GARR TOOL General Purpose Drilling Guide (Bright Finish)

	ISO Material	HRC	M/Min. (by Series)			
			1100	1200, 1205, 1520	1500, 1510	1600
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	- -	30 27	30 27	27 25
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	- -	30 27	30 27	27 25
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	- -	30 27	30 27	27 25
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		-	37	37	35
	5553 / Beta Titanium		-	35	35	30
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	-	40 37	40 37	37 35
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	-	40 37	40 37	37 35
	400 Series - 403, 405, 420, 455	< 40 > 40	-	40 37	40 37	37 35
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	- -	55 52	55 52	52 50
	Thompson Shaft, Armor Plate (Class 1)	> 50	-	37	37	35
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	-	72 70	72 70	70 65
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	-	82	82	80
K	**CAST MATERIAL**					
	Ductile Iron		67	85	85	82
	Gray Iron		72	75	75	72
N	**NON-FERROUS**					
	Aluminum (6061, 7075)		-	75	-	90
	Magnesium		-	45	-	45
	Copper		-	37	-	37
	Brass, Bronze		-	50	-	40
O	**COMPOSITE (non-ISO)**					
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		42	-	42	-

NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL General Purpose Drilling Guide (Bright Finish)

ISO Material		HRC	CHIPLOAD PER TOOTH (Fz)				
			2.0 - 3.0mm	3.0 - 6.0mm	6.0 - 10.0mm	10.0 - 13.0mm	13.0 - 16.0mm
S	**COBALT BASE ALLOYS**						
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	.008 - .020 .005 - .015	.015 - .028 .010 - .023	.025 - .043 .020 - .038	.036 - .061 .030 - .056	.048 - .081 .043 - .076
	NICKEL BASE ALLOYS						
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	.008 - .020 .005 - .015	.015 - .028 .010 - .023	.025 - .043 .020 - .038	.036 - .061 .030 - .056	.048 - .081 .043 - .076
	IRON BASE ALLOYS						
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	.008 - .020 .005 - .015	.015 - .028 .010 - .023	.025 - .043 .020 - .038	.036 - .061 .030 - .056	.048 - .081 .043 - .076
	TITANIUM ALLOYS						
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		.010 - .023	.020 - .036	.030 - .051	.041 - .069	.053 - .084
	5553 / Beta Titanium		.008 - .018	.015 - .028	.025 - .043	.036 - .061	.048 - .076
M	**STAINLESS STEELS**						
	13/8, 15/5, 17-4, pH Types	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
	400 Series - 403, 405, 420, 455	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
P	**HIGH STRENGTH TOOL STEELS**						
	A2, D2, P20, H13, S7, O1	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
	Thompson Shaft, Armor Plate (Class 1)	> 50	.005 - .015	.013 - .023	.023 - .038	.033 - .056	.046 - .071
	MEDIUM ALLOY TOOL STEELS						
	4140, 4340, 52100, 6150, 8620	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
	CARBON STEELS						
	1000's - 1018, 1020, 12L14	< 40	.013 - .025	.020 - .036	.030 - .051	.041 - .069	.053 - .084
K	**CAST MATERIAL**						
	Ductile Iron		.013 - .025	.020 - .036	.030 - .051	.041 - .069	.053 - .084
	Gray Iron		.013 - .025	.020 - .036	.030 - .051	.041 - .069	.053 - .084
N	**NON-FERROUS**						
	Aluminum (6061, 7075)		.015 - .028	.023 - .038	.033 - .053	.043 - .071	.056 - .086
	Magnesium		.013 - .025	.023 - .036	.033 - .051	.043 - .069	.056 - .084
	Copper		.010 - .020	.020 - .030	.030 - .046	.041 - .064	.053 - .079
	Brass, Bronze		.013 - .023	.023 - .033	.033 - .048	.043 - .066	.056 - .081
O	**COMPOSITE (non-ISO)**						
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		.008 - .020	.018 - .030	.028 - .046	.038 - .064	.051 - .079

NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL General Purpose Drilling Guide (Durana Coated)

