



Product Table: Counterbores - Flat Bottom - Corner Radius
Characteristics: 4 Flutes
Series: 7315xx

Product Notes:

Chip Loads are given 2 ways:

Full Plunge refers to vertically machining into solid material with no pilot hole
Finishing refers to vertically machining with an existing pilot hole greater than or equal to 50% of the Counterbore cutter diameter (≤ 25% on wall)

Full Plunge machining may require a peck cycle for proper chip evacuation
 For Ferrous materials, pecking to a depth of 2x diameter is advised

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)																
	SFM	Chip Load (IPT) By Cutter Diameter															
		.031	.047	.062	.078	.093	.125	.187	.250	.312	.375	.437	.500	.625	.750		
ALUMINUM ALLOYS Casting (2xx, 5xx, 7xx, 8xx)	750	Full Plunge	.00014	.00021	.00027	.00034	.00041	.00055	.00082	.00110	.00137	.00165	.00192	.00220	.00275	.00330	
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	Finishing	.00022	.00033	.00043	.00054	.00065	.00087	.00130	.00174	.00217	.00261	.00304	.00348	.00435	.00521	
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Full Plunge	.00012	.00019	.00025	.00031	.00037	.00050	.00074	.00099	.00124	.00149	.00173	.00198	.00248	.00297	
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700																
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650																
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475	Finishing	.00019	.00029	.00039	.00049	.00058	.00078	.00117	.00156	.00195	.00235	.00273	.00313	.00391	.00469	
Wrought - 5%-8% Si (4xxx)	1000																
Wrought - 8%-12% Si (4xxx)	800																
MAGNESIUM ALLOYS	1500	Full Plunge	.00014	.00021	.00027	.00034	.00041	.00055	.00082	.00110	.00137	.00165	.00192	.00220	.00275	.00330	
ZINC ALLOYS	800	Finishing	.00022	.00033	.00043	.00054	.00065	.00087	.00130	.00174	.00217	.00261	.00304	.00348	.00435	.00521	
COPPER ALLOYS High Coppers - 90%+ (C1xxxx) Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C6400-C69800) Phosphor Bronzes (Copper Tin alloys, C5xxxx) Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200) Silicon Bronzes (Copper Silicon alloys, C64700-C66100) Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx) Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	225 500 225 500 500 225 550	Full Plunge Finishing	.00011 .00017	.00017 .00026	.00022 .00034	.00027 .00043	.00033 .00052	.00044 .00070	.00066 .00104	.00088 .00139	.00110 .00174	.00132 .00209	.00154 .00243	.00176 .00278	.00220 .00348	.00264 .00417	

