

MITSUBISHI

MITSUBISHI CARBIDE

High Feed Radius Milling Cutter

B028E

AJX

**Fine pitch type
for even higher
feed rates now
available!**

MIRACLE® Coated VP15TF & VP30RT

&

CVD Coated FH7020



**Cost reductions with
ultra high feed milling for
mould & die machining**

**New ST chipbreaker with tougher
cutting edges**

Effective for heavy interrupted cutting.

**New JM chipbreaker with
sharp cutting edges**

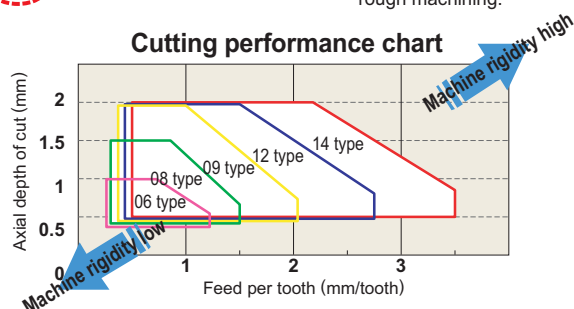
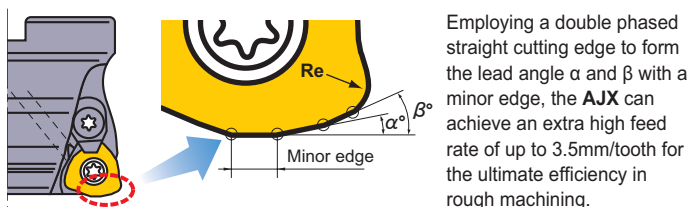
Suitable for BT40 and HSK machines.

High Feed Radius Milling Cutter

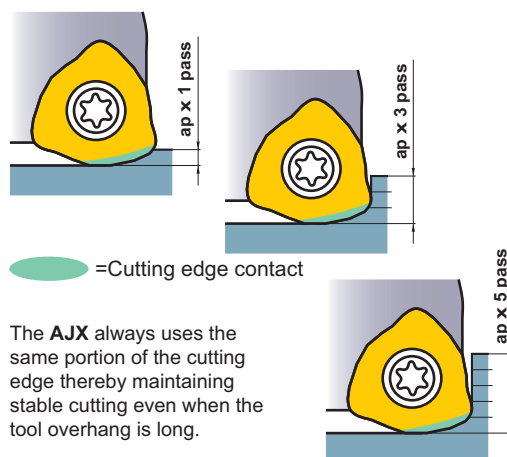
AJX

Features

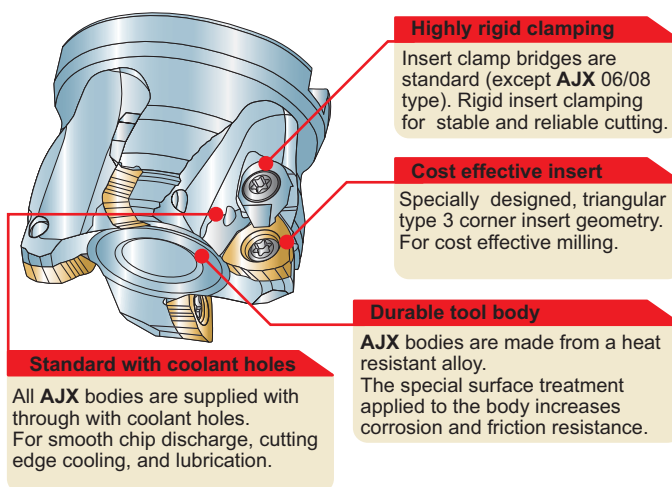
Ultra-high Feed Cutting



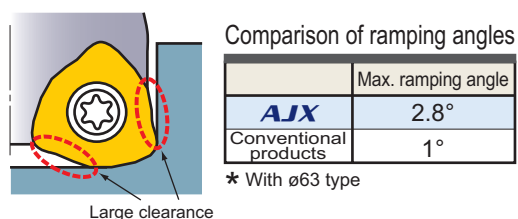
Anti Vibration Properties



High Reliability Cutter Body

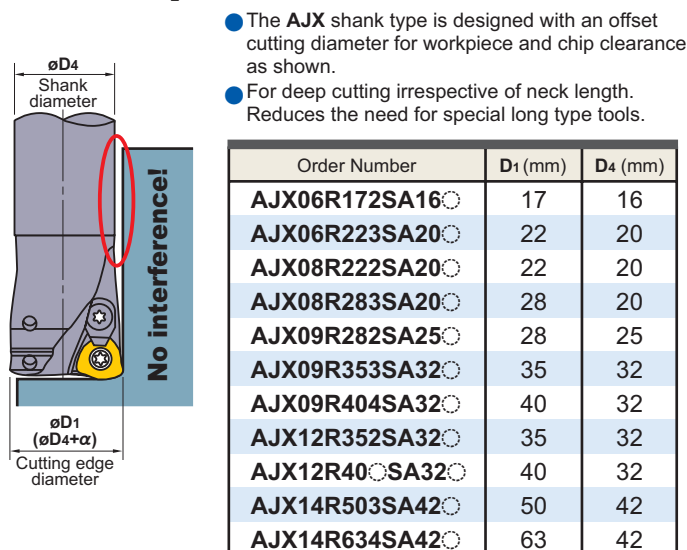


Preventing Chip Packing Problems

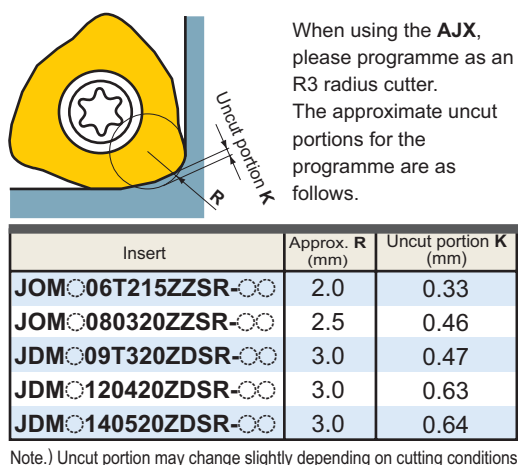


The indents engineered into the inner and outer cutting edges maintain a large clearance, preventing chip packing problems. For improved efficiency and a more stable cutting performance when ramping and sinking compared to conventional products.

