RDHT10T3M0-E04 H25	RDHT10T3M0-E04 F40M	
19	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 T350M	
20	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 T350M	
21	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 T350M	
22	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0-E04 F40M	

Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			F30M			F25M		
	f_z (mm/tooth)																				
	0,10	0,18	0,25	0,10	0,18	0,25	0,10	0,18	0,25	0,10	0,18	0,25	0,10	0,18	0,25	0,10	0,18	0,25	0,10	0,18	0,25
	v_c (m/min)																				
1	540	480	445	480	425	395	455	405	375	415	370	345	360	325	300	380	340	315	400	355	330
2	455	410	380	405	360	335	385	340	315	355	315	290	305	275	255	320	290	265	335	300	280
3	375	335	310	335	300	275	315	285	260	290	260	240	255	225	210	265	235	220	280	250	230
4	320	290	265	285	255	235	270	240	225	250	220	205	215	195	180	225	205	190	240	210	195
5	270	240	220	240	210	195	225	200	185	205	185	170	180	160	150	190	170	155	200	175	165
6	235	210	–	210	185	–	200	175	–	180	160	–	160	140	–	165	150	–	175	155	–
7	65	60	–	50	46	–	50	45	–	50	44	–	43	39	–	45	41	–	48	42	–
8	370	330	305	290	260	240	285	255	240	270	245	225	250	220	205	260	230	215	270	245	225
9	290	260	240	230	205	190	225	200	185	215	190	175	195	175	160	205	180	170	215	190	175
10	235	210	195	190	170	155	185	165	155	175	155	145	160	140	130	165	150	140	175	155	145
11	175	155	145	140	125	115	135	120	115	130	115	105	120	105	100	125	110	100	130	115	105
12	280	250	230	250	220	205	235	210	195	215	195	180	190	170	155	200	175	165	210	185	170
13	245	220	205	220	195	180	205	185	170	190	170	160	165	150	135	175	155	145	180	165	150
14	210	185	170	185	165	150	175	155	145	160	145	135	140	125	115	145	130	120	155	135	125
15	170	155	–	150	135	–	145	130	–	135	120	–	115	105	–	120	110	–	125	115	–
16	–	–	–	1235	1105	1025	1170	1045	970	1080	960	890	935	835	775	985	880	815	1030	920	850
17	–	–	–	1000	890	825	945	845	780	870	775	720	755	675	625	795	710	655	835	745	690
18	–	–	–	760	680	630	720	645	595	665	590	550	575	515	475	605	540	500	635	565	525
19	–	–	–	65	55	–	60	55	–	55	50	–	50	46	–	55	49	–	55	50	–
20	–	–	–	50	46	–	48	43	–	46	41	–	42	37	–	44	39	–	46	41	–
21	–	–	–	44	40	–	42	37	–	40	35	–	36	32	–	38	34	–	40	35	–
22	–	–	–	105	95	–	100	90	–	95	85	–	85	75	–	90	80	–	95	85	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,05	0,09	0,12	0,65
Side milling	2%	0,22	0,40	0,55	1,20
	5%	0,14	0,25	0,35	1,10
	10%	0,10	0,18	0,25	1,00
	20%	0,07	0,13	0,18	0,90
	30%	0,06	0,11	0,15	0,85
Average chip thickness h_m		0,03	0,06	0,08	–

Type of insert

Insert size	Width of slot mm
10	10–12

Insert selection – (R)335.18/29-R05

Universal insert: RDHT10T3M0T-M05 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0-E04 F40M	
2	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0-E04 F40M	
3	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M07 F40M	
4	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M07 F40M	
5	0,15–0,20	RDKW10T3M0T-MD04 MP3000	RDKW10T3M0T-MD06 F15M	
6	0,15–0,20	RDKW10T3M0T-MD04 MP3000	RDKW10T3M0T-MD06 F15M	
7	0,15–0,20	RDKW10T3M0T-MD04 MP3000	RDKW10T3M0T-MD06 F15M	
8	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 MM4500	
9	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 MM4500	
10	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 MM4500	
11	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 MM4500	
12	0,15–0,25	RDKW10T3M0T-MD06 MK2000	RDKW10T3M0T-MD04 MP3000	
13	0,15–0,25	RDKW10T3M0T-MD06 MK2000	RDKW10T3M0T-MD04 MP3000	
14	0,15–0,25	RDKW10T3M0T-MD06 MK2000	RDKW10T3M0T-MD04 MP3000	
15	0,15–0,25	RDKW10T3M0T-MD06 MK2000	RDKW10T3M0T-MD04 MP3000	
16	0,12–0,25	RDHT10T3M0-E04 H25	RDHT10T3M0-E04 F40M	
17	0,12–0,25	RDHT10T3M0-E04 H25	RDHT10T3M0-E04 F40M	
18	0,12–0,25	RDHT10T3M0-E04 H25	RDHT10T3M0-E04 F40M	
19	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 T350M	
20	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 T350M	
21	0,10–0,18	RDHT10T3M0T-M05 F40M	RDHT10T3M0T-M05 T350M	
22	0,12–0,20	RDHT10T3M0T-M05 F40M	RDHT10T3M0-E04 F40M	

Cutting data – 10% engagement width (a_e/D_c = 10%)

SMG	Grades												
	F15M			MS2500			MM4500						
	f_z (mm/tooth)												
	0,10	0,18	0,25	0,10	0,18	0,25	0,10	0,18	0,25				
	v_c (m/min)												
1	435	390	360	520	465	430	295	260	245				
2	370	330	305	440	395	365	250	220	205				
3	305	270	250	365	325	300	205	185	170				
4	260	230	215	310	280	255	175	155	145				
5	215	195	180	260	230	215	145	130	120				
6	190	170	–	230	205	–	130	115	–				
7	50	46	–	55	50	–	–	–	–				
8	295	265	245	315	285	260	215	190	175				
9	235	210	195	250	220	205	170	150	140				
10	190	170	160	205	180	170	135	125	115				
11	140	125	115	150	135	125	100	90	85				
12	225	200	185	270	240	225	135	120	110				
13	200	180	165	240	215	195	120	105	100				
14	165	150	140	200	180	165	100	90	80				
15	140	125	–	165	150	–	80	75	–				
16	1125	1005	930	1350	1205	1115	–	–	–				
17	910	810	750	1090	975	900	–	–	–				
18	690	620	570	830	740	685	–	–	–				
19	60	55	–	70	60	–	37	33	–				
20	50	45	–	55	50	–	30	26	–				
21	43	39	–	48	43	–	25	23	–				
22	105	95	–	115	105	–	60	55	–				

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,05	0,09	0,12	0,65
Side milling	2%	0,22	0,40	0,55	1,20
	5%	0,14	0,25	0,35	1,10
	10%	0,10	0,18	0,25	1,00
	20%	0,07	0,13	0,18	0,90
	30%	0,06	0,11	0,15	0,85
Average chip thickness h_m		0,03	0,06	0,08	–

Type of insert

Insert size	Width of slot mm
10	10–12

Insert selection – (R)335.18-R06

Universal insert: RPHT 1204M0T-M08 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,20–0,32	RPHT1204M0T-ME07 F40M	RPHT1204M0T-M08 F40M	
2	0,20–0,32	RPHT1204M0T-ME07 F40M	RPHT1204M0T-M08 F40M	
3	0,20–0,32	RPHT1204M0T-ME07 F40M	RPHT1204M0T-M08 F40M	
4	0,20–0,32	RPHT1204M0T-ME07 F40M	RPHT1204M0T-M08 F40M	
5	0,15–0,25	RPHW1204M0-MD05 MP3000	RPHW1204M0-MD05 F40M	
6	0,15–0,20	RPHW1204M0-MD05 MP3000	RPKW1204M0T-MD10 F15M	
7	0,15–0,20	RPHW1204M0-MD05 MP3000	RPKW1204M0T-MD10 F15M	
8	0,12–0,25	RPHT1204M0T-ME07 F40M	RPHT1204M0T-ME07 MM4500	
9	0,12–0,25	RPHT1204M0T-ME07 F40M	RPHT1204M0T-ME07 MM4500	
10	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 MM4500	
11	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 MM4500	
12	0,20–0,32	RPKW1204M0T-MD10 MK2000	RPHW1204M0-MD05 MP3000	
13	0,20–0,32	RPKW1204M0T-MD10 MK2000	RPHW1204M0-MD05 MP3000	
14	0,15–0,25	RPKW1204M0T-MD10 MK2000	RPHW1204M0-MD05 MP3000	
15	0,15–0,25	RPKW1204M0T-MD10 MK2000	RPHW1204M0-MD05 MP3000	
16	0,15–0,32	RPHT1204M0-E05 H25	RPHT1204M0-E05 F40M	
17	0,15–0,32	RPHT1204M0-E05 H25	RPHT1204M0-E05 F40M	
18	0,15–0,32	RPHT1204M0-E05 H25	RPHT1204M0-E05 F40M	
19	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 T350M	
20	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 T350M	
21	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 T350M	
22	0,12–0,20	RPHW1204M0-MD05 F40M	RPHT1204M0T-M08 F40M	

Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades																				
	MP1500			MP2500			MP3000			MS2500			F40M			F30M			F25M		
	f_z (mm/tooth)																				
	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32
	v_c (m/min)																				
1	560	485	435	495	430	385	470	410	365	540	470	420	375	325	290	395	345	305	415	360	320
2	475	415	365	420	365	325	395	345	310	460	400	355	320	275	245	335	290	260	350	305	270
3	390	340	305	345	300	270	330	285	255	380	330	295	260	230	205	275	240	215	290	250	225
4	335	290	260	295	260	230	280	245	215	325	280	250	225	195	175	235	205	185	245	215	190
5	280	245	215	245	215	190	235	205	180	270	235	210	185	165	145	195	170	150	205	180	160
6	245	215	–	215	190	–	205	180	–	235	205	–	165	145	–	170	150	–	180	155	–
7	65	60	–	55	47	–	50	46	–	60	50	–	45	39	–	47	41	–	49	43	–
8	380	335	295	305	265	235	300	260	230	330	285	255	255	225	200	270	235	210	280	245	220
9	300	260	235	240	205	185	235	205	180	260	225	200	200	175	155	210	185	165	220	195	170
10	245	215	190	195	170	150	190	165	150	210	185	165	165	145	130	175	150	135	180	160	140
11	180	160	140	145	125	110	140	125	110	155	135	120	120	105	95	130	110	100	135	115	105
12	290	255	225	260	225	200	245	215	190	280	245	220	195	170	150	205	180	160	215	185	165
13	255	225	200	225	200	175	215	185	165	245	215	190	170	150	135	180	155	140	190	165	145
14	215	190	165	190	165	150	180	160	140	210	180	160	145	125	110	150	130	120	160	140	125
15	180	155	–	160	140	–	150	130	–	170	150	–	120	105	–	125	110	–	130	115	–
16	–	–	–	1280	1115	995	1215	1060	940	1400	1220	1085	970	845	755	1020	890	790	1070	930	830
17	–	–	–	1035	905	805	980	855	760	1130	985	875	785	685	610	825	720	640	865	750	670
18	–	–	–	790	690	610	745	650	580	860	750	670	600	520	465	625	545	485	655	575	510
19	–	–	–	65	60	–	60	55	–	70	65	–	55	47	–	55	49	–	60	50	–
20	–	–	–	55	46	–	50	44	–	60	50	–	43	38	–	45	40	–	48	42	–
21	–	–	–	46	40	–	43	38	–	50	44	–	37	33	–	39	34	–	41	36	–
22	–	–	–	110	95	–	105	90	–	120	105	–	90	80	–	95	80	–	100	85	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,05	0,10	0,16	0,65
Side milling	2%	0,22	0,44	0,71	1,20
	5%	0,14	0,28	0,45	1,10
	10%	0,10	0,20	0,32	1,00
	20%	0,07	0,14	0,23	0,90
	30%	0,06	0,12	0,19	0,85
Average chip thickness h_m		0,03	0,06	0,10	–

Type of insert

Insert size	Width of slot mm
12	12–15

Insert selection – (R)335.18-R06

Universal insert: RPHT 1204M0T-M08 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,20–0,32	RPHT1204M0T-ME07 F40M	RPHT1204M0T-M08 F40M	
2	0,20–0,32	RPHT1204M0T-ME07 F40M	RPHT1204M0T-M08 F40M	
3	0,20–0,32	RPHT1204M0T-ME07 F40M	RPHT1204M0T-M08 F40M	
4	0,20–0,32	RPHT1204M0T-ME07 F40M	RPHT1204M0T-M08 F40M	
5	0,15–0,25	RPHW1204M0-MD05 MP3000	RPHW1204M0-MD05 F40M	
6	0,15–0,20	RPHW1204M0-MD05 MP3000	RPKW1204M0T-MD10 F15M	
7	0,15–0,20	RPHW1204M0-MD05 MP3000	RPKW1204M0T-MD10 F15M	
8	0,12–0,25	RPHT1204M0T-ME07 F40M	RPHT1204M0T-ME07 MM4500	
9	0,12–0,25	RPHT1204M0T-ME07 F40M	RPHT1204M0T-ME07 MM4500	
10	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 MM4500	
11	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 MM4500	
12	0,20–0,32	RPKW1204M0T-MD10 MK2000	RPHW1204M0-MD05 MP3000	
13	0,20–0,32	RPKW1204M0T-MD10 MK2000	RPHW1204M0-MD05 MP3000	
14	0,15–0,25	RPKW1204M0T-MD10 MK2000	RPHW1204M0-MD05 MP3000	
15	0,15–0,25	RPKW1204M0T-MD10 MK2000	RPHW1204M0-MD05 MP3000	
16	0,15–0,32	RPHT1204M0-E05 H25	RPHT1204M0-E05 F40M	
17	0,15–0,32	RPHT1204M0-E05 H25	RPHT1204M0-E05 F40M	
18	0,15–0,32	RPHT1204M0-E05 H25	RPHT1204M0-E05 F40M	
19	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 T350M	
20	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 T350M	
21	0,12–0,20	RPHT1204M0T-M08 F40M	RPHT1204M0T-M08 T350M	
22	0,12–0,20	RPHW1204M0-MD05 F40M	RPHT1204M0T-M08 F40M	

Cutting data – 10% engagement width (a_e/D_c = 10%)

	Grades																				
	F15M			MM4500			T350M			T25M			MK2000			MK3000			H25		
	f_z (mm/tooth)																				
	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32	0,10	0,20	0,32
SMG	v_c (m/min)																				
1	450	395	350	305	265	235	430	375	335	415	360	320	–	–	–	–	–	–	–	–	–
2	380	335	295	260	225	200	365	320	285	350	305	270	–	–	–	–	–	–	–	–	–
3	315	275	245	215	185	165	300	265	235	290	250	225	–	–	–	–	–	–	–	–	–
4	270	235	210	180	160	140	260	225	200	245	215	190	–	–	–	–	–	–	–	–	–
5	225	195	175	150	130	115	215	185	165	205	180	160	–	–	–	–	–	–	–	–	–
6	195	170	–	135	115	–	190	165	–	180	155	–	–	–	–	–	–	–	–	–	–
7	55	47	–	–	–	–	50	45	–	49	43	–	–	–	–	–	–	–	–	–	–
8	–	–	–	220	195	170	280	245	220	280	245	220	–	–	–	–	–	–	–	–	–
9	–	–	–	175	150	135	220	195	170	220	195	170	–	–	–	–	–	–	–	–	–
10	–	–	–	140	125	110	180	160	140	180	160	140	–	–	–	–	–	–	–	–	–
11	–	–	–	105	90	80	135	115	105	135	115	105	–	–	–	–	–	–	–	–	–
12	235	205	180	140	120	110	225	195	175	215	185	165	255	220	195	235	205	185	185	160	145
13	205	180	160	120	105	95	200	170	155	190	165	145	225	195	175	210	180	160	165	140	125
14	175	150	135	105	90	80	165	145	130	160	140	125	190	165	145	175	150	135	135	120	105
15	145	125	–	85	75	–	140	120	–	130	115	–	155	135	–	145	125	–	115	100	–
16	1165	1015	905	–	–	–	1115	975	865	1070	930	830	–	–	–	–	–	–	920	805	715
17	940	820	730	–	–	–	900	785	700	865	750	670	–	–	–	–	–	–	745	650	580
18	715	625	555	–	–	–	685	600	535	655	575	510	–	–	–	–	–	–	570	495	440
19	–	–	–	38	33	–	60	50	–	60	50	–	–	–	–	–	–	–	–	–	–
20	–	–	–	31	27	–	48	42	–	48	42	–	–	–	–	–	–	–	–	–	–
21	–	–	–	26	23	–	41	36	–	41	36	–	–	–	–	–	–	–	–	–	–
22	–	–	–	65	55	–	100	85	–	100	85	–	–	–	–	–	–	–	–	–	–

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,05	0,10	0,16	0,65
Side milling	2%	0,22	0,44	0,71	1,20
	5%	0,14	0,28	0,45	1,10
	10%	0,10	0,20	0,32	1,00
	20%	0,07	0,14	0,23	0,90
	30%	0,06	0,12	0,19	0,85
Average chip thickness h_m		0,03	0,06	0,10	–

Type of insert

Insert size	Width of slot mm
12	12–15

Insert selection – (R)335.18-R08

Universal insert: RPKT 1605M0T-ME11 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-M12 F40M	
2	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-M12 F40M	
3	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-M12 F40M	
4	0,20–0,32	RPHT1605M0T-ME11 F40M	RPHT1605M0T-M12 F40M	
5	0,20–0,28	RPHW1605M0T-MD08 MP3000	RPHW1605M0T-MD08 F40M	
6	0,16–0,28	RPHW1605M0T-MD08 MP3000	RPKW1605M0T-MD20 F15M	
7	0,16–0,28	RPHW1605M0T-MD08 MP3000	RPKW1605M0T-MD20 F15M	
8	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-ME11 MM4500	
9	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-ME11 MM4500	
10	0,20–0,28	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 MM4500	
11	0,20–0,28	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 MM4500	
12	0,25–0,38	RPKW1605M0T-MD20 MK2000	RPHW1605M0T-MD08 MP3000	
13	0,25–0,38	RPKW1605M0T-MD20 MK2000	RPHW1605M0T-MD08 MP3000	
14	0,20–0,28	RPKW1605M0T-MD20 MK2000	RPHW1605M0T-MD08 MP3000	
15	0,20–0,28	RPKW1605M0T-MD20 MK2000	RPHW1605M0T-MD08 MP3000	
16	0,20–0,38	RPHT1605M0-E08 H25	RPHW1605M0T-MD08 F40M	
17	0,20–0,38	RPHT1605M0-E08 H25	RPHW1605M0T-MD08 F40M	
18	0,20–0,38	RPHT1605M0-E08 H25	RPHW1605M0T-MD08 F40M	
19	0,20–0,28	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 T350M	
20	0,20–0,28	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 T350M	
21	0,16–0,25	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 T350M	
22	0,20–0,28	RPHW1605M0T-MD08 F40M	RPHT1605M0T-M12 F40M	

Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades																				
	MP1500			MP2500			MP3000			F40M			F30M			F25M			F15M		
	f_z (mm/tooth)																				
	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38
	v_c (m/min)																				
1	505	455	410	450	405	365	425	385	345	340	305	275	355	320	290	375	340	300	410	370	330
2	430	390	345	380	345	305	360	325	290	290	260	235	300	275	245	315	285	255	345	310	280
3	355	320	285	315	285	255	295	270	240	240	215	190	250	225	200	260	235	210	285	260	230
4	300	275	245	270	240	215	255	230	205	205	185	165	215	190	170	225	200	180	245	220	195
5	250	230	205	225	200	180	210	190	170	170	155	135	180	160	145	185	170	150	205	185	165
6	220	200	–	195	175	–	185	170	–	150	135	–	155	140	–	165	145	–	180	160	–
7	60	55	–	49	44	–	47	43	–	41	37	–	43	39	–	45	40	–	49	44	–
8	345	315	280	275	250	220	270	245	220	230	210	190	245	220	195	255	230	205	–	–	–
9	270	245	220	215	195	175	210	190	170	185	165	150	190	175	155	200	180	160	–	–	–
10	225	200	180	175	160	145	175	155	140	150	135	120	155	140	125	165	150	135	–	–	–
11	165	150	135	130	120	105	130	115	105	110	100	90	115	105	95	120	110	100	–	–	–
12	265	240	215	235	210	190	220	200	180	175	160	145	185	170	150	195	175	155	210	190	170
13	230	210	185	205	185	165	195	175	155	155	140	125	165	150	130	170	155	140	185	170	150
14	195	175	160	175	155	140	165	150	130	130	120	105	135	125	110	145	130	115	155	140	125
15	160	145	–	145	130	–	135	120	–	110	100	–	115	105	–	120	110	–	130	115	–
16	–	–	–	1160	1050	940	1100	995	890	880	795	710	925	835	745	970	875	780	1055	955	855
17	–	–	–	940	845	760	890	800	720	710	640	575	745	675	605	780	705	630	850	770	690
18	–	–	–	715	645	575	675	610	545	540	490	435	570	515	460	595	540	480	650	585	525
19	–	–	–	60	55	–	55	50	–	49	44	–	50	46	–	55	48	–	–	–	–
20	–	–	–	48	44	–	46	41	–	39	35	–	41	37	–	43	39	–	–	–	–
21	–	–	–	42	38	–	39	35	–	34	31	–	36	32	–	37	34	–	–	–	–
22	–	–	–	100	90	–	95	85	–	80	75	–	85	75	–	90	80	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,08	0,12	0,19	0,65
Side milling	2%	0,35	0,55	0,84	1,20
	5%	0,22	0,35	0,53	1,10
	10%	0,16	0,25	0,38	1,00
	20%	0,12	0,18	0,27	0,90
	30%	0,10	0,15	0,23	0,85
Average chip thickness h_m		0,05	0,08	0,12	–

Type of insert

Insert size	Width of slot mm
16	16–18,5

Insert selection – (R)335.18-R08

Universal insert: RPKT 1605M0T-ME11 F40M

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-M12 F40M	
2	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-M12 F40M	
3	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-M12 F40M	
4	0,20–0,32	RPHT1605M0T-ME11 F40M	RPHT1605M0T-M12 F40M	
5	0,20–0,28	RPHW1605M0T-MD08 MP3000	RPHW1605M0T-MD08 F40M	
6	0,16–0,28	RPHW1605M0T-MD08 MP3000	RPKW1605M0T-MD20 F15M	
7	0,16–0,28	RPHW1605M0T-MD08 MP3000	RPKW1605M0T-MD20 F15M	
8	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-ME11 MM4500	
9	0,25–0,38	RPHT1605M0T-ME11 F40M	RPHT1605M0T-ME11 MM4500	
10	0,20–0,28	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 MM4500	
11	0,20–0,28	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 MM4500	
12	0,25–0,38	RPKW1605M0T-MD20 MK2000	RPHW1605M0T-MD08 MP3000	
13	0,25–0,38	RPKW1605M0T-MD20 MK2000	RPHW1605M0T-MD08 MP3000	
14	0,20–0,28	RPKW1605M0T-MD20 MK2000	RPHW1605M0T-MD08 MP3000	
15	0,20–0,28	RPKW1605M0T-MD20 MK2000	RPHW1605M0T-MD08 MP3000	
16	0,20–0,38	RPHT1605M0-E08 H25	RPHW1605M0T-MD08 F40M	
17	0,20–0,38	RPHT1605M0-E08 H25	RPHW1605M0T-MD08 F40M	
18	0,20–0,38	RPHT1605M0-E08 H25	RPHW1605M0T-MD08 F40M	
19	0,20–0,28	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 T350M	
20	0,20–0,28	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 T350M	
21	0,16–0,25	RPHT1605M0T-M12 F40M	RPHT1605M0T-M12 T350M	
22	0,20–0,28	RPHW1605M0T-MD08 F40M	RPHT1605M0T-M12 F40M	

Cutting data – 10% engagement width (a_e/D_c = 10%)

SMG	Grades																		
	MM4500			T350M			MS2500			MK2000			MK3000			H25			
	f_z (mm/tooth)																		
	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38	0,16	0,25	0,38	
	v_c (m/min)																		
1	275	250	225	390	355	315	490	440	395	–	–	–	–	–	–	–	–	–	
2	235	210	190	330	300	270	415	375	335	–	–	–	–	–	–	–	–	–	
3	195	175	155	275	245	220	340	310	275	–	–	–	–	–	–	–	–	–	
4	165	150	135	235	210	190	290	265	235	–	–	–	–	–	–	–	–	–	
5	135	125	110	195	175	155	245	220	195	–	–	–	–	–	–	–	–	–	
6	120	110	–	170	155	–	215	195	–	–	–	–	–	–	–	–	–	–	
7	–	–	–	47	42	–	55	48	–	–	–	–	–	–	–	–	–	–	
8	200	180	160	255	230	205	300	270	240	–	–	–	–	–	–	–	–	–	
9	160	140	125	200	180	160	235	210	190	–	–	–	–	–	–	–	–	–	
10	130	115	105	165	150	135	190	175	155	–	–	–	–	–	–	–	–	–	
11	95	85	75	120	110	100	140	130	115	–	–	–	–	–	–	–	–	–	
12	125	115	100	205	185	165	255	230	205	230	210	185	215	195	175	170	150	135	
13	110	100	90	180	160	145	225	200	180	200	185	165	190	170	150	150	135	120	
14	95	85	75	150	135	120	190	170	150	170	155	140	160	145	130	125	110	100	
15	75	70	–	125	115	–	155	140	–	140	125	–	130	120	–	105	95	–	
16	–	–	–	1010	915	815	1265	1145	1025	–	–	–	–	–	–	835	755	675	
17	–	–	–	815	740	660	1025	925	825	–	–	–	–	–	–	675	610	545	
18	–	–	–	620	560	505	780	705	630	–	–	–	–	–	–	515	465	415	
19	34	31	–	55	48	–	65	60	–	–	–	–	–	–	–	–	–	–	
20	28	25	–	43	39	–	55	47	–	–	–	–	–	–	–	–	–	–	
21	24	22	–	37	34	–	45	41	–	–	–	–	–	–	–	–	–	–	
22	55	50	–	90	80	–	110	100	–	–	–	–	–	–	–	–	–	–	

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,08	0,12	0,19	0,65
Side milling	2%	0,35	0,55	0,84	1,20
	5%	0,22	0,35	0,53	1,10
	10%	0,16	0,25	0,38	1,00
	20%	0,12	0,18	0,27	0,90
	30%	0,10	0,15	0,23	0,85
Average chip thickness h_m		0,05	0,08	0,12	–

Type of insert

Insert size	Width of slot mm
16	16–18,5

Insert selection – (R)335.18

SMG	fz mm/tooth ae/Dc = 10%	First choice	First choice	First choice
1	0,25–0,42	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
2	0,25–0,42	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
3	0,23–0,38	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
4	0,23–0,38	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
5	0,23–0,35	335.18-1005T-M10 MP2500	335.18-1305T-M11 MP2500	335.18-1606T-M12 MP2500
6	0,23–0,32	335.18-1005T-M10 MP1500	335.18-1305T-M11 MP1500	335.18-1606T-M12 MP1500
7	0,16–0,28	335.18-1005T-M10 MP1500	335.18-1305T-M11 MP1500	335.18-1606T-M12 MP1500
8	0,25–0,42	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
9	0,25–0,38	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
10	0,23–0,32	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
11	0,20–0,28	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
12	0,25–0,42	335.18-1005T-M10 MK2000	335.18-1305T-M11 MK2000	335.18-1606T-M12 MP2500
13	0,25–0,38	335.18-1005T-M10 MK2000	335.18-1305T-M11 MK2000	335.18-1606T-M12 MP2500
14	0,23–0,35	335.18-1005T-M10 MK2000	335.18-1305T-M11 MK2000	335.18-1606T-M12 MP2500
15	0,20–0,28	335.18-1005T-M10 MK2000	335.18-1305T-M11 MK2000	335.18-1606T-M12 MP2500
16	0,25–0,42	335.18-1005-E07 HX	335.18-1305-E08 HX	335.18-1606-E09 HX
17	0,25–0,42	335.18-1005-E07 HX	335.18-1305-E08 HX	335.18-1606-E09 HX
18	0,25–0,42	335.18-1005-E07 HX	335.18-1305-E08 HX	335.18-1606-E09 HX
19	0,23–0,28	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
20	0,23–0,28	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
21	0,16–0,25	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M
22	0,23–0,28	335.18-1005T-M10 F40M	335.18-1305T-M11 F40M	335.18-1606T-M12 F40M

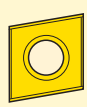
Cutting data – 10% engagement width (a_e /D_c = 10%)

	Grades																				
	MP1500			MP2500			T350M			F40M			MK1500			MK2000			HX		
	f_z (mm/tooth)																				
	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42
SMG	v_c (m/min)																				
1	425	380	325	380	335	285	330	295	250	285	255	215	–	–	–	–	–	–	–	–	–
2	360	320	275	320	285	245	280	250	210	245	215	185	–	–	–	–	–	–	–	–	–
3	300	265	225	265	235	200	230	205	175	200	180	150	–	–	–	–	–	–	–	–	–
4	255	225	195	225	200	170	195	175	150	170	150	130	–	–	–	–	–	–	–	–	–
5	215	190	160	190	165	145	165	145	125	145	125	110	–	–	–	–	–	–	–	–	–
6	185	165	–	165	145	–	145	130	–	125	110	–	–	–	–	–	–	–	–	–	–
7	50	45	–	41	37	–	39	35	–	34	30	–	–	–	–	–	–	–	–	–	–
8	290	260	220	230	205	175	215	190	165	195	175	150	–	–	–	–	–	–	–	–	–
9	230	205	175	180	160	140	170	150	130	155	135	115	–	–	–	–	–	–	–	–	–
10	190	165	140	150	130	115	140	125	105	125	110	95	–	–	–	–	–	–	–	–	–
11	140	125	105	110	100	85	105	90	80	95	85	70	–	–	–	–	–	–	–	–	–
12	225	200	170	195	175	150	170	155	130	150	135	115	280	250	210	195	175	145	140	125	105
13	195	175	150	175	155	130	150	135	115	130	115	100	245	220	185	170	150	130	125	110	95
14	165	145	125	145	130	110	125	115	95	110	100	85	205	185	155	145	130	110	105	95	80
15	135	120	–	120	105	–	105	95	–	90	80	–	170	150	–	120	105	–	85	75	–
16	–	–	–	980	870	740	855	760	645	740	660	560	–	–	–	–	–	–	705	625	535
17	–	–	–	790	705	600	690	610	520	600	535	455	–	–	–	–	–	–	570	505	430
18	–	–	–	605	535	455	525	465	400	455	405	345	–	–	–	–	–	–	435	385	330
19	–	–	–	50	45	–	45	40	–	41	37	–	–	–	–	–	–	–	–	–	–
20	–	–	–	41	36	–	36	32	–	33	29	–	–	–	–	–	–	–	–	–	–
21	–	–	–	35	31	–	31	28	–	29	25	–	–	–	–	–	–	–	–	–	–
22	–	–	–	85	75	–	75	65	–	70	60	–	–	–	–	–	–	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,08	0,12	0,20	0,65
Side milling	2%	0,35	0,55	0,92	1,20
	5%	0,23	0,35	0,59	1,10
	10%	0,16	0,25	0,42	1,00
	20%	0,12	0,18	0,30	0,90
	30%	0,10	0,15	0,25	0,85
Average chip thickness h_m		0,05	0,08	0,13	–

Type of insert



Insert size	Width of slot mm
1005	14–18,5
1305	18,5–24,3
1606	24,3–30,5

Insert selection – (R)335.18N/L-16C

SMG	f_z mm/tooth a_e/D_c = 10%	First choice 335.18-....N-16C	First choice	First choice 335.18....L-16C
1	0,25–0,42	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APKT160408TL-M14 F40M
2	0,25–0,42	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APKT160408TL-M14 F40M
3	0,23–0,38	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APKT160408TL-M14 F40M
4	0,23–0,38	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APKT160408TL-M14 F40M
5	0,23–0,35	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APMX160408TL-M14 MP2500
6	0,23–0,32	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APMX160408TL-M14 MP2500
7	0,16–0,28	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APMX160408TL-M14 MP2500
8	0,25–0,42	APFT160416R-M13 F40M	APFT160416L-M13 F40M	APKT160408TL-M14 F40M
9	0,25–0,38	APFT160416R-M13 F40M	APFT160416L-M13 F40M	APKT160408TL-M14 F40M
10	0,23–0,32	APFT160416R-M13 F40M	APFT160416L-M13 F40M	APKT160408TL-M14 F40M
11	0,20–0,28	APFT160416R-M13 F40M	APFT160416L-M13 F40M	APKT160408TL-M14 F40M
12	0,25–0,42	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APMX160408TL-M14 MP2500
13	0,25–0,38	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APMX160408TL-M14 MP2500
14	0,23–0,35	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APMX160408TL-M14 MP2500
15	0,20–0,28	APMX160408TR-M14 MP2500	APMX160408TL-M14 MP2500	APMX160408TL-M14 MP2500
16	0,25–0,42	APKT1604PDR-E12 HX	APKT1604PDL-E12 HX	APKT1604PDL-E12 HX
17	0,25–0,42	APKT1604PDR-E12 HX	APKT1604PDL-E12 HX	APKT1604PDL-E12 HX
18	0,25–0,42	APKT1604PDR-E12 HX	APKT1604PDL-E12 HX	APKT1604PDL-E12 HX
19		APFT160416R-M13 F40M	APFT160416L-M13 F40M	APKT160408TL-M14 F40M
20	0,23–0,28	APFT160416R-M13 F40M	APFT160416L-M13 F40M	APKT160408TL-M14 F40M
21	0,16–0,25	APFT160416R-M13 F40M	APFT160416L-M13 F40M	APKT160408TL-M14 F40M
22	0,23–0,28	APFT160416R-M13 F40M	APFT160416L-M13 F40M	APKT160408TL-M14 F40M

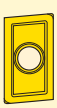
Cutting data – 10% engagement width (a_e/D_c = 10%)

SMG	Grades												
	F40M			MP2500			HX						
	f_z (mm/tooth)												
	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42				
	v_c (m/min)												
1	315	280	235	415	365	315	–	–	–				
2	265	235	200	350	310	265	–	–	–				
3	220	195	165	290	255	220	–	–	–				
4	185	165	140	245	220	185	–	–	–				
5	155	140	120	205	185	155	–	–	–				
6	135	120	–	180	160	–	–	–	–				
7	37	33	–	45	40	–	–	–	–				
8	215	190	160	255	225	190	–	–	–				
9	170	150	130	200	175	150	–	–	–				
10	140	120	105	165	145	125	–	–	–				
11	100	90	75	120	105	90	–	–	–				
12	165	145	125	215	190	165	155	140	115				
13	145	125	110	190	170	145	135	120	105				
14	120	105	90	160	140	120	115	100	85				
15	100	90	–	130	115	–	95	85	–				
16	810	720	615	1070	950	810	770	685	585				
17	655	580	495	865	770	655	620	555	470				
18	500	445	380	660	585	500	475	420	360				
19	45	40	–	55	49	–	–	–	–				
20	36	32	–	45	40	–	–	–	–				
21	31	28	–	38	34	–	–	–	–				
22	75	65	–	90	80	–	–	–	–				

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,08	0,12	0,20	0,65
Side milling	2%	0,35	0,55	0,92	1,20
	5%	0,23	0,35	0,59	1,10
	10%	0,16	0,25	0,42	1,00
	20%	0,12	0,18	0,30	0,90
	30%	0,10	0,15	0,25	0,85
Average chip thickness h_m		0,05	0,08	0,13	–

Type of insert



Insert size	Width of slot mm
1604	22–31

Insert selection – (R)335.18R-16C

Universal insert: APMX 160408TR-M14 MP2500

SMG	f_z mm/tooth a_e/D_c = 10%	First choice	Alternative	
1	0,25–0,42	APMX160408TR-ME11 F40M	APMX160408TR-M14 F40M	
2	0,25–0,42	APMX160408TR-ME11 F40M	APMX160408TR-M14 F40M	
3	0,23–0,38	APMX160408TR-ME11 F40M	APMX160408TR-M14 F40M	
4	0,23–0,38	APMX160408TR-ME11 F40M	APMX160408TR-M14 F40M	
5	0,23–0,35	APMX160408TR-M14 MP2500	APMX160408TR-M14 F40M	
6	0,23–0,32	APMX160408TR-M14 MP1500	APFT1604PDTR-D15 MP3000	
7	0,16–0,28	APFT1604PDTR-D15 MP1500	APFT1604PDTR-D15 MP3000	
8	0,25–0,42	APMX160408TR-ME11 F40M	APMX160408TR-M14 F40M	
9	0,25–0,38	APMX160408TR-ME11 F40M	APMX160408TR-M14 F40M	
10	0,23–0,32	APMX160408TR-M14 F40M	APMX160408TR-ME11 F40M	
11	0,20–0,28	APMX160408TR-M14 F40M	APMX160408TR-ME11 F40M	
12	0,25–0,42	APMX160408TR-M14 MK1500	APFT1604PDTR-D15 MP1500	
13	0,25–0,38	APMX160408TR-M14 MK1500	APFT1604PDTR-D15 MP1500	
14	0,23–0,35	APMX160408TR-M14 MK1500	APFT1604PDTR-D15 MP1500	
15	0,20–0,28	APMX160408TR-M14 MP1500	APFT1604PDTR-D15 MP1500	
16	0,25–0,42	APEX160408FR-E08 H15	APMX160408TR-ME11 F40M	
17	0,25–0,42	APEX160408FR-E08 H15	APMX160408TR-ME11 F40M	
18	0,25–0,42	APEX160408FR-E08 H15	APMX160408TR-ME11 F40M	
19	0,23–0,28	APKX1604PDR-ME12 T350M	APMX160408TR-M14 F40M	
20	0,23–0,28	APKX1604PDR-ME12 T350M	APMX160408TR-M14 F40M	
21	0,16–0,25	APKX1604PDR-ME12 T350M	APMX160408TR-M14 F40M	
22	0,23–0,28	APMX160408TR-ME11 F40M	APMX160408TR-M14 F40M	

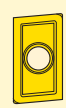
Cutting data – 10% engagement width (a_e /D_c = 10%)

SMG	Grades																				
	F40M			MP2500			MP1500			MP3000			T350M			MK1500			H15		
	f_z (mm/tooth)																				
	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42	0,16	0,25	0,42
	v_c (m/min)																				
1	305	270	230	400	355	305	450	400	340	380	335	285	350	310	265	–	–	–	–	–	–
2	255	230	195	340	300	255	380	340	290	320	285	245	295	260	225	–	–	–	–	–	–
3	210	190	160	280	250	210	315	280	240	265	235	200	245	215	185	–	–	–	–	–	–
4	180	160	135	240	210	180	270	240	205	225	200	170	210	185	160	–	–	–	–	–	–
5	150	135	115	200	175	150	225	200	170	190	165	145	175	155	130	–	–	–	–	–	–
6	130	115	–	175	155	–	195	175	–	165	145	–	150	135	–	–	–	–	–	–	–
7	36	32	–	43	39	–	55	48	–	42	38	–	42	37	–	–	–	–	–	–	–
8	205	185	155	245	215	185	310	275	235	240	215	180	230	205	175	–	–	–	–	–	–
9	165	145	125	190	170	145	240	215	185	190	170	145	180	160	135	–	–	–	–	–	–
10	135	120	100	155	140	120	200	175	150	155	135	115	145	130	110	–	–	–	–	–	–
11	100	90	75	115	105	90	145	130	110	115	100	85	110	95	80	–	–	–	–	–	–
12	160	140	120	210	185	160	235	210	180	195	175	150	180	160	140	295	260	225	150	135	115
13	140	125	105	185	165	140	205	185	155	175	155	130	160	140	120	260	230	195	130	115	100
14	115	105	90	155	135	115	175	155	130	145	130	110	135	120	100	220	195	165	110	100	85
15	95	85	–	125	115	–	145	130	–	120	105	–	110	100	–	180	160	–	90	80	–
16	785	695	595	1035	920	785	–	–	–	980	870	745	900	800	685	–	–	–	745	660	565
17	635	565	480	835	745	635	–	–	–	790	705	600	725	645	555	–	–	–	600	535	455
18	480	430	365	635	565	485	–	–	–	600	535	460	555	495	420	–	–	–	460	405	350
19	43	39	–	55	47	–	–	–	–	50	45	–	48	42	–	–	–	–	–	–	–
20	35	31	–	43	38	–	–	–	–	41	36	–	38	34	–	–	–	–	–	–	–
21	30	27	–	37	33	–	–	–	–	35	31	–	33	29	–	–	–	–	–	–	–
22	70	65	–	90	80	–	–	–	–	85	75	–	80	70	–	–	–	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,08	0,12	0,20	0,65
Side milling	2%	0,35	0,55	0,92	1,20
	5%	0,23	0,35	0,59	1,10
	10%	0,16	0,25	0,42	1,00
	20%	0,12	0,18	0,30	0,90
	30%	0,10	0,15	0,25	0,85
Average chip thickness h_m		0,05	0,08	0,13	–

Type of insert



Insert size	a_p max mm
1604	15

Insert selection – (R)335.18N/L-15H

SMG	f_z mm/tooth a_e/D_c = 10%	First choice 335.18-….N-15H	First choice	First choice 335.18-….L-15H
1	0,30–0,50	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
2	0,30–0,50	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
3	0,28–0,45	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
4	0,28–0,45	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
5	0,25–0,40	ACET150612TR-M11 F40M	ACET150612TL-M11 F40M	ACET150612TL-M11 F40M
6	0,25–0,35	ACET150612TR-M11 MP2500	ACET150612TL-M11 MP2500	ACET150612TL-M11 MP2500
7	0,20–0,30	ACET150612TR-M11 MP2500	ACET150612TL-M11 MP2500	ACET150612TL-M11 MP2500
8	0,28–0,45	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
9	0,28–0,45	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
10	0,25–0,40	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
11	0,20–0,35	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
12	0,28–0,45	ACET150612TR-M11 MK1500	ACET150612TL-M11 MK1500	ACET150612TL-M11 MK1500
13	0,28–0,45	ACET150612TR-M11 MK1500	ACET150612TL-M11 MK1500	ACET150612TL-M11 MK1500
14	0,25–0,40	ACET150612TR-M11 MK1500	ACET150612TL-M11 MK1500	ACET150612TL-M11 MK1500
15	0,25–0,35	ACET150612TR-M11 MK1500	ACET150612TL-M11 MK1500	ACET150612TL-M11 MK1500
16	0,30–0,50	ACET150612TR-M14 F40M	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M
17	0,30–0,50	ACET150612TR-M14 F40M	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M
18	0,30–0,50	ACET150612TR-M14 F40M	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M
19	0,20–0,39	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
20	0,20–0,40	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
21	0,20–0,30	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M
22	0,25–0,35	ACET150612TR-M14 F40M	ACET150612TL-M14 F40M	ACET150612TL-M14 F40M

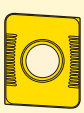
Cutting data – 10% engagement width (a_e/D_c = 10%)

SMG	Grades												
	MP2500			F40M			MK1500						
	f_z (mm/tooth)												
	0,20	0,30	0,50	0,20	0,30	0,50	0,20	0,30	0,50				
	v_c (m/min)												
1	375	335	280	285	250	215	–	–	–				
2	315	280	240	240	215	180	–	–	–				
3	260	235	200	200	175	150	–	–	–				
4	225	200	170	170	150	130	–	–	–				
5	185	165	140	140	125	105	–	–	–				
6	165	145	–	125	110	–	–	–	–				
7	41	36	–	34	30	–	–	–	–				
8	230	205	175	195	175	145	–	–	–				
9	180	160	135	150	135	115	–	–	–				
10	145	130	110	125	110	95	–	–	–				
11	110	95	–	90	80	–	–	–	–				
12	195	175	145	145	130	110	275	245	210				
13	170	150	130	130	115	100	240	215	185				
14	145	130	110	110	95	80	205	180	155				
15	120	105	–	90	80	–	170	150	–				
16	965	860	730	730	655	555	–	–	–				
17	780	695	590	590	525	445	–	–	–				
18	595	530	450	450	400	340	–	–	–				
19	50	44	–	41	36	–	–	–	–				
20	40	36	–	33	29	–	–	–	–				
21	35	31	–	28	25	–	–	–	–				
22	85	75	–	70	60	–	–	–	–				

Cutting data – Side milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,10	0,15	0,24	0,65
Side milling	2%	0,44	0,66	1,10	1,20
	5%	0,28	0,42	0,70	1,10
	10%	0,20	0,30	0,50	1,00
	20%	0,14	0,22	0,36	0,90
	30%	0,12	0,18	0,30	0,85
Average chip thickness h_m		0,06	0,09	0,16	–

Type of insert



Insert size	Width of slot mm
1506	20–29,2

Insert selection – (R)335.18R-15H

Universal insert: ACET 150612TR-M11 MP2500

SMG	fz mm/tooth ae/Dc = 10%	First choice	Alternative	
1	0,30–0,50	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
2	0,30–0,50	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
3	0,28–0,45	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
4	0,28–0,45	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
5	0,25–0,40	ACET150612TR-M14 MP2500	ACET150612TR-MD15 MP3000	
6	0,25–0,35	ACET150612TR-MD15 MP1500	ACET150612TR-MD15 MP3000	
7	0,20–0,30	ACET150612TR-MD15 MP1500	ACET150612TR-MD15 MP3000	
8	0,28–0,45	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
9	0,28–0,45	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
10	0,25–0,40	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
11	0,20–0,35	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
12	0,28–0,45	ACET150612TR-M14 MK1500	ACET150612TR-M14 HX	
13	0,28–0,45	ACET150612TR-M14 MK1500	ACET150612TR-M14 HX	
14	0,25–0,40	ACET150612TR-M14 MK1500	ACET150612TR-M14 HX	
15	0,25–0,35	ACET150612TR-M14 MP1500	ACET150612TR-M14 HX	
16	0,30–0,50	ACET150612TR-ME10 F40M	ACET150612TR-ME10 T350M	
17	0,30–0,50	ACET150612TR-ME10 F40M	ACET150612TR-ME10 T350M	
18	0,30–0,50	ACET150612TR-ME10 F40M	ACET150612TR-ME10 T350M	
19	0,20–0,40	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
20	0,20–0,40	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
21	0,20–0,30	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	
22	0,25–0,35	ACET150612TR-M14 F40M	ACET150612TR-M14 T350M	

Cutting data – 10% engagement width (a_e /D_c = 10%)

	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			MK1500			HX		
	f_z (mm/tooth)																				
	0,20	0,30	0,50	0,20	0,30	0,50	0,20	0,30	0,50	0,20	0,30	0,50	0,20	0,30	0,50	0,20	0,30	0,50	0,20	0,30	0,50
SMG	v_c (m/min)																				
1	405	360	310	360	320	270	340	305	260	310	280	235	270	245	205	–	–	–	–	–	–
2	345	305	260	305	270	230	290	255	220	265	235	200	230	205	175	–	–	–	–	–	–
3	285	255	215	250	225	190	240	210	180	220	195	165	190	170	145	–	–	–	–	–	–
4	240	215	185	215	190	165	205	180	155	185	165	140	160	145	125	–	–	–	–	–	–
5	200	180	155	180	160	135	170	150	130	155	140	120	135	120	105	–	–	–	–	–	–
6	175	160	–	155	140	–	150	130	–	135	120	–	120	105	–	–	–	–	–	–	–
7	48	43	–	39	35	–	38	34	–	37	33	–	32	29	–	–	–	–	–	–	–
8	275	245	210	220	195	165	215	195	165	205	185	155	185	165	–	–	–	–	–	–	–
9	220	195	165	170	155	130	170	150	130	160	145	120	145	130	–	–	–	–	–	–	–
10	180	160	135	140	125	105	140	125	105	130	115	100	120	105	–	–	–	–	–	–	–
11	130	120	–	105	95	–	105	90	–	95	85	–	90	80	–	–	–	–	–	–	–
12	210	190	160	185	165	140	175	160	135	165	145	125	140	125	110	265	235	200	135	120	100
13	185	165	140	165	145	125	155	140	120	145	130	110	125	110	95	235	210	175	120	105	90
14	155	140	120	140	125	105	130	115	100	120	110	90	105	95	–	195	175	150	100	90	75
15	130	115	–	115	100	–	110	95	–	100	90	–	85	75	–	160	145	–	80	75	–
16	–	–	–	930	830	705	880	785	670	810	720	615	705	630	535	–	–	–	670	595	505
17	–	–	–	750	670	570	710	635	540	655	585	495	570	505	430	–	–	–	540	480	410
18	–	–	–	570	510	435	540	485	410	500	445	380	435	385	330	–	–	–	410	365	310
19	–	–	–	48	43	–	45	40	–	43	38	–	39	35	–	–	–	–	–	–	–
20	–	–	–	39	34	–	36	33	–	35	31	–	31	28	–	–	–	–	–	–	–
21	–	–	–	33	30	–	31	28	–	30	27	–	27	24	–	–	–	–	–	–	–
22	–	–	–	80	70	–	75	65	–	70	65	–	65	60	–	–	–	–	–	–	–

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Radial infeed	–	0,10	0,15	0,24	0,65
Side milling	2%	0,44	0,66	1,10	1,20
	5%	0,28	0,42	0,70	1,10
	10%	0,20	0,30	0,50	1,00
	20%	0,14	0,22	0,36	0,90
	30%	0,12	0,18	0,30	0,85
Average chip thickness h_m		0,06	0,09	0,16	–

Type of insert

Insert size	a_p max mm
1506	14,6

Code key

Note that parts of the code can vary for different cutter systems

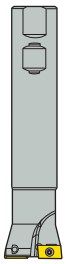
Right hand rotation	System			Cutter diameter		Insert size	
R	217	. 79	- 32	40	. 3	- 16	A

217= With shank
220 = For arbour mount

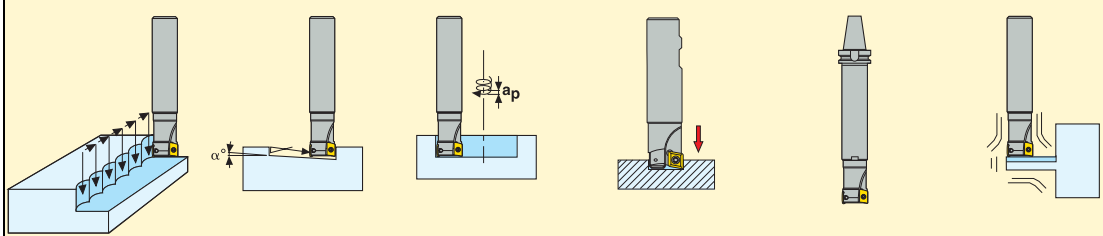
Shank diameter

Shank type

A = With 'through' coolant supply



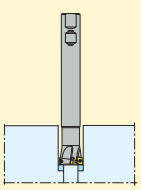
Types of operations



1	2	3	4	5	6
Plunging	**Ramping**	**Helical interpolation ramping**	**Drilling**	**long overhangs**	**Unstable conditions**

For finishing operations, small depth of cut

217.79-06

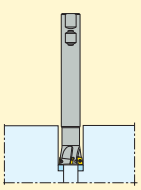


Types of operation
1 5

- Dia range Ø 12-20 mm, see page 313
- High capacity cutter for finishing operations. Especially recommended where large tool overhang is required.
- Fixed pockets, normal pitch.
- Insert types XO..06
- Insert size 06 mm
- Max a_p 2,5 mm (radial depth of cut)

For finishing operations, $a_p \geq 6$mm

217/220.79-09



Types of operation
1 5

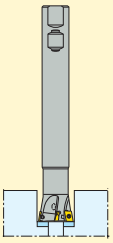
- Dia range ∅ 20-50 mm See page 314
- High capacity cutter for finishing operations. Especially recommended where large tool overhang is required. Can be used for both down copy and up copying in all materials.
- Fixed pockets, normal pitch.
- Insert types XO..0903
- Insert size 09 mm
- Max a_p 6 (1)* mm (radial depth of cut)

*a_p a maximum of 1 mm on up-copying

First choice Plunge milling cutters

For semi-finishing operations

R217/220.79-12 -XO12



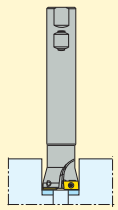
Types of operation
1 5

- Dia range ∅ 25-63 mm, see pages 316 - 317
- High capacity cutter for finishing operations. Especially recommended where large tool overhang is required. Can be used for both down copy and up copying in all materials.
- Fixed pockets, normal pitch.
- Insert types XO..1204
- Insert size 12 mm
- Max a_p 7 (1,5)* mm (radial depth of cut)

* a_p a maximum of 1,5 mm on up-copying.

For medium roughing operations

217/220.79-16

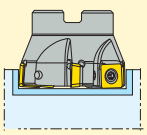


Types of operation
1 5

- Dia range ∅ 40-125 mm, see page 318
- High capacity cutter for medium roughing operations. Especially recommended where large tool overhang is required. Axial feed directions. Can be used in all materials.
- Fixed pockets, normal pitch.
- Insert types AP..1604
- Insert size 16 mm (left hand inserts has to be used)
- Max a_p 15 mm (radial depth of cut)

For roughing operations

217/220.79-12

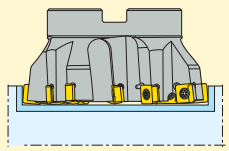


Types of operation
1 5

- Dia range ∅ 32-125 mm, see page 319
- High capacity cutter for roughing operations. Especially recommended where large tool overhang is required. Axial feed directions. Can be used in all materials.
- Fixed pockets, normal pitch
- Insert types SC..1206
- Insert size 12 mm
- Max a_p 11 mm (radial depth of cut)

For heavy roughing operations

220.79-12



Types of operation
1 5

- Dia range Ø 100-200 mm, see page 320
- High capacity cutter for heavy roughing operations Axial feed directions. Can be used in all materials.
- Fixed pockets, normal pitch Insert types SC..1206
- Insert size 12
- Max a_p 20-50 mm (radial depth of cut)

Choice of cutter, inserts and cutting data

1 Select cutter

- Use the previous pages to choose a suitable cutter..

2 Select cutter diameter

2a • Look up the pages for the selected cutter and choose a suitable diameter in the tool table

- Advantages smaller diameter
  - Flexibility
  - Price
- Advantages larger diameter
  - Metal removal rate
  - Rigidity

3 Select inserts

- Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

3a • Use the insert selection tables to choose suitable inserts.

3b • Use the tool data table to find the number of inserts needed

4 Select cutting data

4a • Maximum recommended cutting depth are found in the tool data table.
Note that the definition of a_p is different for plunging

4b • Minimum and maximum feed per tooth recommendations are found in the insert selection table. Choose a value in the middle for normal operations.

4c • Cutting speed recommendations are found in the cutting data table

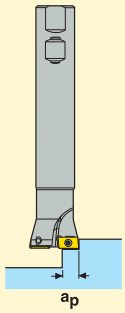
- Maximum RPM that for safety reasons should never be exceeded, are shown on the product page.

- Formulae for cutting data calculation are on page 597.

5 Power requirement

- See page 601 for power requirement calculation.

Figure 1

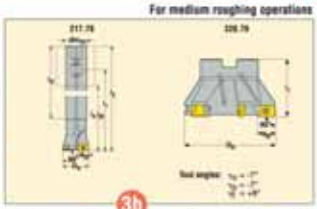


Plunge milling cutters

Plunging cutter 217/220.79-16

For medium roughing operations

- For insert selection and cutting data recommendations, see page
- For complete insert programme, see page



2a 3b 4a

Part No.		Dimensions in mm D_2	$Ø\ldots_{g}$	l_1	l_2	l_3	l_4	l_5	$Ø_{M}$		KGS	Type of mounting	
R217.79	-0040.0-16A	40	32	184	200	140	140	150	10	3	1.1	Cyl/Weldon	AP..1604*
	-0050.0-16A	50	32	184	200	140	140	150	10	3	1.2	Cyl/Weldon	AP..1604*
R220.79	-0060-16	60	-	40	-	-	-	-	10	4	0.5	Arbor	AP..1604*
	-0080-16	80	-	50	-	-	-	-	10	5	0.8	Arbor	AP..1604*
	-0100-16	100	-	50	-	-	-	-	10	6	1.2	Arbor	AP..1604*
	-0125-16	125	-	50	-	-	-	-	10	6	2.0	Arbor	AP..1604*

*Inserts of left-hand design must be used.

Spare parts

For cutter	Locking screw	Key	Arbor screw
R217.79-xxxx.0-16A	224011	T15-8	-
R220.79-0060	224011	T15-8	332.17-001
R220.79-0080	224011	T15-8	M3X0.12x25
R220.79-0100-0125	224011	T15-8	-

Dimensions of mounting

For cutter	Dimensions in mm $Ø\ldots_{mp}$	$Ø\ldots_{gp}$	t	For arbor
R220.79-0060-12	22	15.4	5.3	22
R220.79-0080-12	27	15.4	7	27
R220.79-0100-12	32	14.4	8	32
R220.79-0125-12	40	15.4	9	40

Please check availability in current price and stock list.

Plunge milling cutters

Insert selection 217/220.79-16

Universal insert: APKT 1604PDTL-M14 T25M

3a 4b

Sacs Material group No.	Recom. feed f_z mm/tooth	First choice		
1	0.12-0.20	APKT 1604PDTL-M14 T25M		
2	0.12-0.20	APKT 1604PDTL-M14 T25M		
3	0.12-0.20	APKT 1604PDTL-M14 T25M		
4	0.12-0.20	APKT 1604PDL-M13 T25M		
5	0.10-0.18	APKT 1604PDL-M13 T25M		
6	0.10-0.18	APKT 1604PDTL-010		
7	0.10-0.15	APKT 1604PDTL-010		
8	0.12-0.18	APKT 1604PDTL-M14 T25M		
9	0.12-0.18	APKT 1604PDTL-M14 T25M		
10	0.12-0.14	APKT 1604PDL-M13 T25M		
11	0.10-0.14	APKT 1604PDL-M13 T25M		
12	0.12-0.20	APKT 1604PDTL-010 T25M		
13	0.10-0.20	APKT 1604PDTL-010 T25M		
14	0.10-0.20	APKT 1604PDTL-010 T25M		
15	0.10-0.15	APKT 1604PDTL-010 T25M		
16	0.12-0.20	APKT 1604PDL-010 HM		
17	0.12-0.20	APKT 1604PDL-010 HM		
20	0.10-0.14	APKT 1604PDL-M13 T25M		
21	0.10-0.12	APKT 1604PDL-M13 T25M		
22	0.10-0.14	APKT 1604PDL-M13 T25M		

Cutting data - Full engagement width (a_e/D_2 = 100%)

4c

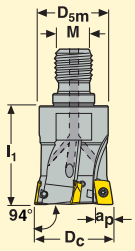
Sacs Material group No.	Grades T25M			T15M			HX					
	Feed, f_z (mm/tooth)											
	0.10	0.15	0.20	0.10	0.15	0.20	0.10	0.15	0.20			
	Cutting speed, v_c (m/min)											
1	280	240	240	230	210	195	-	-	-			
2	280	230	210	210	190	175	-	-	-			
3	210	180	170	170	155	145	-	-	-			
4	200	180	160	160	145	130	-	-	-			
5	170	150	140	135	125	110	-	-	-			
6	130	115	-	105	95	-	-	-	-			
7	45	-	-	-	-	-	-	-	-			
8	220	210	190	190	175	160	-	-	-			
9	200	180	170	170	150	140	-	-	-			
10	175	155	140	140	130	110	-	-	-			
11	140	125	-	110	100	-	-	-	-			
12	190	170	150	150	140	125	140	125	110			
13	170	150	130	140	130	110	130	110	100			
14	160	140	120	130	110	100	110	100	85			
15	130	115	-	100	85	-	85	80	-			
16	-	-	-	810	720	660	720	640	590			
17	-	-	-	660	540	530	580	520	475			
20	-	-	-	80	65	-	75	70	-			
21	-	-	-	70	-	-	70	-	-			
22	-	-	-	52	45	-	25	25	-			

Type of insert

Plunging cutter 217.79-06AN

- For insert selection and cutting data recommendations, see page 321.
- For complete insert programme, see page 553.

Combimaster



Tool angles: γo = - 12°
γp = + 3°
γf = - 12°

Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	M	a_p		KG		Type of mounting	
R217.79 -0612.RE-06-2AN	12	11	18	M6	2,5	2	0,1	32000	Combimaster*	XO..06
-0612.RE-06-3AN	12	11	18	M6	2,5	3	0,1	32000	Combimaster*	XO..06
-0614.RE-06-3AN	14	11	18	M6	2,5	3	0,1	30000	Combimaster*	XO..06
-0816.RE-06.3AN	16	13,5	20	M8	2,5	3	0,1	28000	Combimaster*	XO..06
-0816.RE-06.4AN	16	13,5	20	M8	2,5	4	0,1	28000	Combimaster*	XO..06
-0818.RE-06.4AN	18	13,5	20	M8	2,5	4	0,1	25000	Combimaster*	XO..06
-1020.RE-06.4AN	20	18,5	23	M10	2,5	4	0,1	22000	Combimaster*	XO..06

*For shanks and dimensions, see pages 498 - 510.

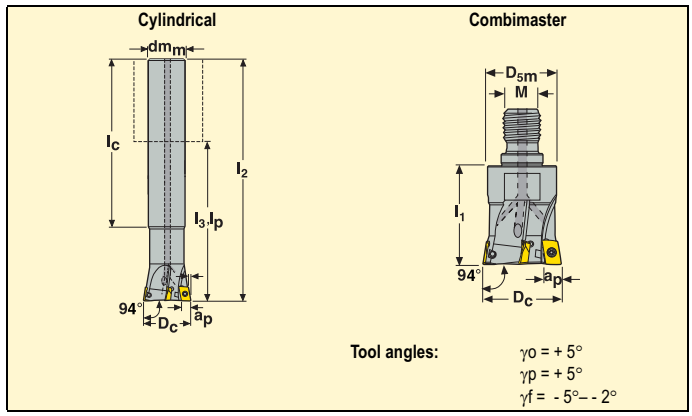
Spare parts

217.79-06	Locking screw	Key *
R217.79..	C01804-T06P	T06P-3

*** Torque values 0,5 Nm.** Dynamomentic keys, see page 590.
Please check availability in current price and stock-list.

Plunging cutter 217.79-09AN

- **For insert selection and cutting data recommendations, see pages 322 - 323.**
- **For complete insert programme, see page 554.**
- Can also be used for up-copying.



Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	M	a_p*		KG		Type of mounting	
R217.79 -1820.0-09-2AN	20	18	–	160	112	112	–	6(1)	2	0,7	29000	Cylindrical	XO..0903
-2225.0-09-3AN	25	22	–	200	150	150	–	6(1)	3	0,4	26000	Cylindrical	XO..0903
-3032.0-09-4AN	32	30	–	250	190	190	–	6(1)	4	0,7	22900	Cylindrical	XO..0903
R217.79 -1020.RE-09-2AN	20	18,5	28	–	–	–	M10	6(1)	2	0,1	29000	Combimaster**	XO..0903
-1020.RE-09-3AN	20	18,5	28	–	–	–	M10	6(1)	3	0,1	29000	Combimaster**	XO..0903
-1225.RE-09-3AN	25	23	30	–	–	–	M12	6(1)	3	0,2	26000	Combimaster**	XO..0903
-1632.RE-09-4AN	32	30	40	–	–	–	M16	6(1)	4	0,2	22900	Combimaster**	XO..0903
-1640.RE-09-5AN	40	30	40	–	–	–	M16	6(1)	5	0,3	20500	Combimaster**	XO..0903

*a_p a maximum of 1 mm on up-copying.

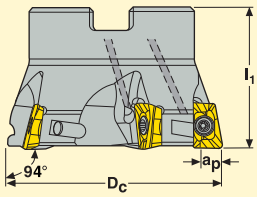
**For shanks and dimensions, see pages 498 - 510.

Spare parts

217.79-09	Locking screw	Key *
R217.79..	C02505-T08P	T08P-3

*** Torque values 1,2 Nm.** Dynamomentic keys, see page 590.
Please check availability in current price and stock-list.

Plunging cutter 220.79-09AN



Tool angles: γo = -7°
γp = +5°
γf = - 7°

- **For insert selection and cutting data recommendations, see page 322 - 323.**
- **For complete insert programme, see page 554.**
- Can also be used for up-copying

Part No.	Dimensions in mm D_c	l_1	a_p*		KG		
R220.79 -0040-09-5AN	40	40	6(1)	5	0,3	20500	XO..0903
-0050-09-5AN	50	40	6(1)	5	0,4	18300	XO..0903
-0050-09-6AN	50	40	6(1)	6	0,4	18300	XO..0903

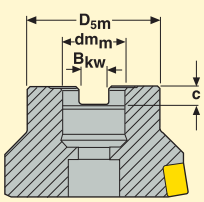
* a_p a maximum of 1,0 mm on up-copying.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.79-0040	C03507-T10P	T10P-3	TCEI0825
R220.79-0050	C03507-T10P	T10P-3	220.17-692

*** Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

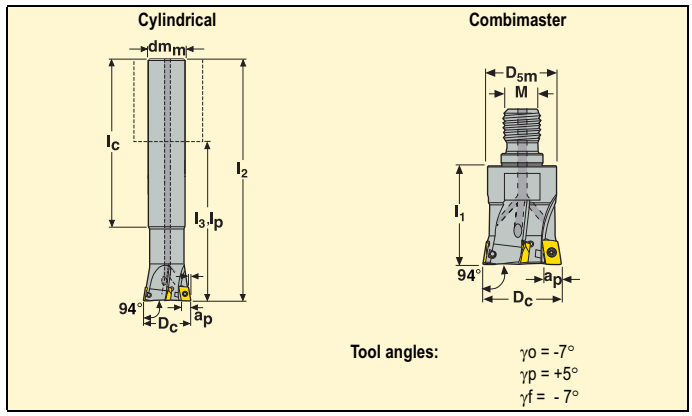


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.79-0040-09	16	35	8,4	5,6	16
R220.79-0050-09	22	47	10,4	6,3	22

Please check availability in current price and stock-list.

Plunging cutter 217.79-XO12A

- **For insert selection and cutting data recommendations, see pages 324 - 325.**
- **For complete insert programme, see page 556.**
- Can also be used for up-copying



Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	M	a_p*		KG		Type of mounting	
R217.79 -2025.0-XO12-2AN	25	22	–	200	144	144	–	7(1,5)	2	0,4	20800	Cylindrical	XO..1204
-2532.0-XO12-3AN	32	30	–	250	194	194	–	7(1,5)	3	0,7	18400	Cylindrical	XO..1204
R217.79 -1025.RE-XO12-2AN	25	18,5	28	–	–	–	M10	7(1,5)	2	0,2	20800	Combimaster**	XO..1204
-1225.RE-XO12-2AN	25	23	30	–	–	–	M12	7(1,5)	2	0,2	20800	Combimaster**	XO..1204
-1232.RE-XO12-3AN	32	23	30	–	–	–	M12	7(1,5)	3	0,2	18400	Combimaster**	XO..1204
-1632.RE-XO12-2AN	32	30	40	–	–	–	M16	7(1,5)	2	0,2	18400	Combimaster**	XO..1204
-1632.RE-XO12-3AN	32	30	40	–	–	–	M16	7(1,5)	3	0,2	18400	Combimaster**	XO..1204
-1640.RE-XO12-3AN	40	30	40	–	–	–	M16	7(1,5)	3	0,3	16400	Combimaster**	XO..1204
-2040.RE-XO12-3AN	40	36	40	–	–	–	M20	7(1,5)	3	0,3	16400	Combimaster**	XO..1204

* a_p a maximum of 1,5 mm on up-copying.

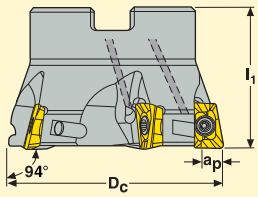
**For shanks and dimensions, see pages 498 - 510.

Spare parts

For cutter	Locking screw	Key *
R217.79..	C03507-T10P	T10P-3

*** Torque values 2,0 Nm.** Dynamomentic keys, see page 590.
Please check availability in current price and stock-list.

Plunging cutter 220.79-XO12A



Tool angles: $\gamma o = -7°$, $\gamma p = +5°$, $\gamma f = -7°$

- **For insert selection and cutting data recommendations, see pages 324 - 325.**
- **For complete insert programme, see page 556.**
- Can also be used for up-copying

Part No.	Dimensions in mm D_c	l_1	a_p*		KG		
R220.79 -0040-XO12-3AN	40	40	7(1,5)	3	0,3	16400	XO..1204
-0040-XO12-4AN	40	40	7(1,5)	4	0,3	16400	XO..1204
-0050-XO12-4AN	50	40	7(1,5)	4	0,4	14800	XO..1204
-0063-XO12-5AN	63	40	7(1,5)	5	0,6	13200	XO..1204

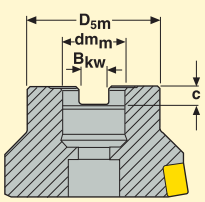
* a_p a maximum of 1,5 mm on up-copying.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.79-0040			
R220.79-0050	C03507-T10P	T10P-3	TCEI0825
R220.79-0063	C03507-T10P	T10P-3	220.17-692

*** Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

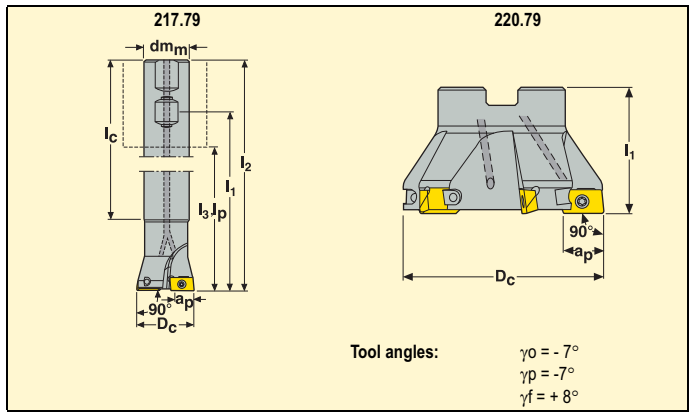


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.79-0040	16	35	8,4	5,6	16
R220.79-0050-0063	22	47	10,4	6,3	22

Please check availability in current price and stock-list.

Plunging cutter 217/220.79-16

For medium roughing operations



- **For insert selection and cutting data recommendations, see page 326.**
- **For complete insert programme, see pages 515 - 516.**
- *Inserts of left-hand design must be used.

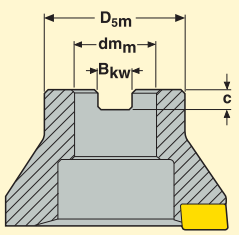
Part No.	Dimensions in mm D_c	dm_m	l_1	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.79 -3240.3-16A	40	32	164	200	140	140	150	15	2	1,1	14600	Cyl/Weldon	AP.1604..L
-3250.3-16A	50	32	164	200	140	140	150	15	3	1,2	13000	Cyl/Weldon	AP.1604..L
R220.79 -0063-16-4A	63	–	40	–	–	–	–	15	4	0,5	11600	Arbor	AP.1604..L
-0080-16-5A	80	–	50	–	–	–	–	15	5	0,8	10300	Arbor	AP.1604..L
-0100-16-6A	100	–	50	–	–	–	–	15	6	1,3	9200	Arbor	AP.1604..L
-0125-16-8A	125	–	63	–	–	–	–	15	8	2,6	8200	Arbor	AP.1604..L

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R217.79-xxxx.3-16A	C04011-T15P	T15P-3	–
R220.79-0063	C04011-T15P	T15P-3	220.17-691
R220.79-0080	C04011-T15P	T15P-3	MC6S12x35
R220.79-0100–0125	C04011-T15P	T15P-3	–

*** Torque values 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



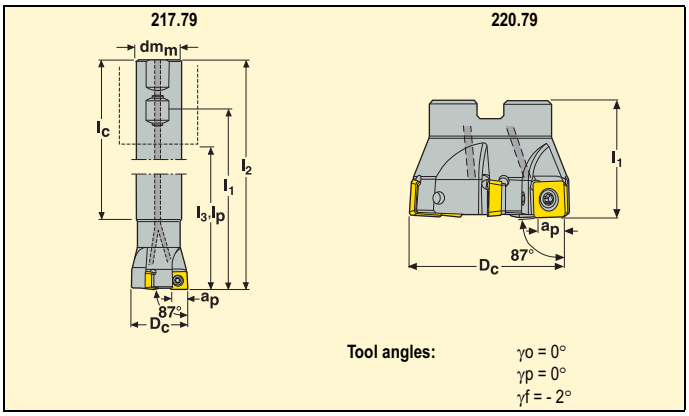
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.79-0063-12	22	47	10,4	6,3	22
R220.79-0080-12	27	62	12,4	7	27
R220.79-0100-12	32	77	14,4	8	32
R220.79-0125-12	40	90	16,4	9	40

Please check availability in current price and stock-list.

Plunging cutter 217/220.79-12A

For roughing operations

- For insert selection and cutting data recommendations, see page 327.
- For complete insert programme, see page 533.



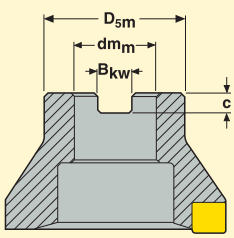
Part No.	Dimensions in mm D_c	dm_m	l_1	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R217.79 -2532.3-12A	32	25	168	200	144	144	150	11	2	0,7	12100	Cyl/Weldon	SC..1206
-3240.3-12A	40	32	164	200	140	140	150	11	3	1,2	10800	Cyl/Weldon	SC..1206
R220.79 -0050-12A	50	–	40	–	–	–	–	11	4	0,4	9700	Arbor	SC..1206
-0063-12A	63	–	40	–	–	–	–	11	5	0,6	8600	Arbor	SC..1206
-0080-12A	80	–	50	–	–	–	–	11	6	1,0	7600	Arbor	SC..1206
-0100-12A	100	–	50	–	–	–	–	11	7	1,6	7000	Arbor	SC..1206
-0125-12	125	–	63	–	–	–	–	11	8	2,6	6300	Arbor	SC..1206

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R217.79-xxxx.3-12A	C45011-T20P	T20P-4	–
R220.79-0050–0063-12	C45011-T20P	T20P-4	220.17-692
R220.79-0080–0125-12	C45011-T20P	T20P-4	–

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



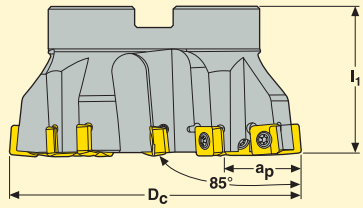
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.79-0050-12	22	47	10,4	6,3	22
R220.79-0063-12	22	47	10,4	6,3	22
R220.79-0080-12	27	62	12,4	7	27
R220.79-0100-12	32	77	14,4	8	32
R220.79-0125-12	40	90	16,4	9	40

Please check availability in current price and stock-list.

Plunging cutter 220.79-12

For roughing operations

- For insert selection and cutting data recommendations, see page 327.
- For complete insert programme, see page 533.



Tool angles: $\gamma o = 0°$, $\gamma p = 0°$, $\gamma f = -2°$

Part No.	Dimensions in mm D_c	l_1	a_p		z_c*	KG		
R220.79 -0100-20	100	50	20	8	4	1,3	7000	SC..1206
-0125-30	125	63	30	12	4	2,6	6300	SC..1206
-8160-40	160	63	40	16	4	5,0	5600	SC..1206

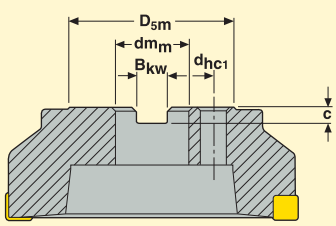
*Effective number of teeth.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.79-0100	C45011-T20P	T20P-4	–
R220.79-0125	C45011-T20P	T20P-4	MC6S20x40
R220.79-8160–8200	C45011-T20P	T20P-4	–

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.79-0100-20	32	77	14,4	8	–	32	–
R220.79-0125-30	40	90	16,4	9	–	40	–
R220.79-8160-40	40	90	16,4	9	66,7	40	ISO40
R220.79-8200-50	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.

Insert selection – 217.79-06

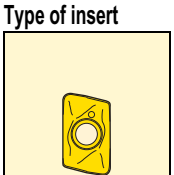
Universal insert: XOMX 060204R-M05 F40M

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,04–0,10	XOMX060204R-M05 F40M		
2	0,04–0,09	XOMX060204R-M05 F40M		
3	0,04–0,09	XOMX060204R-M05 F40M		
4	0,04–0,09	XOMX060204R-M05 F40M		
5	0,03–0,08	XOMX060204R-M05 F40M		
6	0,03–0,07	XOMX060204R-M05 MP3000		
7	0,03-0,07	XOMX060204R-M05 MP3000		
8	0,04–0,09	XOMX060204R-M05 F40M		
9	0,03–0,08	XOMX060204R-M05 F40M		
10	0,03–0,07	XOMX060204R-M05 F40M		
11	0,03–0,07	XOMX060204R-M05 F40M		
12	0,04–0,10	XOMX060204R-M05 MP3000		
13	0,04–0,09	XOMX060204R-M05 MP3000		
14	0,04–0,09	XOMX060204R-M05 MP3000		
15	0,03–0,07	XOMX060204R-M05 MP3000		
16	0,05–0,13	XOEX060204R-E03 H15		
17	0,05–0,11	XOEX060204R-E03 F40M		
18	0,05–0,11	XOEX060204R-E03 H15		
19	0,02–0,05	XOMX060204R-M05 F40M F40M		
20	0,02–0,05	XOMX060204R-M05 F40M F40M		
21	0,02–0,05	XOMX060204R-M05 F40M F40M		
22	0,03–0,07	XOMX060204R-M05 F40M F40M		

Cutting data

SMG	Grades																
	MP3000			F40M			F15M			H15			MM4500				
	f_z (mm/tooth)																
	0,02	0,07	0,12	0,02	0,07	0,12	0,02	0,07	0,12	0,02	0,07	0,12	0,02	0,07	0,12		
SMG	v_c (m/min)																
1	495	395	345	395	320	275	–	–	–	–	–	–	320	255	225		
2	420	335	295	335	270	235	–	–	–	–	–	–	270	220	190		
3	345	280	245	275	220	195	–	–	–	–	–	–	225	180	155		
4	295	235	205	235	190	165	–	–	–	–	–	–	190	155	135		
5	245	200	175	195	160	140	–	–	–	–	–	–	160	130	110		
6	215	175	150	175	140	120	–	–	–	–	–	–	140	110	–		
7	55	44	–	47	38	–	–	–	–	–	–	–	–	–	–		
8	315	250	220	270	215	190	–	–	–	–	–	–	235	185	165		
9	245	200	175	215	170	150	–	–	–	–	–	–	185	145	130		
10	200	160	140	175	140	120	–	–	–	–	–	–	150	120	–		
11	150	120	–	130	105	–	–	–	–	–	–	–	110	90	–		
12	260	205	180	205	165	145	245	200	175	195	155	135	–	–	–		
13	225	180	160	180	145	125	215	175	150	170	140	120	–	–	–		
14	190	155	135	150	120	105	185	145	–	145	115	–	–	–	–		
15	160	125	110	125	100	90	–	–	–	–	–	–	–	–	–		
16	1280	1030	900	1025	820	720	1230	985	860	975	780	680	–	–	–		
17	1035	830	725	825	665	580	990	795	695	785	630	550	–	–	–		
18	790	630	550	630	505	440	755	605	530	600	480	420	–	–	–		
19	65	55	–	55	46	–	–	–	–	–	–	–	40	32	–		
20	55	43	–	46	37	–	–	–	–	–	–	–	32	26	–		
21	46	37	–	39	32	–	–	–	–	–	–	–	28	22	–		
22	110	90	–	95	75	–	–	–	–	–	–	–	65	55	–		

Type of insert



XO..06

Insert selection – 217.79-09

Universal insert: XOMX 090308TR-M08 MP2500

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,08–0,14	XOMX090308TR-ME06 F40M		
2	0,08–0,14	XOMX090308TR-ME06 F40M		
3	0,08–0,14	XOMX090308TR-ME06 MP2500		
4	0,08–0,14	XOMX090308TR-ME06 MP2500		
5	0,06–0,12	XOMX090308TR-M08 MP2500		
6	0,06–0,12	XOMX090308TR-M08 MP2500		
7	0,06–0,09	XOMX090308TR-M08 MP1500		
8	0,08–0,14	XOMX090308TR-ME06 MP2500		
9	0,08–0,14	XOMX090308TR-ME06 MP2500		
10	0,06–0,12	XOMX090308TR-M08 T350M		
11	0,06–0,12	XOMX090308TR-M08 F40M		
12	0,08–0,14	XOMX090308TR-M08 MK1500		
13	0,08–0,14	XOMX090308TR-M08 MK1500		
14	0,08–0,14	XOMX090308TR-M08 MK1500		
15	0,08–0,14	XOMX090308TR-M08 MP1500		
16	0,08–0,15	XOEX090308FR-E05 H15		
17	0,08–0,16	XOEX090308FR-E05 F40M		
18	0,08–0,16	XOEX090308FR-E05 F40M		
19	0,04–0,10	XOMX090308TR-ME06 T350M		
20	0,04–0,10	XOMX090308TR-ME06 T350M		
21	0,04–0,08	XOMX090308TR-M08 F40M		
22	0,04–0,10	XOMX090308TR-ME06 F40M		

Cutting data

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			F15M			MS2500		
	f_z (mm/tooth)																				
	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14
	v_c (m/min)																				
1	640	550	475	565	485	420	535	460	395	495	425	365	430	370	315	–	–	–	620	530	455
2	540	465	400	480	415	355	455	390	335	420	360	310	365	315	270	–	–	–	525	450	385
3	450	385	330	395	340	295	375	325	275	345	295	255	300	260	220	–	–	–	435	370	320
4	380	330	280	340	290	250	320	275	235	295	255	220	255	220	190	–	–	–	370	320	275
5	320	275	235	280	245	210	265	230	195	245	210	180	215	185	160	–	–	–	310	265	225
6	280	240	205	245	215	185	235	200	175	215	185	160	185	160	140	–	–	–	270	230	200
7	75	65	55	60	55	–	60	50	–	60	50	–	50	44	–	–	–	–	65	55	–
8	440	375	325	345	300	255	340	295	250	325	280	240	295	255	215	–	–	–	375	325	280
9	345	295	255	270	235	200	270	230	200	255	220	190	230	200	170	–	–	–	295	255	220
10	280	240	210	225	190	165	220	190	160	210	180	155	190	160	140	–	–	–	240	210	180
11	210	180	155	165	140	–	160	140	–	155	130	–	140	120	–	–	–	–	180	155	–
12	335	285	245	295	255	220	280	240	205	255	220	190	225	190	165	270	230	200	320	275	240
13	295	250	215	260	225	190	245	210	180	225	195	165	195	170	145	235	205	175	285	245	210
14	245	210	180	220	190	160	205	180	155	190	165	140	165	140	120	200	170	–	240	205	175
15	205	175	150	180	155	135	170	145	125	155	135	115	135	120	100	–	–	–	195	170	145
16	–	–	–	1465	1260	1085	1390	1195	1025	1280	1100	945	1110	955	820	1335	1145	985	1600	1375	1180
17	–	–	–	1185	1020	875	1120	965	830	1030	890	765	895	770	665	1075	925	795	1290	1110	955
18	–	–	–	905	775	665	855	735	630	785	675	580	685	590	505	820	705	605	985	845	730
19	–	–	–	75	65	–	70	60	–	70	60	–	60	55	–	–	–	–	80	70	–
20	–	–	–	60	50	–	60	49	–	55	47	–	50	43	–	–	–	–	65	55	–
21	–	–	–	55	45	–	50	43	–	47	40	–	43	37	–	–	–	–	55	49	–
22	–	–	–	125	110	–	120	100	–	115	95	–	105	90	–	–	–	–	135	120	–

Type of insert

XO..09

Insert selection – 217.79-09

Universal insert: XOMX 090308TR-M08 MP2500

SMG	Recom. feed fz mm/tooth	First choice		
1	0,08–0,14	XOMX090308TR-ME06 F40M		
2	0,08–0,14	XOMX090308TR-ME06 F40M		
3	0,08–0,14	XOMX090308TR-ME06 MP2500		
4	0,08–0,14	XOMX090308TR-ME06 MP2500		
5	0,06–0,12	XOMX090308TR-M08 MP2500		
6	0,06–0,12	XOMX090308TR-M08 MP2500		
7	0,06–0,09	XOMX090308TR-M08 MP1500		
8	0,08–0,14	XOMX090308TR-ME06 MP2500		
9	0,08–0,14	XOMX090308TR-ME06 MP2500		
10	0,06–0,12	XOMX090308TR-M08 T350M		
11	0,06–0,12	XOMX090308TR-M08 F40M		
12	0,08–0,14	XOMX090308TR-M08 MK1500		
13	0,08–0,14	XOMX090308TR-M08 MK1500		
14	0,08–0,14	XOMX090308TR-M08 MK1500		
15	0,08–0,14	XOMX090308TR-M08 MP1500		
16	0,08–0,15	XOEX090308FR-E05 H15		
17	0,08–0,16	XOEX090308FR-E05 F40M		
18	0,08–0,16	XOEX090308FR-E05 F40M		
19	0,04–0,10	XOMX090308TR-ME06 T350M		
20	0,04–0,10	XOMX090308TR-ME06 T350M		
21	0,04–0,08	XOMX090308TR-M08 F40M		
22	0,04–0,10	XOMX090308TR-ME06 F40M		

Cutting data

SMG	Grades												
	MK1500			MK2000			H15						
	f_z (mm/tooth)												
	0,04	0,08	0,14	0,04	0,08	0,14	0,04	0,08	0,14				
	v_c (m/min)												
1	–	–	–	560	480	410	–	–	–				
2	–	–	–	475	405	350	–	–	–				
3	–	–	–	390	335	290	–	–	–				
4	–	–	–	335	285	245	–	–	–				
5	–	–	–	280	240	205	–	–	–				
6	–	–	–	245	210	180	–	–	–				
7	–	–	–	65	55	–	–	–	–				
8	–	–	–	380	330	280	–	–	–				
9	–	–	–	300	260	220	–	–	–				
10	–	–	–	245	210	180	–	–	–				
11	–	–	–	180	155	–	–	–	–				
12	420	360	310	290	250	215	215	185	155				
13	370	315	270	255	220	190	185	160	140				
14	310	265	230	215	185	160	155	135	–				
15	255	220	190	180	155	130	–	–	–				
16	–	–	–	1445	1240	1065	1055	910	780				
17	–	–	–	1165	1005	860	855	735	630				
18	–	–	–	890	765	655	650	560	480				
19	–	–	–	80	70	–	–	–	–				
20	–	–	–	65	55	–	–	–	–				
21	–	–	–	55	48	–	–	–	–				
22	–	–	–	135	115	–	–	–	–				

Type of insert

XO..09

Insert selection – 217/220.79-XO12

Universal insert: XOMX 120408TR-M12 MP2500

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,10–0,20	XOMX120408TR-ME08 F40M		
2	0,10–0,20	XOMX120408TR-ME08 F40M		
3	0,10–0,20	XOMX120408TR-ME08 MP2500		
4	0,10–0,20	XOMX120408TR-ME08 MP2500		
5	0,10–0,18	XOMX120408TR-M12 MP2500		
6	0,10–0,16	XOMX120408TR-M12 MP2500		
7	0,08–0,14	XOMX120408TR-D14 MP1500		
8	0,08–0,18	XOMX120408TR-ME08 MP2500		
9	0,08–0,16	XOMX120408TR-ME08 MP2500		
10	0,10–0,18	XOEX120408R-M07 T350M		
11	0,10–0,14	XOEX120408R-M07 T350M		
12	0,10–0,25	XOMX120408TR-M12 MK1500		
13	0,10–0,20	XOMX120408TR-M12 MK1500		
14	0,10–018	XOMX120408TR-M12 MK1500		
15	0,10–0,16	XOMX120408TR-M12 MP1500		
16	0,10–0,25	XOEX120408FR-E06 H15		
17	0,10–0,20	XOEX120408FR-E06 F40M		
18	0,10–0,20	XOEX120408FR-E06 F40M		
19	0,06–0,10	XOEX120408R-M07 T350M		
20	0,06–0,10	XOEX120408R-M07 T350M		
21	0,06–0,08	XOEX120408R-M07 F40M		
22	0,06–0,12	XOEX120408R-M07 F40M		

Cutting data

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			F40M			F15M			MS2500		
	f_z (mm/tooth)																				
	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20
	v_c (m/min)																				
1	595	500	430	530	445	380	500	420	360	460	385	330	400	335	285	–	–	–	575	485	415
2	505	425	365	445	375	320	425	355	305	390	325	280	340	285	245	–	–	–	490	410	350
3	415	350	300	370	310	265	350	295	250	320	270	230	280	235	200	–	–	–	405	340	290
4	355	300	255	315	265	225	300	250	215	275	230	195	240	200	170	–	–	–	345	290	245
5	295	250	215	265	220	190	250	210	180	230	190	165	200	165	145	–	–	–	285	240	205
6	260	220	185	230	195	165	220	185	155	200	170	145	175	145	125	–	–	–	250	210	180
7	70	60	–	55	48	–	55	47	–	55	46	–	48	40	–	–	–	–	60	50	–
8	405	340	295	325	270	230	315	265	230	300	255	215	275	230	195	–	–	–	350	295	250
9	320	270	230	255	215	180	250	210	180	235	200	170	215	180	155	–	–	–	275	230	200
10	260	220	190	205	175	150	205	170	145	195	160	140	175	150	125	–	–	–	225	190	160
11	195	165	–	155	130	–	150	125	–	145	120	–	130	110	–	–	–	–	165	140	–
12	310	260	225	275	230	200	260	220	185	240	200	170	210	175	150	250	210	180	300	250	215
13	275	230	195	240	205	175	230	190	165	210	175	150	185	155	130	220	185	160	265	220	190
14	230	195	165	205	170	145	190	160	140	175	150	125	155	130	110	185	155	135	220	185	160
15	190	160	135	170	140	120	160	135	115	145	125	105	125	105	90	–	–	–	185	155	130
16	–	–	–	1365	1145	980	1295	1085	930	1190	1000	855	1035	870	745	1240	1040	890	1490	1250	1070
17	–	–	–	1105	925	795	1045	875	750	960	805	690	835	700	600	1005	840	720	1205	1010	865
18	–	–	–	840	705	605	795	670	570	730	615	525	635	535	460	765	640	550	915	770	660
19	–	–	–	70	60	–	65	55	–	65	55	–	55	48	–	–	–	–	75	65	–
20	–	–	–	55	48	–	55	45	–	50	43	–	46	39	–	–	–	–	60	50	–
21	–	–	–	49	41	–	46	39	–	44	37	–	40	33	–	–	–	–	55	45	–
22	–	–	–	115	100	–	110	95	–	105	90	–	95	80	–	–	–	–	130	105	–

Type of insert

XO..12

Insert selection – 217/220.79-XO12

Universal insert: XOMX 120408TR-M12 MP2500

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,10–0,20	XOMX120408TR-ME08 F40M		
2	0,10–0,20	XOMX120408TR-ME08 F40M		
3	0,10–0,20	XOMX120408TR-ME08 MP2500		
4	0,10–0,20	XOMX120408TR-ME08 MP2500		
5	0,10–0,18	XOMX120408TR-M12 MP2500		
6	0,10–0,16	XOMX120408TR-M12 MP2500		
7	0,08–0,14	XOMX120408TR-D14 MP1500		
8	0,08–0,18	XOMX120408TR-ME08 MP2500		
9	0,08–0,16	XOMX120408TR-ME08 MP2500		
10	0,10–0,18	XOEX120408R-M07 T350M		
11	0,10–0,14	XOEX120408R-M07 T350M		
12	0,10–0,25	XOMX120408TR-M12 MK1500		
13	0,10–0,20	XOMX120408TR-M12 MK1500		
14	0,10–018	XOMX120408TR-M12 MK1500		
15	0,10–0,16	XOMX120408TR-M12 MP1500		
16	0,10–0,25	XOEX120408FR-E06 H15		
17	0,10–0,20	XOEX120408FR-E06 F40M		
18	0,10–0,20	XOEX120408FR-E06 F40M		
19	0,06–0,10	XOEX120408R-M07 T350M		
20	0,06–0,10	XOEX120408R-M07 T350M		
21	0,06–0,08	XOEX120408R-M07 F40M		
22	0,06–0,12	XOEX120408R-M07 F40M		

Cutting data

SMG	Grades												
	MK1500			MK2000			H15						
	f_z (mm/tooth)												
	0,06	0,12	0,20	0,06	0,12	0,20	0,06	0,12	0,20				
	v_c (m/min)												
1	–	–	–	520	435	375	–	–	–				
2	–	–	–	440	370	315	–	–	–				
3	–	–	–	365	305	260	–	–	–				
4	–	–	–	310	260	225	–	–	–				
5	–	–	–	260	215	185	–	–	–				
6	–	–	–	225	190	165	–	–	–				
7	–	–	–	60	50	–	–	–	–				
8	–	–	–	355	300	255	–	–	–				
9	–	–	–	280	235	200	–	–	–				
10	–	–	–	230	190	165	–	–	–				
11	–	–	–	170	140	–	–	–	–				
12	390	325	280	270	225	195	200	165	140				
13	340	285	245	240	200	170	175	145	125				
14	290	240	205	200	170	145	145	125	105				
15	240	200	170	165	140	120	120	100	85				
16	–	–	–	1345	1130	965	985	825	705				
17	–	–	–	1085	910	780	795	665	570				
18	–	–	–	830	695	595	605	510	435				
19	–	–	–	75	65	–	–	–	–				
20	–	–	–	60	50	–	–	–	–				
21	–	–	–	50	43	–	–	–	–				
22	–	–	–	125	105	–	–	–	–				

Type of insert

XO..12

Insert selection – 217/220.79-16

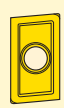
Universal insert: APKT 160408TL-M14 T350M

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,12–0,20	APKT160408TL-M14 F40M		
2	0,12–0,20	APKT160408TL-M14 F40M		
3	0,12–0,20	APKT160408TL-M14 T350M		
4	0,12–0,20	APKT160408TL-M14 T350M		
5	0,10–0,18	APKT160408TL-M14 T350M		
6	0,10–0,18	APKT160408TL-M14 T350M		
7	0,10–0,15	APFT1604PDTL-D15 MP1500		
8	0,12–0,18	APKT160408TL-M14 T350M		
9	0,12–0,16	APKT160408TL-M14 T350M		
10	0,10–0,14	APKT160408TL-M14 T350M		
11	0,10–0,14	APKT160408TL-M14 T350M		
12	0,12–0,20	APFT1604PDTL-D15 MP1500		
13	0,12–0,20	APFT1604PDTL-D15 MP1500		
14	0,12–0,20	APFT1604PDTL-D15 MP1500		
15	0,12–0,20	APFT1604PDTL-D15 MP1500		
16	0,12–0,20	APKT1604PDL-E12 HX		
17	0,12–0,20	APKT1604PDL-E12 HX		
18	0,12–0,20	APKT1604PDL-E12 HX		
19	0,10–0,14	APKT160408TL-M14 T350M		
20	0,10–0,14	APKT160408TL-M14 T350M		
21	0,10–0,12	APKT160408TL-M14 T350M		
22	0,10–0,14	APKT160408TL-M14 F40M		

Cutting data

SMG	Grades														
	MP1500			T350M			F40M			HX					
	f_z (mm/tooth)														
	0,10	0,15	0,20	0,10	0,15	0,20	0,10	0,15	0,20	0,10	0,15	0,20			
	v_c (m/min)														
1	440	395	360	340	305	280	295	265	240	240	210	195			
2	375	335	305	290	260	235	250	225	205	200	180	165			
3	310	275	250	240	215	195	210	185	170	165	150	135			
4	265	235	215	205	180	165	175	160	145	140	125	115			
5	220	195	180	170	150	140	150	130	120	120	105	95			
6	195	170	–	150	135	–	130	115	–	105	90	–			
7	55	–	–	–	–	–	–	–	–	–	–	–			
8	305	270	245	225	200	180	205	180	165	160	145	130			
9	240	210	195	175	155	145	160	140	130	130	115	105			
10	195	175	160	145	130	115	130	115	105	105	95	85			
11	145	130	–	105	95	–	95	85	–	75	70	–			
12	230	205	190	180	160	145	155	140	125	145	130	120			
13	205	180	165	155	140	125	135	120	110	130	115	105			
14	170	150	140	130	115	105	115	100	95	110	95	90			
15	140	125	–	110	95	–	95	85	–	90	80	–			
16	–	–	–	885	790	720	770	685	625	730	650	595			
17	–	–	–	715	635	580	620	555	505	590	525	480			
18	–	–	–	545	485	445	475	420	385	450	400	365			
19	–	–	–	47	42	–	43	38	–	23	21	–			
20	–	–	–	38	34	–	34	31	–	19	17	–			
21	–	–	–	33	–	–	30	–	–	16	–	–			
22	–	–	–	80	70	–	70	65	–	39	35	–			

Type of insert



AP..16

Insert selection – 217/220.79-12

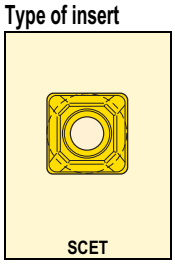
Universal insert: SCET 120612T-M14 MP2500

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,15–0,25	SCET120612T-M11 F40M		
2	0,15–0,25	SCET120612T-M11 F40M		
3	0,15–0,25	SCET120612T-M11 F40M		
4	0,15–0,25	SCET120612T-M11 MP2500		
5	0,14–0,22	SCET120612T-M11 MP2500		
6	0,12–0,20	SCET120612T-M11 MP2500		
7	0,10–0,15	SCET120612T-MD15 MP1500		
8	0,14–0,22	SCET120612T-M14 T350M		
9	0,14–0,22	SCET120612T-M14 T350M		
10	0,12–0,20	SCET120612T-M14 T350M		
11	0,12–0,18	SCET120612T-M14 T350M		
12	0,15–0,25	SCET120612T-M14 MK1500		
13	0,15–0,25	SCET120612T-M14 MK1500		
14	0,12–0,20	SCET120612T-M14 MK1500		
15	0,12–0,20	SCET120612T-MD15 MP1500		
16	0,15–0,25	SCET120612T-M11 F40M		
17	0,15–0,25	SCET120612T-M11 F40M		
18	0,15–0,25	SCET120612T-M11 F40M		
19	0,10–0,20	SCET120612T-M14 T350M		
20	0,10–0,20	SCET120612T-M14 T350M		
21	0,10–0,15	SCET120612T-M14 T350M		
22	0,12–0,18	SCET120612T-M14 F40M		

Cutting data

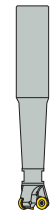
SMG	Grades																		
	MP1500			MP2500			T350M			F40M			MK1500			HX			
	f_z (mm/tooth)																		
	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	0,10	0,15	0,25	
SMG	v_c (m/min)																		
1	525	470	395	465	415	350	405	360	305	350	315	265	–	–	–	–	–	–	
2	445	395	335	395	350	300	345	305	260	300	265	225	–	–	–	–	–	–	
3	365	325	280	325	290	245	285	250	215	245	220	185	–	–	–	–	–	–	
4	315	280	235	275	245	210	240	215	185	210	185	160	–	–	–	–	–	–	
5	260	235	195	230	205	175	200	180	150	175	155	135	–	–	–	–	–	–	
6	230	205	–	205	180	–	175	160	–	155	135	–	–	–	–	–	–	–	
7	65	55	–	50	45	–	48	43	–	42	37	–	–	–	–	–	–	–	
8	360	320	270	285	255	215	265	235	200	240	215	180	–	–	–	–	–	–	
9	280	250	215	225	200	170	210	185	155	190	170	145	–	–	–	–	–	–	
10	230	205	175	185	165	140	170	150	130	155	140	115	–	–	–	–	–	–	
11	170	150	–	135	120	–	125	110	–	115	100	–	–	–	–	–	–	–	
12	275	245	205	240	215	185	210	190	160	185	165	140	345	305	260	175	155	130	
13	240	215	180	215	190	160	185	165	140	160	145	120	300	270	230	155	135	115	
14	200	180	155	180	160	135	155	140	120	135	120	105	255	225	190	130	115	–	
15	165	150	–	150	130	–	130	115	–	110	100	–	210	185	–	–	–	–	
16	–	–	–	1200	1070	910	1045	935	790	910	810	690	–	–	–	865	770	655	
17	–	–	–	970	865	735	845	755	640	735	655	555	–	–	–	700	625	530	
18	–	–	–	740	660	560	645	575	490	560	500	425	–	–	–	530	475	405	
19	–	–	–	60	55	–	55	49	–	50	45	–	–	–	–	28	25	–	
20	–	–	–	50	45	–	45	40	–	41	36	–	–	–	–	22	20	–	
21	–	–	–	43	38	–	39	34	–	35	31	–	–	–	–	19	17	–	
22	–	–	–	105	90	–	90	80	–	85	75	–	–	–	–	46	41	–	

Type of insert



Code key

Note that parts of the code key can vary for different cutters.



