

PRODUCT NEWS

PN-E-022

SERIES EXPANSION

Aerospace Tooling

NEW



AMX/MAM type

AMX / MAM type

- Facemill $\phi 40 - 63$
- Modular head $\phi 16 - 42$

ALX / MAL type

- Facemill $\phi 50 - 63$
- Modular head $\phi 20 - 40$
- Endmill Shank $\phi 20 - 40$

KALIP TEKNİK

DIJET®

For High Precision & High Efficient Machining of Aluminium Alloys

AERO-CHIPPER

"AERO-CHIPPER-MINI" AMX/MAM type

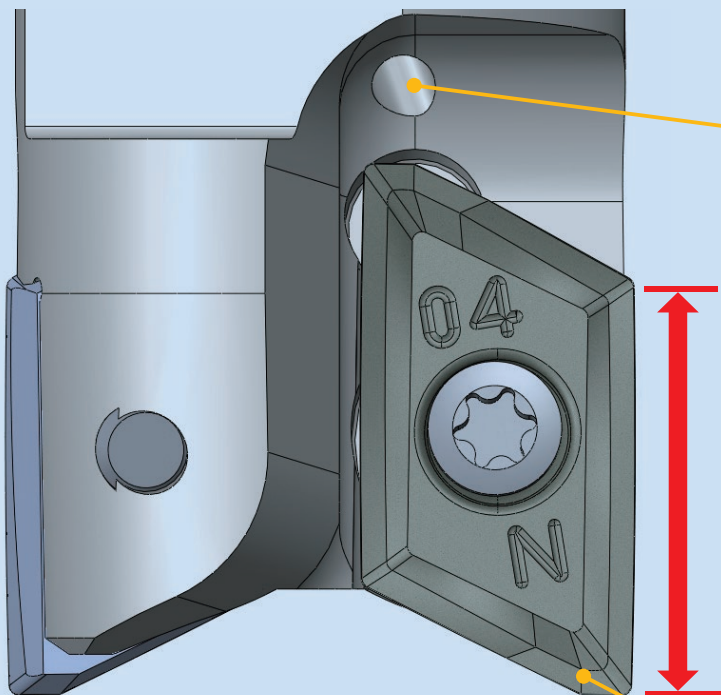
"AERO-CHIPPER" ALX/MAL type



KALIP TEKNİK

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High Precision & High Efficient Machining on Aerospace tooling



■ **Through coolant hole**

■ **High Precision**

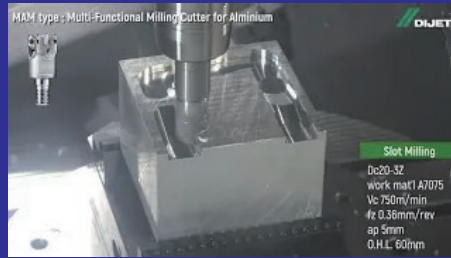
- Combination of high accuracy body and ground insert gives excellent side wall finish.

■ **Multi Function**



■ **High Efficiency**

- Sharp & Unique 3D geometry insert enables high efficiency and low cutting resistance machining. Key in insert gives added security allowing high speed spindle machining.



Movie



TECHNICAL
INFORMATION

AMX / MAM type



- Facemill type
 $\phi 40 - \phi 63$
- Modular Head type
 $\phi 16 - \phi 42$

MAX.ap = 8mm

XOET0803..PDFR

grade: **FZ05**

RE: 0.4 - 2.0



ALX / MAL type



- Facemill type
 $\phi 50 - \phi 63$
- Modular Head type
 $\phi 20 - \phi 40$
- Endmill Shank type
 $\phi 20 - \phi 40$

MAX.ap = 15mm

XOGT1605..PDFR

grade: **FZ05**

RE: 0.2 - 4.0



XOGT1605..PDER

grade: **JC5118**

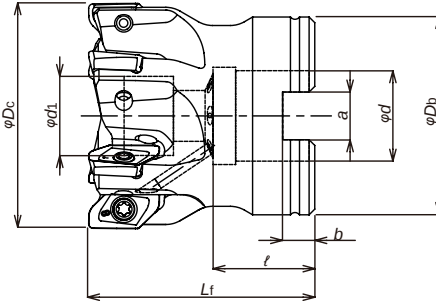
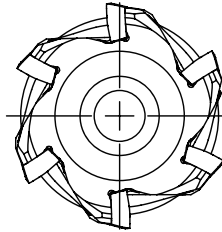
RE: 0.2 - 3.2





