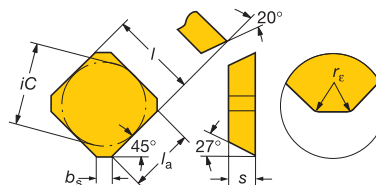


Facemilling 45°

SEER
SEKR

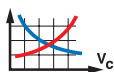
SEKN



	Ordering code	P		M		K		N		S		H		Dimensions, mm						
		GC	GC	CT	-	GC	GC	-	GC	GC	-	CT	-	-	GC	iC	l	s	b_s	l_a
12	SEER 12 03 AZ-WL	☆	☆												12.7	12.7	3.18	1.6	9.6	1.5
	SEKR 12 03 AZ-WM	☆	☆	☆											12.7	12.7	3.18	1.6	9.6	1.5
	SEKR 12 04 AZ-WM	☆	☆	☆											12.7	12.7	4.76	1.6	9.6	1.5
	SEMN 12 03 AZ				☆										12.7	12.7	3.18	2	9.6	
	SEHN 12 04 AZ									☆					12.7	12.7	4.76	1.6	9.6	0.8
	SEMN 12 04 AZ			☆	☆										12.7	12.7	4.76	2	9.6	
	SEKN 12 03 AZ	☆	☆	☆				☆	☆						12.7	12.7	3.18	1.7	9.6	1.2
	SEKN 12 04 AZ	☆	☆	☆				☆	☆	☆					12.7	12.7	4.76	1.7	9.6	1.2
15	SEKN 15 04 AZ	☆	☆	☆				☆	☆	☆					15.88	15.88	4.76	1.6	12.7	1.5
	SEKR 15 04 AZ-WM	☆	☆			☆	☆								15.88	15.88	4.76	1.6	12.7	1.5

Ordering example: 100 pieces SEER 12 03 AZ-WL 4030

For grade description, see page D172.



D154



D172



D2

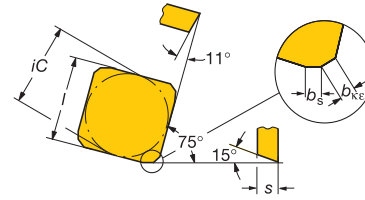
Facemilling 75°



SPKR -WH



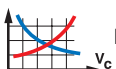
SPKN



□	Ordering code	P												M			K				H		Dimensions, mm								
		GC	GC	GC	CT	-	S6	-	SM30	-	GC	CT	-	SM30	-	GC	GC	GC	CC	-	H13A	-	H1P	-	GC	GC	iC	l	s	bs	b _{ce}
		3040	4030	4040	530	-	S6	-	SM30	-	3020	3040	4030	GC	CC	-	H13A	-	H1P	-	3020	3040									
12	SPKR 12 03 ED L-WH		☆													☆										12.7	12.7	3.18	1.4		
	SPKR 12 03 ED R-WH		☆													☆										12.7	12.7	3.18	1.4		
	SPKR 12 04 ED L-WH		☆																							12.7	12.7	4.76	1.4		
	SPKR 12 04 ED R-WH	☆	☆	☆												☆								☆		12.7	12.7	4.76	1.4		
	SPKN 12 03 ED R																	☆								12.7	12.7	3.18	1.4	1	
	SPKN 12 03 ED L		☆		☆	☆	☆			☆	☆	☆	☆	☆	☆					☆	☆					12.7	12.7	3.18	1.4	1	
	SPKN 12 03 ED R		☆	☆	☆	☆	☆			☆	☆	☆	☆	☆	☆					☆	☆					12.7	12.7	3.18	1.4	1	
	SPKN 12 04 ED L		☆							☆	☆									☆	☆					12.7	12.7	4.76	1.4	1	
	SPKN 12 04 ED R		☆	☆	☆	☆	☆			☆	☆	☆	☆	☆	☆					☆	☆		☆			12.7	12.7	4.76	1.4	1	
15	SPKR 15 04 ED R-WH		☆	☆																						15.88	15.88	4.76	1.4		
	SPKR 15 04 ED L-WH		☆																							15.88	15.88	4.76	1.4		
	SPKN 15 04 ED L		☆	☆											☆											15.88	15.88	4.76	1.4	1	
	SPKN 15 04 ED R	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆		15.88	15.88	4.76	1.4	1	
19	SPKR 19 04 ED R-WH		☆	☆																						19.05	19.05	4.76	2.7		
	SPKN 19 04 ED R												☆													19.05	19.05	4.76	2.7	1	
	Wiper																														
12	SPEX 12 03 ED L-1																												3.18	10	
	SPEX 12 03 ED R-1					☆					☆																		3.18	10	
	SPEX 12 04 ED R-1					☆					☆																		4.76	10	
15	SPEX 15 04 ED R-1					☆					☆																		4.76	10	

Ordering example: 100 pieces SPKR 12 03 ED L-WH 3040
R = Right hand, L = Left hand

For grade description, see page D172.



D154



D172



D2

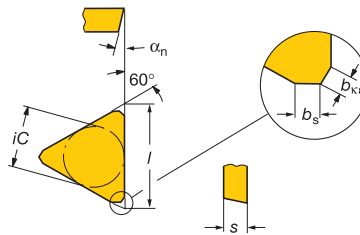
Shoulder milling 90°



TPKR



TPKN



	Ordering code	P		M				K		N		S		H		Dimensions, mm							
		GC	GC	CT	-	-	GC	GC	CT	-	GC	GC	-	-	CT	-	S	H	iC	l	s	b _s	b _{kc}
16	TPKR 16 03 PP R-WH	☆	☆															9.52	16.5	3.18	1.2		13.5
	TPKN 16 03 PP R	☆	☆	☆	☆	☆		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	9.52	16.5	3.18	1.2	1	11
22	TPKR 22 04 PD L-WH	☆	☆															12.7	22	4.76	1.4		15
	TPKR 22 04 PD R-WH	☆	☆															12.7	22	4.76	1.4		15
	TPKN 22 04 PD L	☆																12.7	22	4.76	1.4	0.7	15
	TPKN 22 04 PD R	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	12.7	22	4.76	1.4	0.7	15

Ordering example: 100 pieces TPKR 16 03 PP R-WH 4030
R = Right hand, L = Left hand

For grade description, see page D172.