No Workpiece Interference

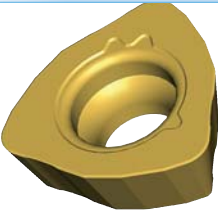
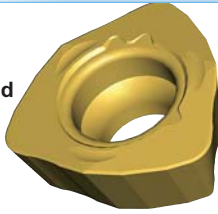
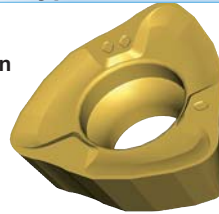


Note for Programming



Note.) Uncut portion may change slightly depending on cutting conditions.

Wide Selection of Inserts

FT Breaker General Use Type First recommended chipbreaker for general cutting  An optimum balance of sharpness and fracture resistance. Versatile insert for a wide range of materials and cutting conditions.	ST Breaker Strong Cutting Edge Type Stable machining even on interrupted work piece surfaces.  With increased fracture resistance during interrupted cutting due to the tougher cutting edges. For increased reliability and higher efficiency machining to reduce costs.	JM Breaker Sharp Cutting Edge Type Suitable for use on BT40 and HSK63 machines.  Boosts cutting performance with a large rake angle. Effective for anti-vibration machining for long overhang applications at higher than normal feeds for cost saving efficiency.
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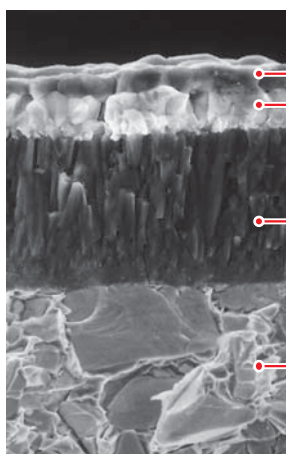
Application of Breakers

Cutting Condition	Light Cutting ← General Cutting → Interrupted Cutting
Recommended Breaker	← JM → FT → ST

Application of Insert Grades

Workpiece	High hardness ← General steel → Low hardness Martensitic ← Stainless steel → Austenitic Ductile cast iron ← Cast iron → General cast iron
Recommended Grade	← VP15TF → FH7020 → VP30RT

CVD Coating

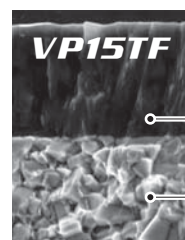


Microstructure of FH7020

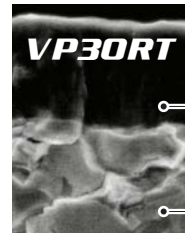
Features of FH7020

- FH7020 for long tool life. Resistance to thermal cracking and crater wear.
- Vapor deposited by newly developed Even Coating Technology, the surface texture of the special titanium compound layers is very smooth and chemically stable. It enables stable cutting performance without chipping and peeling.
- Flat alumina (fine grained aluminum oxide with a smooth surface) is used as the outer layer. It has superior strength at high temperature and prevents crater wear usually associated with high speed cutting.
- The fibrous crystalline carbon titanium nitride inner layer is simultaneously resistant to wear and fracturing.
- The newly developed base metal of cemented carbide has improved heat-crack and fracture resistance.

MIRACLE® Coating



Microstructure of VP15TF



Microstructure of VP30RT

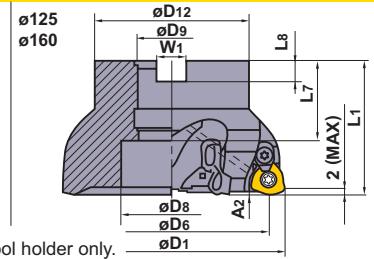
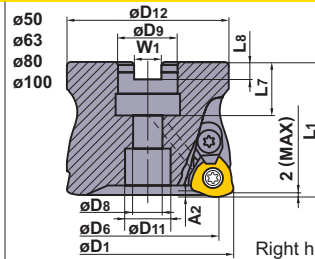
VP15TF with high wear and fracture resistance, for stable, general machining operations.

- MIRACLE coating (Al,Ti)N
- Cemented carbide substrate TF15

VP30RT A combination of a tough, special cemented carbide substrate and MIRACLE coating. Ideal for heavy interrupted cutting of stainless and general steels.

- MIRACLE coating (Al,Ti)N
- A tough, special cemented carbide substrate

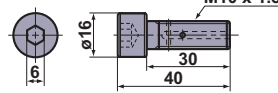
Arbor type



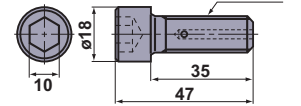
Right hand tool holder only.

Set Bolt

HSC10030H

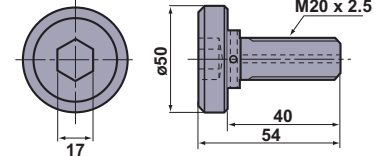
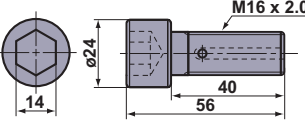


