SANDVIK Coromant

2023.1

Supplement

CoroMill® MH20

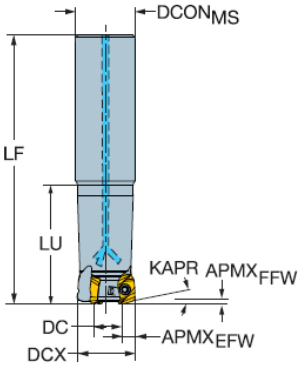
Milling

CoroMill® MH20
CoroMill® MH20 high-feed milling cutter
CoroMill® MH20 insert for milling

CoroMill® MH20 high-feed milling cutter

Cylindrical shank - Internal coolant supply

KAPR 15°



Metric version

DC	SSC	CZCMS	APMXFFW	RMPX	AZ	CNSC			Ordering code	Dimensions, mm DCONMS	DCX	BD	LF	LU	NM	KG	RPMX	CICT	MIID
8.2	06	16	0.80	9.50°	0.7	1	2		MH20-R016A16-06L	16.0	16.0	16.0	100.0	40.0	0.9	0.13	26200	2	MH20-060320..
10.4	08	20	1.20	9.60°	0.9	1	2		MH20-R020A20-08L	20.0	20.0		120.0	40.0	1.4	0.25	23400	2	MH20-080425..
12.2	06	20	0.80	5.80°	0.7	1	2		MH20-R020A20-06L	20.0	20.0	20.0	180.0	80.0	0.9	0.38	16900	2	MH20-060320..
	06	20	0.80	5.80°	0.7	1	3		MH20-R020A20-06M	20.0	20.0		120.0	40.0	0.9	0.25	23400	3	MH20-060320..
15.4	08	25	1.20	5.70°	0.9	1	2		MH20-R025A25-08L	25.0	25.0		200.0	100.0	2.0	0.66	18900	2	MH20-080425..
	08	25	1.20	5.70°	0.9	1		3	MH20-R025A25-08M	25.0	25.0		150.0	50.0	2.0	0.50	20900	3	MH20-080425..
17.2	06	25	0.80	3.70°	0.7	1		3	MH20-R025A25-06M	25.0	25.0		200.0	80.0	0.9	0.68	18900	3	MH20-060320..
	06	25	0.80	3.70°	0.7	1	4		MH20-R025A25-06H	25.0	25.0		150.0	50.0	0.9	0.51	20900	4	MH20-060320..
22.4	08	32	1.20	3.60°	0.9	1		3	MH20-R032A32-08L	32.0	32.0		210.0	100.0	2.0	1.15	18500	3	MH20-080425..
	08	32	1.20	3.60°	0.9	1	4		MH20-R032A32-08M	32.0	32.0		150.0	60.0	2.0	0.82	18500	4	MH20-080425..
23.5	06	32	0.80	2.40°	0.7	1		5	MH20-R032A32-06H	32.0	32.0		210.0		0.9	1.16	18500	5	MH20-060320..

Inch version

DC	SSC	CZCMS	APMXFFW	RMPX	AZ	CNSC			Ordering code	Dimensions, inch DCONMS	DCX	LF	LU	FT/LBS	LBS	RPMX	CICT	MIID
.322	06	5/8	.031	10°	.028	1	2		MH20-AR016O16-06L	.625	.625	3.937	1.575	.6	0.28	26300	2	MH20-060320..
.418	08	3/4	.047	10°	.035	1	2		MH20-AR019O19-08L	.750	.750	4.724	1.575	1.0	0.49	24000	2	MH20-080425..
.443	06	3/4	.031	6°	.028	1	2		MH20-AR019O19-06L	.750	.750	7.087	3.150	.6	0.75	15500	2	MH20-060320..
	06	3/4	.031	6°	.028	1	3		MH20-AR019O19-06M	.750	.750	4.724	1.575	.6	0.50	24000	3	MH20-060320..
.622	08	1	.047	5°	.035	1	2		MH20-AR025O25-08L	1.000	1.000	7.874	3.937	1.4	1.50	19500	2	MH20-080425..
	08	1	.047	5°	.035	1	3		MH20-AR025O25-08M	1.000	1.000	5.906	1.969	1.4	1.14	20700	3	MH20-080425..
.693	06	1	.031	3°	.028	1		3	MH20-AR025O25-06M	1.000	1.000	7.874	3.937	.6	1.53	19500	3	MH20-060320..
	06	1	.031	3°	.028	1	4		MH20-AR025O25-06H	1.000	1.000	5.906	1.969	.6	1.17	20700	4	MH20-060320..
.872	08	1 1/4	.047	3°	.035	1		3	MH20-AR032O32-08L	1.250	1.250	8.268	3.937	1.4	2.49	18600	3	MH20-080425..
	08	1 1/4	.047	3°	.035	1	4		MH20-AR032O32-08M	1.250	1.250	5.906	2.362	1.4	1.77	18600	4	MH20-080425..
1.122	08	1 1/4	.047	2°	.035	2		4	MH20-AR038O32-08M	1.250	1.500	9.843	4.724	1.4	3.26	15800	4	MH20-080425..
	08	1 1/4	.047	2°	.035	1		5	MH20-AR038O32-08H	1.250	1.500	8.268	3.150	1.4	2.72	16900	5	MH20-080425..

