PRODUCT NEWS

PN-E-006

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DIJET

High Precision Indexable Ball Nose End Mill & Radius End Mill

MIRROR Series

BNM&RNM

"Mirror Ball & Mirror Radius"

reich ADVANCED TECHNOLOGY TOOLS Wir verändern.

DIJET GmbH

www.dijet.de

C - Body | Slotting | Copy Milling | Pocket Milling

BNM TYPE

Shank Type

High Precision Indexable Ball Nose End Mill

- Insert radius from accuracy is **below ±0.010 mm** when fixed to the holder. (accuracy **below ±0.006 mm** in insert alone).

Fig.1

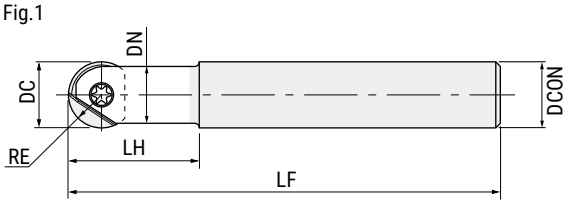
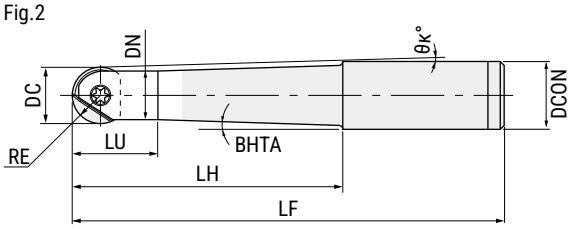


Fig.2



Cat.No.	Stock	Dimensions (mm)									Parts		Inserts	Fig.
		DC	RE	LU	LH	LF	DN	BHTA	θk	DCON	Screws	Wrench		
BNMS-060017S-S06C	●	6	3	–	17	60	5.5	–	–	6	FSW-2005H	A-06	BNM-060	1
BNMS-060030T-S10C	●	6	3	15	30	80	5.5	6°	4°14'	10				2
BNMM-060035S-S06C	●	6	3	–	35	92	5.5	–	–	6				1
BNML-060017S-S06C	●	6	3	–	17	120	5.5	–	–	6				1
BNMS-080025S-S08C	●	8	4	–	25	90	7.5	–	–	8	FSW-2506H	A-07	BNM-080 RNM-080	1
BNMM-080035S-S08C	●	8	4	–	35	92	7.5	–	–	8				1
BNML-080075S-S08C	●	8	4	–	75	140	7.5	–	–	8				1
BNML-080095S-S08C	●	8	4	–	95	160	7.5	–	–	8				1
BNML-080075T-S12C	●	8	4	20	75	132	7.5	2°	1°37'	12				2
BNMS-100030S-S10C	●	10	5	–	30	100	9.5	–	–	10	FSW-3007H	A-08	BNM-100 RNM-100	1
BNMM-100043S-S10C	●	10	5	–	43	100	9.5	–	–	10				1
BNMS-120028S-S12C	●	12	6	–	28	84	11.5	–	–	12	KSW-3509	A-15	BNM-120 RNM-120	1
BNMM-120053S-S12C	●	12	6	–	53	110	11.5	–	–	12				1

Note) All cutter bodies are supplied without Inserts, Wrench and MOLY. ● : Stocked Items

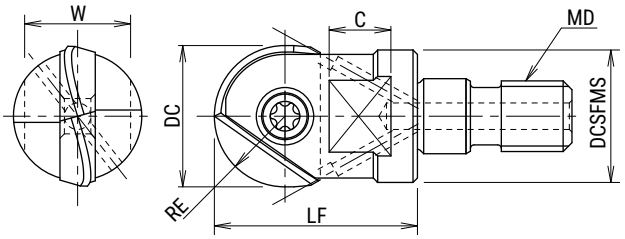
Please note that as of May 15, 2026, BNM C-body type cutter bodies with Ø ≥ 10 mm (excluding 4 tool numbers listed above) have been discontinued and are no longer available.
As an alternative, we recommend the MBX type body in combination with MSN carbide shank holders.

Screw	Torque(N.m)
FSW-2005H	0.5
FSW-2506H	0.9
FSW-3007H	1.2
KSW-3509	3.0

Through coolant hole | Slotting | Copy Milling | Pocket Milling

MBX TYPE Modular Type

- Insert radius from accuracy is **below ±0.010 mm** when fixed to the holder (accuracy **below ±0.006 mm** in insert alone).
- O.D. runout is below 0.015 mm when fixed to MSN carbide shank holder.



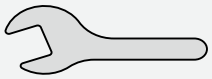
Cat.No.	Stock	Dimensions (mm)							Parts		Inserts
		DC	RE	LF	DCSFMS	MD	C	W	Screws	Wrench	
MBX-100-M6	●	10	5	18	9.7	M6	6.5	8	FSW-3007H	A-08	BNM-100
MBX-120-M6	●	12	6	20	11.5	M6	6.5	8	KSW-3509	A-15	BNM-120
MBX-160-M8	●	16	8	23	15	M8	8	12	FSW-4013H	A-15	BNM-160
MBX-200-M10	●	20	10	30	19	M10	8	14	FSW-5016H	A-20W	BNM-200
MBX-250-M12	●	25	12.5	35	24	M12	10	17	FSW-6020	A-30	BNM-250
MBX-300-M16	●	30	15	43	29	M16	12.5	22	KSW-8025	A-30	BNM-300/320

Note) 1. All cutter bodies are supplied without Inserts, Wrench and MOLY.
2. When Ø32 insert is mounted on a DC30 holder, dimension *LF is 1 mm longer than the value above*.

● : Stocked Items

Screw	Torque(N.m)
FSW-3007H	1.2
KSW-3509	3.0
FSW-4013H	3.0
FSW-5016H	4.0
FSW-6020	6.0
KSW-8025	6.0

■ Spanner

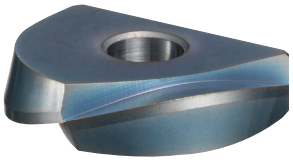


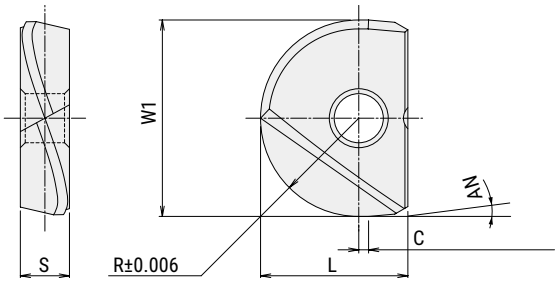
Cat.No.	MD	Torque	width across flat	Thickness	Length
DS-08	M6	8.0 N.m	8	4	85
DS-12	M8	16 N.m	12	4	93

BNM-TG TYPE — Helical geometry

good for finishing hard material/weld up to 60 HRC

Radius accuracy ± 0.006 mm





Cat.No.	PVD Coating	Dimensions(mm)					
	DH102	R	L	W1	S	C	AN
BNM-060-TG	●	3	5	6	2	–	10°
BNM-080-TG	●	4	7	8	2.4	0.5	5°
BNM-100-TG	●	5	8.5	10	2.6	1	5°
BNM-120-TG	●	6	10	12	3	1.5	5°
BNM-160-TG	●	8	12	16	4	1.5	5°
BNM-200-TG	●	10	15	20	5	2	5°
BNM-250-TG	●	12.5	18.5	25	6	2	5°
BNM-300-TG	○	15	22.5	30	7	2	5°
BNM-320-TG	●	16	32	32	7	2	5°

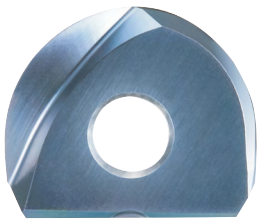
Note) 2 inserts per case.

