MOLDINO
The Edge To Innovation

ASRF/M Turbo4 Mini

Super Radius Mill Four Corners for High Feed Milling

D 20 mm ~ D 66 mm
- Modular & Bore Types
- 4 Cutting Edges Insert Geometry Turbo4
- CAM Radius: R2

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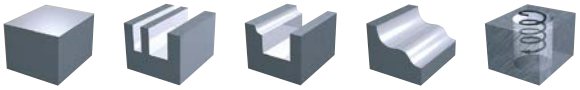
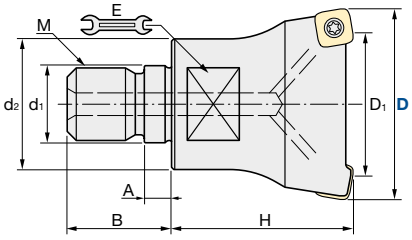
No. 335.2 | ASRF-Mini | 2020-03

ASRFM | Turbo4 - Mini | Modular Type

Q max	Jet	▽	▽▽	HRC	No. of Teeth
High Efficient	Air Hole	Roughing	Semi-Finishing	60	2 – 5





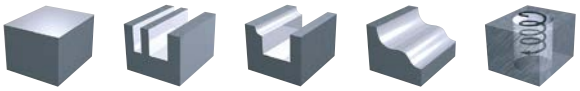
Diameter Holder only [mm]	CAM Radius:	Fastening Torque [Nm]
-0.1/-0.2 mm	2.0 mm	2.0 Nm

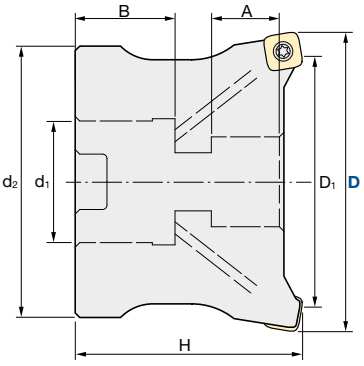
Modular Type												
ID Code	Item Code	Flutes	D	H	D_1	d_1	M	d_2	A	B	E	Inserts
FH552	**ASRFM-3020R-2-M10**	2	**20**	30	8	10.5	M10	17.8	5.5	19	15	SPNW07T2TR SPMT07T2TR SPMT07T2ER-LF
FH553	**ASRFM-3025R-3-M12**	3	**25**	35	13	12.5	M12	20.8	5.5	22	17	
FH554	**ASRFM-3032R-4-M16**	4	**32**	40	20	17	M16	28.8	6	23	22	
FH555	**ASRFM-3035R-4-M16**	4	**35**	40	23	17	M16	28.8	6	23	22	
FH556	**ASRFM-3040R-5-M16**	5	**40**	40	28	17	M16	28.8	6	23	22	
FH557	**ASRFM-3042R-5-M16**	5	**42**	40	30	17	M16	28.8	6	23	22	

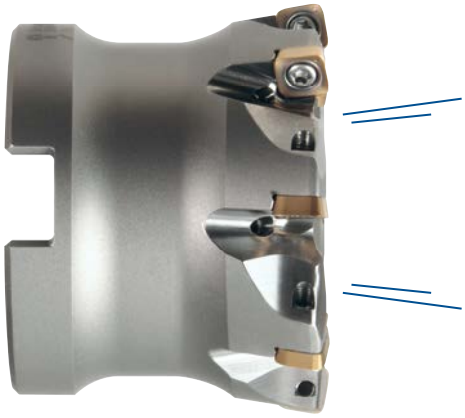
Wrench Size

ASRFB | Turbo4 - Mini | Bore Type

Q max	Jet	▽	▽▽	HRC	No. of Teeth
High Efficient	Air Hole	Roughing	Semi-Finishing	60	5 – 8







Diameter Holder only [mm]	CAM Radius:	Fastening Torque [Nm]
-0.1/-0.2 mm	2.0 mm	2.0 Nm