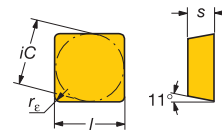
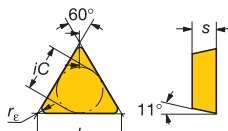
ISO inserts with radius



TPMN



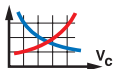
SPMN



	Ordering code	P		M		K		N		S		Dimensions, mm						
		S6	H13A	H13A	H13A	H13A	H13A	H13A	H13A	iC	l	s	r _e					
12	SPMN 12 03 08	☆													12.7	12.7	3.18	0.8
	SPMN 12 04 08		☆	☆	☆	☆	☆	☆	☆	☆	☆			12.7	12.7	4.76	0.8	
15	SPMN 15 04 12		☆	☆	☆	☆	☆	☆	☆	☆	☆			15.88	15.88	4.76	1.2	
16	TPMN 16 03 08	☆												9.52	16.5	3.18	0.8	
22	TPMN 22 04 12	☆												12.7	22	4.76	1.2	

Ordering example: 100 pieces SPMN 12 03 08 S6

For grade description, see page D172.



D154

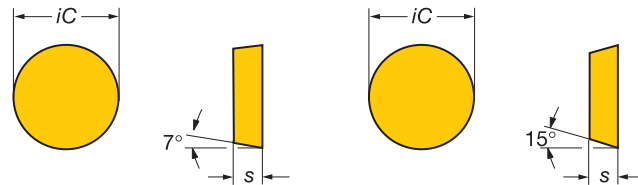
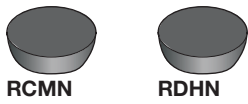


D172



D2

Round insert cutters

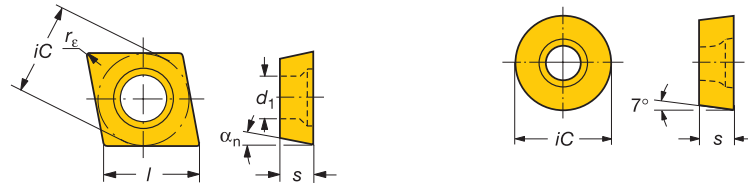
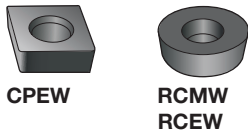
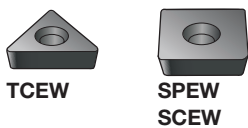


IO	Ordering code	P M K N				Dimensions, mm	
		S6	H10F	H13A	H13A	iC	s
16	RCMN 16 04 M0	☆	☆	☆	☆	16	4.76
19	RDHN 19 04 00	☆	☆	☆	☆	19.05	4.76
20	RCMN 20 06 M0	☆	☆	☆	☆	20	6.35

Ordering example: 100 pieces RCMN 16 04 M0 S6

For grade description, see page D172.

Standard inserts for special tools, T-Max U



Size	Ordering code	P M K N S					Dimensions, mm					
		SM30	SM30	H13A	H13A	H13A	iC	l	s	r _E	α _n [°]	d ₁
22	TCEW 22 04 12	☆	☆	☆	☆	☆	12.7	22	4.76	1.2	-	-
9	SPEW 09 T3 08	☆	☆	☆	☆	☆	9.525	9.525	3.97	0.8	11	4.4
12	SPEW 12 04 08	☆	☆	☆	☆	☆	12.7	12.7	4.76	0.8	11	5.7
	SPEW 12 04 08	☆	☆	☆	☆	☆	12.7	12.7	4.76	0.8	11	5.7
15	SCEW 15 05 12	☆	☆	☆	☆	☆	15.875	15.875	5.56	1.2	7	5.7
12	CPEW 12 04 08	☆	☆	☆	☆	☆	12.7	12.9	4.76	0.8	11	5.7
12	RCEW 12 04 M0	☆	☆	☆	☆	☆	12	-	4.76	-	-	4.6
	RCMW 12 04 M0	☆	☆	☆	☆	☆	12	-	4.76	-	-	4.4
16	RCEW 16 05 M0	☆	☆	☆	☆	☆	16	-	5.56	-	-	5.7
20	RCEW 20 06 M0	☆	☆	☆	☆	☆	20	-	6.35	-	-	6.7

Ordering example: 100 pieces SPEW 12 04 08 SM30



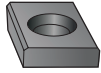
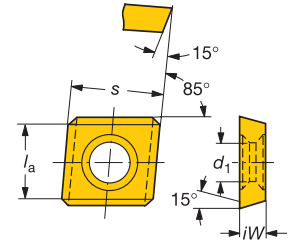
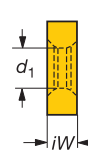
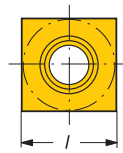
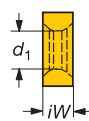
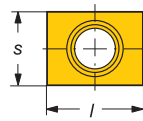
Standard inserts for special tools –for tangential mounting



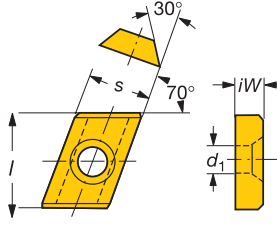
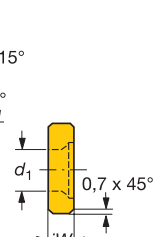
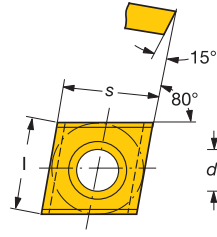
009140



194.1

009370 R6
R7009370 R8
R9
R10
L11
L12
L13009370 R14
R15

190.1



Size	Ordering code					Dimensions, mm				
		P	M	K	N	l	s	la	iW	d1
7	009370R7	☆	☆	☆	☆	–	15.88	12.94	5.56	5.6
9	009370R8	☆	☆	☆	☆	9.67	9.52	–	3.97	4.1
12	009370R9	☆	☆	☆	☆	12.9	12.7	–	4.76	5.6
9	194.1-09 T3 00	☆	☆	☆	☆	9.52	–	–	3.97	4
10	009370R6	☆	☆	☆	☆	–	12.7	10.19	4.76	5.6
11	009370L11	☆	☆	☆	☆	9.67	9.52	–	3.97	4.1
12	009140N56	☆	☆	☆	☆	12.7	9.52	–	3.5	4
12	009370L12	☆	☆	☆	☆	12.9	12.7	–	4.76	5.6
12	009370R14	☆	☆	☆	☆	11.77	10	–	3.5	4.1
12	194.1-12 04 00-AA	☆	☆	☆	☆	12.7	–	–	4.76	5.6
13	009370L13	☆	☆	☆	☆	16.12	15.88	–	5.56	5.6
15	009140N57	☆	☆	☆	☆	15.88	12.7	–	4	4.75
16	009370R10	☆	☆	☆	☆	16.12	15.88	–	5.56	5.6
19	009370R15	☆	☆	☆	☆	19.16	12	–	4.5	5.6