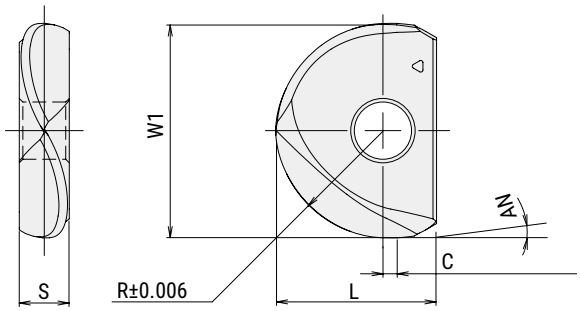
● : Stocked Items ○ : Stock in Japan

BNM-TS TYPE — High Helix geometry

good for semi-finishing & finishing hard materials up to 60HRC

Radius accuracy ± 0.006 mm





Cat.No.	PVD Coating	Dimensions(mm)					
	DH102	R	W1	L	S	C	AN
BNM-060-TS	●	3	6	5	2	–	10°
BNM-080-TS	●	4	8	7	2.4	0.5	5°
BNM-100-TS	●	5	10	8.5	2.6	1	5°
BNM-120-TS	●	6	12	10	3	1.5	5°
BNM-160-TS	●	8	16	12	4	1.5	5°
BNM-200-TS	●	10	20	15	5	2	5°
BNM-250-TS	●	12.5	25	18.5	6	2	5°
BNM-300-TS	○	15	30	22.5	7	2	5°
BNM-320-TS	●	16	32	23.5	7	2	5°

Note) 2 inserts per case.

● : Stocked Items ○ : Stock in Japan

BNM-SS
TYPE

Sharp Helical geometry

good for finishing and semi finishing general steel , mold steel & stainless steel

Radius accuracy
± 0.006 mm

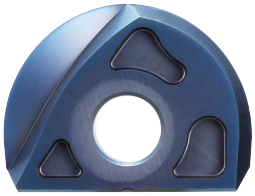


Fig 1

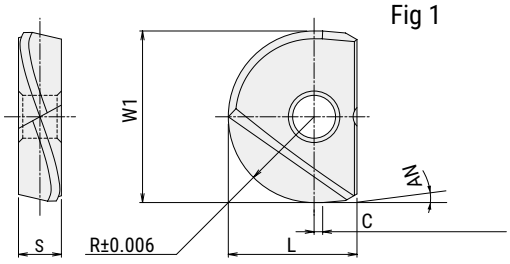
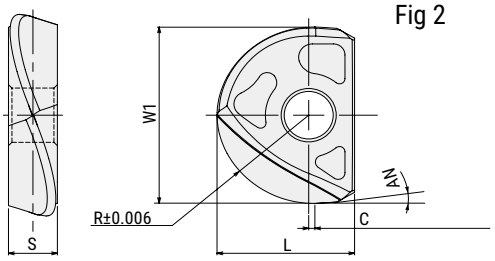


Fig 2



Cat.No.	PVD Coating		Dimensions(mm)						Fig.
	DH108	DS108	R	L	W1	S	C	AN	
BNM-060-SS	●	●	3	5	6	2	–	10°	1
BNM-080-SS	●	●	4	7	8	2.4	0.5	5°	1
BNM-100-SS	●	●	5	8.5	10	2.6	1	5°	1
BNM-120-SS	●	●	6	10	12	3	1	5°	1
BNM-160-SS	●	●	8	12	16	4	1	5°	1
BNM-200-SS	●	●	10	15	20	5	1	5°	2
BNM-250-SS	●	●	12.5	18.5	25	6	1	5°	2
BNM-300-SS	○	○	15	22.5	30	7	1	5°	2
BNM-320-SS	●	●	16	23.5	32	7	1	5°	2

Note) 2 inserts per case.

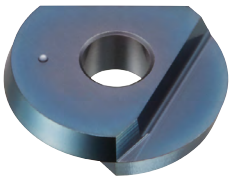
● : Stocked Items ○ : Stock in Japan

BNM TYPE

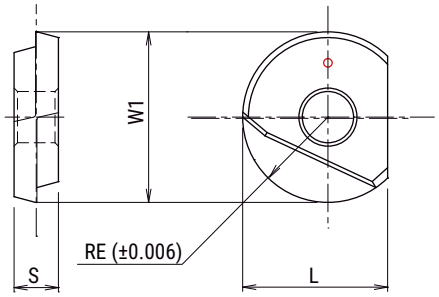
Neutral style geometry

strictly for finishing applications

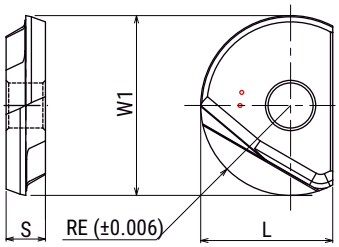
Radius accuracy
± 0.006 mm



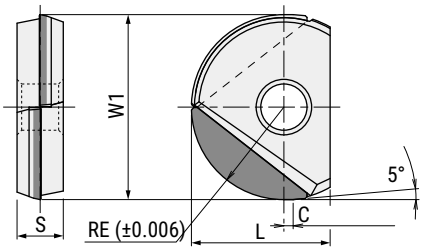
● DH111 (W1≤10)



● DH111 (W1≥12)



● CBN



Cat.No.	PVD Coating	CBN	Dimensions(mm)				
	DH111	JBN245	R	W1	L	C	S
BNM-060	●		3	6	5	–	2
BNM-080	●		4	8	7	–	2.4
BNM-100	●		5	10	8.5	–	2.6
BNM-120	●		6	12	10	–	3
BNM-160	●	○	8	16	12	0.8	4
BNM-200	●	○	10	20	15	1	5
BNM-250	●	○	12.5	25	18.5	1	6
BNM-300	○	○	15	30	22.5	1	7
BNM-320	●		16	32	23.5	–	7

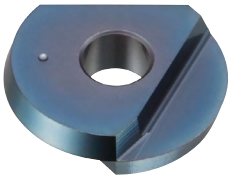
Note) DH111: 2 inserts per case ; JBN245: 1 insert per case

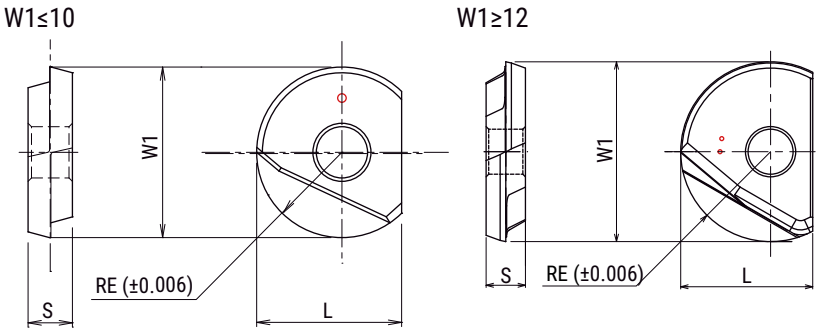
● : Stocked Items ○ : Stock in Japan

BNM TYPE — Neutral style geometry

good for finishing non-ferrous metals such as aluminium, copper

Radius accuracy ± 0.006 mm





Cat.No.	Diamond Coating	Uncoated	Dimensions(mm)				
	JC10000	KT9	R	W1	L	C	S
BNM-060	○	●	3	6	5	–	2
BNM-080	○	●	4	8	7	–	2.4
BNM-100	○	●	5	10	8.5	–	2.6
BNM-120	○	●	6	12	10	–	3
BNM-160	○	●	8	16	12	0.8	4
BNM-200	○	●	10	20	15	1	5

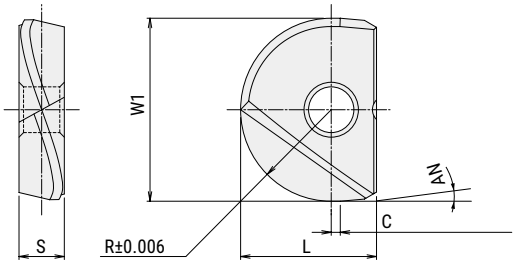
Note) KT9: 2 inserts per case ; JC10000: 1 insert per case

● : Stocked Items ○ : Stock in Japan

BNM-S TYPE — Sharp Helical geometry

good for semi-finishing & finishing non-ferrous metals such as aluminium, copper

Radius accuracy ± 0.006 mm



Cat.No.	Uncoated	DLC Coating	Dimensions (mm)					
	FZ05	JC20003	R	L	W1	S	C	AN
BNM-060-S	●	○	3	5	6	2	–	10°
BNM-080-S	●	○	4	7	8	2.4	0.5	5°
BNM-100-S	●	○	5	8.5	10	2.6	1	5°
BNM-120-S	●	○	6	10	12	3	1	5°
BNM-160-S	●	○	8	12	16	4	1	5°
BNM-200-S	●	○	10	15	20	5	1	5°

Note) 2 inserts per case.

