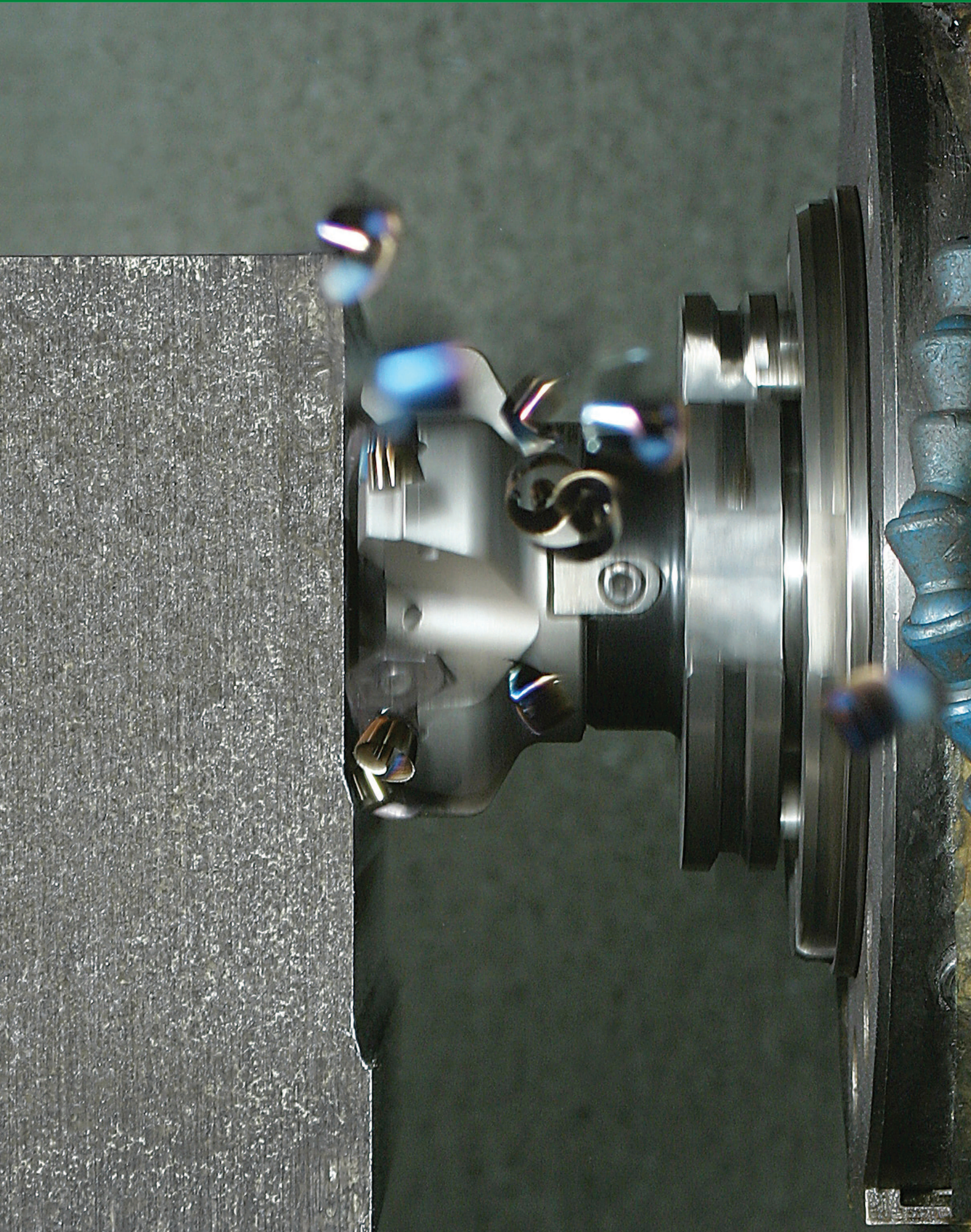




Indexable Milling • Face Mills

M1200 Mini • First Choice for Taper 40 Spindle Machines	H2-H23
M1200 • First Choice for Taper 50 Spindle Machines.....	H24-H41
M640 • High Positive Geometries for Low Power Machines	H42-H49
M660 • Heavy-Duty Applications	H50-H60
SuperFeed • PCD Face Milling & End Milling Platform.....	H62-H68
M4000 • Flexible Cartridge Milling System	H70-H74



One Series Meets Every Face Milling Need •

WIDIA™ Victory™ M1200 Mini

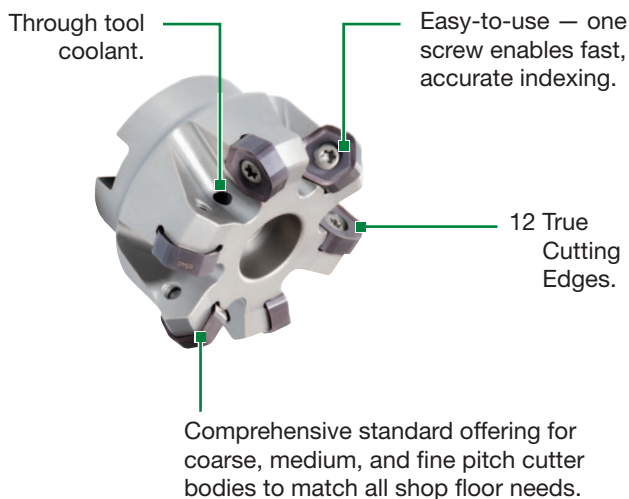
For consistent performance, look no further than the WIDIA Victory™ M1200 Mini. This easy-to-use product ensures great tool life, reduced machining time, and maximum productivity.

- Low cost per edge and high productivity.
- Reduced cutting forces due to soft cutting action.
- Significantly increased Metal Removal Rates (MRR).
- Victory™ M1200 Mini available in 15°, 45°, and 60° lead.
- WIDIA premium milling grades.
- Excellent tool life in light to heavy machining.
- Shorter machining cycle times.



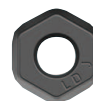
M1200 Mini

Best-in-class face milling platform to boost productivity on taper 40 spindle milling machines and driven tools.



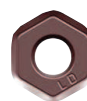
Latest soft cutting edge insert design for all material groups

-FNLDJ



Machining Aluminium

-ENLD



Light Machining

-SNGD



General Purpose

-SNHD



Heavy Machining

Face Mills

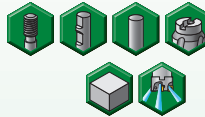
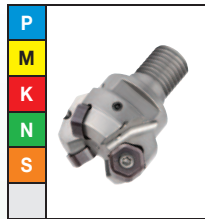


Victory™ M1200 Mini HF 15°

Max depth of cut: 1,7mm

Lead angle: 15°
Indexes per insert: 12
Diameter: 25–80mm

Pages: H5–H11

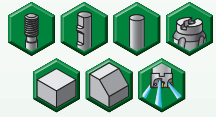
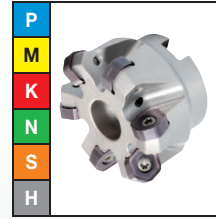


Victory™ M1200 Mini 45°

Max depth of cut: 3,5mm

Lead angle: 45°
Indexes per insert: 12
Diameter: 25–125mm

Pages: H12–H19

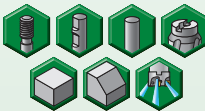


Victory™ M1200 Mini HD 60°

Max depth of cut: 4,7mm

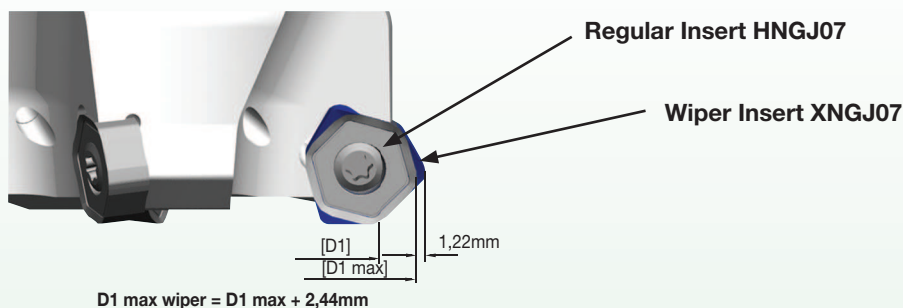
Lead angle: 60°
Indexes per insert: 12
Diameter: 40–125mm

Pages: H20–H23



■ Easy-to-use wiper insert setup to achieve excellent surface floor finish

Wiper insert overlapping vs. regular insert



- Wiper inserts only applied with 45° lead angle cutter bodies.
- Easy to use. Regular and wiper inserts are loaded into fixed pockets. No adjustment required.
- Please have D1 max wiper in mind in case of limited working area.
- Use wiper inserts only in combination with periphery ground regular inserts HNGJ07.
- Up to cutting diameter D1=100mm load one wiper insert.
- For cutting diameter D1=125mm and above load two wiper inserts.
- Each wiper insert XNGJ07 can be applied with three right hand R and three left hand L cutting edges.



Victory™ M1200 Mini Series

Victory™ M1200 Mini HF High-Feed 15°

12 True
Cutting
Edges



15° Lead

Insert HNGJ0704
HNPJ0704

Ap1 max = 1,7mm

M1200 Mini HF can be loaded with all M1200 Mini standard inserts, except wiper inserts.

Victory™ M1200 Mini HF High-Feed



First choice for long reach face milling applications or light fixtures.

Chip thinning effect due to lead angle 14.5°. Tremendous enlargement of feed rate and MRR.

Up to 40% shorter machining cycle time.

Victory™ M1200 Mini 45°

12 True
Cutting
Edges



45° Lead

Insert HNGJ0704
HNPJ0704

Ap1 max = 3,5mm

Best-in-class leader in face milling up to Ap1 max = 3,5mm. Excellent choice for near net shape strategies and driven tools.

Victory™ M1200 Mini HD 60°

12 True
Cutting
Edges



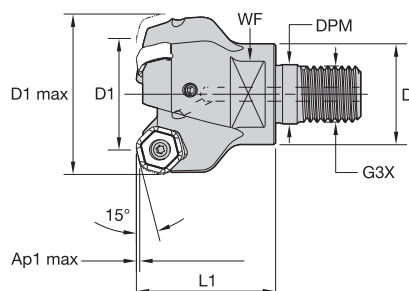
60° Lead

Insert HNGJ0704
HNPJ0704

Ap1 max = 4,7mm

Achieve a higher axial depth-of-cut capability up to Ap1 = 4,7mm with standard M1200 Mini inserts.

- Twelve cutting edges.
- First choice for low depth-of-cut face milling.
- High-Feed capability.



Face Mills

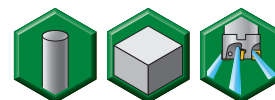
■ Screw-On End Mills

order number	catalogue number	D1	D1 max	D	DPM	G3X	L1	WF	Ap1 max	Z	max RPM	coolant supply	kg
4136874	M1200HF025Z02M16HN07	25	39	29	17,0	M16	32	22	1,7	2	20000	Yes	0,2
4136875	M1200HF025Z03M16HN07	25	39	29	17,0	M16	32	22	1,7	3	20000	Yes	0,2
4136876	M1200HF032Z03M16HN07	32	46	29	17,0	M16	40	22	1,7	3	17600	Yes	0,3
4136877	M1200HF032Z04M16HN07	32	46	29	17,0	M16	40	22	1,7	4	17600	Yes	0,3
4136878	M1200HF040Z04M16HN07	40	54	29	17,0	M16	40	22	1,7	4	15800	Yes	0,3
4136879	M1200HF040Z05M16HN07	40	54	29	17,0	M16	40	22	1,7	5	15800	Yes	0,3

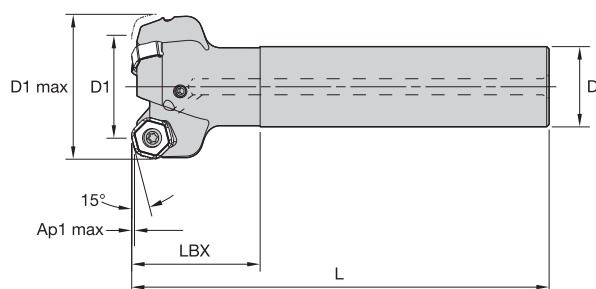
■ Spare Parts

			
D1	insert screw	Nm	Torx driver
25	12146034500	3,5	12148082400
32	12146034500	3,5	12148082400
40	12146034500	3,5	12148082400

- Twelve cutting edges.
- First choice for low depth-of-cut face milling.
- High-Feed capability.



Face Mills



■ Cylindrical Shanks

order number	catalogue number	D1	D1 max	D	L	LBX	Ap1 max	Z	max RPM	coolant supply	kg
4136880	M1200HF025Z02A20HN07L120	25	39,1	20	120	32	1,7	2	20000	Yes	0,33
4136881	M1200HF025Z03A20HN07L120	25	39,1	20	120	32	1,7	3	20000	Yes	0,31
4136882	M1200HF032Z03A25HN07L130	32	46,1	25	130	40	1,7	3	17600	Yes	0,52
4136883	M1200HF032Z04A25HN07L130	32	46,1	25	130	40	1,7	4	17600	Yes	0,53

■ Spare Parts



insert
screw



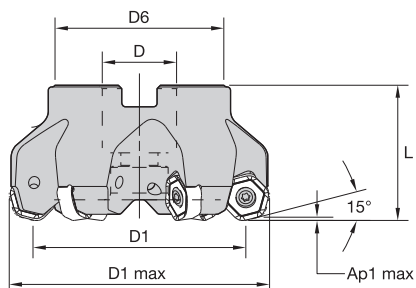
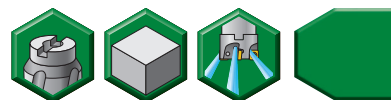
Nm



Torx
driver

D1			
25	12146034500	3,5	12148082400
32	12146034500	3,5	12148082400

- Twelve cutting edges.
- First choice for low depth-of-cut face milling.
- High-Feed capability.



Face Mills

■ Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
4136884	M1200HF040Z05HN07	40	54,1	22	38	40	1,7	5	15800	Yes	0,29
4136885	M1200HF050Z05HN07	50	64,1	22	38	40	1,7	5	12700	Yes	0,40
4136886	M1200HF063Z06HN07	63	77,1	22	50	40	1,7	6	10100	Yes	0,67
4136887	M1200HF080Z08HN07	80	94,1	27	60	50	1,7	8	7900	Yes	1,26

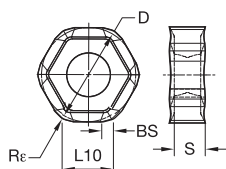
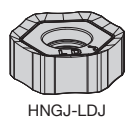
■ Spare Parts



D1	insert screw	Nm	Torx driver	socket-head cap screw
40	12146034500	3,5	12148082400	12146120500
50	12146034500	3,5	12148082400	12146120500
63	12146034500	3,5	12148082400	12146120500
80	12146034500	3,5	12148082400	12748701000

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.S..GD	WP40PM	.S..HD	WP40PM
P3-P4	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
P5-P6	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
M1-M2	.E..LD	WP25PM	.S..GD	WP25PM	.S..HD	WP25PM
M3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
K1-K2	.E..LD	TN6510	.S..GD	WK15CM	.S..HD	WK15CM
K3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
N1-N2	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
N3	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
S1-S2	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP25PM
S3	.E..LD	WS30PM	.S..GD	WS30PM	.S..GD	WS30PM
S4	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
H1	—	—	—	—	—	—

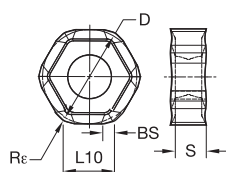
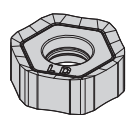


● first choice
○ alternate choice

P			
M			
K			
N	●	●	
S			
H			

HNGJ-LDJ

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6501	THM-U
HNGJ0704ANFNLDJ	12	13	6,80	4,48	1,60	1,20	0,08	3954414	3954332

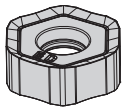


● first choice
○ alternate choice

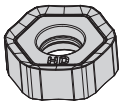
P			●	●	●	●	●	●
M			○	○	○	○	○	○
K	●	●	○	○	○	○	○	○
N								
S			●	●	●	●	○	
H							○	

HNGJ-LD

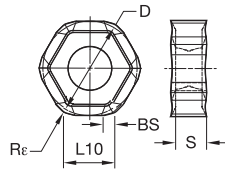
catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
HNGJ0704ANENLD	12	13	6,80	4,48	1,60	1,20	0,08	3954419	3954420	3954421	3954422	—	—	5895291	5895292	5528975	5550905
HNGJ070432ANENLD	12	13	6,80	4,48	—	3,20	0,08	3954428	—	3954429	3954430	—	—	—	—	—	—



HNPJ-GD



HNPJ-HD



- first choice
- alternate choice

P									
M									
K									
N									
S									
H									

Face Mills

■ HNPJ-GD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6510	TN6520	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM	
HNPJ0704ANSNGD	12	13	6,80	4,45	1,27	1,20	0,10	3954432	3954473	-	3954474	3954475	5427374	5895293	5895294	5528976	5550906

■ HNPJ-HD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
HNPJ0704ANSNHD	12	13	6,80	4,41	1,25	1,20	0,14	3954477	3954478	-	3954479	3954480	5427375	5895295	-	5895296	-
HNPJ070432ANSNHD	12	13	6,80	4,42	—	3,20	0,14	3954481	3954482	-	3954483	3954484	-	-	-	-	5895297

■ Recommended Starting Speeds [m/min]

