GARR TOOL®

High Performance Solid Carbide



AHB

TOOLING & MACHINERY

COMPLETE METALWORKING SOLUTIONS

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2024

GARR TOOL sets the standard when it comes to high performance tooling. From its beginning in a garage in 1944, GARR TOOL grew quickly due to its quality products and friendly, reliable service. For eighty years in the cutting tool industry, Garr Tool Company has maintained its commitment to manufacturing the highest quality carbide cutting tools, offering competitive prices and providing unequaled customer service.

Located in Alma, Michigan USA, our current facility of over 200,000 square feet contains clean, efficient production space. An ISO 9001:2015-certified company, GARR TOOL produces thousands of tools per day on our state-of-the-art CNC grinding equipment, run by experienced, conscientious operators. Our select distributors can be found in 35 countries, and end-users worldwide trust and take pride in products that come from GARR TOOL. Our quality tools ensure that individuals in industries such as aerospace, oil and gas, automotive, medical, mold-making, and mining can work efficiently, quickly, and as safely as possible. Garr Tool Company will continue to invest in new technology to meet the future needs of our customers. Adding to our efficiency and service, Oerlikon Balzers Coating USA manages our in-house coating facility.

With a continued focus on maintaining fast, reliable service, we operate an inventory and shipping center in England to better service our customers in the UK and throughout Europe. Quality carbide tooling backed by our ingenuity, integrity, sincerity, work ethic, and personal values is paramount at Garr Tool Company. It's why you can trust GARR TOOL each and every time. We are well-known for having a large inventory in stock, allowing standard catalog items to be shipped within 24 hours at a 99+% fill rate. GARR TOOL continues to introduce new series of standard tools to meet the demands of material specific machining. We also take pride in shipping custom tools within two weeks. To see our selection of tooling, or to learn more about GARR TOOL, we encourage you to visit our website, www.garrtool.com.

All of us at Garr Tool Company, as well as our trusted worldwide network of distributors, look forward to helping you with your solid carbide round tooling needs.





HTD 12 Series Page 17

New series for High Performance drilling

A3 Series Page 118

Built for High Efficiency Milling
on high RPM machines

V4 Series Page 141

Expanded line of our popular V4 Series

NEW

GARR Technical Advisor

Features ease of use, including an extensive material list and setup versatility

Uses a dynamic function based on spindle interface, toolholding, stability of workpiece and *most importantly*, specific material condition

Adaptability of the GARR Technical Advisor is beneficial when setup factors are sub-optimal

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	1205H	2 Flute	5xD	25° Helix	Durana Coated	75
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	1200H	2 Flute	5xD	25° Helix	Durana Coated	88
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1800H		92	DURANA	2 flute, Parabolic

END MILLS

SERIES		PAGE	COATING	DESCRIPTION
A3		118	BRIGHT	High velocity, 3 flute, High metal removal rate
143M, 143R		127, 130	ALUMASTAR	High velocity, 3 flute, High metal removal rate
142B		126	ALUMASTAR	High velocity, 2 flute, High metal removal rate
142M, 142R		123, 124	ALUMASTAR	High velocity, 2 flute, High metal removal rate
242M, 842M		179	BRIGHT	High performance, 2 flute, For 3000-8000 RPM
ARC		114	BRIGHT	High performance, 3 flute, Staggered helix rougher
253M, 853M		182	BRIGHT	High performance, 3 flute, Profiling and finishing
253MC		184	TiCN	High performance, 3 flute, Profiling and finishing
220M, 820M		218	BRIGHT	2 flute, General purpose, Square end
220MC		221	TiCN	2 flute, General purpose, Square end
320M, 920M		230	BRIGHT	2 flute, General purpose, Ball end
320MC		233	TiCN	2 flute, General purpose, Ball end

Recommended for: **TITANIUM**

ISO Material Group: **S**

DRILLS

SERIES		PAGE	COATING	DESCRIPTION
1510H		66	DURANA	2 flute, General purpose, Slow spiral
1550H, 1250H, 1850H		25	ALTINOS	2 flute, High performance, Small diameter, 1/8" or 3mm shank
1580HD		31	ALTINOS	2 flute, High performance, Common shank
1580H, 1280H		34	ALTINOS	2 flute, High performance
1580KD, 1280KD, 1880KD		39	ALTINOS	2 flute, High performance, Coolant fed, Common shank
1580KH, 1280KH, 1880KH		49	ALTINOS	2 flute, High performance, Coolant fed
HTD 12		17	ALTINOS	2 flute, High performance, Coolant fed, Double margin, Common shank
1520H, 1205H		75	DURANA	2 flute, General purpose
1160, 1180		20	ALUMASTAR	3 flute, High performance

END MILLS

SERIES		PAGE	COATING	DESCRIPTION
V4		141	AlCrN	High performance, 4 flute, Variable helix
V5		154	AlCrN	High performance, 5 flute, Variable helix
VX-7		162	ALCRONOS	High performance, 7 flute, Staggered flute
VRX		166	AlTiN	High performance, 4 flute, Staggered flute
VRX-6		176	AlTiN	High performance, 6 flute, Staggered flute
TMS, TMR		134, 136	AlCrN	High performance, Multiple flute finisher
VHM		116	AlTiN	High performance, 4 flute, Staggered flute rougher
255MA, 855MA		186	AlTiN	High performance, 5 flute, Square end
255RA, 855RA		191	AlTiN	High performance, 5 flute, Corner radius
242M, 842M		179	BRIGHT	High performance, 2 flute, For 3000-8000 RPM
246MA, 846MA		193	AlTiN	High performance, 6 flute, Finisher
253MA, 853MA		180	AlTiN	High performance, 3 flute, Profiling and finishing
223MA, 823MA		222	TiAlN	3 flute, General purpose, Square end
230MA, 830MA		222	TiAlN	4 flute, General purpose, Square end
230RA, 830RA		227	TiAlN	4 flute, General purpose, Corner radius
323MA, 923MA		234	TiAlN	3 flute, General purpose, Ball end
330MA, 930MA		234	TiAlN	4 flute, General purpose, Ball end

Recommended for: **STAINLESS STEEL**

ISO Material Group: **M**

DRILLS

SERIES		PAGE	COATING	DESCRIPTION
1510H		66	DURANA	2 flute, General purpose, Slow spiral
1550H, 1250H, 1850H		25	ALTINOS	2 flute, High performance, Small diameter, 1/8" or 3mm shank
1580HD		31	ALTINOS	2 flute, High performance, Common shank
1580H, 1280H		34	ALTINOS	2 flute, High performance
1580KD, 1280KD, 1880KD		39	ALTINOS	2 flute, High performance, Coolant fed, Common shank
1580KH, 1280KH, 1880KH		49	ALTINOS	2 flute, High performance, Coolant fed
HTD 12		17	ALTINOS	2 flute, High performance, Coolant fed, Double margin, Common shank
1520H, 1205H		75	DURANA	2 flute, General purpose

END MILLS

SERIES		PAGE	COATING	DESCRIPTION
V4		141	AlCrN	High performance, 4 flute, Variable helix
V5		154	AlCrN	High performance, 5 flute, Variable helix
VX-7		162	ALCRONOS	High performance, 7flute, Staggered flute
VRX		166	AlTiN	High performance, 4 flute, Staggered flute
VRX-6		176	AlTiN	High performance, 6 flute, Staggered flute
253MA, 853MA		180	AlTiN	High performance, 3 flute, Profiling and finishing
255MA, 855MA		186	AlTiN	High performance, 5 flute, Square end
255RA, 855RA		191	AlTiN	High performance, 5 flute, Corner radius
VHM		116	AlTiN	High performance, 4 flute, Staggered flute rougher
ARC		114	BRIGHT	High performance, 3 flute, Staggered helix rougher
TMS, TMR		134, 136	AlCrN	High performance, Multiple flute finisher
253MC		184	TiCN	High performance, 3 flute, Profiling and finishing
246MA, 846MA		193	AlTiN	High performance, 6 flute, Finisher, Square end
223MA, 823MA		222	TiAlN	3 flute, General purpose, Square end
230MA, 830MA		222	TiAlN	4 flute, General purpose, Square end
230RA, 830RA		227	TiAlN	4 flute, General purpose, Corner radius
323MA, 923MA		234	TiAlN	3 flute, General purpose, Ball end
330MA, 930MA		234	TiAlN	4 flute, General purpose, Ball end

Recommended for: INCONEL, HIGH NICKEL ALLOYS

ISO Material Group: S

DRILLS

SERIES		PAGE	COATING	DESCRIPTION
1510H		66	DURANA	2 flute, General purpose, Slow spiral
1550H, 1250H, 1850H		25	ALTINOS	2 flute, High performance, Small diameter, 1/8" or 3mm shank
1580HD		31	ALTINOS	2 flute, High performance, Common shank
1580H, 1280H		34	ALTINOS	2 flute, High performance
1580KD, 1280KD, 1880KD		39	ALTINOS	2 flute, High performance, Coolant fed, Common shank
1580KH, 1280KH, 1880KH		49	ALTINOS	2 flute, High performance, Coolant fed
HTD 12		17	ALTINOS	2 flute, High performance, Coolant fed, Double margin, Common shank
1520H, 1205H		75	DURANA	2 flute, General purpose

END MILLS

SERIES		PAGE	COATING	DESCRIPTION
V5		154	AlCrN	High performance, 5 flute, Variable helix
V4		141	AlCrN	High performance, 4 flute, Variable helix
VRX		166	AlTiN	High performance, 4 flute, Staggered flute
VRX-6		176	AlTiN	High performance, 6 flute, Staggered flute
VX-7		162	ALCRONOS	High performance, 7 flute, Staggered flute
VHM		116	AlTiN	High performance, 4 flute, Staggered flute rougher
255MA, 855MA		186	AlTiN	High performance, 5 flute, Square end
255RA, 855RA		191	AlTiN	High performance, 5 flute, Corner radius
246MA, 846MA		193	AlTiN	High performance, 6 flute, Finisher, Square end
TMS, TMR		134, 136	AlCrN	High performance, Multiple flute finisher
230MA, 830MA		222	TiAlN	4 flute, General purpose, Square end
230RA, 830RA		227	TiAlN	4 flute, General purpose, Corner radius
330MA, 930MA		234	TiAlN	4 flute, General purpose, Ball end

Recommended for: BRASS, BRONZE, COPPER, MAGNESIUM

ISO Material Group: N

DRILLS

SERIES		PAGE	COATING	DESCRIPTION
1160, 1180		20	ALUMASTAR	3 flute, High performance
1510H		66	DURANA	2 flute, General purpose, Slow spiral
1520, 1205		69	BRIGHT	2 flute, General purpose
1520H, 1205H		75	DURANA	2 flute, General purpose
1500H		61	DURANA	2 flute, Straight flute
1800H		92	DURANA	2 flute, Parabolic

END MILLS

SERIES		PAGE	COATING	DESCRIPTION
143M, 143R		127, 130	ALUMASTAR	High velocity, 3 flute, High metal removal rate
142B		126	ALUMASTAR	High velocity, 2 flute, High metal removal rate
142M, 142R		123, 124	ALUMASTAR	High velocity, 2 flute, High metal removal rate
ARC		114	BRIGHT	High performance, 3 flute, Staggered helix rougher
242M, 842M		179	BRIGHT	High performance, 2 flute, For 3000-8000 RPM
253M, 853M		182	BRIGHT	High performance, 3 flute, Profiling and finishing
253MC		184	TiCN	High performance, 3 flute, Profiling and finishing
220M, 820M		218	BRIGHT	2 flute, General purpose, Square end
220MC		221	TiCN	2 flute, General purpose, Square end
320M, 920M		230	BRIGHT	2 flute, General purpose, Ball end
320MC		233	TiCN	2 flute, General purpose, Ball end

Recommended for: HARDENED TOOL STEELS
(generally over 45 Rc)

ISO Material Group: **P**

DRILLS

SERIES		PAGE	COATING	DESCRIPTION
1500H		61	DURANA	2 flute, Straight flute
1510H		66	DURANA	2 flute, General purpose, Slow spiral
1550H, 1250H, 1850H		25	ALTINOS	2 flute, High performance, Small diameter, 1/8" or 3mm shank
1580HD		31	ALTINOS	2 flute, High performance, Common shank
1580H, 1280H		34	ALTINOS	2 flute, High performance
1580KD, 1280KD, 1880KD		39	ALTINOS	2 flute, High performance, Coolant fed, Common shank
1580KH, 1280KH, 1880KH		49	ALTINOS	2 flute, High performance, Coolant fed
HTD 12		17	ALTINOS	2 flute, High performance, Coolant fed, Double margin, Common shank
1520H, 1205H		75	DURANA	2 flute, General purpose

END MILLS

SERIES		PAGE	COATING	DESCRIPTION
H-45		197	DURANA	High performance, High feed, Corner radius
350MX, 950MX		198	DURANA	High performance, High Rc finisher, Die mold
545MA		194	DURANA	High performance, High Rc finisher, Square end
545RA		195	DURANA	High performance, High Rc finisher, Corner radius
545BA		196	DURANA	High performance, High Rc finisher, Ball end
VRX		166	AlTiN	High performance, 4 flute, Staggered flute
VRX-6		176	AlTiN	High performance, 6 flute, Staggered flute
230MA, 830MA		222	TiAlN	4 flute, General purpose, Square end
230RA, 830RA		227	TiAlN	4 flute, General purpose, Corner radius
330MA, 930MA		234	TiAlN	4 flute, General purpose, Ball end

Recommended for: COMPOSITE MATERIALS
(Graphite, Plastics, Carbon Fiber)

ISO Material Group: **O**

DRILLS

SERIES		PAGE	COATING	DESCRIPTION
1160, 1180		20	ALUMASTAR	3 flute, High performance
154MA		111	TiAlN	4 flute, Center cutting angle
1510H		66	DURANA	2 flute, General purpose, Slow spiral
1520H, 1205H		75	DURANA	2 flute, General purpose
1800H		92	DURANA	2 flute, Parabolic
1500H		61	DURANA	2 flute, Straight flute

END MILLS

SERIES		PAGE	COATING	DESCRIPTION
210D		199	DIAMOND	4 flute, Square end
310D		201	DIAMOND	4 flute, Ball end
210RD		200	DIAMOND	4 flute, Corner radius
143M, 143R		127, 130	ALUMASTAR	High velocity, 3 flute, High metal removal rate
142M, 142R		123, 124	ALUMASTAR	High velocity, 2 flute, High metal removal rate
142B		126	ALUMASTAR	High velocity, 2 flute, High metal removal rate
253M, 853M		182	BRIGHT	High performance, 3 flute, Profiling and finishing
253MC		184	TiCN	High performance, 3 flute, Profiling and finishing
255MC		190	TiCN	High performance, 5 flute, Profiling and finishing
220MC		221	TiCN	2 flute, General purpose, Square end
320MC		233	TiCN	2 flute, General purpose, Ball end
154M, 154MA		110, 111	BRIGHT/TiAlN	4 flute, Drill/Mill, Center cutting to a point
152M, 152MA		108, 109	BRIGHT/TiAlN	2 flute, Drill/Mill, Center cutting to a point

Recommended for: CARBON STEELS, MEDIUM ALLOY STEELS
(generally under 45 Rc)

ISO Material Group: **P**

DRILLS

SERIES		PAGE	COATING	DESCRIPTION
1580HD		31	ALTINOS	2 flute, High performance, Common shank
1550H, 1250H, 1850H		25	ALTINOS	2 flute, High performance, Small diameter, 1/8" or 3mm shank
1580H, 1280H		34	ALTINOS	2 flute, High performance
1580KD, 1280KD, 1880KD		39	ALTINOS	2 flute, High performance, Coolant fed, Common shank
1580KH, 1280KH, 1880KH		49	ALTINOS	2 flute, High performance, Coolant fed
HTD 12		17	ALTINOS	2 flute, High performance, Coolant fed, Double margin, Common shank
1510H		66	DURANA	2 flute, General purpose, Slow spiral
1520H, 1205H		75	DURANA	2 flute, General purpose

END MILLS

SERIES		PAGE	COATING	DESCRIPTION
V4		141	AlCrN	High performance, 4 flute, Variable helix
V5		154	AlCrN	High performance, 5 flute, Variable helix
VX-7		162	ALCRONOS	High performance, 7 flute, Staggered flute
VRX		166	AlTiN	High performance, 4 flute, Staggered flute
VRX-6		176	AlTiN	High performance, 6 flute, Staggered flute
VHM		116	AlTiN	High performance, 4 flute, Staggered flute rougher
255MA, 855MA		186	AlTiN	High performance, 5 flute, Square end
255RA, 855RA		191	AlTiN	High performance, 5 flute, Corner radius
253MA, 853MA		180	AlTiN	High performance, 3 flute, Profiling and finishing
230MA, 830MA		222	TiAlN	4 flute, General purpose, Square end
230RA, 830RA		227	TiAlN	4 flute, General purpose, Corner radius
330MA, 930MA		234	TiAlN	4 flute, General purpose, Ball end

Recommended for: **CAST IRON**

ISO Material Group: K

DRILLS

SERIES		PAGE	COATING	DESCRIPTION
1120H, 1100H		81	DURANA	3 flute, General purpose
1520H, 1205H		75	DURANA	2 flute, General purpose
1510H		66	DURANA	2 flute, General purpose, Slow spiral
1580H, 1280H		34	ALTINOS	2 flute, High performance
1550H, 1250H, 1850H		25	ALTINOS	2 flute, High performance, Small diameter, 1/8" or 3mm shank
1580HD		31	ALTINOS	2 flute, High performance, Common shank
1580KH, 1280KH, 1880KH		49	ALTINOS	2 flute, High performance, Coolant fed
1580KD, 1280KD, 1880KD		39	ALTINOS	2 flute, High performance, Coolant fed, Common shank

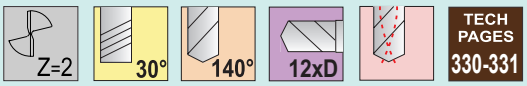
END MILLS

SERIES		PAGE	COATING	DESCRIPTION
VRX		166	AlTiN	High performance, 4 flute, Staggered flute
VRX-6		176	AlTiN	High performance, 6 flute, Staggered flute
V4		141	AlCrN	High performance, 4 flute, Variable helix
V5		154	AlCrN	High performance, 5 flute, Variable helix
VX-7		162	ALCRONOS	High performance, 7 flute, Staggered flute
255MA, 855MA		186	AlTiN	High performance, 5 flute, Square end
255RA, 855RA		191	AlTiN	High performance, 5 flute, Corner radius
143M, 143R		127, 130	ALUMASTAR	High velocity, 3 flute, High metal removal rate
253MA, 853MA		180	AlTiN	High performance, 3 flute, Profiling and finishing
230MC		221	TiCN	4 flute, General purpose, Square end
230MA, 830MA		222	TiAlN	4 flute, General purpose, Square end
230RA, 830RA		227	TiAlN	4 flute, General purpose, Corner radius

TOLERANCES	
d_1	h7
d_2	h6
l_1	+.1181" –.1181" (+3.00 –3.00mm)
l_2	+.1181" –.1181" (+3.00 –3.00mm)
l_4	+.0787" –.0000" (+2.00 –0.00mm)

NEW SERIES

Series HTD 12



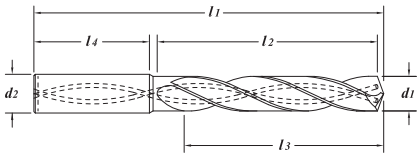
.1181" - .2188"
(3.000mm - 5.557mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels <52 Rc

BALIQ® ALTINOS Coating (AlTiN-based)

High performance solid submicron grain carbide drill with reinforced (HA) shank
h7 drill diameter tolerance
Double margin for true and cleaner holes
Coolant through
Polished flutes
140° Facet point
Pilot drill not required for most applications





EDP#	d_1 Diameter Decimal	d_1 Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
69064	.1181		3.000	6.0	80	40	35	36	122.30	116.98	111.66	106.35
69066	.1220		3.100	6.0	80	40	35	36	122.30	116.98	111.66	106.35
69068	.1250	1/8"	3.175	6.0	82	42	37	36	122.30	116.98	111.66	106.35
69070	.1260		3.200	6.0	82	42	37	36	122.30	116.98	111.66	106.35
69072	.1285	#30	3.264	6.0	82	42	37	36	122.30	116.98	111.66	106.35
69074	.1299		3.300	6.0	82	42	37	36	122.30	116.98	111.66	106.35
69076	.1360	#29	3.454	6.0	85	45	40	36	122.30	116.98	111.66	106.35
69078	.1378		3.500	6.0	85	45	40	36	122.30	116.98	111.66	106.35
69080	.1417		3.600	6.0	85	45	40	36	122.30	116.98	111.66	106.35
69082	.1457		3.700	6.0	90	50	44	36	122.30	116.98	111.66	106.35
69084	.1476		3.750	6.0	90	50	44	36	122.30	116.98	111.66	106.35
69086	.1496		3.800	6.0	90	50	44	36	122.30	116.98	111.66	106.35
69088	.1535		3.900	6.0	90	50	44	36	122.30	116.98	111.66	106.35
69090	.1562	5/32"	3.967	6.0	90	50	44	36	122.30	116.98	111.66	106.35
69092	.1575		4.000	6.0	95	55	48	36	122.30	116.98	111.66	106.35
69094	.1614		4.100	6.0	95	55	48	36	122.30	116.98	111.66	106.35
69096	.1654		4.200	6.0	95	55	48	36	122.30	116.98	111.66	106.35
69098	.1673		4.250	6.0	95	55	48	36	122.30	116.98	111.66	106.35
69100	.1693		4.300	6.0	95	55	48	36	122.30	116.98	111.66	106.35
69102	.1719	11/64"	4.366	6.0	95	55	48	36	122.30	116.98	111.66	106.35
69104	.1732		4.400	6.0	95	55	48	36	122.30	116.98	111.66	106.35
69106	.1772		4.500	6.0	100	60	54	36	122.30	116.98	111.66	106.35
69108	.1811		4.600	6.0	100	60	54	36	122.30	116.98	111.66	106.35
69110	.1831		4.650	6.0	100	60	54	36	122.30	116.98	111.66	106.35
69112	.1850		4.700	6.0	100	60	54	36	122.30	116.98	111.66	106.35
69114	.1875	3/16"	4.762	6.0	100	60	54	36	122.30	116.98	111.66	106.35
69116	.1890	#12	4.800	6.0	100	60	54	36	122.30	116.98	111.66	106.35
69118	.1929		4.900	6.0	100	60	54	36	122.30	116.98	111.66	106.35
69120	.1969		5.000	6.0	105	65	58	36	122.30	116.98	111.66	106.35
69122	.2010	#7	5.105	6.0	105	65	58	36	122.30	116.98	111.66	106.35
69124	.2028		5.150	6.0	105	65	58	36	122.30	116.98	111.66	106.35
69126	.2031	13/64"	5.159	6.0	105	65	58	36	122.30	116.98	111.66	106.35
69128	.2047		5.200	6.0	110	70	63	36	122.30	116.98	111.66	106.35
69130	.2087		5.300	6.0	110	70	63	36	122.30	116.98	111.66	106.35
69132	.2165		5.500	6.0	110	70	63	36	122.30	116.98	111.66	106.35
69134	.2188	7/32"	5.557	6.0	110	70	63	36	122.30	116.98	111.66	106.35

continued ⟶

Series HTD 12 *(continued)*

.2205" - .3937"
(5.600mm - 10.000mm)

