



Product Table: Chamfer Cutters - Pointed - Long Reach Chamfer Cutters - Pointed - Long Reach
Characteristics: 12x Reach Multiple, 2 Flutes
Series: 9190xx, 9240xx, 9972xx, 9982xx, 9996xx

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	SFM	Hardness: ≤ 28 Rc (≤ 271 HBn)											Depth of Cut Passes		
		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	750	Edge Break	.00015	.00031	.00046	.00061	.00077	.00092	.00123	.00185	.00247	.00308	.00370	.00494	1
		Full Chamfer (≥ 25°)	.00012	.00026	.00039	.00051	.00064	.00077	.00103	.00154	.00206	.00257	.00309	.00413	3
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	Full Chamfer (< 25°)	.00009	.00019	.00029	.00039	.00049	.00058	.00078	.00117	.00156	.00195	.00234	.00313	4
		Edge Break	.00013	.00028	.00042	.00055	.00069	.00083	.00111	.00166	.00222	.00277	.00333	.00444	1
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Edge Break	.00013	.00028	.00042	.00055	.00069	.00083	.00111	.00166	.00222	.00277	.00333	.00444	1
		Full Chamfer (< 25°)	.00011	.00023	.00035	.00046	.00058	.00069	.00093	.00139	.00186	.00232	.00278	.00371	3
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700	Edge Break	.00013	.00028	.00042	.00055	.00069	.00083	.00111	.00166	.00222	.00277	.00333	.00444	1
		Full Chamfer (< 25°)	.00011	.00023	.00035	.00046	.00058	.00069	.00093	.00139	.00186	.00232	.00278	.00371	3
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475	Edge Break	.00013	.00028	.00042	.00055	.00069	.00083	.00111	.00166	.00222	.00277	.00333	.00444	1
		Full Chamfer (< 25°)	.00008	.00017	.00026	.00035	.00044	.00052	.00070	.00105	.00141	.00176	.00211	.00281	4
Wrought - 5%-8% Si (4xxx)	1000	Edge Break	.00015	.00031	.00046	.00061	.00077	.00092	.00123	.00185	.00247	.00308	.00370	.00494	1
		Full Chamfer (≥ 25°)	.00012	.00026	.00039	.00051	.00064	.00077	.00103	.00154	.00206	.00257	.00309	.00413	3
Wrought - 8%-12% Si (4xxx)	800	Edge Break	.00015	.00031	.00046	.00061	.00077	.00092	.00123	.00185	.00247	.00308	.00370	.00494	1
		Full Chamfer (< 25°)	.00009	.00019	.00029	.00039	.00049	.00058	.00078	.00117	.00156	.00195	.00234	.00313	4
MAGNESIUM ALLOYS	1500	Edge Break	.00015	.00031	.00046	.00061	.00077	.00092	.00123	.00185	.00247	.00308	.00370	.00494	1
ZINC ALLOYS	800	Full Chamfer (≥ 25°)	.00012	.00026	.00039	.00051	.00064	.00077	.00103	.00154	.00206	.00257	.00309	.00413	3
		Full Chamfer (< 25°)	.00009	.00019	.00029	.00039	.00049	.00058	.00078	.00117	.00156	.00195	.00234	.00313	4
COPPER ALLOYS	225	Edge Break	.00012	.00024	.00037	.00049	.00062	.00073	.00099	.00148	.00198	.00246	.00296	.00395	1
		Full Chamfer (< 25°)	.00010	.00020	.00031	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	3
High Coppers - 90%+ (C1xxx)	500	Edge Break	.00012	.00024	.00037	.00049	.00062	.00073	.00099	.00148	.00198	.00246	.00296	.00395	1
		Full Chamfer (< 25°)	.00010	.00020	.00031	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	3
Brass (Copper Zinc alloys, C2xxx, C3xxx, C4xxx, C6400-C69800)	225	Edge Break	.00012	.00024	.00037	.00049	.00062	.00073	.00099	.00148	.00198	.00246	.00296	.00395	1
		Full Chamfer (< 25°)	.00010	.00020	.00031	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	3
Phosphor Bronzes (Copper Tin alloys, C5xxx)	500	Edge Break	.00012	.00024	.00037	.00049	.00062	.00073	.00099	.00148	.00198	.00246	.00296	.00395	1
		Full Chamfer (< 25°)	.00010	.00020	.00031	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	3
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500	Edge Break	.00012	.00024	.00037	.00049	.00062	.00073	.00099	.00148	.00198	.00246	.00296	.00395	1
		Full Chamfer (< 25°)	.00010	.00020	.00031	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	3
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500	Edge Break	.00012	.00024	.00037	.00049	.00062	.00073	.00099	.00148	.00198	.00246	.00296	.00395	1
		Full Chamfer (< 25°)	.00010	.00020	.00031	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	3
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxx)	225	Edge Break	.00012	.00024	.00037	.00049	.00062	.00073	.00099	.00148	.00198	.00246	.00296	.00395	1
		Full Chamfer (< 25°)	.00010	.00020	.00031	.00041	.00051	.00061	.00083	.00123	.00165	.00206	.00248	.00330	3
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550	Edge Break	.00012	.00024	.00037	.00049	.00062	.00073	.00099	.00148	.00198	.00246	.00296	.00395	1
		Full Chamfer (< 25°)	.00008	.00016	.00024	.00031	.00039	.00047	.00063	.00094	.00125	.00156	.00188	.00250	4