Face Mills

Material Group		TN6510			TN6520			TN6525			TN6540			TN7535			WK15CM		
P	1	–	–	–	–	–	–	410	320	280	360	280	240	545	475	445	–	–	–
	2	–	–	–	–	–	–	320	250	215	250	190	170	335	305	275	–	–	–
	3	–	–	–	–	–	–	280	215	185	215	170	140	305	275	245	–	–	–
	4	–	–	–	–	–	–	235	170	145	180	130	110	230	210	190	–	–	–
	5	–	–	–	–	–	–	310	235	200	240	180	150	310	275	250	–	–	–
	6	–	–	–	–	–	–	205	160	130	160	120	100	190	160	130	–	–	–
M	1	–	–	–	–	–	–	190	120	80	130	80	60	245	220	185	–	–	–
	2	–	–	–	–	–	–	120	80	50	80	50	40	220	190	170	–	–	–
	3	–	–	–	–	–	–	125	80	55	85	50	40	175	155	140	–	–	–
K	1	480	350	260	450	320	230	275	245	220	220	205	180	355	320	290	505	460	410
	2	420	280	205	390	250	190	215	190	180	175	155	140	280	250	230	400	355	330
	3	335	260	200	300	230	160	180	160	145	155	145	125	235	210	190	335	300	275
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	50	35	30	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	25	20	10	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	70	40	30	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	60	30	25	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

(continued)

(Recommended Starting Speeds [m/min] — continued)

Material Group		WP25PM			WP35CM			WS30PM			WP40PM			TN6501			THM-U		
P	1	395	340	325	545	475	445	—	—	—	355	310	295	—	—	—	—	—	—
	2	330	290	240	335	305	275	—	—	—	300	260	215	—	—	—	—	—	—
	3	305	260	210	305	275	245	—	—	—	275	235	190	—	—	—	—	—	—
	4	270	220	180	230	210	190	—	—	—	245	205	160	—	—	—	—	—	—
	5	220	205	180	310	275	250	—	—	—	205	185	160	—	—	—	—	—	—
	6	200	150	120	190	160	130	—	—	—	180	140	110	—	—	—	—	—	—
M	1	245	215	200	245	220	185	270	240	220	235	205	185	—	—	—	—	—	—
	2	220	190	155	220	190	170	245	215	175	210	180	150	—	—	—	—	—	—
	3	170	145	115	175	155	140	185	160	125	155	140	110	—	—	—	—	—	—
K	1	275	245	220	355	320	290	—	—	—	—	—	—	—	—	—	—	—	—
	2	215	190	180	280	250	230	—	—	—	—	—	—	—	—	—	—	—	—
	3	180	160	145	235	210	190	—	—	—	—	—	—	—	—	—	—	—	—
N	1	—	—	—	—	—	—	—	—	—	—	—	—	2400	1440	1200	2400	1440	1200
	2	—	—	—	—	—	—	—	—	—	—	—	—	1640	980	800	1640	980	800
	3	—	—	—	—	—	—	—	—	—	—	—	—	960	600	480	960	600	480
S	1	50	40	30	—	—	—	55	50	35	50	40	35	—	—	—	—	—	—
	2	50	40	30	—	—	—	55	50	35	50	40	35	—	—	—	—	—	—
	3	60	50	30	—	—	—	65	55	35	60	50	35	—	—	—	—	—	—
	4	85	60	40	80	60	40	100	70	50	80	60	40	—	—	—	—	—	—
H	1	145	110	85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

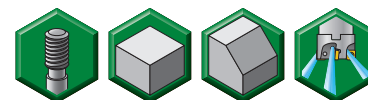
■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

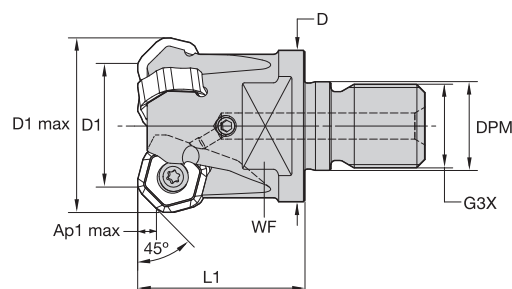
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F.LDJ	0,48	0,89	1,81	0,34	0,64	1,29	0,26	0,48	0,96	0,22	0,42	0,83	0,21	0,38	0,76	.F.LDJ
.E..LD	0,48	1,38	2,85	0,34	0,99	2,00	0,26	0,74	1,48	0,22	0,64	1,28	0,21	0,59	1,17	.E..LD
.S..GD	0,92	2,35	3,89	0,66	1,67	2,70	0,49	1,23	1,98	0,43	1,07	1,72	0,39	0,98	1,57	.S..GD
.S..HD	0,92	2,35	3,89	0,66	1,67	2,70	0,49	1,23	1,98	0,43	1,07	1,72	0,39	0,98	1,57	.S..HD

NOTE: Use "Light Machining" value as starting feed rate.

- Twelve cutting edges.
- First choice for low depth-of-cut face milling.
- Maximum number of teeth per diameter.



Face Mills



■ Screw-On End Mills

order number	catalogue number	D1	D1 max	D	DPM	G3X	L1	WF	Ap1 max	Z	max RPM	coolant supply	kg
3957839	M1200D025Z02M16HN07	25	33,7	29	17,0	M16	32	22	3,5	2	20000	Yes	0,13
3957840	M1200D025Z03M16HN07	25	33,7	29	17,0	M16	32	22	3,5	3	20000	Yes	0,13
3957841	M1200D032Z03M16HN07	32	40,7	29	17,0	M16	40	22	3,5	3	17600	Yes	0,20
3957842	M1200D032Z04M16HN07	32	40,7	29	17,0	M16	40	22	3,5	4	17600	Yes	0,20
3957963	M1200D040Z04M16HN07	40	48,7	29	17,0	M16	40	22	3,5	4	15800	Yes	0,24
3957964	M1200D040Z05M16HN07	40	48,7	29	17,0	M16	40	22	3,5	5	15800	Yes	0,25

■ Spare Parts



insert
screw



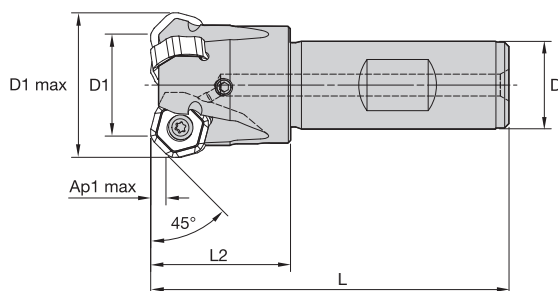
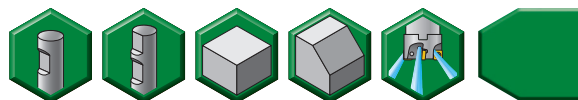
Nm



Torx
driver

D1	insert screw	Nm	Torx driver
25	12146034500	3,5	12148082400
32	12146034500	3,5	12148082400
40	12146034500	3,5	12148082400

- Twelve cutting edges.
- First choice for low depth-of-cut face milling.
- Maximum number of teeth per diameter.



Face Mills

Weldon Shanks

order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
3958011	M1200D025Z02B20HN07	25	33,7	20	82	32	3,5	2	20000	Yes	0,22
3958012	M1200D025Z03B20HN07	25	33,7	20	82	32	3,5	3	20000	Yes	0,21
3958023	M1200D032Z03B25HN07	32	40,7	25	97	40	3,5	3	17600	Yes	0,39
3958024	M1200D032Z04B25HN07	32	40,7	25	97	40	3,5	4	17600	Yes	0,40

Spare Parts



insert screw



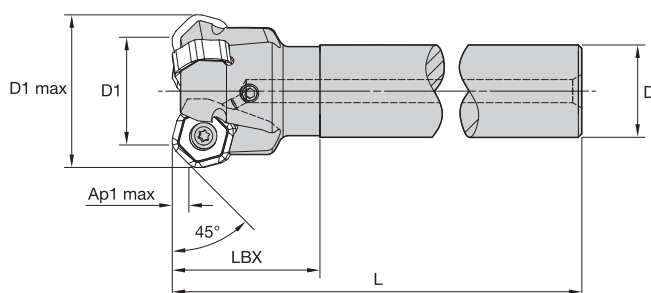
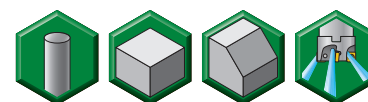
Nm



Torx driver

D1	insert screw	Nm	Torx driver
25	12146034500	3,5	12148082400
32	12146034500	3,5	12148082400

- Twelve cutting edges.
- First choice for low depth-of-cut face milling.
- Maximum number of teeth per diameter.



Cylindrical Shanks

order number	catalogue number	D1	D1 max	D	L	LBX	Ap1 max	Z	max RPM	coolant supply	kg
3958025	M1200D025Z02A20HN07L120	25	33,7	20	120	32	3,5	2	20000	Yes	0,29
3958026	M1200D025Z03A20HN07L120	25	33,7	20	120	32	3,5	3	20000	Yes	0,28
3958029	M1200D025Z02A25HN07L200	25	33,7	25	200	32	3,5	2	20000	Yes	0,72
3958030	M1200D025Z03A25HN07L200	25	33,7	25	200	32	3,5	3	20000	Yes	0,71
3958027	M1200D032Z03A25HN07L130	32	40,7	25	130	40	3,5	3	17600	Yes	0,49
3958028	M1200D032Z04A25HN07L130	32	40,7	25	130	40	3,5	4	17600	Yes	0,50

Spare Parts



insert screw



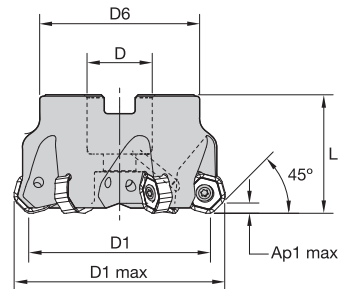
Nm



Torx driver

D1	insert screw	Nm	Torx driver
25	12146034500	3,5	12148082400
32	12146034500	3,5	12148082400

- Twelve cutting edges.
- First choice for low depth-of-cut face milling.
- Maximum number of teeth per diameter.



Face Mills

■ Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
3957995	M1200D040Z04HN07	40	48,7	22	38	40	40	3,5	4	15800	Yes	0,26
3957996	M1200D040Z05HN07	40	48,7	22	38	40	40	3,5	5	15800	Yes	0,26
3957997	M1200D050Z04HN07	50	58,7	22	38	40	40	3,5	4	12700	Yes	0,35
3957998	M1200D050Z05HN07	50	58,7	22	38	40	40	3,5	5	12700	Yes	0,36
3957999	M1200D050Z06HN07	50	58,7	22	38	40	40	3,5	6	12700	Yes	0,35
3958000	M1200D063Z04HN07	63	71,7	22	50	40	40	3,5	4	10100	Yes	0,58
3958001	M1200D063Z06HN07	63	71,7	22	50	40	40	3,5	6	10100	Yes	0,65
3958002	M1200D063Z08HN07	63	71,7	22	50	40	40	3,5	8	10100	Yes	0,62
3958003	M1200D080Z05HN07	80	88,7	27	60	50	50	3,5	5	7900	Yes	1,11
3958004	M1200D080Z08HN07	80	88,7	27	60	50	50	3,5	8	7900	Yes	1,24
3958005	M1200D080Z10HN07	80	88,7	27	60	50	50	3,5	10	7900	Yes	1,17
3958006	M1200D100Z06HN07	100	108,7	32	80	50	50	3,5	6	6300	Yes	1,71
3958007	M1200D100Z09HN07	100	108,7	32	80	50	50	3,5	9	6300	Yes	1,82
3958008	M1200D100Z12HN07	100	108,7	32	80	50	50	3,5	12	6300	Yes	1,82
4138470	M1200D125Z08HN07	125	133,7	40	90	63	—	3,5	8	5050	Yes	2,84
4138471	M1200D125Z12HN07	125	133,7	40	90	63	—	3,5	12	5050	Yes	2,96
4138472	M1200D125Z16HN07	125	133,7	40	90	63	—	3,5	16	5050	Yes	3,02

■ Spare Parts

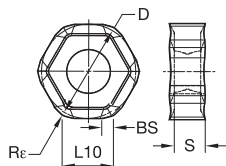
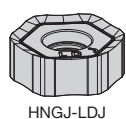


D1	insert screw	Nm	Torx driver	socket-head cap screw	mounting screw with coolant grooves	coolant screw assembly	coolant lock screw	coolant cap
40	12146034500	3,5	12148082400	—	12146109200	—	—	—
50	12146034500	3,5	12148082400	12146120500	—	—	—	—
63	12146034500	3,5	12148082400	12146120500	—	—	—	—
80	12146034500	3,5	12148082400	12748701000	—	—	—	—
100	12146034500	3,5	12148082400	—	—	12146109400	—	—
125	12146034500	3,5	12148082400	—	—	—	12146107000	12146111000

NOTE: Mounting screw with coolant groove, coolant screw assembly, coolant lock screw, and coolant cap must be ordered separately.

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.S..GD	WP40PM	.S..HD	WP40PM
P3-P4	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
P5-P6	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
M1-M2	.E..LD	WP25PM	.S..GD	WP25PM	.S..HD	WP25PM
M3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
K1-K2	.E..LD	TN6510	.S..GD	WK15CM	.S..HD	WK15CM
K3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
N1-N2	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
N3	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
S1-S2	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP25PM
S3	.E..LD	WS30PM	.S..GD	WS30PM	.S..GD	WS30PM
S4	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
H1	—	—	—	—	—	—

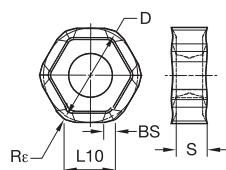
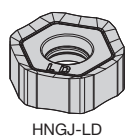


● first choice
○ alternate choice

P			
M			
K			
N	●	●	
S			
H			

HNGJ-LDJ

catalogue number	cutting edges	D	L10	S	BS	Re	hm	TN6501	THM-U
HNGJ0704ANFNLDJ	12	13	6,80	4,48	1,60	1,20	0,08	3954414	3954332

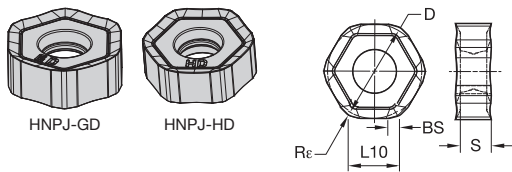


● first choice
○ alternate choice

P			●	●	●	●	●	●
M			○	○	○	○	○	○
K	●	●	○	○	○	○	○	○
N								
S			●	●	●	●	○	
H							○	

HNGJ-LD

catalogue number	cutting edges	D	L10	S	BS	Re	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
HNGJ0704ANENLD	12	13	6,80	4,48	1,60	1,20	0,08	3954419	3954420	3954421	3954422	—	—	5895291	5895292	5528975	5550905
HNGJ070432ANENLD	12	13	6,80	4,48	—	3,20	0,08	3954428	—	3954429	3954430	—	—	—	—	—	—



- first choice
- alternate choice

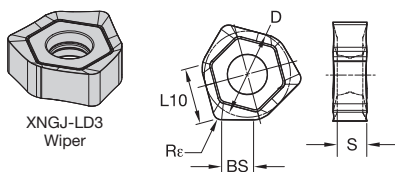
P																		
M																		
K																		
N																		
S																		
H																		

■ HNPJ-GD

catalogue number	cutting edges	D	L10	S	BS	R _ε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
								TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
HNPJ0704ANSNGD	12	13	6,80	4,45	1,27	1,20	0,10	3954432	3954473	-	3954474	3954475	5427374	5895293	5895294	5528976	5550906

■ HNPJ-HD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
								TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
HNPJ0704ANSNHD	12	13	6,80	4,41	1,25	1,20	0,14	3954477	3954478	-	3954479	3954480	5427375	5895295	5895296	-	5550907
HNPJ070432ANSNHD	12	13	6,80	4,42	-	3,20	0,14	3954481	3954482	-	3954483	3954484	-	-	-	-	5895297



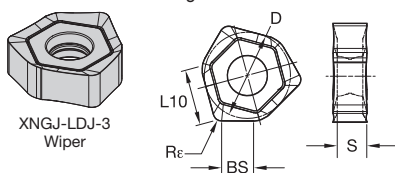
- first choice
- alternate choice

P			
M			
K			
N			
S			
H			

■ XNGJ-LDJ-3 Wiper

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6501	THM-U
XNGJ0704ANFNLDJ3W	3	13	6,78	4,47	6,78	1,30	0,08	3954416	3954433

NOTE: Inserts have 3 right-hand and 3 left-hand cutting edges.



- first choice
- alternate choice

P	Blue			●	●	●		●	●	●		●
M	Yellow			○	●	○		●	●	○		●
K	Red	●	●	○	○	○	●	○				
N	Green											
S	Orange				●			●	●	●	○	
H	Grey							○				

■ XNGJ-LD3 Wiper

catalogue number	cutting edges	D	L10	S	BS	R _ε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
XNGJ0704ANENLD3W	3	13	6,78	4,47	6,78	1,30	0,08	3954424	3954425	3954426	3954427	-	5427373	5895298	-	-	5895299

NOTE: Inserts have 3 right-hand and 3 left-hand cutting edges.