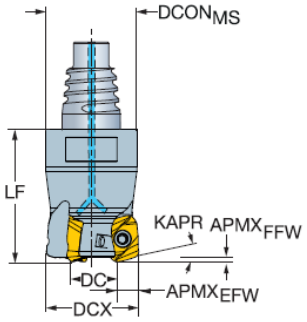
DCX	DC	SSC	CZCMS	APMXEFW	APMXFFW	RMPX	AZ	CNSC		Ordering code	DCONMS	LF	FT/LBS	LBS	RPMX	MIID
1.250	.918	06	1 1/4	.165	.031	2.40°	.028	1	5	MH20-AR032O32-06H	1.250	8.268	.6	2.52	18500	MH20-060320..

Spare parts			
Insert size	Insert screw	Bit	Torque
06	5513 020-48	5680 084-04 (7IP)	0,9 N.m
08	5513 020-64	5680 084-06 (10IP)	2 N.m

CoroMill® MH20 high-feed milling cutter

Coromant EH - Internal coolant supply

KAPR 15°



Metric version

DC	SSC	CZCMS	APMXFFW	RMPX	AZ	CNSC			Ordering code	Dimensions, mm DCONMS	DCX	LF	NM	KG	RPMX	CICT	MIID
8.2	06	E16	0.80	9.50°	0.7	1	2		MH20-R016EH16-06L	15.5	16.0	27.0	0.9	0.08	26200	2	MH20-060320..
10.4	08	E20	1.20	5.80°	0.9	1	2		MH20-R020EH20-08L	19.3	20.0	30.0	1.4	0.14	23400	2	MH20-080425..
12.2	06	E20	0.80	5.80°	0.7	1	3		MH20-R020EH20-06M	19.3	20.0	30.0	0.9	0.15	23400	3	MH20-060320..
15.4	08	E25	1.20	5.70°	0.9	1	2		MH20-R025EH25-08L	24.2	25.0	35.0	2.0	0.27	20900	2	MH20-080425..
	08	E25	1.20	5.70°	0.9	1	3		MH20-R025EH25-08M	24.2	25.0	35.0	2.0	0.27	20900	3	MH20-080425..
17.2	06	E25	0.80	3.70°	0.7	1		3	MH20-R025EH25-06M	24.2	25.0	35.0	0.9	0.28	20900	3	MH20-060320..
	06	E25	0.80	3.70°	0.7	1	4		MH20-R025EH25-06H	24.2	25.0	35.0	0.9	0.28	20900	4	MH20-060320..
20.0	06	E20	0.80	5.80°	0.7	1	2		MH20-R020EH20-06L	19.3	20.0	30.0	0.9	0.15	23400	2	MH20-060320..
25.4	08	E25	1.20	3.60°	0.9	1		3	MH20-R032EH25-08L	24.2	32.0	35.0	2.0	0.34	18500	3	MH20-080425..
	08	E25	1.20	3.60°	0.9	1	4		MH20-R032EH25-08M	24.2	32.0	35.0	2.0	0.33	18500	4	MH20-080425..

