KORLOY TECH-NEWS

ITACHILE
Comercial Itachile LTDA

WE CREATE YOUR TOMORROW!

KORLOY is ISO9001 Certified
ISO9001

No: 158-6

Future Mill Series

Multi Purpose Milling Tool

FMR Tool

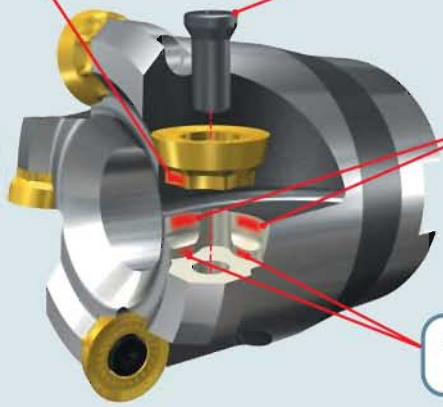
Fono: 055 787169
www.itachile.com

Features

- FMR can cover various applications such as machining of general steel, cast iron & hardened mold steel, from roughing to finishing.
- Double contact faces between insert & seat part of cutter due to the 2-step configuration of insert provide excellent rotating-free machining.
- Insert of FMR can be used 4 to 8 times and ensured full line up. (Inscribed circle of insert : 05,06,07,08,10,12,16,20)
- Unequally placed flute makes it possible to reduce vibration in high-speed machining.
- When re-indexing the insert, easy and secure positioning of insert is possible.

KORLOY Inc.

Clamping system

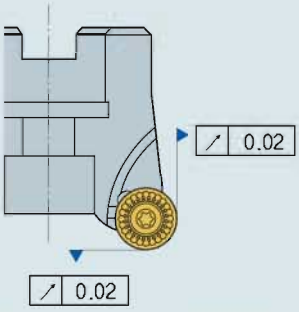


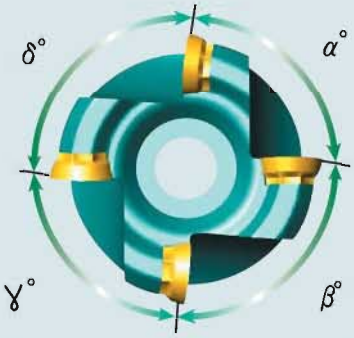
FMR□3000 Type
FMR□4000 Type

FMR□5000 Type
FMR□6000 Type

RDKT10T3M0-□□
RDKT1204M0-□□

RDKT1605M0-MM
RDKT2006M0-MM



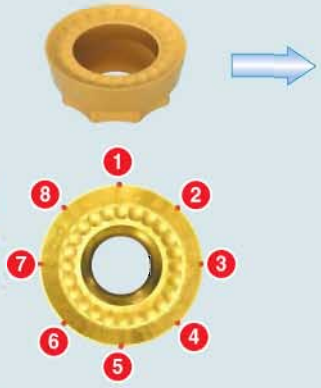


• High tolerance : Better surface finish and less vibration by highly precise design

• Unevenly placed flute prevents vibration at high speed application and provides stable machining

Features of insert

• RDKT□□□□M0-MM Type Chip Breakers



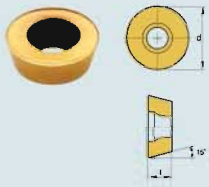
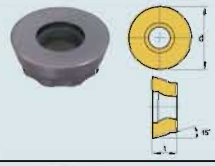
4~8 Cutting edges

• **Low resistance C/B**
- Optimal chip evacuation by chip controlling

• **Low resistance cutting edge**
- Inclined land angle
- Sharp cutting edge for low cutting resistance & better surface finish

• **Rotating prevention system**
- Preventing insert rotating
- Firm and safe clamping at tip seat

FMR H-tolerance insert

Designation	Applicable cutter	Dimensions(mm) d	Dimensions(mm) t	Grade PC3525	PC3545	NCM325	NCM335	PC9530	PC8520	PC6510	H01	Shape
RDKW0501M0E	FMRM1000HRD FMRS1000HRD	5	1.59	●	○	○	○	○	○	○	○	
RDHW0501M0E		5	1.59	○	○	○	○	●	○	○	○	
RDHW0501M0F		5	1.59	○	○	○	○	○	○	○	○	
RDHW0501M0S		5	1.59	○	○	○	○	○	○	○	○	
RDKW06T1M0E	FMRM1500HRD FMRS1500HRD	6	1.98	●	○	○	○	○	○	○	○	
RDHW06T1M0E		6	1.98	○	○	○	○	●	○	○	○	
RDHW06T1M0F		6	1.98	○	○	○	○	○	○	○	○	
RDHW06T1M0S		6	1.98	○	○	○	○	○	○	○	○	
RDKW0702M0E	FMRM2000HRD FMRS2000HRD	7	2.38	○	●	○	○	○	○	○	○	
RDHW0702M0E		7	2.38	○	○	○	○	●	○	○	○	
RDHW0702M0F		7	2.38	○	○	○	○	○	○	○	○	
RDHW0702M0S		7	2.38	○	○	○	○	○	○	○	○	
RDKW0803M0E	FMRM2500HRD FMRS2500HRD	8	3.18	●	○	○	○	○	○	○	○	
RDHW0803M0E		8	3.18	○	○	○	○	●	○	○	○	
RDHW0803M0F		8	3.18	○	○	○	○	○	○	○	○	
RDHW0803M0S		8	3.18	○	○	○	○	○	○	○	○	
RDHW1605M0E	FMRCM5000HRD FMRM5000HRD FMRS5000HRD	16	5.56	○	○	○	○	○	○	○	○	
RDHW1605M0F		16	5.56	○	○	○	○	○	○	○	○	
RDHW1605M0S		16	5.56	○	○	○	○	○	○	○	○	
RDHW2006M0E	FMRCM6000HRD FMRM6000HRD FMRS6000HRD	20	6.35	○	○	○	○	○	○	○	○	
RDHW2006M0F		20	6.35	○	○	○	○	○	○	○	○	
RDHW2006M0S		20	6.35	○	○	○	○	○	○	○	○	
RDCT10T3M0-MA	FMRCM3000HRD FMRM3000HRD FMRS3000HRD	10	3.97	○	○	○	○	○	○	○	●	
RDCT1204M0-MA	FMRCM4000HRD FMRM4000HRD FMRS4000HRD	12	4.76	○	○	○	○	○	○	○	●	
RDKT10T3M0-MA	FMRCM3000HRD FMRM3000HRD FMRS3000HRD	10	3.97	○	○	○	○	○	○	○	○	
RDKT10T3M0-MF		10	3.97	●	●	○	○	●	●	○	○	
RDKT10T3M0-MM		10	3.97	●	●	●	●	●	●	●	○	
RDKT1204M0-MA	FMRCM4000HRD FMRM4000HRD FMRS4000HRD	12	4.76	○	○	○	○	○	○	○	○	
RDKT1204M0-MF		12	4.76	●	●	○	○	●	●	○	○	
RDKT1204M0-MM		12	4.76	●	●	●	●	●	○	●	○	
RDKT1605M0-MM	FMRCM5000HRD FMRM5000HRD FMRS5000HRD	16	5.56	●	●	○	○	○	○	○	○	
		16	5.56									
		16	5.56									
RDKT2006M0-MM	FMRCM6000HRD FMRS6000HRD	20	6.35	●	●	○	○	○	○	○	○	
		20	6.35									

●Stock item, ○Under preparing for stock

Chip breakers

Configuration			Cutting edge	Features
Finishing	MF			• Low cutting resistance Finish or hard-to-cut material cutting chip breaker.
Medium	MM			• General and wide milling application.
Aluminum	MA			• Aluminum cutting C/B Buffing surface treatment : good chip flow & adhesion resistance

Recommended cutting condition

ISO	Designation / Grade	RDHW0501M0□		RDHW06T1M0□	
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)
P	PC3525,PC3545	100~230	0.15~0.30	130~250	0.15~0.40
	PC9530	100~250	0.15~0.30	130~300	0.15~0.40
M	PC8520	50~150	0.05~0.30	80 ~200	0.05~0.40
	PC9530	80~200	0.05~0.30	100~240	0.05~0.40
K	PC6510	130~230	0.15~0.20	150~250	0.15~0.30
S	PC8520	20 ~70	0.05~0.30	20~70	0.05~0.40