EDP#	*d1* Diameter Decimal		*d1* Diameter Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*l3* Max Drill Depth	*l4* Shank Length	1-11	12-24	25-49	50-100
69136	.2205		5.600	6.0	115	75	67	36	122.30	116.98	111.66	106.35
69138	.2244		5.700	6.0	115	75	67	36	122.30	116.98	111.66	106.35
69140	.2283		5.800	6.0	115	75	67	36	122.30	116.98	111.66	106.35
69142	.2323		5.900	6.0	115	75	67	36	122.30	116.98	111.66	106.35
69144	.2344	15/64"	5.954	6.0	120	80	72	36	122.30	116.98	111.66	106.35
69146	.2362		6.000	6.0	120	80	72	36	122.30	116.98	111.66	106.35
69148	.2370		6.020	8.0	120	80	72	36	167.44	160.16	152.88	145.60
69150	.2402		6.100	8.0	120	80	72	36	167.44	160.16	152.88	145.60
69152	.2441		6.200	8.0	120	80	72	36	167.44	160.16	152.88	145.60
69154	.2480		6.300	8.0	120	80	72	36	167.44	160.16	152.88	145.60
69156	.2500	1/4"	6.350	8.0	125	85	77	36	167.44	160.16	152.88	145.60
69158	.2520		6.400	8.0	125	85	77	36	167.44	160.16	152.88	145.60
69160	.2559		6.500	8.0	125	85	77	36	167.44	160.16	152.88	145.60
69162	.2598		6.600	8.0	125	85	77	36	167.44	160.16	152.88	145.60
69164	.2638		6.700	8.0	125	85	77	36	167.44	160.16	152.88	145.60
69166	.2656	17/64"	6.746	8.0	130	90	81	36	167.44	160.16	152.88	145.60
69168	.2677		6.800	8.0	130	90	81	36	167.44	160.16	152.88	145.60
69170	.2717		6.900	8.0	130	90	81	36	167.44	160.16	152.88	145.60
69172	.2756		7.000	8.0	130	90	81	36	167.44	160.16	152.88	145.60
69174	.2795		7.100	8.0	130	90	81	36	167.44	160.16	152.88	145.60
69176	.2812	9/32"	7.142	8.0	135	95	87	36	167.44	160.16	152.88	145.60
69178	.2835		7.200	8.0	135	95	87	36	167.44	160.16	152.88	145.60
69180	.2874		7.300	8.0	135	95	87	36	167.44	160.16	152.88	145.60
69182	.2913		7.400	8.0	135	95	87	36	167.44	160.16	152.88	145.60
69184	.2953		7.500	8.0	135	95	87	36	167.44	160.16	152.88	145.60
69186	.2969	19/64"	7.541	8.0	141	101	92	36	167.44	160.16	152.88	145.60
69188	.2992		7.600	8.0	141	101	92	36	167.44	160.16	152.88	145.60
69190	.3031		7.700	8.0	141	101	92	36	167.44	160.16	152.88	145.60
69192	.3071		7.800	8.0	141	101	92	36	167.44	160.16	152.88	145.60
69194	.3125	5/16"	7.937	8.0	141	101	92	36	167.44	160.16	152.88	145.60
69196	.3150		8.000	8.0	141	101	92	36	167.44	160.16	152.88	145.60
69198	.3189		8.100	10.0	152	108	97	40	254.45	243.39	232.32	221.26
69200	.3228		8.200	10.0	152	108	97	40	254.45	243.39	232.32	221.26
69202	.3268		8.300	10.0	152	108	97	40	254.45	243.39	232.32	221.26
69204	.3287		8.350	10.0	152	108	97	40	254.45	243.39	232.32	221.26
69206	.3307		8.400	10.0	152	108	97	40	254.45	243.39	232.32	221.26
69208	.3346		8.500	10.0	152	108	97	40	254.45	243.39	232.32	221.26
69210	.3386		8.600	10.0	158	114	104	40	254.45	243.39	232.32	221.26
69212	.3425		8.700	10.0	158	114	104	40	254.45	243.39	232.32	221.26
69214	.3438	11/32"	8.732	10.0	158	114	104	40	254.45	243.39	232.32	221.26
69216	.3445		8.750	10.0	158	114	104	40	254.45	243.39	232.32	221.26
69218	.3465		8.800	10.0	158	114	104	40	254.45	243.39	232.32	221.26
69220	.3504		8.900	10.0	158	114	104	40	254.45	243.39	232.32	221.26
69222	.3543		9.000	10.0	158	114	104	40	254.45	243.39	232.32	221.26
69224	.3583		9.100	10.0	163	119	108	40	254.45	243.39	232.32	221.26
69226	.3602		9.150	10.0	163	119	108	40	254.45	243.39	232.32	221.26
69228	.3622		9.200	10.0	163	119	108	40	254.45	243.39	232.32	221.26
69230	.3661		9.300	10.0	163	119	108	40	254.45	243.39	232.32	221.26
69232	.3701		9.400	10.0	163	119	108	40	254.45	243.39	232.32	221.26
69234	.3740		9.500	10.0	163	119	108	40	254.45	243.39	232.32	221.26
69236	.3750	3/8"	9.525	10.0	172	128	114	40	254.45	243.39	232.32	221.26
69238	.3780		9.600	10.0	172	128	114	40	254.45	243.39	232.32	221.26
69240	.3819		9.700	10.0	172	128	114	40	254.45	243.39	232.32	221.26
69242	.3858		9.800	10.0	172	128	114	40	254.45	243.39	232.32	221.26
69244	.3898		9.900	10.0	172	128	114	40	254.45	243.39	232.32	221.26
69246	.3937		10.000	10.0	172	128	114	40	254.45	243.39	232.32	221.26

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	*d1* Diameter Decimal		Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*l3* Max Drill Depth	*l4* Shank Length	1-11	12-24	25-49	50-100
69248	.3976		10.100	12.0	185	136	124	45	333.76	319.25	304.74	290.23
69250	.4016		10.200	12.0	185	136	124	45	333.76	319.25	304.74	290.23
69252	.4062	13/32"	10.317	12.0	185	136	124	45	333.76	319.25	304.74	290.23
69254	.4134		10.500	12.0	185	136	124	45	333.76	319.25	304.74	290.23
69256	.4213		10.700	12.0	185	136	124	45	333.76	319.25	304.74	290.23
69258	.4252		10.800	12.0	185	136	124	45	333.76	319.25	304.74	290.23
69260	.4331		11.000	12.0	185	136	124	45	333.76	319.25	304.74	290.23
69262	.4375	7/16"	11.112	12.0	196	147	135	45	333.76	319.25	304.74	290.23
69264	.4409		11.200	12.0	196	147	135	45	333.76	319.25	304.74	290.23
69266	.4488		11.400	12.0	196	147	135	45	333.76	319.25	304.74	290.23
69268	.4528		11.500	12.0	196	147	135	45	333.76	319.25	304.74	290.23
69270	.4688	15/32"	11.907	12.0	202	153	140	45	333.76	319.25	304.74	290.23
69272	.4724		12.000	12.0	202	153	140	45	333.76	319.25	304.74	290.23



Series 1160, 1180

NEW ITEM

.1562" - .1910"
(3.967mm - 4.851mm)

Z=3 | 30° | 140° | 3xD | 5xD | TECH PAGES 334

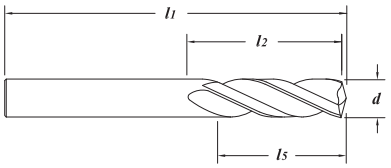
TOLERANCES	
d	+.0000" –.0005" (+.0000 –.0127mm)
l_1	+.125" –.125" (+3.175 –3.175mm)
l_2	+.125" –.125" (+3.175 –3.175mm)

Recommended for aluminum and other soft materials <40 Rc



Alumastar Coated

High performance solid submicron grain carbide drill
No spot drilling required
Unique point geometry and coating for higher speeds and feeds
High performance drill point
Live tooling recommended on lathe processes



3xD (1160) EDP#	5xD (1180) EDP#	Decimal	d † Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
70631		.1562	5/32"	3.967	2-1/16"	9/16"	.497"	42.99	41.12	39.25	37.38
	70161	.1562	5/32"	3.967	2-1/2"	1"	.809"	44.26	42.34	40.41	38.49
70633		.1570	#22	3.988	2-1/8"	5/8"	.500"	43.39	41.50	39.62	37.73
	70163	.1570	#22	3.988	2-1/2"	1"	.814"	44.59	42.65	40.71	38.77
70635		.1575		4.000	54	16	13	43.73	41.83	39.93	38.03
	70166	.1575		4.000	65	24	21	44.92	42.97	41.01	39.06
70637		.1590	#21	4.039	2-1/8"	5/8"	.506"	44.11	42.20	40.28	38.36
	70177	.1590	#21	4.039	2-1/2"	1"	.824"	45.23	43.26	41.30	39.33
70639		.1610	#20	4.089	2-1/8"	5/8"	.512"	44.49	42.56	40.62	38.69
	70179	.1610	#20	4.089	2-1/2"	1"	.834"	45.61	43.63	41.64	39.66
70641		.1660	#19	4.216	2-1/8"	5/8"	.528"	44.87	42.92	40.97	39.02
	70181	.1660	#19	4.216	2-3/4"	1-1/8"	.860"	45.93	43.93	41.94	39.94
70643		.1695	#18	4.305	2-1/8"	5/8"	.539"	45.22	43.25	41.29	39.32
	70183	.1695	#18	4.305	2-3/4"	1-1/8"	.878"	46.23	44.22	42.21	40.20
70645		.1719	11/64"	4.366	2-1/8"	5/8"	.547"	45.61	43.63	41.64	39.66
	70185	.1719	11/64"	4.366	2-3/4"	1-1/8"	.891"	46.56	44.54	42.51	40.49
70647		.1730	#17	4.394	2-3/16"	11/16"	.551"	45.98	43.98	41.98	39.98
	70187	.1730	#17	4.394	2-3/4"	1-1/8"	.897"	46.89	44.85	42.81	40.77
70649		.1770	#16	4.496	2-3/16"	11/16"	.563"	46.30	44.29	42.27	40.26
	70189	.1770	#16	4.496	2-3/4"	1-1/8"	.917"	47.24	45.19	43.13	41.08
70651		.1772		4.500	55	18	14	46.69	44.66	42.63	40.60
	70191	.1772		4.500	65	25	23	47.46	45.40	43.33	41.27
70653		.1800	#15	4.572	2-3/16"	11/16"	.573"	47.00	44.96	42.91	40.87
	70196	.1800	#15	4.572	2-3/4"	1-1/4"	.933"	47.86	45.78	43.70	41.62
70655		.1820	#14	4.623	2-3/16"	11/16"	.579"	47.44	45.38	43.31	41.25
	70201	.1820	#14	4.623	2-3/4"	1-1/4"	.943"	48.19	46.09	44.00	41.90
70657		.1850	#13	4.700	2-3/16"	11/16"	.589"	47.78	45.71	43.63	41.55
	70206	.1850	#13	4.700	2-3/4"	1-1/4"	.959"	48.54	46.43	44.32	42.21
70659		.1875	3/16"	4.763	2-3/16"	11/16"	.597"	48.16	46.07	43.97	41.88
	70211	.1875	3/16"	4.763	2-3/4"	1-1/4"	.972"	48.70	46.59	44.47	42.35
70661		.1890	#12	4.801	2-1/4"	3/4"	.601"	49.74	47.58	45.41	43.25
	70216	.1890	#12	4.801	2-3/4"	1-1/4"	.979"	50.51	48.31	46.12	43.92
70663		.1910	#11	4.851	2-1/4"	3/4"	.608"	50.20	48.02	45.83	43.65
	70221	.1910	#11	4.851	2-3/4"	1-1/4"	.990"	50.82	48.61	46.40	44.19

GARR TOOL®

† *Metric equivalents are for reference only*

Series 1160, 1180 *(continued)*

.1935" - .2570"
(4.914mm - 6.528mm)

3xD (1160) EDP#	5xD (1180) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
70665		.1935	#10	4.914	2-1/4"	3/4"	.616"	50.50	48.30	46.11	43.91
	70226	.1935	#10	4.914	2-3/4"	1-1/4"	1.003"	51.14	48.92	46.69	44.47
70667		.1960	#9	4.978	2-1/4"	3/4"	.624"	50.85	48.64	46.43	44.22
	70229	.1960	#9	4.978	3"	1-5/16"	1.016"	51.44	49.20	46.97	44.73
70669		.1969		5.000	57	19	16	51.13	48.91	46.68	44.46
	70231	.1969		5.000	75	32	26	51.77	49.52	47.27	45.02
70671		.1990	#8	5.055	2-1/4"	3/4"	.633"	51.61	49.37	47.12	44.88
	70236	.1990	#8	5.055	3"	1-5/16"	1.031"	52.03	49.76	47.50	45.24
70673		.2010	#7	5.105	2-1/4"	3/4"	.640"	51.76	49.51	47.26	45.01
	70241	.2010	#7	5.105	3"	1-5/16"	1.042"	52.23	49.96	47.69	45.42
70675		.2031	13/64"	5.159	2-1/4"	3/4"	.646"	52.11	49.84	47.58	45.31
	70246	.2031	13/64"	5.159	3"	1-5/16"	1.053"	52.60	50.31	48.03	45.74
70677		.2040	#6	5.182	2-3/8"	7/8"	.649"	52.46	50.18	47.90	45.62
	70251	.2040	#6	5.182	3"	1-3/8"	1.057"	52.96	50.66	48.35	46.05
70679		.2055	#5	5.220	2-3/8"	7/8"	.654"	52.85	50.56	48.26	45.96
	70256	.2055	#5	5.220	3"	1-3/8"	1.065"	53.30	50.99	48.67	46.35
70681		.2090	#4	5.309	2-3/8"	7/8"	.665"	53.16	50.85	48.54	46.23
	70261	.2090	#4	5.309	3"	1-3/8"	1.083"	53.60	51.27	48.94	46.61
70683		.2130	#3	5.410	2-3/8"	7/8"	.678"	53.52	51.19	48.87	46.54
	70266	.2130	#3	5.410	3"	1-3/8"	1.104"	53.96	51.61	49.27	46.92
70685		.2165		5.500	60	22	18	53.85	51.51	49.17	46.83
	70271	.2165		5.500	75	35	29	54.28	51.92	49.56	47.20
70687		.2188	7/32"	5.558	2-3/8"	7/8"	.696"	54.30	51.94	49.58	47.22
	70276	.2188	7/32"	5.558	3"	1-3/8"	1.134"	54.60	52.23	49.85	47.48
70689		.2210	#2	5.613	2-7/16"	15/16"	.703"	54.69	52.32	49.94	47.56
	70281	.2210	#2	5.613	3"	1-3/8"	1.145"	55.69	53.27	50.85	48.43
70691		.2280	#1	5.791	2-7/16"	15/16"	.726"	55.11	52.71	50.32	47.92
	70286	.2280	#1	5.791	3"	1-3/8"	1.182"	55.96	53.53	51.09	48.66
70693		.2340	A	5.944	2-7/16"	15/16"	.745"	55.49	53.08	50.66	48.25
	70294	.2340	A	5.944	3-1/4"	1-1/2"	1.213"	56.52	54.07	51.61	49.15
70695		.2344	15/64"	5.954	2-7/16"	15/16"	.746"	55.91	53.48	51.05	48.62
	70296	.2344	15/64"	5.954	3-1/4"	1-1/2"	1.215"	57.09	54.60	52.12	49.64
70697		.2362		6.000	64	26	19	56.29	53.85	51.40	48.95
	70301	.2362		6.000	82	38	31	57.25	54.76	52.27	49.78
70699		.2380	B	6.045	2-1/2"	1"	.757"	56.68	54.22	51.75	49.29
	70306	.2380	B	6.045	3-1/4"	1-5/8"	1.233"	57.41	54.91	52.42	49.92
70701		.2420	C	6.147	2-1/2"	1"	.770"	57.14	54.66	52.17	49.69
	70311	.2420	C	6.147	3-1/4"	1-5/8"	1.254"	57.78	55.26	52.75	50.24
70703		.2460	D	6.248	2-1/2"	1"	.783"	57.45	54.96	52.46	49.96
	70316	.2460	D	6.248	3-1/4"	1-5/8"	1.275"	58.12	55.59	53.07	50.54
70705		.2500	1/4" / E	6.350	2-1/2"	1"	.796"	57.95	55.43	52.91	50.39
	70321	.2500	1/4" / E	6.350	3-1/4"	1-5/8"	1.296"	58.43	55.89	53.35	50.81
70707		.2510		6.375	2-1/2"	1"	.799"	58.70	56.14	53.59	51.04
	70911	.2510		6.375	3-1/4"	1-5/8"	1.300"	59.33	56.75	54.17	51.59
70709		.2559		6.500	66	28	21	60.97	58.32	55.67	53.02
	70326	.2559		6.500	82	41	34	61.99	59.29	56.60	53.90
70711		.2570	F	6.528	2-5/8"	1-1/8"	.818"	61.94	59.25	56.55	53.86
	70331	.2570	F	6.528	3-1/4"	1-11/16"	1.332"	62.92	60.18	57.45	54.71

continued ⟶

Series 1160, 1180 *(continued)*

.2610" - .3594"
(6.629mm - 9.129mm)

3xD (1160) EDP#	5xD (1180) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
70713		.2610	G	6.629	2-5/8"	1-1/8"	.831"	62.88	60.15	57.41	54.68
	70336	.2610	G	6.629	3-1/2"	1-11/16"	1.353"	63.88	61.11	58.33	55.55
70715		.2656	17/64"	6.746	2-5/8"	1-1/8"	.845"	63.83	61.05	58.28	55.50
	70341	.2656	17/64"	6.746	3-1/2"	1-11/16"	1.376"	64.83	62.01	59.19	56.37
70717		.2660	H	6.756	2-11/16"	1-3/16"	.846"	64.78	61.96	59.15	56.33
	70346	.2660	H	6.756	3-1/2"	1-11/16"	1.378"	65.81	62.95	60.09	57.23
70719		.2720	I	6.909	2-11/16"	1-3/16"	.866"	64.93	62.11	59.28	56.46
	70351	.2720	I	6.909	3-1/2"	1-11/16"	1.410"	66.76	63.86	60.95	58.05
70721		.2756		7.000	68	30	22	65.87	63.01	60.14	57.28
	70356	.2756		7.000	88	43	36	67.70	64.76	61.81	58.87
70723		.2770	J	7.036	2-11/16"	1-3/16"	.881"	66.79	63.89	60.98	58.08
	70361	.2770	J	7.036	3-1/2"	1-11/16"	1.435"	68.67	65.68	62.70	59.71
70725		.2812	9/32"	7.142	2-11/16"	1-3/16"	.895"	68.70	65.71	62.73	59.74
	70371	.2812	9/32"	7.142	3-1/2"	1-3/4"	1.457"	70.60	67.53	64.46	61.39
70727		.2900	L	7.366	2-3/4"	1-1/4"	.923"	69.63	66.61	63.58	60.55
	70376	.2900	L	7.366	3-1/2"	1-3/4"	1.503"	71.48	68.38	65.27	62.16
70728		.2950	M	7.493	2-3/4"	1-1/4"	.939"	70.98	67.89	64.81	61.72
	70378	.2950	M	7.493	3-3/4"	1-7/8"	1.529"	72.42	69.27	66.12	62.97
70729		.2953		7.500	70	32	24	70.98	67.89	64.81	61.72
	70381	.2953		7.500	95	44	39	72.42	69.27	66.12	62.97
70731		.2969	19/64"	7.541	2-3/4"	1-1/4"	.945"	71.62	68.51	65.39	62.28
	70386	.2969	19/64"	7.541	3-3/4"	1-7/8"	1.539"	73.05	69.87	66.70	63.52
70733		.3020	N	7.671	2-15/16"	1-7/16"	.961"	73.91	70.70	67.48	64.27
	70391	.3020	N	7.671	3-3/4"	1-7/8"	1.565"	75.70	72.41	69.12	65.83
70735		.3125	5/16"	7.938	2-15/16"	1-7/16"	.994"	74.18	70.95	67.73	64.50
	70396	.3125	5/16"	7.938	3-3/4"	1-7/8"	1.619"	75.90	72.60	69.30	66.00
70737		.3150		8.000	76	36	25	78.29	74.89	71.48	68.08
	70401	.3150		8.000	95	48	41	80.10	76.62	73.13	69.65
70739		.3160	O	8.026	2-15/16"	1-7/16"	1.006"	78.29	74.89	71.48	68.08
	70406	.3160	O	8.026	3-3/4"	1-7/8"	1.638"	80.10	76.62	73.13	69.65
70741		.3230	P	8.204	2-15/16"	1-7/16"	1.028"	78.86	75.43	72.00	68.57
	70411	.3230	P	8.204	3-3/4"	2-3/32"	1.674"	80.36	76.87	73.37	69.88
70743		.3281	21/64"	8.334	2-15/16"	1-7/16"	1.044"	80.30	76.81	73.32	69.83
	70416	.3281	21/64"	8.334	4"	2-3/32"	1.700"	81.05	77.53	74.00	70.48
70745		.3320	Q	8.433	3"	1-7/16"	1.056"	81.74	78.19	74.63	71.08
	70421	.3320	Q	8.433	4"	2-3/32"	1.720"	82.54	78.95	75.36	71.77
70747		.3346		8.500	76	36	27	82.10	78.53	74.96	71.39
	70426	.3346		8.500	100	53	44	83.10	79.49	75.87	72.26
70749		.3390	R	8.611	3"	1-7/16"	1.079"	84.31	80.64	76.98	73.31
	70431	.3390	R	8.611	4"	2-3/32"	1.757"	85.17	81.47	77.76	74.06
70751		.3438	11/32"	8.733	3"	1-7/16"	1.094"	86.15	82.40	78.66	74.91
	70436	.3438	11/32"	8.733	4"	2-3/16"	1.782"	87.95	84.13	80.30	76.48
70753		.3480	S	8.839	3-1/16"	1-1/2"	1.107"	90.09	86.17	82.26	78.34
	70441	.3480	S	8.839	4"	2-3/16"	1.803"	93.01	88.97	84.92	80.88
70755		.3543		9.000	78	38	29	92.38	88.36	84.35	80.33
	70446	.3543		9.000	100	55	47	93.52	89.45	85.39	81.32
70757		.3580	T	9.093	3-1/16"	1-1/2"	1.139"	97.18	92.95	88.73	84.50
	70451	.3580	T	9.093	4-1/4"	2-9/32"	1.855"	98.54	94.26	89.97	85.69
70759		.3594	23/64"	9.129	3-1/16"	1-1/2"	1.144"	97.78	93.53	89.28	85.03
	70456	.3594	23/64"	9.129	4-1/4"	2-9/32"	1.862"	99.06	94.75	90.45	86.14