Inch version

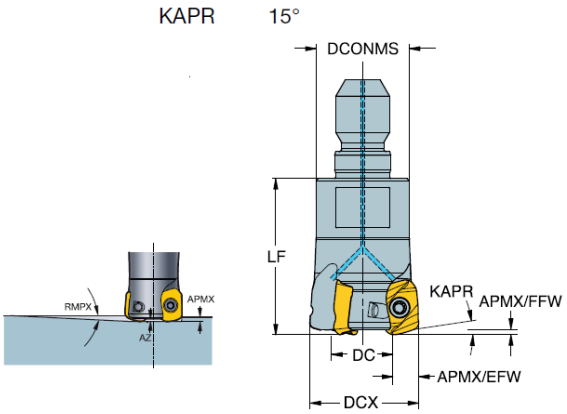
DC	SSC	CZCMS	APMXFFW	RMPX	AZ	CNSC			Ordering code	Dimensions, inch DCONMS	DCX	LF	FT/LBS	LBS	RPMX	CICT	MIID
.318	06	E16	.047	10°	.035	1		2	MH20-AR016EH16-06L	.610	.625	1.063	.6	0.07	26300	2	MH20-060320..
.443	06	E20	.031	6°	.028	1	2		MH20-AR019EH20-06L	.728	.750	1.181	.6	0.31	24000	2	MH20-060320..
	06	E20	.031	6°	.028	1	3		MH20-AR019EH20-06M	.728	.750	1.181	.6	0.31	24000	3	MH20-060320..
.622	08	E25	.047	5°	.035	1	2		MH20-AR025EH25-08L	.965	1.000	1.378	1.4	0.61	20700	2	MH20-080425..
	08	E25	.047	5°	.035	1	3		MH20-AR025EH25-08M	.965	1.000	1.378	1.4	0.59	20700	3	MH20-080425..
.693	06	E25	.031	3°	.028	1		3	MH20-AR025EH25-06M	.965	1.000	1.378	.6	0.62	20700	3	MH20-060320..
	06	E25	.031	3°	.028	1	4		MH20-AR025EH25-06H	.965	1.000	1.378	.6	0.62	20700	4	MH20-060320..
.872	08	E25	.031	3°	.035	1		3	MH20-AR032EH25-08L	.965	1.250	1.378	1.4	0.73	18600	3	MH20-080425..
	08	E25	.047	3°	.035	1	4		MH20-AR032EH25-08M	.965	1.250	1.378	1.4	0.72	18600	4	MH20-080425..

For complete list of spare parts, see www.sandvik.coromant.com

Spare parts			
Insert size	Insert screw	Bit	Torque
06	5513 020-48	5680 084-04 (7IP)	0,9 N.m
08	5513 020-64	5680 084-06 (10IP)	2 N.m

CoroMill® MH20 face milling cutter

Threaded coupling - Internal coolant supply



Metric version

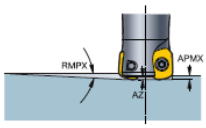
DCX	DC	SSC	CZC_{MS}	$APMX_{EFW}$	$APMX_{FFW}$	RMPX	AZ	CNSC			Ordering code	Dimensions, mm $DCON_{MS}$	LF	NM	KG	RPMX	MIID
16.0	7.5	06	M8	4.2	0.80	9.50°	0.7	1	2		MH20-R016T08-06L	12.8	25.0	0.9	0.03	26100	MH20-060320..
20.0	9.3	08	M10	5.3	1.20	5.80°	0.9	1	2		MH20-R020T10-08L	17.8	30.0	1.4	0.05	23400	MH20-080425..
	11.5	06	M10	4.2	0.80	5.80°	0.7	1		3	MH20-R020T10-06M	17.8	30.0	0.9	0.05	23400	MH20-060320..
25.0	14.3	08	M12	5.3	1.20	5.70°	0.9	1	3		MH20-R025T12-08M	20.8	35.0	2.0	0.09	20900	MH20-080425..
	16.5	06	M12	4.2	0.80	3.70°	0.7	1		4	MH20-R025T12-06H	20.8	35.0	0.9	0.10	20900	MH20-060320..
32.0	21.3	08	M16	5.3	1.20	3.60°	0.9	1	4		MH20-R032T16-08M	28.8	45.0	2.0	0.22	18500	MH20-080425..
	23.5	06	M16	4.2	0.80	2.40°	0.7	1		5	MH20-R032T16-06H	28.8	45.0	0.9	0.23	18500	MH20-060320..