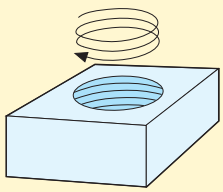
Right hand rotation	System	Outer cutting diameter/ ballnose type = cutting diameter	Maximum axial cutting depth	Setting length (for the shank for combimaster)

R 217 . 29 - 16 16 . 0 - 04 . 2 . 140 A

217 = With shank 220 = For arbor mount	Shank diameter (connecting thread diameter for Combimaster)	Shank type (.RE for Combimaster)	Number of teeth	A = Through 'coolant' supply E = Solid carbide shank

Cutter of choice

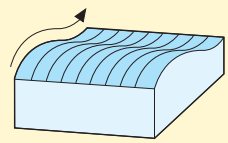
The application determines cutter choice



Choose cutter with round inserts

Choose insert size

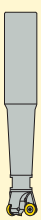
Insert R05	Insert R20
• For finishing and unstable conditions • Good accessibility. • Low cutting forces	• For roughing and stable conditions • High metal removal rate. • Strong insert.



Choose ball nose cutter type

Choose cutter according to the design of the workpiece

- Accessibility
- Radii



One piece design

- Available in small diameters (down to 10 mm)

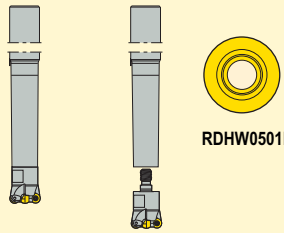
Combimaster design

Flexibility

- Many different shank types and lengths
- Many different cutter heads (e.g. with round inserts, ball nose type, different pitch versions)
- 'Trough' coolant supply

Cutters with round inserts

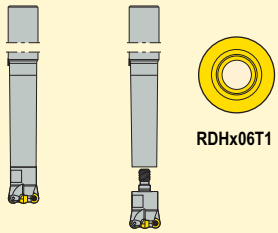
Max a_p 2,5 mm



RDHW0501M0

217.29-025

Max a_p 3 mm

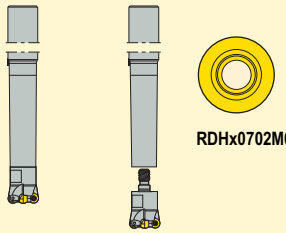


RDHx06T1

217/220.29-04
∅ 12-50 mm

217.29-04
∅ 16-40 mm

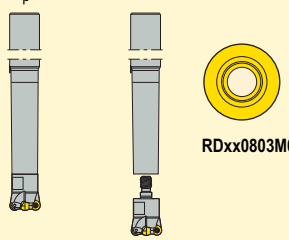
Max a_p 3,5 mm



RDHx0702M0

217.29-035

Max a_p 4 mm

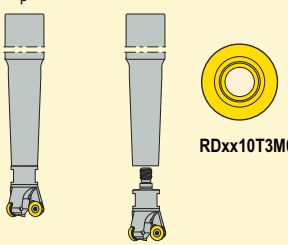


RDxx0803M0

217/220.29-04
∅ 12-50 mm

217.29-04
∅ 16-40 mm

Max a_p 5 mm

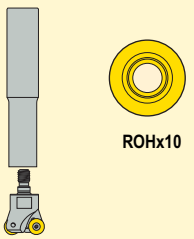


RDxx10T3M0

217/220.29-05
∅ 16-50 mm

217.29-05
∅ 20-42 mm

Max a_p 5 mm

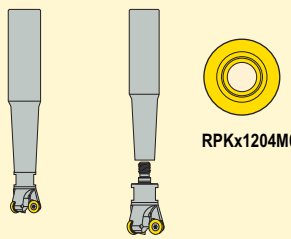


ROHx10

R220.24-10*
∅ 40-63 mm

R217.24-10
∅ 25-32 mm

Max a_p 6 mm

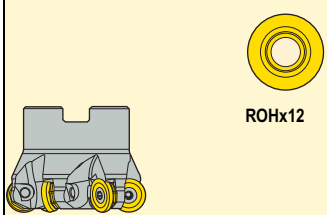


RPKx1204M0

217/220.29-06
∅ 32-137 mm

217.29-06
∅ 24-42 mm

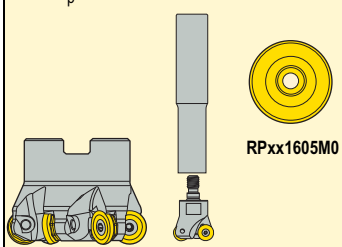
Max a_p 6 mm



ROHx12

R220.24-12*
∅40-80 mm

Max a_p 8 mm

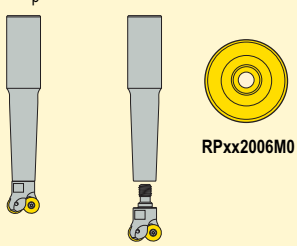


RPxx1605M0

220.29-08
∅ 50-160 mm

217.29-08
∅ 32-40 mm

Max a_p 10



RPxx2006M0

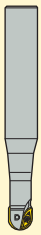
217/220.29-10
∅ 25-250 mm

217.29-10
∅ 40 mm

* 220.24 Power 4™ is intended for turbine blade machining

Ball nose type cutter

Max a_p 14-70 mm

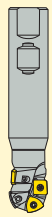


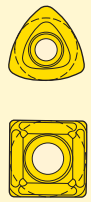
218.20-xxx

R218.20
∅ 16-50 mm

R218.20
∅ 16-40 mm

Max a_p 17-115 mm





SPMX/SPMT/
SCE.

R218.19
∅ 16-50 mm

R218.19
∅ 20-32 mm

Max a_p 9,5-26 mm

219.19-xxx

R219.19
∅ 8-32 mm

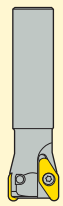
Cutter with 120º cutting angle
Max a_p 14-25 mm

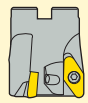
Insert
218.19-xxx

R218.19
∅ 25-40 mm

Cavity milling cutters for aluminium

Max a_p 14 mm





Insert
XPKX12T3..
VPGX2206..

R217.97
∅ 25-40 mm

R217.97
∅ 25-40 mm

R220.97
∅ 50-100 mm

Choice of cutter, inserts and cutting data

1 Select cutter

- Use the guidelines on previous pages to choose a suitable cutter.

2 Select cutter

2a • Look up the pages for the selected cutter and choose a suitable diameter in the tool data table

For cutters with round inserts
D_{c2} = Cutter diameter
D_c = Cutter diameter

For ball nose cutters
D_c = Cutter diameter

2b • For end mills use the tool data table to check that the required mounting type is available.

- Combimaster shanks are found in the Combimaster section. Always choose the shortest shank possible (to get maximum stability.) When using long shanks in combination with cutter heads with round inserts choose coarse pitch cutter head version (to minimize cutting forces)

3 Select inserts

- Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

3a • Use the insert selection tables to choose suitable insert/inserts.

3b • Use the tool data table to find the number of inserts needed

4 Select cutting data

4a • Maximum recommended axial cutting depths are found in the tool data table. (See figure 1.)

4b • Cutting speed recommendations are found in the cutting data table. Notice that the recommendations are for a fully engaged cutter:

- Maximum RPM that for safety reasons should never be exceeded, are shown on the product page.

4c • Feed per tooth recommendations are in the feed selection table.

- If the cutter is not fully engaged the feed per tooth and the cutting speed should be increased compared to the recommendations for a fully engaged cutter.
The reason for that is to keep the chip thickness and the working temperature in the cutting zone at the same value as for a fully engaged cutter:

Figure 1

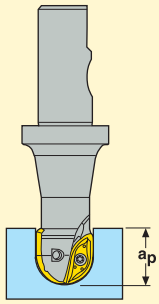
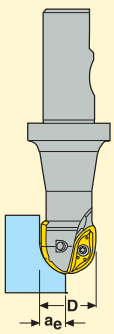


Figure 2



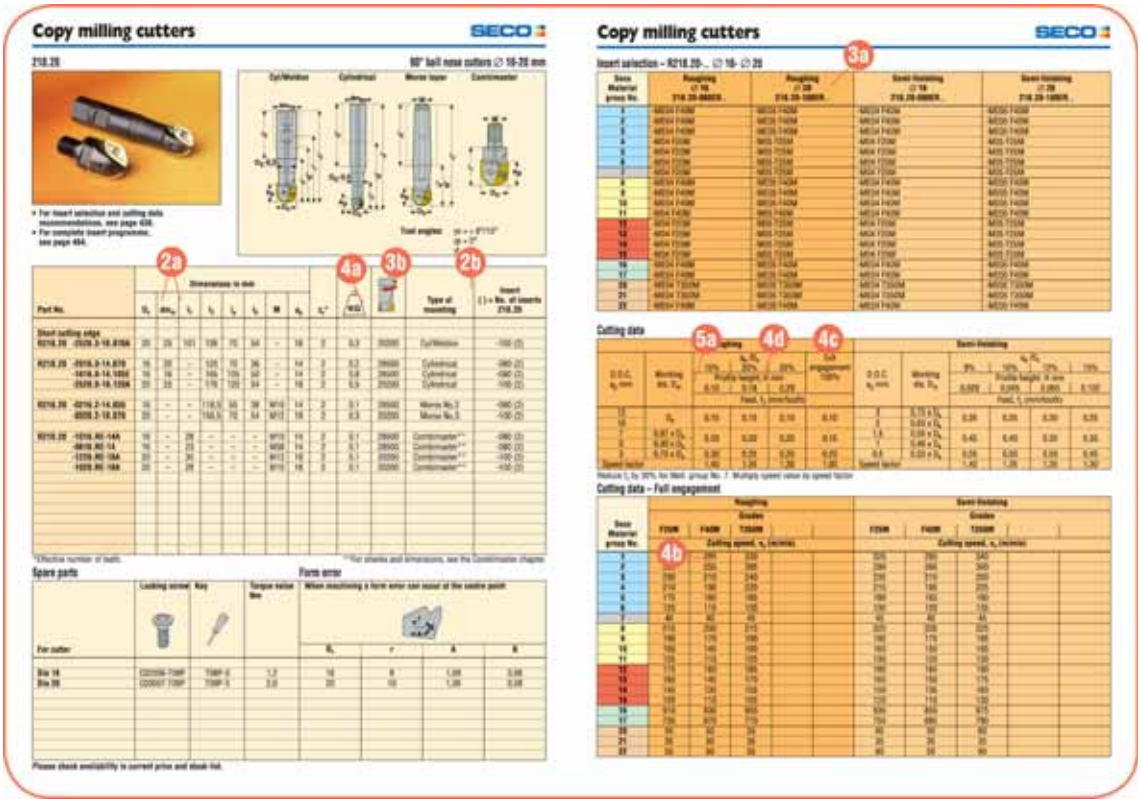
4 • Divide the radial cutting depth with the cutter diameter to get the actual cutter engagement percentage (a_e/D_c% for ball nose type cutters and a_e/D_{c2}% for cutters with round inserts.) (See figure 2)

4d • Use the percentage to get a correct feed per tooth and cutting speed recommendations for the actual cutter engagement

- When milling in corners and bottoms of cavities the feed rate should be reduced due to the increase of the chip thickness. Use the feed per tooth recommendations for a fully engaged cutter. (See figure 3.)

- When calculating feed per revolution and feed speed for ball nose type cutters always use the z_c-value.
That is the effective number of teeth to use for cutting data calculation.
The z_c-value is found in the tool data table.
- When calculating the RPM for ball nose type cutters the working diameter should be used. Use the compensation factors in cutting data conversion table to calculate the working diameter (D_w) (See figure 4.)

- When steep down copying with an angle bigger than 40º or steep up copying with an angle bigger than 30° in combination with small depth of cut use the diameter (D_c) as working diameter instead of D_w



- Formulae for cutting data calculation are found on page 597.

5 Calculate surface finish

5a • Use the profile height value (H) from the cutting data conversion table to calculate the expected surface finish for the actual operation. (See figure 5.)

6 Molykote 1000 is recommended for insert locking screws. Part No. MOLYKOTE 1000-50G

Figure 4

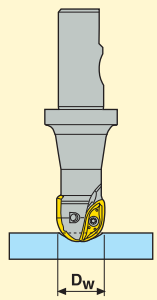


Figure 3

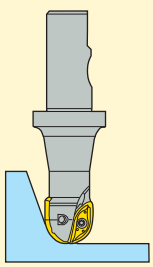
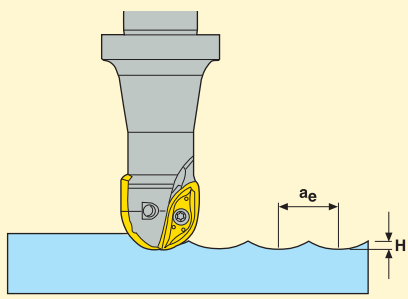


Figure 5

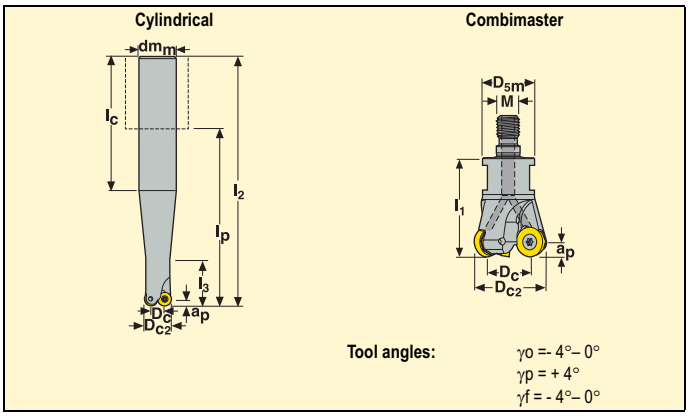
Ra≈Hx0,25



217.29-025

Cutters with round inserts, max. axial cutting depth 2,5 mm

- **For insert selection and cutting data recommendations, see page 364.**
- **For complete insert programme, see page 529.**
- For ramping and helical interpolation, see pages 592 - 595.



Part No.	Dc2	Dc	dmm D5m	l1	l2	lp	l3	lc	M	ap		KG		Type of mounting	
	Dimension in mm														
R217.29 -1010.0-025.2.090E	10	5	10	–	130	90	30	100	–	2,5	2	0,2	75000	Cylindrical	RDH.0501
-1610.0-025.2.112A	10	5	16	–	160	112	20	100	–	2,5	2	0,2	75000	Cylindrical	RDH.0501
-1612.0-025.2.112A	12	7	16	–	160	112	20	120	–	2,5	2	0,3	65000	Cylindrical	RDH.0501
R217.29 -0610.RE-025.2A	10	5	11	18	–	–	–	–	M6	2,5	2	0,1	75000	Combimaster*	RDH.0501
-0612.RE-025.3A	12	7	11	18	–	–	–	–	M6	2,5	3	0,1	65000	Combimaster*	RDH.0501
-0812.RE-025.3A	12	7	13,5	20	–	–	–	–	M8	2,5	3	0,1	65000	Combimaster*	RDH.0501
-0815.RE-025.4A	15	10	13,5	20	–	–	–	–	M8	2,5	4	0,1	60000	Combimaster*	RDH.0501
-1020.RE-025.5A	20	15	18,5	23	–	–	–	–	M10	2,5	5	0,1	50000	Combimaster*	RDH.0501

Suffix E in part No. = Solid carbide shank with brazed cutting head.

*For shanks and dimensions, see pages 498 - 510.

Spare parts

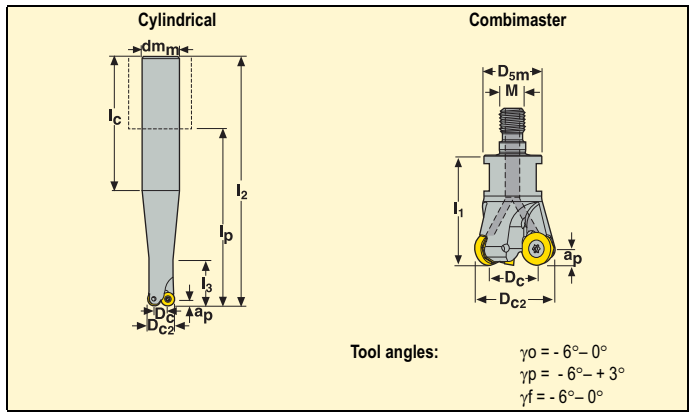
For cutter	Locking screw	Key	Torque value Nm
R217.29-..	C02035-T06P	T06P-3	0,5

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

217.29-03

Cutters with round inserts, max. axial cutting depth 3 mm

- **For insert selection and cutting data recommendations, see page 365.**
- **For complete insert programme, see page 529.**
- For ramping and helical interpolation, see pages 592 - 595.



Part No.	Dimension in mm D_{c2}	D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.29 -1210.0-03.1.035	10	04	12	–	95	35	20	60	–	3	1	0,1	36000	Cylindrical	RDH.06T1
-1612.0-03.2.050	12	06	16	–	110	50	20	60	–	3	2	0,2	32000	Cylindrical	RDH.06T1
-1212.0-03.2.070E	12	06	12	–	130	70	**50	80	–	3	2	0,3	32000	Cylindrical	RDH.06T1
-2016.0-03.3.070	16	10	20	–	130	70	30	60	–	3	3	0,3	28800	Cylindrical	RDH.06T1
-1216.0-03.3.070E	16	10	12	–	130	70	70	110	–	3	3	0,4	28800	Cylindrical	RDH.06T1
-1616.0-03.3.100E	16	10	16	–	160	100	***50	140	–	3	3	0,5	28800	Cylindrical	RDH.06T1
-1620.0-03.4.100E	20	14	16	–	160	100	100	140	–	3	4	0,5	25600	Cylindrical	RDH.06T1
-2520.0-03.4.100	20	14	25	–	160	100	40	80	–	3	4	0,6	25600	Cylindrical	RDH.06T1
R217.29 -0812.RE-03.2	12	6	13,5	23	–	–	–	–	M8	3	2	0,1	32000	Combimaster*	RDH.06T1
-0816.RE-03.3	16	10	30	23	–	–	–	–	M8	3	3	0,1	28800	Combimaster*	RDH.06T1
-1020.RE-03.4A	20	14	13,5	28	–	–	–	–	M10	3	4	0,1	25600	Combimaster*	RDH.06T1
-1225.RE-03.5A	25	19	18,5	28	–	–	–	–	M12	3	5	0,1	23200	Combimaster*	RDH.06T1
-1632.RE-03.6A	32	26	23	28	–	–	–	–	M16	3	6	0,1	20000	Combimaster*	RDH.06T1
-1635.RE-03.7A	35	29	30	28	–	–	–	–	M16	3	7	0,2	19200	Combimaster*	RDH.06T1

Suffix E in part No. = Solid carbide shank with brazed cutting head.

l_3 = 70 if shoulder > 90,20°, *l_3 = 100 if shoulder > 90,20°.

Spare parts

For cutter	Locking screw	Key	Torque value Nm
R217.29-∅10–∅16	C02204-T07P	T07P-3	0,9
R217.29-∅20–∅40	C02245-T07P	T07P-3	0,9

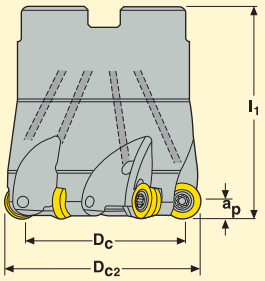
Please check availability in current price and stock-list.

*For shanks and dimensions, see pages 498 - 510.

Dynamomentic keys, see page 590.

220.29-03

Cutters with round inserts, max. axial cutting depth 3 mm



Tool angles: γo = 0°
γp = + 3°
γf = 0°

- **For insert selection and cutting data recommendations, see page 365.**
- **For complete insert programme, see page 529.**
- For ramping and helical interpolation, see pages 592 - 595.

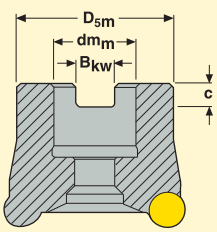
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		
R220.29 -0032-03.6A	32	26	35	3	6	0,1	20000	RDH.06T1
-0040-03.8A	40	34	35	3	8	0,2	17600	RDH.06T1

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.29-..	C02245-T07P	T07P-3	220.17-689

*** Torque values 0,9 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



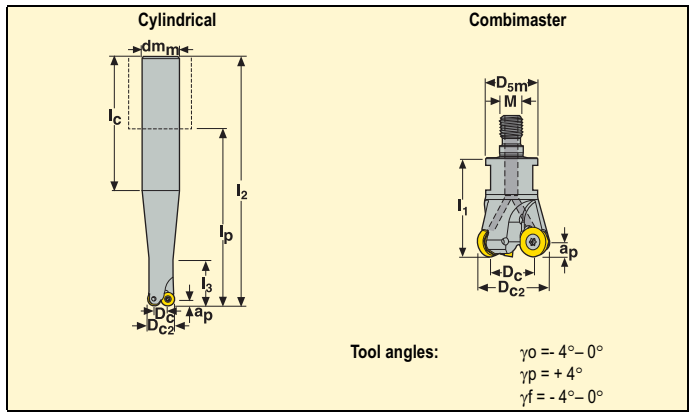
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.29-..	16	35	8,4	5,6	16

Please check availability in current price and stock-list.

217.29-035

Cutters with round inserts, max. axial cutting depth 3,5 mm

- **For insert selection and cutting data recommendations, see page 366.**
- **For complete insert programme, see page 529.**
- For ramping and helical interpolation, see pages 592 - 595.



Part No.	Dimension in mm D_{c2}	D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.29 -2015.0-035.2.150A	15	8	20	–	200	150	20	135	–	3,5	2	0,4	50000	Cylindrical	RDH.0702
R217.29 -0815.RE-035.2A	15	8	13,5	20	–	–	–	–	M8	3,5	2	0,1	50000	Combimaster*	RDH.0702
-0816.RE-035.3A	16	9	13,5	20	–	–	–	–	M8	3,5	3	0,1	48000	Combimaster*	RDH.0702
-1020.RE-035.4A	20	13	18,5	23	–	–	–	–	M10	3,5	4	0,1	44000	Combimaster*	RDH.0702
-1225.RE-035.5A	25	18	23	28	–	–	–	–	M12	3,5	5	0,1	35000	Combimaster*	RDH.0702
-1635.RE-035.6A	35	28	30	28	–	–	–	–	M16	3,5	6	0,2	30000	Combimaster*	RDH.0702

Suffix E in part No. = Solid carbide shank with brazed cutting head.

*For shanks and dimensions, see pages 498 - 510.

Spare parts

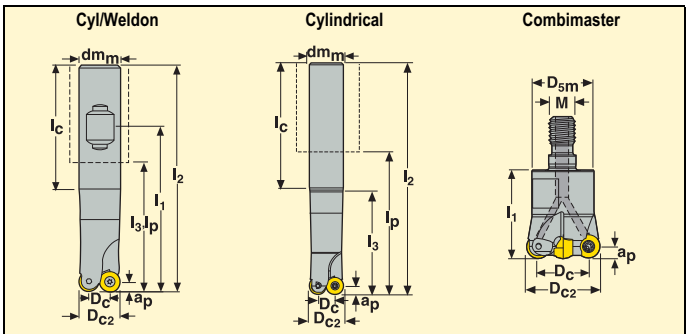
For cutter	Locking screw	Key	Torque value Nm
217.29-..	C02545-T07P	T07P-3	0,9

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

217.29-04

Cutters with round inserts, max. axial cutting depth 4 mm

- **For insert selection and cutting data recommendations, see page 367.**
- **For complete insert programme, see page 529.**
- For ramping and helical interpolation, see pages 592 - 595.



Tool angles:

γo = - 7°– 0°
γp = + 4°
γf = - 7°– 0°

Part No.	Dimension in mm D_{c2}	D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.29 -1616.3-04.2.040	16	8	16	64	88	40	38	48	–	4	2	0,2	36200	Cyl/Weldon	RD..0803
R217.29 -1212.0-04.1.040	12	4	12	–	100	40	40	60	–	4	1	0,2	51200	Cylindrical	RD..0803
-1616.0-04.2.050	16	8	16	–	110	50	50	60	–	4	2	0,2	36200	Cylindrical	RD..0803
-1616.0-04.2.100E	16	8	16	–	160	100	100	95	–	4	2	0,5	36200	Cylindrical	RD..0803
R217.29 -0816.RE-04.2	16	8	13,5	23	–	–	–	–	M8	4	2	0,1	36200	Combimaster**	RD..0803
-1020.RE-04.2A	20	12	18,5	28	–	–	–	–	M10	4	2	0,1	32400	Combimaster**	RD..0803
-1020.RE-04.3A	20	12	18,5	28	–	–	–	–	M10	4	3	0,1	32400	Combimaster**	RD..0803
-1225.RE-04.2A	25	17	23	30	–	–	–	–	M12	4	2	0,2	29000	Combimaster**	RD..0803
-1225.RE-04.3A	25	17	23	30	–	–	–	–	M12	4	3	0,1	29000	Combimaster**	RD..0803
-1225.RE-04.4A	25	17	23	30	–	–	–	–	M12	4	4	0,2	29000	Combimaster**	RD..0803
-1632.RE-04.5A	32	24	30	40	–	–	–	–	M16	4	5	0,3	26100	Combimaster**	RD..0803
-1640.RE-04.5A	40	32	30	40	–	–	–	–	M16	4	5	0,3	23300	Combimaster**	RD..0803
-1640.RE-04.6A	40	32	30	40	–	–	–	–	M16	4	6	0,3	23300	Combimaster**	RD..0803

*For shanks and dimensions, see pages 498 - 510.

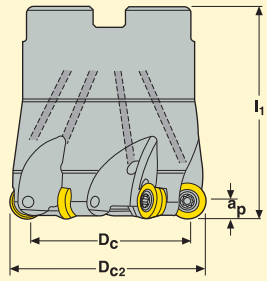
Spare parts

For cutter	Locking screw	Key *
R217.29-∅12–∅16	C02505-T08P	T08P-3
R217.29-∅20–∅40	C02506-T08P	T08P-3

Please check availability in current price and stock-list.
*** Torque values 1,2 Nm.** Dynamomentic keys, see page 590.

220.29-04

Cutters with round inserts, max. axial cutting depth 4 mm



Tool angles:
γo = - 3°– 0°
γp = + 4°
γf = - 3°– 0°

- **For insert selection and cutting data recommendations, see page 367.**
- **For complete insert programme, see page 529.**
- For ramping and helical interpolation, see pages 592 - 595.

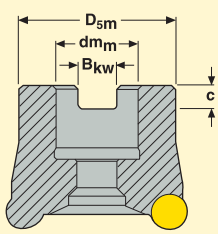
Part No.	Dimension in mm					KG		
	D_{c2}	D_c	l_1	a_p				
R220.29 -0050-04.5A	50	42	40	4	5	0,4	17300	RD..0803
-0050-04.7A	50	42	40	4	7	0,4	17300	RD..0803

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.29-..	C02506-T08P	T08P-3	220.17-692

*** Torque values 1,2 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



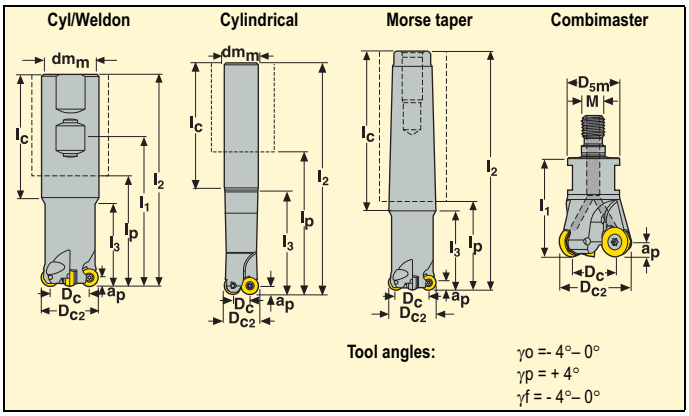
For cutter	Dimensions in mm				For arbor
	dm_m	D_{5m}	B_{kw}	c	
R220.29-..	22	47	10,4	6,3	22

Please check availability in current price and stock-list.

217.29-05

Cutters with round inserts, max. axial cutting depth 5 mm

- **For insert selection and cutting data recommendations, see page 368.**
- **For complete insert programme, see page 529.**
- For ramping and helical interpolation, see pages 592 - 595.



Part No.	Dimension in mm D_{c2}	D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.29 -2520.3-05.2.070	20	10	25	94	126	70	55	66	–	5	2	0,4	27400	Cyl/Weldon	RD..10T3
-2525.3-05.3.050	25	15	25	74	106	50	40	66	–	5	3	0,4	24400	Cyl/Weldon	RD..10T3
-3232.3-05.4.060	32	22	32	84	120	60	50	70	–	5	4	0,7	21600	Cyl/Weldon	RD..10T3
R217.29 -2016.0-05.1.090	16	6	20	–	150	90	25	90	–	5	1	0,4	29900	Cylindrical	RD..10T3
-1620.0-05.2.100E	20	10	16	–	160	112	112	140	–	5	2	0,6	27400	Cylindrical	RD..10T3
-2025.0-05.2.120	25	15	20	–	170	120	120	140	–	5	2	0,5	24400	Cylindrical	RD..10T3
R217.29 -1020.RE-05.2A	20	10	18,5	28	–	–	–	–	M10	5	2	0,1	27400	Combimaster**	RD..10T3
-1225.RE-05.2A	25	15	23	30	–	–	–	–	M12	5	2	0,2	24400	Combimaster**	RD..10T3
-1225.RE-05.3A	25	15	23	30	–	–	–	–	M12	5	3	0,2	24400	Combimaster**	RD..10T3
-1232.RE-05.4A	32	22	23	30	–	–	–	–	M12	5	4	0,2	21600	Combimaster**	RD..10T3
-1632.RE-05.3A	32	22	30	40	–	–	–	–	M16	5	3	0,2	21600	Combimaster**	RD..10T3
-1632.RE-05.4A	32	22	30	40	–	–	–	–	M16	5	4	0,2	21600	Combimaster**	RD..10T3
-1635.RE-05.5A	35	25	30	40	–	–	–	–	M16	5	5	0,2	20700	Combimaster**	RD..10T3
-1640.RE-05.4A	40	30	30	40	–	–	–	–	M16	5	4	0,3	19300	Combimaster**	RD..10T3
-1642.RE-05.5A	42	32	30	40	–	–	–	–	M16	5	5	0,3	18800	Combimaster**	RD..10T3
-1642.RE-05.6A	42	32	30	40	–	–	–	–	M16	5	6	0,3	18800	Combimaster*	RD..10T3

*For shanks and dimensions, see pages 498 - 510.

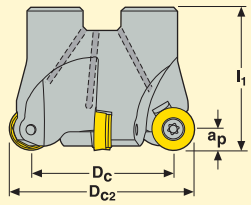
Spare parts

For cutter	Locking screw	Key	Torque value Nm
R217.29-∅16–∅20	C03006-T09P	T09P-3	2,0
R217.29-∅25–∅42	C03007-T09P	T09P-3	2,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

220.29-05

Cutters with round inserts, max. axial cutting depth 5 mm



Tool angles: γo = - 3°– - 2°
γp = + 4°
γf = - 3°– - 2°

- **For insert selection and cutting data recommendations, see page 368.**
- **For complete insert programme, see page 529.**
- For ramping and helical interpolation, see pages 592 - 595.

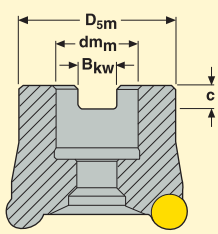
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		
R220.29 -0040-05.3A	40	30	40	5	3	0,3	19300	RD..10T3
-0040-05.5A	40	30	40	5	5	0,3	19300	RD..10T3
-0050-05.4A	50	40	40	5	4	0,4	17300	RD..10T3
-0050-05.6A	50	40	40	5	6	0,4	17300	RD..10T3

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.29-0040	C03007-T09P	T09P-3	220.17-689
R220.29-0050	C03007-T09P	T09P-3	220.17-692

*** Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



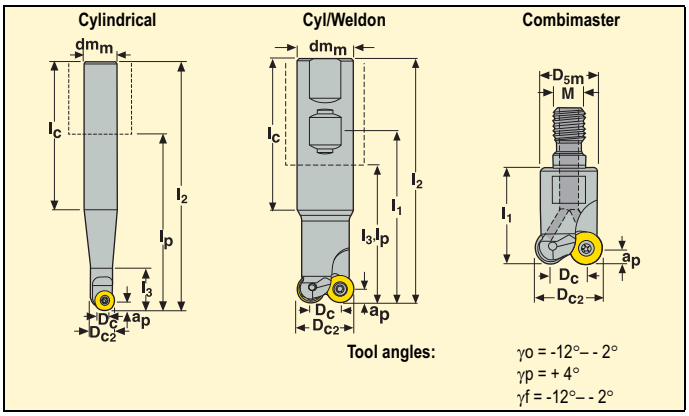
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.29-0040	16	35	8,4	5,6	16
R220.29-0050	22	47	10,4	6,3	22

Please check availability in current price and stock-list.

217.29-06

Cutters with round inserts, max. axial cutting depth 6 mm

- **For insert selection and cutting data recommendations, see page 369.**
- **For complete insert programme, see page 531.**
- For ramping and helical interpolation, see pages 592 - 595.



Part No.	Dimension in mm D_{c2}	D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.29 -2532.0-06.2.140	32	20	25	–	196	140	140	161	–	6	2	0,8	15600	Cylindrical	RP.1204
R217.29 -2525.3-06.2.050	25	13	25	74	106	50	50	56	–	6	2	0,4	17700	Cyl/Weldon	RP.1204
-3232.3-06.3.060	32	20	32	84	120	60	49	70	–	6	3	0,6	15600	Cyl/Weldon	RP.1204
-3240.3-06.4.075	40	28	32	99	135	75	75	70	–	6	4	0,7	14000	Cyl/Weldon	RP.1204
R217.29 -1224.RE-06.2A	24	12	23	35	–	–	–	–	M12	6	2	0,2	18100	Combimaster*	RP.1204
-1225.RE-06.2A	25	13	23	35	–	–	–	–	M12	6	2	0,2	17700	Combimaster*	RP.1204
-1232.RE-06.3A	32	20	23	40	–	–	–	–	M12	6	3	0,2	15600	Combimaster*	RP.1204
-1632.RE-06.2A	32	20	30	40	–	–	–	–	M16	6	2	0,2	15600	Combimaster*	RP.1204
-1632.RE-06.3A	32	20	30	40	–	–	–	–	M16	6	3	0,2	15600	Combimaster*	RP.1204
-1635.RE-06.3A	35	23	30	40	–	–	–	–	M16	6	3	0,3	15000	Combimaster*	RP.1204
-1635.RE-06.4A	35	23	30	40	–	–	–	–	M16	6	4	0,3	15000	Combimaster*	RP.1204
-1640.RE-06.3A	40	28	30	40	–	–	–	–	M16	6	3	0,3	14000	Combimaster*	RP.1204
-1640.RE-06.4A	40	28	30	40	–	–	–	–	M16	6	4	0,3	14000	Combimaster*	RP.1204
-1642.RE-06.4A	42	30	30	40	–	–	–	–	M16	6	4	0,3	13600	Combimaster*	RP.1204
-1642.RE-06.5A	42	30	30	40	–	–	–	–	M16	6	5	0,3	13600	Combimaster*	RP.1204

*For shanks and dimensions, see pages 498 - 510.

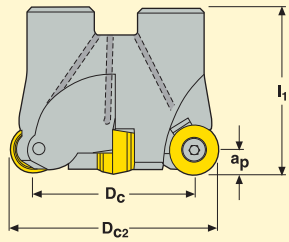
Spare parts

For cutter	Locking screw	Key *
R217.29-..	C03508-T15P	T15P-3

Please check availability in current price and stock-list.
*** Torque values 3,0 Nm.** Dynamomentic keys, see page 590.

220.29-06

Cutters with round inserts, max. axial cutting depth 6 mm



- **For insert selection and cutting data recommendations, see page 369.**
- **For complete insert programme, see page 531.**
- For ramping and helical interpolation, see pages 592 - 595.

Tool angles: γo = - 3°– - 2°
γp = + 4°
γf = - 3°– - 2°

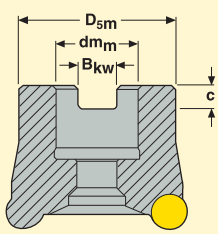
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		
R220.29 -0040-06.3A	40	28	40	6	3	0,2	14000	RP..1204
-0040-06.4A	40	28	40	6	4	0,2	14000	RP..1204
-0044-06.4A	44	32	40	6	4	0,2	13300	RP..1204
-0050-06.3A	50	38	40	6	3	0,3	12500	RP..1204
-0050-06.4A	50	38	40	6	4	0,3	12500	RP..1204
-0050-06.5A	50	38	40	6	5	0,3	12500	RP..1204

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.29-0040-0044	C03508-T15P	T15P-3	220.17-689
R220.29-0050	C03508-T15P	T15P-3	220.17-691

*** Torque values 3,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

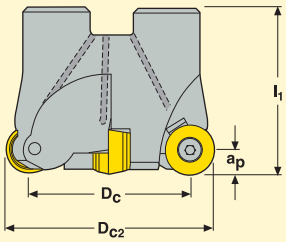


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.29-0040–0044	16	35	8,4	5,6	16
R220.29-0050	22	47	10,4	6,3	22

Please check availability in current price and stock-list.

220.29-06

Cutters with round inserts, max. axial cutting depth 6 mm



Tool angles: γo = - 2°– 0°
γp = + 4°
γf = - 2°– 0°

- **For insert selection and cutting data recommendations, see page 369.**
- **For complete insert programme, see page 531.**
- For ramping and helical interpolation, see pages 592 - 595.

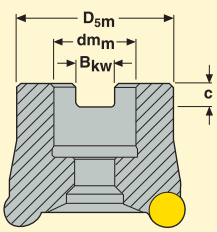
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		
R220.29 -0052-06.4A	52	40	40	6	4	0,3	12300	RP..1204
-0052-06.5A	52	40	40	6	5	0,3	12300	RP..1204
-0062-06.6A	62	50	40	6	6	0,3	11200	RP..1204
-0063-06.4A	63	51	40	6	4	0,4	11200	RP..1204
-0063-06.5A	63	51	40	6	5	0,4	11200	RP..1204
-0063-06.6A	63	51	40	6	6	0,4	11200	RP..1204
-0066-06.6A	66	54	50	6	6	0,7	10900	RP..1204

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.29-0052–0063	C03508-T15P	T15P-3	220.17-692
R220.29-0066	C03508-T15P	T15P-3	MC6S 12x35

*** Torque values 3,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

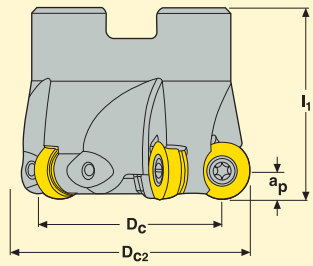


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.29-0052–0063	22	47	10,4	6,3	22
R220.29-0066	27	62	12,4	7	27

Please check availability in current price and stock-list.

220.29-06

Cutters with round inserts, max. axial cutting depth 6 mm



Tool angles: γo = - 4°– 0°
γp = + 4°
γf = - 4°– 0°

- **For insert selection and cutting data recommendations, see page 369.**
- **For complete insert programme, see page 531.**
- For ramping and helical interpolation, see pages 592 - 595.

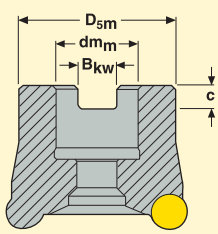
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		
R220.29 -0075-06.6A	75	63	50	6	6	0,9	10200	RP..1204
-0080-06.6A	80	68	50	6	6	1,0	10000	RP..1204
-0080-06.7A	80	68	50	6	7	1,0	10000	RP..1204
-0092-06.7A	92	80	50	6	7	1,0	9200	RP..1204
-0112-06.7A	112	100	50	6	7	1,6	8400	RP..1204
-0137-06.8A	137	125	63	6	8	2,8	7600	RP..1204

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.29-0075–0092	C03508-T15P	T15P-3	MC6S 12x35
R220.29-0112–0137	C03508-T15P	T15P-3	–

*** Torque values 3,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.29-0075–0080	27	62	12,4	7	27
R220.29-0092–0112	32	77	14,4	8	32
R220.29-0137	40	90	16,4	9	40

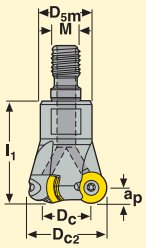
Please check availability in current price and stock-list.

217.29-08

Cutters with round inserts, max. axial cutting depth 8 mm

- **For insert selection and cutting data recommendations, see page 370.**
- **For complete insert programme, see page 532.**
- For ramping and helical interpolation, see pages 592 - 595.

Combimaster



Tool angles: γo = - 4°– - 3°
γp = - 7°– - 5°
γf = - 4°– - 3°

Part No.	Dimension in mm D_{c2}	D_c	D_{5m}	l_1	M	a_p		KG		
R217.29 -1632.RE-08.2A	32	16	30	40	M16	8	2	0,2	12200	RP..1605
-1640.RE-08.3A	40	24	30	40	M16	8	3	0,3	10900	RP..1605

For shanks and dimensions, see pages 498 - 510.

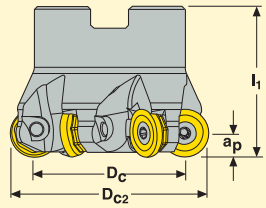
Spare parts

For cutter	Locking screw	Key *
R217.29-1632..	C05010-T20P	T20P-4
R217.29-1640..	C05013-T20P	T20P-4

Please check availability in current price and stock-list.
*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

220.29-08

Cutters with round inserts, max. axial cutting depth 8 mm



Tool angles:
γo = - 2°– 0°
γp = 0°– + 4°
γf = - 2°– 0°

- **For insert selection and cutting data recommendations, see page 370.**
- **For complete insert programme, see page 532.**
- For ramping and helical interpolation, see pages 592 - 595.

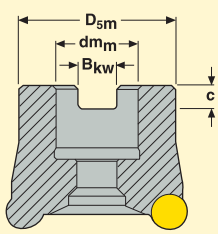
Part No.	Dimension in mm					KG		
	D_{c2}	D_c	l_1	a_p				
R220.29 -0050-08.3A	50	34	50	8	3	0,4	9700	RP..1605
-0052-08.4A	52	36	50	8	4	0,4	9600	RP..1605
-0063-08.4A	63	47	50	8	4	0,6	8700	RP..1605
-0063-08.5A	63	47	50	8	5	0,6	8700	RP..1605
-0066-08.5A	66	50	50	8	5	0,6	8400	RP..1605
-0066-08.6A	66	50	50	8	6	0,6	8400	RP..1605
-0080-08.5A	80	64	50	8	5	0,9	7700	RP..1605
-0080-08.6A	80	64	50	8	6	1,0	7700	RP..1605

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.29-0050–0052	C05013-T20P	T20P-4	220.17-692M
R220.29-0063	C05013-T20P	T20P-4	220.17-692
R220.29-0066–0080	C05013-T20P	T20P-4	MC6S 12x35

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

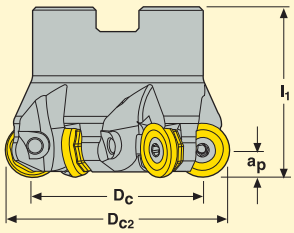


For cutter	Dimensions in mm				For arbor
	dm_m	D_{5m}	B_{kw}	c	
R220.29-0050–0063	22	47	10,4	6,3	22
R220.29-0066–0080	27	62	12,4	7	27

Please check availability in current price and stock-list.

220.29-08

Cutters with round inserts, max. axial cutting depth 8 mm



Tool angles: γo = 0°
γp = + 4°
γf = 0°

- **For insert selection and cutting data recommendations, see page 370.**
- **For complete insert programme, see page 532.**
- For ramping and helical interpolation, see pages 592 - 595.

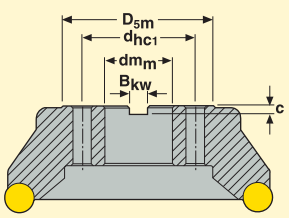
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		
R220.29 -0100-08.6MA	100	84	50	8	6	1,2	6800	RP..1605
-0100-08.7A	100	84	50	8	7	1,2	6800	RP..1605
-0125-08.6MA	125	109	63	8	6	2,4	6100	RP..1605
-0125-08.8A	125	109	63	8	8	2,4	6100	RP..1605
-8160-08.7M	160	144	63	8	7	3,8	5400	RP..1605
-8160-08.9	160	144	63	8	9	3,9	5400	RP..1605

Spare parts

For cutter	Locking screw	Key *	Anvil	Anvil screw	Key
R220.29-0100–08.6	C05018-T20P	T20P-4	SRP1604M0	CA5010	H05-4
R220.29-0100–08.7	C05013-T20P	T20P-4	–	–	–
R220.29-0125–08.6	C05018-T20P	T20P-4	SRP1604M0	CA5010	H05-4
R220.29-0125–08.8	C05013-T20P	T20P-4	–	–	–
R220.29-8160–08.7	C05018-T20P	T20P-4	SRP1604M0	CA5010	H05-4
R220.29-8160–08.9	C05013-T20P	T20P-4	–	–	–

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



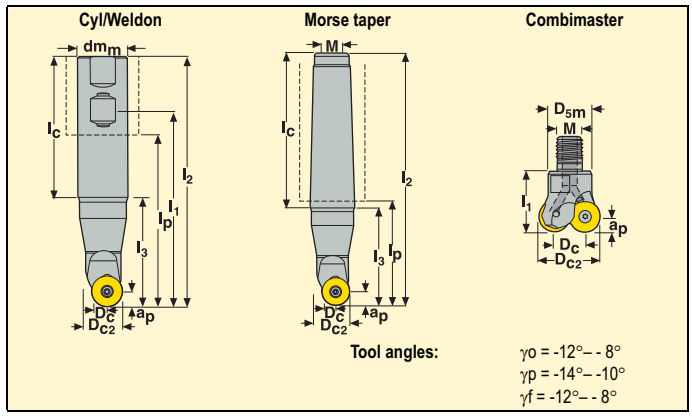
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.29-0100	32	77	14,4	8	–	32	–
R220.29-0125	40	90	16,4	9	–	40	–
R220.29-8160	40	90	16,4	9	66,7	40	ISO 40

Please check availability in current price and stock-list.

217.29-10

Cutters with round inserts, max. axial cutting depth 10 mm

- **For insert selection and cutting data recommendations, see page 371.**
- **For complete insert programme, see page 532.**
- For ramping and helical interpolation, see pages 592 - 595.



Part No.	Dimension in mm D_{c2}	D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.29 -3225.3-10.1.100	25	5	32	124	160	100	40	91	–	10	1	0,7	9200	Cyl/Weldon	RP.2006
-3250.3-10.3.080	50	30	32	104	140	80	79	87	–	10	3	0,8	6500	Cyl/Weldon	RP.2006
R217.29 -1640.RE-10.2A	40	20	30	40	–	–	–	–	M16	10	2	0,2	8400	Combimaster**	RP.2006

*For shanks and dimensions, see pages 498 - 510.

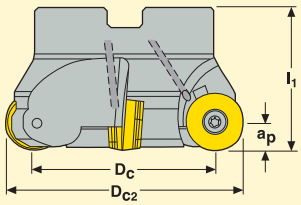
Spare parts

For cutter	Locking screw	Key *
R217.29-..	C05013-T20P	T20P-4

Please check availability in current price and stock-list.
*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

220.29-10

Cutters with round inserts, max. axial cutting depth 10 mm



Tool angles: γo = - 8°– - 2°
γp = - 4°– + 4°
γf = - 8°– - 2°

- **For insert selection and cutting data recommendations, see page 371.**
- **For complete insert programme, see page 532.**
- For ramping and helical interpolation, see pages 592 - 595.

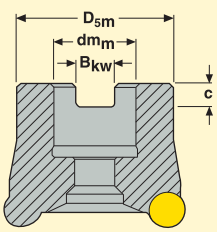
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		
R220.29 -0063-10.4A	63	43	50	10	4	0,5	5800	RP..2006
-0080-10.4MA	80	60	50	10	4	0,9	2100	RP..2006
-0080-10.5A	80	60	50	10	5	0,8	2100	RP..2006

Spare parts

For cutter	Locking screw	Key *	Arbor screw	Anvil	Anvil screw	Allen key
R220.29-0063	C05013-T20P	T20P-4	220.17-696	–	–	–
R220.29-0080-MA	C05018-T20P	T20P-4	MC6S 12x35	SRP2004M0	CA5010	5SMS795
R220.29-0080-A	C05013-T20P	T20P-4	MC6S 12x35	–	–	–

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

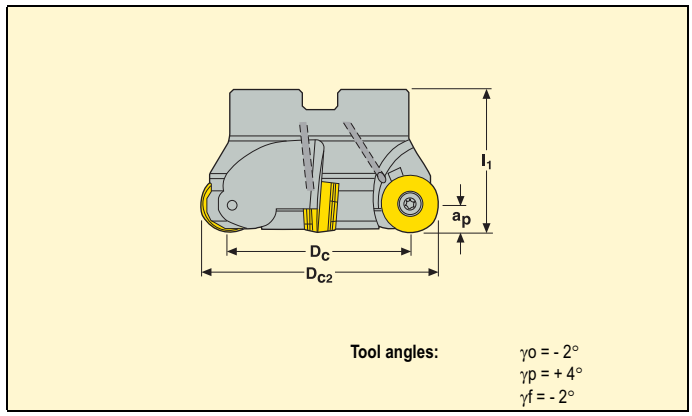


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.29-0063	22	47	10,4	6,3	22
R220.29-0080	27	62	12,4	7	27

Please check availability in current price and stock-list.

220.29-10

Cutters with round inserts, max. axial cutting depth 10 mm



- **For insert selection and cutting data recommendations, see page 371.**
- **For complete insert programme, see page 532.**
- For ramping and helical interpolation, see pages 592 - 595.

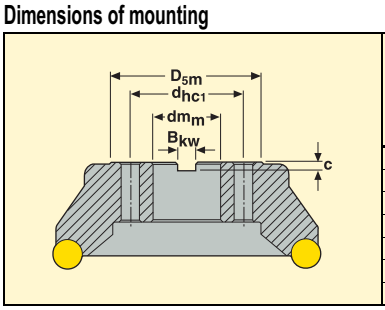
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		
R220.29 -0083-10.4MA	83	63	50	10	4	1,0	5000	RP..2006
-0100-10.5MA	100	80	50	10	5	1,1	4500	RP..2006
-0100-10.6A	100	80	50	10	6	1,1	4500	RP..2006
-0125-10.5MA	125	105	63	10	5	2,5	4000	RP..2006
-0125-10.7A	125	105	63	10	7	2,4	4000	RP..2006
-8160-10.6M	160	140	63	10	6	5,4	3600	RP..2006
-8200-10.8M	200	180	63	10	8	6,7	3200	RP..2006
-8250-10.9M	250	230	63	10	9	8,2	2900	RP..2006

Spare parts

For cutter	Locking screw	Key *	Anvil	Anvil screw	Allen key	Arbor screw
R220.29-0083	C05018-T20P	T20P-4	SRP2004M0	CA5010	H05-4	MC6S 12x35
R220.29-0100-MA	C05018-T20P	T20P-4	SRP2004M0	CA5010	H05-4	–
R220.29-0100-A	C05013-T20P	T20P-4	–	–	–	–
R220.29-0125-MA	C05018-T20P	T20P-4	SRP2004M0	CA5010	H05-4	–
R220.29-0125-A	C05013-T20P	T20P-4	–	–	–	–
R220.29-8160-8250-M	C05018-T20P	T20P-4	SRP2004M0	CA5010	H05-4	–

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.29-0083	27	62	12,4	7	–	27	–
R220.29-0100	32	77	14,4	8	–	32	–
R220.29-0125	40	90	16,4	9	–	40	–
R220.29-8160	40	90	16,4	9	66,7	40	ISO40
R220.29-8200-8250	60	130	25,7	14	101,6	–	ISO50

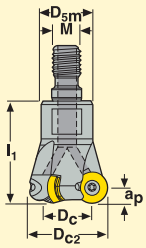
Please check availability in current price and stock-list.

217/220.24 – Power 4™

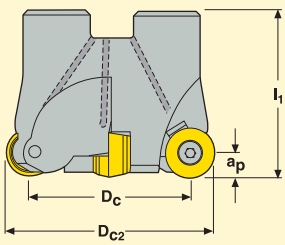
Max a_p 5 mm

- **For insert selection and cutting data recommendations, see page 372.**
- **For complete insert programme, see page 530.**
- For ramping, see page 592.

Combimaster®



Arbor



Tool angles: γo = - 5°
γp = 6°
γf = - 5°

Part No.	Dimension in mm D_{c2}	D_c	M	D_{5m}	l_1	a_p		KG		Type of mounting	
R217.24 -1225.RE-10.3A	25	15	M12	23	30	5	3	0,1	24400	Combimaster	RO..10
-1632.RE-10.4A	32	22	M16	28	40	5	4	0,2	21600	Combimaster	RO..10
R220.24 -0040-10.5A	40	30	–	–	40	5	5	0,2	19300	Arbor	RO..10
-0050-10.6A	50	40	–	–	40	5	6	0,3	17300	Arbor	RO..10
-0063-10.7A	63	53	–	–	40	5	7	0,5	15800	Arbor	RO..10

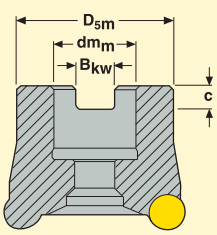
For shanks and dimensions, see pages 498 - 510.

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R217.24 ∅ 25-32	C03507-T10P	T10P-3	–
R220.24 ∅ 40	C03509-T10P	T10P-3	220.17-689
R220.24 ∅ 50-63	C03509-T10P	T10P-3	220.17-692

*** Torque values 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.24-0040	16	35	8,4	5,6	16
R220.24-0050	22	42	10,4	6,3	22
R220.24-0063	22	47	10,4	6,3	22

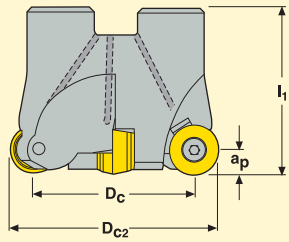
Please check availability in current price and stock-list.

220.24 – Power 4™

Max a_p 6 mm

- **For insert selection and cutting data recommendations, see page 373.**
- **For complete insert programme, see page 530.**
- For ramping, see page 592.

Arbor



Tool angles: γo = - 5°
γp = 6°
γf = - 5°

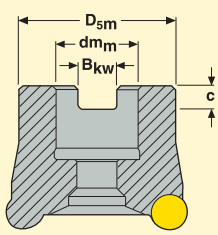
Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		Type of mounting	
R220.24 -0040-12.4A	40	28	40	6	4	0,2	14000	Arbor	RO..12
-0050-12.5A	50	38	40	6	5	0,3	12500	Arbor	RO..12
-0052-12.5A	52	40	40	6	5	0,3	12300	Arbor	RO..12
-0063-12.6A	63	51	40	6	6	0,7	11200	Arbor	RO..12
-0066-12.6A	66	54	50	6	6	0,7	10900	Arbor	RO..12
-0080-12.6A	80	68	50	6	6	1,0	10000	Arbor	RO..12
-0080-12.7A	80	68	50	6	7	1,0	10000	Arbor	RO..12

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.24 ∅ 40	C04009-T15P	T15P-4	220.17-689
R220.24 ∅ 50-52-63	C04011-T15P	T15P-4	220.17-692
R220.24 ∅ 66	C04011-T15P	T15P-4	MC6S 12x35
R220.24 ∅ 80	C04011-T15P	T15P-4	MC6S 12x35

*** Torque values 3,5 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

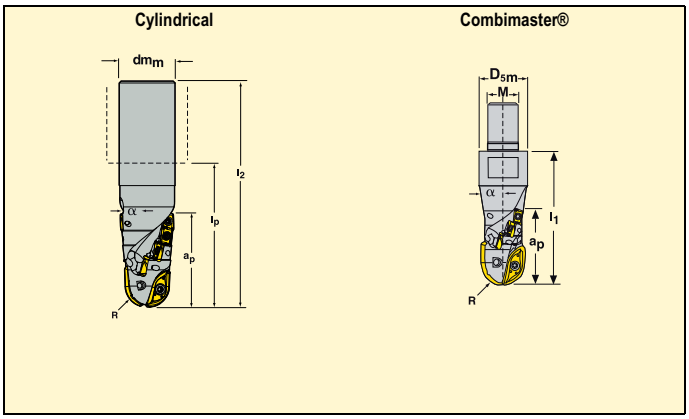


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.24 ∅ 40	16	35	8,8	5,6	16
R220.24 ∅ 50-52	22	42	10,4	6,3	22
R220.24 ∅ 63	22	47	10,4	6,3	22
R220.24 ∅ 66	27	59	12,4	7	27
R220.24 ∅ 80	27	62	12,4	7	27

Please check availability in current price and stock-list.

218.24-K2

- For insert selection and cutting data recommendations, see page 374.
- For complete insert programme, see pages 553 - 554, 561.



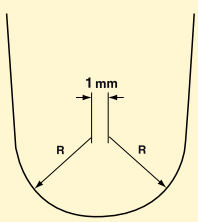
Part No.	Dimensions in mm									KG		Type of mounting	Insert ( ) = No. of inserts	
	dm_m	D_{5m}	l_1	l_2	l_p	M	a_p	R	(α)				218.20-..	XOMX..
R218.24 -10R060.RE-019-06.2A	–	18,5	35	54	–	M10	19	6	4°	0,1	20000	Combimaster	-060(2)	06..(6)
-20R060.0-024-06.2A	20	–	–	90	40	–	24	6	4°	0,2	20000	Cylindrical	-060(2)	06..(2)
-12R080.RE-028-06.2A	–	23	50	72	–	M12	28	8	4°	0,1	18000	Combimaster	-080(2)	06..(6)
-25R080.0-038-06.2A	25	–	–	110	54	–	38	8	4°	0,3	18000	Cylindrical	-080(2)	06..(10)
R218.24 -16R100.RE-033-09.2A	–	30	55	78	–	M16	33	10	4°	0,2	16000	Combimaster	-100(2)	09..(4)
-25R100.0-048-09.2A	25	–	–	125	69	–	48	10	4°	0,4	16000	Cylindrical	-100(2)	09..(6)
-32R125.0-052-09.2A	32	–	–	130	70	–	52	12,5	4°	0,6	14000	Cylindrical	-125(2)	09..(8)
R218.24 -20R125.RE-043-09.2A	–	36,5	65	92	–	M20	43	12,5	4°	0,3	14000	Combimaster	-125(2)	09..(6)

For shanks and dimensions, see pages 498 - 510.

Spare parts

For insert	Locking screw	Key *	Torque value Nm
XOMX06	C01804-T06P	T06P-3	0,5
XOMX09	C02505-T08P	T08P-3	1,2
218.20-060	C01805-T06P	T06P-3	0,5
218.20-080	C02506-T08P	T08P-3	1,2
218.20-100	C03007-T09P	T09P-3	2,0
218.20-125	C04009-T15P	T15P-3	3,5

Programming



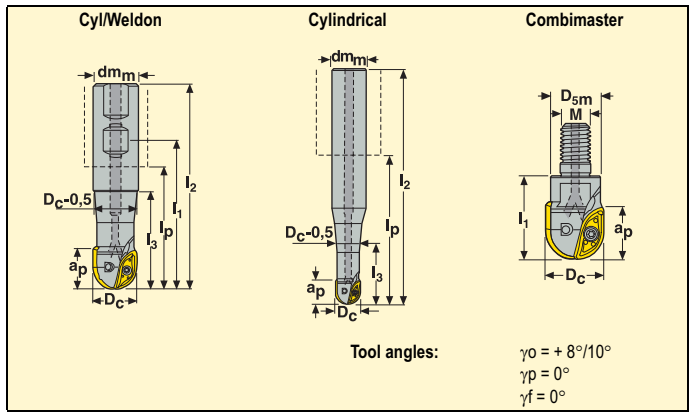
Dynamomentic keys, see page 590.

Please check availability in current price and stock-list.

218.20

90º ball nose cutters ∅ 12-20 mm

- For insert selection and cutting data recommendations, see pages 375 - 376.
- For complete insert programme, see page 561 .



Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	M	a_p	z_c*	KG		Type of mounting	Insert ( ) = No. of inserts 218.20
Short cutting edge													
R218.20 -2012.3-10.060A	12	20	85	110	60	21	–	10	2	0,2	30000	Cyl/Weldon	-060 (2)
-2520.3-18.070A	20	25	101	126	70	54	–	18	2	0,3	20200	Cyl/Weldon	-100 (2)
R218.20 -1612.0-10.112A	12	16	–	160	112	21	–	10	2	0,2	30000	Cylindrical	-060 (2)
-1616.0-14.105E	16	16	–	165	105	50	–	14	2	0,8	28500	Cylindrical	-080 (2)
-2016.0-14.070A	16	20	–	120	70	36	–	14	2	0,2	28500	Cylindrical	-080 (2)
-2520.0-18.120A	20	25	–	176	120	54	–	18	2	0,5	20200	Cylindrical	-100 (2)
R218.20 -0612.RE-10A	12	11	20	–	–	–	M6	10	2	0,1	30000	Combimaster**	-060 (2)
-0812.RE-10A	12	13,5	23	–	–	–	M8	10	2	0,1	30000	Combimaster**	-060 (2)
-0816.RE-14A	16	13,5	23	–	–	–	M8	14	2	0,1	28500	Combimaster**	-080 (2)
-1016.RE-14A	16	18,5	28	–	–	–	M10	14	2	0,1	28500	Combimaster**	-080 (2)
-1020.RE-18A	20	18,5	28	–	–	–	M10	18	2	0,1	20200	Combimaster**	-100 (2)
-1220.RE-18A	20	23	35	–	–	–	M12	18	2	0,1	20200	Combimaster**	-100 (2)

*Effective number of teeth.

**For shanks and dimensions, see pages 498 - 510.

Spare parts

For cutter	Locking screw	Key	Torque value Nm
Dia 12	C01805-T06P	T06P-3	0,5
Dia 16	C02506-T08P	T08P-3	1,2
Dia 20	C03007-T09P	T09P-3	2,0

Form error

When machining a form error can occur at the centre point

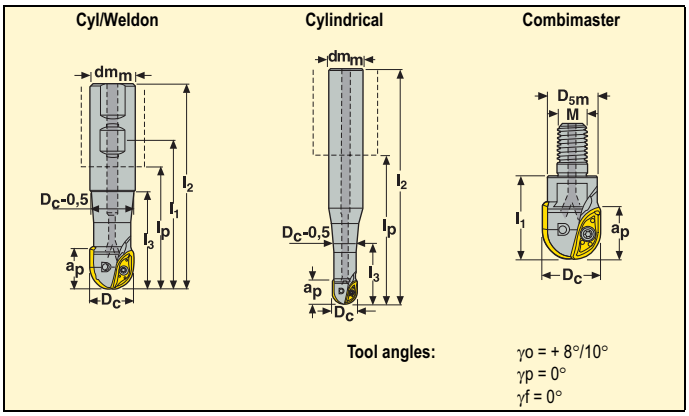
D_c	r	A	B
12	6	0,8	0,05
16	8	1,09	0,06
20	10	1,36	0,08

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

218.20

90º ball nose cutters ∅ 25-32 mm

- For insert selection and cutting data recommendations, see page 377.
- For complete insert programme, see pages 549, 561.



Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	M	a_p	z_c*	KG		Type of mounting	Insert ( ) = No. of inserts 218.20	SPM.
Short cutting edge														
R218.20 -2525.3-22.080A	25	25	104	136	80	76	–	22	2	0,4	16900	Cyl/Weldon	-125 (2)	–
-2525.3-22.060A	25	25	84	116	60	56	–	22	2	0,3	16900	Cyl/Weldon	-125 (2)	–
-3232.3-28.100A	32	32	124	160	100	89	–	28	2	0,8	10900	Cyl/Weldon	-160 (2)	–
-3232.3-28.070A	32	32	94	130	70	68	–	28	2	0,6	10900	Cyl/Weldon	-160 (2)	–
R218.20 -3225.0-22.160A	25	32	–	220	160	68	–	22	2	1,0	16900	Cylindrical	-125 (2)	–
-3230.0-26.160A	30	32	–	220	160	73	–	26	2	1,1	12500	Cylindrical	-150 (2)	–
-3232.0-28.160A	32	32	–	220	160	90	–	28	2	1,1	10900	Cylindrical	-160 (2)	–
R218.20 -1225.RE-22A	25	23	35	–	–	–	M12	22	2	0,1	16900	Combimaster**	-125 (2)	–
-1630.RE-26A	30	28	40	–	–	–	M16	26	2	0,1	12500	Combimaster**	-150 (2)	–
-1632.RE-28A	32	28	40	–	–	–	M16	28	2	0,1	10900	Combimaster**	-160 (2)	–
Long cutting edge														
R218.20 -3230.3-45.100A	30	32	124	160	100	71	–	45	2	0,7	12500	Cyl/Weldon	-150 (2)	SPMT10 (2)
-3232.3-54.100A	32	32	124	160	100	89	–	54	2	0,7	10900	Cyl/Weldon	-160 (2)	SPMT10 (3)
R218.20 -0432.2-54.100	32	–	–	202	100	100	M16	54	2	0,9	10900	Morse No. 4	-160 (2)	SPMT10 (3)

*Effective number of teeth.

**For shanks and dimensions, see pages 498 - 510.

Spare parts

For cutter	Locking screw	Key	Torque value Nm
Dia 25–30	C04009-T15P	T15P-3	3,5
Dia 32	C04011-T15P	T15P-3	3,5
SPMX0903	C03007-T09P	T09P-3	2,0
SPMT1004	C03508-T15P	T15P-3	3,5

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

Form error

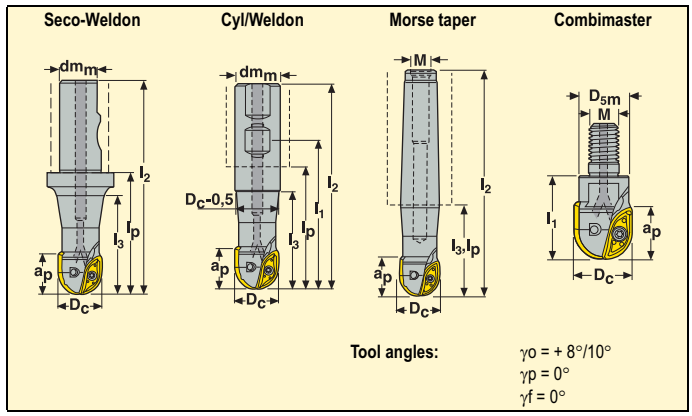
When machining a form error can occur at the centre point

D_c	r	A	B
25	12,5	1,7	0,10
30	15	2,2	0,10
32	16	2,3	0,10

218.20

90º ball nose cutters ∅ 40-50 mm

- For insert selection and cutting data recommendations, see pages 378 - 379.
- For complete insert programme, see pages 533, 561.



Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	M	a_p	z_c*	KG		Type of mounting	Insert ( ) = No. of inserts 218.20	SCE
Short cutting edge														
R218.20 -1640.RE-35A	40	28	50	–	–	–	M16	35	2	0,2	7200	Combimaster**	-200 (2)	–
Long cutting edge														
R218.20 -3240.3S-60.100	40	32	–	160	100	89	–	60	2	1,0	7200	Seco/Weldon	-200 (2)	3
-3250.3S-70.100	50	32	–	160	100	91	–	70	2	1,2	3700	Seco/Weldon	-250 (2)	3
R218.20 -5050.3-70.150	50	50	185	230	150	149	–	70	2	2,7	3700	Cyl/Weldon	-250 (2)	3

*Effective number of teeth.

**For shanks and dimensions, see pages 498 - 510.

Spare parts

For cutter	Locking screw	Key	Torque value Nm
Dia 40	C05013-T20P	T20P-4	5,0
Dia 50	C06018-T25P	T25P-3	6,0
SCET	C45011-T20P	T20P-4	5,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

Form error

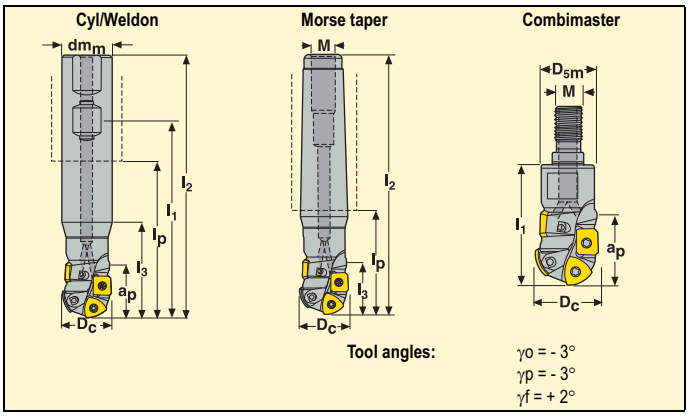
When machining a form error can occur at the centre point

D_c	r	A	B
40	20	2,9	0,13
50	25	3,6	0,16

218.19-16/32

90º ball nose cutters ∅ 16-32 mm

- For insert selection and cutting data recommendations, see page 380.
- For complete insert programme, see pages 549, 560.



Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	M	a_p	z_c**	KG		Type of mounting	Insert ( ) = No. of inserts 218.19	SPMX	SPMT
R218.19 -2016.3-17.050A	16	20	–	100	50	31	–	17	1	0,2	41600	Cyl/Weldon	-080(2)	-0602(2)	
-2520.3-21.069A	20	25	–	125	69	31	–	21	1	0,4	26200	Cyl/Weldon	-100(2)	-0703(2)	
-2525.3-26.074HA	25	25	–	130	74	46	–	26	1	0,4	21700	Cyl/Weldon	-125(2)	-0903(2)	–
-3232.3-30.070HA	32	32	–	130	70	46	–	30	1	0,6	14800	Cyl/Weldon	-160(2)	–	-1004(2)
R218.19 -0816.RE-12A	16	13,5	23	–	–	–	M08	12	1	0,1	41600	Combimaster*	-080(2)	-0602	
-1020.RE-16A	20	18,5	28	–	–	–	M10	16	1	0,1	26200	Combimaster*	-100(2)	-0703	
-1220.RE-21A	20	23	45	–	–	–	M12	21	1	0,1	26200	Combimaster*	-100(2)	-0703(2)	
-1225.RE-26HA	25	23	45	–	–	–	M12	26	1	0,1	21700	Combimaster*	-125(2)	-0903(2)	–
-1632.RE-36HA	32	30	55	–	–	–	M16	36	1	0,2	14800	Combimaster*	-160(2)	–	-1004(3)

*For shanks and dimensions, see pages 498 - 510.

**Effective number of teeth.

Spare parts

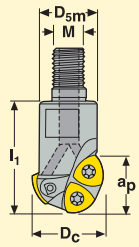
For cutter	Locking screw	Key	Torque value Nm
Dia 16 mm	C02205-T07P	T07P-3	0,9
Dia 20 mm	C02506-T07P	T07P-3	0,9
Dia 25 mm	C03006-T09P	T09P-3	2,0
Dia 32 mm	C03508-T15P	T15P-3	3,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

218.19-..HFA

120º ball nose cutters ∅ 25 -40 mm

- For insert selection and cutting data recommendations, see page 380.
- For complete insert programme, see page 560.



Tool angles: γo = - 2°
γp = - 2°
γf = + 4°

Part No.	Dimensions in mm D_c	D_{5m}	l_1	M	a_p	z_c*	KG		Type of mounting	Insert ( ) = No. of inserts 218.19
R218.19 -1225.RE-14HFA	25	23	40	M12	14	1	0,1	21700	Combimaster**	-125 (3)
-1632.RE-18HFA	32	28	40	M16	18	1	0,2	14800	Combimaster**	-160 (3)
-1640.RE-25HFA	40	28	50	M16	25	1	0,3	10400	Combimaster**	-200 (3)

*Effective number of teeth. **For shanks and dimensions, see pages 498 - 510.

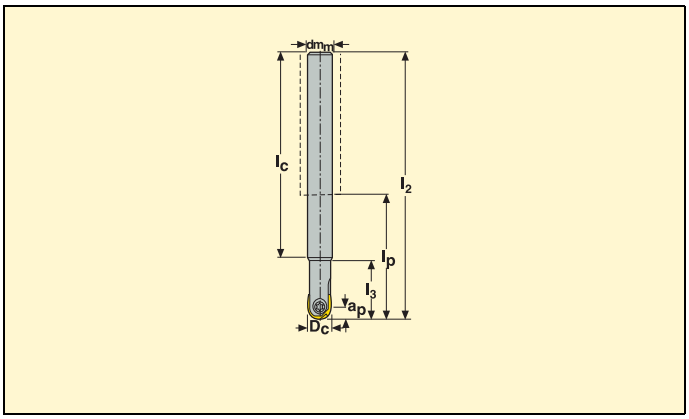
Spare parts

For cutter	Locking screw	Key	Torque value Nm
R218.19-1225	C03006-T09P	T09P-3	2,0
R218.19-1632	C03508-T15P	T15P-3	3,0
R218.19-1640	C45011-T20P	T20P-4	5,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

219.19

90º ball nose cutters ∅ 8-32 mm



- For insert selection and cutting data recommendations, see page 381.
- For complete insert programme, see page 562.

Part No.	Dimensions in mm								KG		Type of mounting	
	D_c	dm_m	l_2	l_p	l_3	l_c	a_p					
R219.19 -1008.0-04-070	8	10	110	70	23	85	9,5	1*	0,1	60000	Cylindrical	219.19-080
-1210.0-05-085	10	12	130	85	28	100	11,5	1*	0,1	48000	Cylindrical	219.19-100
-1212.0-06-085	12	12	130	85	30	100	12	1*	0,2	40000	Cylindrical	219.19-120
-1616.0-08-092	16	16	140	92	35	105	14	1*	0,3	32000	Cylindrical	219.19-160
-2020.0-10-110	20	20	160	110	45	115	16	1*	0,5	24000	Cylindrical	219.19-200
-2525.0-12-104	25	25	160	104	45	115	21,5	1*	0,6	20000	Cylindrical	219.19-250
-3232.0-16-120	32	32	180	120	60	120	26	1*	1,0	16000	Cylindrical	219.19-320

*Effective number of teeth = 2

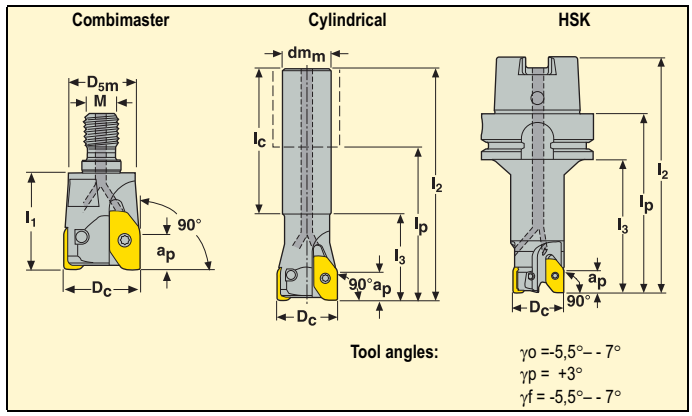
Spare parts

For cutter	Locking screw	Key	Torque value Nm
-1008	CC3007-T08P	T08P-3	2,0
-1210	CC4008-T15P	T15P-3	3,5
-1212	CC5009-T20P	T20P-3	5,0
-1616	CC5013-T20P	T20P-3	5,0
-2020	CC5015-T20P	T20P-3	5,0
-2525	CC6020-T20P	T20P-3	8,0
-3232	CC8025-T30P	T30P-4	8,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

217.97-12

Cavity milling in aluminium



- **For insert selection and cutting data recommendations, see page 382.**
- **For complete insert programme, see page 558.**
- For ramping and helical interpolation, see pages 592 - 595.

Part No.	Dimension in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.97 -1225.RE-X12.2A	25	23	30	–	–	–	–	M12	7,5	2	0,1	40000	Combimaster	XP..12
-1632.RE-X12.2A	32	30	40	–	–	–	–	M16	7,5	2	0,2	40000	Combimaster	XP..12
-1632.RE-X12.3A	32	30	40	–	–	–	–	M16	7,5	3	0,2	40000	Combimaster	XP..12
-1640.RE-X12.3A	40	30	40	–	–	–	–	M16	7,5	3	0,3	35000	Combimaster	XP..12
R217.97 -2525.0-X12.2A	25	25	–	150	90	55	95	–	7,5	2	0,5	40000	Cylindrical	XP..12
-3232.0-X12.2A	32	32	–	150	90	65	85	–	7,5	2	0,8	40000	Cylindrical	XP..12
-3232.0-X12.3A	32	32	–	150	90	65	85	–	7,5	3	0,8	40000	Cylindrical	XP..12

For shanks and dimensions, see pages 498 - 510.

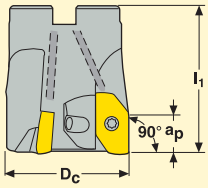
Spare parts

For cutter	Locking screw	Key *
R217.97–∅ 25	C03507-T10P	T10P-3
R217.97–∅ 32–40	C03509-T10P	T10P-3

Please check availability in current price and stock-list.
***Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

220.97-12

Cavity milling in aluminium



- **For insert selection and cutting data recommendations, see page 382**
- **For complete insert programme, see pages 558.**
- For ramping and helical interpolation, see pages 592 - 595.

Tool angles:
γo =-5,5°– - 7°
γp = +3°
γf = -5,5°– - 7°

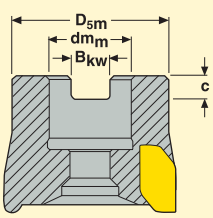
Part No.	Dimensions in mm				KG		
	D_c	l_1	a_p				
R220.97 -0050-X12.4A	50	45	7,5	4	0,4	30000	XP..12

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.97	C03509-T10P	T10P-3	220.17-692

***Torque value 2,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting

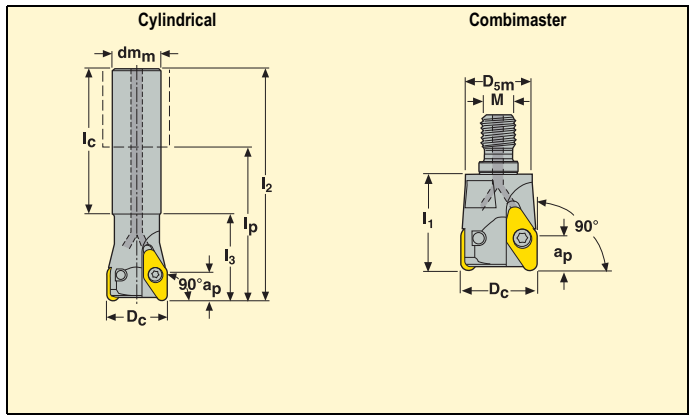


For cutter	Dimensions in mm				For arbor
	dm_m	D_{5m}	B_{kw}	c	
R220.97-0050	22	47	10,4	6,3	22

Please check availability in current price and stock-list.

217.97

Cavity milling in aluminium



- **For insert selection and cutting data recommendations, see page 382.**
- **For complete insert programme, see page 550.**
- For ramping and helical interpolation, see pages 592 - 595.

Part No.	Dimensions in mm D_c	dm_m D_{5m}	l_1	l_2	l_p	l_3	l_c	M	a_p		KG		Type of mounting	
R217.97 -2532.0-V22.2A	32	25	–	120	64	45	75	–	10	2	0,4	40000	Cylindrical	VPGX2206..E.-E10
-3240.0-V22.2A	40	32	–	150	90	45	105	–	10	2	0,9	35000	Cylindrical	VPGX2206..E.-E10
R217.97 -1632.RE-V22.2A	32	30	40	–	–	–	–	M16	10	2	0,2	40000	Combimaster*	VPGX2206..E.-E10
-1640.RE-V22.2A	40	30	40	–	–	–	–	M16	10	2	0,2	35000	Combimaster*	VPGX2206..E.-E10

*For shanks and dimensions, see pages 498 - 510.

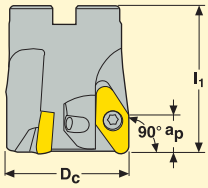
Spare parts

For cutter	Locking screw	Key *
R217.97-..	C05010-T20P	T20P-4

Please check availability in current price and stock-list.
*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

220.97

Cavity milling in aluminium



- **For insert selection and cutting data recommendations, see page 382.**
- **For complete insert programme, see page 550.**
- For ramping and helical interpolation, see pages 592 - 595.

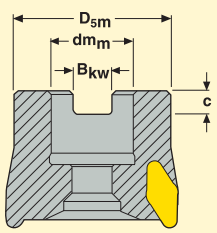
Part No.	Dimensions in mm D_c	l_1	a_p		KG		
R220.97 -0050-V22.2A	50	57	10	2	0,4	30000	VPGX2206..E.-E10
-0050-V22.3A	50	57	10	3	0,4	30000	VPGX2206..E.-E10
-0063-V22.3A	63	57	10	3	0,9	27000	VPGX2206..E.-E10
-0063-V22.4A	63	57	10	4	0,9	27000	VPGX2206..E.-E10
-0080-V22.4A	80	57	10	4	1,1	25000	VPGX2206..E.-E10
-0100-V22.5A	100	57	10	5	1,1	22000	VPGX2206..E.-E10

Spare parts

For cutter	Locking screw	Key *	Arbor screw
R220.97-0050	C05010-T20P	T20P-4	MC6S 10x40
R220.97-0063	C05013-T20P	T20P-4	MC6S 12x35
R220.97-0080	C05013-T20P	T20P-4	220.17-694
R220.97-0100	C05013-T20P	T20P-4	220.17-694

*** Torque values 5,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.97-0050	22	47	10,4	6,3	22
R220.97-0063	27	62	12,4	7	27
R220.97-0080–0100	32	77	14,4	8	32

Please check availability in current price and stock-list.

Insert selection – R217/220.29-025

Insert ∅ 5 mm, max a_p 2,5 mm

SMG	Recom. feed f_z mm/tooth	First choice	First choice	
1	0,10-0,20	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
2	0,10-0,20	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
3	0,10-0,20	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
4	0,10-0,20	RDHT0501M0-MD01 MP3000	RDHT0501M0-MD01 MP3000	
5	0,10-0,20	RDHT0501M0-MD01 MP3000	RDHT0501M0-MD01 F15M	
6	0,10-0,20	RDHT0501M0-MD01 MP3000	RDHT0501M0-MD01 F15M	
7	0,08-0,15	RDHT0501M0-MD01 F15M	RDHT0501M0-MD01 F15M	
8	0,10-0,20	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
9	0,10-0,20	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
10	0,10-0,20	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
11	0,08-0,18	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
12	0,10-0,20	RDHT0501M0-MD01 MP3000	RDHT0501M0-MD01 F15M	
13	0,10-0,20	RDHT0501M0-MD01 MP3000	RDHT0501M0-MD01 F15M	
14	0,10-0,20	RDHT0501M0-MD01 MP3000	RDHT0501M0-MD01 F15M	
15	0,08-0,18	RDHT0501M0-MD01 MP3000	RDHT0501M0-MD01 F15M	
16	0,10-0,20	RDHT0501M0-MD01 F15M	RDHT0501M0-MD01 F15M	
17-18	0,10-0,20	RDHT0501M0-MD01 F15M	RDHT0501M0-MD01 F15M	
19-20	0,08-0,15	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
21	0,08-0,15	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	
22	0,08-0,12	RDHT0501M0-MD01 F40M	RDHT0501M0-MD01 F40M	

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%	D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 5%	10%	25%	100%
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
1,5	0,115	0,20	0,20	0,15	0,10	0,5	0,013	0,35	0,25	0,15	0,15
1,2	0,073					0,4	0,008				
1	0,051	0,25	0,20	0,20	0,15	0,3	0,005	0,45	0,35	0,20	0,20
0,8	0,032					0,2	0,002				
0,6	0,018	0,30	0,25		0,20	0,1	0,001	0,60	0,45	0,30	0,25
Speed factor		1,40	1,35	1,25	1,00	Speed factor		1,60	1,45	1,30	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	MP300	F40M	F15M				
	v_c (m/min)						
1	470	375	–				
2	410	330	–				
3	340	275	–				
4	310	250	300				
5	255	205	245				
6	185	150	180				
7	55	–	55				
8	280	240	–				
9	245	210	–				
10	210	180	–				
11	165	140	–				
12	275	220	260				
13	245	195	235				
14	225	180	215				
15	180	145	175				
16	1270	1015	1220				
17	815	655	785				
18	725	580	695				
19	65	60	–				
20	50	45	–				
21	45	40	–				
22	110	95	–				

Insert selection – R217/220.29-03

Insert ∅ 6 mm, max a_p 3 mm

SMG	Recom. feed f_z mm/tooth	First choice	First choice	
1	0,15-0,25	RDHT06T1M0-E02 F40M	RDHT06T1M0-E02 F40M	
2	0,15-0,25	RDHT06T1M0-E02 F40M	RDHT06T1M0-E02 F40M	
3	0,15-0,25	RDHT06T1M0-E02 F40M	RDHT06T1M0-E02 F40M	
4	0,15-0,25	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 MP3000	
5	0,15-0,25	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 MP3000	
6	0,10-0,20	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 MP3000	
7	0,08-0,15	RDHW06T1M0-MD02 F15M	RDHW06T1M0-MD02 F15M	
8	0,15-0,25	RDHT06T1M0-E02 F40M	RDHT06T1M0-E02 F40M	
9	0,15-0,25	RDHT06T1M0-E02 F40M	RDHT06T1M0-E02 F40M	
10	0,15-0,25	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 MP3000	
11	0,10-0,20	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 MP3000	
12	0,15-0,25	RDHW06T1M0-MD02 MK2000	RDHW06T1M0-MD02 MK2000	
13	0,15-0,25	RDHW06T1M0-MD02 MK2000	RDHW06T1M0-MD02 MK2000	
14	0,15-0,25	RDHW06T1M0-MD02 MK2000	RDHW06T1M0-MD02 MK2000	
15	0,15-0,25	RDHW06T1M0-MD02 MK2000	RDHW06T1M0-MD02 MK2000	
16	0,15-0,25	RDHT06T1M0-E02 H25	RDHT06T1M0-E02 H25	
17-18	0,15-0,25	RDHT06T1M0-E02 H25	RDHT06T1M0-E02 H25	
19-20	0,15-0,25	RDHW06T1M0-MD02 F40M	RDHT06T1M0-E02 F40M	
21	0,15-0,25	RDHW06T1M0-MD02 MP3000	RDHW06T1M0-MD02 F40M	
22	0,10-0,20	RDHW06T1M0-MD02 F40M	RDHT06T1M0-E02 F40M	

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%	D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 5%	10%	25%	100%
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
1,5	0,095	0,20	0,20	0,20	0,15	0,5	0,010	0,35	0,25	0,20	0,15
1,2	0,061					0,4	0,007				
1	0,042	0,25	0,30	0,25	0,15	0,3	0,004	0,50	0,35	0,25	0,20
0,8	0,027					0,2	0,002				
0,6	0,015	0,30	0,35		0,20	0,1	0,001	0,60	0,45	0,30	0,25
Speed factor		1,40	1,35	1,25	1,00	Speed factor		1,60	1,45	1,25	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	MP300	F40M	F15M	F25M	MK20	H25	
	v_c (m/min)						
1	470	375	–	385	485	–	
2	410	330	–	335	425	–	
3	340	275	–	280	355	–	
4	310	250	300	255	325	–	
5	255	205	245	205	265	–	
6	185	150	180	150	195	–	
7	55	–	55	50	–	–	
8	280	240	–	245	315	–	
9	245	210	–	215	275	–	
10	210	180	–	185	235	–	
11	165	140	–	145	185	–	
12	275	220	260	225	285	210	
13	245	195	235	200	255	185	
14	225	180	215	185	235	170	
15	180	145	175	150	190	140	
16	1270	1015	1220	1035	1320	965	
17	815	655	785	665	850	620	
18	725	580	695	590	755	550	
19	65	60	–	60	–	–	
20	50	45	–	45	–	–	
21	45	40	–	40	–	–	
22	110	95	–	95	–	–	

Insert selection – R217/220.29-035

Insert ∅ 7mm, max a_p 3,5 mm

SMG	Recom. feed f_z mm/tooth	First choice	First choice	
1	0,15-0,25	RDHW0702M0-MD03 F40M	RDHW0702M0-MD03 F40M	
2	0,15-0,25	RDHW0702M0-MD03 F40M	RDHW0702M0-MD03 F40M	
3	0,15-0,25	RDHW0702M0-MD03 F40M	RDHW0702M0-MD03 F40M	
4	0,15-0,25	RDHW0702M0-MD03 MS2500	RDHW0702M0-MD03 MP3000	
5	0,15-0,25	RDHW0702M0-MD03 MS2500	RDHW0702M0-MD03 MP3000	
6	0,10-0,20	RDHW0702M0-MD03 MP3000	RDHW0702M0-MD03 MP3000	
7	0,08-0,15	RDHW0702M0-MD03 MP3000	RDHW0702M0-MD03 MP3000	
8	0,15-0,25	RDHW0702M0-MD03 F40M	RDHT0702M0-E03 F40M	
9	0,15-0,25	RDHW0702M0-MD03 F40M	RDHT0702M0-E03 F40M	
10	0,15-0,25	RDHW0702M0T-MD04 F40M	RDHW0702M0-MD03 MP3000	
11	0,10-0,20	RDHW0702M0T-MD04 F40M	RDHW0702M0-MD03 MP3000	
12	0,15-0,25	RDHW0702M0T-MD04 MK2000	RDHW0702M0-MD03 MP3000	
13	0,15-0,25	RDHW0702M0T-MD04 MK2000	RDHW0702M0-MD03 MP3000	
14	0,15-0,25	RDHW0702M0T-MD04 MK2000	RDHW0702M0-MD03 MP3000	
15	0,15-0,25	RDHW0702M0T-MD04 MK2000	RDHW0702M0-MD03 MP3000	
16	0,15-0,25	RDHT0702M0-E03 H25	RDHT0702M0-E03 H25	
17-18	0,15-0,25	RDHT0702M0-E03 H25	RDHT0702M0-E03 H25	
19-20	0,15-0,25	RDHW0702M0T-MD04 MS2500	RDHW0702M0-MD03 F40M	
21	0,15-0,25	RDHW0702M0T-MD04 MS2500	RDHW0702M0-MD03 F40M	
22	0,10-0,20	RDHW0702M0T-MD04 MS2500	RDHW0702M0-MD03 F40M	

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%	D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 5%	10%	25%	100%
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
1,5	0,081	0,25	0,20	0,20	0,15	0,5	0,009	0,40	0,30	0,20	0,15
1,2	0,052					0,4	0,006				
1	0,036	0,25	0,25	0,25	0,20	0,3	0,003	0,50	0,35	0,25	0,20
0,8	0,023					0,2	0,001				
0,6	0,013	0,35	0,30		0,20	0,1	0,001	0,60	0,50	0,35	0,30
Speed factor		1,40	1,35	1,25	1,00	Speed factor		1,55	1,45	1,25	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	MP300	F40M	F15M	MS250	MK20	H25	
	v_c (m/min)						
1	470	375	–	500	485	–	
2	410	330	–	440	425	–	
3	340	275	–	365	355	–	
4	310	250	300	335	325	–	
5	255	205	245	270	265	–	
6	185	150	180	200	195	–	
7	55	–	55	55	–	–	
8	280	240	–	290	315	–	
9	245	210	–	250	275	–	
10	210	180	–	215	235	–	
11	165	140	–	165	185	210	
12	275	220	260	290	285	185	
13	245	195	235	260	255	170	
14	225	180	215	240	235	140	
15	180	145	175	195	190	965	
16	1270	1015	1220	1360	1320	620	
17	815	655	785	875	850	550	
18	725	580	695	775	755	–	
19	65	60	–	70	–	–	
20	50	45	–	60	–	–	
21	45	40	–	50	–	–	
22	110	95	–	120	–		

Insert selection – R217/220.29-04

Insert ∅ 8 mm, max a_p 4 mm

SMG	Recom. feed f_z mm/tooth	First choice	First choice	
1	0,20-0,30	RDHT0803M0-E03 T350M	RDHT0803M0-E03 F40M	
2	0,20-0,30	RDHT0803M0-E03 T350M	RDHT0803M0-E03 F40M	
3	0,20-0,30	RDHT0803M0-E03 T350M	RDHT0803M0-E03 F40M	
4	0,20-0,30	RDKW0803M0T-MD05 MS2500	RDHW0803M0T-MD03 MP3000	
5	0,20-0,30	RDKW0803M0T-MD05 MS2500	RDHW0803M0T-MD03 MP3000	
6	0,15-0,25	RDKW0803M0T-MD05 MP2500	RDHW0803M0T-MD03 MP3000	
7	0,10-0,20	RDKW0803M0T-MD05 F15M	RDKW0803M0T-MD05 F15M	
8	0,20-0,30	RDHW0803M0-MD03 F40M	RDHW0803M0-MD03 F40M	
9	0,20-0,30	RDHW0803M0-MD03 F40M	RDHW0803M0-MD03 F40M	
10	0,20-0,30	RDHW0803M0-MD03 F40M	RDHW0803M0-MD03 F40M	
11	0,15-0,25	RDHW0803M0-MD03 F40M	RDHW0803M0-MD03 F40M	
12	0,20-0,30	RDKW0803M0T-MD05 MK2000	RDKW0803M0T-MD05 MK2000	
13	0,20-0,30	RDKW0803M0T-MD05 MK2000	RDKW0803M0T-MD05 MK2000	
14	0,20-0,30	RDKW0803M0T-MD05 MK2000	RDKW0803M0T-MD05 MK2000	
15	0,20-0,30	RDKW0803M0T-MD05 MK2000	RDKW0803M0T-MD05 MK2000	
16	0,20-0,30	RDHT0803M0-E03 H25	RDHT0803M0-E03 H25	
17-18	0,20-0,30	RDHT0803M0-E03 H25	RDHT0803M0-E03 H25	
19-20	0,20-0,30	RDHW0803M0-MD03 F40M	RDHT0803M0-E03 F40M	
21	0,20-0,30	RDHW0803M0-MD03 F40M	RDHW0803M0-MD03 F40M	
22	0,15-0,25	RDHW0803M0-MD03 F40M	RDHT0803M0-E03 F40M	

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%	D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 5%	10%	25%	100%
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
2	0,127	0,20	0,20	0,15	0,15	0,7	0,015	0,35	0,25	0,15	0,15
1,5	0,071	0,25		0,20		0,5	0,008	0,45	0,30	0,20	0,20
1	0,031					0,3	0,003				
0,8	0,020	0,30	0,25	0,25	0,20	0,2	0,001	0,60	0,45	0,30	0,25
Speed factor		1,40	1,35	1,25	1,00	Speed factor		1,60	1,45	1,25	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades											
	MP1500	MP2500	MP3000	T350M	F40M	F15M	F25M	MH1000	MS2500	MK2000	MK3000	H25
	Cutting speed, v_c (m/min)											
1	–	495	470	430	375	–	410	–	540	–	455	–
2	–	435	410	375	330	–	360	–	470	–	395	–
3	–	360	340	315	275	–	300	–	395	–	330	–
4	370	330	310	285	250	300	275	–	360	–	–	–
5	300	270	255	235	205	245	225	295	290	–	–	–
6	220	195	185	170	150	180	165	215	215	–	–	–
7	70	55	55	55	45	55	50	70	60	–	–	–
8	360	285	280	265	240	290	265	–	310	–	280	–
9	315	250	245	230	210	255	230	–	270	–	245	–
10	270	210	210	200	180	215	200	–	230	–	–	–
11	215	165	165	155	140	170	155	–	180	–	–	–
12	325	290	275	250	220	260	240	315	315	285	265	210
13	290	260	245	225	195	235	215	285	280	255	235	185
14	270	235	225	205	180	215	200	260	260	235	215	170
15	215	190	180	165	145	175	160	210	210	190	175	140
16	–	1340	1270	1165	1015	1220	1115	–	1460	1320	1230	965
17	–	860	815	750	655	785	715	–	940	580	790	620
18	–	765	725	665	580	695	635	–	835	755	700	550
19	–	70	65	65	60	–	65	–	70	–	–	–
20	–	60	50	50	45	–	50	–	60	–	–	–
21	–	50	45	45	40	–	45	–	50	–	–	–
22	–	120	110	110	95	–	110	–	120	–	–	–

Insert selection – R217/220.29-05

Insert ∅ 10 mm, max a_p 5 mm

SMG	Recom. feed f_z mm/tooth	First choice	First choice	
1	0,20-0,30	RDHT10T3M0-M05 T350M	RDHT10T3M0-E04 T350M	
2	0,20-0,30	RDHT10T3M0-M05 T350M	RDHT10T3M0-E04 T350M	
3	0,20-0,30	RDHT10T3M0-M05 T350M	RDHT10T3M0-E04 T350M	
4	0,20-0,30	RDHT10T3M0T-M05 MS2500	RDHT10T3M0-M05 MP3000	
5	0,20-0,30	RDHT10T3M0T-M05 MS2500	RDHT10T3M0-M05 MP3000	
6	0,15-0,25	RDKW10T3M0T-MD06 MP2500	RDHT10T3M0-M05 MP3000	
7	0,10-0,20	RDHW10T3M0T-MD06 MH1000	RDHW10T3M0T-MD06 MH1000	
8	0,20-0,30	RDHT10T3M0T-M05 T350M	RDHT10T3M0T-M05 F40M	
9	0,20-0,30	RDHT10T3M0T-M05 T350M	RDHT10T3M0T-M05 F40M	
10	0,20-0,30	RDHT10T3M0T-M05 T350M	RDHT10T3M0T-M05 F40M	
11	0,15-0,25	RDHT10T3M0T-M05 T350M	RDHT10T3M0T-M05 F40M	
12	0,20-0,30	RDKW10T3M0T-MD06 MP1500	RDKW10T3M0T-MD06 MK2000	
13	0,20-0,30	RDKW10T3M0T-MD06 MP1500	RDKW10T3M0T-MD06 MK2000	
14	0,20-0,30	RDKW10T3M0T-MD06 MP1500	RDKW10T3M0T-MD06 MK2000	
15	0,20-0,30	RDKW10T3M0T-MD06 MP1500	RDKW10T3M0T-MD06 MK2000	
16	0,20-0,30	RDHT10T3M0-E04 H25	RDHT10T3M0-E04 H25	
17-18	0,20-0,30	RDHT10T3M0-E04 H25	RDHT10T3M0-E04 H25	
19-20	0,20-0,30	RDHT10T3M0T-M07 MS2500	RDHT10T3M0-E04 F40M	
21	0,20-0,30	RDHT10T3M0T-M05 MS2500	RDHT10T3M0T-M05 F40M	
22	0,15-0,25	RDHT10T3M0T-M05 MS2500	RDHT10T3M0-E04 F40M	

