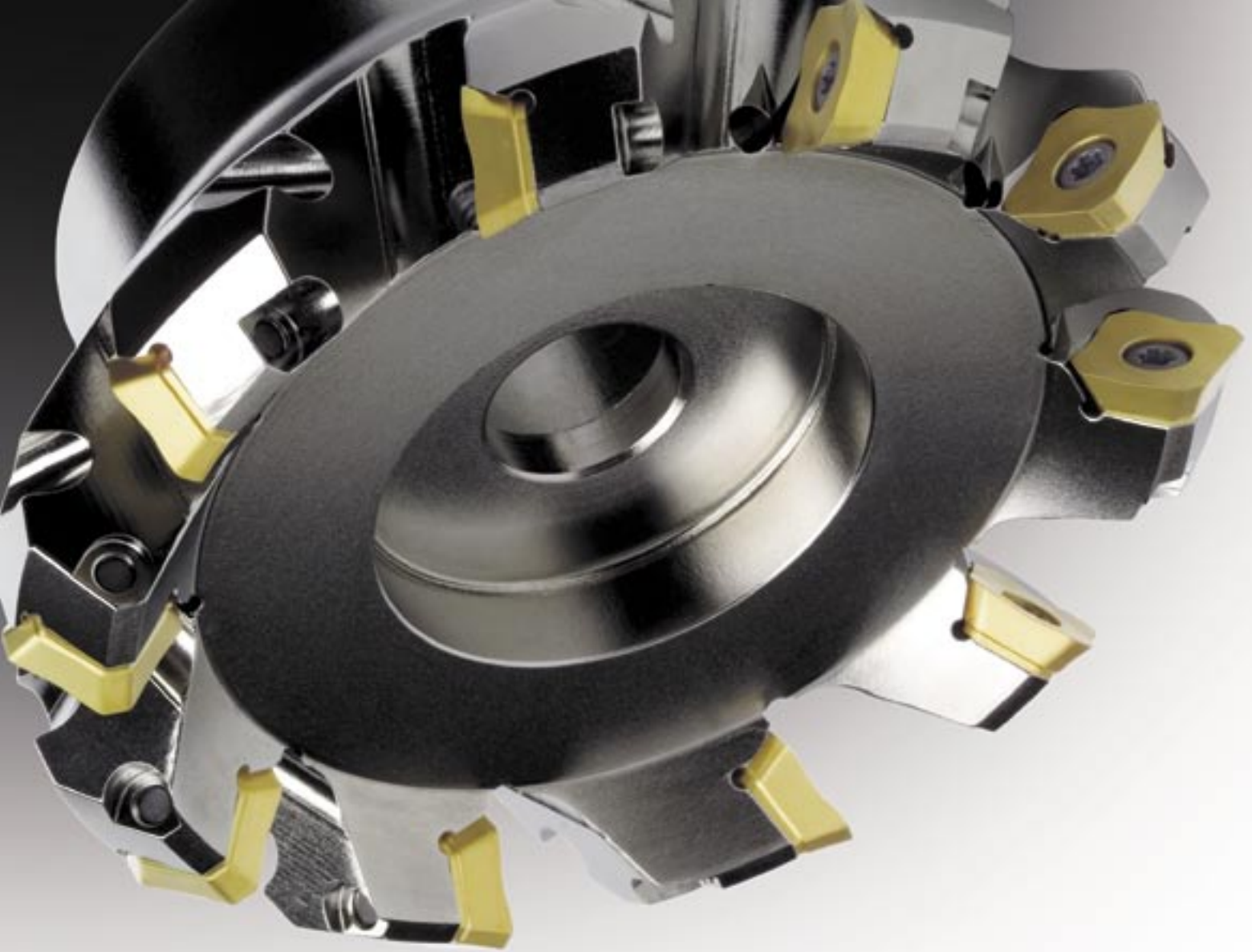


MAKE IT EASY



Positively Simple





NEED TO SIMPLIFY YOUR FACE MILLING OPERATIONS?

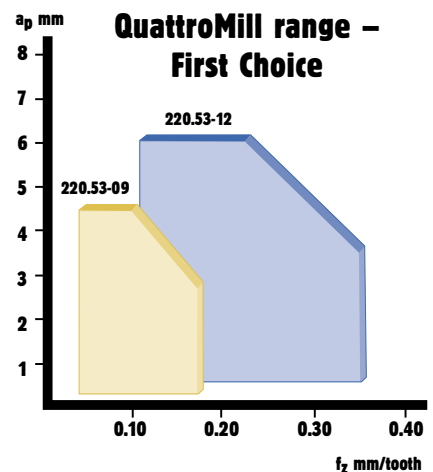
MAKE IT EASY WITH

QuattroMill™

The first choice for Face milling

QuattroMill is more than a general-purpose facemill. It is the industry's new *first choice* for the full range of face milling applications and materials. Its super positive geometry, up to 35° effective rake angle, maximizes your machine tool's available power, allowing you to do more with less.

Strong, square inserts give you depth-of-cut capabilities up to 6 mm and the confidence to tackle your challenging applications. Add to that, the latest cutter body design and a new level of precision manufacturing, and your face milling applications just got *positively simple*.