■ Recommended Starting Speeds [m/min]

Face Mills

Material Group		TN6510			TN6520			TN6525			TN6540			TN7535			WK15CM		
P	1	–	–	–	–	–	–	410	320	280	360	280	240	545	475	445	–	–	–
	2	–	–	–	–	–	–	320	250	215	250	190	170	335	305	275	–	–	–
	3	–	–	–	–	–	–	280	215	185	215	170	140	305	275	245	–	–	–
	4	–	–	–	–	–	–	235	170	145	180	130	110	230	210	190	–	–	–
	5	–	–	–	–	–	–	310	235	200	240	180	150	310	275	250	–	–	–
	6	–	–	–	–	–	–	205	160	130	160	120	100	190	160	130	–	–	–
M	1	–	–	–	–	–	–	190	120	80	130	80	60	245	220	185	–	–	–
	2	–	–	–	–	–	–	120	80	50	80	50	40	220	190	170	–	–	–
	3	–	–	–	–	–	–	125	80	55	85	50	40	175	155	140	–	–	–
K	1	480	350	260	450	320	230	275	245	220	220	205	180	355	320	290	505	460	410
	2	420	280	205	390	250	190	215	190	180	175	155	140	280	250	230	400	355	330
	3	335	260	200	300	230	160	180	160	145	155	145	125	235	210	190	335	300	275
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	50	35	30	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	25	20	10	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	70	40	30	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	60	30	25	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

(continued)

(Recommended Starting Speeds [m/min] — continued)

Material Group		WP25PM			WP35CM			WS30PM			WP40PM			TN6501			THM-U		
P	1	395	340	325	545	475	445	—	—	—	355	310	295	—	—	—	—	—	—
	2	330	290	240	335	305	275	—	—	—	300	260	215	—	—	—	—	—	—
	3	305	260	210	305	275	245	—	—	—	275	235	190	—	—	—	—	—	—
	4	270	220	180	230	210	190	—	—	—	245	205	160	—	—	—	—	—	—
	5	220	205	180	310	275	250	—	—	—	205	185	160	—	—	—	—	—	—
	6	200	150	120	190	160	130	—	—	—	180	140	110	—	—	—	—	—	—
M	1	245	215	200	245	220	185	270	240	220	235	205	185	—	—	—	—	—	—
	2	220	190	155	220	190	170	245	215	175	210	180	150	—	—	—	—	—	—
	3	170	145	115	175	155	140	185	160	125	155	140	110	—	—	—	—	—	—
K	1	275	245	220	355	320	290	—	—	—	—	—	—	—	—	—	—	—	—
	2	215	190	180	280	250	230	—	—	—	—	—	—	—	—	—	—	—	—
	3	180	160	145	235	210	190	—	—	—	—	—	—	—	—	—	—	—	—
N	1	—	—	—	—	—	—	—	—	—	—	—	—	2400	1440	1200	2400	1440	1200
	2	—	—	—	—	—	—	—	—	—	—	—	—	1640	980	800	1640	980	800
	3	—	—	—	—	—	—	—	—	—	—	—	—	960	600	480	960	600	480
S	1	50	40	30	—	—	—	55	50	35	50	40	35	—	—	—	—	—	—
	2	50	40	30	—	—	—	55	50	35	50	40	35	—	—	—	—	—	—
	3	60	50	30	—	—	—	65	55	35	60	50	35	—	—	—	—	—	—
	4	85	60	40	80	60	40	100	70	50	80	60	40	—	—	—	—	—	—
H	1	145	110	85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

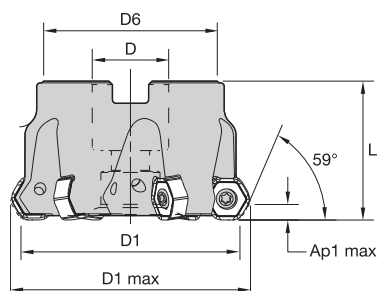
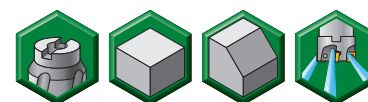
■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
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Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F.LDJ	0,17	0,32	0,65	0,13	0,23	0,47	0,09	0,17	0,35	0,08	0,15	0,31	0,08	0,14	0,28	.F.LDJ
.E..LD	0,17	0,50	1,00	0,13	0,36	0,72	0,09	0,27	0,54	0,08	0,23	0,47	0,08	0,21	0,43	.E..LD
.S..GD	0,33	0,84	1,35	0,24	0,60	0,97	0,18	0,45	0,72	0,16	0,39	0,63	0,14	0,36	0,57	.S..GD
.S..HD	0,33	0,84	1,35	0,24	0,60	0,97	0,18	0,45	0,72	0,16	0,39	0,63	0,14	0,36	0,57	.S..HD

NOTE: Use "Light Machining" value as starting feed rate.

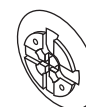
- Twelve cutting edges.
- Higher axial depth-of-cut capability with 59° lead angle.



■ Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
4136482	M1200HD040Z04HN07	40	46,8	22	38	40	4,7	4	15800	Yes	0,22
4136863	M1200HD040Z05HN07	40	46,8	22	38	40	4,7	5	15800	Yes	0,22
4136864	M1200HD050Z04HN07	50	56,8	22	38	40	4,7	4	12700	Yes	0,34
4136865	M1200HD050Z05HN07	50	56,8	22	38	40	4,7	5	12700	Yes	0,34
4136866	M1200HD063Z04HN07	63	69,8	22	50	40	4,7	4	10100	Yes	0,58
4136867	M1200HD063Z06HN07	63	69,8	22	50	40	4,7	6	10100	Yes	0,60
4136868	M1200HD080Z05HN07	80	86,8	27	60	50	4,7	5	7900	Yes	1,11
4136869	M1200HD080Z08HN07	80	86,8	27	60	50	4,7	8	7900	Yes	1,17
4136870	M1200HD100Z06HN07	100	106,7	32	80	50	4,7	6	6300	Yes	1,74
4136871	M1200HD100Z09HN07	100	106,7	32	80	50	4,7	9	6300	Yes	1,74
4136872	M1200HD125Z08HN07	125	131,7	40	90	63	4,7	8	5050	Yes	2,86
4136873	M1200HD125Z12HN07	125	131,7	40	90	63	4,7	12	5050	Yes	2,90

■ Spare Parts

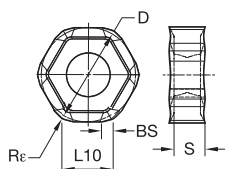
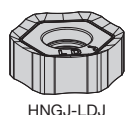


D1	insert screw	Nm	Torx driver	socket-head cap screw	mounting screw with coolant grooves	coolant screw assembly	coolant lock screw	coolant cap
40	12146034500	3,5	12148082400	—	12146109200	—	—	—
50	12146034500	3,5	12148082400	12146120500	—	—	—	—
63	12146034500	3,5	12148082400	12146120500	—	—	—	—
80	12146034500	3,5	12148082400	12748701000	—	—	—	—
100	12146034500	3,5	12148082400	—	—	12146109400	—	—
125	12146034500	3,5	12148082400	—	—	—	12146107000	12146111000

NOTE: Mounting screw with coolant groove, coolant screw assembly, coolant lock screw, and coolant cap must be ordered separately.

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.S..GD	WP40PM	.S..HD	WP40PM
P3-P4	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
P5-P6	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
M1-M2	.E..LD	WP25PM	.S..GD	WP25PM	.S..HD	WP25PM
M3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
K1-K2	.E..LD	TN6510	.S..GD	WK15CM	.S..HD	WK15CM
K3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
N1-N2	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
N3	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
S1-S2	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP25PM
S3	.E..LD	WS30PM	.S..GD	WS30PM	.S..GD	WS30PM
S4	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
H1	—	—	—	—	—	—

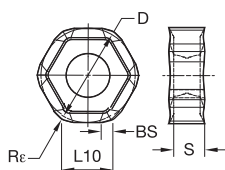
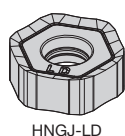


- first choice
- alternate choice

P			
M			
K			
N	●	●	
S			
H			

HNGJ-LDJ

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6501	THM-U
HNGJ0704ANFNLDJ	12	13	6,80	4,48	1,60	1,20	0,08	3954414	3954332



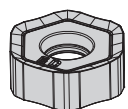
- first choice
- alternate choice

P			●	●	●	●	●	●
M			○	○	○	○	○	○
K	●	●	○	○	○	○	○	○
N								
S			●	●	●	●	○	
H							○	

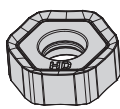
HNGJ-LD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
HNGJ0704ANENLD	12	13	6,80	4,48	1,60	1,20	0,08	3954419	3954420	3954421	3954422	—	—	5895291	5895292	5528975	5550905
HNGJ070432ANENLD	12	13	6,80	4,48	—	3,20	0,08	3954428	—	—	—	—	—	—	—	—	—

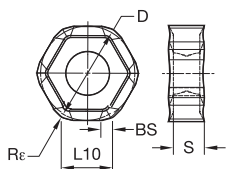
Face Mills



HNPJ-GD



HNPJ-HD



- first choice

- alternate choice

P	Blue			Black	Black	Black	Black			Black	Black	Black	
M	Yellow			White	White	White	White	Black	White	Black	White	Black	White
K	Red	Black	Black	White	White	White	Black	White					
N	Green												
S	Orange				Black			Black	Black	Black		White	
H	Grey							White					

■ HNPJ-GD

catalogue number	cutting edges	D	L10	S	BS	R _ε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
HNPJ0704ANSNGD	12	13	6,80	4,45	1,27	1,20	0,10	3954432	3954473	-	3954474	3954475	5427374	5895293	5895294	5528976	5550906

■ HNPJ-HD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WS30PM	WP40PM
HNPJ0704ANSNHD	12	13	6,80	4,41	1,25	1,20	0,14	3954477	3954478	┆	3954479	3954480	5427375	5895295	5895296	┆	5895297
HNPJ070432ANSNHD	12	13	6,80	4,42	—	3,20	0,14	3954481	3954482	┆	3954483	3954484	┆	┆	┆	┆	5895298

Recommended Starting Speeds

■ Recommended Starting Speeds [m/min]

[illegible]

(continued)

(Recommended Starting Speeds [m/min] — continued)

Material Group		WP25PM			WP35CM			WS30PM			WP40PM			TN6501			THM-U		
P	1	395	340	325	545	475	445	—	—	—	355	310	295	—	—	—	—	—	—
	2	330	290	240	335	305	275	—	—	—	300	260	215	—	—	—	—	—	—
	3	305	260	210	305	275	245	—	—	—	275	235	190	—	—	—	—	—	—
	4	270	220	180	230	210	190	—	—	—	245	205	160	—	—	—	—	—	—
	5	220	205	180	310	275	250	—	—	—	205	185	160	—	—	—	—	—	—
	6	200	150	120	190	160	130	—	—	—	180	140	110	—	—	—	—	—	—
M	1	245	215	200	245	220	185	270	240	220	235	205	185	—	—	—	—	—	—
	2	220	190	155	220	190	170	245	215	175	210	180	150	—	—	—	—	—	—
	3	170	145	115	175	155	140	185	160	125	155	140	110	—	—	—	—	—	—
K	1	275	245	220	355	320	290	—	—	—	—	—	—	—	—	—	—	—	—
	2	215	190	180	280	250	230	—	—	—	—	—	—	—	—	—	—	—	—
	3	180	160	145	235	210	190	—	—	—	—	—	—	—	—	—	—	—	—
N	1	—	—	—	—	—	—	—	—	—	—	—	—	2400	1440	1200	2400	1440	1200
	2	—	—	—	—	—	—	—	—	—	—	—	—	1640	980	800	1640	980	800
	3	—	—	—	—	—	—	—	—	—	—	—	—	960	600	480	960	600	480
S	1	50	40	30	—	—	—	55	50	35	50	40	35	—	—	—	—	—	—
	2	50	40	30	—	—	—	55	50	35	50	40	35	—	—	—	—	—	—
	3	60	50	30	—	—	—	65	55	35	60	50	35	—	—	—	—	—	—
	4	85	60	40	80	60	40	100	70	50	80	60	40	—	—	—	—	—	—
H	1	145	110	85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
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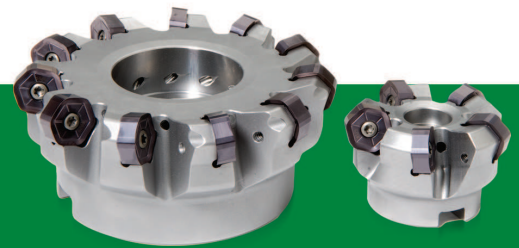
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F.LDJ	0,14	0,26	0,53	0,10	0,19	0,38	0,08	0,14	0,29	0,07	0,12	0,25	0,06	0,11	0,23	.F.LDJ
.E..LD	0,14	0,41	0,82	0,10	0,29	0,59	0,08	0,22	0,44	0,07	0,19	0,38	0,06	0,18	0,35	.E..LD
.S..GD	0,27	0,68	1,10	0,20	0,49	0,79	0,15	0,37	0,59	0,13	0,32	0,51	0,12	0,29	0,47	.S..GD
.S..HD	0,27	0,68	1,10	0,20	0,49	0,79	0,15	0,37	0,59	0,13	0,32	0,51	0,12	0,29	0,47	.S..HD

NOTE: Use "Light Machining" value as starting feed rate.

One Series Meets Every Face Milling Need •

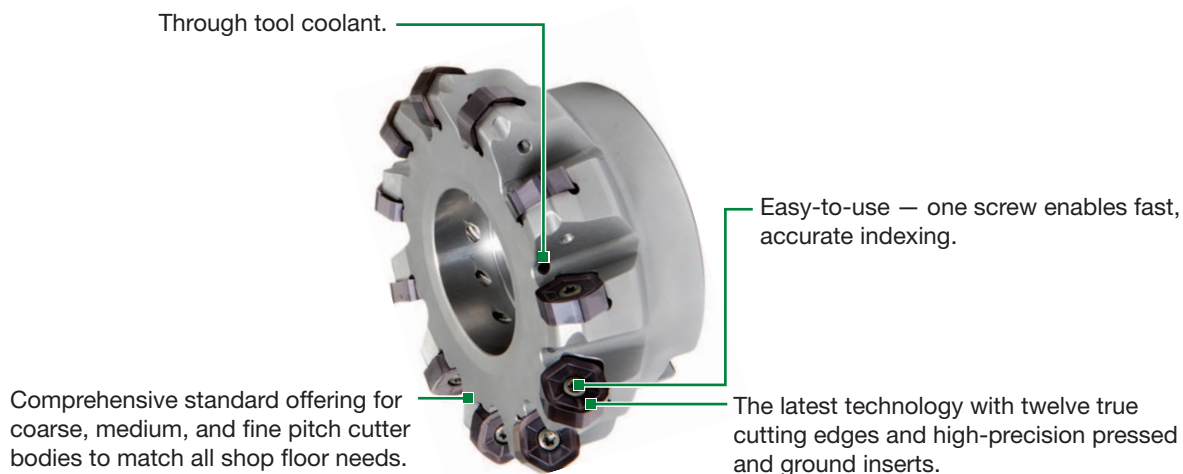
WIDIA™ Victory™ M1200 Series

- Low cost per edge; high productivity.
- 15–60° lead angles.
- One series meets every face milling need.
- Available in WIDIA premium milling grades.
- Better tool life in light to heavy machining.



M1200

Best-in-class face milling platform to boost productivity on taper 50 spindle milling machines.



Face Mills

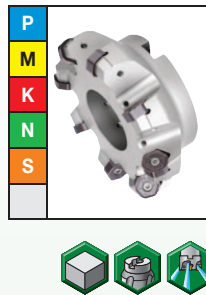


Victory™ M1200 HF 15°

Max depth of cut: 2,2mm

Lead angle: 15°
Indexes per insert: 12
Diameter: 50–160mm

Pages: H26–H29



Victory™ M1200 45°

Max depth of cut: 4,5mm

Lead angle: 45°
Indexes per insert: 12
Diameter: 40–315mm

Pages: H30–H37

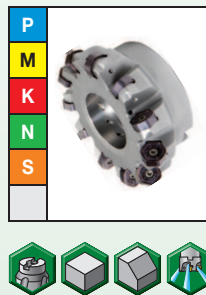


Victory™ M1200 HD 60°

Max depth of cut: 6mm

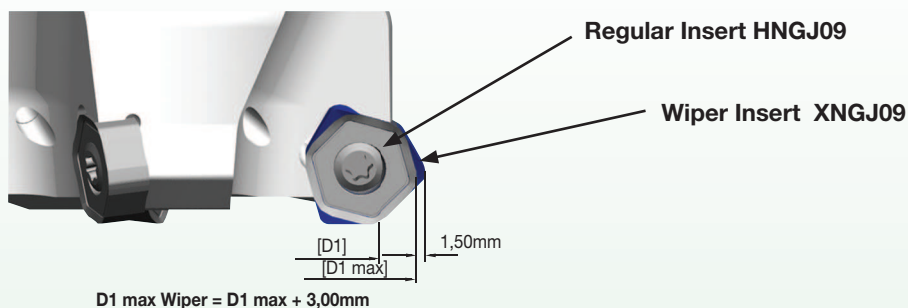
Lead angle: 60°
Indexes per insert: 12
Diameter: 50–160mm

Pages: H38–H41



■ Easy-to-use wiper insert setup to achieve excellent surface floor finish

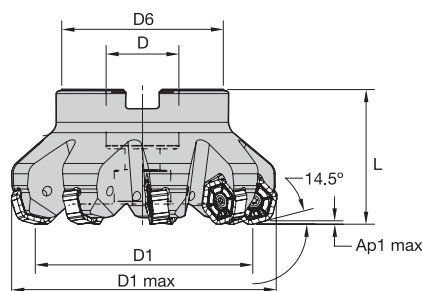
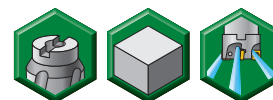
Wiper insert overlapping vs. regular insert



- Wiper inserts only applied with 45° lead angle cutter bodies.
- Easy to use. Regular and wiper inserts are loaded into fixed pockets. No adjustment required.
- Please have D1 max wiper in mind in case of limited working area.
- Use wiper inserts only in combination with periphery ground regular inserts HNGJ09.
- Up to cutting diameter D1=100mm load one wiper insert.
- For cutting diameter D1=125mm and above load two wiper inserts.
- Each wiper insert XNGJ09 can be applied with three right hand R and three left hand L cutting edges.