MATERIAL	SFM	Hardness: 29-37 Rc (279-344 HBn)											Depth of Cut Passes		
		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	600	Edge Break	.00006	.00012	.00018	.00023	.00029	.00035	.00047	.00070	.00093	.00116	.00140	.00187	1
		Full Chamfer (≥ 25°)	.00005	.00010	.00015	.00019	.00024	.00029	.00039	.00058	.00078	.00097	.00117	.00156	4
		Full Chamfer (< 25°)	.00004	.00007	.00011	.00015	.00018	.00022	.00030	.00044	.00059	.00074	.00089	.00118	5
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	200	Edge Break	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00064	.00085	.00106	.00128	.00171	1
		Full Chamfer (≥ 25°)	.00004	.00009	.00013	.00018	.00022	.00027	.00036	.00053	.00071	.00089	.00107	.00143	4
		Full Chamfer (< 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	5
1030 - 1095, 1140 - 1151, 13xx, 15xx, 20xx, 30xx, 40xx & 4xLxx, 50xx & 5xLxx, 50xx & 50Lxx, 51xx & 51Lxx, 52xx & 52Lxx, 60xx, 80xx, 90xx	450	Edge Break	.00006	.00012	.00018	.00023	.00029	.00035	.00047	.00070	.00093	.00116	.00140	.00187	1
		Full Chamfer (≥ 25°)	.00005	.00010	.00015	.00019	.00024	.00029	.00039	.00058	.00078	.00097	.00117	.00156	4
		Full Chamfer (< 25°)	.00004	.00007	.00011	.00015	.00018	.00022	.00030	.00044	.00059	.00074	.00089	.00118	5
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	200	Edge Break	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00064	.00085	.00106	.00128	.00171	1
		Full Chamfer (≥ 25°)	.00004	.00009	.00013	.00018	.00022	.00027	.00036	.00053	.00071	.00089	.00107	.00143	4
		Full Chamfer (< 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	5
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Edge Break	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00053	.00067	.00080	.00107	1
		Full Chamfer (≥ 25°)	.00003	.00006	.00008	.00011	.00014	.00017	.00022	.00033	.00045	.00056	.00067	.00089	4
		Full Chamfer (< 25°)	.00002	.00004	.00006	.00008	.00011	.00013	.00017	.00025	.00034	.00042	.00051	.00068	5
TOOL STEELS	200	Edge Break	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00064	.00085	.00106	.00128	.00171	1
		Full Chamfer (≥ 25°)	.00004	.00009	.00013	.00018	.00022	.00027	.00036	.00053	.00071	.00089	.00107	.00143	4
		Full Chamfer (< 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	5
A, L, O, P, W series	150	Edge Break	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00053	.00067	.00080	.00107	1
		Full Chamfer (≥ 25°)	.00003	.00006	.00008	.00011	.00014	.00017	.00022	.00033	.00045	.00056	.00067	.00089	4
		Full Chamfer (< 25°)	.00002	.00004	.00006	.00008	.00011	.00013	.00017	.00025	.00034	.00042	.00051	.00068	5
D, H, M, T, S series	150	Edge Break	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00053	.00067	.00080	.00107	1
		Full Chamfer (≥ 25°)	.00003	.00006	.00008	.00011	.00014	.00017	.00022	.00033	.00045	.00056	.00067	.00089	4
		Full Chamfer (< 25°)	.00002	.00004	.00006	.00008	.00011	.00013	.00017	.00025	.00034	.00042	.00051	.00068	5
TITANIUM ALLOYS	150	Edge Break	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00053	.00067	.00080	.00107	1
		Full Chamfer (≥ 25°)	.00003	.00006	.00008	.00011	.00014	.00017	.00022	.00033	.00045	.00056	.00067	.00089	4
		Full Chamfer (< 25°)	.00002	.00004	.00006	.00008	.00011	.00013	.00017	.00025	.00034	.00042	.00051	.00068	5
HIGH TEMP ALLOYS	70	Edge Break	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040</					