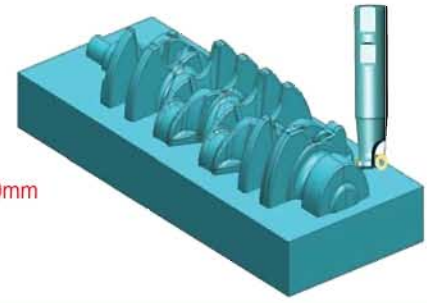
ISO	Designation / Grade	RDHW0702M0□		RDHW0803M0□	
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)
P	PC3525,PC3545	150~300	0.20~0.50	150~300	0.20~0.50
	PC9530	170~300	0.20~0.50	170~300	0.20~0.50
M	PC8520	120~250	0.05~0.50	120~250	0.05~0.50
	PC9530	140~280	0.05~0.50	140~280	0.05~0.50
K	PC6510	150~230	0.15~0.40	150~230	0.15~0.40
S	PC8520	20~70	0.05~0.50	20~70	0.05~0.50

ISO	Designation / Grade	RDKT10T3M0-□□		RDKT1204M0-□□	
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)
P	NCM325	100~300	0.10~0.40	120~250	0.15~0.60
	NCM335	100~250	0.10~0.40	120~220	0.15~0.60
	PC3525,PC3545	100~250	0.10~0.50	100~220	0.10~0.60
M	PC8520	80~160	0.05~0.50	80~160	0.10~0.60
	PC9530	80~180	0.05~0.50	80~180	0.10~0.60
K	PC6510	150~250	0.08~0.35	150~230	0.10~0.55
S	PC8520	20~70	0.05~0.50	20~70	0.05~0.50
N	H01	400~1200	0.05~0.65	400~1000	0.10~0.70

ISO	Designation / Grade	RDHW1605M0□, RDKT1605M0-MM		RDHW2006M0□, RDKT2006M0-MM	
		vc (m/min)	fz (mm/t)	vc (m/min)	fz (mm/t)
P	PC3525,PC3545	100~230	0.25~0.70	90~210	0.25~0.80
	PC9530	100~250	0.30~0.70	90~210	0.30~0.80
M	PC8520	80~200	0.20~0.65	80~200	0.25~0.70
	PC9530	90~210	0.20~0.65	90~210	0.25~0.70
K	PC6510	140~200	0.25~0.70	95~220	0.25~0.80
S	PC8520	20~70	0.20~0.60	20~70	0.25~0.70

Machining examples

1

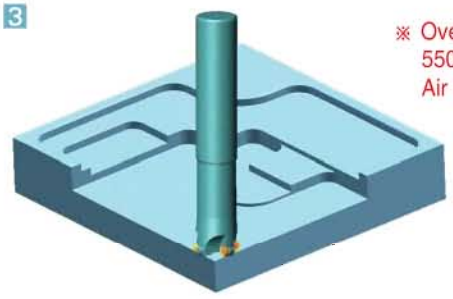


※ Overhang:70mm
450x250mm
Air blow
HRC 31

2

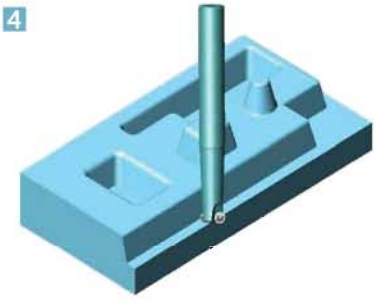
※ Overhang:60mm
350x250mm
Air blow

3



※ Overhang:130mm
550x350mm
Air blow, HRC 39

4



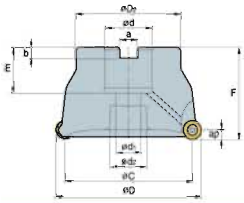
※ Overhang:160mm
850x450mm
Air blow

Workpiece		Test tool	Cutting condition					Result (Cutting time)
			vc (m/min)	n (min⁻¹)	vf (mm/min)	fz (mm/t)	ap x ae	
1	SCM440 41CrMo4 AISI4140	FMRS4032HRD-S RDKT1204M0-MM PC3525	200	1989	1591	0.4	1.5×0.7D	5Hour(VB 0.29)
2	KP1	FMRS4050HRD-L RDKT1204M0-MM PC3545	173	1100	2100	0.4	1.5×1.0D	2Hour(VB 0.32)
3	KP4M	FMRS4050HRD-M RDKT1204M0-MM PC3525	210	1350	2100	0.39	1.0×1.0D	1.5Hour(VB 0.25)
4	KP4M	FMRS3025HRD-L RDKT10T3M0-MM PC3545	133	1700	2200	0.43	1.0×0.4D	3Hour(VB 0.30) Overhang(160mm)

Note

① Insert should be firmly clamped in the insert seat part (rotating prevention system) of cutter.
② In case of noise from chattering, reduce L(overhang length) or decrease feed rate, spindle speed and axial depth of cut.
③ Reduce spindle speed or axial depth of cut if horsepower of machine is not enough.
④ Use coolant or air for smooth chip evacuation and long tool life.
⑤ Reduce axial depth of cut, spindle speed and feed rate up to 30 ~ 50% in the machining of high hardness material (HRC 50 ~ 60)

FMRCM



■ FMRCM 3000/4000

	Designation	Stock	Dimensions(mm) øD	øC	øD2	ød	F	a	b	ød1	ød2	E	◎	Insert
Coarse pitch	3040HRD	●	40	30	36	16	40	8.4	5.0	9	14	20	3	RDKT10T3 M0-□□ RDCT10T3 M0-MA
	3050HRD	●	50	40	42	22	40	10.4	6.3	11	16.5	20	4	
	3063HRD	●	63	53	49	22	40	10.4	6.3	11	16.5	20	5	
	3080HRD	●	80	70	57	27	50	12.4	7.0	14	19	22	6	
	3100HRD	●	100	90	67	32	63	14.4	8.0	18	26	28	7	
Extra close pitch	3040HRD-H	●	40	30	36	16	40	8.4	5.0	9	14	20	4	
	3050HRD-H	●	50	40	42	22	40	10.4	6.3	11	16.5	20	5	
	3063HRD-H	●	63	53	49	22	40	10.4	6.3	11	16.5	20	6	
	3080HRD-H	●	80	70	57	27	50	12.4	7.0	14	19	22	7	
	3100HRD-H	●	100	90	67	32	63	14.4	8.0	18	26	28	8	
Coarse pitch	4050HRD	●	50	38	42	22	50	10.4	6.3	11	18	20	4	RDKT1204 M0-□□ RDCT1204 M0-MA
	4063HRD	●	63	51	49	22	50	10.4	6.3	11	18	20	4	
	4080HRD	●	80	68	57	27	50	12.4	7.0	14	20	23	5	
	4100HRD	●	100	88	67	32	50	14.4	8.0	18	26	25	6	
	4125HRD	●	125	113	87	40	63	16.4	9.0	22	32	29	7	
Close pitch	4063HRD-M	●	63	51	49	22	50	10.4	6.3	11	18	20	5	
	4080HRD-M	●	80	68	57	27	50	12.4	7.0	14	20	23	6	
	4100HRD-M	●	100	88	67	32	50	14.4	8.0	18	26	25	7	
	4125HRD-M	●	125	113	87	40	63	16.4	9.0	22	32	29	8	