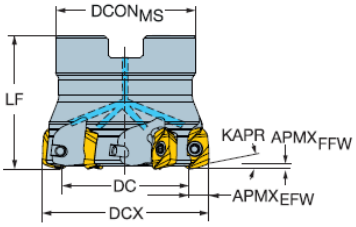
Spare parts			
Insert size	Insert screw	Bit	Torque
06	5513 020-48	5680 084-04 (7IP)	0,9 N.m
08	5513 020-64	5680 084-06 (10IP)	2 N.m

CoroMill® MH20 high-feed milling cutter

Arbor - Internal coolant supply

KAPR 15°





Metric version

DCX	DC	SSC	CZC_{MS}	$APMX_{EFW}$	$APMX_{FFW}$	RMPX	AZ	CNSC			Ordering code	Dimensions, mm $DCON_{MS}$	ISO	LF	NM	KG	RPMX	MIID
40.0	29.3	08	16	5.3	1.20	2.50°	0.9	1		4	MH20-R040Q16-08M	16.0	A	40.0	2.0	0.19	16500	MH20-080425..
	29.3	08	16	5.3	1.20	2.50°	0.9	1	5		MH20-R040Q16-08H	16.0	A	40.0	2.0	0.18	16500	MH20-080425..
44.0	33.3	08	16	5.3	1.20	2.30°	0.9	1		5	MH20-R044Q16-08H	16.0	A	40.0	2.0	0.21	15700	MH20-080425..
50.0	39.3	08	22	5.3	1.20	1.70°	0.9	1		5	MH20-R050Q22-08M	22.0	A	40.0	2.0	0.30	14800	MH20-080425..
	39.3	08	22	5.3	1.20	1.70°	0.9	1	6		MH20-R050Q22-08H	22.0	A	40.0	2.0	0.29	14800	MH20-080425..
52.0	41.3	08	22	5.3	1.20	1.70°	0.9	1		5	MH20-R052Q22-08M	22.0	A	40.0	2.0	0.31	14500	MH20-080425..
	41.3	08	22	5.3	1.20	1.70°	0.9	1		6	MH20-R052Q22-08H	22.0	A	40.0	2.0	0.31	14500	MH20-080425..
54.0	43.3	08	22	5.3	1.20	1.65°	0.9	1		5	MH20-R054Q22-08M	22.0	A	40.0	2.0	0.33	14200	MH20-080425..
	43.3	08	22	5.3	1.20	1.65°	0.9	1		6	MH20-R054Q22-08H	22.0	A	40.0	2.0	0.32	14200	MH20-080425..
63.0	52.3	08	22	5.3	1.20	1.50°	0.9	1		6	MH20-R063Q22-08M	22.0	A	40.0	2.0	0.41	13200	MH20-080425..
	52.3	08	22	5.3	1.20	1.50°	0.9	1		7	MH20-R063Q22-08H	22.0	A	40.0	2.0	0.40	13200	MH20-080425..
66.0	55.3	08	22	5.3	1.20	1.40°	0.9	1		6	MH20-R066Q22-08M	22.0	A	40.0	2.0	0.44	12800	MH20-080425..
	55.3	08	22	5.3	1.20	1.40°	0.9	1		7	MH20-R066Q22-08H	22.0	A	40.0	2.0	0.43	12800	MH20-080425..

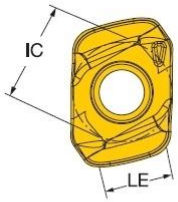
Inch version

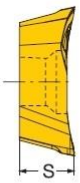
DCX	DC	SSC	CZC_{MS}	$APMX_{EFW}$	$APMX_{FFW}$	RMPX	AZ	CNSC			Ordering code	Dimensions, inch $DCON_{MS}$	ISO	LF	FT/LBS	LBS	RPMX	MIID
2.000	1.581	08	3/4	.209	.047	1.70°	.035	1		5	MH20-AR051R19-08M	.750	A	1.575	1.4	0.71	14700	MH20-080425..
	1.581	08	3/4	.209	.047	1.70°	.035	1	6		MH20-AR051R19-08H	.750	A	1.575	1.4	0.69	14700	MH20-080425..
2.500	2.081	08	3/4	.209	.047	1.50°	.035	1		6	MH20-AR063R19-08M	.750	A	1.575	1.4	0.94	13100	MH20-080425..
	2.081	08	3/4	.209	.047	1.50°	.035	1		7	MH20-AR063R19-08H	.750	A	1.575	1.4	0.92	13100	MH20-080425..