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%	D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 5%	10%	25%	100%
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
2,5	0,159	0,25	0,25	0,20	0,15	1	0,025	0,35	0,25	0,15	0,15
2	0,101	0,30	0,30	0,25	0,20	0,7	0,012	0,45	0,35	0,20	0,20
1,5	0,057					0,5	0,006				
1	0,025	0,40	0,35	0,30	0,25	0,3	0,002	0,65	0,45	0,30	0,25
Speed factor		1,40	1,35	1,25	1,00	Speed factor		1,60	1,45	1,30	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades											
	MP1500	MP2500	MP3000	T350M	F40M	F15M	F25M	MH1000	MS2500	MK2000	MK3000	H25
	Cutting speed, v_c (m/min)											
1	–	455	430	400	345	–	380	–	500	–	420	–
2	–	400	380	350	305	–	335	–	435	–	365	–
3	–	335	315	290	250	–	275	–	365	–	305	–
4	345	305	290	265	230	275	255	–	330	–	–	–
5	280	245	235	215	185	225	205	270	270	–	–	–
6	205	180	170	155	135	165	150	200	195	–	–	–
7	65	50	50	50	45	50	50	65	55	–	–	–
8	335	265	260	245	225	270	245	–	285	–	260	–
9	290	230	225	215	195	235	215	–	250	–	225	–
10	245	195	190	180	165	200	180	–	210	–	–	–
11	195	155	150	145	130	155	145	–	165	–	–	–
12	300	265	250	230	200	240	220	295	290	260	245	190
13	270	240	225	205	180	215	200	260	260	235	220	170
14	245	220	205	190	165	200	180	240	240	215	200	155
15	200	175	170	155	135	160	145	195	195	175	160	125
16	–	1235	1170	1075	935	1125	1030	–	1350	1220	1135	890
17	–	795	750	690	600	725	660	–	870	785	730	570
18	–	705	670	615	535	640	590	–	770	695	650	510
19	–	65	60	60	50	–	60	–	70	–	–	–
20	–	50	45	45	40	–	45	–	60	–	–	–
21	–	45	40	40	35	–	40	–	50	–	–	–
22	–	110	95	95	85	–	95	–	120	–	–	–

Insert selection – R217/220.29-06

Insert ∅ 12 mm, max a_p 6 mm

SMG	Recom. feed f_z mm/tooth	First choice	First choice	
1	0,20-0,30	RPHT1204M0T-M08 T350M	RPHT1204M0T-M08 F40M	
2	0,20-0,30	RPHT1204M0T-M08 T350M	RPHT1204M0T-M08 F40M	
3	0,20-0,30	RPHT1204M0T-M08 T350M	RPHT1204M0T-M08 F40M	
4	0,25-0,35	RPHT1204M0T-M15 MS2500	RPHT1204M0T-M15 MP1500	
5	0,25-0,35	RPHT1204M0T-M15 MS2500	RPHT1204M0T-M15 MP1500	
6	0,20-0,30	RPHT1204M0T-M15 MP2500	RPHT1204M0T-M15 MP1500	
7	0,10-0,20	RPHW1204M0T-MD10 MH1000	RPHW1204M0T-MD10 MH1000	
8	0,20-0,30	RPHT1204M0T-ME07 T350M	RPHT1204M0-M08 F40M	
9	0,20-0,30	RPHT1204M0T-ME07 T350M	RPHT1204M0-M08 F40M	
10	0,20-0,30	RPHT1204M0T-M08 T350M	RPHT1204M0-M08 F40M	
11	0,15-0,25	RPHT1204M0T-M08 T350M	RPHT1204M0-M08 F40M	
12	0,25-0,35	RPKW1204M0T-M15 MK3000	RPKW1204M0-MD10 MK2000	
13	0,25-0,35	RPKW1204M0T-M15 MK3000	RPKW1204M0-MD10 MK2000	
14	0,25-0,35	RPKW1204M0T-M15 MK3000	RPKW1204M0-MD10 MK2000	
15	0,25-0,35	RPKW1204M0T-M15 MK3000	RPKW1204M0-MD10 MK2000	
16	0,25-0,35	RPHT1204M0-E05 H25	RPHT1204M0-E05 H25	
17-18	0,25-0,35	RPHT1204M0-E05 H25	RPHT1204M0-E05 H25	
19-20	0,20-0,30	RPHT1204M0T-M10 MS2500	RPHT1204M0T-M08 F40M	
21	0,20-0,30	RPHT1204M0T-M08 MS2500	RPHT1204M0T-M08 F40M	
22	0,15-0,25	RPHT1204M0T-M08 MS2500	RPHT1204M0-E05 F40M	

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%	D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 5%	10%	25%	100%
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
3,5	0,261	0,40	0,35	0,30	0,25	1,5	0,047	0,50	0,35	0,20	0,20
3	0,191	0,45	0,40			1	0,021	0,60	0,45	0,30	0,25
2,5	0,132					0,8	0,013				
2	0,084	0,50	0,45	0,35	0,30	0,6	0,008	0,70	0,50	0,35	0,30
Speed factor		1,40	1,35	1,25	1,00	Speed factor		1,60	1,45	1,30	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades											
	MP1500	MP2500	MP3000	T350M	F40M	F15M	F25M	MH1000	MS2500	MK2000	MK3000	H25
	Cutting speed, v_c (m/min)											
1	–	420	400	370	320	–	350	–	460	–	385	–
2	–	370	350	320	280	–	310	–	405	–	340	–
3	–	310	290	270	235	–	255	–	335	–	280	–
4	320	280	265	245	215	255	235	–	305	–	–	–
5	260	230	215	200	175	210	190	250	250	–	–	–
6	190	165	160	145	125	150	140	185	180	–	–	–
7	60	50	45	45	40	50	45	60	50	–	–	–
8	310	245	240	225	205	250	225	–	265	–	240	–
9	270	210	210	200	180	215	200	–	230	–	210	–
10	230	180	180	170	155	185	170	–	195	–	–	–
11	180	140	140	130	120	145	130	–	155	–	–	–
12	280	245	235	215	185	225	205	270	270	245	225	175
13	250	220	210	190	165	200	185	240	240	215	200	160
14	230	200	190	175	155	185	170	220	220	200	185	145
15	185	165	155	145	125	150	135	180	180	160	150	120
16	–	1145	1085	995	865	1040	955	–	1250	1125	1050	825
17	–	735	700	640	555	670	615	–	805	725	675	530
18	–	655	620	570	495	595	545	–	715	640	600	470
19	–	60	60	50	50	–	50	–	65	–	–	–
20	–	45	45	40	40	–	40	–	50	–	–	–
21	–	40	40	35	35	–	35	–	45	–	–	–
22	–	95	95	85	85	–	85	–	110	–	–	–

Insert selection – R217/220.29-08

Insert ∅ 16 mm, max a_p 8 mm

SMG	Recom. feed f_z mm/tooth	First choice	First choice	
1	0,25-0,35	RPKT1605M0T-ME11 T350M	RPKT1605M0T-ME11 F40M	
2	0,25-0,35	RPKT1605M0T-ME11 T350M	RPKT1605M0T-ME11 F40M	
3	0,25-0,35	RPKT1605M0T-ME11 T350M	RPKT1605M0T-ME11 F40M	
4	0,30-0,40	RPHT1605M0T-M18 MS2500	RPKT1605M0T-M18 MP1500	
5	0,30-0,40	RPHT1605M0T-M18 MS2500	RPKT1605M0T-M18 MP1500	
6	0,25-0,35	RPHT1605M0T-M18 MP2500	RPKT1605M0T-M18 MP1500	
7	0,15-0,25	RPKW1605M0T-MD20 F15M	RPKW1605M0-MD08 F15M	
8	0,25-0,35	RPKT1605M0T-M12 T350M	RPKW1605M0-M12 F40M	
9	0,25-0,35	RPKT1605M0T-M12 T350M	RPKW1605M0-M12 F40M	
10	0,25-0,35	RPKT1605M0T-M12 T350M	RPKW1605M0-M12 F40M	
11	0,20-0,30	RPKT1605M0T-M12 T350M	RPKW1605M0-M12 F40M	
12	0,30-0,40	RPHT1605M0T-M18 MK3000	RPKW1605M0-MD20 MK2000	
13	0,30-0,40	RPHT1605M0T-M18 MK3000	RPKW1605M0-MD20 MK2000	
14	0,30-0,40	RPHT1605M0T-M18 MK3000	RPKW1605M0-MD20 MK2000	
15	0,25-0,35	RPHT1605M0T-M18 MK3000	RPKW1605M0-MD20 MK2000	
16	0,30-0,40	RPHT1605M0-E08 H25	RPHT1605M0-E08 H25	
17-18	0,30-0,40	RPHT1605M0-E08 H25	RPHT1605M0-E08 H25	
19-20	0,25-0,35	RPHT1605M0T-M12 MS2500	RPHT1605M0T-M12 F40M	
21	0,25-0,35	RPHT1605M0T-M12 MS2500	RPHT1605M0T-M12 F40M	
22	0,20-0,30	RPHT1605M0T-M12 MS2500	RPHT1605M0-ME11 F40M	

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Profile height, H mm	a_e/D_{c2} 15%	a_e/D_{c2} 20%	a_e/D_{c2} 30%	Full engagement 100%	D.O.C. a_p mm	Profile height, H mm	a_e/D_{c2} 5%	a_e/D_{c2} 10%	a_e/D_{c2} 25%	a_e/D_{c2} 100%
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
5,5	0,488	0,60	0,50	0,45	0,35	2	0,063	0,65	0,45	0,30	0,25
4,5	0,323					1,5	0,035				
4	0,254	0,70	0,60	0,50	0,40	1	0,016	0,90	0,65	0,40	0,35
3	0,142					0,8	0,010				
2	0,063	0,85	0,80	0,65	0,55	0,6	0,006	0,95	0,75	0,50	0,40
Speed factor		1,40	1,35	1,30	1,00	Speed factor		1,60	1,45	1,30	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades										
	MP1500	MP2500	MP3000	T350M	F40M	F15M	F25M	MS2500	MK2000	MK3000	H25
	Cutting speed, v_c (m/min)										
1	–	370	350	320	280	–	310	405	–	340	–
2	–	325	305	280	245	–	270	355	–	295	–
3	–	270	255	235	205	–	225	295	–	245	–
4	280	245	235	215	185	225	205	270	–	–	–
5	225	200	190	175	150	180	165	220	–	–	–
6	165	145	140	125	110	135	120	160	–	–	–
7	50	40	40	40	35	40	40	45	–	–	–
8	270	215	210	200	180	215	200	230	–	210	–
9	235	185	185	175	155	190	175	200	–	185	–
10	200	160	155	145	135	160	145	170	–	–	–
11	155	125	120	115	105	125	115	135	–	–	–
12	245	215	205	190	165	195	180	235	210	200	155
13	215	190	180	170	145	175	160	210	190	175	140
14	200	175	170	155	135	160	145	195	175	160	125
15	160	145	135	125	110	130	120	155	140	130	105
16	–	1000	945	870	760	910	835	1090	985	915	720
17	–	645	610	560	490	585	535	700	635	590	465
18	–	570	540	495	435	520	475	620	560	520	410
19	–	50	50	45	45	–	45	60	–	–	–
20	–	40	40	35	45	–	35	45	–	–	–
21	–	35	35	30	30	–	30	40	–	–	–
22	–	85	85	70	70	–	70	95	–	–	–

Insert selection – R217/220.29-10

Insert ∅ 20 mm, max a_p 10 mm

SMG	Recom. feed f_z mm/tooth	First choice	First choice	
1	0,30-0,40	RPHT2006M0T-ME12 T350M	RPHT2006M0T-ME12 T350M	
2	0,30-0,40	RPHT2006M0T-ME12 T350M	RPHT2006M0T-ME12 T350M	
3	0,30-0,40	RPHT2006M0T-ME12 T350M	RPHT2006M0T-ME12 T350M	
4	0,35-0,45	RPKT2006M0T-M20 MS2500	RPKT2006M0T-M20 MP1500	
5	0,35-0,45	RPKT2006M0T-M20 MS2500	RPKT2006M0T-M20 MP1500	
6	0,30-0,40	RPKT2006M0T-M20 MP2500	RPKT2006M0T-M20 MP1500	
7	0,20-0,30	RPKW2006M0T-MD22 F15M	RPKW2006M0T-MD22 F15M	
8	0,30-0,40	RPHT2006M0T-ME12 T350M	RPHT2006M0T-ME12 F40M	
9	0,30-0,40	RPHT2006M0T-ME12 T350M	RPHT2006M0T-ME12 F40M	
10	0,30-0,40	RPHT2006M0T-ME12 T350M	RPHT2006M0T-ME12 F40M	
11	0,25-0,35	RPHT2006M0T-ME12 T350M	RPHT2006M0T-ME12 F40M	
12	0,35-0,45	RPKT2006M0T-M20 MK3000	RPKW2006M0-MD10 F30M	
13	0,35-0,45	RPKT2006M0T-M20 MK3000	RPKW2006M0-MD10 F30M	
14	0,35-0,45	RPKT2006M0T-M20 MK3000	RPKW2006M0-MD10 F30M	
15	0,30-0,40	RPKT2006M0T-M20 MK3000	RPKW2006M0-MD10 F30M	
16	0,35-0,45	RPHT2006M0-E10 H25	RPHT2006M0-E10 H25	
17-18	0,35-0,45	RPHT2006M0-E10 H25	RPHT2006M0-E10 H25	
19-20	0,30-0,40	RPHT2006M0T-ME12 MS2500	RPHT2006M0T-ME12 F40M	
21	0,30-0,40	RPKT2006M0T-M15 MS2500	RPHT2006M0T-ME12 F40M	
22	0,25-0,35	RPKT2006M0T-M15 MS2500	RPHT2006M0T-ME12 F40M	

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%	D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 5%	10%	25%	100%
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
6	0,461	0,70	0,60	0,50	0,40	3	0,113	0,70	0,50	0,30	0,25
5,5	0,386					2,5	0,078				
5	0,318	0,80	0,70	0,60	0,50	2	0,050	0,85	0,60	0,40	0,30
4	0,202					1,5	0,028				
3	0,113	0,90	0,85	0,70	0,60	1	0,013	0,95	0,80	0,50	0,40
Speed factor		1,40	1,35	1,25	1,00	Speed factor		1,60	1,45	1,30	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades										
	MP1500	MP2500	MP3000	T350M	F40M	F15M	F25M	MS2500	MK2000	MK3000	H25
	Cutting speed, v_c (m/min)										
1	–	350	335	305	265	–	295	385	–	325	–
2	–	310	290	270	235	–	255	335	–	280	–
3	–	255	245	225	195	–	215	280	–	235	–
4	265	235	220	205	180	215	195	255	–	–	–
5	215	190	180	165	145	175	160	210	–	–	–
6	155	140	130	120	105	125	115	150	–	–	–
7	50	40	40	40	35	40	35	45	–	–	–
8	255	205	200	190	170	205	190	220	–	200	–
9	225	175	175	165	150	180	165	190	–	175	–
10	190	150	150	140	130	155	140	165	–	–	–
11	150	120	115	110	100	120	110	130	–	–	–
12	230	205	195	180	155	185	170	225	200	190	150
13	205	185	175	160	140	165	155	200	180	170	130
14	190	170	160	145	130	155	140	185	165	155	120
15	155	135	130	120	105	125	115	150	135	125	100
16	–	955	905	830	720	865	795	1040	940	875	685
17	–	615	580	535	465	555	510	670	605	705	440
18	–	545	515	475	410	495	455	595	535	500	390
19	–	50	45	45	45	–	45	50	–	–	–
20	–	40	35	35	35	–	35	40	–	–	–
21	–	35	30	30	30	–	30	35	–	–	–
22	–	85	70	70	70	–	70	85	–	–	–

Insert selection – R217/220.24-10

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,20-0,30	ROHT10T3M0-M06 T350M		
2	0,20-0,30	ROHT10T3M0-M06 T350M		
3	0,20-0,30	ROHT10T3M0-M06 T350M		
4	0,20-0,30	ROHT10T3M0-M06 T350M		
5	0,20-0,30	ROHT10T3M0-M06 MS2500		
6	0,15-0,25	ROHT10T3M0-M06 MP2500		
7	0,10-0,20	ROHT10T3M0-MD04 MP3000		
8	0,20-0,30	ROHT10T3M0-M06 MS2500		
9	0,20-0,30	ROHT10T3M0-M06 MS2500		
10	0,20-0,30	ROHT10T3M0-M06 MS2500		
11	0,15-0,25	ROHT10T3M0-M06 MS2500		
12	0,20-0,30	ROHT10T3M0-M09 MS2500		
13	0,20-0,30	ROHT10T3M0-M09 MS2500		
14	0,20-0,30	ROHT10T3M0-M09 MS2500		
15	0,20-0,30	ROHT10T3M0-M09 MS2500		
16	0,20-0,30	ROHT10T3M0-E04 F40m		
17-18	0,20-0,30	ROHT10T3M0-E04 F40m		
19-20	0,20-0,30	ROHT10T3M0-M09 MS2500		
21	0,20-0,30	ROHT10T3M0-M06 MS2500		
22	0,15-0,25	ROHT10T3M0-M06 MS2500		

Cutting data

D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%
		Feed, f_z (mm/tooth)			
2,5	0,159	0,25	0,25	0,20	0,15
2	0,101	0,30	0,30	0,25	0,20
1,5	0,057				
1	0,025	0,40	0,35	0,30	0,25
Speed factor		1,40	1,35	1,25	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	T350M	MS2500	F40M	MP3000			
	Cutting speed, v_c (m/min)						
1	400	500	345	430			
2	350	435	305	380			
3	290	365	250	315			
4	265	330	230	290			
5	215	270	185	235			
6	155	195	135	170			
7	50	55	45	50			
8	245	285	225	260			
9	215	250	195	225			
10	180	210	165	190			
11	145	165	130	150			
12	230	290	200	250			
13	205	260	180	225			
14	190	240	165	205			
15	155	195	135	170			
16	1075	1350	935	1170			
17	690	870	600	750			
18	615	770	535	670			
19	60	70	50	60			
20	45	60	40	45			
21	40	50	35	40			
22	95	120	85	95			

Insert selection – R220.24-12

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,20-0,30	ROHT1204M0T-M08 T350M		
2	0,20-0,30	ROHT1204M0T-M08 T350M		
3	0,20-0,30	ROHT1204M0T-M08 T350M		
4	0,25-0,35	ROHT1204M0T-M08 T350M		
5	0,25-0,35	ROHT1204M0T-M08 MS2500		
6	0,20-0,30	ROHT1204M0T-M08 MS2500		
7	0,10-0,20	ROHT1204M0T-M15 MS2500		
8	0,20-0,30	ROHT1204M0-M12 MS2500		
9	0,20-0,30	ROHT1204M0-M12 MS2500		
10	0,20-0,30	ROHT1204M0-M12 MS2500		
11	0,15-0,25	ROHT1204M0-M12 MS2500		
12	0,25-0,35	ROHT1204M0T-M15 MS2500		
13	0,25-0,35	ROHT1204M0T-M15 MS2500		
14	0,25-0,35	ROHT1204M0T-M15 MS2500		
15	0,25-0,35	ROHT1204M0T-M15 MS2500		
16	0,25-0,35	ROHT1204M0-E05 MS2500		
17-18	0,25-0,35	ROHT1204M0-E05 MS2500		
19-20	0,20-0,30	ROHT1204M0-M12 MS2500		
21	0,20-0,30	ROHT1204M0-M12 MS2500		
22	0,15-0,25	ROHT1204M0-M12 MS2500		

Cutting data

D.O.C. a_p mm	Profile height, H mm	a_e /D_{c2} 15%	20%	30%	Full engagement 100%
		Feed, f_z (mm/tooth)			
3,5	0,261	0,40	0,35	0,30	0,25
3	0,191	0,45	0,40		
2,5	0,132				
2	0,084	0,50	0,45	0,35	0,30
Speed factor		1,40	1,35	1,25	1,00

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades											
	MP1500	MP2500	MP3000	T350M	F40M	F15M	F25M	MH1000	MS2500	MK2000	MK3000	H25
	Cutting speed, v_c (m/min)											
1	–	420	400	370	320	–	350	–	460	–	385	–
2	–	370	350	320	280	–	310	–	405	–	340	–
3	–	310	290	270	235	–	255	–	335	–	280	–
4	320	280	265	245	215	255	235	–	305	–	–	–
5	260	230	215	200	175	210	190	250	250	–	–	–
6	190	165	160	145	125	150	140	185	180	–	–	–
7	60	50	45	45	40	50	45	60	50	–	–	–
8	310	245	240	225	205	250	225	–	265	–	240	–
9	270	210	210	200	180	215	200	–	230	–	210	–
10	230	180	180	170	155	185	170	–	195	–	–	–
11	180	140	140	130	120	145	130	–	155	–	–	–
12	280	245	235	215	185	225	205	270	270	245	225	175
13	250	220	210	190	165	200	185	240	240	215	200	160
14	230	200	190	175	155	185	170	220	220	200	185	145
15	185	165	155	145	125	150	135	180	180	160	150	120
16	–	1 145	1 085	995	865	1 040	955	–	1 250	1 125	1 050	825
17	–	735	700	640	555	670	615	–	805	725	675	530
18	–	655	620	570	495	595	545	–	715	640	600	470
19	–	60	60	50	50	–	50	–	65	–	–	–
20	–	45	45	40	40	–	40	–	50	–	–	–
21	–	40	40	35	35	–	35	–	45	–	–	–
22	–	95	95	85	85	–	85	–	110	–	–	–

Insert selection – R218.24

SMG	Feed f_z (mm)	218.20-060 First choice	Feed f_z (mm)	218.20-080 First choice	Feed f_z (mm)	218.20-100 First choice	Feed f_z (mm)	218.20-125 First choice
1	0,12-0,18	218.20..ME..F40M	0,14-0,20	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M	0,15-0,26	218.20..ME..F40M
2	0,12-0,18	218.20..ME..F40M	0,14-0,20	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M	0,15-0,26	218.20..ME..F40M
3	0,12-0,18	218.20..ME..F40M	0,14-0,20	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M	0,15-0,26	218.20..ME..F40M
4	0,12-0,18	218.20..ME..F25M	0,14-0,20	218.20..M..F25M	0,15-0,24	218.20..M..F25M	0,15-0,26	218.20..M..F25M
5	0,12-0,16	218.20..ME..F25M	0,14-0,18	218.20..M..F25M	0,15-0,22	218.20..M..F25M	0,15-0,24	218.20..M..F25M
6	0,12-0,16	218.20..ME..F25M	0,14-0,18	218.20..M..F25M	0,15-0,22	218.20..M..F25M	0,15-0,24	218.20..M..F25M
7	–	–	–	–	–	–	–	–
8	0,12-0,16	218.20..ME..F40M	0,14-0,18	218.20..ME..F40M	0,15-0,22	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M
9	0,12-0,16	218.20..ME..F40M	0,14-0,18	218.20..ME..F40M	0,15-0,22	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M
10	0,12-0,16	218.20..ME..F40M	0,14-0,18	218.20..ME..F40M	0,15-0,22	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M
11	0,12-0,16	218.20..ME..F40M	0,14-0,18	218.20..M..F40M	0,15-0,22	218.20..M..F40M	0,15-0,24	218.20..M..F40M
12	0,12-0,18	218.20..ME..F25M	0,14-0,20	218.20..M..F25M	0,15-0,24	218.20..M..F25M	0,15-0,26	218.20..M..F25M
13	0,12-0,18	218.20..ME..F25M	0,14-0,20	218.20..M..F25M	0,15-0,24	218.20..M..F25M	0,15-0,26	218.20..M..F25M
14	0,12-0,18	218.20..ME..F25M	0,14-0,20	218.20..M..F25M	0,15-0,24	218.20..M..F25M	0,15-0,26	218.20..M..F25M
15	0,12-0,18	218.20..ME..F25M	0,14-0,20	218.20..M..F25M	0,15-0,24	218.20..M..F25M	0,15-0,26	218.20..M..F25M
16	0,12-0,18	218.20..ME..F40M	0,14-0,20	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M	0,15-0,26	218.20..ME..F40M
17-18	0,12-0,18	218.20..ME..F40M	0,14-0,20	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M	0,15-0,26	218.20..ME..F40M
19-20	0,12-0,16	218.20..ME..T350M	0,14-0,18	218.20..ME..T350M	0,15-0,22	218.20..ME..T350M	0,15-0,24	218.20..ME..T350M
21	0,10-0,15	218.20..ME..T350M	0,12-0,16	218.20..ME..T350M	0,14-0,20	218.20..ME..T350M	0,15-0,22	218.20..ME..T350M
22	0,12-0,16	218.20..ME..F40M	0,14-0,18	218.20..ME..F40M	0,15-0,22	218.20..ME..F40M	0,15-0,24	218.20..ME..F40M

Cutting data – Full engagement

SMG	Grades						
	F25M	F40M	T350M	MP3000			
	Cutting speed, v_c (m/min)						
1	335	305	350	385			
2	295	270	310	335			
3	245	225	255	280			
4	225	205	235	255			
5	180	165	190	205			
6	135	120	140	150			
7	40	40	45	45			
8	215	200	215	230			
9	190	170	190	200			
10	160	145	160	170			
11	125	115	125	135			
12	195	180	205	225			
13	175	160	185	200			
14	160	145	170	185			
15	130	120	135	150			
16	910	830	955	1035			
17	585	535	615	665			
18	520	475	545	590			
19	50	45	50	50			
20	40	35	40	40			
21	35	30	35	35			
22	85	70	85	85			

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,18	0,26	1,00
Side milling	25%	0,16	0,26	0,32	1,30
	10%	0,20	0,39	0,50	1,50
	5%	0,25	0,52	0,72	1,60

Insert selection – R218.20-.. ∅ 12

SMG	Roughing ∅ 12 218.20-060ER	Semi-finishing ∅ 12 218.20-060ER
1	-ME03 F40M	-ME03 F40M
2	-ME03 F40M	-ME03 F40M
3	-ME03 F40M	-ME03 F40M
4	-M03 F40M	-M03 F40M
5	-M03 F40M	-M03 F40M
6	-M03 F40M	-M03 F40M
7	–	–
8	-ME03 F40M	-ME03 F40M
9	-ME03 F40M	-ME03 F40M
10	-ME03 F40M	-ME03 F40M
11	-M03 F40M	-M03 F40M
12	-M03 F40M	-M03 F40M
13	-M03 F40M	-M03 F40M
14	-M03 F40M	-M03 F40M
15	-M03 F40M	-M03 F40M
16	-ME03 F40M	-ME03 F40M
17	-ME03 F40M	-ME03 F40M
20	-ME03 F40M	-ME03 F40M
21	-ME03 F40M	-ME03 F40M
22	-ME03 F40M	-ME03 F40M

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 15%	a_e/D_c 20%	a_e/D_c 25%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 8%	a_e/D_c 10%	a_e/D_c 12%	a_e/D_c 15%
		Profile height, H mm 0,07	Profile height, H mm 0,12	Profile height, H mm 0,19				Profile height, H mm 0,02	Profile height, H mm 0,03	Profile height, H mm 0,04	Profile height, H mm 0,07
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
8	D_c	0,17	0,15	0,13	0,10	2	0,75 x D_c	0,39	0,35	0,32	0,29
6						1,75	0,70 x D_c				
4	0,90 x D_c	0,24	0,22	0,20	0,15	1,5	0,66 x D_c	0,44	0,39	0,36	0,33
2	0,75 x D_c					1	0,55 x D_c				
1	0,52 x D_c	0,35	0,31	0,28	0,24	0,3	0,31 x D_c	0,66	0,59	0,55	0,50
Speed factor		1,40	1,35	1,30	1,00	Speed factor		1,40	1,35	1,35	1,30

Cutting data – Full engagement

SMG	Grades						
	F40M						
	Cutting speed, v_c (m/min)						
1	375						
2	330						
3	275						
4	250						
5	205						
6	150						
7	–						
8	240						
9	210						
10	180						
11	140						
12	220						
13	195						
14	180						
15	145						
16	1015						
17	820						
20	60						
21	40						
22	60						

Insert selection – R218.20-.. ∅ 16- ∅ 20

SMG	Roughing ∅ 16 218.20-080ER..	Roughing ∅ 20 218.20-100ER..	Semi-finishing ∅ 16 218.20-080ER..	Semi-finishing ∅ 20 218.20-100ER..
1	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M
2	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M
3	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M
4	-M04 F25M	-M05 F25M	-M04 F25M	-M05 F25M
5	-M04 F25M	-M05 F25M	-M04 F25M	-M05 F25M
6	-M04 F25M	-M05 F25M	-M04 F25M	-M05 F25M
7	-M04 F25M	-M05 F25M	-M04 F25M	-M05 F25M
8	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M
9	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M
10	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M
11	-M04 F40M	-M05 F40M	-ME04 F40M	-ME05 F40M
12	-M04 F25M	-M05 F25M	-M04 F25M	-M05 F25M
13	-M04 F25M	-M05 F25M	-M04 F25M	-M05 F25M
14	-M04 F25M	-M05 F25M	-M04 F25M	-M05 F25M
15	-M04 F25M	-M05 F25M	-M04 F25M	-M05 F25M
16	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M
17-18	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M
19-20	-ME04 T350M	-ME05 T350M	-ME04 T350M	-ME05 T350M
21	-ME04 T350M	-ME05 T350M	-ME04 T350M	-ME05 T350M
22	-ME04 F40M	-ME05 F40M	-ME04 F40M	-ME05 F40M

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 15%	a_e/D_c 20%	a_e/D_c 25%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 8%	a_e/D_c 10%	a_e/D_c 12%	a_e/D_c 15%
		Profile height, H mm 0,10	Profile height, H mm 0,18	Profile height, H mm 0,29				Profile height, H mm 0,029	Profile height, H mm 0,045	Profile height, H mm 0,065	Profile height, H mm 0,102
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
12	D_c	0,15	0,15	0,10	0,10	3	0,75 x D_c	0,35	0,35	0,30	0,25
10						2	0,63 x D_c				
7	0,97 x D_c	0,20	0,20	0,20	0,15	1,5	0,55 x D_c	0,45	0,40	0,35	0,35
5	0,90 x D_c					1	0,46 x D_c				
3	0,75 x D_c	0,30	0,25	0,25	0,20	0,5	0,33 x D_c	0,55	0,50	0,50	0,45
Speed factor		1,40	1,35	1,30	1,00	Speed factor		1,40	1,35	1,35	1,30

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	MP300	F40M	T350M	F25M			
	v_c (m/min)						
1	385	305	350	335			
2	335	270	310	295			
3	280	225	255	245			
4	255	205	235	225			
5	205	165	190	180			
6	150	120	140	135			
7	45	40	45	40			
8	230	200	215	215			
9	200	170	190	190			
10	170	145	160	160			
11	135	115	125	125			
12	225	180	205	195			
13	200	160	185	175			
14	185	145	170	160			
15	150	120	135	130			
16	1035	830	955	910			
17	665	535	615	585			
18	590	475	545	520			
19	50	45	50	50			
20	40	35	40	40			
21	35	30	35	35			
22	85	70	85	85			

Insert selection – R218.20-.. ∅ 25- ∅ 32

SMG	Roughing ∅ 25 218.20-125ER..	Roughing ∅ 30 218.20-150ER..	Roughing ∅ 32 218.20-160ER..	Semi-finishing ∅ 25 218.20-125ER..	Semi-finishing ∅ 30 218.20-150ER..	Semi-finishing ∅ 32 218.20-160ER..
1	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
2	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
3	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
4	-M07 F25M	-M08 F25M	-M08 F25M	-M07 F25M	-M08 F25M	-M08 F25M
5	-M07 F25M	-M08 F25M	-M08 F25M	-M07 F25M	-M08 F25M	-M08 F25M
6	-M07 F25M	-M08 F25M	-M08 F25M	-M07 F25M	-M08 F25M	-M08 F25M
7	-M07 F25M	-M08 F25M	-M08 F25M	-M07 F25M	-M08 F25M	-M08 F25M
8	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
9	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
10	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
11	-M07 F40M	-M08 F40M	-M08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
12	-M07 F25M	-M08 F25M	-M08 F25M	-M07 F25M	-M08 F25M	-M08 F25M
13	-M07 F25M	-M08 F25M	-M08 F25M	-M07 F25M	-M08 F25M	-M08 F25M
14	-M07 F25M	-M08 F25M	-M08 F25M	-M07 F25M	-M08 F25M	-M08 F25M
15	-M07 F25M	-M08 F25M	-M08 F25M	-M07 F25M	-M08 F25M	-M08 F25M
16	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
17-18	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M
19-20	-ME07 T350M	-ME07 T350M	-ME08 T350M	-ME07 T350M	-ME07 T350M	-ME08 F40M
21	-ME07 T350M	-ME07 T350M	-ME08 T350M	-ME07 T350M	-ME07 T350M	-ME08 F40M
22	-ME07 F40M	-ME07 F40M	-ME08 F40M	-ME07 F40M	-ME07 F40M	-ME08 F40M

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 15%	a_e/D_c 20%	a_e/D_c 25%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 8%	a_e/D_c 10%	a_e/D_c 12%	a_e/D_c 15%
		Profile height, H mm 0,16	Profile height, H mm 0,28	Profile height, H mm 0,44				Profile height, H mm 0,045	Profile height, H mm 0,070	Profile height, H mm 0,101	Profile height, H mm 0,158
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
20	D_c	0,20	0,20	0,15	0,15	4	0,70 x D_c	0,50	0,45	0,40	0,35
15						2	0,52 x D_c				
12	0,99 x D_c	0,25	0,25	0,20		1,5	0,45 x D_c	0,65	0,55	0,55	0,50
8	0,90 x D_c					1	0,37 x D_c				
5	0,77 x D_c	0,35	0,30	0,30	0,25	0,6	0,29 x D_c	0,80	0,70	0,65	0,60
Speed factor		1,40	1,35	1,30	1,00	Speed factor		1,40	1,35	1,30	1,25

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	MP300	F40M	T350M	F25M			
	v_c (m/min)						
1	360	290	330	320			
2	315	255	290	280			
3	265	210	240	230			
4	240	195	220	210			
5	195	155	180	170			
6	145	115	130	125			
7	40	35	40	40			
8	215	185	205	205			
9	190	165	180	180			
10	160	140	150	150			
11	125	110	120	120			
12	210	170	195	185			
13	190	150	175	165			
14	175	140	160	150			
15	140	110	130	125			
16	980	785	900	860			
17	630	505	580	555			
18	560	450	515	490			
19	50	45	50	50			
20	40	35	40	40			
21	35	30	35	35			
22	85	70	85	85			

Insert selection – R218.20-.. ∅ 40

SMG	Roughing ∅ 40 218.20-200ER-..	Semi-finishing ∅ 40 218.20-200ER-..	Periphery insert ∅ 40 SCET120612T
1	-ME10 F40M	-ME10 F40M	-M14 T350M
2	-ME10 F40M	-ME10 F40M	-M14 T350M
3	-ME10 F40M	-ME10 F40M	-M14 T350M
4	-M10 F25M	-M10 F25M	-M11 F25M
5	-M10 F25M	-M10 F25M	-M11 F25M
6	-M10 F25M	-M10 F25M	-M11 F25M
7	-M10 F25M	-M10 F25M	-M11 F25M
8	-ME10 F40M	-ME10 F40M	-M14 T350M
9	-ME10 F40M	-ME10 F40M	-M14 T350M
10	-ME10 F40M	-ME10 F40M	-M14 T350M
11	-M10 F40M	-ME10 F40M	-M14 T350M
12	-M10 F25M	-M10 F25M	-M11 T200M
13	-M10 F25M	-M10 F25M	-M11 T200M
14	-M10 F25M	-M10 F25M	-M11 T200M
15	-M10 F25M	-M10 F25M	-M11 T200M
16	-ME10 F40M	-ME10 F40M	-M14 F40M
17-18	-ME10 F40M	-ME10 F40M	-M14 F40M
19-20	-ME10 T350M	-ME10 T350M	-M14 T350M
21	-ME10 T350M	-ME10 T350M	-M14 T350M
22	-ME10 F40M	-ME10 F40M	-M14 F40M

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 15%	a_e/D_c 20%	a_e/D_c 25%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 8%	a_e/D_c 10%	a_e/D_c 12%	a_e/D_c 15%
		Profile height, H mm 0,23	Profile height, H mm 0,40	Profile height, H mm 0,64				Profile height, H mm 0,064	Profile height, H mm 0,100	Profile height, H mm 0,145	Profile height, H mm 0,226
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
30	D_c	0,35	0,30	0,25	0,20	5	0,66 x D_c	0,75	0,70	0,60	0,55
20						3	0,53 x D_c				
15	0,97 x D_c	0,45	0,40	0,35	0,25	2	0,44 x D_c	0,95	0,85	0,80	0,70
12	0,92 x D_c					1,5	0,38 x D_c				
8	0,80 x D_c	0,55	0,45	0,40	0,35	1	0,31 x D_c	1,10	1,00	0,95	0,85
Speed factor		1,40	1,35	1,30	1,00	Speed factor		1,40	1,35	1,30	1,25

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades MP300	F40M	T350M	F25M			
	v_c (m/min)						
1	315	255	290	280			
2	280	220	255	245			
3	230	185	215	205			
4	210	170	195	185			
5	170	140	160	150			
6	125	100	115	110			
7	35	30	35	35			
8	190	165	180	180			
9	165	145	155	155			
10	140	120	135	135			
11	110	95	105	105			
12	185	150	170	165			
13	165	130	150	145			
14	150	120	140	135			
15	125	100	115	110			
16	860	690	790	755			
17	555	445	510	485			
18	490	395	450	430			
19	45	35	45	45			
20	35	30	35	35			
21	30	25	30	30			
22	70	60	70	70			

Insert selection – R218.20-.. ∅ 50

SMG	Roughing ∅ 50 218.20-250..	Semi-finishing ∅ 50 218.20-250..	Periphery insert ∅ 50 SCET120612T
1	ER-ME12 F40M	ER-ME12 F40M	-M14 T350M
2	ER-ME12 F40M	ER-ME12 F40M	-M14 T350M
3	ER-ME12 F40M	ER-ME12 F40M	-M14 T350M
4	TR-M14C F25M	TR-M14C F25M	-M11 F25M
5	TR-M14C F25M	TR-M14C F25M	-M11 F25M
6	TR-M14C F25M	TR-M14C F25M	-M11 F25M
7	TR-M14C F25M	TR-M14C F25M	-M11 F25M
8	ER-ME12 F40M	ER-ME12 F40M	-M14 T350M
9	ER-ME12 F40M	ER-ME12 F40M	-M14 T350M
10	ER-ME12 F40M	ER-ME12 F40M	-M14 T350M
11	TR-M14 F40M	ER-ME12 F40M	-M14 T350M
12	TR-M14C F25M	TR-M14C F25M	-M11 T200M
13	TR-M14C F25M	TR-M14C F25M	-M11 T200M
14	TR-M14C F25M	TR-M14C F25M	-M11 T200M
15	TR-M14C F25M	TR-M14C F25M	-M11 T200M
16	ER-ME12 F40M	ER-ME12 F40M	-M14 F40M
17-18	ER-ME12 F40M	ER-ME12 F40M	-M14 F40M
19-20	ER-ME12 T350M	ER-ME12 T350M	-M14 T350M
21	ER-ME12 T350M	ER-ME12 T350M	-M14 T350M
22	ER-ME12 F40M	ER-ME12 F40M	-M14 F40M

Cutting data

Roughing						Semi-finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 15%	a_e/D_c 20%	a_e/D_c 25%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 8%	a_e/D_c 10%	a_e/D_c 12%	a_e/D_c 15%
		Profile height, H mm 0,28	Profile height, H mm 0,51	Profile height, H mm 0,79				Profile height, H mm 0,080	Profile height, H mm 0,125	Profile height, H mm 0,181	Profile height, H mm 0,283
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
35	D_c	0,35	0,35	0,30	0,20	6	0,65 x D_c	0,75	0,70	0,60	0,55
25						4	0,54 x D_c				
20	0,98 x D_c	0,50	0,40	0,40	0,30	3	0,47 x D_c	0,90	0,85	0,75	0,70
15	0,92 x D_c					2	0,39 x D_c				
10	0,80 x D_c	0,60	0,50	0,45	0,40	1,5	0,34 x D_c	1,05	0,95	0,90	0,80
Speed factor		1,40	1,35	1,30	1,00	Speed factor		1,40	1,35	1,30	1,25

Reduce f_z by 30% for Matl. group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	MP300	F40M	T350M	F25M			
	v_c (m/min)						
1	310	245	285	270			
2	270	215	250	235			
3	225	180	205	200			
4	205	165	190	180			
5	165	135	155	145			
6	120	100	110	105			
7	35	30	35	35			
8	185	160	175	175			
9	160	140	155	155			
10	135	120	130	130			
11	105	90	100	100			
12	180	145	165	160			
13	160	130	150	140			
14	150	120	135	130			
15	120	95	110	105			
16	835	670	770	735			
17	535	430	495	475			
18	475	385	440	420			
19	45	35	45	45			
20	35	30	35	35			
21	30	25	30	30			
22	70	60	70	70			

Insert selection – R218.19

SMG	Roughing	Semi-finishing
1	218.19..M..T350M	218.19..M..F40M
2	218.19..M..T350M	218.19..M..F40M
3	218.19..M..T350M	218.19..M..F40M
4	218.19..MD..MP2500	218.19..MD..MP1500
5	218.19..MD..MP2500	218.19..MD..MP1500
6	218.19..MD..MP2500	218.19..MD..MP1500
7	218.19..MD..F15M	218.19..MD..F15M
8	218.19..M..T350M	218.19..M..F25M
9	218.19..M..T350M	218.19..M..F25M
10	218.19..M..T350M	218.19..M..F25M
11	218.19..M..T350M	218.19..M..F25M
12	218.19..MD..MP1500	218.19..MD..F25M
13	218.19..MD..MP1500	218.19..MD..F25M
14	218.19..MD..MP1500	218.19..MD..F25M
15	218.19..MD..MP1500	218.19..MD..F25M
16	218.19..E..H25	218.19..E..H25
17-18	218.19..E..H25	218.19..E..H25
19-20	218.19..M..MS2500	218.19..M..F40M
21	218.19..M..MS2500	218.19..M..F40M
22	218.19..M..MS2500	218.19..M..F40M

Cutting data – side milling

For cutting data side milling, use the values given for corresponding cutter diameter for cutter type 218.20, see previous pages.

Cutting data – Full engagement

SMG	Grades							
	MP1500	MP3000	MS2500	T350M	F40M	F15M	F25M	H25
	Cutting speed, v_c (m/min)							
1	410	345	395	315	275	330	305	–
2	360	300	345	280	240	290	265	–
3	300	250	290	230	200	240	220	–
4	275	230	265	210	185	220	200	–
5	225	185	215	170	150	180	165	–
6	165	135	155	125	110	130	120	–
7	50	40	45	40	35	40	40	–
8	–	205	230	195	180	–	195	–
9	–	180	200	170	155	–	170	–
10	–	155	170	145	130	–	145	–
11	–	120	130	115	105	–	115	–
12	240	200	230	185	160	195	175	170
13	215	180	205	165	145	170	160	150
14	195	165	190	150	130	160	145	140
15	160	135	155	125	105	130	120	115
16	–	935	–	–	745	895	820	790
17	–	600	–	–	480	575	525	510
18	–	535	–	–	425	510	470	450
19	–	50	60	45	45	–	–	–
20	–	40	45	35	35	–	–	–
21	–	35	40	30	30	–	–	–
22	–	85	95	70	70	–	–	–

Insert selection 219.19

SMG	Semi-finishing/Finishing First choice
1	219.19..-MD.. F17M
2	219.19..-MD.. F17M
3	219.19..-MD.. F17M
4	219.19..-MD.. F17M
5	219.19..-MD.. F17M
6	219.19..-MD.. F17M
7	219.19..-MD.. F17M
8	219.19..-MD.. F17M
9	219.19..-MD.. F17M
10	219.19..-MD.. F17M
11	219.19..-MD.. F17M
12	219.19..-MD.. F17M
13	219.19..-MD.. F17M
14	219.19..-MD.. F17M
15	219.19..-MD.. F17M
16	219.19..-MD.. F17M
17-18	219.19..-MD.. F17M
19-20	219.19..-MD.. F17M
21	219.19..-MD.. F17M
22	219.19..-MD.. F17M

Cutting data – Full engagement

SMG	Semi-finishing/Finishing								
	Cutting speed v_c (m/min)	Max depth of cut (a_p, a_e)	Feed , f_z (mm/tooth)						
			Cutter diameter (D_c mm)						
			∅ 8	∅ 10	∅12	∅16	∅20	∅25	∅32
1	300-400	D_c/10	0,12-0,15	0,15-0,20	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
2	280-360		0,12-0,15	0,15-0,20	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
3	240-310	D_c/15	0,12-0,15	0,15-0,20	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
4	200-280		0,12-0,15	0,15-0,20	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
5	160-240	D_c/20	0,12-0,15	0,12-0,17	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
6	120-180		0,12-0,15	0,12-0,17	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
7	60-100	D_c/25	0,12-0,15	0,12-0,17	0,15-0,20	0,20-0,25	0,20-0,25	0,25-0,30	0,25-0,30
8	170-210	D_c/20	0,12-0,15	0,12-0,17	0,15-0,20	0,15-0,20	0,15-0,20	0,20-0,25	0,20-0,25
9	150-190		0,12-0,15	0,12-0,17	0,15-0,20	0,15-0,20	0,15-0,20	0,20-0,25	0,20-0,25
10	130-160		0,12-0,15	0,12-0,17	0,15-0,20	0,15-0,20	0,15-0,20	0,20-0,25	0,20-0,25
11	100-130		0,12-0,15	0,12-0,17	0,15-0,20	0,15-0,20	0,15-0,20	0,20-0,25	0,20-0,25
12	200-250	D_c/10	0,12-0,15	0,15-0,20	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
13	180-230		0,12-0,15	0,15-0,20	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
14	170-210	D_c/15	0,12-0,15	0,15-0,20	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
15	150-190		0,12-0,15	0,15-0,20	0,20-0,25	0,25-0,30	0,25-0,30	0,30-0,35	0,30-0,35
16	800-1200	D_c/8	0,15-0,20	0,20-0,25	0,25-0,30	0,30-0,35	0,30-0,35	0,35-0,40	0,35-0,40
17-18			0,15-0,20	0,20-0,25	0,25-0,30	0,30-0,35	0,30-0,35	0,35-0,40	0,35-0,40
19-20	60-90	D_c/30	0,10-0,15	0,15-0,20	0,15-0,20	0,20-0,25	0,20-0,25	0,25-0,30	0,25-0,30
21	40-60		0,08-0,12	0,10-0,15	0,10-0,15	0,15-0,20	0,15-0,20	0,20-0,25	0,20-0,25
22	60-90		0,10-0,15	0,15-0,20	0,15-0,20	0,20-0,25	0,20-0,25	0,25-0,30	0,25-0,30

VPGX22

SMG	First choice	Feed f_z mm/tooth	Cutting speed V_c m/min
16	VPGX 220631EN-E10 H25	0,15 – 0,30	800 – 3000
17	VPGX 220631EN-E10 H25	0,15 – 0,27	500 – 1000
22	VPGX 220631EN-E10 H25	0,10 – 0,17	32 – 40

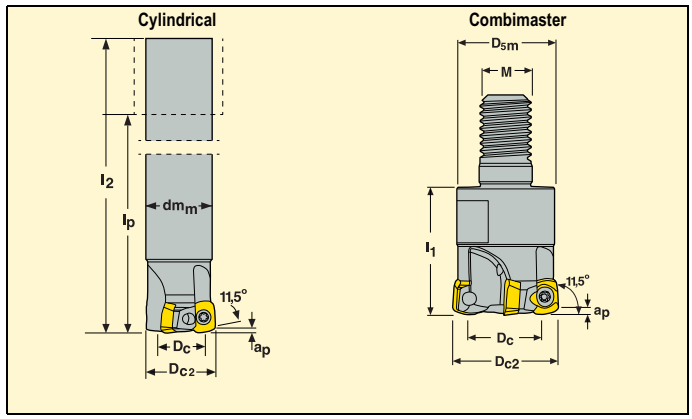
XPKX12

SMG	First choice	Feed f_z mm/tooth	Cutting speed V_c m/min
16	XPKX12T331PDER-E08 H25	0,08 – 0,20	1000 – 2500
17	XPKX12T331PDER-E08 H25	0,08 – 0,20	500 – 2000
22	XPKX12T331PDER-E08 H25	0,07 – 0,15	32 – 40

R217.21

High feed cutters-LP

- For insert selection and cutting data recommendations, see page 393 - 394.
- For complete insert programme, see page 560.



Part No.	Dimension in mm D_{c2}	D_c	dm_m D_{5m}	l_1	l_2	l_p	M	a_p		KG		Type of mounting	Insert
R217.21 -0816.RE-LP06.2A	16	7,5	13,5	20	–	–	M8	0,8	2	0,1	39000	Combimaster*	LP.06
-1020.RE-LP06.2A	20	11,5	18,5	28	–	–	M10	0,8	2	0,1	35000	Combimaster*	LP.06
-1020.RE-LP06.3A	20	11,5	18,5	28	–	–	M10	0,8	3	0,1	35000	Combimaster*	LP.06
-1225.RE-LP06.3A	25	16,5	23	30	–	–	M12	0,8	3	0,1	30000	Combimaster*	LP.06
-1225.RE-LP06.4A	25	16,5	23	30	–	–	M12	0,8	4	0,1	30000	Combimaster*	LP.06
-1632.RE-LP06.5A	32	23,5	30	35	–	–	M16	0,8	5	0,2	27000	Combimaster*	LP.06
-1635.RE-LP06.5A	35	26,5	30	35	–	–	M16	0,8	5	0,2	26000	Combimaster*	LP.06
R217.21 -1416.0-LP06.2A	16	7,5	14	–	150	102	–	0,8	2	0,2	39000	Cylindrical	LP.06
-1618.0-LP06.2A	18	9,5	16	–	160	112	–	0,8	2	0,3	37000	Cylindrical	LP.06
-1820.0-LP06.2A	20	11,6	18	–	160	110	–	0,8	2	0,3	35000	Cylindrical	LP.06
-2525.0-LP06.3A	25	16,5	25	–	180	124	–	0,8	3	0,6	30000	Cylindrical	LP.06
-2527.0-LP06.3A	27	18,5	25	–	250	194	–	0,8	3	0,9	30000	Cylindrical	LP.06
-3232.0-LP06.4A	32	23,5	32	–	200	140	–	0,8	4	1,1	27000	Cylindrical	LP.06
-3235.0-LP06.4A	35	26,5	32	–	250	190	–	0,8	4	1,5	26000	Cylindrical	LP.06

*For shanks and dimensions, see pages 498 - 510.

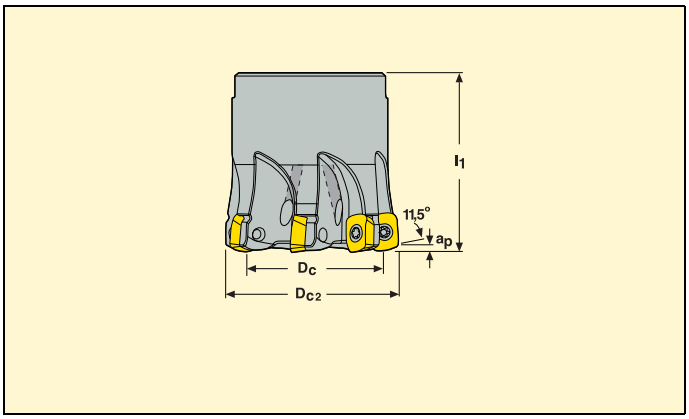
Spare parts

For insert	Locking screw	Key	Torque value Nm
R217.21…Ø16-20	C02555-T08P	T08P-3	1,2
R217.21..Ø25-35	C02506-T08P	T08P-3	1,2

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

R220.21

High feed cutters-LP



- For insert selcetion and cutting data recommendations, see page 396.
- For complete insert programme, see page 533.

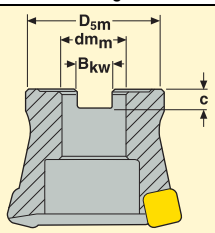
Part No.	Dimension in mm					KG		Insert
	D_{c2}	D_c	a_p	l_1				
R220.21 -0035-LP06.6A	35	26,5	0,8	35	6		26000	LP.06

Spare parts

For cutter	Locking screw	Key	Torque value (Nm)	Arbor screw
R220.21-0035-LP06.6A	C02506-T08P	T08P-3	1,2	TCEI0825

Dynamomentic keys, see page 590.

Dimensions of mounting

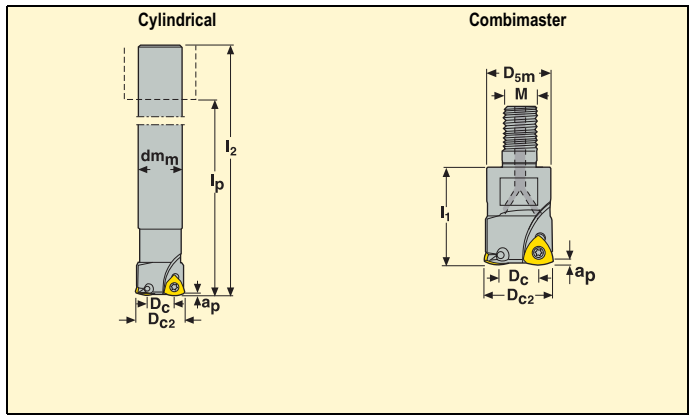


For cutter	Dimensions in mm				For arbor
	dm_m	D_{5m}	B_{kw}	c	
R220.21-0035-LP06.6A	16	32	8,4	5,6	16

Please check availability in current price and stock-list.

R217.21

High feed cutters



- For insert selection and cutting data recommendations, see page 393 - 394.
- For complete insert programme, see page 560.

Part No.	Dimension in mm D_{c2}	D_c	dm_m D_{5m}	l_1	l_2	l_p	M	a_p		KG		Type of mounting	Insert
R217.21 -1416.0-R080.2A	16	9	14	–	150	105	–	0,6	2	0,2	53400	Cylindrical	218.19-080..
-1820.0-R100.2A	20	11,4	18	–	160	110	–	0,7	2	0,3	32600	Cylindrical	218.19-100..
-2025.0-R100.2A	25	16,4	20	–	170	120	–	0,7	2	0,4	29100	Cylindrical	218.19-100..
-2525.0-R100.3A	25	16,4	25	–	170	114	–	0,7	3	0,6	29100	Cylindrical	218.19-100..
-2532.0-R125.2A	32	21	25	–	195	139	–	1,0	2	1,0	19700	Cylindrical	218.19-125..
-3232.0-R125.3A	32	21	32	–	195	135	–	1,0	3	1,1	19700	Cylindrical	218.19-125..
R217.21 -0816.RE-R080.2	16	9	13,5	23	–	–	M8	0,6	2	0,1	53400	Combimaster*	218.19-080..
-1020.RE-R100.2A	20	11,4	18,5	28	–	–	M10	0,7	2	0,1	32600	Combimaster*	218.19-100..
-1020.RE-R100.2HA	20	10,4	18,5	28	–	–	M10	1,0	2	0,1	32600	Combimaster*	218.19-100..
-1225.RE-R100.3A	25	16,4	23	35	–	–	M12	0,7	3	0,1	29100	Combimaster*	218.19-100..
-1225.RE-R125.2HA	25	12	23	35	–	–	M12	1,5	2	0,1	29100	Combimaster*	218.19-125
-1632.RE-R125.2HA	32	21	–	40	–	–	M16	1	2	0,2	19700	Combimaster*	218.19-125..
-1632.RE-R125.3A	32	21	30	40	–	–	M16	1,0	3	0,2	19700	Combimaster*	218.19-125..
-1632.RE-R160.2HA	32	16	30	40	–	–	M16	1,8	2	0,2	16200	Combimaster*	218.19-160-04..
-1635.RE-R125.3A	35	24	30	40	–	–	M16	1,0	3	0,2	18800	Combimaster*	218.19-125..
-1640.RE-R160.3HA	40	23,9	30	40	–	–	M16	1,8	3	0,2	14500	Combimaster*	218.19-160-04..
-1640.RE-R125.4A	40	29	30	40	–	–	M16	1,0	4	0,3	17600	Combimaster*	218.19-125..

*For shanks and dimensions, see pages 498 - 510.

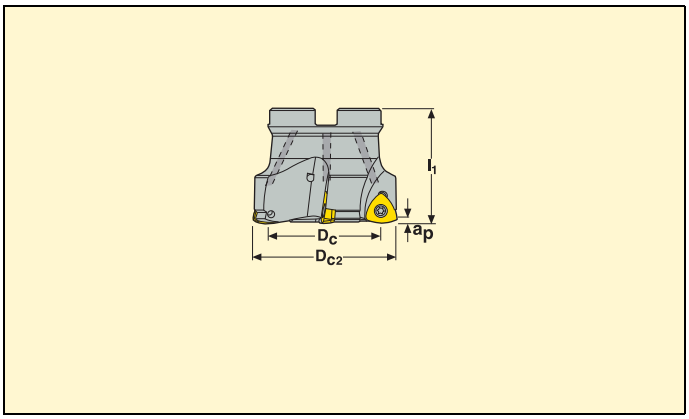
Spare parts

For insert	Locking screw	Key	Torque value Nm
218.19-080	C02205-T07P	T07P-3	0,9
218.19-100	C02506-T08P	T08P-3	1,2
218.19-125-T3	C03007-T09P	T09P-3	2,0
218.19-160-04	C03508-T15P	T15P-3	3,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

R220.21

High feed cutters



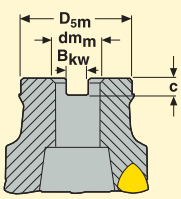
- For insert selection and cutting data recommendations, see page 393 - 394.
- For complete insert programme, see page 560.

Part No.	Dimension in mm D_{c2}	D_c	l_1	a_p		KG		Insert
R220.21 -0040-R125.4A	40	29	40	1,0	4	0,2	17600	218.19-125..
-0042-R125.4A	42	31	40	1,0	4	0,2	17200	218.19-125..
-0050-R160.3A	50	36	40	1,8	3	0,4	12900	218.19-160..
-0050-R160.4A	50	36	40	1,8	4	0,4	12900	218.19-160..
-0052-R160.4A	52	38	40	1,8	4	0,4	12700	218.19-160..
-0063-R160.4A	63	49,5	50	1,8	4	0,5	11500	218.19-160..
-0063-R160.5A	63	49,5	50	1,8	5	0,5	11500	218.19-160..
-0066-R160.5A	66	52,5	50	1,8	5	0,6	11200	218.19-160..
-0080-R160.6A	80	66,5	50	1,8	6	0,9	10200	218.19-160..
-0100-R160.7A	100	86,5	50	1,8	7	1,4	9100	218.19-160..

Spare parts

For cutter	Locking screw	Key	Torque value Values (Nm)	Arbor screw
Dia 40–42 mm	C03007-T09P	T09P-3	2,0	220.17-689
Dia 50–52 mm	C03508-T15P	T15P-3	3,0	220.17-691
Dia 63–66–80 mm	C03508-T15P	T15P-3	3,0	MC6S 12x35
Dia 100 mm	C03508-T15P	T15P-3	3,0	–

Dimensions of mounting

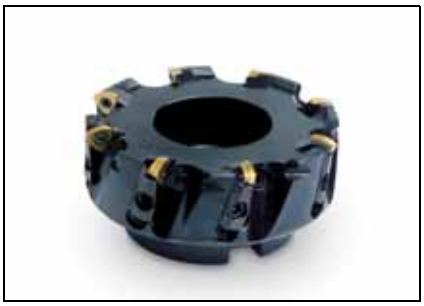


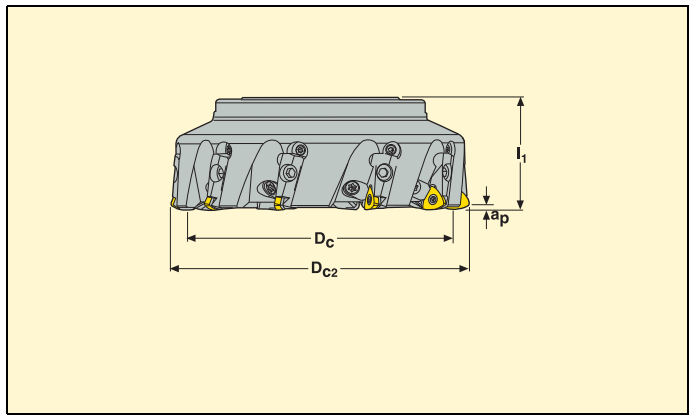
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.21-0040–0042	16	35	8,4	5,6	16
R220.21-0050–0052	22	47	10,4	6,3	22
R220.21-0063–0080	27	62	12,4	7	27
R220.21-0100	32	77	14,4	8	32

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

R220.21

High feed cutters





- For insert selection and cutting data recommendations, see page 395.
- For complete insert programme, see page 560.

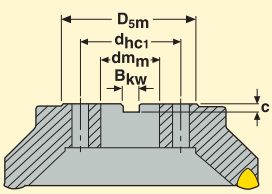
Part No.	Dimensions in mm D_c	D_{c2}	l_1	a_p		KG		Insert
R220.21 -0088-R160.5C	70	88	50	2,5	5	1,7	7200	218.19-160..
-0108-R160.6C	90	108	50	2,5	6	2,6	6500	218.19-160..
-0133-R160.8C	115	133	63	2,5	8	4,2	5900	218.19-160..
-8168-R160.10C	150	168	63	2,5	10	6,3	5200	218.19-160..
-8208-R160.12C	190	208	63	2,5	12	8,9	4700	218.19-160..

Spare parts

For cutter	Cassette*	Cassette screw	Wedge	Wedge screw	Key *	Arbor screw	Setting gauge
R220.21-0088	218.19-160ZR	FS96018	CW0810	LD8020-T25P	T15P-4	MC6S12x35	AU1114T-T15P
R220.21-0108	218.19-160ZR	FS96018	CW0810	LD8020-T25P	T15P-4	220.17-694	AU1114T-T15P
R220.21-0133–8208	218.19-160ZR	FS96018	CW0810	LD8020-T25P	T15P-4	–	AU1114T-T15P

* Locking screw C03508-T15P included.
Key T15P-3 for setting gauge, key T25P-4 for wedge screw and key H05-4 for cassette screw to be ordered separately.

Dimensions of mounting

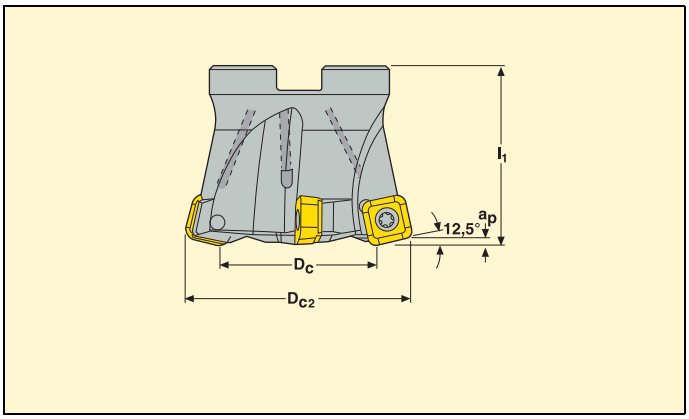


For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.21-0088	27	62	12,4	7	–	27	–
R220.21-0108	32	77	14,4	8	–	32	–
R220.21-0133	40	90	16,4	9	–	40	–
R220.21-8168	40	90	16,4	9	66,7	40	ISO40
R220.21-8208	60	130	25,7	14	101,6	–	ISO50

Please check availability in current price and stock-list.
*** Torque value 3,0 Nm.** Dynamomentic keys, see page 590.

R220.21

High feed cutters



- For insert selcetion and cutting data recommendations, see page 396.
- For complete insert programme, see page 533.

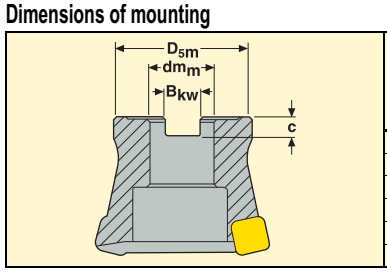
Part No.	Dimension in mm							KG		Insert
	D_{c2}	D_c	a_p	dm_m	D_{5m}	l_1				
R220.21 -0050-SC12.4A	50	31	2	22	42	40	4	0,3	10700	SCET120630T
-0052-SC12.4A	52	33	2	22	42	40	4	0,3	10500	SCET120630T
-0063-SC12.4A	63	44	2	27	50	50	4	0,5	9600	SCET120630T
-0063-SC12.5A	63	44	2	22	50	50	5	0,5	9600	SCET120630T
-0066-SC12.4A	66	47	2	27	60	50	4	0,6	9400	SCET120630T

Spare parts

For cutter	Locking screw	Key	Torque value (Nm)	Arbor screw
R220.21–0050-0052	C45011-T20P	T20P-4	5,0	220.17-692M
R220.21–0063-0066	C45011-T20P	T20P-4	5,0	MC6S 12x35

Dynamomentic keys, see page 590.

Dimensions of mounting

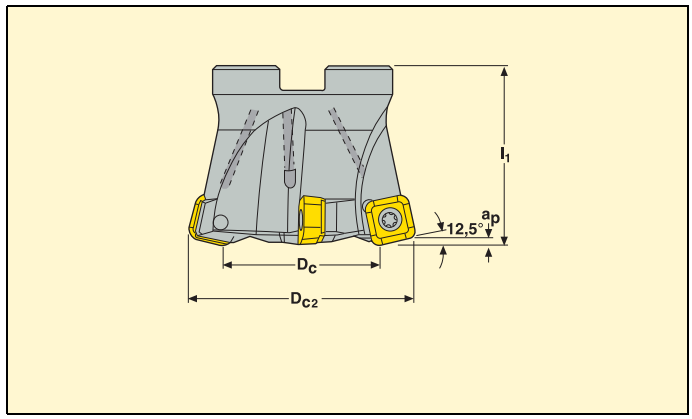


For cutter	Dimensions in mm				For arbor
	dm_m	D_{5m}	B_{kw}	c	
R220.21-0050–0052	22	47	10,4	6,3	22
R220.21-0063	27	50	12,4	7	27
R220.21-0066	27	60	12,4	7	27

Please check availability in current price and stock-list.

R220.21

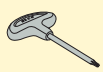
High feed cutters



- For insert selcetion and cutting data recommendations, see page 396.
- For complete insert programme, see page 533.

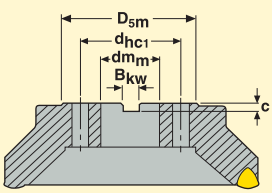
Part No.	Dimension in mm D_{c2}	D_c	a_p	dm_m	D_{5m}	l_1		KG		Insert
R220.21 -0080-SC12.5A	80	61	2	27	62	50	5	0,9	8500	SCET120630T
-0080-SC12.6A	80	61	2	27	62	50	6	0,9	8500	SCET120630T
-0084-SC12.5A	84	65	2	32	77	55	5	1,2	8300	SCET120630T
-0100-SC12.5A	100	81	2	32	77	50	5	1,3	7600	SCET120630T
-0100-SC12.7A	100	81	2	32	77	50	7	1,3	7600	SCET120630T
-0125-SC12.6A	125	106	2	40	90	63	6	2,4	6800	SCET120630T
-8160-SC12.7	160	141	2	40	90	63	7	3,8	6000	SCET120630T

Spare parts

For cutter	Locking screw	Key 	Torque value Values (Nm)	Arbor screw
R220.21–0080	C45011-T20P	T20P-4	5,0	MC6S 12x35
R220.21–0084	C45011-T20P	T20P-4	5,0	MC6S 16x40
R220.21–0100-0125	C45011-T20P	T20P-4	5,0	MLC6S16X35
R220.21–8160	C45011-T20P	T20P-4	5,0	–

Dynamomentic keys, see page 590.

Dimensions of mounting



For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	d_{hc1}	For arbor	For spindle-nose
R220.21-0050-0052	22	47	10,4	6,3	–	22	–
R220.21-0063	27	50	12,4	7	–	27	–
R220.21-0066	27	60	12,4	7	–	27	–
R220.21-0080	27	62	12,4	7	–	27	–
R220.21-0084–0100	32	77	14,4	8	–	32	–
R220.21-0125	40	90	16,4	9	–	40	–
R220.21-8160	40	90	16,4	9	66,7	40	ISO40

Please check availability in current price and stock-list.

Insert selection – 217/220.21LP06

Universal insert: LPHT060310TR-M06 MP2500

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,30–0,80	LPHT060310TR-M06 T350M		
2	0,30–0,80	LPHT060310TR-M06 T350M		
3	0,30–0,80	LPHT060310TR-M06 T350M		
4	0,30–0,80	LPHT060310TR-M06 MP2500		
5	0,30–0,80	LPHW060310TR-MD07 MP2500		
6	0,30–0,80	LPHW060310TR-MD07 MP2500		
7	0,30–0,80	LPHW060310TR-D06 MH1000		
8	0,30–0,80	LPHT060310TR-ME05 F40M		
9	0,30–0,80	LPHT060310TR-ME05 F40M		
10	0,30–0,80	LPHT060310TR-M06 F40M		
11	0,30–0,80	LPHT060310TR-M06 F40M		
12	0,30–0,80	LPHT060310TR-M06 MP3000		
13	0,30–0,80	LPHW060310TR-D06 MP3000		
14	0,30–0,80	LPHW060310TR-D06 MP3000		
15	0,30–0,80	LPHW060310TR-D06 MP3000		
16	0,30–0,80	LPHT060310ER-E05 H25		
17	0,30–0,80	LPHT060310ER-E05 H25		
18	0,30–0,80	LPHT060310ER-E05 H25		
19	0,30–0,80	LPHT060310TR-M06 MS2500		
20	0,30–0,80	LPHT060310TR-M06 MS2500		
21	0,30–0,80	LPHT060310TR-M06 MS2500		
22	0,30–0,80	LPHT060310TR-ME05 F40M		

Cutting data

SMG	Grades																
	MP2500			MP3000			T350M			MM4500			F40M				
	f_z (mm/tooth)																
	0,30	0,60	0,80	0,30	0,60	0,80	0,30	0,60	0,80	0,30	0,60	0,80	0,30	0,60	0,80		
	v_c (m/min)																
1	575	490	455	–	–	–	500	425	395	–	–	–	435	370	345		
2	485	415	385	–	–	–	425	360	335	–	–	–	370	315	290		
3	400	340	315	–	–	–	350	300	275	–	–	–	305	260	240		
4	340	290	270	–	–	–	300	255	235	–	–	–	260	220	205		
5	285	245	225	270	230	215	250	210	195	–	–	–	215	185	170		
6	250	215	–	235	200	–	–	–	–	–	–	–	–	–	–		
7	–	–	–	60	50	–	–	–	–	–	–	–	–	–	–		
8	350	300	275	345	295	275	325	280	260	255	220	205	295	255	–		
9	275	235	220	270	230	215	255	220	205	200	170	160	235	200	–		
10	225	190	180	220	190	175	210	180	165	165	140	130	190	165	–		
11	165	140	–	165	140	–	155	135	–	120	105	–	140	120	–		
12	300	255	235	285	240	225	260	220	205	–	–	–	–	–	–		
13	260	225	210	250	210	195	230	195	180	–	–	–	–	–	–		
14	220	190	175	210	180	165	190	165	150	–	–	–	–	–	–		
15	185	155	–	175	150	–	160	135	–	–	–	–	–	–	–		
16	–	–	–	1405	1200	1110	–	–	–	–	–	–	1125	960	890		
17	–	–	–	1135	965	900	–	–	–	–	–	–	905	775	720		
18	–	–	–	865	735	685	–	–	–	–	–	–	690	590	545		
19	–	–	–	70	60	–	–	–	–	–	–	–	60	55	–		
20	–	–	–	60	50	–	–	–	–	–	–	–	50	43	–		
21	–	–	–	50	43	–	–	–	–	–	–	–	43	37	–		
22	–	–	–	120	105	–	–	–	–	–	–	–	105	90	–		

Insert selection – 217/220.21LP06

Universal insert: LPHT060310TR-M06 MP2500

SMG	Recom. feed f_z mm/tooth	First choice		
1	0,30–0,80	LPHT060310TR-M06 T350M		
2	0,30–0,80	LPHT060310TR-M06 T350M		
3	0,30–0,80	LPHT060310TR-M06 T350M		
4	0,30–0,80	LPHT060310TR-M06 MP2500		
5	0,30–0,80	LPHW060310TR-MD07 MP2500		
6	0,30–0,80	LPHW060310TR-MD07 MP2500		
7	0,30–0,80	LPHW060310TR-D06 MH1000		
8	0,30–0,80	LPHT060310TR-ME05 F40M		
9	0,30–0,80	LPHT060310TR-ME05 F40M		
10	0,30–0,80	LPHT060310TR-M06 F40M		
11	0,30–0,80	LPHT060310TR-M06 F40M		
12	0,30–0,80	LPHT060310TR-M06 MP3000		
13	0,30–0,80	LPHW060310TR-D06 MP3000		
14	0,30–0,80	LPHW060310TR-D06 MP3000		
15	0,30–0,80	LPHW060310TR-D06 MP3000		
16	0,30–0,80	LPHT060310ER-E05 H25		
17	0,30–0,80	LPHT060310ER-E05 H25		
18	0,30–0,80	LPHT060310ER-E05 H25		
19	0,30–0,80	LPHT060310TR-M06 MS2500		
20	0,30–0,80	LPHT060310TR-M06 MS2500		
21	0,30–0,80	LPHT060310TR-M06 MS2500		
22	0,30–0,80	LPHT060310TR-ME05 F40M		

Cutting data

SMG	Grades												
	MH1000			H25			MS2500						
	f_z (mm/tooth)												
	0,30	0,60	0,80	0,30	0,60	0,80	0,30	0,60	0,80				
	v_c (m/min)												
1	–	–	–	–	–	–	625	535	495				
2	–	–	–	–	–	–	530	450	420				
3	–	–	–	–	–	–	435	375	345				
4	–	–	–	–	–	–	375	320	295				
5	–	–	–	–	–	–	310	265	245				
6	–	–	–	–	–	–	275	235	215				
7	75	65	60	–	–	–	–	–	–				
8	–	–	–	–	–	–	380	325	300				
9	–	–	–	–	–	–	300	255	235				
10	–	–	–	–	–	–	245	210	195				
11	–	–	–	–	–	–	180	155	145				
12	330	280	260	–	–	–	325	280	260				
13	290	245	230	–	–	–	285	245	225				
14	240	205	190	–	–	–	240	205	190				
15	200	170	160	–	–	–	200	170	160				
16	–	–	–	1065	910	845	–	–	–				
17	–	–	–	–	–	–	–	–	–				
18	–	–	–	–	–	–	–	–	–				
19	–	–	–	–	–	–	85	70	65				
20	–	–	–	–	–	–	65	55	55				
21	–	–	–	–	–	–	60	49	46				
22	–	–	–	–	–	–	140	120	110				

217/220.21 Cutting speed: Vc (m/min)

Cutting data copy milling

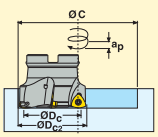
SMG	Roughing First choice	Grades											
		MP1500	MP2500	MP3000	T350M	MS2500	MH1000	MK2000	MK3000	F15M	F25M	F40M	H25
1	218.19-M	505	450	425	**390**	490	–	445	410	–	375	340	–
2	218.19-M	445	395	375	**345**	430	–	385	360	–	330	300	–
3	218.19-M	370	330	310	**285**	360	–	325	300	–	275	250	–
4	218.19-MD	340	300	285	260	**325**	–	295	275	270	250	225	–
5	218.19-MD	275	245	230	210	**265**	–	240	225	220	205	185	–
6	218.19-MD	200	**180**	170	155	195	–	175	165	160	150	135	–
7	218.19-MD	–	–	50	–	–	**160**	–	–	140	–	–	–
8	218.19-M	–	260	255	240	280	–	–	–	–	–	**220**	–
9	218.19-M	–	225	220	210	245	–	–	–	–	–	**190**	–
10	218.19-M	–	195	190	180	210	–	–	–	–	–	**165**	–
11	218.19-M	–	150	150	140	165	–	–	–	–	–	**130**	–
12	218.19-MD	**295**	260	250	230	285	290	260	240	240	220	–	–
13	218.19-MD	**265**	235	220	205	255	255	230	215	215	195	–	–
14	218.19-MD	**245**	215	205	190	235	235	210	195	195	180	–	–
15	218.19-MD	**195**	175	165	150	190	190	170	160	160	145	–	–
16	218.19..E	–	–	1155	–	–	–	–	–	–	–	–	**975**
17	218.19..E	–	–	745	–	–	–	–	–	–	–	–	**625**
18	218.19..E	–	–	660	–	–	–	–	–	–	–		**555**
19	218.19-M	–	–	60	60	**70**	–	–	–	–	–	50	–
20	218.19-M	–	–	45	45	**60**	–	–	–	–	–	40	–
21	218.19-M	–	–	40	40	**50**	–	–	–	–	–	35	–
22	218.19-M	–	–	95	95	**120**	–	–	–	–	–	85	–

Bold figures represent first choice in each material group.

Feed

Insert dimension	f_z mm/tooth	Max a_p (mm)	r_p (mm)	Uncut thickness (mm)
218.19-080..	0,3-0,8	0,6	1,00	0,30
218.19-100..	0,5-1,5	0,7	1,50	0,44
218.19-100...HA	0,5-1,5	1,0	1,50	0,44
218.19-125..	0,5-2,0	1,0	1,70	0,60
218.19-125...HA	0,5-2,0	1,5	1,70	0,60
218.19-160..HA	0,5-3,0	1,8	2,85	0,97

Helical interpolation ramping



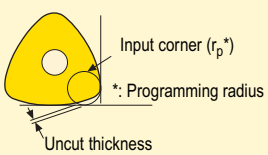
Dia (mm)	Dia (mm) C min	Max a_p (mm)	Dia (mm) C max	Max a_p (mm)
16	25	0,6	30	0,6
20	31	0,7/1,0*	38	0,7/1,0*
25	41	0,7/1,5*	48	0,7/1,5*
32	53	1,0/1,8*	62	0,7/1,8*
35	59	1,0	68	1,0
40	69	1,0/1,8*	78	1,0/1,8*
42	73	1,0	82	1,0
50	86	1,8	98	1,8
52	90	1,8	102	1,8
63	112	1,8	124	1,8
66	118	1,8	130	1,8
80	145	1,8	158	1,8
100	185	1,8	198	1,8

* a_p depending on cutter type used A or HA, see catalogue page 384.

Ramping angle

Dia (mm)	α (°)	Dia (mm)	α (°)
16	6,5	**63**	2,7
20	6	**66**	2,5
25	3,5	**80**	1,9
32	3,5	**100**	1,4
35	3		
40	2,5		
42	2		
50	3,9		
52	3,7		

Insert



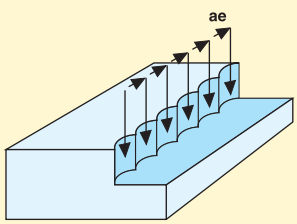
217/220.21 Cutting speed: V_c (mm/min)

Cutting data plunge milling

SMG	Roughing First choice	Grades											
		MP1500	MP2500	MP3000	T350M	MS2500	MH1000	MK2000	MK3000	F15M	F25M	F40M	H25
1	218.19-M	440	**390**	365	340	425	–	380	355	–	325	295	–
2	218.19-M	385	**340**	320	295	370	–	335	310	–	285	255	–
3	218.19-M	320	**285**	270	245	310	–	280	260	–	235	215	–
4	218.19-MD	290	**260**	245	225	280	–	255	235	235	215	195	–
5	218.19-MD	235	**210**	200	185	230	–	205	190	190	175	160	–
6	218.19-MD	175	**155**	145	135	165	–	150	140	140	130	115	–
7	218.19-MD	–	–	45	–	–	**90**	–	–	70	–	–	–
8	218.19-M	–	225	220	210	245	–	–	–	–	–	**190**	–
9	218.19-M	–	195	190	180	240	–	–	–	–	–	**160**	–
10	218.19-M	–	165	165	155	180	–	–	–	–	–	**140**	–
11	218.19-M	–	130	130	120	140	–	–	–	–	–	**110**	–
12	218.19-MD	**255**	225	215	195	245	250	250	205	205	190	–	–
13	218.19-MD	**230**	200	190	175	220	220	220	185	185	170	–	–
14	218.19-MD	**210**	185	175	160	205	205	205	170	170	155	–	–
15	218.19-MD	**170**	150	140	130	165	165	150	140	135	125	–	–
16	218.19..E	–	–	995	–	–	–	–	–	–	–	–	**840**
17	218.19..E	–	–	640	–	–	–	–	–	–	–	–	**680**
18	218.19..E	–	–	570	–	–	–	–	–	–	–	–	**480**
19	218.19-M	–	–	50	50	**60**	–	–	–	–	–	45	–
20	218.19-M	–	–	40	40	**45**	–	–	–	–	–	50	–
21	218.19-M	–	–	35	35	**40**	–	–	–	–	–	30	–
22	218.19-M	–	–	85	85	**95**	–	–	–	–	–	50	–

Bold figures represent first choice in each material group.

Plunging – Axial feed direction



Dia (mm)	Insert dimension	f_z mm/tooth	Max a_e (mm)
16	218.19-080..	0,04/0,09	5
20	218.19-100..	0,05/0,11	7
25	218.19-100..	0,05/0,11	7
32	218.19-125..	0,06/0,13	9
35	218.19-125..	0,06/0,13	9
40	218.19-125..	0,06/0,13	9
42	218.19-125..	0,06/0,13	9
50	218.19-160..	0,07/0,15	11
52	218.19-160..	0,07/0,15	11
63	218.19-160..	0,07/0,15	11
66	218.19-160..	0,07/0,15	11
80	218.19-160..	0,07/0,15	11
100	218.19-160..	0,07/0,15	11

R220.21-C Cutting speed: V_c (m/mm)

Cuttingdata casette cutters

SMG	Roughing First choice	Grades							
		F25M	F15M	F40M	F30M	H25	T350M	T200M	T25M
1	218.19..M..F25M	**300/350**	–	260/310	270/320	–	280/330		200/250
2	218.19..M..F25M	**270/320**	–	230/280	240/290	–	250/300		170/220
3	218.19..M..F25M	**220/270**	–	180/230	190/240	–	200/260		120/170
4	218.19..MD..F25M	**180/250**	190/270	140/210	150/220	–	160/230	190/270	80/150
5	218.19..MD..F25M	**160/220**	170/240	120/180	130/190	–	140/200	170/240	–
6	218.19..MD..F25M	**140/200**	150/220	100/160	110/170	–	120/180	150/220	–
7	218.19..MD.F15M	–	**100/200**	–	80/140	–			–
8	218.19..M..T350M	–	–	200/240	220/260	–	**230/270**		–
9	218.19..M..T350M	–	–	180/220	200/240	–	**210/250**		–
10	218.19..M..T350M	–	–	160/200	180/220	–	**190/230**		110/140
11	218.19..M..T350M	–	–	140/160	160/180	–	**170/190**		90/130
12	218.19..MD.F15M	170/190	**210/230**	–	–	–	–	210/230	–
13	218.19..MD.F15M	150/170	**190/210**	–	–	–	–	190/210	–
14	218.19..MD.F15M	130/150	**170/190**	–	–	–	–	170/190	–
15	218.19..MD.F15M	110/130	**150/170**	–	–	–	–	150/170	–
16	218.19..E..H25	–	–	–	–	**1000/1500**	–		–
17	218.19..E..H25	–	–	–	–	**600/900**	–		–
18	218.19..E..H25	–	–			**400/800**	–		
19	218.19..ME.T350M	–	–			–	40/70		35/70
20	218.19..ME.T350M	–	–	–	–	–	35/60		30/55
21	218.19..ME.T350M	–	–	–	–	–	30/50		25/50
22	218.19..M..F40M	–	–	**80/140**	–	–	70/120		60/120

Bold figures represent first choice in each material group.

Feed

Dia (mm)	Insert dimension	f_z mm/tooth	Max a_p (mm)	Initial values	
				f_z	a_p
88	218.19-160..	0,5/3,0	2,5	1,0	1,7
108	218.19-160..	0,5/3,0	2,5	1,0	1,7
133	218.19-160..	0,5/3,0	2,5	1,0	1,7
168	218.19-160..	0,5/3,0	2,5	1,0	1,7
208	218.19-160..	0,5/3,0	2,5	1,0	1,7

220.21-SC12 Cutting speed: Vc (m/min)

Cutting data copy milling

SMG	Roughing First choice	Grades					
		MP1500	MP2500	MP3000	T350M	MS2500	F40M
1	SCET120630T-M14	**510**	**450**	**425**	**395**	**490**	**340**
2	SCET120630T-M14	**445**	**395**	**375**	**345**	**430**	**300**
3	SCET120630T-M14	**370**	**330**	**310**	**285**	**360**	**250**
4	SCET120630T-MD16	340	300	285	260	330	230
5	SCET120630T-MD16	275	245	230	215	265	185
6	SCET120630T-MD16	200	180	170	155	190	135
7	SCET120630T-MD16	65	–	50	–	–	–
8	SCET120630T-M14	330	260	255	245	280	220
9	SCET120630T-M14	285	225	225	210	245	190
10	SCET120630T-M14	245	195	190	180	210	165
11	SCET120630T-M14	190	150	150	140	165	130
12	SCET120630T-MD16	295	265	250	230	285	200
13	SCET120630T-MD16	265	235	220	205	255	180
14	SCET120630T-MD16	245	215	205	190	235	165
15	SCET120630T-MD16	195	175	165	150	190	130
16	–	–	–	–	–	–	–
17	–	–	–	–	–	–	–
18	–	–	–	–	–	–	–
19	SCET120630T-M13	–	–	60	60	70	50
20	SCET120630T-M14	–	–	45	45	60	40
21	SCET120630T-M14	–	–	60	40	50	35
22	SCET120630T-M14	–	–	**95**	**95**	**120**	**85**

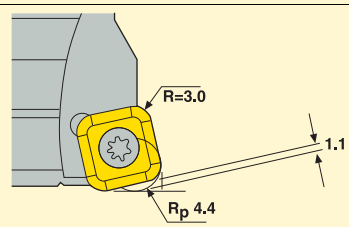
Feed

Dia (mm)	Insert dimension	f_z mm/tooth	Max a_p (mm)	Initial values		r_p (mm)	Uncut thickness (mm)
				f_z	a_p		
50-160	SCET120630T	0,5-3,0	2	1,2	1,5	4,4	1,1

Ramping angle

Dia (mm)	α (°)
50	2,30
52	2,20
63	0,90
66	0,85
80	0,80
84	0,80
100	0,75
125	0,70
160	0,65

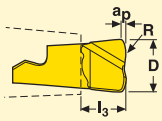
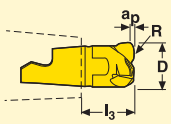
Insert



Helical interpolation

Milling cutter diameter			C min/a_p max		C max/a_p max	
220.21-SC12	∅ D_c mm	∅ D_{c2} mm	∅ C min	a_p max	∅ C max	a_p max
50	31	50	81	1	98	1
52	33	52	85	1	102	1
63	44	63	107	1	124	1
66	47	66	113	1	130	1
80	61	80	141	1	158	1
84	65	84	149	1	166	1
100	81	100	181	1	198	1
125	106	125	231	1	248	1
160	141	160	301	1	318	1

Inserts

Inserts	Part No.	Dimensions in mm D	R	a_p	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
 Tolerance D h10	MM08-08.40-HF-MD06	8,0	4,0	0,4	6,8	2			■							MM0612
	MM10-10.50-HF-MD08	10,0	5,0	0,5	8,5	2		■	■							MM0612
	MM12-12.60-HF-MD10	12,0	6,5	0,6	10,2	2		■	■							MM0612
 Tolerance D e10	MM16-16.60-HF-MD12	16,0	10,0	0,6	17,2	3			■							MM0416

Cutting data

Cutting speed: V_c (mm/min)

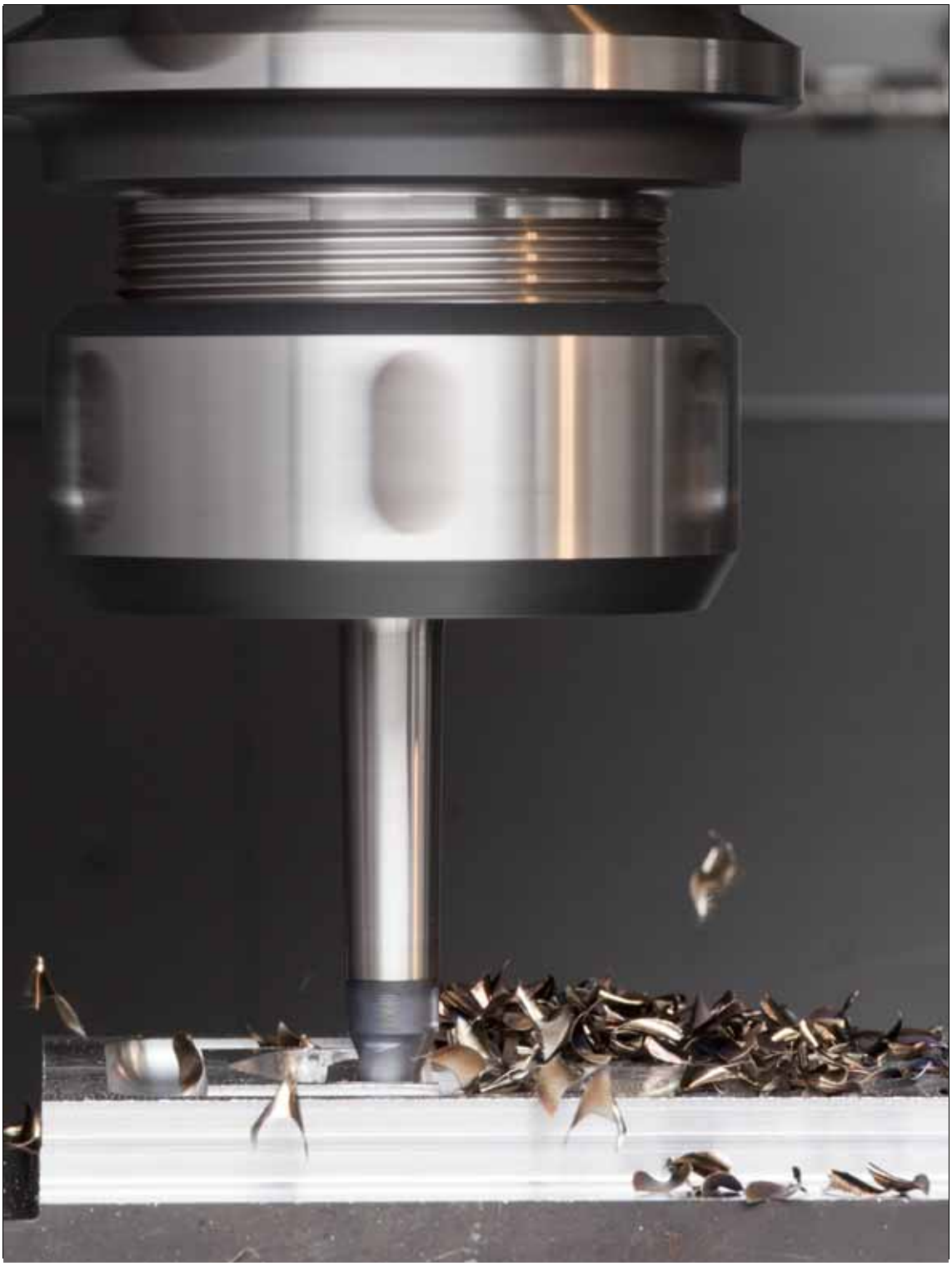
SMG.	Grades F15M	F30M
1	490	430
2	430	375
3	360	315
4	330	285
5	265	235
6	195	170
7	60	55
8	–	280
9	–	240
10	–	205
11	–	160
12	285	250
13	255	225
14	235	205
15	190	165
16	1330	1165
17	1075	940
20	80	70
21	50	45
22	80	70

Feed/Ramping angle/Programming radius

Dia (mm)	f_z mm/tooth	Ramping angle α (°)	Programming radius r_p
8	0,2/0,6	*	0,8
10	0,3/0,7	*	1,0
12	0,3/0,8	*	1,2
16	0,3/0,8	8°	1,4

* No limitation - centre cutting.

Torque value, see 471.



Choice of insert, shank and cutting.

Select taper size

- The design of the workpiece and the machining operations determines suitable taper size.
- Select the largest possible taper size for best strength and stability.

Select insert

- Use the tables beginning on page 563 in Milling 2009 to classify the workpiece material into a Seco material group.
- Look up the pages for the selected taper size and choose a suitable insert in the insert selection table.

Select shank

- Look up the pages for the selected taper size and choose a suitable shank in the tool data table.
- Always choose the shortest shank possible (to get maximum stability).

Select cutting data

- Maximum recommended axial cutting depth is in the cutting data conversion table. (See figure 1.)
- Cutting speed recommendations are in the cutting data tables, see pages 416 - 417.
  Notice that the recommendations are for a fully engaged cutter in stable machining condition.
- Maximum RPM that for safety reasons should never be exceeded, are shown on page 418.
- Feed per tooth f_z recommendations are in the cutting data conversion table.
- **If the cutter is not fully engaged** the feed per tooth and the cutting speed should be increased compared to the recommendations for a fully engaged cutter. The reason for that is to keep the chip thickness and the working temperature in the cutting zone at the same value as for a fully engaged cutter. (See figure 2.)
- Divide the radial cutting depth with the cutter diameter to get the actual cutter engagement percentage (a_e/D_c%).
- Use the percentage to get a correct feed per tooth and cutting speed recommendation for the actual cutter engagement.
- **When calculating feed** per revolution and feed speed always use the z_c-value. That is the effective number of teeth to use for cutting data calculation. The z_c-value is in the insert selection table.
- Extended tables and formulae for calculating cutting data for side milling are found on page 557 in Milling 2009
- Notice that there will be a deterioration of the surface finish on the workpiece when the feed rate is increased (See figure 3).
- **When milling in corners** and bottoms of cavities the feed rate should be reduced due to the increase of the chip thickness. Use the feed per tooth recommendations for a fully engaged cutter. (See figure 4.)
- **When steep down copying** with an angle bigger than 40° or steep up copying with an angle bigger than 30° in combination with small depths of cut use the diameter (D_c) as working diameter instead of D_w (See figure 5)
- **Calculate surface finish**. Use the profile height value (H) from the cutting data conversion table to calculate the expected surface finish for the actual operation. (See figure 5.)