Bore Type										
ID Code	Item Code	Z	D	H	D_1	d_1	d_2	A	B	Inserts
FH558	**ASRFB-3040RM-5-16**	5	**40**	40	28	16	35	10.54	19	SPNW07T2TR SPMT07T2TR SPMT07T2ER-LF
FH559	**ASRFB-3042RM-5-16**	5	**42**	40	30	16	35	10	19	
FH560	**ASRFB-3050RM-7-22**	7	**50**	50	38	22	40	17	20	
FH561	**ASRFB-3052RM-7-22**	7	**52**	50	40	22	40	17	20	
FH562	**ASRFB-3063RM-8-27**	8	**63**	50	51	27	60	16	22	
FH563	**ASRFB-3066RM-8-27**	8	**66**	50	54	27	60	16	22	

INSERTS ASRF | Turbo4 - Mini

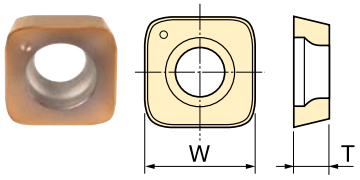


Fig.1 Standard type

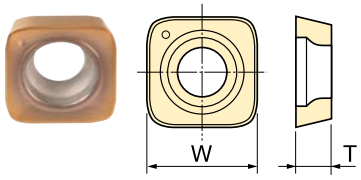


Fig.2 Low-resistance breaker type

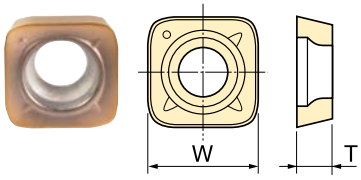


Fig.3 Low-Force type

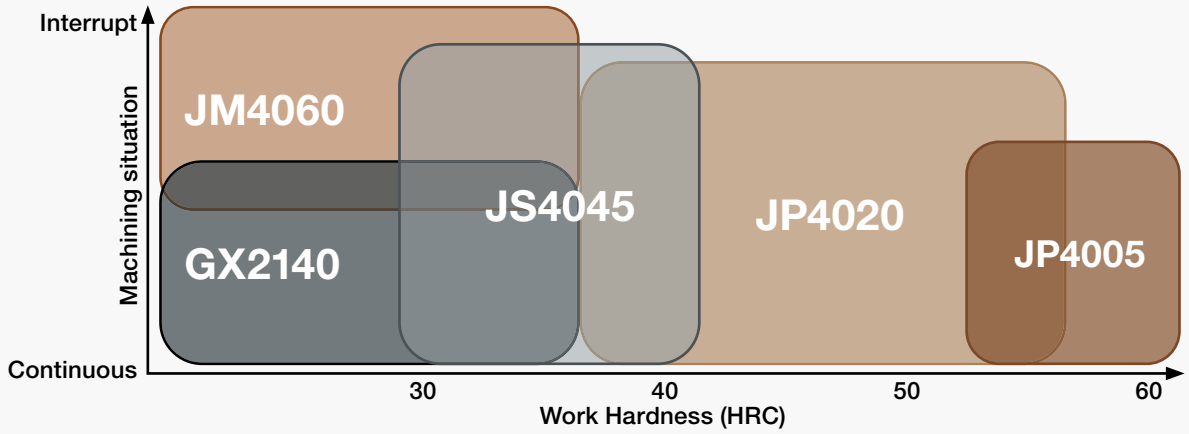
Soft — Target Hardness of Workpiece — Hard

Inserts	Tolerance Class	Grade					Size (mm)			
		GX2140	JM4060	JS4045	JP4020	JP4005				
Item code		ID-Code					CAM R	W	T	Shape
SPNW07T2TR	M	WF716	WF717	WF715	WF714	WF713	2	7.94	2.78	Fig.1
SPMT07T2TR			WF720	WF719	WF718					Fig.2
SPMT07T2ER-LF			WF721							Fig.3

