

# ***RDH/M/ZX* INSERT**



## **Versatile Performance and Long Tool Life**



For Round Insert Type Cutters

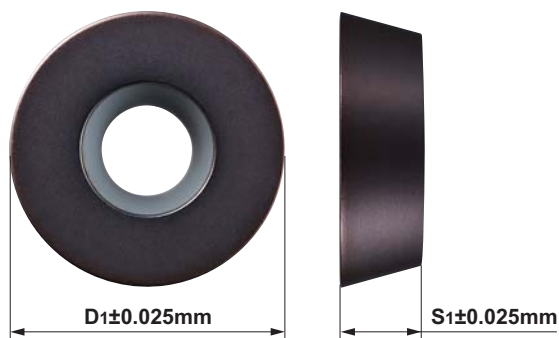
# RDH/M/ZX INSERT

## Features

### RDZX INSERT

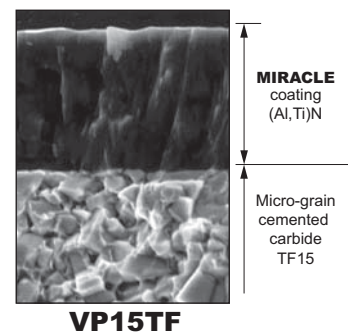
#### High Accuracy

RDZX inserts are a high accuracy type with an E-class tolerance, but the high tolerance is achieved without peripheral grinding to reduce costs.



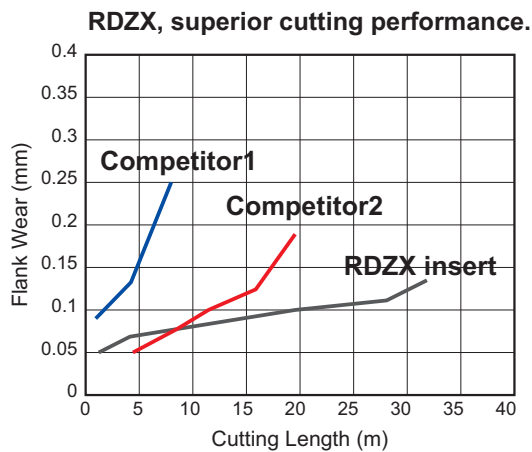
#### Long Tool Life Insert Grade

Stable machining is made possible with **VP15TF MIRACLE** coated inserts.



## Cutting Performance

Increased tool life with VP15TF.

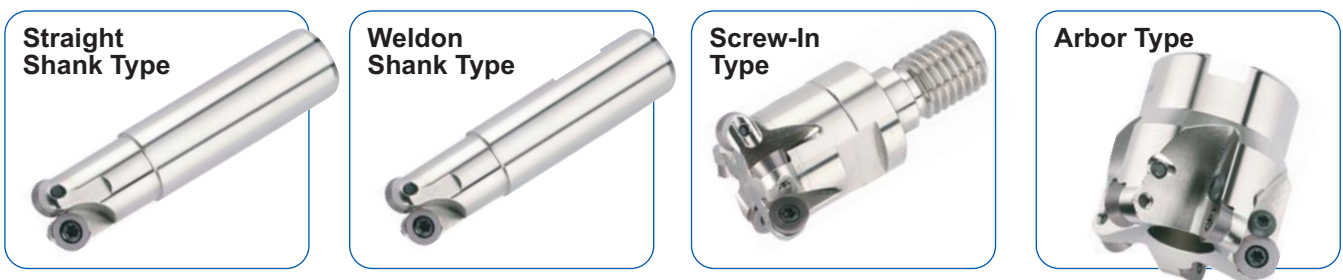



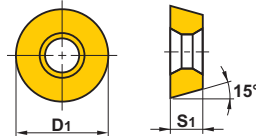

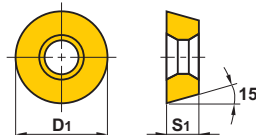

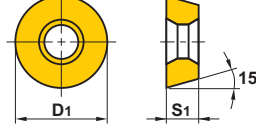
<Cutting conditions>

Workpiece : DIN X40CrMoV51  
 Cutter : RRD050R202S20ZM  
 Insert : RDZX1003M0E  
 Grade : VP15TF  
 Cutting speed : 200m/min.  
 Feed rate : 0.15mm/tooth