Ordering example: 10 pieces 009370R7 H13A



D154



D172



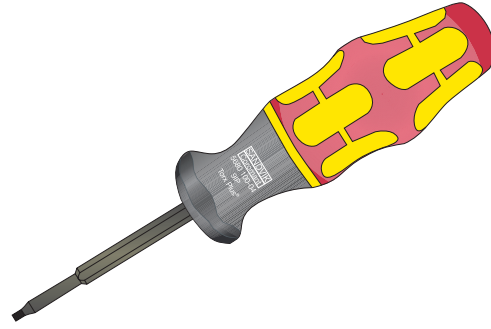
D2

New wrench guarantees correct torque

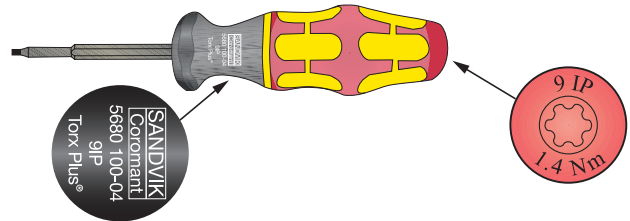
Correct torque when mounting inserts in milling cutters is a prerequisite for a well functioning tool. Together with the Torx Plus screws the new wrench is a guarantee of improved and secure insert clamping.

The wrenches, available in 6 sizes and tested to withstand 10 000 insert tightenings, are each calibrated for the torque needed for correct insert clamping of Sandvik Coromant milling cutters.

A torque wrench is always recommended for cutters with Torx plus screw. The new wrench must be ordered separately, except for CoroMill® Century, CoroMill® 790 and CoroMill® 390 long edge milling cutters, see spare parts tables.



Note! Torx Plus is a registered trademark of Camcar Textron (USA).



Note!

We want to point out to all our customers that the new Torx Plus keys and screw-drivers do NOT fit into the standard Torx screws.

However, the standard Torx keys and screw-drivers will fit the new Torx Plus screws.

Features and benefits

Pre-set torque value related to corresponding Torx Plus screw.

- Always correct torque.

Fixed stop in counter clock wise rotation. Easy to loosen the screw.

- Easy to loosen the screw.

Audistic signal when the pre-set torque is reached.

- Further tightening of the screw is impossible.

Secure, tamper-proof construction. Manipulation of pre-set torque not

- Manipulation of pre-set torque not possible.

Marked handle with Torx Plus size and torque value.

- The right tool, easily at hand.

Ergonomic handle.

- Ensures a very good grip.

Nickel free blade.

- Good for the invironment and the user.

One piece design.

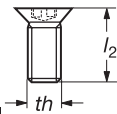
- Easy handling, no loose blades.

Torx Plus® torque wrench

New torque wrench	Size	Torque Nm	Old torque wrench
5680 100-01	6IP	0.6	5680 086-01
5680 100-02	7IP	0.9	5680 086-02
5680 100-03	8IP	1.2	5680 086-03
5680 100-04	9IP	1.4	5680 086-04
5680 100-05	10IP	2.0	5680 086-05
5680 100-06	15IP	3.0	5680 086-06

Insert screw dimensions and torque values

Note: Always apply Molykote 1000 to screw prior to use.



Screw	Size	Nm	th	l ₂		Torx Plus torque wrench
						Ordering code
416.1-831	8IP	0.9	M2.5-4h	7.00	60°	5680 100-03
416.1-832	9IP	1.2	M3-4h	8.50	60°	5680 100-04
416.1-833	10IP	2.0	M3.5-4h	9.40	60°	5680 100-05
416.1-834	15IP	3.0	M4-4h	11.00	60°	5680 100-06
5512 061-01	20IP	5.0	M5-6g	12.50	60°	—
5513 015-01	9IP	1.2	M3.5-4h	8.00	60°	5680 100-03
5513 015-03	9IP	1.2	M3.5-4h	4.15	60°	5680 100-04
5513 015-04	9IP	1.2	M3.5-4h	5.20	60°	5680 100-04
5513 015-05	9IP	1.2	M3.5-4h	7.10	60°	5680 100-04
5513 015-06	9IP	1.2	M3.5-4h	9.10	60°	5680 100-04
5513 015-07	9IP	1.2	M4-4h	9.00	60°	5680 100-04
5513 015-08	9IP	1.2	M3.5-4h	11.40	60°	5680 100-04
5513 016-01	20IP	5.0	M5-4h	14.00	60°	—
5513 020-01	15IP	3.0	M3.5-4h	12.10	60°	5680 100-06
5513 020-02	15IP	3.0	M4-4h	8.50	60°	5680 100-06
5513 020-03	7IP	0.8	M2.5-4h	6.50	60°	5680 100-02
5513 020-04	9IP	1.2	M3-4h	7.20	60°	5680 100-04
5513 020-05	7IP	0.8	M2.2-4h	6.40	60°	5680 100-02
5513 020-06	20IP	5.0	M4-4h	12.20	60°	—
5513 020-07	20IP	5.0	M5-4h	11.05	60°	—
5513 020-08	25IP	7.5	M6-4h	12.20	60°	—
5513 020-09	15IP	3.0	M3.5-4h	8.10	60°	5680 100-06
5513 020-10	15IP	3.0	M3.5-4h	10.10	60°	5680 100-06
5513 020-11	9IP	1.2	M3.5-4h	5.20	60°	5680 100-04
5513 020-12	9IP	1.2	M3.5-4h	11.00	60°	5680 100-04
5513 020-13	15IP	3.0	M4-4h	13.60	60°	5680 100-06
5513 020-14	25IP	7.5	M6-4h	18.25	60°	—
5513 020-15	30IP	10.0	M7-4h	21.35	60°	—
5513 020-16	10IP	3.0	M3.5-4h	7.60	60°	5680 100-05
5513 020-17	15IP	3.0	M4-0.5-4h	11.00	60°	5680 100-06
5513 020-18	15IP	3.0	M4-0.5-4h	14.00	60°	5680 100-06
5513 020-19	7IP	0.8	M2.2-4h	6.40	60°	5680 100-02
5513 020-20	7IP	0.8	M2.5-4h	7.20	60°	5680 100-02
5513 020-21	7IP	2.0	M2.5-4h	4.70	60°	5680 100-02
5513 020-22	10IP	2.0	M3.5-0.35-4h	8.90	60°	5680 100-05
5513 020-24	9IP	1.2	M3-4h	8.50	60°	5680 100-04
5513 020-25	15IP	3.0	M4-4h	12.10	60°	5680 100-06
5513 020-26	20IP	5.0	M5-4h	17.25	60°	—
5513 020-29	15IP	3.0	M4-4h	11.00	60°	5680 100-06
5513 020-30	10IP	2.0	M3.5-4h	9.40	60°	5680 100-05
5513 020-31	25IP	7.5	M6-4h	15.25	60°	—
5513 020-32	15IP	3.0	M3.5-4h	10.00	60°	5680 100-06
5513 020-34	8IP	1.2	M2.5-4h	8.70	60°	5680 100-03
5513 020-35	8IP	1.2	M2.5-4h	7.30	60°	5680 100-03
5513 020-36	8IP	1.2	M2.5-4h	5.95	60°	5680 100-03
5513 020-37	15IP	3.0	M3.5-4h	6.60	60°	5680 086-06
5513 020-39	15IP	3.0	M3.5-4h	8.30	60°	5680 100-06
5513 020-40	6IP	0.6	M2-4h	3.50	60°	5680 100-01
5513 020-41	7IP	0.9	M2.2-4h	4.70	60°	5680 100-02
5513 020-42	7IP	0.9	M2.2-4h	5.20	60°	5680 100-02
5513 020-43	15IP	3.0	M3.5-4h	7.30	60°	5680 100-06
5513 020-44	6IP	0.6	M2-4h	3.85	60°	5680 100-01
5513 020-45	7IP	0.9	M2.5-4h	4.20	60°	5680 100-02
5513 020-46	7IP	0.9	M2.5-4h	5.20	60°	5680 100-02
5513 020-47	7IP	0.9	M2.2-4h	5.20	60°	5680 100-02
5513 020-48	7IP	0.9	M2.5-4h	5.70	60°	5680 100-02
5513 020-52	15IP	3.0	M2-4h	3.35	60°	5680 100-02
5513 021-03	30IP	10.0	M8-6g	18.00	62°	—
5513 022-01	15IP	3.0	6-32 UNC-3A	9.65	60°	5680 100-06
5513 022-02	15IP	3.0	10-32 UNF-3A	15.88	82°	5680 100-06
5513 022-03	15IP	3.0	10-32 UNF-3A	12.70	82°	5680 100-06
5513 024-01	8IP	1.2	M2.5	8.30	60°	5680 100-03
5513 040-01	7IP	0.9	M2.5	6.25	41°	5680 100-02
5513 040-02	8IP	1.2	M3	7.80	40°	5680 100-03
5513 040-03	10IP	2.0	M3.5	9.50	40°	5680 100-05
5513 040-04	15IP	3.0	M4	13.30	40°	5680 100-06
5513 040-05	20IP	5.0	M5	16.20	40°	—
5513 040-06	25IP	7.5	M6	20.00	40°	—
5513 040-07	40IP	26.0	M8	25.00	40°	—