GARR TOOL®

† *Metric equivalents are for reference only*

3xD (1160) EDP#	5xD (1180) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
70761		.3680	U	9.347	3-1/8"	1-9/16"	1.171"	98.61	94.33	90.04	85.75
	70461	.3680	U	9.347	4-1/4"	2-9/32"	1.907"	103.72	99.21	94.70	90.19
70763		.3740		9.500	79	39	30	99.43	95.11	90.78	86.46
	70466	.3740		9.500	108	58	49	104.64	100.09	95.54	90.99
70765		.3750	3/8"	9.525	3-1/8"	1-9/16"	1.193"	100.03	95.68	91.33	86.98
	70471	.3750	3/8"	9.525	4-1/4"	2-3/8"	1.943"	105.57	100.98	96.39	91.80
70767		.3760		9.550	3-1/8"	1-9/16"	1.196"	101.94	97.50	93.07	88.64
	70913	.3760		9.550	4-1/4"	2-3/8"	1.948"	106.98	102.33	97.68	93.03
70769		.3770	V	9.576	3-1/4"	1-5/8"	1.200"	103.86	99.34	94.83	90.31
	70476	.3770	V	9.576	4-1/4"	2-3/8"	1.954"	108.38	103.66	98.95	94.24
70771		.3860	W	9.804	3-1/4"	1-5/8"	1.228"	105.67	101.08	96.48	91.89
	70481	.3860	W	9.804	4-1/2"	2-3/8"	2.000"	110.10	105.31	100.53	95.74
70773		.3906	25/64"	9.921	3-1/4"	1-5/8"	1.243"	107.01	102.36	97.70	93.05
	70486	.3906	25/64"	9.921	4-1/2"	2-3/8"	2.024"	111.33	106.49	101.65	96.81
70775		.3937		10.000	84	43	32	110.25	105.46	100.66	95.87
	70491	.3937		10.000	114	60	52	114.34	109.37	104.40	99.43
70777		.3970	X	10.084	3-5/16"	1-11/16"	1.263"	111.76	106.90	102.04	97.18
	70496	.3970	X	10.084	4-1/2"	2-1/2"	2.057"	115.52	110.50	105.47	100.45
70779		.4040	Y	10.262	3-5/16"	1-11/16"	1.286"	112.48	107.59	102.70	97.81
	70501	.4040	Y	10.262	4-1/2"	2-9/16"	2.094"	118.71	113.55	108.39	103.23
70781		.4062	13/32"	10.317	3-5/16"	1-11/16"	1.293"	115.95	110.91	105.87	100.83
	70506	.4062	13/32"	10.317	4-1/2"	2-9/16"	2.105"	119.63	114.43	109.23	104.03
70783		.4134		10.500	85	43	33	117.02	111.94	106.85	101.76
	70511	.4134		10.500	114	67	54	120.64	115.39	110.15	104.90
70785		.4219	27/64"	10.716	3-3/8"	1-11/16"	1.343"	118.14	113.00	107.87	102.73
	70516	.4219	27/64"	10.716	4-1/2"	2-11/16"	2.186"	121.65	116.36	111.07	105.78
70787		.4331		11.000	87	45	35	126.45	120.96	115.46	109.96
	70521	.4331		11.000	114	68	57	129.79	124.15	118.50	112.86
70789		.4375	7/16"	11.113	3-7/16"	1-3/4"	1.392"	126.80	121.29	115.77	110.26
	70526	.4375	7/16"	11.113	4-3/4"	2-13/16"	2.267"	130.27	124.61	118.94	113.28
70791		.4528		11.500	90	47	37	134.47	128.62	122.78	116.93
	70531	.4528		11.500	120	70	60	138.53	132.51	126.48	120.46
70793		.4531	29/64"	11.509	3-9/16"	1-13/16"	1.442"	134.47	128.62	122.78	116.93
	70536	.4531	29/64"	11.509	4-3/4"	2-7/8"	2.348"	138.53	132.51	126.48	120.46
70795		.4688	15/32"	11.909	3-11/16"	2-1/16"	1.491"	141.29	135.15	129.00	122.86
	70541	.4688	15/32"	11.909	4-3/4"	2-7/8"	2.429"	144.99	138.69	132.38	126.08
70797		.4724		12.000	93	53	38	141.70	135.54	129.38	123.22
	70546	.4724		12.000	120	73	62	145.37	139.05	132.73	126.41
70799		.4844	31/64"	12.304	3-11/16"	2-1/16"	1.541"	142.68	136.48	130.27	124.07
	70551	.4844	31/64"	12.304	5-5/16"	3"	2.510"	147.95	141.52	135.08	128.65
70801		.4921		12.500	95	53	40	144.10	137.83	131.57	125.30
	70556	.4921		12.500	135	75	65	149.59	143.09	136.58	130.08
70803		.5000	1/2"	12.700	3-3/4"	2-1/16"	1.591"	145.02	138.71	132.41	126.10
	70561	.5000	1/2"	12.700	5-3/8"	3-1/16"	2.591"	149.88	143.36	136.85	130.33
70805		.5010		12.725	3-3/4"	2-1/16"	1.594"	146.56	140.18	133.81	127.44
	70915	.5010		12.725	5-3/8"	3-1/16"	2.596"	151.56	144.97	138.38	131.79
70807		.5118		13.000	107	55	41	158.95	152.04	145.13	138.22
	70566	.5118		13.000	136	78	67	164.91	157.74	150.57	143.40

continued ⟶

Series 1160, 1180 *(continued)*

.5156" - .6299"
(13.096mm - 16.000mm)

	3xD (1160) EDP#	5xD (1180) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
	70809		.5156	33/64"	13.096	4-1/4"	2-3/16"	1.641"	162.71	155.64	148.56	141.49
		70571	.5156	33/64"	13.096	5-3/8"	3-1/8"	2.672"	168.43	161.11	153.78	146.46
	70811		.5312	17/32"	13.492	4-1/4"	2-1/4"	1.690"	166.46	159.23	151.99	144.75
		70576	.5312	17/32"	13.492	5-11/16"	3-5/16"	2.753"	172.06	164.58	157.10	149.62
	70813		.5469	35/64"	13.891	4-1/4"	2-1/4"	1.740"	173.95	166.39	158.82	151.26
		70581	.5469	35/64"	13.891	5-13/16"	3-3/8"	2.834"	179.07	171.28	163.50	155.71
	70815		.5512		14.000	107	59	45	177.71	169.98	162.26	154.53
		70586	.5512		14.000	148	86	73	182.62	174.68	166.74	158.80
	70817		.5625	9/16"	14.287	4-1/2"	2-3/8"	1.790"	189.03	180.81	172.59	164.37
		70591	.5625	9/16"	14.287	5-15/16"	3-1/2"	2.915"	195.16	186.67	178.19	169.70
	70819		.5781	37/64"	14.683	4-1/2"	2-1/2"	1.840"	196.03	187.51	178.98	170.46
		70596	.5781	37/64"	14.683	6"	3-1/2"	2.996"	201.78	193.01	184.23	175.46
	70821		.5906		15.000	115	64	48	199.64	190.96	182.28	173.60
		70601	.5906		15.000	152	90	78	205.30	196.37	187.45	178.52
NEW	70823		.5938	19/32"	15.082	4-1/2"	2-1/2"	1.890"	200.71	191.98	183.26	174.53
		70606	.5938	19/32"	15.082	6"	3-9/16"	3.077"	206.28	197.31	188.34	179.37
	70825		.6094	39/64"	15.478	4-1/2"	2-9/16"	1.939"	201.74	192.97	184.20	175.43
		70611	.6094	39/64"	15.478	6-3/16"	3-11/16"	3.158"	223.62	213.90	204.17	194.45
	70827		.6250	5/8"	15.875	4-1/2"	2-5/8"	1.989"	203.81	194.95	186.09	177.23
		70616	.6250	5/8"	15.875	6-5/16"	3-3/4"	3.239"	225.56	215.75	205.95	196.14
	70829		.6299		16.000	115	66	51	208.73	199.65	190.58	181.50
		70621	.6299		16.000	160	95	83	230.29	220.28	210.26	200.25



1180 Series
High Performance Drill in aluminum

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.0000" –.0004" (+.000 –.010mm)
d_2	h6
l_1	+.125" –.125" (+3.175 –3.175mm)
l_2	+.125" –.125" (+3.175 –3.175mm)

Series 1550H,1250H,1850H

Z=2 | 30° | 140° | 3xD | 5xD | 12xD | TECH PAGES 328-329

.0312" - .0354"
(0.792mm - 0.900mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels >40 Rc

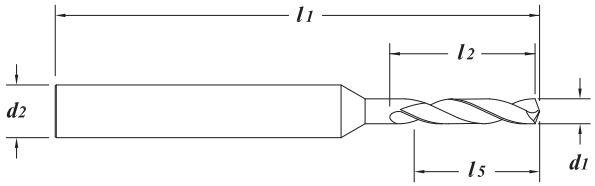
BALIQ® ALTINOS Coating (AlTiN-based)

High performance solid submicron grain carbide drill on 3mm or 1/8" diameter shank

30° helix for better chip evacuation

Live tooling recommended on lathe processes





3xD (1550H) EDP#	5xD (1250H) EDP#	12xD (1850H) EDP#	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
00100			.0312	1/32"	0.792	1/8"	2"	5/32"	.099"	38.17	36.51	34.85	33.19
	00304		.0312	1/32"	0.792	1/8"	2"	15/64"	.162"	39.56	37.84	36.12	34.40
		00510	.0312	1/32"	0.792	1/8"	2"	7/16"	.380"	43.75	41.84	39.94	38.04
	00306		.0315		0.800	3.0	50	6.0	4	39.01	37.31	35.62	33.92
		00512	.0315		0.800	3.0	50	12.0	10	43.14	41.26	39.39	37.51
	00308		.0319		0.810	3.0	50	6.0	4	39.01	37.31	35.62	33.92
00106			.0320	#67	0.812	1/8"	2"	11/64"	.102"	38.17	36.51	34.85	33.19
	00310		.0320	#67	0.812	1/8"	2"	15/64"	.166"	39.56	37.84	36.12	34.40
		00516	.0320	#67	0.812	1/8"	2"	7/16"	.390"	43.75	41.84	39.94	38.04
		00518	.0323		0.820	3.0	50	12.0	10	43.14	41.26	39.39	37.51
00112			.0330	#66	0.838	1/8"	2"	11/64"	.105"	38.17	36.51	34.85	33.19
	00316		.0330	#66	0.838	1/8"	2"	15/64"	.171"	39.56	37.84	36.12	34.40.
		00522	.0330	#66	0.838	1/8"	2"	7/16"	.402"	43.75	41.84	39.94	38.04
	00318		.0331		0.840	3.0	50	6.0	4	39.01	37.31	35.62	33.92
		00524	.0331		0.840	3.0	50	12.0	10	43.14	41.26	39.39	37.51
00116			.0335		0.850	3.0	50	4.5	3	37.54	35.90	34.27	32.64
		00526	.0335		0.850	3.0	50	12.0	10	43.14	41.26	39.39	37.51
	00322		.0339		0.860	3.0	50	6.5	4	39.01	37.31	35.62	33.92
		00528	.0339		0.860	3.0	50	13.0	10	43.14	41.26	39.39	37.51
00120			.0343		0.870	3.0	50	4.5	3	37.54	35.90	34.27	32.64
		00530	.0343		0.870	3.0	50	13.0	11	43.14	41.26	39.39	37.51
00122			.0346		0.880	3.0	50	4.5	3	37.54	35.90	34.27	32.64
00124			.0350	#65	0.890	3.0	50	4.5	3	37.54	35.90	34.27	32.64
	00328		.0350	#65	0.890	3.0	50	6.5	5	39.01	37.31	35.62	33.92
		00534	.0350	#65	0.890	3.0	50	13.0	11	43.14	41.26	39.39	37.51
	00330		.0354		0.900	3.0	50	6.5	5	39.01	37.31	35.62	33.92
		00536	.0354		0.900	3.0	50	13.0	11	43.14	41.26	39.39	37.51

continued ⟶

Series 1550H,1250H,1850H *(continued)*

.0358" - .0465"
(0.910mm - 1.181mm)

3xD (1550H) EDP#	5xD (1250H) EDP#	12xD (1850H) EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
	00332		.0358		0.910	3.0	50	6.5	5	39.01	37.31	35.62	33.92
00130			.0360	#64	0.914	1/8"	2"	3/16"	.115"	38.17	36.51	34.85	33.19
	00334		.0360	#64	0.914	1/8"	2"	1/4"	.187"	39.56	37.84	36.12	34.40
		00540	.0360	#64	0.914	1/8"	2"	1/2"	.439"	43.75	41.84	39.94	38.04
00134			.0366		0.930	3.0	50	5.0	3	37.54	35.90	34.27	32.64
00136			.0370	#63	0.940	3.0	50	5.0	3	37.54	35.90	34.27	32.64
	00340		.0370	#63	0.940	3.0	50	7.0	5	39.01	37.31	35.62	33.92
		00546	.0370	#63	0.940	3.0	50	14.0	11	41.48	39.68	37.87	36.07
00138			.0374		0.950	3.0	50	5.0	3	37.54	35.90	34.27	32.64
00142			.0380	#62	0.965	1/8"	2"	3/16"	.120"	38.17	36.51	34.85	33.19
	00346		.0380	#62	0.965	1/8"	2"	17/64"	.197"	39.56	37.84	36.12	34.40
		00552	.0380	#62	0.965	1/8"	2"	9/16"	.463"	43.75	41.84	39.94	38.04
		00556	.0386		0.980	3.0	50	14.0	12	43.14	41.26	39.39	37.51
00148			.0390	#61	0.990	3.0	50	5.0	3	37.54	35.90	34.27	32.64
		00558	.0390	#61	0.990	3.0	50	14.0	12	43.14	41.26	39.39	37.51
00150			.0394		1.000	3.0	50	5.0	3	37.54	35.90	34.27	32.64
	00354		.0394		1.000	3.0	50	7.0	5	39.01	37.31	35.62	33.92
		00560	.0394		1.000	3.0	50	14.0	12	43.14	41.26	39.39	37.51
00152			.0400	#60	1.016	1/8"	2"	13/64"	.127"	37.80	36.16	34.51	32.87
	00356		.0400	#60	1.016	1/8"	2"	9/32"	.207"	39.20	37.50	35.79	34.09
		00562	.0400	#60	1.016	1/8"	2"	9/16"	.487"	43.34	41.46	39.57	37.69
00154			.0410	#59	1.041	1/8"	2"	13/64"	.131"	37.80	36.16	34.51	32.87
	00358		.0410	#59	1.041	1/8"	2"	9/32"	.213"	39.20	37.50	35.79	34.09
		00564	.0410	#59	1.041	1/8"	2"	9/16"	.500"	43.34	41.46	39.57	37.69
00156			.0413		1.050	3.0	50	5.5	3	37.17	35.55	33.94	32.32
	00360		.0413		1.050	3.0	50	7.5	5	37.20	35.59	33.97	32.35
		00566	.0413		1.050	3.0	50	15.0	13	42.78	40.92	39.06	37.20
00158			.0420	#58	1.066	1/8"	2"	7/32"	.134"	37.80	36.16	34.51	32.87
	00362		.0420	#58	1.066	1/8"	2"	5/16"	.218"	39.20	37.50	35.79	34.09
00160			.0430	#57	1.092	1/8"	2"	7/32"	.137"	37.80	36.16	34.51	32.87
	00364		.0430	#57	1.092	1/8"	2"	5/16"	.223"	39.20	37.50	35.79	34.09
		00570	.0430	#57	1.092	1/8"	2"	9/16"	.524"	43.34	41.46	39.57	37.69
00162			.0433		1.100	3.0	50	5.5	4	37.17	35.55	33.94	32.32
	00366		.0433		1.100	3.0	50	8.0	6	38.69	37.00	35.32	33.64
		00572	.0433		1.100	3.0	50	16.0	13	42.78	40.92	39.06	37.20
00164			.0453		1.150	3.0	50	6.0	4	37.17	35.55	33.94	32.32
	00368		.0453		1.150	3.0	50	8.0	6	38.69	37.00	35.32	33.64
		00574	.0453		1.150	3.0	50	16.0	14	42.78	40.92	39.06	37.20
00166			.0465	#56	1.181	1/8"	2"	15/64"	.148"	37.80	36.16	34.51	32.87
	00370		.0465	#56	1.181	1/8"	2"	11/32"	.241"	39.20	37.50	35.79	34.09
		00576	.0465	#56	1.181	1/8"	2"	5/8"	.567"	43.34	41.46	39.57	37.69

GARR TOOL®

† *Metric equivalents are for reference only*

3xD (1550H) EDP#	5xD (1250H) EDP#	12xD (1850H) EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
00168			.0469	3/64"	1.191	1/8"	2"	15/64"	.149"	37.80	36.16	34.51	32.87
	00372		.0469	3/64"	1.191	1/8"	2"	11/32"	.243"	39.20	37.50	35.79	34.09
		00578	.0469	3/64"	1.191	1/8"	2"	5/8"	.571"	43.34	41.46	39.57	37.69
00170			.0472		1.200	3.0	50	6.0	4	37.17	35.55	33.94	32.32
	00374		.0472		1.200	3.0	50	9.0	6	38.69	37.00	35.32	33.64
		00580	.0472		1.200	3.0	50	18.0	15	42.78	40.92	39.06	37.20
00172			.0492		1.250	3.0	50	6.5	4	37.17	35.55	33.94	32.32
	00376		.0492		1.250	3.0	50	9.0	6	38.69	37.00	35.32	33.64
		00582	.0492		1.250	3.0	50	18.0	15	42.78	40.92	39.06	37.20
00174			.0512		1.300	3.0	50	6.5	4	36.81	35.21	33.61	32.01
	00378		.0512		1.300	3.0	50	9.0	7	38.28	36.62	34.95	33.29
		00584	.0512		1.300	3.0	50	18.0	16	42.33	40.49	38.65	36.81
00176			.0520	#55	1.320	1/8"	2"	17/64"	.166"	37.09	35.48	33.86	32.25
	00380		.0520	#55	1.320	1/8"	2"	3/8"	.270"	38.85	37.16	35.47	33.78
		00586	.0520	#55	1.320	1/8"	2"	3/4"	.634"	42.94	41.07	39.21	37.34
00178			.0531		1.350	3.0	50	6.5	4	36.81	35.21	33.61	32.01
	00382		.0531		1.350	3.0	50	9.5	7	38.28	36.62	34.95	33.29
		00588	.0531		1.350	3.0	50	19.0	16	42.33	40.49	38.65	36.81
00180			.0550	#54	1.397	1/8"	2"	9/32"	.175"	37.09	35.48	33.86	32.25
	00384		.0550	#54	1.397	1/8"	2"	3/8"	.285"	38.85	37.16	35.47	33.78
		00590	.0550	#54	1.397	1/8"	2"	3/4"	.670"	42.94	41.07	39.21	37.34
00182			.0551		1.400	3.0	50	7.0	4	36.81	35.21	33.61	32.01
	00386		.0551		1.400	3.0	50	10.0	7	38.28	36.62	34.95	33.29
		00592	.0551		1.400	3.0	65	20.0	17	44.26	42.34	40.41	38.49
00184			.0571		1.450	3.0	50	7.0	5	36.81	35.21	33.61	32.01
	00388		.0571		1.450	3.0	50	10.5	8	38.28	36.62	34.95	33.29
		00594	.0571		1.450	3.0	65	21.0	18	44.26	42.34	40.41	38.49
00186			.0591		1.500	3.0	50	7.5	5	36.81	35.21	33.61	32.01
	00390		.0591		1.500	3.0	50	10.5	8	38.28	36.62	34.95	33.29
		00596	.0591		1.500	3.0	65	21.0	18	44.26	42.34	40.41	38.49
00188			.0595	#53	1.511	1/8"	2"	19/64"	.189"	37.09	35.48	33.86	32.25
	00392		.0595	#53	1.511	1/8"	2"	7/16"	.308"	38.85	37.16	35.47	33.78
		00598	.0595	#53	1.511	1/8"	2-1/2"	13/16"	.725"	44.91	42.96	41.00	39.05
00190			.0610		1.550	3.0	50	7.5	5	36.43	34.85	33.26	31.68
	00394		.0610		1.550	3.0	50	11.0	8	37.93	36.28	34.63	32.98
		00600	.0610		1.550	3.0	65	22.0	19	43.90	41.99	40.08	38.17
00192			.0625	1/16"	1.587	1/8"	2"	5/16"	.199"	37.09	35.48	33.86	32.25
	00396		.0625	1/16"	1.587	1/8"	2"	7/16"	.324"	38.48	36.81	35.13	33.46
		00602	.0625	1/16"	1.587	1/8"	2-1/2"	13/16"	.761"	44.51	42.57	40.64	38.70
00194			.0630		1.600	3.0	50	7.5	6	36.43	34.85	33.26	31.68
	00398		.0630		1.600	3.0	50	11.0	8	37.93	36.28	34.63	32.98
		00604	.0630		1.600	3.0	65	22.0	19	43.90	41.99	40.08	38.17
00196			.0635	#52	1.613	1/8"	2"	5/16"	.202"	37.09	35.48	33.86	32.25
	00400		.0635	#52	1.613	1/8"	2"	15/32"	.329"	38.48	36.81	35.13	33.46
		00606	.0635	#52	1.613	1/8"	2-1/2"	7/8"	.774"	44.51	42.57	40.64	38.70
00198			.0650		1.650	3.0	50	8.5	5	36.43	34.85	33.26	31.68
	00402		.0650		1.650	3.0	50	11.5	9	37.93	36.28	34.63	32.98
		00608	.0650		1.650	3.0	65	23.0	20	43.90	41.99	40.08	38.17
00200			.0669		1.700	3.0	50	8.5	5	36.43	34.85	33.26	31.68
	00404		.0669		1.700	3.0	50	11.5	9	37.93	36.28	34.63	32.98
		00610	.0669		1.700	3.0	65	23.0	21	43.90	41.99	40.08	38.17
00202			.0670	#51	1.702	1/8"	2"	11/32"	.213"	37.09	35.48	33.86	32.25
	00406		.0670	#51	1.702	1/8"	2"	15/32"	.347"	38.48	36.81	35.13	33.46
		00612	.0670	#51	1.702	1/8"	2-1/2"	7/8"	.816"	44.51	42.57	40.64	38.70
00204			.0689		1.750	3.0	50	9.0	6	36.43	34.85	33.26	31.68
	00408		.0689		1.750	3.0	50	12.0	9	37.93	36.28	34.63	32.98
		00614	.0689		1.750	3.0	65	24.0	21	43.90	41.99	40.08	38.17

continued ⟶

Series 1550H,1250H,1850H *(continued)*

.0700" - .0846"
(1.778mm - 2.150mm)



TOLERANCES	
d_1	+.0000" –.0004" (+.000 –.010mm)
d_2	h6
l_1	+.125" –.125" (+3.175 –3.175mm)
l_2	+.125" –.125" (+3.175 –3.175mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels >40 Rc

BALIQ® ALTINOS Coating (AlTiN-based)

High performance solid submicron grain carbide drill on 3mm or 1/8" diameter shank



3xD (1550H) EDP#	5xD (1250H) EDP#	12xD (1850H) EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
00206			.0700	#50	1.778	1/8"	2"	23/64"	.223"	36.72	35.12	33.53	31.93
	00410		.0700	#50	1.778	1/8"	2"	1/2"	.363"	38.10	36.44	34.79	33.13
		00616	.0700	#50	1.778	1/8"	2-1/2"	1"	.853"	44.06	42.14	40.23	38.31
00208			.0709		1.800	3.0	50	9.0	6	36.09	34.52	32.95	31.38
	00412		.0709		1.800	3.0	50	13.0	9	37.57	35.94	34.30	32.67
		00618	.0709		1.800	3.0	65	26.0	22	43.46	41.57	39.68	37.79
00210			.0728		1.850	3.0	50	9.5	6	36.09	34.52	32.95	31.38
		00620	.0728		1.850	3.0	65	26.0	23	43.46	41.57	39.68	37.79
00212			.0730	#49	1.854	1/8"	2"	3/8"	.232"	36.72	35.12	33.53	31.93
	00416		.0730	#49	1.854	1/8"	2"	1/2"	.378"	38.10	36.44	34.79	33.13
		00622	.0730	#49	1.854	1/8"	2-1/2"	1"	.889"	44.06	42.14	40.23	38.31
00214			.0748		1.900	3.0	50	9.5	6	36.09	34.52	32.95	31.38
	00418		.0748		1.900	3.0	50	13.5	10	37.57	35.94	34.30	32.67
		00624	.0748		1.900	3.0	65	27.0	23	43.46	41.57	39.68	37.79
00216			.0760	#48	1.930	1/8"	2"	3/8"	.242"	36.72	35.12	33.53	31.93
	00420		.0760	#48	1.930	1/8"	2"	17/32"	.394"	38.10	36.44	34.79	33.13
		00626	.0760	#48	1.930	1/8"	2-1/2"	1-1/8"	.926"	46.43	44.41	42.39	40.37
00218			.0768		1.950	3.0	50	10.0	6	36.09	34.52	32.95	31.38
	00422		.0768		1.950	3.0	50	14.0	10	37.57	35.94	34.30	32.67
		00628	.0768		1.950	3.0	65	28.0	24	45.79	43.80	41.81	39.82
00220			.0781	5/64"	1.983	1/8"	2"	13/32"	.249"	36.72	35.12	33.53	31.93
	00424		.0781	5/64"	1.983	1/8"	2"	9/16"	.405"	38.10	36.44	34.79	33.13
		00630	.0781	5/64"	1.983	1/8"	2-1/2"	1-1/8"	.951"	46.43	44.41	42.39	40.37
00222			.0785	#47	1.994	1/8"	2"	13/32"	.250"	36.72	35.12	33.53	31.93
	00426		.0785	#47	1.994	1/8"	2"	9/16"	.407"	38.10	36.44	34.79	33.13
		00632	.0785	#47	1.994	1/8"	2-1/2"	1-1/8"	.956"	46.43	44.41	42.39	40.37
00224			.0787		2.000	3.0	50	10.0	6	36.09	34.52	32.95	31.38
	00428		.0787		2.000	3.0	50	14.0	10	37.57	35.94	34.30	32.67
		00634	.0787		2.000	3.0	65	28.0	24	45.79	43.80	41.81	39.82
00226			.0807		2.050	3.0	50	10.5	7	35.71	34.16	32.60	31.05
	00430		.0807		2.050	3.0	50	14.0	11	37.19	35.57	33.96	32.34
		00636	.0807		2.050	3.0	65	28.0	25	45.38	43.41	41.43	39.46
00228			.0810	#46	2.057	1/8"	2"	27/64"	.258"	36.35	34.77	33.19	31.61
	00432		.0810	#46	2.057	1/8"	2"	9/16"	.420"	37.75	36.11	34.47	32.83
		00638	.0810	#46	2.057	1/8"	2-1/2"	1-1/8"	.987"	46.05	44.04	42.04	40.04
00230			.0820	#45	2.083	1/8"	2"	27/64"	.261"	36.35	34.77	33.19	31.61
	00434		.0820	#45	2.083	1/8"	2"	9/16"	.425"	37.75	36.11	34.47	32.83
		00640	.0820	#45	2.083	1/8"	2-1/2"	1-1/8"	.999"	46.05	44.04	42.04	40.04
00232			.0827		2.100	3.0	50	10.5	7	35.71	34.16	32.60	31.05
	00436		.0827		2.100	3.0	50	14.5	11	37.19	35.57	33.96	32.34
		00642	.0827		2.100	3.0	65	29.0	26	45.38	43.41	41.43	39.46
00234			.0846		2.150	3.0	50	11.0	7	35.71	34.16	32.60	31.05
	00438		.0846		2.150	3.0	50	14.5	11	37.19	35.57	33.96	32.34
		00644	.0846		2.150	3.0	65	29.0	26	45.38	43.41	41.43	39.46