Width of cut : 5mm  
 Depth of cut : 0.5mm  
 Air blow

## Suitable for RRD Cutters

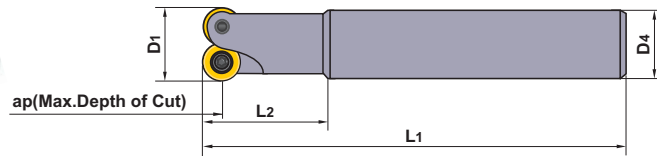


Work Material	P	Steel	●	●	●	●	●	●	●	●	●	●	●	<b>Cutting Conditions (Guide):</b> ●: Stable Cutting   ●: General Cutting   ✖: Unstable Cutting  <b>Honing:</b> E: Round   S: Chamfer + Hone   T: Chamfer			
	M	Stainless Steel	●	●	●	●	●	●	●	●	●	●	●				
	K	Cast Iron	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖				
N	Non-ferrous Metal	●	●	●	●	●	●	●	●	●	●	●	●				
S	Heat-resistant Alloy, Titanium Alloy	●	●	●	●	●	●	●	●	●	●	●	●				
H	Hardened Materials	●	●	●	●	●	●	●	●	●	●	●	●				
Shape	Order Number	Class	Honing	Coated							Cermet	Coated Cermet	Carbide	Dimensions (mm)		Geometry	
				F7030	VP15TF	VP20M	UP20M	VP10H	VP05HT	NX4545	VP25N	UT120T	D1	S1			
	RDHX0501M0E	H	E	●	●	●	●	●	●	●	●	●	●	●	5	1.5	
	0501M0S	H	S	●	●	●	●	●	●	●	●	●	●	●	5	1.5	
	07T1M0E	H	E	●	●	●	●	●	●	●	●	●	●	●	7	1.98	
	07T1M0S	H	S	●	●	●	●	●	●	●	●	●	●	●	7	1.98	
	0702M0E	H	E	●	●	●	●	●	●	●	●	●	●	●	7	2.38	
	0702M0S	H	S	●	●	●	●	●	●	●	●	●	●	●	7	2.38	
	1003M0E	H	E	●	●	●	●	●	●	●	●	●	●	●	10	3.18	
	1003M0S	H	S	●	●	●	●	●	●	●	●	●	●	●	10	3.18	
	12T3M0E	H	E	●	●	●	●	●	●	●	●	●	●	●	12	3.97	
	12T3M0S	H	S	●	●	●	●	●	●	●	●	●	●	●	12	3.97	
	1604M0E	H	E	●	●	●	●	●	●	●	●	●	●	●	16	4.76	
	1604M0S	H	S	●	●	●	●	●	●	●	●	●	●	●	16	4.76	
	RDMX07T1M0E	M	E					□	●						7	1.98	
	07T1M0T	M	T	●	●	●	●	●	●	●	●	●	●	●	7	1.98	
	0702M0E	M	E					□	●						7	2.38	
	0702M0T	M	T	●	●	●	●	●	●	●	●	●	●	●	7	2.38	
	1003M0E	M	E					□	●						10	3.18	
	1003M0S	M	S		□			●	●						10	3.18	
	1003M0T	M	T	●	●	●	●	●	●	●	●	●	●	●	10	3.18	
	12T3M0E	M	E					□	●						12	3.97	
	12T3M0S	M	S		□			●	●						12	3.97	
	12T3M0T	M	T	●	●	●	●	●	●	●	●	●	●	●	12	3.97	
	1604M0E	M	E					□	●						16	4.76	
	1604M0S	M	S		□			●	●						16	4.76	
1604M0T	M	T	●	●	●	●	●	●	●	●	●	●	●	16	4.76		
	RDZX0501M0E	Z	E	●	●										5	1.50	
	0501M0S	Z	S	●	●										5	1.50	
	07T1M0E	Z	E		●										7	1.98	
	07T1M0S	Z	S	●	●										7	1.98	
	0702M0E	Z	E	●	●										7	2.38	
	0702M0S	Z	S	●	●										7	2.38	
	1003M0E	Z	E		●										10	3.18	
	1003M0S	Z	S	●	●										10	3.18	
	12T3M0E	Z	E		●										12	3.97	
	12T3M0S	Z	S	●	●										12	3.97	
	1604M0E	Z	E		●										16	4.76	
	1604M0S	Z	S	●	●										16	4.76	