AMX / MAM type

■ Facemill type



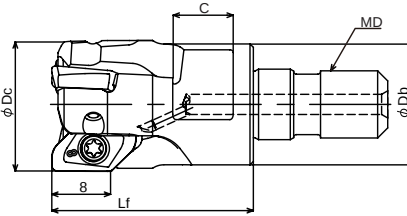
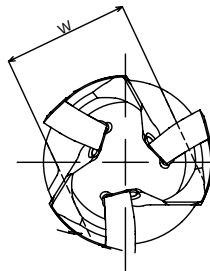
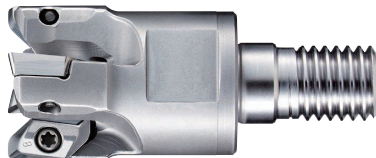
RECOMMENDED
CUTTING CONDITIONS

Cat.No.	Stock	No. of inserts	Dimensions(mm)								Max. spindle speed (min ⁻¹)	Weight (kg)	Inserts
			ϕD_c	L_f	ϕD_b	ϕd	ϕd_1	a	b	ℓ			
AMX-6040R-16	●	6	40	40	35	16	14	8.4	5.6	18	28,000	0.2	XOET0803**PDFR
AMX-7050R-22	●	7	50	40	45	22	16.5	10.4	6.3	20	24,000	0.3	
AMX-8063R-22	●	8	63	40	50	22	17	10.4	6.3	20	21,000	0.48	

Note) 1. All cutters are supplied without inserts or wrenches.
2. In case to use cutting speed over 1,000m/min, please adjust the arbor with the holder within grade G6.3 of the rotating machines-balance quality requirements of rigid rotors (JIS B 0905).

Screw	Torque(N.m)	Wrench
TSW-2567H	1.1	A-08

■ Modular Head type



RECOMMENDED
CUTTING CONDITIONS

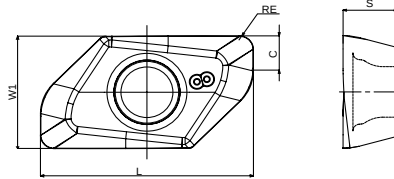
Cat.No.	Stock	No. of inserts	Dimensions(mm)						Max. spindle speed(min ⁻¹)	Inserts	Parts	
			φD _c	L _f	φD _b	MD	C	W			Clamp screw	Wrench
MAM-2016-M8	●	2	16	23	14	M8	8	12	40,000	XOET0803**PDFR	TSW-2556H	A-08
MAM-3020-M10	●	3	20	30	18	M10	9	14	40,000		TSW-2567H	
MAM-3025-M12	○	3	25	35	22	M12	11	19	40,000			
MAM-4025-M12	●	4	25	35	22	M12	11	19	40,000			
MAM-4028-M12	○	4	28	35	23.6	M12	11	19	36,000			
MAM-4030-M16	○	4	30	43	27	M16	12	22	34,000			
MAM-5032-M16	●	5	32	43	29	M16	12	22	33,000			
MAM-5035-M16	○	5	35	43	32	M16	14	26	31,000			
MAM-6040-M16	●	6	40	43	32	M16	14	26	28,000			
MAM-6042-M16	○	6	42	43	32	M16	14	26	27,000			

Note) 1. All cutters are supplied without inserts or wrenches.
2. In case to use cutting speed over 1,000m/min, please adjust the arbor with the holder within grade G6.3 of the rotating machines-balance quality requirements of rigid rotors (JIS B 0905).