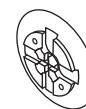
- Twelve cutting edges.
- High feed rates for rough face milling.
- Use standard M1200 inserts.
- Do not load wiper inserts.



■ Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
3750370	M1200HF050Z04HN09	50	67,9	22	38	40	2,2	4	11400	Yes	0,65
3750372	M1200HF063Z05HN09	63	80,9	22	50	40	2,2	5	8950	Yes	0,65
3750434	M1200HF080Z06HN09	80	97,9	27	60	50	2,2	6	7300	Yes	1,24
3750435	M1200HF100Z08HN09	100	117,9	32	80	50	2,2	8	5900	Yes	1,89
3750436	M1200HF125Z09HN09	125	142,9	40	90	63	2,2	9	4800	Yes	3,23
3957969	M1200HF160Z12HN09	160	177,9	40	110	63	2,2	12	3900	Yes	5,14

■ Spare Parts

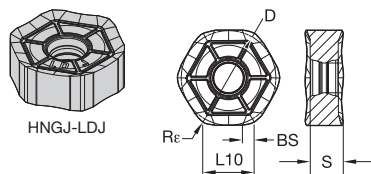


D1	insert screw	Nm	Torx driver	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw assembly	coolant lock screw	coolant cap
50	12146034500	3,5	12148082400	12146120500	12146101000	—	—	—
63	12146034500	3,5	12148082400	12146120500	12146101000	—	—	—
80	12146034500	3,5	12148082400	12748701000	12146101800	—	—	—
100	12146034500	3,5	12148082400	—	—	12146109400	—	—
125	12146034500	3,5	12148082400	—	—	—	12146107000	12146111000
160	12146034500	3,5	12148082400	—	—	—	12146107000	12146111100

NOTE: Socket-head cap screw with coolant groove, coolant lock screw assembly, coolant lock screw, and coolant cap must be ordered separately.

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.S..GD	WP40PM	.S..HD	WP40PM
P3-P4	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
P5-P6	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
M1-M2	.E..LD	WP25PM	.S..GD	WP25PM	.S..HD	WP25PM
M3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
K1-K2	.E..LD	TN6520	.S..GD	WK15CM	.S..HD	WK15CM
K3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
N1-N2	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
N3	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
S1-S2	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP25PM
S3	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
S4	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
H1	-	-	-	-	-	-

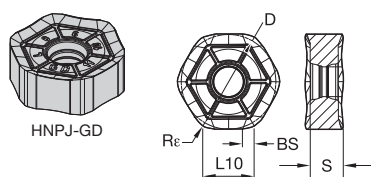


● first choice
○ alternate choice

P			
M			
K			
N	●	●	
S			
H			

HNPJ-GD

catalogue number	cutting edges	D	L10	S	BS	Re	hm	TN6501	THM-U
HNGJ0905ANFNLDJ	12	16	8,58	5,56	1,80	1,20	0,02	3865373	3606383

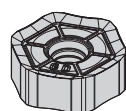


● first choice
○ alternate choice

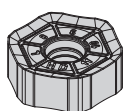
P		●	●	●	●	●	●
M		○	○	○	○	○	○
K	●	○	○	○	○	○	○
N							
S		●	●	●	●	●	○
H							

HNPJ-GD

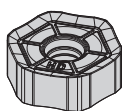
catalogue number	cutting edges	D	L10	S	BS	Re	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
HNPJ0905ANSNGD	12	16	8,58	5,56	1,80	1,20	0,10	3761185	-	3761187	3761188	5427372	5895374	-	5895375	5550908



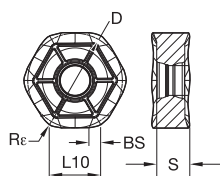
HNGJ-GD



HNPJ-HD



HNGJ-HD



- first choice

- alternate choice

[illegible]

■ HNGJ-GD

catalogue number	cutting edges	D	L10	S	BS	R _ε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
HNGJ0905ANSNGD	12	16	8,58	5,56	1,80	1,20	0,10	3119541	3614650	3037596	3093721	5427370	—	5528974	5895349	5895350

■ HNPJ-HD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM
								3670866	3670865	3670865	3670865	5427371	5895378	5895379	
HNPJ090543ANSNHD	12	16	8,50	5,44	—	4,34	0,13	3670864	3670865	3670865	3670865	5427371	5895378	5895379	5895380
HNPJ0905ANSNHD	12	16	8,59	5,46	1,66	1,20	0,18	3670864	3670865	3670865	3670865	5427371	5895378	5895379	5895380

■ HNGJ-HD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
HNGJ090543ANSNHD	12	16	8,50	5,44	—	4,35	0,20	3564083	3564084	3564085	┐	┐	┐	┐	┐	┐
HNGJ0905ANSNHD	12	16	8,59	5,46	1,66	1,20	0,17	3563900	3563901	3563902	┐	┐	5895371	┐	5895372	5895373

■ Recommended Starting Speeds [m/min]

Material Group		TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM
P	1	– – –	410 320 280	360 280 240	545 475 445	– – –	395 340 325
	2	– – –	320 250 215	250 190 170	335 305 275	– – –	330 290 240
	3	– – –	280 215 185	215 170 140	305 275 245	– – –	305 260 210
	4	– – –	235 170 145	180 130 110	230 210 190	– – –	270 220 180
	5	– – –	310 235 200	240 180 150	310 275 250	– – –	220 205 180
	6	– – –	205 160 130	160 120 100	190 160 130	– – –	200 150 120
M	1	– – –	190 120 80	130 80 60	245 220 185	– – –	245 215 200
	2	– – –	120 80 50	80 50 40	220 190 170	– – –	220 190 155
	3	– – –	125 80 55	85 50 40	175 155 140	– – –	170 145 115
K	1	450 320 230	275 245 220	220 205 180	355 320 290	505 460 410	275 245 220
	2	390 250 190	215 190 180	175 155 140	280 250 230	400 355 330	215 190 180
	3	300 230 160	180 160 145	155 145 125	235 210 190	335 300 275	180 160 145
N	1	– – –	– – –	– – –	– – –	– – –	– – –
	2	– – –	– – –	– – –	– – –	– – –	– – –
	3	– – –	– – –	– – –	– – –	– – –	– – –
S	1	– – –	– – –	50 35 30	– – –	– – –	50 40 30
	2	– – –	– – –	25 20 10	– – –	– – –	50 40 30
	3	– – –	– – –	70 40 30	– – –	– – –	60 50 30
	4	– – –	– – –	60 30 25	– – –	– – –	85 60 40
H	1	– – –	– – –	– – –	– – –	– – –	145 110 85
	2	– – –	– – –	– – –	– – –	– – –	– – –
	3	– – –	– – –	– – –	– – –	– – –	– – –

Material Group		WS30PM	WP35CM	WP40PM	TN6501	THM-U
P	1	– – –	545 475 445	355 310 295	– – –	– – –
	2	– – –	335 305 275	300 260 215	– – –	– – –
	3	– – –	305 275 245	275 235 190	– – –	– – –
	4	– – –	230 210 190	245 205 160	– – –	– – –
	5	– – –	310 275 250	205 185 160	– – –	– – –
	6	– – –	190 160 130	180 140 110	– – –	– – –
M	1	270 240 220	245 220 185	235 205 185	– – –	– – –
	2	245 215 175	220 190 170	210 180 150	– – –	– – –
	3	185 160 125	175 155 140	155 140 110	– – –	– – –
K	1	– – –	355 320 290	– – –	– – –	– – –
	2	– – –	280 250 230	– – –	– – –	– – –
	3	– – –	235 210 190	– – –	– – –	– – –
N	1	– – –	– – –	– – –	2400 1440 1200	2400 1440 1200
	2	– – –	– – –	– – –	1640 980 800	1640 980 800
	3	– – –	– – –	– – –	960 600 480	960 600 480
S	1	55 50 35	– – –	50 40 35	– – –	– – –
	2	55 50 35	– – –	50 40 35	– – –	– – –
	3	65 55 35	– – –	60 50 35	– – –	– – –
	4	100 70 50	80 60 40	80 60 40	– – –	– – –
H	1	– – –	– – –	– – –	– – –	– – –
	2	– – –	– – –	– – –	– – –	– – –
	3	– – –	– – –	– – –	– – –	– – –

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

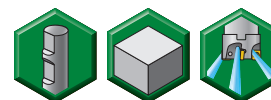
■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

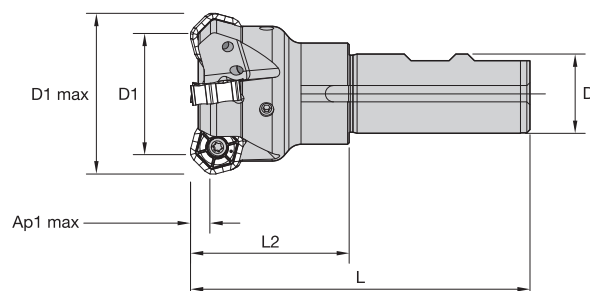
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F.LDJ	0,45	0,90	1,84	0,33	0,65	1,31	0,25	0,48	0,97	0,21	0,42	0,84	0,20	0,39	0,77	.F.LDJ
.E..LD	0,45	1,36	2,81	0,33	0,98	1,97	0,25	0,73	1,46	0,21	0,63	1,27	0,20	0,58	1,16	.E..LD
.S..GD	0,72	2,35	3,89	0,52	1,67	2,70	0,39	1,23	1,98	0,34	1,07	1,72	0,31	0,98	1,57	.S..GD
.S..HD	0,92	2,35	3,89	0,66	1,67	2,70	0,49	1,23	1,98	0,43	1,07	1,72	0,39	0,98	1,57	.S..HD

NOTE: Use "Light Machining" value as starting feed rate.

- Twelve cutting edges.
- First choice for general face milling.
- Low cutting forces for maximum productivity.



Face Mills



Weldon Shanks

order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
3325311	M1200D040Z04B25HN09	40	51,0	25	107	50	4,5	4	15800	Yes	0,52
3325310	M1200D040Z03B25HN09	40	51,0	25	107	50	4,5	3	15800	Yes	0,53

Spare Parts



insert
screw



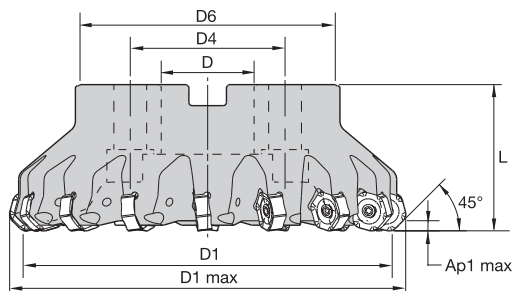
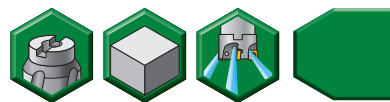
Nm



Torx
driver

D1	insert screw	Nm	Torx driver
40	12146034500	3,5	12148082400

- Twelve cutting edges.
- First choice for general face milling.
- Low cutting forces for maximum productivity.



Face Mills

■ Shell Mills

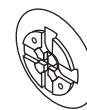
order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
3957970	M1200D040Z03HN09	40	51,0	22	—	39	40	4,4	3	15800	Yes	0,26
3957971	M1200D040Z04HN09	40	51,0	22	—	39	40	4,4	4	15800	Yes	0,25
3325312	M1200D050Z04HN09	50	61,0	22	—	38	40	4,5	4	12700	Yes	0,32
3325693	M1200D050Z05HN09	50	61,0	22	—	38	40	4,5	5	12700	Yes	0,33
3650535	M1200D063Z04HN09	63	74,0	22	—	50	40	4,5	4	10100	Yes	0,59
3093594	M1200D063Z06HN09	63	74,0	22	—	50	40	4,5	6	10100	Yes	0,56
3025376	M1200D063Z07HN09	63	74,0	22	—	50	40	4,5	7	10100	Yes	0,57
3650536	M1200D080Z05HN09	80	91,0	27	—	60	50	4,5	5	7900	Yes	1,12
3081507	M1200D080Z06HN09	80	91,0	27	—	60	50	4,5	6	7900	Yes	1,07
3025377	M1200D080Z09HN09	80	91,0	27	—	60	50	4,5	9	7900	Yes	1,11
3650537	M1200D100Z06HN09	100	111,0	32	—	80	50	4,5	6	6300	Yes	1,73
3325694	M1200D100Z08HN09	100	111,0	32	—	80	50	4,5	8	6300	Yes	1,68
3025378	M1200D100Z11HN09	100	111,0	32	—	80	50	4,5	11	6300	Yes	1,73
3650538	M1200D125Z08HN09	125	135,9	40	—	90	63	4,5	8	5050	Yes	2,84
3081508	M1200D125Z10HN09	125	135,9	40	—	90	63	4,5	10	5050	Yes	2,77
3093593	M1200D125Z14HN09	125	136,0	40	—	90	63	4,5	14	5050	Yes	2,86
3066118	M1200D160Z12HN09	160	171,0	40	66,7	110	63	4,5	12	3900	Yes	4,56
3066119	M1200D160Z16HN09	160	171,0	40	66,7	110	63	4,5	16	3900	Yes	4,70
3957972	M1200D200Z16HN09	200	211,0	60	101,6	130	63	4,5	16	3180	Yes	6,43
3957993	M1200D250Z20HN09	250	261,0	60	101,6	130	63	4,5	20	2550	Yes	9,93
3957994	M1200D315Z24HN09	315	326,0	60	101,6	230	80	4,5	24	2020	Yes	22,90

(continued)

(Shell Mills — continued)

■ Spare Parts

Face Mills

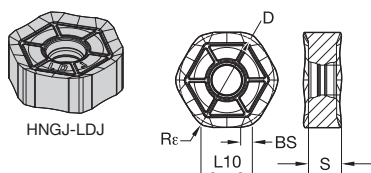


D1	insert screw	Nm	Torx driver	socket-head cap screw	socket-head cap screw with coolant groove	coolant screw assembly	coolant lock screw	coolant cap
40	12146034500	3,5	12148082400	—	12146109200	—	—	—
50	12146034500	3,5	12148082400	—	—	—	—	—
63	12146034500	3,5	12148082400	—	—	—	—	—
80	12146034500	3,5	12148082400	12748701000	—	—	—	—
100	12146034500	3,5	12148082400	—	—	12146109400	—	—
125	12146034500	3,5	12148082400	—	—	—	12146107000	12146111000
160	12146034500	3,5	12148082400	—	—	—	12146107000	12146111100
200	12146034500	3,5	12148082400	—	—	—	—	12146111200
250	12146034500	3,5	12148082400	—	—	—	—	12146111300
315	12146034500	3,5	12148082400	—	—	—	—	12146111400

NOTE: Socket-head cap screw with coolant groove, coolant screw assembly, coolant lock screw, and coolant cap must be ordered separately.