● : Stocked Items ○ : Stock in Japan

■ Controlled Torque Wrenches (with replaceable blade)

Wrenches are pre-set to protect screws and bodies against damage during both the tightening and loosening process

● Controlled Torque Wrenches (with replaceable blade)

Cat. No.	Torque(N.m)	crew torque	Replacement blade	Applicable inserts
TQC-06	T6	0.5Nm	B-06	BNM-060… HRM-060…, FRM-060…
TQC-07	T7	0.9Nm	B-07	BNM-080… RNM-080…, HRM-080/090…, FRM-080…
TQC-08	T8	1.2Nm	B-08	BNM-100… RNM-100…, HRM-100/110…, FRM-100…
TQC-10	T10	2.0Nm	B-10	BNM-120… RNM-120…, HRM-120/130…, FRM-120/130…

Insert Mounting Information

1. Make sure the insert seat on body is carefully cleaned.
2. Make sure insert itself is clean, especially hole and face location.
3. Change insert screw when threads start to wear. (approximately every 10-15 inserts)
4. Do not over tighten screw, see table for torque specifications.

■ Grade Selection Guide

Material	BNM				BNM-S		BNM -SS		BNM -TG	BNM -TS
	DH111	JC10000	KT9	JBN245	FZ05	JC20003	DH108	DS108	DH102	DH102
Carbon steel below 250HB	◎☆						◎			
Tool & Die steel below 255HB	◎☆						◎			
Mold steel 30 - 36HRC	○						◎			
Mold steel 38 - 43HRC	○						◎			
Hardened die steel 42 - 52HRC	○						◎		○	○
Hardened die steel 55 - 62HRC							○		◎	◎
HSS 63 - 70HRC									◎	◎
Grey cast iron 160 - 260HB	○			★			○		◎	◎
Nodular cast iron 170 - 300HB	○			★			○		◎	◎
Austenitic stainless steel (304,316,317) 17Cr	◎☆						◎			
Ferritic & martensitic stainless steel (403,420J2,430) 13Cr	◎☆						◎			
Aluminium alloy (A5052)			◎		◎	◎				
Aluminium alloy (A7075)			◎		◎	◎				
Aluminium alloy Si below13%			◎		◎	◎				
Copper alloy (C1100)			◎		◎	◎				
Graphite		○				◎				
Titanium alloy (Ti-6Al-4V) 35 - 43HRC	◎☆						◎	◎		
Heat resistant alloy (INCO718) 35 - 43HRC	◎☆						◎			

◎ : First choice ○ : Second choice ☆ : Wet cutting ★ : High speed machining

■ Recommended Cutting Conditions | BNM / BNM-SS / BNM-TS / BNM-TG type

Material	Grade		Tool dia. (mm)								
			6	8	10	12	16	20	25	30	32
Carbon steel below 250HB	BNM (DH111) BNM-SS (DH108)	***n*** **(min^{-1})**	18,570	13,930	12,730	10,610	8,950	7,160	6,370	5,310	4,970
		Vf **(mm/min)**	5,570	4,180	5,090	4,240	5,370	5,010	4,460	3,720	3,480
		ap (mm)	0.1	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15
		ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3	0.4	0.5	0.5
Tool & Die steel below 255HB	BNM (DH111) BNM-SS (DH108)	***n*** **(min^{-1})**	18,570	13,930	12,730	10,610	8,950	7,160	6,370	5,310	4,970
		Vf **(mm/min)**	5,570	4,180	5,090	4,240	5,370	5,010	4,460	3,720	3,480
		ap (mm)	0.1	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15
		ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3	0.4	0.5	0.5
Mold steel 30 - 36HRC	BNM (DH111) BNM-SS (DH108)	***n*** **(min^{-1})**	18,570	13,930	12,730	10,610	8,950	7,160	6,370	5,310	4,970
		Vf **(mm/min)**	5,570	4,180	5,090	4,240	5,370	5,010	4,460	3,720	3,480
		ap (mm)	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3	0.4	0.5	0.5
Mold steel 38 - 43HRC	BNM (DH111) BNM-SS (DH108)	***n*** **(min^{-1})**	15,920	11,940	11,140	9,280	7,960	6,370	5,730	4,770	4,480
		Vf **(mm/min)**	3,180	2,390	3,340	2,780	3,980	3,820	3,440	2,860	2,690
		ap (mm)	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3	0.4	0.5	0.5
Hardened die steel 42 - 52HRC	BNM (DH111) BNM-SS (DH108)	***n*** **(min^{-1})**	13,260	9,950	9,550	7,960	6,960	5,570	5,090	4,240	3,980
		Vf **(mm/min)**	2,650	1,990	2,870	2,390	3,480	3,340	3,050	2,540	2,390
		ap (mm)	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3	0.4	0.5	0.5
Hardened die steel 55 - 62HRC	BNM-TG (DH102) BNM-TS (DH102)	***n*** **(min^{-1})**	10,610	7,960	7,960	6,630	5,970	4,770	4,460	3,710	3,480
		Vf **(mm/min)**	2,120	1,590	2,390	1,990	2,990	2,860	2,680	2,230	2,090
		ap (mm)	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		ae (mm)	0.1	0.15	0.15	0.2	0.25	0.3	0.4	0.5	0.5
HSS 63 - 70HRC	BNM-TG (DH102) BNM-TS (DH102)	***n*** **(min^{-1})**	7,960	5,970	6,370	5,310	4,970	3,980	3,820	3,180	2,980
		Vf **(mm/min)**	1,590	1,190	1,270	1,060	1,490	1,190	1,530	1,270	1,190
		ap (mm)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
		ae (mm)	0.05	0.1	0.1	0.1	0.1	0.15	0.2	0.3	0.3
Grey & Nodular cast iron below 300 HB	BNM (DH111) BNM-TG BNM-TS (DH102)	***n*** **(min^{-1})**	18,570	13,930	12,730	10,610	8,950	7,160	6,370	5,310	4,970
		Vf **(mm/min)**	7,430	5,570	6,370	5,310	6,270	5,730	5,100	4,250	3,980
		ap (mm)	0.1	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15
		ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3	0.4	0.5	0.5
Stainless steel	BNM (DH111) BNM-SS (DH108)	***n*** **(min^{-1})**	18,570	13,930	12,730	10,610	8,950	7,160	6,370	5,310	4,970
		Vf **(mm/min)**	5,570	4,180	5,090	4,240	5,370	5,010	4,460	3,720	3,480
		ap (mm)	0.1	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15
		ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3	0.4	0.5	0.5
Titanium alloy (Ti-6Al-4V)	BNM (DH111) BNM-SS (DS108)	***n*** **(min^{-1})**	10,610	7,960	9,550	7,960	5,970	4,770	4,460	3,710	3,480
		Vf **(mm/min)**	3,180	2,390	3,820	3,180	2,990	2,860	2,680	2,230	2,090
		ap (mm)	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		ae (mm)	0.1	0.15	0.15	0.2	0.25	0.3	0.4	0.5	0.5
Heat resistant alloy (INCO718)	BNM (DH111) BNM-SS (DS108)	***n*** **(min^{-1})**	7,960	5,970	6,370	5,310	4,970	3,980	3,820	3,180	2,980
		Vf **(mm/min)**	1,590	1,190	1,910	1,590	1,990	1,590	1,530	1,270	1,190
		ap (mm)	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.15	0.2	0.3	0.3

Note) 1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. These cutting conditions represent stable machining at length 3 x Dc.
Please adjust cutting conditions according to overhang length.
3. In case of chatter ocurring, recommended to reduce ap or feed.
4. Use air blow.