GARR TOOL®

† *Metric equivalents are for reference only*

3xD (1550H) EDP#	5xD (1250H) EDP#	12xD (1850H) EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
00236			.0860	#44	2.184	1/8"	2"	7/16"	.274"	36.35	34.77	33.19	31.61
	00440		.0860	#44	2.184	1/8"	2"	19/32"	.446"	37.75	36.11	34.47	32.83
		00646	.0860	#44	2.184	1/8"	2-1/2"	1-3/16"	1.048"	46.05	44.04	42.04	40.04
00238			.0866		2.200	3.0	50	11.0	7	35.71	34.16	32.60	31.05
	00442		.0866		2.200	3.0	50	15.5	11	37.19	35.57	33.96	32.34
		00648	.0866		2.200	3.0	65	31.0	27	45.38	43.41	41.43	39.46
00240			.0886		2.250	3.0	50	11.5	7	35.71	34.16	32.60	31.05
00242			.0890	#43	2.260	1/8"	2"	29/64"	.283"	36.35	34.77	33.19	31.61
	00446		.0890	#43	2.260	1/8"	2"	5/8"	.461"	37.75	36.11	34.47	32.83
		00652	.0890	#43	2.260	1/8"	2-1/2"	1-1/4"	1.084"	46.05	44.04	42.04	40.04
00244			.0906		2.300	3.0	50	11.5	7	35.35	33.81	32.28	30.74
	00448		.0906		2.300	3.0	50	16.0	12	36.83	35.23	33.63	32.03
		00654	.0906		2.300	3.0	65	32.0	28	44.94	42.99	41.03	39.08
00246			.0925		2.350	3.0	50	12.0	7	35.35	33.81	32.28	30.74
	00450		.0925		2.350	3.0	50	16.0	12	35.42	33.88	32.34	30.80
		00656	.0925		2.350	3.0	65	32.0	29	44.94	42.99	41.03	39.08
00248			.0935	#42	2.375	1/8"	2"	31/64"	.298"	35.97	34.41	32.84	31.28
	00452		.0935	#42	2.375	1/8"	2"	21/32"	.485"	37.38	35.75	34.13	32.50
		00658	.0935	#42	2.375	1/8"	3"	1-5/16"	1.139"	45.61	43.63	41.64	39.66
00250			.0938	3/32"	2.382	1/8"	2"	31/64"	.299"	35.97	34.41	32.84	31.28
	00454		.0938	3/32"	2.382	1/8"	2"	21/32"	.486"	37.38	35.75	34.13	32.50
		00660	.0938	3/32"	2.382	1/8"	3"	1-5/16"	1.143"	45.61	43.63	41.64	39.66
00252			.0945		2.400	3.0	50	12.0	8	35.35	33.81	32.28	30.74
	00456		.0945		2.400	3.0	50	17.0	12	36.83	35.23	33.63	32.03
		00662	.0945		2.400	3.0	75	34.0	29	44.94	42.99	41.03	39.08
00254			.0960	#41	2.438	1/8"	2"	31/64"	.306"	35.97	34.41	32.84	31.28
	00458		.0960	#41	2.438	1/8"	2"	43/64"	.498"	37.38	35.75	34.13	32.50
		00664	.0960	#41	2.438	1/8"	3"	1-11/32"	1.170"	45.61	43.63	41.64	39.66
00256			.0965		2.450	3.0	50	12.5	8	35.35	33.81	32.28	30.74
00258			.0980	#40	2.489	1/8"	2"	1/2"	.312"	35.97	34.41	32.84	31.28
	00462		.0980	#40	2.489	1/8"	2"	11/16"	.508"	37.38	35.75	34.13	32.50
		00668	.0980	#40	2.489	1/8"	3"	1-3/8"	1.194"	45.61	43.63	41.64	39.66
00260			.0984		2.500	3.0	50	12.5	8	35.35	33.81	32.28	30.74
	00464		.0984		2.500	3.0	50	17.5	13	36.83	35.23	33.63	32.03
		00670	.0984		2.500	3.0	75	35.0	30	44.94	42.99	41.03	39.08
00262			.0995	#39	2.527	1/8"	2"	1/2"	.317"	35.97	34.41	32.84	31.28
	00466		.0995	#39	2.527	1/8"	2"	11/16"	.516"	37.38	35.75	34.13	32.50
		00672	.0995	#39	2.527	1/8"	3"	1-3/8"	1.212"	45.61	43.63	41.64	39.66
00264			.1004		2.550	3.0	50	13.0	8	35.02	33.50	31.97	30.45
	00468		.1004		2.550	3.0	50	17.5	13	36.50	34.91	33.33	31.74
		00674	.1004		2.550	3.0	75	35.0	31	44.56	42.63	40.69	38.75
00266			.1015	#38	2.578	1/8"	2"	17/32"	.323"	35.65	34.10	32.55	31.00
	00470		.1015	#38	2.578	1/8"	2"	45/64"	.526"	37.05	35.44	33.83	32.22
		00676	.1015	#38	2.578	1/8"	3"	1-13/32"	1.237"	45.21	43.24	41.28	39.31
00268			.1024		2.600	3.0	50	13.0	8	35.02	33.50	31.97	30.45
	00472		.1024		2.600	3.0	50	18.0	13	36.50	34.91	33.33	31.74
		00678	.1024		2.600	3.0	75	36.0	32	44.56	42.63	40.69	38.75
00270			.1040	#37	2.641	1/8"	2"	17/32"	.331"	35.65	34.10	32.55	31.00
	00474		.1040	#37	2.641	1/8"	2"	23/32"	.539"	37.05	35.44	33.83	32.22
		00680	.1040	#37	2.641	1/8"	3"	1-7/16"	1.267"	45.21	43.24	41.28	39.31
00272			.1043		2.650	3.0	50	13.5	8	35.02	33.50	31.97	30.45
	00476		.1043		2.650	3.0	50	18.5	14	36.50	34.91	33.33	31.74
		00682	.1043		2.650	3.0	75	37.0	32	44.56	42.63	40.69	38.75

continued →

Series 1550H,1250H,1850H *(continued)*

.1063" - .1250"
(2.700mm - 3.175mm)

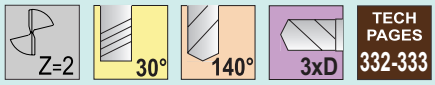
3xD (1550H) EDP#	5xD (1250H) EDP#	12xD (1850H) EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
00274			.1063		2.700	3.0	50	13.5	9	35.02	33.50	31.97	30.45
	00478		.1063		2.700	3.0	50	19.0	14	36.50	34.91	33.33	31.74
		00684	.1063		2.700	3.0	75	38.0	33	44.56	42.63	40.69	38.75
00276			.1065	#36	2.705	1/8"	2"	17/32"	.339"	35.65	34.10	32.55	31.00
	00480		.1065	#36	2.705	1/8"	2"	3/4"	.552"	37.05	35.44	33.83	32.22
		00686	.1065	#36	2.705	1/8"	3"	1-1/2"	1.297"	45.21	43.24	41.28	39.31
00278			.1083		2.750	3.0	50	14.0	9	35.02	33.50	31.97	30.45
	00482		.1083		2.750	3.0	50	19.5	14	36.50	34.91	33.33	31.74
		00688	.1083		2.750	3.0	75	39.0	34	44.56	42.63	40.69	38.75
00280			.1094	7/64"	2.778	1/8"	2"	9/16"	.348"	35.65	34.10	32.55	31.00
	00484		.1094	7/64"	2.778	1/8"	2"	49/64"	.567"	37.05	35.44	33.83	32.22
		00690	.1094	7/64"	2.778	1/8"	3"	1-9/16"	1.333"	45.21	43.24	41.28	39.31
00282			.1100	#35	2.794	1/8"	2"	9/16"	.350"	35.65	34.10	32.55	31.00
	00486		.1100	#35	2.794	1/8"	2"	49/64"	.570"	37.05	35.44	33.83	32.22
		00692	.1100	#35	2.794	1/8"	3"	1-9/16"	1.340"	45.21	43.24	41.28	39.31
00284			.1102		2.800	3.0	50	14.0	9	35.02	33.50	31.97	30.45
	00488		.1102		2.800	3.0	50	19.5	15	36.50	34.91	33.33	31.74
		00694	.1102		2.800	3.0	75	39.0	34	44.56	42.63	40.69	38.75
00286			.1110	#34	2.819	1/8"	2"	9/16"	.353"	35.65	34.10	32.55	31.00
	00490		.1110	#34	2.819	1/8"	2"	25/32"	.575"	37.05	35.44	33.83	32.22
		00696	.1110	#34	2.819	1/8"	3"	1-5/8"	1.352"	45.21	43.24	41.28	39.31
00288			.1122		2.850	3.0	50	14.5	9	35.02	33.50	31.97	30.45
		00698	.1122		2.850	3.0	75	40.0	35	44.56	42.63	40.69	38.75
00290			.1130	#33	2.870	1/8"	2"	19/32"	.356"	35.65	34.10	32.55	31.00
	00494		.1130	#33	2.870	1/8"	2"	51/64"	.586"	37.05	35.44	33.83	32.22
		00700	.1130	#33	2.870	1/8"	3"	1-5/8"	1.377"	45.21	43.24	41.28	39.31
00292			.1142		2.900	3.0	50	14.5	9	35.02	33.50	31.97	30.45
	00496		.1142		2.900	3.0	50	20.0	15	36.50	34.91	33.33	31.74
		00702	.1142		2.900	3.0	75	40.0	35	44.56	42.63	40.69	38.75
00294			.1160	#32	2.946	1/8"	2"	19/32"	.369"	35.65	34.10	32.55	31.00
	00498		.1160	#32	2.946	1/8"	2"	13/16"	.601"	37.05	35.44	33.83	32.22
		00704	.1160	#32	2.946	1/8"	3"	1-5/8"	1.413"	45.21	43.24	41.28	39.31
00296			.1161		2.950	3.0	50	15.0	9	35.02	33.50	31.97	30.45
		00706	.1161		2.950	3.0	75	42.0	36	44.56	42.63	40.69	38.75
00298			.1181		3.000	3.0	50	15.0	10	32.90	31.47	30.04	28.61
	00502		.1181		3.000	3.0	50	21.0	16	34.37	32.88	31.38	29.89
		00708	.1181		3.000	3.0	75	42.0	37	42.04	40.22	38.39	36.56
00300			.1200	#31	3.048	1/8"	2"	5/8"	.382"	35.65	34.10	32.55	31.00
	00504		.1200	#31	3.048	1/8"	2"	7/8"	.622"	37.05	35.44	33.83	32.22
		00710	.1200	#31	3.048	1/8"	3"	1-3/4"	1.462"	45.21	43.24	41.28	39.31
00302			.1250	1/8"	3.175	1/8"	2"	5/8"	.398"	33.53	32.08	30.62	29.16
	00506		.1250	1/8"	3.175	1/8"	2"	7/8"	.648"	34.93	33.41	31.89	30.37
		00712	.1250	1/8"	3.175	1/8"	3"	1-3/4"	1.523"	42.70	40.84	38.99	37.13

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d_1*	3mm - 6mm	+.016mm +.004mm (+.00063" +.00015")
	> 6mm - 10mm	+.021mm +.006mm (+.00082" +.00023")
	> 10mm - 18mm	+.025mm +.007mm (+.00098" +.00027")
	> 18mm - 20mm	+.029mm +.008mm (+.00114" +.00031")
d_2	h6	
l_1	+3.175mm -3.175mm (+.125" -.125")	
l_2	+3.175mm -3.175mm (+.125" -.125")	
l_4	+1.980mm -.000mm (+.078" -.000")	



TECH PAGES 332-333

Series 1580HD

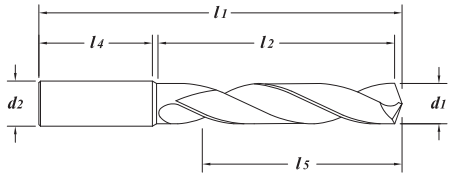
.1181" - .2342"
(3.000mm - 5.950mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels >40 Rc

BALIQ® ALTINOS Coating (AlTiN-based)

High performance solid submicron grain carbide drill with reinforced shank
Up to 50% faster than standard carbide drills
30° helix for better chip evacuation
Honed cutting edge
Can be used as a pilot drill
Live tooling recommended on lathe processes





Note - These drills are made to a plus/plus tolerance on the drill diameter. If you are in need of a minus tolerance drill, please refer to our other high performance drills.

EDP#	d_1 † Diameter Decimal	Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
20085	.1181	3.000	6.0	62	20	16	36	47.23	45.18	43.12	41.07
20095	.1220	3.100	6.0	62	20	15	36	47.23	45.18	43.12	41.07
20105	.1248	3.170	6.0	62	20	15	36	47.23	45.18	43.12	41.07
20115	.1260	3.200	6.0	62	20	15	36	47.23	45.18	43.12	41.07
20125	.1280	3.250	6.0	62	20	15	36	47.23	45.18	43.12	41.07
20135	.1299	3.300	6.0	62	20	15	36	47.23	45.18	43.12	41.07
20145	.1339	3.400	6.0	62	20	15	36	47.23	45.18	43.12	41.07
20155	.1378	3.500	6.0	62	20	15	36	47.23	45.18	43.12	41.07
20165	.1417	3.600	6.0	62	20	15	36	47.23	45.18	43.12	41.07
20175	.1457	3.700	6.0	62	20	14	36	47.23	45.18	43.12	41.07
20185	.1476	3.750	6.0	62	20	14	36	47.23	45.18	43.12	41.07
20195	.1496	3.800	6.0	66	24	18	36	47.23	45.18	43.12	41.07
20205	.1535	3.900	6.0	66	24	18	36	47.23	45.18	43.12	41.07
20215	.1575	4.000	6.0	66	24	18	36	47.23	45.18	43.12	41.07
20225	.1614	4.100	6.0	66	24	18	36	47.23	45.18	43.12	41.07
20235	.1654	4.200	6.0	66	24	18	36	47.23	45.18	43.12	41.07
20245	.1673	4.250	6.0	66	24	18	36	47.23	45.18	43.12	41.07
20255	.1693	4.300	6.0	66	24	18	36	47.23	45.18	43.12	41.07
20265	.1732	4.400	6.0	66	24	17	36	47.23	45.18	43.12	41.07
20275	.1772	4.500	6.0	66	24	17	36	47.23	45.18	43.12	41.07
20285	.1811	4.600	6.0	66	24	17	36	47.23	45.18	43.12	41.07
20295	.1831	4.650	6.0	66	24	17	36	47.23	45.18	43.12	41.07
20305	.1850	4.700	6.0	66	24	17	36	47.23	45.18	43.12	41.07
20315	.1870	4.750	6.0	66	24	17	36	47.23	45.18	43.12	41.07
20325	.1890	4.800	6.0	66	28	21	36	47.23	45.18	43.12	41.07
20335	.1929	4.900	6.0	66	28	21	36	47.23	45.18	43.12	41.07
20345	.1969	5.000	6.0	66	28	21	36	47.23	45.18	43.12	41.07
20355	.2008	5.100	6.0	66	28	20	36	47.23	45.18	43.12	41.07
20365	.2027	5.150	6.0	66	28	20	36	47.23	45.18	43.12	41.07
20375	.2047	5.200	6.0	66	28	20	36	47.23	45.18	43.12	41.07
20385	.2087	5.300	6.0	66	28	20	36	47.23	45.18	43.12	41.07
20395	.2165	5.500	6.0	66	28	20	36	47.23	45.18	43.12	41.07
20405	.2185	5.550	6.0	66	28	20	36	47.23	45.18	43.12	41.07
20408	.2205	5.600	6.0	66	28	20	36	47.23	45.18	43.12	41.07
20412	.2244	5.700	6.0	66	28	19	36	47.23	45.18	43.12	41.07
20415	.2283	5.800	6.0	66	28	19	36	47.23	45.18	43.12	41.07
20425	.2323	5.900	6.0	66	28	19	36	47.23	45.18	43.12	41.07
20435	.2342	5.950	6.0	66	28	19	36	47.23	45.18	43.12	41.07

continued ⟶

Series 1580HD *(continued)*

.2362" - .4252"
(6.000mm - 10.800mm)

EDP#	d_1 † Diameter Decimal	Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
20445	.2362	6.000	6.0	66	28	19	36	47.23	45.18	43.12	41.07
20448	.2402	6.100	8.0	79	34	25	36	64.98	62.15	59.33	56.50
20452	.2441	6.200	8.0	79	34	25	36	64.98	62.15	59.33	56.50
20454	.2480	6.300	8.0	79	34	25	36	64.98	62.15	59.33	56.50
20455	.2500	6.350	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20462	.2520	6.400	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20465	.2559	6.500	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20468	.2571	6.530	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20472	.2598	6.600	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20473	.2638	6.700	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20475	.2657	6.750	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20485	.2677	6.800	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20495	.2717	6.900	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20505	.2756	7.000	8.0	79	34	24	36	64.98	62.15	59.33	56.50
20515	.2795	7.100	8.0	79	41	30	36	64.98	62.15	59.33	56.50
20525	.2815	7.150	8.0	79	41	30	36	64.98	62.15	59.33	56.50
20535	.2835	7.200	8.0	79	41	30	36	64.98	62.15	59.33	56.50
20542	.2874	7.300	8.0	79	41	30	36	64.98	62.15	59.33	56.50
20545	.2913	7.400	8.0	79	41	30	36	64.98	62.15	59.33	56.50
20555	.2953	7.500	8.0	79	41	30	36	64.98	62.15	59.33	56.50
20565	.2972	7.550	8.0	79	41	30	36	64.98	62.15	59.33	56.50
20575	.2992	7.600	8.0	79	41	30	36	64.98	62.15	59.33	56.50
20585	.3031	7.700	8.0	79	41	29	36	64.98	62.15	59.33	56.50
20595	.3071	7.800	8.0	79	41	29	36	64.98	62.15	59.33	56.50
20605	.3130	7.950	8.0	79	41	29	36	64.98	62.15	59.33	56.50
20615	.3150	8.000	8.0	79	41	29	36	64.98	62.15	59.33	56.50
20622	.3189	8.100	10.0	89	47	35	40	90.40	86.47	82.54	78.61
20625	.3228	8.200	10.0	89	47	35	40	90.40	86.47	82.54	78.61
20635	.3268	8.300	10.0	89	47	35	40	90.40	86.47	82.54	78.61
20645	.3287	8.350	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20652	.3307	8.400	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20655	.3346	8.500	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20665	.3386	8.600	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20675	.3425	8.700	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20685	.3445	8.750	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20695	.3465	8.800	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20705	.3504	8.900	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20715	.3543	9.000	10.0	89	47	34	40	90.40	86.47	82.54	78.61
20725	.3583	9.100	10.0	89	47	33	40	90.40	86.47	82.54	78.61
20735	.3602	9.150	10.0	89	47	33	40	90.40	86.47	82.54	78.61
20745	.3622	9.200	10.0	89	47	33	40	90.40	86.47	82.54	78.61
20755	.3661	9.300	10.0	89	47	33	40	90.40	86.47	82.54	78.61
20762	.3701	9.400	10.0	89	47	33	40	90.40	86.47	82.54	78.61
20765	.3740	9.500	10.0	89	47	33	40	90.40	86.47	82.54	78.61
20775	.3760	9.550	10.0	89	47	33	40	90.40	86.47	82.54	78.61
20778	.3780	9.600	10.0	89	47	33	40	90.40	86.47	82.54	78.61
20782	.3819	9.700	10.0	89	47	32	40	90.40	86.47	82.54	78.61
20785	.3858	9.800	10.0	89	47	32	40	90.40	86.47	82.54	78.61
20795	.3898	9.900	10.0	89	47	32	40	90.40	86.47	82.54	78.61
20805	.3937	10.000	10.0	89	47	32	40	90.40	86.47	82.54	78.61
20812	.3976	10.100	12.0	102	55	40	45	117.61	112.50	107.38	102.27
20815	.4016	10.200	12.0	102	55	40	45	117.61	112.50	107.38	102.27
20825	.4055	10.300	12.0	102	55	40	45	117.61	112.50	107.38	102.27
20835	.4134	10.500	12.0	102	55	39	45	117.61	112.50	107.38	102.27
20842	.4173	10.600	12.0	102	55	39	45	117.61	112.50	107.38	102.27
20845	.4213	10.700	12.0	102	55	39	45	117.61	112.50	107.38	102.27
20855	.4252	10.800	12.0	102	55	39	45	117.61	112.50	107.38	102.27