HSC12035H



MBA20040H

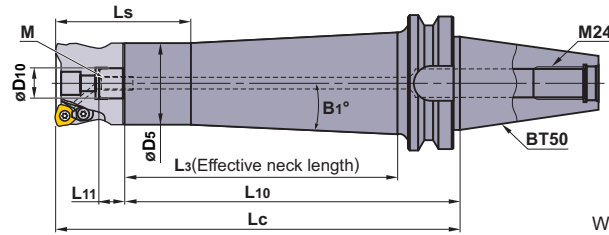
HSC16040H



Light Alloy	Cast Iron	General Steel	Stainless Steel	Hardened Steel

Type	Order Number	Stock	Number of Teeth	Dimensions (mm)											Tool Weight (kg)							
				D1	D6	D8	D9	D11	D12	L1	L7	L8	W1	A2		Insert	Clamp Screw	Clamp Bridge	Clamp Bridge Screw	Spring	Wrench	Set Bolt
Coarse Pitch	AJX12-050A03R	●	3	50	38.3	11	22	17	47	50	20	6.3	10.4	1.5	0.4	JDM 120420 ZDSR-○	TS43	AMS4	AJS40 12T15	ASS2	①TKY15T	HSC100 30H
	R05003B	★	3	50	38.3	11	22.225	17	47	50	19	5.0	8.4	1.5	0.4							
	-052A03R	●	3	52	40.3	11	22	17	47	50	20	6.3	10.4	1.5	0.5							
	AJX14-063A03R	●	3	63	51.1	11	22	17	60	50	20	6.3	10.4	2.0	0.7							HSC100 30H
	R06303B	★	3	63	51.1	11	22.225	17	60	50	19	5.0	8.4	2.0	0.7							
	-066A03R	●	3	66	54.1	11	22	17	60	50	20	6.3	10.4	2.0	0.8							
	-080A04R	●	4	80	68.1	13	27	19	76	50	23	7.0	12.4	2.0	1.2							HSC120 35H
	-100A05R	●	5	100	88.1	17	32	26	96	63	26	8.0	14.4	2.0	2.4							HSC160 40H
	-125B05R	●	5	125	113.2	56	40	—	100	63	40	9.0	16.4	2.0	3.3							MBA200 40H
	-160B06R	●	6	160	148.2	56	40	—	100	63	40	9.0	16.4	2.0	5.0							
Fine Pitch	NEW AJX09-050A05R	●	5	50	40	11	22	17	47	50	20	6.3	10.4	1.0	0.4	JDM 09T320 ZD○R-○	TS351	AMS3	AJS30 10T10	ASS2	②TKY10D	HSC100 30H
	NEW -052A05R	●	5	52	42	11	22	17	47	50	20	6.3	10.4	1.0	0.4							
	AJX12-050A04R	●	4	50	38.3	11	22	17	47	50	20	6.3	10.4	1.5	0.4	JDM 120420 ZDSR-○	TS43	AMS4	AJS40 12T15	ASS2	①TKY15T	HSC100 30H
	R05004B	★	4	50	38.3	11	22.225	17	47	50	19	5.0	8.4	1.5	0.4							
	-052A04R	●	4	52	40.3	11	22	17	47	50	20	6.3	10.4	1.5	0.5							
	NEW -063A05R	●	5	63	51.3	11	22	17	60	50	20	6.3	10.4	1.5	0.7							HSC120 35H
	NEW -066A05R	●	5	66	54.3	11	22	17	60	50	20	6.3	10.4	1.5	0.8							HSC160 40H
	NEW -080A06R	●	6	80	68.3	13	27	19	76	50	23	7.0	12.4	1.5	1.2							
	NEW -100A07R	●	7	100	88.3	17	32	26	96	63	26	8.0	14.4	1.5	2.6							
	AJX14-063A04R	●	4	63	51.1	11	22	17	60	50	20	6.3	10.4	2.0	0.7	JDM 140520 ZDSR-○	TS54	AMS5	AJS50 14T25	ASS3	①TKY25T	HSC100 30H
	R06304B	★	4	63	51.1	11	22.225	17	60	50	19	5.0	8.4	2.0	0.7							
	-066A04R	●	4	66	54.1	11	22	17	60	50	20	6.3	10.4	2.0	0.8							HSC120 35H
	-080A05R	●	5	80	68.1	13	27	19	76	50	23	7.0	12.4	2.0	1.2							HSC160 40H
	-100A06R	●	6	100	88.1	17	32	26	96	63	26	8.0	14.4	2.0	2.4							
	-125B07R	●	7	125	113.2	56	40	—	100	63	40	9.0	16.4	2.0	3.3							MBA200 40H
	-160B08R	●	8	160	148.2	56	40	—	100	63	40	9.0	16.4	2.0	5.0							

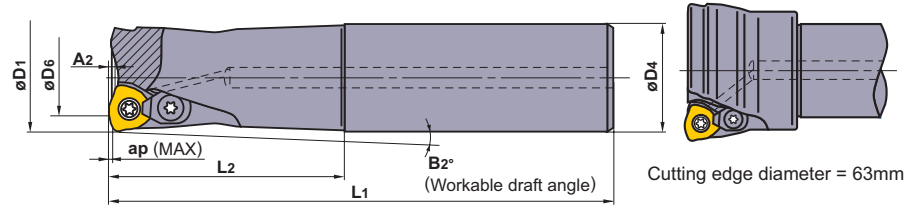
BT50 Arbor



With through coolant supplied as standard.

Order Number	Stock	Dimensions (mm)								Taper Angle B1°	Tool Weight (kg)	Set Bolt	Holder
		L10	L3	Lc	Ls	L11	D10	D5	M				
BT50-22-198-50TA	★	198	150	248	100	18	22	47	M10	3°	5.9	HSC10030H	AJX12-050A..R
BT50-22-248-50TA	★	248	200	298	100	18	22	47	M10	2°30'	6.9	HSC10030H	AJX12-050A..R
BT50-22-298-50TA	★	298	250	348	100	18	22	47	M10	2°	7.8	HSC10030H	AJX12-050A..R
BT50-22.225-198-50TA	★	198	150	248	100	17	22.225	47	M10	3°	5.9	HSC10030H	AJX12R050..B
BT50-22-198-63TA	★	198	150	248	100	18	22	60	M10	3°	7.4	HSC10030H	AJX14-063A..R
BT50-22-298-63TA	★	298	250	348	100	18	22	60	M10	2°	10.2	HSC10030H	AJX14-063A..R
BT50-22-398-63TA	★	398	350	448	100	18	22	60	M10	2°	14.0	HSC10030H	AJX14-063A..R
BT50-22.225-198-63TA	★	198	150	248	100	17	22.225	60	M10	3°	7.4	HSC10030H	AJX14R063..B
BT50-31.75-235-80TA	★	235	187	298	113	30	31.75	76	M16	2°30'	11.1	HSC16040H	AJX14R080..D
BT50-31.75-315-80TA	★	315	267	378	113	30	31.75	76	M16	2°	14.7	HSC16040H	AJX14R080..D
BT50-31.75-385-80TA	★	385	337	448	113	30	31.75	76	M16	2°	18.4	HSC16040H	AJX14R080..D
BT50-31.75-235-100SA	★	235	187	298	—	30	31.75	96	M16	—	14.4	HSC16040H	AJX14R100..D
BT50-31.75-315-100SA	★	315	267	378	—	30	31.75	96	M16	—	18.8	HSC16040H	AJX14R100..D
BT50-31.75-385-100SA	★	385	337	448	—	30	31.75	96	M16	—	22.6	HSC16040H	AJX14R100..D

