

CARBIDE

HSS

CBN
END MILLS

i-Xmill
END MILLS

i-HS mill
END MILLS

X5070
END MILLS

4G MILL
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

TN MILL
END MILLS

V7 Mill
END MILLS

ALU-POWER
END MILLS

CRX S
END MILLS

D-POWER
GRAPHITE
END MILLS

D-POWER
CFRP
END MILLS

ROUTERS

K-2 CARBIDE
END MILLS

GENERAL
CARBIDE
END MILLS

TANK-POWER
END MILLS

GENERAL
HSS
END MILLS

MILLING
CUTTERS

TECHNICAL
DATA



ML072 SERIES

PLAIN SHANK
GLATTER ZYLINDERSCHAFT

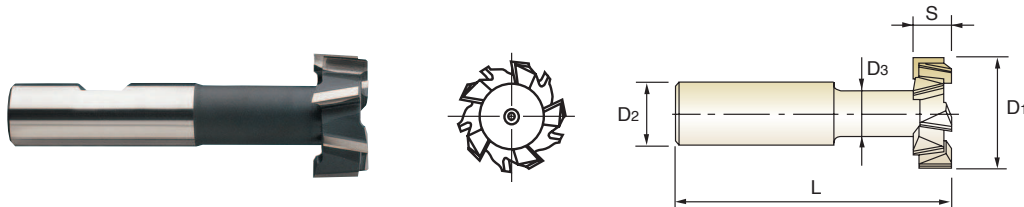
ML172 SERIES

FLAT SHANK
SEITLICHEN MITNAHMEFLÄCHEN

ML272 SERIES

THREAD SHANK
ANZUGSGEWINDE

HSS-E, T-SLOT CUTTERS TYPE "AA", "AB", "AD"
HSS-E, SCHAFTERFRÄSER FÜR T-NUTEN FORM "AA", "AB", "AD"

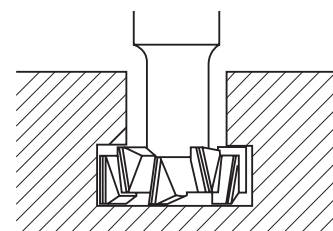


Unit : mm

EDP No.			Cutter Diameter	Width of Face	Shank Diameter	Neck Diameter	Overall Length	No. of Teeth
PLAIN	FLAT	THREAD	D ₁ (d11)	S(d11)	D ₂ (h6)	D ₃ (h12)	L(js18)	Z
ML07212E01	ML17212E01	ML27212E01	12.5	6	10	5	57	6
ML07201601	ML17201601	ML27201601	16.0	8	10	6.5	62	6
ML07201801	ML17201801	ML27201801	18.0	8	12	8	70	6
ML07201901	ML17201901	ML27201901	19.0	9	12	8	71	6
ML07202101	ML17202101	ML27202101	21.0	9	12	10	74	6
ML07202201	ML17202201	ML27202201	22.0	10	12	10	75	6
ML07202501	ML17202501	ML27202501	25.0	11	16	12	82	6
ML07202801	ML17202801	ML27202801	28.0	12	16	13	83	6
ML07203201	ML17203201	ML27203201	32.0	14	16	15	90	8
ML07203601	ML17203601	ML27203601	36.0	16	25	17	103	8
ML07204001	ML17204001	ML27204001	40.0	18	25	19	108	8

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

	Nominal-Diameter in mm / Nennmaßbereich in mm						
	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50	over 50 to 80 über 50 bis 80	over 80 to 120 über 80 bis 120
Tolerance range in mm / Toleranzwerte in mm							
h12	0 - 0.12	0 - 0.15	0 - 0.18	0 - 0.21	0 - 0.25	0 - 0.30	0 - 0.35
js18	± 0.90	± 1.10	± 1.35	± 1.65	± 1.95	± 2.30	± 2.70
Tolerance range in μm / Toleranzwerte in μm							
d11	- 30 - 105	- 40 - 130	- 50 - 160	- 65 - 195	- 80 - 240	- 100 - 290	- 120 - 340
h6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16	0 - 19	0 - 22



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRC30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎								○					

HSS-E, WOODRUFF KEYSEAT CUTTERS TYPE "B", "D", "F"
HSS-E, SCHLITZFRÄSER FORM "B", "D", "F"

ML062, ML162, ML262 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
	~ 500N/mm ²				~ HRc20 500 ~ 800N/mm ²				HRc20 ~ HRc30 800 ~ 1000N/mm ²			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.5	900	72	30	0.010	600	48	20	0.010	480	38	15	0.010
13.5	700	56	30	0.010	470	38	20	0.010	370	30	15	0.010
16.5	570	114	30	0.025	380	76	20	0.025	300	60	15	0.025
19.5	480	134	30	0.035	320	90	20	0.035	260	73	15	0.035
22.5	420	168	30	0.040	280	112	20	0.040	220	88	15	0.040
28.5	330	165	30	0.050	220	110	20	0.050	180	90	15	0.050
32.5	290	209	30	0.060	190	137	20	0.060	155	112	15	0.060
45.5	210	206	30	0.070	130	127	20	0.070	110	108	15	0.070

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM & ALUMINUM ALLOYS			
	HRc30 ~ HRc40 1000 ~ 1300N/mm ²							
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.5	300	24	10	0.010	3000	240	100	0.010
13.5	230	18	10	0.010	2300	184	100	0.010
16.5	190	38	10	0.025	1900	380	100	0.025
19.5	160	45	10	0.035	1600	448	100	0.035
22.5	140	56	10	0.040	1400	560	100	0.040
28.5	110	55	10	0.050	1100	550	100	0.050
32.5	90	65	10	0.060	900	648	90	0.060
45.5	70	69	10	0.070	700	686	100	0.070

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS-E, T-SLOT CUTTERS TYPE "AA", "AB", "AD"
HSS-E, SCHAFTERFRÄSER FÜR T-NUTEN FORM "AA", "AB", "AD"

ML072, ML172, ML272 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM & ALUMINUM ALLOYS			
	~ 500N/mm ²				~ HRc20 500 ~ 800N/mm ²				HRc20 ~ HRc30 800 ~ 1000N/mm ²							
HARDNESS																
STRENGTH																
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
12.5	770	38	30	0.008	380	16	15	0.007	270	8	10	0.005	2350	110	90	0.008
16.0	600	45	30	0.013	300	19	15	0.011	210	9	10	0.007	1830	140	90	0.013
18.0	550	47	30	0.014	270	20	15	0.012	195	12	10	0.010	1680	150	95	0.015
19.0	500	50	30	0.017	250	20	15	0.013	180	15	10	0.014	1540	160	90	0.017
21.0	470	52	30	0.018	230	22	15	0.016	160	16	10	0.017	1430	165	95	0.019
22.0	440	55	30	0.021	220	25	15	0.019	150	17	10	0.019	1330	170	90	0.021
25.0	390	65	30	0.028	190	30	15	0.026	135	18	10	0.022	1170	180	90	0.026
28.0	345	75	30	0.036	170	38	15	0.037	120	20	10	0.028	1040	210	90	0.034
32.0	310	90	30	0.036	150	42	15	0.035	100	20	10	0.025	910	250	90	0.034
50.0	270	80	40	0.037	135	40	20	0.037	90	20	15	0.028	800	230	125	0.036
63.0	240	70	50	0.036	120	38	25	0.040	85	20	15	0.029	730	210	145	0.036

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t