Figure 1

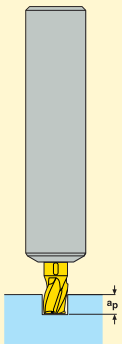


Figure 2

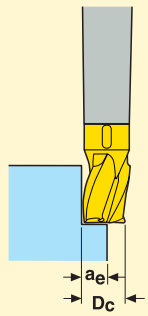


Figure 3

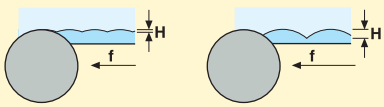


Figure 4

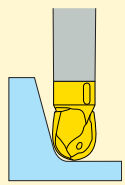
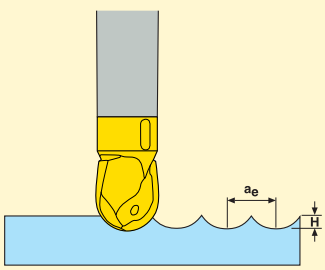
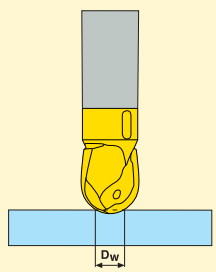


Figure 5





Code keys

Connecting size
MP = Minimaster Plus

Shank length

Angle of tapered part

MP12 - 16 078 - 018 . 00

Shank diameter

Access length

Connecting size
MP = Minimaster Plus

Cutting edge length

No. of teeth

Grade

MP12 - 120 14 R12 Z3 - M04 , MP3000

Diameter
(120 = 12,0 mm)

B90 = Ballnose
R12 = Corner radius (12 = 1,2 mm)
KW = Key Way

Edge geometry

Internal coolant

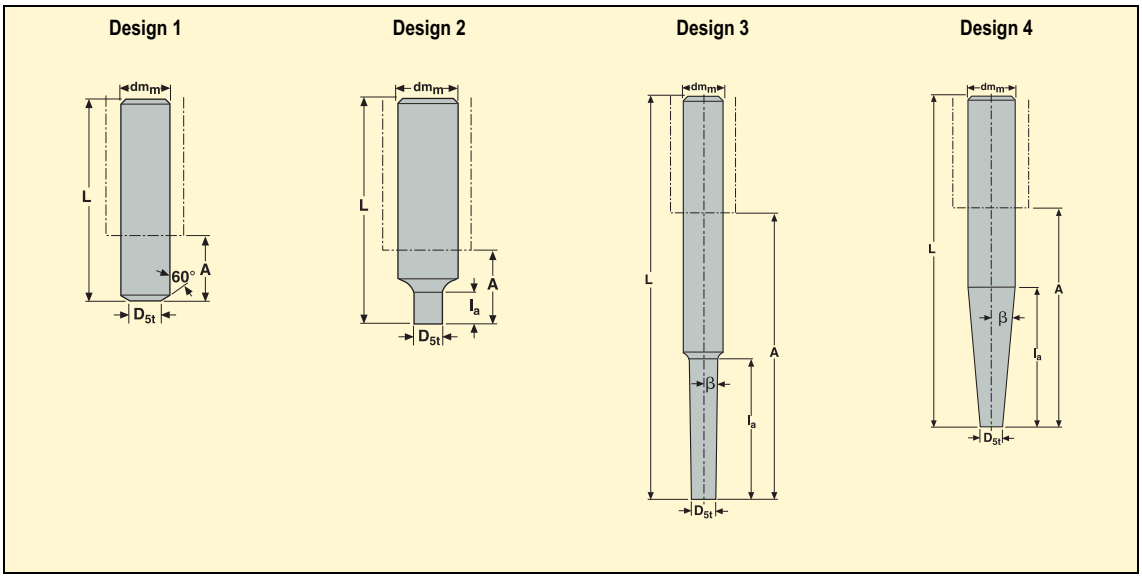
Torque key information

We recommend a torque key when mounting the insert
for best precision and extend tool life

- Diffrent torque values for assembly
  - MP10: 8Nm
  - MP12: 12Nm
  - MP16: 16Nm
- Do not use worn out hook key

Before mounting the insert make sure to lubricate the contact surface for extended tool life,
trouble free mounting and dismantle

MP10 Steel shanks



Shanks

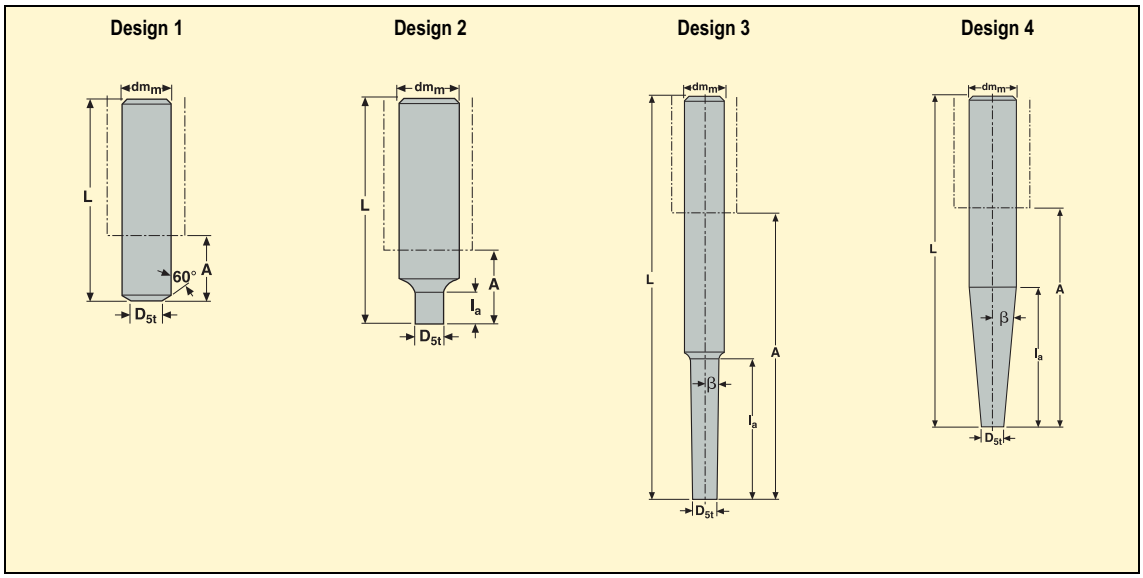
Part No.	Connecting size	Dimensions in mm								KG
		D_{5t}	dm_m	L	A	l_a	β°	Design		
MP10 -16068-000.60	MP10	9,5	16	68	20	–	–	1	√	0,1
-10055-010.00	MP10	9,8	10	55	15	10	–	2	√	0,1
-16073-015.00	MP10	9,8	16	73	25	15	–	2	√	0,1
-16118-035.01	MP10	9,5	16	118	70	35	1	3	√	0,2
-16158-060.01	MP10	9,5	16	158	110	60	1	3	√	0,2
-20100-045.03	MP10	9,5	20	100	50	45	3	3	√	0,2
-20140-085.03	MP10	9,5	20	140	90	85	3	3	√	0,3
-20140-090.05	MP10	9,5	20	140	90	60	5	4	√	0,3

Spare parts

Connecting size	Dynamomentic Key*	Dynamomentic blade	Wrench	Torque values Nm
MP10	MP00-10.080	MP00-10	MP10-10	8,0

*Including blades

MP12 Steel shanks



Shanks

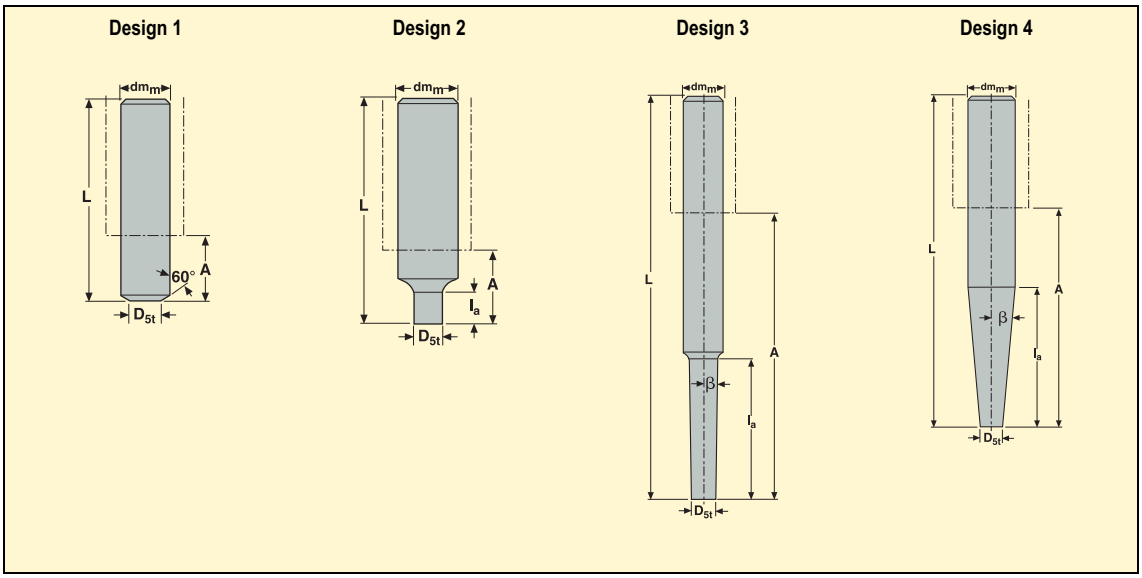
Part No.	Connecting size	Dimensions in mm								KG
		D_{5t}	dm_m	L	A	l_a	β°	Design		
MP12 -16068-000.60	MP12	11,5	16	68	20	–	–	1	√	0,1
-12060-012.00	MP12	11,5	12	60	15	12	–	2	√	0,1
-16078-018.00	MP12	11,5	16	78	30	18	–	2	√	0,1
-16153-042.01	MP12	11,5	16	153	105	42	1	3	√	0,2
-20170-072.01	MP12	11,5	20	170	120	72	1	3	√	0,3
-20110-055.03	MP12	11,5	20	110	60	55	3	3	√	0,2
-20150-100.03	MP12	11,5	20	150	100	81	3	4	√	0,3
-20155-105.05	MP12	11,5	20	155	105	48	5	4	√	0,3

Spare parts

Connecting size	Dynamomentic Key*	Dynamomentic blade	Wrench	Torque values Nm
MP12	MP00-12.120	MP00-12	MP12-12	12,0

*Including blades

MP16 Steel shanks



Shanks

Part No.	Connecting size	Dimensions in mm								KG
		D_{5t}	dm_m	L	A	l_a	β°	Design		
MP16 -20070-000.60	MP16	15,2	20	70	20	–	–	1	√	0,2
-16068-016.00	MP16	15,2	16	68	20	16	–	2	√	0,1
-20090-024.00	MP16	15,2	20	90	40	24	–	2	√	0,2
-20190-056.01	MP16	15,2	20	190	140	56	1	3	√	0,4
-20195-095.01	MP16	15,2	20	195	145	95	1	3	√	0,4
-25136-075.03	MP16	15,2	25	136	80	75	3	3	√	0,4
-25181-125.03	MP16	15,2	25	181	125	93	3	4	√	0,6
-25181-125.05	MP16	15,2	25	181	125	56	5	4	√	0,6

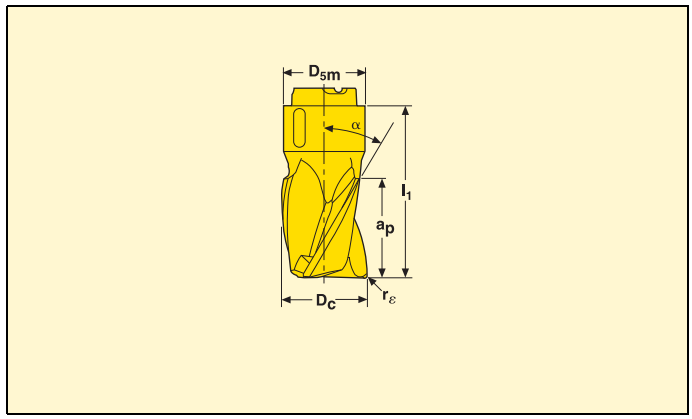
Spare parts

Connecting size	Dynamomentic Key*	Dynamomentic blade	Wrench	Torque values Nm
MP16	MP00-16.160	MP00-16	MP16-16	16,0

*Including blades

MP10 Square shoulder

Slotting and contouring

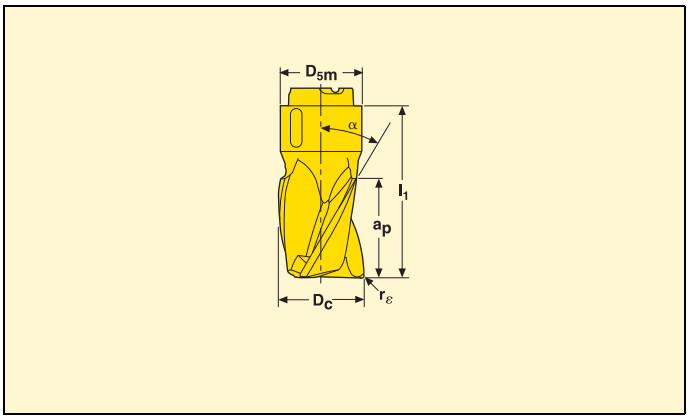


Inserts	Part No.	Dimensions in mm D_c	r_ε	a_p	D_{5m}	l_1	α	z_c-value		Grades Coated F40M	MP3000				
	MP10 -09812KWZ3-E03	9,8	0,3	12	9,6	21	30°	3	√	■					
	-10012R04Z3-M03	10	0,4	12	9,6	21	30°	3	√		■				
	-10012R04Z3-E03	10	0,4	12	9,6	21	30°	3	√	■					
	-10012R05Z3-E03	10	0,5	12	9,6	21	30°	3	√	■					
	-10012R08Z3-M03	10	0,8	12	9,6	21	30°	3	√		■				
	-10012R08Z3-E03	10	0,8	12	9,6	21	30°	3	√	■					
	-10012R12Z3-M03	10	1,2	12	9,6	21	30°	3	√		■				
	-10012R12Z3-E03	10	1,2	12	9,6	21	30°	3	√	■					
	-10012R16Z3-E03	10	1,6	12	9,6	21	30°	3	√	■					
	-10012R20Z3-E03	10	2,0	12	9,6	21	30°	3	√	■					
	-10012R24Z3-E03	10	2,4	12	9,6	21	30°	3	√	■					
	-10012R31Z3-E03	10	3,1	12	9,6	21	30°	3	√	■					
	MP10 -10012R04Z4-M02*	10	0,4	12	9,6	21	50°	4			■				
	-10012R04Z4-E02*	10	0,4	12	9,6	21	50°	4		■					
	-10012R05Z4-E02*	10	0,5	12	9,6	21	50°	4		■					
	-10012R08Z4-M02*	10	0,8	12	9,6	21	50°	4			■				
	-10012R08Z4-E02*	10	0,8	12	9,6	21	50°	4		■					
	-10012R12Z4-E02*	10	1,2	12	9,6	21	50°	4		■					
	-10012R12Z4-M02*	10	1,2	12	9,6	21	50°	4			■				
	-10012R16Z4-E02*	10	1,6	12	9,6	21	50°	4		■					
	-10012R20Z4-E02*	10	2,0	12	9,6	21	50°	4		■					

* Slotting only in stable conditions.

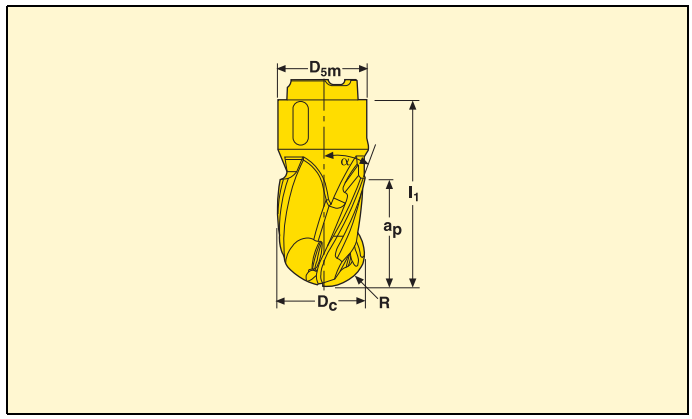
MP10 Square shoulder

Contouring only



Inserts	Part No.	Dimensions in mm						z_c-value		Grades					
										Coated					
		D_c	r_ε	a_p	D_{5m}	l_1	α			F40M	MP3000				
	MP10 -10012R04Z5-M02	10	0,4	12	9,6	21	40°	5			■				

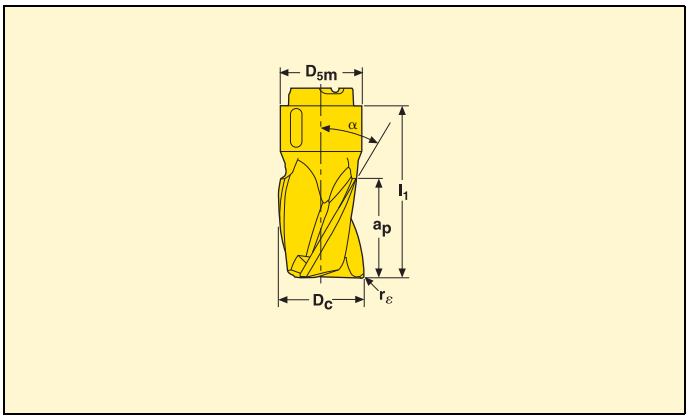
MP10 Ball nose design



Inserts	Part No.	Dimension in mm							z_c-value		Grades				
											Coated				
		D_c	r_ε	a_p	D_{5m}	R	l_1	α			F40M	MP3000			
	MP10 -10010B90Z2-M03	10	5,0	10	9,6	5	18,8	20°	2	√		■			
	-10012B90Z3-M03	10	5,0	12	9,6	5	21	30°	3	√		■			

MP12 Square shoulder

Slotting and contouring

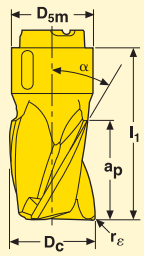


Inserts	Part No.	Dimensions in mm D_c	r_ε	a_p	D_{5m}	l_1	α	z_c-value		Grades Coated F40M	MP3000					
	MP12 -11714KWZ3-E04	11,7	0,3	14	11,5	24	30°	3	√	■						
	-12014R04Z3-M04	12	0,4	14	11,5	24	30°	3	√		■					
	-12014R04Z3-E04	12	0,4	14	11,5	24	30°	3	√	■						
	-12014R05Z3-E04	12	0,5	14	11,5	24	30°	3	√	■						
	-12014R08Z3-M04	12	0,8	14	11,5	24	30°	3	√		■					
	-12014R08Z3-E04	12	0,8	14	11,5	24	30°	3	√	■						
	-12014R12Z3-M04	12	1,2	14	11,5	24	30°	3	√		■					
	-12014R12Z3-E04	12	1,2	14	11,5	24	30°	3	√	■						
	-12014R16Z3-E04	12	1,6	14	11,5	24	30°	3	√	■						
	-12014R20Z3-E04	12	2,0	14	11,5	24	30°	3	√	■						
	-12014R24Z3-E04	12	2,4	14	11,5	24	30°	3	√	■						
	-12014R31Z3-E04	12	3,1	14	11,5	24	30°	3	√	■						
	MP12 -12014R04Z4-M03*	12	0,4	14	11,5	24	50°	4			■					
	-12014R04Z4-E03*	12	0,4	14	11,5	24	50°	4		■						
	-12014R05Z4-E03*	12	0,5	14	11,5	24	50°	4		■						
	-12014R08Z4-E03*	12	0,8	14	11,5	24	50°	4		■						
	-12014R08Z4-M03*	12	0,8	14	11,5	24	50°	4			■					
	-12014R12Z4-E03*	12	1,2	14	11,5	24	50°	4		■						
	-12014R12Z4-M03*	12	1,2	14	11,5	24	50°	4			■					
	-12014R16Z4-E03*	12	1,6	14	11,5	24	50°	4		■						
	-12014R20Z4-E03*	12	2,0	14	11,5	24	50°	4		■						
	-12014R24Z4-E03*	12	2,4	14	11,5	24	50°	4		■						

* Slotting only in stable conditions.

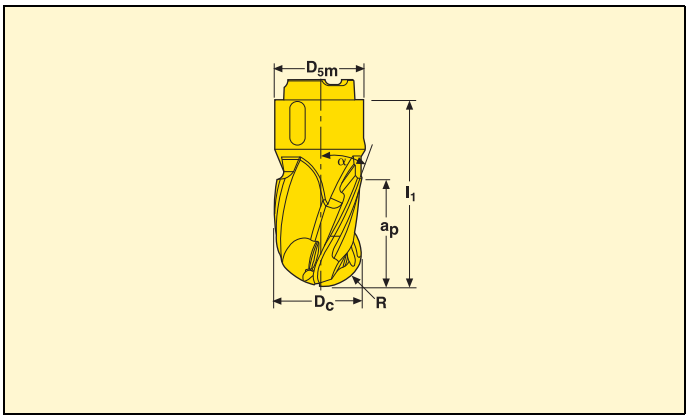
MP12 Square shoulder

Contouring only



Inserts	Part No.	Dimensions in mm						z_c-value		Grades					
										Coated					
		D_c	r_ε	a_p	D_{5m}	l_1	α			F40M	MP3000				
	MP12 -12014R04Z6-M03	12	0,4	14	11,5	24	40°	6			■				

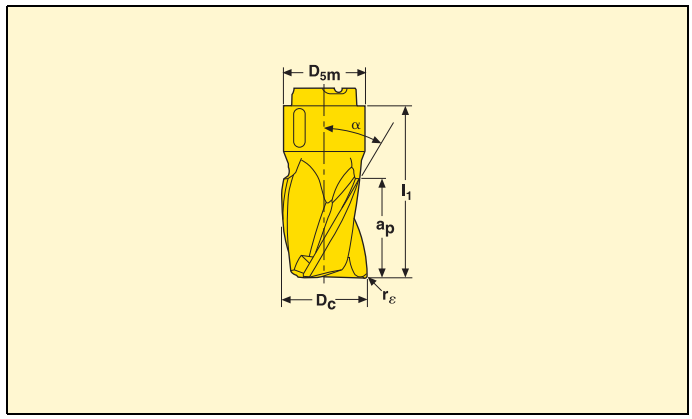
MP12 Ballnose Design



Inserts	Part No.	Dimensions in mm							z_c-value		Grades Coated				
		D_c	r_ε	a_p	D_{5m}	R	l_1	α			F40M	MP3000			
	MP12 -12012B90Z2-M04	12	6,0	12	11,5	6	21,8	20°	2	√		■			
	-12014B90Z3-M04	12	6,0	14	11,5	6	24	30°	3	√		■			

MP16 Square shoulder

Slotting and contouring

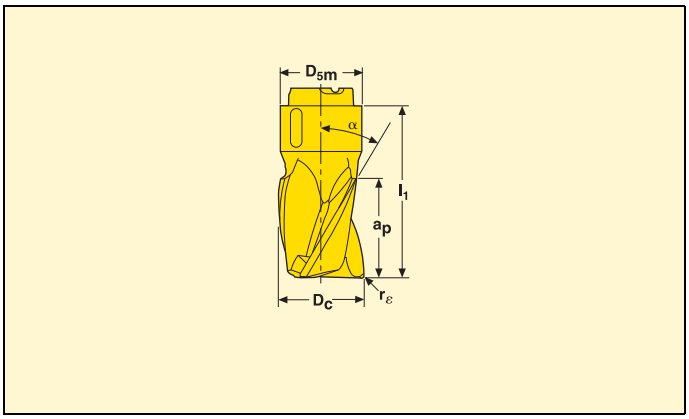


Inserts	Part No.	Dimensions in mm D_c	r_ε	a_p	D_{5m}	l_1	α	z_c-value		Grades Coated F40M	MP3000					
	MP16 -15719KWZ3-E05	15,7	0,3	19	15,4	32,6	30°	3	√	■						
	-16019R04Z3-M05	16	0,4	19	15,4	32,6	30°	3	√		■					
	-16019R04Z3-E05	16	0,4	19	15,4	32,6	30°	3	√	■						
	-16019R05Z3-E05	16	0,5	19	15,4	32,6	30°	3	√	■						
	-16019R08Z3-M05	16	0,8	19	15,4	32,6	30°	3	√		■					
	-16019R08Z3-E05	16	0,8	19	15,4	32,6	30°	3	√	■						
	-16019R12Z3-M05	16	1,2	19	15,4	32,6	30°	3	√		■					
	-16019R12Z3-E05	16	1,2	19	15,4	32,6	30°	3	√	■						
	-16019R16Z3-E05	16	1,6	19	15,4	32,6	30°	3	√	■						
	-16019R20Z3-E05	16	2,0	19	15,4	32,6	30°	3	√	■						
	-16019R24Z3-E05	16	2,4	19	15,4	32,6	30°	3	√	■						
	-16019R31Z3-E05	16	3,1	19	15,4	32,6	30°	3	√	■						
	MP16 -16019R04Z4-E04	16	0,4	19	15,4	32,6	50°	4		■						
	-16019R04Z4-M04	16	0,4	19	15,4	32,6	50°	4			■					
	-16019R05Z4-E04	16	0,5	19	15,4	32,6	50°	4		■						
	-16019R08Z4-E04	16	0,8	19	15,4	32,6	50°	4		■						
	-16019R08Z4-M04	16	0,8	19	15,4	32,6	50°	4			■					
	-16019R12Z4-E04	16	1,2	19	15,4	32,6	50°	4		■						
	-16019R12Z4-M04	16	1,2	19	15,4	32,6	50°	4			■					
	-16019R16Z4-E04	16	1,6	19	15,4	32,6	50°	4		■						
	-16019R20Z4-E04	16	2,0	19	15,4	32,6	50°	4		■						
	-16019R24Z4-E04	16	2,4	19	15,4	32,6	50°	4		■						

* Slotting only in stable conditions.

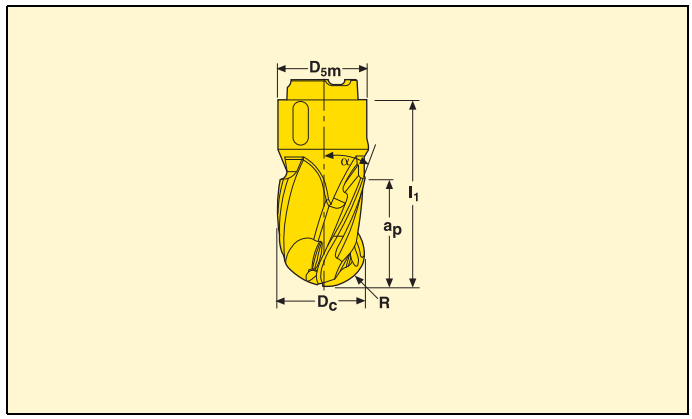
MP16 Square shoulder

Contouring only



Inserts	Part No.	Dimensions in mm D_c	r_ε	a_p	D_{5m}	l_1	α	z_c-value		Grades Coated F40M	MP3000					
	MP16 -16019R04Z6-M04	16	0,4	19	15,4	32,6	40°	6			■					
	-16019R04Z8-M04	16	0,4	19	15,4	32,6	40°	8			■					

MP16 Ballnose design



Inserts	Part No.	Dimensions in mm D_c	r_ε	a_p	D_{5m}	R	l_1	α	z_c-value		Grades Coated F40M	MP3000				
	MP16 -16016B90Z2-M05	16	8,0	16	15,4	8	29,5	20°	2	√		■				
	-16019B90Z3-M05	19	8,0	19	15,4	8	32,6	30°	3	√		■				

Cutting data - Slot milling

SMG	Cutting speed (m/mm)		MP10		MP12		MP16	
	MP3000	F40M	Feed mm/tooth	Max depth of cut	Feed mm/tooth	Max depth of cut	Feed mm/tooth	Max depth of cut
1	**315**	285	0,04 - 0,06	5,0	0,05 - 0,09	6,0	0,06 - 0,10	8,0
2	**280**	250	0,04 - 0,06	5,0	0,05 - 0,09	6,0	0,06 - 0,10	8,0
3	**235**	205	0,03 - 0,05	5,0	0,04 - 0,07	6,0	0,06 - 0,08	8,0
4	**215**	190	0,03 - 0,05	5,0	0,04 - 0,07	6,0	0,06 - 0,08	8,0
5	**175**	155	0,03 - 0,05	5,0	0,04 - 0,07	5,0	0,06 - 0,08	6,5
6	**140**	110	0,03 - 0,05	4,0	0,04 - 0,07	4,5	0,06 - 0,08	6,0
7	**50**	35	0,03 - 0,05	2,0	0,04 - 0,06	3,0	0,05 - 0,07	4,0
8	155	**145**	0,03 - 0,05	5,0	0,04 - 0,07	6,0	0,06 - 0,10	8,0
9	140	**135**	0,03 - 0,05	5,0	0,04 - 0,06	6,0	0,06 - 0,08	8,0
10	120	**115**	0,03 - 0,05	4,0	0,04 - 0,06	4,5	0,06 - 0,08	6,0
11	95	**90**	0,03 - 0,05	4,0	0,04 - 0,06	4,5	0,06 - 0,08	6,0
12	**220**	205	0,03 - 0,06	5,0	0,05 - 0,09	6,0	0,06 - 0,10	8,0
13	**195**	185	0,03 - 0,05	5,0	0,04 - 0,07	6,0	0,06 - 0,08	8,0
14	**180**	175	0,03 - 0,05	5,0	0,04 - 0,07	6,0	0,06 - 0,08	8,0
15	**145**	140	0,03 - 0,05	5,0	0,04 - 0,06	6,0	0,06 - 0,08	8,0
16	**900**	850	0,04 - 0,08	5,0	0,05 - 0,09	6,0	0,06 - 0,12	8,0
17	**580**	545	0,04 - 0,08	5,0	0,05 - 0,09	6,0	0,06 - 0,12	8,0
18	**515**	485	0,04 - 0,08	5,0	0,05 - 0,09	6,0	0,06 - 0,12	8,0
19	**50**	45	0,03 - 0,05	3,0	0,03 - 0,06	3,5	0,04 - 0,08	4,5
20	**40**	35	0,03 - 0,05	3,0	0,03 - 0,06	3,5	0,04 - 0,08	4,5
21	**35**	30	0,03 - 0,05	2,0	0,03 - 0,06	2,5	0,04 - 0,08	3,5
22	85	**70**	0,03 - 0,05	3,0	0,03 - 0,06	3,5	0,04 - 0,08	4,5

Bold figures represent first choice in each material group

Cutting data - Side milling (κ=90°)

Operation	a_e/D_c	Recommended feed per tooth (mm)			Max a_p (mm)	Speed factor
Full engagement	100%	0,03	0,05	0,08	0,5 x D_c	1,0
Side milling	25%	0,08	0,10	0,12	0,75 x D_c	1,3
	10%	0,13	0,16	0,19	1,2 x D_c	1,5
	5%	0,18	0,22	0,27	1,2 x D_c	1,6
Average chip thickness (h_m)		0,02	0,04	0,05		

Drilling - parameters

MP Size	Max depth (a_e = 100%)	Feed (mm/r)
MP10	7,5*	0,04
MP12	9,0*	0,05
MP16	12,0*	0,06

*Interupted drilling cycle required

Plunging - Parameters

Diameter ∅ (mm)	Max radial step (mm)	Feed (mm/tooth)
10	3,0	0,04
12	3,5	0,05
16	4,8	0,06

Cutting data - Copy milling

(a_e / D_c ≤ 100%)

SMG	Cutting speed (m/min)	MP10		MP12		MP16	
	MP3000	Feed mm/tooth	Max depth of cut (mm)	Feed mm/tooth	Max depth of cut (mm)	Feed mm/tooth	Max depth of cut (mm)
1	315	0,07 - 0,10	5,0	0,09 - 0,12	6,0	0,10 - 0,12	8,0
2	280	0,07 - 0,10	5,0	0,09 - 0,12	6,0	0,10 - 0,12	8,0
3	235	0,06 - 0,08	5,0	0,08- 0,10	6,0	0,10 - 0,12	8,0
4	215	0,06 - 0,08	5,0	0,08- 0,10	6,0	0,10 - 0,12	8,0
5	175	0,06 - 0,08	5,0	0,08- 0,10	5,0	0,10 - 0,12	6,5
6	140	0,06 - 0,08	4,0	0,08- 0,10	4,5	0,10 - 0,12	6,0
7	50	0,06 - 0,08	2,0	0,08- 0,10	3,0	0,10 - 0,12	4,0
8	155	0,06 - 0,08	5,0	0,08- 0,10	6,0	0,10 - 0,12	8,0
9	140	0,06 - 0,08	5,0	0,08- 0,10	6,0	0,10 - 0,12	8,0
10	120	0,06 - 0,08	4,0	0,08- 0,10	4,5	0,10 - 0,12	6,0
11	95	0,06 - 0,08	4,0	0,08- 0,10	4,5	0,10 - 0,12	6,0
12	220	0,06 - 0,08	5,0	0,08- 0,10	6,0	0,10 - 0,12	8,0
13	195	0,06 - 0,08	5,0	0,08- 0,10	6,0	0,10 - 0,12	8,0
14	180	0,06 - 0,08	5,0	0,08- 0,10	6,0	0,10 - 0,12	8,0
15	145	0,06 - 0,08	5,0	0,07 - 0,09	6,0	0,08 - 0,10	8,0
16	900	0,04 - 0,08	5,0	0,10 - 0,12	6,0	0,10 - 0,14	8,0
17	580	0,04 - 0,08	5,0	0,10 - 0,12	6,0	0,10 - 0,14	8,0
18	515	0,04 - 0,08	5,0	0,10 - 0,12	6,0	0,10 - 0,14	8,0
19	50	0,06 - 0,08	3,0	0,07 - 0,10	3,5	0,09 - 0,12	4,5
20	40	0,06 - 0,08	3,0	0,07 - 0,10	3,5	0,09 - 0,12	4,5
21	35	0,06 - 0,08	2,0	0,07 - 0,10	2,5	0,09 - 0,12	3,5
22	85	0,06 - 0,08	3,0	0,07 - 0,10	3,5	0,09 - 0,12	4,5

Feed selection

Roughing application						
D.O.C a_p (mm)	Working diameter D_w (mm)			a_e/D_c		
				20%	40%	100%
	MP10	MP12	MP16	Feed recomendations f_z (mm/tooth)		
8,0	-	-	1,00 x D_c	0,16	0,14	0,10
6,0	-	1 x D_c	0,94 x D_c	0,16 - 0,20	0,10 - 0,14	0,10 - 0,12
5,0	1 x D_c	0,97 x D_c	0,90 x D_c	0,12 - 0,25	0,08 - 0,19	0,06 - 0,14
4,0	0,96 x D_c	0,94 x D_c	0,83 x D_c	0,14 - 0,25	0,10 - 0,19	0,10 - 0,19
3,0	0,92 x D_c	0,87 x D_c	0,75 x D_c	0,15 - 0,30	0,12 - 0,25	0,10 - 0,25
2,0	0,80 x D_c	0,75 x D_c	0,63 x D_c	0,17 - 0,30	0,13 - 0,25	0,13 - 0,25
1,0	0,60 x D_c	0,55 x D_c	0,46 x D_c	0,20 - 0,35	0,17 - 0,35	0,17 - 0,35
Speed factor				1,30 x V_c	1,20 x V_c	1,00 x V_c

Reduce f_z by 30% for Material group No.7. Multiply speed value by speed factor

Feed selection

Finishing application						
D.O.C a_p (mm)	Working diameter D_w (mm)			a_e/D_c		
				2%	5%	10%
				Profile height, H (mm)		
				0,002	0,008	0,03
	MP10	MP12	MP16	Feed recomendations, f_z (mm/tooth)		
1,5	0,70 x D_c	0,66 x D_c	0,55 x D_c	0,12 - 0,18	0,20 - 0,30	0,15 - 0,25
1,0	0,60 x D_c	0,55 x D_c	0,46 x D_c			
0,6	0,47 x D_c	0,43 x D_c	0,36 x D_c	0,10 - 0,16	0,25 - 0,35	0,18 - 0,30
0,4	0,38 x D_c	0,35 x D_c	0,29 x D_c			
0,2	0,26 x D_c	0,24 x D_c	0,21 x D_c	0,08 - 0,14	0,20 - 0,30	0,25 - 0,40
0,1	0,20 x D_c	0,18 x D_c	0,15 x D_c			
Speed factor				1,60 x V_c	1,40 x V_c	1,30 x V_c

Normally there is no need for balancing tools for RPM up to 10 000. However in some cases balancing is necessary, for instance when using heavy tools and toolholders in small machines

Over 10 000 RPM:
We recommend balancing of tool and toolholders at least separately.
Over 20 000 RPM:
Both tool and toolholders must be balanced at least separately.
Over 30 000 RPM:
Tool and tool holders must be balanced as a unit.
The max RPM in the tables should never be exceeded.

The exception is the Minimaster®Plus programme where the values are given in the table below.

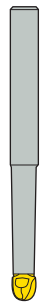
Minimaster®Plus

Cutter	D_c min	Torque values (Nm)	Max RPM
MP10 -Steel shank	10	8	80000
MP12 -Steel shank	12	12	72700
MP16 -Steel shank	16	16	63600

Code key - Shank

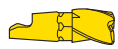
Note that parts of the code can vary for different shanks.

Insert taper size		Shank length		Angle of tapered part (10 = 1°)		High density anti vibration shank (without sleeve)	
MM10	- 16	160	. 0	- 10	35	DS	M
	Shank diameter		Shank type 0 = Cylindrical 3 = Cyl/Weldon		Length of tapered part		Modified version



Code key 3 - flute Minimaster inserts

Insert taper size	Diameter (100 = 10,0)		Corner radius (B90 = ball nose)			Edge geometry
MM10	- 100	12	- R10	A30	- M03	
		Cutting edge length		Helix angle 30°		



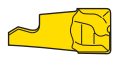
Edge geometry,
E = easy operations
M = medium operations
D = difficult operations
03 = relative edge strength

Corner radius
A = positive rake angle
B = ball nose
C = centre drill
CR = concave radius
4525 = chamfer 45 x 2,5 mm
Rxx-PL = Plunging

Code key -2-flute Minimaster insert

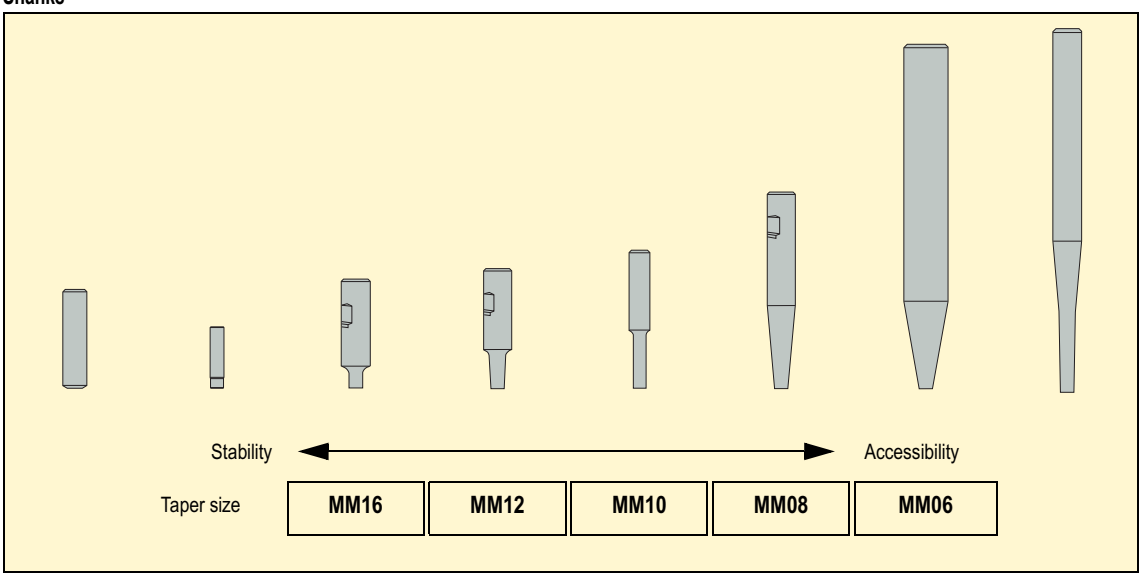
Note that parts of the code can vary for different inserts.

Insert taper size	Diameter (100 = 10,0)		Corner radius		Edge geometry
MM10	- 100	07	- R04	- MD04	
		Cutting edge length			



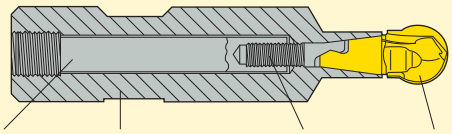
Edge geometry,
E = for easy conditions
M = for medium conditions
D = for difficult conditions.
04 = relative edge strength

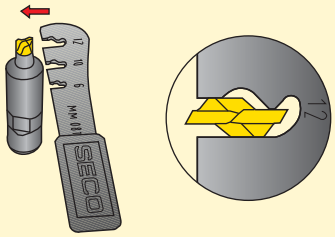
Shanks



Mounting instructions for 2-flute Minimaster

During normal operations inserts are exchanged using the Minimaster wrench



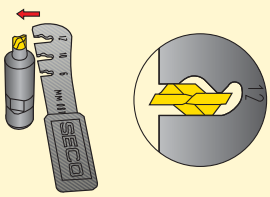


- **The sleeve must be securely tightened in the shank before the tension screw and insert are fitted.**
- If the wrench cannot be used for changing the insert (If the insert has broken off or jammed in the shank) , the sleeve can be released, which will also release the insert.
- Use allen key (turn it anti-clockwise) to back off the sleeve until the insert is free.
- Re-tighten the sleeve in the shank before fitting the tension screw and the new insert.

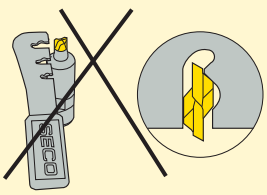
For 3-flute Minimaster another key (MM0416) must be used (Key grip on hexagonal part of the insert.)

Make sure that the wrench is used correctly.

Mounting instructions for 2-flute Minimaster

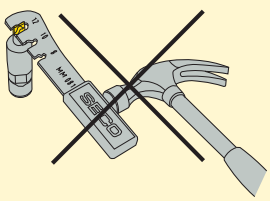


Make sure that the wrench is used correctly...

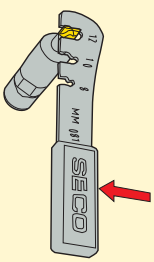


...if used on the wrong side, it will cause damage.

4-16Nm



Do not use excessive force...



...normal hand-power is quite sufficient.

During normal operation inserts are exchanged using the Minimaster wrench.

Choice of insert, shank and cutting data for copy milling

1 Select taper size

- The design of the workpiece and the machining operations determines suitable taper size.
- Select the largest possible taper size for best strength and stability.

2 Select insert

- Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

2a • Look up the pages for the selected taper size and choose a suitable insert in the insert selection table.

3 Select shank

3a • Look up the pages for the selected taper size and choose a suitable shank in the tool data table.

- Always choose the shortest shank possible (to get maximum stability).

4 Select cutting data

4a • Maximum recommended axial cutting depth is in the cutting data conversion table. (See figure 1.)

4b • Cutting speed recommendations are in the cutting data table. Notice that the recommendations are for a fully engaged cutter.

- Maximum RPM that for safety reasons should never be exceeded, are shown on page 472.

4c • Feed per tooth recommendations are in the cutting data conversion table.

- If the cutter is not fully engaged the feed per tooth and the cutting speed should be increased compared to the recommendations for a fully engaged cutter. The reason for that is to keep the chip thickness and the working temperature in the cutting zone at the same value as for a fully engaged cutter.
- Divide the radial cutting depth with the cutter diameter to get the actual cutter engagement percentage (a_e/D_c%). (See figure 2.)

4d • Use the percentage to get a correct feed per tooth and cutting speed recommendation for the actual cutter engagement.

Figure 1

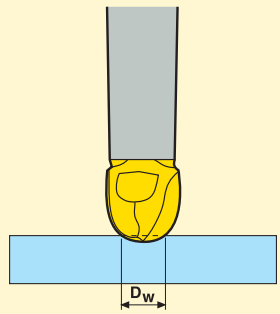
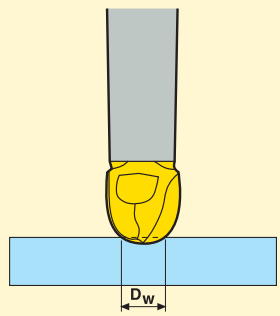


Figure 2



- When milling in corners and bottoms of cavities the feed rate should be reduced due to the increase of the chip thickness. Use the feed per tooth recommendation for a fully engaged cutter. (See figure 3.)
- When calculating feed per revolution and feed speed always use the z_c-value. That is the effective number of teeth to use for cutting data calculation.

4e • When milling in corners and bottoms of cavities the feed rate should be reduced due to the increase of the chip thickness. Use the feed per tooth recommendations for a fully engaged cutter. (See figure 3.)

- When steep down copying with an angle bigger than 40° or steep up copying with an angle bigger than 30° in combination with small depths of cut use the diameter (D_c) as working diameter instead of D_w.
- Formulae for cutting data calculation are found on page 597.

4f • Calculate surface finish. Use the profile height value (H) from the cutting data conversion table to calculate the expected surface finish for the actual operation. (See figure 5.)

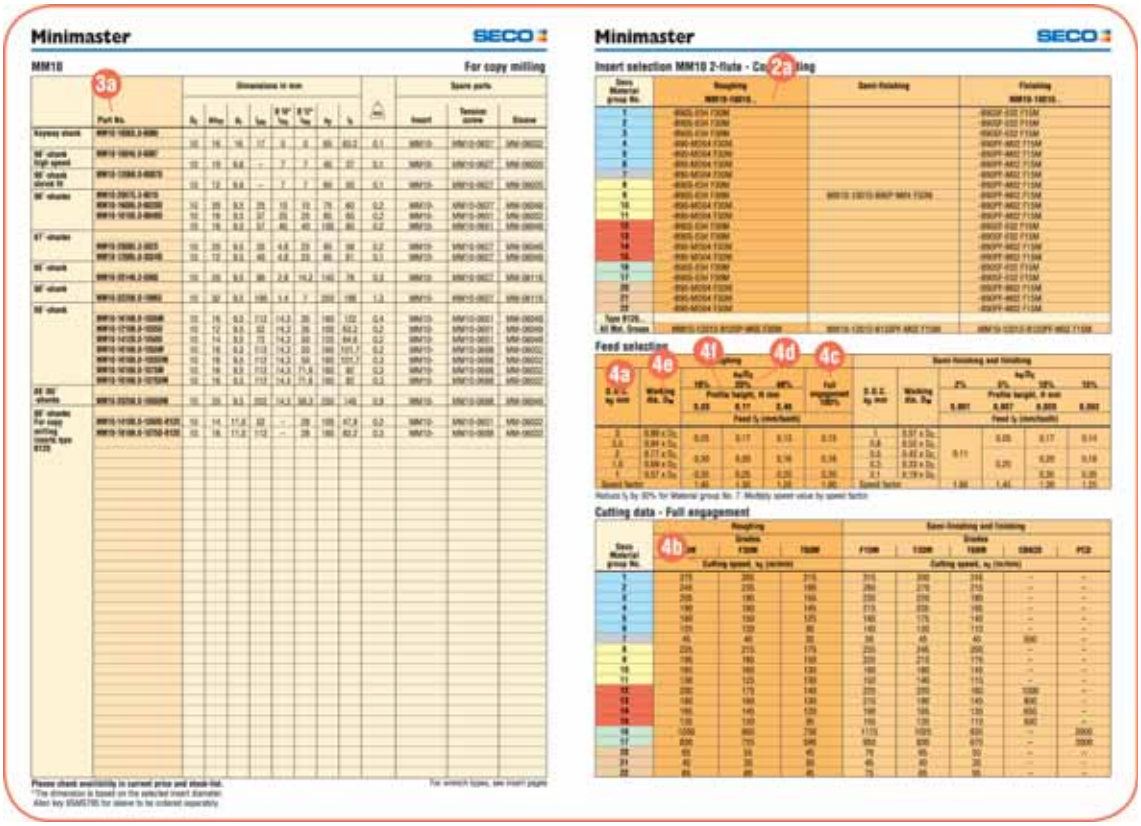


Figure 3

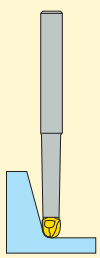


Figure 4

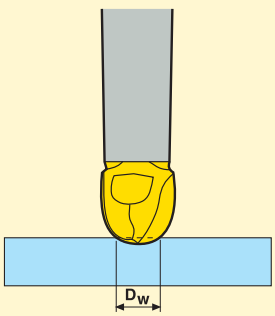
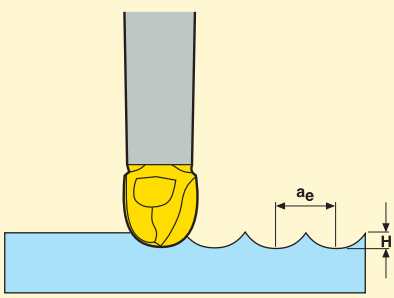


Figure 5

Ra≈Hx0,25



Choice of insert, shank and cutting data for slot milling, square shoulder milling, keyway milling, centre drilling and chamfer milling.

1 Select taper size

- The design of the workpiece and the machining operations determines suitable taper size.
- Select the largest possible taper size for best strength and stability.

2 Select insert

2a • Look up the pages for the selected taper size and choose a suitable insert in the insert selection table.

3 Select shank

3a • Look up the pages for the selected taper size and choose a suitable shank in the tool data table.

- Always choose the shortest shank possible (to get maximum stability).

4 Select cutting data

- Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

4a • Maximum recommended axial cutting depth is in the cutting data conversion table. (See figure 1.)

4b • Minimum and maximum feed per tooth recommendations are in the depth of cut and feed rate table.

- Choose a value in the middle for normal operations where the cutter is fully engaged (See figure 2).

4c • Cutting speed recommendations are in the cutting speed table.

- Maximum RPM that for safety reasons should never be exceeded, are shown on page 472.

4d • When calculating feed per revolution and feed speed always use the z_c-value. That is the effective number of teeth to use for cutting data calculation. The z_c-value is in the insert selection table.

Figure 1

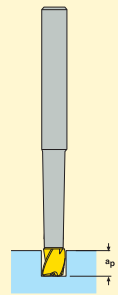
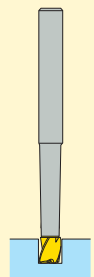
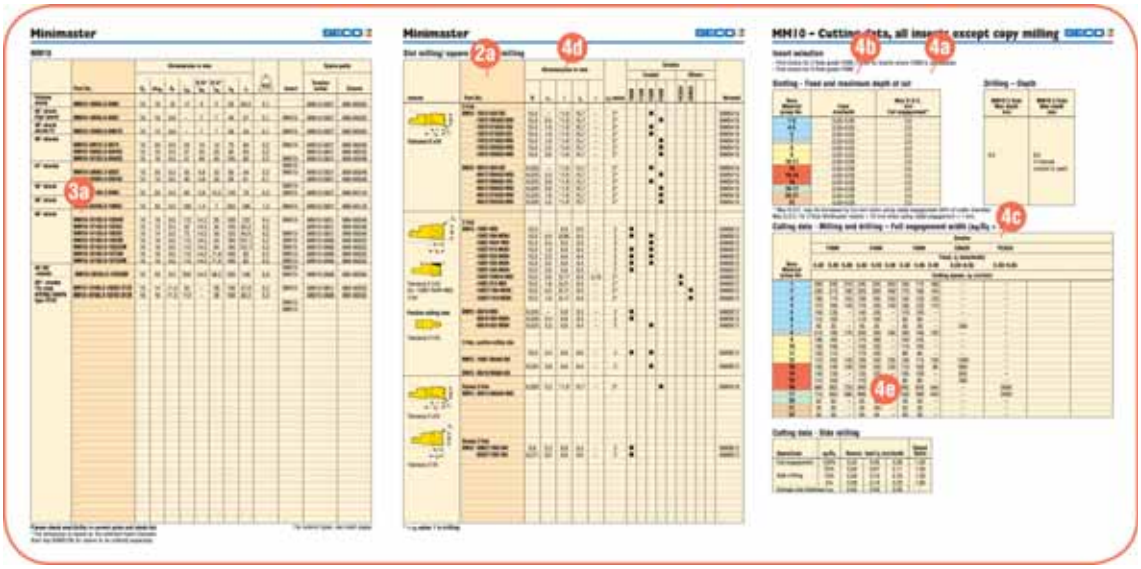


Figure 2



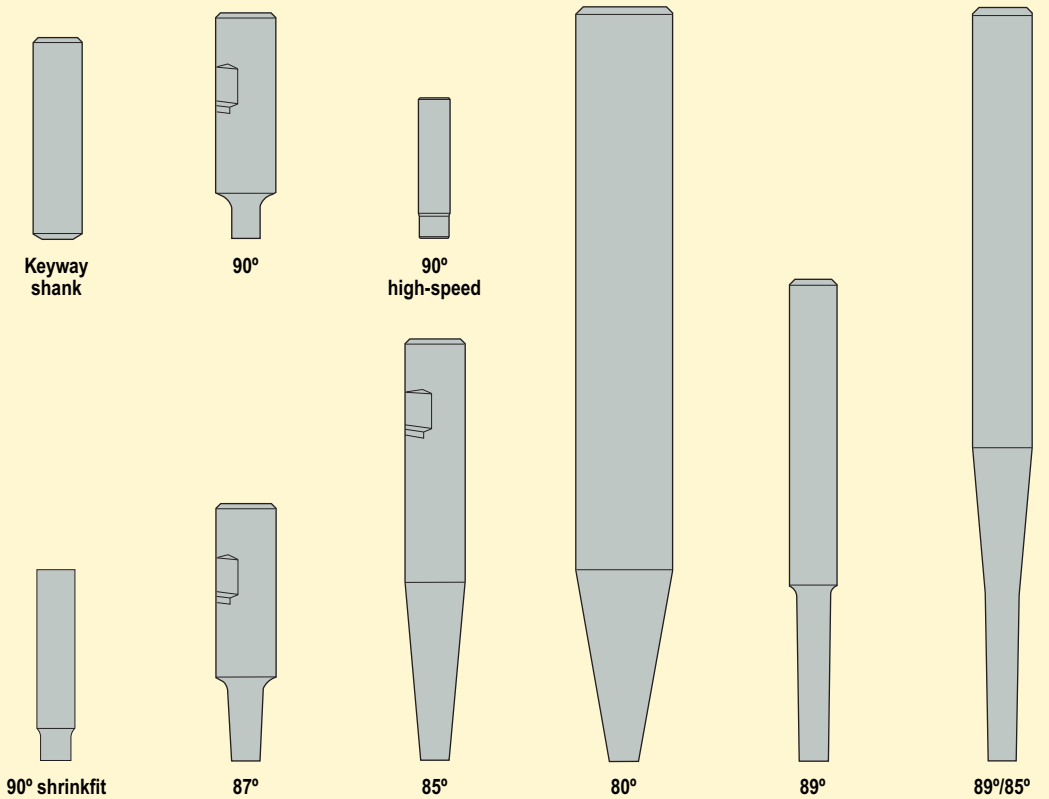
4e • When side milling the feed per tooth and the cutting speed should be increased compared to the recommendations for a fully engaged cutter. The reason for that is to keep the chip thickness and the working temperature in the cutting zone at the same value as for a fully engaged cutter. Recommendations for suitable increases are found in the (limited) side milling cutting data table. Divide the radial cutting depth with the cutter diameter

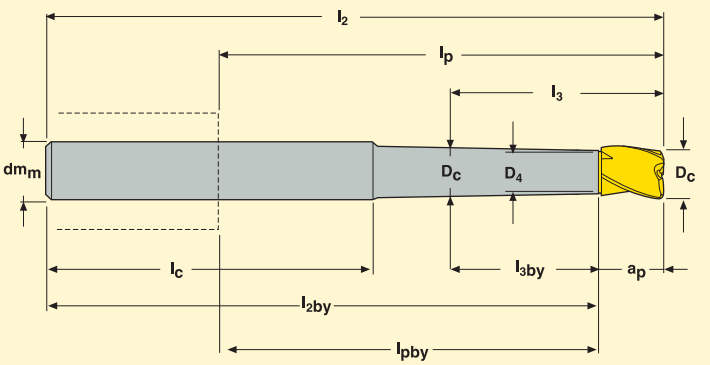
- Extended tables and formulae for calculating cutting data for side milling are found on page 599.
- Notice that there will be a deterioration of the surface finish on the workpiece when the feed rate is increased (See figure 4).



Taper size	For slot milling, with 3 flutes	For keyway milling, with 3 flutes	For copy milling, with 3 flutes	For slot milling	For slot milling, with positive (= easy cutting) geometry	For square shoulder milling	For keyway milling
MM16	D = 16, D = 20	D = 15,7, D = 19,7	D = 16, D = 20	D = 16, D = 20	D = 16, D = 20	D = 16, D = 20	D = 15,7
MM12	D = 12	D = 11,7	D = 12	D = 12, D = 14	D = 12, D = 14	D = 12, D = 14	D = 11,7, D = 13,7
MM10	D = 10	D = 9,525	D = 10	D = 10	D = 10	D = 10	D = 9,8
MM08	D = 08	D = 7,8	D = 08	D = 08	D = 08	D = 08	D = 7,8
MM06	D = 0,6	D = 5,8	D = 06	D = 06	D = 06	D = 06	D = 5,8

Taper size	For centre drilling	For chamfer milling	For milling of external radius	For copying with 90º cutting angle	For copying, with 120º cutting angle	For plunge milling
MM16	D = 16	D = 16	–	D = 16, D = 20	D = 20	D = 16
MM12	D = 12	–	D = 12	D = 12, D = 14	D = 14, D = 16	D = 12, D = 14
MM10	D = 10	D = 10	–	D = 10	D = 12	D = 10
MM08	D = 08	D = 08	–	D = 08	D =10	D = 08
MM06	D = 06	D = 06	–	D = 06	D = 08	D = 06





Dimension $a_p = l_3$ is shown on the insert pages.

$l_2 = l_{2by}+a_p$
$l_p = l_{pby}+a_p$
$l_3 = l_{3by}+a_p$

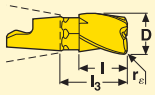
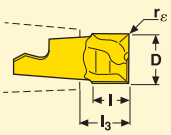
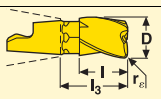
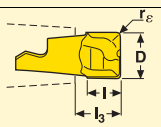
MM06

	Part No.	Dimensions in mm								KG	Insert	Spare parts	
		D_c	dm_m	D_4	l_{pby}	∅6* l_{3by}	∅8* l_{3by}	l_{2by}	l_c			Tension screw	Sleeve
Keyway shank	MM06-12065.0-0000	6	12	12	5	0	0	65	63	0,1	MM06-	MM06-03518	MM-035046
90°-shank, high-speed	MM06-10040.0-0007	6	10	5,7	–	7	7	40	29	0,1	MM06-	MM06-03518	MM-035023
90°-shank, shrinkfit	MM06-10050.0-0007DS	6	10	5,7	–	7	7	50	39	0,1	MM06-	MM06-03518	–
90°-shanks	MM06-12070.3-0005	6	12	5,7	25	5	5	70	61	0,1	MM06-	MM06-03518	MM-035046
	MM06-16090.0-0012DS	6	16	5,7	42	12	12	90	73	0,3	MM06-	MM06-03518	–
	MM06-16095.0-0024DS	6	16	5,7	47	24	24	95	66	0,2	MM06-	MM06-03518	–
87°-shanks	MM06-16075.3-3009	6	16	5,7	27	2,86	9	75	61	0,1	MM06-	MM06-03518	MM-035046
	MM06-10075.0-3041DS	6	10	5,7	35	2,86	21	75	34	0,1	MM06-	MM06-03518	–
85°-shank	MM06-16110.3-5058	6	16	5,7	62	1,7	13,1	110	51	0,2	MM06-	MM06-03518	MM-035091
89°-shanks	MM06-16140.0-1020M	6	16	5,7	80	8,59	20	140	115	0,2	MM06-	MM06-03544	MM-035046
	MM06-16140.0-1035M	6	16	5,7	80	8,59	35	140	100,6	0,2	MM06-	MM06-03564	MM-035046
	MM06-16140.0-1035DS	6	16	5,7	80	8,59	35	140	100,6	0,4	MM06-	MM06-03518	–
	MM06-10100.0-1035DS	6	10	5,7	60	8,59	35	100	62	0,1	MM06-	MM06-03518	–
	MM06-12120.0-1050DS	6	12	5,7	72	8,59	50	120	67	0,2	MM06-	MM06-03518	–
	MM06-16140.0-1050M	6	16	5,7	80	8,59	50	140	85,5	0,2	MM06-	MM06-03564	MM-035046
	MM06-16140.0-1050DS	6	16	5,7	80	8,59	50	140	85,5	0,3	MM06-	MM06-03518	–
89°/ 85° -shanks	MM06-20250.0-1035DS	6	20	5,7	190	8,59	40	250	141	0,9	MM06-	MM06-03518	–

Please check availability in current price and stock-list.
*The dimension is based on the selected insert diameter.
Allen key H05-4 for sleeve to be ordered separately.

For wrench types, see insert pages 428 - 431.

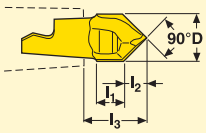
Slot milling/ square shoulder milling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	ε	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
 Tolerance D e10	**3-flute**																
	MM06 -06007-A30-E02	6,0	–	7,5	9,9	–	3*			■							MM0416
	-06007-R05A30-M02	6,0	0,5	7,5	9,9	–	3*				■						MM0416
	-06007-R10A30-D02	6,0	1,0	7,5	9,9	–	3*			■							MM0416
	-06007-R10A30-E02	6,0	1,0	7,5	9,9	–	3*			■							MM0416
	-06007-R10A30-M02	6,0	1,0	7,5	9,9	–	3*				■						MM0416
	-06007-R20A30-M02	6,0	2,0	7,5	9,9	–	3*				■						MM0416
	MM06 -06407-A30-E02	6,35	–	7,5	9,9	–	3*			■							MM0416
	-06407-R04A30-M02	6,35	0,4	7,5	9,9	–	3*				■						MM0416
	-06407-R08A30-D02	6,35	0,8	7,5	9,9	–	3*			■							MM0416
	-06407-R08A30-M02	6,35	0,8	7,5	9,9	–	3*				■						MM0416
 Tolerance D h10	**2-flute**																
	MM06 -06004-M02	6,0	–	4,1	5,1	–	2	■									MM0612
	-06004-R04-MD02	6,0	0,4	4,1	5,1	–	2	■		■							MM0612
	-06004-R10-MD02	6,0	1,0	4,1	5,1	–	2			■							MM0612
	-06004-R20-MD02	6,0	2,0	4,1	5,1	–	2			■							MM0612
	MM06 -06404-M02	6,35	0	4,1	5,0	–	2	■									MM0612
	-06404-R04-MD02	6,35	0,4	4,1	5,0	–	2	■									MM0612
 Tolerance D e10	**Keyway 3-flute**																
	MM06 -05807-R02A30-M02	5,8	0,2	7,5	9,3	–	3*				■						MM0416
 Tolerance D h9	**Keyway 2-flute**																
	MM06 -05804T-R02-D02	5,8	0,2	4,1	5,1	–	2	■									MM0612

* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.

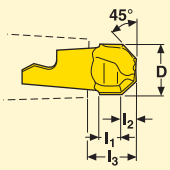
Centre drilling

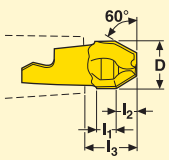


Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	90° angle																	
	MM06 -06003-C90-M02	6,0	–	–	3,3	3,0	7,1	2	■									MM0612
	120° angle																	
	MM06 -06003-C120-M02	6,0	–	–	4,6	1,6	7,2	2	■									MM0612

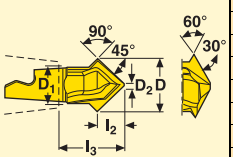
Chamfering





Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	45° angle																	
	MM06 -06004-4515-E02	6,0	–	–	2,1	2,1	5,1	2	■									MM0612
	60° angle																	
	MM06 -06004-6015-E02	6,0	–	–	2,4	2,4	5,8	2	■									MM0612

Double chamfer

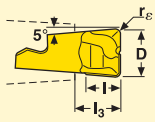


Tolerance D h10

Inserts	Part No.	Dimensions in mm D	D_1	D_2	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	45° angle																
	MM06 -08008-D4510P-M02	8	6	0,6	3,7	8,5	2		■								MM0612

For dynamomentic keys and torque values, see page 471.

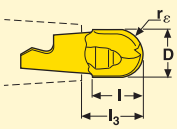
Plunge milling



Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Plunge milling															
	MM06 -06004-R10-PL-MD02	6,0	1,0	4,3	–	2			■							MM0612

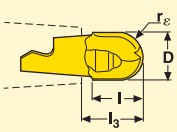
Copy milling



Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Roughing in normal and hard steel															
	MM06 -06006-B90-MD02	6,0	3,0	6,14	7,0	2	■		■							MM0612
	Roughing in sticky materials															
	MM06 -06006-B90S-E02	6,0	3,0	6,14	7,0	2			■							MM0612
	MM06 -06406-B90S-E02	6,35	3,175	6,3	7,2	2			■							MM0612

Precision inserts for semi-finishing

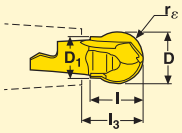


Tolerance D h7

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	In all materials																
	MM06 -06006-B90P-M02	6,0	–	3,0	6,14	7,0	2			■							MM0612
	MM06 -06406-B90P-M02	6,35	–	3,175	6,3	7,2	2			■							MM0612
	In normal and hard steels																
	MM06 -06006-B90PF-M01	6,0	–	3,0	6,14	7,0	2		■								MM0612

For dynamomentic keys and torque values, see page 471.

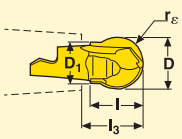
Precision inserts for roughing in all materials



Tolerance D h7

Inserts	Part No.	D	D_1	r_ε	l	l_3	z_c-value	T60M	F15M	F30M	F40M						Wrench
		Dimensions in mm						Grades									
								Coated									
	MM06 -08008-B120P-M03	8,0	6,0	4,0	8,1	9,2	2			■							MM0612
	MM06 -07908-B120P-M03	7,938	6,0	3,969	6,5	8,7	2			■							MM0612

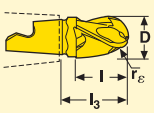
Precision inserts for semi-finishing and finishing in all materials



Tolerance D h7

Inserts	Part No.	D	D_1	r_ε	l	l_3	z_c-value	T60M	F15M	F30M	F40M						Wrench
		Dimensions in mm						Grades									
								Coated									
	MM06 -08008-B120PF-M01	8,0	6,0	4,0	8,1	9,2	2		■								MM0612

Copy milling

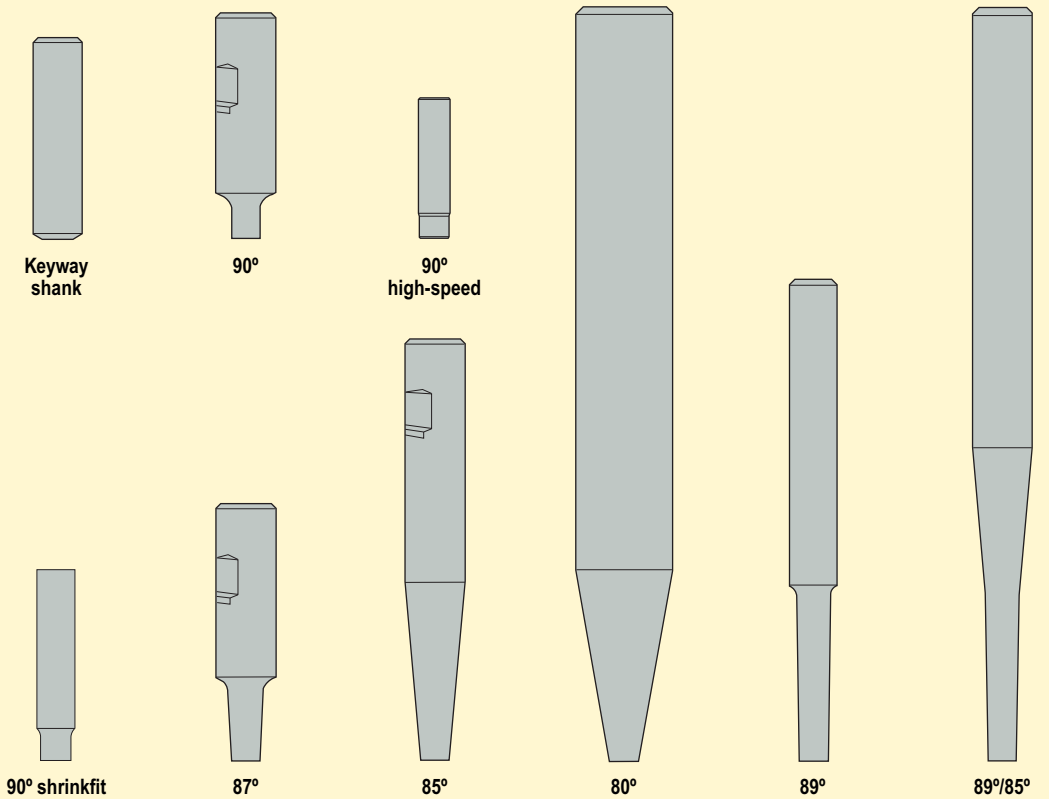


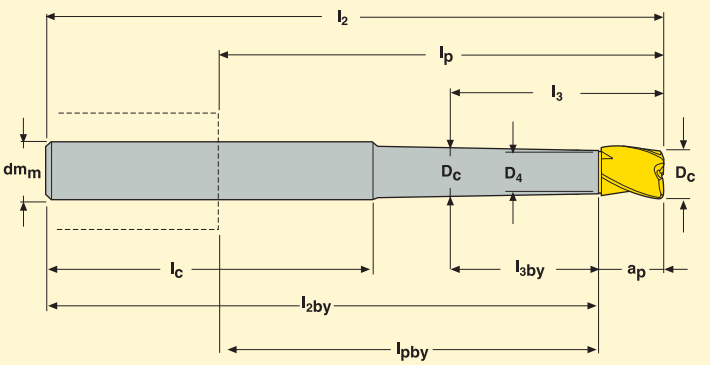
Tolerance D e10

Inserts	Part No.	D	D_1	r_ε	l	l_3	z_c-value	T60M	F15M	F30M	F40M						Wrench
		Dimensions in mm						Grades									
								Coated									
	Finishing insert 3-flute																
	MM06 -06007-B90A30-E02	6,0	–	3,0	7,5	9,9	3*			■							MM0416
	Roughing insert 3-flute																
	MM06 -06007-B90A30-M02	6,0	–	3,0	7,5	9,9	3*				■						MM0416
	-06007-B90A30-D02	6,0	–	3,0	7,5	9,9	3*			■							MM0416
	MM06 -06407-B90A30-E02	6,35	–	3,148	7,46	9,85	3*			■							MM0416
	-06407-B90A30-M02	6,35	–	3,148	7,46	9,85	3*				■						MM0416
	-06407-B90A30-D02	6,35	–	3,148	7,46	9,85	3*			■							MM0416

* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.





Dimension $a_p = l_3$ is shown on the insert pages.

$l_2 = l_{2by}+a_p$
$l_p = l_{pby}+a_p$
$l_3 = l_{3by}+a_p$

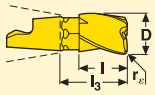
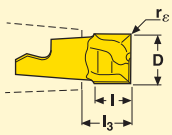
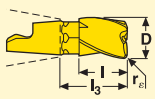
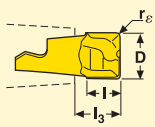
MM08

	Part No.	Dimensions in mm								KG	Insert	Spare parts	
		D_c	dm_m	D_4	l_{pby}	∅ 8* l_{3by}	∅ 10* l_{3by}	l_{2by}	l_c			Tension screw	Sleeve
Keyway shank													
	MM08-12065.0-0000	8	12	12	17	0	0	65	65	0,1	MM08-	MM08-0524	MM-05044
90°-shank, high speed													
	MM08-10040.0-0007	8	10	7,6	–	7	7	40	30	0,1	MM08-	MM08-0524	MM-05019
90°-shanks, shrinkfit													
	MM08-10050.0-0007DS	8	10	7,6	–	7	7	50	39	0,1	MM08-	MM08-0524	–
90°- shank													
	MM08-16070.3-0007	8	16	7,6	22	7	7	70	57,6	0,1	MM08-	MM08-0524	MM-05044
	MM08-16085.0-0016DS	8	16	7,6	37	16	16	85	64	0,4	MM08-	MM08-0524	–
	MM08-16100.0-0032DS	8	16	7,6	52	32	32	100	63	0,4	MM08-	MM08-0524	–
87°-shank													
	MM08-16075.3-3012	8	16	7,6	27	3,8	12	75	61	0,1	MM08-	MM08-0524	MM-05044
	MM08-10080.0-3023DS	8	10	7,6	40	3,8	12	80	57	0,2	MM08-	MM08-0524	–
85°-shank													
	MM08-16120.3-5048M	8	16	7,6	72	2,3	13,7	120	72	0,2	MM08-	MM08-0543	MM-05044
80°-shank													
	MM08-32250.0-10069	8	32	7,6	190	1,1	6,8	250	181	1,2	MM08-	MM08-0524	MM-05090
89°-shanks													
	MM08-16150.0-1030M	8	16	7,6	102	11,4	30	150	115,6	0,3	MM08-	MM08-0543	MM-05044
	MM08-12100.0-1035DS	8	12	7,6	52	11,4	35	100	62	0,2	MM08-	MM08-0524	–
	MM08-12120.0-1050DS	8	12	7,6	72	11,4	50	120	67	0,1	MM08-	MM08-0524	–
	MM08-16150.0-1050M	8	16	7,6	102	11,4	50	150	96	0,2	MM08-	MM08-0582	MM-05044
	MM08-16150.0-1050DS	8	16	7,6	102	11,4	50	150	96	0,3	MM08-	MM08-0524	–
	MM08-16150.0-1070M	8	16	7,6	102	11,4	68,7	150	76	0,2	MM08-	MM08-0582	MM-05044
	MM08-16150.0-1070DS	8	16	7,6	102	11,4	68,7	150	76	0,3	MM08-	MM08-0524	–
89°/ 85° -shanks													
	MM08-20250.0-1050DS	8	20	7,6	202	11,4	53,7	250	139	0,8	MM08-	MM08-0524	–

Please check availability in current price and stock-list.
*The dimension is based on the selected insert diameter.
Allen key H05-4 for sleeve to be ordered separately.

For wrench types, see insert pages 434 - 437.

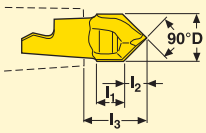
Slot milling/ square shoulder milling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	ε	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
 Tolerance D e10	**3-flute**																
	MM08 -08009-A30-E03	8,0	0	10,0	13,0	–	3*			■							MM0416
	-08009-R05A30-M03	8,0	0,5	10,0	13,0	–	3*				■						MM0416
	-08009-R10A30-D03	8,0	1,0	10,0	13,0	–	3*			■							MM0416
	-08009-R10A30-E03	8,0	1,0	10,0	13,0	–	3*			■							MM0416
	-08009-R10A30-M03	8,0	1,0	10,0	13,0	–	3*				■						MM0416
	-08009-R20A30-M03	8,0	2,0	10,0	13,0	–	3*				■						MM0416
	-08009-R30A30-M03	8,0	3,0	10,0	13,0	–	3*				■						MM0416
 **Positive cutting rake** Tolerance D h10	**2-flute**																
	MM08 -08005-M03	8,0	0	5,5	6,8	–	2	■									MM0612
	-08005-R04-MD03	8,0	0,4	5,5	6,8	–	2	■		■							MM0612
	-08005-R04P-M02	8,0	0,4	5,5	6,8	–	2			■							MM0612
	-08005-R10-MD03	8,0	1,0	5,5	6,8	–	2			■							MM0612
	2-flute, positive cutting rake																
	MM08 -08005-R04A8-E03	8,0	0,4	5,6	6,9	–	2	■		■							MM0612
	-08005-R30A8-E03	8,0	3,0	5,5	6,8	–	2			■							MM0612
 Tolerance D e10	**Keyway 3-flute**																
	MM08 -07809-R02A30-M03	7,8	0,2	10,0	13,0	–	3*				■						MM0416
 Tolerance D h9	**Keyway 2-flute**																
	MM08 -07805T-R02-D03	7,8	0,2	5,4	6,8	–	2	■									MM0612

* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.

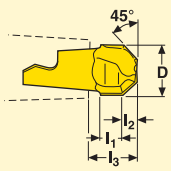
Centre drilling

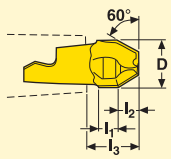


Tolerance D h10

Inserts	Part No.	D	r_ε	l	l_1	l_2	l_3	z_c-value	T60M	F15M	F30M	F40M						Wrench
		Dimensions in mm							Grades									
									Coated									
	90° angle																	
	MM08 -08004-C90-M03	8,0	–	–	4,45	4,0	9,5	2	■									MM0612
	120° angle																	
	MM08 -08006-C120-M03	8,0	–	–	6,2	2,15	9,5	2	■									MM0612

Chamfering

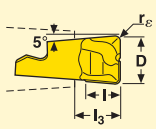




Tolerance D h10

Inserts	Part No.	D	r_ε	l	l_1	l_2	l_3	z_c-value	T60M	F15M	F30M	F40M						Wrench
		Dimensions in mm							Grades									
									Coated									
	45° angle																	
	MM08 -08005-4520-E03	8,0	–	–	3,5	2,0	6,8	2	■									MM0612
	60° angle																	
	MM08 -08006-6030-E03	8,0	–	–	2,9	3,3	7,6	2	■									MM0612

Plunge milling

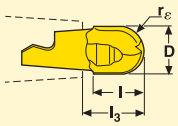


Tolerance D h10

Inserts	Part No.	D	r_ε	l	l_1	l_2	l_3	z_c-value	T60M	F15M	F30M	F40M						Wrench
		Dimensions in mm							Grades									
									Coated									
	MM08 -08005-R10-PL-MD03	8,0	1,0	5,6	–	–	6,8	2			■							MM0612

For dynamomentic keys and torque values, see page 471.

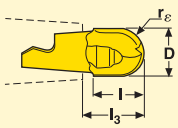
Copy milling



Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Roughing in normal and hard steel															
	MM08 -08008-B90-MD03	8,0	4,0	8,1	9,4	2	■		■							MM0612
	Roughing in sticky materials															
	MM08 -08008-B90S-E03	8,0	4,0	8,1	9,4	2			■							MM0612

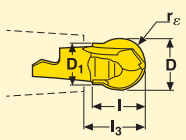
Precision inserts for semi-finishing



Tolerance D h7

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	In all materials															
	MM08 -08008-B90P-M03	8,0	4,0	8,1	9,4	2			■							MM0612
	In normal and hard steels															
	MM08 -08008-B90PF-M01	8,0	4,0	8,1	9,4	2		■								MM0612

Precision inserts for roughing in all materials

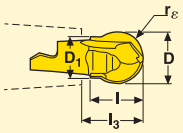


Tolerance D h7

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM08 -10010-B120P-M04	10,0		5,0	10,2	11,6				■							MM0612

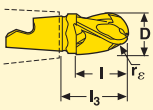
For dynamomentic keys and torque values, see page 471.

Precision inserts for semi-finishing and finishing in all materials

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM08 -10010-B120PF-M02	10,0	8,0	5,0	10,2	11,3	2		■								MM0612

Tolerance D h7

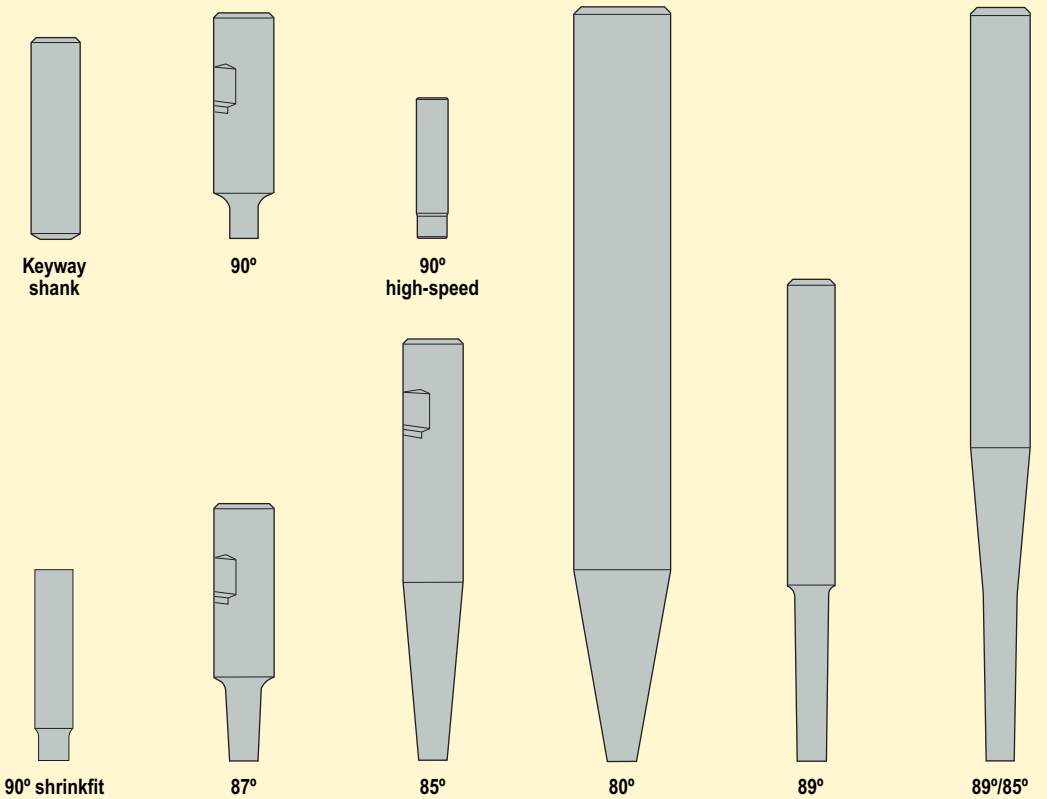
Copy milling

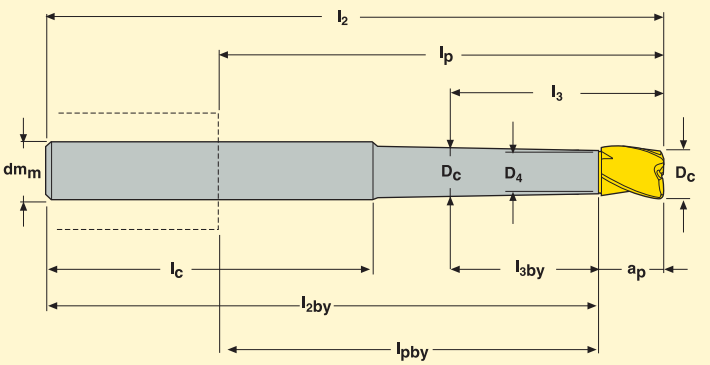
Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Finishing insert 3-flute																
	MM08 -08009-B90A30-E03	8,0	–	4,0	10,0	13,0	3*			■							MM0416
	Roughing insert 3-flute																
	MM08 -08009-B90A30-M03	8,0	–	4,0	10,0	13,0	3*				■						MM0416
	-08009-B90A30-D03	8,0	–	4,0	10,0	13,0	3*			■							MM0416

Tolerance D e10

* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.





Dimension $a_p = l_3$ is shown on the insert pages.

$l_2 = l_{2by} + a_p$
$l_p = l_{pby} + a_p$
$l_3 = l_{3by} + a_p$

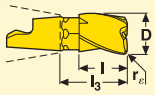
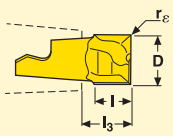
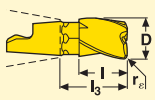
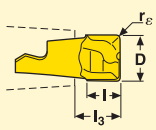
MM10

	Part No.	Dimensions in mm								KG	Insert	Spare parts	
		D_c	dm_m	D_4	l_{pby}	∅ 10* l_{3by}	∅ 12* l_{3by}	l_{2by}	l_c			Tension screw	Sleeve
Keyway shank	MM10-16065.0-0000	10	16	16	17	0	0	65	63,2	0,1	MM10-	MM10-0627	MM-06032
90°-shank high speed	MM10-10045.0-0007	10	10	9,6	–	7	7	45	37	0,1	MM10-	MM10-0627	MM-06020
90°-shank shrinkfit	MM10-12060.0-0007DS	10	12	9,6	–	7	7	60	50	0,1	MM10-	MM10-061027	–
90°-shanks	MM10-20075.3-0010	10	20	9,5	25	10	10	75	60	0,2	MM10-	MM10-0627	MM-06048
	MM10-16085.0-0020DS	10	16	9,5	37	20	20	85	60	0,2	MM10-	MM10-061027	–
	MM10-16105.0-0040DS	10	16	9,5	57	40	40	105	60	0,2	MM10-	MM10-061027	–
87°-shanks	MM10-20085.3-3023	10	20	9,5	35	4,8	23	85	58	0,2	MM10-	MM10-0627	MM-06048
	MM10-12085.0-3024DS	10	12	9,5	40	4,8	23	85	61	0,1	MM10-	MM10-061027	–
85°-shank	MM10-20140.3-5060	10	20	9,5	90	2,8	14,2	140	76	0,3	MM10-	MM10-0627	MM-06116
80°-shank	MM10-32250.0-10063	10	32	9,5	190	1,4	7	250	186	1,3	MM10-	MM10-0627	MM-06116
89°-shank	MM10-16160.0-1035M	10	16	9,5	112	14,3	35	160	122	0,4	MM10-	MM10-0651	MM-06048
	MM10-12100.0-1035DS	10	12	9,5	52	14,3	35	100	63,2	0,2	MM10-	MM10-061027	–
	MM10-14120.0-1050DS	10	14	9,5	72	14,3	50	120	64,6	0,2	MM10-	MM10-061027	–
	MM10-16160.0-1055M	10	16	9,5	112	14,3	50	160	101,7	0,2	MM10-	MM10-0688	MM-06032
	MM10-16160.0-1055DS	10	16	9,5	112	14,3	50	160	101,7	0,3	MM10-	MM10-061027	–
	MM10-16160.0-1075M	10	16	9,5	112	14,3	71,6	160	82	0,3	MM10-	MM10-0688	MM-06032
	MM10-16160.0-1075DS	10	16	9,5	112	14,3	71,6	160	82	0,3	MM10-	MM10-061027	–
89°/ 85° -shanks	MM10-20250.0-1055DS	10	20	9,5	202	14,3	58,3	250	146	0,9	MM10-	MM10-061027	–

Please check availability in current price and stock-list.
*The dimension is based on the selected insert diameter.
Allen key 6SMS795 for sleeve to be ordered separately.

For wrench types, see insert pages 440 - 443.

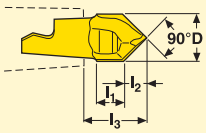
Slot milling/ square shoulder milling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	ε	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
 Tolerance D e10	**3-flute**																
	MM10 -10012-A30-E03	10,0	–	11,8	15,7	–	3*			■							MM0416
	-10012-R05A30-M03	10,0	0,5	11,8	15,7	–	3*				■						MM0416
	-10012-R10A30-D03	10,0	1,0	11,8	15,7	–	3*			■							MM0416
	-10012-R10A30-E03	10,0	1,0	11,8	15,7	–	3*			■							MM0416
	-10012-R10A30-M03	10,0	1,0	11,8	15,7	–	3*				■						MM0416
	-10012-R20A30-M03	10,0	2,0	11,8	15,7	–	3*				■						MM0416
	-10012-R30A30-E03	10,0	3,0	11,8	15,7	–	3*			■							MM0416
	-10012-R30A30-M03	10,0	3,0	11,8	15,7	–	3*				■						MM0416
	MM10 -09512-A30-E03	9,525	–	11,8	15,7	–	3*			■							MM0416
	-09512-R04A30-M03	9,525	0,4	11,8	15,7	–	3*				■						MM0416
	-09512-R08A30-D03	9,525	0,8	11,8	15,7	–	3*			■							MM0416
	-09512-R08A30-M03	9,525	0,8	11,8	15,7	–	3*				■						MM0416
	-09512-R16A30-M03	9,525	1,6	11,8	15,7	–	3*				■						MM0416
	-09512-R32A30-M03	9,525	3,2	11,8	15,7	–	3*				■						MM0416
 **Positive cutting rake** Tolerance D h10	**2-flute**																
	MM10 -10007-M03	10,0	–	6,9	8,5	–	2	■									MM0612
	-10007-R04-MD04	10,0	0,4	6,89	8,5	–	2	■		■							MM0612
	-10007-R04P-M03	10,0	0,4	6,9	8,5	–	2			■							MM0612
	-10007-R10-MD04	10,0	1,0	6,9	8,5	–	2	■		■							MM0612
	-10007-R20-MD04	10,0	2,0	6,8	8,4	–	2	■		■							MM0612
	-10007-R30-MD04	10,0	3,0	6,8	8,4	–	2			■							MM0612
	MM10 -09510-M03	9,525	–	6,8	8,5	–	2	■									MM0612
	-09510-R04-MD04	9,525	0,4	6,8	8,5	–	2	■									MM0612
	-09510-R32-MD04	9,525	3,2	6,8	8,4	–	2			■							MM0612
	2-flute, positive cutting rake																
	MM10 -10007-R04A8-E03	10,0	0,4	6,8	8,5	–	2	■		■							MM0612
	-09510-R08A8-E03	9,525	0,8	6,6	8,4	–	2			■							MM0612
 Tolerance D e10	**Keyway 3-flute**																
	MM10 -09512-R03A30-M03	9,525	0,3	11,8	15,7	–	3*				■						MM0416
 Tolerance D h9	**Keyway 2-flute**																
	MM10 -09807T-R03-D04	9,8	0,3	6,9	8,5	–	2	■									MM0612
	-09307T-R02-D04	9,271	0,2	6,8	8,5	–	2	■									MM0612

* = z_c-value 1 in drilling.

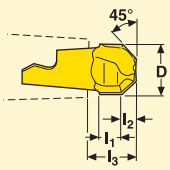
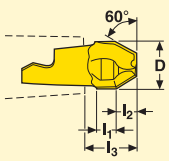
For dynamomentic keys and torque values, see page 471.

Centre drilling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	90° angle																	
	MM10 -10005-C90-M03	10,0	–	–	5,5	5,0	11,8	2	■									MM0612
	120° angle																	
	MM10 -10007-C120-M03	10,0	–	–	7,3	2,7	11,8	2	■									MM0612

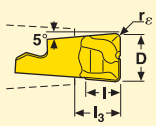
Tolerance D h10

Chamfering

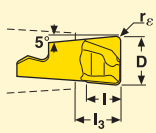
Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	45° angle																	
	MM10 -10007-4525-E03	10,0	–	–	4,4	2,6	8,5	2	■									MM0612
	60° angle																	
	MM10 -10008-6040-E03	10,0	–	–	3,7	4,2	9,4	2	■									MM0612
																		

Tolerance D h10

Plunge milling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Plunge milling																	
	MM10 -10007-R10-PL-MD04	10,0	1,0	7,1	–	–	8,5	2			■							MM0612

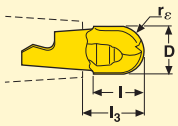
Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Precision and turn-milling																	
	MM10 -10007-R10-PLP-M03	10,0	1,0	6,7	–	–	8,4	2			■							MM0612

Tolerance D h7

For dynamomentic keys and torque values, see page 471.

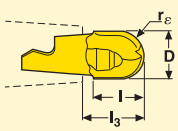
Copy milling



Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Roughing in normal and hard steel															
	MM10 -10010-B90-MD04	10,0	5,0	10,2	11,8	2	■		■							MM0612
	Roughing in sticky materials															
	MM10 -10010-B90S-E04	10,0	5,0	10,2	11,8	2			■							MM0612
	MM10 -09510-B90S-E04	9,525	4,7625	10,2	11,7	2			■							MM0612

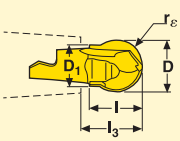
Precision inserts for semi-finishing



Tolerance D h7

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	In all materials															
	MM10 -10010-B90P-M04	10,0	5,0	10,2	11,8	2			■							MM0612
	MM10 -09510-B90P-M04	9,525	4,7625	10,2	11,7	2	■		■							MM0612
	In normal and hard steels															
	MM10 -10010-B90PF-M02	10,0	5,0	10,2	11,8	2		■								MM0612

Precision inserts for roughing in all materials

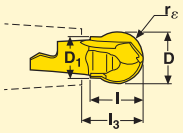


Tolerance D h7

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM10 -12012-B120P-M05	12,0	10,0	6,0	12,3	13,8	2			■							MM0612
	MM10 -12712-B120P-M05	12,7	10,0	6,35	10,2	13,5	2			■							MM1420

For dynamomentic keys and torque values, see page 471.

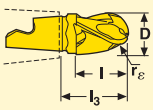
Precision inserts for semi-finishing and finishing in all materials



Tolerance D h7

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM10 -12012-B120PF-M02	12,0	10,0	6,0	12,3	13,8	2		■								MM0612
	MM10 -12712-B120PF-M03	12,7	10,0	6,35	10,2	13,5	2		■								MM1420

Copy milling

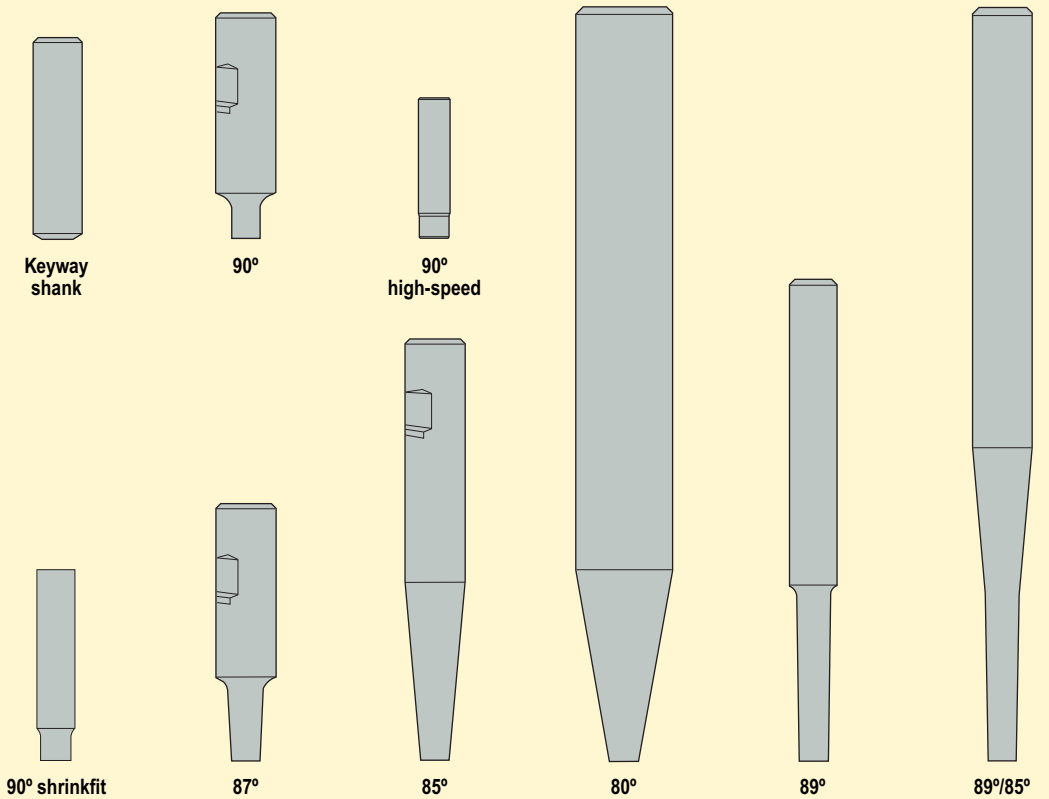


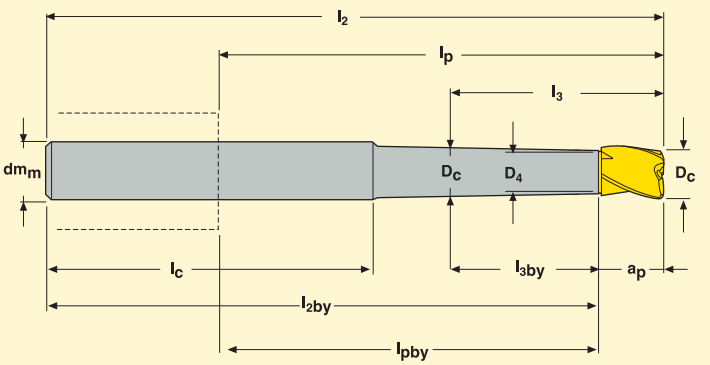
Tolerance D e10

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Finishing insert 3-flute																
	MM10 -10012-B90A30-E03	10,0	–	5,0	11,8	15,7	3*			■							MM0416
	Roughing insert 3-flute																
	MM10 -10012-B90A30-M03	10,0	–	5,0	11,8	15,7	3*				■						MM0416
	-10012-B90A30-D03	10,0	–	5,0	11,8	15,7	3*			■							MM0416
	MM10 -09512-B90A30-E03	9,25	–	4,736	11,87	15,72	3*			■							MM0416
	-09512-B90A30-M03	9,25	–	4,736	11,87	15,72	3*				■						MM0416
	-09512-B90A30-D03	9,25	–	4,736	11,87	15,72	3*			■							MM0416

* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.





Dimension $a_p = l_3$ is shown on the insert pages.

$l_2 = l_{2by}+a_p$
$l_p = l_{pby}+a_p$
$l_3 = l_{3by}+a_p$

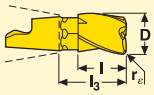
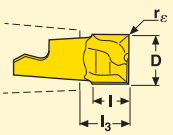
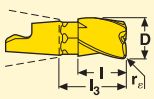
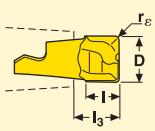
MM12

	Part No.	Dimensions in mm									KG	Insert	Spare parts	
		D_c	dm_m	D_4	l_{pby}	∅ 12 l_{3by}	∅ 14 l_{3by}	∅ 16 l_{3by}	l_{2by}	l_c			Tension screw	Sleeve
Keyway shank														
	MM12-16065.0-0000	12	16	16	15,3	0	0	0	65	63,8	0,1	MM12-	MM12-0637	MM-06032
90°-shank, high speed														
	MM12-12055.0-0008	12	12	11,5	–	8,5	8,5	8,5	55	45,3	0,1	MM12-	MM12-0637	MM-06020
90°-shank, shrinkfit														
	MM12-12070.0-0008DS	12	12	11,5	–	8,5	8,5	8,5	70	61	0,2	MM12-	MM12-061037	–
90°-shanks														
	MM12-20080.3-0012	12	20	11,4	28	12	12	12	80	63	0,2	MM12-	MM12-0637	MM-06048
	MM12-16095.0-0024DS	12	16	11,4	45	24	24	24	95	67	0,3	MM12-	MM12-061037	–
	MM12-16115.0-0048DS	12	16	11,4	65	48	48	48	115	63	0,3	MM12-	MM12-061037	–
87°-shank														
	MM12-20095.3-3027	12	20	11,4	43	3,7	24,8	27	95	63	0,2	MM12-	MM12-0637	MM-06048
	MM12-16090.0-3044DS	12	16	11,4	42	5,7	24,8	43,8	90	46	0,3	MM12-	MM12-061037	–
85°-shank														
	MM12-20150.3-5049	12	20	11,4	99,7	3,4	14,8	26,2	150	101	0,3	MM12-	MM12-0637	MM-06116
80°-shank														
	MM12-32250.0-10058	12	32	11,4	190	1,7	7,3	13	250	191,6	1,3	MM12-	MM12-0637	MM-06116
89°-shanks														
	MM12-16170.0-1040	12	16	11,4	120	17,1	40	40	170	126,8	0,4	MM12-	MM12-0637	MM-06116
	MM12-16120.0-1045DS	12	16	11,4	70	17,1	45	45	120	71,7	0,3	MM12-	MM12-061037	–
	MM12-16170.0-1060	12	16	11,4	120	17,1	60	60	170	106,6	0,2	MM12-	MM12-0637	MM-06116
	MM12-16170.0-1060DS	12	16	11,4	120	17,1	60	60	170	106,6	0,4	MM12-	MM12-061037	–
	MM12-16170.0-1080	12	16	11,4	120	17,1	74,4	80	170	87	0,4	MM12-	MM12-0637	MM-06116
	MM12-16170.0-1080DS	12	16	11,4	120	17,1	74,4	80	170	87	0,4	MM12-	MM12-061037	–
89°/ 85° -shank														
	MM12-20250.0-1060DS	12	20	11,4	120	17,1	69,9	74,3	250	152	0,9	MM12-	MM12-061037	–

Please check availability in current price and stock-list.
*The dimension is based on the selected insert diameter.
Allen key 6SMS795 for sleeve to be ordered separately.

For wrench types, see insert pages 446 - 449.

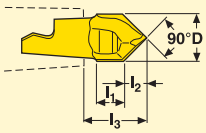
Slot milling/ square shoulder milling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	ε	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
 Tolerance D e10	**3-flute**																
	MM12 -12015-A30-E04	12,0	–	15,35	19,75	–	3*			■							MM0416
	-12015-R05A30-M04	12,0	0,5	15,35	19,75	–	3*				■						MM0416
	-12015-R10A30-E04	12,0	1,0	15,35	19,75	–	3*			■							MM0416
	-12015-R10A30-M04	12,0	1,0	15,35	19,75	–	3*				■						MM0416
	-12015-R15A30-D04	12,0	1,5	15,35	19,75	–	3*			■							MM0416
	-12015-R20A30-M04	12,0	2,0	15,35	19,75	–	3*				■						MM0416
	-12015-R30A30-E04	12,0	3,0	15,35	19,75	–	3*			■							MM0416
	-12015-R30A30-M04	12,0	3,0	15,35	19,75	–	3*				■						MM0416
	-12015-R40A30-M04	12,0	4,0	15,35	19,75	–	3*				■						MM0416
	MM12 -12715-A30-E04	12,7	–	15,35	19,75	–	3*			■							MM0416
	-12715-R08A30-D04	12,7	0,8	15,35	19,75	–	3*			■							MM0416
	-12715-R08A30-M04	12,7	0,8	15,35	19,75	–	3*				■						MM0416
	-12715-R16A30-M04	12,7	1,6	15,35	19,75	–	3*				■						MM0416
	-12715-R32A30-M04	12,7	3,2	15,35	19,75	–	3*				■						MM0416
 **Positive cutting rake** Tolerance D h10	**2-flute**																
	MM12 -12008-M04	12,0	–	8,3	10,2	–	2	■									MM0612
	-12008-R08-MD05	12,0	0,8	8,2	10,2	–	2	■		■							MM0612
	-12008-R08P-M04	12,0	0,8	8,2	10,2	–	2			■							MM0612
	-12008-R20-MD05	12,0	2,0	8,2	10,2	–	2	■		■							MM0612
	-12008-R30-MD05	12,0	3,0	8,2	10,2	–	2	■		■							MM0612
	MM12 -14009-M04	14,0	–	9,3	11,2	–	2	■									MM1420
	-14009-R08-MD05	14,0	0,8	9,3	11,2	–	2	■		■							MM1420
	MM12 -12708-M04	12,7	–	9,3	11,2	–	2	■									MM1420
	-12708-R08-MD05	12,7	0,8	9,3	11,2	–	2	■									MM1420
	-12708-R08P-M04	12,7	0,8	9,3	11,2	–	2			■							MM1420
	-12708-R32-MD05	12,7	3,2	9,3	11,1	–	2			■							MM1420
	2-flute, positive cutting rake																
	MM12 -12008-R08A8-E04	12,0	0,8	8,3	10,2	–	2	■		■							MM0612
	-14009-R08A8-E04	14,0	0,8	9,3	11,2	–	2	■		■							MM1420
	MM12 -12708-R08A8-E04	12,7	0,8	8,1	10,1	–	2			■							MM1420
 Tolerance D e10	**Keyway 3-flute**																
	MM12 -11715-R03A30-M04	11,7	0,3	15,35	19,75	–	3*				■						MM0416
 Tolerance D h9	**Keyway 2-flute**																
	MM12 -11708T-R03-D05	11,7	0,3	8,3	10,1	–	2	■									MM0612
	-13709T-R03-D05	13,7	0,3	9,3	11,2	–	2	■									MM1420

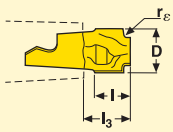
* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.