Spare parts			
Insert size	Insert screw	Bit	Torque
08	5513 020-64	5680 084-06 (10IP)	2 N.m

CoroMill® MH20 insert for milling

KRINS 15°

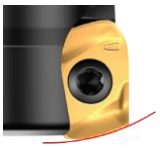




		SSC	CEMR	RE	Ordering code	P		M					S				H		Dimensions, mm, inch		
						1130	4340	1040	1130	2040	4340	S30T	S40T	1130	2040	S30T	S40T	1010	1130	W1	LE	S
	L30	06	15.0	1.60	MH20-060320E-L30			★		☆		☆	☆		☆	★	☆			6.4	4.5	3.42
			.591	.063																.252	.177	.135
Medium	L50	06	15.0	1.60	MH20-060320E-L50			★		☆		☆	☆		☆	★	☆			6.4	4.5	3.42
			.591	.063																.252	.177	.135
	M20	06	15.0	1.60	MH20-060320M-M20	☆	★		☆		☆			☆				★	☆	6.4	4.5	3.42
			.591	.063																.252	.177	.135
	M50	06	15.0	1.60	MH20-060320M-M50	☆	★		☆		☆			☆					☆	6.4	4.5	3.42
			.591	.063																.252	.177	.135
	L30	08	25.0	2.10	MH20-080425E-L30			★		☆		☆	☆		☆	★	☆			8.5	5.9	4.03
			.984	.083																.335	.232	.159
	L50	08	25.0	2.10	MH20-080425E-L50			★		☆		☆	☆		☆	★	☆			8.5	5.9	4.03
			.984	.083																.335	.232	.159
	M20	08	25.0	2.10	MH20-080425M-M20	☆	★		☆		☆			☆				★	☆	8.5	5.9	4.03
			.984	.083																.335	.232	.159
	M50	08	25.0	2.10	MH20-080425M-M50	☆	★		☆		☆			☆					☆	8.5	5.9	4.03
			.984	.083																.335	.232	.159

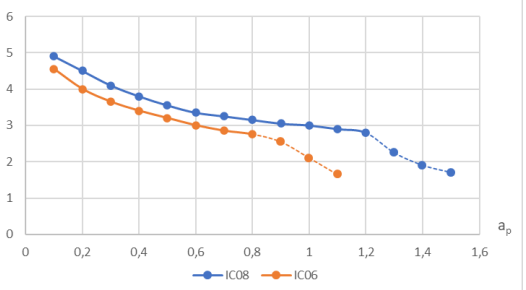
Cutting data, h_{ex} recommendations

insert size	ISO area	Hex recommnedations			
		E-L30	E-L50	M-M20	M-M50
iC 06	ISO S (TiAl6V4)	0.08 (0.03–0.16)			
	ISO S (Inconel)		0.09 (0.03–0.16)		
	ISO M (316L)	0.08 (0.05–0.21)	0.09 (0.05–0.21)		
	ISO P			0.16 (0.05–0.21)	0.21 (0.11–0.26)
	ISO H			0.12 (0.04–0.16)	
iC 08	ISO S (TiAl6V4)	0.11 (0.03–0.16)			
	ISO S (Inconel)		0.13 (0.03–0.16)		
	ISO M (316L)	0.11 (0.05–0.21)	0.13 (0.05–0.21)		
	ISO P			0.18 (0.05–0.26)	0.26 (0.11–0.34)
	ISO H			0.14 (0.04–0.2)	



Curve cutting edge

h_{ex} modification factor #1 (ap)