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
20865	.4331	11.000	12.0	102	55	38	45	117.61	112.50	107.38	102.27
20875	.4370	11.100	12.0	102	55	38	45	117.61	112.50	107.38	102.27
20885	.4409	11.200	12.0	102	55	38	45	117.61	112.50	107.38	102.27
20892	.4488	11.400	12.0	102	55	38	45	117.61	112.50	107.38	102.27
20895	.4528	11.500	12.0	102	55	38	45	117.61	112.50	107.38	102.27
20905	.4606	11.700	12.0	102	55	37	45	117.61	112.50	107.38	102.27
20915	.4685	11.900	12.0	102	55	37	45	117.61	112.50	107.38	102.27
20925	.4724	12.000	12.0	102	55	37	45	117.61	112.50	107.38	102.27
20935	.4764	12.100	14.0	107	60	42	45	147.50	141.09	134.67	128.26
20941	.4803	12.200	14.0	107	60	42	45	147.50	141.09	134.67	128.26
20945	.4842	12.300	14.0	107	60	42	45	147.50	141.09	134.67	128.26
20955	.4921	12.500	14.0	107	60	41	45	147.50	141.09	134.67	128.26
20961	.4961	12.600	14.0	107	60	41	45	147.50	141.09	134.67	128.26
20965	.5000	12.700	14.0	107	60	41	45	147.50	141.09	134.67	128.26
20975	.5039	12.800	14.0	107	60	41	45	147.50	141.09	134.67	128.26
20978	.5051	12.830	14.0	107	60	41	45	147.50	141.09	134.67	128.26
20981	.5079	12.900	14.0	107	60	41	45	147.50	141.09	134.67	128.26
20982	.5098	12.950	14.0	107	60	41	45	147.50	141.09	134.67	128.26
20985	.5118	13.000	14.0	107	60	41	45	147.50	141.09	134.67	128.26
20995	.5157	13.100	14.0	107	60	40	45	147.50	141.09	134.67	128.26
20998	.5236	13.300	14.0	107	60	40	45	147.50	141.09	134.67	128.26
21005	.5315	13.500	14.0	107	60	40	45	147.50	141.09	134.67	128.26
21015	.5394	13.700	14.0	107	60	39	45	147.50	141.09	134.67	128.26
21025	.5433	13.800	14.0	107	60	39	45	147.50	141.09	134.67	128.26
21035	.5512	14.000	14.0	107	60	39	45	147.50	141.09	134.67	128.26
21045	.5551	14.100	16.0	115	65	44	48	175.32	167.70	160.07	152.45
21053	.5591	14.200	16.0	115	65	44	48	175.32	167.70	160.07	152.45
21055	.5610	14.250	16.0	115	65	44	48	175.32	167.70	160.07	152.45
21065	.5630	14.300	16.0	115	65	44	48	175.32	167.70	160.07	152.45
21075	.5709	14.500	16.0	115	65	43	48	175.32	167.70	160.07	152.45
21085	.5787	14.700	16.0	115	65	43	48	175.32	167.70	160.07	152.45
21105	.5906	15.000	16.0	115	65	43	48	175.32	167.70	160.07	152.45
21115	.5945	15.100	16.0	115	65	42	48	175.32	167.70	160.07	152.45
21125	.6102	15.500	16.0	115	65	42	48	175.32	167.70	160.07	152.45
21135	.6181	15.700	16.0	115	65	41	48	175.32	167.70	160.07	152.45
21145	.6220	15.800	16.0	115	65	41	48	175.32	167.70	160.07	152.45
21155	.6299	16.000	16.0	115	65	41	48	175.32	167.70	160.07	152.45
21159	.6331	16.080	18.0	123	73	49	48	232.70	222.59	212.47	202.35
21175	.6496	16.500	18.0	123	73	48	48	232.70	222.59	212.47	202.35
21185	.6555	16.650	18.0	123	73	48	48	232.70	222.59	212.47	202.35
21195	.6693	17.000	18.0	123	73	48	48	232.70	222.59	212.47	202.35
21215	.6870	17.450	18.0	123	73	47	48	232.70	222.59	212.47	202.35
21225	.6890	17.500	18.0	123	73	47	48	232.70	222.59	212.47	202.35
21235	.7027	17.850	18.0	123	73	46	48	232.70	222.59	212.47	202.35
21245	.7087	18.000	18.0	123	73	46	48	232.70	222.59	212.47	202.35
21255	.7185	18.250	20.0	131	79	52	50	318.68	304.82	290.97	277.11
21265	.7283	18.500	20.0	131	79	51	50	318.68	304.82	290.97	277.11
21275	.7342	18.650	20.0	131	79	51	50	318.68	304.82	290.97	277.11
21295	.7500	19.050	20.0	131	79	50	50	318.68	304.82	290.97	277.11
21304	.7598	19.300	20.0	131	79	50	50	318.68	304.82	290.97	277.11
21315	.7677	19.500	20.0	131	79	50	50	318.68	304.82	290.97	277.11
21325	.7815	19.850	20.0	131	79	49	50	318.68	304.82	290.97	277.11
21335	.7874	20.000	20.0	131	79	49	50	318.68	304.82	290.97	277.11

Series 1580H, 1280H

.1181" - .1719"
(3.000mm - 4.366mm)

Z=2 | 30° | 140° | 3xD | 5xD | TECH PAGES 332-333

TOLERANCES

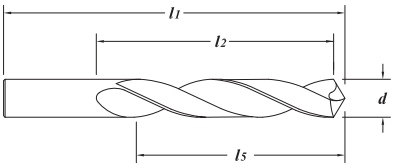
d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels >40 Rc

BALIQ® ALTINOS Coating (AlTiN-based)

High performance - high penetration solid submicron grain carbide drill
Extended tool life and greater surface finish through faster SFM rates
Up to 50% faster than standard carbide drills
30° helix for better chip evacuation
Honed cutting edge
Live tooling recommended on lathe processes





3xD (1580H) EDP#	5xD (1280H) EDP#	d † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
20301		.1181		3.000	46	16	10	32.90	31.47	30.04	28.61
	21301	.1181		3.000	50	19	16	34.39	32.89	31.40	29.90
20306		.1200	#31	3.048	1-13/16"	5/8"	.382"	33.24	31.79	30.35	28.90
	21306	.1200	#31	3.048	2"	3/4"	.622"	34.66	33.15	31.65	30.14
20311		.1250	1/8"	3.175	1-15/16"	11/16"	.398"	33.53	32.08	30.62	29.16
	21311	.1250	1/8"	3.175	2"	3/4"	.648"	34.94	33.42	31.90	30.38
20316		.1285	#30	3.264	1-15/16"	11/16"	.409"	33.83	32.36	30.89	29.42
	21316	.1285	#30	3.264	2-1/4"	3/4"	.666"	35.25	33.72	32.18	30.65
20321		.1360	#29	3.454	2-1/16"	3/4"	.433"	34.16	32.67	31.19	29.70
	21321	.1360	#29	3.454	2-1/4"	7/8"	.705"	35.51	33.97	32.42	30.88
20326		.1378		3.500	52	19	11	34.49	32.99	31.49	29.99
	21326	.1378		3.500	57	22	18	35.80	34.24	32.69	31.13
20331		.1405	#28	3.569	2-1/16"	3/4"	.447"	34.81	33.30	31.78	30.27
	21331	.1405	#28	3.569	2-1/4"	7/8"	.728"	36.09	34.52	32.95	31.38
20336		.1406	9/64"	3.571	2-1/16"	3/4"	.447"	35.11	33.58	32.06	30.53
	21336	.1406	9/64"	3.571	2-1/4"	7/8"	.729"	36.40	34.82	33.23	31.65
20341		.1440	#27	3.658	2-1/16"	3/4"	.458"	35.42	33.88	32.34	30.80
	21341	.1440	#27	3.658	2-1/4"	7/8"	.746"	36.64	35.05	33.45	31.86
20346		.1470	#26	3.734	2-3/16"	13/16"	.468"	35.70	34.14	32.59	31.04
	21346	.1470	#26	3.734	2-1/4"	7/8"	.762"	36.94	35.33	33.73	32.12
20351		.1495	#25	3.797	2-3/16"	13/16"	.476"	36.08	34.51	32.94	31.37
	21351	.1495	#25	3.797	2-1/4"	15/16"	.775"	37.21	35.60	33.98	32.36
20356		.1520	#24	3.861	2-3/16"	13/16"	.484"	36.36	34.78	33.20	31.62
	21356	.1520	#24	3.861	2-1/4"	15/16"	.788"	37.48	35.85	34.22	32.59
20361		.1540	#23	3.912	2-3/16"	13/16"	.490"	36.69	35.09	33.50	31.90
	21361	.1540	#23	3.912	2-1/4"	15/16"	.798"	37.80	36.16	34.51	32.87
20366		.1562	5/32"	3.967	2-3/16"	13/16"	.497"	36.97	35.37	33.76	32.15
	21366	.1562	5/32"	3.967	2-1/2"	15/16"	.809"	38.07	36.41	34.76	33.10
20371		.1570	#22	3.988	2-3/16"	13/16"	.500"	37.32	35.70	34.07	32.45
	21371	.1570	#22	3.988	2-1/2"	15/16"	.814"	38.34	36.67	35.01	33.34
20376		.1575		4.000	56	21	13	37.62	35.98	34.35	32.71
	21376	.1575		4.000	65	24	21	38.63	36.95	35.27	33.59
20381		.1590	#21	4.039	2-3/16"	13/16"	.506"	37.94	36.29	34.64	32.99
	21381	.1590	#21	4.039	2-1/2"	15/16"	.824"	38.90	37.21	35.52	33.83
20386		.1610	#20	4.089	2-3/16"	13/16"	.512"	38.26	36.60	34.93	33.27
	21386	.1610	#20	4.089	2-1/2"	15/16"	.834"	39.22	37.51	35.81	34.10
20391		.1660	#19	4.216	2-9/32"	15/16"	.528"	38.59	36.92	35.24	33.56
	21391	.1660	#19	4.216	2-1/2"	1"	.860"	39.49	37.77	36.06	34.34
20396		.1695	#18	4.305	2-9/32"	15/16"	.539"	38.89	37.20	35.51	33.82
	21396	.1695	#18	4.305	2-1/2"	1"	.878"	39.76	38.03	36.30	34.57
20401		.1719	11/64"	4.366	2-9/32"	15/16"	.547"	39.22	37.51	35.81	34.10
	21401	.1719	11/64"	4.366	2-1/2"	1"	.891"	40.04	38.30	36.56	34.82

GARR TOOL®

† *Metric equivalents are for reference only*

.1730" - .2380"
(4.394mm - 6.045mm)

3xD (1580H) EDP#	5xD (1280H) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
20406		.1730	#17	4.394	2-9/32"	15/16"	.551"	39.54	37.82	36.10	34.38
	21406	.1730	#17	4.394	2-1/2"	1"	.897"	40.32	38.57	36.81	35.06
20411		.1770	#16	4.496	2-9/32"	15/16"	.563"	39.81	38.08	36.35	34.62
	21411	.1770	#16	4.496	2-1/2"	1"	.917"	40.63	38.86	37.10	35.33
20416		.1772		4.500	58	24	14	40.15	38.40	36.66	34.91
	21416	.1772		4.500	65	25	23	40.92	39.14	37.36	35.58
20421		.1800	#15	4.572	2-9/32"	15/16"	.573"	40.42	38.67	36.91	35.15
	21421	.1800	#15	4.572	2-3/4"	1"	.933"	41.17	39.38	37.59	35.80
20426		.1820	#14	4.623	2-9/32"	15/16"	.579"	40.79	39.02	37.24	35.47
	21426	.1820	#14	4.623	2-3/4"	1"	.943"	41.45	39.64	37.84	36.04
20431		.1850	#13	4.700	2-9/32"	15/16"	.589"	41.09	39.30	37.52	35.73
	21431	.1850	#13	4.700	2-3/4"	1-1/4"	.959"	41.76	39.94	38.13	36.31
20436		.1875	3/16"	4.763	2-13/32"	1"	.597"	41.42	39.62	37.82	36.02
	21436	.1875	3/16"	4.763	2-3/4"	1-1/4"	.972"	42.06	40.23	38.40	36.57
20441		.1890	#12	4.801	2-13/32"	1"	.601"	41.73	39.92	38.10	36.29
	21441	.1890	#12	4.801	2-3/4"	1-1/4"	.979"	42.33	40.49	38.65	36.81
20446		.1910	#11	4.851	2-13/32"	1"	.608"	42.11	40.28	38.45	36.62
	21446	.1910	#11	4.851	2-3/4"	1-1/4"	.990"	42.58	40.73	38.88	37.03
20451		.1935	#10	4.915	2-13/32"	1"	.616"	42.37	40.52	38.68	36.84
	21451	.1935	#10	4.915	2-3/4"	1-1/4"	1.003"	42.88	41.02	39.15	37.29
20456		.1960	#9	4.978	2-13/32"	1"	.624"	42.67	40.81	38.96	37.10
	21456	.1960	#9	4.978	3"	1-5/16"	1.016"	43.15	41.27	39.40	37.52
20461		.1969		5.000	61	25	16	42.90	41.03	39.17	37.30
	21461	.1969		5.000	75	33	26	43.45	41.56	39.67	37.78
20466		.1990	#8	5.055	2-13/32"	1"	.633"	43.30	41.42	39.53	37.65
	21466	.1990	#8	5.055	3"	1-5/16"	1.031"	43.68	41.78	39.88	37.98
20471		.2010	#7	5.105	2-13/32"	1"	.640"	43.42	41.54	39.65	37.76
	21471	.2010	#7	5.105	3"	1-5/16"	1.042"	43.87	41.97	40.06	38.15
20476		.2031	13/64"	5.159	2-13/32"	1"	.646"	43.71	41.81	39.91	38.01
	21476	.2031	13/64"	5.159	3"	1-5/16"	1.053"	44.19	42.27	40.35	38.43
20481		.2040	#6	5.182	2-13/32"	1"	.649"	44.01	42.10	40.18	38.27
	21481	.2040	#6	5.182	3"	1-3/8"	1.057"	44.52	42.58	40.65	38.71
20486		.2055	#5	5.220	2-13/32"	1"	.654"	44.33	42.41	40.48	38.55
	21486	.2055	#5	5.220	3"	1-3/8"	1.065"	44.82	42.87	40.92	38.97
20491		.2090	#4	5.309	2-13/32"	1"	.665"	44.60	42.66	40.72	38.78
	21491	.2090	#4	5.309	3"	1-3/8"	1.083"	45.11	43.15	41.19	39.23
20496		.2130	#3	5.410	2-5/8"	1-3/32"	.678"	44.90	42.94	40.99	39.04
	21496	.2130	#3	5.410	3"	1-3/8"	1.104"	45.43	43.45	41.48	39.50
20501		.2165		5.500	67	28	18	45.18	43.22	41.25	39.29
	21501	.2165		5.500	75	35	29	45.70	43.71	41.73	39.74
20506		.2188	7/32"	5.558	2-5/8"	1-3/32"	.696"	45.55	43.57	41.59	39.61
	21506	.2188	7/32"	5.558	3"	1-3/8"	1.134"	45.99	43.99	41.99	39.99
20511		.2210	#2	5.613	2-5/8"	1-3/32"	.703"	45.89	43.89	41.90	39.90
	21511	.2210	#2	5.613	3"	1-3/8"	1.145"	46.98	44.94	42.89	40.85
20516		.2280	#1	5.791	2-5/8"	1-3/32"	.726"	46.24	44.23	42.22	40.21
	21516	.2280	#1	5.791	3"	1-3/8"	1.182"	47.22	45.17	43.11	41.06
20521		.2340	A	5.944	2-5/8"	1-3/32"	.745"	46.55	44.53	42.50	40.48
	21521	.2340	A	5.944	3-1/4"	1-1/2"	1.213"	47.92	45.84	43.75	41.67
20526		.2344	15/64"	5.954	2-5/8"	1-3/32"	.746"	46.91	44.87	42.83	40.79
	21526	.2344	15/64"	5.954	3-1/4"	1-1/2"	1.215"	48.05	45.96	43.87	41.78
20531		.2362		6.000	67	28	19	47.23	45.18	43.12	41.07
	21531	.2362		6.000	80	38	31	48.20	46.10	44.01	41.91
20536		.2380	B	6.045	2-3/4"	1-7/32"	.757"	47.55	45.49	43.42	41.35
	21536	.2380	B	6.045	3-1/4"	1-5/8"	1.233"	48.33	46.23	44.13	42.03

continued ⟶

Series 1580H, 1280H *(continued)*

.2420" - .3438"
(6.147mm - 8.733mm)

3xD (1580H) EDP#	5xD (1280H) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
20541		.2420	C	6.147	2-3/4"	1-7/32"	.770"	47.93	45.85	43.76	41.68
	21541	.2420	C	6.147	3-1/4"	1-5/8"	1.254"	48.67	46.55	44.44	42.32
20546		.2460	D	6.248	2-3/4"	1-7/32"	.783"	48.20	46.10	44.01	41.91
	21546	.2460	D	6.248	3-1/4"	1-5/8"	1.275"	48.98	46.85	44.72	42.59
20551		.2500	1/4" / E	6.350	2-3/4"	1-7/32"	.796"	48.62	46.51	44.39	42.28
	21551	.2500	1/4" / E	6.350	3-1/4"	1-5/8"	1.296"	49.25	47.11	44.97	42.83
20556		.2559		6.500	70	31	21	49.39	47.25	45.10	42.95
	21556	.2559		6.500	80	41	34	50.13	47.95	45.77	43.59
20561		.2570	F	6.528	2-3/4"	1-7/32"	.818"	50.17	47.99	45.81	43.63
	21561	.2570	F	6.528	3-1/4"	1-11/16"	1.332"	50.99	48.77	46.56	44.34
20566		.2610	G	6.629	2-3/4"	1-7/32"	.831"	50.93	48.72	46.50	44.29
	21566	.2610	G	6.629	3-1/2"	1-11/16"	1.353"	51.87	49.61	47.36	45.10
20571		.2656	17/64"	6.746	2-15/16"	1-11/32"	.845"	51.70	49.46	47.21	44.96
	21571	.2656	17/64"	6.746	3-1/2"	1-11/16"	1.376"	52.70	50.41	48.12	45.83
20576		.2660	H	6.756	2-15/16"	1-11/32"	.846"	52.46	50.18	47.90	45.62
	21576	.2660	H	6.756	3-1/2"	1-11/16"	1.378"	53.60	51.27	48.94	46.61
20581		.2720	I	6.909	2-15/16"	1-11/32"	.866"	53.25	50.93	48.62	46.30
	21581	.2720	I	6.909	3-1/2"	1-11/16"	1.410"	54.46	52.10	49.73	47.36
20586		.2756		7.000	75	34	22	54.03	51.68	49.33	46.98
	21586	.2756		7.000	88	43	36	55.30	52.90	50.49	48.09
20591		.2770	J	7.036	2-15/16"	1-11/32"	.881"	54.77	52.39	50.01	47.63
	21591	.2770	J	7.036	3-1/2"	1-11/16"	1.435"	56.18	53.74	51.29	48.85
20596		.2810	K	7.137	2-15/16"	1-11/32"	.894"	55.56	53.14	50.73	48.31
	21596	.2810	K	7.137	3-1/2"	1-3/4"	1.456"	57.07	54.59	52.11	49.63
20601		.2812	9/32"	7.142	2-15/16"	1-11/32"	.895"	56.33	53.88	51.43	48.98
	21601	.2812	9/32"	7.142	3-1/2"	1-3/4"	1.457"	57.94	55.42	52.90	50.38
20606		.2900	L	7.366	2-15/16"	1-11/32"	.923"	57.10	54.62	52.13	49.65
	21606	.2900	L	7.366	3-1/2"	1-3/4"	1.503"	58.73	56.18	53.62	51.07
20611		.2950	M	7.493	2-15/16"	1-11/32"	.939"	58.21	55.68	53.15	50.62
	21611	.2950	M	7.493	3-3/4"	1-3/4"	1.529"	59.57	56.98	54.39	51.80
20616		.2953		7.500	75	34	24	58.21	55.68	53.15	50.62
	21616	.2953		7.500	95	44	39	59.57	56.98	54.39	51.80
20621		.2969	19/64"	7.541	3-3/32"	1-15/32"	.945"	58.72	56.17	53.61	51.06
	21621	.2969	19/64"	7.541	3-3/4"	1-7/8"	1.539"	60.17	57.55	54.94	52.32
20626		.3020	N	7.671	3-3/32"	1-15/32"	.961"	61.35	58.69	56.02	53.35
	21626	.3020	N	7.671	3-3/4"	1-7/8"	1.565"	62.55	59.83	57.11	54.39
20631		.3125	5/16"	7.938	3-3/32"	1-15/32"	.994"	61.57	58.89	56.22	53.54
	21631	.3125	5/16"	7.938	3-3/4"	1-7/8"	1.619"	62.74	60.02	57.29	54.56
20636		.3150		8.000	79	37	25	64.98	62.15	59.33	56.50
	21636	.3150		8.000	95	48	41	66.14	63.26	60.39	57.51
20641		.3160	O	8.026	3-3/32"	1-15/32"	1.006"	64.98	62.15	59.33	56.50
	21641	.3160	O	8.026	3-3/4"	1-7/8"	1.638"	66.14	63.26	60.39	57.51
20646		.3230	P	8.204	3-3/32"	1-15/32"	1.028"	65.45	62.60	59.76	56.91
	21646	.3230	P	8.204	3-3/4"	2-3/32"	1.674"	66.38	63.49	60.61	57.72
20651		.3281	21/64"	8.334	3-3/32"	1-15/32"	1.044"	66.65	63.76	60.86	57.96
	21651	.3281	21/64"	8.334	4"	2-3/32"	1.700"	67.00	64.09	61.17	58.26
20656		.3320	Q	8.433	3-3/32"	1-15/32"	1.056"	67.85	64.90	61.95	59.00
	21656	.3320	Q	8.433	4"	2-3/32"	1.720"	68.33	65.36	62.39	59.42
20661		.3346		8.500	79	37	27	68.14	65.18	62.21	59.25
	21661	.3346		8.500	100	53	44	68.83	65.84	62.84	59.85
20666		.3390	R	8.611	3-5/16"	1-9/16"	1.079"	69.98	66.94	63.89	60.85
	21666	.3390	R	8.611	4"	2-3/32"	1.757"	70.73	67.65	64.58	61.50
20671		.3438	11/32"	8.733	3-5/16"	1-9/16"	1.094"	71.51	68.40	65.29	62.18
	21671	.3438	11/32"	8.733	4"	2-3/16"	1.782"	73.20	70.02	66.83	63.65

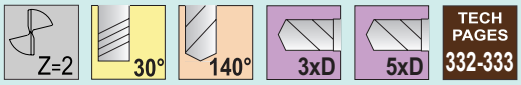
GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Series 1580H, 1280H *(continued)*



.3480" - .4531"
(8.839mm - 11.509mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels >40 Rc

BALIQ® ALTINOS Coating (AlTiN-based)

High performance - high penetration solid submicron grain carbide drill



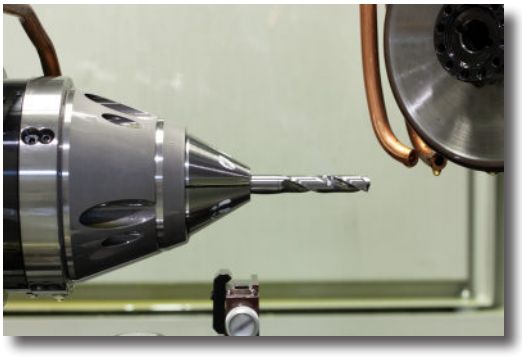
3xD (1580H) EDP#	5xD (1280H) EDP#	Decimal	d † Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
20676		.3480	S	8.839	3-5/16"	1-9/16"	1.107"	73.88	70.66	67.45	64.24
	21676	.3480	S	8.839	4"	2-3/16"	1.803"	76.06	72.75	69.45	66.14
20681		.3543		9.000	84	40	29	75.75	72.46	69.16	65.87
	21681	.3543		9.000	100	56	47	76.51	73.18	69.86	66.53
20686		.3580	T	9.093	3-5/16"	1-9/16"	1.139"	78.72	75.30	71.87	68.45
	21686	.3580	T	9.093	4-1/4"	2-9/32"	1.855"	79.53	76.08	72.62	69.16
20691		.3594	23/64"	9.129	3-5/16"	1-9/16"	1.144"	79.21	75.77	72.32	68.88
	21691	.3594	23/64"	9.129	4-1/4"	2-9/32"	1.862"	80.02	76.54	73.06	69.58
20696		.3680	U	9.347	3-5/16"	1-9/16"	1.171"	80.86	77.34	73.83	70.31
	21696	.3680	U	9.347	4-1/4"	2-9/32"	1.907"	84.57	80.89	77.22	73.54
20701		.3740		9.500	84	40	30	81.54	77.99	74.45	70.90
	21701	.3740		9.500	105	58	49	85.40	81.69	77.97	74.26
20706		.3750	3/8"	9.525	3-1/2"	1-11/16"	1.193"	82.02	78.45	74.89	71.32
	21706	.3750	3/8"	9.525	4-1/4"	2-3/8"	1.943"	86.25	82.50	78.75	75.00
20711		.3770	V	9.576	3-1/2"	1-11/16"	1.200"	85.17	81.47	77.76	74.06
	21711	.3770	V	9.576	4-1/4"	2-3/8"	1.954"	88.37	84.52	80.68	76.84
20716		.3860	W	9.804	3-1/2"	1-11/16"	1.228"	86.66	82.90	79.13	75.36
	21716	.3860	W	9.804	4-1/2"	2-3/8"	2.000"	89.93	86.02	82.11	78.20
20721		.3906	25/64"	9.921	3-1/2"	1-11/16"	1.243"	87.75	83.93	80.12	76.30
	21721	.3906	25/64"	9.921	4-1/2"	2-3/8"	2.024"	91.01	87.05	83.10	79.14
20726		.3937		10.000	89	43	32	90.40	86.47	82.54	78.61
	21726	.3937		10.000	115	60	52	93.76	89.68	85.61	81.53
20731		.3970	X	10.084	3-1/2"	1-11/16"	1.263"	91.63	87.65	83.66	79.68
	21731	.3970	X	10.084	4-1/2"	2-1/2"	2.057"	94.90	90.77	86.65	82.52
20736		.4040	Y	10.262	3-1/2"	1-11/16"	1.286"	92.23	88.22	84.21	80.20
	21736	.4040	Y	10.262	4-1/2"	2-9/16"	2.094"	97.76	93.51	89.26	85.01
20741		.4062	13/32"	10.317	3-1/2"	1-11/16"	1.293"	95.08	90.95	86.81	82.68
	21741	.4062	13/32"	10.317	4-1/2"	2-9/16"	2.105"	98.61	94.33	90.04	85.75
20746		.4130	Z	10.490	3-1/2"	1-11/16"	1.314"	95.97	91.80	87.62	83.45
	21746	.4130	Z	10.490	4-1/2"	2-5/8"	2.140"	99.51	95.18	90.86	86.53
20751		.4134		10.500	89	43	33	95.97	91.80	87.62	83.45
	21751	.4134		10.500	115	67	54	99.51	95.18	90.86	86.53
20756		.4219	27/64"	10.716	3-3/4"	1-13/16"	1.343"	96.88	92.66	88.45	84.24
	21756	.4219	27/64"	10.716	4-1/2"	2-11/16"	2.186"	100.41	96.04	91.68	87.31
20761		.4331		11.000	95	46	35	103.98	99.46	94.94	90.42
	21761	.4331		11.000	115	68	57	107.73	103.05	98.36	93.68
20766		.4375	7/16"	11.113	3-3/4"	1-13/16"	1.392"	103.98	99.46	94.94	90.42
	21766	.4375	7/16"	11.113	4-3/4"	2-13/16"	2.267"	108.17	103.47	98.76	94.06
20771		.4528		11.500	95	46	37	111.61	106.76	101.90	97.05
	21771	.4528		11.500	120	71	60	115.59	110.56	105.54	100.51
20776		.4531	29/64"	11.509	3-3/4"	1-13/16"	1.442"	111.61	106.76	101.90	97.05
	21776	.4531	29/64"	11.509	4-3/4"	2-7/8"	2.348"	115.59	110.56	105.54	100.51

continued ⟶

Series 1580H, 1280H *(continued)*

.4688" - .6299"
(11.908mm - 16.000mm)

