High Feed Mill

HFM

KORLOY TECH-NEWS

- Increase productivity through improved insert shape and size, higher feed per tooth and number of inserts, for small diameter machining.
- Stable tool life through the combination of the reinforced cutting edge and applying suitable grades for hardened steels machining.

KORLOY

Small diameter machining high feed tool

HFM

The need for high feed tooling has grown while the materials of molds tend to be harder. Small size tooling is required for the electronic parts and mold manufacturers to achieve high productivity.

However, increasing productivity has been restricted due to the absence of small size high feed tools for high hardness steel. **HFM** extends the range of process to small diameter, improving productivity with more number of teeth, compared to HRM(D).

High Helix angle on the cutting edge reduces cutting resistance, while the negative axial rake angle of holder reduces the contact surface on workpiece in order to reduce wear and vibration through more stable machinability.

Improved grades ensure stable tool life. Ultrafine grain substrate and specialized coating layer highly improve anti-chipping and anti-wear.

Reinforced cutting edge

- Improved tool life for machining hardened steel through the increased chipping resistance

Small diameter

- Extension of the range of cutting process
- More number of teeth leads high productivity

Various grades available

- Suitable for P, M, K, S, H
- Improved Chipping and Wear resistance

Code System

Shank Type

HFM	S	1	010	H	R	-	2	L	10
High Feed Mill	**Type** S: Shank	**Insert size** 1: 04 type insert	**Tool Dia. Ø** 010: Ø 10 mm	**Coolant type** No code: None H: Thru-hole	**Hand** R: Right L: Left		**No. of tooth** 2: 2 teeth	**Shank length** S: Standard type M: Middle type L: Long type	**Shank Dia. Ø** 10: Ø10 mm

Modular Type

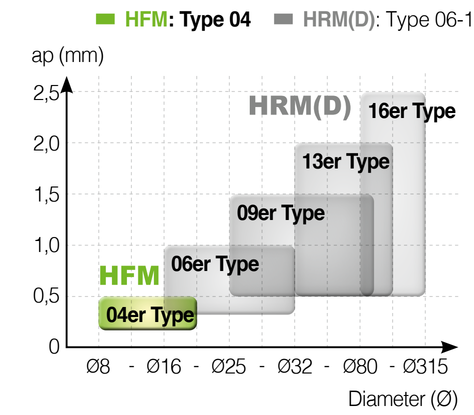
HFM	M	1	010	H	R	-	M06
High Feed Mill	**Type** M: Modular	**Insert size** 1: 04 type insert	**Tool Dia Ø** 10: Ø10 mm	**Coolant type** No code: None H: Thru-hole	**Hand** R: Right L: Left		**M-Dimensions** M6

Modular Adapter

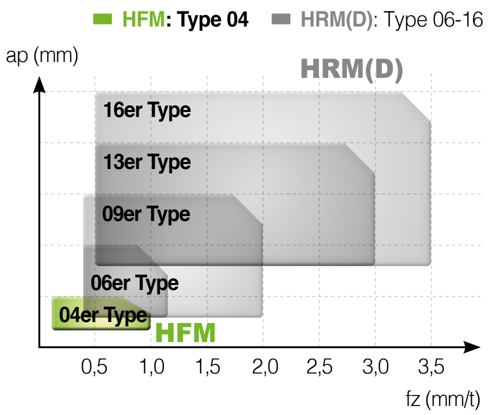
MAT	-	M10	-	010	S20	S	-	C	-	170
Modular Adapter		**M-Dimensions** M10		**Neck length** 010: 10 mm	**Shank Dia. Ø** S20: Ø20 mm	**Neck type** T: Taper S: straight		**Adaptor material** Unmarked: Steel C: Carbide		**Adaptor length** 170: 170 mm

Application Range

(ap & Diameter)



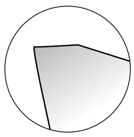
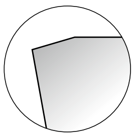
(ap & fz)



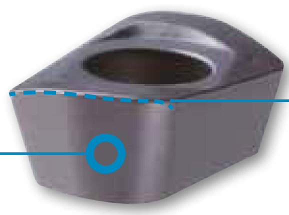
Features

- Reduced cutting load and reinforced toughness on insert corner through applied helix angle
- Increased rigidity with double relief angle (11°, 13°), prevent interference with workpiece
- Negative Axial Rake Angle (A.R) applied to increase chipping resistance
- Increased tool life and machinability through selecting suitable grades for various kind of materials

Chipbreaker Application Range and Features

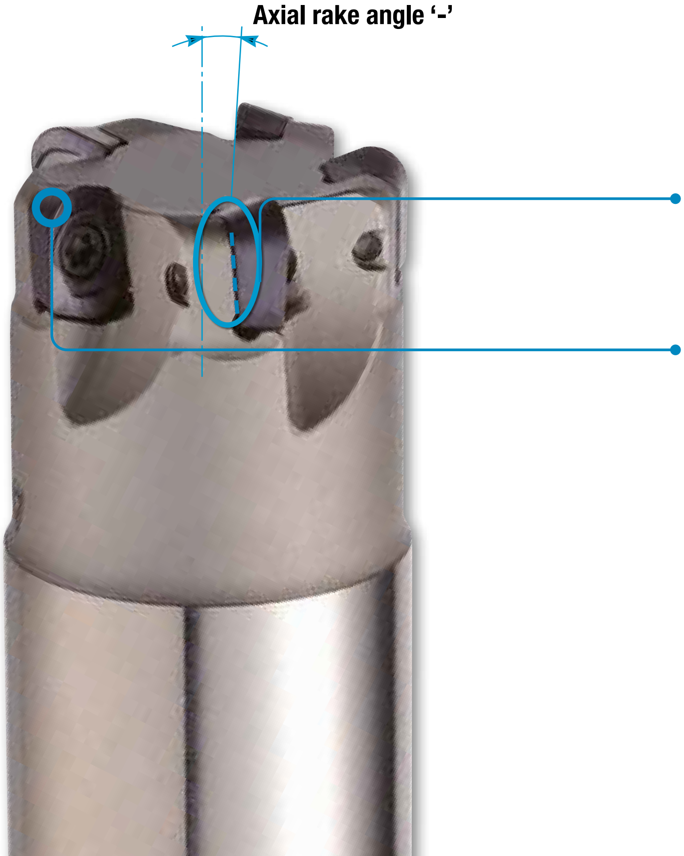
Chip Breaker	Cutting edge	Application	Features
MF		Finishing Titanium & Inconel machining	Low cutting resistance C/B, suitable for light cutting
ohne C/B		Hardened steel machining	High toughness cutting edge, suitable to machine mold steel with high hardness

Relief angle
12-Step Relief Angle (11°, 13°)
increased rigidity and prevented interference



Helix Cutting Edge applied
Improved sharpness of cutting edge
Improved rigidity of corner.