# Round Insert Type Cutters

# RRD

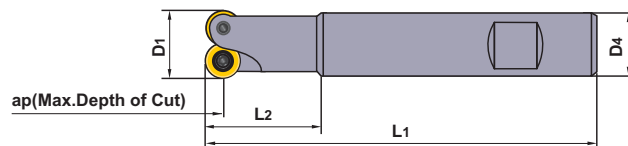
## ■ Straight Shank Type



Right hand tool holder only.

R (mm)	Order Number	Stock		Dimensions (mm)					Clamp Screw	Wrench	Insert
		R	Number of Teeth	D1	D4	L1	L2	ap			
2.5	RRD025R102S10Z-B20	●	2	10	10	75	23	2.5	B-TS20	TKY06F	RDH/Z 0501M0
	123S12Z-B20	●	3	12	12	75	23	2.5	B-TS20	TKY06F	
	154S16Z-B20	●	4	15	16	80	23	2.5	B-TS20	TKY06F	
3.5	RRD035R122S10Z	●	2	12	10	75	23	3.5	TS253	TKY08F	RDH/M/Z 07T1M0
	122S12Z	●	2	12	12	75	23	3.5	TS253	TKY08F	
	122S16Z	●	2	12	16	88	15	3.5	TS253	TKY08F	
	122S16ZL	●	2	12	16	128	15	3.5	TS253	TKY08F	
	122S16ZM	●	2	12	16	108	15	3.5	TS253	TKY08F	
3.5	RRD035R152S16Z	●	2	15	16	88	18	3.5	TS25	TKY08F	RDH/M/Z 0702M0
	152S16ZM	●	2	15	16	108	18	3.5	TS25	TKY08F	
	152S20Z	●	2	15	20	130	20	3.5	TS25	TKY08F	
	152S20ZM	●	2	15	20	150	20	3.5	TS25	TKY08F	
	152S25Z	●	2	15	25	176	20	3.5	TS25	TKY08F	
3.5	RRD035R153S12Z	●	3	15	12	75	17	3.5	TS253	TKY08F	RDH/M/Z 07T1M0
	153S16Z	●	3	15	16	78	30	3.5	TS253	TKY08F	
5	RRD050R202S20Z	●	2	20	20	90	31	5.0	B-TS35	TKY15F	RDH/M/Z 1003M0
	202S20ZM	●	2	20	20	110	51	5.0	B-TS35	TKY15F	
	202S25Z	●	2	20	25	136	72	5.0	B-TS35	TKY15F	
	202S25ZL	●	2	20	25	176	112	5.0	B-TS35	TKY15F	
	202S25ZM	●	2	20	25	156	92	5.0	B-TS35	TKY15F	

## ■ Weldon Shank Type

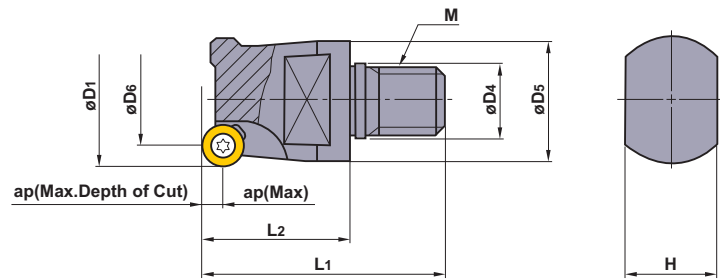


Right hand tool holder only.