Shank type

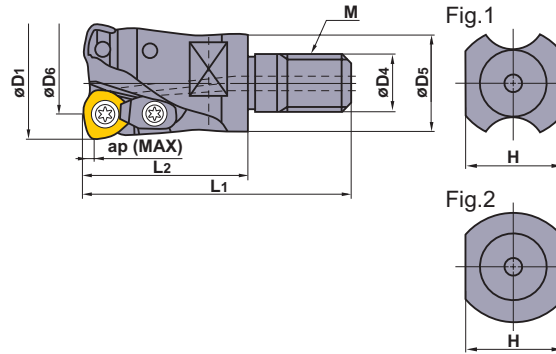


Right hand tool holder only.

Type	Order Number	Stock	Number of Teeth	Dimensions (mm)								Insert	Clamp Screw	Clamp Bridge	Clamp Bridge Screw	Spring	Wrench
				D1	D4	D6	L1	L2	ap	A2	B2°						
Short	AJX06R162SA16ES	●	2	16	16	8.9	70	20	1.0	0.3	3°30'	JOM-06 T215ZZSR	TS25	—	—	—	①TKY08F
	172SA16ES	●	2	17	16	9.9	70	20	1.0	0.3	—		TS25	—	—	—	①TKY08F
Standard	AJX06R162SA16S	●	2	16	16	8.9	110	30	1.0	0.3	2°15'	JOM-06 T215ZZSR	TS25	—	—	—	①TKY08F
	172SA16S	●	2	17	16	9.9	110	20	1.0	0.3	—		TS25	—	—	—	①TKY08F
	NEW 203SA20S	●	3	20	20	12.9	130	50	1.0	0.3	1°18'		TS25	—	—	—	①TKY08F
	NEW 223SA20S	●	3	22	20	14.9	130	30	1.0	0.3	—		TS25	—	—	—	①TKY08F
	AJX08R202SA20S	●	2	20	20	11.4	130	50	1.5	0.5	1°18'	JOM-080 320ZZSR	TS33	—	—	—	②TKY08D
	222SA20S	●	2	22	20	13.4	130	30	1.5	0.5	—		TS33	—	—	—	②TKY08D
	NEW 253SA25S	●	3	25	25	16.4	140	60	1.5	0.5	1°06'		TS33	—	—	—	②TKY08D
	NEW 283SA25S	●	3	28	25	19.4	140	40	1.5	0.5	—		TS33	—	—	—	②TKY08D
	AJX09R252SA25S	●	2	25	25	14.9	140	60	2.0	1.0	1°06'	JDM-09T 320ZDSR	TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	282SA25S	●	2	28	25	17.9	140	40	2.0	1.0	—		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 303SA32S	●	3	30	32	20.0	150	70	2.0	1.0	1°48'		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 323SA32S	●	3	32	32	21.9	150	70	2.0	1.0	0°56'		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 353SA32S	●	3	35	32	24.9	150	50	2.0	1.0	—		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 404SA32S	●	4	40	32	29.9	150	50	2.0	1.0	—		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 404SA40S	●	4	40	40	29.9	150	70	2.0	1.0	0°56'		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	AJX12R302SA32S	●	2	30	32	18.3	150	70	2.0	1.5	1°48'	JDM-120420 ZDSR	TS407	AMS4	AJS4012T15	ASS2	②TKY15D
	322SA32S	●	2	32	32	20.3	150	70	2.0	1.5	1°		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	352SA32S	●	2	35	32	23.3	150	50	2.0	1.5	—		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	403SA32S	●	3	40	32	28.3	150	50	2.0	1.5	—		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	403SA40S	★	3	40	40	28.3	150	70	2.0	1.5	0°57'		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	403SA42S	●	3	40	42	28.3	150	70	2.0	1.5	1°48'		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	AJX14R503SA40S	●	3	50	40	38.2	150	50	2.0	2.0	—	JDM-140 520ZDSR	TS54	AMS5	AJS5014T25	ASS3	②TKY25D
	503SA42S	★	3	50	42	38.2	150	50	2.0	2.0	—		TS54	AMS5	AJS5014T25	ASS3	②TKY25D
	634SA40S	●	4	63	40	51.2	150	50	2.0	2.0	—		TS54	AMS5	AJS5014T25	ASS3	②TKY25D
	634SA42S	★	4	63	42	51.2	150	50	2.0	2.0	—		TS54	AMS5	AJS5014T25	ASS3	②TKY25D

