



MATERIAL	Hardness: ≤ 28 Rc (≤ 271 HBn)								Depth of Cut Passes		
	SFM	Chip Load (IPT) By Cutter Diameter									
		0.250	0.312	0.375	0.437	0.500	0.625	0.750		1.000	
<b>ALUMINUM ALLOYS</b>											
Castings (2xx, 5xx, 7xx, 8xx)	750	Deburring	.00198	.00273	.00329	.00383	.00438	.00548	.00657	.00876	1
		Front/Back Chamfer	.00165	.00228	.00274	.00319	.00365	.00456	.00548	.00730	2
		V-Groove	.00124	.00171	.00205	.00239	.00274	.00342	.00411	.00548	3
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000										
Castings - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Deburring	.00178	.00246	.00296	.00345	.00394	.00493	.00591	.00788	1
Castings - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700										
Castings - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650	Front/Back Chamfer	.00149	.00205	.00246	.00287	.00329	.00411	.00493	.00657	2
Castings - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475										
Wrought - 5%-8% Si (4xxx)	1000	V-Groove	.00111	.00154	.00185	.00215	.00246	.00308	.00370	.00493	3
Wrought - 8%-12% Si (4xxx)	800										
<b>MAGNESIUM ALLOYS</b>	1500	Deburring	.00198	.00273	.00329	.00383	.00438	.00548	.00657	.00876	1
		Front/Back Chamfer	.00165	.00228	.00274	.00319	.00365	.00456	.00548	.00730	2
		V-Groove	.00124	.00171	.00205	.00239	.00274	.00342	.00411	.00548	3
<b>ZINC ALLOYS</b>	800										
<b>COPPER ALLOYS</b>											
High Coppers - 90%+ (C1xxx)	225										
Brass (Copper Zinc alloys, C2xxx, C3xxx, C4xxx, C6400-C6980)	500	Deburring	.00158	.00219	.00263	.00306	.00350	.00438	.00526	.00701	1
Phosphor Bronzes (Copper Tin alloys, C5xxx)	225										
Aluminum Bronzes (Copper Aluminum alloys, C6050-C6420)	500	Front/Back Chamfer	.00132	.00182	.00219	.00255	.00292	.00365	.00438	.00584	2
Silicon Bronzes (Copper Silicon alloys, C6470-C6610)	500										
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxx)	225										
Cast Copper Alloys (C8300-C8620, C8640-C8790, C9220-C9580, C9730-C9780, C9940-C9970)	550	V-Groove	.00099	.00137	.00164	.00191	.00219	.00274	.00329	.00438	3

**Product Table:** Double Angle Shank Cutters - Pointed - Reduced Shank  
**Characteristics:** 60°-90° Included Angle  
**Series:** 8664xx, 8755xx & Items #16220, #16230, #19220, #19230, #19520, #27520

Neck Length/Neck Diameter Ratio	Chipload
3x	110%
5x	100%
8x	90%
10x	80%
14x	75%

**Product notes:**

- Chip Loads are given 3 ways:
  - Deburring: Generating an Edge Break of .005"-.008"
  - Front/Back Chamfer: Full chamfer generation using front or back of the cutter head
  - V-Groove: Assumes engagement on the point, front and back of the cutter head

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

Chip Loads within table pertain to machining on one side (from tool centerline) of the cutter head.

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

Adjust chiploads according to the values in Table 1 to account for the neck length to neck diameter ratio.

**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](mailto:800-645-5609) or [Harveytech@harveyperformance.com](mailto:Harveytech@harveyperformance.com).

WARNING: Cutting tools may shatter under improper use. Government regulations require use of safety glasses and other