R (mm)	Order Number	Stock		Dimensions (mm)					Clamp Screw	Wrench	Insert
		R	Number of Teeth	D1	D4	L1	L2	ap			
3.5	RRD035R122S16W	●	2	12	16	88	15	3.5	TS253	TKY08F	RDH/M/Z 07T1M0
	122S16WL	●	2	12	16	128	15	3.5	TS253	TKY08F	
	122S16WM	●	2	12	16	108	15	3.5	TS253	TKY08F	
3.5	RRD035R152S16W	●	2	15	16	88	18	3.5	TS25	TKY08F	RDH/M/Z 0702M0
	152S16WM	●	2	15	16	108	18	3.5	TS25	TKY08F	
	152S20W	●	2	15	20	130	20	3.5	TS25	TKY08F	
	152S20WM	●	2	15	20	150	20	3.5	TS25	TKY08F	
	152S25W	●	2	15	25	176	20	3.5	TS25	TKY08F	
3.5	RRD035R153S16W	●	3	15	16	78	30	3.5	TS253	TKY08F	RDH/M/Z 07T1M0
5	RRD050R202S20W	●	2	20	20	90	19	5.0	B-TS35	TKY15F	RDH/M/Z 1003M0
	202S20WM	●	2	20	20	110	20	5.0	B-TS35	TKY15F	
	202S25W	●	2	20	25	135	23	5.0	B-TS35	TKY15F	
	202S25WL	●	2	20	25	176	23	5.0	B-TS35	TKY15F	
	202S25WM	●	2	20	25	156	23	5.0	B-TS35	TKY15F	

● : Inventory maintained.

## Screw-In Type

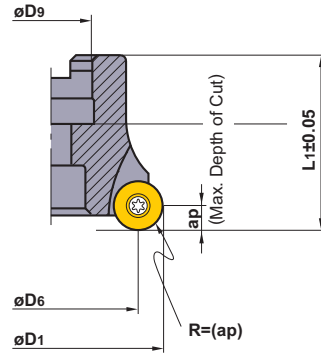


Right hand tool holder only.







R (mm)	Order Number	Stock	Number of Teeth	Dimensions (mm)								Clamp Screw	Clamp Screw	Wrench	Insert	
				R	D1	D6	L1	L2	D4	D5	M					ap
2.5	RRD025R102M5-B20	●	2	10	5	35	20	5.5	9.9	M5	2.5	6	B-TS20	—	TKY06F	RDH/Z 0501M0
	123M8-B20	●	3	12	7	38	20	8.5	13.5	M8	2.5	9	B-TS20	—	TKY06F	
	154M8-B20	●	4	15	10	38	20	8.5	13.5	M8	2.5	10	B-TS20	—	TKY06F	
	205M10-B20	●	5	20	15	44	25	10.5	18	M10	2.5	15	B-TS20	—	TKY06F	
3.5	RRD035R122M8	●	2	12	5	46	28	8.5	13.5	M8	3.5	9	TS253	—	TKY08F	RDH/M/Z 07T1M0
	153M8	●	3	15	8	46	28	8.5	13.5	M8	3.5	10	TS253	—	TKY08F	
	204M10	●	4	20	13	47	28	10.5	18	M10	3.5	15	TS253	—	TKY08F	
	255M12	●	5	25	18	50	28	12.5	21	M12	3.5	17	TS253	—	TKY08F	
	306M16	●	6	30	23	51	28	17	29	M16	3.5	22	TS253	—	TKY08F	
	357M16	●	7	35	28	51	28	17	29	M16	3.5	22	TS253	—	TKY08F	
3.5	RRD035R152M8	●	2	15	8	46	28	8.5	13.5	M8	3.5	10	TS25	—	TYK08F	RDH/M/Z 0702M0
	153M8X	●	3	15	8	43	28	8.5	13.5	M8	3.5	10	TS25	—	TYK08F	
5	RRD050R202M10	●	2	20	10	47	28	10.5	18	M10	5.0	15	B-TS35	—	TYK15F	RDH/M/Z 1003M0
	252M12	●	2	25	15	54	32	12.5	21	M12	5.0	17	B-TS35	—	TYK15F	
	253M12	●	3	25	15	54	32	12.5	21	M12	5.0	17	B-TS35	—	TYK15F	
	304M12	●	4	30	20	54	32	12.5	21	M12	5.0	17	B-TS35	—	TYK15F	
	304M16	●	4	30	20	55	32	17	29	M16	5.0	22	B-TS35	—	TYK15F	
	355M16	●	5	35	25	65	42	17	29	M16	5.0	22	B-TS35	—	TYK15F	
	426M16	●	6	42	32	65	42	17	29	M16	5.0	22	B-TS35	—	TYK15F	
6	RRD060R242M12	●	2	24	12	54	32	12.5	21	M12	6.0	17	B-TS35	—	TYK15F	RDH/M/Z 12T3M0
	353M16	●	3	35	23	65	42	17	29	M16	6.0	22	B-TS35	TS1001	TYK15F	
	354M16	●	4	35	23	65	42	17	29	M16	6.0	22	B-TS35	TS1001	TYK15F	
	424M16	●	4	42	30	55	32	17	29	M16	6.0	24	B-TS35	TS1001	TYK15F	
	425M16	●	5	42	30	65	42	17	29	M16	6.0	22	B-TS35	TS1001	TYK15F	
8	RRD080R322M16	●	2	32	16	65	42	17	29	M16	8.0	22	214	—	TYK20F	RDH/M/Z 1604M0