●Stock item, ○Under preparing for stock

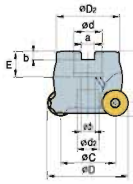


Fig.1

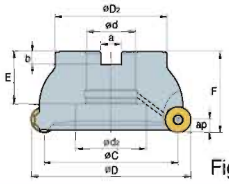


Fig.2

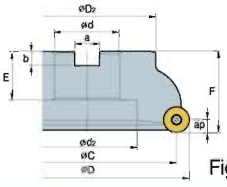


Fig.3

■ FMRCM 5000/6000

	Designation	Stock	Dimensions(mm) øD	øC	øD2	ød	F	a	b	ød1	ød2	E	◎	Fig.	Insert
Coarse pitch	5050HRD	○	50	34	42	22	50	10.4	6.3	11	16.5	20	3	1	RDHW1605 M0□ RDKT1605 M0-MM
	5063HRD	○	63	47	49	22	50	10.4	6.3	11	18	20	4	1	
	5080HRD	●	80	64	57	27	50	12.4	7.0	14	20	23	5	1	
	5100HRD	●	100	84	67	32	50	14.4	8.0	18	26	25	6	1	
	5125HRD	●	125	109	87	40	63	16.4	9.0	22	32	29	7	1	
Extra close pitch	5063HRD-H	○	63	47	49	22	50	10.4	6.3	11	18	20	5	1	
	5080HRD-H	○	80	64	57	27	50	12.4	7.0	14	20	23	6	1	
	5100HRD-H	○	100	84	67	32	50	14.4	8.0	18	26	25	7	1	
	5125HRD-H	○	125	109	87	40	63	16.4	9.0	22	32	29	8	1	
Coarse pitch	6063HRD	○	63	43	49	22	50	10.4	6.3	11	17	20	3	1	RDHW2006 M0□ RDKT2006 M0-MM
	6080HRD	●	80	60	57	27	50	12.4	7.0	14	20	22	4	1	
	6100HRD	●	100	80	67	32	63	14.4	8.0	18	26	28	5	1	
	6125HRD	●	125	105	87	40	63	16.4	9.0	22	32	29	6	1	
	6160RD	●	160	140	107	40	63	16.4	9.0	-	78	35	7	3	
Close pitch	6063HRD-M	○	63	43	49	22	50	10.4	6.3	11	17	20	4	1	
	6080HRD-M	○	80	60	57	27	50	12.4	7.0	14	20	22	5	1	
	6100HRD-M	○	100	80	67	32	63	14.4	8.0	18	26	28	6	1	
	6125HRD-M	○	125	105	87	40	63	16.4	9.0	22	32	29	7	1	
	6160RD-M	○	160	140	107	40	63	16.4	9.0	-	78	35	8	3	

●Stock item, ○Under preparing for stock

FMRS

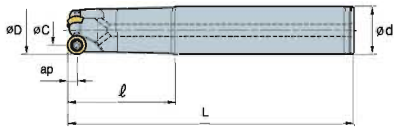


Fig.1

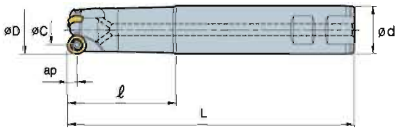


Fig.2

■ **FMRS 1000/1500/2000/2500**

Designation	Stock	Dimensions(mm)						◎	Fig.	Insert
		øD	øC	L	ød	ℓ	ap			
1008HRD-M	○	8	5.5	80	10	30	2.5	1	1	RDHW0501 M0□ RDKW0501 M0E
1008HRD-L	○	8	5.5	100	10	50	2.5	1	1	
1010HRD-M	○	10	5	100	12	44	2.5	2	1	
1010HRD-L	○	10	5	120	12	64	2.5	2	1	
1012HRD-M	●	12	7	100	12	44	2.5	2	1	
1012HRD-L	●	12	7	160	16	80	2.5	2	1	
1015HRD-M	○	15	10	160	16	80	2.5	3	1	
1015HRD-L	○	15	10	200	16	100	2.5	3	1	
1510HRD-M	○	10	6	100	12	44	3	1	1	RDHW06T1 M0□ RDKW06T1 M0E
1510HRD-L	○	10	6	120	12	64	3	1	1	
1512HRD-M	●	12	6	110	12	54	3	2	1	
1512HRD-L	●	12	6	160	16	80	3	2	1	
1516HRD-M	○	16	10	130	16	60	3	3	1	
1516HRD-L	○	16	10	180	20	90	3	3	1	
1520HRD-M	○	20	14	150	20	80	3	3	1	
1520HRD-L	○	20	14	200	20	90	3	3	1	
2015HRD-S	●	15	8	115	16	55	3.5	2	2	RDHW0702 M0□ RDKW0702 M0E
2015HRD-M	●	15	8	150	20	80	3.5	2	2	
2015HRD-L	●	15	8	200	20	90	3.5	2	2	
2020HRD-S	○	20	14	125	20	65	3.5	3	2	
2020HRD-M	○	20	14	150	20	80	3.5	3	2	
2020HRD-L	○	20	14	200	25	90	3.5	3	2	
2516HRD-S	●	16	8	125	16	65	4	2	2	RDHW0803 M0□ RDKW0803 M0E
2516HRD-M	●	16	8	150	16	80	4	2	2	
2516HRD-L	●	16	8	200	20	90	4	2	2	
2520HRD-S	●	20	12	125	20	65	4	2	2	
2520HRD-M	●	20	12	150	20	80	4	2	2	
2520HRD-L	●	20	12	200	25	90	4	2	2	
2525HRD-S	○	25	17	125	25	55	4	3	2	
2525HRD-M	○	25	17	200	25	90	4	3	2	
2525HRD-L	○	25	17	250	32	110	4	3	2	

●Stock item, ○Under preparing for stock

FMRS

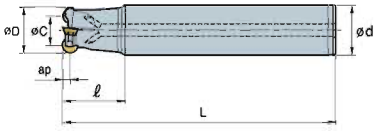


Fig.1

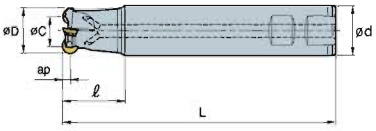


Fig.2

■ **FMRS 3000/4000**

Designation	Stock	Dimensions(mm)						◎	Fig.	Insert
		øD	øC	L	ød	ℓ	ap			
3021HRD-M	●	21	11	150	20	40	5	1	1	RDKT10T3M0 -□□
3021HRD-M2	●	21	11	150	20	40	5	2	1	
3021HRD-L	●	21	11	200	20	50	5	1	1	
3021HRD-L2	●	21	11	200	20	50	5	2	1	
3025HRD-S	●	25	15	115	25	35	5	2	2	
3025HRD-M	●	25	15	200	25	70	5	2	1	
3025HRD-L	●	25	15	250	25	100	5	2	1	
3026HRD-M	●	26	16	200	25	70	5	2	1	
3026HRD-L	●	26	16	250	25	100	5	2	1	
3032HRD-S	●	32	22	125	32	40	5	3	2	
3032HRD-M	●	32	22	200	32	70	5	3	1	
3032HRD-L	●	32	22	300	32	150	5	3	1	
3040HRD-S	●	40	30	125	32	40	5	4	2	
3040HRD-M	●	40	30	200	32	70	5	4	1	
3040HRD-L	●	40	30	300	32	150	5	4	1	
4032HRD-S	●	32	20	125	32	40	6	2	2	RDKT1204M0 -□□
4032HRD-M	●	32	20	200	32	70	6	2	1	
4032HRD-L	●	32	20	300	32	150	6	2	1	
4033HRD-S	●	33	21	125	32	40	6	2	2	
4033HRD-M	●	33	21	200	32	70	6	2	1	
4033HRD-L	●	33	21	300	32	150	6	2	1	
4040HRD-S	●	40	28	125	32	40	6	3	2	
4040HRD-M	●	40	28	200	32	70	6	3	1	
4040HRD-L	●	40	28	300	32	150	6	3	1	
4040HRD-S40		40	28	125	40	40	6	3	2	
4040HRD-M40		40	28	200	40	70	6	3	1	
4040HRD-L40		40	28	300	40	150	6	3	1	
4040HRD-S42		40	28	125	42	40	6	3	2	
4040HRD-M42		40	28	200	42	70	6	3	1	
4040HRD-L42		40	28	300	42	150	6	3	1	
4050HRD-S	●	50	38	125	42	50	6	4	2	
4050HRD-M	●	50	38	200	42	50	6	4	1	
4050HRD-L	●	50	38	300	42	50	6	4	1	
4050HRD-S40		50	38	150	40	50	6	4	2	
4050HRD-M40		50	38	200	40	50	6	4	1	
4050HRD-L40		50	38	300	40	50	6	4	1	