Screw	Torque(N.m)	Wrench
TSW-2556H	1.1	A-08
TSW-2567H		

AMX / MAM type

■ Insert



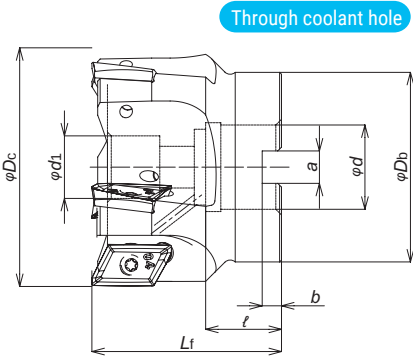
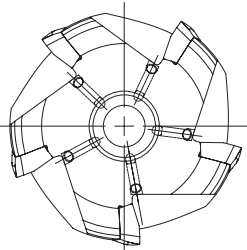
Cat.No.	Tolerance	Uncoated	Dimensions (mm)				
		FZ05	RE	L	W1	S	C
XOET080304PDFR	E	●	0.4	12.5	6.8	3.2	1.7
XOET080308PDFR		●	0.8	12.5	6.8	3.2	2
XOET080316PDFR		●	1.6	12.5	6.8	3.2	2.9
XOET080320PDFR		●	2.0	12.5	6.8	3.2	3

Note) 10 inserts per case.



ALX / MAL type

Facemill type



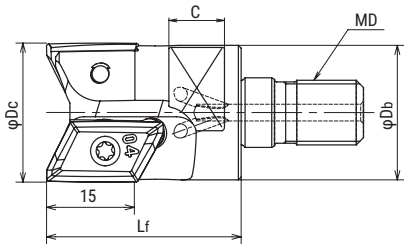
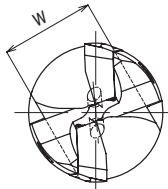
RECOMMENDED CUTTING CONDITIONS

Cat.No.	Stock	No. of inserts	Dimensions(mm)								Max. spindle speed (min ⁻¹)	Weight (kg)	Inserts
			ϕD_c	L_f	ϕD_b	ϕd	ϕd_1	a	b	ℓ			
ALX4050R-22	●	4	50	50	45	22	16.5	10.4	6.3	20	24,000	0.4	XOGT1605**PD*R
ALX5063R-22	●	5	63		50						21,000	0.6	

Note) 1. All cutters are supplied without inserts or wrenches.
2. Body must be modified to 1.5mm radius or 1.2mm chamfer at corner to use 3.0mm or 3.2mm corner radius insert.
3. In case to use cutting speed over 1,000m/min, please adjust the arbor with the holder within grade G6.3 of the rotating machines-balance quality requirements of rigid rotors (JIS B 0905).

Screw	Torque(N.m)	Wrench
DSW-4085	3.6	A-15

Modular Head type



RECOMMENDED CUTTING CONDITIONS

Cat.No.	Stock	No. of inserts	Dimensions(mm)						Max. spindle speed (min ⁻¹)	Inserts
			ϕD_c	L_f	ϕD_b	MD	C	W		
MAL-1020-M10	●	1	20	35	19.5	M10	9	14	15,000	XOGT1605**PD*R
MAL-2025-M12	●	2	25		24	M12	10	19	40,000	
MAL-2028-M12	○		28			M12			36,000	
MAL-2030-M16	○		30	43	28	M16	12	22	34,000	
MAL-2032-M16	●		32		29	M16			33,000	
MAL-2035-M16	○		35			M16			31,000	
MAL-3040-M16	●	3	40		32	M16	14	26	28,000	

Note) 1. All cutters are supplied without inserts or wrenches.
2. Body must be modified to 1.5mm radius or 1.2mm chamfer at corner to use 3.0mm or 3.2mm corner radius insert.
3. In case to use cutting speed over 1,000m/min, please adjust the arbor with the holder within grade G6.3 of the rotating machines-balance quality requirements of rigid rotors (JIS B 0905).

Screw	Torque(N.m)	Wrench
DSW-4085	3.6	A-15

Part to be modified

R2.6

Part to be modified

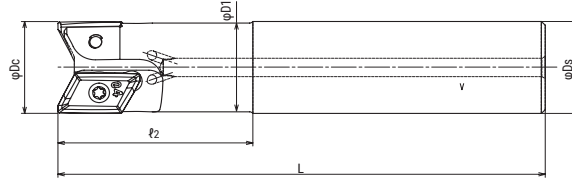
C2.3

When using inserts with corner radius RE 4 (XOGT160540PDFR), Standard cutter body has to be modified with R2.6 or C2.3

