



HAAS INDEXABLE DRILLING

Feeds and Speeds

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						Inch Recommended Feed Rate per Revolution				
Geometry	Grade	Cutting Speed - SFM			Tool Diameter	.750 - .938"	.969 - 1.156"	1.188 - 1.438"	1.469 - 1.750"	
		min	start	max		Insert Size C	Insert Size D	Insert Size E	Insert Size F	
P0	-HL	PM35	360	540	780	ipr	0.0039 - 0.0051	0.0043 - 0.0055	0.0051 - 0.0063	0.0059 - 0.0071
P1	-HL	PM35	360	540	780	ipr	0.0039 - 0.0059	0.0043 - 0.0063	0.0051 - 0.0071	0.0059 - 0.0079
P2	-HP	PM35	360	570	840	ipr	0.0039 - 0.0063	0.0043 - 0.0067	0.0051 - 0.0079	0.0059 - 0.0083
P3	-HP	PM35	360	600	930	ipr	0.0043 - 0.0071	0.0047 - 0.0079	0.0053 - 0.0094	0.0063 - 0.0094
P4	-HP	PM35	360	570	930	ipr	0.0043 - 0.0071	0.0047 - 0.0079	0.0055 - 0.0087	0.0063 - 0.0094
P5	-HM	PM35	360	540	750	ipr	0.0039 - 0.0059	0.0043 - 0.0063	0.0051 - 0.0071	0.0059 - 0.0079
P6	-HM	PM35	360	480	630	ipr	0.0039 - 0.0059	0.0043 - 0.0063	0.0051 - 0.0071	0.0059 - 0.0079
M1	-HL	PM35	360	480	720	ipr	0.0031 - 0.0059	0.0039 - 0.0063	0.0047 - 0.0079	0.0055 - 0.0098
M2	-HL	PM35	330	420	630	ipr	0.0031 - 0.0059	0.0039 - 0.0063	0.0047 - 0.0079	0.0055 - 0.0098
M3	-HM	PM35	300	360	600	ipr	0.0031 - 0.0059	0.0039 - 0.0063	0.0047 - 0.0079	0.0055 - 0.0098
K1	-HP	PM35	360	600	840	ipr	0.0039 - 0.0071	0.0047 - 0.0094	0.0055 - 0.0102	0.0063 - 0.0118
K2	-HP	PM35	300	540	780	ipr	0.0039 - 0.0071	0.0047 - 0.0094	0.0055 - 0.0102	0.0063 - 0.0118
K3	-HP	PM35	300	510	720	ipr	0.0039 - 0.0071	0.0047 - 0.0094	0.0055 - 0.0102	0.0063 - 0.0118
N1	-HA	HN25	750	1050	1500	ipr	0.0039 - 0.0059	0.0043 - 0.0063	0.0051 - 0.0071	0.0059 - 0.0079
N2	-HA	HN25	450	900	1350	ipr	0.0039 - 0.0059	0.0043 - 0.0063	0.0051 - 0.0071	0.0059 - 0.0079
N3	-HA	HN25	240	360	450	ipr	0.0031 - 0.0047	0.0039 - 0.0055	0.0047 - 0.0067	0.0055 - 0.0083
S3	-HL	PM35	60	90	135	ipr	0.0039 - 0.0059	0.0047 - 0.0075	0.0055 - 0.0083	0.0063 - 0.0094
S4	-HL	PM35	105	120	195	ipr	0.0039 - 0.0059	0.0047 - 0.0075	0.0055 - 0.0083	0.0063 - 0.0094

Geomtry (Chip Groove):
 HL - Low Carbon Steel
 HP - Alloy Steels, Tool Steels, Cast Iron
 HM - Stainless Steels
 HA - Aluminum

Haas Idexable Drill Bodies Tool Diameters
.750 - .938" 01-0022, 01-0023, 01-0031, 01-0032
.969 - 1.156" 01-0024, 01-0025, 01-0033, 01-0034
1.188 - 1.438" 01-0026, 01-0027, 01-0035, 01-0036
1.469 - 1.750" 01-0028, 01-0029, 01-0030, 01-0037