MATERIAL	Hardness: 29-37 Rc (279-344 HBn)															
	SFM	Chip Load (IPT) By Cutter Diameter														
		.031	.047	.062	.078	.093	.125	.187	.250	.312	.375	.437	.500	.625	.750	
CARBON STEELS Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	600	Full Plunge	.00005	.00007	.00009	.00012	.00014	.00019	.00028	.00038	.00047	.00057	.00066	.00076	.00095	.00113
		Finishing	.00007	.00010	.00013	.00017	.00020	.00027	.00041	.00054	.00068	.00082	.00095	.00109	.00136	.00163
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4Lxx, 5xxx & 5Lxx, 50xxx & 50Lxxx, 51xxx & 51Lxxx, 52xxx & 52Lxxx, 6xxx, 8xxx, 9xxx	200	Full Plunge	.00004	.00006	.00009	.00011	.00013	.00017	.00026	.00035	.00043	.00052	.00060	.00069	.00086	.00104
		Finishing	.00006	.00009	.00012	.00016	.00018	.00025	.00037	.00050	.00062	.00075	.00087	.00099	.00124	.00149
STAINLESS STEELS 203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	450	Full Plunge	.00005	.00007	.00009	.00012	.00014	.00019	.00028	.00038	.00047	.00057	.00066	.00076	.00095	.00113
		Finishing	.00007	.00010	.00013	.00017	.00020	.00027	.00041	.00054	.00068	.00082	.00095	.00109	.00136	.00163
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	Full Plunge	.00004	.00006	.00009	.00011	.00013	.00017	.00026	.00035	.00043	.00052	.00060	.00069	.00086	.00104
		Finishing	.00006	.00009	.00012	.00016	.00018	.00025	.00037	.00050	.00062	.00075	.00087	.00099	.00124	.00149
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Full Plunge	.00003	.00004	.00005	.00007	.00008	.00011	.00016	.00022	.00027	.00032	.00038	.00043	.00054	.00065
		Finishing	.00004	.00006	.00008	.00010	.00012	.00016	.00023	.00031	.00039	.00047	.00054	.00062	.00078	.00093
TOOL STEELS A, L, O, P, W series	200	Full Plunge	.00004	.00006	.00009	.00011	.00013	.00017	.00026	.00035	.00043	.00052	.00060	.00069	.00086	.00104
		Finishing	.00006	.00009	.00012	.00016	.00018	.00025	.00037	.00050	.00062	.00075	.00087	.00099	.00124	.00149
D, H, M, T, S series	150	Full Plunge	.00003	.00004	.00005	.00007	.00008	.00011	.00016	.00022	.00027	.00032	.00038	.00043	.00054	.00065
		Finishing	.00004	.00006	.00008	.00010	.00012	.00016	.00023	.00031	.00039	.00047	.00054	.00062	.00078	.00093
TITANIUM ALLOYS	150	Full Plunge	.00003	.00004	.00005	.00007	.00008	.00011	.00016	.00022	.00027	.00032	.00038	.00043	.00054	.00065
		Finishing	.00004	.00006	.00008	.00010	.00012	.00016	.00023	.00031	.00039	.00047	.00054	.00062	.00078	.00093
HIGH TEMP ALLOYS Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discolloy, Incoloy	70	Full Plunge	.00003	.00004	.00005	.00007	.00008	.00011	.00016	.00022	.00027	.00032	.00038	.00043	.00054	.00065
		Finishing	.00004	.00006	.00008	.00010	.00012	.00016	.00023	.00031	.00039	.00047	.00054	.00062	.00078	.00093

MATERIAL	Hardness: 38-45 Rc (353-421 HBn)															
	SFM	Chip Load (IPT) By Cutter Diameter														
		.031	.047	.062	.078	.093	.125	.187	.250	.312	.375	.437	.500	.625	.750	
		Full Plunge	.00002	.00003	.00004	.00005	.00006	.00009	.00013	.00017	.00022	.00026	.00030	.00035	.00043	.00052
		Finishing	.00003	.00005	.00006	.00008	.00009	.00013	.00019	.00025	.00031	.00038	.00044	.00050	.00063	.00075
		Full Plunge	.00001	.00002	.00003	.00003	.00004	.00005	.00008	.00011	.00013	.00016	.00019	.00022	.00027	.00032
		Finishing	.00002	.00003	.00004	.00005	.00006	.00008	.00012	.00016	.00020	.00023	.00027	.00031	.00039	.00047
		Full Plunge	.00002	.00003	.00004	.00005	.00006	.00009	.00013	.00017	.00022	.00026	.00030	.00035	.00043	.00052
		Finishing	.00003	.00005	.00006	.00008	.00009	.00013	.00019	.00025	.00031	.00038	.00044	.00050	.00063	.00075
		Full Plunge	.00001	.00002	.00003	.00003	.00004	.00005	.00008	.00011	.00013	.00016	.00019	.00022	.00027	.00032
		Finishing	.00002	.00003	.00004	.00005	.00006	.00008	.00012	.00016	.00020	.00023	.00027	.00031	.00039	.00047
		Full Plunge	.00001	.00002	.00003	.00003	.00004	.00005	.00008	.00011	.00013	.00016	.00019	.00022	.00027	.00032
		Finishing	.00002	.00003	.00004	.00005	.00006	.00008	.00012	.00016	.00020	.00023	.00027	.00031	.00039	.00047
		Full Plunge	.00001	.00002	.00003	.00003	.00004	.00005	.00008	.00011	.00013	.00016	.00019	.00022	.00027	.00032
		Finishing	.00002	.00003	.00004	.00005	.00006	.00008	.00012	.00016	.00020	.00023	.00027	.00031	.00039	.00047