ALX / MAL type

■ Endmill Shank type

Through coolant hole



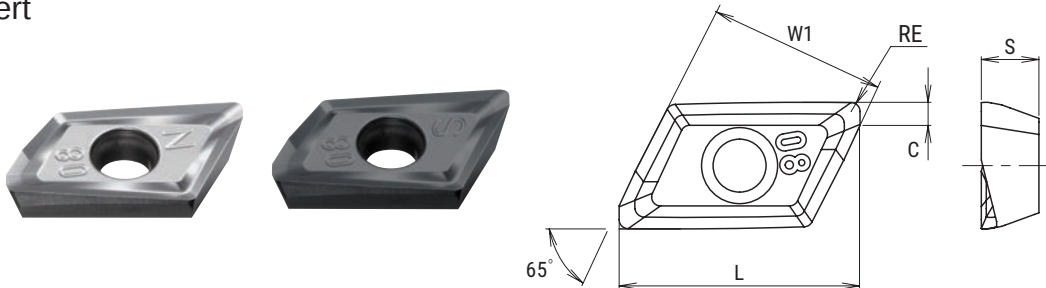
RECOMMENDED CUTTING CONDITIONS

Cat.No.	Stock	No. of inserts	Dimensions(mm)					Max. spindle speed(min ⁻¹)	Parts		Inserts
			φDc	ℓ ₂	L	φD1	φDs		Screw	Wrench	
ALXM1020S20	●	1	20	35	110	19.18	20	15,000	DSW-4075H	A-15	XOGT1605**PD*R
ALXM2025S25	●	2	25	50	125	24	25	40,000	DSW-4085		
ALXM2028S25	●		28		26.87	36,000					
ALXM2032S32	●		32		30.5	33,000					
ALXM2035S32	○		35		33.32	31,000					
ALXM3040S32	●	3	40	80	170	37.96	28,000				

Note) 1. All cutters are supplied without inserts or wrenches.
 2. Body must be modified to 1.5mm radius or 1.2mm chamfer at corner to use 3.0mm or 3.2mm corner radius insert.
 3. In case to use cutting speed over 1,000m/min, please adjust the arbor with the holder within grade G6.3 of the rotating machines-balance quality requirements of rigid rotors (JIS B 0905).

Screw	Torque(N.m)
DSW-4075H	3.6
DSW-4085	3.6

■ Insert



Cat.No.	Tolerance	PVD Coating	Uncoated	Dimensions (mm)								
		JC5118	FZ05	RE	L	W1	S	C				
XOGT160502PDFR	G		●	0.2	20.8	16.35	5	2.5				
XOGT160504PDFR			●	0.4	21.0			20.9	20.7	2.4		
XOGT160508PDFR			●	0.8						2.5		
XOGT160512PDFR			●	1.2	20.9			2.6				
XOGT160516PDFR			●	1.6	20.7			2.8				
XOGT160520PDFR			●	2.0	20.6			3				
XOGT160525PDFR			●	2.5	20.3			3.3				
XOGT160530PDFR			●	3.0	20.1			3.5				
XOGT160532PDFR			●	3.2	19.9			4.3				
XOGT160540PDFR			●	4.0	19.2			2.5				
XOGT160502PDER			●		0.2			20.8	21.0	20.9	20.7	2.4
XOGT160504PDER			●		0.4			2.5				
XOGT160508PDER			●		0.8			20.9	2.6			
XOGT160512PDER			●		1.2			20.7	2.8			
XOGT160516PDER			●		1.6			20.6	3.3			
XOGT160520PDER			●		2.0			20.1	3.5			
XOGT160530PDER			●		3.0			19.9				
XOGT160532PDER			●		3.2							

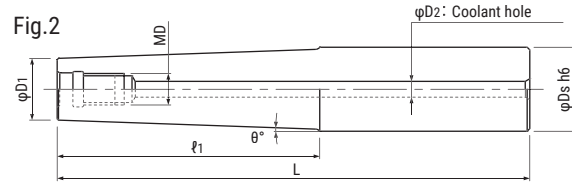
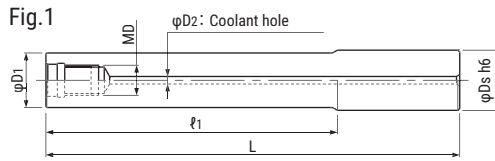
Note) 10 inserts per case.