Type	Order Number	Stock	Number of Teeth	Dimensions (mm)								Insert	Clamp Screw	Clamp Bridge	Clamp Bridge Screw	Spring	Wrench
				D1	D4	D6	L1	L2	ap	A2	B2°						
Long	AJX06R162SA16L	●	2	16	16	8.9	150	70	1.0	0.3	0°56'	JOM06 T215ZZSR	TS25	—	—	—	①TKY08F
	172SA16L	●	2	17	16	9.9	150	20	1.0	0.3	—		TS25	—	—	—	①TKY08F
	NEW 203SA20L	●	3	20	20	12.9	180	100	1.0	0.3	0°38'		TS25	—	—	—	①TKY08F
	NEW 223SA20L	●	3	22	20	14.9	180	30	1.0	0.3	—		TS25	—	—	—	①TKY08F
	AJX08R202SA20L	●	2	20	20	11.4	180	100	1.5	0.5	0°36'	JOM080 320ZZSR	TS33	—	—	—	②TKY08D
	222SA20L	●	2	22	20	13.4	180	30	1.5	0.5	—		TS33	—	—	—	②TKY08D
	NEW 253SA25L	●	3	25	25	16.4	200	120	1.5	0.5	0°32'		TS33	—	—	—	②TKY08D
	NEW 283SA25L	●	3	28	25	19.4	200	40	1.5	0.5	—		TS33	—	—	—	②TKY08D
	AJX09R252SA25L	●	2	25	25	14.9	200	120	2.0	1.0	0°30'	JDM09T 320ZDSR	TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	282SA25L	●	2	28	25	17.9	200	40	2.0	1.0	—		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 303SA32L	●	3	30	32	20.0	200	120	2.0	1.0	1°02'		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 323SA32L	●	3	32	32	21.9	200	120	2.0	1.0	0°32'		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 353SA32L	●	3	35	32	24.9	200	50	2.0	1.0	—		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 404SA32L	●	4	40	32	29.9	250	50	2.0	1.0	—		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	NEW 404SA40L	□	4	40	40	29.9	250	70	2.0	1.0	0°56'		TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	AJX12R302SA32L	★	2	30	32	18.3	200	120	2.0	1.5	1°	JDM120420 ZDSR	TS407	AMS4	AJS4012T15	ASS2	②TKY15D
	322SA32L	●	2	32	32	20.3	200	120	2.0	1.5	0°36'		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	352SA32L	●	2	35	32	23.3	200	50	2.0	1.5	—		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	403SA32L	●	3	40	32	28.3	250	50	2.0	1.5	—		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	403SA40L	□	3	40	40	28.3	250	70	2.0	1.5	0°57'		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	403SA42L	★	3	40	42	28.3	250	70	2.0	1.5	1°48'		TS43	AMS4	AJS4012T15	ASS2	②TKY25D
	AJX14R503SA40L	□	3	50	40	38.2	250	50	2.0	2.0	—	JDM140 520ZDSR	TS54	AMS5	AJS5014T25	ASS3	②TKY25D
	503SA42L	★	3	50	42	38.1	250	50	2.0	2.0	—		TS54	AMS5	AJS5014T25	ASS3	②TKY25D
	634SA40L	□	4	63	40	51.1	250	50	2.0	2.0	—		TS54	AMS5	AJS5014T25	ASS3	②TKY25D
	634SA42L	★	4	63	42	51.1	250	50	2.0	2.0	—		TS54	AMS5	AJS5014T25	ASS3	①TKY08F
Extra Long	AJX06R162SA16EL	★	2	16	16	8.9	200	100	1.0	0.3	0°38'	JOM06 T215ZZSR	TS25	—	—	—	①TKY08F
	172SA16EL	★	2	17	16	9.9	200	20	1.0	0.3	—		TS25	—	—	—	②TKY08D
	AJX08R202SA20EL	★	2	20	20	11.4	250	130	1.5	0.5	0°30'	JOM080 320ZZSR	TS33	—	—	—	②TKY08D
	222SA20EL	★	2	22	20	13.4	250	30	1.5	0.5	—		TS33	—	—	—	②TKY10D
	AJX09R252SA25EL	★	2	25	25	14.9	300	180	2.0	1.0	0°18'	JDM09T 320ZDSR	TS351	AMS3	AJS3010T10	ASS2	②TKY10D
	282SA25EL	★	2	28	25	17.9	300	40	2.0	1.0	—		TS351	AMS3	AJS3010T10	ASS2	②TKY15D
	AJX12R302SA32EL	★	2	30	32	18.3	300	180	2.0	1.5	0°42'	JDM120420 ZDSR	TS407	AMS4	AJS4012T15	ASS2	②TKY15D
	322SA32EL	★	2	32	32	20.3	300	180	2.0	1.5	0°24'		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	352SA32EL	★	2	35	32	23.3	300	50	2.0	1.5	—		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	402SA32EL	★	2	40	32	28.3	350	50	2.0	1.5	—		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	402SA40EL	□	2	40	40	28.3	350	70	2.0	1.5	0°57'		TS43	AMS4	AJS4012T15	ASS2	②TKY15D
	402SA42EL	★	2	40	42	28.3	350	70	2.0	1.5	1°48'		TS43	AMS4	AJS4012T15	ASS2	②TKY15D

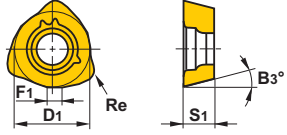
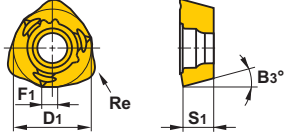
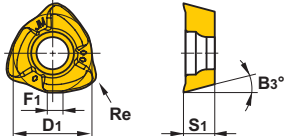
Screw-in type



Right hand tool holder only.