Axial rake angle '-'



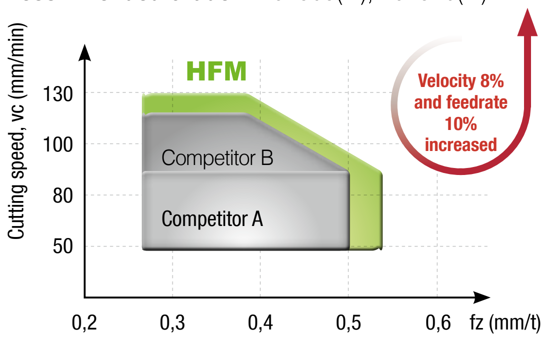
Holder Setup
Negative Axial Rake Angle applied increased chipping resistance.

Number of Teeth
Increased productivity through higher number of teeth
- HRM(D) Ø20 (2 teeth)
- HFM Ø20 (5 teeth)

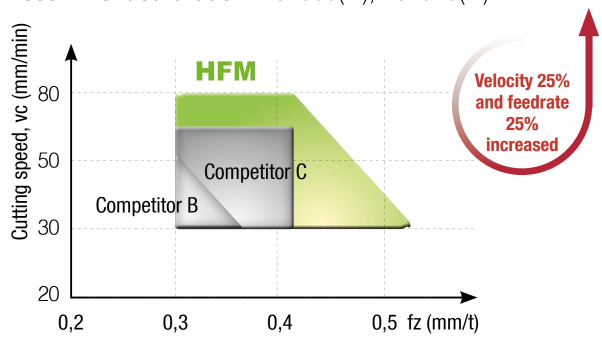
Performance Test

High speed machining

Workpiece	STD11(HRC40-45)
Insert	LPM(E)W0402_ _R
Recommended Grade	PC2505(1.), PC2510(2.)

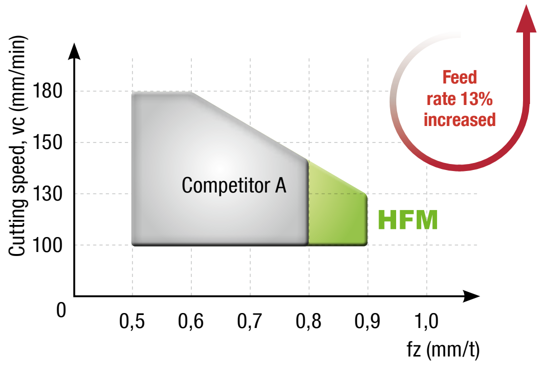


Workpiece	STD11(Over HRC60)
Insert	LPM(E)W0402_ _R
Recommended Grade	PC2505(1.), PC2510(2.)

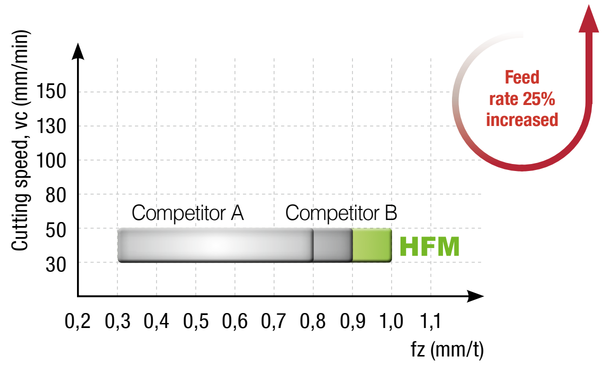


High feed machining

Workpiece	KP4M(HRC32), NAK80(HRC43)
Insert	LPMT0402_ _R-MF
Recommended Grade	PC5300(1.), PC2510(2.)



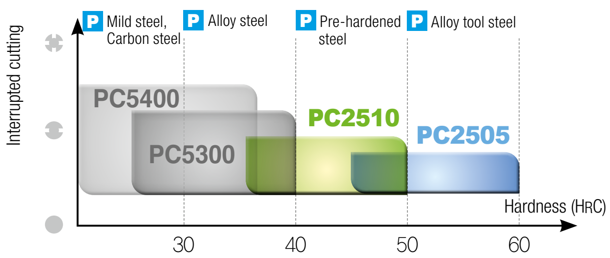
Workpiece	Ti-6AL-4V(HRC40-45)
Insert	LPMT0402_ _R-MF
Recommended Grade	PC5300(1.), PC5400(2.)

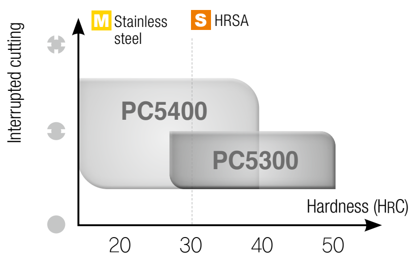


➔ **Better performance than competitors under high feed rate**

High hardness machining

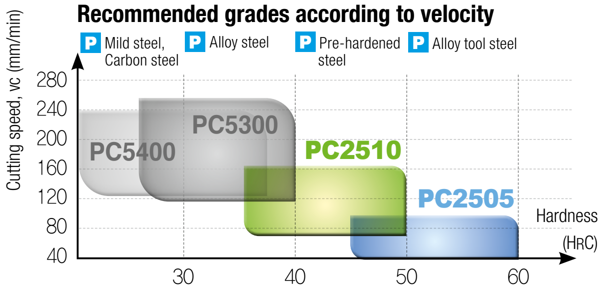
Recommended grades according to interruption

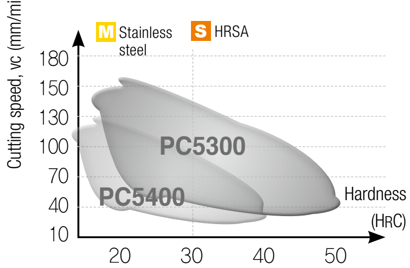




New Grades: **PC2505** and **PC2510** are the 1st recommendation for high hardened.

Recommended grades according to velocity

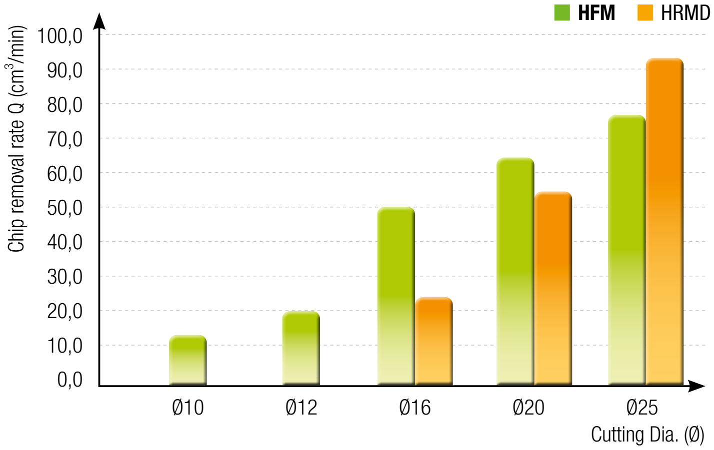




Grade	Hardness
PC2505	Over HRC45
PC2510	HRC35-50
PC5300	HRC20-40
PC5400	Under HRC37

Performance Test

Effective machining



Machining center

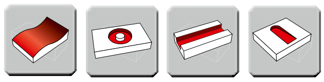
- SK40 and under, HFM recommended
- SK50 and above, HRM(D) recommended