● : Standard stock items

○ : Stock in Japan

Through coolant hole

■ Endmill Shank type



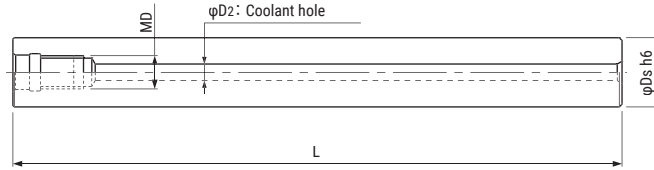
Cat.No.	Stock	Dimensions(mm)							Weight (kg)	Fig.
		φDs	ℓ1	L	φD1	θ°	MD	φD2		
MSN-M8-20-S16C	●	16	20	75	15.5	-	M8	4	0.17	1
MSN-M8-40-S16C	●	16	40	95	15.5	-			0.22	1
MSN-M8-40T-S20C	○	20	40	100	14.5	3°30'			0.36	2
MSN-M8-77T-S20C	●	20	77	143	14.5	1°45'			0.49	2
MSN-M8-80-S16C	●	16	80	135	15.5	-			0.32	1
MSN-M8-120-S16C	●	16	120	175	15.5	-			0.42	1
MSN-M8-152-S16C	●	16	152	207	15.5	-			0.51	1
MSN-M10-20-S20C	●	20	20	80	19.5	-	M10	4	0.29	1
MSN-M10-40-S20C	●	20	40	100	19.5	-			0.39	1
MSN-M10-40T-S20C	●	20	40	100	18.5	0°43'			0.39	2
MSN-M10-70-S20C	●	20	70	130	19.5	-			0.50	1
MSN-M10-85T-S25C	●	25	85	161	18.5	2°			0.90	2
MSN-M10-90-S20C	●	20	90	150	19.5	-			0.60	1
MSN-M10-90T-S20C	●	20	90	150	18.5	0°19'			0.58	2
MSN-M10-140-S20C	●	20	140	200	19.5	-			0.80	1
MSN-M10-140T-S20C	●	20	140	200	18.5	0°12'			0.77	2
MSN-M10-160-S20C	●	20	160	220	19.5	-			0.87	1
MSN-M10-210-S20C	●	20	210	270	19.5	-			1.07	1
MSN-M12-25-S25C	●	25	25	90	24	-	M12	6	0.53	1
MSN-M12-55-S25C	●	25	55	120	24	-			0.72	1
MSN-M12-100T-S32C	○	32	100	180	23.5	2°			1.61	2
MSN-M12-105-S25C	●	25	105	170	24	-			1.03	1
MSN-M12-135-S25C	●	25	135	215	24	-			1.30	1
MSN-M12-155-S25C	●	25	155	220	24	-			1.34	1
MSN-M12-200-S25C	●	25	200	265	24	1°30'			1.58	1
MSN-M16-25-S32C	●	32	25	90	29	-	M16	8	0.85	1
MSN-M16-55-S32C	●	32	55	120	29	-			1.13	1
MSN-M16-77-S32C	●	32	77	157	29	-			1.47	1
MSN-M16-97-S32C	●	32	97	177	29	-			1.64	1
MSN-M16-105-S32C	●	32	105	170	29	-			1.59	1
MSN-M16-117T-S32C	○	32	117	197	29	0°38'			1.88	2
MSN-M16-127-S32C	●	32	127	207	29	-			1.89	1
MSN-M16-127T-S32C	○	32	127	207	29	0°30'			2.23	2
MSN-M16-155-S32C	●	32	155	220	29	-			2.04	1
MSN-M16-177-S32C	●	32	177	257	29	-			2.32	1
MSN-M16-177T-S32C	●	32	177	257	29	0°23'			2.78	2
MSN-M16-195-S32C	●	32	195	260	29	-			2.40	1
MSN-M16-197T-S32C	○	32	197	277	29	0°23'			3.00	2
MSN-M16-225-S32C	●	32	225	290	29	-			2.57	1
MSN-M16-245-S32C	●	32	245	310	29	-			2.74	1
MSN-M16-295-S32C	●	32	295	360	29	-			3.17	1