MATERIAL	Hardness: 29-37 Rc (279-344 HBn)								Depth of Cut Passes		
	SFM	Chip Load (IPT) By Cutter Diameter									
		0.250	0.312	0.375	0.437	0.500	0.625	0.750		1.000	
<b>CARBON STEELS</b>											
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	600	Deburring	.00084	.00118	.00142	.00165	.00189	.00236	.00284	.00378	1
		Front/Back Chamfer	.00070	.00098	.00118	.00138	.00158	.00197	.00236	.00315	3
		V-Groove	.00053	.00074	.00089	.00103	.00118	.00148	.00177	.00236	4
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xx & 50Lxx, 51xx & 51Lxx, 52xx & 52Lxx, 6xx, 8xx, 9xx	200	Deburring	.00077	.00108	.00130	.00151	.00173	.00216	.00259	.00346	1
		Front/Back Chamfer	.00064	.00090	.00108	.00126	.00144	.00180	.00216	.00288	3
		V-Groove	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	4
<b>STAINLESS STEELS</b>											
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	450	Deburring	.00084	.00118	.00142	.00165	.00189	.00236	.00284	.00378	1
		Front/Back Chamfer	.00070	.00098	.00118	.00138	.00158	.00197	.00236	.00315	3
		V-Groove	.00053	.00074	.00089	.00103	.00118	.00148	.00177	.00236	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, 413, 420, 429, 430, 434, 436, 442, 446, 501, 502	200	Deburring	.00077	.00108	.00130	.00151	.00173	.00216	.00259	.00346	1
		Front/Back Chamfer	.00064	.00090	.00108	.00126	.00144	.00180	.00216	.00288	3
		V-Groove	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	4
414, 431, 440A, 440B, 440C, 13-8, 15-8, 15-7, 17-4, 17-7	150	Deburring	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	1
		Front/Back Chamfer	.00040	.00056	.00068	.00079	.00090	.00113	.00135	.00180	3
		V-Groove	.00030	.00042	.00051	.00059	.00068	.00084	.00101	.00135	4
<b>TOOL STEELS</b>											
A, L, O, P, W series	200	Deburring	.00077	.00108	.00130	.00151	.00173	.00216	.00259	.00346	1
		Front/Back Chamfer	.00064	.00090	.00108	.00126	.00144	.00180	.00216	.00288	3
		V-Groove	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	4
D, H, M, T, S series	150	Deburring	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	1
		Front/Back Chamfer	.00040	.00056	.00068	.00079	.00090	.00113	.00135	.00180	3
		V-Groove	.00030	.00042	.00051	.00059	.00068	.00084	.00101	.00135	4
<b>TITANIUM ALLOYS</b>	150	Deburring	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	1
		Front/Back Chamfer	.00040	.00056	.00068	.00079	.00090	.00113	.00135	.00180	3
		V-Groove	.00030	.00042	.00051	.00059	.00068	.00084	.00101	.00135	4
<b>HIGH TEMP ALLOYS</b>	70	Deburring	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	1
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy		Front/Back Chamfer	.00040	.00056	.00068	.00079	.00090	.00113	.00135	.00180	3
		V-Groove	.00030	.00042	.00051	.00059	.00068	.00084	.00101	.00135	4

MATERIAL	Hardness: 38-45 Rc (353-421 HBn)								Depth of Cut Passes		
	SFM	Chip Load (IPT) By Cutter Diameter									
		0.250	0.312	0.375	0.437	0.500	0.625	0.750		1.000	
		Deburring	-	-	-	-	-	-	-	-	-
		Front/Back Chamfer	-	-	-	-	-	-	-	-	-
		V-Groove	-	-	-	-	-	-	-	-	-
		Deburring	-	-	-	-	-	-	-	-	-
		Front/Back Chamfer	-	-	-	-	-	-	-	-	-
		V-Groove	-	-	-	-	-	-	-	-	-
		Deburring	.00077	.00108	.00130	.00151	.00173	.00216	.00259	.00346	1
		Front/Back Chamfer	.00064	.00090	.00108	.00126	.00144	.00180	.00216	.00288	4
		V-Groove	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	5
		Deburring	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	1
		Front/Back Chamfer	.00040	.00056	.00068	.00079	.00090	.00113	.00135	.00180	4
		V-Groove	.00030	.00042	.00051	.00059	.00068	.00084	.00101	.00135	5
		Deburring	.00077	.00108	.00130	.00151	.00173	.00216	.00259	.00346	1
		Front/Back Chamfer	.00064	.00090	.00108	.00126	.00144	.00180	.00216	.00288	4
		V-Groove	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	5
		Deburring	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	1
		Front/Back Chamfer	.00040	.00056	.00068	.00079	.00090	.00113	.00135	.00180	4
		V-Groove	.00030	.00042	.00051	.00059	.00068	.00084	.00101	.00135	5
		Deburring	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	1
		Front/Back Chamfer	.00040	.00056	.00068	.00079	.00090	.00113	.00135	.00180	4
		V-Groove	.00030	.00042	.00051	.00059	.00068	.00084	.00101	.00135	5
		Deburring	.00048	.00067	.00081	.00094	.00108	.00135	.00162	.00216	1
		Front/Back Chamfer	.00040	.00056	.00068	.00079	.00090	.00113	.00135	.00180	4
		V-Groove	.00030	.00042	.00051	.00059	.00068	.00084	.00101	.00135	5