NOTE:
 All Speed Conditions are for stable conditions. For unstable conditions, suggest to reduce starting Speeds by 10%. For interrupted cuts, reduce by 20%
 For 4xD, it is highly recommended to start with Feed and Speed values reduced by 10% less than above data
 For 5xD, diameter range .473" - .938" (insert sizes A to C), it is highly recommended to start with Feed and Speed values reduced by 20% less than above data
 For 5xD, diameter range .969" - 2.5" (inserts sizes D to H), it is highly recommended to start with Feed and Speed values reduced by 15% less than above data
 For 4xD and 5xD, it is recommended to reduce Feedrate during entry and exit by 30 - 50%



INSERT SELECTION

Haas Indexable Drilling

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Haas Indexable Drill Body Part #	Description	Steel						Stainless Steel	
		P0-P1		P2-P4		P5-P6		M1-M2	
		Center	Periphery	Center	Periphery	Center	Periphery	Center	Periphery
01-0022	HID3-.750-1.00-2C	02-0045	02-0044	02-0029	02-0028	02-0037	02-0036	02-0045	02-0044
01-0023	HID3-.875-1.00-2C	02-0045	02-0044	02-0029	02-0028	02-0037	02-0036	02-0045	02-0044
01-0024	HID3-1.000-1.00-2D	02-0047	02-0046	02-0031	02-0030	02-0039	02-0038	02-0047	02-0046
01-0025	HID3-1.125-1.25-2D	02-0047	02-0046	02-0031	02-0030	02-0039	02-0038	02-0047	02-0046
01-0026	HID3-1.250-1.25-2E	02-0049	02-0048	02-0033	02-0032	02-0041	02-0040	02-0049	02-0048
01-0027	HID3-1.375-1.25-2E	02-0049	02-0048	02-0033	02-0032	02-0041	02-0040	02-0049	02-0048
01-0028	HID3-1.500-1.50-2F	02-0051	02-0050	02-0035	02-0034	02-0043	02-0042	02-0051	02-0050
01-0029	HID3-1.625-1.50-2F	02-0051	02-0050	02-0035	02-0034	02-0043	02-0042	02-0051	02-0050
01-0030	HID3-1.750-1.50-2F	02-0051	02-0050	02-0035	02-0034	02-0043	02-0042	02-0051	02-0050
01-0031	HID5-.750-1.00-2C	02-0045	02-0044	02-0029	02-0028	02-0037	02-0036	02-0045	02-0044
01-0032	HID5-.875-1.00-2C	02-0045	02-0044	02-0029	02-0028	02-0037	02-0036	02-0045	02-0044
01-0033	HID5-1.000-1.00-2D	02-0047	02-0046	02-0031	02-0030	02-0039	02-0038	02-0047	02-0046
01-0034	HID5-1.125-1.25-2D	02-0047	02-0046	02-0031	02-0030	02-0039	02-0038	02-0047	02-0046
01-0035	HID5-1.250-1.25-2E	02-0049	02-0048	02-0033	02-0032	02-0041	02-0040	02-0049	02-0048
01-0036	HID5-1.375-1.25-2E	02-0049	02-0048	02-0033	02-0032	02-0041	02-0040	02-0049	02-0048
01-0037	HID5-1.500-1.50-2F	02-0051	02-0050	02-0035	02-0034	02-0043	02-0042	02-0051	02-0050