Order Number	Stock	Number of Teeth	Dimensions (mm)										Insert	Clamp Screw	Clamp Bridge	Clamp Bridge Screw	Spring	Wrench	Fig.
			D1	D4	D5	D6	L1	L2	H	M	ap	A2							
AJX06R162AM08	●	2	16	8.5	13	8.9	43	25	10	M8	1.0	0.3	JOM T215ZZSR	TS25	—	—	—	①TKY08F	1
172AM08	●	2	17	8.5	13	8.9	43	25	10	M8	1.0	0.3		TS25	—	—	—	①TKY08F	1
NEW 203AM10	●	3	20	10.5	18	12.9	47	28	15	M10	1.0	0.3		TS25	—	—	—	①TKY08F	2
NEW 223AM10	●	3	22	10.5	18	14.9	47	28	15	M10	1.0	0.3		TS25	—	—	—	①TKY08F	2
AJX08R202AM10	●	2	20	10.5	18	11.4	47	28	15	M10	1.5	0.5	JOM 320ZZSR	TS33	—	—	—	①TKY08D	1
222AM10	●	2	22	10.5	18	13.4	47	28	15	M10	1.5	0.5		TS33	—	—	—	①TKY08D	1
NEW 253AM12	●	3	25	12.5	21	16.4	58	36	17	M12	1.5	0.5		TS33	—	—	—	①TKY08D	2
NEW 283AM12	●	3	28	12.5	21	19.4	58	36	17	M12	1.5	0.5		TS33	—	—	—	①TKY08D	2
AJX09R252AM12	●	2	25	12.5	21	14.9	58	36	17	M12	2.0	1.0	JDM 320ZDSR	TS351	AMS3	AJS3010T10	ASS2	②TKY10D	1
282AM12	●	2	28	12.5	21	17.9	58	36	17	M12	2.0	1.0		TS351	AMS3	AJS3010T10	ASS2	②TKY10D	1
NEW 303AM16	●	3	30	17.0	29	20.0	70	47	22	M16	2.0	1.0		TS351	AMS3	AJS3010T10	ASS2	②TKY10D	2
NEW 323AM16	●	3	32	17.0	29	21.9	70	47	22	M16	2.0	1.0		TS351	AMS3	AJS3010T10	ASS2	②TKY10D	2
NEW 353AM16	●	3	35	17.0	29	24.9	70	47	22	M16	2.0	1.0		TS351	AMS3	AJS3010T10	ASS2	②TKY10D	2
NEW 404AM16	●	4	40	17.0	29	29.9	83	60	22	M16	2.0	1.0		TS351	AMS3	AJS3010T10	ASS2	②TKY10D	2
AJX12R302AM16	●	2	30	17.0	29	18.3	70	47	22	M16	2.0	1.0	JDM 120420 ZDSR	TS407	AMS4	AJS4012T15	ASS2	②TKY15D	1
322AM16	●	2	32	17.0	29	20.3	70	47	22	M16	2.0	1.0		TS43	AMS4	AJS4012T15	ASS2	②TKY15D	1
352AM16	●	2	35	17.0	29	23.3	70	47	22	M16	2.0	1.0		TS43	AMS4	AJS4012T15	ASS2	②TKY15D	1
403AM14	●	3	40	17.0	29	28.3	83	60	22	M16	2.0	1.0		TS43	AMS4	AJS4012T15	ASS2	②TKY15D	1

INSERTS

Shape	Order Number	Class	Coated				Dimensions (mm)					Geometry
			FH7020	VP15TF	VP30RT		B ₃ °	D ₁	S ₁	F ₁	Re	
	JOMW06T215ZZSR-FT	M	●	●	●		13°	6.35	2.78	1.2	1.5	
	080320ZZSR-FT	M	●	●	●		13°	8	3.18	1.4	2.0	
	JDMW09T320ZDSR-FT	M	●	●	●		15°	9.525	3.97	1.8	2.0	
	120420ZDSR-FT	M	●	●	●		15°	12	4.76	2.5	2.0	
	140520ZDSR-FT	M	●	●	●		15°	14	5.56	2.8	2.0	
	JDMT120420ZDSR-ST	M	●	●	●		15°	12	4.76	2.5	2.0	
	140520ZDSR-ST	M	●	●	●		15°	14	5.56	2.8	2.0	
	JOMT06T215ZZSR-JM	M	●	●	●		13°	6.35	2.78	1.2	1.5	
	080320ZZSR-JM	M	●	●	●		13°	8	3.18	1.4	2.0	
	JDMT09T320ZDSR-JM	M	●	●	●		15°	9.525	3.97	1.8	2.0	
	120420ZDSR-JM	M	●	●	●		15°	12	4.76	2.5	2.0	
	140520ZDSR-JM	M	●	●	●		15°	14	5.56	2.8	2.0	

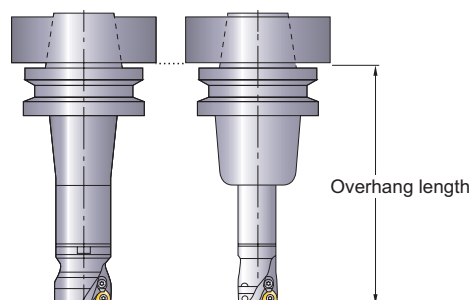
Note) Setting heights for ST chipbreaker and the other chipbreakers differ slightly.
If an ST type chipbreaker is used, please check the tool length offset height.

RECOMMENDED CUTTING CONDITIONS

Table 1. Recommended cutting conditions for turning of steel and cast iron																
Workpiece		Hardness	Grade	Cutting Speed (m/min)	φ 16,17,20,22			φ 25/28			φ 30/32/35			φ 40 (φ 32 Shank)		
					Over-hang (mm)	Axial Depth of Cut (mm)	Feed per Tooth (mm/tooth)	Over-hang (mm)	Axial Depth of Cut (mm)	Feed per Tooth (mm/tooth)	Over-hang (mm)	Axial Depth of Cut (mm)	Feed per Tooth (mm/tooth)	Over-hang (mm)	Axial Depth of Cut (mm)	Feed per Tooth (mm/tooth)
P	Mild Steel	≤ 180HB	FH7020	170 (120—220)	140	0.8	0.8	170	1.0	1.2	180	1.2	1.4	180	1.2	1.4
	Carbon Steel	180—280HB	FH7020	150 (100—200)	180	0.6	0.6	230	0.8	1.0	230	1.0	1.2	240	1.0	1.2
					210	0.4	0.4	290	0.6	0.8	290	0.8	1.0	300	0.8	1.0
	Alloy Steel	280—350HB	FH7020	130 (80—180)	140	0.7	0.8	170	0.8	1.2	180	1.0	1.4	180	1.0	1.4
					180	0.5	0.6	230	0.6	1.0	230	0.8	1.2	240	0.8	1.2
	Alloy Tool Steel	≤ 350HB	FH7020	120 (80—160)	210	0.3	0.4	290	0.4	0.8	290	0.6	1.0	300	0.6	1.0
					140	0.7	0.7	170	0.8	1.0	180	1.0	1.2	180	1.0	1.2
	Pre-hardened Steel	≤ 35HRC	FH7020	180	0.5	0.5	230	0.6	0.8	230	0.8	1.0	240	0.8	1.0	
35—43HRC		VP15TF	210	0.3	0.3	290	0.4	0.6	290	0.6	0.8	300	0.6	0.8		
M	Stainless Steel	≤ 270HB	VP30RT	120 (80—160)	140	0.8	0.7	170	1.0	1.0	180	1.2	1.2	180	1.2	1.2
					180	0.6	0.5	230	0.8	0.8	230	1.0	1.0	240	1.0	1.0
					210	0.4	0.3	290	0.6	0.6	290	0.8	0.8	300	0.8	0.8
K	Cast Iron	Tensile strength ≤ 350MPa	FH7020	150 (100—200)	140	0.8	1.0	170	1.0	1.4	180	1.2	1.6	180	1.2	1.6
					180	0.6	0.8	230	0.8	1.2	230	1.0	1.4	240	1.0	1.4
					210	0.4	0.6	290	0.6	1.0	290	0.8	1.2	300	0.8	1.2
	Ductile Cast Iron	Tensile strength ≤ 800MPa	VP15TF	120 (80—160)	140	0.7	0.8	170	0.8	1.2	180	1.0	1.4	180	1.0	1.4
					180	0.5	0.6	230	0.6	1.0	230	0.8	1.2	240	0.8	1.2
					210	0.3	0.4	290	0.4	0.8	290	0.6	1.0	300	0.6	1.0
H	Hardened Steel	43—55HRC	VP15TF	70 (50—90)	140	0.5	0.5	170	0.5	0.8	180	0.6	1.0	180	0.6	1.0
					180	0.4	0.3	230	0.4	0.6	230	0.5	0.8	240	0.5	0.8
					210	0.3	0.2	290	0.3	0.4	290	0.4	0.6	300	0.4	0.6