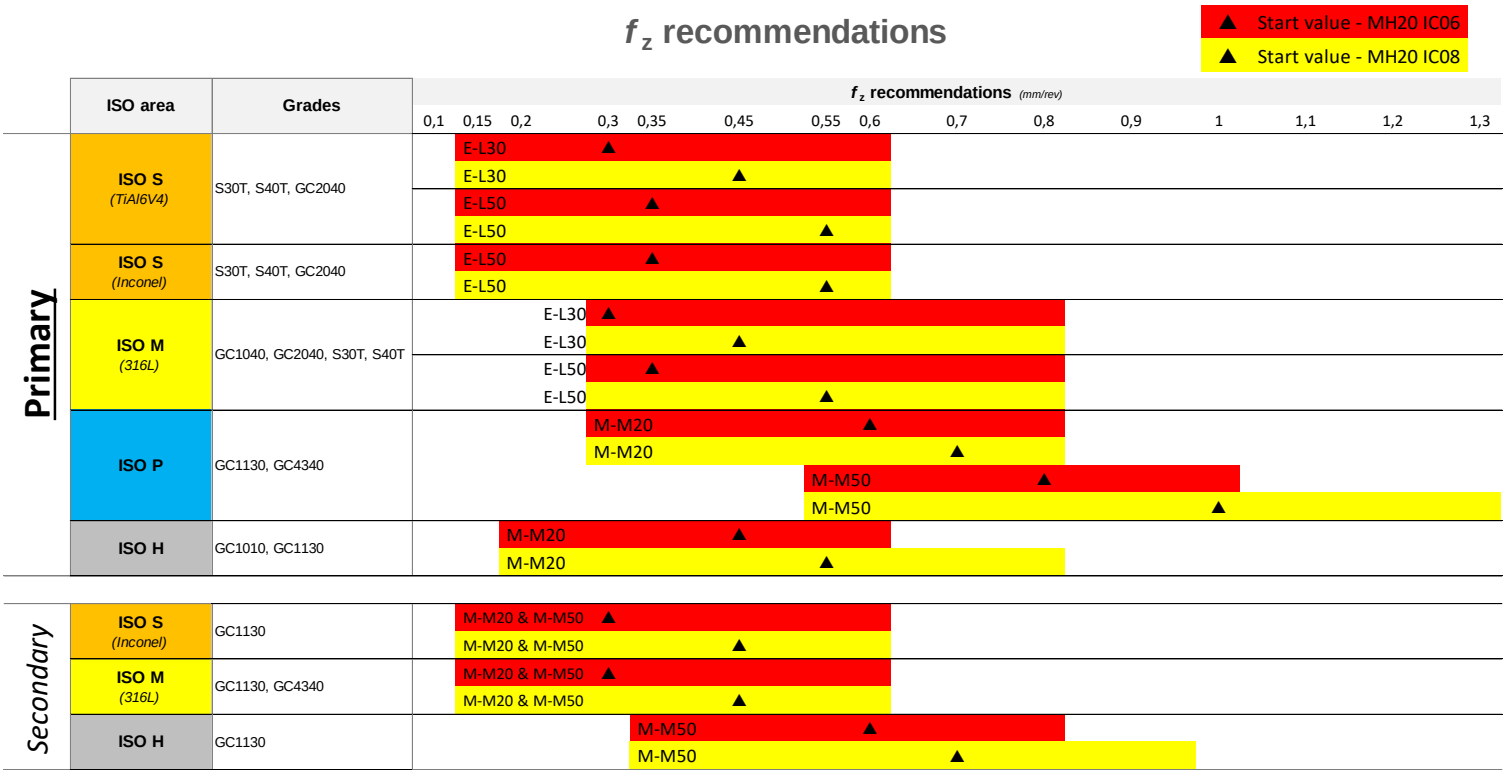
But if the radial engagement is ***ae≤25%DCX*** *should be applied the second modification factor according this table >>>*

a_e / DC = %	**Modification factor #2** (ae)
0.25	1.2
0.20	1.25
0.15	1.4
0.10	1.7
0.075	1.9
0.050	2.3
0.025	3.2