Chip removal rate Q (cm³/min)

- Ø8 - Ø20, HFM recommended
- Ø20 and above, HRM(D) recommended

Recommended Cutting Conditions

※ Recommended chip breaker: ● First ○ Second



Workpiece						HB (HRC)	Grade	Cutting conditions				Chip breaker	
	Workpiece		KOR (KS)	USA (AISI)	GER (DIN)			vc (m/min)	fz (mm/t)	ap (mm)	ae (mm)	MF	None
P	Mild steel		SM20C	1020	C22	120-180	PC3700 PC5400 (PC5300)	100-220	0,5-1,0	-0,5	0,7D-0,1D	●	-
P	Carbon steel		SM45C	1045	C45	200	PC5400 (PC5300)	100-200	0,5-1,0	-0,5	0,7D-0,1D	●	-
P	Alloy steel		SCM440	4140	41CrMo4	270(28)	PC5300	100-200	0,5-1,0	-0,5	0,7D-0,1D	●	-
P	Pre-hardened steel		KP4M	P20 (verbessert)	1,2738 (verbessert)	300(32)	PC5300 new (PC2510)	100-180	0,5-0,9	-0,4	0,7D-0,1D	●	○
P	Pre-hardened steel		NIMAX	P21 (verbessert)	-	370(40)	PC5300 new (PC2510)	100-180	0,5-0,9	-0,4	0,7D-0,1D	●	○
P	Pre-hardened steel		CENA1	P21 (verbessert)	-	370(40)	PC5300 new (PC2510)	100-180	0,5-0,9	-0,4	0,7D-0,1D	●	○
P	Pre-hardened steel		NAK80	P21 (verbessert)	-	400(43)	PC5300	100-160	0,5-0,7	-0,4	0,7D-0,1D	○	-
								100-180	0,5-0,9	-0,4	0,7D-0,1D	-	●
P	Pre-hardened steel		STAVAX	420	X30Cr13	510(52)	PC2510 new (PC5300)	80-150	0,3-0,6	-0,4	0,7D-0,1D	●	-
P	Alloy tool steel		STD11 STD61	D2 H13	X155CrVMo12-1 X40CrMoV5-1	- (40-50)	PC2510 new (PC2505) new	80-130	0,3-0,55	-0,3	0,7D-0,1D	-	●
P	Alloy tool steel		STD11 (Kaltgeschmiedet)	D2	X155CrVMo12-1	630(60)	PC2505 new	30-75	0,3-0,5	-0,2	0,7D-0,1D	-	●
M	Stainless steel		STS316	316	X5CrNiMo17-12-2	unter 270	PC5400 (PC5300)	70-150	0,5-0,7	-0,5	0,7D-0,1D	●	-
K	Gray cast iron, Ductile cast iron		GCD450	65-45-12	GGG40,3	Zugfestigkeit über 450Mpa	PC5300	130-220	0,6-0,8	-0,5	0,7D-0,1D	●	-
S	HRSA	Fe Series	Incoloy901	N09901	- (WS 2,4662)	- (25-35)	UNC840 PC5300 (PC5400)	30-100	0,3-0,5	-0,3	0,4D-0,7D	●	○
S	HRSA	Ni / Co Series	Inconel718	N07718	NiCr19FeNbMo (WS 2,4668)	- (35-45)	PC5300 (PC5400)	20-50	0,3-0,6	-0,3	0,4D-0,7D	●	○
S	Titanium		Ti-6Al-4V	R56400	TiAl6V4	- (40-45)	PC5300	30-50	0,4-1,0	-0,3	0,7D-0,1D	●	-

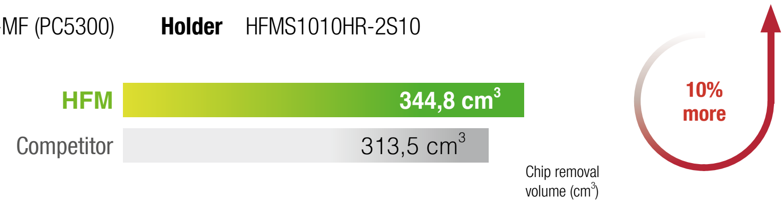
Cutting Performance

Carbon steel (C45, HB200)

- **Workpiece** Mold
- **Cutting conditions** vc = 150 (m/min) · fz = 0,6 (mm/t) · ap = 0,4 (mm) · ae = 5 (mm), dry
- **Designation** **Insert** LPMT040210R-MF (PC5300) **Holder** HFMS1010HR-2S10

HFM

Competitor



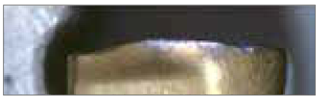
- Chip removal rate Q (cm^3/min): 11,5
- Cutting time (min): 30

➔ **Better wear & chipping resistance due to applied helix cutting edge than competitor.**

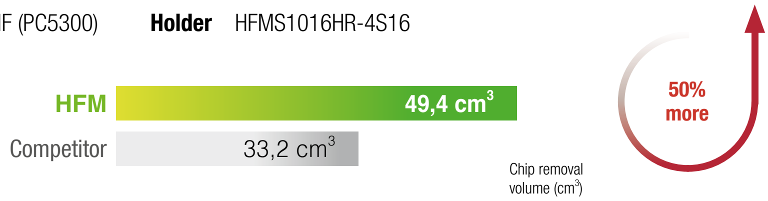
Pre-hardened steel [P21(Improved)) (AISI) / NAK80(KS), HRC40-41]

- **Workpiece** Mold
- **Cutting conditions** vc = 100 (m/min) · fz = 1,26 (mm/t) · ap = 0,3 (mm) · ae = 10 (mm), dry
- **Designation** **Insert** LPMT040210R-MF (PC5300) **Holder** HFMS1016HR-4S16

HFM



Competitor



- Chip removal rate Q (cm^3/min): 15
- Cutting time (min): 3,29

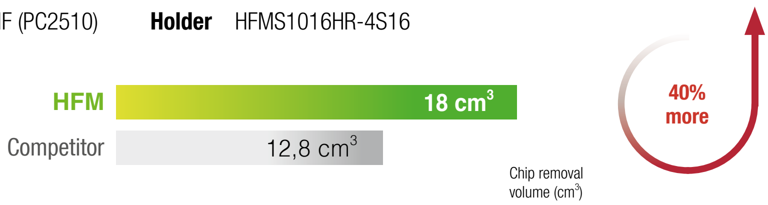
➔ **Excellent chipping resistance due to optimized insert shape at high feed machining.**

Pre-hardened steel [X30Cr13(DIN) / 420(AISI) / STAVAX(KS), HRC50-51]

- **Workpiece** Mold
- **Cutting conditions** vc = 200 (m/min) · fz = 0,6 (mm/t) · ap = 0,3 (mm) · ae = 10 (mm), dry
- **Designation** **Insert** LPMT040210R-MF (PC2510) **Holder** HFMS1016HR-4S16

HFM

Competitor



- Chip removal rate Q (cm^3/min): 14,3
- Cutting time (min): 1,26

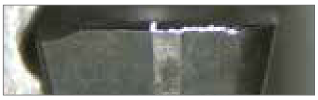
➔ **Excellent wear resistance thanks to the exclusive grade when machining hardened steel.**