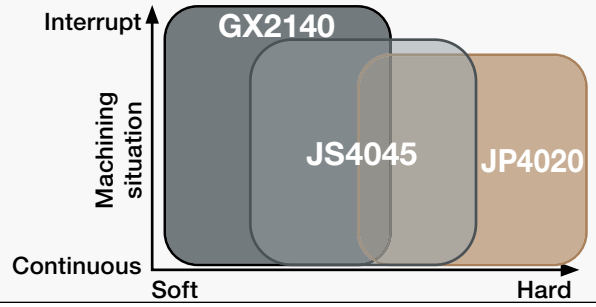
GX2140	CVD · For heavy roughing of mild steels | Recommended for dry cutting
JM4060	PVD · For stainless steels
JS4045	PVD · General grade for 30 – 40 HRC | Recommended for dry cutting
JP4020	PVD · For pre-hardened steels 40 – 55 HRC
JP4005	PVD · For hardened steels > 50 HRC

ASRF Mini Insert grade – target material

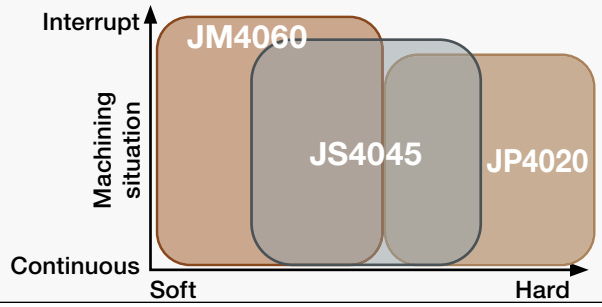
Mild steel ~ Hardened steel



Cast iron



Stainless



Clamp Screw		Wrench	
			
ID-Code	Item-Code	ID-Code	Item-Code
ET176	**265-143**	ET011	**104-T10**

Cutting Conditions | Schnittwerte | Condizioni di taglio | Condiciones de Corte | Conditions de coupe | Valores de corte:			
D 20 (Z2) – D 35 (Z4):	Page 4 – 5	D 40 (Z5) – D 66 (Z8)	Page 6 – 7

ASRF | Turbo4 - Mini | Recommended Cutting Conditions

Work piece material		Recommend grade & Target hardness (HRC)			Emulsion	Mist	Air	Parameter		D 20 (Z2)				D 25 (Z3)			
		30	40	50						Q max	3D - 5D	5D - 7D	> 7D	Q max	3D - 5D	5D - 7D	> 7D
I II	Carbon-Steel Alloy-Steel <30HRC							V_c	m/min	200	160	130	100	200	160	130	100
		GX2140					•	n	min^{-1}	3180	2550	2070	1590	2550	2040	1660	1270
		JM4060			•	•	•	f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		JS4045					•	V_f	mm/min	9550	7640	4970	3820	11460	9170	5960	4580
								a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
								a_e	mm	10	10	10	10	13	13	13	13
								Q	cm^3/min	96	61	32	23	149	95	50	36
III	Alloy-Steel Tool-Steel 30–40HRC							V_c	m/min	160	128	104	80	160	128	104	80
		GX2140					•	n	min^{-1}	2550	2040	1660	1270	2040	1630	1320	1020
		JM4060			•	•	•	f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		JS4045					•	V_f	mm/min	7640	6110	3970	3060	9170	7330	4770	3670
								a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
			JP4020		•	•	•	a_e	mm	10	10	10	10	13	13	13	13
								Q	cm^3/min	76	49	26	18	119	76	40	29
IV	Pre-Hardened Steel Tool-Steel 40–50HRC							V_c	m/min	120	96	78	60	120	96	78	60
								n	min^{-1}	1910	1530	1240	950	1530	1220	990	760
								f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		JS4045					•	V_f	mm/min	4580	3670	2480	1910	5500	4400	2980	2290
								a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