# RRD N

## Arbor Type (Neutral)

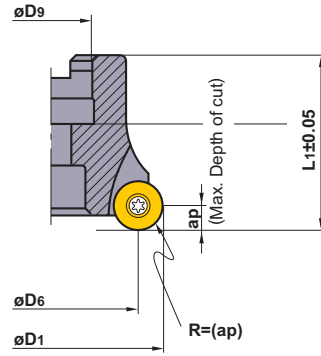


Right hand tool holder only.







R (mm)	Order Number	Stock	Number of Teeth	Dimensions (mm)					Tool Weight (kg)						
				D1	D6	L1	D9	ap		Shim	Shim Screw	Clamp Screw	Clamp Screw	Wrench	Insert
5	RRD050N-042A06R	●	6	42	32	44	16	5	0.26	—	—	B-TS35	—	TKY15F	RDH/M/Z 1003M0
	-052A07R	●	7	52	42	50	22	5	0.4	—	—	B-TS35	—	TKY15F	
6	RRD060N-042A05R	●	5	42	30	42	16	6	0.26	—	—	B-TS35	TS1001	TKY15F	RDH/M/Z 12T3M0
	-050A05R	●	5	50	38	50	22	6	0.38	—	—	B-TS35	TS1001	TKY15F	
	-052A05R	●	5	52	40	50	22	6	0.4	—	—	B-TS35	TS1001	TKY15F	
	-063A06R	●	6	63	51	50	22	6	0.33	—	—	B-TS35	TS1001	TKY15F	
8	RRD080N-050A04R	●	4	50	34	50	22	8	0.4	KS12	B-TS45	214	—	TKY20F	RDH/M/Z 1604M0
	-052A04R	●	4	52	36	50	22	8	0.4	KS12	B-TS45	214	—	TKY20F	
	-052A05R	●	5	52	36	50	22	8	0.4	KS12	B-TS45	214	—	TKY20F	
	-063A05R	●	5	63	47	50	22	8	0.58	KS12	B-TS45	214	—	TKY20F	
	-066A05R	●	5	66	50	50	27	8	0.6	KS12	B-TS45	214	—	TKY20F	
	-080A06R	●	6	80	64	52	27	8	1	KS12	B-TS45	214	—	TKY20F	
	-100A07R	●	7	100	84	52	32	8	1.5	KS12	B-TS45	214	—	TKY20F	
	-125B08R	●	8	125	109	52	40	8	2.5	KS12	B-TS45	214	—	TKY20F	
-160C09R	●	9	160	144	52	40	8	3.5	KS12	B-TS45	214	—	TKY20F		

# RRD P

## Arbor Type (Positive)



Right hand tool holder only.