Not just another pretty facemill.

Looks aren't everything, but in this case, they are quite important. QuattroMill is manufactured using the latest multi-axis CNC machines and processes for exacting precision. Pockets are perfectly positioned and feature a 10° positive angle with the closest manufacturing tolerances in the industry. All new cutter bodies range from 20 mm to 200 mm and feature an extremely hard coating (greater than 700 Vickers) to further enhance the life of the cutter body. Through-coolant is also standard on cutters up to 125 mm.



**How sure are we that this facemill can make it easy?
Super positive!!!**

The 10° positive angle in the cutter body pocket is complemented by seven insert geometries, from flattop to the most free-cutting +25° geometry. This, in combination with a choice of seven carbide grades,

including the new T200M and T350M, allows you to machine steel, stainless steel, cast iron and even high-temperature alloy materials.



IT'S ALL ABOUT PRODUCTIVITY

The name of the game is to keep you 'in cut'. Your productivity depends on things like reduced cycle times, quick insert indexing, higher metal removal and consistent part quality. These issues were central to the design of QuattroMill.

Fewer spare parts and extra thick inserts with integrated anvils, means that you won't have to fumble with an insert seat. Furthermore, all QuattroMill inserts are manufactured with a through-hole to accept a centre-lock TorxPlus™ screw, which we made stronger and longer so it doesn't need to be removed when indexing to the next cutting edge.



That means that time is saved between parts, and indexing can take place easily, even on the machine.

QuattroMill's super positive, free-cutting design gives you two other options to boost your productivity: Increase the depth of cut, or turn up the feed rate. Because QuattroMill is so free cutting, you can take full advantage of the available power and get more from your machine.

The standard insert produces a very good surface finish. For even better finishes, use the wiper insert. The large wiper flat makes it possible to increase the feed rate and still get a very high quality finish.

QuattroMill: The easiest way to increase productivity

In the tests below, QuattroMill beat the competition easily. In both cases, Seco's milling grade F40M was used in a 12mm insert to provide a 60% and

50% (respectively) increase over competitive 45° lead facemills.

+60%		
Test Results		
Workpiece material: Alloyed steel		
	SECO	Competitor
Cutter	220.53-0063-12-5A	45° lead Facemill
Insert	SEM1204AFTN-ME12	Square insert
Grade	F40M	-
Cutting speed	160	126
Diameter	63	63
No. of teeth	5	5
Feed per tooth	0,2	0,15
Table feed	800	500
Depth of cut	3	3
Width of cut	50	50
Coolant	no	no
Overhang	200	200
No. of parts	6	4
Comments	Smooth cutting Better surface	Some vibrations

+50%		
Test Results		
Workpiece material: Stainless steel		
	SECO	Competitor
Cutter	220.53-0080-12-6A	45° lead Facemill
Insert	SEM1204AFTN-ME12	Square insert
Grade	F40M	-
Cutting speed	220	220
Diameter	80	80
No. of teeth	6	4
Feed per tooth	0,17	0,17
Table feed	890	595
Depth of cut	1	1
Width of cut	50	50
Comments	Smooth cutting Better surface	Some vibrations Z = 6 was impossible

One new technology . . .

A whole range of possibilities

The first choice QuattroMill uses 12 mm inserts in cutter bodies ranging from 40 mm to 200 mm and are available in normal, close and coarse pitch versions. QuattroMill technology has also been introduced in a size, using smaller 9 mm inserts and cutter bodies as small as 20 mm (with integral shank).

This two-size solution allows you to handle a broad range of challenging operations, even weak or unstable

set ups, older and under-powered machines, parts with thin walls and even long overhangs where vibration can be detrimental to both the component and the cutting tool.

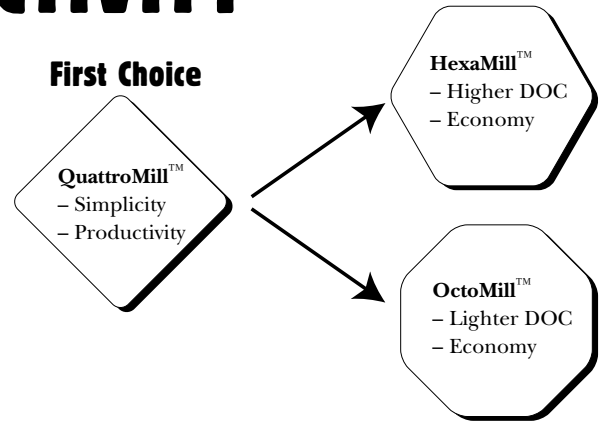


QuattroMill, industry's new first choice facemill

If you want to simplify your general-purpose face milling applications and get the added benefits of ease of use, increased productivity, reliability and greater precision – *make it easy* . . . make it QuattroMill.