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.S..GD	WP40PM	.S..HD	WP40PM
P3-P4	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
P5-P6	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
M1-M2	.E..LD	WP25PM	.S..GD	WP25PM	.S..HD	WP25PM
M3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
K1-K2	.E..LD	TN6520	.S..GD	WK15CM	.S..HD	WK15CM
K3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
N1-N2	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
N3	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
S1-S2	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP25PM
S3	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
S4	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
H1	-	-	-	-	-	-

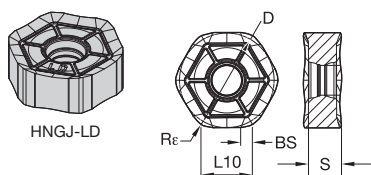


● first choice
○ alternate choice

P			
M			
K			
N	●	●	
S			
H			

HNGJ-LDJ

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6501	THM-U
HNGJ0905ANFNLDJ	12	16	8,58	5,56	1,80	1,20	0,02	3865373	3606363



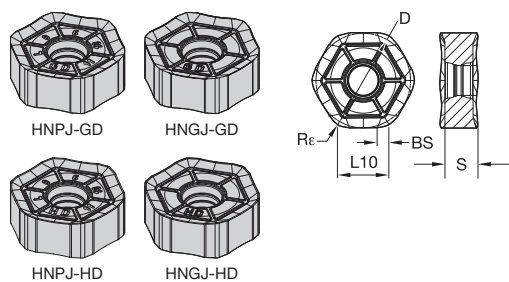
● first choice
○ alternate choice

P			●	●	●	●	●	●	●
M		○	○	○	○	○	○	○	○
K	●	○	○	○	○	○	○	○	○
N									
S			●			●	●	●	○
H						○			

HNGJ-LD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
HNGJ0905ANENLD	12	16	8,58	5,56	1,80	1,20	0,05	3093559	3330950	3030034	3030017	I	5895346	5528973	5895347	5895348

Face Mills



- first choice
- alternate choice

[illegible]

■ HNPJ-GD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WD40PM
								TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WD40PM
HNPJ0905ANSNGD	12	16	8,58	5,56	1,80	1,20	0,10	3761185	—	3761187	3761188	5427372	5895374	—	5895375	5550008

■ HNGJ-GD

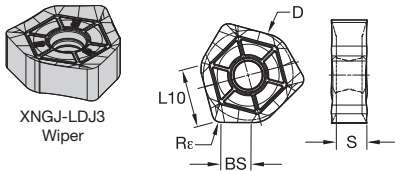
catalogue number	cutting edges	D	L10	S	BS	R _ε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP10DM
HNGJ0905ANSNGD	12	16	8,58	5,56	1,80	1,20	0,10	3119541	3614650	3037596	3093721	5427370	I	5528974	5895349	5805350

■ HNPJ-HD

catalogue number	cutting edges							TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WD10DM	
		D	L10	S	BS	Rε	hm										
HNPJ090543ANSNHD	12	16	8,50	5,44	—	4,34	0,13	3670866	—	3670865	—	—	5895378	—	5895379	5895380	5895381
HNPJ0905ANSNHD	12	16	8,59	5,46	1,66	1,20	0,18	3670864	—	3670842	—	5427371	5895376	—	5895377	5895378	5895379

■ HNGJ-HD

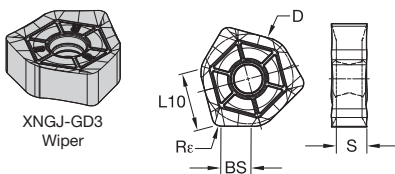
catalogue number	cutting edges	D	L10	S	BS	R _ε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
								TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
HNGJ090543ANSNHD	12	16	8,50	5,44	—	4,35	0,20	3564083	3564084	3564085	—	—	—	—	—	—
HNGJ0905ANSNHD	12	16	8,59	5,46	1,66	1,20	0,17	3563900	3563901	3563902	—	—	5895371	—	5895372	5895373



XNGJ-LDJ3 Wiper

catalogue number	cutting edges	D	L10	S	BS	Re	hm	TN6501	THM-U
XNGJ0905ANFNLDJ3W	3	16	9,60	5,51	6,00	1,60	0,02	3865375	3865358

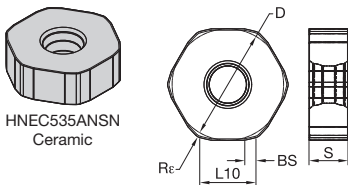
NOTE: Inserts have 3 right-hand and 3 left-hand cutting edges.



XNGJ-GD3 Wiper

catalogue number	cutting edges	D	L10	S	BS	Re	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
XNGJ0905ANSNGD3W	3	16	9,60	5,51	6,00	1,60	0,09	3524707	3523620	3066479	I	5622622	5895381	I	I	5895382

NOTE: Inserts have 3 right-hand and 3 left-hand cutting edges.



HNEC535ANSN Ceramic

catalogue number	cutting edges	D	L10	S	BS	Re	hm	WK25YM
HNEC0905ANSN	12	16	9,17	5,56	1,95	1,20	0,19	5910033

■ Recommended Starting Speeds [m/min]

Face Mills

Material Group		TN6520			TN6525			TN6540			TN7535			WK15CM			WP25PM		
P	1	–	–	–	410	320	280	360	280	240	545	475	445	–	–	–	395	340	325
	2	–	–	–	320	250	215	250	190	170	335	305	275	–	–	–	330	290	240
	3	–	–	–	280	215	185	215	170	140	305	275	245	–	–	–	305	260	210
	4	–	–	–	235	170	145	180	130	110	230	210	190	–	–	–	270	220	180
	5	–	–	–	310	235	200	240	180	150	310	275	250	–	–	–	220	205	180
	6	–	–	–	205	160	130	160	120	100	190	160	130	–	–	–	200	150	120
M	1	–	–	–	190	120	80	130	80	60	245	220	185	–	–	–	245	215	200
	2	–	–	–	120	80	50	80	50	40	220	190	170	–	–	–	220	190	155
	3	–	–	–	125	80	55	85	50	40	175	155	140	–	–	–	170	145	115
K	1	450	320	230	275	245	220	220	205	180	355	320	290	505	460	410	275	245	220
	2	390	250	190	215	190	180	175	155	140	280	250	230	400	355	330	215	190	180
	3	300	230	160	180	160	145	155	145	125	235	210	190	335	300	275	180	160	145
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	50	35	30	–	–	–	–	–	–	50	40	30
	2	–	–	–	–	–	–	25	20	10	–	–	–	–	–	–	50	40	30
	3	–	–	–	–	–	–	70	40	30	–	–	–	–	–	–	60	50	30
	4	–	–	–	–	–	–	60	30	25	–	–	–	–	–	–	85	60	40
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	145	110	85
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

(continued)

(Recommended Starting Speeds [m/min] — continued)

Material Group		WS30PM	WP35CM	WP40PM	WK25YM	TN6501	THM-U
P	1	— — —	545 475 445	355 310 295	— — —	— — —	— — —
	2	— — —	335 305 275	300 260 215	— — —	— — —	— — —
	3	— — —	305 275 245	275 235 190	— — —	— — —	— — —
	4	— — —	230 210 190	245 205 160	— — —	— — —	— — —
	5	— — —	310 275 250	205 185 160	— — —	— — —	— — —
	6	— — —	190 160 130	180 140 110	— — —	— — —	— — —
M	1	270 240 220	245 220 185	235 205 185	— — —	— — —	— — —
	2	245 215 175	220 190 170	210 180 150	— — —	— — —	— — —
	3	185 160 125	175 155 140	155 140 110	— — —	— — —	— — —
K	1	— — —	355 320 290	— — —	965 880 780	— — —	— — —
	2	— — —	280 250 230	— — —	765 685 635	— — —	— — —
	3	— — —	235 210 190	— — —	645 570 525	— — —	— — —
N	1	— — —	— — —	— — —	— — —	2400 1440 1200	2400 1440 1200
	2	— — —	— — —	— — —	— — —	1640 980 800	1640 980 800
	3	— — —	— — —	— — —	— — —	960 600 480	960 600 480
S	1	55 50 35	— — —	50 40 35	— — —	— — —	— — —
	2	55 50 35	— — —	50 40 35	— — —	— — —	— — —
	3	65 55 35	— — —	60 50 35	— — —	— — —	— — —
	4	100 70 50	80 60 40	80 60 40	— — —	— — —	— — —
H	1	— — —	— — —	— — —	— — —	— — —	— — —
	2	— — —	— — —	— — —	— — —	— — —	— — —
	3	— — —	— — —	— — —	— — —	— — —	— — —

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

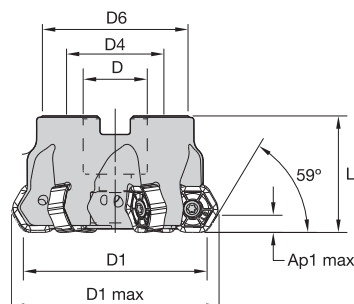
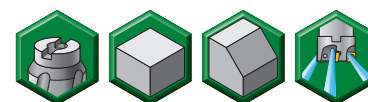
■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F.LDJ	0,17	0,33	0,66	0,12	0,24	0,47	0,09	0,18	0,35	0,08	0,15	0,31	0,07	0,14	0,28	.F.LDJ
.E..LD	0,17	0,49	0,99	0,12	0,35	0,71	0,09	0,27	0,53	0,08	0,23	0,46	0,07	0,21	0,42	.E..LD
.S..GD	0,26	0,84	1,35	0,19	0,60	0,97	0,14	0,45	0,72	0,12	0,39	0,63	0,11	0,36	0,57	.S..GD
.S..HD	0,33	0,84	1,35	0,24	0,60	0,97	0,18	0,45	0,72	0,16	0,39	0,63	0,14	0,36	0,57	.S..HD
.S..Ceramic	0,17	0,33	0,49	0,12	0,24	0,35	0,09	0,18	0,27	0,08	0,15	0,23	0,07	0,14	0,21	.S..Ceramic

NOTE: Use "Light Machining" value as starting feed rate.

- Twelve cutting edges.
- Higher A_{p1} max with standard insert.



Shell Mills

order number	catalogue number	D1	D1 max	D	D4	D6	L	A_{p1} max	Z	max RPM	coolant supply	kg
4152113	M1200HD050Z04HN09	50	58,6	22	—	38	40	6,0	4	12700	Yes	0,29
4152114	M1200HD050Z05HN09	50	58,6	22	—	38	40	6,0	5	12700	Yes	0,28
4152115	M1200HD063Z04HN09	63	71,5	22	—	50	40	6,0	4	10100	Yes	0,54
4152116	M1200HD063Z06HN09	63	71,5	22	—	50	40	6,0	6	10100	Yes	0,55
4152117	M1200HD080Z05HN09	80	88,5	27	—	60	50	6,0	5	7900	Yes	1,05
4152118	M1200HD080Z08HN09	80	88,5	27	—	60	50	6,0	8	7900	Yes	1,10
4152119	M1200HD100Z06HN09	100	108,5	32	—	80	50	6,0	6	6300	Yes	1,61
4152120	M1200HD100Z08HN09	100	108,5	32	—	80	50	6,0	8	6300	Yes	1,63
4152121	M1200HD125Z08HN09	125	133,5	40	—	90	63	6,0	8	5050	Yes	2,88
4152122	M1200HD125Z10HN09	125	133,5	40	—	90	63	6,0	10	5050	Yes	2,85
4152123	M1200HD160Z09HN09	160	168,5	40	66,7	110	63	6,0	9	3900	Yes	4,62
4152124	M1200HD160Z12HN09	160	168,5	40	66,7	110	63	6,0	12	3900	Yes	4,75

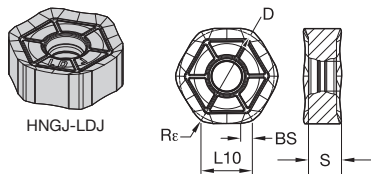
Spare Parts

D1	insert screw	Nm	Torx driver	socket-head cap screw	coolant screw assembly	coolant lock screw	coolant cap
50	12146034500	3,5	12148082400	12146120500	—	—	—
63	12146034500	3,5	12148082400	12146120500	—	—	—
80	12146034500	3,5	12148082400	12748701000	—	—	—
100	12146034500	3,5	12148082400	—	12146109400	—	—
125	12146034500	3,5	12148082400	—	—	12146107000	12146111000
160	12146034500	3,5	12148082400	—	—	12146107000	12146111100

NOTE: Coolant screw assembly, coolant lock screw, and coolant cap must be ordered separately.

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.S..GD	WP40PM	.S..HD	WP40PM
P3-P4	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
P5-P6	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
M1-M2	.E..LD	WP25PM	.S..GD	WP25PM	.S..HD	WP25PM
M3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
K1-K2	.E..LD	TN6520	.S..GD	WK15CM	.S..HD	WK15CM
K3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
N1-N2	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
N3	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
S1-S2	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP25PM
S3	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
S4	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
H1	-	-	-	-	-	-

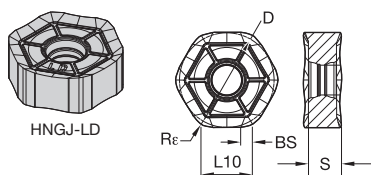


● first choice
○ alternate choice

P			
M			
K			
N	●	●	
S			
H			

HNGJ-LDJ

catalogue number	cutting edges	D	L10	S	BS	Re	hm	TN6501	THM-U
HNGJ0905ANFNLDJ	12	16	8,58	5,56	1,80	1,20	0,02	3865373	3606383



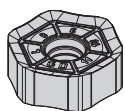
● first choice
○ alternate choice

P		●	●	●	●	●	●	●
M		○	●	○	○	○	○	●
K	●	○	○	○	○	○	○	○
N								
S			●	●	●	●	○	
H								

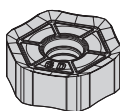
HNGJ-LD

catalogue number	cutting edges	D	L10	S	BS	Re	hm	TN6520	TN6525	TN6540	TN7535	WP25PM	WK15CM	WS30PM	WP35CM	WP40PM
HNGJ0905ANENLD	12	16	8,58	5,56	1,80	1,20	0,05	3093559	3330950	3030034	3030017	5895346	I	5528973	5895347	5895348

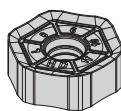
Face Mills



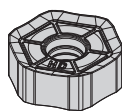
HNPJ-GD



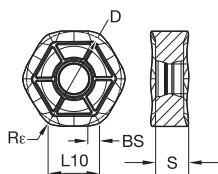
HNGJ-GD



HNPJ-HD



HNGJ-HD



- first choice
- alternate choice

[illegible]

■ HNPJ-GD

catalogue number	cutting edges	D	L10	S	BS	R _ε	hm	TN6520	TN6525	TN6540	TN7535	WP25PM	WK15CM	WS30PM	WP35CM	WP40PM
HNPJ0905ANSNGD	12	16	8,58	5,56	1,80	1,20	0,10	3761185	—	3761187	3761188	5895374	5427372	—	5895375	5500008

■ HNGJ-GD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WP25PM	WK15CM	WS30PM	WP35CM	WP40PM
HNGJ0905ANSNGD	12	16	8,58	5,56	1,80	1,20	0,10	3119541	3614650	3037596	3093721	I	5427370	5528974	5895349	5905250

■ HNPJ-HD

catalogue number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WP25PM	WK15CM	WS30PM	WP35CM	WP40PM
HNPJ090543ANSNHD	12	16	8,50	5,44	—	4,34	0,13	3670866	3670865	3670865	5895378	5895378	5427371	5895379	5895379	5895379
HNPJ0905ANSNHD	12	16	8,59	5,46	1,66	1,20	0,18	3670864	3670842	3670842	5895376	5895376	5427371	5895377	5895377	5895377

■ HNGJ-HD

catalogue number	cutting edges							TN6520	TN6525							
		D	L10	S	BS	Rε	hm	TN6540	TN7535	WP25PM	WK15CM	WS30PM	WP35CM	WP40PM		
HNGJ090543ANSNHD	12	16	8,50	5,44	—	4,35	0,20									
HNGJ0905ANSNHD	12	16	8,59	5,46	1,66	1,20	0,17									

■ Recommended Starting Speeds [m/min]

Material Group		TN6501	TN6520	TN6525	TN6540	TN7535	WP25PM
P	1	- - -	- - -	410 320 280	360 280 240	545 475 445	1295 1120 1060
	2	- - -	- - -	320 250 215	250 190 170	335 305 275	1080 940 785
	3	- - -	- - -	280 215 185	215 170 140	305 275 245	1000 845 690
	4	- - -	- - -	235 170 145	180 130 110	230 210 190	890 725 590
	5	- - -	- - -	310 235 200	240 180 150	310 275 250	725 670 590
	6	- - -	- - -	205 160 130	160 120 100	190 160 130	650 490 395
M	1	- - -	- - -	190 120 80	130 80 60	245 220 185	805 710 650
	2	- - -	- - -	120 80 50	80 50 40	220 190 170	725 630 510
	3	- - -	- - -	125 80 55	85 50 40	175 155 140	550 475 370
K	1	- - -	450 320 230	275 245 220	220 205 180	355 320 290	905 805 725
	2	- - -	390 250 190	215 190 180	175 155 140	280 250 230	710 630 590
	3	- - -	300 230 160	180 160 145	155 145 125	235 210 190	590 535 475
N	1	2400 1440 1200	- - -	- - -	- - -	- - -	- - -
	2	1640 980 800	- - -	- - -	- - -	- - -	- - -
	3	960 600 480	- - -	- - -	- - -	- - -	- - -
S	1	- - -	- - -	- - -	50 35 30	- - -	155 140 95
	2	- - -	- - -	- - -	25 20 10	- - -	155 140 95
	3	- - -	- - -	- - -	70 40 30	- - -	200 155 95
	4	- - -	- - -	- - -	60 30 25	- - -	275 200 140
H	1	- - -	- - -	- - -	- - -	- - -	475 355 275
	2	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -

Material Group		WK15CM	WS30PM	WP35CM	WP40PM	TN6501	THM-U
P	1	- - -	- - -	545 475 445	355 310 295	- - -	- - -
	2	- - -	- - -	335 305 275	300 260 215	- - -	- - -
	3	- - -	- - -	305 275 245	275 235 190	- - -	- - -
	4	- - -	- - -	230 210 190	245 205 160	- - -	- - -
	5	- - -	- - -	310 275 250	205 185 160	- - -	- - -
	6	- - -	- - -	190 160 130	180 140 110	- - -	- - -
M	1	- - -	270 240 220	245 220 185	235 205 185	- - -	- - -
	2	- - -	245 215 175	220 190 170	210 180 150	- - -	- - -
	3	- - -	185 160 125	175 155 140	155 140 110	- - -	- - -
K	1	505 460 410	- - -	355 320 290	- - -	- - -	- - -
	2	400 355 330	- - -	280 250 230	- - -	- - -	- - -
	3	335 300 275	- - -	235 210 190	- - -	- - -	- - -
N	1	- - -	- - -	- - -	- - -	2400 1440 1200	2400 1440 1200
	2	- - -	- - -	- - -	- - -	1640 980 800	1640 980 800
	3	- - -	- - -	- - -	- - -	960 600 480	960 600 480
S	1	- - -	55 50 35	- - -	50 40 35	- - -	- - -
	2	- - -	55 50 35	- - -	50 40 35	- - -	- - -
	3	- - -	65 55 35	- - -	60 50 35	- - -	- - -
	4	- - -	100 70 50	80 60 40	80 60 40	- - -	- - -
H	1	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.