Milling with large engagement

ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	530		1025	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.2		0.05 – 0.1 – 0.2	
Cutting speed v_c , m/min									
P	Steel Unalloyed	01.1 C = 0.10 – 0.25%	1500	125	0.25	430–390–350	340–310–255		
		01.2 C = 0.25 – 0.55%	1600	150	0.25	385–350–315	305–280–230		
		01.3 C = 0.55 – 0.80%	1700	170	0.25	365–330–300	290–260–215		
		01.4	1800	210	0.25	315–290–260	250–230–185		
		01.5	2000	300	0.25	235–210–195	185–170–140		
	02.1	Low alloyed (alloying elements ≤5%) Non-hardened	1700	175	0.25	300–275–245	240–215–180		
		Hardened and tempered	2000	300	0.25	180–165–150	145–130–105		
	03.11	High alloyed (alloying elements > 5%) Annealed	1950	200	0.25	230–205–185	180–165–135		
		03.13 Hardened tool steel	2150	200	0.25	190–170–155	150–135–110		
		03.21	2900	300	0.25	165–150–135	130–120–100		
		03.22	3100	380	0.25	105–95–85	80–75–60		
	06.1	Castings Unalloyed	1400	150	0.25	305–280–250	245–220–180		
		06.2 Low alloyed (alloying elements ≤5%)	1600	200	0.25	245–220–200	195–175–145		
		06.3 High alloyed (alloying elements > 5%)	1950	200	0.25	180–160–145	140–130–105		

ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	530		1025	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.2		0.05 – 0.1 – 0.2	
Cutting speed v_c , m/min									
M	Stainless steel Ferritic/martensitic	05.11 Non-hardened	1800	200	0.21	285–255–230	255–225–180		
		05.12 PH-hardened	2800	330	0.21	205–185–165	180–160–130		
		05.13 Hardened	2300	330	0.21	215–190–170	185–165–135		
	05.21	Austenitic Non-hardened	2000	200	0.21	265–240–215	250–225–180		
		05.22 PH-hardened	2800	330	0.21	200–175–160	170–155–125		
	05.51	Austenitic-ferritic (Duplex) Non-weldable ≥ 0.05%C	2000	230	0.21	260–235–210	205–185–145		
		05.52 Weldable < 0.05%C	2400	260	0.21	230–205–185	175–155–125		
	15.11	Stainless steel – Cast Ferritic/martensitic							
		Non-hardened	1700	200	0.25	255–230–205	225–200–160		
		15.12 PH-hardened	2500	330	0.25	180–160–145	155–140–115		
		15.13 Hardened	2100	330	0.25	195–175–155	170–155–120		
		15.21 Austenitic	1800	200	0.25	255–225–205	235–210–170		
		15.22 PH-hardened	2500	330	0.25	180–160–145	160–140–115		
	15.51	Austenitic-ferritic (Duplex) Non-weldable ≥ 0.05%C	1800	230	0.25	245–220–195	195–175–140		
		15.52 Weldable < 0.05%C	2200	260	0.25	215–190–170	160–145–115		

ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	CB50		6090	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.2		0.1 – 0.2 – 0.3	
Cutting speed v_c , m/min									
K	07.1	Malleable cast iron Ferritic (short chipping)	800	130	0.28	1190–975–805			
		07.2 Pearlitic (long chipping)	900	230	0.28	980–805–660			
	08.1	Grey cast iron Low tensile strength	900	180	0.28	845–725–620			
		08.2 High tensile strength	1100	245	0.28	910–780–665			
	09.1	Nodular cast iron Ferritic	900	160	0.28	920–755–620			
		09.2 Pearlitic	1350	250	0.28	760–625–515			

1) 45-60° entering angle. Positive cutting geometry and coolant should be used.

2) R_m = ultimate tensile strength measured in MPa.



Conditions:

Cutter, dia. 125 mm, centered over the workpiece. Working engagement 100 mm.