FACE MILLING PRODUCTIVITY OPTIMIZE

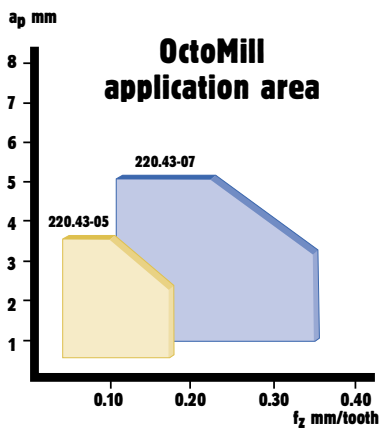
Fine tune your face milling performance with a choice of cutter families that provides different depth of cut and feed rate capabilities, versatility and economy. The features and capabilities of QuattroMill are complemented by two other Seco families of facemills: OctoMill™ and HexaMill™.



OctoMill

For economy in light to medium duty face milling applications in a full range of materials, choose OctoMill. With an eight-sided insert and unique cutter body design, OctoMill offers the lowest cost per edge, and the ability

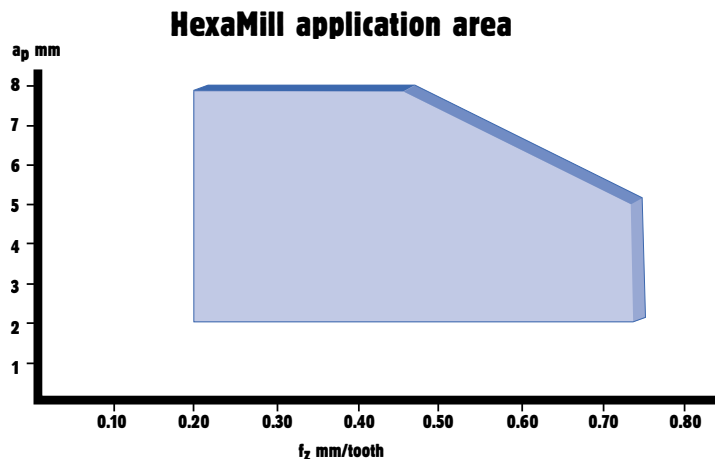
to slot, ramp, plunge and interpolate. OctoMill is available in a full range of cutter body diameters; 5 mm and 7 mm insert sizes; and a combination of grades and geometries to handle all materials.



HexaMill

For those operations where higher metal removal is required, Seco offers HexaMill. The 12 mm inserts are extra-thick to provide security and safety in higher feed/higher depth of cut, aggressive metal removal applications.

With a unique hexagonal insert, HexaMill also offers the economy of six cutting edges. A full range of cutter body diameters and insert grades and geometries is available for medium to rough machining of all materials.



INCREASE TOOL LIFE WITH ACCU-FIT™

Increase tool life and minimize run-out with Seco's new Accu-Fit™ – the hydraulic shell mill holder that provides the best connection between milling cutter and machine tool. Use with our versatile QuattroMill and take precision manufacturing to an all-new level.

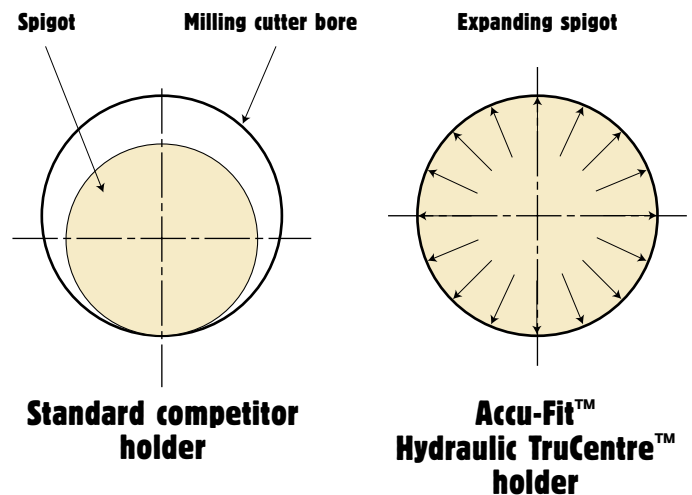
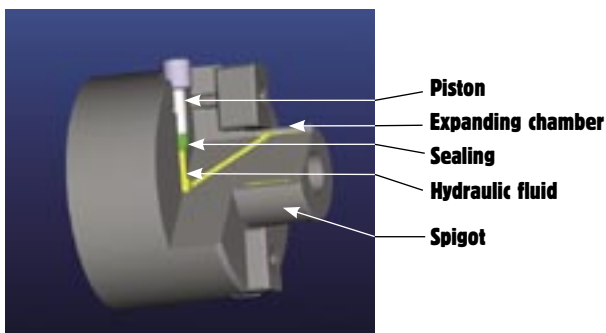
Fine balanced to 3 gmm/kg, Accu-Fit is the best choice for high-revolution applications and difficult materials. And, because the mechanism is self-centering, balance of the assembled cutter and holder is maintained during demanding high-speed operations.



Accu-Fit™ holder's TruCentre™

Our patent-pending TruCentre™ design features an expandable hydraulic spigot to precisely hold the shell mill, eliminate play and minimize run out.

The clamping force between the cutter and the holder is further secured by the central bolt.



Available in a range of sizes and styles

Accu-Fit comes with HSK-A or SA (DIN, BT, ANSI) back ends, and is available in both inch and metric versions with spigot sizes from 22 mm (3/4") to 40 mm (1-1/2"). With through coolant channels in the spigot.