3xD (1580H) EDP#	5xD (1280H) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
20781		.4688	15/32"	11.908	4"	1-15/16"	1.492"	117.27	112.17	107.07	101.97
	21781	.4688	15/32"	11.908	4-3/4"	2-7/8"	2.429"	121.39	116.12	110.84	105.56
20786		.4724		12.000	102	49	38	117.61	112.50	107.38	102.27
	21786	.4724		12.000	120	73	62	121.76	116.47	111.17	105.88
20791		.4844	31/64"	12.304	4"	1-15/16"	1.541"	118.43	113.28	108.13	102.98
	21791	.4844	31/64"	12.304	5-5/16"	3"	2.510"	123.12	117.77	112.41	107.06
20796		.4921		12.500	102	49	40	119.60	114.40	109.20	104.00
	21796	.4921		12.500	135	76	65	124.59	119.17	113.76	108.34
20801		.5000	1/2"	12.700	4"	1-15/16"	1.591"	120.37	115.14	109.90	104.67
	21801	.5000	1/2"	12.700	5-3/8"	3-1/16"	2.591"	124.84	119.42	113.99	108.56
20806		.5118		13.000	107	53	41	131.93	126.19	120.46	114.72
	21806	.5118		13.000	135	78	67	135.76	129.86	123.95	118.05
20811		.5156	33/64"	13.096	4-7/32"	2-3/32"	1.641"	135.06	129.18	123.31	117.44
	21811	.5156	33/64"	13.096	5-3/8"	3-1/8"	2.672"	138.93	132.89	126.85	120.81
20816		.5312	17/32"	13.492	4-7/32"	2-3/32"	1.690"	138.16	132.15	126.15	120.14
	21816	.5312	17/32"	13.492	5-11/16"	3-5/16"	2.753"	142.20	136.02	129.83	123.65
20821		.5315		13.500	110	56	43	141.29	135.15	129.00	122.86
	21821	.5315		13.500	145	84	70	145.34	139.02	132.70	126.38
20826		.5469	35/64"	13.891	4-5/16"	2-7/32"	1.740"	144.38	138.11	131.83	125.55
	21826	.5469	35/64"	13.891	5-13/16"	3-3/8"	2.834"	148.50	142.04	135.59	129.13
20831		.5512		14.000	110	56	45	147.50	141.09	134.67	128.26
	21831	.5512		14.000	145	86	73	151.71	145.11	138.52	131.92
20836		.5625	9/16"	14.288	4-9/16"	2-15/32"	1.790"	158.78	151.88	144.97	138.07
	21836	.5625	9/16"	14.288	5-15/16"	3-1/2"	2.915"	163.04	155.95	148.86	141.77
20841		.5709		14.500	116	63	46	161.76	154.73	147.69	140.66
	21841	.5709		14.500	150	89	75	166.04	158.82	151.60	144.38
20846		.5781	37/64"	14.684	4-15/16"	2-9/16"	1.840"	164.66	157.50	150.34	143.18
	21846	.5781	37/64"	14.684	6"	3-1/2"	2.996"	169.02	161.67	154.32	146.97
20851		.5906		15.000	125	65	48	167.69	160.40	153.11	145.82
	21851	.5906		15.000	150	90	78	172.19	164.70	157.22	149.73
20856		.5938	19/32"	15.083	4-15/16"	2-9/16"	1.890"	168.60	161.27	153.94	146.61
	21856	.5938	19/32"	15.083	6"	3-9/16"	3.077"	173.08	165.55	158.03	150.50
20861		.6094	39/64"	15.479	5-1/16"	2-13/16"	1.939"	169.46	162.10	154.73	147.36
	21861	.6094	39/64"	15.479	6-3/16"	3-11/16"	3.158"	187.57	179.41	171.26	163.10
20866		.6102		15.500	129	71	49	170.34	162.93	155.53	148.12
	21866	.6102		15.500	160	94	80	188.43	180.24	172.04	163.85
20871		.6250	5/8"	15.875	5-1/4"	3-1/8"	1.989"	171.20	163.76	156.31	148.87
	21871	.6250	5/8"	15.875	6-5/16"	3-3/4"	3.239"	189.31	181.08	172.85	164.62
20876		.6299		16.000	133	79	51	175.32	167.70	160.07	152.45
	21876	.6299		16.000	160	95	83	193.56	185.14	176.73	168.31



GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES		
d_1 *	3mm - 6mm	+.016mm +.004mm (+.00063" +.00015")
	> 6mm - 10mm	+.021mm +.006mm (+.00082" +.00023")
	> 10mm - 18mm	+.025mm +.007mm (+.00098" +.00027")
	> 18mm - 20mm	+.029mm +.008mm (+.00114" +.00031")
d_2	h6	
l_1	+3.175mm –3.175mm (+.125" –.125")	
l_2	+3.175mm –3.175mm (+.125" –.125")	
l_4	+1.980mm –.000mm (+.078" –.000")	

NEW ITEMS

Series 1580KD, 1280KD, 1880KD



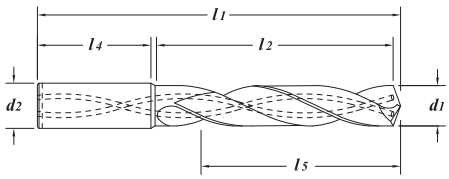
.1181" - .1470"
(3.000mm - 3.734mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels >40 Rc

BALIQ® ALTINOS Coating (AlTiN-based)

- High performance solid submicron grain carbide drill with reinforced shank
- Coolant through capabilities for high pressure coolant systems
- Up to 70% faster than standard carbide drills
- 30° helix for better chip evacuation
- Honed cutting edge
- Can be used as a pilot drill
- Live tooling recommended on lathe processes





* *Note - These drills are made to a plus/plus tolerance on the drill diameter. If you are in need of a minus tolerance drill, please refer to our other high performance drills.*

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	d_1 Diameter Decimal	d_1 Diameter	d_1 Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
	27995			.1181		3.000	6.0	62	20	16	36	60.57	57.94	55.30	52.67
		25065		.1181		3.000	6.0	66	28	24	36	71.50	68.39	65.28	62.17
			26942	.1181		3.000	6.0	70	30	26	36	85.82	82.09	78.36	74.63
	28005			.1220		3.100	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25075		.1220		3.100	6.0	66	28	23	36	71.50	68.39	65.28	62.17
	28015			.1248		3.170	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25085		.1248		3.170	6.0	66	28	23	36	71.50	68.39	65.28	62.17
NEW			26946	.1248		3.170	6.0	70	30	25	36	85.82	82.09	78.36	74.63
	28018			.1250	1/8"	3.175	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25088		.1250	1/8"	3.175	6.0	66	28	23	36	71.50	68.39	65.28	62.17
			26948	.1250	1/8"	3.175	6.0	70	30	25	36	85.82	82.09	78.36	74.63
	28025			.1260		3.200	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25095		.1260		3.200	6.0	66	28	23	36	71.50	68.39	65.28	62.17
			26950	.1260		3.200	6.0	70	30	25	36	85.82	82.09	78.36	74.63
	28035			.1280		3.250	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25105		.1280		3.250	6.0	66	28	23	36	71.50	68.39	65.28	62.17
			26952	.1280		3.250	6.0	70	30	25	36	85.82	82.09	78.36	74.63
	28038			.1285	#30	3.264	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25108		.1285	#30	3.264	6.0	66	28	23	36	71.50	68.39	65.28	62.17
			26954	.1285	#30	3.264	6.0	70	30	25	36	85.82	82.09	78.36	74.63
	28045			.1299		3.300	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25115		.1299		3.300	6.0	66	28	23	36	71.50	68.39	65.28	62.17
			26956	.1299		3.300	6.0	70	30	25	36	85.82	82.09	78.36	74.63
	28055			.1339		3.400	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25125		.1339		3.400	6.0	66	28	23	36	71.50	68.39	65.28	62.17
	28058			.1360	#29	3.454	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25128		.1360	#29	3.454	6.0	66	28	23	36	71.50	68.39	65.28	62.17
			26960	.1360	#29	3.454	6.0	70	30	25	36	85.82	82.09	78.36	74.63
	28065			.1378		3.500	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25135		.1378		3.500	6.0	66	28	23	36	71.50	68.39	65.28	62.17
			26962	.1378		3.500	6.0	75	37	32	36	85.82	82.09	78.36	74.63
	28075			.1417		3.600	6.0	62	20	15	36	60.57	57.94	55.30	52.67
		25145		.1417		3.600	6.0	66	28	23	36	71.50	68.39	65.28	62.17
	28085			.1457		3.700	6.0	62	20	14	36	60.57	57.94	55.30	52.67
		25155		.1457		3.700	6.0	66	28	22	36	71.50	68.39	65.28	62.17
	28088			.1470	#26	3.734	6.0	62	20	14	36	60.57	57.94	55.30	52.67
		25158		.1470	#26	3.734	6.0	66	28	22	36	71.50	68.39	65.28	62.17
			26968	.1470	#26	3.734	6.0	75	37	31	36	85.82	82.09	78.36	74.63

continued ⟶

Series 1580KD, 1280KD, 1880KD *(continued)*

.1476" - .1811"
(3.750mm - 4.600mm)

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	d_1 Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
	28095			.1476		3.750	6.0	62	20	14	36	60.57	57.94	55.30	52.67
		25165		.1476		3.750	6.0	66	28	22	36	71.50	68.39	65.28	62.17
NEW			26972	.1476		3.750	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28098			.1495	#25	3.797	6.0	62	20	14	36	60.57	57.94	55.30	52.67
		25172		.1495	#25	3.797	6.0	66	28	22	36	71.50	68.39	65.28	62.17
NEW			26978	.1495	#25	3.797	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28105			.1496		3.800	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25175		.1496		3.800	6.0	74	36	30	36	71.50	68.39	65.28	62.17
	28115			.1535		3.900	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25185		.1535		3.900	6.0	74	36	30	36	71.50	68.39	65.28	62.17
			26982	.1535		3.900	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28118			.1562	5/32"	3.967	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25192		.1562	5/32"	3.967	6.0	74	36	30	36	71.50	68.39	65.28	62.17
			26984	.1562	5/32"	3.967	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28125			.1563		3.970	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25195		.1563		3.970	6.0	74	36	30	36	71.50	68.39	65.28	62.17
	28135			.1575		4.000	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25205		.1575		4.000	6.0	74	36	30	36	71.50	68.39	65.28	62.17
			26986	.1575		4.000	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28138			.1590	#21	4.038	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25208		.1590	#21	4.038	6.0	74	36	30	36	71.50	68.39	65.28	62.17
			26988	.1590	#21	4.038	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28140			.1610	#20	4.089	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25212		.1610	#20	4.089	6.0	74	36	30	36	71.50	68.39	65.28	62.17
			26990	.1610	#20	4.089	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28145			.1614		4.100	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25215		.1614		4.100	6.0	74	36	30	36	71.50	68.39	65.28	62.17
			26992	.1614		4.100	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28155			.1654		4.200	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25225		.1654		4.200	6.0	74	36	30	36	71.50	68.39	65.28	62.17
			26994	.1654		4.200	6.0	75	37	31	36	85.82	82.09	78.36	74.63
	28158			.1660	#19	4.216	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25228		.1660	#19	4.216	6.0	74	36	30	36	71.50	68.39	65.28	62.17
			26996	.1660	#19	4.216	6.0	85	45	39	36	85.82	82.09	78.36	74.63
	28165			.1673		4.250	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25235		.1673		4.250	6.0	74	36	30	36	71.50	68.39	65.28	62.17
NEW			26998	.1673		4.250	6.0	85	45	39	36	85.82	82.09	78.36	74.63
	28175			.1693		4.300	6.0	66	24	18	36	60.57	57.94	55.30	52.67
		25245		.1693		4.300	6.0	74	36	30	36	71.50	68.39	65.28	62.17
	28178			.1719	11/64"	4.366	6.0	66	24	17	36	60.57	57.94	55.30	52.67
		25248		.1719	11/64"	4.366	6.0	74	36	29	36	71.50	68.39	65.28	62.17
			27002	.1719	11/64"	4.366	6.0	85	45	38	36	85.82	82.09	78.36	74.63
	28185			.1732		4.400	6.0	66	24	17	36	60.57	57.94	55.30	52.67
		25255		.1732		4.400	6.0	74	36	29	36	71.50	68.39	65.28	62.17
			27004	.1732		4.400	6.0	85	45	38	36	85.82	82.09	78.36	74.63
	28188			.1770	#16	4.496	6.0	66	24	17	36	60.57	57.94	55.30	52.67
		25262		.1770	#16	4.496	6.0	74	36	29	36	71.50	68.39	65.28	62.17
			27006	.1770	#16	4.496	6.0	85	45	38	36	85.82	82.09	78.36	74.63
	28195			.1772		4.500	6.0	66	24	17	36	60.57	57.94	55.30	52.67
		25265		.1772		4.500	6.0	74	36	29	36	71.50	68.39	65.28	62.17
			27008	.1772		4.500	6.0	85	45	38	36	85.82	82.09	78.36	74.63
	28205			.1811		4.600	6.0	66	24	17	36	60.57	57.94	55.30	52.67
		25275		.1811		4.600	6.0	74	36	29	36	71.50	68.39	65.28	62.17
			27011	.1811		4.600	6.0	85	45	38	36	85.82	82.09	78.36	74.63
	28208			.1820	#14	4.622	6.0	66	24	17	36	60.57	57.94	55.30	52.67
		25280		.1820	#14	4.622	6.0	74	36	29	36	71.50	68.39	65.28	62.17
NEW			27012	.1820	#14	4.622	6.0	90	50	43	36	85.82	82.09	78.36	74.63

GARR TOOL®

† *Metric equivalents are for reference only*

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	*d1* Diameter Decimal		Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	*l4* Shank Length	1-11	12-24	25-49	50-100
		25285		.1831		4.650	6.0	74	36	29	36	71.50	68.39	65.28	62.17
			27014	.1831		4.650	6.0	90	50	43	36	85.82	82.09	78.36	74.63
	28225			.1850		4.700	6.0	66	24	17	36	60.57	57.94	55.30	52.67
		25295		.1850		4.700	6.0	74	36	29	36	71.50	68.39	65.28	62.17
	28235			.1870		4.750	6.0	66	24	17	36	60.57	57.94	55.30	52.67
		25305		.1870		4.750	6.0	74	36	29	36	71.50	68.39	65.28	62.17
NEW			27016	.1870		4.750	6.0	90	50	43	36	85.82	82.09	78.36	74.63
	28238			.1875	3/16"	4.762	6.0	66	28	21	36	60.57	57.94	55.30	52.67
		25310		.1875	3/16"	4.762	6.0	74	36	29	36	68.75	65.76	62.77	59.78
			27018	.1875	3/16"	4.762	6.0	90	50	43	36	85.82	82.09	78.36	74.63
	28245			.1890	#12	4.800	6.0	66	28	21	36	60.57	57.94	55.30	52.67
		25315		.1890	#12	4.800	6.0	82	44	37	36	71.50	68.39	65.28	62.17
			27021	.1890	#12	4.800	6.0	90	50	43	36	85.82	82.09	78.36	74.63
	28255			.1929		4.900	6.0	66	28	21	36	60.57	57.94	55.30	52.67
		25325		.1929		4.900	6.0	82	44	37	36	71.50	68.39	65.28	62.17
			27022	.1929		4.900	6.0	90	50	43	36	85.82	82.09	78.36	74.63
	28258			.1960	#9	4.978	6.0	66	28	21	36	60.57	57.94	55.30	52.67
		25330		.1960	#9	4.978	6.0	82	44	37	36	71.50	68.39	65.28	62.17
NEW			27024	.1960	#9	4.978	6.0	90	50	43	36	85.82	82.09	78.36	74.63
	28265			.1969		5.000	6.0	66	28	21	36	60.57	57.94	55.30	52.67
		25335		.1969		5.000	6.0	82	44	37	36	71.50	68.39	65.28	62.17
			27026	.1969		5.000	6.0	90	50	43	36	85.82	82.09	78.36	74.63
	28275			.2008		5.100	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25345		.2008		5.100	6.0	82	44	36	36	71.50	68.39	65.28	62.17
	28278			.2010	#7	5.105	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25348		.2010	#7	5.105	6.0	82	44	36	36	71.50	68.39	65.28	62.17
			27031	.2010	#7	5.105	6.0	97	57	49	36	85.82	82.09	78.36	74.63
	28285			.2027		5.150	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25355		.2027		5.150	6.0	82	44	36	36	71.50	68.39	65.28	62.17
	28295			.2047		5.200	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25365		.2047		5.200	6.0	82	44	36	36	71.50	68.39	65.28	62.17
	28305			.2087		5.300	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25375		.2087		5.300	6.0	82	44	36	36	71.50	68.39	65.28	62.17
	28308			.2130	#3	5.410	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25380		.2130	#3	5.410	6.0	82	44	36	36	71.50	68.39	65.28	62.17
			27036	.2130	#3	5.410	6.0	97	57	49	36	85.82	82.09	78.36	74.63
	28315			.2165		5.500	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25385		.2165		5.500	6.0	82	44	36	36	71.50	68.39	65.28	62.17
			27038	.2165		5.500	6.0	97	57	49	36	85.82	82.09	78.36	74.63
	28325			.2185		5.550	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25395		.2185		5.550	6.0	82	44	36	36	71.50	68.39	65.28	62.17
	28328			.2188	7/32"	5.557	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25398		.2188	7/32"	5.557	6.0	82	44	36	36	71.50	68.39	65.28	62.17
			27041	.2188	7/32"	5.557	6.0	97	57	49	36	85.82	82.09	78.36	74.63
	28335			.2205		5.600	6.0	66	28	20	36	60.57	57.94	55.30	52.67
		25397		.2205		5.600	6.0	82	44	36	36	71.50	68.39	65.28	62.17
NEW			27042	.2205		5.600	6.0	97	57	49	36	85.82	82.09	78.36	74.63
	28345			.2244		5.700	6.0	66	28	19	36	60.57	57.94	55.30	52.67
		25400		.2244		5.700	6.0	82	44	35	36	71.50	68.39	65.28	62.17
			27044	.2244		5.700	6.0	97	57	48	36	85.82	82.09	78.36	74.63
	28348			.2280	#1	5.791	6.0	66	28	19	36	60.57	57.94	55.30	52.67
		25403		.2280	#1	5.791	6.0	82	44	35	36	71.50	68.39	65.28	62.17
			27046	.2280	#1	5.791	6.0	97	57	48	36	85.82	82.09	78.36	74.63
	28355			.2283		5.800	6.0	66	28	19	36	60.57	57.94	55.30	52.67
		25405		.2283		5.800	6.0	82	44	35	36	71.50	68.39	65.28	62.17
			27048	.2283		5.800	6.0	97	57	48	36	85.82	82.09	78.36	74.63

continued ⟶

Series 1580KD, 1280KD, 1880KD *(continued)*

.2323" - .2812"
(5.900mm - 7.142mm)

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	*d1* Diameter Decimal		Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	*l4* Shank Length	1-11	12-24	25-49	50-100
	28365			.2323		5.900	6.0	66	28	19	36	60.57	57.94	55.30	52.67
		25415		.2323		5.900	6.0	82	44	35	36	71.50	68.39	65.28	62.17
NEW			27051	.2323		5.900	6.0	97	57	48	36	85.82	82.09	78.36	74.63
	28375			.2342		5.950	6.0	66	28	19	36	60.57	57.94	55.30	52.67
		25425		.2342		5.950	6.0	82	44	35	36	71.50	68.39	65.28	62.17
NEW			27052	.2342		5.950	6.0	97	57	48	36	85.82	82.09	78.36	74.63
	28385			.2362		6.000	6.0	66	28	19	36	60.57	57.94	55.30	52.67
		25435		.2362		6.000	6.0	82	44	35	36	71.50	68.39	65.28	62.17
			27054	.2362		6.000	6.0	97	57	48	36	85.82	82.09	78.36	74.63
	28395			.2402		6.100	8.0	79	34	25	36	84.39	80.72	77.05	73.38
		25437		.2402		6.100	8.0	91	53	44	36	100.53	96.16	91.79	87.42
	28405			.2441		6.200	8.0	79	34	25	36	84.39	80.72	77.05	73.38
		25440		.2441		6.200	8.0	91	53	44	36	100.53	96.16	91.79	87.42
	28415			.2480		6.300	8.0	79	34	25	36	84.39	80.72	77.05	73.38
		25443		.2480		6.300	8.0	91	53	44	36	100.53	96.16	91.79	87.42
	28425			.2500	1/4"	6.350	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25445		.2500	1/4"	6.350	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27056	.2500	1/4"	6.350	8.0	106	66	56	36	121.37	116.09	110.82	105.54
	28435			.2520		6.400	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25450		.2520		6.400	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27058	.2520		6.400	8.0	106	66	56	36	121.37	116.09	110.82	105.54
	28445			.2559		6.500	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25455		.2559		6.500	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27061	.2559		6.500	8.0	106	66	56	36	121.37	116.09	110.82	105.54
	28446			.2571		6.530	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25457		.2571		6.530	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27062	.2571		6.530	8.0	106	66	56	36	121.37	116.09	110.82	105.54
	28455			.2598		6.600	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25460		.2598		6.600	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27064	.2598		6.600	8.0	106	66	56	36	121.37	116.09	110.82	105.54
		25463		.2638		6.700	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27066	.2638		6.700	8.0	106	66	56	36	121.37	116.09	110.82	105.54
	28463			.2656	17/64"	6.746	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25464		.2656	17/64"	6.746	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27068	.2656	17/64"	6.746	8.0	106	66	56	36	121.37	116.09	110.82	105.54
	28465			.2657		6.750	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25465		.2657		6.750	8.0	91	53	43	36	100.53	96.16	91.79	87.42
	28475			.2677		6.800	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25475		.2677		6.800	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27071	.2677		6.800	8.0	106	66	56	36	121.37	116.09	110.82	105.54
	28485			.2717		6.900	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25485		.2717		6.900	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27072	.2717		6.900	8.0	116	76	66	36	121.37	116.09	110.82	105.54
	28495			.2756		7.000	8.0	79	34	24	36	84.39	80.72	77.05	73.38
		25495		.2756		7.000	8.0	91	53	43	36	100.53	96.16	91.79	87.42
			27074	.2756		7.000	8.0	116	76	66	36	121.37	116.09	110.82	105.54
NEW	28498			.2770	J	7.035	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25498		.2770	J	7.035	8.0	91	53	42	36	100.53	96.16	91.79	87.42
NEW			27076	.2770	J	7.035	8.0	116	76	65	36	121.37	116.09	110.82	105.54
	28505			.2795		7.100	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25505		.2795		7.100	8.0	91	53	42	36	100.53	96.16	91.79	87.42
	28508			.2812	9/32"	7.142	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25512		.2812	9/32"	7.142	8.0	91	53	42	36	100.53	96.16	91.79	87.42
			27079	.2812	9/32"	7.142	8.0	116	76	65	36	121.37	116.09	110.82	105.54