Carbide Modular Head Holder

MSN type

Through coolant hole

■ Straight type



Cat.No.	Stock	Dimensions(mm)				Weight (kg)
		φDs	L	MD	φD2	
MSN-M8-87S-S14C	○	14	87	M8	4	0.16
MSN-M8-137S-S14C	●	14	137		4	0.26
MSN-M8-97S-S15C	●	15	97		4	0.21
MSN-M8-147S-S15C	●	15	147		4	0.33
MSN-M8-197S-S15C	●	15	197		4	0.44
MSN-M8-107S-S16C	●	16	107		4	0.27
MSN-M8-157S-S16C	●	16	157		4	0.40
MSN-M10-130S-S18C	●	18	130	M10	4	0.42
MSN-M10-190S-S18C	●	18	190		4	0.62
MSN-M10-240S-S18C	●	18	240		4	0.89
MSN-M10-130S-S20C	●	20	130		4	0.53
MSN-M10-190S-S20C	●	20	190		4	0.78
MSN-M10-250S-S20C	●	20	250	M12	4	1.02
MSN-M12-185S-S23C	●	23	185		6	0.98
MSN-M12-265S-S23C	●	23	265		6	1.42
MSN-M12-185S-S24C	●	24	185		6	1.07
MSN-M12-265S-S24C	●	24	265		6	1.54
MSN-M12-145S-S25C	●	25	145		6	0.91
MSN-M12-215S-S25C	●	25	215		6	1.36
MSN-M12-285S-S25C	●	25	285	M16	6	1.80
MSN-M16-160S-S28C	●	28	160		8	1.22
MSN-M16-230S-S28C	●	28	230		8	1.77
MSN-M16-310S-S28C	●	28	310		8	2.41
MSN-M16-157S-S32C	●	32	157		8	1.61
MSN-M16-217S-S32C	●	32	217		8	2.22
MSN-M16-287S-S32C	●	32	287		8	2.94
MSN-M16-357S-S32C	●	32	357		8	3.66

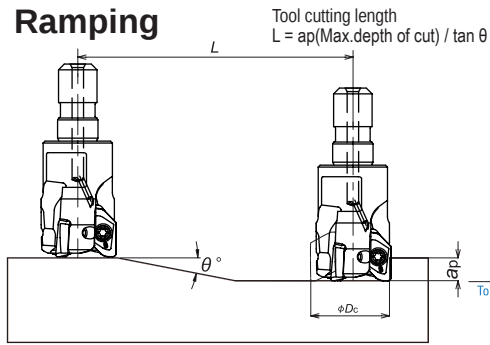


ATTENTION

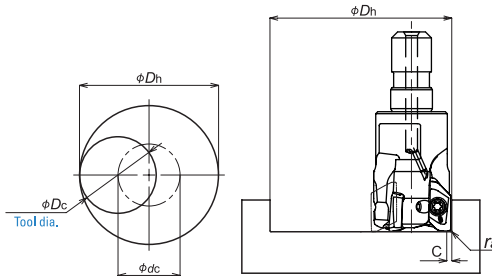
AMX / MAM type

Recommended Data for Profile Milling

Ramping



Helical interpolation



● Calculation of tool pass dia.

$$\phi dc = \phi Dh - \phi Dc$$

Tool pass dia. Bore dia. Tool dia.

- Depth of cut per one circuit should not exceed max. depth of cut ap.

- Down cutting is recommended, so tool pass rotation should be counterclockwise.