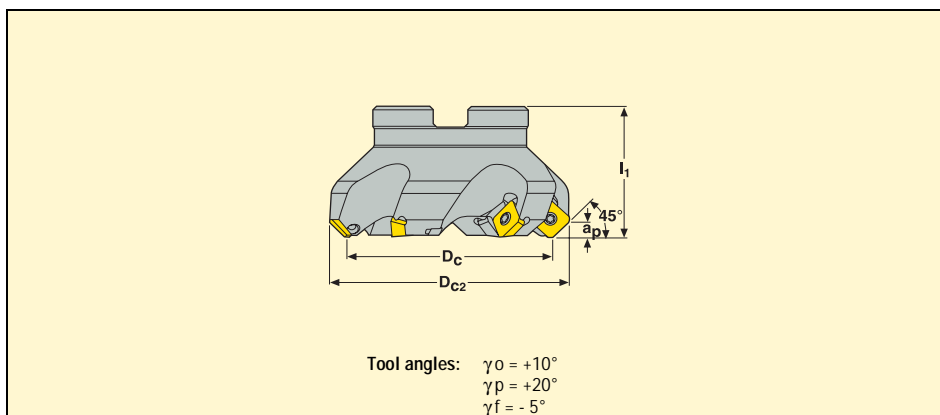
SECO
20.53-0063-2-6

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220.53-09



- For insert selection and cutting data recommendations, see pages 16, 20.
- For complete insert programme, see pages 18-20.



Pitch	Part No.	Dimensions in mm						
		D _c	D _{c2}	l ₁	a _p			
Normal	R220.53 -0032-09-4A	32	42	40	4,5	4	0,2	SE..09T3
	-0040-09-4A	40	50	40	4,5	4	0,4	SE..09T3
	-0050-09-5A	50	60	40	4,5	5	0,4	SE..09T3
	-0063-09-6A	63	73	40	4,5	6	0,6	SE..09T3
	-0080-09-6A	80	90	50	4,5	6	1,2	SE..09T3
	-0100-09-7A	100	110	50	4,5	7	1,8	SE..09T3
Close	R220.53 -0040-09-5A	40	50	40	4,5	5	0,4	SE..09T3
	-0050-09-6A	50	60	40	4,5	6	0,4	SE..09T3
	-0063-09-7A	63	73	40	4,5	7	0,6	SE..09T3
	-0080-09-8A	80	90	50	4,5	8	1,2	SE..09T3
	-0100-09-10A	100	110	50	4,5	10	1,8	SE..09T3

Spare parts

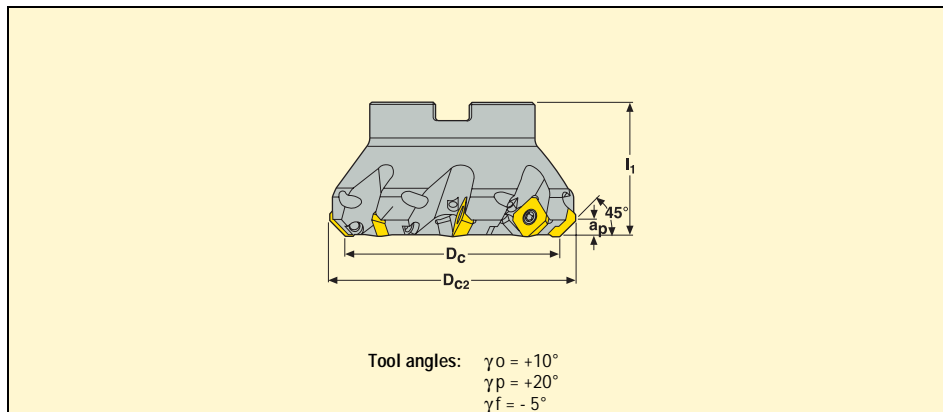
For cutter	Locking screw 	Key 	Arbor screw
R220.53-0032	C03007-T09P	T09P-3	220.17-690
R220.53-0040-0063	C03007-T09P	T09P-3	220.17-696
R220.53-0080-0100	C03007-T09P	T09P-3	-

Dimensions of mounting

	For cutter	Dimensions in mm			For arbor
		dm _m	B _{kw}	c	
	R220.53-0032	16	8,4	5,6	16
	R220.53-0040-0063	22	10,4	6,3	22
	R220.53-0080	27	12,4	7	27
	R220.53-0100	32	14,4	8	32

Please check availability in current price and stock-list.

220.53-12



- For insert selection and cutting data recommendations, see pages 17, 20.
- For complete insert programme, see pages 18-20.