			JP4020		•	•	•	a_e	mm	10	10	10	10	13	13	13	13
								Q	cm^3/min	37	23	14	8	57	37	22	12
V	Hardened steel Tool-Steel 50–55HRC							V_c	m/min	100	80	60	60	100	80	60	60
								n	min^{-1}	1590	1270	950	950	1270	1020	760	760
								f_z	mm/t	0.8	0.8	0.6	0.6	0.8	0.8	0.6	0.6
								V_f	mm/min	2550	2040	1150	1150	3060	2440	1380	1380
								a_p	mm	0.5	0.4	0.4	0.3	0.5	0.4	0.4	0.3
			JP4020		•	•	•	a_e	mm	10	10	10	10	13	13	13	13
				JP4005	•	•	•	Q	cm^3/min	13	8	4	3	20	13	6	5
V	Hardened steel Tool-Steel > 55HRC							V_c	m/min	80	70	60	60	80	70	60	60
								n	min^{-1}	1270	1110	950	950	1020	890	760	760
								f_z	mm/t	0.6	0.6	0.4	0.4	0.6	0.6	0.4	0.4
								V_f	mm/min	1530	1340	760	760	1830	1600	920	920
								a_p	mm	0.35	0.28	0.25	0.21	0.35	0.28	0.25	0.21
			JP4020		•	•	•	a_e	mm	10	10	10	10	13	13	13	13
				JP4005	•	•	•	Q	cm^3/min	5	4	2	2	8	6	3	3
VIII	Cast-Iron GG EN-JL10** EN-GJL-***							V_c	m/min	200	160	130	100	200	160	130	100
		GX2140					•	n	min^{-1}	3180	2550	2070	1590	2550	2040	1660	1270
		JM4060			•	•	•	f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		JS4045					•	V_f	mm/min	9550	7640	4970	3820	11460	9170	5960	4580
								a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
			JP4020		•	•	•	a_e	mm	10	10	10	10	13	13	13	13
								Q	cm^3/min	96	61	32	23	149	95	50	36
VIII	Cast-Iron GGG EN-JS10** EN-GJS-***							V_c	m/min	180	144	117	90	180	144	117	90
		GX2140					•	n	min^{-1}	2860	2290	1860	1430	2290	1830	1490	1150
		JM4060			•	•	•	f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		JS4045					•	V_f	mm/min	6880	5500	3720	2860	8250	6600	4470	3440
								a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
			JP4020		•	•	•	a_e	mm	10	10	10	10	13	13	13	13
								Q	cm^3/min	55	35	21	11	86	55	33	18
VI	Stainless Steels High alloy Steelsç							V_c	m/min	160	128	104	80	160	128	104	80
								n	min^{-1}	2550	2040	1660	1270	2040	1630	1320	1020
		JM4060			•	•	•	f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		JS4045					•	V_f	mm/min	6110	4890	3310	2550	7330	5870	3970	3060
								a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
			JP4020		•	•	•	a_e	mm	10	10	10	10	13	13	13	13
								Q	cm^3/min	49	31	19	10	76	49	29	16