Milling with large engagement

4020	4030	4040	3040	2030	2040	SM30
Max chip thickness, h_{ex} mm						
0.1 – 0.2 – 0.3						
Cutting speed v_c, m/min						
490–405–330 440–360–295 415–340–280 365–300–245 270–220–180	365–300–245 325–270–220 310–255–210 270–220–180 200–165–135	310–255–170 280–230–155 260–215–145 230–190–125 170–140–95	390–320–260 350–285–235 330–270–220 290–235–195 215–175–145	325–265–220 290–240–195 275–225–185 240–200–165 175–145–120	295–240–165 265–215–145 250–205–135 220–180–120 160–130–90	265–230–170 240–205–150 225–195–145 195–170–125 145–125–90
345–285–230 205–170–140	255–210–170 155–125–105	215–180–120 130–105–70	275–225–185 165–135–110	225–185–155 135–110–90	205–170–115 125–100–70	185–160–120 110–95–70
300–245–200 215–180–145 190–155–125 120–95–80	195–160–130 160–130–110 140–115–95 85–70–60	165–135–90 135–110–75 120–100–65 75–60–41	205–170–140 170–140–115 150–125–100 95–75–65	170–140–115 140–115–95 125–100–85 75–65–50	155–130–85 125–105–70 110–90–60 70–55–38	140–120–90 115–100–75 105–90–65 65–55–41
350–290–235 280–230–190 205–170–140	260–215–175 205–170–140 150–125–100	220–180–120 175–145–95 130–105–70	280–230–190 220–180–150 160–135–110	230–190–155 185–150–125 135–110–90	210–170–115 170–140–95 120–100–70	190–165–120 150–130–95 110–95–70
2030	2040	4030	4040	SM30		
Max chip thickness, h_{ex} mm						
0.05 – 0.15 – 0.25						
Cutting speed v_c, m/min						
240–190–155 170–135–110 175–140–115	240–190–155 165–130–105 175–140–110	275–220–175 190–150–120 200–160–125	210–170–110 140–110–70 160–125–80	185–160–115 105–90–65 110–95–70		
235–190–150 165–130–105	200–160–130 160–125–100		185–150–95 135–105–70	170–150–110 100–85–65		
195–155–125 165–130–105	170–135–105 135–110–85		170–135–85 135–110–70	165–145–105 130–110–80		
215–170–135 150–120–95 160–130–105	210–170–135 145–115–90 160–130–100	245–195–155 165–130–105 180–145–115	185–150–95 120–100–65 145–115–75	165–140–105 90–80–60 100–85–65		
225–180–145 150–120–95	190–155–125 145–115–90		180–140–90 125–100–65	165–140–105 90–80–60		
185–150–120 150–120–95	160–125–100 130–100–80		160–125–80 125–100–65	160–135–100 115–105–75		
3020	3040	K20W	4020	4030	4040	H13A
Max chip thickness, h_{ex} mm						
0.1 – 0.2 – 0.3						
Cutting speed v_c, m/min						
265–220–180 220–180–150	240–195–135 200–165–110	255–210–170 210–170–140	255–210–170 210–170–140	215–175–145 175–145–120	195–160–110 160–130–90	120–105–75 100–85–65
290–240–195 235–190–155	260–215–145 210–170–115	290–240–195 220–180–150	275–225–185 220–180–150	230–190–155 185–155–125	215–175–120 170–140–95	130–110–85 105–90–65
180–150–125 170–140–115	165–135–90 150–125–85	175–140–115 160–130–110	175–140–115 160–130–110	145–120–100 135–110–90	135–110–75 125–100–70	80–70–50 75–65–48

Milling with large engagement

ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	CD10		H10	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.2		0.1 – 0.15 – 0.2	
Cutting speed v_c , m/min									
N	30.11	Aluminium alloys Wrought or wrought and coldworked, non-aging	400	60		1880 –1740 –1615		940 –870 –805	
	30.12	Aluminium alloys Wrought or wrought and aged	650	100		1695 –1570 –1455		845 –785 –725	
	30.21	Aluminium alloys Cast, non-aging	600	75	0.25	1880 –1745 –1615		940 –870 –810	
	30.22	Aluminium alloys Cast or cast and aged	700	90	0.25	1695 –1570 –1455		845 –785 –730	
	30.3	Aluminium alloys Al >99%	350	30		1890 –1755 –1625		945 –875 –810	
	30.41	Aluminium alloys Cast, 13–15% Si	700	130		755 –700 –650		380 –350 –325	
	30.42	Aluminium alloys Cast, 16–22% Si	700	130		565 –525 –485		285 –265 –245	
	33.1	Copper and copper alloys Free cutting alloys, $\geq 1\%$ Pb	550	110	0.25	945 –875 –810		470 –435 –405	
	33.2	Copper and copper alloys Brass, leaded bronzes, $\leq 1\%$ Pb	550	90		940 –875 –810		470 –435 –405	
	33.3	Copper and copper alloys Bronze and non-leadad copper incl. electrolytic copper	1350	100	0.25	660 –610 –565		325 –305 –285	
ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	1025		H13A	
						Max chip thickness, h_{ex} mm			
						0.05 – 0.15 – 0.2		0.1 – 0.15 – 0.2	
Cutting speed v_c , m/min									
S	20.11	Heat resistant super alloys Iron base Annealed or solution treated	2400	200	0.25	65 –60 –55		60 –55 –50	
	20.12	Heat resistant super alloys Iron base Aged or solution treated and aged	2500	280	0.25	50 –43 –40		44 –41 –38	
	20.21	Nickel base Annealed or solution treated	2650	250	0.25	65 –55 –50		55 –55 –49	
	20.22	Nickel base Aged or solution treated and aged	2900	350	0.25	40 –34 –32		35 –33 –30	
	20.24	Nickel base Cast or cast and aged	3000	320	0.25	49 –42 –39		44 –41 –38	
	20.31	Cobalt base Annealed or solution treated	2700	200	0.25	28 –22 –20		23 –21 –18	
	20.32	Cobalt base Solution treated and aged	3000	300	0.25	20 –16 –14		17 –15 –13	
	20.33	Cobalt base Cast or cast and aged	31000	320	0.25	18 –14 –13		16 –14 –13	
	23.1	Titanium alloys ¹⁾ Commercial pure (99,5% Ti) α , near α and $\alpha+\beta$ alloys, annealed $\alpha+\beta$ alloys in aged cond., β alloys, annealed or aged	1300	Rm ²⁾ 400	0.23	140 –120 –110		125 –115 –110	
	23.21	Titanium alloys ¹⁾ Commercial pure (99,5% Ti) α , near α and $\alpha+\beta$ alloys, annealed $\alpha+\beta$ alloys in aged cond., β alloys, annealed or aged	1400	Rm ²⁾ 950	0.23	75 –65 –60		65 –60 –55	
23.22	Titanium alloys ¹⁾ Commercial pure (99,5% Ti) α , near α and $\alpha+\beta$ alloys, annealed $\alpha+\beta$ alloys in aged cond., β alloys, annealed or aged	1400	Rm ²⁾ 1050	0.23	60 –50 –48		55 –49 –46		
ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	CB50		6090	
						Max chip thickness, h_{ex} mm			
						0.07 – 0.12 – 0.2		0.07 – 0.12 – 0.2	
Cutting speed v_c , m/min									
H	04.1	Extra hard steel Hardened and tempered	4200	59 HRC	0.25	160 –140 –115		85 –75 –60	
	10.1	Chilled cast iron Cast or cast and aged	2200	400	0.28	310 –270 –215		160 –140 –115	



Conditions:
Cutter, dia. 125 mm, centered over the workpiece. Working engagement 100 mm.