●Stock item, ○Under preparing for stock

FMRS

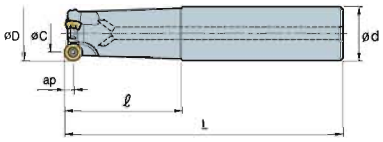


Fig.1

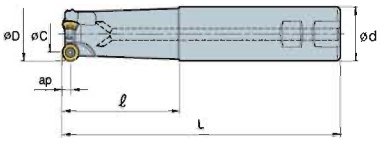


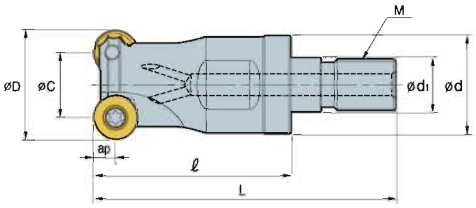
Fig.2

■ **FMRS 5000/6000**

Designation	Stock	Dimensions(mm)						◎	Fig.	Insert
		øD	øC	L	ød	ℓ	ap			
5040HRD-S	○	40	24	125	32	40	8	2	2	
5040HRD-M	○	40	24	200	32	70	8	2	1	
5040HRD-L	○	40	24	300	32	150	8	2	1	
5040HRD-S40		40	24	125	40	40	8	2	2	
5040HRD-M40		40	24	200	40	70	8	2	1	
5040HRD-L40		40	24	300	40	150	8	2	1	
5040HRD-S42		40	24	125	42	40	8	2	2	
5040HRD-M42		40	24	200	42	70	8	2	1	
5040HRD-L42		40	24	300	42	150	8	2	1	
5050HRD-S40		50	34	150	40	50	8	3	2	RDKT1605M0-MM
5050HRD-M40		50	34	250	40	50	8	3	1	RDHW1605M0□
5050HRD-L40		50	34	300	40	50	8	3	1	
5050HRD-S	○	50	34	150	42	50	8	3	2	
5050HRD-M	○	50	34	250	42	50	8	3	1	
5050HRD-L	○	50	34	300	42	50	8	3	1	
5063HRD-S40		63	47	150	40	50	8	4	2	
5063HRD-M40		63	47	250	40	50	8	4	1	
5063HRD-L40		63	47	300	40	50	8	4	1	
5063HRD-S	○	63	47	150	42	50	8	4	2	
5063HRD-M	○	63	47	250	42	50	8	4	1	
5063HRD-L	○	63	47	300	42	50	8	4	1	
6050HRD-S40		50	31	150	40	50	10	3	2	
6050HRD-M40		50	31	250	40	50	10	3	1	
6050HRD-L40		50	31	300	40	50	10	3	1	
6050HRD-S42		50	31	150	42	50	10	3	2	
6050HRD-M42		50	31	250	42	50	10	3	1	
6050HRD-L42		50	31	300	42	50	10	3	1	RDKT2006M0-MM
6063HRD-S40		63	44	150	40	50	10	4	2	RDHW2006M0□
6063HRD-M40		63	44	250	40	50	10	4	1	
6063HRD-L40		63	44	300	40	50	10	4	1	
6063HRD-S42		63	44	150	42	50	10	4	2	
6063HRD-M42		63	44	250	42	50	10	4	1	
6063HRD-L42		63	44	300	42	50	10	4	1	

●Stock item, ○Under preparing for stock

FMRM



■ FMRM 1000/1500/2000/2500/3000/4000/5000

Designation	Stock	Dimensions(mm)									Insert
		M	øD	øC	L	ℓ	ød	ød₁	ap	◎	
1008HRD-M06	○	M06	8	5.5	40	25	9.5	6.5	2.5	1	RDHW0501M0□ RDKW0501M0E
1010HRD-M06	○	M06	10	5	40	25	9.5	6.5	2.5	2	
1012HRD-M06	●	M06	12	7	40	25	11	6.5	2.5	2	
1015HRD-M08	○	M08	15	10	47	30	14.5	8.5	2.5	3	
1510HRD-M06	○	M06	10	7	40	25	9.5	6.5	3	1	RDHW06T1M0□ RDKW06T1M0E
1512HRD-M06	●	M06	12	6	40	25	11	6.5	3	2	
1516HRD-M08	●	M08	16	10	47	30	14.5	8.5	3	3	
1520HRD-M10	●	M10	20	14	56	35	18	10.5	3	3	
2015HRD-M08	○	M08	15	8	47	30	14.5	8.5	3.5	2	RDHW0702M0□ RDKW0702M0E
2020HRD-M10	○	M10	20	13	56	35	18	10.5	3.5	3	
2516HRD-M08	●	M08	16	8	47	30	14.5	8.5	4	2	RDHW0803M0□ RDKW0803M0E
2520HRD-M10	●	M10	20	12	56	35	18	10.5	4	2	
2525HRD-M12	○	M12	25	17	69	45	22.5	12.5	4	3	
3021HRD-M10	○	M10	21	11	56	35	18	10.5	5	2	RDKT10T3M0-□□
3025HRD-M12	●	M12	25	15	69	45	22.5	12.5	5	2	
3032HRD-M16	○	M16	32	22	77	50	29	16.5	5	3	
3042HRD-M16	○	M16	42	32	77	50	29	16.5	5	4	
4025HRD-M12	○	M12	25	13	69	45	22.5	12.5	6	2	RDKT1204M0-□□
4032HRD-M16	●	M16	32	20	77	50	29	17	6	2	
4040HRD-M16	●	M16	40	28	77	50	29	17	6	3	
4042HRD-M16	○	M16	42	28	77	50	29	17	6	4	
5040HRD-M16	○	M16	40	24	77	50	29	17	8	2	RDKT1605-MM RDHW1605M0□

●Stock item, ○Under preparing for stock

Modular adaptor

Steel

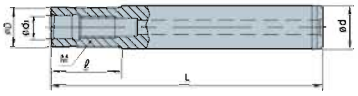


Fig 1. Straight Neck adaptor

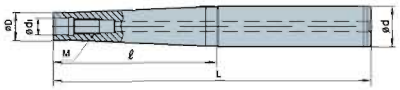
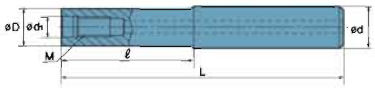


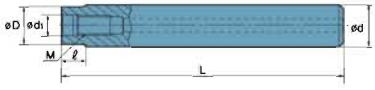
Fig 2. Taper Neck adaptor

Designation	Stock	Fig.	Dimensions(mm)					
			M	øD	ød	ød₁	ℓ	L
MAT-M06-020-S10S	●	1	M06	9.5	10	6.5	20	70
MAT-M06-040-S12T	●	2	M06	9.5	12	6.5	40	96
MAT-M06-065-S16T	●	2	M06	9.5	16	6.5	65	125
MAT-M6B-020-S12S	●	1	M06	11	12	6.5	20	76
MAT-M6B-040-S12S	●	1	M06	11	12	6.5	40	96
MAT-M6B-065-S16T	●	2	M06	11	16	6.5	65	125
MAT-M6B-080-S16T	●	2	M06	11	16	6.5	80	140
MAT-M08-020-S16S	●	1	M08	14.5	16	8.5	20	80
MAT-M08-040-S16T	●	2	M08	14.5	16	8.5	40	100
MAT-M08-065-S16T	●	2	M08	14.5	16	8.5	65	125
MAT-M08-080-S20T	●	2	M08	14.5	20	8.5	80	150
MAT-M08-110-S25T	●	2	M08	14.5	25	8.5	110	190
MAT-M10-030-S20S	●	1	M10	18	20	10.5	30	100
MAT-M10-050-S20T	●	2	M10	18	20	10.5	50	120
MAT-M10-070-S20T	●	2	M10	18	20	10.5	70	140
MAT-M10-090-S25T	●	2	M10	18	25	10.5	90	170
MAT-M10-110-S25T	●	2	M10	18	25	10.5	110	190
MAT-M10-130-S32T	●	2	M10	18	32	10.5	130	220
MAT-M12-030-S25S	●	1	M12	22.5	25	12.5	30	110
MAT-M12-050-S25T	●	2	M12	22.5	25	12.5	50	130
MAT-M12-070-S25T	●	2	M12	22.5	25	12.5	70	150
MAT-M12-090-S25T	●	2	M12	22.5	25	12.5	90	170
MAT-M12-110-S32T	●	2	M12	22.5	32	12.5	110	200
MAT-M12-175-S40T	●	2	M12	22.5	40	12.5	175	300
MAT-M16-035-S32S	●	1	M16	28.5	32	17	35	125
MAT-M16-055-S32T	●	2	M16	28.5	32	17	55	145
MAT-M16-080-S32T	●	2	M16	28.5	32	17	80	170
MAT-M16-120-S32T	●	2	M16	28.5	32	17	120	210
MAT-M16-175-S40T	●	2	M16	28.5	40	17	175	300

• Available to use (FMRM, LBE, PAM, AMM, RM4PM, HRMM, PAXM) • S : Straight type • T : Taper type ●Stock item, ○Under preparing for stock

