

SPEED & FEED INFORMATION

Notes

Note: All technical data provided are suggested starting points. They may be increase or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE Team with questions

SPEED & FEEDS FOR SERIES: ZCDR & ZMDR

DESCRIPTION: 2 FLUTE - 140° POINT DRILLS - WITH & WITHOUT COOLANT HOLE



Material Guide			Material Hardness	SFM		FL	INCHES PER REV (IPR)					
				Non-Coolant ZMDR	Coolant Fed ZCDR		1/16" - 1/8"	1/8" - 1/4"	1/4" - 3/8"	3/8" - 1/2"	1/2" - 5/8"	5/8" - 3/4"
ISO-M	Precipitation	13-8, 15-5, 17-4PH	Under 35 HRc	225	300	2	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045	.0040-.0055
			Over 35 HRc	175	240	2	.0002-.0005	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045
	Austenitic	302, 303, 304L, 316L	Under 35 HRc	125	175	2	.0005-.0010	.0010-.0015	.0015-.0020	.0020-.0030	.0030-.0040	.0025-.0040
			Over 35 HRc	80	100	2	.0001-.0003	.0003-.0010	.0010-.0015	.0015-.0025	.0025-.0035	.0020-.0040
Martensitic	403, 410, 416	Under 35 HRc	225	300	2	.0007-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045	.0040-.0055	
		Over 35 HRc	175	240	2	.0002-.0005	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045	
ISO-S	Cobalt Base	Stellite, Haynes 25, 188, X-40	Under 35 HRc	185	225	2	.0005-.0010	.0010-.0020	.0020-.0030	.0025-.0035	.0030-.0040	.0035-.0055
			Over 35 HRc	125	180	2	.0002-.0005	.0005-.0015	.0015-.0025	.0020-.0030	.0025-.0035	.0030-.0045
	Nickel Base	Inconel 600, 625, 718, Nickel 200, 270, Monel 400, 405, K-Monel, Inconel 600	Under 35 HRc	150	225	2	.0005-.0010	.0010-.0020	.0020-.0030	.0025-.0035	.0030-.0040	.0035-.0055
ISO-P	High Strength Steels	4140, 4340, 52100	Under 35 HRc	200	300	2	.0007-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045	.0045-.0055
			Over 35 HRc	175	240	2	.0002-.0005	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045
	High Alloy Steels Mold & Die	A-2, P20, 01, 02, 06, D2, H-13	Under 35 HRc	200	300	2	.0002-.0005	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045
			Over 35 HRc	175	240	2	.0002-.0005	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045
Medium Alloy Steels	200, 250, 300, 8620	Under 35 HRc	200	300	2	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045	.0045-.0055	
		Over 35 HRc	175	240	2	.0002-.0005	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045	
Low Alloy Steels-Maraging	10XX, 11XX, 13XX	Under 35 HRc	200	300	2	.0007-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045	.0045-.0055	
		Over 35 HRc	175	240	2	.0002-.0005	.0005-.0015	.0015-.0025	.0025-.0030	.0030-.0035	.0035-.0045	
ISO-K	Ductile Iron	ASTM A536, ASTM 897		250	350	2	.0013-.0025	.0025-.0035	.0035-.0045	.0035-.0045	.0045-.0055	.0065-.0075
	Ductile Cast Iron											
ISO-S	Titanium Alloys	6AL-4V, ASTM 1, 2, 3, 6AL-25		225	350	2	.0005-.0010	.0010-.0020	.0020-.0030	.0025-.0035	.0030-.0040	.0035-.0055
			Cast Iron	SAE J431, ASTM A48	250	400	2	.0013-.0025	.0025-.0035	.0035-.0045	.0035-.0045	.0045-.0055
ISO-N	Aluminum	6061-T6, 7075 Die Cast		300	400	2	.0015-.0025	.0025-.0035	.0035-.0045	.0035-.0045	.0045-.0055	.0065-.0075
				300	400	2	.0015-.0025	.0025-.0035	.0035-.0045	.0045-.0055	.0045-.0055	.0085-.0095
				200	300	2	.0015-.0025	.0025-.0035	.0035-.0045	.0035-.0045	.0045-.0055	.0075-.0085
				200	300	2	.0015-.0025	.0025-.0035	.0035-.0045	.0035-.0045	.0045-.0055	.0075-.0085
				150	250	2	.0007-.0015	.0015-.0025	.0025-.0035	.0025-.0035	.0035-.0045	.0065-.0075
				300	400	2	.0020-.0035	.0035-.0045	.0045-.0055	.0065-.0075	.0085-.0095	.0085-.0095
				400	500	2	.0020-.0035	.0035-.0045	.0045-.0055	.0065-.0075	.0085-.0095	.0085-.0095
				300	400	2	.0015-.0025	.0025-.0035	.0035-.0045	.0055-.0065	.0075-.0085	.0075-.0085