Cutting Performance

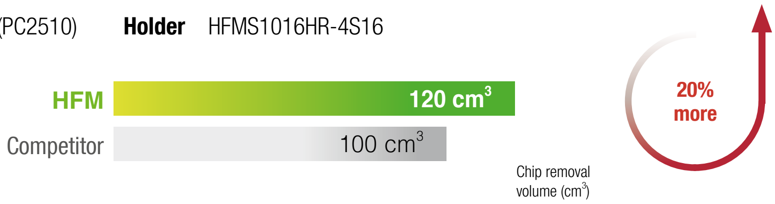
Alloy tool steel [X155CrVMo12-1(DIN) / D2(AISI) / STD11(KS), HRC40-45]

- **Workpiece** Mold
- **Cutting conditions** vc = 80 (m/min) · fz = 0,5 (mm/t) · ap = 0,3 (mm) · ae = 10 (mm), dry
- **Designation** **Insert** LPMW040210R (PC2510) **Holder** HFMS1016HR-4S16

HFM



Competitor



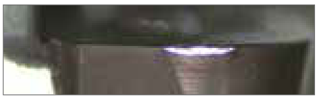
- Chip removal rate Q (cm^3/min): 4,8
- Cutting time (min): 25

➜ **Higher Rigidity of insert due to optimized shape and exclusive grade when machining alloy tool steel.**

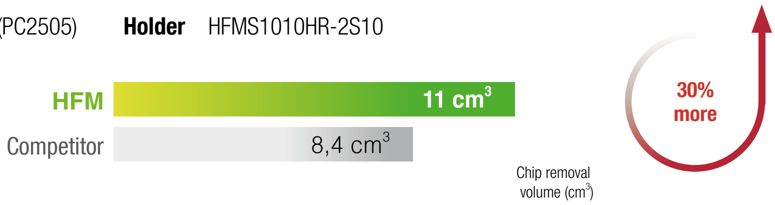
Alloy tool steel [X155CrVMo12-1(DIN) / D2(AISI) / STD11(KS), HRC60]

- **Workpiece** Mold
- **Cutting conditions** vc = 75 (m/min) · fz = 0,4 (mm/t) · ap = 0,15 (mm) · ae = 5 (mm), dry
- **Designation** **Insert** LPMW040210R (PC2505) **Holder** HFMS1010HR-2S10

HFM



Competitor



- Chip removal rate Q (cm^3/min): 1,4
- Cutting time (min): 7,85

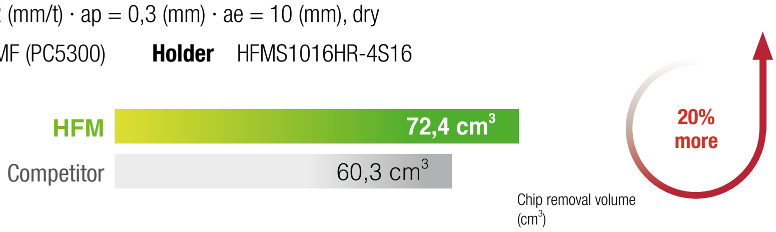
➜ **Excellent wear resistance thanks to the exclusive grade when machining alloy tool steel.**

HRSA [TiAl6V4(DIN) / R56400(AISI) / Ti-6Al-4V(KS), HRC48]

- **Workpiece** Aviation parts
- **Cutting conditions** vc = 50 (m/min) · fz = 1,2 (mm/t) · ap = 0,3 (mm) · ae = 10 (mm), dry
- **Designation** **Insert** LPMT040210R-MF (PC5300) **Holder** HFMS1016HR-4S16

HFM

Competitor

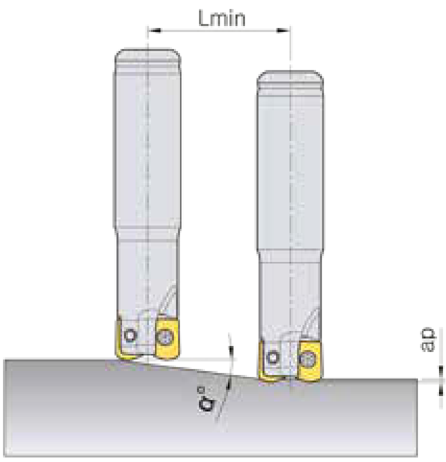


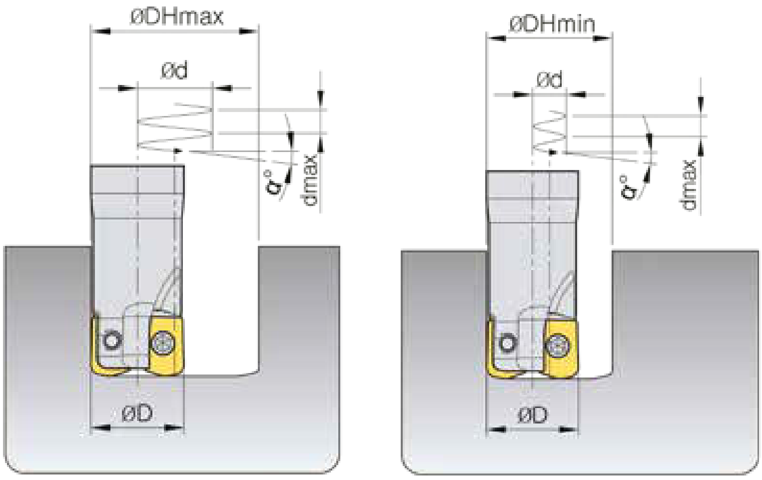
- Chip removal rate Q (cm^3/min): 7,2
- Cutting time (min): 10,05

➜ **Better wear resistance due to optimized insert shape when machining HRSA.**

Ramping & Helical cutting

Ramping	Helical cutting





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

※ Lmin: Min. inclination cutting length
α˚ : Max. ramping angle
ap: Depth of cut

- ØD = Tool Dia. (mm)
- Ød = Tool path(mm) = ØDHmin, max - ØD
- ØDHmin (Min diameter, mm) = ØD × 2 - 5.4
- ØDHmax (Max diameter, mm) = ØD×2 - 2

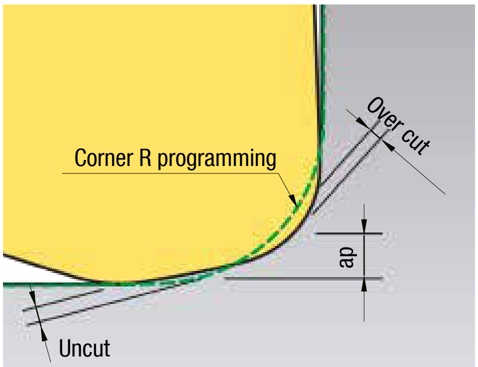
(mm)