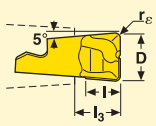
Centre drilling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	90° angle																	
	MM12 -12006-C90-M04	12,0	–	–	6,6	6,0	14,2	2	■									MM0612

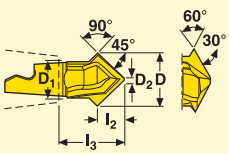
Concave radius

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM12 -12010-CR10-MD05	12,0	1,0	10,6	–	–	12,2	2	■									MM0612
	-12010-CR20-MD05	12,0	2,0	10,6	–	–	12,2	2	■									MM0612
	-12010-CR30-MD05	12,0	3,0	10,6	–	–	12,2	2	■									MM0612

Plunge milling

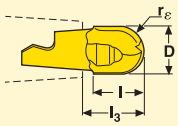
Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM12 -12008-R10-PL-MD05	12,0	1,0	8,4	–	–	10,1	2			■							MM0612
	-12008-R20-PL-MD05	12,0	2,0	8,4	–	–	10,1	2			■							MM0612
	-14009-R10-PL-MD05	14,0	1,0	9,3	–	–	11,2	2			■							MM0612
	-14009-R20-PL-MD05	14,0	2,0	9,3	–	–	11,2	2			■							MM0612

Double chamfer

Inserts	Part No.	Dimensions in mm D	D_1	D_2	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	30° angle																
	MM12 -16016-D3020P-M02	16,0	11,5	1,0	4,3	15,2	2		■								MM1420
	45° angle																
	MM12 -16016-D4520P-M02	16,0	11,5	1,0	7,5	17,2	2		■								MM1420

For dynamomentic keys and torque values, see page 471.

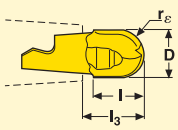
Copy milling



Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M					Wrench
	Roughing in normal and hard steel														
	MM12 -12012-B90-MD05	12,0	6,0	12,3	14,1	2	■		■						MM0612
	-14014-B90-MD05	14,0	7,0	14,1	16,0	2	■		■						MM1420
	Roughing in sticky materials														
	MM12 -12012-B90S-E05	12,0	6,0	12,3	14,1	2			■						MM0612
	-14014-B90S-E05	14,0	7,0	14,1	16,0	2			■						MM1420
	-12713-B90S-E05	12,7	6,35	12,6	14,4	2			■						MM1420
	Finishing in sticky materials														
	MM12 -12713-B90SF-E03	12,7	6,35	12,6	14,4	2		■							MM1420

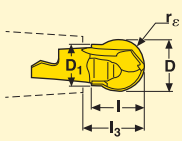
Precision inserts for semi-finishing



Tolerance D h7

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M					Wrench
	In all materials														
	MM12 -12012-B90P-M05	12,0	6,0	12,3	14,1	2			■						MM0612
	-14014-B90P-M05	13,0	7,0	14,1	16,0	2			■						MM1420
	MM12 -12713-B90P-M05	12,7	6,35	12,6	14,4	2	■		■						MM1420
	In normal and hard steels														
	MM12 -12012-B90PF-M02	12,0	6,0	12,3	14,1	2		■							MM0612

Precision inserts for roughing in all materials

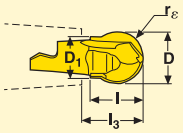


Tolerance D h7

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M					Wrench
	MM12 -14014-B120P-M05	14,0	12,0	7,0	14,1	16,0	2			■						MM1420
	-16016-B120P-M07	16,0	12,0	8,0	16,2	18,0	2			■						MM1420

For dynamomentic keys and torque values, see page 471.

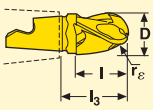
Precision inserts for semi-finishing and finishing in all materials



Tolerance D h7

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM12 -14014-B120PF-M03	14,0	12,0	7,0	14,1	16,0	2		■								MM1420
	-16016-B120PF-M03	16,0	12,0	8,0	16,2	18,0	2		■								MM1420

Copy milling

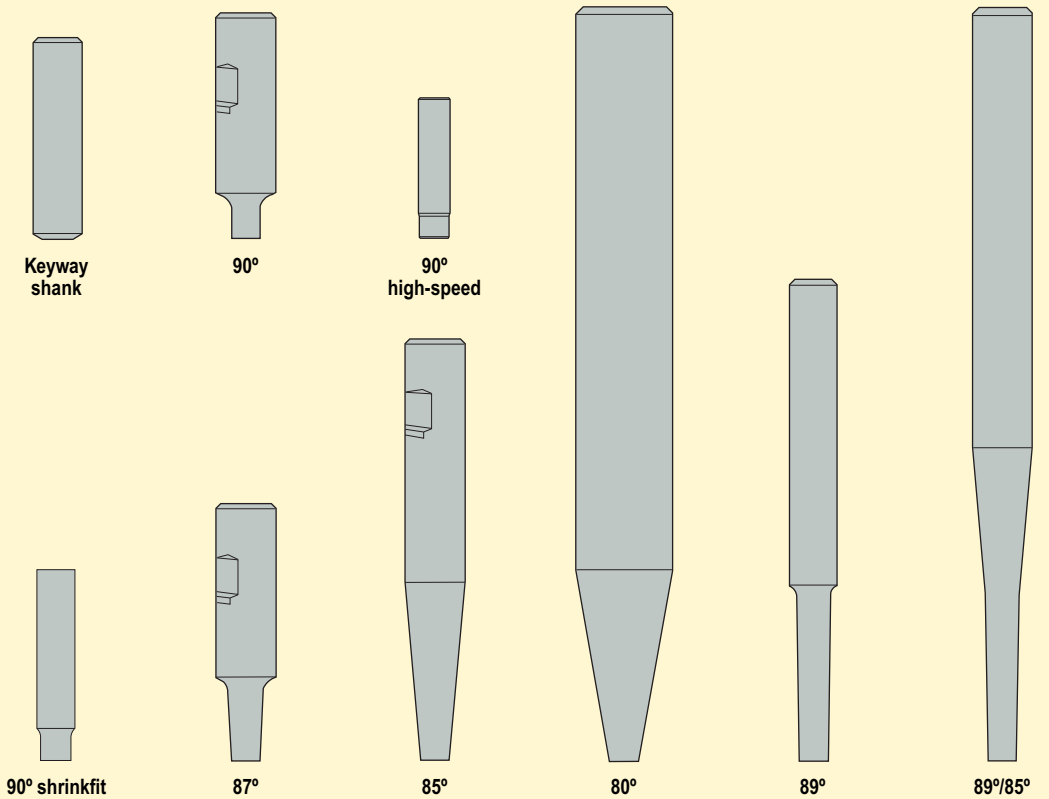


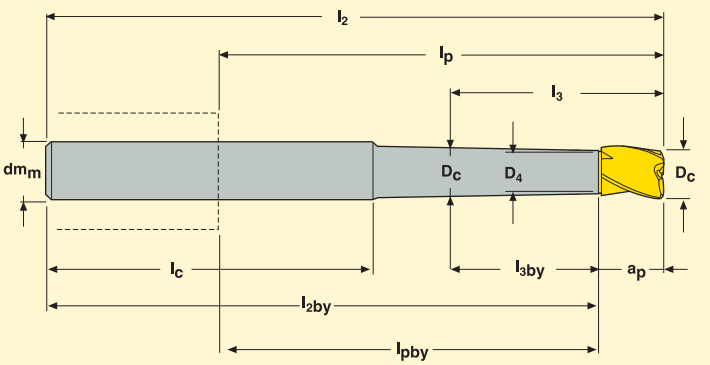
Tolerance D e10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Finishing insert 3-flute															
	MM12 -12015-B90A30-E04	12,0	6,0	15,35	19,75	3*			■							MM0416
	Roughing insert 3-flute															
	MM12 -12015-B90A30-M04	12,0	6,0	15,35	19,75	3*				■						MM0416
	-12015-B90A30-D04	12,0	6,0	15,35	19,75	3*			■							MM0416
	MM12 -12715-B90A30-E04	12,7	6,317	15,5	19,9	3*			■							MM0416
	-12715-B90A30-M04	12,7	6,317	15,5	19,9	3*				■						MM0416
	-12715-B90A30-D04	12,7	6,317	15,5	19,9	3*			■							MM0416

* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.





Dimension $a_p = l_3$ is shown on the insert pages.

$l_2 = l_{2by} + a_p$
$l_p = l_{pby} + a_p$
$l_3 = l_{3by} + a_p$

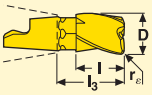
MM16

	Part No.	Dimensions in mm								KG	Insert	Spare parts	
		D_c	dm_m	D_4	l_{pby}	∅ 16* l_{3by}	∅ 20* l_{3by}	l_{2by}	l_c			Tension screw	Sleeve
Keyway shank													
	MM16-20070.0-0000	16	20	20	10	0	0	70	69	0,2	MM16-	MM16-1045	MM-10030
90°-shank, high speed													
	MM16-16070.0-0011M	16	16	15,2	–	11,3	11,3	70	57,2	0,1	MM16-	MM16-1045	MM-10030
90°-shank, shrinkfit													
	MM16-20080.0-0011DS	16	20	15,2	–	11,3	11,3	80	65	0,3	MM16-	MM16--1045	–
90°-shanks													
	MM16-25100.3-0019	16	25	15,2	40	19	19	100	77	0,3	MM16-	MM16-1045	MM-10062
	MM16-20150.0-0038DS	16	20	15,2	90	38	38	150	108,4	0,5	MM16-	MM16--1045	–
	MM16-20160.0-0076DS	16	20	15,2	100	76	76	160	80,3	0,6	MM16-	MM16--1045	–
	MM16-16150.0-0080DS	16	16	15,2	100	80	80	150	68	0,3	MM16-	MM16--1045	–
87°-shank													
	MM16-20115.3-3045	16	20	15,2	65	7,6	45,7	115	69	0,2	MM16-	MM16-1045	MM-10062
	MM16-25115.3-3035	16	25	15,2	59	7,6	35	115	76	0,3	MM16-	MM16-1045	MM-10062
85°-shank													
	MM16-25170.3-5056	16	25	15,2	114	4,5	27,4	170	114	0,5	MM16-	MM16-1045	MM-10132
80°-shank													
	MM16-32250.0-10047	16	32	15,2	190	2,2	13,6	250	202	1,3	MM16-	MM16-1045	MM-10132
89°-shanks													
	MM16-20130.0-1045DS	16	32	15,2	80	2,2	13,6	130	81	1,3	MM16-	MM16--1045	–
	MM16-20190.0-1055M	16	20	15,2	130	22,8	55	190	132,2	0,6	MM16-	MM16-1093	MM-10062
	MM16-25170.0-1060	16	25	19	110	0	28,6	170	106,7	0,5	MM16-	MM16-1093	MM-10062
	MM16-20190.0-1075M	16	20	15,2	130	22,8	75	190	112	0,5	MM16-	MM16-1093	MM-10062
	MM16-20190.0-1075DS	16	20	15,2	130	22,8	75	190	112,5	0,6	MM16-	MM16--1045	–
	MM16-20190.0-1095M	16	20	15,2	130	22,8	95	190	92,8	0,5	MM16-	MM16-10113	MM-10062
	MM16-20190.0-1095DS	16	20	15,2	130	22,8	95	190	92,8	0,5	MM16-	MM16--1045	–
89°/ 85° -shank													
	MM16-25250.0-1075DS	16	25	15,2	190	22,8	87,4	250	134	1,3	MM16-	MM16--1045	–

Please check availability in current price and stock-list.
*The dimension is based on the selected insert diameter.
Allen key 8SMS795 for sleeve to be ordered separately.

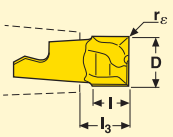
For wrench types, see insert pages 452 - 455.

Slot milling/ square shoulder milling



Tolerance D e10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	ε	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	3-flute																
	MM16 -16019-A30-E06	16,0	–	19,0	24,3	–	3*			■							MM0416
	-16019-R05A30-M06	16,0	0,5	19,0	24,3	–	3*				■						MM0416
	-16019-R10A30-E06	16,0	1,0	19,0	24,3	–	3*			■							MM0416
	-16019-R10A30-M06	16,0	1,0	19,0	24,3	–	3*				■						MM0416
	-16019-R20A30-D06	16,0	2,0	19,0	24,3	–	3*			■							MM0416
	-16019-R20A30-M06	16,0	2,0	19,0	24,3	–	3*				■						MM0416
	-16019-R30A30-E06	16,0	3,0	19,0	24,3	–	3*			■							MM0416
	-16019-R30A30-M06	16,0	3,0	19,0	24,3	–	3*				■						MM0416
	-16019-R40A30-M06	16,0	4,0	19,0	24,3	–	3*				■						MM0416
	-16019-R50A30-M06	16,0	5,0	19,0	24,3	–	3*				■						MM0416
	-16019-R60A30-M06	16,0	6,0	19,0	24,3	–	3*				■						MM0416
	MM16 -20015-A30-E06	20,0	–	15,0	20,1	–	3*			■							MM0416
	-20015-R05A30-M06	20,0	0,5	15,0	20,1	–	3*				■						MM0416
	-20015-R10A30-E06	20,0	1,0	15,0	20,1	–	3*			■							MM0416
	-20015-R10A30-M06	20,0	1,0	15,0	20,1	–	3*				■						MM0416
	-20015-R20A30-D06	20,0	2,0	15,0	20,1	–	3*			■							MM0416
	-20015-R30A30-E06	20,0	3,0	15,0	20,1	–	3*			■							MM0416
	-20015-R30A30-M06	20,0	3,0	15,0	20,1	–	3*				■						MM0416
	-20015-R50A30-M06	20,0	5,0	15,0	20,1	–	3*				■						MM0416
	MM16 -15919-A30-E06	15,87	–	19,0	24,3	–	3*			■							MM0416
	-15919-R08A30-M06	15,87	0,8	19,0	24,3	–	3*				■						MM0416
	-15919-R16A30-D06	15,87	1,6	19,0	24,3	–	3*			■							MM0416
	-15919-R32A30-M06	15,87	3,2	19,0	24,3	–	3*				■						MM0416
	-15919-R64A30-M06	15,87	6,4	19,0	24,3	–	3*				■						MM0416
	MM16 -19115-A30-E06	19,05	–	15,0	20,1	–	3*			■							MM0416
	-19115-R08A30-M06	19,05	0,8	15,0	20,1	–	3*				■						MM0416
	-19115-R19A30-D06	19,05	1,9	15,0	20,1	–	3*			■							MM0416
	-19115-R32A30-M06	19,05	3,2	15,0	20,1	–	3*				■						MM0416
	-19115-R64A30-M06	19,05	6,4	15,0	20,1	–	3*				■						MM0416



Positive cutting rake

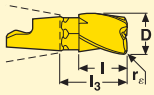
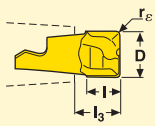
Tolerance D h10

Inserts	Part No.	D	r_ε	l	l_3	ε	z_c-value	T60M	F15M	F30M	F40M						Wrench
	2-flute																
	MM16 -16011-M06	16,0	–	11,0	13,6	–	2	■									MM1420
	-16011-R08-MD07	16,0	0,8	11,0	13,6	–	2	■		■							MM1420
	-16011-R08P-M05	16,0	0,8	11,0	13,6	–	2			■							MM1420
	-16011-R20-MD07	16,0	2,0	10,9	13,5	–	2			■							MM1420
	-16011-R30-MD07	16,0	3,0	10,9	13,5	–	2	■		■							MM1420
	-16011-R40-MD07	16,0	4,0	10,9	13,5	–	2	■									MM1420
	-16011-R50-MD07	16,0	5,0	10,9	13,5	–	2	■									MM1420
	MM16 -15911-M06	15,87	–	11,0	13,6	–	2	■									MM1420
	-15911-R08-MD07	15,87	0,8	11,0	13,6	–	2	■									MM1420
	2-flute, positive cutting rake																
	MM16 -16011-R08A8-E06	16,0	0,8	10,7	13,6	–	2	■		■							MM1420
	-20013-R08A8-E06	20,0	0,8	12,9	15,6	–	2	■		■							MM1420
	MM16 -19013-R08A8-E06	19,05	0,8	12,7	15,4	–	2			■							MM1420

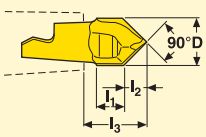
* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.

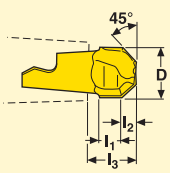
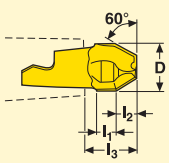
Slot milling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	**Keyway 3-flute**																	
	MM16 -15719-R03A30-M06	15,7	0,3	19,0	–	–	24,3	3*				■						MM0416
	-19715-R05A30-M06	19,7	0,5	15,5	–	–	20,6	3*				■						MM0416
	**Keyway 2-flute**																	
	MM16 -15711T-R03-D07	15,7	0,3	11,0	–	–	13,6	2	■									MM1420
Tolerance D h9																		

Centre drilling

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	**90° angle**																	
	MM16 -16008-C90-M06	16	–	–	9,4	8	19,2	2	■									MM1420
	120° angle																	
	MM16 -16011-C120-M06	16	–	–	11,7	4,3	19,0	2	■									MM1420
Tolerance D h10																		

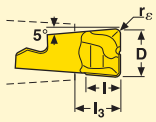
Chamfering

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	**45° angle**																	
	MM16 -16011-4540-E06	16,0	–	–	7,0	4,1	13,6	2	■									MM1420
	60° angle																	
	MM16 -16012-6060-E06	16,0	–	–	5,9	6,7	15,0	2	■									MM1420
																		
Tolerance D h10																		

* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.

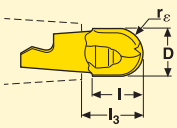
Plunge milling



Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_1	l_2	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Plunge milling																	
	MM16 -16011-R10-PL-MD07	16,0	1,0	11,3	–	–	13,5	2			■							MM1420
	-16011-R20-PL-MD07	16,0	2,0	11,3	–	–	13,5	2			■							MM1420

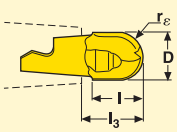
Copy milling



Tolerance D h10

Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	Roughing in normal and hard steel															
	MM16 -16016-B90-MD07	16,0	8,0	16,2	18,4	2	■		■							MM1420
	-20020-B90-MD07	20,0	10,0	20,3	22,1	2	■		■							MM1420
	MM16 -19020-B90-MD07	19,05	9,525	20,3	22,1	2	■									MM1420
	Roughing in sticky materials															
	MM16 -16016-B90S-E07	16,0	8,0	16,2	18,4	2			■							MM1420
	-20020-B90S-E07	20,0	10,0	20,3	22,1	2			■							MM1420
	MM16 -19020-B90S-E07	19,05	9,525	20,3	22,1	2			■							MM1420

Precision inserts for semi-finishing

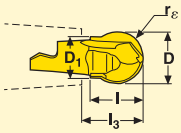


Tolerance D h7

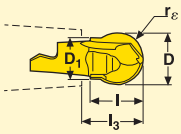
Inserts	Part No.	Dimensions in mm D	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	In all materials															
	MM16 -16016-B90P-M07	16,0	8,0	16,2	18,4	2			■							MM1420
	-20020-B90P-M07	20,0	10,0	20,3	22,1	2			■							MM1420
	MM16 -15916-B90P-M07	15,875	7,9375	16,2	18,4	2	■		■							MM1420
	-19020-B90P-M07	19,05	9,525	20,2	22,1	2	■									MM1420
	In normal and hard steels															
	MM16 -16016-B90PF-M03	16,0	8,0	16,2	18,4	2		■								MM1420

For dynamomentic keys and torque values, see page 471.

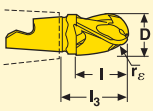
Precision inserts for roughing in all materials

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM16 -20020-B120P-M07	20,0	15,9	10,0	20,3	22,1	2			■							MM1420
Tolerance D h7																	

Precision inserts for semi-finishing and finishing in all materials

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	MM16 -20020-B120PF-M04	20,0	15,9	10,0	20,3	22,1	2		■								MM1420
Tolerance D h7																	

Copy milling

Inserts	Part No.	Dimensions in mm D	D_1	r_ε	l	l_3	z_c-value	Grades Coated T60M	F15M	F30M	F40M						Wrench
	**Finishing insert 3-flute**																
	MM16 -16019-B90A30-E06	16,0	–	8,0	19,0	24,3	3*			■							MM0416
	-20015-B90A30-E06	20,0	–	10,0	15,0	20,1	3*			■							MM0416
Tolerance D e10	**Roughing insert 3-flute**																
	MM16 -16019-B90A30-M06	16,0	–	8,0	19,0	24,3	3*				■						MM0416
	-20015-B90A30-M06	20,0	–	10,0	15,0	20,1	3*				■						MM0416
	MM16 -16019-B90A30-D06	16,0	–	8,0	19,0	24,3	3*			■							MM0416
	-20015-B90A30-D06	20,0	–	10,0	15,0	20,1	3*			■							MM0416
	MM16 -15919-B90A30-E06	15,875	–	7,904	19,25	24,5	3*			■							MM0416
	-15919-B90A30-M06	15,875	–	7,904	19,25	24,5	3*				■						MM0416
	-15919-B90A30-D06	15,875	–	7,904	19,25	24,5	3*			■							MM0416
	MM16 -19115-B90A30-E06	19,05	–	9,484	15	20,15	3*			■							MM0416
	-19115-B90A30-M06	19,05	–	9,484	15	20,15	3*				■						MM0416
	-19115-B90A30-D06	19,05	–	9,484	15	20,15	3*			■							MM0416

* = z_c-value 1 in drilling.

For dynamomentic keys and torque values, see page 471.

MM06 - Cutting data, all inserts except copy milling

– First choice for 2-flute grade F30M (T60M for inserts where F30M is unavailable)
– First choice for 3-flute grade F40M

Slotting – Feed and maximum depth of cut

SMG	Feed mm/tooth	Max D.O.C. mm Full engagement*
1-3	0,02–0,04	2,5
4-5	0,02–0,04	2
6	0,02–0,03	1
7	0,02–0,03	1
8	0,02–0,04	2
9	0,02–0,03	1,5
10-11	0,02–0,03	1
12	0,02–0,04	2,5
13-14	0,02–0,03	2,5
15	0,02–0,03	1,5
16-18	0,02–0,06	2,5
19-21	0,02–0,03	1
22	0,02–0,03	1,5

Drilling – Depth

MM06 2 flute Max depth mm	MM06 3 flute Max depth mm
3,0	4,5 if internal coolant is used

* Max D.O.C. may be increased by 0,5 mm when using radial engagement 50% of cutter diameter.
Max D.O.C. for 3 flute Minimaster inserts = 6 mm when using radial engagement < 1 mm.

Cutting data – Milling and drilling – Full engagement width (a_e /D_c = 100%)

SMG	Grades												
	F30M			F40M			T60M						
	f_z (mm/tooth)												
	0,02	0,04	0,06	0,02	0,04	0,06	0,02	0,04	0,06				
	v_c (m/min)												
1	365	330	305	350	315	290	295	265	245				
2	310	280	255	295	265	245	250	225	210				
3	255	230	–	245	220	–	210	185	–				
4	220	195	–	210	185	–	180	160	–				
5	185	165	–	175	155	–	150	135	–				
6	160	145	–	155	135	–	130	115	–				
7	44	39	–	42	37	–	36	32	–				
8	250	225	205	240	215	195	205	180	170				
9	195	175	–	190	170	–	160	145	–				
10	160	145	–	155	140	–	130	115	–				
11	120	105	–	115	100	–	95	85	–				
12	190	170	160	180	165	150	155	140	130				
13	170	150	140	160	145	130	135	120	110				
14	140	125	–	135	120	–	115	105	–				
15	115	105	–	110	100	–	95	85	–				
16	950	850	785	905	810	745	770	690	635				
17	770	690	635	730	655	605	620	555	510				
18	585	525	480	555	500	460	475	425	390				
19	55	47	–	50	45	–	43	38	–				
20	42	38	–	40	36	–	34	31	–				
21	37	33	–	35	31	–	30	27	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,02	0,04	0,06	1,00
Side milling	25%	0,03	0,05	0,08	1,30
	10%	0,04	0,08	0,12	1,50
	5%	0,06	0,11	0,17	1,60
Average chip thickness h_m		0,01	0,03	0,04	–

MM06 - Cutting data, 2-flute copy milling

Insert selection MM06 2- flute – Copy milling

SMG	Roughing MM06-06006..	Semi-finishing MM06-06006..	Finishing MM06-06006..
1	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
2	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
3	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
4	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
5	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
6	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
7	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
8	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
9	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
10	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
11	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
12	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
13	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
14	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
15	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
16	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
17-18	-B90S-E02 F30M	-B90P-M02 F30M	-B90SF-E01 F15M
19-20	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
21	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M
22	-B90-MD02 F30M	-B90P-M02 F30M	-B90PF-M01 F15M

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm 0,02	Profile height, H mm 0,07	Profile height, H mm 0,29				Profile height, H mm 0,001	Profile height, H mm 0,004	Profile height, H mm 0,018	Profile height, H mm 0,040
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
2,5	0,96 x D_c	0,14	0,10	0,07	0,07	0,7	0,60 x D_c	0,07	0,15	0,11	0,09
2	0,90 x D_c					0,5	0,52 x D_c				
1,5	0,82 x D_c	0,17	0,12	0,09	0,09	0,3	0,41 x D_c		0,18	0,14	0,12
1	0,70 x D_c					0,2	0,33 x D_c				
0,7	0,60 x D_c	0,20	0,15	0,12	0,12	0,1	0,24 x D_c			0,18	0,17
Speed factor		1,45	1,30	1,20	1,00	Speed factor		1,65	1,45	1,30	1,25

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades F15M	F30M	T60M				
	Cutting speed, v_c (m/min)						
1	415	365	295				
2	365	320	260				
3	305	265	215				
4	280	245	195				
5	225	200	160				
6	165	145	115				
7	50	45	35				
8	270	235	190				
9	235	205	165				
10	200	175	140				
11	155	135	110				
12	245	215	170				
13	215	190	155				
14	200	175	140				
15	160	140	115				
16	1130	990	800				
17	725	635	515				
18	645	565	455				
19	65	60	45				
20	70	60	50				
21	45	40	30				
22	70	60	50				

MM06 - Cutting data, 3-flute copy milling

Insert selection MM06 3-flute – Copy milling

SMG	Roughing MM06-06007..	Semi-finishing MM06-06007..	Finishing MM06-06007..
1	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
2	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
3	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
4	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
5	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
6	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
7	-B90A30-D02 F30M	-B90A30-E02 F30M	-B90A30-E02 F30M
8	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
9	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
10	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
11	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M
12	-B90A30-E02 F30M	-B90A30-E02 F30M	-B90A30-E02 F30M
13	-B90A30-E02 F30M	-B90A30-E02 F30M	-B90A30-E02 F30M
14	-B90A30-D02 F30M	-B90A30-E02 F30M	-B90A30-E02 F30M
15	-B90A30-D02 F30M	-B90A30-E02 F30M	-B90A30-E02 F30M
16	-B90A30-E02 F30M	-B90A30-E02 F30M	-B90A30-E02 F30M
17-18	-B90A30-E02 F30M	-B90A30-E02 F30M	-B90A30-E02 F30M
19-20	-B90A30-D02 F30M	-B90A30-E02 F30M	-B90A30-E02 F30M
21	-B90A30-D02 F30M	-B90A30-D02 F30M	-B90A30-E02 F30M
22	-B90A30-M02 F40M	-B90A30-E02 F30M	-B90A30-E02 F30M

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm 0,02	Profile height, H mm 0,06	Profile height, H mm 0,25				Profile height, H mm 0,001	Profile height, H mm 0,004	Profile height, H mm 0,015	Profile height, H mm 0,034
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
2,5	0,99 x D_c	0,12	0,09	0,06	0,06	0,7	0,64 x D_c	0,06	0,13	0,09	0,08
2	0,94 x D_c					0,5	0,55 x D_c				
1,5	0,87 x D_c	0,15	0,11	0,08	0,08	0,3	0,44 x D_c		0,15	0,12	0,10
1	0,75 x D_c					0,2	0,36 x D_c				
0,7	0,64 x D_c	0,18	0,13	0,11	0,11	0,1	0,26 x D_c			0,15	0,14
Speed factor		1,45	1,30	1,20	1,00	Speed factor		1,65	1,45	1,30	1,25

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	F30M	F40M					
	Cutting speed, v_c (m/min)						
1	385	370					
2	340	320					
3	280	270					
4	260	245					
5	210	200					
6	155	145					
7	50	45					
8	250	240					
9	215	205					
10	185	175					
11	145	140					
12	225	215					
13	200	190					
14	185	175					
15	150	145					
16	1045	995					
17	670	640					
18	595	570					
19	60	60					
20	45	45					
21	40	40					
22	95	95					

MM08 - Cutting data, all inserts except copy milling

–First choice for 2-flute grade F30M (T60M for inserts where F30M is unavailable)
–First choice for 3-flute grade is F40M

Slotting – Feed and maximum depth of cut

SMG	Feed mm/tooth	Max D.O.C. mm Full engagement*
1-3	0,02–0,05	3,0
4-5	0,02–0,05	2,5
6	0,02–0,04	1,5
7	0,02–0,04	1,5
8	0,02–0,05	2,5
9	0,02–0,04	2,0
10-11	0,02–0,04	1,5
12	0,02–0,05	3,0
13-14	0,02–0,04	3,0
15	0,02–0,04	2,0
16-18	0,03–0,07	3,5
19-21	0,02–0,04	1,5
22	0,02–0,04	2,0

Drilling – Depth

MM08 2 flute Max depth mm	MM08 3 flute Max depth mm
4,0	6,0 if internal coolant is used

* Max D.O.C. may be increased by 0,5 mm when using radial engagement 50% of cutter diameter.
Max D.O.C. for 3 flute Minimaster inserts = 8 mm when using radial engagement < 1 mm.

Cutting data – Milling and drilling – Full engagement width (a_e /D_c = 100%)

SMG	Grades												
	F30M			F40M			T60M						
	f_z (mm/tooth)												
	0,02	0,05	0,07	0,02	0,05	0,07	0,02	0,05	0,07				
	v_c (m/min)												
1	365	315	290	350	300	280	295	255	235				
2	310	265	245	295	255	235	250	215	200				
3	255	220	–	245	210	–	210	180	–				
4	220	190	–	210	180	–	175	150	–				
5	185	155	–	175	150	–	150	125	–				
6	160	135	–	155	130	–	130	110	–				
7	44	38	–	42	36	–	35	30	–				
8	250	215	200	240	205	190	205	175	160				
9	195	170	–	190	160	–	160	135	–				
10	160	140	–	155	130	–	130	110	–				
11	120	105	–	115	100	–	95	85	–				
12	190	165	150	180	155	145	155	135	125				
13	170	145	135	160	135	125	135	115	110				
14	140	120	–	135	115	–	115	100	–				
15	115	100	–	110	95	–	95	80	–				
16	950	815	755	905	775	720	770	660	610				
17	765	660	610	730	625	580	620	530	495				
18	585	500	465	555	475	445	475	405	375				
19	55	45	–	50	43	–	43	37	–				
20	42	36	–	40	35	–	34	29	–				
21	37	31	–	35	30	–	30	25	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,02	0,05	0,07	1,00
Side milling	25%	0,03	0,07	0,09	1,30
	10%	0,04	0,10	0,14	1,50
	5%	0,06	0,14	0,20	1,60
Average chip thickness h_m		0,01	0,03	0,04	–

MM08 - Cutting data, 2-flute copy milling

Insert selection MM08 2-flute – Copy milling

SMG	Roughing MM08-08008..	Semi-finishing MM08-08008..	Finishing MM08-08008..
1	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
2	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
3	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
4	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
5	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
6	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
7	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
8	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
9	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
10	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
11	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
12	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
13	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
14	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
15	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
16	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
17-18	-B90S-E03 F30M	-B90P-M03 F30M	B90SF-E02 F15M
19-20	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
21	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M
22	-B90-MD03 F30M	-B90P-M03 F30M	B90PF-M01 F15M

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm 0,02	Profile height, H mm 0,09	Profile height, H mm 0,38				Profile height, H mm 0,001	Profile height, H mm 0,006	Profile height, H mm 0,023	Profile height, H mm 0,051
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
2,5	0,90 x D_c	0,18	0,13	0,10	0,09	0,7	0,54 x D_c	0,09	0,19	0,13	0,11
2	0,83 x D_c					0,5	0,46 x D_c				
1,5	0,75 x D_c	0,20	0,16	0,13	0,13	0,3	0,36 x D_c		0,25	0,17	0,15
1	0,63 x D_c					0,2	0,29 x D_c				
0,7	0,54 x D_c	0,25	0,19	0,17	0,17	0,1	0,21 x D_c			0,25	0,20
Speed factor		1,45	1,30	1,15	1,00	Speed factor		1,60	1,40	1,30	1,20

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades F15M	Grades F30M	Grades T60M				
	Cutting speed, v_c (m/min)						
1	405	355	285				
2	355	310	250				
3	295	255	210				
4	270	235	190				
5	220	190	155				
6	160	140	115				
7	50	45	35				
8	260	230	185				
9	225	200	160				
10	195	170	135				
11	150	130	105				
12	235	205	165				
13	210	185	150				
14	195	170	135				
15	155	135	110				
16	1090	955	775				
17	700	615	500				
18	620	545	445				
19	60	50	45				
20	45	40	35				
21	40	35	30				
22	95	85	70				

MM08 - Cutting data, 3-flute copy milling

Insert selection MM08 3-flute – Copy milling

SMG	MM08-08009..	MM08-08009..	MM08-08009..
1	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
2	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
3	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
4	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
5	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
6	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
7	-B90A30-D03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
8	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
9	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
10	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
11	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
12	-B90A30-E03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
13	-B90A30-E03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
14	-B90A30-D03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
15	-B90A30-D03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
16	-B90A30-E03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
17-18	-B90A30-E03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
19-20	-B90A30-D03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
21	-B90A30-D03 F30M	-B90A30-D03 F30M	-B90A30-E03 F30M
22	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm 0,02	Profile height, H mm 0,08	Profile height, H mm 0,33				Profile height, H mm 0,001	Profile height, H mm 0,005	Profile height, H mm 0,020	Profile height, H mm 0,045
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
2,5	0,93 x D_c	0,14	0,10	0,08	0,07	0,7	0,57 x D_c	0,08	0,16	0,11	0,09
2	0,87 x D_c					0,5	0,48 x D_c				
1,5	0,78 x D_c	0,17	0,13	0,10	0,10	0,3	0,38 x D_c		0,20	0,14	0,12
1	0,66 x D_c					0,2	0,31 x D_c				
0,7	0,57 x D_c	0,20	0,15	0,13	0,13	0,1	0,22 x D_c			0,19	0,18
Speed factor		1,45	1,30	1,20	1,00	Speed factor		1,60	1,45	1,30	1,25

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	F30M	F40M					
	Cutting speed, v_c (m/min)						
1	380	360					
2	330	315					
3	275	265					
4	250	240					
5	205	195					
6	150	145					
7	45	45					
8	245	235					
9	215	205					
10	180	175					
11	140	135					
12	220	210					
13	195	190					
14	180	175					
15	145	140					
16	1025	975					
17	660	625					
18	585	555					
19	60	60					
20	45	45					
21	40	40					
22	95	95					

MM10 - Cutting data, all inserts except copy milling

–First choice for 2-flute grade F30M (T60M for inserts where F30M is unavailable)
–First choice for 3-flute grade is F40M

Slotting – feed and maximum depth of cut

SMG	Feed mm/tooth	Max D.O.C. mm Full engagement*
1-3	0,03–0,06	3,5
4-5	0,03–0,05	3,0
6	0,03–0,05	2,0
7	0,03–0,05	2,0
8	0,03–0,05	3,0
9	0,03–0,05	2,5
10-11	0,03–0,05	2,0
12	0,03–0,06	3,5
13-14	0,03–0,05	3,5
15	0,03–0,05	2,5
16-18	0,04–0,08	4,0
19-21	0,03–0,05	2,0
22	0,03–0,05	2,5

Drilling – Depth

MM10 2 flute Max depth mm	MM10 3 flute Max depth mm
5,0	8,0 if internal coolant is used

* Max D.O.C. may be increased by 0,5 mm when using radial engagement 50% of cutter diameter.
Max D.O.C. for 3 flute Minimaster inserts = 10 mm when using radial engagement < 1 mm.

Cutting data – Milling and drilling – Full engagement width (a_e /D_c = 100%)

SMG	Grades												
	F30M			F40M			T60M						
	f_z (mm/tooth)												
	0,03	0,05	0,08	0,03	0,05	0,08	0,03	0,05	0,08				
	v_c (m/min)												
1	345	315	285	330	300	270	280	255	230				
2	295	265	240	280	255	230	235	215	195				
3	240	220	–	230	210	–	195	180	–				
4	205	190	–	195	180	–	165	150	–				
5	170	155	–	165	150	–	140	125	–				
6	150	135	–	145	130	–	120	110	–				
7	41	38	–	39	36	–	33	30	–				
8	235	215	195	225	205	185	190	175	155				
9	185	170	–	175	160	–	150	135	–				
10	150	140	–	145	130	–	125	110	–				
11	115	100	–	105	100	–	90	85	–				
12	180	165	145	170	155	140	145	135	120				
13	160	145	130	150	135	125	130	115	105				
14	135	120	–	125	115	–	110	100	–				
15	110	100	–	105	95	–	90	80	–				
16	895	815	730	855	775	695	725	660	590				
17	725	660	590	690	625	565	585	530	480				
18	550	500	450	525	475	430	445	405	365				
19	50	45	–	47	43	–	40	36	–				
20	40	36	–	38	35	–	32	29	–				
21	34	31	–	33	30	–	28	25	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,03	0,05	0,08	1,00
Side milling	25%	0,04	0,07	0,11	1,30
	10%	0,06	0,10	0,16	1,50
	5%	0,09	0,14	0,23	1,60
Average chip thickness h_m		0,02	0,03	0,05	–

MM10 - Cutting data, 2-flute copy milling

Insert selection MM10 2-flute – Copy milling

SMG	Roughing MM10-10010..	Semi-finishing MM10-10010..	Finishing MM10-10010..
1	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
2	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
3	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
4	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
5	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
6	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
7	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
8	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
9	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
10	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
11	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
12	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
13	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
14	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
15	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
16	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
17-18	-B90S-E04 F30M	-B90P-M04 F30M	B90SF-E02 F15M
19-20	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
21	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M
22	-B90-MD04 F30M	-B90P-M04 F30M	B90PF-M02 F15M

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm						Profile height, H mm			
		0,03	0,11	0,46				0,001	0,007	0,028	0,062
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
3	0,89 x D_c	0,25	0,17	0,13	0,13	1	0,57 x D_c	0,11	0,25	0,17	0,14
2,5	0,84 x D_c					0,8	0,52 x D_c				
2	0,77 x D_c	0,30	0,20	0,16	0,16	0,5	0,42 x D_c		0,20	0,20	0,18
1,5	0,69 x D_c					0,3	0,33 x D_c				
1	0,57 x D_c	0,35	0,25	0,20	0,20	0,1	0,19 x D_c			0,35	0,35
Speed factor		1,45	1,30	1,20	1,00	Speed factor		1,60	1,45	1,30	1,25

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	F15M	F30M	T60M				
	Cutting speed, v_c (m/min)						
1	380	330	270				
2	330	290	235				
3	275	240	195				
4	255	220	180				
5	205	180	145				
6	150	130	105				
7	45	40	35				
8	245	215	175				
9	215	185	150				
10	180	160	130				
11	140	125	100				
12	220	195	155				
13	200	175	140				
14	180	160	130				
15	145	130	105				
16	1030	900	730				
17	660	580	470				
18	590	515	415				
19	60	50	45				
20	45	40	35				
21	40	35	30				
22	95	85	70				

MM10 - Cutting data, 3-flute copy milling

Insert selection MM10 3-flute – Copy milling

SMG	Roughing MM10-10012..	Semi-finishing MM10-10012..	Finishing MM10-10012..
1	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
2	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
3	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
4	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
5	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
6	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
7	-B90A30-D03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
8	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
9	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
10	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
11	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M
12	-B90A30-E03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
13	-B90A30-E03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
14	-B90A30-D03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
15	-B90A30-D03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
16	-B90A30-E03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
17-18	-B90A30-E03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
19-20	-B90A30-D03 F30M	-B90A30-E03 F30M	-B90A30-E03 F30M
21	-B90A30-D03 F30M	-B90A30-D03 F30M	-B90A30-E03 F30M
22	-B90A30-M03 F40M	-B90A30-E03 F30M	-B90A30-E03 F30M

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm 0,03	Profile height, H mm 0,10	Profile height, H mm 0,42				Profile height, H mm 0,001	Profile height, H mm 0,006	Profile height, H mm 0,025	Profile height, H mm 0,057
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
3	0,92 x D_c	0,20	0,15	0,11	0,10	1	0,60 x D_c	0,10	0,20	0,14	0,12
2,5	0,87 x D_c					0,8	0,54 x D_c				
2	0,80 x D_c	0,25	0,17	0,13	0,13	0,5	0,44 x D_c		0,25	0,18	0,15
1,5	0,71 x D_c					0,3	0,34 x D_c				
1	0,60 x D_c	0,30	0,20	0,17	0,17	0,1	0,20 x D_c			0,25	0,25
Speed factor		1,45	1,30	1,20	1,00	Speed factor		1,65	1,45	1,30	1,25

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades F30M	Grades F40M					
	Cutting speed, v_c (m/min)						
1	355	335					
2	310	295					
3	260	245					
4	235	225					
5	190	185					
6	140	135					
7	45	40					
8	230	220					
9	200	190					
10	170	160					
11	135	125					
12	205	195					
13	185	175					
14	170	160					
15	135	130					
16	960	915					
17	615	590					
18	550	520					
19	50	50					
20	40	40					
21	35	35					
22	85	85					

MM12 - Cutting data, all inserts except copy milling

– First choice for 2-flute grade F30M (T60M for inserts where F30M is unavailable)
– First choice for 3-flute grade F40M

Slotting – Feed and maximum depth of cut

SMG	Feed mm/tooth	Max D.O.C. mm Full engagement*
1-3	0,04–0,09	4,5
4-5	0,04–0,07	3,5
6	0,03–0,06	2,5
7	0,03–0,06	2,5
8	0,04–0,07	3,5
9	0,04–0,06	3,0
10-11	0,03–0,06	2,5
12	0,04–0,09	4,5
13-14	0,04–0,07	4,5
15	0,03–0,06	3,0
16-18	0,05–0,10	5,0
19-21	0,03–0,06	2,5
22	0,03–0,06	3,0

Drilling – Depth

MM12 2 flute Max depth mm	MM12 3 flute Max depth mm
6,0	10,0 mm for ∅ 12 if internal coolant is used

* Max D.O.C. may be increased by 0,5 mm when using radial engagement 50% of cutter diameter.
Max D.O.C. for 3 flute Minimaster inserts = 12 mm when using radial engagement < 1 mm.

Cutting data – Milling and drilling – Full engagement width (a_e /D_c = 100%)

SMG	Grades												
	F30M			F40M			T60M						
	f_z (mm/tooth)												
	0,03	0,07	0,10	0,03	0,07	0,10	0,03	0,07	0,10				
	v_c (m/min)												
1	345	290	265	330	280	255	280	235	215				
2	295	245	225	280	235	215	235	200	185				
3	240	205	–	230	195	–	195	165	–				
4	205	175	–	195	165	–	165	140	–				
5	170	145	–	165	140	–	140	120	–				
6	150	125	–	145	120	–	120	105	–				
7	41	35	–	39	33	–	33	28	–				
8	235	200	185	225	190	175	190	160	150				
9	185	155	–	175	150	–	150	125	–				
10	150	130	–	145	120	–	125	105	–				
11	115	95	–	105	90	–	90	75	–				
12	180	150	140	170	145	130	145	125	115				
13	160	135	120	150	125	115	130	110	100				
14	135	110	–	125	105	–	110	90	–				
15	110	95	–	105	90	–	90	75	–				
16	895	755	690	850	720	660	725	610	560				
17	725	610	560	690	580	530	585	495	450				
18	550	465	425	525	445	405	445	375	345				
19	50	42	–	47	40	–	40	34	–				
20	40	34	–	38	32	–	32	27	–				
21	34	29	–	33	28	–	28	24	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,03	0,07	0,10	1,00
Side milling	25%	0,04	0,09	0,13	1,30
	10%	0,06	0,14	0,20	1,50
	5%	0,09	0,20	0,29	1,60
Average chip thickness h_m		0,02	0,04	0,06	–

MM12 - Cutting data, 2-flute copy milling

Insert selection MM12 2-flute – Copy milling

SMG	Roughing MM12-14014..	Semi-finishing MM12-14014..	Finishing MM12-14014..
1	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
2	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
3	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
4	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
5	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
6	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
7	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
8	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
9	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
10	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
11	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
12	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
13	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
14	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
15	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
16	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
17-18	-B90S-E05 F30M	-B90P-M05 F30M	B90SF-E03 F15M
19-20	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
21	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M
22	-B90-MD05 F30M	-B90P-M05 F30M	B90PF-M02* F15M

*For ∅ 14, use insert MM12-14014-B120PF-M03 F15M for these materials.

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm						Profile height, H mm			
		0,04	0,14	0,58				0,001	0,009	0,035	0,079
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
4	0,90 x D_c	0,30	0,20	0,16	0,16	1	0,52 x D_c	0,14	0,30	0,25	0,19
3	0,82 x D_c					0,8	0,46 x D_c				
2	0,70 x D_c	0,35	0,25	0,20	0,20	0,5	0,37 x D_c		0,35	0,30	0,25
1,5	0,62 x D_c					0,3	0,29 x D_c				
1	0,52 x D_c	0,45	0,30	0,30	0,30	0,1	0,17 x D_c			0,45	0,45
Speed factor		1,40	1,30	1,15	1,00	Speed factor		1,60	1,40	1,30	1,20

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	F15M	F30M	T60M				
	Cutting speed, v_c (m/min)						
1	360	315	255				
2	315	275	225				
3	265	230	185				
4	240	210	170				
5	195	170	140				
6	145	125	100				
7	45	40	30				
8	235	205	165				
9	205	180	145				
10	175	150	120				
11	135	120	95				
12	210	185	150				
13	190	165	135				
14	175	150	120				
15	140	120	100				
16	975	855	690				
17	625	550	445				
18	555	490	395				
19	60	50	35				
20	45	40	30				
21	40	35	25				
22	95	85	60				

MM12 - Cutting data, 3-flute copy milling

Insert selection MM12 3-flute – Copy milling

SMG	Roughing MM12-12015..	Semi-finishing MM12-12015..	Finishing MM12-12015..
1	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
2	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
3	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
4	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
5	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
6	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
7	-B90A30-D04 F30M	-B90A30-E04 F30M	-B90A30-E04 F30M
8	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
9	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
10	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
11	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M
12	-B90A30-E04 F30M	-B90A30-E04 F30M	-B90A30-E04 F30M
13	-B90A30-E04 F30M	-B90A30-E04 F30M	-B90A30-E04 F30M
14	-B90A30-D04 F30M	-B90A30-E04 F30M	-B90A30-E04 F30M
15	-B90A30-D04 F30M	-B90A30-E04 F30M	-B90A30-E04 F30M
16	-B90A30-E04 F30M	-B90A30-E04 F30M	-B90A30-E04 F30M
17-18	-B90A30-E04 F30M	-B90A30-E04 F30M	-B90A30-E04 F30M
19-20	-B90A30-D04 F30M	-B90A30-E04 F30M	-B90A30-E04 F30M
21	-B90A30-D04 F30M	-B90A30-D04 F30M	-B90A30-E04 F30M
22	-B90A30-M04 F40M	-B90A30-E04 F30M	-B90A30-E04 F30M

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm						Profile height, H mm			
		0,03	0,12	0,50				0,001	0,008	0,030	0,068
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
4	0,94 x D_c	0,25	0,16	0,12	0,12	1	0,55 x D_c	0,12	0,25	0,17	0,14
3	0,87 x D_c					0,8	0,50 x D_c				
2	0,75 x D_c	0,30	0,20	0,16	0,16	0,5	0,40 x D_c		0,30	0,20	0,18
1,5	0,66 x D_c					0,3	0,31 x D_c				
1	0,55 x D_c	0,35	0,25	0,20	0,20	0,1	0,18 x D_c			0,35	0,35
Speed factor		1,45	1,30	1,15	1,00	Speed factor		1,60	1,45	1,30	1,20

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	F30M	F40M					
	Cutting speed, v_c (m/min)						
1	345	330					
2	300	285					
3	250	240					
4	230	220					
5	185	180					
6	135	130					
7	45	40					
8	220	210					
9	195	185					
10	165	155					
11	130	125					
12	200	190					
13	180	170					
14	165	155					
15	135	125					
16	930	890					
17	600	570					
18	530	510					
19	50	50					
20	40	40					
21	35	35					
22	85	85					

MM16 - Cutting data, all inserts except copy milling

–First choice for 2-flute grade F30M (T60M for inserts where F30M is unavailable)
–First choice for 3-flute grade is F40M

Slotting – Feed and maximum depth of cut

SMG	Feed mm/tooth	Max D.O.C. mm Full engagement*
1-3	0,05–0,12	6,0
4-5	0,05–0,11	5,0
6	0,04–0,10	3,5
7	0,04–0,10	3,5
8	0,05–0,11	5,0
9	0,04–0,10	4,0
10-11	0,04–0,10	3,5
12	0,05–0,12	6,0
13-14	0,05–0,11	6,0
15	0,04–0,10	4,0
16-18	0,06–0,12	6,0
19-21	0,04–0,10	3,5
22	0,04–0,10	4,0

Drilling – Depth

MM16 2 flute Max depth mm	MM16 3 flute Max depth mm
8,0	13,0 mm for ∅ 16 (16,0 mm for ∅ 20) if internal coolant is used

* Max D.O.C. may be increased by 0,5 mm when using radial engagement 50% of cutter diameter.
Max D.O.C. for 3 flute Minimaster inserts = 16 mm when using radial engagement < 1 mm.

Cutting data – Milling and drilling – Full engagement width (a_e /D_c = 100%)

SMG	Grades												
	F30M			F40M			T60M						
	f_z (mm/tooth)												
	0,04	0,08	0,12	0,04	0,08	0,12	0,04	0,08	0,12				
	v_c (m/min)												
1	330	280	255	315	270	240	265	230	205				
2	280	240	215	265	230	205	225	195	175				
3	230	200	–	220	190	–	185	160	–				
4	195	170	–	185	160	–	160	135	–				
5	165	140	–	155	135	–	130	115	–				
6	145	125	–	135	115	–	115	100	–				
7	39	34	–	37	32	–	32	27	–				
8	225	195	175	215	185	165	180	155	140				
9	175	150	–	170	145	–	145	125	–				
10	145	125	–	140	120	–	115	100	–				
11	105	90	–	100	90	–	85	75	–				
12	170	145	130	165	140	125	140	120	105				
13	150	130	115	145	125	110	120	105	95				
14	125	110	–	120	105	–	100	90	–				
15	105	90	–	100	85	–	85	75	–				
16	850	730	655	810	695	625	690	590	530				
17	685	590	530	655	560	505	555	480	430				
18	525	450	405	500	430	385	425	365	325				
19	47	40	–	45	39	–	38	33	–				
20	38	33	–	36	31	–	31	26	–				
21	33	28	–	31	27	–	26	23	–				

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,04	0,08	0,12	1,00
Side milling	25%	0,05	0,11	0,16	1,30
	10%	0,08	0,16	0,25	1,50
	5%	0,11	0,23	0,34	1,60
Average chip thickness h_m		0,03	0,05	0,08	–

MM16 - Cutting data, 2-flute copy milling

Insert selection MM16 2-flute – Copy milling

SMG	Roughing MM16-20020..	Semi-finishing MM16-20020..	Finishing MM16-20020..
1	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
2	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
3	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
4	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
5	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
6	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
7	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
8	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
9	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
10	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
11	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
12	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
13	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
14	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
15	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
16	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
17-18	-B90S-E07 F30M	-B90P-M07 F30M	B90SF-E04 F15M
19-20	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
21	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M
22	-B90-MD07 F30M	-B90P-M07 F30M	B90PF-M03* F15M

*For ∅ 20, use insert MM16-20020-B120PF-M04 F15M for these materials.

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm						Profile height, H mm			
		0,05	0,18	0,75				0,002	0,011	0,045	0,102
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
5	0,90 x D_c	0,40	0,30	0,25	0,20	1,5	0,55 x D_c	0,18	0,45	0,30	0,25
4	0,83 x D_c					1	0,46 x D_c				
3	0,75 x D_c	0,50	0,35	0,30	0,30	0,6	0,36 x D_c			0,40	0,35
2	0,63 x D_c					0,4	0,29 x D_c				
1,5	0,55 x D_c	0,60	0,45	0,40	0,40	0,2	0,21 x D_c			0,55	0,50
Speed factor		1,45	1,30	1,15	1,00	Speed factor		1,60	1,40	1,30	1,20

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

Cutting data – Full engagement

SMG	Grades						
	F15M	F30M	T60M				
	Cutting speed, v_c (m/min)						
1	330	290	235				
2	290	255	205				
3	240	210	170				
4	220	195	155				
5	180	155	125				
6	130	115	95				
7	40	35	30				
8	215	185	150				
9	185	165	130				
10	160	140	110				
11	125	110	90				
12	195	170	135				
13	175	150	120				
14	160	140	110				
15	130	110	90				
16	895	785	635				
17	575	505	410				
18	510	450	365				
19	50	45	35				
20	40	35	30				
21	35	30	25				
22	85	70	60				

MM16 - Cutting data, 3-flute copy milling

Insert selection MM16 3-flute – Copy milling

SMG	Roughing MM16-20015..	Semi-finishing MM16-20015..	Finishing MM16-20015..
1	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
2	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
3	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
4	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
5	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
6	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
7	-B90A30-D06 F30M	-B90A30-E06 F30M	-B90A30-E06 F30M
8	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
9	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
10	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
11	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M
12	-B90A30-E06 F30M	-B90A30-E06 F30M	-B90A30-E06 F30M
13	-B90A30-E06 F30M	-B90A30-E06 F30M	-B90A30-E06 F30M
14	-B90A30-D06 F30M	-B90A30-E06 F30M	-B90A30-E06 F30M
15	-B90A30-D06 F30M	-B90A30-E06 F30M	-B90A30-E06 F30M
16	-B90A30-E06 F30M	-B90A30-E06 F30M	-B90A30-E06 F30M
17-18	-B90A30-E06 F30M	-B90A30-E06 F30M	-B90A30-E06 F30M
19-20	-B90A30-D06 F30M	-B90A30-E06 F30M	-B90A30-E06 F30M
21	-B90A30-D06 F30M	-B90A30-D06 F30M	-B90A30-E06 F30M
22	-B90A30-M06 F40M	-B90A30-E06 F30M	-B90A30-E06 F30M

Feed selection

Roughing						Semi-finishing and finishing					
D.O.C. a_p mm	Working dia. D_w	a_e/D_c 10%	a_e/D_c 20%	a_e/D_c 40%	Full engagement 100%	D.O.C. a_p mm	Working dia. D_w	a_e/D_c 2%	a_e/D_c 5%	a_e/D_c 10%	a_e/D_c 15%
		Profile height, H mm 0,05	Profile height, H mm 0,18	Profile height, H mm 0,75				Profile height, H mm 0,002	Profile height, H mm 0,011	Profile height, H mm 0,045	Profile height, H mm 0,102
		Feed, f_z (mm/tooth)						Feed, f_z (mm/tooth)			
5	0,90 x D_c	0,35	0,25	0,19	0,19	1,5	0,55 x D_c	0,18	0,35	0,25	0,20
4	0,83 x D_c					1	0,46 x D_c				
3	0,75 x D_c	0,45	0,30	0,25	0,25	0,6	0,36 x D_c		0,45	0,35	0,30
2	0,63 x D_c					0,4	0,29 x D_c				
1,5	0,55 x D_c	0,50	0,35	0,35	0,35	0,2	0,21 x D_c			0,45	0,45
Speed factor		1,45	1,30	1,15	1,00	Speed factor		1,60	1,40	1,30	1,20

Reduce f_z by 30% for Material group No. 7. Multiply speed value by speed factor.

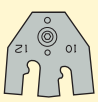
Cutting data – Full engagement

SMG	Grades						
	F30M	F40M					
	Cutting speed, v_c (m/min)						
1	315	300					
2	275	260					
3	230	215					
4	210	200					
5	170	160					
6	125	120					
7	40	35					
8	200	190					
9	175	165					
10	150	145					
11	115	110					
12	180	175					
13	165	155					
14	150	145					
15	120	115					
16	845	805					
17	545	520					
18	480	460					
19	50	45					
20	40	35					
21	35	30					
22	85	70					

Dynamomentic keys for Minimaster

Dynamomentic keys with fixed torque values to ensure the correct tightening force when mounting the Minimaster insert into its holder.
Dynamomentic keys are calibrated according to ISO 6789.

Code key: MM02-4006
MM02 = 2-flute (MM03 = 3-flute)
40 = Torque value 4 Nm
06 = Insert size

Dynamomentic key (including key end)	Replaceable key end 	For insert	Torque value
MM02-4006	MM02-06	2-flute MM06	4 Nm
MM02-8008	MM02-08	2-flute MM08	8 Nm
MM02-1201012	MM02-1012	2-flute MM10-M12	12 Nm
MM02-16014	MM02-14	2-flute MM12-M14	16 Nm
MM02-16016	MM02-16	2-flute MM16	16 Nm
MM03-4006	MM03-06	3-flute MM06	4 Nm
MM03-8008	MM03-08	3-flute MM08	8 Nm
MM03-1201012	MM03-1012	3-flute MM10-M12	12 Nm
MM03-16016	MM03-16	3-flute MM16	16 Nm

Max RPM and torque values

Recommended RPM for all Seco cutters are shown on each catalogue page.
Normally there is no need for balancing tools for RPM up to 10 000. However in some cases balancing is necessary, for instance when using heavy tools and toolholders in small machines

Over 10 000 RPM:
We recommend balancing of tool and toolholders at least separately.
Over 20 000 RPM:
Both tool and toolholders must be balanced at least separately.
Over 30 000 RPM:
Tool and tool holders must be balanced as a unit.
The max RPM in the tables should never be exceeded.

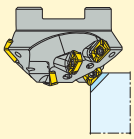
The exception is the Minimaster programme where the values are given in the table below.

Minimaster

Cutter	D_c min	Torque values (Nm)	Max RPM
MM06- Steel holder	6	4	80000
-Steel holder	8	4	80000
-90°/89° D/DM holder	6	4	80000
-90°/89° D/DM holder	8	4	80000
MM08 -Steel holder	8	8	80000
-Steel holder	10	8	80000
-90°/89° D/DM holder	8	8	80000
-90°/89° D/DM holder	10	8	76300
MM10 -Steel holder	10	12	80000
-Steel holder	12	12	80000
-90°/89° D/DM holder	10	12	76300
-90°/89° D/DM holder	12	12	63600
MM12 -Steel holder	12	12	80000
Steel holder	14	16	72700
Steel holder	16	16	63600
-90°/89° D/DM holder	12	12	63600
-90°/89° D/DM holder	14	16	54500
-90°/89° D/DM holder	16	16	47600
MM16 -Steel holder	16	16	63600
Steel holder	20	16	50800
-90°/89° D/DM holder	16	16	47600
-90°/89° D/DM holder	20	16	38100

Chamfer milling 217/220.49-XO12

Page 480

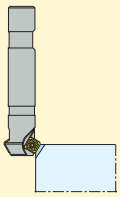


30° ∅ 20-35
45° ∅ 16-35
60° ∅ 16-35
75° ∅ 20-35

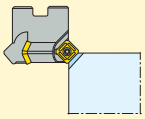
Chamfer milling

Chamfer milling 215.39/49, 215/220.49

page 481



∅ 20 mm (215.39)



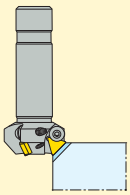
∅ 9-25 mm (215.49)
∅ 40 mm (220.49)

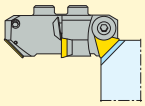
Chamfer milling 60°

Chamfer milling 45°

Chamfer milling 215/220.47

page 482



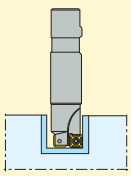


∅ 32 mm (215.47)
∅ 50-63 mm (220.47)

Chamfer milling 45°

Spot face milling 417.19

Page 483

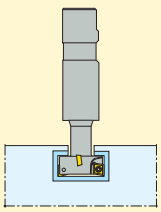


∅ 18-42 mm

Spot face milling

T-slot milling 395.19

page 484



∅ 25-50 mm

T-slot milling

Choice of cutter, inserts and cutting data

1 Select cutter

- Use the guidelines on pages 480 - 482 to choose a suitable cutter.

2 Select cutter diameter

2a • Look up the pages for the selected cutter and choose a suitable diameter in the tool data table.

- Advantages smaller diameter
  - Flexibility
  - Price
- Advantages larger diameter
  - Metal removal rate
  - Rigidity

3 Select inserts

- Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

3a • Use the insert selection table to choose suitable inserts.

3b • Use the tool data table to find the number of inserts needed.

4 Select cutting data

4a • Maximum recommended axial cutting depth is in the tool data table. (See figure 1.)

4b • Minimum and maximum feed per tooth recommendations are in the insert selection table. Choose a value in the middle for normal operations.

4c • Cutting speed recommendations are in the cutting data table.

- Maximum rpm that for safety reasons should never be exceeded, are shown on each product page.

4d • Notice that the feed per tooth and cutting speed recommendations are for 10% cutter engagement. Calculate the actual engagement (a_e/D_c%) and use the calculated percentage to get appropriate cutting data recommendations from the (limited) cutting data conversion table. (See figure 2.)

- Formulae for cutting data calculation are on page 597.

Figure 1

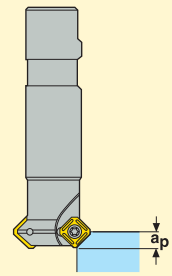
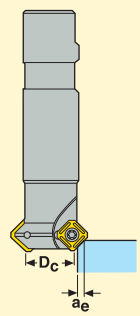


Figure 2



Chamfer milling cutters

215.39/49 and 220.49

Chamfer milling 60° and 45°

- For insert selection and cutting data recommendations, see page
- For complete insert programme, see page

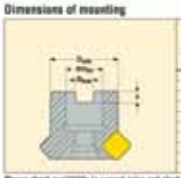
2a 4a 3b

	Part No.		Dimensions in mm											Type of mounting	
			D_c	D_{cp}	DMm_{min}	l_2	l_3	l_4	l_5	l_6	a_p		K.O.		
Chamfer milling 60°	R215.39	-0808.3-08	20	27	20	-	110	80	80	70	8.3	2	5.3	Cyl/Weldon	SPMX 0903...
Chamfer milling 45°	R215.49	-1008.3-08	8	16	10	-	80	32	32	40	4	1	3.1	Cyl/Weldon	SPMX 0903...
		-0816.3-08	16	26	20	-	110	60	60	70	6	3	5.3	Cyl/Weldon	SPMX 0903...
		-0825.3-10	25	34	32	-	130	70	70	80	7	3	5.8	Cyl/Weldon	SPMX 1273...
Chamfer milling 45°	R220.49	-0840-12	40	34	-	40	-	-	-	-	7	3	8.3	Arbor	SPMX 1273...

Spare parts

For cutter	Locking screw	Key	Arbor screw
R215.39-0808	C03007	T09-3	-
R215.49-1008	C03009	T07-3	-
R215.49-0816	C03007	T09-3	-
R215.49-0825	C03010	T10-3	-
R220.49-0840	C03009	T10-3	300.17-001

Dimensions of mounting



For cutter	Dimensions in mm			For arbor
	DMm_{min}	B_{min}	r	
R220.49-0840-12	20	15.8	6.3	20

Please check availability in current price and stock list.

Chamfer milling cutters

4b 3a

Insert selection – 215.39 and 215/220.49

Sass Material group No.	Feed f_z mm/tooth (a_p/D_c = 10%)	First choice 215.39-...-08	Feed f_z mm/tooth (a_p/D_c = 10%)	First choice 215.49-...-08	Feed f_z mm/tooth (a_p/D_c = 10%)	First choice 215.49-...-12
1	0.20-0.35	SPMX 0903AP-75 T25M	0.28-0.45	SPMX 0903AP-75 T25M	0.28-0.50	SPMX 1273AP-75 T25M
2	0.20-0.35	SPMX 0903AP-75 T25M	0.28-0.45	SPMX 0903AP-75 T25M	0.28-0.50	SPMX 1273AP-75 T25M
3	0.20-0.30	SPMX 0903AP-75 T25M	0.28-0.40	SPMX 0903AP-75 T25M	0.28-0.45	SPMX 1273AP-75 T25M
4	0.20-0.30	SPMX 0903AP-75 T25M	0.28-0.40	SPMX 0903AP-75 T25M	0.28-0.45	SPMX 1273AP-75 T25M
5	0.18-0.28	SPMX 0903AP-75 T25M	0.25-0.38	SPMX 0903AP-75 T25M	0.25-0.40	SPMX 1273AP-75 T25M
6	0.14-0.25	SPMX 0903AP-75 T25M	0.20-0.30	SPMX 0903AP-75 T25M	0.20-0.35	SPMX 1273AP-75 T25M
7	0.12-0.18	SPMX 0903AP-75 T25M	0.15-0.25	SPMX 0903AP-75 T25M	0.15-0.25	SPMX 1273AP-75 T25M
8	0.20-0.30	SPMX 0903AP-75 T25M	0.28-0.40	SPMX 0903AP-75 T25M	0.28-0.40	SPMX 1273AP-75 T25M
9	0.18-0.28	SPMX 0903AP-75 T25M	0.25-0.38	SPMX 0903AP-75 T25M	0.25-0.38	SPMX 1273AP-75 T25M
10	0.18-0.25	SPMX 0903AP-75 T25M	0.22-0.34	SPMX 0903AP-75 T25M	0.24-0.36	SPMX 1273AP-75 T25M
11	0.12-0.20	SPMX 0903AP-75 T25M	0.15-0.25	SPMX 0903AP-75 T25M	0.15-0.25	SPMX 1273AP-75 T25M
12	0.20-0.35	SPMX 0903AP-75 HX	0.28-0.45	SPMX 0903AP-75 HX	0.28-0.50	SPMX 1273AP-75 HX
13	0.20-0.30	SPMX 0903AP-75 HX	0.28-0.40	SPMX 0903AP-75 HX	0.28-0.45	SPMX 1273AP-75 HX
14	0.18-0.28	SPMX 0903AP-75 HX	0.25-0.38	SPMX 0903AP-75 HX	0.25-0.38	SPMX 1273AP-75 HX
15	0.15-0.25	SPMX 0903AP-75 HX	0.20-0.30	SPMX 0903AP-75 HX	0.30-0.32	SPMX 1273AP-75 HX
16	0.20-0.35	SPMX 0903AP-75 HX	0.28-0.45	SPMX 0903AP-75 HX	0.28-0.50	SPMX 1273AP-75 HX
17	0.20-0.28	SPMX 0903AP-75 HX	0.28-0.40	SPMX 0903AP-75 HX	0.28-0.38	SPMX 1273AP-75 HX
20	0.15-0.25	SPMX 0903AP-75 T25M	0.20-0.30	SPMX 0903AP-75 T25M	0.30-0.32	SPMX 1273AP-75 T25M
21	0.12-0.20	SPMX 0903AP-75 T25M	0.15-0.25	SPMX 0903AP-75 T25M	0.15-0.25	SPMX 1273AP-75 T25M
22	0.15-0.25	SPMX 0903AP-75 T25M	0.20-0.30	SPMX 0903AP-75 T25M	0.20-0.32	SPMX 1273AP-75 T25M

Cutting data - 10% engagement (a_p/D_c = 10%)

4c

Sass Material group No.	Grades																	
	T25M			S25M			HX											
	Feed, f_z (mm/tooth)																	
	0.12	0.20	0.32	0.12	0.20	0.32	0.12	0.20	0.32									
	Cutting speed, v_c (m/min)																	
1	400	370	320	330	270	230	-	-	-									
2	310	230	290	300	240	210	-	-	-									
3	240	215	240	240	200	170	-	-	-									
4	210	200	220	230	185	160	-	-	-									
5	200	215	180	190	150	130	-	-	-									
6	200	190	-	150	120	-	-	-	-									
7	70	60	-	50	40	-	-	-	-									
8	270	205	260	270	220	190	-	-	-									
9	220	200	230	235	190	160	-	-	-									
10	270	220	190	200	160	140	-	-	-									
11	210	175	-	160	130	-	-	-	-									
12	300	240	210	230	190	150	260	210	180									
13	270	220	190	200	160	140	240	190	170									
14	250	200	180	190	150	130	220	180	150									
15	200	180	-	150	120	-	170	140	-									
16	1070	1070	1100	1140	930	800	1000	1100	900									
17	1000	1000	800	900	750	600	1000	800	770									
20	90	80	-	70	60	-	80	40	-									
21	90	80	-	80	70	-	70	70	-									
22	90	80	-	70	50	-	50	40	-									

Cutting data - Chamf. milling

4d

Operations	a_p/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0.08	0.10	0.20	0.60
Side milling	25%	0.08	0.20	0.30	0.80
	10%	0.12	0.30	0.50	1.00
	5%	0.17	0.43	0.70	1.10
Average chip thickness hm		0.03	0.07	0.11	-

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert

SPMX

Choice of cutter, inserts and cutting data

1 Select cutter diameter

1a • Look up the pages for spot face milling cutters and choose a suitable diameter in the tool data table.

• Advantages smaller diameter
- Flexibility
- Price

• Advantages larger diameter
- Metal removal rate
- Rigidity

2 Select inserts

• Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

2a • Use the tool data and the insert selection tables to choose suitable inserts.

• Notice that there are different inserts for periphery and centre.

3 Select cutting data

3a • Maximum recommended drilling and axial cutting depths are found in the tool data table. (See figure 1.)

• Notice that the maximum axial cutting depth is smaller than the maximum recommended drilling depth if circular interpolation is used to increase the diameter of the spot face.

3b • Minimum and maximum feed per tooth recommendations are in the insert selection table. Choose a value in the middle for normal operations where the cutter is fully engaged. (See figure 2.)

3c • When calculating feed per revolution and feed speed always use the z_c-value for the actual cutter. That is the effective number of teeth to use for cutting data calculation. The z_c-value is found in the tool data table.

3d • Cutting speed recommendations are found in the cutting data table.

• Maximum rpm that for safety reasons should never be exceeded, are shown on each product page.

• Formulae for cutting data calculation are on page 597.

3e • If circular interpolation is used to increase the diameter of the spot face the feed per tooth and the cutting speed should be increased compared to the recommendations for a fully engaged cutter. The reason for that is to keep the chip thickness and the working temperature in the cutting zone at the same value as for a fully engaged cutter. Recommendations for suitable increases are found in the (limited) side milling cutting data table. Divide the radial cutting depth (a_e) with the cutter diameter (D_c) and use the calculated percentage to get the appropriate cutting data. (See figure 3.)

Figure 1

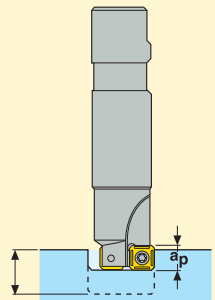
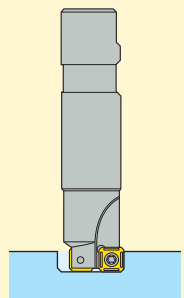


Figure 2



• Formulae for calculating the radial cutting depth in circular interpolation are on page 598.
• Extended tables and formulae for calculating cutting data for side milling are found on page 599.
• Notice that there will be a deterioration of the surface finish on the workpiece when the feed rate is increased. (See figure 4.)

4 Power requirement

• See page 601 for power requirement calculation.

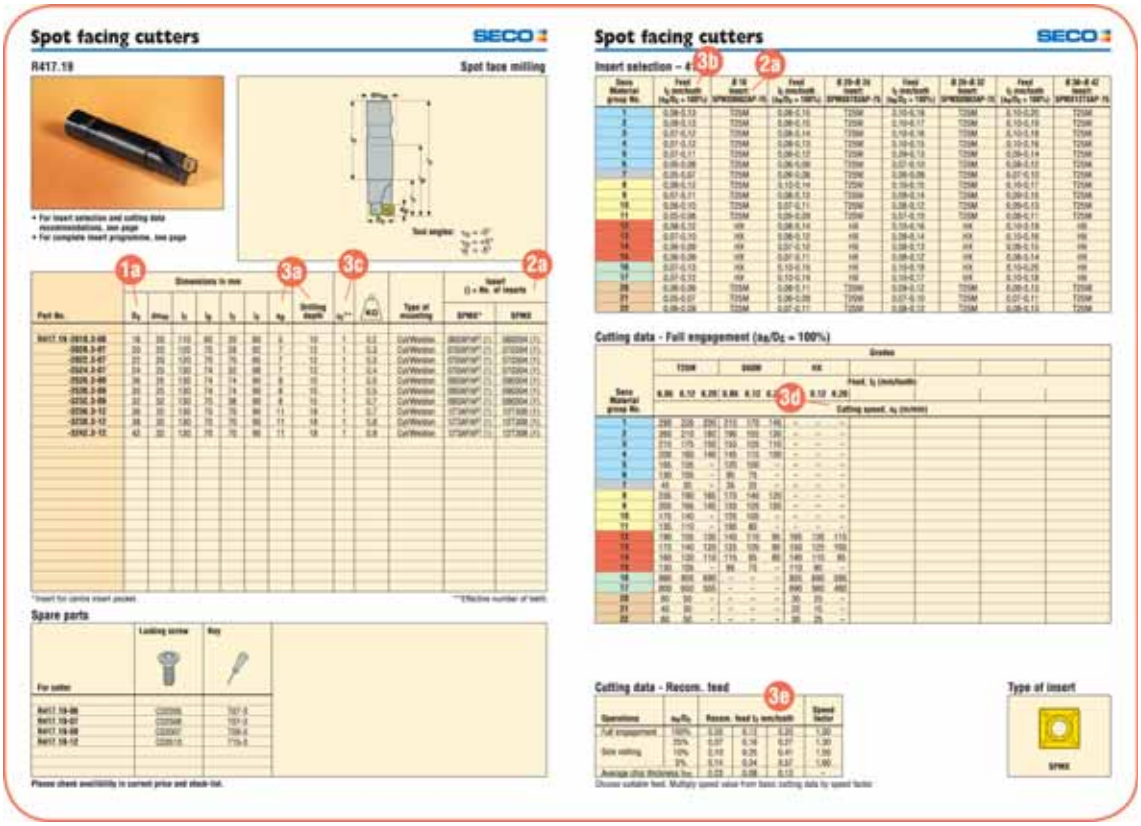


Figure 3

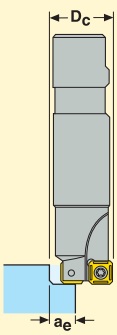
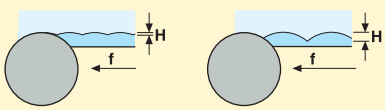


Figure 4



Choice of cutter, inserts and cutting data

1 Select cutter diameter

1a • Look up the pages for T-slot milling cutters and choose a suitable diameter in the tool data table.

• Notice that the choice of cutter diameter (D_c) also determines the minimum height of the T-slot (a_p). (See figure 1)

2 Select inserts

• Use the tables beginning on page 603 to classify the workpiece material into a Seco material group.

2a • Use the insert selection table to choose suitable inserts.

2b • Use the tool data table to find the number of inserts needed.

3 Select cutting data

• The minimum axial cutting depth and minimum cutting width is determined by the cutter when machining a T slot. (See figure 2)

3a • Minimum and maximum feed per tooth recommendations are in the insert selection table. Choose a value in the middle for normal operations where the cutter is fully engaged.

3b • When calculating feed per revolution and feed speed always use the z_c-value for the actual cutter. That is the effective number of teeth to use for cutting data calculation. The z_c-value is found in the tool data table.

3c • Cutting speed recommendations are in the cutting data table.

• Maximum rpm that for safety reasons should never be exceeded, are shown on each product page.

• Formulae for cutting data calculation are on page 597.

3d • When side milling, for example when widening a slot, the feed per tooth and the cutting speed should be increased compared to the recommendations for a fully engaged cutter. The reason for that is to keep the chip thickness and the working temperature in the cutting zone at the same value as for a fully engaged cutter. Recommendations for suitable increases are found in the (limited) side milling cutting data table. Divide the radial cutting depth (a_e) with the cutter diameter (D_c) and use the calculated percentage to get the appropriate cutting data. (See figure 3)

Figure 1

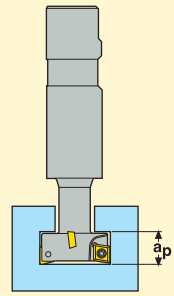
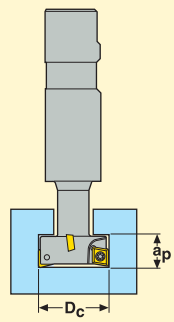


Figure 2



• Extended tables and formulae for calculating cutting data for side milling are on page 599.

• Notice that there will be a deterioration of the surface finish on the workpiece when the feed rate is increased. (See figure 4)

4 Power requirement

• See page 601 for power requirement calculation.

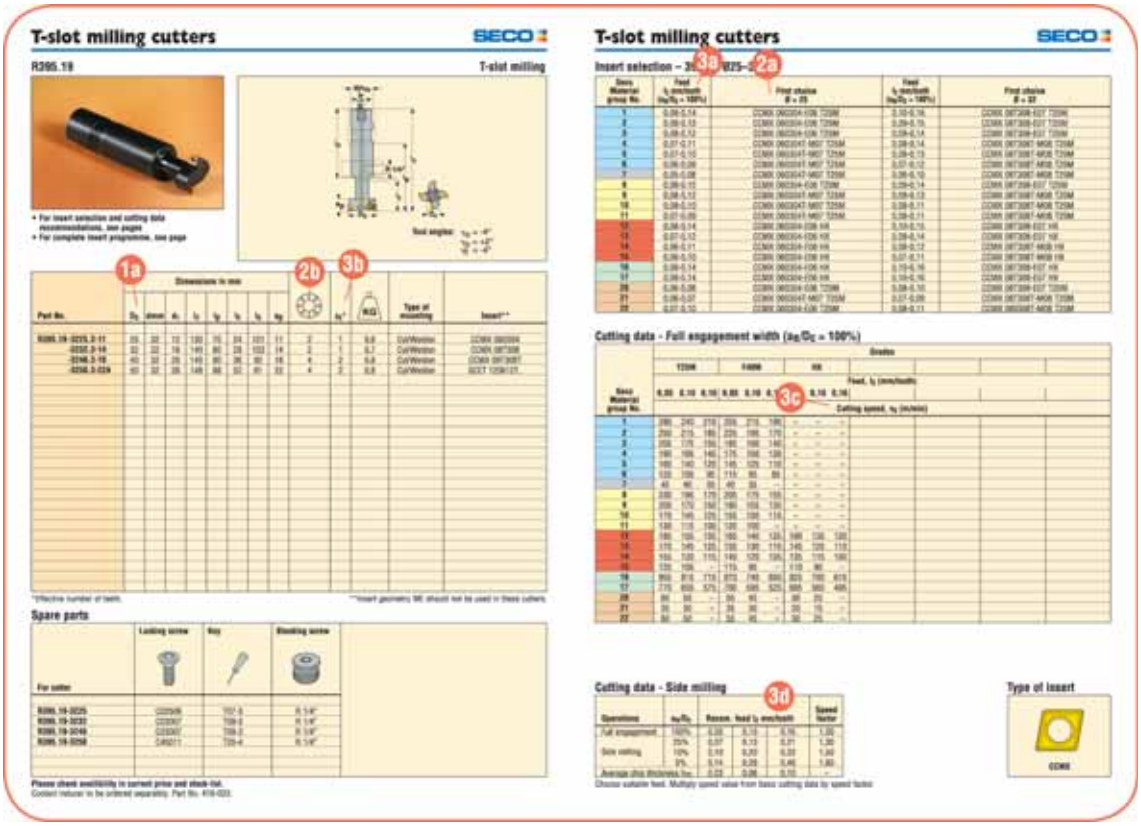


Figure 3

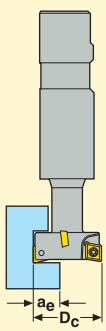
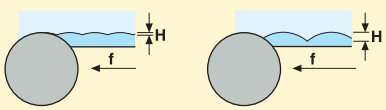


Figure 4

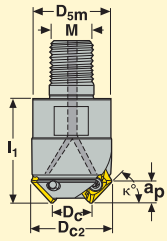


217/220.49

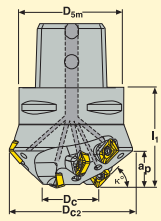
Chamfer milling 30°, 45°, 60° and 75°

- For insert selection and cutting data recommendations, see pages 485 - 492.
- For complete insert programme, see page 556.

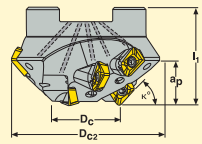
Combimaster



Seco-Capto



Arbor



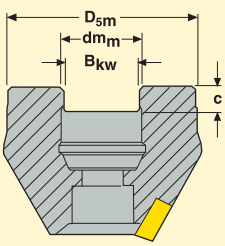
κ	Part No.	Dimensions in mm D_c	D_{c2}	D_{5m}	l_1	M	a_p	z_c*		KG		Type of mounting	
Chamfer angle 30°													
	R217.49 -1620.RE-XO12-30.3A	20	38,8	30	40	M16	5,5	3	3	0,3	16400	Combimaster**	XO..1204
	R220.49 -0035-15-XO12-30.3A	35	90,5	–	50	–	15	3	9	1	10700	Arbor	XO..1204
	C6-R217.49 -032-15-XO12-30.3A	32	87,5	63	60	–	15	3	9	1,6	10900	Seco-Capto C6	XO..1204
Chamfer angle 45°													
	R217.49 -1616.RE-XO12-45.2A	16	30,8	30	40	M16	7	2	2	0,2	18600	Combimaster**	XO..1204
	-1620.RE-XO12-45.3A	20	34,8	30	40	M16	7	3	3	0,2	17400	Combimaster**	XO..1204
	R220.49 -0035-22-XO12-45.3A	35	79,4	–	50	–	22,5	3	9	0,8	11600	Arbor	XO..1204
	C6-R217.49 -032-22-XO12-45.3A	32	76,4	63	60	–	22,5	3	9	1,4	11800	Seco-Capto C6	XO..1204
Chamfer angle 60°													
	R217.49 -1216.RE-XO12-60.2A	16	27	23	30	M12	9	2	2	0,1	20100	Combimaster**	XO..1204
	-1620.RE-XO12-60.3A	20	30,5	30	40	M16	9	3	3	0,2	18400	Combimaster**	XO..1204
	R220.49 -0035-28-XO12-60.3A	35	67	–	50	–	28	3	9	0,6	12600	Arbor	XO..1204
	C6-R217.49 -032-28-XO12-60.3A	32	64	63	60	–	28	3	9	1,2	12900	Seco-Capto C6	XO..1204
Chamfer angle 75°													
	R217.49 -1220.RE-XO12-75.2A	20	25,4	23	30	M12	11	2	2	0,1	20500	Combimaster**	XO..1204
	R220.49 -0035-31-XO12-75.3A	35	51,5	–	50	–	31	3	9	0,3	14400	Arbor	XO..1204
	C5-R217.49 -032-42-XO12-75.3A	32	54,1	50	70	–	42,5	3	12	0,8	14100	Seco-Capto C5	XO..1204

*Effective number of teeth ** For shanks and dimensions, see pages 498 - 510.

Spare parts

For cutter	D_c	Chamfer angle	Locking screw	Key	Arbor screw	Torque values Nm
R217.49-xxxx.RE	16	45-60	C03507-T10P	T10P-3	–	2,0
R217.49-xxxx.RE	20	60-75	C03507-T10P	T10P-3	–	2,0
R217.49-xxxx.RE	20	30-45	C03509-T10P	T10P-3	–	2,0
C5/C6-R217.49-xxxx	32	30-45-60-75	C03509-T10P	T10P-3	–	2,0
R220.49-xxxx	35	30-45-60	C03509-T10P	T10P-3	MC6S12X35	2,0
R220.49-xxxx	35	75	C03509-T10P	T10P-3	MC6S10X40	2,0

Dimensions of mounting



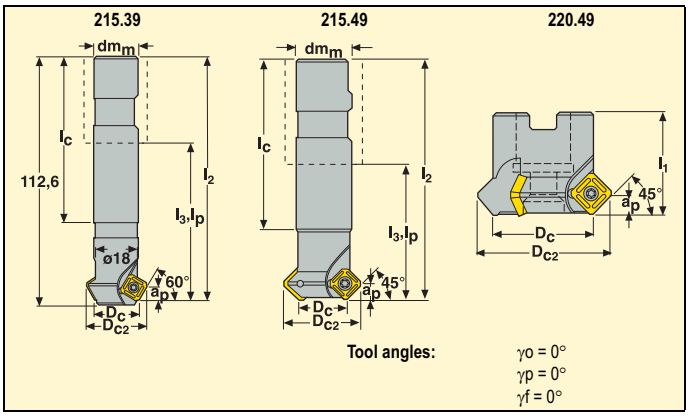
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.49-0035-31-XO12-75.3A	22	47	10,4	6,3	22
R220.49-0035-XO12..	27	62	12,4	7	27

Please check availability in current price and stock-list.

215.39/49 and 220.49

Chamfer milling 60° and 45°

- For insert selection and cutting data recommendations, see page 494.
- For complete insert programme, see page 549.



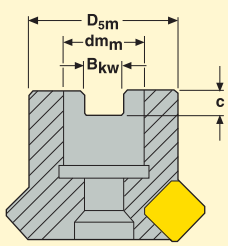
	Part No.	Dimensions in mm D_c	D_{c2}	dm_m	l_1	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
Chamfer milling 60°	R215.39 -2020.3-09	20	27	20	–	110	60	60	70	6,5	2	0,3	24300	Cyl/Weldon	SPMX0903..
Chamfer milling 45°	R215.49 -1609.3-06	9	16	16	–	80	32	32	40	4	1	0,1	55600	Cyl/Weldon	SPMX0602..
	-2016.3-09	16	26	20	–	110	60	60	75	5	2	0,3	27200	Cyl/Weldon	SPMX0903..
	-3225.3-12	25	39	32	–	130	70	70	90	7	2	0,8	16900	Cyl/Weldon	SPMX12T3..
Chamfer milling 45°	R220.49 -0040-12	40	54	–	40	–	–	–	–	7	3	0,3	13400	Arbor	SPMX12T3..

Spare parts

For cutter	Locking screw	Key	Torque value Nm	Arbor screw
R215.39-2020	C03007-T09P	T09P-3	1,9	–
R215.49-1609	C02205-T07P	T07P-3	0,9	–
R215.49-2016	C03007-T09P	T09P-3	2,0	–
R215.49-3225	C03510-T15P	T15P-3	3,0	–
R220.49-0040	C03508-T15P	T15P-3	3,0	220.17-691

Dynamomentic keys, see page 590.

Dimensions of mounting



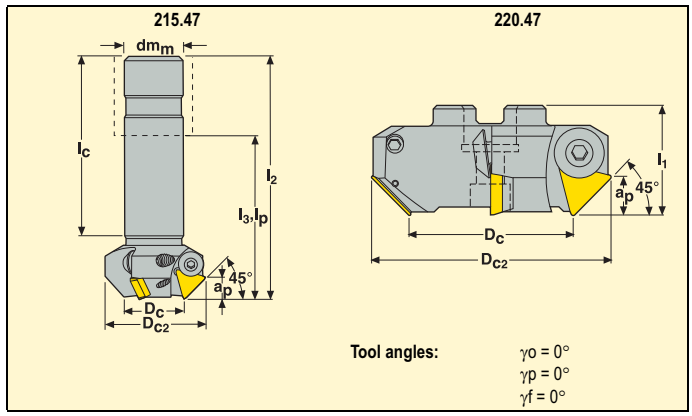
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.49-0040-12	22	47	10,4	6,3	22

Please check availability in current price and stock-list.

215.47/220.47

Chamfer milling 45°

- For insert selection and cutting data recommendations, see page 493.
- For complete insert programme, see page 582.



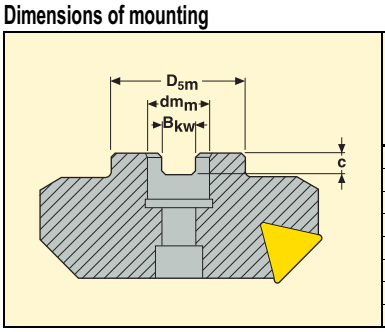
Part No.	Dimension in mm D_c	D_{c2}	dm_m	l_1	l_2	l_p	l_3	l_c	a_p		KG		Type of mounting	
R215.47 -3232	32	50	32	–	125	35	35	97	9	3	0,8	15300	Cyl/Weldon	TP.1603
R220.47 -0050	50	75	–	40	–	–	–	–	13	4	0,5	7600	Arbor	TP.2204
-0063	63	88	–	40	–	–	–	–	13	4	0,9	6800	Arbor	TP.2204

Spare parts

For cutter	Anvil	Anvil screw	Locking screw	Allen key*	Arbor screw
R215.47-..	175.11-621	174.10-650.9	174.16-644	2 + 4 SMS795	–
R220.47-0050–0063	175.11-624	174.10-650.9	174.16-648	2 + 5 SMS795	220.17-692

*** Torque values 6,0 Nm.** Dynamomentic keys, see page 590.

Dimensions of mounting



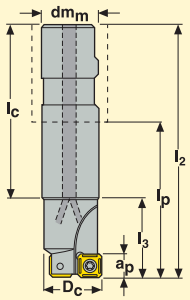
For cutter	Dimensions in mm dm_m	D_{5m}	B_{kw}	c	For arbor
R220.47-0050–0063	22	47	10,4	6,3	22

Please check availability in current price and stock-list.

R417.19

Spot face milling

- For insert selection and cutting data recommendations, see page 495.
- For complete insert programme, see page 549.



Tool angles: γ0 = - 5°
γp = + 5°
γf = - 5°

Part No.	Dimension in mm D_c	dm_m	l_2	l_p	l_3	l_c	a_p	Drilling depth	z_c**	KG		Type of mounting	Insert ( ) = No. of inserts SPMX*	SPMX
R417.19 -2018.3-06A	18	20	110	60	20	87	5	10	1	0,2	39200	Cyl/Weldon	0602AP/APT (1)	060204 (1)
-2020.3-07A	20	20	120	70	28	92	7	12	1	0,3	26200	Cyl/Weldon	0703AP/APT (1)	070304 (1)
-2022.3-07A	22	20	120	70	70	92	7	12	1	0,3	25000	Cyl/Weldon	0703AP/APT (1)	070304 (1)
-2524.3-07A	24	25	130	74	31	98	7	12	1	0,4	24000	Cyl/Weldon	0703AP/APT (1)	070304 (1)
-2526.3-09A	26	25	130	74	74	98	8	15	1	0,5	21200	Cyl/Weldon	0903AP/APT (1)	090304 (1)
-2530.3-09A	30	25	130	74	74	90	8	15	1	0,5	19800	Cyl/Weldon	0903AP/APT (1)	090304 (1)
-3232.3-09A	32	32	130	70	38	90	8	15	1	0,7	19200	Cyl/Weldon	0903AP/APT (1)	090304 (1)
-3236.3-12A	36	32	130	70	70	90	11	18	1	0,7	12600	Cyl/Weldon	12T3AP/APT (1)	12T308 (1)
-3238.3-12A	38	32	130	70	70	90	11	18	1	0,8	12300	Cyl/Weldon	12T3AP/APT (1)	12T308 (1)
-3242.3-12A	42	32	130	70	70	90	11	18	1	0,9	12000	Cyl/Weldon	12T3AP/APT (1)	12T308 (1)

*Insert for centre insert pocket.

**Effective number of teeth.

Spare parts

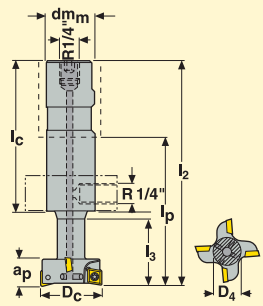
For cutter	Locking screw	Key	Torque value Nm
R417.19-06A	C02205-T07P	T07P-3	0,9
R417.19-07A	C02506-T07P	T07P-3	0,9
R417.19-09A	C03007-T09P	T09P-3	2,0
R417.19-12A	C03510-T15P	T15P-3	3,0

Please check availability in current price and stock-list.
Dynamomentic keys, see page 590.

R395.19

T-slot milling

- For insert selection and cutting data recommendations, see pages 496 - 497.
- For complete insert programme, see pages 517, 533.



Tool angles:

$\gamma o = -4°$
$\gamma p = +2°$
$\gamma f = -4°$

Part No.	Dimensions in mm D_c	dm_m	D_4	l_2	l_p	l_3	l_c	a_p		z_c*	KG		Type of mounting	Insert**
R395.19 -3225.3-11A	25	32	12	130	70	24	101	11	2	1	0,6	28400	Cyl/Weldon	CCMX 060304
-3232.3-14A	32	32	16	140	80	29	103	14	2	1	0,7	19800	Cyl/Weldon	CCMX 08T308
-3240.3-18A	40	32	20	150	90	41	104	18	4	2	0,8	14600	Cyl/Weldon	CCMX 09T308
-3250.3-22A	50	32	26	148	88	52	91	22	4	2	0,8	9800	Cyl/Weldon	SCET 120612T..

*Effective number of teeth.

**Insert geometry ME should not be used in these cutters.

Spare parts

For cutter	Locking screw	Key	Torque value Nm	Blanking screw
R395.19-3225	C02506-T07P	T07P-3	0,9	R 1/4"
R395.19-3232	C03007-T09P	T09P-3	2,0	R 1/4"
R395.19-3240	C03007-T09P	T09P-3	2,0	R 1/4"
R395.19-3250	C45011-T20P	T20P-4	5,0	R 1/4"

Please check availability in current price and stock-list.
Coolant inducer to be ordered separately. Part No. 416-033.
Dynamomentic keys, see page 590.

