MATERIAL	SFM	Hardness: ≤ 28 Rc (≤ 271 HBn)									Depth of Cut
		Chip Load (IPT) By Cutter Diameter									
			0.250	0.312	0.375	0.437	0.500	0.625	0.750	1.000	Passes
ALUMINUM ALLOYS	750	Deburring	.00198	.00273	.00329	.00383	.00438	.00548	.00657	.00876	1
Casting (2xx, 5xx, 7xx, 8xx)		Front/Back Chamfer	.00165	.00228	.00274	.00319	.00365	.00456	.00548	.00730	2
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	V-Groove	.00124	.00171	.00205	.00239	.00274	.00342	.00411	.00548	3
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Deburring	.00178	.00246	.00296	.00345	.00394	.00493	.00591	.00788	1
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700										
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650	Front/Back Chamfer	.00149	.00205	.00246	.00287	.00329	.00411	.00493	.00657	2
Casting - 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										
MAGNESIUM ALLOYS	1500	Deburring	.00198	.00273	.00329	.00383	.00438	.00548	.00657	.00876	1
		Front/Back Chamfer	.00165	.00228	.00274	.00319	.00365	.00456	.00548	.00730	2
ZINC ALLOYS	800	V-Groove	.00124	.00171	.00205	.00239	.00274	.00342	.00411	.00548	3
COPPER ALLOYS	225	Deburring	.00158	.00219	.00263	.00306	.00350	.00438	.00526	.00701	1
High Coppers - 90%+ (C1xxxx)											
Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C66400-C69800)	500										
Phosphor Bronzes (Copper Tin alloys, C5xxxx)	225	Front/Back Chamfer	.00132	.00182	.00219	.00255	.00292	.00365	.00438	.00584	2
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500										
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	V-Groove	.00099	.00137	.00164	.00191	.00219	.00274	.00329	.00438	3

HARVEY TOOL

Speeds & Feeds

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

Table 1	
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** or **Harveytech@harveyperformance.com**.

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

MATERIAL	SFM	Hardness: 29-37 Rc (279-344 HBn)									Depth of Cut
		Chip Load (IPT) By Cutter Diameter									
			0.250	0.312	0.375	0.437	0.500	0.625	0.750	1.000	Passes
CARBON STEELS	600	Deburring	.00084	.00118	.00142	.00165	.00189	.00236	.00284	.00378	1
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx		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, 50xxx & 50Lxxx, 51xxx & 51Lxxx, 52xxx & 52Lxxx, 6xxx, 8xxx, 9xxx	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
STAINLESS STEELS	450	Deburring	.00084	.00118	.00142	.00165	.00189	.00236	.00284	.00378	1
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe		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, 15-5, 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
TOOL STEELS	200	Deburring	.00077	.00108	.00130	.00151	.00173	.00216	.00259	.00346	1
A, L, O, P, W series		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
TITANIUM ALLOYS	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
HIGH TEMP ALLOYS	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

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