HARVEY TOOL

Speeds & Feeds

Product Table: Drill/End Mills - Mill Style - 2 Flute
Characteristics: 82°-120° Included Angle
Series: 153xx-2, 722xx, 723xx, 9285xx, 9494xx, 9855xx

Product Notes:

Milling - Presented data reflects slotting application using OD of cutter up to .5x Dia Axial DOC
- Use OD of cutter for Chip Load selection and RPM calculation
- If Axial DOC exceeds .5x Dia, Chip Load and/or Radial DOC must be reduced

Chamfering - Presented data reflects full chamfer engagement on one side of workpiece
- Due to a varying tip diameter, an Effective Cutter Diameter is needed for Chip Load selection and RPM calculation. Consider the major and minor diameters along the actual contact length and average them: (Major Diameter + Minor Diameter)/2
- Depth of Cut is shown as number of Passes with each made using a descending stepover
- Feed rates may be increased (or number of passes decreased) when creating traditional edge breaks

Drilling - Presented values are Chip Load per Tooth and not Chip Load per Rev
- Use OD for Chip Load selection and RPM calculation
- Since only 2 flutes are center cutting in 2 and 4 flute drill/mills, all drilling feed calulations should be made using 2 Effective Flutes
- Depth of Cut not shown as it is not applicable
- Drilling is not recommended for tools with < 82° included point angle

General Notes:

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions. Chip loads reflect uncoated cutters and may be increased 10%-20% if coated. For ferrous materials with hardness ≤ 28 Rc, chip loads can be increased 10%-20%.

If you require additional information, Harvey Tool has a team of technical experts available to assist you through even the most challenging applications. Please contact us at **800-645-5609** or **Harveytech@harveyperformance.com**.

WARNING: Cutting tools may shatter under improper use. Government regulations require use of safety glasses and other appropriate safety equipment in the vicinity of use.

Hardness: ≤ 28 Rc (≤ 271 HBn)

MATERIAL	SFM		Chip Load (IPT) By Cutter Diameter												Depth of Cut	
			0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375	0.500	0.625	0.750	1.000	Radial	Axial
ALUMINUM ALLOYS	750	Milling	.00068	.00086	.00102	.00138	.00206	.00275	.00343	.00413	.00550	.00688	.00825	.01100	1x Dia	.5x Dia
Casting (2xx, 5xx, 7xx, 8xx)		Chamfering	.00068	.00086	.00102	.00138	.00206	.00275	.00343	.00413	.00550	.00688	.00825	.01100	2 passes	
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	Drilling	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	.00413	.00495	.00660	-	
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Milling	.00061	.00077	.00092	.00124	.00185	.00248	.00309	.00371	.00495	.00619	.00743	.00990	1x Dia	.5x Dia
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700															
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650	Chamfering	.00061	.00077	.00092	.00124	.00185	.00248	.00309	.00371	.00495	.00619	.00743	.00990	2 passes	
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475															
Wrought - 5%-8% Si (4xxx)	1000	Drilling	.00037	.00046	.00055	.00074	.00111	.00149	.00185	.00223	.00297	.00371	.00446	.00594	-	
Wrought - 8%-12% Si (4xxx)	800															
MAGNESIUM ALLOYS	1500	Milling	.00068	.00086	.00102	.00138	.00206	.00275	.00343	.00413	.00550	.00688	.00825	.01100	1x Dia	.5x Dia
		Chamfering	.00068	.00086	.00102	.00138	.00206	.00275	.00343	.00413	.00550	.00688	.00825	.01100	2 passes	
ZINC ALLOYS	800	Drilling	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	.00413	.00495	.00660	-	
COPPER ALLOYS High Coppers - 90%+ (C1xxxx)	225	Milling	.00055	.00069	.00082	.00110	.00165	.00220	.00275	.00330	.00440	.00550	.00660	.00880	1x Dia	.5x Dia
Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C66400-C69800)	500															
Phosphor Bronzes (Copper Tin alloys, C5xxxx)	225															
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500	Chamfering	.00055	.00069	.00082	.00110	.00165	.00220	.00275	.00330	.00440	.00550	.00660	.00880	2 passes	
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500															
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx)	225															
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550	Drilling	.00033	.00041	.00049	.00066	.00099	.00132	.00165	.00198	.00264	.00330	.00396	.00528	-	

Hardness: 29-37 Rc (279-344 HBn)