Carbide





Designation	Stock	Dimensions(mm)					
		M	øD	ød	ød₁	ℓ	L
MAT-M08-080-S16S-C	●	M08	14.5	16	8.5	80	150
MAT-M08-110-S16S-C	●	M08	14.5	16	8.5	110	180
MAT-M08-150-S16S-C	●	M08	14.5	16	8.5	150	250
MAT-M10-090-S20S-C	●	M10	18	20	10.5	90	170
MAT-M10-110-S20S-C	●	M10	18	20	10.5	110	200
MAT-M10-175-S20S-C	●	M10	18	20	10.5	175	300
MAT-M12-090-S25S-C	●	M12	22.5	25	12.5	90	170
MAT-M12-110-S25S-C	●	M12	22.5	25	12.5	110	200
MAT-M12-175-S25S-C	●	M12	22.5	25	12.5	175	300
MAT-M16-090-S32S-C	●	M16	28.5	32	17	90	180
MAT-M16-120-S32S-C	●	M16	28.5	32	17	120	210
MAT-M16-175-S32S-C	●	M16	28.5	32	17	175	300
MAT-M08-010-S16S-C-150	●	M08	14.5	8.5	16	10	150
MAT-M08-010-S16S-C-180	●	M08	14.5	8.5	16	10	180
MAT-M08-010-S16S-C-250	●	M08	14.5	8.5	16	10	250
MAT-M10-010-S20S-C-170	●	M10	18	10.5	20	10	170
MAT-M10-010-S20S-C-200	●	M10	18	10.5	20	10	200
MAT-M10-010-S20S-C-300	●	M10	18	10.5	20	10	300
MAT-M12-015-S25S-C-170	●	M12	22.5	12.5	25	15	170
MAT-M12-015-S25S-C-200	●	M12	22.5	12.5	25	15	200
MAT-M12-015-S25S-C-300	●	M12	22.5	12.5	25	15	300
MAT-M16-020-S32S-C-180	●	M16	28.5	17	32	20	180
MAT-M16-020-S32S-C-210	●	M16	28.5	17	32	20	210
MAT-M16-020-S32S-C-300	●	M16	28.5	17	32	20	300

• Available to use (FMRM, LBE, PAM, AMM, RM4PM, HRMM, PAXM) ●Stock item, ○Under preparing for stock

Feed rate as per depth of cut

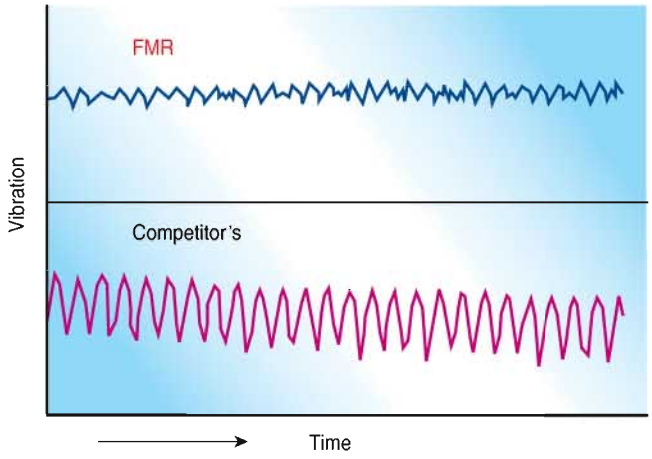
Unit : fz (mm/t)

Designation	C/B	Depth of cut(mm)								
		0.2~0.5	0.5~1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
		Feed(mm/t)								
RDHW0501M0□	—	0.25	0.15	-	-	-	-	-	-	-
RDHW06T1M0□	—	0.30	0.20	0.10	-	-	-	-	-	-
RDHW0702M0□	—	0.35	0.25	0.10	0.07	-	-	-	-	-
RDHW0803M0□	—	0.40	0.30	0.15	0.01	-	-	-	-	-
RDKT10T3M0-□□	MF/MM	-	0.40	0.35	0.30	0.20	-	-	-	-
RDKT1204M0-□□	MF/MM	-	0.50	0.45	0.30	0.25	0.22	-	-	-
RDHW1605M0□	—	-	0.60	0.50	0.45	0.35	0.30	0.20	0.10	-
RDHW2006M0□	—	-	-	0.60	0.50	0.40	0.30	0.25	0.15	0.10
RDKT1605M0-□□	MM	-	0.60	0.50	0.45	0.35	0.30	0.20	0.10	-
RDKT2006M0-□□	MM	-	-	0.60	0.50	0.40	0.30	0.25	0.15	0.10

Parts

Cutter	Screw		Wrench	
FMR1000	FTNA0203		TW06P	
FMR1500	FTNA02205		TW06P	
FMR2000	FTKA02555		TW07S	
FMR2500	FTNA0305		TW09S	
FMR3000	FTGA03508(07)		TW15S	
FMR4000	FTKA0410		TW15S	
FMR5000	FTGA0513-P		TW20S	
FMR6000	FTGA0515-P		TW20S	

FMR vibration test

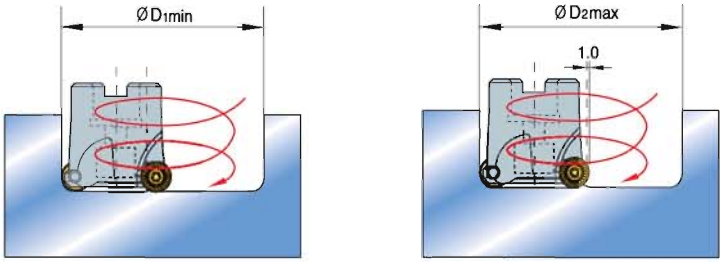


Machine example

- FMRS3032RD-S
  RDKT10T3M0-MM (PC3535)
- Workpiece : SKD11

	vc	fz	ap	ae
Metric	200	0.40	2.0	4.0

Helical cutting technical data



Unit : mm

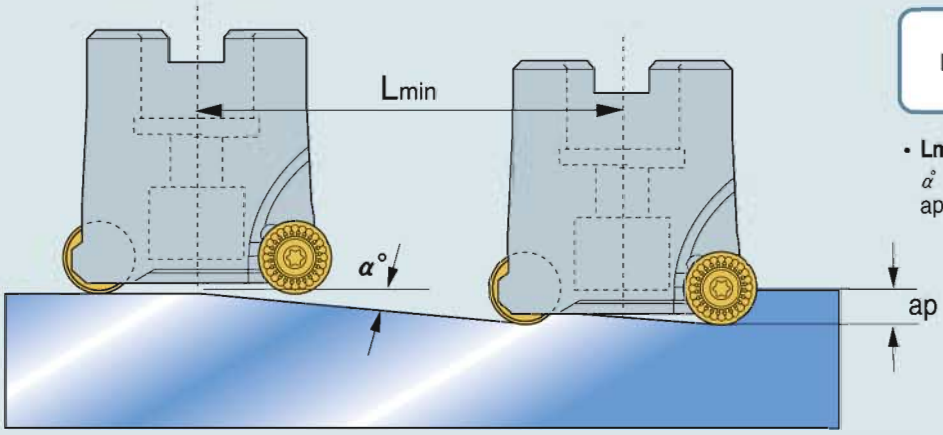
Section	øD	øD1min	øD2max	Insert	dmax
FMR1000	8	10	14	RDHW0501M0□ RDKW0501M0E	2.5
	10	12	18		
	12	16	22		
	15	22	28		
FMR1500	10	12	18	RDHW06T1M0□ RDKW06T1M0E	3
	12	14	22		
	16	22	30		
	20	30	38		
FMR2000	15	18	28	RDHW0702M0□ RDKW0702M0E	3.5
	20	28	38		

Helical cutting technical data

Unit : mm

Section	øD	$øD_{1min}$	$øD_{2max}$	Insert	d_{max}
FMR2500	16	18	30	RDHW0803M0□ RDKW0803M0E	4
	20	26	38		
	25	36	18		
FMR3000	25	32	18	RDKT10T3M0-□□ RDCT10T3M0-MA	5
	32	46	62		
	40	62	78		
	50	82	98		
	63	108	124		
	100	182	198		
FMR4000	32	42	62	RDKT1204M0-□□ RDCT1204M0-MA	6
	40	58	78		
	50	78	98		
	63	104	14		
	80	138	158		
	100	178	198		
	125	228	248		
FMR5000	40	50	78	RDHW1605M0□ RDKT1605M0-MM	8
	50	70	98		
	63	96	124		
	80	130	158		
	100	170	198		
	125	220	248		
FMR6000	50	62	98	RDHW2006M0□ RDKT2006M0-MM	10
	63	88	124		
	80	122	158		
	100	162	198		
	125	212	248		
	160	282	318		