Designation	Tool Dia. ØD	Depth of cut ap	Ramping		Helical cutting			
			Max ramping angle α(°)	Lmin	Max. diameter ØDH max	Max. pitch Dmax	Min. diameter ØDH min	Max. pitch dmax
HFMS1010HR	10	0,4-0,5	3,5	7	18	1,1	15	0,9
HFMS1011HR	11	0,4-0,5	3,1	8	20	1,1	17	0,9
HFMS1012HR	12	0,4-0,5	2,7	9	22	1,0	19	0,9
HFMS1013HR	13	0,4-0,5	2,4	10	24	1,0	21	0,9
HFMS1014HR	14	0,4-0,5	2,2	11	26	1,0	23	0,9
HFMS1015HR	15	0,4-0,5	2,0	12	28	1,0	25	0,9
HFMS1016HR	16	0,4-0,5	1,8	13	30	1,0	27	0,9
HFMS1017HR	17	0,4-0,5	1,7	14	32	0,9	29	0,9
HFMS1018HR	18	0,4-0,5	1,6	15	34	0,9	31	0,9
HFMS1019HR	19	0,4-0,5	1,5	16	36	0,9	33	0,9
HFMS1020HR	20	0,4-0,5	1,4	17	38	0,9	35	0,8
HFMS1021HR	21	0,4-0,5	1,3	18	40	0,9	37	0,8
HFMM1025HR	25	0,4-0,5	1,1	22	48	0,9	45	0,8
HFMM1026HR	26	0,4-0,5	1,0	23	50	0,9	47	0,8
HFMM1030HR	30	0,4-0,5	0,9	27	58	0,9	55	0,8
HFMM1032HR	32	0,4-0,5	0,8	29	62	0,9	59	0,8
HFMM1033HR	33	0,4-0,5	0,8	30	64	0,9	61	0,8

Adjust feed to under 70% of recommended cutting condition when ramping & helical cutting.
In helical ramping, max. cutting depth per 1 helical revolution of cutter should not exceed max. cutting depth as per insert size.
In ramping, max. cutting depth per 1 ramping process of cutter should not exceed max. depth of cut as per used insert size.

Corner R programming

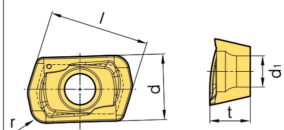
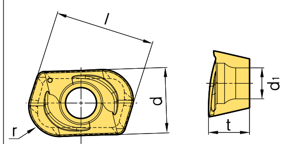
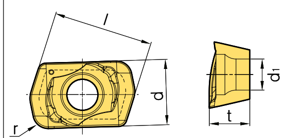
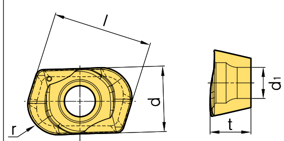
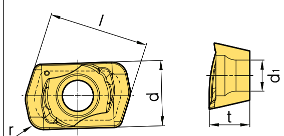
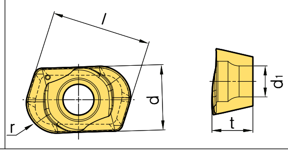
(mm)



Insert	Corner R programming	Cutting conditions		Over cut	Uncut
		Nose-R	Max. ap		
LPMT040210R-MF LPMW040210R LPEW040210R	R1,0 (Standard)	1,0	0,4	0	0,17
	R1,5			0.10	0,08
	R2,0			0,31	0
LPMT040220R-MF LPMW040220R LPEW040220R	R1,0	2,0	0,5	0	0,41
	R1,5			0	0,2
	R2,0 (Standard)			0	0

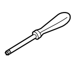
When making CNC program, above overcut & undercut occurs on the corner if entering the correct corner R program value of each insert.
To prevent overcut, you will need to complete a CNC program considering the above overcut.

Inserts

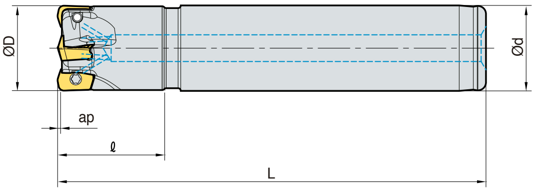
Designation		Usage	Coated							Dimensions (mm)					Depth of cut	Geometrien
			PC3700	PC5300	PC5400	PC2510	PC2505	UNC840	PC9540	l	d	t	r	d1	ap	
LPMT	040210R-MF	Fine finishing	●	▲	▲	▲	○	○	▲	6,4	4,2	2,6	1,0	2,0	0,4	
	040220R-MF		●	▲	▲	▲	○	○	▲	6,4	4,2	2,6	2,0	2,0	0,5	
LPMW	040210R	High hardness material machining		▲	○	▲	▲		▲	6,4	4,2	2,6	1,0	2,0	0,4	
	040220R			▲	▲	▲	▲		▲	6,4	4,2	2,6	2,0	2,0	0,5	
LPEW	040210R	High hardness material machining		▲	○	▲	▲		▲	6,4	4,2	2,6	1,0	2,0	0,4	
	040220R			▲	○	▲	▲		▲	6,4	4,2	2,6	2,0	2,0	0,5	

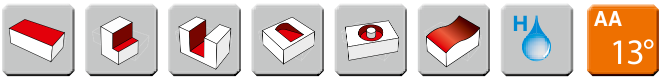
▲: Stock item Europe ●: Stock item Korea ○: Production on demand

Parts

	Screw	Wrench	Holder Dia.
Spezifikation			
Ø08 - Ø33	FTKA01840 FTKA01842	TW06S-A	Ø08 Ø010 - Ø033

HFMS1000 (Shank)





• AR: -4°
• RR: -14° – -7°

(mm)

Designation			ØD	Ød	ℓ	L	ap	kg
HFMS	1008HR-1L10	1	8	10	35	120	0,4-0,5	0,03
HFMS	1008HR-1M10	1	8	10	25	100	0,4-0,5	0,03
HFMS	1008HR-1S10	1	8	10	20	80	0,4-0,5	0,03
HFMS	1010HR-2L08	2	10	8	35	120	0,4-0,5	0,04
HFMS	1010HR-2L10	2	10	10	35	120	0,4-0,5	0,06
HFMS	1010HR-2M08	2	10	8	25	100	0,4-0,5	0,04
HFMS	1010HR-2M10	2	10	10	25	105	0,4-0,5	0,05
HFMS	1010HR-2S08	2	10	8	20	80	0,4-0,5	0,03
HFMS	1010HR-2S10	2	10	10	20	80	0,4-0,5	0,04
HFMS	1011HR-2L10	2	11	10	35	120	0,4-0,5	0,07
HFMS	1011HR-2M10	2	11	10	25	105	0,4-0,5	0,06
HFMS	1011HR-2S10	2	11	10	20	80	0,4-0,5	0,04
HFMS	1012HR-3L10	3	12	10	35	120	0,4-0,5	0,07
HFMS	1012HR-3L12	3	12	12	35	120	0,4-0,5	0,09
HFMS	1012HR-3M10	3	12	10	25	105	0,4-0,5	0,06
HFMS	1012HR-3M12	3	12	12	25	105	0,4-0,5	0,08
HFMS	1012HR-3S10	3	12	10	20	80	0,4-0,5	0,05
HFMS	1012HR-3S12	3	12	12	20	80	0,4-0,5	0,06
HFMS	1013HR-3L12	3	13	12	40	120	0,4-0,5	0,10
HFMS	1013HR-3M12	3	13	12	25	105	0,4-0,5	0,09
HFMS	1013HR-3S12	3	13	12	20	80	0,4-0,5	0,06
HFMS	1014HR-3L12	3	14	12	40	120	0,4-0,5	0,10
HFMS	1014HR-3M12	3	14	12	25	105	0,4-0,5	0,09
HFMS	1014HR-3S12	3	14	12	20	80	0,4-0,5	0,07