As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F.LDJ	0,13	0,27	0,54	0,10	0,19	0,39	0,07	0,14	0,29	0,06	0,13	0,25	0,06	0,12	0,23	.F.LDJ
.E..LD	0,13	0,40	0,81	0,10	0,29	0,58	0,07	0,22	0,43	0,06	0,19	0,38	0,06	0,17	0,35	.E..LD
.S..GD	0,21	0,68	1,10	0,15	0,49	0,79	0,12	0,37	0,59	0,10	0,32	0,51	0,09	0,29	0,47	.S..GD
.S..HD	0,27	0,68	1,10	0,20	0,49	0,79	0,15	0,37	0,59	0,13	0,32	0,51	0,12	0,29	0,47	.S..HD

NOTE: Use "Light Machining" value as starting feed rate.

When Low Cutting Forces Are Required • M640 Series

The M640 platform is the first choice when high productivity, superior finish operations, and soft cutting performance are a priority. With six effective cutting edges and a streamlined body design, this easy-to-use tool is ideal, even for low-power machines.

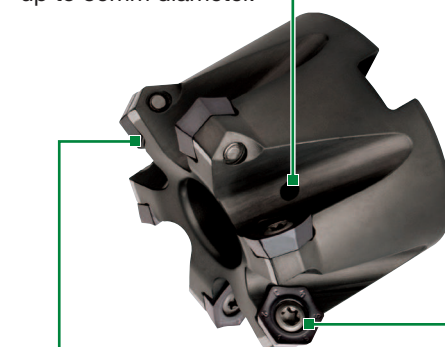
- Highly positive rake angle means extremely low cutting forces.
- Available in geometries and grades for all applications.
- Easy-to-use for fast, accurate indexing.



M640

All pockets are machined into preheated material for excellent runout and pocket strength.

Through tool coolant
up to 80mm diameter.



Optimum tool body design
using latest technology.

One screw enables
fast, accurate
indexing.

Face Mills



M640

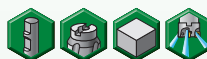
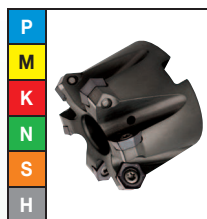
Max depth of cut: 4,8mm

Lead angle: 58°

Indexes per insert: 6

Diameter: 32–125mm

Pages: H44–H49



■ Insert Offering



Low cutting force wiper inserts:
Special wiper design for very soft
cutting in finishing operations
with high productivity.

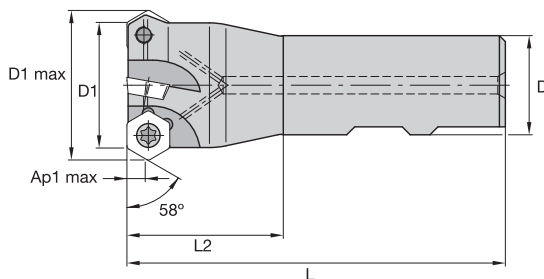
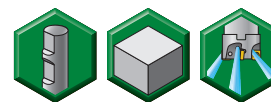


Six effective cutting edges.

Highly positive rake:

- Extremely low cutting forces.
- For low-power machines, driven units, and light fixtures.
- Chipbreaker and grades for all applications.
- Through tool coolant up to 80mm diameter.

- Six cutting edges.
- Highly positive rake for low-power machines or light fixtures.
- Geometries and grades for all applications.



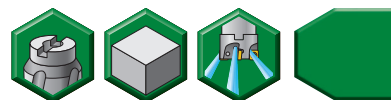
Weldon Shanks

order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
2263165	12395405200	32	38,4	32	100	40	4,8	4	29500	Yes	0,35

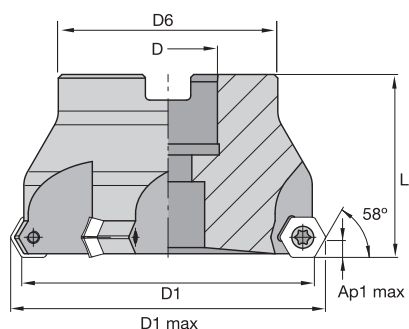
Spare Parts

			
D1	insert screw	Nm	Torx driver
32	12148038800	4,0	12148000600

- Six cutting edges.
- Highly positive rake for low-power machines or light fixtures.
- Geometries and grades for all applications.



Face Mills



■ Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
2263132	12395410200	50	56,4	22	47	40	4,8	4	19000	Yes	0,40
2263154	12395410400	63	69,4	22	50	40	4,8	5	15000	Yes	0,55
2263156	12395410600	80	86,4	27	60	50	4,8	6	11500	Yes	1,05
2263158	12395410800	100	106,4	32	78	50	4,8	7	9500	No	1,50
2263159	12395415800	100	106,4	32	78	50	4,8	10	9500	No	1,65
2263160	12395411000	125	131,4	40	89	63	4,8	8	7500	No	2,90

■ Spare Parts



insert
screw



Nm

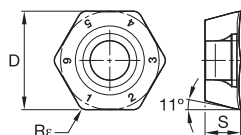
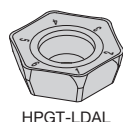


Torx
driver

D1	insert screw	Nm	Torx driver
50	12148038800	4,0	12148000600
63	12148038800	4,0	12148000600
80	12148038800	4,0	12148000600
100	12148038800	4,0	12148000600
125	12148038800	4,0	12148000600

■ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.E..GD	WP40PM	.E..GD	WP40PM
P3-P4	.E..LD	WP25PM	.E..GD	WP35CM	.E..GD	WP35CM
P5-P6	.E..LD	WP25PM	.E..GD	WP35CM	.E..GD	WP35CM
M1-M2	.E..LD	WP25PM	.E..GD	WP25PM	.E..GD	WP25PM
M3	.E..LD	WP40PM	.E..GD	WP35CM	.E..GD	WP35CM
K1-K2	.E..LD	TN6510	.E..GD	WK15CM	.E..GD	WK15CM
K3	.E..LD	TN6520	.E..GD	WP35CM	.E..GD	WP35CM
N1-N2	.F..LDAL	TN6501	.F..LDAL	TN6501	.F..LDAL	TN6501
N3	.F..LDAL	TN6501	.F..LDAL	TN6501	.F..LDAL	TN6501
S1-S2	.E..LD	WP25PM	.E..GD	WP25PM	.E..GD	WP25PM
S3	.E..GD	WS30PM	.E..GD	WS30PM	.E..GD	WP40PM
S4	.E..GD	WS30PM	.E..GD	WS30PM	.E..GD	WP40PM
H1	.E..LD	TN2510	.E..GD	TN2510	-	-



- first choice

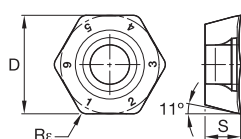
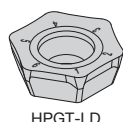
- alternate choice

P				
M				
K				
N				
S				
H				

■ HPGT-LDAL

catalogue number	cutting edges	D	S	Rε	hm	TN6501	THM-U	TUM
HPGT06T3DZFRLDAL	6	11	4,00	0,90	0,08	2957548	2288107	0000006

NOTE: $A_{p1 \text{ max}} = 3,2\text{mm}$ with this geometry.



- first choice

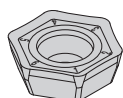
- alternate choice

[illegible]

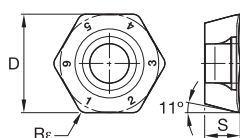
■ HPGT-LD

catalogue number	cutting edges	D	S	R _ε	hm	TN2510	TN6510	TN6520	TN6525	TN6540	TN7525	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
HPGT06T3DZERLD	6	11	3,99	0,98	0,08	2288072	—	2957585	2957547	2957587	2288070	—	—	5895784	—	—	5905795

NOTE: $A_{p1 \text{ max}} = 3\text{mm}$ with this geometry.



HPPT-GD
HPGT-GD



- first choice
- alternate choice

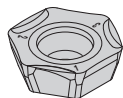
P										
M										
K										
N										
S										
H										

■ HPPT-GD

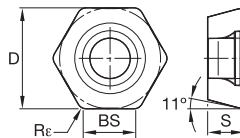
catalogue number	cutting edges	D	S	Rε	hm	TN2510	TN6510	TN6520	TN6525	TN6540	TN7525	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
HPPT06T3DZENGD	6	11	3,97	0,98	0,10	I	I	2957583	2957586	2957552	2271760	2271759	I	5895788	I	5895790	5895789

■ HPGT-GD

catalogue number	cutting edges	D	S	Rε	hm	TN2510	TN6510	TN6520	TN6525	TN6540	TN7525	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
HPGT06T3DZENGD	6	11	3,97	0,98	0,10	2288069	2957589	I	2957588	2957546	2288067	2288066	5427387	5895782	5528978	I	5895783



HPGT-GD
Wiper



- first choice
- alternate choice

P										
M										
K										
N										
S										
H										

■ HPGT-GD Wiper

						TN2510	TN6510	TN6520	TN6525	TN6540	TN7525	TN7535	WK15CM	WP25PM	WS30PM	WP35CM	WP40PM
catalogue number	cutting edges	D	S	BS	R _e	hm											
HPGT06T3DZERGD3W	3	11	4,00	2,88	0,98	0,10	I 2957549	I 2957584	I 2957584	I 2288103	I 5427388	I 5895786	I 5895786	I 5895786	I 5895786	I 5895787	I 5895787

■ Recommended Starting Speeds [m/min]

Face Mills

Material Group		TN2510			TN6510			TN6520			TN6525			TN6540			TN7525		
P	1	660	580	540	–	–	–	–	–	–	410	320	280	360	280	240	410	310	280
	2	410	370	330	–	–	–	–	–	–	320	250	215	250	190	170	310	250	215
	3	370	330	305	–	–	–	–	–	–	280	215	185	215	170	140	280	215	185
	4	275	260	230	–	–	–	–	–	–	235	170	145	180	130	110	235	170	145
	5	330	300	275	–	–	–	–	–	–	310	235	200	240	180	150	310	235	200
	6	230	205	175	–	–	–	–	–	–	205	160	130	160	120	100	205	160	130
M	1	270	240	210	–	–	–	–	–	–	190	120	80	130	80	60	245	220	185
	2	245	210	190	–	–	–	–	–	–	120	80	50	80	50	40	220	190	170
	3	190	175	150	–	–	–	–	–	–	125	80	55	85	50	40	175	155	140
K	1	420	360	300	480	350	260	450	320	230	275	245	220	220	205	180	380	280	240
	2	360	300	250	420	280	205	390	250	190	215	190	180	175	155	140	325	240	200
	3	300	250	200	335	260	200	300	230	160	180	160	145	155	145	125	240	200	170
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	50	35	30	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	25	20	10	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	70	40	30	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	60	30	25	–	–	–
H	1	145	110	70	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	145	110	70	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	115	80	45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		TN7535			WK15CM			WP25PM			WS30PM			WP35CM			WP40PM		
P	1	545	475	445	–	–	–	395	340	325	–	–	–	545	475	445	355	310	295
	2	335	305	275	–	–	–	330	290	240	–	–	–	335	305	275	300	260	215
	3	305	275	245	–	–	–	305	260	210	–	–	–	305	275	245	275	235	190
	4	230	210	190	–	–	–	270	220	180	–	–	–	230	210	190	245	205	160
	5	310	275	250	–	–	–	220	205	180	–	–	–	310	275	250	205	185	160
	6	190	160	130	–	–	–	200	150	120	–	–	–	190	160	130	180	140	110
M	1	245	220	185	–	–	–	245	215	200	270	240	220	245	220	185	235	205	185
	2	220	190	170	–	–	–	220	190	155	245	215	175	220	190	170	210	180	150
	3	175	155	140	–	–	–	170	145	115	185	160	125	175	155	140	155	140	110
K	1	355	320	290	505	460	410	275	245	220	–	–	–	355	320	290	–	–	–
	2	280	250	230	400	355	330	215	190	180	–	–	–	280	250	230	–	–	–
	3	235	210	190	335	300	275	180	160	145	–	–	–	235	210	190	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	50	40	30	55	50	35	–	–	–	50	40	35
	2	–	–	–	–	–	–	50	40	30	55	50	35	–	–	–	50	40	35
	3	–	–	–	–	–	–	60	50	30	65	55	35	–	–	–	60	50	35
	4	–	–	–	–	–	–	85	60	40	100	70	50	80	60	40	80	60	40
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

(continued)

(Recommended Starting Speeds [m/min] — continued)

Material Group		TN6501			THM-U			THM		
P	1	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—	—	—
	6	—	—	—	—	—	—	—	—	—
M	1	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—
K	1	—	—	—	230	205	180	145	110	90
	2	—	—	—	—	—	—	150	120	85
	3	—	—	—	—	—	—	155	115	70
N	1	2400	1440	1200	2400	1440	1200	1080	720	600
	2	1640	980	800	1640	980	800	820	560	460
	3	960	600	480	960	600	480	540	335	240
S	1	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—	—	—
H	1	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F.LDAL	0,13	0,34	0,47	0,10	0,25	0,34	0,07	0,18	0,25	0,06	0,16	0,22	0,06	0,15	0,20	.F.LDAL
.E..LD	0,13	0,34	0,47	0,10	0,25	0,34	0,07	0,18	0,25	0,06	0,16	0,22	0,06	0,15	0,20	.E..LD
.E..GD	0,13	0,48	0,54	0,10	0,35	0,39	0,07	0,26	0,29	0,06	0,23	0,25	0,06	0,21	0,23	.E..GD

NOTE: Use "Light Machining" value as starting feed rate.

The Ideal Heavy-Duty Face Milling Platform •

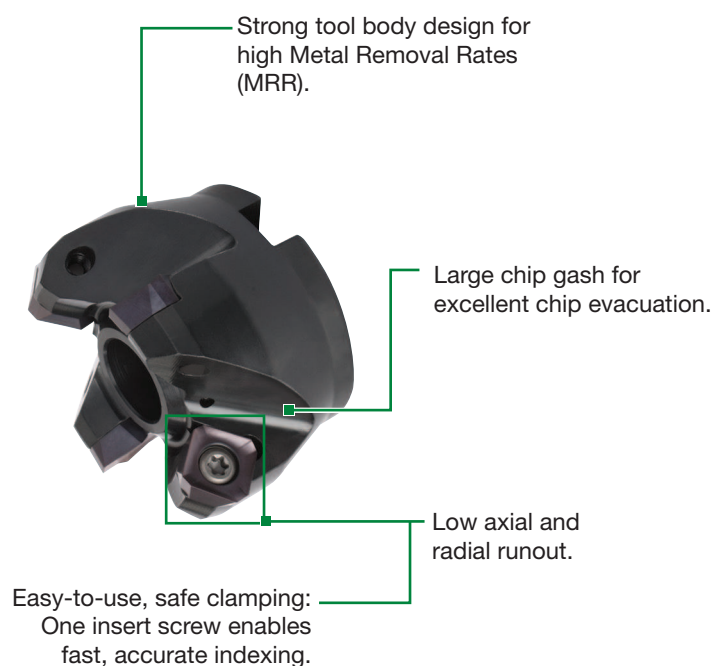
M660 Series

The M660 Series Heavy-Duty Face Milling platform, with its strong tool body design and perfect axial and radial runout, is the ultimate high-performance booster in the heavy machining of steel and cast iron.

- Three tailor-made chipbreakers with large chip gash ensures excellent chip evacuation.
- Easy, safe, and stable clamping ensures accurate indexing.
- Thick inserts for reliability and high MRR capability.



M660



Face Mills



M660 SN1205..

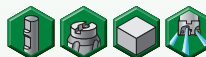
Max depth of cut: 6,4mm

Lead angle: 45°

Indexes per insert: 4

Diameter: 20–160mm

Pages: H52–H57



M660 SN1505..

Max depth of cut: 8,4mm

Lead angle: 45°

Indexes per insert: 4

Diameter: 100mm

Pages: H58–H60



■ Insert Offering



Three tailor-made chipbreakers (-20, -21, -31) for all heavy-duty applications in steel and cast iron.

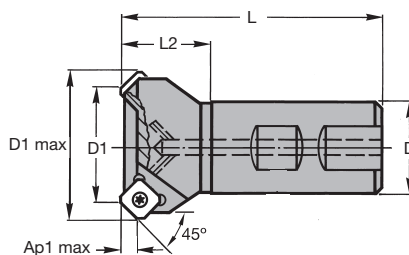
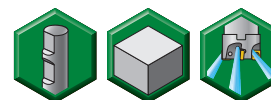
Thick inserts for reliability and high MRR capability.

Integrated wiper facet: Good surface finish in heavy roughing applications.

Positive rake angle:

- Soft cutting action.
- Less spindle power requirement.
- Less chipping on workpiece in cast iron.
- Less burs on workpiece in steel.
- High feed rate capability.

- Four cutting edges.
- Strong tool body design.
- Excellent chip evacuation.



Weldon Shanks

order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
2002367	12396202200	20	33,8	25	86	30	6,4	2	17000	Yes	0,30
2002370	12396202600	25	38,7	25	91	35	6,4	2	15000	Yes	0,35

Spare Parts



insert screw



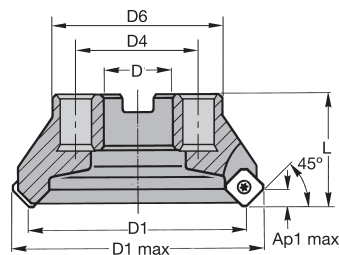
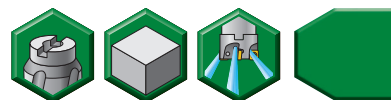
Nm



Torx driver

D1	insert screw	Nm	Torx driver
20	12148007200	3,5	12148007500
25	12148007200	3,5	12148007500

- Four cutting edges.
- Strong tool body design.
- Excellent chip evacuation.