Ramping technical data



$$L_{min} = \frac{ap}{\tan \alpha^{\circ}} \text{ (mm)}$$

- **Lmin : minimum inclination cutting length**

  α° : Max. ramping angle

  ap : depth of cut

Diameter(mm)	α°(max)	L min(mm)	Insert
8	18.14°	3.0	RDHW0501M0□ (ap=1mm)
10	11.70°	4.8	
12	8.43°	6.7	
15	5.93°	9.6	
15	9.42°	6.0	RDHW0702M0□ (ap=1mm)
20	5.85°	9.7	
-	-	-	
25	21.8°	5	RDKT10T3M0-□□ (ap=2mm)
32	13.24°	8.5	
40	9.09°	12.5	
50	6.52°	17.5	
63	4.76°	24	
80	3.52°	32.5	
100	2.69°	42.5	
40	7.40°	30.7	RDHW1605M0□ RDKT1605M0-MM (ap=4mm)
50	5.22°	43.7	
63	3.79°	60.3	
80	2.97°	77.0	
100	2.09°	109.6	
125	1.63°	140.5	

Diameter(mm)	α°(max)	L min(mm)	Insert
10	20.67°	2.6	RDHW06T1M0□ (ap=1mm)
12	10.05°	5.6	
16	6.12°	9.3	
20	4.36°	13.1	
16	13.70°	4.1	RDHW0803M0□ (ap=1mm)
20	9.29°	6.1	
25	6.56°	8.6	
32	15.95°	7	RDKT1204M0-□□ (ap=2mm)
40	10.30°	11	
50	7.13°	16	
63	5.08°	22.5	
80	3.69°	31	
100	2.79°	41	
125	2.14°	53.5	
50	7.44°	30.6	RDHW2006M0□ RDKT2006M0-MM (ap=4mm)
63	4.97°	45.9	
80	3.69°	62.0	
100	2.72°	84.1	
125	2.12°	108.0	
160	1.57°	145.9	

FMR technical information
(major milling machining formula)

Cutting speed

$$vc = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

R.P.M.

$$n = \frac{vc \times 1000}{\pi \times D} \text{ (min}^{-1}\text{)}$$

Feed rate (per tooth)

$$fz = \frac{vf}{n \times z} \text{ (mm/t)}$$

Feed rate (per minute)

$$vf = fz \times n \times z \text{ (mm/min)}$$

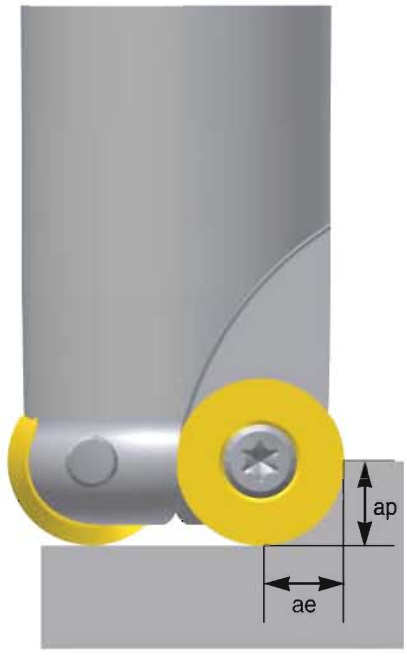
Chip removal rate (volume)

$$Q = \frac{ap \times ae \times vf}{1000} \text{ (cm}^3\text{/min)}$$

Machine power

$$Pc = \frac{Q \times kc}{60 \times 102 \times \eta} \text{ (kW)}$$

$$H = \frac{Pc}{0.75} \text{ (HP)}$$



n = RPM(min^{-1})
vc = Cutting speed(m/min)
D = Cutting diameter(mm)
vf = Feed per minute(mm/min)
fz = Feed per tooth(mm/t)
z = Number of tooth
Pc = Power requirement(kW)
H = Horsepower requirement(HP)
Q = Chip removal amount(cm^3/min)
ap = Axial depth of cut(mm)
ae = Radial depth of cut(mm)
kc = Specific cutting resistance(kg/mm^2)
η = Mechanical efficiency(%)

FMR technical information

Specific cutting resistance by workpiece

Workpiece	Tensile strength (kg/mm²)	Specific cutting resistance (kg/mm²)				
		fz(mm/t) 0.1	fz(mm/t) 0.2	fz(mm/t) 0.3	fz(mm/t) 0.4	fz(mm/t) 0.6
Soft steel	52	220	195	182	170	158
Medium steel	62	198	180	173	160	157
Hard steel	72	252	220	204	185	174
Tool steel	67	198	180	173	170	160
Tool steel	77	203	180	175	170	158
Cr-Mg steel	77	230	200	188	175	166
Cr-Mg steel	63	275	230	206	180	178
Cr-Mo steel	73	254	225	214	200	180
Cr-Mo steel	60	218	200	186	180	167
Ni-Cr-Mo steel	94	200	180	168	160	150
Ni-Cr-Mo steel	HB352	210	190	176	170	153
Cast steel	52	280	250	232	220	204
Hard cast iron	H_RC46	300	270	250	240	220
Cast iron	36	218	200	175	160	147
Gray cast iron	HB200	175	140	124	105	97
Brass	50	115	95	80	70	63
Hard alloy (Al-Mg)	16	58	48	40	35	32
Hard alloy (Al-Si)	20	70	60	52	45	39

Machine efficiency(η)

Power transfer system	Efficiency co-efficient (E)	Efficiency co-efficient (E)
Direct link operation	0.90	
Belt operation	0.85	2 link : 0.85 x 0.85 ≒ 0.70
Gear operation	0.75	
Oil pressure operation	0.60~0.90	

Chip removal rate (cm³/min)

■ RDHW0501M0□

Workpiece		Grade \ Diameter	8mm	10mm	12mm	15mm	Cutting condition			
							vc	fz	ap	ae
P	General structure steel (Under 200HB)	PC3525 PC9530	4.97	9.94	9.94	14.92	250	0.25	0.5	0.5D
P	General carbon steel (Under 30HRC)	PC3525 PC9530	3.97	7.95	7.95	11.93	200	0.25	0.5	0.5D
P	High carbon steel, alloy steel (30~40HRC)	PC3525 PC9530	2.86	5.72	5.72	8.59	180	0.20	0.5	0.5D
P	High carbon steel, alloy steel (40~50HRC)	PC3525 PC9530	1.24	2.48	2.48	3.72	130	0.15	0.4	0.5D
P	Alloy steel (Over 50HRC)	PC3525 PC9530	0.95	1.90	1.90	2.86	100	0.15	0.4	0.5D
M	Stainless steel	PC9530	2.06	4.13	4.13	6.20	130	0.20	0.5	0.5D
K	Gray cast iron Ductile cast iron	PC6510	2.86	5.72	5.72	8.59	180	0.20	0.5	0.5D

■ RDHW06T1M0□

Workpiece		Grade \ Diameter	10mm	12mm	15mm	20mm	Cutting condition			
							vc	fz	ap	ae
P	General structure steel (Under 200HB)	PC3525 PC9530	9.35	18.71	28.07	28.07	280	0.30	0.7	0.5D
P	General carbon steel (Under 30HRC)	PC3525 PC9530	8.35	16.71	25.06	25.06	250	0.30	0.7	0.5D
P	High carbon steel, alloy steel (30~40HRC)	PC3525 PC9530	6.68	13.36	20.05	20.05	200	0.30	0.7	0.5D
P	High carbon steel, alloy steel (40~50HRC)	PC3525 PC9530	2.86	5.72	8.59	8.59	150	0.20	0.6	0.5D
P	Alloy steel (Over 50HRC)	PC3525 PC9530	1.90	3.81	5.72	5.72	100	0.20	0.6	0.5D
M	Stainless steel	PC9530	4.17	8.35	12.53	12.53	150	0.25	0.7	0.5D
K	Gray cast iron Ductile cast iron	PC6510	4.01	8.02	12.03	12.03	180	0.20	0.7	0.5D

Chip removal rate (cm³/min)

■ RDHW0702M0□

Workpiece		Diameter / Grade	15mm	20mm	Cutting condition			
					vc	fz	ap	ae
P	General structure steel (Under 200HB)	PC3525 PC9530	26.73	40.10	300	0.35	0.8	0.5D
	General carbon steel (Under 30HRC)		22.28	33.42	250	0.35	0.8	0.5D
	High carbon steel, alloy steel (30~40HRC)		17.82	26.73	200	0.35	0.8	0.5D
	High carbon steel, alloy steel (40~50HRC)		11.36	17.04	170	0.30	0.7	0.5D
	Alloy steel (Over 50HRC)		8.68	13.03	130	0.30	0.7	0.5D
M	Stainless steel	PC9530	17.82	26.73	200	0.35	0.8	0.5D
K	Gray cast iron Ductile cast iron	PC6510	13.75	20.62	180	0.30	0.8	0.5D