No. 335.2 | ASRF-Mini | 2020-03

ASRF | Turbo4 - Mini | Recommended Cutting Conditions

Work piece material		Parameter		D 32 (Z4)				D 35 (Z4)			
				Q max	3D - 5D	5D - 7D	> 7D	Q max	3D - 5D	5D - 7D	> 7D
I II	Carbon-Steel Alloy-Steel <30HRC	V_c	m/min	200	160	130	100	200	160	130	100
		n	min^{-1}	1990	1590	1290	990	1820	1460	1180	910
		f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		V_f	mm/min	11940	9550	6210	4770	10910	8730	5680	4370
		a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
		a_e	mm	20	20	20	20	23	23	23	23
		Q	cm^3/min	239	153	81	57	251	161	85	60
III	Alloy-Steel Tool-Steel 30–40HRC	V_c	m/min	160	128	104	80	160	128	104	80
		n	min^{-1}	1590	1270	1030	800	1460	1160	950	730
		f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		V_f	mm/min	9550	7640	4970	3820	8730	6980	4540	3490
		a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
		a_e	mm	20	20	20	20	23	23	23	23
		Q	cm^3/min	191	122	65	46	201	128	68	48
IV	Pre-Hardened Steel Tool-Steel 40–50HRC	V_c	m/min	120	96	78	60	120	96	78	60
		n	min^{-1}	1190	950	780	600	1090	870	710	550
		f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		V_f	mm/min	5730	4580	3100	2390	5240	4190	2840	2180
		a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
		a_e	mm	20	20	20	20	23	23	23	23
		Q	cm^3/min	92	59	35	19	96	62	37	20
V	Hardened steel Tool-Steel 50–55HRC	V_c	m/min	100	80	60	60	100	80	60	60
		n	min^{-1}	990	800	600	600	910	730	550	550
		f_z	mm/t	0.8	0.8	0.6	0.6	0.8	0.8	0.6	0.6
		V_f	mm/min	3180	2550	1430	1430	2910	2330	1310	1310
		a_p	mm	0.5	0.4	0.4	0.3	0.5	0.4	0.4	0.3
		a_e	mm	20	20	20	20	23	23	23	23
		Q	cm^3/min	32	20	10	9	33	21	11	9
V	Hardened steel Tool-Steel > 55HRC	V_c	m/min	80	70	60	60	80	70	60	60
		n	min^{-1}	800	700	600	600	730	640	550	550
		f_z	mm/t	0.6	0.6	0.4	0.4	0.6	0.6	0.4	0.4
		V_f	mm/min	1910	1670	950	950	1750	1530	870	870
		a_p	mm	0.35	0.28	0.25	0.21	0.35	0.28	0.25	0.21
		a_e	mm	20	20	20	20	23	23	23	23
		Q	cm^3/min	13	9	5	4	14	10	5	4
VIII	Cast-Iron GG EN-JL10** EN-GJL-***	V_c	m/min	200	160	130	100	200	160	130	100
		n	min^{-1}	1990	1590	1290	990	1820	1460	1180	910
		f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		V_f	mm/min	11940	9550	6210	4770	10910	8730	5680	4370
		a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
		a_e	mm	20	20	20	20	23	23	23	23
		Q	cm^3/min	239	153	81	57	251	161	85	60
VIII	Cast-Iron GGG EN-JS10** EN-GJS-***	V_c	m/min	180	144	117	90	180	144	117	90
		n	min^{-1}	1790	1430	1160	900	1640	1310	1060	820
		f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		V_f	mm/min	8590	6880	4660	3580	7860	6290	4260	3270
		a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
		a_e	mm	20	20	20	20	23	23	23	23
		Q	cm^3/min	137	88	52	29	145	93	55	30
VI	Stainless Steels High alloy Steels	V_c	m/min	160	128	104	80	160	128	104	80
		n	min^{-1}	1590	1270	1030	800	1460	1160	950	730
		f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		V_f	mm/min	7640	6110	4140	3180	6980	5590	3780	2910
		a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
		a_e	mm	20	20	20	20	23	23	23	23
		Q	cm^3/min	122	78	46	25	128	82	49	27