R (mm)	Order Number	Stock R	Number of Teeth	Dimensions (mm)					Tool Weight (kg)						
				D1	D6	L1	D9	ap		Shim	Shim Screw	Clamp Screw	Clamp Screw	Wrench	Insert
6	<b>RRD060P-050A05R</b>	●	5	50	38	50	22	6	0.33	—	—	B-TS35	TS1001	TKY15F	RDH/M/Z 12T3M0E
	<b>-052A05R</b>	●	5	52	40	50	22	6	0.35	—	—	B-TS35	TS1001	TKY15F	
	<b>-063A06R</b>	●	6	63	51	50	22	6	0.58	—	—	B-TS35	TS1001	TKY15F	
	<b>-066A06R</b>	●	6	66	54	52	27	6	0.6	—	—	B-TS35	TS1001	TKY15F	
	<b>-080A07R</b>	●	7	80	68	50	27	6	1.0	—	—	B-TS35	TS1001	TKY15F	
8	<b>RRD080P-050A04R</b>	●	4	50	34	50	22	8	0.33	KS12	B-TS45	214	—	TKY20F	RDH/M/Z 1604M0
	<b>-063A05R</b>	●	5	63	47	50	22	8	0.53	KS12	B-TS45	214	—	TKY20F	
	<b>-066A05R</b>	●	5	66	50	50	27	8	0.55	KS12	B-TS45	214	—	TKY20F	
	<b>-080A06R</b>	●	6	80	64	52	27	8	1.0	KS12	B-TS45	214	—	TKY20F	
	<b>-100A07R</b>	●	7	100	84	52	32	8	1.5	KS12	B-TS45	214	—	TKY20F	
	<b>-125B08R</b>	●	8	125	109	52	40	8	2.6	KS12	B-TS45	214	—	TKY20F	
	<b>-160C09R</b>	●	9	160	144	52	40	8	3.5	KS12	B-TS45	214	—	TKY20F	

# Round Insert Type Cutters

## CUTTING CONDITIONS FOR ROUGHING (ae=50% of Ø)

Work Material	Hardness	Grade	Cutting Speed (m/min)	Ø 10–15mm		Ø 20mm		Ø 24–25mm		Ø 30–42mm		Ø 50–80mm		Ø 100–160mm	
				ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)
P Mild Steel	≤180HB	NX4545	(260–360)	–0.2	0.25	–0.5	0.45	–1.0	0.35	–1.0	0.40	–1.0	0.50	–1.5	0.60
		F7030	(240–320)	0.2–0.3	0.20	0.5–1.0	0.25	1.0–2.0	0.30	1.5–2.0	0.32	1.0–1.5	0.40	1.5–2.5	0.45
		VP15TF	(220–280)	0.3–0.5	0.12	1.0–1.5	0.15	2.0–2.5	0.20	2.0–3.0	0.25	1.5–3.0	0.35	2.5–5.0	0.35
Carbon Steel Alloy Steel	180–350HB	NX4545	(250–350)	–0.2	0.20	–0.5	0.40	–1.0	0.30	–1.0	0.40	–1.0	0.50	–1.5	0.55
		F7030	(230–310)	0.2–0.3	0.15	0.5–1.0	0.20	1.0–1.5	0.25	1.5–2.0	0.30	1.0–1.5	0.38	1.5–2.5	0.40
		VP15TF	(210–270)	0.3–0.5	0.10	1.0–1.5	0.10	1.5–2.0	0.22	2.0–3.0	0.22	1.5–3.0	0.30	2.5–4.5	0.32
M Stainless Steel	≤270HB	F7030 VP20M	(180–240)	–0.1	0.15	–0.5	0.20	–1.0	0.20	–1.0	0.25	–1.0	0.25	–1.5	0.30
			(160–200)	0.1–0.2	0.15	0.5–1.0	0.15	1.0–2.0	0.18	1.5–2.0	0.20	1.0–1.5	0.22	1.5–2.5	0.25
			(140–180)	0.2–0.25	0.10	1.0–1.5	0.12	2.0–2.5	0.14	2.0–3.0	0.15	1.5–3.0	0.18	2.5–5.0	0.20
K Cast Iron	Tensile Strength ≤450N/mm <sup>2</sup>	VP15TF	(200–300)	–0.1	0.15	–0.5	0.18	–1.0	0.20	–1.0	0.25	–1.0	0.30	–1.5	0.35
		VP20M	(200–280)	0.1–0.2	0.10	0.5–1.0	0.10	1.0–1.5	0.15	1.5–2.0	0.18	1.0–1.5	0.25	1.5–2.5	0.22
		VP10H	(180–240)	0.2–0.25	0.10	1.0–1.5	0.10	1.5–2.0	0.12	2.0–3.0	0.15	1.5–3.0	0.18	2.5–4.5	0.20
H Hardened Steel	–52HRC –58HRC –60HRC	VP15TF	(150–200)	–0.1	0.12	–0.1	0.14	–0.1	0.15	–0.1	0.18	–0.1	0.18	–0.1	0.20
		VP10H	(120–180)	0.1–0.15	0.10	0.1–0.20	0.12	0.1–0.30	0.12	0.1–0.30	0.14	0.1–0.30	0.14	0.1–0.30	0.15
		VP05HT	(100–180)	0.1–0.15	0.10	0.1–0.20	0.10	0.1–0.30	0.10	0.1–0.30	0.12	0.1–0.30	0.12	0.1–0.30	0.12

\*1 When using a full width of cut please reduce the cutting conditions by 20%.