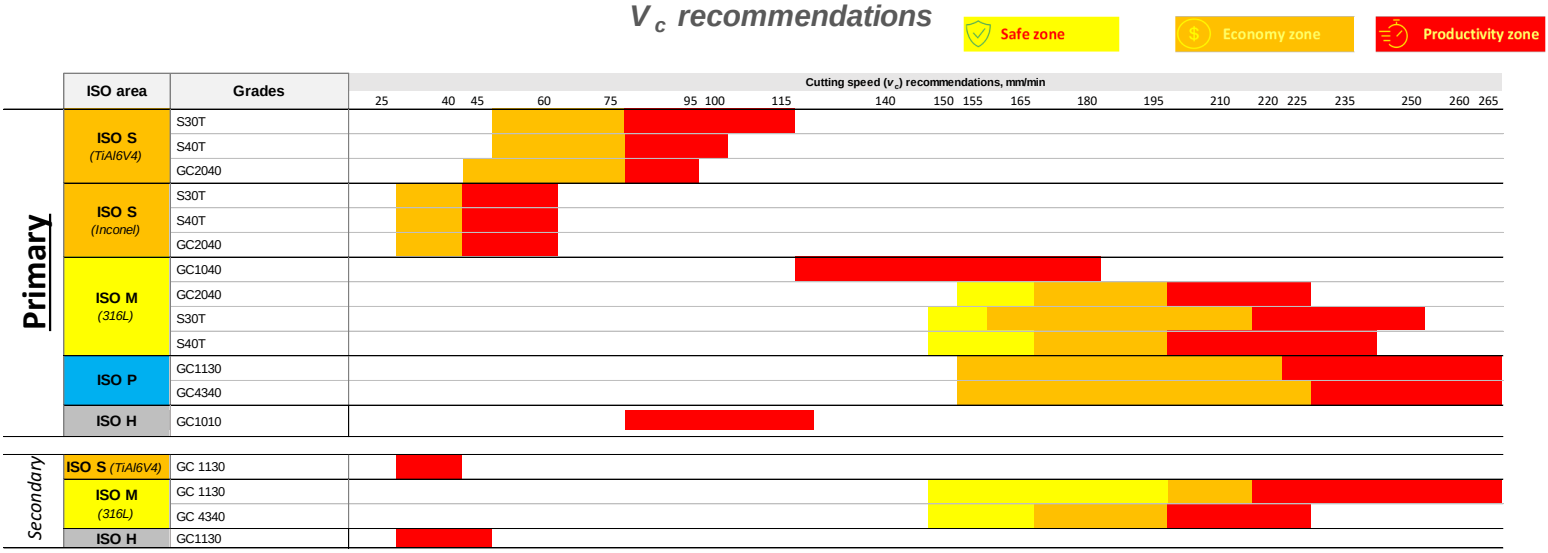
Note! f_z = Recommended h_{ex} × **modification factor #1 & #2** at defined a_p and a_e (if necessary)

Cutting data – CoroMill® MH20

f_z recommendations



V_c recommendations

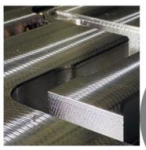


Performance test, ISO P

Industry segment: Plastic injection mould
Component: Hot chamber, thickness 60 mm
Material: P2.5.Z.HT (SSAB Toolox 33)
Operation: Full slot
Machine: MAZAK SMOOTH FJV 35/80, VMC, ISO50
Coolant: External air

	Competitor	Sandvik Coromant
Tool	Ø20	MH20-R020A20-06
Insert	Double sided	MH20-060320M M50 1130
DCX, mm / z_n	20/3	20/3
Tool overhang, mm	Chuck + 50 = 160	Chuck + 50 = 160
v_c, m/min	135	135
n, rpm	2150	2150
f_z, mm/z	1.32	1.32
v_f, mm/min	8500	8500
a_p, mm	0.65	0.65
a_e, mm	20	20
Time in cut, min	140	140
Tool life, min	**70**	**70**

Result: The competitor insert shows notch wear and micro chipping. CoroMill® MH20 has less wear and machining is secure and reliable.



Secure and reliable performance

Competitor

CoroMill® MH20, M-M50 GC1130

Performance test, ISO M

Industry segment: Food processing machine component
Component: Side dx and sx
Material: M1.0.Z.AQ (AISI 304)
Operation: Side and face milling
Machine: DMG MORI NT4250/1500, Coromant Capto® C6
Coolant: External air

	Competitor	Sandvik Coromant
Tool	Ø25	MH20-025A25-06H
Insert	Single sided	MH20-06 03 20E-L30 1040
DCX, mm / z_n	25/4	25/4
Tool overhang, mm	Chuck + 70 = 160	Chuck + 90 = 180
v_c, m/min	120	120
n, rpm	1530	1530
f_z, mm/z	0.85	0.85
v_f, mm/min	5200	5200
a_p, mm	0.75	0.75
a_e, mm	20	20
Time in cut, min	16.5	16.5
Tool life	**3 components / 49.5 min**	**3 components / 49.5 min**

Result: After machining three components, the competitor insert clearly showed notch wear and micro chipping. The CoroMill® MH20 insert had less wear proving a reliable cutting edge with a secure and better edge-line quality.