GARR TOOL®

† *Metric equivalents are for reference only*

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	d_1 Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
	28515			.2815		7.150	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25515		.2815		7.150	8.0	91	53	42	36	100.53	96.16	91.79	87.42
NEW			27082	.2815		7.150	8.0	116	76	65	36	121.37	116.09	110.82	105.54
	28525			.2835		7.200	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25525		.2835		7.200	8.0	91	53	42	36	100.53	96.16	91.79	87.42
	28535			.2874		7.300	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25530		.2874		7.300	8.0	91	53	42	36	100.53	96.16	91.79	87.42
	28545			.2913		7.400	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25535		.2913		7.400	8.0	91	53	42	36	100.53	96.16	91.79	87.42
	28555			.2953		7.500	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25545		.2953		7.500	8.0	91	53	42	36	100.53	96.16	91.79	87.42
			27086	.2953		7.500	8.0	116	76	65	36	121.37	116.09	110.82	105.54
	28565			.2972		7.550	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25555		.2972		7.550	8.0	91	53	42	36	100.53	96.16	91.79	87.42
			27088	.2972		7.550	8.0	116	76	65	36	121.37	116.09	110.82	105.54
	28575			.2992		7.600	8.0	79	41	30	36	84.39	80.72	77.05	73.38
		25565		.2992		7.600	8.0	91	53	42	36	100.53	96.16	91.79	87.42
	28578			.3020	N	7.670	8.0	79	41	29	36	84.39	80.72	77.05	73.38
		25570		.3020	N	7.670	8.0	91	53	41	36	100.53	96.16	91.79	87.42
NEW			27092	.3020	N	7.670	8.0	116	76	64	36	121.37	116.09	110.82	105.54
	28585			.3031		7.700	8.0	79	41	29	36	84.39	80.72	77.05	73.38
		25575		.3031		7.700	8.0	91	53	41	36	100.53	96.16	91.79	87.42
	28595			.3071		7.800	8.0	79	41	29	36	84.39	80.72	77.05	73.38
		25585		.3071		7.800	8.0	91	53	41	36	100.53	96.16	91.79	87.42
			27096	.3071		7.800	8.0	116	76	64	36	121.37	116.09	110.82	105.54
	28602			.3125	5/16"	7.937	8.0	79	41	29	36	84.39	80.72	77.05	73.38
		25593		.3125	5/16"	7.937	8.0	91	53	41	36	100.53	96.16	91.79	87.42
			27101	.3125	5/16"	7.937	8.0	116	76	64	36	121.37	116.09	110.82	105.54
	28605			.3130		7.950	8.0	79	41	29	36	84.39	80.72	77.05	73.38
		25595		.3130		7.950	8.0	91	53	41	36	100.53	96.16	91.79	87.42
			27102	.3130		7.950	8.0	116	76	64	36	121.37	116.09	110.82	105.54
	28615			.3150		8.000	8.0	79	41	29	36	84.39	80.72	77.05	73.38
		25605		.3150		8.000	8.0	91	53	41	36	100.53	96.16	91.79	87.42
			27104	.3150		8.000	8.0	116	76	64	36	121.37	116.09	110.82	105.54
	28625			.3189		8.100	10.0	89	47	35	40	113.71	108.77	103.82	98.88
		25610		.3189		8.100	10.0	103	61	49	40	129.52	123.89	118.26	112.63
	28635			.3228		8.200	10.0	89	47	35	40	113.71	108.77	103.82	98.88
		25615		.3228		8.200	10.0	103	61	49	40	129.52	123.89	118.26	112.63
	28638			.3230	P	8.204	10.0	89	47	35	40	113.71	108.77	103.82	98.88
NEW		25618		.3230	P	8.204	10.0	103	61	49	40	129.52	123.89	118.26	112.63
NEW			27108	.3230	P	8.204	10.0	131	87	75	40	165.51	158.31	151.12	143.92
	28645			.3268		8.300	10.0	89	47	35	40	113.71	108.77	103.82	98.88
		25625		.3268		8.300	10.0	103	61	49	40	129.52	123.89	118.26	112.63
	28648			.3281	21/64"	8.333	10.0	89	47	35	40	113.71	108.77	103.82	98.88
		25628		.3281	21/64"	8.333	10.0	103	61	49	40	129.52	123.89	118.26	112.63
			27112	.3281	21/64"	8.333	10.0	131	87	75	40	165.51	158.31	151.12	143.92
	28655			.3287		8.350	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25635		.3287		8.350	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27114	.3287		8.350	10.0	131	87	74	40	165.51	158.31	151.12	143.92
	28665			.3307		8.400	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25640		.3307		8.400	10.0	103	61	48	40	129.52	123.89	118.26	112.63
	28675			.3346		8.500	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25645		.3346		8.500	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27118	.3346		8.500	10.0	131	87	74	40	165.51	158.31	151.12	143.92
	28685			.3386		8.600	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25655		.3386		8.600	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27121	.3386		8.600	10.0	131	87	74	40	165.51	158.31	151.12	143.92

continued ⟶

Series 1580KD, 1280KD, 1880KD *(continued)*

.3390" - .3906"
(8.610mm - 9.920mm)

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	*d1* Diameter Decimal		Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	*l4* Shank Length	1-11	12-24	25-49	50-100
	28688			.3390	R	8.610	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25658		.3390	R	8.610	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27122	.3390	R	8.610	10.0	131	87	74	40	165.51	158.31	151.12	143.92
	28695			.3425		8.700	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25665		.3425		8.700	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27124	.3425		8.700	10.0	131	87	74	40	165.51	158.31	151.12	143.92
	28698			.3438	11/32"	8.732	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25670		.3438	11/32"	8.732	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27126	.3438	11/32"	8.732	10.0	131	87	74	40	165.51	158.31	151.12	143.92
	28725			.3445		8.750	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25675		.3445		8.750	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27128	.3445		8.750	10.0	131	87	74	40	165.51	158.31	151.12	143.92
	28735			.3465		8.800	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25685		.3465		8.800	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27130	.3465		8.800	10.0	131	87	74	40	165.51	158.31	151.12	143.92
	28745			.3504		8.900	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25695		.3504		8.900	10.0	103	61	48	40	129.52	123.89	118.26	112.63
	28755			.3543		9.000	10.0	89	47	34	40	113.71	108.77	103.82	98.88
		25705		.3543		9.000	10.0	103	61	48	40	129.52	123.89	118.26	112.63
			27134	.3543		9.000	10.0	131	87	74	40	165.51	158.31	151.12	143.92
	28765			.3583		9.100	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25715		.3583		9.100	10.0	103	61	47	40	129.52	123.89	118.26	112.63
	28768			.3594	23/64"	9.128	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25720		.3594	23/64"	9.128	10.0	103	61	47	40	129.52	123.89	118.26	112.63
			27138	.3594	23/64"	9.128	10.0	139	95	84	40	165.51	158.31	151.12	143.92
		25725		.3602		9.150	10.0	103	61	47	40	129.52	123.89	118.26	112.63
NEW			27140	.3602		9.150	10.0	139	95	81	40	165.51	158.31	151.12	143.92
	28815			.3622		9.200	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25735		.3622		9.200	10.0	103	61	47	40	129.52	123.89	118.26	112.63
	28825			.3661		9.300	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25745		.3661		9.300	10.0	103	61	47	40	129.52	123.89	118.26	112.63
	28845			.3701		9.400	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25750		.3701		9.400	10.0	103	61	47	40	129.52	123.89	118.26	112.63
	28855			.3740		9.500	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25755		.3740		9.500	10.0	103	61	47	40	129.52	123.89	118.26	112.63
NEW			27146	.3740		9.500	10.0	139	95	81	40	165.51	158.31	151.12	143.92
	28858			.3750	3/8"	9.525	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25760		.3750	3/8"	9.525	10.0	103	61	47	40	129.52	123.89	118.26	112.63
			27148	.3750	3/8"	9.525	10.0	139	95	81	40	165.51	158.31	151.12	143.92
	28875			.3760		9.550	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25765		.3760		9.550	10.0	103	61	47	40	129.52	123.89	118.26	112.63
NEW			27150	.3760		9.550	10.0	139	95	81	40	165.51	158.31	151.12	143.92
	28878			.3780		9.600	10.0	89	47	33	40	113.71	108.77	103.82	98.88
		25767		.3780		9.600	10.0	103	61	47	40	129.52	123.89	118.26	112.63
			27152	.3780		9.600	10.0	139	95	81	40	165.51	158.31	151.12	143.92
	28882			.3819		9.700	10.0	89	47	32	40	113.71	108.77	103.82	98.88
		25770		.3819		9.700	10.0	103	61	46	40	129.52	123.89	118.26	112.63
	28885			.3858		9.800	10.0	89	47	32	40	113.71	108.77	103.82	98.88
		25775		.3858		9.800	10.0	103	61	46	40	129.52	123.89	118.26	112.63
	28895			.3898		9.900	10.0	89	47	32	40	113.71	108.77	103.82	98.88
		25785		.3898		9.900	10.0	103	61	46	40	129.52	123.89	118.26	112.63
			27160	.3898		9.900	10.0	139	95	80	40	165.51	158.31	151.12	143.92
	28898			.3906	25/64"	9.920	10.0	89	47	32	40	113.71	108.77	103.82	98.88
		25787		.3906	25/64"	9.920	10.0	103	61	46	40	129.52	123.89	118.26	112.63
			27162	.3906	25/64"	9.920	10.0	139	95	80	40	165.51	158.31	151.12	143.92

GARR TOOL®

† *Metric equivalents are for reference only*

Series 1580KD, 1280KD, 1880KD *(continued)*

.3937" - .4688"
(10.000mm - 11.907mm)

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	*d1* Diameter Decimal		*d1* Diameter Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	*l4* Shank Length	1-11	12-24	25-49	50-100
	28905			.3937		10.000	10.0	89	47	32	40	113.71	108.77	103.82	98.88
		25795		.3937		10.000	10.0	103	61	46	40	129.52	123.89	118.26	112.63
			27164	.3937		10.000	10.0	139	95	80	40	165.51	158.31	151.12	143.92
	28925			.3976		10.100	12.0	102	55	40	45	147.23	140.83	134.43	128.03
		25800		.3976		10.100	12.0	118	71	56	45	167.05	159.79	152.52	145.26
	28935			.4016		10.200	12.0	102	55	40	45	147.23	140.83	134.43	128.03
		25805		.4016		10.200	12.0	118	71	56	45	167.05	159.79	152.52	145.26
	28945			.4055		10.300	12.0	102	55	40	45	147.23	140.83	134.43	128.03
		25815		.4055		10.300	12.0	118	71	56	45	167.05	159.79	152.52	145.26
NEW			27170	.4055		10.300	12.0	155	106	91	45	215.11	205.76	196.40	187.05
	28948			.4062	13/32"	10.317	12.0	102	55	40	45	147.23	140.83	134.43	128.03
		25817		.4062	13/32"	10.317	12.0	118	71	56	45	167.05	159.79	152.52	145.26
			27172	.4062	13/32"	10.317	12.0	155	106	91	45	215.11	205.76	196.40	187.05
	28953			.4130	Z	10.490	12.0	102	55	39	45	147.23	140.83	134.43	128.03
		25823		.4130	Z	10.490	12.0	118	71	55	45	167.05	159.79	152.52	145.26
			27178	.4130	Z	10.490	12.0	155	106	90	45	215.11	205.76	196.40	187.05
	28955			.4134		10.500	12.0	102	55	39	45	147.23	140.83	134.43	128.03
		25825		.4134		10.500	12.0	118	71	55	45	167.05	159.79	152.52	145.26
			27180	.4134		10.500	12.0	155	106	90	45	215.11	205.76	196.40	187.05
	28965			.4173		10.600	12.0	102	55	39	45	147.23	140.83	134.43	128.03
		25830		.4173		10.600	12.0	118	71	55	45	167.05	159.79	152.52	145.26
NEW			27182	.4173		10.600	12.0	155	106	90	45	215.11	205.76	196.40	187.05
	28975			.4213		10.700	12.0	102	55	39	45	147.23	140.83	134.43	128.03
		25835		.4213		10.700	12.0	118	71	55	45	167.05	159.79	152.52	145.26
NEW			27184	.4213		10.700	12.0	155	106	90	45	215.11	205.76	196.40	187.05
	28978			.4219	27/64"	10.716	12.0	102	55	39	45	147.23	140.83	134.43	128.03
		25838		.4219	27/64"	10.716	12.0	118	71	55	45	167.05	159.79	152.52	145.26
			27186	.4219	27/64"	10.716	12.0	155	106	90	45	215.11	205.76	196.40	187.05
	28985			.4252		10.800	12.0	102	55	39	45	147.23	140.83	134.43	128.03
		25845		.4252		10.800	12.0	118	71	55	45	167.05	159.79	152.52	145.26
	28995			.4331		11.000	12.0	102	55	39	45	147.23	140.83	134.43	128.03
		25855		.4331		11.000	12.0	118	71	55	45	167.05	159.79	152.52	145.26
			27190	.4331		11.000	12.0	163	114	98	45	215.11	205.76	196.40	187.05
	29005			.4370		11.100	12.0	102	55	38	45	147.23	140.83	134.43	128.03
		25865		.4370		11.100	12.0	118	71	54	45	167.05	159.79	152.52	145.26
	29008			.4375	7/16"	11.112	12.0	102	55	38	45	147.23	140.83	134.43	128.03
		25868		.4375	7/16"	11.112	12.0	118	71	54	45	167.05	159.79	152.52	145.26
			27194	.4375	7/16"	11.112	12.0	163	114	97	45	215.11	205.76	196.40	187.05
	29015			.4409		11.200	12.0	102	55	38	45	147.23	140.83	134.43	128.03
		25875		.4409		11.200	12.0	118	71	54	45	167.05	159.79	152.52	145.26
	29025			.4488		11.400	12.0	102	55	38	45	147.23	140.83	134.43	128.03
		25880		.4488		11.400	12.0	118	71	54	45	167.05	159.79	152.52	145.26
	29035			.4528		11.500	12.0	102	55	38	45	147.23	140.83	134.43	128.03
		25885		.4528		11.500	12.0	118	71	54	45	167.05	159.79	152.52	145.26
NEW	29038			.4531	29/64"	11.508	12.0	102	55	38	45	147.23	140.83	134.43	128.03
		25888		.4531	29/64"	11.508	12.0	118	71	54	45	167.05	159.79	152.52	145.26
			27200	.4531	29/64"	11.508	12.0	163	114	97	45	215.11	205.76	196.40	187.05
	29045			.4606		11.700	12.0	102	55	37	45	147.23	140.83	134.43	128.03
		25895		.4606		11.700	12.0	118	71	53	45	167.05	159.79	152.52	145.26
	29055			.4685		11.900	12.0	102	55	37	45	147.23	140.83	134.43	128.03
	29058			.4688	15/32"	11.907	12.0	102	55	37	45	147.23	140.83	134.43	128.03
		25910		.4688	15/32"	11.907	12.0	118	71	53	45	167.05	159.79	152.52	145.26
			27208	.4688	15/32"	11.907	12.0	163	114	96	45	215.11	205.76	196.40	187.05

continued ⟶

Series 1580KD, 1280KD, 1880KD *(continued)*

.4724" - .5610"
(12.000mm - 14.250mm)

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	d_1 Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
	29065			.4724		12.000	12.0	102	55	37	45	147.23	140.83	134.43	128.03
		25915		.4724		12.000	12.0	118	71	53	45	167.05	159.79	152.52	145.26
NEW			27210	.4724		12.000	12.0	163	114	96	45	215.11	205.76	196.40	187.05
	29075			.4764		12.100	14.0	107	60	42	45	205.67	196.72	187.78	178.84
		25925		.4764		12.100	14.0	124	77	59	45	246.47	235.75	225.04	214.32
	29085			.4803		12.200	14.0	107	60	42	45	205.67	196.72	187.78	178.84
		25930		.4803		12.200	14.0	124	77	59	45	246.47	235.75	225.04	214.32
	29095			.4842		12.300	14.0	107	60	42	45	205.67	196.72	187.78	178.84
		25935		.4842		12.300	14.0	124	77	59	45	246.47	235.75	225.04	214.32
	29098			.4844	31/64"	12.303	14.0	107	60	42	45	205.67	196.72	187.78	178.84
		25937		.4844	31/64"	12.303	14.0	124	77	59	45	246.47	235.75	225.04	214.32
			27214	.4844	31/64"	12.303	14.0	182	133	115	45	287.20	274.71	262.23	249.74
	29115			.4921		12.500	14.0	107	60	41	45	205.67	196.72	187.78	178.84
		25945		.4921		12.500	14.0	124	77	58	45	246.47	235.75	225.04	214.32
			27218	.4921		12.500	14.0	182	133	114	45	287.20	274.71	262.23	249.74
	29125			.4961		12.600	14.0	107	60	41	45	205.67	196.72	187.78	178.84
		25950		.4961		12.600	14.0	124	77	58	45	246.47	235.75	225.04	214.32
	29135			.5000	1/2"	12.700	14.0	107	60	41	45	205.67	196.72	187.78	178.84
		25955		.5000	1/2"	12.700	14.0	124	77	58	45	246.47	235.75	225.04	214.32
			27220	.5000	1/2"	12.700	14.0	182	133	114	45	287.20	274.71	262.23	249.74
	29145			.5039		12.800	14.0	107	60	41	45	205.67	196.72	187.78	178.84
		25960		.5039		12.800	14.0	124	77	58	45	246.47	235.75	225.04	214.32
	29148			.5051		12.830	14.0	107	60	41	45	205.67	196.72	187.78	178.84
		25961		.5051		12.830	14.0	124	77	58	45	246.47	235.75	225.04	214.32
NEW			27224	.5051		12.830	14.0	182	133	114	45	287.20	274.71	262.23	249.74
	29155			.5079		12.900	14.0	107	60	41	45	205.67	196.72	187.78	178.84
NEW			27226	.5079		12.900	14.0	182	133	114	45	287.20	274.71	262.23	249.74
	29161			.5098		12.950	14.0	107	60	41	45	197.75	189.16	180.56	171.96
NEW			27228	.5098		12.950	14.0	182	133	114	45	287.20	274.71	262.23	249.74
	29165			.5118		13.000	14.0	107	60	41	45	205.67	196.72	187.78	178.84
		25965		.5118		13.000	14.0	124	77	58	45	246.47	235.75	225.04	214.32
			27230	.5118		13.000	14.0	182	133	114	45	287.20	274.71	262.23	249.74
	29175			.5157		13.100	14.0	107	60	40	45	205.67	196.72	187.78	178.84
		25975		.5157		13.100	14.0	124	77	57	45	246.47	235.75	225.04	214.32
	29181			.5236		13.300	14.0	107	60	40	45	205.67	196.72	187.78	178.84
	29184			.5312	17/32"	13.492	14.0	107	60	40	45	205.67	196.72	187.78	178.84
		25983		.5312	17/32"	13.492	14.0	124	77	57	45	246.47	235.75	225.04	214.32
			27238	.5312	17/32"	13.492	14.0	182	133	113	45	287.20	274.71	262.23	249.74
	29185			.5315		13.500	14.0	107	60	40	45	205.67	196.72	187.78	178.84
		25985		.5315		13.500	14.0	124	77	57	45	246.47	235.75	225.04	214.32
NEW			27240	.5315		13.500	14.0	182	133	113	45	287.20	274.71	262.23	249.74
	29195			.5394		13.700	14.0	107	60	39	45	205.67	196.72	187.78	178.84
		25995		.5394		13.700	14.0	124	77	56	45	246.47	235.75	225.04	214.32
	29205			.5433		13.800	14.0	107	60	39	45	205.67	196.72	187.78	178.84
		26005		.5433		13.800	14.0	124	77	56	45	246.47	235.75	225.04	214.32
	29215			.5512		14.000	14.0	107	60	39	45	205.67	196.72	187.78	178.84
		26015		.5512		14.000	14.0	124	77	56	45	246.47	235.75	225.04	214.32
			27250	.5512		14.000	14.0	182	133	112	45	287.20	274.71	262.23	249.74
	29225			.5551		14.100	16.0	115	65	44	48	251.39	240.46	229.53	218.60
		26025		.5551		14.100	16.0	133	83	62	48	327.73	313.48	299.23	284.98
	29235			.5591		14.200	16.0	115	65	44	48	251.39	240.46	229.53	218.60
		26027		.5591		14.200	16.0	133	83	62	48	327.73	313.48	299.23	284.98
	29245			.5610		14.250	16.0	115	65	44	48	251.39	240.46	229.53	218.60

GARR TOOL®

† *Metric equivalents are for reference only*

Series 1580KD, 1280KD, 1880KD *(continued)*

.5625" - .7283"
(14.287mm - 18.500mm)