\*2 When using a long overhang please reduce the feed rate by 20%.

## CUTTING CONDITIONS FOR FINISHING (ae=20% of Ø)

Work Material	Hardness	Grade	Cutting Speed (m/min)	Ø 10–15mm		Ø 20mm		Ø 24–25mm		Ø 30–42mm		Ø 50–80mm		Ø 100–160mm	
				ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)	ap (mm)	fz (mm/rev)
P Mild Steel	≤180HB	NX4545	(250–320)	–0.1	0.15	–0.15	0.20	–0.15	0.25	–0.15	0.30	–0.15	0.32	–0.3	0.35
		F7030	(240–300)	0.1–0.2	0.15	0.1–0.2	0.15	0.1–0.2	0.18	0.1–0.3	0.20	0.1–0.3	0.22	0.2–0.3	0.25
		VP15TF	(200–280)	0.2–0.24	0.10	0.1–0.30	0.15	0.1–0.30	0.18	0.1–0.30	0.20	0.2–0.30	0.20	0.3–0.40	0.20
Carbon Steel Alloy Steel	180–350HB	NX4545	(220–300)	–0.1	0.12	–0.1	0.15	–0.1	0.18	–0.1	0.25	–0.1	0.28	–0.15	0.30
		F7030	(200–290)	0.1–0.15	0.12	0.1–0.30	0.15	0.1–0.30	0.15	0.1–0.30	0.20	0.1–0.3	0.22	0.15–0.3	0.25
		VP15TF	(160–250)	0.15–0.2	0.10	0.15–0.30	0.12	0.15–0.30	0.15	0.15–0.30	0.15	0.2–0.3	0.18	0.2–0.3	0.18
M Stainless Steel	≤270HB	F7030 VP20M	(180–240)	–0.1	0.12	–0.1	0.18	–0.1	0.20	–0.1	0.22	–0.1	0.25	–0.15	0.30
			(160–200)	0.1–0.2	0.10	0.1–0.30	0.12	0.1–0.3	0.15	0.1–0.3	0.18	0.1–0.3	0.20	0.15–0.3	0.22
			(140–180)	0.2–0.25	0.10	0.2–0.30	0.10	0.2–0.3	0.12	0.2–0.3	0.12	0.2–0.3	0.15	0.2–0.3	0.18
K Cast Iron	Tensile Strength ≤450N/mm <sup>2</sup>	VP15TF	(200–250)	–0.1	0.15	–0.1	0.18	–0.1	0.20	–0.1	0.22	–0.1	0.25	–0.15	0.30
		VP20M	(180–230)	0.1–0.2	0.10	0.1–0.30	0.10	0.1–0.3	0.15	0.1–0.3	0.15	0.1–0.3	0.20	0.15–0.3	0.22
		VP10H	(160–200)	0.2–0.25	0.10	0.2–0.40	0.10	0.2–0.4	0.12	0.2–0.4	0.12	0.2–0.4	0.15	0.2–0.4	0.18
H Hardened Steel	–52HRC –58HRC –60HRC	VP15TF	(140–200)	–0.1	0.15	–0.1	0.14	–0.1	0.15	–0.1	0.18	–0.1	0.18	–0.1	0.20
		VP10H	(110–180)	0.1–0.15	0.10	0.1–0.20	0.12	0.1–0.30	0.12	0.1–0.30	0.14	0.1–0.30	0.14	0.1–0.30	0.15
		VP05HT	(100–170)	0.1–0.15	0.10	0.1–0.20	0.10	0.1–0.30	0.10	0.1–0.30	0.12	0.1–0.30	0.12	0.1–0.30	0.12

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\*2 When using a long overhang please reduce the feed rate by 20%.



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