Milling with large engagement

CT530	1025	H10F	H13A			
Max chip thickness, h_{ex} mm						
0.1 – 0.15 – 0.2	0.1 – 0.15 – 0.2	0.1 – 0.15 – 0.2	0.1 – 0.15 – 0.2			
Cutting speed v_c, m/min						
1035–960–890	985–915–845	940–870–805	750–695–645			
930–865–800	890–825–765	845–785–725	675–630–580			
1035–960–890	985–915–850	940–870–810	750–695–645			
930–865–800	890–825–765	845–785–730	680–630–580			
1040–965–895	995–920–855	945–875–810	755–700–650			
415–385–355	395–370–340	380–350–325	300–280–260			
310–290–270	300–275–255	285–265–245	225–210–195			
520–480–445	495–460–425	470–435–405	375–350–325			
520–480–445	495–460–425	470–435–405	375–350–325			
365–335–310	345–320–295	330–305–285	265–245–225			
H10F						
2030						
2040						
Max chip thickness, h_{ex} mm						
0.1 – 0.15 – 0.2	0.05 – 0.15 – 0.2	0.05 – 0.15 – 0.25				
Cutting speed v_c, m/min						
55 –50 –47	65 –55 –50	65 –55 –46				
40 –37 –35	46 –40 –37	46 –40 –34				
50 –48 –45	60 –50 –48	60 –50 –44				
32 –30 –27	37 –32 –30	37 –32 –27				
40 –37 –34	45 –39 –36	45 –39 –34				
22 –19 –17	26 –21 –18	26 –21 –17				
15 –14 –12	19 –15 –13	19 –15 –12				
14 –13 –12	17 –14 –12	17 –14 –11				
115 –105 –100	130 –115 –105	130 –115 –95				
60 –55 –50	70 –60 –55	70 –60 –50				
49 –45 –42	55 –48 –45	55 –48 –42				
530						
4020						
3020						
3040						
1025						
Max chip thickness, h_{ex} mm						
0.07 – 0.1 – 0.2	0.1 – 0.15 – 0.25	0.1 – 0.15 – 0.25	0.1 – 0.2 – 0.25	0.07 – 0.12 – 0.2		
Cutting speed v_c, m/min						
80– 75– 55	55– 47–36	65– 55–42	44–33–29	41–35–29		
155–140–110	100–90–70	120–105–80	85–65–55	75–70–55		

Milling with small engagement

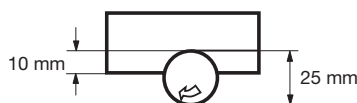
ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	530		1025	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.2		0.05 – 0.1 – 0.2	
Cutting speed v_c , m/min									
P	01.1 01.2 01.3 01.4 01.5	Steel Unalloyed C = 0.10–0.25% C = 0.25–0.55% C = 0.55–0.80%	1500	125	0.25	500–490–480	365–360–345		
			1600	150	0.25	450–440–430	330–325–310		
			1700	170	0.25	425–415–405	310–305–290		
			1800	210	0.25	370–360–355	270–265–255		
			2000	300	0.25	275–265–260	200–200–190		
	02.1 02.2	Low-alloy (alloying elements ≤5%) Non-hardened Hardened and tempered	1700	175	0.25	350–345–335	260–255–240		
			2000	300	0.25	210–205–200	155–150–145		
	03.11 03.13 03.21 03.22	High-alloy (alloying elements >5%) Annealed Hardened tool steel	1950	200	0.25	265–260–255	195–190–185		
			2150	200	0.25	220–215–210	160–160–150		
			2900	300	0.25	195–190–185	140–140–135		
			3100	380	0.25	120–120–115	90–85–85		
	06.1 06.2 06.3	Castings Unalloyed Low-alloy (alloying elements ≤5%) High-alloy (alloying elements >5%)	1400	150	0.25	360–350–340	265–260–245		
			1600	200	0.25	285–280–275	210–205–195		
			1950	200	0.25	210–205–200	155–150–145		

ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	530		1025	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.2		0.05 – 0.1 – 0.2	
Cutting speed v_c , m/min									
M	05.11 05.12 05.13	Stainless steel Ferritic/martensitic Non-hardened PH-hardened Hardened	1800	200	0.21	340–335–325	275–270–260		
			2800	330	0.21	245–240–235	195–190–180		
			2300	330	0.21	255–250–240	205–200–190		
	05.21 05.22	Austenitic Non-hardened PH-hardened	2000	200	0.21	320–310–305	270–265–255		
			2800	330	0.21	235–230–225	190–185–175		
	05.51 05.52	Austenitic-ferritic (Duplex) Non-weldable ≥ 0.05%C Weldable < 0.05%C	2000	230	0.21	310–305–295	225–220–210		
			2400	260	0.21	275–270–260	190–185–175		
	15.11 15.12 15.13 15.21 15.22 15.51 15.52	Stainless steel – Cast Ferritic/martensitic Non-hardened PH-hardened Hardened Austenitic Austenitic PH-hardened Austenitic-ferritic (Duplex) Non-weldable ≥ 0.05%C Weldable < 0.05%C	1700	200	0.25	305–295–290	245–240–230		
			2500	330	0.25	215–210–205	170–170–160		
			2100	330	0.25	235–225–220	185–180–175		
			1800	200	0.25	300–295–290	260–255–240		
			2500	330	0.25	215–210–205	170–170–160		
			1800	230	0.25	295–285–280	215–210–200		
	2200	260	0.25	255–250–245	175–175–165				

ISO	CMC No.	Material	Specific cutting force k_c 1 N/mm ²	Hardness Brinell HB	mc	3020		3040	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.25		0.1 – 0.2 – 0.3	
Cutting speed v_c , m/min									
K	07.1 07.2	Malleable cast iron Ferritic (short chipping) Pearlitic (long chipping)	800	130	0.28	310–305–290	280–270–255		
			900	230	0.28	255–250–240	230–220–210		
	08.1 08.2	Grey cast iron Low tensile strength High tensile strength	900	180	0.28	340–330–320	305–290–280		
			1100	245	0.28	270–265–255	245–235–225		
	09.1 09.2	Nodular cast iron Ferritic Pearlitic	900	160	0.28	210–210–200	190–185–175		
			1350	250	0.28	200–195–185	180–170–165		

1) 45–60° entering angle. Positive cutting geometry and coolant should be used.