Secure and reliable performance

Competitor

CoroMill® MH20, E-L30 GC1040

Performance test, ISO M

Industry segment: Aerospace
Component:
Material: M1.0.Z.AQ (AISI 316L)
Operation: External ramping
Machine: DMG DMU 80 evo
Coolant: Dry

	Competitor	Sandvik Coromant
Tool	Ø25	MH20-R020A20-06M
Insert	double sided	MH20-060320M-M20 1130
DCX, mm / z_n	20/4	20/3
Tool overhang, mm		
v_c, m/min	-	170
n, rpm	-	
f_z, mm/z	-	0,37 - 0.85 *(depending on component stability)*
v_f, mm/min	5000	3000 - 7000
a_p, mm	-	0,5
a_e, mm	5-15	5-15
Time in cut, min	3	3
Tool life	**40-50 components / 150 min**	**70 components / 215 min**

Result: Tool life improved by 50% with only 3 inserts/tool instead of 4.

Secure and reliable performance

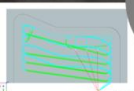
Performance test, long overhang in ISO S

Industry segment: Aerospace
Component: Demo component
Material: S4.2.Z.AN (TiAl6V4)
Operation: Rough pocketing at 4×DC
Machine: DMG MORI, Coromant Capto® C10, 5-axis VMC set-up
Coolant: Internal (emulsion)

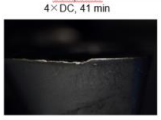
	Competitor	Sandvik Coromant
Tool	Ø25	MH20-R025EH25-08M
Insert	Single sided	MH20-080425 M-M20 S30T
DCX, mm / z_n	25/2	25/3
Tool overhang	4×DC	4×DC
v_c, m/min	55	69
h_{ex}, mm	0.139	0.15
a_p, mm	0.75	0.7
a_e, %	75%	100%

Result: The test proves that the edge-line quality of CoroMill® MH20 is much more secure and better than the competitor. With its reliable cutting edge, a more secure machining process can be achieved.

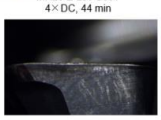
Secure and reliable performance



Competitor
4×DC, 41 min



MH20 E-L30 S30T
4×DC, 44 min



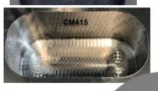
Performance test, ISO S

Industry segment: Aerospace
Component: Wing support
Material: S4.3.Z.AN (Ti6Al4V)
Operation: Pocketing
Machine: Okuma M560V-Genos, CAT40 BIG-PLUS®
Coolant: Internal (emulsion) 6% Blasers

	CoroMill® 415	CoroMill® MH20
Tool	415-016A12-05H	MH20-AR016O16-06L
Insert	415N-050212E-M30 S30T	M20-060320E-L30 S30T
DCX, mm / z_n	16/3	15.875/2
Tool overhang, mm	40	40
v_c, m/min	69	69
n, rpm	1000	1000
f_z, mm/z	0.51	0.51
v_f, mm/min	1530	1016
a_p, mm	0.8	0.8
a_e, mm	16	15.8
Time in cut/pocket, min	2.7	4
Tool life, min	**49**	**64.5**

Result: With CoroMill® MH20, the customer improved tool life by 32% and achieved a much higher component surface quality. The insert corner of CoroMill® MH20 showed better edge-line security and less vibration tendency.

CoroMill® 415, E-M30 S30T
49 minutes



CoroMill® MH20, E-L30 S30T
64.5 minutes

+32%
Tool life

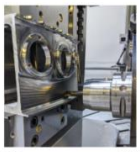
Performance test, ISO S

Industry segment: Aerospace
Component: Engine casing – Demo piece
Material: S2.0.Z.AG (Inconel 718 Aged 44HRC)
Operation: Rough face milling
Machine: DMG MORI, Coromant Capto ® C10, 5 axis VMC set up
Coolant: Internal (emulsion)

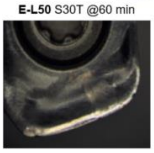
MH20-060320**E-L50** S30T vs MH20-060320**E-L30** S30T

Tool	CoroChuck®930-HD Tool: MH20-R016A16-06L Insert: MH20-060320E-L50/L30 S30T
v_c, m/min	30
f_z, mm/z	0.4
v_f, mm/min	478
a_p, mm	0.6
a_e, mm / ramping	7 ***+ optimized path programming***
Time in cut/pocket, min	2.25
Tool overhang, mm	48 (3×DC)
Machining time, min	**60 (E-L50), 45 (E-L30)**
MRR (Q), cm³/min	1,92

Result: optimized geometry for Inconel applications, CoroMill® MH20 insert MH20-060320**E-L50** S30T provides even higher performances than sharp edge geometry **E-L30**



E-L50 S30T @60 min



E-L30 S30T@45 min

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