Inserts

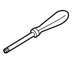
LPMT-MF

LPMW

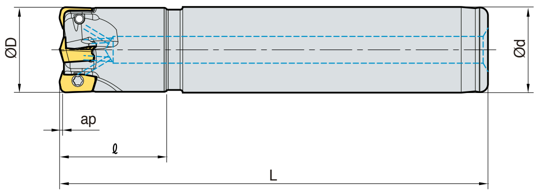
LPEW

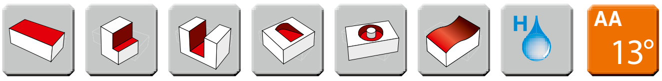
Designation		Usage	Coated						
LPMT	040210R-MF	Finishing	PC3700	PC5300	PC5400	PC2510	PC2505	UNC840	PC9540
	040220R-MF								
LPMW	040210R	High hardness material machining							
	040220R								
LPEW	040210R								
	040220R								

Parts

Spezifikation	Screw	Wrench
		
Ø08 - Ø10 Ø11 - Ø14	FTKA01840 FTKA01842	TW06S-A

HFMS1000 (Shank)





- AR: -4°
- RR: -6°– -3°

(mm)

Designation			ØD	Ød	ℓ	L	ap	kg
HFMS	1015HR-4L12	4	15	12	40	120	0,4-0,5	0,11
HFMS	1016HR-4L16	4	16	16	40	120	0,4-0,5	0,16
HFMS	1016HR-4M16	4	16	16	25	105	0,4-0,5	0,14
HFMS	1016HR-4S16	4	16	16	20	80	0,4-0,5	0,11
HFMS	1017HR-4L16	4	17	16	40	120	0,4-0,5	0,17
HFMS	1017HR-4M16	4	17	16	25	105	0,4-0,5	0,15
HFMS	1017HR-4S16	4	17	16	20	80	0,4-0,5	0,11
HFMS	1018HR-4L16	4	18	16	40	120	0,4-0,5	0,17
HFMS	1019HR-4L16	4	19	16	40	120	0,4-0,5	0,18
HFMS	1020HR-4L20	4	20	20	40	120	0,4-0,5	0,26
HFMS	1020HR-4M20	4	20	20	25	105	0,4-0,5	0,22
HFMS	1020HR-4S20	4	20	20	20	80	0,4-0,5	0,17
HFMS	1020HR-5L20	5	20	20	40	120	0,4-0,5	0,27
HFMS	1020HR-5M20	5	20	20	25	105	0,4-0,5	0,23
HFMS	1020HR-5S20	5	20	20	20	80	0,4-0,5	0,17
HFMS	1021HR-5L20	5	21	20	40	120	0,4-0,5	0,27
HFMS	1021HR-5M20	5	21	20	25	105	0,4-0,5	0,23
HFMS	1021HR-5S20	5	21	20	20	80	0,4-0,5	0,17

Inserts

LPMT-MF

LPMW

LPEW

<table>
<tr><th>Designation</th><th></th><th>Usage</th><th colspan="7">Coated</th></tr>
<tr><td rowspan="2">LPMT</td><td>040210R-MF</td><td rowspan="2">Finishing</td><td rowspan="6">PC3700</td><td rowspan="6">PC5300</td><td rowspan="6">PC5400</td><td rowspan="6">PC2510</td><td rowspan="6">PC2505</td><td rowspan="6">UNC840</td><td rowspan="6">PC9540</td></tr>
<tr><td>040220R-MF</td></tr>
<tr><td rowspan="2">LPMW</td><td>040210R</td><td rowspan="4">High hardness material machining</td></tr>
<tr><td>040220R</td></tr>
<tr><td rowspan="2">LPEW</td><td>040210R</td></tr>
<tr><td>040220R</td></tr>
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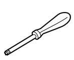
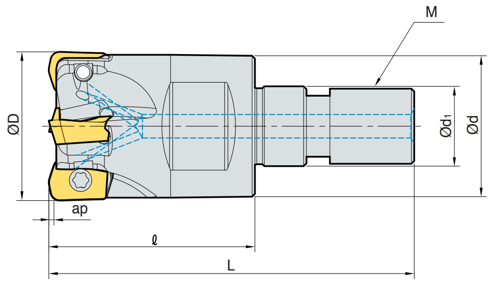
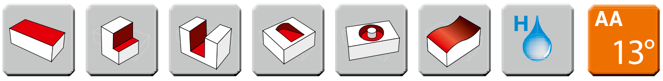
Parts

Spezifikation	Screw 	Wrench 
Ø15 - Ø21	FTKA01842	TW06S-A

HFMM (Modular)





- AR: -4°
- RR: -14° – -3°

(mm)

Designation			ØD	Ød	Ød1	ℓ	L	M	ap	kg
HFMM	1008HR-M06	1	8	9,5	6,5	17	32	M06	0,4-0,5	0,01
HFMM	1010HR-M06	2	10	9,5	6,5	17	32	M06	0,4-0,5	0,01
HFMM	1011HR-M06	2	11	9,5	6,5	17	32	M06	0,4-0,5	0,01
HFMM	1012HR-M06	3	12	11	6,5	19	34	M6B	0,4-0,5	0,01
HFMM	1013HR-M06	3	13	11	6,5	19	34	M6B	0,4-0,5	0,01
HFMM	1016HR-M08	4	16	14,5	8,5	22	39	M08	0,4-0,5	0,03
HFMM	1017HR-M08	4	17	14,5	8,5	22	39	M08	0,4-0,5	0,03
HFMM	1020HR-M10	5	20	18	10,5	25	46	M10	0,4-0,5	0,06
HFMM	1021HR-M10	5	21	18	10,5	25	46	M10	0,4-0,5	0,06
HFMM	1025HR-M12	6	25	23	12,5	27	51	M12	0,4-0,5	0,11
HFMM	1026HR-M12	6	26	23	12,5	27	51	M12	0,4-0,5	0,11
HFMM	1030HR-M16	7	30	29	17	30	60	M16	0,4-0,5	0,17
HFMM	1032HR-M16	8	32	29	17	30	60	M16	0,4-0,5	0,18
HFMM	1033HR-M16	8	33	29	17	30	60	M16	0,4-0,5	0,18

Inserts

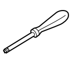
LPMT-MF

LPMW

LPEW

Designation		Usage	Coated						
LPMT	040210R-MF	Finishing	PC3700	PC5300	PC5400	PC2510	PC2505	UNC840	PC9540
	040220R-MF								
LPMW	040210R	High hardness material machining							
	040220R								
LPEW	040210R								
	040220R								