Overhang length	***n*** **(min^{-1})**	***Vf*** **(mm/min)**
~3Dc	100%	100%
3Dc~5Dc	70%	70%
5Dc~10Dc	50%	50%

■ Recommended Cutting Conditions | BNM (CBN) type

Material	Cat.No	Grade		Tool dia.(mm)			
				16	20	25	30
Grey cast iron 160- 260 HB	BNM	JBN245	***n*** **(min^{-1})**	23,870	19,100	15,280	12,730
			Vf **(mm/min)**	11,940	11,460	9,170	8,910
			ap (mm)	0.05	0.05	0.05	0.05
			ae (mm)	0.25	0.3	0.4	0.5
Nodular cast iron 170- 300 HB	BNM	JBN245	***n*** **(min^{-1})**	19,890	15,920	12,730	10,610
			Vf **(mm/min)**	7,960	7,960	6,370	6,370
			ap (mm)	0.05	0.05	0.05	0.05
			ae (mm)	0.25	0.3	0.4	0.5

Note
1. These cutting conditions represent on high speed machine.
2. These cutting conditions represent stable machining at length 3 x Dc.
   Please adjust cutting conditions according to overhang length.
3. Use carbide shank holder.
4. For better surface finish , mist coolant is recommended.
5. Plunging is not recommended.
6 Please keep the stock uniform by pre-machining.

Overhang length	***n*** **(min^{-1})**	***Vf*** **(mm/min)**
~3Dc	100%	100%
3Dc~5Dc	70%	70%
5Dc~10Dc	50%	50%

■ Recommended Cutting Conditions | BNM / BNM-S type

Material	Cat.No	Grade		Tool dia.(mm)					
				6	8	10	12	16	20
Aluminium	BNM BNM-S	KT9 FZ05 JC20003	***n*** **(min^{-1})**	23,870	17,900	15,920	13,260	10,940	8,750
			Vf **(mm/min)**	9,550	7,160	7,960	6,630	7,660	7,000
			ap (mm)	0.2	0.2	0.25	0.25	0.25	0.25
			ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3
Copper alloy	BNM BNM-S	KT9 FZ05 JC20003	***n*** **(min^{-1})**	23,870	17,900	15,920	13,260	10,940	8,750
			Vf **(mm/min)**	9,550	7,160	7,960	6,630	7,660	7,000
			ap (mm)	0.15	0.15	0.2	0.2	0.2	0.2
			ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3
Graphite	BNM BNM-S	JC10000 JC20003	***n*** **(min^{-1})**	23,870	17,900	15,920	13,260	10,940	8,750
			Vf **(mm/min)**	9,550	7,160	7,960	6,630	7,660	7,000
			ap (mm)	0.15	0.15	0.2	0.2	0.2	0.2
			ae (mm)	0.1	0.15	0.2	0.2	0.25	0.3

Note) 1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. These cutting conditions represent stable machining at length 3 x Dc.
   Please adjust cutting conditions according to overhang length.
3. In case of chatter ocurring, recommended to reduce ap or feed.
4. Use air blow.

Overhang length	***n*** **(min^{-1})**	***Vf*** **(mm/min)**
~3Dc	100%	100%
3Dc~5Dc	70%	70%
5Dc~10Dc	50%	50%

C-Body | Face Milling | Shoulder | Copy Milling | Pocket Milling | Helical Inter-

RNM TYPE

Shank Type
High Precision Indexable Radius End Mill

● Corner radius accuracy below ±0.010mm

Fig.1

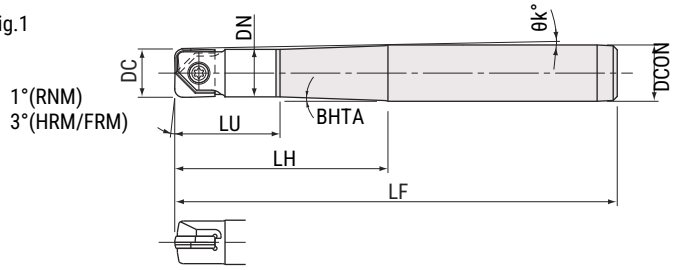
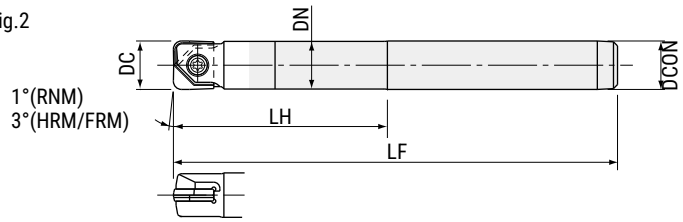


Fig.2



Cat.No.	Stock	Dimensions (mm)								Parts		Inserts	Fig.
		DC	LU	LH	LF	DN	BHTA	θk	DCON	Screws	Wrench		
RNMS-060015U-S06C	●	6	–	15	60	5.7	–	–	6	FSW-2005H	A-06	RNM-060 HRM-060 FRM-060	2
RNMM-060030U-S06C	●	6	–	30	80	5.7	–	–	6				2
RNMS-080020U-S08C	●	8	–	20	70	7.6	–	–	8	FSW-2506H	A-07	RNM-080 HRM-080/090 FRM-080	2
RNMM-080040U-S08C	●	8	–	40	90	7.6	–	–	8				2
RNMM-080053T-S12C	●	8	20	53	110	7.8	2°	2°12'	12				1
RNML-080075S-S08C	●	8	–	75	140	7.8	–	–	8				2
RNMM-100050S-S10C	●	10	–	50	110	9.8	–	–	10	FSW-3007H	A-08	RNM-100 HRM-100/110 FRM-100	2
RNML-100075S-S10C	●	10	–	75	140	9.8	–	–	10				2
RNMM-120053S-S12C	●	12	–	53	110	11.8	–	–	12	KSW-3509	A-15	RNM-120 HRM-120/130 FRM-120	2
RNML-120095S-S12C	●	12	–	95	160	11.8	–	–	12				2

Note) All cutter bodies are supplied without Inserts, Wrench and MOLY.

● : Stocked Items

Please note that as of May 15, 2026, RNM C-body type cutter bodies with Ø ≥ 10 mm (excluding 4 tool numbers listed above) have been discontinued and are no longer available.
As an alternative, we recommend the MRX type body in combination with MSN carbide shank holders.

Screw	Torque (N.m)
FSW-2005H	0.5
FSW-2506H	0.9
FSW-3007H	1.2
KSW-3509	3.0

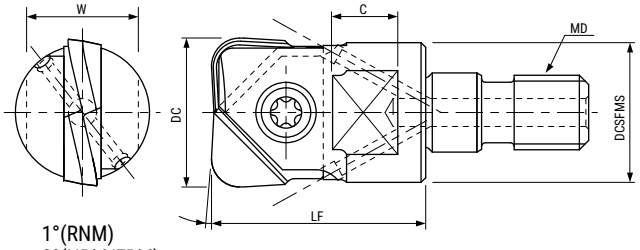
MRX TYPE

Modular Type

High Precision Indexable Radius End Mill

Through coolant hole | Face Milling | Shoulder | Copy Milling | Pocket Milling | Helical Inter-

- RNM / Corner radius accuracy below ±0.010mm
- HRM / Corner radius accuracy ±0.015 mm
- FRM / Corner radius accuracy ±0.010 mm
- O.D. run out / MRX + MSN carbide shank below ±0.015mm



Cat.No.	Stock	Dimensions (mm)						Parts		Inserts
		DC	LF	DCSFMS	MD	C	W	Screws	Wrench	
MRX-100-M6	●	10	18	9.7	M6	6.5	8	FSW-3007H	A-08	RNM-100 HRM-100/110 FRM-100...
MRX-120-M6	●	12	20	11.5	M6	6.5	8	KSW-3509	A-15	RNM-120 HRM-120/130 FRM-120
MRX-160-M8	●	16	23	15	M8	8	12	FSW-4013H	A-15	RNM-160 HRM-160/170 FRM-160/170...
MRX-200-M10	●	20	30	18.5	M10	8	14	FSW-5016H	A-20W	HRM-200/220 FRM-200/210
MRX-250-M12	●	25	35	24	M12	10	17	FSW-6020	A-30	FRM-250
MRX-300-M16	○	30	43	29	M16	12.5	22	KSW-8025	A-30	FRM-300
MRX-320-M16	●	32	43	30	M16	12.5	22	KSW-8025	A-30	FRM-320

Note) All cutter bodies are supplied without Inserts, Wrench and MOLY.