ASRF | Turbo4 - Mini | Recommended Cutting Conditions

Work piece material		Recommend grade & Target hardness (HRC) 30	40	50	Emulsion	Mist	Air	Parameter		D 40 (Z5) Q max	3D - 5D	5D - 7D	> 7D	D 42 (Z5) Q max	3D - 5D	5D - 7D	> 7D
I II	Carbon-Steel Alloy-Steel <30HRC							V_c	m/min	200	160	130	100	200	160	130	100
		GX2140					•	n	min^{-1}	1520	1210	990	760	1520	1210	990	760
		JM4060			•	•	•	f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		JS4045					•	V_f	mm/min	11370	9090	5910	4550	11370	9090	5910	4550
								a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
								a_e	mm	29	29	29	29	29	29	29	29
								Q	cm^3/min	330	211	111	79	330	211	111	79
III	Alloy-Steel Tool-Steel 30–40HRC							V_c	m/min	160	128	104	80	160	128	104	80
		GX2140					•	n	min^{-1}	1210	970	790	610	1210	970	790	610
		JM4060			•	•	•	f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		JS4045					•	V_f	mm/min	9090	7280	4730	3640	9090	7280	4730	3640
								a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
			JP4020		•	•	•	a_e	mm	29	29	29	29	29	29	29	29
								Q	cm^3/min	264	169	89	63	264	169	89	63
IV	Pre-Hardened Steel Tool-Steel 40–50HRC							V_c	m/min	120	96	78	60	120	96	78	60
								n	min^{-1}	910	730	590	450	910	730	590	450
								f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		JS4045					•	V_f	mm/min	5460	4370	2960	2270	5460	4370	2960	2270
								a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
			JP4020		•	•	•	a_e	mm	29	29	29	29	29	29	29	29
								Q	cm^3/min	127	81	48	26	127	81	48	26
V	Hardened steel Tool-Steel 50–55HRC							V_c	m/min	100	80	60	60	100	80	60	60
								n	min^{-1}	760	610	450	450	760	610	450	450
								f_z	mm/t	0.8	0.8	0.6	0.6	0.8	0.8	0.6	0.6
								V_f	mm/min	3030	2430	1360	1360	3030	2430	1360	1360
								a_p	mm	0.5	0.4	0.4	0.3	0.5	0.4	0.4	0.3
			JP4020		•	•	•	a_e	mm	29	29	29	29	29	29	29	29
				JP4005	•	•	•	Q	cm^3/min	44	28	14	12	44	28	14	12
V	Hardened steel Tool-Steel > 55HRC							V_c	m/min	80	70	60	60	80	70	60	60
								n	min^{-1}	610	530	450	450	610	530	450	450
								f_z	mm/t	0.6	0.6	0.4	0.4	0.6	0.6	0.4	0.4
								V_f	mm/min	1820	1590	910	910	1820	1590	910	910
								a_p	mm	0.35	0.28	0.25	0.21	0.35	0.28	0.25	0.21
			JP4020		•	•	•	a_e	mm	29	29	29	29	29	29	29	29
				JP4005	•	•	•	Q	cm^3/min	18	13	6	6	18	13	6	6
VIII	Cast-Iron GG EN-JL10** EN-GJL-***							V_c	m/min	200	160	130	100	200	160	130	100
		GX2140					•	n	min^{-1}	1520	1210	990	760	1520	1210	990	760
		JM4060			•	•	•	f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		JS4045					•	V_f	mm/min	11370	9090	5910	4550	11370	9090	5910	4550
								a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
			JP4020		•	•	•	a_e	mm	29	29	29	29	29	29	29	29
								Q	cm^3/min	330	211	111	79	330	211	111	79
VIII	Cast-Iron GGG EN-JS10** EN-GJS-***							V_c	m/min	180	144	117	90	180	144	117	90
		GX2140					•	n	min^{-1}	1360	1090	890	680	1360	1090	890	680
		JM4060			•	•	•	f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		JS4045					•	V_f	mm/min	8190	6550	4430	3410	8190	6550	4430	3410
								a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
			JP4020		•	•	•	a_e	mm	29	29	29	29	29	29	29	29
								Q	cm^3/min	190	122	72	40	190	122	72	40
VI	Stainless Steels High alloy Steels							V_c	m/min	160	128	104	80	160	128	104	80
								n	min^{-1}	1210	970	790	610	1210	970	790	610
		JM4060			•	•	•	f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		JS4045					•	V_f	mm/min	7280	5820	3940	3030	7280	5820	3940	3030
								a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
			JP4020		•	•	•	a_e	mm	29	29	29	29	29	29	29	29
								Q	cm^3/min	169	108	64	35	169	108	64	35

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ASRF | Turbo4 - Mini | Recommended Cutting Conditions