Workpiece		Hardness	Grade	Cutting Speed (m/min)	φ 40 (φ 42 Shank)			φ 50/63 (Shank type)			φ 50/63 (Arbor type)			φ 80/100/125/160 (Arbor type)		
					Over-hang (mm)	Axial Depth of Cut (mm)	Feed per Tooth (mm/tooth)	Over-hang (mm)	Axial Depth of Cut (mm)	Feed per Tooth (mm/tooth)	Over-hang (mm)	Axial Depth of Cut (mm)	Feed per Tooth (mm/tooth)	Over-hang (mm)	Axial Depth of Cut (mm)	Feed per Tooth (mm/tooth)
P	Mild Steel	≤ 180HB	FH7020	170 (120—220)	180	1.2	1.5	180	1.4	1.5	150	1.5	1.5	170	1.5	1.5
	Carbon Steel	180—280HB	FH7020	150 (100—200)	240	1.0	1.3	240	1.2	1.3	250	1.3	1.3	300	1.3	1.3
	Alloy Steel	280—350HB	FH7020	130 (80—180)	180	1.0	1.5	180	1.2	1.5	150	1.3	1.5	170	1.3	1.5
	Alloy Tool Steel	≤ 350HB			240	0.8	1.3	240	1.0	1.3	250	1.1	1.3	300	1.1	1.3
	Pre-hardened Steel	≤ 35HRC 35—43HRC	FH7020	120 (80—160)	180	1.0	1.3	180	1.2	1.3	150	1.3	1.3	170	1.3	1.3
					240	0.8	1.1	240	1.0	1.1	250	1.1	1.1	300	1.1	1.1
300					0.6	0.9	—	—	—	350	0.9	0.9	450	0.8	0.8	
M	Stainless Steel	≤ 270HB	VP30RT	120 (80—160)	180	1.2	1.3	180	1.4	1.3	150	1.5	1.3	170	1.5	1.3
					240	1.0	1.1	240	1.2	1.1	250	1.3	1.1	300	1.3	1.1
					300	0.8	0.9	—	—	—	350	1.1	0.9	450	1.0	0.8
K	Cast Iron	Tensile strength ≤ 350MPa	FH7020	150 (100—200)	180	1.2	1.7	180	1.4	1.7	150	1.5	1.7	170	1.5	1.7
					240	1.0	1.5	240	1.2	1.5	250	1.3	1.5	300	1.3	1.5
					300	0.8	1.3	—	—	—	350	1.1	1.3	450	1.0	1.2
	Ductile Cast Iron	Tensile strength ≤ 800MPa	VP15TF	120 (80—160)	180	1.0	1.5	180	1.2	1.5	150	1.3	1.5	170	1.3	1.5
					240	0.8	1.3	240	1.0	1.3	250	1.1	1.3	300	1.1	1.3
					300	0.6	1.1	—	—	—	350	0.9	1.1	450	0.8	1.0
H	Hardened Steel	43—55HRC	VP15TF	70 (50—90)	180	0.6	1.1	180	0.8	1.1	150	0.9	1.1	170	0.9	1.1
					240	0.5	0.9	240	0.6	0.9	250	0.7	0.9	300	0.7	0.9
					300	0.4	0.7	—	—	—	—	—	—	—	—	—

① Overhang length



② Main spindle revolution

$$N(\text{min}^{-1}) = (\text{Recommended cutting speed} \times 1000) \div (\text{outer tool diameter} \times 3.14)$$

③ Table feed rate

$$vf(\text{mm/min}) = N \times \text{feed per tooth} \times \text{number of teeth}$$

④ Recommended width of cut (ae) is more than 60% of cutter diameter.

⑤ The above cutting conditions are a guide when using a BT50 size holder. In case of BT40 and HSK63 machines, a cutter diameter of under 35mm is recommended. In this case, reduce the depth of cut and table feed rate.

⑥ Use of **ST** chipbreaker with a tougher cutting edge is recommended for interrupted cutting.

The first recommended insert grade for non-standard 06/08/09 **ST** chipbreakers is **VP30RT** irrespective of workpiece materials.

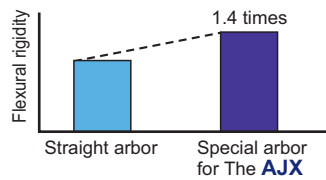
⑦ A cutter body with a coarse pitch is recommended for use in unstable conditions such as a long tool overhang.