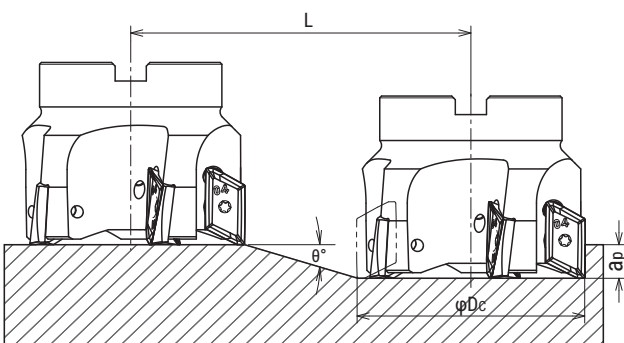
Cat.No.	Tool dia.	RE	Eff.Cutting dia. (mm)	Max. Depth of cut (mm) ap	Ramping		Helical interpolation			Max. Drilling Depth (mm)
					Max. ramping angle θ°	Total cutting length at Max.ap L (mm)	Through hole Min. bore dia. Dh min (mm)	Flat bottom Min.bore dia. Df min (mm)	Through hole Max. bore dia. phi Dh max (mm)	
MAM-2016-M8	16	0.4	15.1	5	18	15.4	20	29.0	31	2.5
MAM-2016-M8	16	0.8	14.3	5	18	15.4	20	28.5	31	2.5
MAM-2016-M8	16	1.6	12.7	5	18	15.4	20	27.0	31	2.5
MAM-2016-M8	16	2.0	11.9	5	18	15.4	20	26.5	31	2.5
MAM-3020-M10	20	0.4	19.1	5	14	20.1	28	37.0	39	2.5
MAM-3020-M10	20	0.8	18.3	5	14	20.1	28	36.5	39	2.5
MAM-3020-M10	20	1.6	16.7	5	14	20.1	28	35.0	39	2.5
MAM-3020-M10	20	2.0	15.9	5	14	20.1	28	34.5	39	2.5
MAM-3025... / MAM-4025...	25	0.4	24.1	5	10	28.4	38	47.0	49	2.5
MAM-3025... / MAM-4025...	25	0.8	23.3	5	10	28.4	38	46.5	49	2.5
MAM-3025... / MAM-4025...	25	1.6	21.7	5	10	28.4	38	45.0	49	2.5
MAM-3025... / MAM-4025...	25	2.0	20.9	5	10	28.4	38	44.5	49	2.5
MAM-4028-M12	28	0.4	27.1	5	8.5	33.5	44	53.0	55	2.5
MAM-4028-M12	28	0.8	26.3	5	8.5	33.5	44	52.5	55	2.5
MAM-4028-M12	28	1.6	24.7	5	8.5	33.5	44	51.0	55	2.5
MAM-4028-M12	28	2.0	23.9	5	8.5	33.5	44	50.5	55	2.5
MAM-4030-M16	30	0.4	29.1	5	7.5	38.0	48	57.0	59	2.5
MAM-4030-M16	30	0.8	28.3	5	7.5	38.0	48	56.5	59	2.5
MAM-4030-M16	30	1.6	26.7	5	7.5	38.0	48	55.0	59	2.5
MAM-4030-M16	30	2.0	25.9	5	7.5	38.0	48	54.5	59	2.5
MAM-5032-M16	32	0.4	31.1	5	7	40.7	52	61.0	63	2.5
MAM-5032-M16	32	0.8	30.3	5	7	40.7	52	60.5	63	2.5
MAM-5032-M16	32	1.6	28.7	5	7	40.7	52	59.0	63	2.5
MAM-5032-M16	32	2.0	27.9	5	7	40.7	52	58.5	63	2.5
MAM-5035-M16	35	0.4	34.1	5	6	47.6	58	67.0	69	2.5
MAM-5035-M16	35	0.8	33.3	5	6	47.6	58	66.5	69	2.5
MAM-5035-M16	35	1.6	31.7	5	6	47.6	58	65.0	69	2.5
MAM-5035-M16	35	2.0	30.9	5	6	47.6	58	64.5	69	2.5
MAM-6040... / AMX-6040...	40	0.4	39.1	5	5	57.2	68	77.0	79	2.5
MAM-6040... / AMX-6040...	40	0.8	38.3	5	5	57.2	68	76.5	79	2.5
MAM-6040... / AMX-6040...	40	1.6	36.7	5	5	57.2	68	75.0	79	2.5
MAM-6040... / AMX-6040...	40	2.0	35.9	5	5	57.2	68	74.5	79	2.5
MAM-6042-M16	42	0.4	41.1	5	5	57.2	72	81.0	83	2.5
MAM-6042-M16	42	0.8	40.3	5	5	57.2	72	80.5	83	2.5
MAM-6042-M16	42	1.6	38.7	5	5	57.2	72	79.0	83	2.5
MAM-6042-M16	42	2.0	37.9	5	5	57.2	72	78.5	83	2.5
AMX-7050R-22	50	0.4	49.1	5	4	71.5	88	97	99	2.5
AMX-7050R-22	50	0.8	48.3	5	4	71.5	88	96.5	99	2.5
AMX-7050R-22	50	1.6	46.7	5	4	71.5	88	94.5	99	2.5
AMX-7050R-22	50	2.0	45.9	5	4	71.5	88	94.5	99	2.5
AMX-8063R-22	63	0.4	62.1	5	3	95.4	114	123.0	125	2.5
AMX-8063R-22	63	0.8	61.3	5	3	95.4	114	122.5	125	2.5
AMX-8063R-22	63	1.6	59.7	5	3	95.4	114	120.5	125	2.5
AMX-8063R-22	63	2.0	58.9	5	3	95.4	114	120.5	125	2.5

- 10
- In case of ramping, apply 70% or less feed (Vf) from standard cutting condition table.
 - Wet cutting is recommended.