2) R_m = ultimate tensile strength measured in MPa.



Conditions:

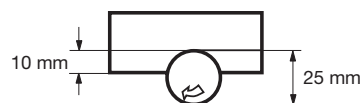
Sidemilling, cutter dia. 25 mm.
Working engagement 10 mm.

Milling with small engagement

4020	4030	4040	3040	2030	2040	P10A	SM30
Max chip thickness, h_{ex} mm							
0.1 – 0.2 – 0.3	0.1 – 0.2 – 0.3	0.1 – 0.2 – 0.4	0.1 – 0.2 – 0.3	0.05 – 0.15 – 0.25	0.1 – 0.2 – 0.4	0.05 – 0.1 – 0.15	0.1 – 0.2 – 0.4
Cutting speed v_c, m/min							
570 – 560 – 525 515 – 505 – 470 485 – 475 – 445 425 – 415 – 390 315 – 305 – 285	425 – 415 – 390 380 – 375 – 350 360 – 350 – 330 315 – 305 – 285 230 – 225 – 215	360 – 345 – 330 325 – 310 – 295 305 – 290 – 280 265 – 255 – 245 200 – 190 – 180	455 – 445 – 415 410 – 400 – 375 385 – 375 – 355 335 – 330 – 310 250 – 245 – 230	350 – 335 – 320 315 – 300 – 290 295 – 285 – 270 260 – 250 – 240 190 – 185 – 175	340 – 330 – 315 310 – 295 – 280 290 – 275 – 265 255 – 245 – 235 185 – 180 – 170	500 – 385 – 300 450 – 335 – 250	300 – 290 – 280 270 – 260 – 250 255 – 245 – 240 220 – 215 – 210 165 – 160 – 155
400 – 395 – 370 240 – 235 – 220	295 – 290 – 275 180 – 175 – 165	255 – 240 – 230 150 – 145 – 140	320 – 310 – 290 190 – 185 – 175	245 – 235 – 225 145 – 140 – 135	240 – 230 – 220 145 – 140 – 135	400 – 285 – 200 330 – 245 – 180	210 – 205 – 195 125 – 120 – 120
350 – 340 – 320 255 – 245 – 230 220 – 215 – 200 135 – 135 – 125	225 – 220 – 205 185 – 185 – 170 165 – 160 – 150 100 – 100 – 95	190 – 185 – 175 160 – 150 – 145 140 – 135 – 125 85 – 85 – 80	240 – 235 – 220 200 – 195 – 185 175 – 170 – 160 110 – 105 – 100	185 – 175 – 170 150 – 145 – 140 135 – 125 – 120 85 – 80 – 75	185 – 175 – 165 150 – 140 – 135 130 – 125 – 120 80 – 80 – 75	325 – 255 – 200	160 – 155 – 150 130 – 130 – 125 115 – 110 – 110 70 – 70 – 65
410 – 400 – 375 325 – 320 – 300 240 – 235 – 220	305 – 295 – 280 240 – 235 – 220 175 – 175 – 160	260 – 245 – 235 205 – 195 – 190 150 – 145 – 140	325 – 315 – 295 260 – 255 – 235 190 – 185 – 175	250 – 235 – 225 200 – 190 – 185 145 – 140 – 135	240 – 230 – 220 200 – 185 – 180 145 – 135 – 130		215 – 205 – 200 170 – 165 – 160 125 – 120 – 115
2030	2040	4030	4040	SM30	P10A		
Max chip thickness, h_{ex} mm							
0.05-0.15-0.25	0.1-0.2-0.3	0.1-0.2-0.3	0,1-0,2-0,4	0.1-0.2-0.4	0.05-0.1-0.15		
Cutting speed v_c, m/min							
265 – 250 – 240 185 – 175 – 170 195 – 185 – 175	285 – 280 – 265 195 – 190 – 180 205 – 200 – 190	325 – 320 – 305 225 – 220 – 210 235 – 230 – 220	250 – 240 – 230 165 – 160 – 150 190 – 180 – 170	210 – 200 – 195 120 – 115 – 110 125 – 120 – 115	200 – 170 – 150		
255 – 245 – 235 180 – 170 – 160	240 – 235 – 220 190 – 185 – 175		220 – 210 – 200 160 – 150 – 145	195 – 185 – 180 115 – 110 – 105	170 – 145 – 120		
215 – 205 – 195 180 – 170 – 160	200 – 195 – 185 160 – 155 – 150		200 – 190 – 180 160 – 155 – 145	190 – 180 – 175 145 – 140 – 135			
235 – 225 – 215 160 – 155 – 145 175 – 165 – 160	255 – 245 – 235 170 – 165 – 160 190 – 185 – 175	290 – 285 – 270 195 – 190 – 185 215 – 210 – 200	225 – 210 – 200 145 – 140 – 130 175 – 165 – 155	185 – 180 – 175 105 – 100 – 95 115 – 110 – 105			
245 – 235 – 220 160 – 155 – 145	230 – 225 – 215 170 – 170 – 160		210 – 200 – 190 145 – 140 – 135	185 – 180 – 170 105 – 100 – 95			
205 – 195 – 185 165 – 160 – 150	190 – 185 – 175 150 – 150 – 140		190 – 180 – 170 145 – 140 – 135	180 – 175 – 165 135 – 130 – 125			
4020	4030	4040	P10A	H13A	CB50	690	K20W
Max chip thickness, h_{ex} mm							
0.1-0.15-0.25	0.1-0.15-0.25	0.1-0.2-0.3	0.05-0.1-0.15	0.1-0.2-0.3	0.1-0.15-0.2	0.1-0.2-0.3	0.1-0.2-0.3
Cutting speed v_c, m/min							
295 – 290 – 280 245 – 240 – 230	250 – 245 – 235 205 – 200 – 190	225 – 215 – 210 185 – 180 – 170	450 – 345 – 260 450 – 395 – 340	135 – 130 – 125 110 – 110 – 105		1385 – 1330 – 1275 1145 – 1095 – 1050	295 – 285 – 270 245 – 235 – 225
320 – 315 – 300 260 – 250 – 240	270 – 265 – 255 215 – 210 – 205	250 – 235 – 225 200 – 190 – 180	400 – 320 – 255	145 – 145 – 140 120 – 115 – 110	1080 – 1045 – 1010 1165 – 1125 – 1085	1535 – 1470 – 1410 1220 – 1165 – 1115	340 – 325 – 315 260 – 245 – 235
200 – 195 – 190 185 – 185 – 175	170 – 165 – 160 160 – 155 – 150	155 – 150 – 140 145 – 140 – 130	500 – 465 – 430 350 – 290 – 240	95 – 90 – 85 85 – 85 – 80	630 – 610 – 590	1075 – 1030 – 985 890 – 850 – 815	200 – 195 – 185 185 – 180 – 170