Pitch	Part No.	Dimensions in mm						
		D _c	D _{c2}	l ₁	a _p			
Normal	R220.53 -0040-12-3A	40	52	40	6	3	0,4	SE.X1204
	-0050-12-4A	50	62	40	6	4	0,4	SE.X1204
	-0063-12-5A	63	75	40	6	5	0,5	SE.X1204
	-0080-12-6A	80	92	50	6	6	1,1	SE.X1204
	-0100-12-7A	100	112	50	6	7	1,7	SE.X1204
	-0125-12-8A	125	137	63	6	8	3,2	SE.X1204
	-8160-12-10	160	172	63	6	10	4,6	SE.X1204
	-8200-12-12	200	212	63	6	12	7,6	SE.X1204

Spare parts

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

Dimensions of mounting

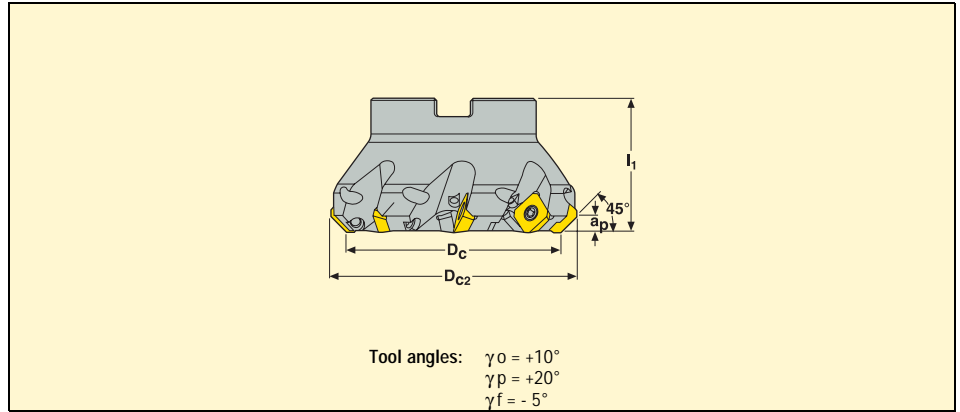
	For cutter	Dimensions in mm				For arbor	For spindle-nose
		d _m	B _{kw}	c	d _{hc1}		
	R220.53-0040-0063	22	10,4	6,3	-	22	-
	R220.53-0080	27	12,4	7	-	27	-
	R220.53-0100	32	14,4	8	-	32	-
	R220.53-0125	40	16,4	9	-	40	-
	R220.53-8160	40	16,4	9	66,7	40	ISO40
	R220.53-8200	60	25,7	14	101,6	-	ISO50

Please check availability in current price and stock-list.

220.53-12



- For insert selection and cutting data recommendations, see pages 17, 20.
- For complete insert programme, see pages 18-20.



Pitch	Part No.	Dimensions in mm						
		D _c	D _{c2}	l ₁	a _p			
Coarse	R220.53 -0100-12-5A	100	112	50	6	5	1,7	SE.X1204
	-0125-12-6A	125	137	63	6	6	3,1	SE.X1204
	-8160-12-7	160	172	63	6	7	4,6	SE.X1204
	-8200-12-8	200	212	63	6	8	7,4	SE.X1204

Spare parts

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

Dimensions of mounting

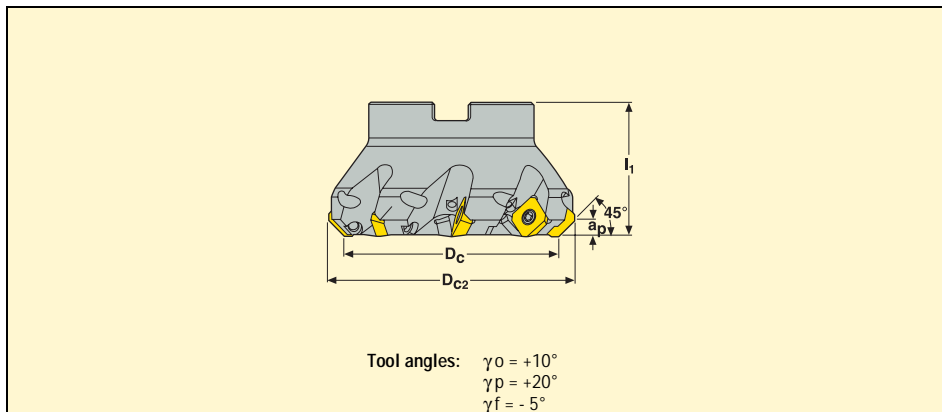
	Dimensions in mm			For arbor	
	For cutter	dm _m	B _{kw}		c
	R220.53-0100	32	14,4	8	32
	R220.53-0125	40	16,4	9	40
	R220.53-8160	40	16,4	9	40
	R220.53-8200	60	25,7	14	-

Please check availability in current price and stock-list.

220.53-12



- For insert selection and cutting data recommendations, see pages 17, 20.
- For complete insert programme, see pages 18-20.



Pitch	Part No.	Dimensions in mm						
		D _c	D _{c2}	l ₁	a _p			
Close	R220.53 -0040-12-4A	40	52	40	6	4	0,3	SE.X1204
	-0050-12-5A	50	62	40	6	5	0,4	SE.X1204
	-0063-12-6A	63	75	40	6	6	0,5	SE.X1204
	-0080-12-8A	80	92	50	6	8	1,1	SE.X1204
	-0100-12-10A	100	112	50	6	10	1,7	SE.X1204
	-0125-12-12A	125	137	63	6	12	3,1	SE.X1204