■ RDHW0803M0□

Workpiece		Diameter / Grade	16mm	20mm	25mm	Cutting condition			
						vc	fz	ap	ae
P	General structure steel (Under 200HB)	PC3525 PC9530	31.83	31.83	47.74	300	0.40	1.0	0.5D
	General carbon steel (Under 30HRC)		25.46	25.46	38.19	250	0.40	1.0	0.5D
	High carbon steel, alloy steel (30~40HRC)		22.91	22.91	34.37	200	0.40	1.0	0.5D
	High carbon steel, alloy steel (40~50HRC)		11.45	11.45	17.18	170	0.30	0.9	0.5D
	Alloy steel (Over 50HRC)		7.63	7.63	11.45	130	0.30	0.9	0.5D
M	Stainless steel	PC9530	16.55	16.55	24.82	200	0.20	1.0	0.5D
K	Gray cast iron Ductile cast iron	PC6510	14.32	14.32	21.48	180	0.20	1.0	0.5D

Chip removal rate (cm³/min)

■ RDKT10T3M0-□□

Workpiece		Grade \ Diameter	21mm	25mm	26mm	32mm	40mm	50mm	63mm	80mm	100mm	Cutting condition vc	fz	ap	ae
P	General structure steel (Under 200HB)	NCM325 NCM335 PC3525 PC3545	47.74	47.74	47.74	71.61	95.49	119.36	143.23	167.11	190.98	250	0.40	1.5	0.5D
P	General carbon steel (Under 30HRC)	NCM325 NCM335 PC3525 PC3545	38.19	38.19	38.19	57.29	76.39	95.49	114.59	133.69	152.78	200	0.40	1.5	0.5D
P	High carbon steel, alloy steel (30~40HRC)	NCM325 NCM335 PC3525 PC3545	34.37	34.37	34.37	51.56	68.75	85.94	103.13	120.32	137.50	180	0.40	1.5	0.5D
P	High carbon steel, alloy steel (40~50HRC)	NCM325 NCM335 PC3525 PC3545	14.32	14.32	14.32	21.48	28.64	35.80	42.97	50.13	57.29	150	0.30	1.0	0.5D
P	Alloy steel (Over 50HRC)	NCM325 NCM335 PC3525 PC3545	9.54	9.54	9.54	14.32	19.09	23.87	28.64	33.42	38.19	100	0.30	1.0	0.5D
M	Stainless steel	PC9530	12.41	12.41	12.41	18.62	24.82	31.03	37.24	43.44	49.65	130	0.20	1.5	0.5D
K	Gray cast iron Ductile cast iron	PC6510	21.48	21.48	21.48	32.22	42.97	53.71	64.45	75.20	85.94	180	0.20	1.5	0.5D

■ RDKT1204M0-□□

Workpiece		Grade \ Diameter	32mm	33mm	40mm	50mm	63mm	80mm	100mm	125mm	Cutting condition vc	fz	ap	ae
P	General structure steel (Under 200HB)	NCM325 NCM335 PC3525 PC3545	38.19	38.19	57.29	76.39	76.39	95.49	114.59	133.69	200	0.40	1.5	0.5D
P	General carbon steel (Under 30HRC)	NCM325 NCM335 PC3525 PC3545	38.19	38.19	57.29	76.39	48.50	95.49	114.59	133.69	180	0.40	1.5	0.5D
P	High carbon steel, alloy steel (30~40HRC)	NCM325 NCM335 PC3525 PC3545	34.37	34.37	51.56	68.75	43.65	85.94	103.13	120.32	160	0.40	1.5	0.5D
P	High carbon steel, alloy steel (40~50HRC)	NCM325 NCM335 PC3525 PC3545	14.32	14.32	21.48	22.91	28.64	35.80	42.97	50.13	140	0.30	1.0	0.5D
P	Alloy steel (Over 50HRC)	NCM325 NCM335 PC3525 PC3545	9.54	9.54	14.32	19.09	12.12	23.87	28.64	33.42	100	0.30	1.0	0.5D
M	Stainless steel	PC9530	12.41	12.41	18.62	24.82	15.76	31.03	37.24	43.44	130	0.20	1.5	0.5D
K	Gray cast iron Ductile cast iron	PC6510	21.48	21.48	32.22	42.97	27.28	53.71	64.45	75.20	180	0.20	1.5	0.5D

Chip removal rate (cm³/min)

RDHW1605M0□/RDKT1605M0-MM

Workpiece		Diameter / Grade	40mm	50mm	63mm	80mm	100mm	125mm	Cutting condition			
									vc	fz	ap	ae
P	General structure steel (Under 200HB)	NCM325 NCM335 PC3525 PC3545 PC9530	128.11	192.17	256.23	320.29	384.35	448.41	230	0.50	3.5	0.5D
P	General carbon steel (Under 30HRC)	NCM325 NCM335 PC3525 PC3545 PC9530	111.40	167.11	222.81	278.52	334.22	389.92	200	0.50	3.5	0.5D
P	High carbon steel, alloy steel (30~40HRC)	NCM325 NCM335 PC3525 PC3545 PC9530	85.94	103.13	171.88	214.85	257.83	300.80	200	0.50	3.5	0.5D
P	High carbon steel, alloy steel (40~50HRC)	NCM325 NCM335 PC3525 PC3545 PC9530	57.29	68.75	114.59	143.23	171.88	200.53	180	0.50	3.0	0.5D
P	Alloy steel (Over 50HRC)	NCM325 NCM335 PC3525 PC3545 PC9530	31.83	47.74	63.66	79.57	95.49	111.40	100	0.40	2.5	0.5D
M	Stainless steel	PC9530	72.41	108.62	144.83	181.03	217.24	253.45	130	0.50	3.5	0.5D
K	Gray cast iron Ductile cast iron	PC6510	68.75	103.13	137.50	171.88	206.26	240.64	180	0.40	3.0	0.5D

RDHW2006M0□/RDKT2006M0-MM

Workpiece		Diameter / Grade	50mm	63mm	80mm	100mm	125mm	160mm	Cutting condition			
									vc	fz	ap	ae
P	General structure steel (Under 200HB)	NCM325 NCM335 PC3525 PC3545 PC9530	190.98	254.64	318.30	381.97	445.63	509.29	200	0.50	4.0	0.5D
P	General carbon steel (Under 30HRC)	NCM325 NCM335 PC3525 PC3545 PC9530	171.88	229.18	286.47	343.77	401.07	458.36	180	0.50	4.0	0.5D
P	High carbon steel, alloy steel (30~40HRC)	NCM325 NCM335 PC3525 PC3545 PC9530	152.78	203.71	254.64	305.57	356.50	407.43	160	0.50	4.0	0.5D
P	High carbon steel, alloy steel (40~50HRC)	NCM325 NCM335 PC3525 PC3545 PC9530	93.58	124.77	155.97	187.16	218.36	249.55	140	0.40	3.5	0.5D
P	Alloy steel (Over 50HRC)	NCM325 NCM335 PC3525 PC3545 PC9530	57.29	76.39	95.49	114.59	133.69	152.78	100	0.40	3.0	0.5D
M	Stainless steel	PC9530	124.14	165.52	206.90	248.28	289.662	331.04	130	0.50	4.0	0.5D
K	Gray cast iron Ductile cast iron	PC6510	137.50	183.34	229.18	275.01	320.85	366.69	180	0.40	4.0	0.5D

Required machine power (Hp)

$P_{kw} = 0.75 \times P_{Hp}$

■ RDKT10T3M0-□□

(Hp)