Insert selection – 217/220.49 - κ 30°

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,39–0,71	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,39–0,71	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,39–0,61	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,32–0,61	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,32–0,58	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,26–0,45	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7				
8	0,32–0,58	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,32–0,48	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,32–0,48	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,26–0,45	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,39–0,74	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,35–0,61	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,35–0,55	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,32–0,48	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,39–0,71	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,39–0,65	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,39–0,65	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,23–0,35	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,23–0,35	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,23–0,35	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,35–0,48	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data – 30% Contouring only

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,23	0,49	0,74	0,23	0,49	0,74	0,23	0,49	0,74	0,23	0,49	0,74	0,23	0,49	0,74	0,23	0,49	0,74	0,23	0,49	0,74
SMG	v_c (m/min)																				
1	635	520	455	565	460	405	535	435	380	490	400	350	345	285	250	425	350	305	–	–	–
2	540	440	385	480	390	340	450	370	325	415	340	300	295	240	210	360	295	260	–	–	–
3	445	365	320	395	320	280	375	305	265	345	280	245	240	200	175	300	245	215	–	–	–
4	380	310	270	335	275	240	320	260	230	295	240	210	205	170	150	255	210	185	–	–	–
5	315	260	–	280	230	–	265	215	–	245	200	–	170	140	–	215	175	–	–	–	–
6	280	225	–	245	200	–	235	190	–	215	175	–	–	–	–	185	150	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	435	355	310	345	280	245	340	275	245	320	260	230	250	205	180	290	240	210	–	–	–
9	340	280	–	270	220	–	265	215	190	255	205	–	200	160	–	230	185	–	–	–	–
10	280	230	–	220	180	–	220	180	155	205	170	–	160	130	–	190	155	–	–	–	–
11	205	170	–	165	135	–	160	130	–	155	125	–	120	100	–	140	115	–	–	–	–
12	330	270	235	295	240	210	280	225	200	255	210	185	160	130	115	225	180	160	265	220	190
13	290	240	210	260	210	185	245	200	175	225	185	160	140	115	100	195	160	140	235	190	170
14	245	200	–	215	175	–	205	170	–	190	155	–	115	95	–	165	135	–	195	160	–
15	205	165	–	180	145	–	170	140	–	155	130	–	95	80	–	135	110	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1105	900	790	1325	1085	950
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	895	730	640	1070	875	765
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	680	555	485	815	665	585
19	–	–	–	75	60	–	70	60	–	65	55	–	43	35	–	60	50	–	–	–	–
20	–	–	–	60	50	–	55	47	–	55	44	–	35	28	–	49	40	–	–	–	–
21	–	–	–	50	43	–	49	40	–	47	38	–	30	25	–	43	35	–	–	–	–
22	–	–	–	125	100	–	120	95	–	110	90	–	70	60	–	100	85	–	–	–	–

Insert selection – 217/220.49 - κ 30°

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,23–0,43	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,23–0,43	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,23–0,37	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,19–0,37	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,19–0,35	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,15–0,27	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7				
8	0,19–0,35	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,19–0,29	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,19–0,29	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,15–0,27	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,23–0,45	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,21–0,37	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,21–0,33	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,19–0,29	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,23–0,43	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,23–0,39	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,23–0,39	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,14–0,21	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,14–0,21	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,14–0,21	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,21–0,29	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data – 100% Slotting/Contouring

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,14	0,30	0,45	0,14	0,30	0,45	0,14	0,30	0,45	0,14	0,30	0,45	0,14	0,30	0,45	0,14	0,30	0,45	0,14	0,30	0,45
	v_c (m/min)																				
1	420	340	300	370	305	265	350	285	250	325	265	230	230	185	165	280	230	200	–	–	–
2	355	290	255	315	255	225	300	245	215	275	225	195	195	160	140	240	195	170	–	–	–
3	295	240	210	260	210	185	245	200	175	225	185	160	160	130	115	195	160	140	–	–	–
4	250	205	180	220	180	160	210	170	150	195	160	140	135	110	100	170	135	120	–	–	–
5	210	170	–	185	150	–	175	145	–	160	130	–	115	95	–	140	115	–	–	–	–
6	185	150	–	160	130	–	155	125	–	140	115	–	–	–	–	125	100	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	285	235	205	230	185	165	225	180	160	210	175	150	165	135	120	195	155	140	–	–	–
9	225	185	–	180	145	–	175	145	125	165	135	–	130	105	–	150	125	–	–	–	–
10	185	150	–	145	120	–	145	115	105	135	110	–	105	85	–	125	100	–	–	–	–
11	135	110	–	110	90	–	105	85	–	100	80	–	80	65	–	90	75	–	–	–	–
12	220	180	155	195	160	140	185	150	130	170	140	120	105	85	75	145	120	105	175	145	125
13	190	155	140	170	140	120	160	130	115	150	120	105	90	75	65	130	105	90	155	125	110
14	160	130	–	145	115	–	135	110	–	125	100	–	75	65	–	110	90	–	130	105	–
15	135	110	–	120	95	–	110	90	–	105	85	–	65	50	–	90	75	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	730	595	520	875	715	625
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	590	480	420	705	575	505
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	450	365	320	540	440	385
19	–	–	–	50	40	–	47	38	–	44	36	–	29	23	–	40	33	–	–	–	–
20	–	–	–	40	33	–	38	31	–	36	29	–	23	19	–	33	27	–	–	–	–
21	–	–	–	35	28	–	33	27	–	31	25	–	20	16	–	28	23	–	–	–	–
22	–	–	–	85	65	–	80	65	–	75	60	–	48	39	–	65	55	–	–	–	–

Insert selection – 217/220.49 - κ 45°

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,26–0,49	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,26–0,49	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,26–0,42	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,22–0,42	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,22–0,40	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,18–0,31	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7				
8	0,22–0,40	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,22–0,33	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,22–0,33	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,18–0,31	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,26–0,51	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,24–0,42	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,24–0,37	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,22–0,33	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,26–0,49	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,26–0,44	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,26–0,44	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,15–0,24	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,15–0,24	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,15–0,24	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,24–0,33	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data - 30% Contouring only

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,15	0,33	0,51	0,15	0,33	0,51	0,15	0,33	0,51	0,15	0,33	0,51	0,15	0,33	0,51	0,15	0,33	0,51	0,15	0,33	0,51
	v_c (m/min)																				
1	665	540	470	590	480	415	560	455	395	515	415	360	360	295	255	445	360	315	–	–	–
2	565	455	400	500	405	350	475	385	335	435	355	305	305	250	215	380	305	265	–	–	–
3	465	375	330	410	335	290	390	315	275	360	290	255	255	205	180	310	255	220	–	–	–
4	395	320	280	350	285	250	335	270	235	305	250	215	215	175	155	265	215	190	–	–	–
5	330	270	–	295	240	–	280	225	–	255	205	–	180	145	–	220	180	–	–	–	–
6	290	235	–	255	210	–	245	200	–	225	180	–	–	–	–	195	160	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	455	370	320	360	290	255	355	285	250	335	270	235	265	215	185	305	250	215	–	–	–
9	360	290	–	285	230	–	280	225	195	265	215	–	205	170	–	240	195	–	–	–	–
10	295	235	–	230	190	–	230	185	160	215	175	–	170	135	–	195	160	–	–	–	–
11	215	175	–	170	140	–	170	135	–	160	130	–	125	100	–	145	120	–	–	–	–
12	345	280	245	305	250	215	290	235	205	270	215	190	165	135	115	235	190	165	280	225	195
13	305	245	215	270	220	190	255	205	180	235	190	165	145	120	105	205	165	145	245	200	175
14	255	210	–	225	185	–	215	175	–	200	160	–	125	100	–	170	140	–	205	165	–
15	210	170	–	190	150	–	180	145	–	165	135	–	100	80	–	140	115	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1155	935	815	1385	1125	980
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	935	755	660	1120	910	790
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	710	575	500	855	690	600
19	–	–	–	80	65	–	75	60	–	70	55	–	45	37	–	65	50	–	–	–	–
20	–	–	–	65	50	–	60	48	–	55	46	–	36	30	–	50	42	–	–	–	–
21	–	–	–	55	44	–	50	42	–	49	40	–	31	25	–	44	36	–	–	–	–
22	–	–	–	130	105	–	125	100	–	115	95	–	75	60	–	105	85	–	–	–	–

Insert selection – 217/220.49 - κ 45°

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,16–0,30	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,16–0,30	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,16–0,26	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,14–0,26	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,14–0,24	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,11–0,19	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7				
8	0,14–0,24	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,14–0,20	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,14–0,20	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,11–0,19	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,16–0,31	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,15–0,26	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,15–0,23	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,14–0,20	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,16–0,30	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,16–0,27	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,16–0,27	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,09–0,15	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,09–0,15	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,09–0,15	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,15–0,20	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data - 100% Slotting/Contouring

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,09	0,20	0,31	0,09	0,20	0,31	0,09	0,20	0,31	0,09	0,20	0,31	0,09	0,20	0,31	0,09	0,20	0,31	0,09	0,20	0,31
	v_c (m/min)																				
1	530	430	370	470	380	330	445	360	310	410	330	285	285	235	200	355	285	250	–	–	–
2	445	360	315	395	320	280	375	305	265	345	280	245	245	195	170	300	245	210	–	–	–
3	370	300	260	325	265	230	310	250	220	285	230	200	200	165	140	250	200	175	–	–	–
4	315	255	220	280	225	195	265	215	185	245	195	170	170	140	120	210	170	150	–	–	–
5	265	215	–	235	190	–	220	180	–	205	165	–	145	115	–	175	145	–	–	–	–
6	230	185	–	205	165	–	195	155	–	180	145	–	–	–	–	155	125	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	360	295	255	285	230	200	280	230	200	265	215	190	210	170	145	240	195	170	–	–	–
9	285	230	–	225	180	–	220	180	155	210	170	–	165	135	–	190	155	–	–	–	–
10	230	190	–	185	150	–	180	145	125	170	140	–	135	110	–	155	125	–	–	–	–
11	170	140	–	135	110	–	135	110	–	125	105	–	100	80	–	115	95	–	–	–	–
12	275	225	195	245	195	170	230	185	165	210	170	150	130	105	95	185	150	130	220	180	155
13	240	195	170	215	175	150	205	165	145	185	150	130	115	95	80	160	130	115	195	160	135
14	205	165	–	180	145	–	170	140	–	155	125	–	95	80	–	135	110	–	165	135	–
15	170	135	–	150	120	–	140	115	–	130	105	–	80	65	–	115	90	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	915	745	645	1100	890	775
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	740	600	520	890	720	625
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	565	455	400	675	550	475
19	–	–	–	60	50	–	60	48	–	55	45	–	36	29	–	50	41	–	–	–	–
20	–	–	–	50	41	–	47	38	–	45	36	–	29	23	–	41	33	–	–	–	–
21	–	–	–	43	35	–	41	33	–	39	31	–	25	20	–	35	29	–	–	–	–
22	–	–	–	105	85	–	100	80	–	95	75	–	60	48	–	85	70	–	–	–	–

Insert selection 217/220.49 - κ 60°

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,20–0,37	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,20–0,37	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,20–0,32	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,17–0,32	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,17–0,31	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,14–0,24	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7				
8	0,17–0,31	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,17–0,25	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,17–0,25	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,14–0,24	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,20–0,39	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,19–0,32	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,19–0,29	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,17–0,25	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,20–0,37	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,20–0,34	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,20–0,34	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,12–0,19	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,12–0,19	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,12–0,19	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,19–0,25	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data – 30% Contouring only

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,12	0,26	0,39	0,12	0,26	0,39	0,12	0,26	0,39	0,12	0,26	0,39	0,12	0,26	0,39	0,12	0,26	0,39	0,12	0,26	0,39
	v_c (m/min)																				
1	665	540	475	590	480	420	560	455	400	515	415	365	360	295	260	445	365	320	–	–	–
2	565	460	405	500	405	355	475	385	340	435	355	310	305	250	220	380	305	270	–	–	–
3	465	380	330	410	335	295	390	315	280	360	290	255	255	205	180	310	255	225	–	–	–
4	395	325	285	350	285	250	335	270	240	305	250	220	215	175	155	265	215	190	–	–	–
5	330	270	–	295	240	–	280	225	–	255	210	–	180	145	–	220	180	–	–	–	–
6	290	235	–	255	210	–	245	200	–	225	180	–	–	–	–	195	160	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	455	370	325	360	295	255	355	290	255	335	275	240	265	215	190	305	250	220	–	–	–
9	360	290	–	285	230	–	280	225	200	265	215	–	205	170	–	240	195	–	–	–	–
10	295	240	–	230	190	–	230	185	165	215	175	–	170	140	–	195	160	–	–	–	–
11	215	175	–	170	140	–	170	135	–	160	130	–	125	100	–	145	120	–	–	–	–
12	345	280	250	305	250	220	290	235	210	270	215	190	165	135	120	235	190	165	280	225	200
13	305	250	220	270	220	195	255	210	180	235	190	170	145	120	105	205	165	145	245	200	175
14	255	210	–	225	185	–	215	175	–	200	160	–	125	100	–	170	140	–	205	170	–
15	210	170	–	190	155	–	180	145	–	165	135	–	100	85	–	140	115	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1155	940	825	1385	1125	990
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	935	760	665	1120	910	800
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	710	580	510	855	695	610
19	–	–	–	80	65	–	75	60	–	70	55	–	45	37	–	65	50	–	–	–	–
20	–	–	–	65	50	–	60	49	–	55	46	–	36	30	–	50	42	–	–	–	–
21	–	–	–	55	44	–	50	42	–	49	40	–	31	25	–	44	36	–	–	–	–
22	–	–	–	130	105	–	125	100	–	115	95	–	75	60	–	105	85	–	–	–	–

Insert selection 217/220.49 - κ 60°

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,14–0,25	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,14–0,25	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,14–0,22	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,11–0,22	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,11–0,20	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,09–0,16	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7				
8	0,11–0,20	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,11–0,17	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,11–0,17	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,09–0,16	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,14–0,26	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,12–0,22	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,12–0,19	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,11–0,17	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,14–0,25	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,14–0,23	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,14–0,23	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,08–0,12	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,08–0,12	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,08–0,12	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,12–0,17	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data - 100% Slotting/Contouring

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,08	0,17	0,26	0,08	0,17	0,26	0,08	0,17	0,26	0,08	0,17	0,26	0,08	0,17	0,26	0,08	0,17	0,26	0,08	0,17	0,26
	v_c (m/min)																				
1	455	370	325	405	330	290	380	310	275	350	285	250	250	200	175	305	250	220	–	–	–
2	385	315	275	340	280	245	325	265	230	300	245	215	210	170	150	260	210	185	–	–	–
3	320	260	225	280	230	200	265	220	190	245	200	175	175	140	125	215	175	155	–	–	–
4	270	220	195	240	195	170	230	185	165	210	170	150	150	120	105	185	150	130	–	–	–
5	225	185	–	200	165	–	190	155	–	175	145	–	125	100	–	150	125	–	–	–	–
6	200	160	–	175	145	–	165	135	–	155	125	–	–	–	–	135	110	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	310	255	220	245	200	175	245	200	175	230	190	165	180	145	130	210	170	150	–	–	–
9	245	200	–	195	160	–	190	155	135	180	150	–	140	115	–	165	135	–	–	–	–
10	200	165	–	160	130	–	155	125	110	150	120	–	115	95	–	135	110	–	–	–	–
11	150	120	–	120	95	–	115	95	–	110	90	–	85	70	–	100	80	–	–	–	–
12	235	195	170	210	170	150	200	165	140	185	150	130	115	95	80	160	130	115	190	155	135
13	210	170	150	185	150	130	175	145	125	160	130	115	100	80	70	140	115	100	170	135	120
14	175	145	–	155	125	–	145	120	–	135	110	–	85	70	–	120	95	–	140	115	–
15	145	120	–	130	105	–	120	100	–	110	90	–	70	55	–	95	80	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	790	645	565	950	775	680
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	640	520	455	765	625	545
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	485	400	345	585	475	415
19	–	–	–	55	44	–	50	42	–	48	39	–	31	25	–	44	36	–	–	–	–
20	–	–	–	43	35	–	41	33	–	39	32	–	25	20	–	35	29	–	–	–	–
21	–	–	–	37	31	–	35	29	–	33	27	–	21	18	–	30	25	–	–	–	–
22	–	–	–	90	75	–	85	70	–	80	65	–	50	42	–	75	60	–	–	–	–

Insert selection 217/220.49 - κ 75°

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,17–0,30	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,17–0,30	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,17–0,26	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,14–0,26	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,14–0,25	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,11–0,19	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7				
8	0,14–0,25	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,14–0,21	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,14–0,21	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,11–0,19	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,17–0,32	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,15–0,26	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,15–0,24	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,14–0,21	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,17–0,30	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,17–0,28	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,17–0,28	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,10–0,15	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,10–0,15	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,10–0,15	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,15–0,21	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data – 30% Contouring only

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,10	0,21	0,32	0,10	0,21	0,32	0,10	0,21	0,32	0,10	0,21	0,32	0,10	0,21	0,32	0,10	0,21	0,32	0,10	0,21	0,32
	v_c (m/min)																				
1	670	550	480	595	485	425	565	460	405	520	425	370	365	300	260	450	370	320	–	–	–
2	570	465	405	505	415	360	475	390	340	440	360	315	310	255	220	380	315	275	–	–	–
3	470	385	335	415	340	300	395	325	280	360	295	260	255	210	185	315	260	225	–	–	–
4	400	330	285	355	290	255	335	275	240	310	255	220	220	180	155	270	220	195	–	–	–
5	335	275	–	295	240	–	280	230	–	260	210	–	180	150	–	225	185	–	–	–	–
6	295	240	–	260	215	–	245	200	–	225	185	–	–	–	–	195	160	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	460	375	330	365	300	260	355	295	255	340	280	245	265	220	190	310	250	220	–	–	–
9	360	295	–	285	235	–	280	230	200	265	220	–	210	170	–	240	200	–	–	–	–
10	295	240	–	235	190	–	230	190	165	220	180	–	170	140	–	200	160	–	–	–	–
11	220	180	–	175	140	–	170	140	–	160	130	–	125	105	–	145	120	–	–	–	–
12	350	285	250	310	255	220	295	240	210	270	220	195	165	135	120	235	190	170	280	230	200
13	305	250	220	270	225	195	260	210	185	235	195	170	145	120	105	205	170	150	245	205	175
14	260	210	–	230	190	–	215	180	–	200	165	–	125	100	–	175	140	–	210	170	–
15	215	175	–	190	155	–	180	145	–	165	135	–	100	85	–	145	120	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1165	955	835	1400	1145	1000
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	940	770	675	1130	925	810
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	715	585	515	860	705	615
19	–	–	–	80	65	–	75	60	–	70	60	–	46	37	–	65	55	–	–	–	–
20	–	–	–	65	50	–	60	49	–	55	47	–	37	30	–	50	43	–	–	–	–
21	–	–	–	55	45	–	50	43	–	49	40	–	32	26	–	45	37	–	–	–	–
22	–	–	–	130	110	–	125	100	–	120	95	–	75	60	–	110	90	–	–	–	–

Insert selection 217/220.49 - κ 75°

Universal insert: XOMX 120408TR-M12 MP2500

SMG	f_z mm/tooth a_e/D_c = 100%	First choice	Difficult operations	
1	0,12–0,23	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
2	0,12–0,23	XOMX120408TR-ME08 F40M	XOMX120408TR-ME08 T350M	
3	0,12–0,19	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
4	0,10–0,19	XOMX120408TR-ME08 MP2500	XOMX120408TR-M12 T350M	
5	0,10–0,18	XOMX120408TR-M12 MP2500	XOMX120408TR-M12 T350M	
6	0,08–0,14	XOMX120408TR-M12 MP2500	XOMX120408TR-D14 MP2500	
7				
8	0,10–0,18	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
9	0,10–0,15	XOMX120408TR-ME08 MP2500	XOEX120408R-M07 T350M	
10	0,10–0,15	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
11	0,08–0,14	XOEX120408R-M07 T350M	XOEX120408R-M07 MM4500	
12	0,12–0,24	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
13	0,11–0,19	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
14	0,11–0,17	XOMX120408TR-M12 MK1500	XOMX120408TR-M12 MK2000	
15	0,10–0,15	XOMX120408TR-M12 MP1500	XOMX120408TR-D14 MP1500	
16	0,12–0,23	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
17	0,12–0,20	XOEX120408FR-E06 F40M	XOEX120408FR-ME08 F40M	
18	0,12–0,20	XOEX120408FR-E06 H15	XOEX120408FR-E06 F40M	
19	0,07–0,11	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
20	0,07–0,11	XOEX120408R-M07 T350M	XOEX120408R-M07 F40M	
21	0,07–0,11	XOEX120408R-M07 F40M	XOEX120408R-M07 MP3000	
22	0,11–0,15	XOEX120408R-M07 F40M	XOEX120408R-M07 F40M	

Cutting data - 100% Slotting/Contouring

SMG	Grades																				
	MP1500			MP2500			MP3000			T350M			MM4500			F40M			F15M		
	f_z (mm/tooth)																				
	0,07	0,16	0,24	0,07	0,16	0,24	0,07	0,16	0,24	0,07	0,16	0,24	0,07	0,16	0,24	0,07	0,16	0,24	0,07	0,16	0,24
	v_c (m/min)																				
1	485	390	340	430	345	305	410	325	285	375	300	265	265	210	185	325	260	230	–	–	–
2	410	330	290	365	290	255	345	275	245	320	255	225	225	180	160	275	220	195	–	–	–
3	340	270	240	300	240	210	285	230	200	265	210	185	185	150	130	230	185	160	–	–	–
4	290	235	205	255	205	180	245	195	170	225	180	160	160	125	110	195	155	135	–	–	–
5	240	195	–	215	170	–	205	165	–	185	150	–	130	105	–	160	130	–	–	–	–
6	210	170	–	190	150	–	180	145	–	165	130	–	–	–	–	140	115	–	–	–	–
7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
8	335	265	235	265	210	185	260	205	180	245	195	175	195	155	135	225	180	155	–	–	–
9	260	210	–	205	165	–	205	165	145	195	155	–	150	120	–	175	140	–	–	–	–
10	215	170	–	170	135	–	165	135	115	160	125	–	125	100	–	145	115	–	–	–	–
11	160	125	–	125	100	–	125	100	–	115	95	–	90	75	–	105	85	–	–	–	–
12	255	205	180	225	180	160	215	170	150	195	155	135	120	95	85	170	135	120	205	165	145
13	225	180	155	195	160	140	185	150	130	170	140	120	105	85	75	150	120	105	180	145	125
14	185	150	–	165	135	–	155	125	–	145	115	–	90	70	–	125	100	–	150	120	–
15	155	125	–	135	110	–	130	105	–	120	95	–	75	60	–	105	85	–	–	–	–
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	845	675	595	1015	810	715
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	680	545	480	820	655	575
18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	520	415	365	625	500	440
19	–	–	–	60	46	–	55	43	–	50	41	–	33	26	–	47	37	–	–	–	–
20	–	–	–	46	37	–	44	35	–	41	33	–	27	21	–	38	30	–	–	–	–
21	–	–	–	40	32	–	38	30	–	36	29	–	23	18	–	32	26	–	–	–	–
22	–	–	–	95	75	–	90	70	–	85	70	–	55	44	–	80	60	–	–	–	–

Insert selection – 215/220.47

SMG	Feed f_z mm/tooth (a_e/D_c=10%)	First choice 215.47..	First choice 220.47..
1	0,32-0,50	TPUN 160308T F40M	TPUN 220412T F40M
2	0,30-0,48	TPUN 160308T F40M	TPUN 220412T F40M
3	0,30-0,44	TPUN 160308T F40M	TPUN 220412T F40M
4	0,28-0,44	TPUN 160308T F40M	TPUN 220412T F40M
5	0,28-0,42	TPUN 160308T F40M	TPUN 220412T F40M
6	0,24-0,40	TPUN 160308T F40M	TPUN 220412T F40M
7	0,24-0,32	TPUN 160308T F40M	TPUN 220412T F40M
8	0,30-0,44	TPUN 160308T F40M	TPUN 220412T F40M
9	0,28-0,40	TPUN 160308T F40M	TPUN 220412T F40M
10	0,24-0,36	TPUN 160308T F40M	TPUN 220412T F40M
11	0,22-0,34	TPUN 160308T F40M	TPUN 220412T F40M
12	0,30-0,50	TPUN 160308 HX	TPUN 220412 HX
13	0,30-0,44	TPUN 160308 HX	TPUN 220412 HX
14	0,30-0,42	TPUN 160308 HX	TPUN 220412 HX
15	0,24-0,32	TPUN 160308 HX	TPUN 220412 HX
16	0,32-0,50	TPUN 160308 HX	TPUN 220412 HX
17-18	0,30-0,48	TPUN 160308 HX	TPUN 220412 HX
19-20	0,22-0,30	TPUN 160308 HX	TPUN 220412 HX
21	0,20-0,28	TPUN 160308 HX	TPUN 220412 HX
22	0,22-0,30	TPUN 160308 HX	TPUN 220412 HX

Cutting data – 10% engagement (a_e /D_c = 10%)

SMG	Grades										
	F40M			HX							
	f_z (mm/tooth)										
	0,20	0,35	0,50	0,20	0,35	0,50					
	v_c (m/min)										
1	560	490	445	–	–	–					
2	475	415	380	–	–	–					
3	390	345	310	–	–	–					
4	335	295	265	–	–	–					
5	280	245	220	–	–	–					
6	245	215	195	–	–	–					
7	65	60	–	–	–	–					
8	385	335	305	–	–	–					
9	300	265	240	–	–	–					
10	245	215	195	–	–	–					
11	180	160	–	–	–	–					
12	290	255	230	275	245	220					
13	255	225	205	245	215	195					
14	215	190	170	205	180	165					
15	180	155	–	170	150	–					
16	1450	1275	1155	1375	1210	1095					
17	1170	1030	935	1110	975	885					
18	890	785	710	845	745	675					
19	80	70	–	–	–	–					
20	65	55	–	–	–	–					
21	55	49	–	–	–	–					
22	135	115	–	–	–	–					

Cutting data – Chamf. milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,10	0,17	0,25	0,65
Side milling	25%	0,13	0,23	0,33	0,90
	10%	0,20	0,35	0,50	1,00
	5%	0,29	0,49	0,70	1,10
Average chip thickness h_m		0,05	0,08	0,11	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert

TP..1603.., 2204..

Insert selection – 215.39 and 215/220.49

SMG	Feed f_z mm/tooth (a_e/D_c=10%)	First choice 215.49-...-06 ∅9	Feed f_z mm/tooth (a_e/D_c=10%)	First choice 215.49-...-09 ∅16 215.39-...-09 ∅20	Feed f_z mm/tooth (a_e/D_c=10%)	First choice 215.49-...-12 ∅25 215.49-...-12 ∅40
1	0,20-0,35	SPMX 0602AP-75 F40M	0,28-0,45	SPMX 0903AP-75 F40M	0,28-0,50	SPMX 12T3AP-75 F40M
2	0,20-0,35	SPMX 0602AP-75 F40M	0,28-0,45	SPMX 0903AP-75 F40M	0,28-0,50	SPMX 12T3AP-75 F40M
3	0,20-0,30	SPMX 0602AP-75 F40M	0,28-0,40	SPMX 0903AP-75 F40M	0,28-0,45	SPMX 12T3AP-75 F40M
4	0,20-0,30	SPMX 0602AP-75 F40M	0,28-0,40	SPMX 0903AP-75 F40M	0,28-0,45	SPMX 12T2AP-75 F40M
5	0,18-0,28	SPMX 0602AP-75 F40M	0,25-0,38	SPMX 0903AP-75 F40M	0,25-0,40	SPMX 12T3AP-75 F40M
6	0,14-0,20	SPMX 0602AP-75 F40M	0,20-0,30	SPMX 0903AP-75 F40M	0,20-0,32	SPMX 12T3AP-75 F40M
7	0,12-0,16	SPMX 0602AP-75 F40M	0,15-0,25	SPMX 0903AP-75 F40M	0,15-0,25	SPMX 12T3AP-75 F40M
8	0,20-0,30	SPMX 0602AP-75 F40M	0,28-0,40	SPMX 0903AP-75 F40M	0,28-0,40	SPMX 12T3AP-75 F40M
9	0,18-0,28	SPMX 0602AP-75 F40M	0,25-0,38	SPMX 0903AP-75 F40M	0,25-0,38	SPMX 12T3AP-75 F40M
10	0,18-0,26	SPMX 0602AP-75 F40M	0,22-0,34	SPMX 0903AP-75 F40M	0,24-0,35	SPMX 12T3AP-75 F40M
11	0,12-0,20	SPMX 0602AP-75 F40M	0,15-0,25	SPMX 0903AP-75 F40M	0,15-0,25	SPMX 12T3AP-75 F40M
12	0,20-0,35	SPMX 0602AP-75 HX	0,28-0,45	SPMX 0903AP-75 HX	0,28-0,50	SPMX 12T3AP-75 HX
13	0,20-0,30	SPMX 0602AP-75 HX	0,28-0,40	SPMX 0903AP-75 HX	0,28-0,45	SPMX 12T3AP-75 HX
14	0,18-0,28	SPMX 0602AP-75 HX	0,25-0,35	SPMX 0903AP-75 HX	0,25-0,38	SPMX 12T3AP-75 HX
15	0,15-0,25	SPMX 0602AP-75 HX	0,20-0,30	SPMX 0903AP-75 HX	0,20-0,32	SPMX 12T3AP-75 HX
16	0,20-0,35	SPMX 0602AP-75 HX	0,28-0,45	SPMX 0903AP-75 HX	0,28-0,50	SPMX 12T3AP-75 HX
17-18	0,20-0,35	SPMX 0602AP-75 HX	0,28-0,45	SPMX 0903AP-75 HX	0,28-0,50	SPMX 12T3AP-75 HX
19-20	0,15-0,25	SPMX 0602AP-75 F40M	0,20-0,30	SPMX 0903AP-75 F40M	0,20-0,32	SPMX 12T3AP-75 F40M
21	0,12-0,20	SPMX 0602AP-75 F40M	0,15-0,25	SPMX 0903AP-75 F40M	0,15-0,25	SPMX 12T3AP-75 F40M
22	0,15-0,25	SPMX 0602AP-75 F40M	0,20-0,30	SPMX 0903AP-75 F40M	0,20-0,32	SPMX 12T3AP-75 F40M

Cutting data – 10% engagement (a_e/D_c = 10%)

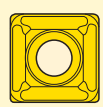
SMG	Grades														
	T350M			F40M			T25M			HX					
	f_z (mm/tooth)														
	0,12	0,30	0,50	0,12	0,30	0,50	0,12	0,30	0,50	0,12	0,30	0,50			
	v_c (m/min)														
1	615	510	445	535	445	390	585	490	425	–	–	–			
2	520	430	380	450	375	330	495	415	360	–	–	–			
3	430	355	310	375	310	270	410	340	300	–	–	–			
4	365	305	265	320	265	230	350	290	255	–	–	–			
5	305	255	220	265	220	195	290	245	210	–	–	–			
6	270	225	–	235	195	–	255	215	–	–	–	–			
7	75	60	–	65	55	–	70	60	–	–	–	–			
8	400	335	290	365	305	265	400	335	290	–	–	–			
9	315	260	230	285	240	210	315	260	230	–	–	–			
10	260	215	190	235	195	170	260	215	190	–	–	–			
11	190	160	–	175	145	–	190	160	–	–	–	–			
12	320	265	230	280	230	200	305	255	220	265	220	190			
13	280	235	205	245	205	175	270	225	195	230	195	170			
14	235	195	170	205	170	150	225	190	165	195	160	140			
15	195	165	–	170	140	–	185	155	–	160	135	–			
16	1585	1320	1155	1380	1145	1005	1520	1260	1105	1310	1090	955			
17	1280	1065	930	1115	925	810	1225	1020	890	1060	880	770			
18	975	810	710	850	705	615	935	775	680	805	670	585			
19	85	70	–	75	65	–	85	70	–	42	35	–			
20	70	55	–	60	50	–	70	55	–	34	28	–			
21	60	49	–	55	44	–	60	49	–	29	24	–			
22	140	115	–	125	105	–	140	115	–	70	60	–			

Cutting data – Chamf. milling

Operations	a_e/D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,06	0,15	0,25	0,65
Side milling	25%	0,08	0,20	0,33	0,90
	10%	0,12	0,30	0,50	1,00
	5%	0,17	0,43	0,70	1,10
Average chip thickness h_m		0,03	0,07	0,11	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert



SPMX

Insert selection – 417.19

SMG	Feed f_z mm/tooth (a_e/D_c=100%)	∅18 Insert: SPMX 0602AP-75	Feed f_z mm/tooth (a_e/D_c=100%)	∅20-∅24 Insert: SPMX 0703AP-75	Feed f_z mm/tooth (a_e/D_c=100%)	∅26-∅32 Insert: SPMX 0903AP-75	Feed f_z mm/tooth (a_e/D_c=100%)	∅36-∅42 Insert: SPMX 12T3AP-75
1	0,08-0,13	F40M	0,08-0,15	F40M	0,10-0,18	F40M	0,10-0,20	F40M
2	0,08-0,13	F40M	0,08-0,15	F40M	0,10-0,17	F40M	0,10-0,19	F40M
3	0,07-0,12	F40M	0,08-0,14	F40M	0,10-0,16	F40M	0,10-0,18	F40M
4	0,07-0,12	F40M	0,08-0,13	F40M	0,10-0,15	F40M	0,10-0,16	F40M
5	0,07-0,11	F40M	0,08-0,12	F40M	0,09-0,13	F40M	0,09-0,14	F40M
6	0,05-0,08	F40M	0,06-0,09	F40M	0,07-0,10	F40M	0,08-0,12	F40M
7	0,05-0,07	F40M	0,06-0,08	F40M	0,06-0,09	F40M	0,07-0,10	F40M
8	0,08-0,12	F40M	0,10-0,14	F40M	0,10-0,15	F40M	0,10-0,17	F40M
9	0,07-0,11	F40M	0,08-0,12	F40M	0,09-0,14	F40M	0,09-0,15	F40M
10	0,06-0,10	F40M	0,07-0,11	F40M	0,08-0,12	F40M	0,09-0,13	F40M
11	0,05-0,08	F40M	0,05-0,09	F40M	0,07-0,10	F40M	0,08-0,11	F40M
12	0,08-0,12	HX	0,08-0,14	HX	0,10-0,16	HX	0,10-0,19	HX
13	0,07-0,10	HX	0,08-0,12	HX	0,09-0,14	HX	0,10-0,16	HX
14	0,06-0,09	HX	0,07-0,12	HX	0,08-0,13	HX	0,09-0,15	HX
15	0,06-0,09	HX	0,07-0,11	HX	0,08-0,12	HX	0,08-0,14	HX
16	0,07-0,13	HX	0,10-0,15	HX	0,10-0,18	HX	0,10-0,20	HX
17-18	0,07-0,12	HX	0,10-0,14	HX	0,10-0,17	HX	0,10-0,18	HX
19-20	0,06-0,09	F40M	0,08-0,11	F40M	0,09-0,12	F40M	0,09-0,13	F40M
21	0,05-0,07	F40M	0,06-0,09	F40M	0,07-0,10	F40M	0,07-0,11	F40M
22	0,06-0,09	F40M	0,07-0,11	F40M	0,08-0,12	F40M	0,08-0,13	F40M

Cutting data – Full engagement (a_e /D_c = 100%)

SMG	Grades														
	T350M			F40M			T25M			HX					
	f_z (mm/tooth)														
	0,05	0,12	0,20	0,05	0,12	0,20	0,05	0,12	0,20	0,05	0,12	0,20			
	v_c (m/min)														
1	275	220	190	235	190	165	260	210	180	–	–	–			
2	230	185	160	200	160	140	220	180	155	–	–	–			
3	190	155	130	165	135	115	180	145	125	–	–	–			
4	165	130	110	140	115	100	155	125	110	–	–	–			
5	135	110	–	120	95	–	130	105	–	–	–	–			
6	120	95	–	105	85	–	115	90	–	–	–	–			
7	33	26	–	28	23	–	31	25	–	–	–	–			
8	180	145	125	160	130	110	180	145	125	–	–	–			
9	140	115	95	125	105	90	140	115	95	–	–	–			
10	115	95	–	105	85	–	115	95	–	–	–	–			
11	85	70	–	75	60	–	85	70	–	–	–	–			
12	140	115	100	125	100	85	135	110	95	115	95	80			
13	125	100	85	110	90	75	120	95	80	105	85	70			
14	105	85	75	90	75	65	100	80	70	85	70	60			
15	85	70	–	75	60	–	85	65	–	70	60	–			
16	705	570	485	615	495	425	675	545	465	585	470	400			
17	570	460	395	495	400	340	545	440	375	470	380	325			
18	435	350	300	380	305	260	415	335	285	360	290	250			
19	37	30	–	34	27	–	37	30	–	19	15	–			
20	30	24	–	27	22	–	30	24	–	15	12	–			
21	26	21	–	24	19	–	26	21	–	13	10	–			
22	60	50	–	55	46	–	60	50	–	31	25	–			

Cutting data – Recom. feed

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,05	0,12	0,20	1,00
Side milling	25%	0,07	0,16	0,27	1,30
	10%	0,10	0,25	0,41	1,50
	5%	0,14	0,34	0,57	1,60
Average chip thickness h_m		0,03	0,08	0,13	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert

SPMX

Insert selection – 395.19

SMG	Feed f_z mm/tooth (a_e/D_c=100%)	First choice ∅ = 25	Feed f_z mm/tooth (a_e/D_c=100%)	First choice ∅ = 32
1	0,08–0,14	CCMX 060304-E06 F40M	0,10–0,16	CCMX 08T308-E07 F40M
2	0,08–0,13	CCMX 060304-E06 F40M	0,09–0,15	CCMX 08T308-E07 F40M
3	0,08–0,12	CCMX 060304-E06 F40M	0,09–0,14	CCMX 08T308-E07 F40M
4	0,07–0,11	CCMX 060304T-M07 F40M	0,08–0,14	CCMX 08T308T-M08 F40M
5	0,07–0,10	CCMX 060304T-M07 F40M	0,08–0,13	CCMX 08T308T-M08 F40M
6	0,06–0,09	CCMX 060304T-M07 F40M	0,07–0,12	CCMX 08T308T-M08 MP2500
7	0,05–0,08	CCMX 060304T-M07 F40M	0,06–0,10	CCMX 08T308T-M08 MP2500
8	0,08–0,12	CCMX 060304-E06 F40M	0,09–0,14	CCMX 08T308-E07 F40M
9	0,08–0,12	CCMX 060304T-M07 F40M	0,09–0,13	CCMX 08T308T-M08 F40M
10	0,08–0,10	CCMX 060304T-M07 F40M	0,08–0,11	CCMX 08T308T-M08 F40M
11	0,07–0,09	CCMX 060304T-M07 F40M	0,08–0,11	CCMX 08T308T-M08 F40M
12	0,08–0,14	CCMX 060304-E06 HX	0,10–0,15	CCMX 08T308-E07 HX
13	0,08–0,12	CCMX 060304-E06 HX	0,09–0,14	CCMX 08T308-E07 HX
14	0,06–0,11	CCMX 060304-E06 HX	0,08–0,12	CCMX 08T308-E07 HX
15	0,06–0,10	CCMX 060304-E06 HX	0,07–0,11	CCMX 08T308-E07 HX
16	0,08–0,14	CCMX 060304-E06 HX	0,10–0,16	CCMX 08T308-E07 HX
17-18	0,08–0,14	CCMX 060304-E06 HX	0,10–0,16	CCMX 08T308-E07 HX
19-20	0,06–0,08	CCMX 060304-E06 F40M	0,08–0,10	CCMX 08T308-E07 F40M
21	0,06–0,07	CCMX 060304T-M07 F40M	0,07–0,09	CCMX 08T308T-M08 F40M
22	0,07–0,10	CCMX 060304T-M07 F40M	0,08–0,11	CCMX 08T308T-M08 F40M

Cutting data – Full engagement width (a_e /D_c = 100%)

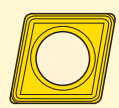
SMG	Grades																
	MP2500			MP3000			T350M			F40M			HX				
	f_z (mm/tooth)																
	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16	0,05	0,10	0,16		
	v_c (m/min)																
1	430	365	320	410	345	305	375	320	280	325	275	240	–	–	–		
2	365	310	270	345	295	255	320	270	235	275	235	205	–	–	–		
3	300	255	225	285	240	210	265	225	195	230	195	170	–	–	–		
4	255	220	190	245	205	180	225	190	165	195	165	145	–	–	–		
5	215	180	160	205	170	150	185	160	140	165	140	120	–	–	–		
6	190	160	140	180	150	130	165	140	120	145	120	105	–	–	–		
7	47	40	–	46	39	–	45	38	–	39	33	–	–	–	–		
8	265	225	195	260	220	190	245	210	180	225	190	165	–	–	–		
9	205	175	155	205	175	150	195	165	145	175	150	130	–	–	–		
10	170	145	125	165	140	125	160	135	115	145	120	105	–	–	–		
11	125	105	–	125	105	–	115	100	–	105	90	–	–	–	–		
12	225	190	165	215	180	160	195	165	145	170	145	125	160	135	120		
13	195	170	145	185	160	140	170	145	130	150	125	110	140	120	105		
14	165	140	125	155	135	115	145	125	105	125	105	95	120	100	90		
15	135	115	–	130	110	–	120	100	–	105	90	–	100	85	–		
16	1115	945	830	1055	895	785	970	825	720	845	715	625	805	680	595		
17	900	765	670	855	725	635	785	665	580	685	580	505	650	550	480		
18	685	585	510	650	550	480	600	510	445	520	440	385	495	420	365		
19	60	49	–	55	46	–	50	44	–	47	40	–	26	22	–		
20	46	39	–	44	37	–	41	35	–	38	32	–	21	18	–		
21	40	34	–	38	32	–	36	30	–	32	28	–	18	15	–		
22	95	80	–	90	75	–	85	75	–	80	65	–	43	36	–		

Cutting data – Side milling

Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,05	0,10	0,16	1,00
Side milling	25%	0,07	0,13	0,21	1,30
	10%	0,10	0,20	0,33	1,50
	5%	0,14	0,29	0,46	1,60
Average chip thickness h_m		0,03	0,06	0,10	–

Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert



CCMX

Insert selection – 395.19

SMG	Feed f_z mm/tooth (a_e/D_c=100%)	First choice ∅ = 40	Feed f_z mm/tooth (a_e/D_c=100%)	First choice ∅ = 50
1	0,10–0,16	CCMX 09T308T-MD09 F40M	0,10–0,18	SCET 120612T-M11 F40M
2	0,09–0,15	CCMX 09T308T-MD09 F40M	0,10–0,17	SCET 120612T-M11 F40M
3	0,09–0,14	CCMX 09T308T-MD09 F40M	0,10–0,16	SCET 120612T-M14 T350M
4	0,08–0,14	CCMX 09T308T-MD09 F40M	0,10–0,15	SCET 120612T-M11 T350M
5	0,08–0,13	CCMX 09T308T-MD09 F40M	0,09–0,13	SCET 120612T-M11 T350M
6	0,07–0,12	CCMX 09T308T-MD09 F40M	0,07–0,12	SCET 120612T-MD15 MP1500
7	0,06–0,10	CCMX 09T308T-MD09 F40M	0,06–0,10	SCET 120612T-MD15 MP1500
8	0,09–0,14	CCMX 09T308T-MD09 F40M	0,10–0,15	SCET 120612T-M14 T350M
9	0,09–0,13	CCMX 09T308T-MD09 F40M	0,09–0,14	SCET 120612T-M14 T350M
10	0,08–0,11	CCMX 09T308T-MD09 F40M	0,09–0,13	SCET 120612T-M14 T350M
11	0,08–0,11	CCMX 09T308T-MD09 F40M	0,08–0,11	SCET 120612T-M14 T350M
12	0,10–0,15	CCMX 09T308T-MD09 F40M	0,10–0,16	SCET 120612T-M11 MK1500
13	0,09–0,14	CCMX 09T308T-MD09 F40M	0,09–0,15	SCET 120612T-M11 MK1500
14	0,08–0,12	CCMX 09T308T-MD09 F40M	0,08–0,13	SCET 120612T-M11 MK1500
15	0,07–0,11	CCMX 09T308T-MD09 F40M	0,08–0,12	SCET 120612T-MD15 MK1500
16	0,10–0,16	CCMX 09T308T-MD09 F40M	0,10–0,18	SCET 120612T-ME10 F40M
17-18	0,10–0,16	CCMX 09T308T-MD09 F40M	0,10–0,18	SCET 120612T-ME10 F40M
19-20	0,08–0,10	CCMX 09T308T-MD09 F40M	0,09–0,12	SCET 120612T-M14 T350M
21	0,07–0,09	CCMX 09T308T-MD09 F40M	0,07–0,10	SCET 120612T-M14 F40M
22	0,08–0,11	CCMX 09T308T-MD09 F40M	0,08–0,12	SCET 120612T-M14 F40M

Cutting data – Full engagement width (a_e /D_c = 100%)

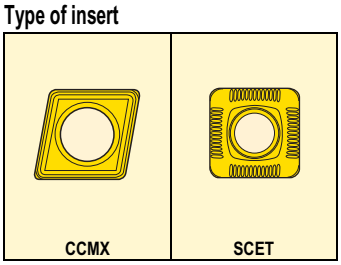
SMG	Grades																	
	MP1500			MP2500			T350M			F40M			MK1500			HX		
	f_z (mm/tooth)																	
	0,05	0,10	0,18	0,05	0,10	0,18	0,05	0,10	0,18	0,05	0,10	0,18	0,05	0,10	0,18	0,05	0,10	0,18
SMG	v_c (m/min)																	
1	430	365	305	380	325	270	330	280	235	290	245	205	–	–	–	–	–	–
2	365	310	260	325	275	230	280	240	200	245	210	175	–	–	–	–	–	–
3	300	255	215	265	225	190	230	195	165	200	170	145	–	–	–	–	–	–
4	255	220	185	230	195	165	200	170	140	170	145	125	–	–	–	–	–	–
5	215	180	155	190	160	135	165	140	120	145	120	105	–	–	–	–	–	–
6	190	160	–	165	140	–	145	125	–	125	105	–	–	–	–	–	–	–
7	50	44	–	41	35	–	40	34	–	34	29	–	–	–	–	–	–	–
8	295	250	210	235	200	165	215	185	155	200	170	140	–	–	–	–	–	–
9	230	195	165	185	155	130	170	145	120	155	130	110	–	–	–	–	–	–
10	190	160	135	150	125	105	140	120	100	125	110	90	–	–	–	–	–	–
11	140	120	–	110	95	–	105	90	–	95	80	–	–	–	–	–	–	–
12	225	190	160	200	170	140	175	145	125	150	130	105	280	240	200	145	120	100
13	195	165	140	175	150	125	150	130	110	130	110	95	245	210	175	125	105	90
14	165	140	120	145	125	105	130	110	90	110	95	80	210	175	150	105	90	75
15	135	115	–	120	105	–	105	90	–	90	80	–	170	145	–	85	75	–
16	1115	945	795	985	835	705	860	730	615	745	635	535	–	–	–	710	600	505
17	900	765	645	795	675	570	695	590	495	605	510	430	–	–	–	575	485	410
18	685	580	490	605	515	435	530	450	380	460	390	330	–	–	–	435	370	310
19	60	50	–	50	43	–	46	39	–	41	35	–	–	–	–	23	19	–
20	50	42	–	41	35	–	37	31	–	33	28	–	–	–	–	18	16	–
21	43	36	–	35	30	–	32	27	–	29	24	–	–	–	–	16	13	–
22	105	85	–	85	70	–	75	65	–	70	60	–	–	–	–	38	32	–

Cutting data – Side milling

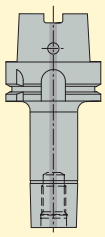
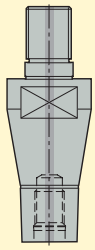
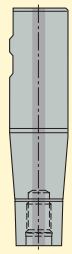
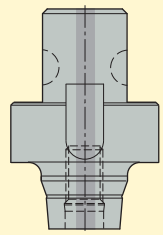
Operations	a_e /D_c	Recom. feed f_z mm/tooth			Speed factor
Full engagement	100%	0,05	0,10	0,18	1,00
Side milling	25%	0,07	0,13	0,24	1,30
	10%	0,10	0,20	0,37	1,50
	5%	0,14	0,29	0,52	1,60
Average chip thickness h_m		0,03	0,06	0,11	–

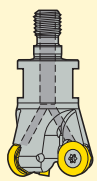
Choose suitable feed. Multiply speed value from basic cutting data by speed factor.

Type of insert



Combimaster system overview

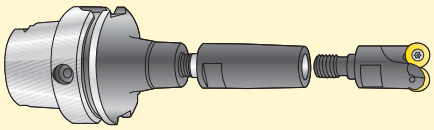
	Combimaster arbors	Combimaster intermediates extensions and reducers	Combimaster intermediates cylindrical, Weldon	Graflex Combimaster adapters
				
Guide page:	page 499	page 499	page 499	page 499
Product pages:				page 509
HSK-A	page 501	–	–	–
HSK-E	page 502	–	–	–
DIN 69871	page 503	–	–	–
JIS (BT)	page 504	–	–	–
Extension	–	page 505	–	–
Reducers	–	page 506	–	–
Cylindrical	–	–	page 507	–
Weldon	–	–	page 508	–
Morse taper		–		–

	Seco-Capto Combimaster adapters	Combimaster heads		
				
Guide page:	page 499	Information can be found in product pages under "Type of mounting		
Product pages:	page 510			

Note: Combimaster holders (arbors, intermediates and adapters) are also shown in the Seco-EPB tooling systems catalogue.

The modular milling solution for medium size cutters

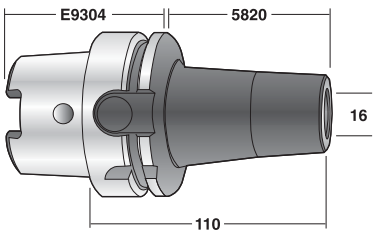
Combimaster tools achieve maximum access and shortest overhang.
Stability, precision and balance are improved vs. classic assemblies, e.g. Weldon or collet chucks.
Modular: Extensions and reducers. Graflex, Seco-Capto and Shrinkfit adapters.



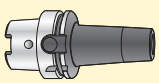
Combimaster holders, kode key

Back end type	Combimaster front end type	Connecting thread size / Gauge length
XXXXX	5820	16110

Code separation spaces are only there to facilitate easy reading of the part numbers. They do not form part of the ordering code.

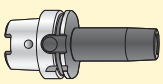


Front end types



5820

Conical



5821

Cylindrical-conical front

5822

Cylindrical

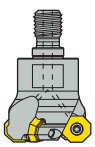
Balancing quality

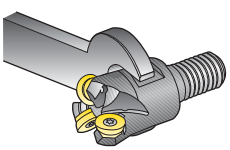
Most holders are fine balanced. See the product pages: 1 = fine balanced ; 2 = pre-balanced.
For more information, see the Seco Tooling systems catalogue.

Combimaster heads, kode key

Note that parts of the code key can vary for different heads

Right hand rotation	Type of milling cutter		Connecting thread size	Cutter head diameter		Combimaster (RE= replaceable)		Insert size		Number of teeth	Internal coolant supply
R	217.43	-	16	24	.	RE	-	05	.	2	A





Recommended Combimaster connection locking torques

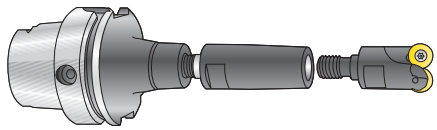
Connecting thread size	Tightening torque	Mounting key size (mm)
M6	10Nm	9
M8	25 Nm	11
M10	40 Nm	15

The modular milling solution for medium size cutters

Combimaster tools achieve optimum access and shortest overhang.

Stability, precision and balance are improved vs. classic assemblies, e.g. Weldon or collet chucks. Extensions and reducers to realise optimum tool length.

Modular: The Graflex®/ Combimaster as well as Seco-Capto™/ Combimaster holders (Machining Naviigator Seco-Capto™) allow you to mix systems. Combimaster with Shrinkfit front ends are also available to hold small tools.



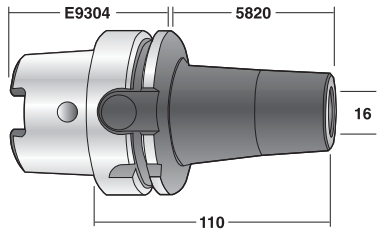
Balancing quality

Most holders are fine balanced. See Product pages.

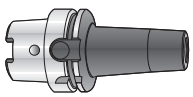
Combimaster holders, code key

Back end type	Combimaster front end type	Connecting thread size / Gauge length
XXXXX	5820	16110

Code separation spaces are only there to facilitate easy reading of the part numbers. They do not form part of the ordering code.

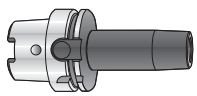


Combimaster holders, front end types



5820

Entirely tapered



5821

Cylindrical and front tapered*

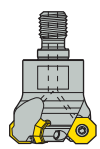
5822

Entirely cylindrical

* Except Type 5821 Cylindrical and Morse Taper extensions, see specific shape in Product pages.

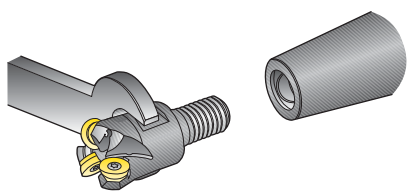
Combimaster heads

Note: Combimaster heads are shown ‘all grouped´ and also ‘in each cutter family´in Machining Navigator Milling.



Recommended Combimaster connection tightening torques

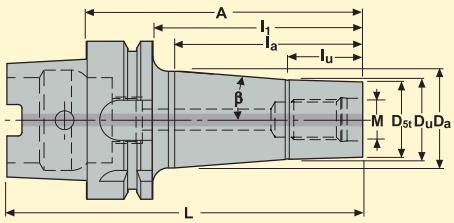
Connecting thread size	Tightening torque	Mounting key size (mm)
M06	10 Nm	9
M08	25 Nm	11
M10	40 Nm	15
M12	60 Nm	19
M16	80 Nm	26



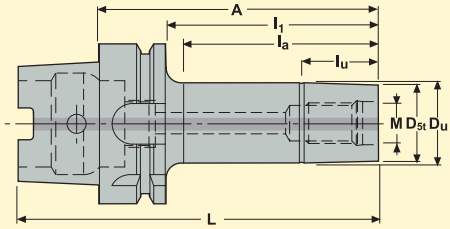
Types 5820-5821 – Arbors HSK-A

HSK-A/ ISO 12164-1-A

Design 1 (5820)



Design 2 (5821)



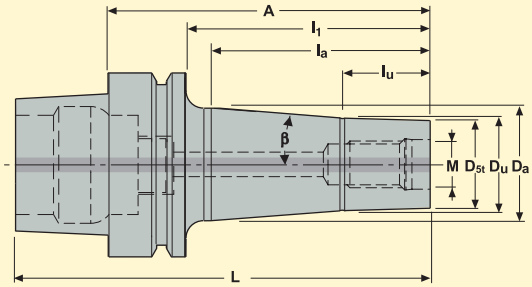
$D_a = D_u$

Taper	Connecting thread size	Part No.	Dimensions in mm A	L	l_1	l_a	D_a	l_u	D_u	M	D_{5t}	β°	Design	Balancing	KG
HSK-A40															
	M6	**E9302 5820 0645**	45	65	25	15	13,5	10	11,7	6	11	10,2	1	1	0,3
HSK-A63															
	M6	**E9304 5820 0660**	60	92	34	25	14,5	10	11,7	6	11	5,3	1	1	0,7
	M8	**E9304 5820 0860**	60	92	34	25	18,5	10	15,7	8	13,5	5,3	1	1	0,7
	M8	**E9304 5820 0885**	85	117	59	50	20	15	15,7	8	13,5	3,5	1	1	0,8
	M10	**E9304 5820 1060**	60	92	34	25	23	10	19,7	10	18,5	6,3	1	1	0,7
	M10	**E9304 5820 1085**	85	117	59	50	24,5	15	19,7	10	18,5	3,9	1	1	0,8
	M10	**E9304 5820 10135**	135	167	109	100	27,5	20	19,7	10	18,5	2,8	1	1	1,0
	M10	**E9304 5821 1060**	60	92	34	25	18,5	10	18,5	10	18,5	–	2	1	0,7
	M12	**E9304 5820 1260**	60	92	34	25	28,5	10	24,7	12	23	7,2	1	1	0,8
	M12	**E9304 5820 1285**	85	117	59	50	30	20	24,7	12	23	5	1	1	0,9
	M12	**E9304 5820 12110**	110	142	84	75	31,5	25	24,7	12	23	3,9	1	1	1,0
	M12	**E9304 5820 12135**	135	167	109	100	33	30	24,7	12	23	3,4	1	1	1,1
	M12	**E9304 5821 1260**	60	92	34	25	23,5	10	23,5	12	23	–	2	1	1,0
	M12	**E9304 5821 1285**	85	117	59	50	23,5	20	23,5	12	23	–	2	1	1,0
	M16	**E9304 5820 1660**	60	92	34	25	35,5	10	31,7	16	30	6,9	1	1	1,0
	M16	**E9304 5820 1685**	85	117	59	50	37	20	31,7	16	30	5	1	1	1,0
	M16	**E9304 5820 16110**	110	142	84	75	38,5	25	31,7	16	30	3,9	1	1	1,2
	M16	**E9304 5820 16135**	135	167	109	100	40	30	31,7	16	30	3,4	1	1	1,4
	M16	**E9304 5820 16185**	185	217	159	150	50	35	31,7	16	30	4,5	1	1	2,1
	M16	**E9304 5821 1685**	85	117	59	50	30,5	20	30,5	16	30	–	2	1	1,0
	M16	**E9304 5821 16110**	110	142	84	75	30,5	25	30,5	16	30	–	2	1	1,1
	M16	**E9304 5821 16135**	135	167	109	100	30,5	30	30,5	16	30	–	2	1	1,3
HSK-A100															
	M8	**E9306 5820 0885**	85	135	56	50	24,5	15	15,7	8	13,5	7,2	1	1	2,1
	M10	**E9306 5820 1085**	85	135	56	50	29	15	19,7	10	18,5	7,6	1	1	2,2
	M12	**E9306 5820 1285**	85	135	56	50	35	20	24,7	12	23	9,7	1	1	2,3
	M12	**E9306 5820 12110**	110	160	81	75	38	25	24,7	12	23	7,6	1	1	2,4
	M12	**E9306 5820 12135**	135	185	106	100	41	30	24,7	12	23	6,6	1	1	2,7
	M12	**E9306 5820 12185**	185	235	156	150	42,5	30	24,7	12	23	4,2	1	1	3,0
	M16	**E9306 5820 1685**	85	135	56	50	42,5	20	31,7	16	30	10,2	1	1	2,5
	M16	**E9306 5820 16135**	135	185	106	100	49	30	31,7	16	30	7	1	1	3,0
	M16	**E9306 5820 16185**	185	235	156	150	50	35	31,7	16	30	4,5	1	1	3,4
	M16	**E9306 5820 16235**	235	285	206	200	55	35	31,7	16	30	4	1	1	4,2

Please check availability in current price and stock-list.

Type 5820 – Arbors HSK-E

HSK-E



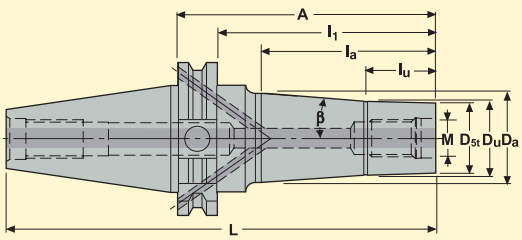
Taper	Connecting thread size	Part No.	Dimensions in mm									β°	Balancing	KG
			A	L	l_1	l_a	D_a	l_u	D_u	M	D_{5t}			
HSK-E32														
	M6	**E9341 5820 0650**	50	66	30	25	14,5	10	11,7	6	11	5,3	1	0,2
	M8	**E9341 5820 0850**	50	66	30	25	18,5	10	15,7	8	13,5	5,3	1	0,2
HSK-E40														
	M6	**E9342 5820 0650**	50	70	30	25	14,5	10	11,7	6	11	5,3	1	0,2
	M8	**E9342 5820 0875**	75	95	55	50	20	15	15,7	8	13,5	3,5	1	0,3
	M10	**E9342 5820 1075**	75	95	55	50	24,5	15	19,7	10	18,5	3,9	1	0,3
HSK-E50														
	M6	**E9343 5820 0655**	55	80	29	25	14,5	10	11,7	6	11	5,3	1	0,4
	M8	**E9343 5820 0855**	55	80	29	25	18,5	10	15,7	8	13,5	5,3	1	0,4
	M10	**E9343 5820 1080**	80	105	54	50	24,5	15	19,7	10	18,5	3,9	1	0,5
	M12	**E9343 5820 1280**	80	105	54	50	30	20	24,7	12	23	5	1	0,6
	M16	**E9343 5820 1680**	80	105	54	50	37	20	31,7	16	30	5	1	0,7

Please check availability in current price and stock-list.

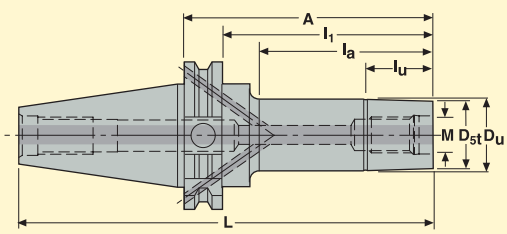
Types 5820-5821 – Arbors DIN 69871

DIN 69871-ADB/ CAT Combined

Design 1 (5820)



Design 2 (5821)



$D_a = D_u$

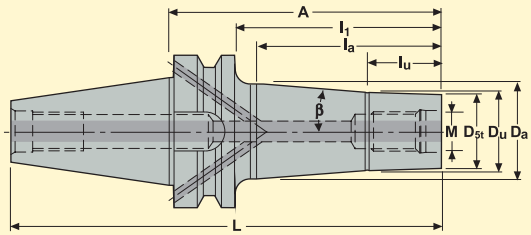
Taper	Connecting thread size	Part No.	Dimensions in mm A	L	l_1	l_a	D_a	l_u	D_u	M	D_{5t}	β°	Design	Balancing	KG
DIN40 ADB/ CAT40															
	M6	**E3476 5820 0660**	60	128,4	41	25	14,5	10	11,7	6	11	5,3	1	1	1,0
	M8	**E3476 5820 0860**	60	128,4	41	25	18,5	10	15,7	8	13,5	5,3	1	1	1,0
	M8	**E3476 5820 0885**	85	153,4	66	50	20	15	15,7	8	13,5	3,5	1	1	1,1
	M10	**E3476 5820 1040**	40	108,4	21	5	19,7	5	19,7	10	18,5	0	1	1	1,0
	M10	**E3476 5820 1060**	60	128,4	41	25	23	10	19,7	10	18,5	6,3	1	1	1,0
	M10	**E3476 5820 1085**	85	153,4	66	50	24,5	15	19,7	10	18,5	3,9	1	1	1,1
	M10	**E3476 5820 10135**	135	203,4	116	100	27,5	20	19,7	10	18,5	2,8	1	1	1,2
	M10	**E3476 5821 1060**	60	128,4	41	25	18,5	10	18,5	10	18,5	–	2	1	1,0
	M12	**E3476 5820 1240**	40	108,4	21	5	24,7	5	24,7	12	23	0	1	1	1,0
	M12	**E3476 5820 1260**	60	128,4	41	25	28,5	10	24,7	12	23	7,2	1	1	1,0
	M12	**E3476 5820 1285**	85	153,4	66	50	30	20	24,7	12	23	5	1	1	1,1
	M12	**E3476 5820 12110**	110	178,4	91	75	31,5	25	24,7	12	23	3,9	1	1	1,2
	M12	**E3476 5820 12135**	135	203,4	116	100	33	30	24,7	12	23	3,4	1	1	1,3
	M12	**E3476 5820 12185**	185	253,4	166	150	42,5	30	24,7	12	23	4,2	1	1	1,6
	M12	**E3476 5821 1260**	60	128,4	41	25	23,5	10	23,5	12	23	–	2	1	1,0
	M12	**E3476 5821 1285**	85	153,4	66	50	23,5	20	23,5	12	23	–	2	1	1,1
	M16	**E3476 5820 1640**	40	108,4	21	5	31,7	5	31,7	16	30	0	1	1	1,0
	M16	**E3476 5820 1660**	60	128,4	41	25	35,5	10	31,7	16	30	7,2	1	1	1,2
	M16	**E3476 5820 1685**	85	153,4	66	50	37	20	31,7	16	30	5	1	1	1,2
	M16	**E3476 5820 16110**	110	178,4	91	75	38,5	25	31,7	16	30	3,9	1	1	1,4
	M16	**E3476 5820 16135**	135	203,4	116	100	40,5	30	31,7	16	30	3,6	1	1	1,6
	M16	**E3476 5820 16185**	185	253,4	166	150	43,5	35	31,7	16	30	2,9	1	1	2,1
	M16	**E3476 5821 1685**	85	153,4	66	50	30,5	20	30,5	16	30	–	2	1	1,2
	M16	**E3476 5821 16110**	110	178,4	91	75	30,5	25	30,5	16	30	–	2	1	1,4
	M16	**E3476 5821 16135**	135	203,4	116	100	30,5	30	30,5	16	30	–	2	1	1,6
DIN50 ADB/ CAT50															
	M12	**E3478 5820 1295**	95	196,7	76	50	35	20	24,7	12	23	9,7	1	1	3,3
	M12	**E3478 5820 12145**	145	246,7	126	100	41	30	24,7	12	23	6,6	1	1	3,6
	M12	**E3478 5820 12195**	195	296,7	176	150	42,5	30	24,7	12	23	4,2	1	1	3,8
	M12	**E3478 5820 12245**	245	346,7	226	200	47,5	30	24,7	12	23	3,8	1	1	4,0
	M16	**E3478 5820 1695**	95	196,7	76	50	42,5	20	31,7	16	30	10,2	1	1	3,4
	M16	**E3478 5820 16145**	145	246,7	126	100	49	30	31,7	16	30	7	1	1	3,8
	M16	**E3478 5820 16195**	195	296,7	176	150	50	35	31,7	16	30	4,5	1	1	4,3
	M16	**E3478 5820 16245**	245	346,7	226	200	55	35	31,7	16	30	4	1	1	4,9
	M16	**E3478 5820 16295**	295	396,7	276	250	59,5	35	31,7	16	30	3,7	1	1	6,0

Please check availability in current price and stock-list.

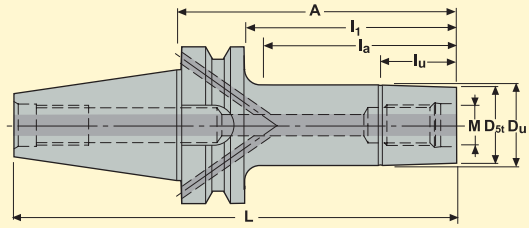
Types 5820-5821 – Arbors BT JIS

BT JIS B 6339-ADB

Design 1 (5820)



Design 2 (5821)

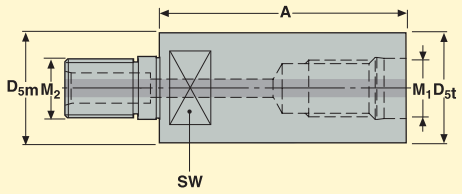


$D_a = D_u$

Taper	Connecting thread size	Part No.	Dimensions in mm									β°	Design	Balancing	KG
			A	L	l_1	l_a	D_a	l_u	D_u	M	D_{5t}				
BT40 ADB															
	M6	**E3414 5820 0660**	60	125,4	33	25	14,5	10	11,7	6	11	5,3	1	1	1,0
	M8	**E3414 5820 0860**	60	125,4	33	25	18,5	10	15,7	8	13,5	5,3	1	1	1,0
	M8	**E3414 5820 08110**	110	175,4	83	75	21,5	20	15,7	8	13,5	3	1	1	1,1
	M8	**E3414 5821 0860**	60	125,4	33	25	14,5	10	14,5	8	13,5	–	2	1	1,0
	M10	**E3414 5820 1060**	60	125,4	33	25	23	10	19,7	10	18,5	6,3	1	1	1,0
	M10	**E3414 5820 1085**	85	150,4	58	50	24,5	15	19,7	10	18,5	3,9	1	1	1,1
	M10	**E3414 5820 10135**	135	200,4	108	100	27,5	20	19,7	10	18,5	2,8	1	1	1,2
	M10	**E3414 5820 10185**	185	250,4	158	150	37	20	19,7	10	18,5	3,8	1	1	1,3
	M10	**E3414 5821 1060**	60	125,4	33	25	18,5	10	18,5	10	18,5	–	2	1	1,0
	M12	**E3414 5820 1240**	40	105,4	13	5	24,7	5	24,7	12	23	0	1	1	1,0
	M12	**E3414 5820 1260**	60	125,4	33	25	28,5	10	24,7	12	23	7,2	1	1	1,1
	M12	**E3414 5820 1285**	85	150,4	58	50	30	20	24,7	12	23	5	1	1	1,2
	M12	**E3414 5820 12110**	110	175,4	83	75	31,5	25	24,7	12	23	3,9	1	1	1,3
	M12	**E3414 5820 12135**	135	200,4	108	100	33	30	24,7	12	23	3,4	1	1	1,4
	M12	**E3414 5821 1260**	60	125,4	33	25	23,5	10	23,5	12	23	–	2	1	1,0
	M12	**E3414 5821 1285**	85	150,4	58	50	23,5	20	23,5	12	23	–	2	1	1,1
	M16	**E3414 5820 1640**	40	105,4	13	5	31,7	5	31,7	16	30	0	1	1	1,2
	M16	**E3414 5820 1660**	60	125,4	33	25	35,5	10	31,7	16	30	7,2	1	1	1,2
	M16	**E3414 5820 1685**	85	150,4	58	50	37	20	31,7	16	30	5	1	1	1,3
	M16	**E3414 5820 16110**	110	175,4	83	75	38,5	25	31,7	16	30	3,9	1	1	1,5
	M16	**E3414 5820 16135**	135	200,4	108	100	40,5	30	31,7	16	30	3,6	1	1	1,7
	M16	**E3414 5820 16185**	185	250,4	158	150	50	35	31,7	16	30	4,5	1	1	2,1
BT50 ADB															
	M12	**E3416 5820 1295**	95	196,8	57	50	35	20	24,7	12	23	9,7	1	1	3,8
	M12	**E3416 5820 12145**	145	246,8	107	100	41	30	24,7	12	23	6,6	1	1	4,1
	M12	**E3416 5820 12195**	195	296,8	157	150	42,5	30	24,7	12	23	4,2	1	1	4,3
	M16	**E3416 5820 1695**	95	196,8	57	50	42,5	20	31,7	16	30	10,2	1	1	3,9
	M16	**E3416 5820 16145**	145	246,8	107	100	49	30	31,7	16	30	7	1	1	4,3
	M16	**E3416 5820 16195**	195	296,9	157	150	50	35	31,7	16	30	4,5	1	1	5,0
	M16	**E3416 5820 16245**	245	346,8	207	200	55	35	31,7	16	30	4	1	1	5,4
	M16	**E3416 5820 16295**	295	396,8	257	250	59,5	35	31,7	16	30	3,7	1	1	6,1

Please check availability in current price and stock-list.

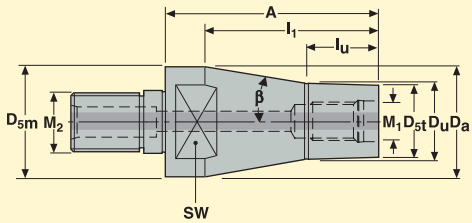
Types BS/5820 – Extensions



Combimaster shank size	Connecting thread size	Part No.	Dimensions in mm						Balancing	KG
			A	M_2	M_1	D_{5m}	D_{5t}	SW		
M6	M6	**BS006 5820 0625**	25	6	6	11	11	9	2	0,1
M8	M8	**BS008 5820 0830**	30	8	8	13,5	13,5	11	2	0,1
M10	M10	**BS010 5820 1035**	35	10	10	18,5	18,5	15	2	0,1
M12	M12	**BS012 5820 1240**	40	12	12	23	23	19	2	0,1
M16	M16	**BS016 5820 1640**	40	16	16	30	30	26	2	0,2

Please check availability in current price and stock-list.

Types BS/5820 – Reducers

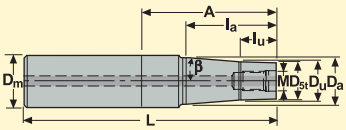


Combi-master shank size	Connecting thread size	Part No.	Dimensions in mm										β°	Balanc-ing	KG
			A	l_1	D_a	l_u	D_u	M_2	M_1	D_{5m}	D_{5t}	SW			
M8	M6	**BS008 5820 0625**	25	14	13,5	6	11,7	8	6	13,5	11	11	6,4	2	0,1
M10	M6	**BS010 5820 0635**	35	22	18,5	6	11,7	10	6	18,5	11	15	12	2	0,1
M10	M8	**BS010 5820 0830**	30	17	18,5	8	15,7	10	8	18,5	13,5	15	8,8	2	1,0
M12	M10	**BS012 5820 1035**	35	24	23	8	19,7	12	10	23	18,5	19	5,9	2	0,1
M16	M10	**BS016 5820 1060**	60	49	30	8	19,7	16	10	30	18,5	26	7,15	2	0,2
M16	M12	**BS016 5820 1240**	40	29	30	8	24,7	16	12	30	23	26	7,2	2	0,2

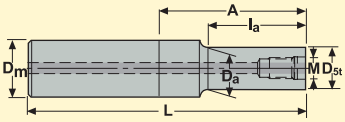
Please check availability in current price and stock-list.

Types BD/5820-5821-5822 – Cylindrical extensions, steel, heavy metal or carbide

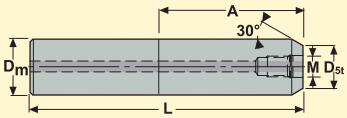
Design 1 (5820)



Design 2 (5821)



Design 3 (5822)



$D_a = D_{5t}$

Cyl. Shank D_m	Combimaster bore size	Part No.	Dimensions in mm								β°	Design	Balancing	KG
			A	L	l_a	D_a	l_u	D_u	M	D_{5t}				
12	M6	**BD012 5822 0660**	60	105	–	–	–	–	6	11	–	3	2	0,1
12	M6	**BD012 5822 0695E**	95	140	–	–	–	–	6	11	–	3	2	0,3
14	M8	**BD014 5822 0860**	60	105	–	–	–	–	8	13,5	–	3	2	0,1
14	M8	**BD014 5822 0895E**	95	140	–	–	–	–	8	13,5	–	3	2	0,3
16	M8	**BD016 5822 0865**	65	113	–	–	–	–	8	13,5	–	3	2	0,2
16	M8	**BD016 5822 08105E**	105	153	–	–	–	–	8	13,5	–	3	2	0,4
16	M8	**BD016 5821 08105E**	105	153	50	14,5	–	–	8	13,5	–	2	2	0,5
18	M10	**BD018 5822 1070**	70	118	–	–	–	–	10	18	–	3	2	0,2
18	M10	**BD018 5822 10125E**	125	173	–	–	–	–	10	18	–	3	2	0,6
20	M10	**BD020 5822 1075**	75	125	–	–	–	–	10	18,5	–	3	2	0,3
20	M10	**BD020 5821 1040D**	40	90	25	18,5	–	–	10	18,5	–	2	2	0,4
20	M10	**BD020 5821 10110**	110	160	65	18,5	–	–	10	18,5	–	2	2	0,3
20	M10	**BD020 5821 10110D**	110	160	65	18,5	–	–	10	18,5	–	2	2	0,7
25	M12	**BD025 5822 1280**	80	136	–	–	–	–	12	23	–	3	2	0,5
25	M12	**BD025 5822 12180E**	180	236	–	–	–	–	12	23	–	3	2	1,7
25	M12	**BD025 5821 12185E**	185	241	85	23,5	–	–	12	23	–	2	2	1,4
25	M12	**BD025 5821 12185**	185	241	85	23	–	–	12	23	–	2	2	0,9
25	M12	**BD025 5821 12185D**	185	241	85	23	–	–	12	23	–	2	2	2,0
32	M12	**BD032 5820 12100**	100	160	65	31	25	24,7	12	23	4,5	1	2	0,9
32	M12	**BD032 5820 12240**	240	300	145	31	30	24,7	12	23	1,6	1	2	1,5
32	M16	**BD032 5822 1695**	95	155	–	–	–	–	16	30	–	3	2	0,9
32	M16	**BD032 5821 16100D**	100	160	65	30	–	–	16	30	–	2	2	1,9
32	M16	**BD032 5821 16145D**	145	205	110	30	–	–	16	30	–	2	2	2,5
32	M16	**BD032 5821 16240D**	240	300	145	30	–	–	16	30	–	2	2	3,7
40	M16	**BD040 5820 1690**	90	160	65	39	25	31,7	16	30	5,2	1	2	1,4
40	M16	**BD040 5820 16135**	135	205	110	39	35	31,7	16	30	2,8	1	2	1,8
40	M16	**BD040 5820 16230**	230	300	145	39	35	31,7	16	30	1,9	1	2	2,6

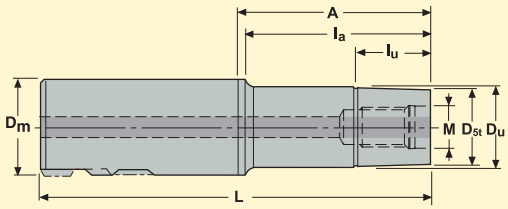
Please check availability in current price and stock-list.

D = High density anti-vibration shank, E = carbide.

Type BW/5821 – Weldon extensions

DIN 1835-1 Form B

Design 2 (5821)

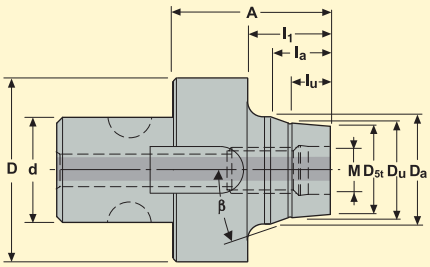


$D_a = D_u$

Weldon Shank Dm	Connecting thread size	Part No.	Dimensions in mm								β°	Design	Balancing	KG
			A	L	l_a	D_a	l_u	D_u	M	D_{5t}				
20	M10	**BW020 5821 1030**	30	80	25	18,5	10	18,5	10	18,5	–	2	2	0,2
20	M10	**BW020 5821 10102**	102	152	97	18,5	20	18,5	10	18,5	–	2	2	0,3
25	M12	**BW025 5821 1245**	45	101	40	23,5	20	23,5	12	23	–	2	2	0,4
25	M12	**BW025 5821 12115**	115	171	110	23,5	30	23,5	12	23	–	2	2	0,6
32	M16	**BW032 5821 1645**	45	105	40	30,5	20	30,5	16	30	–	2	2	0,6

Please check availability in current price and stock-list.

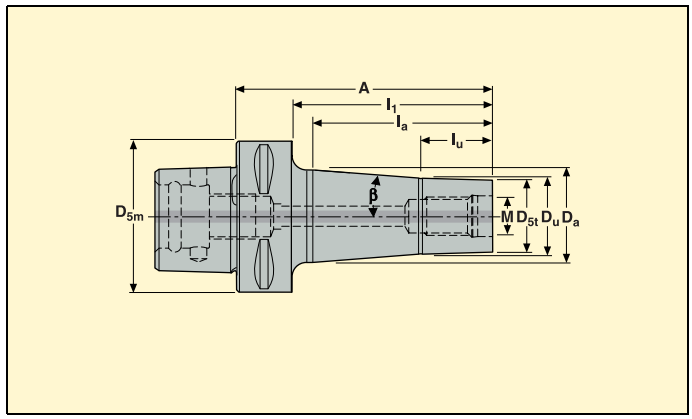
Type BM/5820 – Graflex® Combimaster adapters



Graflex shank Size	d mm	Connecting thread size	Part No.	Dimensions in mm A	l_1	D	l_a	D_a	l_u	D_u	M	D_{5t}	β°	Balancing	KG
5	28	M16	**BM050 5820 1640**	40	20	50	15	35	10	31,7	16	30	18,25	2	0,6

Please check availability in current price and stock-list.

Type 5820 – Combimaster adapters



Seco-Capto shank size	Connecting thread size	Part No.	Dimensions in mm									Balancing	KG
			A	D_{5m}	D_{5t}	D_a	D_u	l_a	l_1	l_u	β°		
C3	M6	C3-391.5820 -06030	30	32	11,0	13,5	11,7	10	12	5	10,2	1	0,1
C3	M8	-08030	30	32	13,5	17,5	15,7	10	12	5	10,2	1	0,1
C3	M10	-10030	30	32	18,5	22,0	19,7	10	12	5	13,0	1	0,2
C3	M12	-12035	35	32	23,0	28,0	24,7	15	17	10	18,3	1	0,2
C3	M16	-16040	40	32	30,0	32,0	31,7	–	–	10	0,9	1	0,2
C4	M6	C4-391.5820 -06030	30	40	11,0	11,7	11,7	5	7	5	–	1	0,3
C4	M8	-08030	30	40	13,5	15,7	15,7	5	7	5	0	1	0,3
C4	M10	-10035	35	40	18,5	22,0	19,7	10	12	5	13,0	1	0,3
C4	M12	-12040	40	40	23,0	28,0	24,7	15	17	10	18,3	1	0,3
C4	M16	-16045	45	40	30,0	35,5	31,7	20	22	10	10,8	1	0,4
C5	M6	C5-391.5820 -06050	50	50	11,0	14,5	11,7	25	27	10	5,3	1	0,5
C5	M8	-08050	50	50	13,5	18,5	15,7	25	27	10	5,3	1	0,5
C5	M8	-08075	75	50	13,5	20,0	15,7	50	52	15	3,5	1	0,5
C5	M10	-10050	50	50	18,5	23,0	19,7	25	27	10	6,3	1	0,5
C5	M10	-10075	75	50	18,5	24,5	19,7	50	52	15	3,9	1	0,6
C5	M12	-12050	50	50	23,0	28,5	24,7	25	27	10	7,2	1	0,5
C5	M12	-12075	75	50	23,0	30,0	24,7	50	52	20	5,0	1	0,6
C5	M16	-16050	50	50	30,0	35,5	31,7	25	27	10	7,2	1	0,6
C5	M16	-16075	75	50	30,0	37,0	31,7	50	52	20	5,0	1	0,7
C6	M6	C6-391.5820 -06050	50	63	11,0	14,0	11,7	20	25	10	6,6	1	0,8
C6	M8	-08050	50	63	13,5	18,5	15,7	20	25	10	8,0	1	0,8
C6	M8	-08075	75	63	13,5	20,0	15,7	45	50	15	4,1	1	0,8
C6	M10	-10050	50	63	18,5	22,5	19,7	20	25	10	8,0	1	0,8
C6	M10	-10075	75	63	18,5	24,0	19,7	45	50	15	4,1	1	0,9
C6	M12	-12050	50	63	23,0	28,0	24,7	20	25	10	9,4	1	0,9
C6	M12	-12075	75	63	23,0	29,5	24,7	45	50	20	5,5	1	1,0
C6	M16	-16050	50	63	30,0	35,5	31,7	20	25	10	10,8	1	0,9
C6	M16	-16075	75	63	30,0	37,0	31,7	45	50	20	6,1	1	1,1
C8	M8	C8-391.5820 -08085	85	80	13,5	24,5	15,7	50	52	15	7,2	1	1,8
C8	M10	-10085	85	80	18,5	29,0	19,7	50	52	15	7,6	1	1,9
C8	M12	-12085	85	80	23,0	35,0	24,7	50	52	20	9,7	1	2,0
C8	M16	-16085	85	80	30,0	42,5	31,7	50	52	20	10,2	1	2,1

Please check availability in current price and stock-list

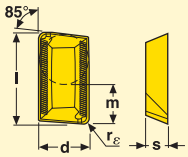
Inserts for Seco´s standard milling cutters, see pages 512 - 565.

PCD inserts for Seco´s standard milling cutters, see pages 566 - 569.

Inserts in grade PCBN, see pages 571 - 575.

Remaining stock standard inserts, see pages 576 - 583.

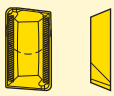
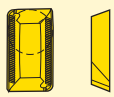
ABER26



Tolerances (± mm)

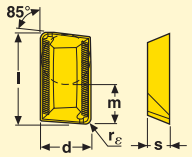
	d	s	m
ABER	0,025	0,025	0,025

Size	Dimensions in mm ~ l	d	s
2606	26,4	14	6,35

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	M4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
2606 ZFFR 	ABER 2606ZFFR-M15	1,6	17°	■					■				■	■							
2606 ZZFR 	ABER 2606ZZFR-M15	1,6	17°											■							

■Stock standard
Subject to change refer to current price and stock-list

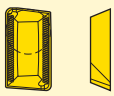
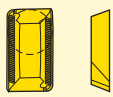
ABEX



Tolerances (± mm)

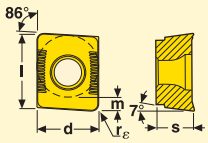
	d	s	m
ABER	0,025	0,025	0,025

Size	Dimensions in mm ~ l	d	s
2606	26,4	14	6,35

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	M4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
2606 ZFFR 																					
2606 ZZFR 																					

■Stock standard
Subject to change refer to current price and stock-list

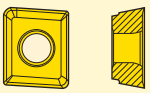
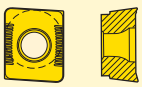
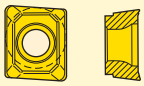
AC..15



Tolerances (± mm)

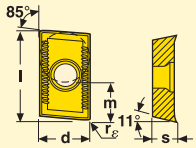
	d	s	m
ACE.	0,025	0,025	0,025
ACM.	0,08	0,13	0,08

Size	Dimensions in mm ~ l	d	s
1506	15	12,7	6,35

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
E08 	ACET 150612TR-ME10	1,2	22°											■			■				
	150612TR-M11	1,2	14°	■	■								■	■		■	■				
	150612TR-M14	1,2	15°		■				■				■	■			■		■		
	150612TR-MD15	1,2	15°	■		■							■	■							
ME10 	ACET 150612TL-M11	1,2	14°		■				■								■				
	150612TL-M14	1,2	15°														■				
	ACET 150630TR-M14	3,0	15°											■							
	150630TR-MD15	3,0	15°	■																	
M11/M14/MD15 	150631TR-M11	3,1	14°														■				
	150631TR-M14	3,1	15°														■				
	ACET 150631TL-M11	3,1	14°														■				
	ACET 150660TR-M14	6,0	15°											■			■				
	ACET 150660TL-M14	6,0	15°														■				
	ACMT 150612TR-M14	1,2	15°		■									■			■				

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with corner radius > 3 mm, the cutter body must be modified.

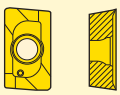
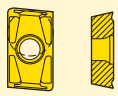
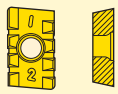
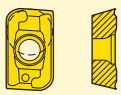
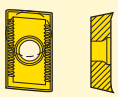
AP..16



Tolerances (± mm)

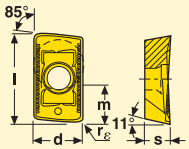
	d	s	m
APEX	0,025	0,025	0,025
APFT	0,013	0,025	0,007
APKT	0,050	0,025	0,013

Size	Dimensions in mm ~ l	d	s
1604	17	9,525	4,76

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MK1500	MK2000	MK3000	MP1500	MP2500	MP3000	MH1000	MS2500	T25M	T350M	F15M	F20M	F25M	F40M	Uncoated S60M	HX	H15	H25
E08 	APEX 160408FR-E07																		■		
	160408FR-E08	0,8	25°											■						■	
	APFT 1604PDR-M12	0,8	15°									■					■		■		
D15 	APFT 1604PDTR-D15	0,8	8°				■		■			■	■				■		■		
	1604PDTL-D15	0,8	8°				■					■	■						■		
	1604PDTR-E08	0,8	13°									■									
E08 	APFT 160416R-M13	1,6	15°									■					■		■		
	160416L-M13	1,6	15°									■					■				
	160424R-M13	2,4	15°									■					■				
	160430R-M13	3,0	15°									■					■				
	160430TR-MD15	3,0	15°										■								
	160430L-M13	3,0	15°								■						■				
E12/M/MD 	160440R-M13	4,0	15°									■					■				
	160448R-M13	4,8	15°									■					■				
	160460R-M13	6,0	15°														■				
	APKT 1604PDR-E12	0,4	22°									■					■		■		
	1604PDL-E12	0,4	22°														■		■		
	1604PDTR-M14	0,4	22°									■	■				■		■		
ME14 	1604PDTR-ME14	0,8	24°	■			■					■	■				■				
	160408TR-D15	0,8	8°	■																	
	160408TL-M14	0,8	22°									■	■				■				

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with corner radius > 3 mm, the cutter body must be modified.

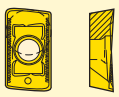
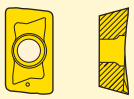
AP..16



Tolerances (± mm)

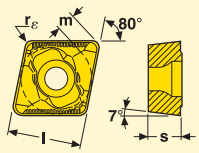
	d	s	m
APKX	0,050	0,025	0,013
APMX	0,050	0,050	-

Size	Dimensions in mm ~ l	d	s
1604	17	9,525	5,67

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
ME11/ME12 																					
	APEX 160408FR-E07	0,8	18°																■		
	APKX 1604PDR-ME11	1,2	24°														■				
	1604PDR-ME12	0,8	24°		■	■			■				■	■			■		■		
	160416R-ME12	1,6	24°										■				■				
M14 																					
	APMX 160408TR-ME11	0,8	24°	■													■				
	160404TR-M14	0,4	24°		■																
	160408TR-M14	0,8	24°	■	■				■					■			■				
	160416TR-M14	1,6	24°		■									■			■				
	APMX 160404TL-M14	0,4	24°		■																
	160408TL-M14	0,8	24°		■																
	APKX 160430R-ME12	3,0	24°										■				■				
	160440R-ME12	4,0	24°														■				

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with corner radius > 3 mm, the cutter body must be modified.

CCMX/COMX



Tolerances (± mm)

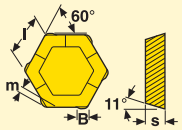
	l	s	m
C...06/08/09	0,05	0,13	0,08
CCMX12	0,08	0,13	0,13

Size	Dimensions in mm l	s
0601	6,35	1,89
0602	6,35	2,38
0603	6,35	3,5
08T3	8,03	4,4
0803	7,94	3,18
09T3	9,525	3,97
1204	12,7	4,76

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated															Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
ME06/ME11																					
	CCMX 060304-E06	0,4	15°														■		■		
	08T308-E07	0,8	15°											■			■		■		
	CCMX 09T308T-ME09	0,8	24°														■				
	120412T-ME11	1,2	24°														■				
M05																					
	CCMX 060304T-M07	0,4	9°														■				
	08T308T-M08	0,8	15°										■	■			■				
MD05/MD11																					
	CCMX 060204T-MD06	0,4	0°														■				
	080308T-MD07	0,8	0°														■				
	09T308T-MD09	0,8	0°										■				■				
	120412T-MD11	1,2	0°														■				
	COMX 060104T-MD05	0,4	0°															■			

■Stock standard
Subject to change refer to current price and stock-list

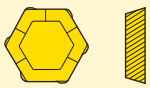
HPMR/N



Tolerances (± mm)

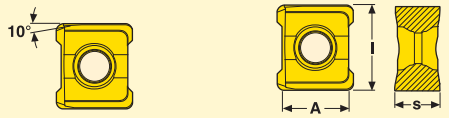
	l	s	m
HPMN	0,08	0,13	0,13
HPMR	0,08	0,13	0,13

Size	Dimensions in mm l	s
1206	12,5	6,35

Inserts	Part No.	B	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
	HPMR 1206ZETR-ME15	0,8	26°		■									■			■				
	1206ZETR-M17	0,8	17°		■			■						■			■				
	HPMN 1206ZETR-D25	0,8	0°	■	■																
	1206ZETR-MD20	0,8	0°		■				■		■			■							
	HPMN 1206ZETL-D25				■																

■Stock standard
Subject to change refer to current price and stock-list

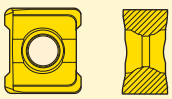
LNKT/LNKW05..



Tolerances (± mm)

	l	s	A
LNK.	0,013	0,025	0,025

Size	Dimensions in mm l	s	A
0504	10	4,7	5,8

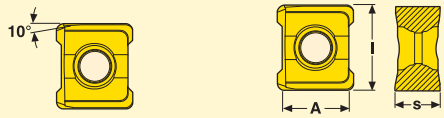
Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F30M	F25M	F40M	S60M	HX	H15	H25
LNK.05 	LNKT 050404PPTN4-M06	0,4	15°			■		■						■			■				
	050408PPTN4-M06	0,8	15°			■		■						■			■				
	050416PPTN4-M06	1,6	15°											■			■				
	050420PPTN4-M06	2,0	15°											■			■				
	050424PPTN2-M06	2,4	15°														■				
	050431PPTR1-M06	3,1	15°														■				
	050431PPTL1-M06	3,1	15°														■				
	LNKT 050404PPN4-E05	0,4	0°														■				■
	050408PPN4-E05	0,8	0°														■				■
	LNKW 050404PPN4-MD07	0,4	0°			■								■							
	050408PPN4-MD07	0,8	0°			■								■							

■Stock standard

Subject to change refer to current price and stock-list

When using inserts with radius >2,4 mm, the cutter body must be modified.

LNKT/LNKW06/08



Tolerances (± mm)

	l	s	A
LNK.	0,013	0,025	0,025

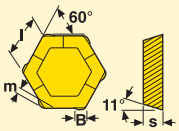
Size	Dimensions in mm l	s	A
0605	10	5	7,8
0805	10	5	7,8

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated															Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
LNK.06																					
	LNKT 060504PPN-E05	0,4	23°																		■
	060508PPN-E05	0,8	23°																		■
	060516PPN-E05	1,6	23°																		■
	060531PPN-E05	3,1	23°																		■
	060540PPR-E05*	4,0	23°																		■
	060540PPL-E05*	4,0	23°																		■
	LNKT 060504PPTN-M06	0,4	15°		■	■								■			■				
	060508PPTN-M06	0,8	15°		■	■			■					■			■				
	060516PPTN-M06	1,6	15°						■								■				
	060531PPTN-M06	3,1	15°														■				
	060540PPTR-M06	4,0	15°														■				
	060540PPTL-M06	4,0	15°														■				
	LNKW 060504PPN-MD08	0,4	0°			■			■								■				
	060508PPN-MD08	0,8	0°		■	■			■												
	LNKT 060504PPTN4-M06	0,4	15°					■													
	060508PPTN4-M06	0,8	15°					■													
LNK.08																					
	LNKT 080504PPN-E05	0,4	23°																		■
	080508PPN-E05	0,8	23°																		■
	080516PPN-E05	1,6	23°																		■
	080520PPN-E05*	2,0	23°																		■
	080524PPN-E05*	2,4	23°																		■
	080531PPN-E05	3,1	23°																		■
	080540PPR-E05	4,0	23°																		■
	080540PPL-E05	4,0	23°																		■
	LNKT 080504PPTN-M06	0,4	15°		■	■								■			■				
	080508PPTN-M06	0,8	15°		■	■			■					■			■				
	080516PPTN-M06	1,6	15°						■								■				
	080520PPTN-M06*	2,0	15°						■								■				
	080524PPTN-M06*	2,4	15°						■								■				
	080531PPTN-M06	3,1	15°						■								■				
	080540PPTR-M06	4,0	15°														■				
	080540PPTL-M06	4,0	15°														■				
	LNKW 080504PPN-MD08	0,4	0°			■			■								■				
	080508PPN-MD08	0,8	0°		■	■			■												
	LNKT 080504PPTN4-M06	0,4	15°					■													
	080508PPTN4-M06	0,8	15°					■													

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with radius >2,4 mm, the cutter body must be modified.

*Also used for slot width 10-12 mm.

LPH.



Tolerances (± mm)

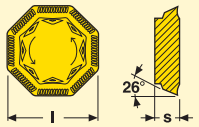
	l	s	m
HPMN	0,08	0,13	0,13
HPMR	0,08	0,13	0,13

Size	Dimensions in mm l	s
1206	12,5	6,35

Inserts	Part No.	B	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
	LPHW 060310TR-D06					■	■														
	060310TR-MD07				■							■									
	LPHT 060310TR-M06				■	■						■		■			■				
	LPHT 060310TR-ME05					■		■									■				
	LPHT 060310ER-E05							■									■				■

■Stock standard
Subject to change refer to current price and stock-list

OFER/OFEN/OFMR07



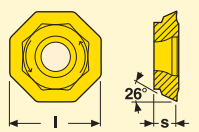
Tolerances (± mm)

	l	s
OF..	0,025	0,025

Size	Dimensions in mm l	s
OFER07	17,94	4,56
OFEN07	18,02	4,76
OFEN07ZZT	18,07	4,74
OFMR07	18,02	4,86

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	F15M	T350M	F25M	F40M	S60M	HX	H15	H25
E07/M10/M16																				
	OFER 070405N-E07	20°											■						■	
	070405N-M10	0°			■															
	OFEN 070405TN-D18	0°	■	■	■		■	■		■										
ME10/ME15																				
	OFER 070405TN-M16	0°	■	■			■	■		■		■		■		■				
	070405TN-ME10	18°		■			■				■	■				■				
	070405TN-ME15	18°		■			■					■		■		■				
	OFMR 070405TR-M15	6°		■				■						■		■				
	070405TR-ME13	15°		■			■	■						■		■				
ZZR/ZZTR																				
	OFEN 0704ZZR-M10	0°			■															
	0704ZZTR-M16	0°						■						■						
	0704ZZTL-M16	0°						■												

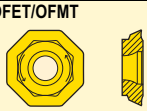
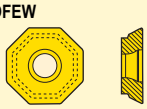
OFET/OFEW/OFMT07



Tolerances (± mm)

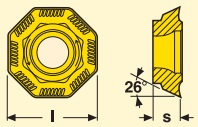
	l	s
OFE.	0,025	0,025
OFMT	0,10	0,15

Size	Dimensions in mm l	s
OFET07	17,94	4,56
OFEW07	17,94	4,76
OFMT07	17,97	4,86

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
OFET/OFMT																				
	OFET 070405TN-ME10	18°														■				
	070405TN-ME15	18°					■									■				
	070405TN-M16	0°						■												
OFEW																				
	OFEW 070405TN-D18	0°	■																	
	OFMT 070405TN-ME13	18°		■			■									■				
	070405TR-ME13	18°											■							
	OFMT 070405TN-M15	0°		■												■				
	070405TR-M15	0°														■				

■Stock standard
Subject to change refer to current price and stock-list

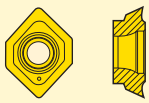
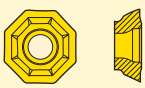
OFEX/OFMT05



Tolerances (± mm)

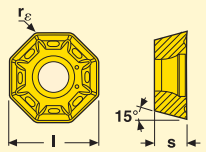
	l	s
OFEX	0,025	0,025
OFMT	0,08	0,05

Size	Dimensions in mm l	s
05T3	12,7	3,77
0504	13,3	4,76

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
E06 	OFEX 05T305FR-E06	18°												■					■	
	05T305N-E04	20°												■					■	
	05T305N-M05	0°			■															
	05T305TN-M08	0°		■				■		■			■			■				
ME07/ME12	OFEX 05T305TN-ME07	18°		■			■					■	■			■				
	OFEX 05T305TN-D09	0°	■																	
M05	OFMT 050405TR-ME12	18°		■			■						■			■				
	050405TR-M14	0°		■				■					■			■				
M08/D09/M14 																				

■Stock standard
Subject to change refer to current price and stock-list

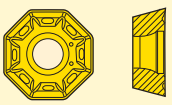
ODMT05



Tolerances (± mm)

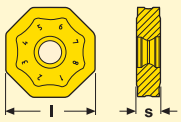
	l	s
ODMT	0,08	0,05

Size	Dimensions in mm l	s
0504	12,7	4,76

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
MD20 																					
	ODMT 050408TN-MD20	0,8	14°	■	■	■					■	■					■				
	ODMT 050504TN-MD20	0,4	14°			■															

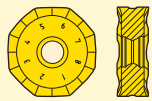
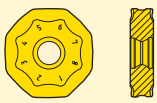
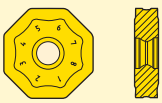
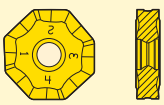
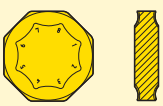
■Stock standard
Subject to change refer to current price and stock-list

ON..09



ON.U09..

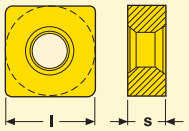
Size	Dimensions in mm l	s
ON.U09	22	5,8

Inserts	Part No.	Cutting rake	MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
			Grades																	
			Coated														Uncoated			
M13/M12/ME13/ME12																				
	ONMU 090520ANTN-ME12	20°	■	■	■		■	■	■	■			■			■				
	ONMU 090520ANTN-ME13	20°	■	■	■		■	■	■	■			■			■				
M14/M15	ONMU 090520ANTN-M12	20°	■	■	■		■	■	■	■			■			■				
	ONMU 090520ANTN-M13	20°	■	■	■		■	■	■	■			■			■				
	ONMU 090520ANTN-M14	15°	■	■	■			■	■	■			■			■				
MD16/MD17	ONMU 090520ANTN-M15	15°	■	■	■			■	■	■			■			■				
	ONMU 090520ANTN-MD16	0°	■	■	■			■		■			■							
	ONMU 090520ANTN-MD17	0°	■	■	■			■					■							
09ZNTR-M14	ONEU 090520ZZTN4-M14	15°	■	■	■		■	■	■	■			■			■				
																				
M14																				
	ONMF 090520ANTN-M14	15°	■	■				■		■			■							
	090520ANTN-MD16	0°	■					■		■			■							
	ONEF 090520ZZTN-M14	15°	■					■					■							

■Stock standard
Subject to change refer to current price and stock-list

Only to be used in combination with other M14-geometries

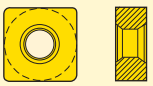
R230.19



Tolerances (± mm)

	l	s
R230.19	0,013	0,010

Size	Dimensions in mm l	s
1205	12,70	5,4

Inserts	Part No.	Cutting rake	MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S60M	HX	H15	H25
			Grades																		
			Coated															Uncoated			
E05/M07 																					
	R230.19 -1205-E05	20°																	■		
	-1205-M07	0°														■					

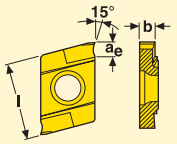
R235.15

Size	Dimensions in mm ~ l
032	43,0
050	54,7
080	54,7

Inserts	Part No.	Cutting rake	MP1500	MP2500	MP3000	MH1000	M4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S60M	HX	H15	H25
			Grades																		
			Coated															Uncoated			
E05																					
	R235.15 -032-E05	8°														■					
	-050-E05	8°														■			■		
	-080-E05	8°														■			■		

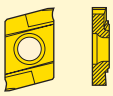
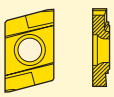
■Stock standard
Subject to change refer to current price and stock-list

R335.15-13..

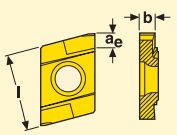


Tolerances (mm)
R335.15-.. a_e 0 – +0,15
b 0 – +0,05

Size	Dimensions in mm ~ l	a_e	b
13110/13130	13,50/13,50	1,40/1,60	1,13/1,33
13160	13,50	2,20	1,63
13185	13,50	2,20	1,88
13215	13,50	3,10	2,18
13265	13,50	3,10	2,68

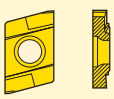
Inserts	Part No.	Cutting rake	Grades: Coated															Uncoated				
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S25M	S60M	HX	H15	H25
E08 																						
	R335.15 -13110FG-E08	15°															■					
	-13130FG-E08	15°															■					
	-13160FG-E08	15°															■					
	-13185FG-E08	15°															■					
	-13215FG-E08	15°															■					
	-13265FG-E08	15°															■					
M10 																						
	R335.15 -13185FG-M10	0°															■					
	-13215FG-M10	0°															■					
	-13265FG-M10	0°															■					

R335.15-18..