Spare parts

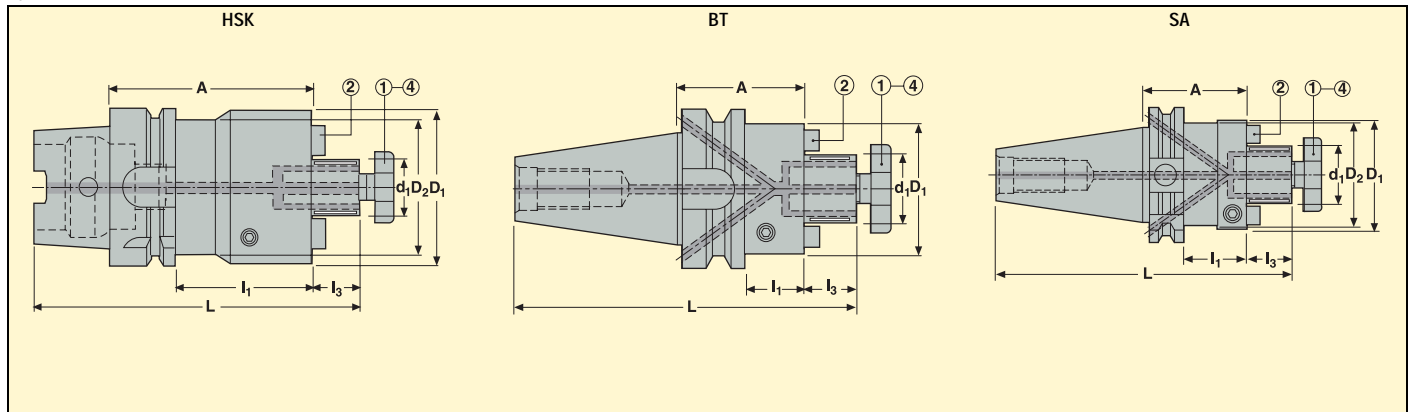
	Locking screw	Key	Arbor screw	
For cutter				
R220.53-0040-0063	C04011-T15P	T15P-4	220.17-696	
R220.53-0080-0125	C04011-T15P	T15P-4	-	

Dimensions of mounting

	For cutter	Dimensions in mm			For arbor
		dm _m	B _{kw}	c	
	R220.53-0040-0063	22	10,4	6,3	22
	R220.53-0080	27	12,4	7	27
	R220.53-0100	32	14,4	8	32
	R220.53-0125	40	16,4	9	40

Please check availability in current price and stock-list.

Type 5545 - Shell mill holders, Accu-Fit™



Taper	d ₁ mm	Part No.	Dimensions in mm						Balancing	KG
			A	D ₁	D ₂	L	l ₁	l ₃		
HSK-A63	22	E9304 5545 2250	50	48	48	101	24	19	1	1,10
	27	E9304 5545 2760	60	60	53	113	34	21	1	1,45
	32	E9304 5545 3260	60	78	53	116	34	24	1	1,75
HSK-A100	22	E9306 5545 2255	55*	48	48	124	26	19	1	3,35
	27	E9306 5545 2750	50	60	60	121	21	21	1	3,50
	32	E9306 5545 3250	50	78	78	124	21	24	1	3,70
	40	E9306 5545 4060	60	89	88	137	31	27	1	3,95
BT40	22	E3414 5545 2245	45	48	-	129,4	18	19	1	1,15
	27	E3414 5545 2745	45	60	-	131,4	18	21	1	1,35
	32	E3414 5545 3250	50	78	-	139,4	23	24	1	1,60
BT50	22	E3416 5545 2255	55	48	-	175,8	17	19	1	3,95
	27	E3416 5545 2755	55	60	-	177,8	17	21	1	4,15
	32	E3416 5545 3255	55	78	-	180,8	17	24	1	4,40
	40	E3416 5545 4055	55	89	-	183,8	17	27	1	4,70
SA40	22	E3469 5545 2235	35	48	48	122,4	16	19	1	1,05
	27	E3469 5545 2745	45*	60	50	134,4	26	21	1	1,45
	32	E3469 5545 3250	50	78	50	142,4	31	24	1	1,75
SA50	22	E3478 5545 2235	35	48	69,85	155,7	16	19	1	3,30
	27	E3478 5545 2740	40	60	69,85	162,7	21	21	1	3,50
	32	E3478 5545 3250	50	78	78	175,7	31	24	1	4,00
	40	E3478 5545 4050	50	89	80	178,7	31	27	1	4,10

* Dimension A changed in regard of 5525 type holders.

Balancing: 1 = Fine-balanced (3 gmm/kg).

Accessories

For d ₁	Locking key	S	Spanner	Bolt, through coolant type (4)
22	03M04	4	5812210	5812210L
27	03M04	4	5812712	5812712L
32	03M04	4	5813216	5813216L
40	03M04	4	5814020	5814020L

Spare parts

Bolt (1)	Tenon/ Screw (2)
5802210	16C2101111 951D0416
5802712	16C2121214 951D0508
5803216	16C2141421 951D0516
5804020	16C2161621 951D0516

Assembly procedure

1. Assemble the cutter on to the holder.
 2. Tighten the hydraulic spigot pressuring screw until the clearance is eliminated.
 3. Tighten fully the axial locking bolt according to normal procedure.
 4. Completely tighten the hydraulic spigot pressuring screw to the bottom of the thread.
- Warning!** Never lock the hydraulic spigot pressuring screw without having a cutter in place. It could destroy the spigot.