Haas Indexable Drill Body Part #	Description	Stainless Steel		Cast Iron		Aluminum		High-Temp Alloys	
		M3		K1-K3		N1-N3		S3-S4	
		Center	Periphery	Center	Periphery	Center	Periphery	Center	Periphery
01-0022	HID3-.750-1.00-2C	02-0037	02-0036	02-0029	02-0028	02-0052	02-0056	02-0045	02-0044
01-0023	HID3-.875-1.00-2C	02-0037	02-0036	02-0029	02-0028	02-0052	02-0056	02-0045	02-0044
01-0024	HID3-1.000-1.00-2D	02-0039	02-0038	02-0031	02-0030	02-0053	02-0057	02-0047	02-0046
01-0025	HID3-1.125-1.25-2D	02-0039	02-0038	02-0031	02-0030	02-0053	02-0057	02-0047	02-0046
01-0026	HID3-1.250-1.25-2E	02-0041	02-0040	02-0033	02-0032	02-0054	02-0058	02-0049	02-0048
01-0027	HID3-1.375-1.25-2E	02-0041	02-0040	02-0033	02-0032	02-0054	02-0058	02-0049	02-0048
01-0028	HID3-1.500-1.50-2F	02-0043	02-0042	02-0035	02-0034	02-0055	02-0059	02-0051	02-0050
01-0029	HID3-1.625-1.50-2F	02-0043	02-0042	02-0035	02-0034	02-0055	02-0059	02-0051	02-0050
01-0030	HID3-1.750-1.50-2F	02-0043	02-0042	02-0035	02-0034	02-0055	02-0059	02-0051	02-0050
01-0031	HID5-.750-1.00-2C	02-0037	02-0036	02-0029	02-0028	02-0052	02-0056	02-0045	02-0044
01-0032	HID5-.875-1.00-2C	02-0037	02-0036	02-0029	02-0028	02-0052	02-0056	02-0045	02-0044
01-0033	HID5-1.000-1.00-2D	02-0039	02-0038	02-0031	02-0030	02-0053	02-0057	02-0047	02-0046
01-0034	HID5-1.125-1.25-2D	02-0039	02-0038	02-0031	02-0030	02-0053	02-0057	02-0047	02-0046
01-0035	HID5-1.250-1.25-2E	02-0041	02-0040	02-0033	02-0032	02-0054	02-0058	02-0049	02-0048
01-0036	HID5-1.375-1.25-2E	02-0041	02-0040	02-0033	02-0032	02-0054	02-0058	02-0049	02-0048
01-0037	HID5-1.500-1.50-2F	02-0043	02-0042	02-0035	02-0034	02-0055	02-0059	02-0051	02-0050



MATERIAL GRADES

ANSI

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P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	A36, 1008, 1010, 1018 through 1029; 1108, 1117
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	10L18, 1200 Series, 1213, 12L14
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	1035, 1045, 10L45, 1050, 10L50, 1080, 1137, 1144, 11L44, 1525, 1545, 1572
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
M1	Austenitic Stainless Steel	–	<600	130–200	–	200 Series, 301, 302, 304, 304L, 309
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	310, 316, 316L, 321, 347, 384 ASTM Cast XM-1, XM-5, XM-7, XM-21
M3	Duplex Stainless Steel	–	<800	135–275	<30	323, 329, F55, 2205, S329000
K1	Gray Cast Iron	–	125–500	120–290	<32	class 20, 25, 30, 35, 40, 45, 50, 55, 60, G1800, G3000, G3500, G4000
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	60-40-18, 65-45-12, 80-55-06, SAE J434: D4018, D4512, D5506, ASTM A47: Grade 32510, 35018, SAE J158: Grade M3210, M4504, M5003, M5503, M7002, ASTMA842: Grade 250, 300, 350, 400, 450
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	ASTM A536: 100-70-03, 120-90-02, SAE J434: D7003, SAE J158: Grade M8501AST A897: 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185
N1	Wrought Aluminum	–	–	–	–	2025, 5050, 7050, 1000, 2017
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	2024, 6061, 7075
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	–
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	C81500
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	–
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	Graphite, CFK, CFRP
N7	Metal Matrix Composites (MMC)	–	–	–	–	C63000
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	A-286, INCOLOY® 800 Series, A608, A567, Discaloy®, INVAR®, N-155, 16-25-6, 19-9 DL; Cast: ASTM A-297, A-351, A-567, A-608
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 25 (L605), Haynes 188, J-1570, Stellite®, AlResist 213; Cast: AlResist 13, Haynes 21, MAR-M302, MAR-M509, NASA Co-W-Re, WI-52
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	Astrolloy®, Hastelloy® B/C/ C-276 /X, INCONEL® 600 and 700 Series, IN102, INCOLOY 900 Series, Rene 41, Waspalloy®, Monel®, K-500, MAR-M20, NIMONIC®, UDIMET®
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Pure: Ti 98.8, Ti 98.9, Ti 99.9; Alloyed: Ti 5Al-2.5Sn, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al
H1	Hardened Materials	–	–	–	44–48	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H2	Hardened Materials	–	–	–	48–55	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H3	Hardened Materials	–	–	–	56–60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H4	Hardened Materials	–	–	–	>60	Tool Steel H10, H11, H13, D2, D3, 4340, P20