● : Stocked Items ○ : Stock in Japan

Screw	Torque (N.m)
FSW-3007H	1.2
KSW-3509	3.0
FSW-4013H	3.0
FSW-5016H	4.0
FSW-6020	5.0
KSW-8025	6.0

■Spanner

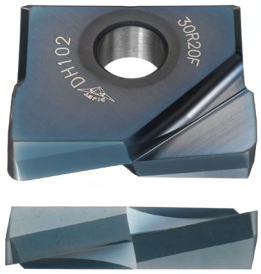
Cat.No.	MD	Torque	width across flat	Thickness	Length
DS-08	M6	8.0 N.m	12	4	85
DS-12	M8	16 N.m	12	4	93

FRM TYPE

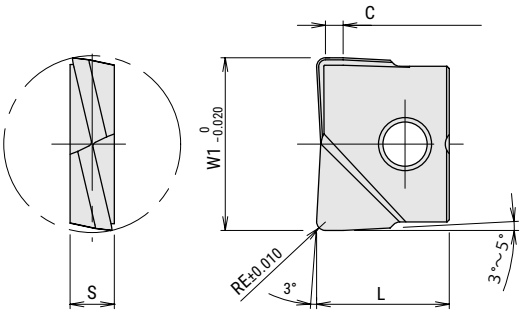
High feed geometry

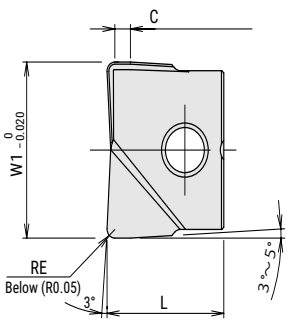
from Semi-finishing to finishing

Corner radius accuracy ±0.010 mm



■FRM-□□□-R0





Cat.No.	PVD Coating		Dimensions(mm)				
	DH102	JC8015	RE	L	W1	S	C
FRM-060-R0		●	※	5	6	2	0.8
FRM-060-R03	●	●	0.3	5	6	2	0.8
FRM-060-R05	●	●	0.5	5	6	2	0.8
FRM-060-R10	●	●	1	5	6	2	0.8
FRM-080-R0		●	※	7	8	2.4	1.2
FRM-080-R03	●	●	0.3	7	8	2.4	1.2
FRM-080-R05	●	●	0.5	7	8	2.4	1.2
FRM-080-R10	●	●	1	7	8	2.4	1.2
FRM-100-R0		●	※	8.5	10	2.6	1.5
FRM-100-R03	●	●	0.3	8.5	10	2.6	1.5
FRM-100-R05	●	●	0.5	8.5	10	2.6	1.5
FRM-100-R10	●	●	1	8.5	10	2.6	1.5
FRM-100-R20	●	●	2	8.5	10	2.6	1.5
FRM-120-R0		●	※	10	12	3	1.5
FRM-120-R03	●	●	0.3	10	12	3	1.5
FRM-120-R05	●	●	0.5	10	12	3	1.5
FRM-120-R10	●	●	1	10	12	3	1.5
FRM-120-R15	●		1.5	10	12	3	1.5
FRM-120-R20	●	●	2	10	12	3	1.5
FRM-120-R30	●		3	10	12	3	1.5
FRM-130-R05		●	0.5	10	13	3	1.5
FRM-130-R10		●	1	10	13	3	1.5

Note) 2 inserts per case

● : Stocked Items ○ : Stock in Japan

Cat.No.	PVD Coating		Dimensions(mm)				
	DH102	JC8015	RE	L	W1	S	C
FRM-160-R0		●	※	12	16	4	2
FRM-160-R03	●	●	0.3	12	16	4	2
FRM-160-R05	●	●	0.5	12	16	4	2
FRM-160-R10	●	●	1	12	16	4	2
FRM-160-R15	●		1.5	12	16	4	2
FRM-160-R20	●	●	2	12	16	4	2
FRM-160-R30	●		3	12	16	4	2
FRM-170-R03		●	0.3	12	17	4	2
FRM-170-R05		●	0.5	12	17	4	2
FRM-170-R10	●	●	1	12	17	4	2
FRM-170-R20		●	2	12	17	4	2
FRM-200-R0		●	※	15	20	5	2
FRM-200-R03	●	●	0.3	15	20	5	2
FRM-200-R05	●	●	0.5	15	20	5	2
FRM-200-R10	●	●	1	15	20	5	2
FRM-200-R15	●		1.5	15	20	5	2
FRM-200-R20	●	●	2	15	20	5	2
FRM-200-R30	●	●	3	15	20	5	2
FRM-210-R05		●	0.5	15	21	5	2
FRM-210-R10	●	●	1	15	21	5	2
FRM-210-R20		●	2	15	21	5	2
FRM-250-R03	●	●	0.3	18.5	25	6	2.5
FRM-250-R05	●	●	0.5	18.5	25	6	2.5
FRM-250-R10	●	●	1	18.5	25	6	2.5
FRM-250-R15	●		1.5	18.5	25	6	2.5
FRM-250-R20	●	●	2	18.5	25	6	2.5
FRM-250-R30	●	●	3	18.5	25	6	2.5
FRM-260-R03		●	0.3	18.5	26	6	2.5
FRM-260-R05		●	0.5	18.5	26	6	2.5
FRM-260-R10		●	1	18.5	26	6	2.5
FRM-300-R03	○	○	0.3	22.5	30	7	3
FRM-300-R05	○	○	0.5	22.5	30	7	3
FRM-300-R10	○	○	1	22.5	30	7	3
FRM-300-R20	○	○	2	22.5	30	7	3
FRM-300-R30	○	○	3	22.5	30	7	3
FRM-320-R03	●	●	0.3	23.5	32	7	3
FRM-320-R05	●	●	0.5	23.5	32	7	3
FRM-320-R10	●	●	1	23.5	32	7	3
FRM-320-R20	●	●	2	23.5	32	7	3
FRM-320-R30	●		3	23.5	32	7	3

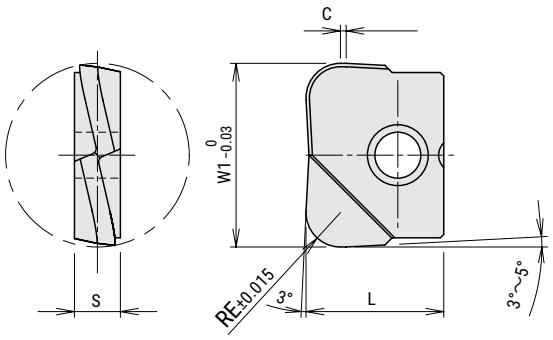
Note) 2 inserts per case

● : Stocked Items ○ : Stock in Japan

HRM TYPE — High feed geometry

from Semi-finishing to finishing

Corner radius accuracy ±0.01 mm



Cat.No.	PVD Coating	Dimensions(mm)				
	JC8015	RE	L	W1	S	C
HRM-060-R05	●	0.5	5	6	2	–
HRM-060-R10	●	1	5	6	2	–
HRM-060-R15	●	1.5	5	6	2	–
HRM-080-R20	●	2	7	8	2.4	0.3
HRM-090-R20	●	2	7	9	2.4	0.3
HRM-100-R20	●	2	8.5	10	2.6	0.3
HRM-110-R20	●	2	8.5	11	2.6	0.3
HRM-120-R20	●	2	10	12	3	0.5
HRM-130-R20	●	2	10	13	3	0.5
HRM-160-R20	●	2	12	16	4	0.5
HRM-160-R30	●	3	12	16	4	0.5
HRM-170-R30	●	3	12	17	4	0.5
HRM-200-R20	●	2	15	20	5	0.5
HRM-200-R30	●	3	15	20	5	0.5
HRM-220-R30	○	3	15	22	5	0.5

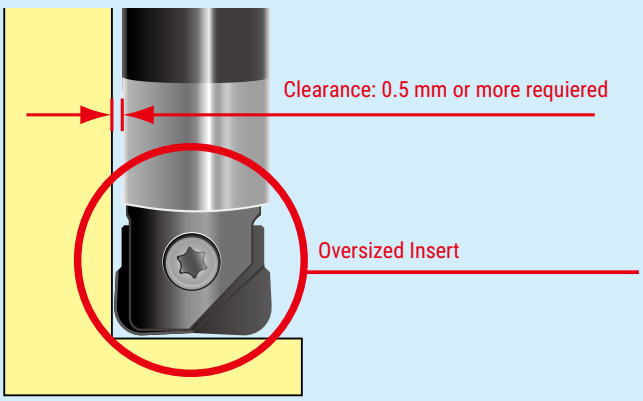
Note) 2 inserts per case

● : Stocked Items ○ : Stock in Japan

Mirror Radius Oversized Insert

Recommended to use oversized insert ※ for increasing side clearance to prevent the damage of shank by sticking chips.