Face Mills

■ Shell Mills

order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
2003541	12396203800	50	63,5	22	—	50	40	6,4	4	12500	Yes	0,45
2003558	12396204200	63	76,5	22	—	50	40	6,4	5	11000	Yes	0,60
2003575	12396204600	80	94,3	27	—	60	50	6,4	6	9900	Yes	1,15
2003582	12396205000	100	113,4	32	—	78	50	6,4	7	8900	No	1,60
2003679	12396205400	125	138,3	40	—	89	63	6,4	8	7900	No	2,80
2003780	12396205800	160	173,3	40	66,7	90	63	6,4	10	7000	No	4,10

■ Spare Parts



insert screw



Nm



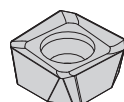
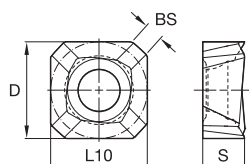
Torx driver

D1	insert screw	Nm	Torx driver
50	12148007200	3,5	12148007500
63	12148007200	3,5	12148007500
80	12148007200	3,5	12148007500
100	12148007200	3,5	12148007500
125	12148007200	3,5	12148007500
160	12148007200	3,5	12148007500

■ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	...20	TN6540	...31	WP40PM	...31	WP40PM
P3-P4	...20	TN7535	...31	WP35CM	...31	WP35CM
P5-P6	...20	TN7535	...31	WP35CM	...31	WP35CM
M1-M2	...20	TN6540	...31	WP25PM	...31	WP25PM
M3	...20	TN7535	...31	WP35CM	...31	WP35CM
K1-K2	...21	WK15CM	...31	WK15CM	...31	WK15CM
K3	...21	WK15CM	...31	WP35CM	...31	WP35CM
N1-N2	—	—	—	—	—	—
N3	—	—	—	—	—	—
S1-S2	...20	TN6540	...31	WP25PM	...31	WP25PM
S3	—	—	—	—	—	—
S4	...20	TN6540	...31	WP40PM	...31	WP40PM
H1	—	—	—	—	—	—

Inserts • SN1205..

SNKT-20
SNKT-21

● first choice
○ alternate choice

P	●	●	●	●	●	●
M	●	○	○	○	○	○
K	○	○	○	●	○	○
N	○	○	○	○	○	●
S	●	○	○	○	○	○
H	○	○	○	○	○	○

■ SNKT-20

catalogue number	cutting edges	D	L10	S	BS	hm	TN6540	TN7535	WK15CM	WP40PM	TT125	THM
SNKT1205AZER20	4	12,70	12,70	5,51	2,00	0,10	2964201	2022370	2020691	—	—	2022371

■ SNKT-21

catalogue number	cutting edges	D	L10	S	BS	hm	TN6540	TN7535	WK15CM	WP40PM	TT125	THM
SNKT1205AZR21	4	12,70	12,70	5,56	1,54	0,15	—	2022373	—	5427383	—	2022374

■ Recommended Starting Speeds [m/min]

Face Mills

Material Group		TN6525			TN6540			TN7525			TN7535		
P	1	410	320	280	360	280	240	410	310	280	545	475	445
	2	320	250	215	250	190	170	310	250	215	335	305	275
	3	280	215	185	215	170	140	280	215	185	305	275	245
	4	235	170	145	180	130	110	235	170	145	230	210	190
	5	310	235	200	240	180	150	310	235	200	310	275	250
	6	205	160	130	160	120	100	205	160	130	190	160	130
M	1	190	120	80	130	80	60	245	220	185	245	220	185
	2	120	80	50	80	50	40	220	190	170	220	190	170
	3	125	80	55	85	50	40	175	155	140	175	155	140
K	1	275	245	220	220	205	180	380	280	240	355	320	290
	2	215	190	180	175	155	140	325	240	200	280	250	230
	3	180	160	145	155	145	125	240	200	170	235	210	190
N	1	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	50	35	30	–	–	–	–	–	–
	2	–	–	–	25	20	10	–	–	–	–	–	–
	3	–	–	–	70	40	30	–	–	–	–	–	–
	4	–	–	–	60	30	25	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–

(continued)

(Recommended Starting Speeds [m/min] — continued)

Material Group		WK15CM			WP40PM			TTI25			THM		
P	1	—	—	—	355	310	295	430	360	300	—	—	—
	2	—	—	—	300	260	215	310	250	215	—	—	—
	3	—	—	—	275	235	190	310	250	215	—	—	—
	4	—	—	—	245	205	160	265	215	180	—	—	—
	5	—	—	—	205	185	160	320	235	200	—	—	—
	6	—	—	—	180	140	110	145	110	90	—	—	—
M	1	—	—	—	235	205	185	480	310	215	—	—	—
	2	—	—	—	210	180	150	325	205	145	—	—	—
	3	—	—	—	155	140	110	320	210	145	—	—	—
K	1	505	460	410	—	—	—	220	185	155	145	110	90
	2	400	355	330	—	—	—	180	145	125	150	120	85
	3	335	300	275	—	—	—	145	125	100	155	115	70
N	1	—	—	—	—	—	—	—	—	—	1080	720	600
	2	—	—	—	—	—	—	—	—	—	820	560	460
	3	—	—	—	—	—	—	—	—	—	540	335	240
S	1	—	—	—	50	40	35	—	—	—	—	—	—
	2	—	—	—	50	40	35	—	—	—	—	—	—
	3	—	—	—	60	50	35	—	—	—	—	—	—
	4	—	—	—	80	60	40	—	—	—	—	—	—
H	1	—	—	—	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—	—	—	—

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

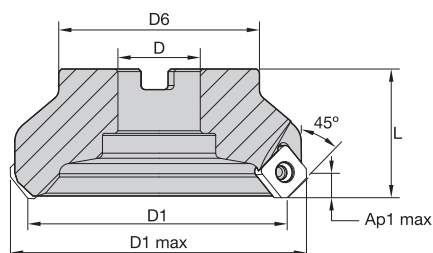
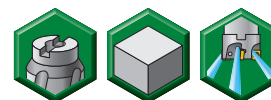
■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
...20	0,17	0,66	1,19	0,12	0,47	0,86	0,09	0,35	0,64	0,08	0,31	0,56	0,07	0,28	0,51	...20
...21	0,24	0,74	1,25	0,18	0,53	0,89	0,13	0,40	0,66	0,12	0,35	0,58	0,11	0,32	0,53	...21
...31	0,26	0,76	1,28	0,19	0,55	0,91	0,14	0,41	0,68	0,12	0,36	0,59	0,11	0,33	0,54	...31

NOTE: Use "Light Machining" value as starting feed rate.

- Four cutting edges.
- Strong tool body design.
- Thick inserts for reliability.



■ Shell Mills

order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
2003593	12396215000	100	116,9	32	78	50	8,0	7	8900	No	1,60

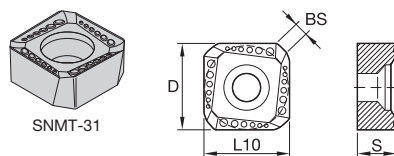
■ Spare Parts

			
D1	insert screw	Nm	Torx driver
100	12148007200	3,5	12148007500

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	...31	WP40PM	...31	WP40PM	...31	WP40PM
P3-P4	...31	WP25PM	...31	WP35CM	...31	WP35CM
P5-P6	...31	WP25PM	...31	WP35CM	...31	WP35CM
M1-M2	...31	WP25PM	...31	WP25PM	...31	WP25PM
M3	...31	WP35CM	...31	WP35CM	...31	WP35CM
K1-K2	...31	WK15CM	...31	WK15CM	...31	WK15CM
K3	...31	WK15CM	...31	WK35CM	...31	WK15CM
N1-N2	—	—	—	—	—	—
N3	—	—	—	—	—	—
S1-S2	...31	WP25PM	...31	WP25PM	...31	WP25PM
S3	—	—	—	—	—	—
S4	...31	WP40PM	...31	WP40PM	...31	WP40PM
H1	—	—	—	—	—	—

Inserts • SN1505..



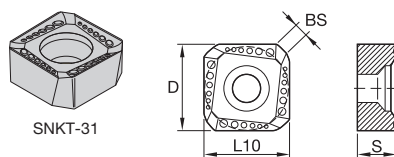
SNMT-31

● first choice
○ alternate choice

P	●	●	●	●	●
M	○	○	○	○	○
K	○	○	○	○	○
N	○	○	○	○	○
S	○	○	○	○	○
H	○	○	○	○	○

SNMT-31

catalogue number	cutting edges	D	L10	S	BS	hm	TN7525	TN7535	WK15CM
SNMT1505AZR31	4	16	15,88	5,56	2,00	0,16	2020701	2020695	5427386



SNKT-31

● first choice
○ alternate choice

P	●	●	●	●	●
M	○	○	○	○	○
K	○	○	○	○	○
N	○	○	○	○	○
S	○	○	○	○	○
H	○	○	○	○	○

SNKT-31

catalogue number	cutting edges	D	L10	S	BS	hm	TN7525	TN7535	WK15CM	WP25PM	WP35CM	WP40PM
SNKT1505AZR31	4	16	15,88	5,56	2,00	0,16	2020711	2020705	5427385	5895538	5895539	5895540

■ Recommended Starting Speeds [m/min]

Material Group		TN6525			TN7525			TN7535			WK15CM		
P	1	410	320	280	410	310	280	545	475	445	–	–	–
	2	320	250	215	310	250	215	335	305	275	–	–	–
	3	280	215	185	280	215	185	305	275	245	–	–	–
	4	235	170	145	235	170	145	230	210	190	–	–	–
	5	310	235	200	310	235	200	310	275	250	–	–	–
	6	205	160	130	205	160	130	190	160	130	–	–	–
M	1	190	120	80	245	220	185	245	220	185	–	–	–
	2	120	80	50	220	190	170	220	190	170	–	–	–
	3	125	80	55	175	155	140	175	155	140	–	–	–
K	1	275	245	220	380	280	240	355	320	290	505	460	410
	2	215	190	180	325	240	200	280	250	230	400	355	330
	3	180	160	145	240	200	170	235	210	190	335	300	275
N	1	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
...21	0,24	0,74	1,25	0,18	0,53	0,89	0,13	0,40	0,66	0,12	0,35	0,58	0,11	0,32	0,53	...21
...31	0,33	0,84	1,35	0,24	0,60	0,97	0,18	0,45	0,72	0,16	0,39	0,63	0,14	0,36	0,57	...31

NOTE: Use "Light Machining" value as starting feed rate.

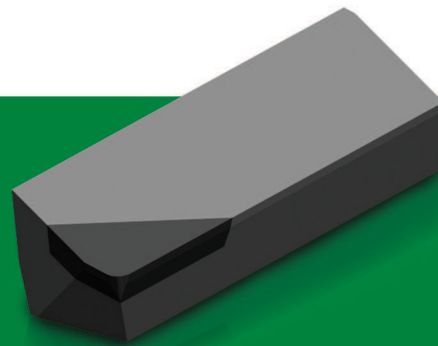


Indexable Milling • **SuperFeed™**

The new SuperFeed face mills and end mills are the first choice platform for machining aluminium in the transportation and general engineering industries.

Our unique insert design delivers exceptional stability and performance. Reduced complexity with exceptional finishing capabilities make SuperFeed the go-to platform in aluminium and non-ferrous face and end milling applications.

- Durable cutter body protection.
- Five PCD cartridge options for increased flexibility.
- User-friendly axial adjustment 0,3–0,8mm.
- Reduce overall tooling costs with reconditioning options.



SuperFeed

Features	Benefits
• Anodized aluminium cutter bodies.	• Durable and lightweight.
• Easy axial adjustment range 0,3–0,8mm.	• Simple and very user friendly.
• DovLok™ PCD cartridge design.	• Proven in demanding automotive applications.
• Fine pitch cutters.	• Shorter cycle times, higher MRR and productivity.



Face Mills



SuperFeed™

Max depth of cut: 6,35mm
(can be less depending on the cartridge)

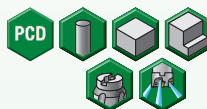
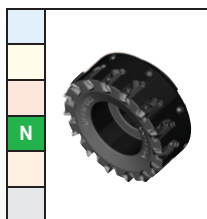
Lead angle: 90°

Indexes per insert:

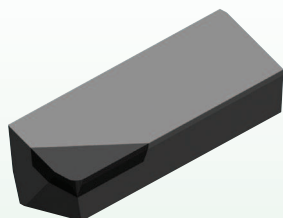
1 edge per PCD cartridge

Diameter: Standard Platform
63–200mm

Pages: H64–H68



■ Insert Offering



SDR/EDR

Corner Radii:

SDR — 0,8mm and 2,36mm
EDR — 0,8mm

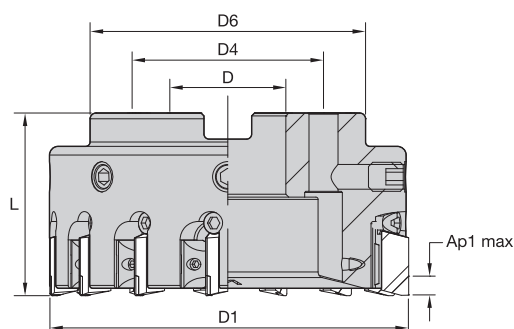
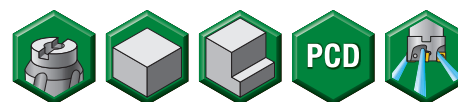
Axial DOC:

SDR — 6,35mm max
EDR — 6,35mm max

WIDIA™ Grade WDN00U™:

- Ultra fine grain PCD.
- Long tool life, consistent results, excellent surface qualities.

- Through coolant capability.
- +/- 3 micron axial adjustment range.
- Balanced design.
- Easy setup in a simple system design.
- Modified standards available.



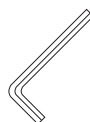
■ Face Mills • Metric

order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	Z ADJ	kg	max RPM
5363208	SF06306RH	63	22	—	60	40	6	6	6	0,45	20000
5363209	SF08008RH	80	27	—	77	50	6	8	8	0,63	20000
5363220	SF10012RH	100	32	—	97	50	6	12	12	1,13	17320
5363221	SF12515RH	125	40	—	122	63	6	15	15	2,30	15500
5363222	SF16018RH	160	40	—	157	63	6	18	18	3,20	14150
5363223	SF20024RH	200	60	102	197	63	6	24	24	4,21	12240

NOTE: Z = Number of cartridges.

Z ADJ = Number of adjustable cartridges.

■ Spare Parts



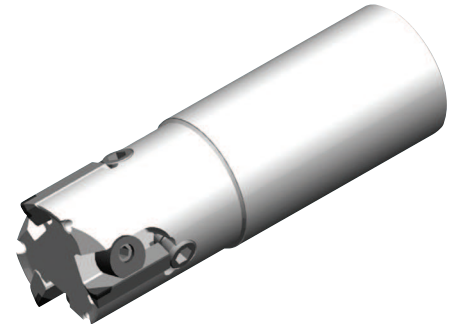
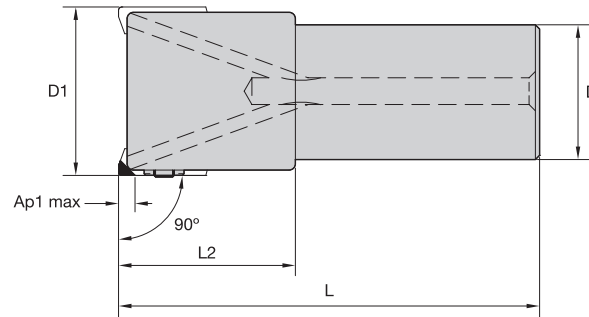
D1	wedge screw	wrench size wedge screw	adjusting screw	wrench size-adjusting screw	coolant cap	coolant shower plate	wedge
63	LS103	3 mm	SWSM515	4 mm	SALS063	—	HDWM5EU4DD
80	LS103	3 mm	SWSM515	4 mm	SALS080	—	HDWM5EU4DD
100	LS103	3 mm	SWSM515	4 mm	SALS100	—	HDWM5EU4DD
125	LS103	3 mm	SWSM515	4 mm	SALS125	—	HDWM5EU4DD
160	LS103	3 mm	SWSM515	4 mm	SALS160	—	HDWM5EU4DD
200	LS103	3 mm	SWSM515	4 mm	—	SSP8	HDWM5EU4DD

NOTE: Coolant cap or coolant shower plate must be ordered separately.

- Through coolant capability.
- +/- 3 micron axial adjustment range.
- Easy setup in a simple system design.
- Modified standards available.



Face Mills



■ End Mills • Metric

order number	catalogue number	D1	D	L2	L	Ap1 max	Z	Z ADJ	kg	max RPM
5363252	WSSEM02502RH	25	20	40	100	6,4	2	2	0,22	35800
5363253	WSSEM03203RH	32	32	42	100	6,4	3	3	0,54	31600
5363254	WSSEM04004RH	40	32	42	100	6,4	4	4	0,49	28300
5363255	WSSEM05005RH	50	32	42	100	6,4	5	5	0,79	25300

NOTE: Z = Number of cartridges.

Z ADJ = Number of adjustable cartridges.