	ISO Material	HRC	M/Min. (by Series)			
			1100H, 1120H	1200H, 1205H, 1520H	1500H, 1510H	1800H
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	- -	37 32	37 32	- -
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	- -	37 32	37 32	- -
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	- -	37 32	37 32	- -
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		-	42	42	-
	5553 / Beta Titanium		-	40	40	-
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	- -	45 40	45 40	- -
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	- -	45 40	45 40	- -
	400 Series - 403, 405, 420, 455	< 40 > 40	- -	45 40	45 40	- -
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	- -	60 57	60 57	- -
	Thompson Shaft, Armor Plate (Class 1)	> 50	-	-	42	-
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	- -	77 75	77 75	- -
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	-	87	87	-
K	**CAST MATERIAL**					
	Ductile Iron		90	90	90	-
	Gray Iron		82	82	82	-
N	**NON-FERROUS**					
	Aluminum (6061, 7075)		-	90	-	85
	Magnesium		-	55	-	67
	Copper		-	52	-	55
	Brass, Bronze		-	55	-	80
O	**COMPOSITE (non-ISO)**					
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		50	50	50	-

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GARR TOOL General Purpose Drilling Guide (Durana Coated)

ISO Material		HRC	CHIPLOAD PER TOOTH (Fz)				
			2.0 - 3.0mm	3.0 - 6.0mm	6.0 - 10.0mm	10.0 - 13.0mm	13.0 - 16.0mm
S	**COBALT BASE ALLOYS**						
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	.008 - .020 .005 - .015	.015 - .028 .010 - .023	.025 - .043 .020 - .038	.036 - .061 .030 - .056	.048 - .081 .043 - .076
	NICKEL BASE ALLOYS						
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	.008 - .020 .005 - .015	.015 - .028 .010 - .023	.025 - .043 .020 - .038	.036 - .061 .030 - .056	.048 - .081 .043 - .076
	IRON BASE ALLOYS						
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	.008 - .020 .005 - .015	.015 - .028 .010 - .023	.025 - .043 .020 - .038	.036 - .061 .030 - .056	.048 - .081 .043 - .076
	TITANIUM ALLOYS						
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		.010 - .023	.020 - .036	.030 - .051	.041 - .069	.053 - .084
	5553 / Beta Titanium		.008 - .018	.015 - .028	.025 - .043	.036 - .061	.048 - .076
M	**STAINLESS STEELS**						
	13/8, 15/5, 17-4, pH Types	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
	400 Series - 403, 405, 420, 455	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
P	**HIGH STRENGTH TOOL STEELS**						
	A2, D2, P20, H13, S7, O1	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
	Thompson Shaft, Armor Plate (Class 1)	> 50	.005 - .015	.013 - .023	.023 - .038	.033 - .056	.046 - .071
	MEDIUM ALLOY TOOL STEELS						
	4140, 4340, 52100, 6150, 8620	< 40 > 40	.010 - .023 .008 - .018	.018 - .033 .015 - .028	.028 - .048 .025 - .043	.038 - .066 .036 - .061	.051 - .081 .048 - .076
	CARBON STEELS						
	1000's - 1018, 1020, 12L14	< 40	.013 - .025	.020 - .036	.030 - .051	.041 - .069	.053 - .084
K	**CAST MATERIAL**						
	Ductile Iron		.013 - .025	.020 - .036	.030 - .051	.041 - .069	.053 - .084
	Gray Iron		.013 - .025	.020 - .036	.030 - .051	.041 - .069	.053 - .084
N	**NON-FERROUS**						
	Aluminum (6061, 7075)		.015 - .028	.023 - .038	.033 - .053	.043 - .071	.056 - .086
	Magnesium		.013 - .025	.023 - .036	.033 - .051	.043 - .069	.056 - .084
	Copper		.010 - .020	.020 - .030	.030 - .046	.041 - .064	.053 - .079
	Brass, Bronze		.013 - .023	.023 - .033	.033 - .048	.043 - .066	.056 - .081
O	**COMPOSITE (non-ISO)**						
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		.008 - .020	.018 - .030	.028 - .046	.038 - .064	.051 - .079

NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.