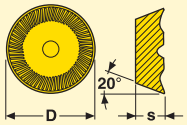
Tolerances (mm)
R335.15-.. a_e 0 – +0,15
b 0 – +0,05

Size	Dimensions in mm ~ l	a_e	b
18315	18,0	3,55	3,20
18350	18,0	3,85	3,55
18400	18,0	4,55	4,05
18415	18,0	4,55	4,20
18500	18,0	5,50	5,05
18515	18,0	5,50	5,20

Inserts	Part No.	Cutting rake	Grades: Coated															Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S60M	HX	H15	H25
M12 																					
	R335.15 -18315FG-M12	0°															■				
	-18350FG-M12	0°															■				
	-18400FG-M12	0°															■				
	-18415FG-M12	0°															■				
	-18500FG-M12	0°															■				
	-18515FG-M12	0°															■				

■Stock standard
Subject to change refer to current price and stock-list

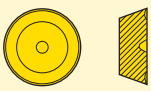
REHR1605



Tolerances (± mm)

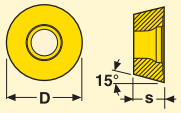
	D	s
REHR	0,013	0,25

Size	Dimensions in mm D	s
1605	16,0	5,56

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
ME12																				
	REHR 1605M0T-ME12	20°														■				
	1605M0T-M14	14°						■				■	■					■		
	1605M0T-MD15	6°	■																	
M14/MD15 																				

■Stock standard
Subject to change refer to current price and stock-list

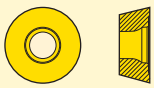
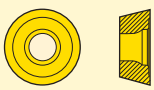
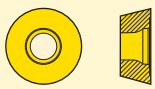
RD..05/06/07/08/10



Tolerances (± mm)

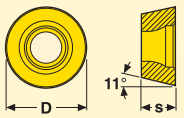
	D	s
RDHT	0,013	0,025
RDHW	0,013	0,025
RDKW	0,05	0,025

Size	Dimensions in mm D	s
0501	5,0	1,51
06T1	6,0	2,18
0702	7,0	2,38
0803	8,0	3,18
10T3	10,0	3,97

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
E02/E03/E04																				
	RDHT 06T1M0-E02	18°														■				■
	0702M0-E03	18°														■				■
	0803M0-E03	20°											■			■				■
	10T3M0-E04	20°											■			■				■
M05/M07	10T3M0T-M05	16°		■			■				■		■			■				
	10T3M0T-M07	11°		■			■				■		■			■				
	RDHW 0501M0-MD01	0°			■									■		■				
	06T1M0-MD02	0°			■				■					■	■	■				
MD01/MD02/MD03/	0702M0T-MD03	0°			■											■				
MD04/MD05/MD06	0702M0T-MD04	0°							■		■			■		■				
	0803M0-MD03	0°			■											■				
	10T3M0-MD04	0°			■											■				
	10T3M0T-MD06	0°				■									■	■				
	RDKW 0803M0T-MD05	0°		■					■		■			■	■	■				
	10T3M0T-MD06	0°	■	■					■		■			■	■	■				

■Stock standard
Subject to change refer to current price and stock-list

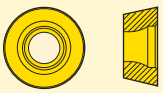
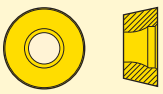
ROH.10/12



Tolerances (± mm)

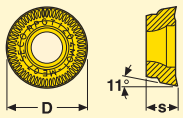
	D	s
ROH.10/12	0,013	0,025

Size	Dimensions in mm D	s
10T3	10,0	3,97
1204	12,0	4,76

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
E04/E05																				
	ROHT 10T3M0-E04	20°											■			■				
	10T3M0-M06	14°									■		■							
	10T3M0-M09	11°									■		■							
M06/M08/M09/M14/ M12/M15/MD04	ROHW 10T3M0-MD04	0°			■											■				
	ROHT 1204M0-E05	20°									■		■							
	ROHT 1204M0T-M08	16°									■		■							
	1204M0-M14	16°									■		■							
	1204M0-M12	10°									■		■							
	ROHT 1204M0T-M15	15°									■		■							

■Stock standard
Subject to change refer to current price and stock-list

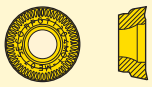
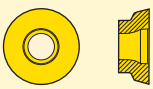
RP..12



Tolerances (± mm)

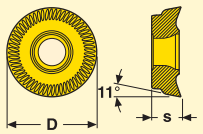
	D	s
RPH.	0,013	0,025
RPKW	0,08	0,025

Size	Dimensions in mm D	s
1204	12,0	4,76

Inserts	Part No.	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
ME07 	RPHT 1204M0T-M08	16°		■			■				■	■	■			■				
	1204M0-E05	20°									■			■		■				■
	1204M0T-ME07	20°		■			■				■		■			■				
	1204M0T-M15	15°	■	■			■			■	■		■		■	■				
E05/MD05	1204M0T-M10	11°		■			■				■		■			■				
	RPHW 1204M0-MD05	0°			■											■				
	1204M0T-MD10	0°				■														
M08/M15/MD10 	RPKW 1204M0T-MD10	0°	■						■		■			■	■					
M10																				

■Stock standard
Subject to change refer to current price and stock-list

RP..16/20



Tolerances (± mm)

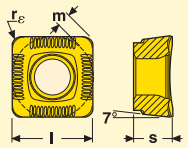
	D	s
RPHT	0,013	0,25
RPKX	0,013	0,25
RPHW	0,013	0,25

Size	Dimensions in mm D	s
1605	16,0	5,56
2006	20,0	6,35

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
ME11/ME12																				
	RPHT 1605M0T-ME11	21°		■			■				■		■			■				
	1605M0-E08	21°																		■
	1605M0T-M12	15°		■			■				■		■			■				
	1605M0T-M18	15°	■	■						■	■		■		■	■				
M10/M14/D15/M18																				
	RPKW 1605M0T-MD20	0°	■						■		■			■	■					
	RPHW 1605M0T-MD08	0°			■											■				
E08/E10																				
	RPHT 2006M0-E10	21°																		■
	2006M0T-ME12	20°		■			■				■		■			■				
	RPKT 2006M0T-M15	15°		■							■		■			■				
	2006M0T-M20	15°	■							■	■		■		■	■				
	2006M0T-M20	15°		■																
	RPKW 2006M0T-MD22	0°	■						■		■			■	■					
	2006M0-MD10	0°														■				

■Stock standard
Subject to change refer to current price and stock-list

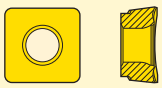
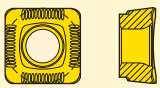
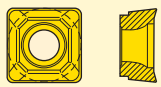
SC..12



Tolerances (± mm)

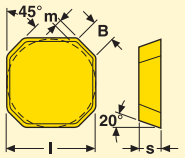
	l	s	m
SCE.	0,025	0,025	0,025
SCM.	0,08	0,13	0,13

Size	Dimensions in mm l	s
1206	12,7	6,35

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
E08 	SCEX 120612-E08	1,2	26°												■						
	SCET 120612T-ME10	1,2	22°														■				
ME10 	SCET 120612T-M11	1,2	14°	■	■				■					■			■				
	120612T-M14	1,2	15°		■				■				■	■			■		■		
	120612T-MD15	1,2	15°	■		■								■							
	SCET 120630T-M14	3,0	15°		■	■				■		■		■			■				
M11/M14/MD15 	120631T-ME10	3,1	22°										■								
	120631T-M11	3,1	14°										■								
	SCEX 120660T-M14	6,0	15°											■							
	SCMT 120612T-M14	1,2	15°		■												■				
	SCET 120630T-MD16	3,0	15°	■	■							■		■			■				

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with corner radius > 3 mm, the cutter body must be modified.

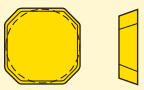
SEAN..



Tolerances (± mm)

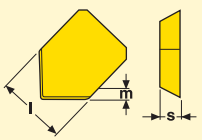
	l	s	m
SEAN	0,025	0,025	0,007

Size	Dimensions in mm l	s
1203	12,7	3,18
1303	13,44	3,36
1604	16,8	4,79



Inserts	Part No.	B	Cutting rake	Grades: Coated															Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S60M	HX	H15	H25
	SEAN 1203AFN-E12	1,6	0°														■			■		
	1203AFTN-M14	1,6	0°										■	■				■		■		
	SEAN 1303AFN-E12	3,5	0°																	■		
	1303AFTN-M14	3,5	0°											■								
	1303AFTN-M15	3,5	0°						■													
	SEAN 1604AFN-E15	4,1	0°																	■		
	1604AFTN-M18	4,1	0°											■								
	1604AFTN-M19	4,1	0°						■													

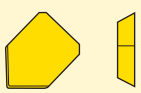
SEAN..ZZ..



Tolerances (± mm)

	l	s	m
SEAN	0,025	0,025	0,007

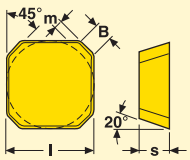
Size	Dimensions in mm l	s
1203	12,7	3,18
1504	15,875	4,76



Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S10M	HX	H15	H25
	SEAN 1203ZZN-E12	0°																■		
	1203ZZTN-M14	0°															■			
	1203ZZTN-M15	0°						■												
	1203ZZTN-MD15	0°	■																	
	SEAN 1504ZZTN-M18	0°						■												

■Stock standard
Subject to change refer to current price and stock-list

SEKN..



Tolerances (± mm)

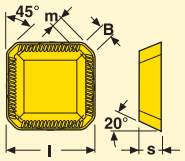
	l	s	m
SEKN12	0,08	0,025	0,013
-M14	0,08	0,025	0,03
SEKN15	0,10	0,025	0,013
-M18	0,05	0,025	0,05

Size	Dimensions in mm l	s
1203	12,70	3,18
1204	12,70	4,76
1504	15,875	4,76

Inserts	Part No.	B	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S10M	HX	H15	H25
	SEKN 1203AFN-E12	1,6	0°						■								■		■		
	1203AFTN-M14	1,6	0°	■	■			■	■		■		■	■			■				
	1203AFTN-D16	1,6	0°	■																	
	SEKN 1204AFTN-M18	1,5	0°						■					■							
	SEKN 1504AFN-E15	1,6	0°														■		■		
	1504AFTN-M18	1,6	0°		■			■	■		■		■	■			■				
	1504AFTN-MD20	1,6	0°	■																	

■Stock standard
Subject to change refer to current price and stock-list

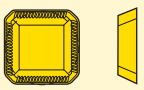
SEKR



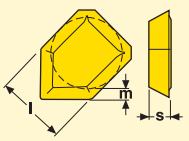
Tolerances (± mm)

	l	s	m
SEKR12/13	0,08	0,025	0,013
SEKR15	0,10	0,025	0,05
SEKR16	0,10	0,025	0,013

Size	Dimensions in mm l	s
1203	12,7	3,18
1303	13,44	3,36
1504	15,875	4,76
1604	16,8	4,79

Inserts	Part No.	B	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
E07	SEKR 1203AFN-E07	1,6	18°										■				■		■		
	SEKR 1203AFTN-ME10	1,5	20°										■	■			■		■		
	1203AFTN-ME13	1,5	24°	■	■			■					■	■			■		■		
ME10/ME16 	SEKR 1303AFTN-ME13	3,5	24°														■		■		
	SEKR 1504AFTN-ME12	1,5	20°											■							
	1504AFTN-ME16	1,5	20°					■					■	■							
	SEKR 1604AFTN-ME16	4,1	20°										■								

SEKR..ZZ



Tolerances (± mm)

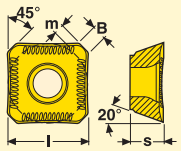
	l	s	m
SEKR..ZZ	0,08	0,025	0,013

Size	Dimensions in mm l	s
1203	12,7	3,18

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
	SEKR 1203ZZN-E07	18°																■		

■Stock standard
Subject to change refer to current price and stock-list

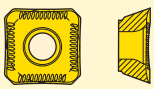
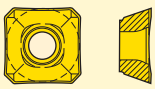
SEEX09



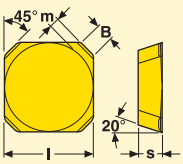
Tolerances (± mm)

	l	s	m
SEEX	0,025	0,025	0,025

Size	Dimensions in mm l	s
09T3	9,525	3,97

Inserts	Part No.	B	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
ME07																					
	SEEX 09T3AFN-E04	1,5	25°												■		■			■	
	09T3AFN-M05	1,5	0°			■											■				
	09T3AFTN-ME07	1,5	22°		■			■					■	■			■				
	09T3AFTN-M08	1,5	0°						■	■	■		■	■			■				
M08	09T3AFTN-D09	1,5	0°	■																	
																					

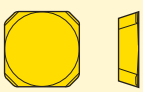
SEEX1203



Tolerances (± mm)

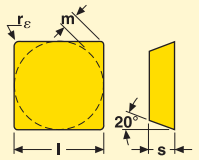
	l	s	m
SEEX	0,025	0,025	0,025

Size	Dimensions in mm l	s
1203	12,77	3,18

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
	SEEX 1203AFTN-M13	1,6	0°											■							
	1203AFTN-MD14	1,6	0°				■		■						■					■	

■Stock standard
Subject to change refer to current price and stock-list

SENN12



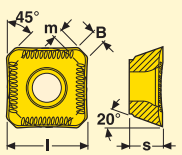
Tolerances (± mm)

	l	s	m
SENN	0,08	0,025	0,13

Size	Dimensions in mm l	s
1203	12,7	3,18

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MK1500	MM4500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
	SENN 120308-E10	0,8	0°																■		
	120308T-M12	0,8	0°														■				

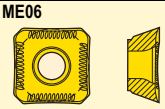
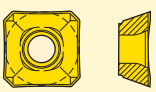
SEMX09



Tolerances (± mm)

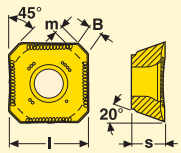
	l	s	m
SEMX	0,05	0,13	0,08

Size	Dimensions in mm l	s
09T3	9,525	3,97

Inserts	Part No.	B	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
ME06 	SEMX 09T3AFTN-ME06	1,5	25°		■			■						■			■				
	09T3AFTN-M08	1,5	0°		■			■						■			■				
M08 																					

■Stock standard
Subject to change refer to current price and stock-list

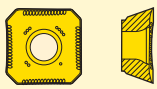
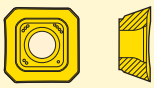
SEMX12



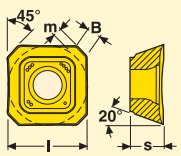
Tolerances (± mm)

	l	s	m
SEMX	0,03	0,025	0,03

Size	Dimensions in mm l	s
1204	12,7	4,76

Inserts	Part No.	B	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
ME12/M15 	SEMX 1204AFTN-ME12	1,57	18°		■			■						■			■				
	1204AFTN-M15	1,57	7°	■	■			■	■	■	■			■			■				
MD19 	SEMX 1204AFTN-MD19	1,57	0°	■		■			■					■							

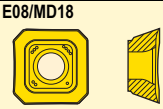
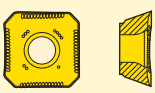
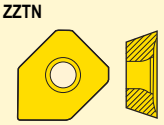
SEEX1204



Tolerances (± mm)

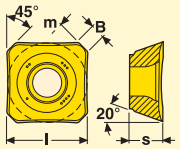
	l	s	m
SEEX	0,025	0,025	0,025

Size	Dimensions in mm l	s
1204	12,7	4,76

Inserts	Part No.	B	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
E08/MD18 	SEEX 1204AFN-E08	1,57	25°														■				■
	1204AFN-M10	1,57	7°		■	■		■						■			■				
	SEEX 1204AFTN-ME11	1,57	18°		■			■						■			■				
ME11/M10/M14 	SEEX 1204AFTN-M14	1,57	7°	■	■			■	■	■	■			■			■				
	SEEX 1204AFTN-MD18	1,57	0°	■		■			■					■			■				
ZZTN 	SEEX 1204ZZTN-M14*	–	0°	■	■				■					■			■				

* Only to be used together with SEEX1204.. inserts.

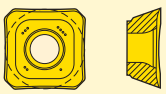
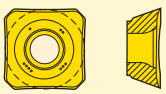
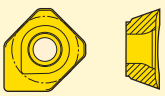
SEEX15



Tolerances (± mm)

	l	s	m
SEEX	0,025	0,025	0,025

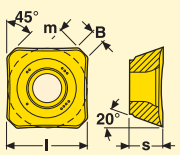
Size	Dimensions in mm l	s
1505	15,875	5,56

Inserts	Part No.	B	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
E10 	SEEX 1505AFN-E10	1,8	25°																		■
	SEEX 1505AFN-M12	1,8	5°		■									■			■				
M17/M12 	SEEX 1505AFTN-M17	1,8	5°	■	■			■	■	■	■			■			■				
	SEEX 1505ZZTN-M17*	–	5°		■				■					■			■				
ZZTN 																					

■Stock standard
Subject to change refer to current price and stock-list

*Only to be used with SEEX1505..inserts

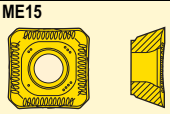
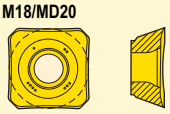
SEMX15



Tolerances (± mm)

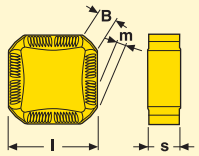
	l	s	m
SEMX	0,1	0,13	0,15

Size	Dimensions in mm l	s
1505	15,875	5,56

Inserts	Part No.	B	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
ME15 	SEMX 1505AFTN-ME15	1,8	21°					■						■			■				
	SEMX 1505AFTN-M18	1,8	5°	■	■			■	■	■	■			■			■				
M18/MD20 	SEMX 1505AFTN-MD20	1,8	0°	■	■	■			■					■							

■Stock standard
Subject to change refer to current price and stock-list

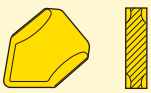
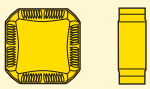
SNH.15



Tolerances (± mm)

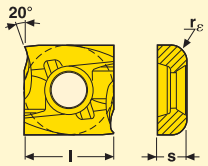
	l	s	m
SNHN	0,013	0,025	0,013
SNHF	0,013	0,025	0,013

Size	Dimensions in mm l	s
1203	12,7	3,25
1204	12,7	4,02
12045	12,7	4,57
1205	12,7	5,47
1207	12,7	7,08

Inserts	Part No.	B	Cut-ting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	Uncoated S60M	HX	H15	H25
MD15																						
	SNHN 150412TN-MD15	1,2	0°	■					■		■											
	SNHF 150412TN-M14	1,2	15°	■					■		■											
	1504XNN-ME10	1,37	10°						■													
M14																						
	SNHF 1504XNN-M14	1,37	15°	■					■		■											
	SNHN 1504XNN-MD15	1,37	0°						■		■											
ME10	SNHF 1504ZZN-M14	1,37	15°						■													
																						

■Stock standard
Subject to change refer to current price and stock-list

SNHQ 2 edges



Tolerances (± mm)

	l	s
SNHQ	0,013	0,01

Size	Dimensions in mm l	s
1203	12,7	3,25
1204	12,7	4,02
12045	12,7	4,57
1205	12,7	5,47
1207	12,7	7,08

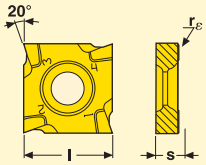
Inserts	Part No.	r_ε	Cut-ting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	Uncoated S60M	HX	H15	H25
	SNHQ 120320EL2-M07	2,0	20°															■				
	120324EL2-M07	2,4	20°															■				
	120330EL2-M07	3,0	20°															■				
	SNHQ 120320ER2-M07	2,0	20°															■				
	120324ER2-M07	2,4	20°															■				
	120330ER2-M07	3,0	20°															■				
	SNHQ 120424EL2-M07	2,4	20°															■				
	120431EL2-M07	3,1	20°															■				
	120435EL2-M07	3,5	20°															■				
	SNHQ 120424ER2-M07	2,4	20°															■				
	120431ER2-M07	3,1	20°															■				
	120435ER2-M07	3,5	20°															■				
	SNHQ 1204524EL2-M07	2,4	20°															■				
	1204531EL2-M07	3,1	20°															■				
	1204540EL2-M07	4,0	20°															■				
	SNHQ 1204524ER2-M07	2,4	20°															■				
	1204531ER2-M07	3,1	20°															■				
	1204540ER2-M07	4,0	20°															■				
	SNHQ 120524EL2-M07	2,4	20°															■				
	120531EL2-M07	3,1	20°															■				
	120540EL2-M07	4,0	20°															■				
	120550EL2-M07	5,0	20°															■				
	SNHQ 120524ER2-M07	2,4	20°															■				
	120531ER2-M07	3,1	20°															■				
	120540ER2-M07	4,0	20°															■				
	120550ER2-M07	5,0	20°															■				
	SNHQ 120724EL2-M07	2,4	20°															■				
	120731EL2-M07	3,1	20°															■				
	120740EL2-M07	4,0	20°															■				
	120750EL2-M07	5,0	20°															■				
	120760EL2-M07	6,0	20°															■				
	SNHQ 120724ER2-M07	2,4	20°															■				
	120731ER2-M07	3,1	20°															■				
	120740ER2-M07	4,0	20°															■				
	120750ER2-M07	5,0	20°															■				
	120760ER2-M07	6,0	20°															■				

■Stock standard

Subject to change refer to current price and stock-list

When using inserts with corner radius > 4,0 mm, the cutter must be modified

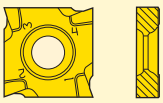
SNHQ 4 edges



Tolerances (± mm)

	l	s
SNHQ	0,013	0,01

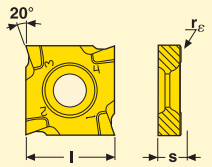
Size	Dimensions in mm l	s
1102	11,0	2,32
1103	11,0	2,72

Inserts	Part No.	r_ε	Cut-ting rake	Grades: Coated															Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S60M	HX	H15	H25
	SNHQ 110202TL4-M07	0,2	20°															■				
	110204TL4-M07	0,4	20°					■									■	■				
	110208TL4-M07	0,8	20°					■									■	■				
	110212TL4-M07	1,2	20°															■				
	110216TL4-M07	1,6	20°														■	■				
	110220TL4-M07	2,0	20°														■					
	SNHQ 110202TR4-M07	0,2	20°															■				
	110204TR4-M07	0,4	20°					■									■	■				
	110208TR4-M07	0,8	20°					■									■	■				
	110212TR4-M07	1,2	20°															■				
	110216TR4-M07	1,6	20°														■	■				
	110220TR4-M07	2,0	20°														■					
	SNHQ 110302TL4-M07	0,2	20°															■				
	110304TL4-M07	0,4	20°					■									■	■				
	110308TL4-M07	0,8	20°					■									■	■				
	110312TL4-M07	1,2	20°															■				
	110316TL4-M07	1,6	20°														■	■				
	110320TL4-M07	2,0	20°														■					
	SNHQ 110302TR4-M07	0,2	20°															■				
	110304TR4-M07	0,4	20°					■									■	■				
	110308TR4-M07	0,8	20°					■									■	■				
	110312TR4-M07	1,2	20°															■				
	110316TR4-M07	1,6	20°														■	■				
	110320TR4-M07	2,0	20°														■					

■Stock standard

Subject to change refer to current price and stock-list

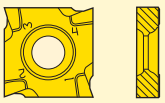
SNHQ 4 edges



Tolerances (± mm)

	l	s
SNHQ	0,013	0,01

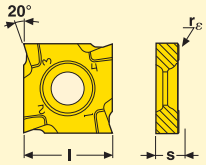
Size	Dimensions in mm l	s
1203	12,7	3,25
1204	12,7	4,02



Inserts	Part No.	r_ε	Cut-ting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	Uncoated S60M	HX	H15	H25
	SNHQ 120302TL4-M07	0,2	20°															■				
	120304TL4-M07	0,4	20°					■									■	■				
	120308TL4-M07	0,8	20°					■									■	■				
	120310TL4-M07	1,0	20°															■				
	120312TL4-M07	1,2	20°															■				
	120316TL4-M07	1,6	20°														■	■				
	120320TL4-M07	2,0	20°														■	■				
	SNHQ 120302TR4-M07	0,2	20°															■				
	120304TR4-M07	0,4	20°					■									■	■				
	120308TR4-M07	0,8	20°					■									■	■				
	120310TR4-M07	1,0	20°															■				
	120312TR4-M07	1,2	20°															■				
	120316TR4-M07	1,6	20°														■	■				
	120320TR4-M07	2,0	20°														■	■				
	SNHQ 120402TL4-M07	0,2	20°															■				
	120404TL4-M07	0,4	20°					■									■	■				
	120408TL4-M07	0,8	20°					■									■	■				
	120412TL4-M07	1,2	20°															■				
	120416TL4-M07	1,6	20°														■	■				
	120420TL4-M07	2,0	20°														■	■				
	SNHQ 120402TR4-M07	0,2	20°															■				
	120404TR4-M07	0,4	20°					■									■	■				
	120408TR4-M07	0,8	20°					■									■	■				
	120412TR4-M07	1,2	20°															■				
	120416TR4-M07	1,6	20°														■	■				
	120420TR4-M07	2,0	20°														■	■				

■Stock standard
Subject to change refer to current price and stock-list

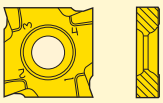
SNHQ 4 edges



Tolerances (± mm)

	l	s
SNHQ	0,013	0,01

Size	Dimensions in mm l	s
12045	12,7	4,57
1205	12,7	5,47
1207	12,7	7,08

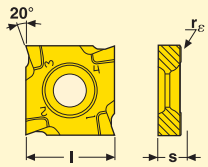


Inserts	Part No.	r_ε	Cut-ting rake	Grades: Coated															Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S60M	HX	H15	H25
	SNHQ 1204502TL4-M07	0,2	20°															■				
	1204504TL4-M07	0,4	20°					■									■	■				
	1204508TL4-M07	0,8	20°					■									■	■				
	1204512TL4-M07	1,2	20°															■				
	1204516TL4-M07	1,6	20°														■	■				
	1204520TL4-M07	2,0	20°														■	■				
	SNHQ 1204502TR4-M07	0,2	20°															■				
	1204504TR4-M07	0,4	20°					■									■	■				
	1204508TR4-M07	0,8	20°					■									■	■				
	1204512TR4-M07	1,2	20°															■				
	1204516TR4-M07	1,6	20°														■	■				
	1204520TR4-M07	2,0	20°														■	■				
	SNHQ 120502TL4-M07	0,2	20°															■				
	120504TL4-M07	0,4	20°					■									■	■				
	120508TL4-M07	0,8	20°					■									■	■				
	120510TL4-M07	1,0	20°															■				
	120512TL4-M07	1,2	20°															■				
	120516TL4-M07	1,6	20°														■	■				
	120520TL4-M07	2,0	20°														■	■				
	SNHQ 120502TR4-M07	0,2	20°															■				
	120504TR4-M07	0,4	20°					■									■	■				
	120508TR4-M07	0,8	20°					■									■	■				
	120510TR4-M07	1,0	20°															■				
	120512TR4-M07	1,2	20°															■				
	120516TR4-M07	1,6	20°														■	■				
	120520TR4-M07	2,0	20°														■	■				
	SNHQ 120702TL4-M07	0,2	20°															■				
	120704TL4-M07	0,4	20°					■									■	■				
	120708TL4-M07	0,8	20°					■									■	■				
	120712TL4-M07	1,2	20°															■				
	120716TL4-M07	1,6	20°														■	■				
	120720TL4-M07	2,0	20°														■	■				
	SNHQ 120702TR4-M07	0,2	20°															■				
	120704TR4-M07	0,4	20°					■									■	■				
	120708TR4-M07	0,8	20°					■									■	■				
	120712TR4-M07	1,2	20°															■				
	120716TR4-M07	1,6	20°														■	■				
	120720TR4-M07	2,0	20°														■	■				

■Stock standard

Subject to change refer to current price and stock-list

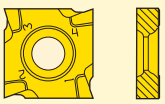
SNHQ 4 edges



Tolerances (± mm)

	l	s
SNHQ	0,013	0,01

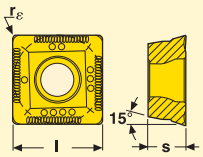
Size	Dimensions in mm l	s
1102	11,0	2,32
1103	11,0	2,72
1203	12,7	3,25
1204	12,7	4,02
12045	12,7	4,57
1205	12,7	5,47
1207	12,7	7,08

Inserts	Part No.	r_ε	Cut-ting rake	Grades: Coated															Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S60M	HX	H15	H25
	SNHQ 110202EL4-E05	0,2	20°															■				■
	110202ER4-E05	0,2	20°															■				■
	SNHQ 110302EL4-E05	0,2	20°															■				■
	110302ER4-E05	0,2	20°															■				■
	SNHQ 120302EL4-E05	0,2	20°															■				■
	120302ER4-E05	0,2	20°															■				■
	SNHQ 120404EL4-E05	0,4	20°															■				■
	120404ER4-E05	0,4	20°															■				■
	SNHQ 1204504EL4-E05	0,4	20°															■				■
	1204504ER4-E05	0,4	20°															■				■
	SNHQ 120504EL4-E05	0,4	20°															■				■
	120504ER4-E05	0,4	20°															■				■
	SNHQ 120704EL4-E05	0,4	20°															■				■
	120704ER4-E05	0,4	20°															■				■

■ Stock standard

Subject to change refer to current price and stock-list

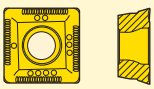
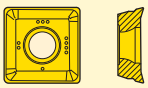
SONX



Tolerances (± mm)

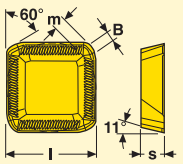
	l	s
SONX	0,03	0,025

Size	Dimensions in mm l	s
09T3	9,55	3,97
1205	12,7	5,17
1505	15,8	5,56

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
ME06/ME08/ME10																					
	SONX 09T304TR-ME06	0,4	22°														■				
	09T304TR-M10	0,4	19°	■	■				■					■			■				
	09T308TR-M10	0,8	19°	■	■				■	■			■				■				
M10/M12/M14																					
	SONX 120508TR-ME08	0,8	24°														■				
	120508TR-M12	0,8	16°	■	■				■	■				■			■				
	SONX 150508TR-ME10	0,8	19°														■				
	150508TR-M14	0,8	22°	■	■				■	■				■			■				
	150516TR-M14	1,6	22°		■				■								■				

■Stock standard
Subject to change refer to current price and stock-list

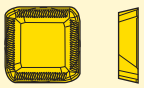
SPE.



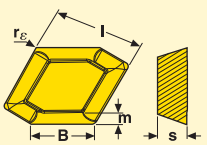
Tolerances (± mm)

	l	s	m
SPEN	0,025	0,025	0,025
SPER	0,025	0,025	0,025

Size	Dimensions in mm l	s
1906	19,05	6,35
2807	28,575	7,94

Inserts	Part No.	B	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
SPER 	SPER 1906ZETR-M17	1,0	17°					■					■	■							
	SPEN 1906ZETR-D25	1,0	0°	■	■																
SPEN	SPEN 1906ZETR-MD20	1,0	0°		■				■				■	■							
	1906ZETL-MD20	1,0	0°		■																
	SPEN 2807ZETR-D35	1,5	0°	■																	
	2807ZETR-MD35	1,5	0°						■												

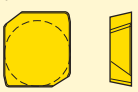
SPE.-ZZ



Tolerances (± mm)

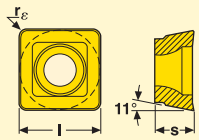
	l	s	m
SPER	0,025	0,025	0,025
SPEN	0,025	0,025	0,025

Size	Dimensions in mm l	s	B
1906	20,00	6,35	12
2807	28,575	7,94	8,5

Inserts	Part No.	r_e	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
D35 	SPER 1906ZZTR-M17	1,6	17°		■																
	1906ZZTL-M17	1,6	17°		■																
	SPEN 1906ZZTR-D25	1,0	0°	■	■																
M17/D25/MD20	1906ZZTR-MD20	1,0	0°		■				■												
	2807ZZTR-D35	2,1	0°	■																	

■Stock standard
Subject to change refer to current price and stock-list

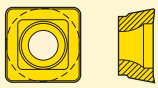
SPMT10



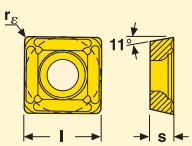
Tolerances (± mm)

	l	s
SPMT	0,05	0,13

Size	Dimensions in mm l	s
1004	10,0	4,76

Inserts	Part No.	r_ε	Cut-ting rake	Grades: Coated															Uncoated				
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S25M	S60M	HX	H15	H25
	SPMT 100408T-M08	0,8	10°													■		■					

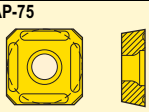
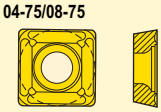
SPMX



Tolerances (± mm)

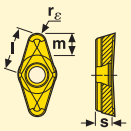
	l	s
SPMX06/07/09	0,05	0,13
SPMX12	0,08	0,13
SPMX15	0,10	0,13

Size	Dimensions in mm l	s	B
0602AP.	6,35	2,38	0,7
060204	6,35	2,38	-
0703AP.	7,94	3,18	0,9
070304	7,94	3,18	-
0903AP.	9,525	3,18	1,0
090304	9,525	3,18	-
12T3AP	12,7	3,97	1,4
12T308	12,7	3,97	-
1504AP.	15,875	4,76	1,7

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated															Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
AP-75																						
	SPMX 0602AP-75	–	5°										■				■		■		
	0703AP-75	–	5°														■				
	0903AP-75	–	5°										■	■			■		■		
	12T3AP-75	–	5°										■	■			■	■	■		
04-75/08-75	1504AP-75	–	5°														■				
	1904AP-75	–	5°														■				
	SPMX 060204-75	0,4	5°										■				■				
	070304-75	0,4	5°										■				■				
	090304-75	0,4	5°										■				■				
	12T308-75	0,8	5°														■				

■Stock standard
Subject to change refer to current price and stock-list

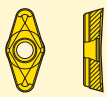
VPGX



Tolerances (± mm)

	s	m
VPGX	0,13	0,025

Size	Dimensions in mm ~ l	s
2206	14	6,35

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated				
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S25M	S60M	HX	H15	H25
	VPGX 220608PDER-E10*	0,8	25°																				■
	220605ER-E10*	0,45	25°																				■
	220605FR-E06*	0,45	25°																			■	
	220616ER-E10	1,6	25°																				■
	220620ER-E10	2,0	25°																				■
	220624ER-E10	2,44	25°																				■
	220640ER-E10	4,0	25°																				■
	220640FR-E06	4,0	25°																			■	
	220648ER-E10	4,88	25°																				■
	220663ER-E10	6,22	25°																				■
	220631EN-E10	3,1	25°																				■
	220631FN-E06	3,1	25°																			■	

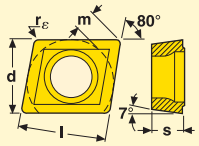
■ **Stock standard**

Subject to change refer to current price and stock-list

When using inserts with corner radius >4,0 mm, the cutter must be modified.

*Insert with viper flat 1,5 mm

XCMX05/12



Tolerances (± mm)

	d	s	m
XCMX05	0,05	0,13	0,08
XCMX12	0,08	0,13	0,13

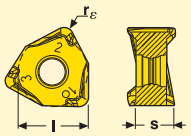
Size	Dimensions in mm ~ l	d	s
05	6,35	5,65	2,38
12	12,7	9,525	4,76

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
	XCMX 050204T-MD05	0,4	0°															■			
	120408T-MD11	0,8	0°										■								

■Stock standard

Subject to change refer to current price and stock-list

XNEX

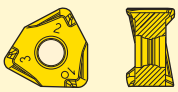


Tolerances (± mm)

	l	s
XNEX	0,025	0,025

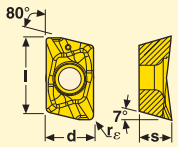
Size	Dimensions in mm l	s
0304	7,64-7,78	3,29
0806	12,48	6,37 - 6,47

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
M08/ME09/M13/MD15																					
	XNEX 040304TR-M08	0,4	27°		■	■		■		■							■				
	XNEX 040308TR-M08	0,8	27°	■	■	■		■	■	■							■				
	XNEX 080608TR-ME09	0,8	27°	■	■	■		■	■	■	■			■			■				
	080608TR-M13	0,8	22°	■	■	■			■	■	■			■			■				
	080608TR-MD15	0,8	17°	■	■	■			■	■	■			■			■				
	XNEX 080612TR-ME09	1,2	27°		■	■		■		■				■			■				
	080612TR-M13	1,2	22°	■	■	■			■	■							■				
	080612TR-MD15	1,2	17°	■	■				■								■				
	XNEX 080616TR-ME09	1,6	27°		■	■		■	■	■	■			■			■				
	080616TR-M13	1,6	22°	■	■	■			■	■				■			■				
	080616TR-MD15	1,6	17°	■	■	■			■	■				■			■				
	XNEX 080608R-M08	0,8	24°			■		■				■		■			■				■



■Stock standard
Subject to change refer to current price and stock-list

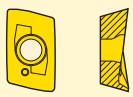
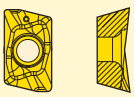
XO..06



Tolerances (± mm)

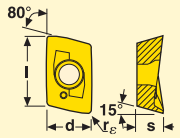
	d	s
XOEX	0,025	0,025
XOMX	0,03	0,05

Size	Dimensions in mm l	d	s
XOEX 0602	6,94	4,09	2,45
XOMX 0602	6,91-6,94	4,09	2,45

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
E03 	XOEX 060202FR-E03	0,2	30°																	■	
	060204FR-E03	0,4	30°														■			■	
	060208FR-E03	0,8	30°																	■	
	060212FR-E03	1,2	30°																	■	
	060216FR-E03	1,6	30°														■			■	
M05 	XOMX 060202R-M05	0,2	24°			■											■				
	060204R-M05	0,4	24°			■									■		■				
	060208R-M05	0,8	24°			■		■							■		■				
	060216R-M05	1,6	24°			■											■				

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with corner radius > 0,8 mm, the cutter body must be modified.

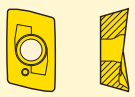
XOEX09



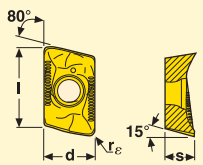
Tolerances (± mm)

	d	s
XOEX	0,025	0,025

Size	Dimensions in mm ~ l	d	s
0903	10,8	6,35	3,65

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
	XOEX 090304FR-E05	0,4	31°												■		■			■	
	090308FR-E05	0,8	31°														■			■	
	090316FR-E05	1,6	31°														■			■	
	090320FR-E05	2,0	31°														■			■	
	090331FR-E05	3,1	31°																	■	

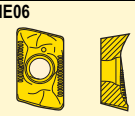
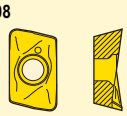
XOMX09



Tolerances (± mm)

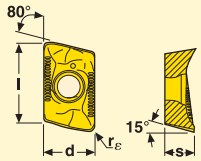
	d	s
XOMX	0,03	0,05

Size	Dimensions in mm l	d	s
0903	9,9-10,8	6,35	3,21-3,65

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated														Uncoated			
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
ME06 	XOMX 090304TR-ME06	0,4	24°	■	■	■			■				■	■		■	■				
	090308TR-ME06	0,8	24°	■	■	■		■	■	■		■	■	■		■	■				■
	090312TR-ME06	1,2	24°		■	■								■			■				
	090316TR-ME06	1,6	24°		■	■		■	■					■		■	■				
	090320TR-ME06	2,0	24°		■	■								■			■				
	090324TR-ME06	2,4	24°		■									■			■				
	090331TR-ME06	3,1	24°		■	■		■				■		■			■				
M08 	XOMX 090308TL-ME06	0,8	24°														■				
	XOMX 090308TR-M08	0,8	16°	■	■	■		■	■	■				■			■				
	090312TR-M08	1,2	16°			■								■			■				
	090316TR-M08	1,6	16°					■						■			■				
	090320TR-M08	2,0	16°											■			■				
	090324TR-M08	2,4	16°														■				
	090331TR-M08	3,1	16°					■									■				

■**Stock standard**
Subject to change refer to current price and stock-list
When using inserts with corner radius > 2,4 mm, the cutter body must be modified.

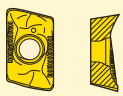
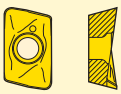
XOMX10



Tolerances (± mm)

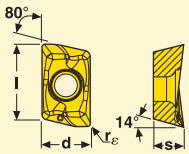
	d	s
XOMX	0,03	0,05

Size	Dimensions in mm l	d	s
10T3	11,08	6,86	3,83

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
ME07 	XOMX 10T304TR-ME07	0,4	20°	■	■	■		■	■	■		■		■			■				
	10T304TR-M09	0,4	10°	■	■			■	■	■		■		■			■				
	XOMX 10T308TR-ME07	0,8	20°	■	■	■		■	■	■		■		■			■				
M09 	10T308TR-M09	0,8	10°	■	■			■	■	■		■		■			■				

■Stock standard
Subject to change refer to current price and stock-list

XO.X12



Tolerances (± mm)

	d	s
XOEX	0,025	0,025
XOMX	0,03	0,05

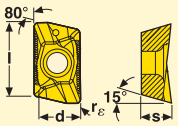
Size	Dimensions in mm l	d	s
XOEX1204	11,73-12,16	8,18	5,06
XOMX1204	11,41-12,16	8,18	3,93-4,15

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
E06																					
	XOEX 120404FR-E06	0,4	27°												■		■			■	
	120408FR-E06	0,8	27°												■		■			■	
	120416FR-E06	1,6	27°												■		■				
	120420FR-E06	2,0	27°												■		■				
	120431FR-E06	3,1	27°												■		■				
M07																					
	XOEX 120402R-M07	0,2	20°														■				
	120404R-M07	0,4	20°		■												■				
	120408R-M07	0,8	20°		■	■		■				■		■			■				
	120416R-M07	1,6	20°			■		■									■				
	120424R-M07	2,4	20°											■			■				
	120431R-M07	3,1	20°			■		■				■		■			■				
	120440R-M07	4,0	20°														■				
	120450R-M07*	5,0	20°														■				
	120463R-M07*	6,3	20°														■				
	XOEX 120408ZZR-M07*	0,8	20°			■											■				
ME08																					
	XOMX 120404TR-ME08	0,4	25°		■				■					■			■				
	120408TR-ME08	0,8	25°		■			■	■	■				■			■				
	120412TR-ME08	1,2	25°		■									■			■				
	120416TR-ME08	1,6	25°		■			■						■			■				
M12	120420TR-ME08	2,0	25°		■									■			■				
	120424TR-ME08	2,4	25°		■									■			■				
	120431TR-ME08	3,1	25°		■			■						■			■				
	120440TR-ME08	4,0	25°		■									■			■				
MD13	XOMX 120408TR-M12	0,8	13°	■	■	■			■	■				■			■				
	120416TR-M12	1,6	13°			■								■			■				
	XOMX 120404TR-MD13	0,4	15°	■					■					■			■				
	120408TR-MD13	0,8	15°	■	■	■			■	■				■			■				
D14	120412TR-MD13	1,2	15°	■		■			■								■				
	120416TR-MD13	1,6	15°	■		■			■					■			■				
	XOMX 120408TR-D14	0,8	1°	■	■	■			■												
	120431TR-D14	3,1	1°			■															

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with corner radius > 2,4 mm, the cutter body must be modified.

* Inserts with only one cutting edge.

XO.X18



Tolerances (± mm)

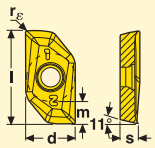
	d	s
XOEX	0,025	0,025
XOMX	0,03	0,05

Size	Dimensions in mm l	d	s
1806	~ 17,5	11,2	6,35

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
E10																					
	XOEX 180604FR-E10	0,4	30°														■				
	180608FR-E10	0,8	30°														■				■
	180616FR-E10	1,6	30°																		■
	180620FR-E10	2,0	30°																		■
	180624FR-E10	2,4	30°																		■
	180631FR-E10	3,1	30°																		■
	180640FR-E10	4,0	30°																		■
	180650FR-E10	5,0	30°																		■
	180663FR-E10	6,3	30°																		■
	180608ZZR-M10	0,8	17°			■											■				
	180616ZZR-M10	1,6	17°														■				
ME13																					
	XOMX 180604TR-ME13	0,4	25°		■									■			■				
	180608TR-ME13	0,8	25°		■			■	■					■			■				
	180616TR-ME13	1,6	25°		■			■													
	180620TR-ME13	2,0	25°		■												■				
	180624TR-ME13	2,4	25°		■																
	180631TR-ME13	3,1	25°		■			■									■				
	180640TR-ME13	4,0	25°		■																
M10																					
	XOMX 180604R-M10	0,4	22°											■			■				
	180608R-M10	0,8	22°	■	■			■						■			■				
	180616R-M10	1,6	22°					■						■			■				
	180620R-M10	2,0	22°											■			■				
	180624R-M10	2,4	22°											■			■				
	180631R-M10	3,1	22°					■						■			■				
	180640R-M10	4,0	22°											■			■				
	180650R-M10	5,0	22°											■			■				
	180663R-M10	6,3	22°											■			■				
M14																					
	XOMX 180608TR-M14	0,8	15°	■	■	■			■	■				■			■				
	180612TR-M14	1,2	15°	■	■	■			■	■				■			■				
	180616TR-M14	1,6	15°		■	■			■					■			■				
	180620TR-M14	2,0	15°		■	■								■			■				
	180624TR-M14	2,4	15°		■	■								■			■				
	180631TR-M14	3,1	15°		■	■								■			■				
D16																					
	XOMX 180608TR-D16	0,8	11°	■	■	■			■					■	■						
	180631TR-D16	3,1	11°	■		■															
MD15																					
	XOMX 180608TR-MD15	0,8	15°	■	■	■			■	■				■			■				
	180612TR-MD15	1,2	15°	■		■			■	■				■			■				
	180616TR-MD15	1,2	15°			■			■					■			■				

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with corner radius > 4,0 mm, the cutter body must be modified.

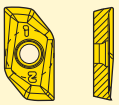
XPKX12



Tolerances (± mm)

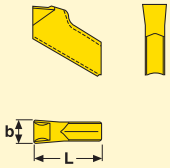
	l	s	m
XPKX	0,050	0,020	0,020

Size	Dimensions in mm l	d	s
12T3	~ 18,8	10,07	3,98

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
E08 	XPKX 12T304PDER-E08	0,4	23°																		■
	XPKX 12T308PDER-E08	0,8	23°																		■
	XPKX 12T320PDER-E08	2,0	23°																		■
	XPKX 12T324PDER-E08	2,4	23°																		■
	XPKX 12T331PDER-E08	3,1	23°																		■
	XPKX 12T340PDER-E08	4,2	23°																		■

■Stock standard
Subject to change refer to current price and stock-list

150.10



Tolerances (± in)

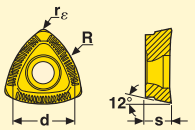
	a_p
150.10-2.25/2.5	0,05
150.10-3/4	0,08

Size	Dimensions in inch ~ L	a_p
2.25N	9	2,24
2.5N	9	2,52
3N	9	3,11
4N	9	4,09

Inserts	Part No.	Cutting rake	Grades: Coated															Uncoated				
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	CP600	S60M	HX	H15	H25
-12																						
	150.10 -2.5N-12	30°	■									■	■	■				■				
	-3N-12	30°	■									■	■	■				■				
	-4N-12	30°	■									■	■	■				■				
	150.10 -2.25N-14	21°											■	■				■		■		
	-2.5N-14	21°										■	■	■				■		■		
-14	-3N-14	21°	■									■	■	■				■		■		
	-4N-14	21°	■									■	■	■				■		■		
	150.10 -2.25N-16	26°										■	■	■				■		■		
	-2.5N-16	26°										■	■	■				■		■		
	-3N-16	26°	■									■	■	■				■		■		
-16	-4N-16	26°	■									■	■	■				■		■		

■Stock standard
Subject to change refer to current price and stock-list

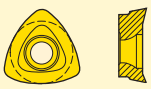
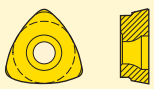
218.19



Tolerances (± mm)

	d	R	s
218.19-..	0,01	0,01	0,013-0,07

Size	Dimensions in mm d	s	R
-080.	5,50	2,38	8
-100.	7,06	2,78	10
-125.	8,90	3,97	12,5
-150.	10,60	4,76	15
-160.	11,18	4,76	16
-200.	12,70	5,50	20
-250.	16,54	6,35	25

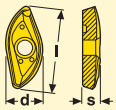
Inserts	Part No.	R	r_ε	Cutting rake	Grades: Coated														Uncoated			
					MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
E04–E07 																						
	218.19 -080-E04	8	0,4	20°																		■
	-100-E06	10	0,8	20°																		■
	-125-T3-E06	12,5	0,8	20°																		■
	-160-04-E07	16	1,2	20°																		■
ME07–ME12																						
	218.19 -125T-T3-ME07	12,5	0,8	20°														■				
	-160T-04-ME08	16	1,2	20°														■				
	-200T-05-ME10	20	0,6	20°														■				
	-250T-06-ME12	25	1,2	20°										■								
M04–M12																						
	218.19 -080T-M04	8	0,4	10°		■	■								■			■				
	-100T-M06	10	0,8	10°		■	■		■				■		■		■	■				
	-125T-T3-M07	12,5	0,8	10°		■	■		■				■		■		■	■				
	-150T-04-M08	15	1,2	10°										■								
	-160T-04-M08	16	1,2	10°		■	■		■				■		■		■	■				
	-200T-05-M10	20	0,6	10°													■	■				
MD04–MD09 																						
	218.19 -080T-MD04	8	0,4	0°		■							■			■	■					
	-100T-MD08	10	0,8	0°	■	■		■					■			■	■					
	-125T-T3-MD08	12,5	0,8	0°			■															
	-125T-T3-MD10	12,5	0,8	0°	■	■		■					■		■	■	■					
	-160T-04-MD09	16	1,2	0°			■															
	-160T-04-MD11	16	1,2	0°	■	■						■	■		■	■	■					
	218.19 -200T-05-D12	20	0,6	0°													■					

■Stock standard
Subject to change refer to current price and stock-list

218.20

Tolerances (± mm)

	s	d
218.20-..	0,02	0,03

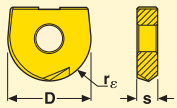


Size	Dimensions in mm l	s	d
-060	11,73	2,37	5,16
-080.	15,64	3,21	6,88
-100.	19,55	4,05	8,59
-125.	24,43	5,05	10,74
-150.	28,70	5,99	11,91
-160.	30,61	6,40	12,70
-200.	38,26	7,94	15,86
-250.	47,83	10,00	19,82

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated															Uncoated				
				MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	S25M	S60M	HX	H15	H25
	218.20 -060ER-ME03	–	12°															■					
	-080ER-ME04	–	12°											■				■					
	-100ER-ME05	–	12°					■						■				■					
	-125ER-ME07	–	12°					■						■				■					
	-150ER-ME07	–	12°															■					
	-160ER-ME08	–	12°					■						■				■					
	-200ER-ME10	–	12°					■						■				■					
	-250ER-ME12	–	12°					■						■				■					
	218.20 -060ER-M03	–	0°															■					
	-080ER-M04	–	0°					■								■		■					
	-100ER-M05	–	0°					■								■		■					
	-125ER-M07	–	0°					■								■		■					
	-150ER-M08	–	0°					■								■		■					
	-160ER-M08	–	0°					■								■		■					
	-200ER-M10	–	0°													■		■					
	-250TR-M14	–	0°															■					
	-250TR-M14C	–	0°													■							

■Stock standard
Subject to change refer to current price and stock-list

219.19



Tolerances (mm)

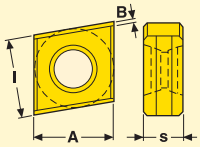
	D
219.19-...	+0/ -0,02
	s
219.19-...	+0,005/ -0,010

Size	Dimensions in mm D	s
080	8,0	2,0
100	10,0	2,5
120	12,0	2,5
160	16,0	3,0
200	20,0	3,0
250	25,0	4,0
320	32,0	5,0

Inserts	Part No.	Cutting rake	Grades Coated F17M
	219.19 -080-MD03	0°	■
	-100-MD04	0°	■
	-120-MD05	0°	■
	-160-MD07	0°	■
	-200-MD08	0°	■
	-250-MD09	0°	■
	-320-MD10	0°	■

■Stock standard
Subject to change refer to current price and stock-list

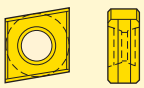
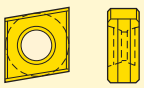
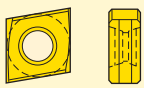
335.18



Tolerances (± mm)

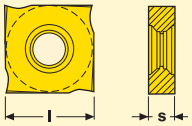
	l	s	A
335.18-10	0,013	0,025	0,013
335.18-13	0,025	0,025	0,013
335.18-16	0,025	0,025	0,013

Size	Dimensions in mm l	s	A
-1005	10	5,4	10
-1305	12,7	5,4	10
-1606	16	6,4	12
-1005ZZ	10	5,4	10

Inserts	Part No.	B	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
E07/E09 	335.18 -1005-E07	0,5	20°																■		
	-1305-E08	0,5	20°																■		
	-1606-E09	0,5	20°																■		
M10/M12 	335.18 -1005T-M10	0,5	10°	■	■				■	■			■				■		■		
	-100508-M10	0,5	8°											■							
	-1305T-M11	0,5	10°	■	■				■	■			■				■		■		
	-130508-M11	0,5	8°											■							
	-1606T-M12	0,5	10°	■	■												■				
MD10 	-160608-M12	0,5	8°											■							
	-1606T-D13	0,5	0°														■				
	335.18 -1005ZZ-MD10	-	0°																■		

■Stock standard
Subject to change refer to current price and stock-list

335.19



Tolerances (± mm)

	l	s
335.19...	0,013	0,010

Size	Dimensions in mm l	s
-1205.	12,7	5,4

Inserts	Part No.	Cutting rake	Grades: Coated														Uncoated			
			MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	S60M	HX	H15	H25
M08	335.19 -1205-M08	15°														■				
	335.19 -1205T-MD09	15°		■								■				■				
MD09																				

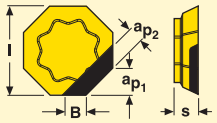
■Stock standard
Subject to change refer to current price and stock-list

Cermet

Inserts	Part No.	Cutting rake	Grade Cermet C15M	
	APFT1604PDTR-D15	8°	■	
	APKT1604PDTR-ME14	24°	■	
	OFEX05T305TN-M08	0°	■	
	OFER070405TN-M16	0°	■	
	OFEN0704ZZTR-M16	0°	■	
	SEAN1203AFTN-MD15		■	
	SEAN1203ZZTN-MD15	0°	■	
	SEAN1303AFTN-MD15	0°	■	
	SEAN1203AFTN-M14	0°	■	
	SEKN1203AFTN-M14	0°	■	
	SEKN1203AFTN-MD16		■	
	SEKN1504AFTN-MD21	0°	■	
	TPKN1603PPTR-MD13	0°	■	
	TPKN2204PDTR-MD16	0°	■	
	R230.19-1205-M07	0°	■	

■Stock standard
Subject to change refer to current price and stock-list

OFEN



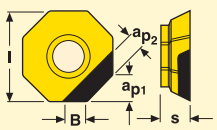
Tolerances (± mm)

	l	s
OFEN	0,025	0,025

Size	Dimensions in mm				
	l	s	B	a_{p1}	a_{p2}
07	17,95	4,76	1,7	3,5	–

Inserts	Part No.	Cutting rake	Grades				
			PCD20	PCD05	PCD30	PCD30M	
	OFEN 070405FN-M09	0°	■				

OFEX



Tolerances (± mm)

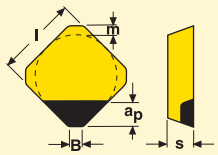
	l	s
OFEX	0,025	0,025

Size	Dimensions in mm				
	l	s	B	a_{p1}	a_{p2}
05	12,79	3,97	1,5	2,6	–

Inserts	Part No.	Cutting rake	Grades				
			PCD20				
	OFEX 05T305FN-M05	0°	■				

■Stock standard
Subject to change refer to current price and stock-list

SEHN



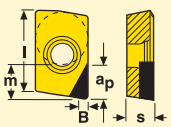
Tolerances (± mm)

	l	s	m
SEHN	0,013	0,025	0,013

Size	Dimensions in mm l	s	B	a_p
12	12,7	3,18	1,6	1,6

Inserts	Part No.	Cutting rake	Grades PCD20	PCD30M			
	SEHN 1203AFFN-E08	0°	■	■			

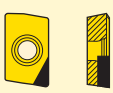
APHT



Tolerances (± mm)

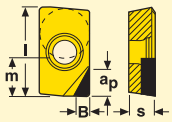
	l	s	m
APHT	0,013	0,025	0,013

Size	Dimensions in mm l	s	B	a_p
16	17	4,86	1,6	2,6

Inserts	Part No.	Cutting rake	Grades PCD20				
	APHT 160408FR-M08	15°	■				

■Stock standard
Subject to change refer to current price and stock-list

XCHX



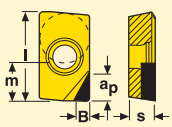
Tolerances (± mm)

	l	s	m
XCHX	0,013	0,025	0,013

Size	Dimensions in mm l	s	B	a_p
13	14	4,37	0,8	3,2

Inserts	Part No.	Cutting rake	Grades PCD20				
	XCHX 13T304FR-M06	15°	■				

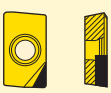
XOEX



Tolerances (± mm)

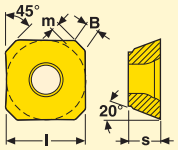
	l	s	m
XOEX06	0,03	0,13	0,025
XOEX09	0,05	0,25	0,25
XOEX12	0,05	0,25	0,25

Size	Dimensions in mm l	s	B	a_p
06..FR	6,94	2,45	1,5	2,5
09..FR	10,75	3,65	1,45	4
09..ZZ	10,75	3,65	2	3,5
12..FR	13,88	5,03	1,5	4
12..FR-L2	13,7			

Inserts	Part No.	Cutting rake	Grades PCD20	PCD05	PCD30		
	XOEX 060204FR	8°		■			
	XOEX 090304FR	8°	■		■		
	090304FR-ZZ	8°		■			
	XOEX 120404FR	15°	■		■		
	120404FR-L2	14°		■			

■Stock standard
Subject to change refer to current price and stock-list

SEEX09



Tolerances (± mm)

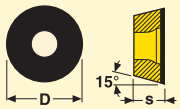
	l	s	m
SEEX	0,025	0,025	0,025

Size	Dimensions in mm			
	l	s	B	a_p
09T3	9,525	3,97	1,5	1,6

Inserts	Part No.	Cutting rake	Grades				
			PCD20	PCD05	PCD30M		
	SEEX 09T3AFFN-L1	12º	■	■			
	SEEW 09T3AFFN-L1	0º		■	■		

■Stock standard
Subject to change refer to current price and stock-list

RDHW 08/10



Tolerances (± mm)

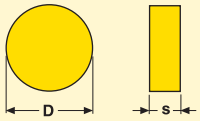
D	s
0,013	0,025

Size	Dimensions in mm D	s
0803	8,0	3,18
10T3	10,0	3,97

Inserts	Part No.	Cutting rake	Grades CBN10	CBN100	CBN100P	CBN150	CBN200	CBN300	CBN300P	CBN160C
RDHW-LF										
	RDHW 0803M0S-01030-LF	0°					■			
	10T3M0S-01030-LF	0°					■			

Subject to change refer to current price and stock-list

RN.N06/09



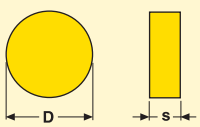
Tolerances (± mm)

	D	s
RNMN06	0,05	0,13
RNGN06	0,025	0,13
RNMN09	0,05	0,13
RNGN09	0,025	0,13

Size	Dimensions in mm D	s
RNMN06	6,350	3,18
RNGN06	6,350	3,18
RNMN09	9,525	3,18
RNGN09	9,525	3,18

Inserts	Part No.	Cutting rake	Grades CBN10	CBN100	CBN100P	CBN150	CBN200	CBN300	CBN300P	CBN050C	CBN400C	CBN060K	CBN170
RNMN/RNGN													
	RNGN 090300E25	0°		■									■
	060300E	0°		■									
	060300S	0°					■						
	060300S-01020	0°		■									
E = Honed	090300E	0°		■									
S = Chamfered and honed	090300S	0°					■						
	090300S-01020	0°		■									
	RNMN 060300S	0°						■	■				
Solid	090300E	0°						■			■		
	090300S	0°						■	■				
	090300S-02020	0°									■		
	RNGN 060300S-01525	0°								■			
	090300S-01525	0°								■			

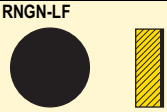
RNGN-LF 06/09



Tolerances (± mm)

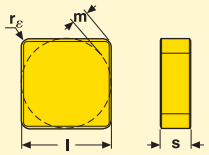
D	s
0,025	0,13

Size	Dimensions in mm D	s
06	6,350	3,18
09	9,525	3,18

Inserts	Part No.	Cutting rake	Grades CBN10	CBN100	CBN100P	CBN150	CBN200	CBN300	CBN300P	CBN160C
RNGN-LF										
	RNGN 060300S-LF	0°	■							
	090300S-LF	0°	■							
	RNGN 060300S-01525-LF	0°				■				■
S = Chamfered and honed	090300S-01525-LF	0°				■				■
	RNGN 060300S-02020-LF	0°					■			
LF = Complete top layer	090300S-02020-LF	0°					■			

■Stock standard
Subject to change refer to current price and stock-list

SN..06/09/SNEX12



Tolerances (± mm)

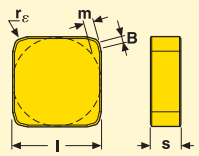
	l	s	m
SNMN	0,05	0,013	0,08
SNEX	0,025	0,025	0,025
SNGN	0,025	0,013	0,025

Size	Dimensions in mm l	s
09	9,525	3,18
12	12,7	3,18

Inserts	Part No.	r_e	Cutting rake	CBN10	CBN100	CBN150	CBN300	CBN200	CBN100P	CBN300P	CBN050C	CBN400C	CBN060K	CBN170
				Grades										
	SNMN 060308E	0,8	0°				■					■		
	060308S	0,8	0°				■							
	SNMN 090308E	0,8	0°				■			■		■		
	090308S	0,8	0°				■			■		■		
	SNMN 090312E	1,2	0°				■			■				
	090312S	1,2	0°				■			■				
	SNMN 090316S	1,6	0°				■							
	SNEX 120312ZZ	1,2	0°					■						
	SNGN 060308S	0,8	0°					■						
	SNGN 090308E	0,8	0°					■						
	090308S	0,8	0°					■						
	090308S-01020	0,8	0°		■									
	090312S	1,2	0°					■						
	090312S-01020	1,2	0°		■									
	090316S	1,6	0°					■						
	SNGN 090308S-01525	0,8	0°								■			

■Stock standard
Subject to change refer to current price and stock-list

SNEN09



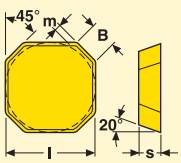
Tolerances (± mm)

	l	s	m
SNEN	0,025	0,025	0,025

Size	Dimensions in mm l	s	r_e
09	9,525	3,18	0,8

Inserts	Part No.	B	Cutting rake	Grades CBN100	CBN100P	CBN200	CBN300	CBN300P
	SNEN 0903ENE-M06	0,9	0°			■		
	0903ENS-M08	0,9	0°			■		

SEEN/SEEX12



Tolerances (± mm)

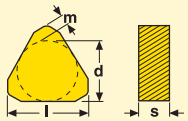
	l	s	m
SEEN	0,025	0,025	0,025
SEEX	0,025	0,025	0,025

Size	Dimensions in mm l	s
12	12,7	3,18

Inserts	Part No.	B	Cutting rake	Grades CBN10	CBN100	CBN100P	CBN150	CBN200	CBN300	CBN300P
	SEEN 1203AFTN-D16	1,6	0°						■	
-LF	SEEX 1203AETN-MD13-LF	8,0	0°					■		

■Stock standard
Subject to change refer to current price and stock-list

TNGN



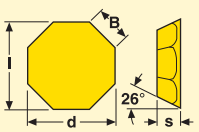
Tolerances (± mm)

	d	s	m
TNGN	0,025	0,13	0,025

Size	Dimensions in mm ~ l	d	s
16	16,5	11,857	4,76

Inserts	Part No.	Cutting rake	Grades CBN100	CBN100P	CBN200	CBN300	CBN300P
	TNGN 1103PNE	0°			■		
	1103PNS	0°			■		
	1103PRS	0°			■		
	TNGN 1604PNE	0°			■		
	1604PNS	0°			■		
	1604PRS	0°			■		

OFEN



Tolerances (± mm)

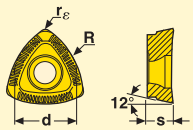
	l
OFEN	0,025

Size	Dimensions in mm d	l	s
07	17,96	17,96	4,76

Inserts	Part No.	B	Cutting rake	Grades CBN10	CBN100	CBN100P	CBN150	CBN200	CBN300	CBN300P
-LF	OFEN 070405TN-MD16-LF	1,6	0°					■		

■Stock standard
Subject to change refer to current price and stock-list

218.19-100T



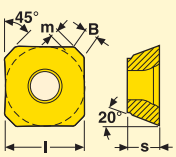
Tolerances (± mm)

	l	R	s
218.19	0,01	0,01	0,013-0,07

Size	Dimensions in mm d	s	R
100T	7,00	2,78	10

Inserts	Part No.	r_ε	Cutting rake	Grades CBN10	CBN100	CBN100P	CBN150	CBN200	CBN300	CBN300P
	218.19 -100T-MD08-LF	0,8	0°					■		

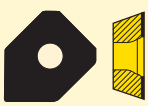
SEEX09/12



Tolerances (± mm)

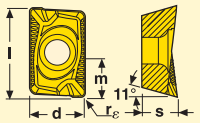
	l	s	m
SEEX	0,025	0,025	0,025

Size	Dimensions in mm l	s
09T3	9,525	3,97
1204	12,7	4,76

Inserts	Part No.	B	Cutting rake	Grades CBN10	CBN100	CBN100P	CBN150	CBN200	CBN300	CBN300P
	SEEX 09T3AFTN-D09-LF	1,25	0°					■		
	SEEX 1204AFTN-D16-LF	1,57	0°					■		
ZZTN 	SEEX 1204ZZTN-D16-LF	–	0°					■		

■Stock standard
Subject to change refer to current price and stock-list

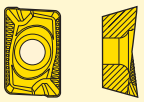
ADKT



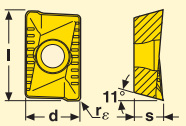
Tolerances (± mm)

	d	s	m
ADKT	0,05	0,025	0,013

Size	Dimensions in mm ~ l	d	s
15	15,2	9,6	5,65

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated T150M	T200M	T25M	T350M	F15M	F17M	F25M	F40M	Uncoated S10M	S25M	HX			
	ADKT 1505PDR-ME14	0,8	22°								■						

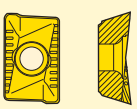
AP..



Tolerances (± mm)

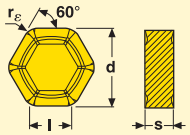
	d	s
APMT	0,05	0,13

Size	Dimensions in mm ~ l	d	s
10	10,28	6,65	3,5

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated T150M	T200M	T25M	T350M	F15M	F17M	F25M	F40M	Uncoated S10M	S25M	HX			
	APMT 100305TR-ME08	0,5	21°								■						

■Stock standard
Subject to change refer to current price and stock-list

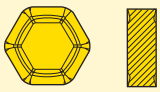
HNEF



Tolerances (± mm)

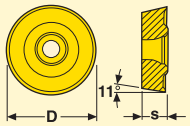
	s	d
HNEF	0,025	0,025

Size	Dimensions in mm l	s	B
0905	9,37	16,22	5,60

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
M14 	HNEF 090531-M14	3,1	10°						■												

■Stock standard
Subject to change refer to current price and stock-list

RPHT



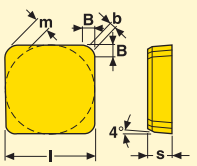
Tolerances (± mm)

	D	s
RPHT	0,013	0,025

Size	Dimensions in mm D	s
08	8,0	3,18
10	10,0	3,97

Inserts	Part No.	Cutting rake	Grades: Coated T150M	T200M	T350M	T25M	F15M	F17M	F25M	F40M	Uncoated S10M	S25M	HX			
	RPHT 0803M0T-M06	25°				■										
	RPHT 10T3M0T-M08	25°				■										

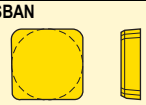
SBAN



Tolerances (± mm)

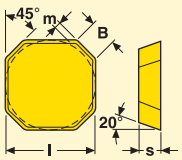
	l	s	m
SBAN	0,025	0,025	0,025
SBEX	0,025	0,025	0,025

Size	Dimensions in mm l	s	b
1203	12,7	3,18	0,7
1204	12,65	4,76	0,8

Inserts	Part No.	B	Cutting rake	Grades: Coated T150M	T200M	T25M	T350M	F15M	F17M	F25M	F40M	Uncoated S10M	S25M	HX			
SBAN 	SBAN 1203ZZ	0,67	0°					■									

■Stock standard
Subject to change refer to current price and stock-list

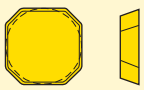
SEMN



Tolerances (± mm)

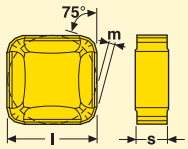
	l	s	m
SEMN25	0,13	0,13	0,18
SEMN31	0,15	0,13	0,20

Size	Dimensions in mm l	s
25	25,4	6,35
31	31,75	7,94

Inserts	Part No.	B	Cutting rake	Grades: Coated T150M	T200M	T25M	T350M	F15M	F17M	F25M	F40M	Uncoated S10M	S25M	HX			
	**SEMN 2506AFTN-M20**	5,8	0°			■											
	SEMN 3107AFTN-M25	6,1	0°			■											

■Stock standard
Subject to change refer to current price and stock-list

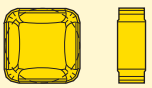
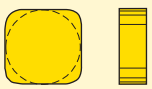
SNKF/SNKN



Tolerances (± mm)

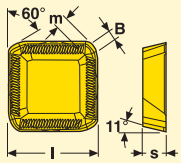
	l	s	m
SNK.	0,08	0,025	0,05

Size	Dimensions in mm l	s
12	12,7	4,76

Inserts	Part No.	B	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoat. S25M	HX
E08 	SNKF 1204ENEN-E08	0,9	17°						■										
	SNKN 1204EN-M10	0,9	0°						■				■						■
M10 																			

■Stock standard
Subject to change refer to current price and stock-list

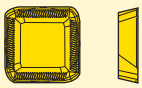
SPER/SPFN



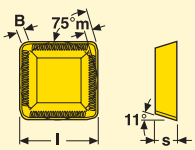
Tolerances (± mm)

	l	s	m
SPER	0,025	0,025	0,025
SPFN	0,02	0,025	0,007

Size	Dimensions in mm l	d
1904	19,05	4,76

Inserts	Part No.	B	Cutting rake	Grades: Coated T150M	T200M	T25M	T350M	F15M	F17M	F25M	F40M	Uncoated S10M	S25M	HX			
SPER 	SPER 1904ZETR-M17	1,0	17°			■											
SPFN	SPFN 1904ZETR-MD20	1,0	0°			■											

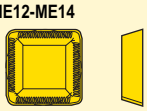
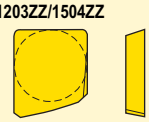
SPKN/SPKR



Tolerances (± mm)

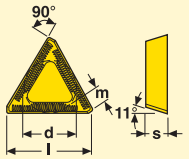
	l	s	m
SPK.12	0,08	0,025	0,013
SPKN15	0,10	0,025	0,013
SPMN	0,08	0,13	0,13

Size	Dimensions in mm l	s
1203	12,7	3,18
1504	15,875	4,76

Inserts	Part No.	B	Cutting rake	Grades: Coated T150M	T200M	T25M	T350M	F15M	F25M	F30M	F40M	Uncoated S10M	S25M	HX			
M13-MD15	SPKN 1203EDR-M13	1,4	0°								■			■			
	1203EDTR-MD14	1,4	0°			■	■										
	1203EDTL-MD14	1,4	0°			■											
ME12-ME14 	SPKR 1203EDTR-ME12	1,2	20°								■						
	SPKR 1504EDTR-ME14	1,3	20°				■										
1203ZZ/1504ZZ 	SPKN 1504ZZR-M15	-	0°							■							
	1504ZZL-M15	-	0°							■							
	1504EDR-M15	1,4	0°											■			
	1504EDTR-MD17	1,4	0°				■										

■Stock standard
Subject to change refer to current price and stock-list

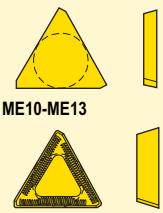
TPKN/TPKR



Tolerances (± mm)

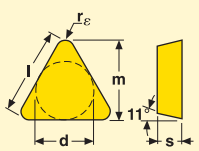
	d	s	m
TPK.16	0,05	0,025	0,013
TPK.22	0,08	0,025	0,013

Size	Dimensions in mm ~ l	d	s
16	16,5	9,525	3,18
22	22,0	12,7	4,76



Inserts	Part No.	Cutting rake	Grades: Coated T150M	T200M	T350M	T25M	T250M	F15M	F17M	F25M	F40M	Uncoated S10M	S25M	HX		
	TPKN 1603PPR-M11	0°									■			■		
	1603PDTR-MD12	0°			■	■										
	TPKN 2204PPR-M14	0°												■		
	2204PDTR-MD15	0°			■	■					■					
	TPKR 1603PDTR-ME10	24°			■	■										
	TPKR 2204PDTR-ME13	20°			■	■					■					

TPUN



Tolerances (± mm)

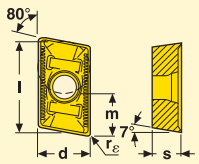
	d	s	m
TPUN11	0,08	0,13	0,13
TPUN16	0,08	0,13	0,13
TPUN22	0,13	0,13	0,20

Size	Dimensions in mm ~ l	d	s
11	11,0	6,35	2,38
16	16,5	9.525	3,18
22	22,0	12,7	4,76

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoat. S25M	HX
	TPUN 110208																	■	
	160304	0,4	0°															■	■
	160308	0,8	0°															■	■
	160308T	0,8	0°														■		
	TPUN 220408	0,8	0°															■	■
	220408T	0,8	0°														■		
	220412	1,2	0°															■	
	220412T	1,2	0°														■		

■Stock standard
Subject to change refer to current price and stock-list

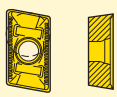
XCKX13



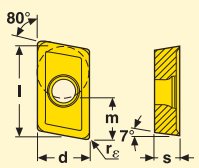
Tolerances (± mm)

	d	s	m
XCKX	0,05	0,025	0,013

Size	Dimensions in mm ~ l	d	s
13T304R	14,7	7,922	5,03
13T308R	14,6	7,922	5,03
13T316R	14,3	7,922	5,03
13T320R	14,1	7,922	5,03
13T330R	14,1	7,922	5,03

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F30M	F40M	Uncoated S60M	HX	H15	H25
	XCKX 13T304R-ME10	0,4	24°	■									■	■								
	13T308R-ME10	0,8	24°			■							■	■				■				
	13T316R-ME10	1,6	24°															■				

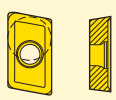
XCMX13



Tolerances (± mm)

	d	s	m
XCMX	0,05	0,13	0,08

Size	Dimensions in mm ~ l	d	s
13T308	14,4	8,03	4,37
13T320	14,0	8,03	4,37
13T330	13,6	8,03	4,37

Inserts	Part No.	r_ε	Cutting rake	Grades: Coated MP1500	MP2500	MP3000	MH1000	MM4500	MK1500	MK2000	MK3000	MS2500	T25M	T350M	F15M	F25M	F40M	Uncoated S60M	HX	H15	H25
	XCMX 13T308TR-M11	0,8	15°	■										■							
	13T320TR-M11	2,0	15°														■				
	13T330TR-M11	3,0	15°														■				

■Stock standard
Subject to change refer to current price and stock-list
When using inserts with corner radius > 2 mm, the cutter body must be modified.

Suitable workpiece materials

- Secomax CBN10/100 and CBN150 inserts are suitable for finishing in hard steel (52-63 HRc).
- CBN200 inserts are suitable for finishing and roughing in hard steel (52-63HRc) and finishing and roughing in pearlitic cast iron with a free ferrite content of less than 5%

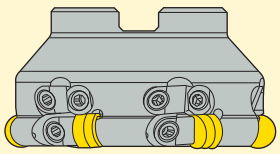
Secomax CBN300 inserts are suitable for:

- Roughing in hard steel (52-63 HRc).
- Finishing and roughing in pearlitic cast iron with a free ferrite content of less than 5%.

Note: When milling with PCBN conventional milling should be used. Use inserts with protection chamfer (S) for best tool life.

Programme

Face milling cutter type R217/220.70



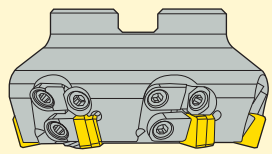
Cutter especially developed for CBN inserts, 2 insert sizes. Maximum cutting depth 3 mm D_c = 20-63 mm and maximum cutting depth 4,5 mm D_c = 63-200 mm (D_c = 125-200 mm fitted with wiper insert).

Inserts for finishing	RNGN060300E (E = honed) RNGN/RNMN090300E
Inserts for roughing	RNGN/RNMN060300S (S = chamfered and honed) RNGN/RNMN090300S
Wiper insert	SNEX120312ZZ

The relation between cutting depth and number of usable cutting edges (per side).

D.O.C a_p (mm)	RN.. 060300	RN.. 090300	D.O.C a_p (mm)	RN.. 060300	RNMN 090300
0,1	20	24	1,2	5	7
0,15	16	20	1,5	5	6
0,2	14	17	1,8	4	5
0,25	12	15	2,0	4	5
0,3	11	14	2,5	3	4
0,4	10	12	3,0	3	4
0,5	8	10	3,5	–	4
0,8	7	8	4,0	–	3
1,0	6	7	4,5	–	–

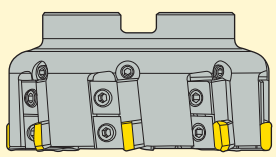
Square shoulder and slot milling cutter type R220.68



Cutter especially developed for CBN inserts, maximum cutting depth 8,0 mm D = 63-200 mm. (D = 125-200 mm fitted with wiper insert).

Inserts for finishing	SNEN0903ENE-M06 (E = honed) SNMN090308E SNMN090312E
Inserts for roughing	SNEN0903ENS-M08 (S = chamfered and honed) SNMN090308S SNMN090312S SNMN090316S
Wiper insert	SNEX120312ZZ

Square shoulder and slot milling cutter type R220.68



Cutter especially developed for CBN inserts. D = 63-160 mm

Insert with corner chamfer for finishing operations	TNGN1604PNE
Insert with corner chamfer for roughing operations	TNGN1604PNS
Insert with corner radius for roughing operations	TNGN1604PRS

Inserts for standard milling cutters

For roughing
SEEX09T3AFTN-D09-LF
SEEX1204AFTN-D16-LF
QuattroMill R220.53
milling cutter

Wiper insert for high quality surface finish
SEEX1204ZZTN-D16-LF

For roughing
OFEN070405TN-MD16
Octomill R220.43
Face milling cutter

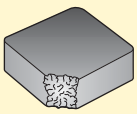
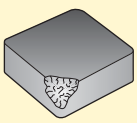
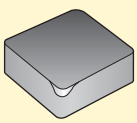
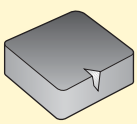
For roughing
SEEN1203AFTN-D16
R220.13 Face milling cutter

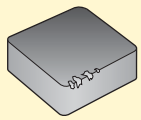
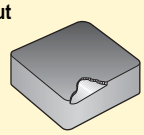
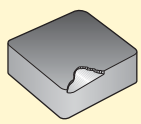
For finishing
SEEX1203AETN-MD13
R220.30 Face milling cutter

Cutting data

- Cutting speed recommendations are in the cutting data table.
- Feed rate recommendations are in the cutting data table.
- Formulae for cutting data calculation are on page 597.

Troubleshooting

Breakage 	• Do not use worn anvils. • Do not use worn wedges. • Clean seats and inserts.
Cutting edge breakage 	• Reduce the cutting edge load (i.e) the depth of cut or feed rate). • Increase the insert corner radius (consider using round inserts). • Use inserts with chamfered cutting edges. • Change the cutting speed.
Rapid flank wear 	• Increase the cutting speed. • Increase the feed rate. • Check if the ferrite content is within the prescribed limits.
Notching 	• Reduce the feed rate. • Increase the cutting speed. • Vary the depth of cut. • Use inserts with chamfered cutting edges.

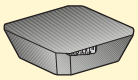
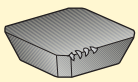
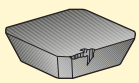
Edge chipping 	• Use inserts with chamfered cutting edges. • Increase the system rigidity. • Change the feed rate.
Rake face flaking while in continuous cut 	• Reduce the feed rate. • Use inserts with chamfered cutting edges.
Rake face flaking when milling in irregular surfaces 	• Do not use coolant. • Use chamfered inserts. • Change the feed rate. • Increase the cutting speed.

Inserts for standard milling cutters

Cutter family range	First choice
R220.13 SEHN12	For large diameters/Wiper flat length ~ 1,6 mm.
R220.33 SEHN12	For surface finish. Due to setting angle (R220.13), Wiper flat lenght close to 8 mm.
OCTO R220.43 OFEN..07 OFEX..05	Roughing due to tip size. Finishing for wiper flat length, but must be properly set, and feed adjusted. Two different sizes of insert, larger selection of cutters.
R220.69 XC..13	Square shoulder milling.
R220.69-16 AP..16	Square shoulder milling, and face milling (surface finish) (Setting via cassettes, not possible with XC..13).
TURBO XOEX09 XOEX12	Square shoulder milling. Shape of the insert for chip formation (low Si alloys).
QUATTRO R220.53 SEEX09 SEEW09	Very positive cutter, useful for long chip formation materials. To be chosen when R220.13 is not suitable.

Note: All PCD milling inserts for these cutters are designed with Wiper flat for surface finish

Troubleshooting

Problem	Possible cause	Suggested actions
Rapid wear 	**Wrong choice of grade**	• Change to coarser PCD grade
	Presence of Fe/Ni/Co	• Check material composition • Reduce cutting speed • Use coolant
Built-up edge	**High speed**	• Reduce cutting speed to reduce heat generation or use coolant
	Incorrect cutting edge selection	• Choose a sharper edge
	Low speed	• Increase speed to improve cutting action
	Wrong choice of grade	• Change to finer PCD grade
Edge chipping 	**Poor rigidity**	• Minimize vibration • Check set-up, run-out • Change nose angle
	Operating conditions	• Review speeds and feeds
	Wrong edge design (radius or honing)	• Increase nose radius or change to chamfer type • Add a honing or slight chamfer on the edge
	High run-out	• Check set-up
	Wrong choice of grade	• Change to a tougher grade (PCD10 → PCD20 → PCD30 → PCD30M → PCD05)
Edge breakage 	**Wrong choice of grade**	• Change to a tougher grade (PCD10 → PCD20 → PCD30 → PCD30M → PCD05)
Poor surface finish	**Wrong choice of grade**	• Change to finer PCD grade
	High feed speed	• Check set-up
	Poor set-up of Wiper insert	• Check offset of Wiper / Other inserts
Flaking of workpiece	**Large depth of cut**	• Reduce depth of cut • Add entry chamfer on the component

Max RPM

Recommended RPM for all Seco cutters are shown on each catalogue page.
Normally there is no need for balancing tools for RPM up to 10 000.
However in some cases balancing is necessary,
for instance when using heavy tools and toolholders in small machines

Over 10 000 RPM:
We recommend balancing of tool and toolholders at least separately.
Over 20 000 RPM:
Both tool and toolholders must be balanced at least separately.
Over 30 000 RPM:
Tool and tool holders must be balanced as a unit.
The max RPM in the tables should never be exceeded.

Dynamomentic keys

The range of dynamomentic keys with fixed torque values are available in combinations of key grip/torque value for insert locking for most of the Seco milling products.
By using a dynamomentic key you always ensure the correct tightening force when mounting the insert.
The torque value is given in the spare part table for each cutter.
Dynamomentic keys are calibrated according to ISO 6789.

Code key: T00-15P35

T00 = Dynamomentic screw driver type for Torx Plus blade

T00T = Dynamomentic T-handle type for Torx Plus blade

H00T = Dynamomentic T-handle type for hexagonal blade

15P = Torx Plus size

Dynamomentic key*	Replaceable blade	Torx Plus size	Torque value
T00-06P05	T00-06P	T06P	0,5 Nm
T00-07P09	T00-07P	T07P	0,9 Nm
T00-07P12	T00-07P	T07P	1,2 Nm
T00-08P12	T00-08P	T08P	1,2 Nm
T00-09P12	T00-09P	T09P	1,2 Nm
T00-09P20	T00-09P	T09P	2,0 Nm
T00-10P20	T00-10P	T10P	2,0 Nm
T00-10P30	T00-10P	T10P	3,0 Nm
T00-15P20	T00-15P	T15P	2,0 Nm
T00-15P30	T00-15P	T15P	3,0 Nm
T00-15P35	T00-15P	T15P	3,5 Nm
T00-15P50	T00-15P	T15P	5,0 Nm
T00-20P50	T00-20P	T20P	5,0 Nm

Please observe that blades are not interchangeable between screw driver type and T-handle type.

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Dynamomentic key*	Replaceable blade	Torx Plus size	Torque value
T00T-15P50	T00T-15P	T15P	5,0 Nm
T00T-20P50	T00T-20P	T20P	5,0 Nm
T00T-20P80	T00T-20P	T20P	8,0 Nm
T00T-25P60	T00T-25P	T25P	6,0 Nm
T00T-25P80	T00T-25P	T25P	8,0 Nm
T00T-30P80	T00T-30P	T30P	8,0 Nm

Dynamomentic key*	Replaceable blade	Hexagonal size	Torque value
H00T-3050	H00T-3.0	3 mm	5,0 Nm
H00T-4050	H00T-4.0	4 mm	5,0 Nm
H00T-4060	H00T-4.0	4 mm	6,0 Nm
H00T-5080	H00T-5.0	5 mm	8,0 Nm
H00T-60100	H00T-6.0	6 mm	10,0 Nm

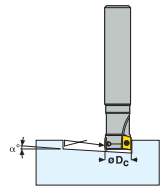
*Including blade

Ramping

The milling cutter design and the clearance on the bottom side of the chosen insert determines the tool's suitability for ramping.

Maximum ramping angle and cutting depth recommendations for suitable tools are found in the tables below.

Use the cutting speeds and feed rates recommended for normal operations.



	Cutter dia ∅ D_c mm	Cutter dia ∅D_{c2} mm	a_p max	α max
220.24-12				
	28	40	6	2,6°
	38	50	6	3,7°
	40	52	6	3,6°
	51	63	6	2,7°
	54	66	6	2,5°
	68	80	6	1,9°
217/220.24-10				
	15	25	5	1,9°
	22	32	5	3,1°
	30	40	5	1,9°
	40	50	5	2,5°
	53	63	5	1,8°
217/220.29-025				
	5	10	2,5	90°
	7	12	2,5	13,5°
	10	15	2,5	8°
	15	20	2,5	5°
217/220.29-03				
	4	10	3	30°
	6	12	3	90°
	10	16	3	15,5°
	14	20	3	9,6°
	19	25	3	6,5°
	26	32	3	4,5°
	29	35	3	4°
	34	40	3	3°
217/220.29-035				
	8	15	3,5	22°
	9	16	3,5	17,5°
	13	20	3,5	10°
	18	25	3,5	6,5°
	28	35	3,5	4°
217/220.29-04				
	4	12	4	30°
	8	16	4	90°
	12	20	4	16,5°
	17	25	4	10°
	24	32	4	6,5°
	27	35	4	5,5°
	32	40	4	4,5°
	42	50	4	3°
217/220.29-05				
	6	16	5	30°
	10	20	5	90°
	15	25	5	17°
	22	32	5	10°
	25	35	5	8,5°
	30	40	5	6,5°
	32	42	5	6,3°
	40	50	5	4,5°

	Cutter dia ∅ D_c mm	Cutter dia ∅ D_{c2} mm	a_p max	α max
217/220.29-06				
	4	16	6	30º
	8	20	6	30º
	12	24	6	90º
	13	25	6	90º
	20	32	6	14,7º
	23	35	6	12º
	28	40	6	9,3º
	30	42	6	4,2º
	32	44	6	7,85º
	38	50	6	6,4º
	40	52	6	6º
	50	62	6	4,65º
	51	63	6	4,55º
	54	66	6	4,25º
	63	75	6	3,6º
	68	80	6	3,3º
	80	92	6	2,75º
	100	112	6	2,15º
	125	137	6	1,7º
217/220.29-08				
	16	32	8	90º
	24	40	8	20º
	34	50	8	15,5º
	36	52	8	13º
	47	63	8	9,5º
	50	66	8	8,5º
	64	80	8	6º
	84	100	8	5º
	109	125	8	3,5º
	144	160	8	2,5º
217/220.29-10				
	5*	25*	10	40º
	20	40	10	40º
	30	50	10	9,5º
	43	63	10	6º
	50	70	10	6º
	60	80	10	6º
	63	83	10	6º
	80	100	10	5º
	100	120	10	4,5º
	105	125	10	4,5º
	140	160	10	3º
217/220.21				
	9	16	0,6	6,5º
	11,4	20	0,7	6º
	16,4	25	0,7	3,5º
	21	32	1,0	3,5º
	24	35	1,0	3º
	29	40	1,0	2,5º
	31	42	1,0	2º
	36	50	1,1	2º
	49,5	63	1,1	1,5º

*Centre cutting

	Cutter dia ∅ D_c mm	a_p max	α max
217/220.43-05			
	24	3,5	19°
	32	3,5	7,75°
	40	3,5	5,65°
	42	3,5	5,25°
	50	3,5	4,25°
	63	3,5	3,25°
	80	3,5	2,5°
	100	3,5	1,8°
Temporary a_p	125	3,5	1,5°
max = 8 mm	160	3,5	1°
220.43-07			
	50	5	1,3°
	63	5	0,8°
	80	5	0,6°
	100	5	0,45°
	125	5	0,35°
Temporary a_p	160	5	0,25°
max = 12 mm			
217/220.43-07S/07SA	32	5	23°
	38	5	15,75°
	51	5	9,3°
	63	5	6°
	68	5	6,1°
	80	5	5°
	88	5	4,5°
	100	5	3,65°
	125	5	2,8°
R220.42-05	40	3,5	8°
	53	3,5	5,8°
	60	3,5	4,3°
	80	3,5	3,2°
	100	3,5	2,4°
R217/220.69-06*			
	10	5	10º
	12	5	6,5º
	14	5	5º
	16	5	4º
	18	5	3º
	20	5	2,5º
	25	5	1,5º
	32	5	1º
	40	5	1º
217/220.69-09**			
	12	8	7º
	16	8	7,6º
	18	8	6º
	20	8	4,5º
	25	8	2,9º
	32	8	1,7º
	40	8	1,5º
	50	8	1,1º
	63	8	0,9º
	80	8	0,7º
	100	8	0,55º

	Cutter dia ∅ D_c mm	a_p max	α max
R217/220.69-10			
	14	9	
	16	9	7,6º
	18	9	6º
	20	9	4,5º
	25	9	3º
	32	9	2º
	40	9	1,5º
	50	9	1,2º
	63	9	0,9º
	80	9	0,7º
	100	9	0,55º
217/220.69-12***			
	20	11	8º
	25	11	5º
	32	11	3º
	40	11	2,5º
	50	11	2º
	63	11	1,5º
	80	11	1º
	100	11	0,5º
	125	11	0,5º
217/220.69-18****			
	32	17	7,15º
	40	17	4,5º
	50	17	3,15º
	63	17	2,4º
	80	17	1,55º
	100	17	1,3º
	125	17	1º
	160	17	0,65º
220.69-15H			
	50	14	1,15º
	63	14	0,8º
	80	14	0,75º
	100	14	0,45º
	125	14	0,35º
217/220.97-12			
	25	7,5	10º
	32	7,5	8º
	40	7,5	6º
	50	7,5	5º
217/220.97-22			
	32	10	15º
	40	10	10º
	50	10	8º
	63	10	6º
	80	10	5º
	100	10	4º

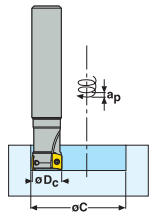
When changing ramping direction, using max. ramping angle, retract the cutter *0,6 mm, **0,8 mm, ***1,4 mm, ****1,9 mm.

Helical interpolation ramping

The milling cutter design and the clearance on the bottom side of the chosen insert determines the tool's suitability for helical interpolation ramping.

Maximum and minimum hole diameters and maximum cutting depth per revolution recommendations for suitable tools are in the tables below.

Use the cutting speeds and feed rates recommended for normal operations.



	Cutter dia Ø D_c mm	Cutter dia Ø D_{c2} mm	C min/a_p max		C max/a_p max	
			C min Ø	a_p max mm	C max Ø	a_p max mm
217/220.29-025						
	5	10	15	2,5	19	2,5
	7	12	19	2,5	23	2,5
	10	15	25	2,5	29	2,5
	15	20	35	2,5	39	2,5
217/220.29-03						
	4*	10*	14	3	19	3
	6	12	18	3	23	3
	10	16	26	3	31	3
	14	20	34	3	39	3
	19	25	44	3	49	3
	26	32	58	3	63	3
	29	25	64	3	69	3
	34	40	74	3	79	3
217/220.29-035						
	8	15	23	3,5	29	3,5
	9	16	25	3,5	31	3,5
	13	20	33	3,5	39	3,5
	18	25	43	3,5	49	3,5
	28	35	63	3,5	69	3,5
217.29-04						
	4*	12*	16	4	23	4
	8	16	24	4	31	4
	12	20	32	4	39	4
	17	25	42	4	49	4
	24	32	56	4	63	4
	27	35	62	4	69	4
	32	40	72	4	79	4
	42	50	92	4	99	4
217/220.29-05						
	6*	16*	22	5	31	5
	10	20	30	5	39	5
	15	25	40	5	49	5
	22	32	54	5	63	5
	25	35	60	5	69	5
	30	40	70	5	79	5
	40	50	90	5	99	5

	Cutter dia Ø D_c mm	Cutter dia Ø D_{c2} mm	C min/a_p max		C max/a_p max	
			C min Ø	a_p max mm	C max Ø	a_p max mm
217/220.29-06						
	4*	16*	25	6	30	6
	8	20	28	6	8	6
	12	24	36	6	46	6
	13	25	38	6	48	6
	20	32	52	6	62	6
	23	35	58	6	68	6
	28	40	68	6	78	6
	32	44	76	6	86	6
	28	50	88	6	98	6
	40	52	92	6	102	6
	50	62	112	6	122	6
	51	63	114	6	124	6
	54	66	120	6	130	6
	63	75	138	6	148	6
	68	80	148	6	158	6
	80	92	172	6	182	6
	100	112	212	6	222	6
	125	137	262	6	272	6
217/220.29-08						
	16	32	48	8	62	8
	24	40	64	8	78	8
	34	50	84	8	98	8
	36	52	88	8	102	8
	47	63	110	8	124	8
	50	66	116	8	130	8
	64	80	144	8	158	8
	84	100	184	8	198	8
	109	125	234	8	248	8
	144	160	304	8	318	8
217/220.29-10						
	5*	25*	25	10	48	10
	20	40	60	10	78	10
	30	50	80	10	98	10
	43	63	106	10	124	10
	50	70	120	10	138	10
	60	80	140	10	158	10
	63	83	146	10	164	10
	80	100	180	10	198	10
	100	120	220	10	238	10
	105	125	230	10	248	10
	140	160	300	10	318	10

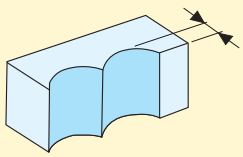
	Cutter dia Ø D_c mm	C min/a_p max		C max/a_p max	
		C min Ø	a_p max mm	C max Ø	a_p max mm
217/220.43-05	24	45	3,5	56	3,5
	32	60	3,5	79	3,5
	40	76	3,5	95	3,5
	42	80	3,5	99	3,5
	50	96	3,5	115	3,5
	63	129	3,5	141	3,5
	80	156	3,5	175	3,5
	100	196	3,5	215	3,5
	125	246	3,5	265	3,5
	160	316	3,5	335	3,5
217/220.43-07S/07SA	32	51	5	85	5
	38	66	5	100	5
	51	92	5	126	5
	63	122	5	148	5
	68	126	5	160	5
	80	156	5	182	5
	88	166	5	200	5
	100	196	5	222	5
	125	246	5	272	5
R220.42					
	40	78	3,5	96	3,5
	50	97	3,5	115	3,5
	63	123	3,5	141	3,5
	80	157	3,5	175	3,5
	100	198	3,5	216	3,5
217.69-06					
	10	13	1,7	19	4,0
	12	17	1,8	23	4,0
	16	25	2,0	31	3,3
	20	33	1,8	39	2,6
	25	43	1,5	49	2,4
	32	57	1,3	63	2,3
	40	73	1,8	79	2,2
217/220.69-09					
	12	–	–	–	–
	16	20	3,4	30	6,8
	18	24	3,4	34	6,1
	20	28	3,3	38	5,4
	25	38	3,5	48	5,1
	32	52	3,4	62	4,4
	40	68	3,3	78	4,0
	50	88	3,0	98	3,8
	63	114,5	3,1	125	3,8
	80	148	3,1	159	3,6

	Cutter dia Ø D_c mm	C min/a_p max		C max/a_p max	
		C min Ø	a_p max mm	C max Ø	a_p max mm
	14				
	16	18,86	1,23	30	6,02
	18	22,86	1,63	34	5,43
	20	26,86	1,71	38	4,54
	25	36,88	1,9	48	3,71
217/220.69-10	32	50,9	2,07	62	3,33
	40	66,92	2,21	78	3,16
	50	86,94	2,43	98	3,18
	63	112,96	2,47	124	3,03
	80	146,98	2,57	158	3,01
	100	186,98	2,62	198	2,97
217/220.69-12					
	20	26	2,6	38	7,9
	25	36	3,0	48	6,3
	32	50	2,9	62	4,9
	40	66	3,5	77	5,0
	50	87	4,0	97	5,1
	63	112	4,0	123	4,9
	80	146	3,6	157	4,2
	100	486	2,3	197	2,6
	125	236	3,0	247	3,3
217/220.69-18					
	32	42,5	4	62	11,8
	40	58,5	4,6	77	9,3
	50	78,5	5	97	8,4
	63	104,5	5,4	123	7,8
	80	138,5	5,6	157	7,4
	100	178,5	5,8	197	7,1
	125	229	5,9	247	6,9
	160	299	5,7	317	6,4
220.69-15H					
	50	77	1,6	97	2,8
	63	104	1,8	123	2,7
	80	138	2	157	2,6
	100	178	2	197	2,6
	125	228	2,1	247	2,5
	160	298	2,2	317	2,5
217/220.97-12					
	25	40	7,5	49	7,5
	32	54	7,5	63	7,5
	40	70	7,5	79	7,5
	50	90	7,5	99	7,5
217/220.97-22					
	32	56	10	62	10
	40	72	10	78	10
	50	92	10	98	10
	63	118	10	124	10
	80	152	10	158	10
	100	192	10	198	10

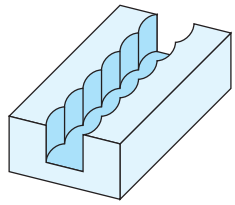
Plunge milling

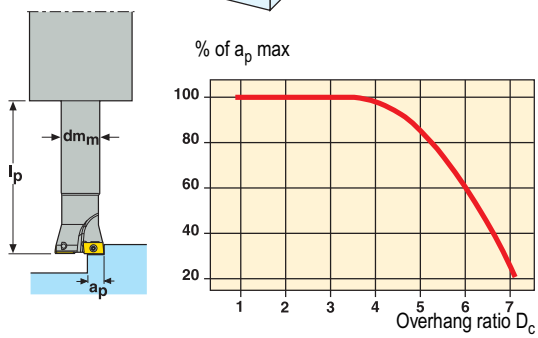
The insert design and the insert clamping system determines the tool's suitability for plunging.
Maximum cutting depth recommendations for suitable tools are in the tables below.
Note that the definition of ap is different for plunge milling.
Use the cutting speeds and feed rates recommended for normal operations.
Values for milling cutters designed for plunge milling only can be found in the chapter Plunge milling cutters R217/220.79 Milling 2

Plunging



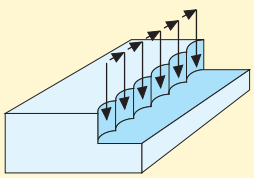
Type of cutter	a_p max mm
220.43…-05	10
220.43…-07W	8
217/220.43…07SA/07S	12
217.69-06	3,5
217/220.69…-09	4
217/220.69-10	6
217/220.69…-12	7
217/220.69-18	10
217/220.69…15H/15.xH	10
217/220.29-03	3
217/220.29-04	4
217/220.29-05	5
217/220.29-06	6
217/220.29-08	8
217/220.29-10	10
R217/220.96-04	4
217.96-08	7,5





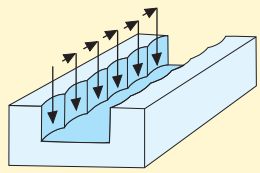
a_p max can normally be used if the overhang ratio is up to 4 but should be reduced at higher ratios as shown in the graph.

