



Speeds & Feeds

Product Table: Chamfer Cutters - Pointed & Flat End - Double-Ended
Characteristics: 4 Flutes, Type I
Series: 693xx

Product notes:

Due to a varying diameter, an Effective Cutter Diameter is needed for Chip Load selection and RPM calculation:
 Effective Cutter Diameter = (Major Diameter + Minor Diameter)/2.
 Or consider the actual diameter along the angle that is engaged with the workpiece.

Depth of Cut is shown as number of Passes with each pass resulting in a descending stepover

Chip Loads are given 3 ways:

- Traditional Edge Break of .010"-.015"
- Full Chamfer engagement for cutters with angles GREATER than or equal to 25° per side (50° included)
- Full Chamfer engagement for cutters with angles LESS than 25° per side (50° included)

Chip Loads within table pertain to machining on one side of workpiece.

For machining on two sides, reduce Chip Loads to 60%-80% depending on contact length and finish
 For vertical plunging, reduce Chip Loads to 40%-50% depending on finish

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.

MATERIAL	Hardness: ≤ 28 Rc (≤ 271 HBn)												Depth of Cut Passes		
	SFM	Chip Load (IPT) By Effective Cutter Diameter													
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375		0.500	
ALUMINUM ALLOYS															
Edge Break		.00018	.00037	.00056	.00074	.00094	.00112	.00150	.00224	.00300	.00374	.00450	.00600		1
Castings (2xx, 5xx, 7xx, 8xx)	750	Full Chamfer (≥ 25°)	.00015	.00031	.00047	.00062	.00078	.00093	.00125	.00187	.00250	.00312	.00375	.00500	2
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	Full Chamfer (≥ 25°)	.00011	.00023	.00035	.00047	.00059	.00070	.00094	.00140	.00188	.00234	.00281	.00375	3
Castings - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Edge Break	.00016	.00033	.00051	.00067	.00084	.00100	.00135	.00202	.00270	.00337	.00405	.00540	1
Castings - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700	Full Chamfer (≥ 25°)	.00014	.00028	.00042	.00056	.00070	.00084	.00113	.00168	.00225	.00281	.00338	.00450	2
Castings - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650	Full Chamfer (≥ 25°)	.00014	.00028	.00042	.00056	.00070	.00084	.00113	.00168	.00225	.00281	.00338	.00450	2
Castings - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475	Full Chamfer (≥ 25°)	.00014	.00028	.00042	.00056	.00070	.00084	.00113	.00168	.00225	.00281	.00338	.00450	2
Wrought - 5%-8% Si (4xxx)	1000	Full Chamfer (< 25°)	.00010	.00021	.00032	.00042	.00053	.00063	.00084	.00126	.00169	.00211	.00253	.00338	3
Wrought - 8%-12% Si (4xxx)	800	Full Chamfer (< 25°)	.00010	.00021	.00032	.00042	.00053	.00063	.00084	.00126	.00169	.00211	.00253	.00338	3
MAGNESIUM ALLOYS															
Edge Break	1500		.00018	.00037	.00056	.00074	.00094	.00112	.00150	.00224	.00300	.00374	.00450	.00600	1
Full Chamfer (≥ 25°)		.00015	.00031	.00047	.00062	.00078	.00093	.00125	.00187	.00250	.00312	.00375	.00500	2	
ZINC ALLOYS															
Edge Break	800		.00011	.00023	.00035	.00047	.00059	.00070	.00094	.00140	.00188	.00234	.00281	.00375	3
Full Chamfer (< 25°)		.00011	.00023	.00035	.00047	.00059	.00070	.00094	.00140	.00188	.00234	.00281	.00375	3	
COPPER ALLOYS															
High Coppers - 90%+ (C1xxxx)	225	Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C66400-C69800)	500	Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
Phosphor Bronzes (Copper Tin alloys, C5xxxx)	225	Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500	Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500	Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx)	225	Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
Full Chamfer (≥ 25°)		.00012	.00025	.00038	.00050	.00062	.00074	.00100	.00150	.00200	.00250	.00300	.00400	2	
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C98400-C99700)	550	Full Chamfer (< 25°)	.00009	.00019	.00028	.00037	.00047	.00056	.00075	.00112	.00150	.00187	.00225	.00300	3

MATERIAL	Hardness: 29-37 Rc (279-344 HBn)												Depth of Cut Passes		
	SFM	Chip Load (IPT) By Effective Cutter Diameter													
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375		0.500	
CARBON STEELS															
Edge Break		.00007	.00014	.00021	.00028	.00035	.00042	.00057	.00085	.00113	.00142	.00170	.00227		1
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	600	Full Chamfer (≥ 25°)	.00006	.00012	.00018	.00023	.00029	.00035	.00047	.00071	.00095	.00118	.00142	.00189	3
Full Chamfer (< 25°)		.00004	.00009	.00013	.00018	.00022	.00026	.00035	.00053	.00071	.00088	.00106	.00142	4	
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xxx & 50Lxx, 51xxx & 51Lxx, 52xxx & 52Lxx, 6xxx, 8xxx, 9xxx	200	Edge Break	.00006	.00013	.00019	.00026	.00032	.00039	.00052	.00078	.00104	.00129	.00156	.00207	1
Full Chamfer (≥ 25°)		.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	3	
Full Chamfer (< 25°)		.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	4	
STAINLESS STEELS															
Edge Break		.00007	.00014	.00021	.00028	.00035	.00042	.00057	.00085	.00113	.00142	.00170	.00227		1
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	450	Full Chamfer (≥ 25°)	.00006	.00012	.00018	.00023	.00029	.00035	.00047	.00071	.00095	.00118	.00142	.00189	3
Full Chamfer (< 25°)		.00004	.00009	.00013	.00018	.00022	.00026	.00035	.00053	.00071	.00088	.00106	.00142	4	
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, 412, 420, 429, 430, 434, 436, 442, 446, 501, 502	200	Edge Break	.00006	.00013	.00019	.00026	.00032	.00039	.00052	.00078	.00104	.00129	.00156	.00207	1
Full Chamfer (≥ 25°)		.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	3	
Full Chamfer (< 25°)		.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	4	
414, 431, 440A, 440B, 440C, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Edge Break	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	1
Full Chamfer (≥ 25°)		.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	3	
Full Chamfer (< 25°)		.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	4	
TOOL STEELS															
Edge Break		.00006	.00013	.00019	.00026	.00032	.00039	.00052	.00078	.00104	.00129	.00156	.00207		1
A, L, O, P, W series	200	Full Chamfer (≥ 25°)	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	3
Full Chamfer (< 25°)		.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	4	
D, H, M, T, S series	150	Edge Break	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	1
Full Chamfer (≥ 25°)		.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	3	
Full Chamfer (< 25°)		.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	4	
TITANIUM ALLOYS															
Edge Break		.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130		1
Full Chamfer (≥ 25°)		.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	3	
Full Chamfer (< 25°)		.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	4	
HIGH TEMP ALLOYS															
Edge Break		.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130		1
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	70	Full Chamfer (≥ 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	3
Full Chamfer (< 25°)		.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	4	

MATERIAL	Hardness: 38-45 Rc (353-421 HBn)												Depth of Cut Passes		
	SFM	Chip Load (IPT) By Effective Cutter Diameter													
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375		0.500	
CARBON STEELS															
Edge Break		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	600	Full Chamfer (≥ 25°)	-	-	-	-	-	-	-	-	-	-	-	-	-
Full Chamfer (< 25°)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xxx & 50Lxx, 51xxx & 51Lxx,															