For 5553, decrease SFM and IPM by 25%

Material Guide			Material Hardness	M/MIN		FL	MILLIMETERS PER REV (mmPR)					
				Non-Coolant ZMDR	Coolant Fed ZCDR		1.5mm-3mm	3mm-6.5mm	6.5mm-10mm	10mm-13mm	13mm-16mm	16mm-20mm
ISO-M	Precipitation	13-8, 15-5, 17-4PH	Under 35 HRc	68	90	2	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1016-.1397
			Over 35 HRc	53	73	2	.0050-.0203	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143
	Austenitic	302, 303, 304L, 316L	Under 35 HRc	38	53	2	.0127-.0254	.0254-.0381	.0381-.0508	.0508-.0762	.0762-.1016	.0635-.1016
			Over 35 HRc	24	30	2	.0025-.0076	.0076-.0254	.0254-.0381	.0381-.0635	.0635-.0889	.0508-.1016
Martensitic	403, 410, 416	Under 35 HRc	67	90	2	.0177-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1016	.1016-.1397	
		Over 35 HRc	53	73	2	.0058-.0127	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	
ISO-S	Cobalt Base	Stellite, Haynes 25, 188, X-40	Under 35 HRc	56	69	2	.0127-.0254	.0254-.0508	.0508-.0762	.0635-.0889	.0762-.1016	.0889-.1397
			Over 35 HRc	38	55	2	.0050-.0254	.0127-.0381	.0381-.0635	.0508-.0762	.0635-.0889	.0762-.1016
	Nickel Base	Inconel 600, 625, 718, Nickel 200, 270, Monel 400, 405, K-Monel, Inconel 600	Under 35 HRc	45	69	2	.0127-.0254	.0254-.0508	.0508-.0762	.0635-.0889	.0762-.1143	.0889-.1397
ISO-P	High Strength Steels	4140, 4340, 52100	Under 35 HRc	60	90	2	.0177-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1143-.1397
			Over 35 HRc	53	73	2	.0050-.0127	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143
	High Alloy Steels Mold & Die	A-2, P20, 01, 02, 06, D2, H-13	Under 35 HRc	60	90	2	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1143-.1397
			Over 35 HRc	53	73	2	.0050-.0127	.0127-.0381	.0281-.0635	.0635-.0762	.0762-.0889	.0889-.1143
Medium Alloy Steels	200, 250, 300, 8620	Under 35 HRc	60	90	2	.0127-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1143-.1397	
		Over 35 HRc	53	73	2	.0050-.0127	.0127-.0381	.0281-.0635	.0635-.0762	.0762-.0889	.0889-.1143	
Low Alloy Steels-Maraging	10XX, 11XX, 13XX	Under 35 HRc	60	90	2	.0177-.0381	.0381-.0635	.0635-.0762	.0762-.0889	.0889-.1143	.1143-.1397	
		Over 35 HRc	53	73	2	.0050-.0127	.0127-.0381	.0281-.0635	.0635-.0762	.0762-.0889	.0889-.1143	
ISO-K	Ductile Iron	ASTM A536, ASTM 897		76	106	2	.0330-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1143-.1397	.1651-.1905
	Ductile Cast Iron											
ISO-S	Titanium Alloys	6AL-4V, ASTM 1, 2, 3, 6AL-25		68	106	2	.0127-.0254	.0254-.0508	.0508-.0672	.0635-.0889	.0762-.1016	.0889-.1397
			Cast Iron	SAE J431, ASTM A48	76	122	2	.0330-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1143-.1397
ISO-N	Aluminum	6061-T6, 7075 Die Cast		90	122	2	.0381-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1143-.1397	.1651-.1905
				90	122	2	.0381-.0889	.0889-.1143	.1143-.1397	.1651-.1905	.2159-.2413	.2519-.2413
				60	90	2	.0254-.0635	.0635-.0889	.0889-.1143	.1397-.1651	.1905-.2159	.1905-.2159
				60	90	2	.0254-.0635	.0635-.0889	.0889-.1143	.0889-.1143	.1397-.1651	.1905-.2159
				45	76	2	.0177-.0381	.0381-.0635	.0365-.0889	.0635-.0889	.1143-.1397	.1651-.1905
				90	122	2	.0580-.0889	.0889-.1143	.1143-.1397	.1651-.1905	.2159-.2413	.2159-.2413
				122	152	2	.0580-.0889	.0889-.1143	.1143-.1397	.1651-.1905	.2159-.2431	.2159-.2413
				90	122	2	.0254-.0635	.0635-.0889	.0889-.1143	.1397-.1651	.1905-.2159	.1905-.2159

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