⑧ Use "sharp" JM chipbreaker to lower cutting forces or when there is a long tool overhang.

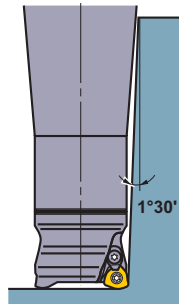
⑨ Large chips are generated when machining with the **AJX**. To avoid a chip jamming-related problems, machine using an air blow to disperse the chips effectively.

Effective Use

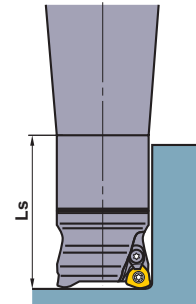
The special arbors for the **AJX** use a tapered body, and thereby achieve improved rigidity when compared to straight arbors.



* BT50-22-298-50TA



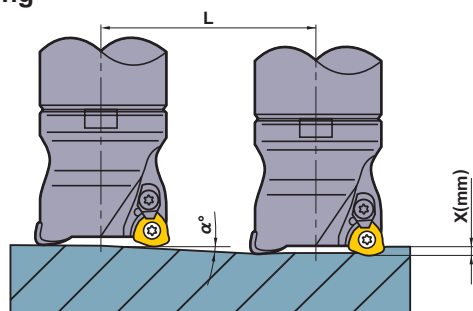
The 1°30' draft angle of the special tapered body of the arbor enables machining without touching finished wall.



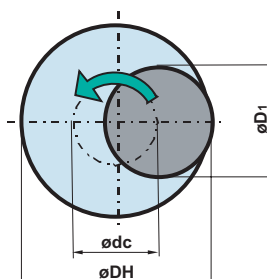
Vertical wall machining is possible within the range of **Ls**.

Maximum Capacities

Ramping



Helical Cutting



- How to derive a locus of the centre of the tool.

$$\phi_{dc} = \phi_{DH} - \phi_{D1}$$

Locus of the center of the tool Desired hole diameter Cutting edge diameter

- Please set the depth of cut per cycle under max. depth of cut (ap).
- Please machine in a down cutting direction (climb milling).

- When ramping and helical cutting, please apply a lower feed (60% of the calculated feed rate or less).
- When drilling, please set the feed in the axial direction 0.2mm/rev or less.

Type	Order Number	Tool Diameter (mm)	Machined Face Diameter (mm)	Max. Depth of Cut ap (mm)	Ramp Machining				Helical Cutting		Max. Drilling Depth A2 (mm)
					Max. Angle	Required Distance for X mm Depth L (mm)			Min. Hole Diameter DH (mm)	Max. Hole Diameter DH (mm)	
						X=1	X=1.5	X=2			
Shank type	AJX06R162	16	8	1.0	3°	19.1	—	—	23	29	0.3
	06R172	17	9	1.0	2°30′	22.9	—	—	25	31	0.3
	06R203	20	12	1.0	1°30′	38.2	—	—	31	37	0.3
	06R223	22	14	1.0	1°	57.3	—	—	35	41	0.3
	08R202	20	11	1.5	3°30′	16.3	24.5	—	27	36	0.5
	08R222	22	13	1.5	3°	19.1	28.6	—	31	40	0.5
	08R253	25	16	1.5	2°	28.6	43.0	—	37	46	0.5
	08R283	28	19	1.5	1°42′	33.7	50.5	—	43	52	0.5
	09R252	25	14	2.0	4°	14.3	21.5	28.6	33	46	1.0
	09R282	28	17	2.0	3°	19.1	28.6	38.1	39	52	1.0
	09R303	30	19	2.0	2°42′	21.2	31.8	42.4	43	56	1.0
	09R323	32	21	2.0	2°30′	22.9	34.4	45.8	47	60	1.0
	09R353	35	24	2.0	2°	28.6	43.0	57.3	53	66	1.0
	09R404	40	29	2.0	1°30′	38.2	57.3	76.4	63	76	1.0
	12R302	30	18	2.0	4°30′	12.7	19.0	25.4	39	56	1.5
	12R322	32	20	2.0	4°	14.3	21.4	28.6	41	60	1.5
	12R352	35	23	2.0	3°30′	16.3	24.5	32.7	47	66	1.5
	12R402	40	28	2.0	3°	19.1	28.6	38.2	57	76	1.5
Arbor type	12R403	40	28	2.0	3°	19.1	28.6	38.2	57	76	1.5
	14R503	50	38	2.0	4°12′	13.6	20.4	27.2	72	96	2.0
	14R634	63	51	2.0	2°48′	20.4	30.7	40.9	98	122	2.0
	AJX09-050	50	39	2.0	1°06′	52.1	78.1	104.2	83	96	1.0
	09-052	52	41	2.0	1°	57.3	85.9	114.6	87	100	1.0
	AJX12-050	50	38	2.0	2°	28.6	43.0	57.3	77	96	1.5
	R050	50	38	2.0	2°	28.6	43.0	57.3	77	96	1.5
	-052	52	40	2.0	1°48′	31.8	47.7	63.6	81	100	1.5
	-063	63	51	2.0	1°30′	38.2	57.3	76.4	103	122	1.5
	-066	66	54	2.0	1°24′	40.9	61.4	81.8	109	128	1.5
	-080	80	68	2.0	1°06′	52.1	78.1	104.2	137	156	1.5
	-100	100	88	2.0	0°48′	71.6	107.4	143.2	177	196	1.5
	AJX14-063	63	51	2.0	2°48′	20.4	30.7	40.9	98	122	2.0
	R063	63	51	2.0	2°48′	20.4	30.7	40.9	98	122	2.0
	-066	66	54	2.0	2°30′	22.9	34.4	45.8	105	128	2.0
	R080	80	68	2.0	1°48′	31.8	47.7	63.6	132	156	2.0
	R100	100	88	2.0	1°12′	47.7	71.6	95.5	172	196	2.0
	R125	125	113	2.0	0°48′	71.6	107.4	143.2	222	246	2.0
R160	160	148	2.0	0°30′	114.6	171.9	229.2	292	316	2.0	