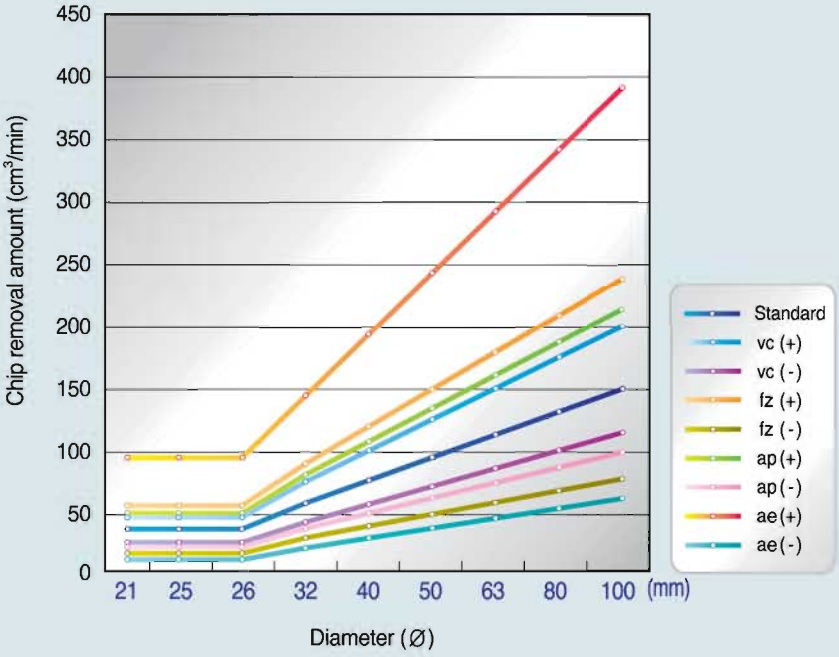
Workpiece		Diameter / Grade	21mm	25mm	26mm	32mm	40mm	50mm	63mm	80mm	100mm	Cutting condition vc	fz	ap	ae
P	General structure steel (Under 200HB)	NCM325 NCM335 PC3525 PC3545	2.2	2.2	2.2	3.3	4.4	5.5	6.6	7.7	8.8	250	0.40	1.5	0.5D
P	General carbon steel (Under 30HRC)	NCM325 NCM335 PC3525 PC3545	2.1	2.1	2.1	3.1	4.1	5.2	6.2	7.3	8.3	200	0.40	1.5	0.5D
P	High carbon steel, alloy steel (30~40HRC)	NCM325 NCM335 PC3525 PC3545	2.2	2.2	2.2	3.3	4.5	5.6	6.7	7.9	9.0	180	0.40	1.5	0.5D
P	High carbon steel, alloy steel (40~50HRC)	NCM325 NCM335 PC3525 PC3545	1.1	1.1	1.1	1.6	2.1	2.6	3.2	3.7	4.2	150	0.30	1.0	0.5D
P	Alloy steel (Over 50HRC)	NCM325 NCM335 PC3525 PC3545	0.7	0.7	0.7	1.1	1.4	1.7	2.1	2.4	2.8	100	0.30	1.0	0.5D
M	Stainless steel	PC9530	0.6	0.6	0.6	0.8	1.2	1.5	1.7	2.0	2.3	130	0.20	1.5	0.5D
K	Gray cast iron Ductile cast iron	PC6510	0.6	0.6	0.6	0.9	1.2	1.5	1.8	2.1	2.4	180	0.20	1.5	0.5D

■ RDKT1204M0-□□

(Hp)

Workpiece		Diameter / Grade	32mm	33mm	40mm	50mm	63mm	80mm	100mm	125mm	Cutting condition vc	fz	ap	ae
P	General structure steel (Under 200HB)	NCM325 NCM335 PC3525 PC3545	1.7	1.7	2.6	3.5	3.5	4.4	5.3	6.1	200	0.40	1.5	0.5D
P	General carbon steel (Under 30HRC)	NCM325 NCM335 PC3525 PC3545	2.0	2.0	3.1	4.1	2.6	5.2	6.2	7.2	180	0.40	1.5	0.5D
P	High carbon steel, alloy steel (30~40HRC)	NCM325 NCM335 PC3525 PC3545	2.2	2.2	3.3	4.4	2.8	5.6	6.7	7.8	160	0.40	1.5	0.5D
P	High carbon steel, alloy steel (40~50HRC)	NCM325 NCM335 PC3525 PC3545	1.0	1.0	1.5	1.6	2.1	2.6	3.1	3.6	140	0.30	1.0	0.5D
P	Alloy steel (Over 50HRC)	NCM325 NCM335 PC3525 PC3545	0.7	0.7	1.0	1.4	0.8	1.7	2.1	2.4	100	0.30	1.0	0.5D
M	Stainless steel	PC9530	0.5	0.5	0.8	1.1	0.7	1.4	1.7	2.0	130	0.20	1.5	0.5D
K	Gray cast iron Ductile cast iron	PC6510	0.6	0.6	0.9	1.2	0.7	1.5	1.8	2.1	180	0.20	1.5	0.5D

Chip removal rate by condition change



■ Variation of cutting condition

	ISO
Standard Condition	vc = 200 fz = 0.4 ap = 1.5 ae = 0.5D
vc (+)	250
vc (-)	150
fz (+)	0.6
fz (-)	0.2
ap (+)	2
ap (-)	1
ae (+)	D
ae (-)	0.2D

Cutting time comparative examples

- Maker : SEIKI, HR5BS
- Workpiece : SM45C,AISI1045, Ck45

	vc	fz	ap	ae	Tooth
Metric	200	0.4	2.0	D	5

- Slotting
- Designation : FMRCM4050RD

① FMR (RDKT12)

- Maker : SEIKI, HR5BS
- Workpiece : SM45C,AISI1045, Ck45

	vc	fz	ap	ae	Tooth
Metric	200	0.14	7.0	D	5

- Slotting
- T maker (ø50mm)

② APKT (T-maker)

Section	n	vf	Q	P	Cutting time	Chip thickness
① FMR- RDKT12	1273 min^{-1}	2546 m/min	254 cm^3/min	8.51 kW	9.9 min	0.3 mm
② APKT	1273 min^{-1}	700 m/min	245 cm^3/min	8.51 kW	36 min	0.11 mm

● **FMR : Improvement more than 3 times by high feed cutting**

FMR code system (shank & cutter)

F	M	R	C	M	4	0	6	3
Future- Mill		Insert geometry Round type	Tool type - C : Cutter - S : Shank	Arbor type - M : Metric - A : Inch	Insert I/C **10** : 05 size insert **15** : 06 size insert **20** : 07 size insert **25** : 08 size insert **30** : 10 size insert **40** : 12 size insert **50** : 16 size insert **60** : 20 size insert		Tool diameter - ISO : mm - AISI : inch	

H	R	(D)	H	-	(2)
Coolant type - H : Thru-hole - Unmarked : No thru-hole	Hand of tool - R : Right - L : Left	Clearance angle - (D) = D-Posi	Tool length (shank type) - S : Standard type - M : Middle type - L : Long type Pitch (cutter type) - None : coarse pitch - M : close pitch - H : extra close pitch		Number of tooth

FMR code system (modular)

F	M	R	M	2	5	2	0
Future- Mill		Insert geometry Round type	Tool type - **M** : Modular	Insert I/C **10** : 05 size insert **15** : 06 size insert **20** : 07 size insert **25** : 08 size insert **30** : 10 size insert **40** : 12 size insert **50** : 16 size insert		Tool diameter - ISO : mm - AISI : inch	

H	R	D	-	M10
Coolant type - H : Thru-hole - Unmarked : No thru-hole	Hand of tool - **R** : Right - **L** : Left	Clearance angle - **(D)** = D-Posi		Screw size

Warning

※ Safety instruction

- Use glasses safely and face cover with protective equipment. If cutting condition and use method are inaccurate, you may be injured by broken tools or scattered chips.
- Excessive cutting load may influence badly on both tool and machine. Make suitable tool replacement for preventing failure of machining.
- After machine stopped, clean remained chips from machine with special cleaning equipment.
- Keep safety distance from acute and hot chip during machining.
- Make precaution for prevention of fire in advance when you use insoluble cutting oil.
- Assembled parts may be scattered at high speed cutting. Please use protective equipment.

KORLOY Inc.

HEAD OFFICE
Holystar B/D 953-1, Doksanbon-Dong, Geumcheon-Gu, Seoul, Korea
TEL: +82 2 522 3181 FAX: +82 2 522 3184, +82 2 3474 4744
WEB : www.korloy.com

CHEONGJU FACTORY
53-16, Songjeong-Dong, Hungduk-Gu, Chengju, Chungcheongbuk-Do, Korea
TEL: +82 43 262 0141 FAX: +82 43 262 0146
E-MAIL : export@korloy.com

JINCHEON FACTORY
767-1, Gwanghyewon-Ri, Gwanghyewon-Myon, Jincheon-Gun, Chungcheongbuk-Do, Korea
TEL: +82 43 535 0141 FAX: +82 43 535 0144