MATERIAL	SFM		Chip Load (IPT) By Cutter Diameter												Depth of Cut	
			0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375	0.500	0.625	0.750	1.000	Radial	Axial
CARBON STEELS	600	Milling	.00023	.00029	.00035	.00047	.00071	.00095	.00118	.00142	.00189	.00236	.00284	.00378	1x Dia	.5x Dia
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx		Chamfering	.00029	.00037	.00044	.00059	.00088	.00118	.00147	.00177	.00236	.00295	.00354	.00473	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xxx & 50Lxxx, 51xxx & 51Lxxx, 52xxx & 52Lxxx, 6xxx, 8xxx, 9xxx	200	Milling	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	.00216	.00259	.00346	1x Dia	.5x Dia
		Chamfering	.00027	.00034	.00040	.00054	.00081	.00108	.00135	.00162	.00216	.00270	.00324	.00432	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
STAINLESS STEELS	450	Milling	.00023	.00029	.00035	.00047	.00071	.00095	.00118	.00142	.00189	.00236	.00284	.00378	1x Dia	.5x Dia
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe		Chamfering	.00029	.00037	.00044	.00059	.00088	.00118	.00147	.00177	.00236	.00295	.00354	.00473	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
201, 202, 203, 205, 301, 302, 304, 304L, 308, 309, 310, 314, 316, 316L, 317, 321, 329, 330, 347, 348, 385, 403, 405, 409, 410, 413, 420, 429, 430, 434, 436, 442, 446, 501, 502	200	Milling	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	.00216	.00259	.00346	1x Dia	.5x Dia
		Chamfering	.00027	.00034	.00040	.00054	.00081	.00108	.00135	.00162	.00216	.00270	.00324	.00432	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Milling	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	.00135	.00162	.00216	1x Dia	.5x Dia
		Chamfering	.00017	.00021	.00025	.00034	.00050	.00068	.00084	.00101	.00135	.00169	.00203	.00270	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOOL STEELS	200	Milling	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	.00216	.00259	.00346	1x Dia	.5x Dia
A, L, O, P, W series		Chamfering	.00027	.00034	.00040	.00054	.00081	.00108	.00135	.00162	.00216	.00270	.00324	.00432	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
D, H, M, T, S series	150	Milling	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	.00135	.00162	.00216	1x Dia	.5x Dia
		Chamfering	.00017	.00021	.00025	.00034	.00050	.00068	.00084	.00101	.00135	.00169	.00203	.00270	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
TITANIUM ALLOYS	150	Milling	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	.00135	.00162	.00216	1x Dia	.5x Dia
		Chamfering	.00017	.00021	.00025	.00034	.00050	.00068	.00084	.00101	.00135	.00169	.00203	.00270	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
HIGH TEMP ALLOYS	70	Milling	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	.00135	.00162	.00216	1x Dia	.5x Dia
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy		Chamfering	.00017	.00021	.00025	.00034	.00050	.00068	.00084	.00101	.00135	.00169	.00203	.00270	3 passes	
		Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	

Hardness: 38-45 Rc (353-421 HBn)

SFM		Chip Load (IPT) By Cutter Diameter												Depth of Cut	
		0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375	0.500	0.625	0.750	1.000	Radial	Axial
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	Milling	.00011	.00013	.00016	.00022	.00032	.00043	.00054	.00065	.00086	.00108	.00130	.00173	1x Dia	.5x Dia
	Chamfering	.00027	.00034	.00040	.00054	.00081	.00108	.00135	.00162	.00216	.00270	.00324	.00432	4 passes	
	Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
90	Milling	.00007	.00008	.00010	.00014	.00020	.00027	.00034	.00041	.00054	.00068	.00081	.00108	1x Dia	.5x Dia
	Chamfering	.00017	.00021	.00025	.00034	.00050	.00068	.00084	.00101	.00135	.00169	.00203	.00270	4 passes	
	Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
100	Milling	.00011	.00013	.00016	.00022	.00032	.00043	.00054	.00065	.00086	.00108	.00130	.00173	1x Dia	.5x Dia
	Chamfering	.00027	.00034	.00040	.00054	.00081	.00108	.00135	.00162	.00216	.00270	.00324	.00432	4 passes	
	Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
90	Milling	.00007	.00008	.00010	.00014	.00020	.00027	.00034	.00041	.00054	.00068	.00081	.00108	1x Dia	.5x Dia
	Chamfering	.00017	.00021	.00025	.00034	.00050	.00068	.00084	.00101	.00135	.00169	.00203	.00270	4 passes	
	Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
75	Milling	.00007	.00008	.00010	.00014	.00020	.00027	.00034	.00041	.00054	.00068	.00081	.00108	1x Dia	.5x Dia
	Chamfering	.00017	.00021	.00025	.00034	.00050	.00068	.00084	.00101	.00135	.00169	.00203	.00270	4 passes	
	Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	
50	Milling	.00007	.00008	.00010	.00014	.00020	.00027	.00034	.00041	.00054	.00068	.00081	.00108	1x Dia	.5x Dia
	Chamfering	.00017	.00021	.00025	.00034	.00050	.00068	.00084	.00101	.00135	.00169	.00203	.00270	4 passes	
	Drilling	-	-	-	-	-	-	-	-	-	-	-	-	-	