Parts

Spezifikation	Screw 	Wrench 
Ø08 - Ø10 Ø11 - Ø33	FTKA01840 FTKA01842	TW06S-A

MAT (Steel Shank type)

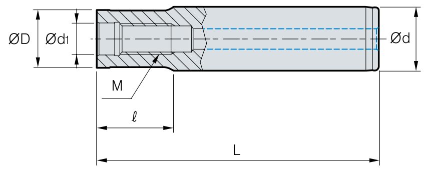


Fig. 1

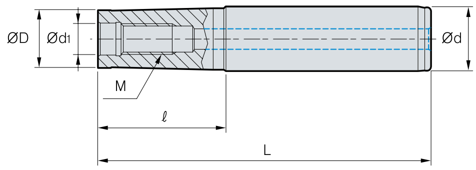


Fig. 2

(mm)

Designation		ØD	Ød	Ød1	ℓ	L	M	Fig.
MAT	**M06-020-S10S**	9,5	10	6,5	20	70	M06	1
MAT	**M6B-020-S12S**	11,0	12	6,5	20	76	M06	1
MAT	**M6B-040-S12S**	11,0	12	6,5	40	96	M06	1
MAT	**M08-020-S16S**	14,5	16	8,5	20	80	M08	1
MAT	**M10-030-S20S**	18,0	20	10,5	30	100	M10	1
MAT	**M12-030-S25S**	22,5	25	12,5	29	110	M12	1
MAT	**M16-035-S32S**	28,5	32	17,0	35	125	M16	1
MAT	**M06-040-S12T**	9,5	12	6,5	40	96	M06	2
MAT	**M06-065-S16T**	9,5	16	6,5	65	125	M06	2
MAT	**M6B-065-S16T**	11,0	16	6,5	65	125	M06	2
MAT	**M6B-080-S16T**	11,0	16	6,5	80	140	M06	2
MAT	**M08-040-S16T**	14,5	16	8,5	40	100	M08	2
MAT	**M08-065-S16T**	14,5	16	8,5	65	125	M08	2
MAT	**M08-080-S20T**	14,5	20	8,5	80	150	M08	2
MAT	**M08-110-S25T**	14,5	25	8,5	110	190	M08	2
MAT	**M10-050-S20T**	18,0	20	10,5	50	120	M10	2
MAT	**M10-070-S20T**	18,0	20	10,5	70	140	M10	2
MAT	**M10-090-S25T**	18,0	25	10,5	90	170	M10	2
MAT	**M10-110-S25T**	18,0	25	10,5	110	190	M10	2
MAT	**M10-130-S32T**	18,0	32	10,5	130	220	M10	2
MAT	**M12-050-S25T**	22,5	25	12,5	50	130	M12	2
MAT	**M12-070-S25T**	22,5	25	12,5	70	150	M12	2
MAT	**M12-090-S25T**	22,5	25	12,5	90	170	M12	2
MAT	**M12-110-S32T**	22,5	32	12,5	110	200	M12	2
MAT	**M12-175-S40T**	22,5	40	12,5	175	300	M12	2
MAT	**M16-055-S32T**	28,5	32	17,0	55	145	M16	2
MAT	**M16-080-S32T**	28,5	32	17,0	80	170	M16	2
MAT	**M16-120-S32T**	28,5	32	17,0	120	210	M16	2
MAT	**M16-175-S40T**	28,5	40	17,0	175	300	M16	2

S: Straight Neck Adaptor, T: Taper Neck Adaptor

MAT-C (Carbide Shank type)

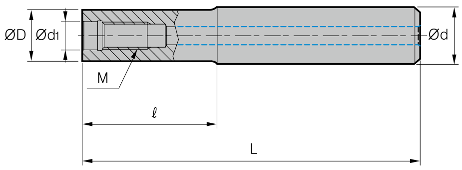


Fig. 1

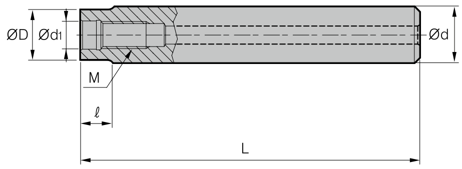


Fig. 2

(mm)

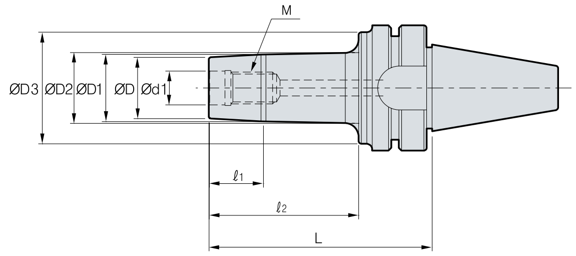
Designation	ØD	Ød	Ød1	ℓ	L	M	Fig.
MAT M06-030-S10S-C-80	9.5	10	6.5	30	80	M06	1
MAT M06-050-S10S-C-100	9.5	10	6.5	50	100	M06	1
MAT M06-080-S10S-C-130	9.5	10	6.5	80	130	M06	1
MAT M6B-030-S10S-C-80	11	12	6.5	30	80	M06	1
MAT M6B-050-S10S-C-100	11	12	6.5	50	100	M06	1
MAT M6B-080-S10S-C-130	11	12	6.5	80	130	M06	1
MAT M08-080-S16S-C	14,5	16	8,5	80	150	M08	1
MAT M08-110-S16S-C	14,5	16	8,5	110	180	M08	1
MAT M08-150-S16S-C	14,5	16	8,5	150	250	M08	1
MAT M08-010-S16S-C-150	14,5	16	8,5	10	150	M08	2
MAT M08-010-S16S-C-180	14,5	16	8,5	10	180	M08	2
MAT M08-010-S16S-C-250	14,5	16	8,5	10	250	M08	2
MAT M10-090-S20S-C	18,0	20	10,5	90	170	M10	1
MAT M10-110-S20S-C	18,0	20	10,5	110	200	M10	1
MAT M10-175-S20S-C	18,0	20	10,5	175	300	M10	1
MAT M10-010-S20S-C-170	18,0	20	10,5	10	170	M10	2
MAT M10-010-S20S-C-200	18,0	20	10,5	10	200	M10	2
MAT M10-010-S20S-C-300	18,0	20	10,5	10	300	M10	2
MAT M12-090-S25S-C	22,5	25	12,5	90	170	M12	1
MAT M12-110-S25S-C	22,5	25	12,5	110	200	M12	1
MAT M12-175-S25S-C	22,5	25	12,5	175	300	M12	1
MAT M12-015-S25S-C-170	22,5	25	12,5	15	170	M12	2
MAT M12-015-S25S-C-200	22,5	25	12,5	15	200	M12	2
MAT M12-015-S25S-C-300	22,5	25	12,5	15	300	M12	2
MAT M16-090-S32S-C	28,5	32	17,0	90	180	M16	1
MAT M16-120-S32S-C	28,5	32	17,0	120	210	M16	1
MAT M16-175-S32S-C	28,5	32	17,0	175	300	M16	1
MAT M16-020-S32S-C-180	28,5	32	17,0	20	180	M16	2
MAT M16-020-S32S-C-210	28,5	32	17,0	20	210	M16	2
MAT M16-020-S32S-C-300	28,5	32	17,0	20	300	M16	2