Insert selection – 217/220.53-09

Universal insert: SEMX 09T3AFTN-M08 F40M

Seco Material group No.	Recom. feed f_z mm/tooth	First choice	Alternatives	
			Difficult operations	Easy operations
1	0,09–0,16	SEMX 09T3AFTN-M08 F40M	SEMX 09T3AFTN-M08 T350M	SEMX 09T3AFTN-ME06 T250M
2	0,09–0,16	SEMX 09T3AFTN-M08 F40M	SEMX 09T3AFTN-M08 T350M	SEMX 09T3AFTN-ME06 T250M
3	0,09–0,14	SEMX 09T3AFTN-M08 F40M	SEMX 09T3AFTN-M08 T350M	SEMX 09T3AFTN-ME06 T250M
4	0,09–0,14	SEMX 09T3AFTN-M08 F40M	SEMX 09T3AFTN-M08 T350M	SEMX 09T3AFTN-ME06 T250M
5	0,06–0,11	SEMX 09T3AFTN-M08 T250M	SEEX 09T3AFTN-D09 T200M	SEMX 09T3AFTN-M08 T250M
6	0,06–0,11	SEMX 09T3AFTN-M08 T250M	SEEX 09T3AFTN-D09 T200M	SEMX 09T3AFTN-M08 T250M
7	0,06–0,08	SEEX 09T3AFTN-D09 T200M	SEEX 09T3AFN-M05 F30M	SEEX 09T3AFN-M05 F30M
8	0,09–0,16	SEEX 09T3AFTN-ME07 F40M	SEEX 09T3AFTN-M08 T350M	SEEX 09T3AFTN-ME07 F40M
9	0,09–0,14	SEEX 09T3AFTN-ME07 F40M	SEEX 09T3AFTN-M08 T350M	SEEX 09T3AFTN-ME07 F40M
10	0,09–0,11	SEEX 09T3AFTN-M08 T350M	SEEX 09T3AFTN-M08 F40M	SEEX 09T3AFTN-ME07 T350M
11	0,07–0,10	SEEX 09T3AFTN-M08 T350M	SEEX 09T3AFTN-M08 F40M	SEEX 09T3AFTN-ME07 T350M
12	0,09–0,14	SEEX 09T3AFTN-M08 T150M	SEEX 09T3AFTN-D09 T200M	SEEX 09T3AFN-M05 F30M
13	0,09–0,14	SEEX 09T3AFTN-M08 T150M	SEEX 09T3AFTN-D09 T200M	SEEX 09T3AFN-M05 F30M
14	0,06–0,11	SEEX 09T3AFTN-M08 T150M	SEEX 09T3AFTN-D09 T200M	SEEX 09T3AFN-M05 F30M
15	0,06–0,11	SEEX 09T3AFTN-D09 T200M	SEEX 09T3AFTN-D09 T200M	SEEX 09T3AFN-M05 F30M
16	0,09–0,16	SEEX 09T3AFN-E04 H15	SEEX 09T3AFN-E04 F40M	SEEX 09T3AFN-E04 H15
17	0,09–0,16	SEEX 09T3AFN-E04 H15	SEEX 09T3AFN-E04 F40M	SEEX 09T3AFN-E04 H15
20	0,06–0,08	SEEX 09T3AFTN-ME07 T350M	SEEX 09T3AFTN-M08 F40M	SEEX 09T3AFTN-ME07 T250M
21	0,06–0,08	SEEX 09T3AFTN-M08 F40M	SEEX 09T3AFN-M05 F30M	SEEX 09T3AFTN-ME07 T350M
22	0,07–0,10	SEEX 09T3AFTN-ME07 F40M	SEEX 09T3AFTN-M08 F40M	SEEX 09T3AFTN-M08 T350M

Cutting data

Seco Material group No.	Grades																				
	T150M			T200M/F15M*			T250M			T350M/F30M			T25M			F40M			H15		
	Feed, 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
Cutting speed, v_c (m/min)																					
1	-	-	-	420	370	325	360	320	280	330	290	255	345	305	265	315	280	245	-	-	-
2	-	-	-	375	330	290	320	285	250	295	260	230	305	270	240	280	250	220	-	-	-
3	-	-	-	310	275	240	265	235	205	240	215	190	255	225	195	230	205	180	-	-	-
4	-	-	-	285	255	220	245	215	190	225	200	175	235	210	180	215	190	165	-	-	-
5	-	-	-	240	215	190	210	185	160	190	170	145	200	175	155	180	160	140	-	-	-
6	-	-	-	185	165	-	160	140	-	145	130	-	155	135	-	140	125	-	-	-	-
7	-	-	-	65	60	-	55	50	-	50	45	-	55	50	-	50	45	-	-	-	-
8	-	-	-	340	300	265	295	260	225	265	235	210	280	250	215	255	225	-	-	-	-
9	-	-	-	295	265	230	255	225	200	235	205	180	245	215	190	225	200	-	-	-	-
10	-	-	-	255	225	195	215	190	170	200	175	155	210	185	160	190	170	-	-	-	-
11	-	-	-	200	175	-	170	150	-	155	135	-	165	145	-	150	130	-	-	-	-
12	350	310	270	275	245	215	235	210	185	215	190	165	225	200	175	205	185	160	230	200	175
13	320	285	250	255	225	195	215	190	170	200	175	155	210	185	160	190	170	150	210	185	165
14	295	260	230	230	205	180	200	175	155	180	160	140	190	170	145	175	155	135	190	170	-
15	235	210	-	185	165	-	160	140	-	145	130	-	155	135	-	140	125	-	-	-	-
16	-	-	-	1430	1270	1110	1225	1085	955	1120	995	870	1175	1040	910	1075	950	835	1185	1050	920
17	-	-	-	1155	1025	900	990	880	770	905	800	705	950	840	735	870	770	675	960	850	745
20	-	-	-	-	-	-	75	65	-	70	60	-	70	65	-	65	60	-	-	-	-
21	-	-	-	-	-	-	45	40	-	45	40	-	45	40	-	40	35	-	-	-	-
22	-	-	-	-	-	-	75	65	-	70	60	-	70	65	-	65	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 μ m
SEEX09T3..	1,5	1,0