Plunging - Axial feed direction



Type of cutter	a_p max mm
220.43…-05	5*
220.43…-07W	7*
217/220.43…07SA/07S	7*
217.69-06	3,5*
217/220.69…-09	4*
217/220.69-10	6
217/220.69…-12	7*
217/220.69-18	10*
217/220.69…15H/15.xH	10*
217/220.29-03	3
217/220.29-04	4
217/220.29-05	5
217/220.29-06	6
217/220.29-08	8
217/220.29-10	10
R217/220.96-04	4
217.96-08	7,5

Slotting - Axial feed direction



Type of cutter	a_p max mm
220.43…-05	5*
220.43…-07W	7*
217/220.43…07SA/07S	7*
217.69-06	3,5*
217/220.69…-09	4*
217/220.69-10	6
217/220.69…-12	7*
217/220.69-18	10*
217/220.69…15H/15.xH	10*
217/220.29-03	3
217/220.29-04	4
217/220.29-05	5
217/220.29-06	6
217/220.29-08	8
217/220.29-10	10
R217/220.96-04	4
217.96-08	7,5

*To create a flat bottom surface, a_p max = the wiper flat width. Dimensions to be found on the cutting data pages.

Nomenclature and formulae

RPM

$$n = \frac{v_c \cdot 1000}{\pi \cdot D_c} \quad \text{(rev/min)}$$

Cutting speed

$$v_c = \frac{n \cdot \pi \cdot D_c}{1000} \quad \text{(m/min)}$$

Feed speed

$$v_f = n \cdot z_n \cdot f_z \quad \text{(mm/min)}$$

$$v_f = n \cdot z_c \cdot f_z \quad \text{(mm/min)}$$

Feed per revolution

$$f = z_n \cdot f_z \quad \text{(mm/rev)}$$

$$f = z_c \cdot f_z \quad \text{(mm/rev)}$$

Metal removal rate

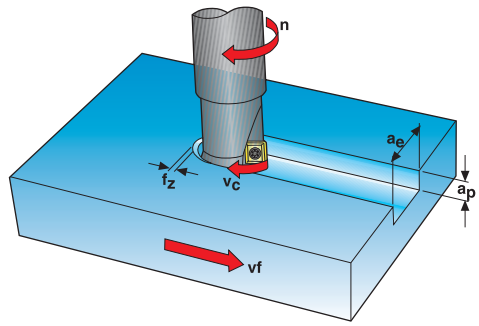
$$Q = \frac{a_e \cdot a_p \cdot v_f}{1000} \quad \text{(cm}^3\text{/min)}$$

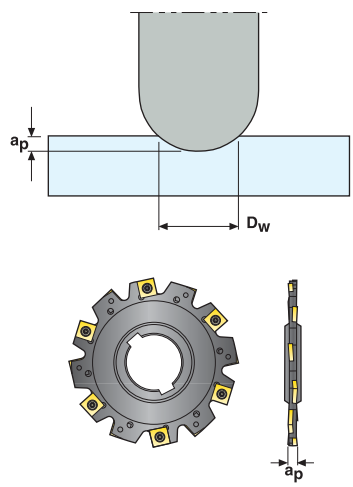
Cutting speed and RPM for copying

$$v_c = \frac{n \cdot \pi \cdot D_w}{1000} \quad \text{(m/min)}$$

$$n = \frac{v_c \cdot 1000}{\pi \cdot D_w} \quad \text{(RPM)}$$

$$D_w = 2 \cdot \sqrt{a_p (D_c - a_p)} \quad \text{(mm)}$$





Effective No. of teeth (zc)

The effective No. of teeth (z_c) is used to calculate the feed speed (v_f) and the feed per revolution (f). For most of the cutters the effective No. of teeth (z_c) is equal to the No. of teeth in the cutter (z_n), but for some of the cutters z_c is less than z_n.

Example: Disc mill 335.19

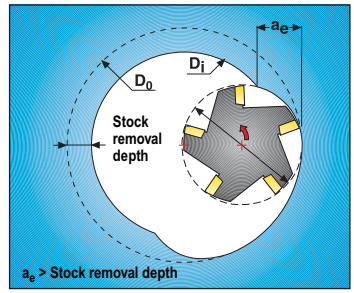
Total No. of teeth (z_n) = 12 Effective No. of teeth (z_c) = 6

Explanation: 6 inserts on one side of the cutter and 6 overlapping inserts on the other side are used to get the full width (a_p), which means z_c = 6.

Internal circular interpolation
When using circular interpolation or helical interpolation ramping to increase the diameter of a hole in a workpiece, the stock removal depth is not the same as the width of cut value. The real width of cut must be calculated from the formula below.

The width of cut value is then used for calculation of feed/tooth and feed speed.

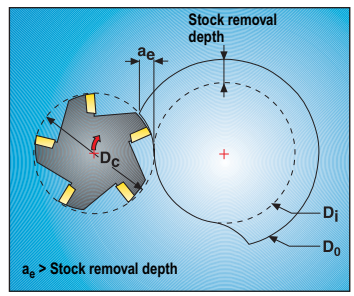
$$a_e = \frac{D_o^2 - D_i^2}{4\,(D_o - D_c)}$$



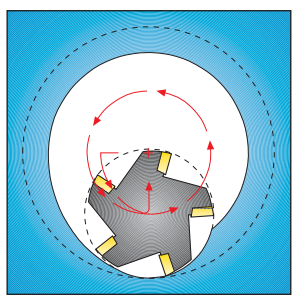
External circular interpolation
When using external circular interpolation or helical interpolation ramping to decrease the diameter of a round workpiece the stock removal depth is not the same as the width of cut value. The real width of cut must be calculated from the formula below.

The width of cut is then used for calculation of feed/tooth and feed speed.

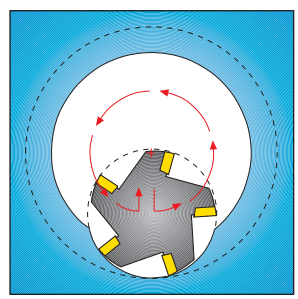
$$a_e = \frac{D_o^2 - D_i^2}{4\,(D_i + D_c)}$$



Increase the width of cut successively to full value
For circular interpolation operations it is recommended to successively increase the width of cut up to full value. When using radial infeed up to full width of cut, reduce the feed/tooth and feed speed to half.



Successive increase of width of cut – recommended method.



Radial infeed – Reduce feed/tooth.

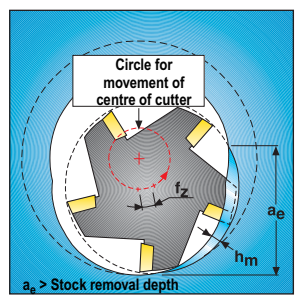
Feed speed related to the centre of the cutter
When calculating feed speed and feed/tooth from average chip thickness using circular interpolation or helical interpolation ramping in an operation, the feed speed and feed/tooth are always related to the centre and not to the periphery of the cutter.

Int.

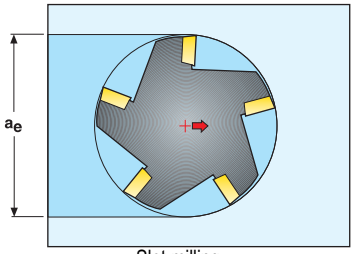
$$v_f = \frac{(D_0 - D_c) \cdot n \cdot z_c \cdot f_z}{D_0}$$

Ext.

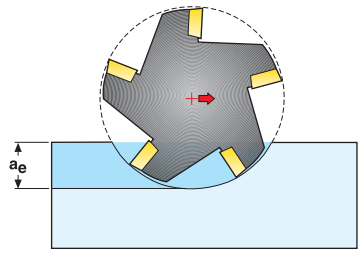
$$v_f = \frac{(D_i + D_c) \cdot n \cdot z_c \cdot f_z}{D_i}$$



Slot milling compared with side milling



Slot milling



Side milling

Relative engagement of the cutter diameter (a_e/D_c=%)	Multiply the feed per tooth by the following factor
30%	1.25
20%	1.5
10%	2.0
5%	3.0

Calculation of feed per tooth and cutting speed for side milling operations

When using side milling it is necessary to increase the feed per tooth to keep the chip thickness at the same value.
It is also possible to increase the cutting speed and keep the same tool life. Use the tables below.

This table can be used for cutters with cutting edge angle = 90

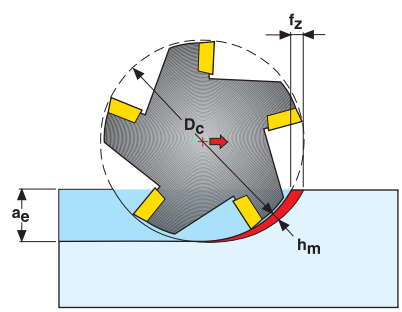
a_e/D_c %	Feed Per Tooth, mm/tooth (f_z)													Speed Factor
	0,03	0,06	0,08	0,10	0,15	0,20	0,25	0,30	0,40	0,50	0,60	0,80	1,00	
	Average Chip Thickness, mm/tooth (h_m)													
Width of cut up to and including $D_c/2$														
2 (0.02)					0,02	0,03	0,04	0,04	0,06	0,07	0,08	0,11	0,14	1.8
3 (0.03)				0,02	0,03	0,03	0,04	0,05	0,07	0,09	0,10	0,14	0,17	1.7
5 (0.05)			0,02	0,02	0,03	0,04	0,06	0,07	0,09	0,11	0,13	0,18	0,22	1.6
10 (0.10)		0,02	0,02	0,03	0,05	0,06	0,08	0,09	0,12	0,16	0,19	0,25	0,31	1.5
15 (0.15)	0,011	0,02	0,03	0,04	0,06	0,08	0,09	0,11	0,15	0,19	0,23	0,30		1.4
20 (0.20)	0,013	0,03	0,03	0,04	0,06	0,09	0,11	0,13	0,17	0,22	0,26			1.35
30 (0.30)	0,016	0,03	0,04	0,05	0,08	0,10	0,13	0,16	0,21	0,26	0,31			1.3
40 (0.40)	0,018	0,04	0,05	0,06	0,09	0,12	0,15	0,18	0,23	0,29				1.25
50 (0.50)	0,02	0,04	0,05	0,06	0,10	0,13	0,16	0,19	0,25	0,32				1.2
Slotting (Width of cut = D_c)														
100 (1.00)	0,02	0,04	0,05	0,06	0,10	0,13	0,16	0,19	0,25	0,32				1.0

- - - - = Feed per tooth correction example: at 20% engagement also increase speed by 1.35

Instead of using the table above for calculating hm and f_z, the following formula could be used if a_e/D_c < 30%.

$$h_m = f_z \cdot \sqrt{\frac{a_e}{D_c}}$$

$$f_z = h_m \cdot \sqrt{\frac{D_c}{a_e}}$$



Calculation of feed per tooth and cutting speed for side milling operations

Side milling can of course be used for a face milling operation with a width of cut value less than half the diameter of the cutter.

This table can be used for cutters with cutting edge angle = 45º

a_e/D_c %	Feed Per Tooth, mm/tooth (f_z)													Speed Factor
	0,03	0,06	0,08	0,10	0,15	0,20	0,25	0,30	0,40	0,50	0,60	0,80	1,00	
	Average Chip Thickness, mm (h_m)													
Width of cut up to and including $D_c/2$														
2 (0.02)					0,01	0,02	0,02	0,03	0,04	0,05	0,06	0,08	0,10	1.8
3 (0.03)				0,01	0,02	0,02	0,03	0,04	0,05	0,06	0,07	0,10	0,12	1.7
5 (0.05)			0,01	0,02	0,02	0,03	0,04	0,05	0,06	0,08	0,09	0,13	0,16	1.6
10 (0.10)		0,01	0,02	0,02	0,03	0,04	0,05	0,07	0,09	0,11	0,13	0,18	0,22	1.5
15 (0.15)	0,008	0,02	0,02	0,03	0,04	0,05	0,07	0,08	0,11	0,13	0,16	0,21		1.4
20 (0.20)	0,009	0,02	0,02	0,03	0,05	0,06	0,08	0,09	0,12	0,15	0,18			1.35
30 (0.30)	0,011	0,02	0,03	0,04	0,05	0,07	0,09	0,11	0,15	0,18	0,22			1.3
40 (0.40)	0,012	0,02	0,03	0,04	0,06	0,08	0,10	0,12	0,17	0,21				1.25
50 (0.50)	0,01	0,03	0,04	0,05	0,07	0,09	0,11	0,14	0,18	0,23				1.2
Face milling full engagement (Width of cut = D_c)														
100 (1.00)	0,01	0,03	0,04	0,05	0,07	0,09	0,11	0,14	0,18	0,23				1.0

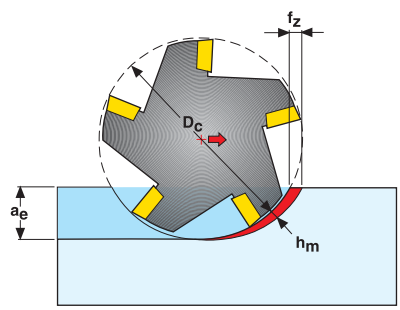
This table can be used for cutters with cutting edge angle = 60º

a_e/D_c %	Feed Per Tooth, mm/tooth (f_z)													Speed Factor
	0,03	0,06	0,08	0,10	0,15	0,20	0,25	0,30	0,40	0,50	0,60	0,80	1,00	
	Average Chip Thickness, mm (h_m)													
Width of cut up to and including $D_c/2$														
2 (0.02)					0,02	0,02	0,03	0,04	0,05	0,06	0,07	0,10	0,12	1.8
3 (0.03)				0,01	0,02	0,03	0,04	0,04	0,06	0,07	0,09	0,12	0,15	1.7
5 (0.05)			0,02	0,02	0,03	0,04	0,05	0,06	0,08	0,10	0,12	0,15	0,19	1.6
10 (0.10)		0,02	0,02	0,03	0,04	0,05	0,07	0,08	0,11	0,13	0,16	0,22	0,27	1.5
15 (0.15)	0,010	0,02	0,03	0,03	0,05	0,07	0,08	0,10	0,13	0,16	0,20	0,26		1.4
20 (0.20)	0,011	0,02	0,03	0,04	0,06	0,07	0,09	0,11	0,15	0,19	0,22			1.35
30 (0.30)	0,013	0,03	0,04	0,04	0,07	0,08	0,11	0,13	0,18	0,22	0,27			1.3
40 (0.40)	0,015	0,03	0,04	0,05	0,08	0,10	0,13	0,15	0,20	0,25				1.25
50 (0.50)	0,02	0,03	0,04	0,06	0,08	0,11	0,14	0,17	0,22	0,28				1.2
Face milling full engagement (Width of cut = D_c)														
100 (1.00)	0,02	0,03	0,04	0,06	0,08	0,11	0,14	0,17	0,22	0,28				1.0

Instead of using the table above for calculating hm and fz, the following formula could be used if $a_e/D_c < 30\%$.

$$h_m = f_z \cdot \sqrt{\frac{a_e}{D_c}} \cdot \sin \kappa$$

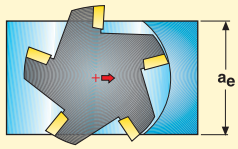
$$f_z = h_m \cdot \sqrt{\frac{D_c}{a_e}} \cdot \frac{1}{\sin \kappa}$$



Milling

Calculating the power demand

$$P_c = \frac{a_p \cdot a_e \cdot v_f}{60\,000\,000 \cdot \eta} \cdot k_c$$



P_c = Power (kW)
a_p = Depth of cut (mm)
a_e = Width of cut (mm)
v_f = Feed speed (mm/min)
η = Efficiency
k_c = Cutting force per mm²

Calculating average chip thickness (h_m) and cutting force per mm² (k_c)

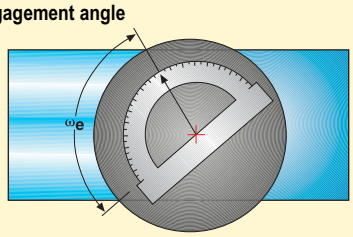
$$h_m = \frac{360 \cdot f_z \cdot a_e}{\pi \cdot D_c \cdot \omega e} \cdot \sin \kappa$$

h_m = Average chip thickness (mm)
f_z = Feed per tooth (mm/tooth)
D_c = Cutter diameter (mm)
ωe = Engagement angle
κ = Cutting edge angle

$$k_c = \frac{1 - 0{,}01 \cdot \gamma o}{h_m^{mc}} \cdot k_c 1.1$$

γo = Effective rake angle (rake angle of cutter+rake angle of insert)
m_c = Exponent (see page 603)
$k_c 1.1$ = Cutting force for 1 mm chip thickness (N/mm²) (see page 603)

Engagement angle



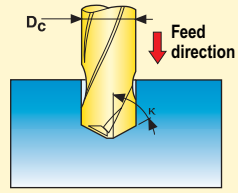
Engagement a_e/D_c	Engagement angle ω_e
75%	97°
100%	180°

Engagement a_e/D_c	Engagement angle ω_e
5%	26°
10%	37°
25%	60°

Drilling/Plunging

Calculating the power demand

$$P_c = \frac{Q}{60\,000 \cdot \eta} \cdot k_c$$



P_c = Power (kW)
Q = Metal removal rate (cm³/min)
η = Efficiency
k_c = Cutting force per mm²

Calculating metal removal rate (Q)

Example: For a drill

$$A_T = \frac{\pi \cdot D_c^2}{4} \qquad Q = \frac{v_f \cdot A_T}{1000}$$

(The factor 1000 is used to get cm3/min)

A_T = Cross section area of the cut in feed direction

Calculating cutting force mm² (k_c) and norminal chip thickness (hD)

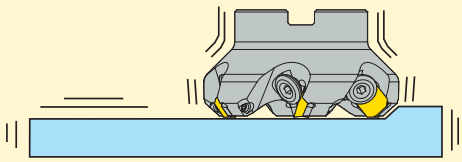
$$k_c = \frac{1 - 0{,}01 \cdot \gamma o}{h_D^{mc}} \cdot k_c 1.1$$

$$h_D = f_z \cdot \sin \kappa$$

f_z = Feed per tooth (mm/tooth)
hD = Nominal chip thickness (mm)
$k_c 1.1$ = Cutting force for 1 mm chip thickness (N/mm²) (see page 603)
m_c = Exponent (see page 603)
κ = Cutting edge angle
γo = Effective rake angle (rake angle of cutter+rake angle of insert)

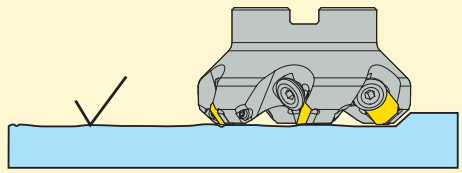
Troubleshooting

Vibrations



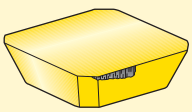
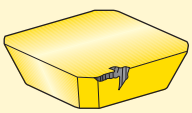
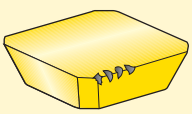
- Improve the stability of cutter and workpiece.
- Change cutter positioning.
- Minimize tool overhang.
- Reduce the cutting speed.
- Increase the feed rate.
- Reduce the depth of cut.

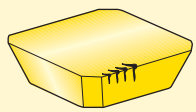
Poor surface finish



- Improve the stability of cutter and workpiece.
- Minimize tool overhang.
- Reduce the feed rate.
- Incease the cutting speed
- Use a coolant.
- Use wiper inserts.

Tool life problems

Rapid flank wear 	• Reduce the cutting speed. • Increase the feed rate. • Climb milling.
Rapid notch wear 	• Reduce the cutting speed. • Increase the feed rate. • Increase the depth of cut. • Climb milling. • Change cutter positioning.
Chipping 	• Increase the cutting speed. • reduce the feed rate. • Conventional milling. • Improve chip evacuation. • Change cutter positioning. • Minimize tool overhang. • Improve stability.

Comb cracks 	• Reduce the cutting speed. • Reduce the feed rate • No coolant. • Change cutter positioning.
Built up edge	• Increase the cutting speed. • Increase the feed rate • No coolant. • Climb milling. • Change cutter positioning.

Workpiece materials – Seco Material Group, SMG (ver. 1)

Steel, ferritic and martensitic stainless steel

ISO	SMG	Repr	Description	R_m (N/mm²)	$k_{c1.1}$ (N/mm²)	m_c
P	1	S275J2G3	Very soft carbon steels Purely ferritic steels	<450	1350	0,21
	2	11 SMn30	Free-cutting steels	400 <700	1500	0,22
	3	S355JR	Structural steels. Ordinary carbon steels with low to medium carbon content (<0,5%C)	450 <550	1500	0,25
	4	42 CrMo 4	Carbon steels with high carbon content (>0,5%C) Medium hard steels for toughening. Ordinary low-alloy steels Ferritic and martensitic stainless steels	550 <700	1700	0,24
	5	34CrNiMo6	Normal tool steels Harder steels for toughening Martensitic stainless steels	700 <900	1900	0,24
	6	X 40 CrMoV 5 1	Difficult tool steels High-alloy steels with high hardness Martensitic stainless steels	900 <1200	2000	0,24
H	7	X 120 Mn 12 (50 HRC)	Difficult high-strength steels with 42 to 56 HRC hardness Hardened steels from material group 3-6 Martensitic stainless steels	>1200	2900	0,22

Free-cutting, austenitic and duplex stainless steel

M	8	X 8 CrNiS 18 9	Easy-cutting stainless steels Free-cutting stainless steels Calcium-treated stainless steels		1750	0,22
	9	X 2 CrNiMo 17 12 2	Moderately difficult stainless steels Austenitic and duplex stainless steels		1900	0,20
	10	X 5 CrNiMo 17 12 2	Difficult stainless steels Austenitic and duplex stainless steels		2050	0,20
	11	X 2 CrNiMoN 22 5 3	Very difficult stainless steels Austenitic and duplex stainless steels		2150	0,20

Cast iron

K	12	GJL-150	Medium hard cast iron Grey cast iron		1150	0,22
	13	GJL-250	Low-alloy cast iron Malleable cast iron Nodular cast iron		1225	0,25
	14	GJS-700-2	Moderately difficult alloy cast iron Moderately difficult malleable cast iron Nodular cast iron		1350	0,28
	15	GJL-350	Difficult high-alloy cast iron Difficult malleable cast iron Nodular cast iron		1470	0,30

Other materials

N	16	AW7075	Aluminium alloys: Low Si			
	17	AlSi12	Aluminium alloys: High Si			
	18	CuZn37	Copper alloys			
S	19	Discalloy	Fe-based superalloys			
	20	Stellite 21	Co-based superalloys			
	21	Inconel 718 (bar, forge, ring)	Ni-based superalloys		3300	0,24
	22	Ti 6Al-4V (annealed)	Titanium alloys		1450	0,23

Bear in mind that the R_m-value is only an aid in the selection of the material group when the material has been worked by rolling, drawing, heat treatment or other methods that increase the strength of the material.

SMG

SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
1			1.1133	20 Mn 5	20 M 5	120 M 19	G 22 Mn 3
	G 28 Mn6	1.1165	1.1165	30 Mn 5		120 M 36	
	C 10	1.0301	1.0301	C 10	AF 34 C 10; XC 10	045 M 10	C 10
			1.0401	C 15	AF3 7 C 12; XC 18	080 M 15	C 15; C 16
	C22+N	1.0402	1.0402	C 22	C 20	050 A 20	C 20; C 21
	C25+N	1.0406	1.0406	C 25	AF 50 C 30	070 M 26	C 25
	C 10E	1.1121	1.1121	Ck 10	XC 10	040 A 10	C 10
	C 15R	1.1141	1.1141	Ck 15	XC 15; XC 18	080 M 15	15; C 16
	C 22E	1.1151	1.1151	Ck 22	XC 25; XC 18	040 A 22	C 20
			1.1158	Ck 25	XC 25	060 A 25	C 25
	S235JR	1.0037	1.0037	St 37-2	E24-2		Fe 360 B
	S235JRG2	1.0038	1.0116	St 37-3	E 24-3; E 24-4	4360-40 C	Fe 360 D FF
	S275J0H	1.0149	1.0044	St 44-2	E 28-2	4360-43 B	Fe 430 B FN
	S275J2G3	1.0144	1.0144	St 44-3 N	E 28-3; E 28-4	4360-43 C	Fe 430 D FF
2	10 S 20	1.0721	1.0721	10 S 20	10 F 1	210 M 15	CF 10 S 20
			1.0722	10 SPb 20	10 PbF 2		CF 10 SPb 20
	15 SMn13	1.0725	1.0723	15 S 20		210 A 15	
	35 S20	1.0726	1.0726	35 S 20	35 MF 4	212 M 36	
	46 S20	1.0727	1.0727	46 S 20	45 MF 4	212 M 44	
	60 S20	1.0728	1.0728	60 S 20	60 MF 4		
			1.0711	9 S 20		220 M 07	CF 9 S 22
	11 SMn30	1.0715	1.0715	9 SMn 28	S 250	230 M 07	CF 9 SMn 28
	11 SMn37	1.0736	1.0736	9 SMn 36	S 300	240 M 07	CF 9 SMn 36
	11 SMnPb30	1.0718	1.0718	9 SMnPb 28	S 250 Pb		CF 9 SMnPb 28
	11 SMnPb 37	1.0737	1.0737	9 SMnPb 36	S 300 Pb		CF 9 SMnPb 36
3			1.5622	14 Ni 6	16 N 6		14 Ni 6
			1.5423	16 Mo 5		1503-245-420	16 Mo 5
	G 28 Mn6+QT	1.1165	1.1167	36 Mn 5	40 M 5	150 M 36	
			1.1157	40 Mn 4	35 M 5	150 M 36	
			1.0528	C 30	C 30	080 A 30	
	C35+N		1.0501	C 35	AF 55 C 35	060 A 35	C 35
	C40+N		1.0511	C 40	AF 60 C 40	080 M 40	C 40
	E 335	1.0503	1.0503	C 45	AF 65 C 45	80 M 46	C 45
	C50+N		1.0540	C 50	C 50	080 M 50	
	C 30E	1.1178	1.1178	Ck 30		060 A 30	
	C 35E	1.1181	1.1181	Ck 35	XC 38 H1:XC 32	080 M 36	C 35
	C 40 E	1.1186	1.1186	Ck 40	XC 42 H1	080 M 40	C 40
	C 50E	1.1206	1.1206	Ck 50	XC 48 H1	080 M 50	
	C 55E	1.1203	1.1203	Ck 55	XC 55	070 M 55	C 50
	S355JR	1.0570	1.0570	St 52-3	E 36-3; E 36-4	4360-50 C	Fe 510 B; C; D
	E 360	1.0070	1.0535	St 70-2	A 70-2		Fe 690
4			1.5680	12 Ni 19	Z 18 N 5		
			1.7012	13 Cr 2			
	13 CrMo 4 5	1.7335	1.7335	13 CrMo 4 4	15 CD 3.5	1501-620 Gr. 27	14 CrMo 4 5
			1.7715	14 MoV 6 3		1503-660-440	
			1.5732	14 NiCr 10	14 NC 11		16 NiCr 11
	14 NiCr 14	1.5752	1.5752	14 NiCr 14	12 NC 15	655 M 13	
			1.7015	15 Cr 3	12 C 3	523 M 15	
			1.7262	15 CrMo 5	12 CD 4		12 CrMo 4
			1.8521	15 CrMoV 5 9			
			1.5919	15 CrNi 6	16 NC 6	S 107	16 CrNi 4
	16 Mo 3	1.5415	1.5415	15 Mo 3	15 D 3	1501-240	16 Mo 3
			1.2735	15 NiCr 14	10 NC 12		
			1.7337	16 CrMo 4 4	15 CD 4.5	1501-620 Gr. 27	14 CrMo 4 5
	16 MnCr 5	1.5715	1.7131	16 MnCr 5	16 MC 5	527 M 17	16 MnCr 5
	16 MnCrS 5	1.7139	1.7139	16 MnCrS 5			
			1.5920	18 CrNi 8	20 NC 6		
	17 CrNiMo 6	1.6587	1.6587	18 CrNiMo 6	18 NCD 6	820 A 16	18 NiCrMo 7
			1.7311	20 CrMo 2			
	20 CrMo 5	1.7264	1.7264	20 CrMo 5	18 CD 4		
	20 MnCr 5	1.7147	1.7147	20 MnCr 5	20 MC 5		20 MnCr 5
	20 MnCrS 5	1.7149	1.7149	20 MnCrS 5	20 MnCrS 5		
			1.7321	20 MoCr 4			
			1.7323	20 MoCrS 4			
			1.2162	21 MnCr 5	20 NC 5		

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
SMnC 420		G10220	1022; 1518				
SMn 1 H; SCMn 2		G13300	1330				
S 10 C		G10100	1010				
	1350	G10170	1015				
	1450	G10200	1023				
S 25 C			1025				
S 10 C; S 9 CK	1265	G10100	1010				
S 15 C; S 15 CK	1370	G10170	1015				
S 22 C; S 20 CK			1022				
S 25 C		G10250	1025				
STKM 12 C	1311						
	1312; 1313		A 573 Gr. 58				
SM 41 B	1412		A 570 Gr. 40				
SM 41 C	1412; 1414		A 573 Gr. 70				
			1108				
			11 L 08				
SUM 32	1922						
	1957	G11400	1140				
	1973	G11460	1146				
SUM 21		G12120	1212				
SUM 22	1912	G12130	1213				
		G12150	1215				
SUM 22 L	1914	G12134	12 L 13				
	1926	G12144	12 L 14				
			A 350-LF 5				
SB 450 M		G45200	4520				
SMn 438 (H); SCMn 3	2120	G13350	1335				
		G10390	1039				
S 30 C							
	1550	G10350	1035				
S 40 C			1040				
S 45 C	1650	G10430	1045				
S 50 C			1049				
S 30 C			1030				
S 35 C	1572	G10340	1035				
S 40 C			1040				
			1050				
S 55 C			1055				
SM 50 YA	2172; 2132						
	1655		1055				
			2515				
	2216		A 182-F11; F12				
SNC 415 (H)			3415				
SNC 815 (H)		G 33106	3310; 9314				
SCr 415 (H)		G 50150	5015				
SCM 415 (H)							
			4320				
	2912		A 204 Gr. A				
SNC 22		T 51606	P6				
	2216		A 387 Gr. 12 Cl. 2				
SCR 415	2511	G51170	5115				
SCM 421							
SMnC 420 (H)		G51200	5120				
SMnC 21 H			5120 H				
SCR 420 H							

SMG

SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
4	20 NiCrMoS 2 2	1.6526	1.6523	21 NiCrMo 2	20 NCD 2	805 M 20	20 NiCrMo 2
			1.7271	23 CrMoB 3 3			
	25 CrMo 4	1.7218	1.7218	25 CrMo 4	25 CD 4 S	1717 CDS 110	25 CrMo 4 (KB)
			1.7325	25 MoCr 4			
			1.7326	25 MoCrS 4			
	28 Cr4	1.7030	1.7030	28 Cr 4		530 A 30	
			1.6513	28 NiCrMo 4			
			1.7707	30 CrMoV 9			
			1.6580	30 CrNiMo 8	30 CND 8	823 M 30	30 NiCrMo 8
	31 CrMoV 9	1.8519	1.8519	31 CrMoV 9	32 CDV 12		
			1.5755	31 NiCr 14	30 NC 11	653 M 31	
			1.7020	32 Cr 2			
			1.7361	32 CrMo 12	30 CD 12	722 M 24	32 CrMo 12
	34 Cr 4	1.7033	1.7033	34 Cr 4	32 C 4	530 A 32	34 Cr 4 (KB)
	34 CrMo 4	1.7220	1.7220	34 CrMo 4	35 CD 4	708 A 37	35 CrMo 4
			1.2330	35 CrMo 4	34 CD 4	708 A 37	35 CrMo 4
			1.5864	35 NiCr 18			
	36CrNiMo4+TA		1.6511	36 CrNiMo 4	40 NCD 3	816 M 40	38 NiCrMo 4 (KB)
			1.5736	36 NiCr 10	35 NC 11		35 NiCr 9
			1.5710	36 NiCr 6	35 NC 6	640 A 35	
			1.7034	37 Cr 4	38 C 4	530 A 36	38 Cr 4
			1.5122	37 MnSi 4			
	38 Cr2	1.7003	1.7003	38 Cr 2	38 C 2		38 Cr 2
			1.5120	38 MnSi 4			
			1.8523	39 CrMoV 13 9		897 M 39	36 CrMoV 13 9
			1.2311	40 CrMnMo 7			
			1.2312	40 CrMnMoS 8 6	40 CMD 8S		
			1.2738	40 CrMnNiMo 8	40 CND 8		
	41 Cr 4	1.7035	1.7035	41 Cr 4	42 C 4	530 M 40	41 Cr 4
			1.7223	41 CrMo 4	42 CD 4 TS	708 M 40	41 CrMo 4
			1.7045	42 Cr 4	42 C 4 TS	530 A 40	41 Cr 4
	42 CrMo 4	1.7225	1.7225	42 CrMo 4	42 CD 4	708 M 40	42 CrMo 4
			1.7561	42 CrV 6			
			1.5223	42 MnV 7			
			1.3563	43 CrMo 4			
			1.3561	44 Cr 2			
			1.7006	46 Cr 2	42 C 2		45 Cr 2
			1.5121	46 MnSi 4			
			1.3565	48 CrMo 4			
			1.7228	50 CrMo 4		708 A 47	
	50 CrV 4	1.8159	1.8159	50 CrV 4	50 CV 4	735 A 50	51 CrV 4
	50 MnSi4	1.5131	1.5131	50 MnSi 4			
			1.5141	53 MnSi 4			
	55 Cr 3	1.7176	1.7176	55 Cr 3	55 C 3	527 A 60	55 Cr 3
	55 SiCr7	1.7100	1.0904	55 Si 7	55 S 7	250 A 53	55 Si 8
			1.2103	58 SiCr 8			
			1.0961	60 SiCr 7	60 SC 7		60 SiCr 8
			1.2101	62 SiMnCr 4			
			1.1730	C 45 W	Y3 42		
			1.1820	C 55 W			
	C60+N	1.0601	1.0601	C 60	CC 55	080 A 62	C 60
			1.1740	C 60 W	Y3 55		
			1.1744	C 67 W			
			1.1520	C 70 W1			
			1.1620	C 70 W2			
	C 75 W	1.1750	1.1750	C 75 W		BW 1A	
			1.1525	C 80 W1	Y1 90; Y1 80		C 80 KU
			1.1625	C 80 W2	Y1 80	BW 1 B	C 80 KU
			1.1830	C 85 W	Y3 90		
	C 45E	1.1191	1.1191	Ck 45	XC 42	080 M 46	C 45
	C 60E	1.1221	1.1221	Ck 60	XC 60	080 A 62	C 60
	C 67S	1.1231	1.1231	Ck 67	XC 68	060 A 67	C 70
	C 75S	1.1248	1.1248	Ck 75	XC 75	060 A 78	C 75
			1.8159	GS-50 CrV 4			
	E 335	1.0060	1.0060	St 60-2	A 60-2	4360-SSE; SSC	Fe 590; Fe 60-2

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
SNCM 220 (H)	2506	G86170	8620				
SCM 420; SCM 430	2225	G41300	4130				
			5130				
SNCM 431							
SNC 836							
	2240						
SCr 430 (H)		G51320	5132				
SCM 432; SCCrM 3	2234	G41350	4135; 4137				
	2234	T 51620	4135				
		G98400	9840				
			3435				
			3135				
			5135				
			P 20				
			P 20+S				
			P20+Ni				
SCr 440 (H)		G51400	5140				
SCM 440	2244	G41420	4142; 4140				
SCr 440	2245 *)		5140				
SCM 440 (H)	2244	G41400	4142; 4140				
			5045				
			5045				
SCM 445 (H)		G41470	4150				
SUP 10	2230	H61500	6150				
SUP 9 (A)	2253	G51550	5155				
	2085; 2090		9255				
SUP 7			9262				
		G10600	1060				
SK 7							
		T72301	W1				
			W 108				
SKC 3; SK 5; SK 6							
SK 5							
S 45 C	1672	G10420					
S 58 C	1665; 1678	G10640	1064				
	1770	G10700	1070				
	1774; 1778	G10780	1078; 1080				
			6150H				
SM 58							

SMG

SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
4	X 12 Cr 13	1.4006	1.4006	X 10 Cr 13	Z 12 C 13	410 S 21	X 12 Cr 13
	X 10 CrAl 13	1.4724	1.4724	X 10 CrAl 13	Z 10 C 13	BH 12	X 10 CrAl 12
	X 10 CrAl 24	1.4762	1.4762	X 10 CrAl 24	Z 10 CAS 24		X 16 Cr 26
	X 12 Cr 13	1.4006	1.4006	X 12 Cr 13		410 S 21	
	X 14 CrMoS 17	1.4104	1.4104	X 12 CrMoS 17	Z 10 CF 17	441 S 29	X 10 CrS 17
	X 12 CrS 13	1.4005	1.4005	X 12 CrS 13	Z 12 CF 13	416 S 21	X 12 CrS 13
	X 12 Cr 13	1.4024	1.4024	X 15 Cr 13	Z 12 C 13	420 S 29	
	X 2 CrMoTi18 2	1.4521	1.4521	X 2 CrMoTi18 2			
	X 2 CrMoTi18 2	1.4521	1.4521	X 2 CrMoTi18 2			
	X 2 CrNi 13	1.4003	1.4003	X 2 CrNi 12			
	X 3 CrNIMo 13 3	1.4313	1.4313	X 5 CrNi 13 4	Z 5 CN 13.4	425 C 11	X 6 CrNi 13 04
	X 5 CrTi 12	1.4512	1.4512	X 5 CrTi 12	Z 6 CT 12	409 S 19	X 6 CrTi 12
	X 6 Cr 13	1.4000	1.4000	X 6 Cr 13	Z 6 C 12	403 S 17	X 6 Cr 13
	X 6 Cr 17	1.4016	1.4016	X 6 Cr 17	Z 8 C 17	430 S 15	X 8 Cr 17
	X 6 CrAl 13	1.4002	1.4002	X 6 CrAl 13	Z 6 CA 13	405 S 17	X 6 CrAl 13
	X 6 CrMo 4	1.2341	1.2341	X 6 CrMo 4			
	X 6 CrTi 17	1.4510	1.4510	X 6 CrTi 17	Z 8 CT 17		X 6 CrTi 17
	X 3 CrNb 17	1.4511	1.4511	X 8 CrNb 17	Z 8 CNb 17		X 6 CrNb 17
5	10 CrMo 9 10	1.7380	1.7380	10 CrMo 9 10	10 CD 9.10	1501-622 Gr. 31; 45	12 CrMo 9 10
	100 Cr 6	1.3505	1.3505	100 Cr 6	100 C 6	534 A 99	100 Cr 6
			1.2510	100 MnCrW 4	90 MWCV 5	BO 1	95 MnWCr 5 KU
			1.2833	100 V 1	Y1 105 V	BW 2	102 V 2 KU
	105 WCr 6	1.2419	1.2419	105 WCr 6	105 WC 13		107 WCr 5 KU
	107 CrV 3	1.2210	1.2210	115 CrV 3	100 C 3		107 CrV 3 KU
			1.2516	120 WV 4	110 WC 20	BF 1	110 W 4 KU
	14 CrMoV 6 9	1.7735	1.7735	14 CrMoV 6 9	20 CDV 5.07		
			1.5860	14 NiCr 18			
			1.7709	21 CrMoV 5 7			
			1.6746	32 NiCrMo 14 5	35 NCD 14	830 M 31	
	34 CrAl 6	1.8504	1.8504	34 CrAl 6			
			1.8507	34 CrAlMo 5	30 CAD 6.12	905 M 31	34 CrAlMo 7
	34 CrAlNi 7	1.8550	1.8550	34 CrAlNi 7	34 CAND 7		
			1.8506	34 CrAlS 5			
	34 CrNiMo 6	1.6582	1.6582	34 CrNiMo 6	35 NCD 6	817 M 40	35 NiCrMo 6 (KW)
			1.6546	40 NiCrMo 2 2	40 NCD 2	311-Type 7	40 NiCrMo 2 (KB)
			1.6565	40 NiCrMo 6		311-Type 6	
	41 CrAlMo 7 10	1.8509	1.8509	41 CrAlMo 7	40 CAD 6.12	905 M 39	41 CrAlMo 7
			1.2542	45 WCrV 7		BS 1	45 WCrV 8 KU
			1.2721	50 NiCr 13			
			1.8161	58 CrV 4			
			1.2826	60 MnSiCr 4			
			1.2550	60 WCrV 7	55 WC 20		55 WCrV 8 KU
			1.7103	67 SiCr 5			
			1.2108	90 CrSi 5			
			1.1273	90 Mn 4			
	90 MnCrV 8	1.2842	1.2842	90 MnCrV 8	90 MV 8	BO 2	90 MnVCr 8 KU
	C 105U	1.1545	1.1545	C 105 W1	Y1 105		C 100 KU
			1.1645	C 105 W2	Y1 105		C 100 KU
			1.1654	C 110 W			
			1.1663	C 125 W	Y2 120		C 120 KU
			1.1673	C 135 W	Y2 140		C 140 KU
	C 100S	1.1274	1.1274	Ck 101		060 A 96	
			1.2887	GS-34 CoCrMoV 19 12			
			1.2392	G-X 28 CrMoV 5 1			
			1.2606	G-X 37 CrMoW 5 1			
	X 18 CrN 28	1.4749	1.4749	X 18 CrN 28	Z 18 C 25		
			1.2764	X 19 NiCrMo 4			
	X 20 Cr 13	1.4021	1.4021	X 20 Cr 13	Z 20 C 13	420 S 37	X 20 Cr 13
	X 20 CrMoWV 12 1	1.4935	1.4935	X 20 CrMoWV 12 1			
	X 20 CrNi 17 2	1.4057	1.4057	X 20 CrNi 17 2	Z 15 CN 16.02	431 S 29	X 16 CrNi 16
	X 22 CrMoV 12 1	1.4923	1.4923	X 22 CrMoV 12 1	Z 21 CDV 12	762	X22 CrMoV 12 1
	X 30 Cr 13	1.4028	1.4028	X 30 Cr 13	Z 30 C 13	420 S 45	X 30 Cr 13
	X 38 CrMo 16	1.2316	1.2316	X 36 CrMo 17	Z 35CD17		X 38 CrMo 16 1 KU
	X 4 CrNiMo 16 5	1.4418	1.4418	X 4 CrNiMo 16 5	Z 6 CND 16.05.01		
	X 39 Cr 13	1.4031	1.4031	X 40 Cr 13	Z 40 C 14	(420 S 45)	X 40 Cr 14

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
SUS 410	2302	S41000	410; CA-15				Martensite
SUS 405		S40500	405				Ferrite
SUH 442		S44600	446				Ferrite
SUS 410	2302	S41000	410 S				Martensite
SUS 430 F	2383	S43020	430 F				Ferrite
SUS 416	2380	S41600	416				Martensite
SUS 410 J 1		J91201					Martensite
	2326		444				Ferrite
	2326		444				Ferrite
		S40977	309				Ferrite
SCS 5	2385	S41500		F6NM			Martensite
SUH 409		S40900	409 L				Ferrite
SUS 403	2301	S41008	403				Ferrite
SUS 430	2320	S43000	430				Ferrite
SUS 405		S40500	405				Ferrite
SUS 430 LX		S43036	430 Ti				Ferrite
SUS 430 LX			430 Nb				Ferrite
	2218	J 21890	A 182-F22				
SUJ 2	2258	G51986	52100				
SKS 3	2140	T31501	O1				
SKS 43		T 72302	W 210				
SKS 31							
		T61202	L2				
		K 23545	A 355 Cl. D				
		K 52440					
		K 23745					
SNCM 447	2541		4340				
SNCM 240		G87400	8740				
SNCM 439			4340				
SACM 645	2940	K 24065	A 355 Cl. A				
	2710	T41901	S1				
		T31502	O2				
	1880		W 110				
SK 3							
SK 2			W 112				
SK 1							
SUP 4	1870	G10950	1095				
	2322	S44600	446				Ferrite
SUS 420 J 1	2303	S42000	420				Martensite
		S42200					Martensite
SUS 431	2321-03	S43100	431				Martensite
	2317						Martensite
SUS 420 J 2	2304	J91153	420				Martensite
			422				
	2387	–					Martensite
SUS 420	2304,2314	S40280	420				Martensite

SMG

SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
5	X 45 Cr 13	1.4034	1.4034	X 45 Cr 13	Z 40 C 14	(420 S 45)	
	X 45 CrNiW 18 9	1.4873	1.4873	X 45 CrNiW 18 9	Z 35 CNWS 18.09	331 S 40	X 45 CrNiW 18 9
	X 45 NiCrMo 4	1.2767	1.2767	X 45 NiCrMo 4	45 NCD 17	EN 20B	42 NiCrMo 15 7
	X 70 CrMo 15	1.4109	1.4109	X 65 CrMo 14	Z 70 D 14		
	X 80 CrNiSi 20	1.4747	1.4747	X 80 CrNiSi 20	Z 80 CSN 20.02	443 S 65	X 80 CrSiNi 20
	X 90 CrMoV 18	1.4112	1.4112	X 90 CrMoV 18	Z 2 CND 18 05	409 S 19	X CrTi 12
6	54 NiCrMoV 6	1.2711	1.2711	54 NiCrMoV 6	55 NCDV 6	BH 224	
			1.2713	55 NiCrMoV 6	55 NCDV 7		
			1.2744	57 NiCrMoV 7 7			
			1.2762	75 CrMoNiW 6 7			
			1.2369	81 CrMov 42 16			
			1.2880	G-X 165 CrCoMo 12			
			1.2601	G-X 165 CrMoV 12			
			1.2201	G-X 165 CrV 12			
	HS 10-4-3-10	1.3207	1.3207	S 10-4-3-10	Z 130 WKCDV 10-4-3-10	BT 42	HS 10-4-3-10
	HS 12-1-2	1.3318	1.3318	S 12-1-2			
	HS 12-1-4	1.3302	1.3302	S 12-1-4			
	HS 12-1-4-5	1.3202	1.3202	S 12-1-4-5			
	HS 18-0-1	1.3355	1.3355	S 18-0-1	Z 80 WCV 18-04-01	BT 1	HS 18-0-1
	HS 18-1-2-10	1.3265	1.3265	S 18-1-2-10		BT 5	HS 18-0-1-10
	HS 18-1-2-15	1.3257	1.3257	S 18-1-2-15			
	HS 18-1-2-5	1.3255	1.3255	S 18-1-2-5	Z 80 WKCV 18-05-04-0	BT 4	HS 18-1-1-5
	HS 2-10-1-8	1.3247	1.3247	S 2-10-1-8	Z 110 DKCWV 09-08-04	BM 42	HS 2-9-1-8
	HS 2-9-1	1.3346	1.3346	S 2-9-1	Z 85 DCWV 08-04-02-0	BM 1	HS 1-8-1
	HS 2-9-2	1.3348	1.3348	S 2-9-2	Z 100 DCWV 09-04-02-		HS 2-9-2
			1.3249	S 2-9-2-8		BM 34	
	HS 3-3-2	1.3333	1.3333	S 3-3-2			HS 3-3-2
	HS 6-5-2	1.3343	1.3343	S 6-5-2	Z 85 WDCV 06-05-04-0	BM 2	HS 6-5-2
	HS 6-5-2-5	1.3243	1.3243	S 6-5-2-5	Z 85 WDKCV 06-05-05-04-02		HS 6-5-2-5
	HS 6-5-3	1.3344	1.3344	S 6-5-3	Z 120 WDCV 06-05-04-	BM 4	HS 6-5-3
	S-6-5-3C	1.3345	1.3345	S 6-5-3C			
	HS 7-4-2-5	1.3246	1.3246	S 7-4-2-5	Z 110 WKCDV 07-05-04		HS 7-4-2-5
	X 100 CrMoV 5	1.2363	1.2363	X 100 CrMoV 5 1	Z 100 CDV 5	BA 2	X 100 CrMoV 5 1 KU
	X 105 CrMo 17	1.4125	1.4125	X 105 CrMo 17	Z 100 CD 17		X 105 CrMo 17
	X 155 CrVMo 12 1		1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	BD 2	X 155 CrVMo 12 1 KU
			1.2601	X 165 CrMoV 12			X 165 CrMoW 12 KU
			1.2709	X 2 NiCoMoTi 18 9 5	Z 2 NKD 19-09		
	X 210 Cr 12	1.2080	1.2080	X 210 Cr 12	Z 200 C 12	BD 3	X 210 Cr 13 KU
			1.2436	X 210 CrW 12			X 215 CrW 12 1 KU
			1.2706	X 3 NiCrMo 18 8 5	E-Z 2 NKD 18		
			1.2567	X 30 WCrV 5 3	Z 32 WCV 5		X 30 WCrV 5 3 KU
			1.2581	X 30 WCrV 9 3	Z 30 WCV 9	BH 21	X 30 WCrV 9 3 KU
			1.2885	X 32 CrMoCoV 3 3 3			
			1.2365	X 32 CrMoV 3 3	32 DCV 28	BH 10	30 CrMoV 12 27 KU
			1.2343	X 38 CrMoV 5 1	Z 38 CDV 5	BH 11	X 37 CrMoV 5 1 KU
			1.2367	X 38 CrMoV 5 3			
	X 40 CrMoV 5 1	1.2344	1.2344	X 40 CrMoV 5 1	Z 40 CDV 5	BH 13	X 40 CrMo 5 1 1 KU
7	X 120 Mn 12	1.3401	1.3401	X 120 Mn 12	Z 120 M 12	BW 10	
8	X 8 CrNiS 18 9	1.4305	1.4305	X 10 CrNiS 18 9	Z 10 CNF 18.09	303 S 31	X 10 CrNi 18 09
	X 9 CrNi 18 8	1.4310	1.4310	X 12 CrNi 17 7	Z 12 CN 17.07	301 S 21	X 12 CrNi 17 07
	X 12 CrNi 18 8	1.4300	1.4300	X 12 CrNi 18 8	Z 12 CN 18	302 S 25	
	X 5 CrNiNb 18 10	1.4546	1.4546	X 5 CrNiNb 18 10		347 S 31	X 6 CrNiNb 18 11
	X 5 CrNi 18 9	1.4301	1.4301	X 6 CrNi 18 10	Z 6 CN 18.09	304 S 31	X 5 CrNi 18 11
	X 6 CrNi 18 11	1.4948	1.4948	X 6 CrNi 18 11	Z 6 CN 18.09	304 S 51	X 5 CrNi 18 10 KW
	X 4 CrNi 18 11	1.4303	1.4303	X 6 CrNi 18 12	Z 8 CN 18.11 FF	305 S 19	X 7 CrNi 18 10
	X 6 CrNiNb 18 10	1.4550	1.4550	X 6 CrNiNb 18 10	Z 6 CNNb 18.10	347 S 31	X 6 CrNiNb 18 11
9	X 5 CrNiMoNb 19 11 2	1.4583	1.4583	X 10 CrNiMoNb 18 12	Z 6 CNDNb 17.13	318 C 17	X 6 CrNiMoNb 17 13
	X 12 CrNi 25 21	1.4335	1.4335	X 12 CrNi 25 21	Z 12 CN 25.20	310 S24	X 6 CrNi 26 20
	X 6 CrNiTi 18 10	1.4878	1.4541	X 12 CrNiTi 18 9	Z 6 CNT 18.12	321 S 51	X 6 CrNiTi 18 11
	X 12 CrNiWTi 16 3	1.4962	1.4962	X 12 CrNiWTi 16 3	Z 6 CNNb 18.10		
	X 15 CrNiSi 20 12	1.4828	1.4828	X 15 CrNiSi 20 12	Z 17 CNS 20.12	309 S 24	
	X 2 CrNi 19 11	1.4306	1.4306	X 2 CrNi 19 11	Z 2 CN 18.10	304 S 12	X 3 Cr Ni 18 11
	X 2 CrNiMo 17 12 2	1.4404	1.4404	X 2 CrNiMo 17 13 2	Z 2 CND 17.12.02	316 S 11	X 2 CrNiMo 17 12 2
	X 3 CrNiMo 18 14 3	1.4435	1.4435	X 2 CrNiMo 18 14 3	Z 2 CND 17.13	316 S 12	X 2 CrNiMo 17 13 2
	X 2 CrNiMo 18 15 4	1.4438	1.4438	X 2 CrNiMo 18 16 4	Z 2 CND 19.15.4	317 S 12	X 2 CrNiMo 18 16

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
	[2304]		–				Martensite
SUH 31			SAE HNV 3				Martensite
			6F7				
SUS 440 A		S44002	440 A				Martensite
SUH 4		S65006	SAE HNV 6	sol. treated			PH
SUS 440 B	2327	S44003	440 B				Martensite
			6F2				
SKT 4		T61206	L6				
SKH 57							
		T12015	T15				
SKH 2		T12001	T1				
SKH 4 A		T12005	T5				
SKH 3		T12004	T4				
SKH 51		T11342	M42				
		T 11301	H41; M1				
	2782	T11307	M7				
		T11333	M33; M34				
SKH 9; SKH 51	2722	T 11302	M2				
SKH 53	2723		M35				
SKH 52; SKH 53		T11323	M3 Cl. 2				
SKH 55		T11323	M3				
		T11341	M41				
SKD 12	2260	T30102	A2				
SUS 440 C		S44004	440 C				Martensite
SKD 11		T30402	D2				
	2310						
			18 MAR 300				
SKD 1		T30403	D3				
SKD 2	2312						
		K 93120					
SKD 4							
SKD 5		T20821	H21				
SKD 7		T20810	H10				
SKD 6		T20811	H11				
SKD 61	2242	T20813	H13				
SC MnH 1	2183		A128 Grade A				
SUS 303	2346	S30300	303				Austenite
SUS 301	(2331)	S30100	301				Austenite
SUS 302	2331	S30200	302				Austenite
		S34800	348				Austenite
SUS 304	2333	S30400	304; 304 H				Austenite
SUS 304 H	2333	S30480	304 H				Austenite
SUS 305	2333	S30500	308; 305				Austenite
SUS 347	2338	S34700	347				Austenite
SCS 22			318				Austenite
SUH 310; SUS 310 S	2361	S31008	310 S				Austenite
SUS 321	2337	S32100	321; 321 H				Austenite
		S34700	347 H				Austenite
SUH 309		S30900	309				Austenite
SUS 304 L	2352	S30403	304 L				Austenite
SUS 316 L	2348	S31603	316 L				Austenite
SCS 16; SUS 316 L	2353	S 31603	316 L				Austenite
SUS 317 L	2367	S31703	317 L				Austenite

SMG

SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
9	X 2 CrNiN 18 10	1.4311	1.4311	X 2 CrNiN 19 11	Z 2 CN 18 .10 Az	304 S 62	X 2 CrNiN 18 11
	X 5 CrNiMo 17 13 3	1.4436	1.4436	X 5 CrNiMo 17 13 3	Z 6 CND 18.12.03	316 S 33	X 5 CrNiMo 17 13 2
	X 5 CrNi 19 10	1.4308	1.4308	X 6 CrNi 18 9	Z 6 CN 18.10M	304 C 15	
	X 6 CrNiMoNb 17 12 2	1.4580	1.4580	X 6 CrNiMoNb 17 12 2	Z 6 CNDNb 17.12	318 S 17	X 6 CrNiMoNb 17 12
	X 6 CrNiMoTi 17 12 2	1.4571	1.4571	X 6 CrNiMoTi 17 12 2	Z 6 CNDT 17.12	320 S 31	X 6 CrNiMoTi 17 12
10	X 15 CrNiSi 25 20	1.4841	1.4841	X 15 CrNiSi 25 20	Z 15 CNS 25.20	314 S 25	X 16 CrNiSi 25 20
	X 5 CrNiMo 17 12 2	1.4401	1.4401	X 5 CrNiMo 18 10	Z 3 CND 17.11.1	316 S 31	X 5 CrNiMo 17 12
11	X 1 CrNiMoN 20 18 7	1.4547	1.4547	X 1 CrNiMoN 20 18 7		X 1 CrNiMoN 20 18 7	X 1 CrNiMoN 20 18 7
	X 1 NiCrMoCuN 31 27 4	1.4563	1.4563	X 1 NiCrMoCuN 31 27 4			
	X 10 NiCrAlTi 32 20	1.4876	1.4876	X 10 NiCrAlTi 32 20	Incoloy 800	Z 10 NC 32.21	
	X 12 NiCrSi 35 16	1.4864	1.4864	X 12 NiCrSi 36 16	Z 20 NCS 33.16	NA 17	
	X 2 CrNiMoN 25 7 4	1.4410	1.4410	X 2 CrNiMoN 25 7 4	Z 3 CND 25.07 Az		X 2 CrNiMoN 25 7 4
	X 2 CrMoNiCuN 25 6 3	1.4507	1.4507	X 2 CrMoNiCuN 25 6 3			
	X 2 CrNiMoCuWN25 7 4	1.4501	1.4501	X 2 CrNiMoCuWN 25 7 4	Z 3 CND 25.06 Az		
	X 2 CrNiMoN 17 11 2	1.4406	1.4406	X 2 CrNiMoN 17 12 2	Z 2 CND 17.12 Az	316 S 61	X 2 CrNiMoN 17 12
	X 2 CrNiMoN 17 13 3	1.4429	1.4429	X 2 CrNiMoN 17 13 3	Z 2 CND 17.13 Az	316 S 62	X 2 CrNiMoN 17 13 3
	X 2 CrNiMoN 17 13 5	1.4439	1.4439	X 2 CrNiMoN 17 13 3	Z 3 CND 18.14.05 Az	(316 S 63)	
	X 2 CrNiMoN 22 5 3	1.4462	1.4462	X 2 CrNiMoN 22 5	Z 2 CND 22.05 Az	332 S 15	X 2 CrNiMoN 22 5
	X 2 CrNiMoN 22 5	1.4462	1.4462	X 2 CrNiMoN 22 5	Z 2 CND 22.05 Az	318 S 13	X 2 CrNiMoN 22 5
	X 1 CrNiMoN 25 22 8	1.4652	1.4652	X 2 CrNiMoN 25 22 7			
	X 2 CrNiN 23 4	1.4362	1.4362	X 2 CrNiN 23 4			
	X 2 NiCrMoCu 25 20 5	1.4539	1.4539	X 2 NiCrMoCu 25 20 5	Z 2 NCDU 25 20	904 S 13	
	X 1 NiCrMoCu 25 20 5	1.4539	1.4539	X 2 NiCrMoCu 25 20 5			
	X 4 CrNiCuNb 16 4	1.4540	1.4540	X 4 CrNiCuNb 16 4	Z 4 CNUNb 16.4 M		
	X 3 CrNiMo 27 5 2	1.4460	1.4460	X 4 CrNiMo 27 5 2	Z 3 CND 25.7 Az		X 3 CrNiMo 27 5 2
	X 5 CrNiCuNb 16 4	1.4548	1.4542	X 5 CrNiCuNb 17 4	Z 6 CNU 17.4		
12	EN-GJL-100	0.6100	0.6100	GG-10	Ft 10 D	Grade 100	G10
	EN-GJL-150	0.6150	0.6150	GG-15	Ft 15 D	Grade 150	G15
	EN-GJS-350-22	0.7033	0.7033	GGG-35.3	FGS 370-17	Grade 350/22	
	EN-GJS-400-15	0.7040	0.7040	GGG-40	FGS 400-12	Grade 420/12	GS 400-12
	EN-GJS-400-18	0.7043	0.7043	GGG-40.3	FGS-370-17	Grade 370/17	GSO 42/17
	EN-GJMB-350-10	0.8135		GTS-35-10	B 340/12	B 340/12	B 35-12
	EN-GJMB-450-6	0.8145		GTS-45-06	P 440/7	P 440/7	P 45-06
	EN-GJMB-550-4	0.8155		GTS-55-04	P 540/5	P 540/5	P 55-04
13	EN-GJL-200	0.6200	0.6200	GG-20	Ft 20 D	Grade 220	G20
	EN-GJL-250	0.6250	0.6250	GG-25	Ft 25 D	Grade 260	G25
	EN-GJS-500-7	0.7050	0.7050	GGG-50	FGS 500-7	Grade 500/7	GS 500-7
	EN-GJS-600-3	0.7060	0.7060	GGG-60	FGS 600-3	Grade 600/3	GS 600-3
	EN-GJSA-XNiCr20-2	0.7660	0.7660	GGG-NiCr 20 2	FGS Ni20 Cr2	Grade S2	
	EN-GJSA-XNiCr20-3	0.7661	0.7661	GGG-NiCr 20 3	FGS Ni20 Cr3	Grade S2B	
	EN-GJSA-XNiMn13-7	0.7652	0.7652	GGG-NiMn 13 7	FGS Ni13 Mn7	Grade S6	
	EN-GJLA-XNiCr 20-2	0.6660	0.6660	GGL-NiCr 20 2	FGL Ni20 Cr2	Grade F2	
	EN-GJLA-XNiCr20-3	0.6661	0.6661	GGL-NiCr 20 3	FGL Ni20 Cr3		
	EN-GJMB-600-3	0.8165		GTS-65-02	P 570/3	P 570/3	P 65-02
14	EN-GJL-300	0.6300	0.6300	GG-30	Ft 30 D	Grade 300	G30
	EN-GJS-700-2	0.7070	0.7070	GGG-70	FGS 700-2	Grade 700/2	GS 700-2
	EN-GJLA-XNiCuCr15-6-2	0.6655	0.6655	GGL-NiCuCr 15 6 2	FGL Ni15 Cu6 Cr2	Grade F1	
	EN-GJLA-XNiCuCr15-6-3	0.6656	0.6656	GGL-NiCuCr 15 6 3	FGL Ni15 Cu6 Cr3		
	EN-GJMB-700-2	0.8170		GTS-70-02	P 690/2	P 690/2	P 70-02
15	EN-GJL-350	0.6350	0.6350	GG-35	Ft 35 D	Grade 350	G35
	–	0.6040	0.6040	GG-40	Fgl 400	Grade 400	
	EN-GJS-800-2	0.7080	0.7080	GGG-80	FGS 800-2		GS 800-2
	EN-GJSA-XNi22	0.7670	0.7670	GGG-Ni 22	FGS Ni22		
	EN-GJSA-XNi35	0.7683	0.7683	GGG-Ni 35	FGS Ni35		
	–	0.7677	0.7677	GGG-NiCr 30 1	FGS Ni30 Cr1		
	EN-GJSA-XNiCr30-3	0.7676	0.7676	GGG-NiCr 30 3	FGS Ni30 Cr3	Grade S3	
	EN-GJSA-XNiCr35-3	0.7683	0.7683	GGG-NiCr 35 3	FGS Ni35 Cr3		
	EN-GJSA-XNiMn23-4	0.7673	0.7673	GGG-NiMn 23 4	FGS Ni23 Mn4	Grade S2M	
	EN-GJSA-XNiSiCr20-5-2	0.7665	0.7665	GGG-NiSiCr 20 5 2	FGS Ni20 Si5 Cr2		
	EN-GJSA-XNiSiCr30-5-5	0.7680	0.7680	GGG-NiSiCr 30 5 5	FGS Ni30 Si5 Cr5		
	EN-GJLA-XNiCr 30-3	0.6676	0.6676	GGL-NiCr 30 3	FGL Ni30 Cr3	Grade F3	
	EN-GJLA-XNiSiCr20-5-3	0.6667	0.6667	GGL-NiSiCr 20 5 3	FGL Ni20 Si5 Cr3		
	–	0.6680	0.6680	GGL-NiSiCr 30 5 5	FGL Ni30 Si5 Cr5		
16	AW-1200	Al99	3.0205	Al99	A-4/1200	1C/1200	
	AW-1050A	Al99.5	3.0255	Al99.5	A-5/1050A	1B/1050A	

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
SUS 304 LN	2371	S30453	304 LN				Austenite
SUS 316	2343	S31600	316				Austenite
SCS 13	2333		CF8				Austenite
		S31640	316 Cb				Austenite
SUS 316 Ti	2350		316 Ti				Austenite
SUH 310		S31000	314; 310				Austenite
SUS 316	2347	S31600	316				Austenite
	2778	S31254		254 SMO			Super austenite
		N08028		Sanicro 28			Super austenite
NCF 800		N08800		Alloy 800	sol. treated		PH
SUH 330		N08330	330	Incoloy DS			Austenite
	2328	S32750	F 53	SAF 2507			Super duplex
		S32550	255	Ferralium			Super duplex
		S32760	F 55	Zeron 100			Super duplex
SUS 316 LN		S 31653	316 LN				Austenite
SUS 316 LN	2375	S31653	316 LN				Austenite
(SUS 316LN)		(S31653)	(316LN)				Austenite
	2377	S31803	329 LN	SAF 2205			Duplex
SUS 329 J 3L	2377	S32205	318	SAF 2205			Duplex
		S32654		654 SMO			Super austenite
	2327	S32304	–	SAF 2304			Duplex
	2562	N08904	904L				Super austenite
	2564		CN7M				Super austenite
		S15500	XM-12	15-5-PH	sol. treated		PH
SUS 329 J 1	2324	S32900	329				Duplex
SCS 24; SUS 630		S17400	630	17-4-PH	sol. treated		Super austenite
FC 100	01 10-00	F11401	A18 20 B				GCI
FC 150	01 15-00	F11601	A48 25 B				GCI
FCD 350-22L	07 17-15						DCI
FCD 400-18L	07 17-02	F32800	60-40-18				DCI
	07 17-12	F32800	60-40-18				DCI
FCMB35-10	08 15-00	F22200	A47 32510				Martensite
PCMP45-06	08 52-00	F23130	A220 45008				Martensite
PCMP55-04	08 54-00	F24130	A220 60004				Martensite
FC 200	01 20-00	F12101	A48 30 B				GCI
FC 250	01 25-00	F12401	A48 35 B				GCI
FCD 500-7	07 27-02	F33800	A536 80-55-6				DCI
FCD 600-3	07 32-03	F34100	A476 80-60-03				DCI
		F43000	A436 Type D-2				Austenite
		F43001	A436 Type D-2B				Austenite
	07 72-00	–	–				Austenite
	05 23-00	F41002	A436 Type 2				Austenite
		F41003	A436Type 2b				Austenite
PCMP60-03	08 56-00	F24830	A220 70003				Martensite
FC 300	01 30-00	F13101	A48 45 B				GCI
FCD 700-2	07 37-01	F34800	A536 100-70-03				DCI
		F41000	A436 Type 1				Austenite
		F41001	A436 Type 1b				Austenite
PCMP70-02	08 62-00	F26230	A220 90001				Martensite
FC 350	01 35-00	F13502	A48 50 B				GCI
	01 40-00	F14102	A278 60 B				GCI
FCD 800-2		F36200	A536 120-90-02				Martensite
			A439 Type D-2B				Austenite
		F43006	A439 Type D-5				Austenite
		F43004	A436 Type D-3A				Austenite
		F43003	A436 Type D-3				Austenite
		F43007	A436 Type D-5B				Austenite
		F43010	A439 Type D-2M				Austenite
		–	Nicrosilal Spheronic				Austenite
		F43005	A439 Type D-4				Austenite
		F41004	A436 Type 3				Austenite
			Nicrosilal				Austenite
			A436 Type D-4				Austenite
A1200	4010	AA1200					
(A1050)	4007	AA1050A					

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SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
16	AW-1070	Al99.7	3.0275	Al99.7	A-7/1070		
	AW-1080	Al99.8	3.0285	Al99.8	A-8/1080	1A	
			3.1305	AlCu2.5Mg0.5	A-U2G	2L69	
	AW-2011	AlCuBiPb	3.1655	AlCuBiPb	A-U5PbBi/2011	FC1/2011	
	AW-2024	AlCuMg1	3.1325	AlCuMg1	A-U4G/2024	H14	
			3.1355	AlCuMg2	A-U4G1	2L97/98	
	AW-2014	AlCuSiMn	3.1255	AlCuSiMn	A-U4SG/2014	H15/2014	
	AW-5005A	AlMg1	3.3315	AlMg1	A-G0.6	N41/5005	
			3.3316	AlMg1.5	A-G1.5		
	AW-6061	AlMg1SiCu	3.3211	AlMg1SiCu	(6061)	H20	
	AW-5052	AlMg2.5	3.3523	AlMg2.5	A-G2.5C/5052	(N4)	
	AW-5454	AlMg2.7Mn	3.3537	AlMg2.7Mn	A-G2.5MC/5454	N51/5454	
	AW-5251	AlMg2Mn0.3	3.3525	AlMg2Mn0.3	A-G2M	N4 /5251	
	AW-5049	AlMg2Mn0.8	3.3527	AlMg2Mn0.8	A-G2Mn0.8		
	AW-5754	AlMg3	3.3535	AlMg3	A-G3M		
			3.3345	AlMg4.5			
	AW-5083	AlMg4.5Mn	3.3547	AlMg4.5Mn	A-G4.5MC	N8/5083	
	AW-5086	AlMg4Mn	3.3545	AlMg4Mn	A-G4MC/5086	(N5/6)	
	AW-6060	AlMgSi0.5	3.3206	AlMgSi0.5	A-GS/6060	(H9)/(6060)	
	AW-6063	AlMgSi0.7	3.3210	AlMgSi0.7	A-GSUC/6061	(H10)	
	AW-6082	AlMgSi1	3.2315	AlMgSi1	A-SGM0.7/6082	H30/6082	
			3.0615	AlMgSiPb	A-SGPb		
	AW-3105	AlMn0.5Mg0.5	3.0505	AlMn0.5Mg0.5		N31	
	AW-3005	AlMn0.5Mg0.5	3.0525	AlMn0.5Mg0.5	A-MG0.5/3005		
	AW-3103	AlMn1	3.0515	AlMn1		N3/3103	
	AW-3003	AlMn1Cu	3.0517	AlMn1Cu	A-M1/3003		
	AW-3004	AlMn1Mg1	3.0526	AlMn1Mg1	A-M1G/3004		
	AW-7020	AlZn4.5Mg1	3.4335	AlZn4.5Mg1	A-Z5G/7020	H17/7020	
			3.4345	AlZnMgCu0.5	A-Z4GU		
	AW-7075		3.4365	AlZnMgCu1.5	A-Z5GU/7075	2L95/96	
	AC-21100	AlCu4Ti	3.1841	G-AlCu4Ti			
	AC-21000	AlCu4TiMg	3.1371	G-AlCu4TiMg	A-U5GT	2L91/92	
	AC-51100	AlMg3	3.3541	G-AlMg3	A-G3T		
			3.3241	G-AlMg3Si			
	AC-51400	AlMg5(Si)	3.3261	G-AlMg5			
	AC-51400	AlMg5	3.3555	G-AlMg5		LM5	
	AC-51200	AlMg9	3.3292	G-AlMg9			
	AC-43400	AlSi10Mg(Fe)	3.2381	G-AlSi10Mg	A-S10G	LM9	
	AC-42000		3.2341	G-AlSi5Mg	A-S7G	LM25	
	AC-45000	AlSi6Cu4	3.2151	G-AlSi6Cu4			
	AC-42100	AlSi7Mg	3.2371	G-AlSi7Mg	A-S7GO3	2L99	
	AC-46200	AlSi8Cu3(Si)	3.2161	G-AlSi8Cu3			
	AC-43200	AlSi9Mg	3.2373	G-AlSi9Mg	A-S10G		
			3.5106	G-MgAg3Se2Zr1			
	MG-P-62	MgAl3Zn	3.5314	G-MgAl3Zn	G-A3-Z1	MAG-E-111	
	MC 21230	MgAl6Mn	3.5662	G-MgAl6Mn			
	MG-P-63	MgAl6Zn	3.5612	G-MgAl6Zn	G-A6-Z1	MAG-E-121	
	MG-P-61	MgAl8Zn	3.5812	G-MgAl8Zn	G-A9	MAG1-M	
	MC 21110	MgAl8Zn1	3.5812	G-MgAl8Zn1	G-A92	A82	
	MC 21120	MgAl9Zn1	3.5912	G-MgAl9Zn1	G-A92	MAG3	
			3.5200	G-MgMn2	G-M2	MAG-E-101	
	MB 65110	MgSe3Zn2Zr1	3.5103	G-MgSe3Zn2Zr1	ZRE1	MAG6-TE	
			3.5105	G-MgTh3Zn2Zr1			
17	AC-43200	AlSi10Mg(Cu)	3.2383	G-AlSi10Mg(Cu)			
	AC-44200	AlSi12	3.2382	GD-AlSi12			
	AC-46100	AlSi11Cu2(Fe)				LM9	
	AC-47100	AlSi12Cu1(Fe)					
		AlSi17Cu5					
18	CW004A			Cu			
	CW013A	CuAg0.1	2.1203	CuAg0.1		Cu-Ag-4	
	CC331G		2.0940.01	CuAl10Fe	CuAl10Fe	AB1	
	CC333G-GZ			CuAl10Fe5Ni5			
	CC333G		2.0975.01	CuAl10Ni	CuAl10Ni5Fe5	AB2	
	CW307G	CuAl10Ni5Fe4	2.0966	CuAl10Ni5Fe4	CuAl10Ni	CA104	
	CW308G	CuAl11Ni6Fe6	2.0978	CuAl11Ni6Fe5			

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
	4005	AA1070A					
	4004	AA1080A					
		AA2117					
A2011	4355	AA2011					
A2017		AA2017A					
		AA2024					
	4338	AA2014					
	4106	AA5005A					
		AA5050B					
A6061		AA6061					
A5052	4120	AA5052					
A5454		AA5454					
		AA5251					
	4115	AA5049					
	4125	AA5754					
A5082		AA5082					
	4140	AA5083					
		AA5086					
	4103	AA6060					
(A6063	4104,4107	AA6005					
	4212	AA6082					
		AA6012					
		AA3105					
–		AA3005					
	4054	AA3103					
A3003		AA3003					
–		AA3004					
	4425	AA7020					
		AA7022					
A7075		AA7075					
	4337	A02040	204				
		A05140	5140				
			5056A				
	4163						
	4253	A13600	B85				
	4244		B26				
	4245	A13560					
	4251		A380				
			359,2				
			4418				
		AZ31B					
	4633	AM60A					
		AZ61A					
		AZ80A					
	4637	AZ81A					
	4635	AZ91A/B	4437				
		M1A					
		B80	4442				
		B80					
			A413.2				
ADC12			A384.0				
		AA384					
ADC14			B390.0				
	5015						
	5030	C11600					
	5710	C95200	CA952				
	5716	C95500	CA955				
C6301		C62730					

SMG

SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
18			2.0916	CuAl5			
	CW300G	CuAl5As	2.0918	CuAl5As			
			2.0932	CuAl8 Fe3			
			2.1291	CuCr			
	CW107C	CuFe2P	2.1310	CuFe2P			
	CW109C	CuNi1Si	2.0853	CuNi1.5Si			
		CuNi10Fe1Mn	2.0872	CuNi10Fe1Mn	CuNi10Fe1Mn	CN102	
				CuNi10Zn45			
	CW406J	CuNi12Zn30Pb1	2.0780	CuNi12Zn30Pb1			
		CW408J	2.0790	CuNi18Zn19Pb	CuNi18Zn19Pb1		
	CW408J	CuNi18Zn19Pb1	2.0790	CuNi18Zn19Pb1	CuNi18Zn19Pb1		
	CW409J	CuNi18Zn20	2.0740	CuNi18Zn20	CuNi18Zn20	NS106	
	CW410J	CuNi18Zn27	2.0742	CuNi18Zn27		NS107	
			2.0822	CuNi20			
			2.0830	CuNi25	CuNi25	CN105	
			2.0835	CuNi30			CuNi30
			2.0883	CuNi30Fe2Mn2			
				CuNi30FeMn			
	CW354H	CuNi30Mn1Fe	2.0882	CuNi30Mn1Fe	CuNi30Mn1Fe	CN107	
	CW112C	CuNi3Si	2.0857	CuNi3Si			
			2.0842	CuNi44Mn1	CuNi44Mn		
				CuNi5Fe1Mn	CuNi5Fe1Mn		
	CW351H	CuNi9Sn2	2.0875	CuNi9Sn2			
	CW352H		2.1176	CuPb10Sn	CuSn10Pb10	LB2	
	CC496K-GZ		2.1183	CuPb15Sn			
	CW113C	CuPb1P	2.1160	CuPb1P			
			2.1189	CuPb20Sn			
	CC480K		2.1050.01	CuSn10	CuSn10	CT1	
			2.1087	CuSn10Zn			
	CC483K		2.1051.01	CuSn12	CuSn12	PB2	
				CuSn14	CuSn14		
	CW450K	CuSn4	2.1016	CuSn4	CuSn4P	PB101	
		CW451K		CuSn5			
	CW452K	CuSn6	2.1020	CuSn6	CuSn6	PB103	
			2.1080	CuSn6Zn6			
				CuSn7			CuSn7
	CC493K-GZ		2.1090.03	CuSn7ZnPb			
	CW453K	CuSn8	2.1030	CuSn8	CuSn8P	PB104	
	CW501L	CuZn10	2.0230	CuZn10	CuZn10	CZ101	
	CW502L	CuZn15	2.0240	CuZn15	CuZn15	CZ102	
	CW503L	CuZn20	2.0250	CuZn20		CZ103	
	CW702R	CuZn20Al2	2.0460	CuZn20Al2	CuZn22Al2	CZ110	
				CuZn25Al15			
	CW504L	CuZn28	2.0261	CuZn28		CZ105	
	CW706R	CuZn28Sn1	2.0470	CuZn28Sn1	CuZn29Sn1		
	CW505L	CuZn30	2.0265	CuZn30	CuZn30	CZ106	
				CuZn30AlFeMn	CuZn30AlFeMn		
	CW708R	CuZn31Si1	2.0490	CuZn31Si1			
	CW506L	CuZn33	2.0280	CuZn33		CZ107	
	CC765S		2.0592.01	CuZn35Al1	CuZn30AlFeMn	HTB1	
	CW710R	CuZn35Ni2	2.0540	CuZn35Ni2			
	CW507L	CuZn36	2.0335	CuZn36	CuZn36	CZ108	
	CW601N	CuZn35Pb2	2.0331	CuZn36Pb1.5	CuZn35Pb2	CZ131	
	CW602N	CuZn36Pb3	2.0375	CuZn36Pb3	CuZn36Pb3	CZ124	
	CW508L	CuZn37	2.0321	CuZn37	CuZn37	CZ108	
	CW604N	CuZn37Pb0.5	2.0332	CuZn37Pb0.5		CZ118	
	CW607N	CuZn38Pb1.5	2.0371	CuZn38Pb1.5	(CuZn38Pb2)	CZ119	
	CW717R	CuZn38Sn1	2.0530	CuZn38Sn1			
	CW715R	CuZn38SnAl	2.0525	CuZn38SnAl			
				CuZn39AlFeMn			
	CW610N	CuZn39Pb0.5	2.0372	CuZn39Pb0.5	CuZn39Pb0.8	CZ123	
	CW612N	CuZn39Pb2	2.0380	CuZn39Pb2		CZ128	
	CW614N	CuZn39Pb3	2.0401	CuZn39Pb3	CuZn39Pb3	CZ121	
	CW509	CuZn40	2.0360	CuZn40	CuZn40	CZ109	
	CW713R		2.0550	CuZn40Al2			

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
		C60800					
C6140							
		C18400					
		C19400					
	5667	C70600					
		C79300					
		C76300					
		C76300					
C7451		C75200					
		C77000					
		C71300					
		C71580					
	5682	C70600					
		C70250					
		C72150					
		C72500					
	5640	C93700	CA937				
		C93800					
		C19000					
		C94100					
	5443	C90700					
	5458	C90500					
	5465		CA907				
	5475	C91000					
C5111		C51100					
		C51000					
C5191	5428	C51900					
		C93200					
		C83600					
C5210		C52100					
C2200		C22000					
C2300	5112	C23000					
C2400		C24000					
	5217	C68700					
		C86300					
C4430		C25600					
	5220	C44300					
C2600	5122	C26000					
C2680		C26800					
	5256	C96500	CA865				
C2720		C27200					
		C34200					
		C36000					
	5150	C27200					
		C33500					
	5165	C35300					
		C46400					
		C47000					
		C36500					
		C37700					
	5170	C38500					
C2800		C28000					
		C67410					

SMG

SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
18	CW723R	CuZn40Mn1	2.0572	CuZn40Mn1			
	CW720R	CuZn40Mn1Pb	2.0580	CuZn40Mn1Pb		CZ136	
	CW612N	CuZn40Pb2	2.0402	CuZn40Pb2	CuZn39Pb2	CZ120	
	CW622N	CuZn44Pb2	2.0410	CuZn44Pb2		CZ104	
	CW500L	CuZn5	2.0220	CuZn5		CZ125	
19							
	X2NiCrAlTi3220		1.4876				
20							
21							
	NiMo30		2.4810				
	NiMo30		2.4810				
			2.4602				
	NiMo16Cr15W		2.4819				
	NiMo16Cr16Ti		2.4610				
			2.4619				
	NiCr21Fe18Mo9						
			2.4665				

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
	5168	C37800					
	5272	C68700					
C2100		C21000					
				AMPCO 15			
				AMPCO 18			
				AMPCO 18.136			
				AMPCO 18.22			
				AMPCO 18.23			
				AMPCO 21			
				AMPCO 22			
				AMPCO 25			
				AMPCO 26			
				AMPCO 45			
				AMPCO 483			
				AMPCO 642			
				AMPCO 673			
				AMPCO 674			
				AMPCO 8			
				AMPCO 863			
				AMPCO M4			
		S66286		A286	precip. hardened		
		S35000		AM350		cast	
		S35000		AM350	heat treated		
		S35500		AM355			
		S45500		Custom 455			
				Discalloy			
		N08800		Incoloy 800			
				Incoloy 801			
		N19909		Incoloy 909			
				Lapelloy			
				M-308			
		R30155		N-155		bar, forge, ring	
		R30155		N-155			
				Air Resist 13			
				FSX-414			
				H531			
				Haynes 188		bar, forge, ring	
				Haynes 188		tube	
				Haynes 25			
				Mar-M-302			
				Mar-M-509			
		R30195		MP159			
				MP35N			
				Stellite 21			
				Stellite 30			
				Stellite 31			
				W152			
				W162			
				Astroloy		all forms	
				GTD222			
		N10665		Hastelloy B-2			
		N10002		Hastelloy C		plate	
		N10002		Hastelloy C		cast	
				Hastelloy C-22			
		N10276		Hastelloy C-276			
		N06455		Hastelloy C-4			
		N06007		Hastelloy G			
		N06985		Hastelloy G-3			
		N10003		Hastelloy N		bar, forge, ring	
		N10003		Hastelloy N		cast	
		N06635		Hastelloy S		all forms	
		N10004		Hastelloy W			
		N06002		Hastelloy X		all forms	

SMG

SMG	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI
21							
	NiCr15Fe		2.4816				
			2.4851				
	NiCr22Mo9Nb		2.4856				
	NiCr22Mo9Nb		2.4856				
	NiCr22Mo9Nb		2.4856				
	NiFe38Cr16Nb						
	NiCr19Fe19Nb5Mo3		2.4668				
	NiCr19Fe19Nb5Mo3		2.4668				
	NiCr19Fe19Nb5Mo3		2.4668				
			2.4669				
			2.4669				
	Ni99.6		2.4061				
			2.4634				
			2.4636				
			2.4650				
	NiCr20TiAl		2.4631				
			2.4632				
			2.4662				
			ppm				
	NiCr19Co18Mo4Ti3Al3						
	NiCr20Co13Mo4Ti3Al		2.4654				
	NiCr20Co13Mo4Ti3Al		2.4654				
22			3.7024				
			3.7024				
				TiV10Fe2Al3			
	TiCu2		3.7124				
	TiAl5Sn2.5						
	TiAl5Sn2.5						
	TiAl5Sn2.5						
	TiAl6V4		3.7164				
	TiAl6V4		3.7164				
	TiAl6V4						
	TiAl6V4		3.7164				
	TiAl6V4		3.7164				

SMG

JIS	SS	UNS	AISI/ASTM	Misc.Brands	Condition	Form	Structure
				IN 100			
		N06600		Inconel 600		all forms	
		N06601		Inconel 601		all forms	
		N06625		Inconel 625		bar, forge, ring	
		N06625		Inconel 625		tube	
		N06625		Inconel 625		cast	
		N09706		Inconel 706			
				Inconel 708		bar, forge, ring	
		N07713		Inconel 713			
				Inconel 713LC			
		N07718		Inconel 718		bar, forge, ring	
		N07718		Inconel 718		tube	
		N07718		Inconel 718		cast	
				Inconel 901			
		N07750		Inconel X-750	sol. treated		
		N07750		Inconel X-750	precip. hardened		
				Mar-M-200			
				Mar-M-247		all forms	
				Mod. IN 100			
				Mod. IN 792			
		N02205		Nickel 201			
				Nimonic 101			
				Nimonic 105			
				Nimonic 115			
		N07263		Nimonic 263			
		N07080		Nimonic 80A			
				Nimonic 81			
				Nimonic 86			
		N07090		Nimonic 90			
		N09901		Nimonic 901			
				Nimonic 91			
				René 95			
		N03260		TD Nickel			
		N07500		Udimet 500			
				Udimet 520			
				Udimet 700			
				Udimet 720			
		N07001		Waspalloy		bar, forge	
		N07001		Waspalloy		cast	
				Ti (pure)		pure - tube	Ti (α)
			AMS 4900, -01, -21	Ti (pure) (grd 1-4)		pure - plate, bar, forge	Ti (α)
			AMS 4986	Ti 10V-2Fe-3Al			Ti (β)
		R58210	ASTM Grade 21	Ti 15Mo-3Nb-3Al-0.2Si			Ti (β)
		R58650	AMS 4995	Ti 17			Ti (a+b)
				Ti 2Cu			Ti (α)
		R56320	AMS 4943	Ti 3Al-2.5V	annealed	tube	Ti (α+β)
		R56320	AMS 4943	Ti 3Al-2.5V		bar, forge	Ti (α+β)
		R54520	AMS 4910	Ti 5Al-2.5Sn	ELI		Ti (α)
		R54521	AMS 4909	Ti 5Al-2.5Sn			Ti (α)
		R54520	AMS 4910	Ti 5Al-2.5Sn	annealed		Ti (α)
		R54620	AMS 4919	Ti 6-2-4-2	annealed		Ti (α)
		R54621	AMS 4919	Ti 6-2-4-2	precip. hardened		Ti (α)
		R56260	AMS 4981	Ti 6-2-4-6	annealied		Ti (α+β)
		R56260	AMS 4981	Ti 6-2-4-6	precip. hardened		Ti (α+β)
		R56400	AMS 4920	Ti 6Al-4V	annealed		Ti (α+β)
		R56400	AMS 4920, Grd 5	Ti 6Al-4V	annealed		Ti (α+β)
		R56401	AMS 4981	Ti 6Al-4V	ELI	ELI	Ti (α+β)
		R56400	AMS 4920	Ti 6Al-4V		extrusion	Ti (α+β)
		R56400	AMS 4920	Ti 6Al-4V	precip. hardened		Ti (α+β)

Workpiece materials – Machinability factor, SMG (ver. 1)

Superalloys and titanium alloys

Decreasing machinability factor indicates increasing machining difficulty. If SecoCut is not available, use the machinability factors to get the recommended cutting speed for any specific alloy by using it in combination with the table on page X and X.

SMG		Alloy	Form/Condition	Machin-ability factor
19	Fe-based superalloys	A286	(precip. hardened)	0,80
		AM350	(cast)	0,90
		AM355		0,80
		Custom 455		1,00
		Discalloy		**1,00**
		IN 800		0,80
		IN 801		1,00
		Incoloy 909		0,80
		Lapelloy		1,25
		M308		1,00
		N 155	(bar, forge, ring)	1,00
		N 155		0,80
20	Co-based superalloys	Air resist 13		0,25
		FSX-414		1,00
		H531		0,38
		Haynes 188	(bar, forge, ring)	0,75
		Haynes 188	(tube)	0,88
		Haynes 25		0,75
		Mar-M-302		1,00
		Mar-M-509		0,75
		MP159		1,00
		MP35N		1,00
		Stellite 21		**1,00**
		Stellite 30		1,00
		Stellite 31		1,00
		W152		1,00
		W162		0,88
21	Ni-based superalloys	Astroloy	(all forms)	1,00
		Hastelloy B-2		1,43
		Hastelloy C	(plate)	1,79
		Hastelloy C	(cast)	1,43
		Hastelloy C-22		1,43
		Hastelloy C-276		1,29
		Hastelloy C-4		1,29
		Hastelloy G		1,29
		Hastelloy G-3		1,29
		Hastelloy N	(bar, forge, ring)	1,43
		Hastelloy N	(cast)	1,29
		Hastelloy S	(all forms)	1,79
		Hastelloy W		1,29
		Hastelloy X	(all forms)	1,29
		IN 100		0,57
		Inconel 600	(all forms)	1,43
		Inconel 601	(all forms)	1,43
		Inconel 625	(bar, forge, ring)	1,14
		Inconel 625	(tube)	1,29
		Inconel 625	(cast)	1,71
		Inconel 706		1,43
		Inconel 708	(bar, forge, ring)	1,29

SMG		Alloy	Form/Condition	Machin-ability factor
21	Ni-based superalloys	Inconel 713		1,07
		Inconel 713LC		1,14
		Inconel 718	**(bar, forge, ring)**	**1,00**
		Inconel 718	(tube)	1,14
		Inconel 718	(cast)	1,14
		Inconel 901		1,14
		Inconel X750	(sol. treated)	1,43
		Inconel X750	(precip. hardened)	1,00
		Mar-M-200		0,57
		Mar-M-247	(all forms)	0,71
		Mod. IN 100		0,57
		Mod. IN 792		0,86
		Nickel 201		4,29
		Nimonic 101		0,71
		Nimonic 105		1,29
		Nimonic 115		1,00
		Nimonic 263		1,14
		Nimonic 80A		1,29
		Nimonic 81		1,14
		Nimonic 86		1,43
		Nimonic 90		0,71
		Nimonic 901		1,29
		Nimonic 91		0,71
		René 95		0,43
		TD Nickel		1,00
		Udimet 500		0,86
		Udimet 520		0,86
		Udimet 700		0,86
		Udimet 720		0,86
		Waspalloy	(bar, forge)	1,14
		Waspalloy	(cast)	1,00
22	Titanium alloys	Ti 6Al-4V	(annealed casting)	1,09
		Ti 6Al-4V	(extrusion)	1,09
		Ti 6Al-4V	**(annealed)**	**1,00**
		Ti 6Al-4V	(ELI)	1,00
		Ti 6Al-4V	(precip. hardened)	0,94
		Ti	(pure) - (tube)	1,88
		Ti 3Al-2.5V	(annealed tube)	1,88
		Ti	(pure) - (plate, bar, forge)	1,41
		Ti 5Al-2.5Sn	(ELI)	1,25
		Ti 5Al-2.5Sn		1,09
		Ti 5Al-2.5Sn	(annealed)	1,09
		Ti 6-2-4-6	(annealed)	1,09
		Ti 2Cu		0,94
		Ti 6-2-4-2	(annealed)	0,94
		Ti 3Al-2.5V	(bar, forge)	0,78
		Ti 6-2-4-2	(precip. hardened)	0,78
		Ti 6-2-4-6	(precip. hardened)	0,78
		Ti 17		0,56

Note that the machinability factors refer to the representative materials for each SMG 19-22, i.e. the machinability factors should be used to recalculate the given cutting speed for the representative material when SecoCut is not available.

Cemented carbide inserts and insert carriers

Cemented carbide inserts and cemented carbide insert carriers from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

These products meet all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Regrinding:
Wet or dry grinding can produce potentially hazardous dusts or mists that can irritate skin, eyes, nose, throat and result in lung damage or disease. To avoid injury use proper safety precautions and protective equipment.

Disposal:
Seco Tools will buy back used inserts and solid carbide tools for recycling. Inserts and solid carbide tools should be separated from other metal waste (steel, aluminium, copper etc).
All packing material is fully recyclable.

CBN and PCD inserts

Inserts from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

This product meets all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Regrinding:
Wet or dry grinding can produce potentially hazardous dusts or mists that can irritate skin, eyes, nose, throat and result in lung damage or disease. To avoid injury use proper safety precautions and protective equipment.

Disposal:
Seco Tools will buy back used CBN- or PCD-tipped inserts for recycling. Inserts should be separated from other metal waste (steel, aluminium, copper etc). Solid CBN-inserts may be discarded as landfill waste.
All packing material is fully recyclable.

Black oxide insert carriers

Insert carriers from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

This product meets all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Disposal:
Used insert carriers may be sent for recycling together with ordinary steel waste (swarf and discarded steel scrap) for recycling.
All packing material is fully recyclable.

Cermet inserts

Inserts from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

This product meets all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Cermet grade C15M inserts do contain Nickel and will leach Nickel when in contact with the skin. Amount of leaching is higher than specified in norm SS-EN 1811 Reference test method for release of nickel from products intended to come into direct and prolonged contact with the skin. These norms are intended for products that are in direct and prolonged contact with the skin and are therefore not directly applicable for cermet inserts. Persons with known allergic reactions to nickel are advised to wear protective gloves when handling cermet inserts.

Regrinding:
Wet or dry grinding can produce potentially hazardous dusts or mists that can irritate skin, eyes, nose, throat and result in lung damage or disease. To avoid injury use proper safety precautions and protective equipment.

Disposal:
Used inserts may be recycled. Inserts should be separated from other metal waste (steel, aluminium, copper, etc) including cemented carbide inserts.
All packing material is fully recyclable.

Nickel coated insert carriers

Insert carriers from Seco Tools are not included in the product range intended for the following requirements. Nevertheless Seco Tools can make the following declaration.

This product meets all requirements in RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment), WEEE (Waste Electrical & Electronic Equipment) and ELV (End of Life Vehicles) requirements.

Products do not contain mercury, lead, hexavalent chromium, cadmium, CFC, HCFC, flame retardants or solvents in concentrations that exceed specifications in the regulations.

Insert carriers do contain Nickel and will leach Nickel when in contact with the skin. Amount of leaching is higher then norm SS-EN 1811 Reference test method for release of nickel from products intended to come into direct and prolonged contact with the skin. These norms are intended for products that are in direct and prolonged contact with the skin and are therefore not directly applicable for insert carriers. Persons with known allergic reactions to nickel are advised to wear protective gloves when handling Nickel coated insert carriers.

As Ni leaching is regarded as the highest priority within our environmental portfolio, Seco Tools will continue to focus on solving this issue and we expect to implement a new process during 2009 that will meet the demand according to SS-EN 1811.

Disposal:
Used tools maybe sent for recycling together with ordinary steel waste (swarf and discarded steel scrap) for recycling.
All packing material is fully recyclable.

Intentionally added alloying elements

Grade	Cemented carbide										Coating					
	W	Ti	Ta	Nb	Co	Cr	Ni	Mo	C	N	Ti	Al	C	N	O	Si
CP200	■				■	■			■		■	■		■		
CP300	■	■	■	■	■				■		■	■		■		
CP500	■				■	■			■		■	■		■		
CP600	■				■	■			■		■	■		■		
C15M	■	■	■	■	■		■	■	■	■						
DP2000	■		■	■	■				■		■	■	■	■	■	
F15M	■				■	■			■		■	■		■		
F25M	■	■	■	■	■				■		■	■		■		
F30M	■				■	■			■		■	■		■		
F40M	■				■	■			■		■	■		■		
HX	■		■		■				■							
H15	■				■	■			■							
H25	■				■	■			■							
KX	■				■	■			■							
MH1000	■				■	■			■		■	■		■		
MK1500	■		■		■				■		■	■	■	■	■	
MK2000	■		■		■				■		■	■		■		
MK3000	■		■	■	■				■		■	■	■	■	■	
MM4500	■				■	■			■		■	■	■	■	■	
MP1500	■		■	■	■				■		■	■	■	■	■	
MP2500	■		■	■	■				■		■	■	■	■	■	
MP3000	■				■	■			■		■	■		■		
MS2500	■		■	■	■				■		■	■	■	■	■	
TGP25	■	■	■	■	■				■		■	■	■	■	■	
TGP35	■		■	■	■				■		■	■	■	■	■	
TGP45	■		■	■	■				■		■	■	■	■	■	
TH1000	■				■	■			■		■	■		■		■
TH1500	■				■	■			■		■	■	■	■	■	
TK150	■		■		■				■		■	■	■	■	■	
TK1000	■		■	■	■				■		■	■	■	■	■	
TK1001	■				■	■			■		■	■	■	■	■	
TK2000	■	■	■	■	■				■	■	■	■	■	■	■	
TK2001	■		■		■	■			■		■	■	■	■	■	
TM2000	■	■	■	■	■				■	■	■	■	■	■	■	
TM4000	■	■	■	■	■				■	■	■	■	■	■	■	
TP0500	■	■	■	■	■				■		■	■	■	■	■	
TP1020	■	■	■	■	■				■	■						
TP1030	■	■	■	■	■				■	■	■	■		■		■
TP1500	■	■	■	■	■				■	■	■	■	■	■	■	
TP200	■	■	■	■	■				■	■	■	■	■	■	■	
TP2500	■	■	■	■	■				■	■	■	■	■	■	■	
TP40	■		■	■	■				■		■		■	■		
TS2000	■				■	■			■		■	■		■		
TS2500	■		■		■				■		■	■		■		
T1000D	■	■	■	■	■				■	■	■	■	■	■	■	
T2000D	■		■	■	■				■		■	■	■	■	■	
T25M	■		■	■	■				■		■		■	■		
T250D	■				■	■			■		■	■		■		
T3000D	■		■	■	■				■		■	■	■	■	■	
T350M	■		■	■	■				■		■	■	■	■	■	
T400D	■				■	■			■		■	■		■		
T60M	■	■	■	■	■				■		■	■		■		
883	■		■		■				■							
890	■				■	■			■							