(※) **HRM-090-R20, HRM-110-R20, HRM-130-R20, HRM-170-R30, HRM-220-R30**

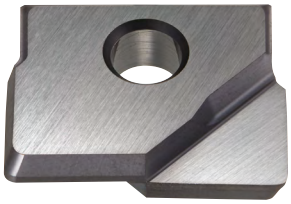


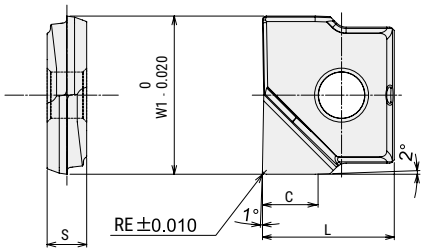
RNM TYPE

Neutral geometry

good for finishing non-ferrous materials such as Aluminium, Copper

Corner radius accuracy ±0.010 mm





Cat.No.	Diamond Coating	Uncoated	Dimensions(mm)				
	JC10000	KT9 (K10)	RE	L	W1	S	C
RNM-080-R03		○	0.3	7	8	2.4	2.7
RNM-080-R05	●	●	0.5	7	8	2.4	2.7
RNM-080-R10		●	1	7	8	2.4	2.7
RNM-100-R03		○	0.3	8.5	10	2.6	3.3
RNM-100-R05	●	●	0.5	8.5	10	2.6	3.3
RNM-100-R10	○	●	1	8.5	10	2.6	3.3
RNM-100-R15		○	1.5	8.5	10	2.6	3.3
RNM-100-R20		○	2	8.5	10	2.6	3.3
RNM-120-R03		○	0.3	10	12	3	4
RNM-120-R05	○	●	0.5	10	12	3	4
RNM-120-R10	○	●	1	10	12	3	4
RNM-120-R15		○	1.5	10	12	3	4
RNM-120-R20		●	2	10	12	3	4
RNM-160-R03		●	0.3	12	16	4	5.3
RNM-160-R05		●	0.5	12	16	4	5.3
RNM-160-R10		●	1	12	16	4	5.3
RNM-160-R15		○	1.5	12	16	4	5.3
RNM-160-R20		○	2	12	16	4	5.3
RNM-200-R03		○	0.3	15	20	5	6.7
RNM-200-R05		○	0.5	15	20	5	6.7
RNM-200-R10		●	1	15	20	5	6.7
RNM-200-R15		○	1.5	15	20	5	6.7
RNM-200-R20		○	2	15	20	5	6.7

■Grade Selection Guide

Material	Insert	Grade	RNM		HRM	FRM	
			JC10000	KT9	JC8015	DH102	JC8015
Carbon steel below 250HB	FRM HRM	JC8015			◎		◎
Cast steel below 285HB	FRM HRM	JC8015			◎		◎
Tool & Die steel below 255HB	FRM HRM	JC8015			◎		◎
Mold steel 30 - 36HRC	FRM HRM	JC8015			◎		◎
Mold steel 38 - 43HRC	FRM HRM	JC8015			◎		◎
Hardened die steel 42 - 52HRC	FRM HRM	DH102 JC8015			○	◎	○
Hardened die steel 55 - 62HRC	FRM	DH102				◎	
HSS 63 - 70HRC	FRM	DH102				◎	
Grey & Nodular cast iron below 300HB	FRM HRM	DH102 JC8015			○	◎	○
Austenitic stainless steel (304,316,317) 17Cr	FRM HRM	JC8015			◎	○	◎
Aluminium alloy (A5052)	RNM	KT9		◎			
Copper alloy (C1100)	RNM	KT9		◎			
Graphite	RNM	JC10000	◎				
Titanium alloy (Ti-6Al-4V) 35 - 43HRC	HRM FRM	JC8015			◎		◎
Heat resistant alloy (INCO718) 35 - 43HRC	HRM FRM	JC8015			◎		◎

◎ : First choice ○ : Second choice

■ Recommended Cutting Conditions | RNM type | Side Finishing

Material	Cat.No	Grade		Tool dia.(mm)				
				8	10	12	16	20
Aluminium	RNM	KT9	***n*(min^{-1})**	13,930	11,140	9,280	6,960	5,570
			***Vf*(mm/min)**	5,570	4,460	3,710	3,500	2,800
			ap(mm)	0.4	0.5	0.6	0.8	1.0
			ae(mm)	0.2	0.2	0.2	0.2	0.2
Copper alloy	RNM	KT9	***n*(min^{-1})**	9,950	7,960	6,630	4,970	3,980
			***Vf*(mm/min)**	3,980	3,180	2,650	2,500	2,000
			ap(mm)	0.3	0.3	0.4	0.5	0.7
			ae(mm)	0.15	0.15	0.15	0.15	0.15
Graphite	RNM	JC10000	***n*(min^{-1})**	13,930	11,140	9,280	–	–
			***Vf*(mm/min)**	5,570	4,460	3,710	–	–
			ap(mm)	0.4	0.5	0.6	–	–
			ae(mm)	0.2	0.2	0.2	–	–

■ Recommended Cutting Conditions | RNM type | Bottom Finishing

Material	Cat.No	Grade		Tool dia.(mm)				
				8	10	12	16	20
Aluminium	RNM	KT9	**n (min^{-1})**	11,940	9,550	7,960	5,970	4,770
			Vf (mm/min)	4,780	3,820	3,180	3,580	2,860
			ap (mm)	0.25	0.25	0.25	0.25	0.3
			ae (mm)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)
Copper alloy	RNM	KT9	**n (min^{-1})**	7,960	6,370	5,310	3,980	3,180
			Vf (mm/min)	2,390	1,910	1,590	1,190	950
			ap (mm)	0.2	0.2	0.2	0.2	0.25
			ae (mm)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)
Graphite	RNM	JC10000	**n (min^{-1})**	11,940	9,550	7,960	–	–
			Vf (mm/min)	4,780	3,820	3,180	–	–
			ap (mm)	0.25	0.25	0.25	–	–
			ae (mm)	1.2 (~4)	1.2 (~5)	1.5 (~5)	–	–

Note) 1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. These cutting conditions represent stable machining at length 3 x Dc.
Please adjust cutting conditions according to overhang length.
3. In case of chatter ocurring, recommended to reduce ap or feed.
4. Use air blow.

Overhang length	*n* (min^{-1})	*Vf* (mm/min)
~3Dc	100%	100%
3Dc~5Dc	70%	70%
5Dc~10Dc	50%	50%