Milling with small engagement

ISO	CMC No.	Material	Specific cutting force kc 1 N/mm ²	Hardness Brinell HB	mc	530		1025	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.2		0.1 – 0.15 – 0.2	
Cutting speed v_c , m/min									
N	30.11	Aluminium alloys Wrought or wrought and coldworked, non-aging	400	60		1165 –1145 –1125		1110 –1090 –1075	
	30.12	Aluminium alloys Wrought or wrought and aged	650	100		1050 –1030 –1015		1000 –985 –970	
	30.21	Aluminium alloys Cast, non-aging	600	75	0.25	1165 –1145 –1125		1110 –1095 –1075	
	30.22	Aluminium alloys Cast or cast and aged	700	90	0.25	1050 –1030 –1015			
	30.3	Aluminium alloys Al >99%	350	30		1170 –1150 –1135		1120 –1100 –1080	
	30.41	Aluminium alloys Cast, 13–15% Si	700	130		470 –460 –455		445 –440 –430	
	30.42	Aluminium alloys Cast, 16–22% Si	700	130		350 –345 –340		335 –330 –325	
	33.1	Copper and copper alloys Free cutting alloys, ≥1% Pb	550	110	0.25	585 –575 –565		560 –550 –540	
	33.2	Copper and copper alloys Brass, leaded bronzes, ≤1% Pb	550	90		585 –575 –565		555 –550 –540	
	33.3	Copper and copper alloys Bronze and non-leadad copper incl. electrolytic copper	1350	100	0.25	405 –400 –395		390 –385 –375	
ISO	CMC No.	Material	Specific cutting force kc 1 N/mm ²	Hardness Brinell HB	mc	1025		H13A	
						Max chip thickness, h_{ex} mm			
						0.1 – 0.15 – 0.2		0.1 – 0.15 – 0.2	
Cutting speed v_c , m/min									
S	20.11	Heat resistant super alloys Iron base Annealed or solution treated	2400	200	0.25	70 –70 –70		70 –65 –65	
	20.12	Heat resistant super alloys Iron base Aged or solution treated and aged	2500	280	0.25	55 –50 –50		49 –48 –48	
	20.21	Nickel base Annealed or solution treated	2650	250	0.25	70 –65 –65		65 –65 –60	
	20.22	Nickel base Aged or solution treated and aged	2900	350	0.25	42 –41 –40		40 –39 –38	
	20.24	Nickel base Cast or cast and aged	3000	320	0.25	50 –50 –50		49 –49 –48	
	20.31	Cobalt base Annealed or solution treated	2700	200	0.25	30 –29 –28		28 –27 –26	
	20.32	Cobalt base Solution treated and aged	3000	300	0.25	21 –20 –20		20 –20 –19	
	20.33	Cobalt base Cast or cast and aged	31000	320	0.25	20 –19 –18		19 –19 –18	
	23.1	Titanium alloys ¹⁾ Commercial pure (99,5% Ti) α , near α and $\alpha+\beta$ alloys, annealed $\alpha+\beta$ alloys in aged cond., β alloys, annealed or aged	1300	400	0.23	150 –145 –140		140 –140 –135	
	23.21	Titanium alloys ¹⁾	1400	950	0.23	80 –75 –75		75 –70 –70	
23.22	Titanium alloys ¹⁾	1400	1050	0.23	65 –60 –60		60 –60 –60		
ISO	CMC No.	Material	Specific cutting force kc 1 N/mm ²	Hardness Brinell HB	mc	530		4020	
						Max chip thickness, h_{ex} mm			
						0.07 – 0.12 – 0.2		0.07 – 0.12 – 0.25	
Cutting speed v_c , m/min									
H	04.1	Extra hard steel Hardened and tempered	4200	59 HRC	0.25	95 –90 –85		65 –60 –60	
	10.1	Chilled cast iron Cast or cast and aged	2200	400	0.28	180 –175 –165		125 –120 –115	



Conditions:

Sidemilling, cutter dia. 25 mm.
Working engagement 10 mm.

Milling with small engagement

H10F	H13A	CD10	H13A				
Max chip thickness, h_{ex} mm							
0.1-0.15-0.2	0.1-0.15-0.2	0.1-0.15-0.2	0.1-0.15-0.2				
Cutting speed v_c, m/min							
1060 –1040–1025	845 –830 –820	2115 –2080 –2045	1060 –1040 –1025				
955 –935 –920	765 –750 –740	1905 –1875 –1845	955 –935 –920				
1060 –1040 –1025	845 –835 –820	215 –2080 –2050	1060 –1040 –1025				
955 –940 –925	765 –750 –740	1910 –1875 –1845	995 –940 –925				
1065 –1045 –1030	850 –840 –825	2130 –2095 –2060	1065 –1045 –1030				
425 –420 –410	340 –335 –330	850 –835 –825	425 –420 –410				
320 –315 –310	255 –250 –245	640 –630 –620	320 –315 –310				
530 –520 –515	425 –420 –410	1060 –1045 –1025	530 –520 –515				
530 –520 –515	425 –415 –410	1060 –1045 –1025	530 –520 –515				
370 –365 –360	295 –290 –285	740 –730 –715	370 –365 –360				
H10F							
2030							
2040							
Max chip thickness, h_{ex} mm							
0.1-0.15-0.2	0.05-0.15-0.2	0.05-0.15-0.25					
Cutting speed v_c, m/min							
60 –60 –60	65 –65 –65	65 –65 –60					
45 –45 –44	49 –47 –47	49 –47 –46					
60 –60 –55	65 –60 –60	65 –60 –60					
36 –35 –35	39 –38 –37	39 –38 –37					
45 –44 –43	48 –47 –46	48 –47 –45					
26 –25 –24	28 –27 –26	28 –27 –26					
18 –18 –17	20 –20 –19	20 –20 –19					
17 –17 –16	19 –18 –17	19 –18 –17					
130 –125 –125	140 –135 –135	140 –135 –130					
65 –65 –65	75 –70 –70	75 –70 –70					
55 –55 –55	60 –60 –55	60 –60 –55					
3020							
3040							
1025							
P10A							
CB50							
Max chip thickness, h_{ex} mm							
0.1-0.2-0.25	0.1-0.2-0.25	0.07-0.12-0.2	0.05-0.1-0.15	0.07-0.12-0.2			
Cutting speed v_c, m/min							
75 –75 –70	55 –50 –49	47 –46 –44	150 –90 –55	190 –185 –175			
145 –140 –135	100 –95 –95	90 –85 –85		355 –345 –330			

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