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

Dimensions in mm

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

Max RPM and torque values

Recommended max RPM for all Turbo cutters are stated in the table below.

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 toolholder at least separately.

Over 20 000 RPM:

Both tool and toolholder must be balanced at least separately.

Over 30 000 RPM:

Tool and toolholder must be balanced as a unit.

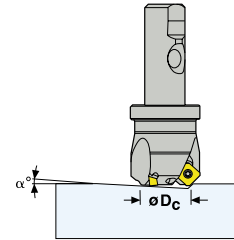
The max RPM in the tables should never be exceeded.

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.



Face milling cutters

Cutter	D_C mm	Torque values (Nm)	Max RPM
217.53-09	20	2	25100
-09	25	2	22400
-09	32	2	19800
220.53-09	32	2	19800
-09	40	2	17700
-09	50	2	15800
-09	63	2	14100
220.53-12	40	3,5	16500
-12	50	3,5	14800
-12	63	3,5	13200
-12	80	3,5	11700
-12	100	3,5	10500
-12	125	3,5	9400
-12	160	3,5	8300
-12	200	3,5	7400

Ramping

	Cutter dia $\varnothing D_C$ mm	a_p max mm	α° max
217.53-09	20	4,5	22,2°
	25	4,5	16,1°
	32	4,5	11,5°
220.53-09	32	4,5	11,5°
	40	4,5	8,6°
	50	4,5	6,6°
	63	4,5	5°
	100	4,5	3°
220.53-12	40	6	12,2°
	50	6	9,1°
	63	6	6,8°
	80	6	5,1°
	100	6	3,9°
	125	6	3,1°
	160	6	2,3°
	200	6	1,8°

Steel

		R_m (N/mm ²)	k_c 1.1	m_c
1	Very soft low-carbon steels. Purely ferritic steels.	<450	1350	0,21
2	Free-cutting steels.	400 <700	1500	0,22
3	Structural steels. Ordinary carbon steels with low to medium carbon content (<0,5%C).	450 <550	1500	0,25
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	Normal tool steels. Harder steels for toughening. Martensitic stainless steels.	700 <900	1900	0,24
6	Difficult tool steels. High-alloy steels with high hardness. Martensitic stainless steels.	900 <1200	2000	0,24
7	Difficult high-strength steels with high hardness. Hardened steels from material group 3–6. Martensitic stainless steels.	>1200	2900	0,22

Stainless steel

8	Easy austenitic stainless steels. Free-cutting stainless steels. Calcium-treated stainless steels.		1750	0,22
9	Moderately difficult stainless steels. Austenitic and duplex stainless steels.		1900	0,20
10	Difficult stainless steels. Austenitic and duplex stainless steels.		2050	0,20
11	Very difficult stainless steels. Austenitic and duplex stainless steels.		2150	0,20

Cast iron

12	Medium hard cast iron. Grey iron.		1150	0,22
13	Low-alloy cast iron. Malleable cast iron. Nodular cast iron.		1225	0,25
14	Moderately difficult alloy cast iron. Moderately difficult malleable cast iron. Nodular cast iron.		1350	0,28
15	Difficult high-alloy cast iron. Difficult malleable cast iron. Nodular cast iron.		1470	0,30

Other materials

16	Free-cutting non-ferrous materials. Aluminium with <16% Si. Brass, Zinc, Magnesium.		700	0,25
17	Non-ferrous materials. Aluminium with >16% Si. Bronze, Cupro-nickel.		700	0,27
20	Nickel-, Cobalt- and Iron-based superalloys with hardness <30 HRc. Incoloy 800, Inconel 601, 617, 625. Monel 400.		2600	0,24
21	Nickel-, Cobalt- and Iron-based superalloys with hardness >30 HRc. Incoloy 925, Inconel 718, 750-X, Monel K-500.		3300	0,24
22	Titanium based alloys, Ti-6Al-4V.		1450	0,23

$k_{c1.1}$ -values with 0 degree effective cutting rake angle. For other rake angles, reduce the $k_{c1.1}$ -value by 1% for every degree increase in the cutting rake angle and vice versa. 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.



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