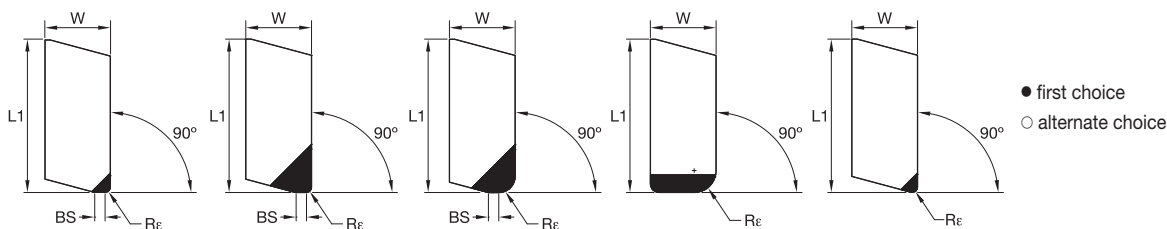
■ Spare Parts

D1	wedge screw	wrench size wedge screw	wedge	adjusting screw	wrench size-adjusting screw
25	DSM550	3 mm	HDWM5S	SWSM5155	4 mm
32	DSM550	3 mm	HDWM5S	SWSM5155	4 mm
40	DSM550	3 mm	HDWM5S	SWSM5155	4 mm
50	DSM550	3 mm	HDWM5S	SWSM5155	4 mm

NOTE: For setting procedure, see page H68.

■ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	-	-	-	-	-	-
P3-P4	-	-	-	-	-	-
P5-P6	-	-	-	-	-	-
M1-M2	-	-	-	-	-	-
M3	-	-	-	-	-	-
K1-K2	-	-	-	-	-	-
K3	-	-	-	-	-	-
N1-N2	SDR.../EDR...	WDN00U	SDR.../EDR...	WDN00U	SDR.../EDR...	WDN00U
N3	SDR.../EDR...	WDN00U	SDR.../EDR...	WDN00U	SDR.../EDR...	WDN00U
S1-S2	-	-	-	-	-	-
S3	-	-	-	-	-	-
S4	-	-	-	-	-	-
H1	-	-	-	-	-	-



P	
M	
K	
N	●
S	
H	

■ PCD Inserts • Face Mills • SDR

catalogue number	cutting edges	L1	BS	W	Rε	hm	WDN00U
SDR100031E0NW	1	22,23	—	9,53	0,79	0,02	5358450
SDR100031E0W4	1	22,23	1,52	9,53	0,79	0,02	5358407
SDR100031E1W4	1	22,23	1,52	9,53	0,79	0,02	5358408
SDR100093E1W4	1	22,23	1,52	9,53	2,36	0,02	5358409
SDR102	1	22,22	—	9,52	3,17	0,02	5358451

■ PCD Inserts • End Mills • EDR

catalogue number	cutting edges	L1	BS	W	Rε	hm	WDN00U
EDR100031E1W4	1	22,23	1,52	6,36	0,79	0,02	5358452

NOTE: hm = Average chip thickness; BS = Wiper facet length; E0 = 2,5 ap1 max; E1 = 6,3 ap1 max.

■ Recommended Starting Speeds [m/min]

Material Group		WDN00U		
P	1	–	–	–
	2	–	–	–
	3	–	–	–
	4	–	–	–
	5	–	–	–
	6	–	–	–
M	1	–	–	–
	2	–	–	–
	3	–	–	–
K	1	–	–	–
	2	–	–	–
	3	–	–	–
N	1–2	910	1980	4880
	3	460	610	760
S	1	–	–	–
	2	–	–	–
	3	–	–	–
	4	–	–	–
H	1	–	–	–

Face Mills

Recommended Starting Feeds

■ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
SDR...	0,08	0,17	0,33	0,06	0,13	0,25	0,06	0,11	0,22	0,05	0,10	0,20	0,05	0,10	0,20	SDR...
EDR...	0,08	0,17	0,33	0,06	0,13	0,25	0,06	0,11	0,22	0,05	0,10	0,20	0,05	0,10	0,20	EDR...

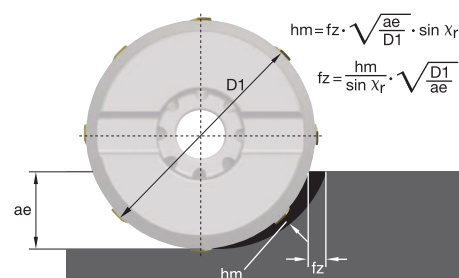
NOTE: First choice starting feed (fz) is in **bold** type.

Use corresponding speed (vc).

fz and vc are valid for $ae \geq 0,4 D1$.

For smaller ae, fz and vc should be multiplied by the factor given below:

ae/D1 =	0,2	0,3	0,4
fz-Factor	1,5	1,3	1,0
vc-Factor	1,3	1,2	1,1



■ General

- Non-contact gages are preferred.
- Contact gages can be used with the following precautions:
 - Indicator must be flat and parallel to the base.
 - Always approach the PCD cartridge from the relief angle under the PCD segment.
 - Do NOT let the indicator drop on the PCD segment.
- Remove all worn PCD cartridges.
- Clean the pockets of the cutter completely.

■ Face Mills

- Apply a small amount of lubricant to the following areas:
 - Pocket area where the wedge slides.
 - Threads of the cartridge locking screw.
 - Threads of the axial adjustment screw.
- Install cartridges applying light torque to the wedge assembly locking screw.
- Turn axial adjustment screw until the cartridge is 0,01–0,015mm below the final set height.
- Tighten the wedge assembly locking screw to 4 Nm.
- Turn the axial adjustment screw moving the PCD cartridge 0,005mm to the final set height position.
- Set all cartridges as above.

■ End Mills

- Apply a small amount of lubricant to the following areas:
 - Threads of the cartridge locking screw.
 - Threads of the axial adjustment screw.
- Install cartridges applying light torque to the locking screws.
- Turn axial adjustment screw until the cartridge is 0,01–0,015mm below the final set height.
- Tighten the locking screw (left-hand threads) to 8 Nm leaving 0,005mm below the final set height.
- Turn the axial adjustment screw moving the PCD cartridge 0,005mm to the final set height position.
- Set all cartridges as above.

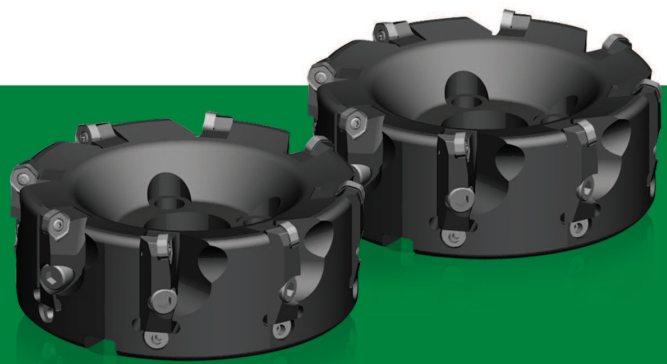


Roughing and Finishing with a Single Tool •

WIDIA™ M4000

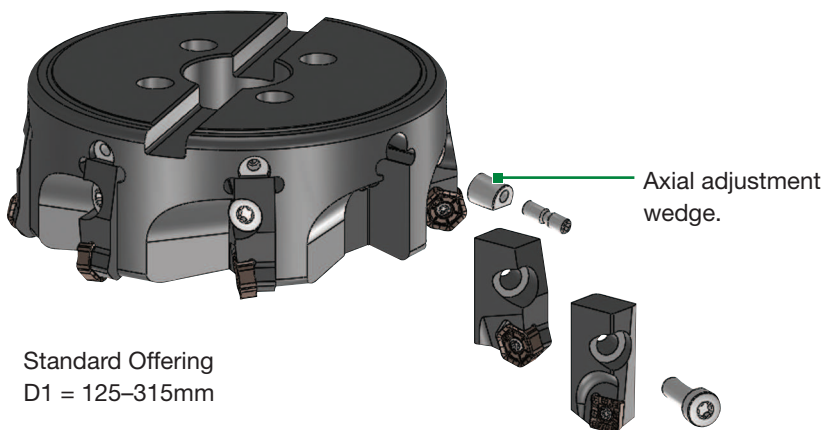
Cartridges with different insert styles and lead angles can be easily changed.

- Roughing and finishing solution with a single tool.
- Adjustable pockets and cartridge stop feature.
- Easily change cartridges with different insert styles and lead angles.
- Best-in-class flexibility lowers cost per tool.
- Easy runout adjustment.
- Perfect floor surface for finishing operations.



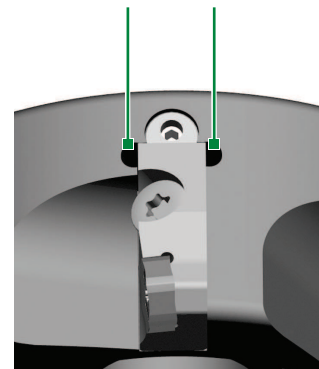
M4000

Roughing and Finishing with a Single Tool



Standard Offering
D1 = 125–315mm

Quick cartridge stop ready to go in a minute with no adjustment for roughing.



Face Mills

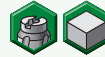


M4000 Cartridge Milling System

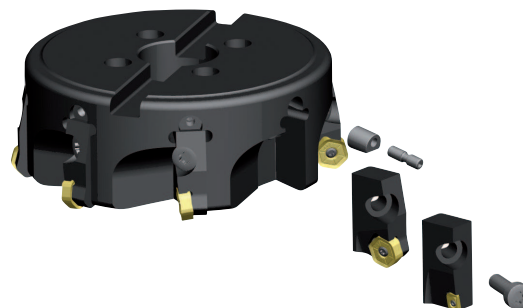
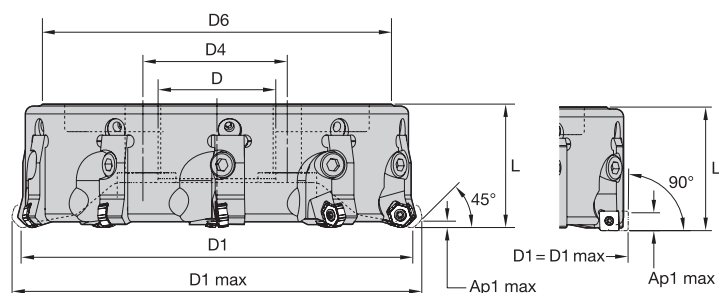
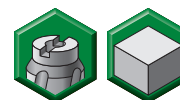
All front line insert styles available.

Diameter: 125–315mm

Pages: H72–H74



- Roughing and finishing with a single tool.
- Quick cartridge stop feature.
- Easy runout adjustment.
- Easy change of cartridges with different insert styles and lead angles.



■ Cartridge Milling System

order number	catalogue number	D1	D	D4	D6	L	number of cartridges	kg
4136343	M4000D125Z06ADJ	125	40	—	108	68,0	6	3,34
4136344	M4000D125Z08ADJ	125	40	—	108	68,0	8	3,51
4136345	M4000D160Z08ADJ	160	40	66,7	137	63,0	8	5,19
4136346	M4000D160Z12ADJ	160	40	66,7	137	63,0	12	5,20
4136347	M4000D200Z10ADJ	200	60	101,6	178	63,0	10	8,02
4136348	M4000D200Z14ADJ	200	60	101,6	178	80,0	14	12,57
4136349	M4000D250Z12ADJ	250	60	101,6	228	63,0	12	13,53
4136350	M4000D250Z18ADJ	250	60	101,6	228	63,0	18	13,90
4136351	M4000D315Z16ADJ	315	60	101,6	293	80,0	16	25,08
4136352	M4000D315Z22ADJ	315	60	101,6	293	80,0	22	25,42

■ Spare Parts

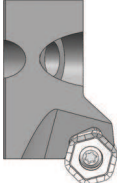
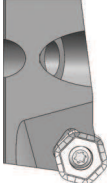
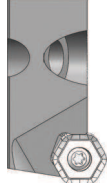
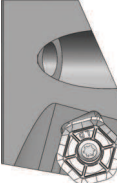
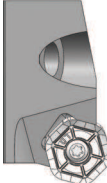
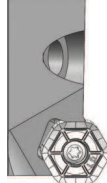


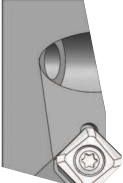
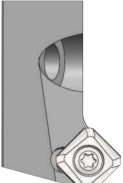
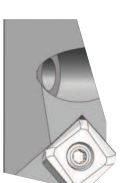
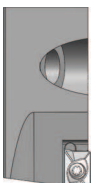
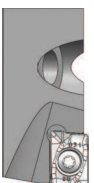
D1	cartridge screw	Nm	wedge	adjusting screw
125	MS1294	20,0	12748308500	12748600900
160	MS1294	20,0	12748308500	12748600900
200	MS1294	20,0	12748308500	12748600900
250	MS1294	20,0	12748308500	12748600900
315	MS1294	20,0	12748308500	12748600900

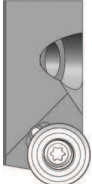
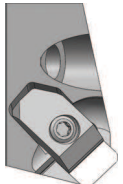
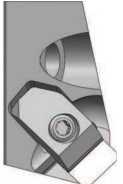
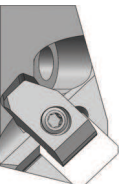
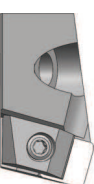
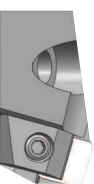
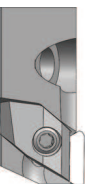
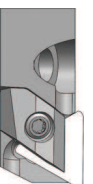
■ Cartridge

order number	catalogue number	insert style	master platform *	Ap max
4159022	M4000CA-AD1505	AD.T1505	CIP	14,0
4159020	M4000CA-AP1003	AP.T1003	CIP	10,2
4159021	M4000CA-AP1604	AP.T1604	CIP	16,2
3968124	M4000CA-HN07	HN.J0704/XNGJ0704	M1200 Mini	3,5
4159018	M4000CA-HN07HD	HN.J0704	M1200 Mini	4,7
4159017	M4000CA-HN07HF	HN.J0704	M1200 Mini	1,0
3126691	M4000CA-HN09	HN.J0905/XNGJ0905	M1200	4,4
4159019	M4000CA-HN09HD	HN.J0905	M1200	6,0
3954792	M4000CA-HN09HF	HN.J0905	M1200	2,2
2511344	M4000CA-HP06	HP.T06T3	M640	4,8
2006361	M4000CA-MDHX10	MDHX1004	M76	1,0
2006346	M4000CA-RC1606	RC.T1606	M100	8,0
2067492	M4000CA-SD1204	SDM.1204	M690	11,7
2006359	M4000CA-SD1506	SDM.1506	M690	14,9
2006374	M4000CA-SE1203	SE.N1203/SE.R1203	M68	6,0
2033495	M4000CA-SE1204	SE.N1204/SE.R1204	M68	6,0
2006377	M4000CA-SE1504	SE.N1504/SE.R1504	M68	8,0
2006348	M4000CA-SN12	SN.T1205/XNKT1205	M660	6,4
2006360	M4000CA-SN15	SN.T1505	M660	8,0
2006362	M4000CA-SP12	121358680	M40Wiper	9,0
2006373	M4000CA-SP1203	SP.N1203/SP.R1203	M40	9,0
2006376	M4000CA-SP1504	SP.N1504	M40	12,0
2033496	M4000CA-TP1603	TP.N1603/TP.R1603	M40	12,0
2006379	M4000CA-TP2204	TP.N2204/TP.R2204	M40	18,0
2006347	M4000CA-XP16	XP.T1604	M680	14,0

* For all details regarding insert offering and cutting conditions, please refer to the master platforms.

								
	M4000CA-MDHX10CA	M4000CA-HN07HF	M4000CA-HN07	M4000CA-HN07HD	M4000CA-HN09HF	M4000CA-HN09	M4000CA-HN09HD	M4000CA-HP06
	order number 2006361	order number 4159017	order number 3968124	order number 4159018	order number 3954792	order number 3126691	order number 4159019	order number 2511344
D1	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max
125	125	139	134	132	143	136	133	131,4
160	160	174	169	167	178	171	168	166,4
200	200	214	209	207	218	211	208	206,4
250	250	264	259	257	268	261	258	256,4
315	315	329	324	322	333	326	323	321,4

									
	M4000CA-SN12	M4000CA-SN12RC	M4000CA-SN15	M4000CA-XP16	M4000CA-AP1003	M4000CA-AD1505	M4000CA-AP1604	M4000CA-SD1204	M4000CA-SD1506
	order number 2006348	order number 2006357	order number 2006360	order number 2006347	order number 4159020	order number 4159022	order number 4159021	order number 2067492	order number 2006359
D1	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max
125	139,3	139,3	143	125	125	125	125	125	125
160	174,3	174,3	178	160	160	160	160	160	160
200	214,3	214,3	218	200	200	200	200	200	200
250	264,3	264,3	268	250	250	250	250	250	250
315	329,3	329,3	333	315	315	315	315	315	315

									
	M4000CA-RC1606	M4000CA-SE1203	M4000CA-SE1204	M4000CA-SE1504	M4000CA-SP1203	M4000CA-SP12 Wiper	M4000CA-SP1504	M4000CA-TP1603	M4000CA-TP2204
	order number 2006346	order number 2006374	order number 2033495	order number 2006377	order number 2006373	order number 2006362	order number 2006376	order number 2033496	order number 2006379
D1	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max	D1 max
125	125	139	139	143	130,6	132,2	132,2	125	125
160	160	174	174	178	165,6	167,2	167,2	160	160
200	200	214	214	218	205,6	207,2	207,2	200	200
250	250	264	264	268	255,6	257,2	257,2	250	250
315	315	329	329	333	320,6	322,2	322,2	315	315