■ Recommended Cutting Conditions | FRM type | Side Finishing

Material	Grade		Tool dia. (mm)								
			6	8	10	12/13	16/17	20/21	25/26	30	32
Carbon steel below 250HB	JC8015	*n* (min^{-1})	15,920	11,940	9,550	7,960	5,970	4,770	3,820	3,180	2,980
		Vf (mm/min)	3,980	2,990	2,870	2,390	2,390	1,910	1,530	1,270	1,190
		ap (mm)	0.2	0.3	0.3	0.3	0.4	0.5	0.8	1.0	1.2
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Tool & Die steel below 255HB	JC8015	*n* (min^{-1})	15,920	11,940	9,550	7,960	5,970	4,770	3,820	3,180	2,980
		Vf (mm/min)	3,980	2,990	2,870	2,390	2,390	1,910	1,530	1,270	1,190
		ap (mm)	0.2	0.3	0.3	0.3	0.4	0.5	0.8	1.0	1.2
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Mold steel 30 - 36HRC	JC8015	*n* (min^{-1})	15,920	11,940	9,550	7,960	5,970	4,770	3,820	3,180	2,980
		Vf (mm/min)	3,980	2,990	2,870	2,390	2,390	1,910	1,530	1,270	1,190
		ap (mm)	0.2	0.3	0.3	0.3	0.4	0.5	0.8	1.0	1.2
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Mold steel 38 - 43HRC	JC8015	*n* (min^{-1})	14,850	11,140	8,910	7,430	5,570	4,460	3,570	2,970	2,790
		Vf (mm/min)	3,710	2,790	2,670	2,230	1,670	1,340	1,070	890	840
		ap (mm)	0.2	0.2	0.3	0.3	0.4	0.5	0.8	1.0	1.2
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hardened die steel 42 - 52HRC	DH102 JC8015	*n* (min^{-1})	13,260	9,950	7,960	6,630	4,970	3,980	3,180	2,650	2,490
		Vf (mm/min)	1,330	1,000	800	660	750	600	480	400	370
		ap (mm)	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.8	1.0
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hardened die steel 55 - 62HRC	DH102	*n* (min^{-1})	10,610	7,960	6,370	5,310	3,980	3,180	2,550	2,120	1,990
		Vf (mm/min)	1,060	800	640	530	600	480	380	320	300
		ap (mm)	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.8	1.0
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HSS 63 - 70HRC	DH102	*n* (min^{-1})	7,960	5,970	4,770	3,980	2,980	2,390	1,910	1,590	1,490
		Vf (mm/min)	320	240	290	320	300	240	190	160	150
		ap (mm)	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Grey & Nodular cast iron below 300 HB	DH102 JC8015	*n* (min^{-1})	18,570	13,930	11,140	9,280	6,960	5,570	4,460	3,710	3,480
		Vf (mm/min)	6,500	4,880	3,900	3,250	3,480	3,340	2,680	2,230	2,090
		ap (mm)	0.2	0.3	0.3	0.3	0.4	0.5	0.8	1.0	1.2
		ae (mm)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Stainless steel	JC8015	*n* (min^{-1})	14,850	11,140	8,910	7,430	5,570	4,460	3,570	2,970	2,790
		Vf (mm/min)	4,460	3,340	2,670	2,230	2,230	1,780	1,430	1,190	1,120
		ap (mm)	0.2	0.3	0.3	0.3	0.4	0.5	0.8	1.0	1.0
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Titanium alloy (Ti-6Al-4V)	JC8015	*n* (min^{-1})	5,310	3,980	3,180	2,650	1,990	1,590	1,270	1,060	990
		Vf (mm/min)	1,060	800	760	640	480	380	320	270	250
		ap (mm)	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Heat resistant alloy (INCO718)	JC8015	*n* (min^{-1})	4,240	3,180	2,550	2,120	1,590	1,270	1,020	850	800
		Vf (mm/min)	850	640	610	510	380	300	260	210	200
		ap (mm)	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4
		ae (mm)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Note) 1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. These cutting conditions represent stable machining at length 3 x Dc.
Please adjust cutting conditions according to overhang length.
3. In case of chatter ocurring, recommended to reduce ap or feed.
4. Use air blow.

Overhang length	*n* (min^{-1})	*Vf* (mm/min)
~3Dc	100%	100%
3Dc~5Dc	70%	70%
5Dc~10Dc	50%	50%

■ Recommended Cutting Conditions | FRM type | Bottom Finishing

Material	Grade		Tool dia. (mm)								
			6	8	10	12/13	16/17	20/21	25/26	30	32
Carbon steel below 250HB	JC8015	***n*** **(min^{-1})**	13,790	10,350	8,280	6,900	5,170	4,140	3,310	2,760	2,590
		Vf **(mm/min)**	3,450	3,110	2,480	2,070	2,070	1,660	1,320	1,100	1,040
		ap (mm)	0.1	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
Tool & Die steel below 255HB	JC8015	***n*** **(min^{-1})**	13,790	10,350	8,280	6,900	5,170	4,140	3,310	2,760	2,590
		Vf **(mm/min)**	3,450	3,110	2,480	2,070	2,070	1,660	1,320	1,100	1,040
		ap (mm)	0.1	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
Mold steel 30 - 36HRC	JC8015	***n*** **(min^{-1})**	13,790	10,350	8,280	6,900	5,170	4,140	3,310	2,760	2,590
		Vf **(mm/min)**	3,450	3,110	2,480	2,070	2,070	1,660	1,320	1,100	1,040
		ap (mm)	0.1	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
Mold steel 38 - 43HRC	JC8015	***n*** **(min^{-1})**	12,730	9,550	7,640	6,370	4,770	3,820	3,060	2,550	2,390
		Vf **(mm/min)**	3,180	2,870	2,290	1,910	1,430	1,150	920	770	720
		ap (mm)	0.1	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
Hardened die steel 42 - 52HRC	DH102 JC8015	***n*** **(min^{-1})**	10,080	7,560	6,050	5,040	3,780	3,020	2,420	2,020	1,890
		Vf **(mm/min)**	1,010	760	610	600	570	450	360	300	280
		ap (mm)	0.05	0.06	0.08	0.1	0.1	0.15	0.15	0.15	0.15
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
Hardened die steel 55 - 62HRC	DH102	***n*** **(min^{-1})**	6,900	5,170	4,140	3,450	2,590	2,070	1,660	1,380	1,290
		Vf **(mm/min)**	690	520	410	410	390	310	250	210	190
		ap (mm)	0.05	0.06	0.08	0.1	0.1	0.15	0.15	0.15	0.15
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
HSS 63 - 70HRC	DH102	***n*** **(min^{-1})**	5,310	3,980	3,180	2,650	1,990	1,590	1,270	1,060	990
		Vf **(mm/min)**	210	160	190	210	200	160	130	110	100
		ap (mm)	0.03	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
		ae (mm)	1.0 (~2)	1.2 (~3)	1.2 (~4)	1.5 (~5)	2.0 (~6)	2.5 (~8)	4.0 (~10)	4.2 (~12)	4.2 (~13)
Grey & Nodular cast iron below 300 HB	DH102 JC8015	***n*** **(min^{-1})**	15,920	11,940	9,550	7,960	5,970	4,770	3,820	3,180	2,980
		Vf **(mm/min)**	4,780	4,180	3,340	3,180	2,390	1,910	1,910	1,590	1,490
		ap (mm)	0.1	0.15	0.15	0.2	0.2	0.2	0.2	0.2	0.2
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
Stainless steel	JC8015	***n*** **(min^{-1})**	12,730	9,550	7,640	6,370	4,770	3,820	3,060	2,550	2,390
		Vf **(mm/min)**	3,180	2,870	2,290	1,910	1,910	1,530	1,220	1,020	960
		ap (mm)	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
Titanium alloy (Ti-6Al-4V)	JC8015	***n*** **(min^{-1})**	2,920	2,190	1,750	1,460	1,090	880	700	580	550
		Vf **(mm/min)**	580	440	350	290	220	180	140	120	110
		ap (mm)	0.1	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2
		ae (mm)	1.0 (~3)	1.2 (~4)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)
Heat resistant alloy (INCO718)	JC8015	***n*** **(min^{-1})**	2,920	2,190	1,750	1,460	1,090	880	700	580	550
		Vf **(mm/min)**	580	440	350	290	220	180	140	120	110
		ap (mm)	0.1	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2
		ae (mm)	1.0 (~3)	1.2 (~5)	1.2 (~5)	1.5 (~5)	2.0 (~9)	2.5 (~13)	4.0 (~18)	4.2 (~23)	4.2 (~25)

Note) 1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. These cutting conditions represent stable machining at length 3 x Dc.
Please adjust cutting conditions according to overhang length.
3. In case of chatter ocurring, recommended to reduce ap or feed.
4. Use air blow.