ALX / MAL type

Recommended Data for Profile Milling

Ramping

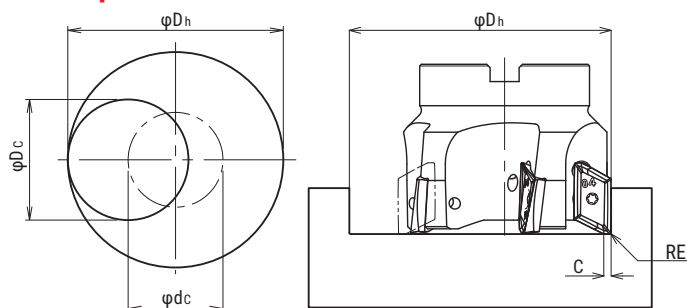


Tool dia. (mm)	Aluminium		Stainless steel		Titanium alloy		Max. Depth of cut (mm)
	Max. ramping angle (°)	Cutting length (mm)	Max. ramping angle (°)	Cutting length (mm)	Max. ramping angle (°)	Cutting length (mm)	
φDc	θ°	L	θ°	L	θ°	L	ap
20	16	28	10	45	10	45	8
25	11	41	9	51	9	51	8
28	9	51	7	65	7	65	8
30	8	57	6	76	6	76	8
32	7	65	6	76	6	76	8
35	6	76	6	76	6	76	8
40	5	91	5	91	5	91	8
50	4	114	4	114	4	114	8
63	3	153	3	153	3	153	8

Note

1. In case of ramping, apply 70% or less feed (Vf) from standard cutting condition table.
2. When cutting Titanium/Stainless steel, apply 0.005mm or less (fz) from standard cutting condition table.
3. Wet cutting is recommended.

Helical interpolation



- Calculation of tool pass dia.

$$\phi_{dc} = \phi_{Dh} - \phi_{Dc}$$

Tool pass dia. Bore dia. Tool dia.

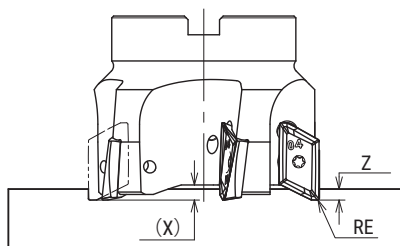
- Depth of cut per one circuit should not exceed max. depth of cut Ap
- Down cutting is recommended, tool pass rotation should be counterclockwise

Tool dia. (mm)	Min.bore dia. (mm)	Max. Bore dia. (mm)	Max.Depth of cut (mm)		
			Aluminium	Stainless steel	Titanium alloy
φDc	φDh min.	φDh max.			
20	35.8	38.6	15	9	9
25	45.8	48.6	13	11	11
28	51.8	54.6	12	10	10
30	55.8	58.6	11	10	10
32	59.8	62.6	11	10	10
35	65.8	68.6	11	11	11
40	75.8	78.6	10	10	10
50	96.8	98.6	10	10	10
63	122.8	124.6	10	10	10

Note

1. In case of helical interpolation, apply 70% or less feed (Vf) from standard cutting condition table.
2. When cutting Titanium/Stainless steel, apply 0.005mm or less (fz) from standard cutting condition table.
3. Wet cutting is recommended.

Drilling



Coner radius R (mm)	Max. depth of cut: Z (mm)
RE	Z
R2.5 or below	3
R3 / R3.2	2
R4	1.5

Note

1. Do not combine drilling and ramping together.
2. In case of drilling, apply 50% or less feed (Vf) from standard cutting condition table.
3. Long chips may come out in case of drilling, confirm safe operating conditions.



JQA-2089



JQA-EM1580

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