Modules

FMRM Type	LBE-MHD Type	PAM/PAXM Type	AMM Type	RM3 Type
				

RM4/RM4Z Type	HFMM Type	HRMM Type	HRMD Type	GBEM Type
				

BT30 / BT40 / BT50



(mm)

Designation		ØD	ØD1	ØD2	ØD3	Ød1	ℓ1	ℓ2	L	M
BT30	**MAT-M06-053**	11	11,7	13	30	6,5	5	21	53	M6x1.0
BT30	**MAT-M08-057**	14,5	15,7	17,5	35	8,5	7	25	57	M8x1.25
BT30	**MAT-M10-062**	18	19,7	24	38	10,5	7	30	62	M10x1.5
BT30	**MAT-M12-067**	23	24,7	27,5	41	12,5	10	35	67	M12x1.75
BT30	**MAT-M16-067**	29	31,7	33,5	41	17	10	35	67	M16x2.0
BT40	**MAT-M06-062**	11	11,7	14	40	6,5	5	25	62	M6x1.0
BT40	**MAT-M06-077**	11	11,7	14	40	6,5	5	40	77	M6x1.0
BT40	**MAT-M06-092**	11	11,7	14	40	6,5	5	55	92	M6x1.0
BT40	**MAT-M08-067**	14,5	15,7	19	44	8,5	7	30	67	M8x1.25
BT40	**MAT-M08-082**	14,5	15,7	19	44	8,5	7	45	82	M8x1.25
BT40	**MAT-M08-097**	14,5	15,7	19	44	8,5	7	60	97	M8x1.25
BT40	**MAT-M10-072**	18	19,7	23	50	10,5	10	35	72	M10x1.5
BT40	**MAT-M10-087**	18	19,7	23	50	10,5	10	50	87	M10x1.5
BT40	**MAT-M10-102**	18	19,7	23	50	10,5	10	65	102	M10x1.5
BT40	**MAT-M12-077**	23	24,7	30	55	12,5	10	40	77	M12x1.75
BT40	**MAT-M12-092**	23	24,7	30	55	12,5	13	55	92	M12x1.75
BT40	**MAT-M12-107**	23	24,7	30	55	12,5	13	70	107	M12x1.75
BT40	**MAT-M16-077**	29	31,7	37	55	17	13	40	77	M16x2.0
BT40	**MAT-M16-092**	29	31,7	37	55	17	13	55	92	M16x2.0
BT40	**MAT-M16-107**	29	31,7	37	55	17	13	70	107	M16x2.0
BT50	**MAT-M06-083**	11	11,7	15	40	6,5	5	35	83	M6x1.0
BT50	**MAT-M06-098**	11	11,7	15	40	6,5	5	50	98	M6x1.0
BT50	**MAT-M06-113**	11	11,7	15	40	6,5	5	65	113	M6x1.0
BT50	**MAT-M08-088**	14,5	15,7	20	45	8,5	7	40	88	M8x1.25
BT50	**MAT-M08-103**	14,5	15,7	20	45	8,5	7	55	103	M8x1.25
BT50	**MAT-M08-118**	14,5	15,7	20	45	8,5	7	70	118	M8x1.25
BT50	**MAT-M10-093**	18	19,7	25	55	10,5	10	45	93	M10x1.5
BT50	**MAT-M10-113**	18	19,7	25	55	10,5	10	65	113	M10x1.5
BT50	**MAT-M10-128**	18	19,7	25	55	10,5	10	80	128	M10x1.5
BT50	**MAT-M12-103**	23	24,7	33	65	12,5	10	55	103	M12x1.75
BT50	**MAT-M12-118**	23	24,7	33	65	12,5	13	70	118	M12x1.75
BT50	**MAT-M12-133**	23	24,7	33	65	12,5	13	85	133	M12x1.75
BT50	**MAT-M16-103**	29	31,7	41	85	17	13	55	103	M16x2.0
BT50	**MAT-M16-118**	29	31,7	41	85	17	13	70	118	M16x2.0
BT50	**MAT-M16-133**	29	31,7	41	85	17	13	85	133	M16x2.0

Notes

0 5 25mm

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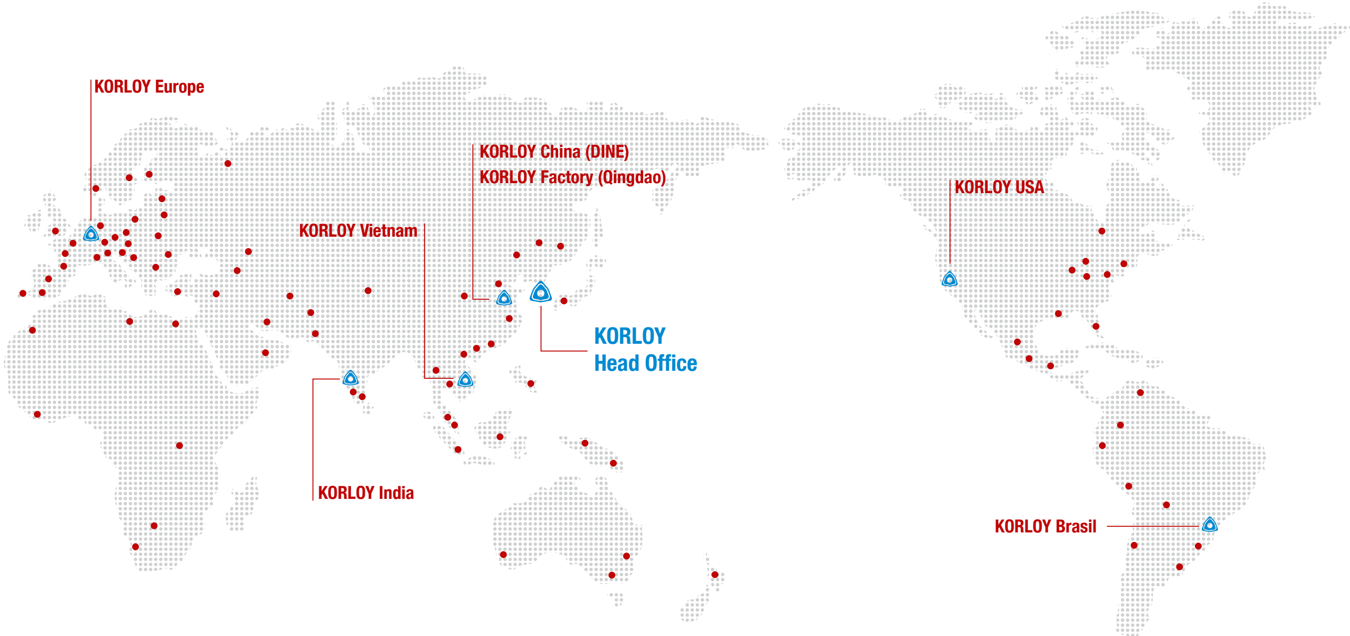

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