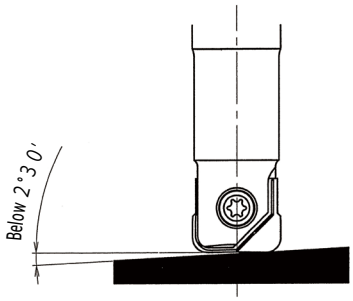
Overhang length	***n*** **(min^{-1})**	***Vf*** **(mm/min)**
~3Dc	100%	100%
3Dc~5Dc	70%	70%
5Dc~10Dc	50%	50%

■ Recommended Cutting Conditions | HRM type | High Feed / Semi finishing

Material		Tool dia. (mm)									
		Ø6×R1.5		Ø8×R2/Ø9×R2				Ø10×R2/Ø11×R2			
		2.5 D	5.0 D	2.5 D	5.0 D	7.5 D	10 D	2.5 D	5.0 D	7.5 D	10 D
Carbon steel below 250HB	***n*** **(min^{-1})**	9,000	9,000	7,500	7,500	7,500	7,500	6,000	6,000	6,000	6,000
	Vf **(mm/min)**	8,000	7,200	8,200	6,750	6,750	6,750	7,200	6,000	6,000	6,000
	ap (mm)	0.2	0.15	0.4	0.4	0.25	0.2	0.4	0.4	0.25	0.2
	ae (mm)	2.1	2.1	2.8	2.8	2.8	2.8	4.2	4.2	4.2	4.2
Mold steel 30 - 43HRC	***n*** **(min^{-1})**	8,500	8,500	7,100	7,100	7,100	7,100	5,700	5,700	5,700	5,700
	Vf **(mm/min)**	7,600	6,800	7,800	6,400	6,400	6,400	6,800	5,700	5,700	5,700
	ap (mm)	0.2	0.15	0.4	0.4	0.25	0.2	0.4	0.4	0.25	0.2
	ae (mm)	2.1	2.1	2.8	2.8	2.8	2.8	4.2	4.2	4.2	4.2
Tool & Die steel below 255HB	***n*** **(min^{-1})**	8,500	8,500	7,100	7,100	7,100	7,100	5,700	5,700	5,700	5,700
	Vf **(mm/min)**	7,600	6,800	7,800	6,400	6,400	6,400	6,800	5,700	5,700	5,700
	ap (mm)	0.2	0.15	0.4	0.4	0.25	0.2	0.4	0.4	0.25	0.2
	ae (mm)	2.1	2.1	2.8	2.8	2.8	2.8	4.2	4.2	4.2	4.2
Stainless steel below 250HB	***n*** **(min^{-1})**	8,000	8,000	6,700	6,700	6,700	6,700	5,400	5,400	5,400	5,400
	Vf **(mm/min)**	6,400	5,600	7,300	6,000	6,000	6,000	6,400	5,400	5,400	5,400
	ap (mm)	0.2	0.15	0.4	0.4	0.25	0.2	0.4	0.4	0.25	0.2
	ae (mm)	2.1	2.1	2.8	2.8	2.8	2.8	4.2	4.2	4.2	4.2
Hardened die steel 40 - 50HRC	***n*** **(min^{-1})**	6,900	6,900	6,000	6,000	6,000	6,000	4,700	4,700	4,700	4,700
	Vf **(mm/min)**	5,500	4,800	6,600	4,800	4,800	4,800	5,600	4,700	4,700	4,700
	ap (mm)	0.15	0.1	0.2	0.2	0.15	0.1	0.2	0.2	0.15	0.1
	ae (mm)	2.1	2.1	2.8	2.8	2.8	2.8	4.2	4.2	4.2	4.2
Grey & Nodular cast iron below 300 HB	***n*** **(min^{-1})**	7,400	7,400	6,400	6,400	6,400	6,400	5,100	5,100	5,100	5,100
	Vf **(mm/min)**	6,600	5,900	7,600	5,700	5,700	5,700	6,100	5,100	5,100	5,100
	ap (mm)	0.2	0.15	0.4	0.4	0.25	0.2	0.4	0.4	0.25	0.2
	ae (mm)	2.1	2.1	2.8	2.8	2.8	2.8	4.2	4.2	4.2	4.2

ap adjustment by corner radius ap × ratio	Tool dia. (mm)	∂p (mm)
	Ø6×R0.5	65%
	Ø6×R1.0	80%
	Ø6×R1.5	100%

Note) 1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter ocurring, recommended to reduce ap or Vf.
3. Recommended to reduce the parameteres when using on low horse power machine.
4. Use air blow.
5. Reduce ap, n & Vf by 30% in case of cutting material 50-55HRC.
6. Reduce Vf for better surface finish.
7. Use angle 2°30'or below in case of ramping (see right figure).
8. In case of slotting with over 5xDc, reduce Vf or ap appropriately.



★ Insert Mounting Information

1. Make sure the insert seat on body is carefully cleaned.
2. Make sure insert itself is clean, especially the hole and face location.
3. Change insert screw when threads starts to wear.
4. Do not over tighten screw. See table for torque specifications.

Toll dia. (mm)	Torque
φDc	N·m
6	0.5
8	0.9
10	1.2
12	2.0
16	3.0
20	4.0

■ Recommended Cutting Conditions | HRM type | High Feed / Semi finishing

	Tool dia. (mm)											
	Ø12×R2/Ø13×R2				Ø16×R3/Ø17×R3				Ø20×R3/Ø22×R3			
	2.5 D	5.0 D	7.5 D	10 D	2.5 D	5.0 D	7.5 D	10 D	2.5 D	5.0 D	7.5 D	10 D
n **(min^{-1})**	5,000	5,000	5,000	5,000	3,800	3,800	3,800	3,800	3,000	3,000	3,000	3,000
Vf **(mm/min)**	6,000	5,000	5,000	5,000	4,500	3,800	3,800	3,800	3,600	3,000	3,000	3,000
ap (mm)	0.5	0.4	0.25	0.2	0.6	0.6	0.4	0.3	0.6	0.6	0.4	0.3
ae (mm)	5.6	5.6	5.6	5.6	7	7	7	7	9.8	9.8	9.8	9.8
n **(min^{-1})**	4,700	4,700	4,700	4,700	3,500	3,500	3,500	3,500	2,800	2,800	2,800	2,800
Vf **(mm/min)**	5,600	4,700	4,700	4,700	4,200	3,500	3,500	3,500	3,300	2,800	2,800	2,800
ap (mm)	0.4	0.4	0.25	0.2	0.6	0.6	0.4	0.3	0.6	0.6	0.4	0.3
ae (mm)	5.6	5.6	5.6	5.6	7	7	7	7	9.8	9.8	9.8	9.8
n **(min^{-1})**	4,700	4,700	4,700	4,700	3,500	3,500	3,500	3,500	2,800	2,800	2,800	2,800
Vf **(mm/min)**	5,600	4,700	4,700	4,700	4,200	3,500	3,500	3,500	3,300	2,800	2,800	2,800
ap (mm)	0.4	0.4	0.25	0.2	0.6	0.6	0.4	0.3	0.6	0.6	0.4	0.3
ae (mm)	5.6	5.6	5.6	5.6	7	7	7	7	9.8	9.8	9.8	9.8
n **(min^{-1})**	4,500	4,500	4,500	4,500	3,400	3,400	3,400	3,400	2,700	2,700	2,700	2,700
Vf **(mm/min)**	5,400	4,500	4,500	4,500	4,000	3,400	3,400	3,400	3,200	2,700	2,700	2,700
ap (mm)	0.4	0.4	0.25	0.2	0.6	0.6	0.4	0.3	0.6	0.6	0.4	0.3
ae (mm)	5.6	5.6	5.6	5.6	7	7	7	7	9.8	9.8	9.8	9.8
n **(min^{-1})**	4,000	4,000	4,000	4,000	3,000	3,000	3,000	3,000	2,400	2,400	2,400	2,400
Vf **(mm/min)**	4,800	4,000	4,000	4,000	3,600	3,000	3,000	3,000	2,800	2,400	2,400	2,400
ap (mm)	0.2	0.2	0.15	0.1	0.3	0.3	0.25	0.2	0.3	0.3	0.25	0.2
ae (mm)	5.6	5.6	5.6	5.6	7	7	7	7	9.8	9.8	9.8	9.8
n **(min^{-1})**	4,200	4,200	4,200	4,200	3,200	3,200	3,200	3,200	2,500	2,500	2,500	2,500
Vf **(mm/min)**	5,000	4,200	4,200	4,200	3,800	3,200	3,200	3,200	3,000	2,500	2,500	2,500
ap (mm)	0.4	0.4	0.25	0.2	0.6	0.6	0.4	0.3	0.6	0.6	0.4	0.3
ae (mm)	5.6	5.6	5.6	5.6	7	7	7	7	9.8	9.8	9.8	9.8

ap adjustment by corner radius ap × ratio	Tool dia. (mm)	ap (mm)	Tool dia. (mm)	ap (mm)
	Ø16×R2.0	75%	Ø20×R2.0	75%
	Ø16×R3.0	100%	Ø20×R3.0	100%

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ISO9001 JQA-2089
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