Work piece material		Parameter		D 52 (Z7)				D 66 (Z8)			
				Q max	3D - 5D	5D - 7D	> 7D	Q max	3D - 5D	5D - 7D	> 7D
I II	Carbon-Steel Alloy-Steel <30HRC	V_c	m/min	200	160	130	100	200	160	130	100
		n	min^{-1}	1220	980	800	610	960	770	630	480
		f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		V_f	mm/min	12850	10280	6680	5140	11570	9260	6020	4630
		a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
		a_e	mm	36	36	36	36	48	48	48	48
		Q	cm^3/min	463	296	156	111	555	356	188	133
III	Alloy-Steel Tool-Steel 30–40HRC	V_c	m/min	160	128	104	80	160	128	104	80
		n	min^{-1}	980	780	640	490	770	620	500	390
		f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		V_f	mm/min	10280	8230	5350	4110	9260	7410	4820	3700
		a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
		a_e	mm	36	36	36	36	48	48	48	48
		Q	cm^3/min	370	237	125	89	444	285	150	107
IV	Pre-Hardened Steel Tool-Steel 40–50HRC	V_c	m/min	120	96	78	60	120	96	78	60
		n	min^{-1}	730	590	480	370	580	460	380	290
		f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		V_f	mm/min	6170	4940	3340	2570	5560	4440	3010	2310
		a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
		a_e	mm	36	36	36	36	48	48	48	48
		Q	cm^3/min	178	114	67	37	214	136	81	44
V	Hardened steel Tool-Steel 50–55HRC	V_c	m/min	100	80	60	60	100	80	60	60
		n	min^{-1}	610	490	370	370	480	390	290	290
		f_z	mm/t	0.8	0.8	0.6	0.6	0.8	0.8	0.6	0.6
		V_f	mm/min	3430	2740	1540	1540	3090	2470	1390	1390
		a_p	mm	0.5	0.4	0.4	0.3	0.5	0.4	0.4	0.3
		a_e	mm	36	36	36	36	48	48	48	48
		Q	cm^3/min	62	39	19	17	74	47	23	20
V	Hardened steel Tool-Steel > 55HRC	V_c	m/min	80	70	60	60	80	70	60	60
		n	min^{-1}	490	430	370	370	390	340	290	290
		f_z	mm/t	0.6	0.6	0.4	0.4	0.6	0.6	0.4	0.4
		V_f	mm/min	2060	1800	1030	1030	1850	1620	930	930
		a_p	mm	0.35	0.28	0.25	0.21	0.35	0.28	0.25	0.21
		a_e	mm	36	36	36	36	48	48	48	48
		Q	cm^3/min	26	18	9	8	31	22	11	9
VIII	Cast-Iron GG EN-JL10** EN-GJL-***	V_c	m/min	200	160	130	100	200	160	130	100
		n	min^{-1}	1220	980	800	610	960	770	630	480
		f_z	mm/t	1.5	1.5	1.2	1.2	1.5	1.5	1.2	1.2
		V_f	mm/min	12850	10280	6680	5140	11570	9260	6020	4630
		a_p	mm	1	0.8	0.7	0.6	1	0.8	0.7	0.6
		a_e	mm	36	36	36	36	48	48	48	48
		Q	cm^3/min	463	296	156	111	555	356	188	133
VIII	Cast-Iron GGG EN-JS10** EN-GJS-***	V_c	m/min	180	144	117	90	180	144	117	90
		n	min^{-1}	1100	880	720	550	870	690	560	430
		f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		V_f	mm/min	9260	7400	5010	3860	8330	6670	4510	3470
		a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
		a_e	mm	36	36	36	36	48	48	48	48
		Q	cm^3/min	267	170	101	56	320	205	121	67
VI	Stainless Steels High alloy Steels	V_c	m/min	160	128	104	80	160	128	104	80
		n	min^{-1}	980	780	640	490	770	620	500	390
		f_z	mm/t	1.2	1.2	1	1	1.2	1.2	1	1
		V_f	mm/min	8230	6580	4460	3430	7410	5930	4010	3090
		a_p	mm	0.8	0.6	0.6	0.4	0.8	0.6	0.6	0.4
		a_e	mm	36	36	36	36	48	48	48	48
		Q	cm^3/min	237	152	90	49	285	182	108	59

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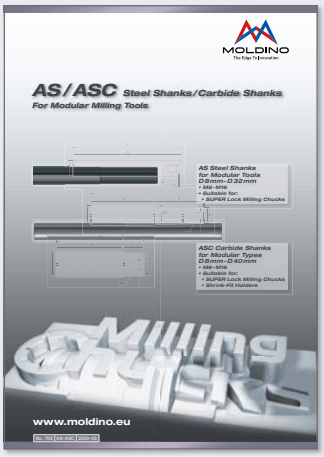

⚠ Attentions on Safety

1. Cautions regarding handling

(1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.

(2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

2. Cautions regarding mounting

(1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.

(2) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.

(3) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions during use

(1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.

(2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.

(3) Cutting tools are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.

(4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. Please caution of fire while using oil base coolant, fire prevention is necessary.

(5) Do not use the tool for any purpose other than that for which it is intended.

4. Cautions regarding regrinding

(1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.

(2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.

(3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with thelocal laws and regulations regarding prevention of hazards due to specified chemical substances.

Specifications for the products listed in this catalog are subject to change without notice due to replacement or modification.

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