	3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	d_1 Diameter Decimal	d_1 Diameter	d_1 Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
	29250			.5625	9/16"	14.287	16.0	115	65	44	48	251.39	240.46	229.53	218.60
		26042		.5625	9/16"	14.287	16.0	133	83	62	48	327.73	313.48	299.23	284.98
			27254	.5625	9/16"	14.287	16.0	204	152	131	48	379.91	363.40	346.88	330.36
	29255			.5630		14.300	16.0	115	65	44	48	251.39	240.46	229.53	218.60
		26045		.5630		14.300	16.0	133	83	62	48	327.73	313.48	299.23	284.98
	29265			.5709		14.500	16.0	115	65	43	48	251.39	240.46	229.53	218.60
		26055		.5709		14.500	16.0	133	83	61	48	327.73	313.48	299.23	284.98
NEW			27258	.5709		14.500	16.0	204	152	130	48	379.91	363.40	346.88	330.36
	29275			.5787		14.700	16.0	115	65	43	48	251.39	240.46	229.53	218.60
		26065		.5787		14.700	16.0	133	83	61	48	327.73	313.48	299.23	284.98
	29285			.5827		14.800	16.0	115	65	43	48	251.39	240.46	229.53	218.60
		26067		.5827		14.800	16.0	133	83	61	48	327.73	313.48	299.23	284.98
	29305			.5906		15.000	16.0	115	65	43	48	251.39	240.46	229.53	218.60
		26075		.5906		15.000	16.0	133	83	61	48	327.73	313.48	299.23	284.98
			27264	.5906		15.000	16.0	204	152	130	48	379.91	363.40	346.88	330.36
NEW	29308			.5938	19/32"	15.082	16.0	115	65	42	48	251.39	240.46	229.53	218.60
		26083		.5938	19/32"	15.082	16.0	133	83	60	48	327.73	313.48	299.23	284.98
			27266	.5938	19/32"	15.082	16.0	204	152	129	48	379.91	363.40	346.88	330.36
	29315			.5945		15.100	16.0	115	65	42	48	251.39	240.46	229.53	218.60
		26085		.5945		15.100	16.0	133	83	60	48	327.73	313.48	299.23	284.98
NEW			27268	.5945		15.100	16.0	204	152	129	48	379.91	363.40	346.88	330.36
	29325			.6102		15.500	16.0	115	65	42	48	251.39	240.46	229.53	218.60
		26095		.6102		15.500	16.0	133	83	60	48	327.73	313.48	299.23	284.98
		26105		.6181		15.700	16.0	133	83	59	48	327.73	313.48	299.23	284.98
	29345			.6220		15.800	16.0	115	65	41	48	251.39	240.46	229.53	218.60
		26107		.6220		15.800	16.0	133	83	59	48	327.73	313.48	299.23	284.98
NEW			27276	.6220		15.800	16.0	204	152	128	48	379.91	363.40	346.88	330.36
	29348			.6250	5/8"	15.875	16.0	115	65	41	48	251.39	240.46	229.53	218.60
		26108		.6250	5/8"	15.875	16.0	133	83	59	48	327.73	313.48	299.23	284.98
NEW			27278	.6250	5/8"	15.875	16.0	204	152	128	48	379.91	363.40	346.88	330.36
		26115		.6299		16.000	16.0	133	83	59	48	327.73	313.48	299.23	284.98
NEW			27282	.6299		16.000	16.0	204	152	128	48	379.91	363.40	346.88	330.36
	29363			.6331		16.080	18.0	123	73	49	48	317.85	304.03	290.21	276.39
		26118		.6331		16.080	18.0	143	93	69	48	389.62	372.68	355.74	338.80
	29365			.6339		16.100	18.0	123	73	49	48	317.85	304.03	290.21	276.39
		26119		.6339		16.100	18.0	143	93	69	48	389.62	372.68	355.74	338.80
		26123		.6378		16.200	18.0	143	93	69	48	389.62	372.68	355.74	338.80
	29375			.6398		16.250	18.0	123	73	49	48	317.85	304.03	290.21	276.39
		26125		.6398		16.250	18.0	143	93	69	48	389.62	372.68	355.74	338.80
	29385			.6496		16.500	18.0	123	73	48	48	317.85	304.03	290.21	276.39
		26135		.6496		16.500	18.0	143	93	68	48	389.62	372.68	355.74	338.80
	29395			.6555		16.650	18.0	123	73	48	48	317.85	304.03	290.21	276.39
		26145		.6555		16.650	18.0	143	93	68	48	389.62	372.68	355.74	338.80
	29405			.6693		17.000	18.0	123	73	48	48	317.85	304.03	290.21	276.39
		26155		.6693		17.000	18.0	143	93	68	48	389.62	372.68	355.74	338.80
	29415			.6713		17.050	18.0	123	73	47	48	317.85	304.03	290.21	276.39
		26165		.6713		17.050	18.0	143	93	67	48	389.62	372.68	355.74	338.80
	29425			.6870		17.450	18.0	123	73	47	48	317.85	304.03	290.21	276.39
		26175		.6870		17.450	18.0	143	93	67	48	389.62	372.68	355.74	338.80
	29435			.6890		17.500	18.0	123	73	47	48	317.85	304.03	290.21	276.39
		26185		.6890		17.500	18.0	143	93	67	48	389.62	372.68	355.74	338.80
	29445			.7027		17.850	18.0	123	73	46	48	317.85	304.03	290.21	276.39
		26195		.7027		17.850	18.0	143	93	66	48	389.62	372.68	355.74	338.80
	29455			.7087		18.000	18.0	123	73	46	48	317.85	304.03	290.21	276.39
		26205		.7087		18.000	18.0	143	93	66	48	389.62	372.68	355.74	338.80
		26215		.7185		18.250	20.0	153	101	74	50	472.93	452.36	431.80	411.24
		26225		.7283		18.500	20.0	153	101	73	50	472.93	452.36	431.80	411.24

continued ⟶

Series 1580KD, 1280KD, 1880KD *(continued)*

.7342" - .7874"
(18.650mm - 20.000mm)

3xD (1580KD) EDP#	5xD (1280KD) EDP#	7xD (1880KD) EDP#	d_1 Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	l_4 Shank Length	1-11	12-24	25-49	50-100
	26235		.7342		18.650	20.0	153	101	73	50	472.93	452.36	431.80	411.24
	26245		.7480		19.000	20.0	153	101	73	50	472.93	452.36	431.80	411.24
29505			.7500	3/4"	19.050	20.0	131	79	50	50	419.91	401.65	383.40	365.14
	26255		.7500	3/4"	19.050	20.0	153	101	72	50	472.93	452.36	431.80	411.24
29545			.7579		19.250	20.0	131	79	50	50	419.91	401.65	383.40	365.14
29546			.7590		19.280	20.0	131	79	50	50	419.91	401.65	383.40	365.14
	26260		.7590		19.280	20.0	153	101	72	50	472.93	452.36	431.80	411.24
29551			.7598		19.300	20.0	131	79	50	50	419.91	401.65	383.40	365.14
	26261		.7598		19.300	20.0	153	101	72	50	472.93	452.36	431.80	411.24
29565			.7677		19.500	20.0	131	79	50	50	419.91	401.65	383.40	365.14
	26281		.7795		19.800	20.0	153	101	71	50	472.93	452.36	431.80	411.24
29595			.7815		19.850	20.0	131	79	49	50	419.91	401.65	383.40	365.14
29605			.7874		20.000	20.0	131	79	49	50	419.91	401.65	383.40	365.14





GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Series 1580KH, 1280KH, 1880KH

Z=2 | 30° | 140° | 3xD | 5xD | 7xD

TECH PAGES 332-333

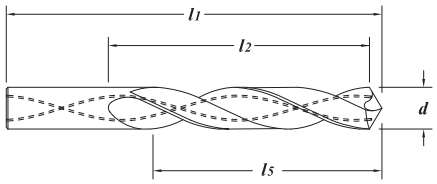
.1181" - .1540"
(3.000mm - 3.912mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels >40 Rc

BALIQ® ALTINOS Coating (AlTiN-based)

High performance - high penetration solid submicron grain carbide drill
Coolant through capabilities for high pressure coolant systems
Extended tool life and greater surface finish through faster SFM rates
Up to 70% faster than standard carbide drills
30° helix for better chip evacuation
Honed cutting edge
Live tooling recommended on lathe processes





3xD (1580KH) EDP#	5xD (1280KH) EDP#	7xD (1880KH) EDP#	d † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
22010			.1181		3.000	46	16	10	42.18	40.35	38.51	36.68
	25366		.1181		3.000	50	19	16	46.66	44.63	42.60	40.57
		26366	.1181		3.000	65	28	22	52.06	49.80	47.53	45.27
22015			.1200	#31	3.048	1-13/16"	5/8"	.382"	42.63	40.78	38.92	37.07
	25371		.1200	#31	3.048	2"	3/4"	.622"	47.02	44.98	42.93	40.89
		26371	.1200	#31	3.048	2-1/2"	1-1/8"	.862"	52.50	50.22	47.93	45.65
22020			.1250	1/8"	3.175	1-15/16"	11/16"	.398"	42.99	41.12	39.25	37.38
	25376		.1250	1/8"	3.175	2"	3/4"	.648"	47.41	45.35	43.29	41.23
		26376	.1250	1/8"	3.175	2-1/2"	1-1/8"	.898"	52.91	50.61	48.31	46.01
22025			.1285	#30	3.264	1-15/16"	11/16"	.409"	43.38	41.49	39.61	37.72
	25381		.1285	#30	3.264	2-1/4"	3/4"	.666"	47.83	45.75	43.67	41.59
		26381	.1285	#30	3.264	2-1/2"	1-1/8"	.923"	53.39	51.07	48.75	46.43
22030			.1360	#29	3.454	2-1/16"	3/4"	.433"	43.78	41.88	39.97	38.07
	25386		.1360	#29	3.454	2-1/4"	7/8"	.705"	48.19	46.09	44.00	41.90
		26386	.1360	#29	3.454	3"	1-1/4"	.977"	53.77	51.44	49.10	46.76
22035			.1378		3.500	52	19	11	44.23	42.31	40.38	38.46
	25391		.1378		3.500	57	22	18	48.55	46.44	44.33	42.22
		26391	.1378		3.500	75	32	25	54.20	51.84	49.49	47.13
22040			.1405	#28	3.569	2-1/16"	3/4"	.447"	44.63	42.69	40.75	38.81
	25396		.1405	#28	3.569	2-1/4"	7/8"	.728"	48.96	46.83	44.70	42.57
		26396	.1405	#28	3.569	3"	1-1/4"	1.009"	54.64	52.26	49.89	47.51
22045			.1406	9/64"	3.571	2-1/16"	3/4"	.447"	45.02	43.07	41.11	39.15
	25401		.1406	9/64"	3.571	2-1/4"	7/8"	.729"	49.38	47.23	45.09	42.94
		26401	.1406	9/64"	3.571	3"	1-1/4"	1.010"	55.10	52.70	50.31	47.91
22050			.1440	#27	3.658	2-1/16"	3/4"	.458"	45.43	43.45	41.48	39.50
	25406		.1440	#27	3.658	2-1/4"	7/8"	.746"	49.70	47.54	45.38	43.22
		26406	.1440	#27	3.658	3"	1-3/8"	1.034"	55.48	53.06	50.65	48.24
22055			.1470	#26	3.734	2-3/16"	13/16"	.468"	45.77	43.78	41.79	39.80
	25411		.1470	#26	3.734	2-1/4"	7/8"	.762"	50.13	47.95	45.77	43.59
		26411	.1470	#26	3.734	3"	1-3/8"	1.056"	55.94	53.50	51.07	48.64
22060			.1495	#25	3.797	2-3/16"	13/16"	.476"	46.24	44.23	42.22	40.21
	25416		.1495	#25	3.797	2-1/4"	15/16"	.775"	50.51	48.31	46.12	43.92
		26416	.1495	#25	3.797	3"	1-3/8"	1.074"	56.37	53.92	51.47	49.02
22065			.1520	#24	3.861	2-3/16"	13/16"	.484"	46.62	44.59	42.57	40.54
	25421		.1520	#24	3.861	2-1/4"	15/16"	.788"	50.86	48.65	46.44	44.23
		26421	.1520	#24	3.861	3"	1-1/2"	1.092"	56.76	54.30	51.83	49.36
22070			.1540	#23	3.912	2-3/16"	13/16"	.490"	47.02	44.98	42.93	40.89
	25426		.1540	#23	3.912	2-1/4"	15/16"	.798"	51.29	49.06	46.83	44.60
		26426	.1540	#23	3.912	3"	1-1/2"	1.106"	57.24	54.75	52.26	49.77

continued ⟶

Series 1580KH, 1280KH, 1880KH *(continued)*

.1562" - .1935"
(3.967mm - 4.915mm)

3xD (1580KH) EDP#	5xD (1280KH) EDP#	7xD (1880KH) EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
22075			.1562	5/32"	3.967	2-3/16"	13/16"	.497"	47.40	45.34	43.28	41.22
	25431		.1562	5/32"	3.967	2-1/2"	15/16"	.809"	51.66	49.41	47.17	44.92
		26431	.1562	5/32"	3.967	3"	1-1/2"	1.122"	57.65	55.14	52.64	50.13
22080			.1570	#22	3.988	2-3/16"	13/16"	.500"	47.83	45.75	43.67	41.59
	25436		.1570	#22	3.988	2-1/2"	15/16"	.814"	52.01	49.75	47.49	45.23
		26436	.1570	#22	3.988	3"	1-1/2"	1.128"	58.05	55.53	53.00	50.48
22085			.1575		4.000	56	21	13	48.21	46.11	44.02	41.92
	25441		.1575		4.000	65	24	21	52.43	50.15	47.87	45.59
		26441	.1575		4.000	75	38	29	58.50	55.96	53.41	50.87
22090			.1590	#21	4.039	2-3/16"	13/16"	.506"	48.66	46.54	44.43	42.31
	25446		.1590	#21	4.039	2-1/2"	15/16"	.824"	52.79	50.49	48.20	45.90
		26446	.1590	#21	4.039	3"	1-1/2"	1.142"	58.88	56.32	53.76	51.20
22095			.1610	#20	4.089	2-3/16"	13/16"	.512"	49.05	46.92	44.78	42.65
	25451		.1610	#20	4.089	2-1/2"	15/16"	.834"	53.19	50.88	48.56	46.25
		26451	.1610	#20	4.089	3"	1-1/2"	1.156"	59.34	56.76	54.18	51.60
22100			.1660	#19	4.216	2-9/32"	15/16"	.528"	49.47	47.32	45.17	43.02
	25456		.1660	#19	4.216	2-1/2"	1"	.860"	53.59	51.26	48.93	46.60
		26456	.1660	#19	4.216	3"	1-1/2"	1.192"	59.80	57.20	54.60	52.00
22105			.1695	#18	4.305	2-9/32"	15/16"	.539"	49.88	47.71	45.54	43.37
	25461		.1695	#18	4.305	2-1/2"	1"	.878"	53.98	51.63	49.29	46.94
		26461	.1695	#18	4.305	3-1/2"	1-3/4"	1.217"	60.20	57.59	54.97	52.35
22110			.1719	11/64"	4.366	2-9/32"	15/16"	.547"	50.28	48.09	45.91	43.72
	25466		.1719	11/64"	4.366	2-1/2"	1"	.891"	54.35	51.99	49.62	47.26
		26466	.1719	11/64"	4.366	3-1/2"	1-3/4"	1.235"	60.63	57.99	55.36	52.72
22115			.1730	#17	4.394	2-9/32"	15/16"	.551"	50.69	48.49	46.28	44.08
	25471		.1730	#17	4.394	2-1/2"	1"	.897"	54.71	52.33	49.95	47.57
		26471	.1730	#17	4.394	3-1/2"	1-3/4"	1.243"	61.03	58.38	55.72	53.07
22120			.1770	#16	4.496	2-9/32"	15/16"	.563"	51.04	48.82	46.60	44.38
	25476		.1770	#16	4.496	2-1/2"	1"	.917"	55.11	52.71	50.32	47.92
		26476	.1770	#16	4.496	3-1/2"	1-3/4"	1.271"	61.51	58.84	56.16	53.49
22125			.1772		4.500	58	24	14	51.49	49.25	47.01	44.77
	25481		.1772		4.500	65	25	23	55.52	53.11	50.69	48.28
		26481	.1772		4.500	88	45	32	61.95	59.26	56.56	53.87
22130			.1800	#15	4.572	2-9/32"	15/16"	.573"	51.81	49.56	47.30	45.05
	25486		.1800	#15	4.572	2-3/4"	1"	.933"	55.89	53.46	51.03	48.60
		26486	.1800	#15	4.572	3-1/2"	1-3/4"	1.293"	62.35	59.64	56.93	54.22
22135			.1820	#14	4.623	2-9/32"	15/16"	.579"	52.31	50.04	47.76	45.49
	25491		.1820	#14	4.623	2-3/4"	1"	.913"	56.25	53.80	51.36	48.91
		26491	.1820	#14	4.623	3-1/2"	1-3/4"	1.307"	62.76	60.03	57.30	54.57
22140			.1850	#13	4.699	2-9/32"	15/16"	.589"	52.68	50.39	48.10	45.81
	25496		.1850	#13	4.699	2-3/4"	1-1/4"	.959"	56.65	54.19	51.72	49.26
		26496	.1850	#13	4.699	3-1/2"	1-3/4"	1.329"	63.20	60.46	57.71	54.96
22145			.1875	3/16"	4.763	2-13/32"	1"	.597"	53.11	50.80	48.49	46.18
	25501		.1875	3/16"	4.763	2-3/4"	1-1/4"	.972"	57.06	54.58	52.10	49.62
		26501	.1875	3/16"	4.763	4"	2"	1.347"	63.69	60.92	58.15	55.38
22150			.1890	#12	4.801	2-13/32"	1"	.601"	53.49	51.16	48.84	46.51
	25506		.1890	#12	4.801	2-3/4"	1-1/4"	.979"	57.42	54.92	52.43	49.93
		26506	.1890	#12	4.801	4"	2"	1.357"	64.07	61.28	58.50	55.71
22155			.1910	#11	4.851	2-13/32"	1"	.608"	53.98	51.63	49.29	46.94
	25511		.1910	#11	4.851	2-3/4"	1-1/4"	.990"	57.79	55.28	52.76	50.25
		26511	.1910	#11	4.851	4"	2"	1.372"	64.49	61.69	58.88	56.08
22160			.1935	#10	4.915	2-13/32"	1"	.616"	54.29	51.93	49.57	47.21
	25516		.1935	#10	4.915	2-3/4"	1-1/4"	1.003"	58.22	55.69	53.16	50.63
		26516	.1935	#10	4.915	4"	2"	1.390"	64.94	62.12	59.29	56.47

GARR TOOL®

† *Metric equivalents are for reference only*

Series 1580KH, 1280KH, 1880KH *(continued)*

.1960" - .2420"
(4.978mm - 6.147mm)

3xD (1580KH) EDP#	5xD (1280KH) EDP#	7xD (1880KH) EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
22165			.1960	#9	4.978	2-13/32"	1"	.624"	54.69	52.32	49.94	47.56
	25521		.1960	#9	4.978	3"	1-5/16"	1.016"	58.56	56.01	53.47	50.92
		26521	.1960	#9	4.978	4"	2"	1.408"	65.32	62.48	59.64	56.80
22170			.1969		5.000	61	25	16	55.00	52.61	50.22	47.83
	25526		.1969		5.000	75	33	26	58.96	56.40	53.83	51.27
		26526	.1969		5.000	100	50	36	65.78	62.92	60.06	57.20
22175			.1990	#8	5.055	2-13/32"	1"	.633"	55.51	53.10	50.68	48.27
	25531		.1990	#8	5.055	3"	1-5/16"	1.031"	59.26	56.68	54.11	51.53
		26531	.1990	#8	5.055	4"	2"	1.429"	66.11	63.24	60.36	57.49
22180			.2010	#7	5.105	2-13/32"	1"	.640"	55.67	53.25	50.83	48.41
	25536		.2010	#7	5.105	3"	1-5/16"	1.042"	59.52	56.94	54.35	51.76
		26536	.2010	#7	5.105	4"	2"	1.444"	66.41	63.53	60.64	57.75
22185			.2031	13/64"	5.159	2-13/32"	1"	.646"	56.04	53.60	51.17	48.73
	25541		.2031	13/64"	5.159	3"	1-5/16"	1.053"	59.96	57.35	54.75	52.14
		26541	.2031	13/64"	5.159	4"	2"	1.459"	66.91	64.00	61.09	58.18
22190			.2040	#6	5.182	2-13/32"	1"	.649"	56.43	53.98	51.52	49.07
	25546		.2040	#6	5.182	3"	1-3/8"	1.057"	60.41	57.78	55.16	52.53
		26546	.2040	#6	5.182	4"	2"	1.465"	67.39	64.46	61.53	58.60
22195			.2055	#5	5.220	2-13/32"	1"	.654"	56.82	54.35	51.88	49.41
	25551		.2055	#5	5.220	3"	1-3/8"	1.065"	60.80	58.16	55.51	52.87
		26551	.2055	#5	5.220	4"	2"	1.476"	67.85	64.90	61.95	59.00
22200			.2090	#4	5.309	2-13/32"	1"	.665"	57.19	54.70	52.22	49.73
	25556		.2090	#4	5.309	3"	1-3/8"	1.083"	61.23	58.56	55.90	53.24
		26556	.2090	#4	5.309	4"	2"	1.501"	68.30	65.33	62.36	59.39
22205			.2130	#3	5.410	2-5/8"	1-3/32"	.678"	57.57	55.07	52.56	50.06
	25561		.2130	#3	5.410	3"	1-3/8"	1.104"	61.62	58.94	56.26	53.58
		26561	.2130	#3	5.410	4"	2"	1.530"	68.76	65.77	62.78	59.79
22210			.2165		5.500	67	28	18	57.94	55.42	52.90	50.38
	25566		.2165		5.500	75	35	29	62.00	59.30	56.61	53.91
		26566	.2165		5.500	100	50	40	69.17	66.17	63.16	60.15
22215			.2188	7/32"	5.558	2-5/8"	1-3/32"	.696"	58.42	55.88	53.34	50.80
	25571		.2188	7/32"	5.558	3"	1-3/8"	1.134"	62.13	59.43	56.73	54.03
		26571	.2188	7/32"	5.558	4"	2"	1.571"	69.59	66.56	63.54	60.51
22220			.2210	#2	5.613	2-5/8"	1-3/32"	.703"	58.83	56.28	53.72	51.16
	25576		.2210	#2	5.613	3"	1-3/8"	1.145"	63.19	60.45	57.70	54.95
		26576	.2210	#2	5.613	4"	2"	1.587"	70.68	67.61	64.53	61.46
22225			.2280	#1	5.791	2-5/8"	1-3/32"	.726"	59.27	56.69	54.12	51.54
	25581		.2280	#1	5.791	3"	1-3/8"	1.182"	63.42	60.67	57.91	55.15
		26581	.2280	#1	5.791	4-1/8"	2-1/8"	1.638"	80.98	77.46	73.94	70.42
22230			.2340	A	5.944	2-5/8"	1-3/32"	.745"	59.70	57.10	54.51	51.91
	25586		.2340	A	5.944	3-1/4"	1-1/2"	1.213"	71.17	68.08	64.98	61.89
		26586	.2340	A	5.944	4-1/8"	2-1/8"	1.681"	85.50	81.79	78.07	74.35
22235			.2344	15/64"	5.954	2-5/8"	1-3/32"	.746"	60.13	57.52	54.90	52.29
	25591		.2344	15/64"	5.954	3-1/4"	1-1/2"	1.215"	71.30	68.20	65.10	62.00
		26591	.2344	15/64"	5.954	4-1/8"	2-1/8"	1.684"	85.63	81.91	78.18	74.46
22240			.2362		6.000	67	28	19	60.57	57.94	55.30	52.67
	25596		.2362		6.000	80	38	31	71.50	68.39	65.28	62.17
		26596	.2362		6.000	105	55	43	85.82	82.09	78.36	74.63
22245			.2380	B	6.045	2-3/4"	1-7/32"	.757"	63.97	61.19	58.41	55.63
	25601		.2380	B	6.045	3-1/4"	1-5/8"	1.233"	73.76	70.55	67.35	64.14
		26601	.2380	B	6.045	4-1/8"	2-1/8"	1.709"	89.07	85.20	81.32	77.45
22250			.2420	C	6.147	2-3/4"	1-7/32"	.770"	64.50	61.70	58.89	56.09
	25606		.2420	C	6.147	3-1/4"	1-5/8"	1.254"	74.11	70.88	67.66	64.44
		26606	.2420	C	6.147	4-1/4"	2-1/4"	1.738"	89.41	85.53	81.64	77.75

continued ⟶

Series 1580KH, 1280KH, 1880KH *(continued)*

.2460" - .3125"
(6.248mm - 7.938mm)

3xD (1580KH) EDP#	5xD (1280KH) EDP#	7xD (1880KH) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
22255			.2460	D	6.248	2-3/4"	1-7/32"	.783"	64.86	62.04	59.22	56.40
	25611		.2460	D	6.248	3-1/4"	1-5/8"	1.275"	74.43	71.19	67.96	64.72
		26611	.2460	D	6.248	4-1/4"	2-1/4"	1.767"	89.75	85.84	81.94	78.04
22260			.2500	1/4" / E	6.350	2-3/4"	1-7/32"	.796"	65.40	62.56	59.71	56.87
	25616		.2500	1/4" / E	6.350	3-1/4"	1-5/8"	1.296"	74.75	71.50	68.25	65.00
		26616	.2500	1/4" / E	6.350	4-1/4"	2-1/4"	1.796"	90.07	86.15	82.24	78.32
22265			.2559		6.500	70	31	21	66.47	63.58	60.69	57.80
	25621		.2559		6.500	80	41	34	75.67	72.38	69.09	65.80
		26621	.2559		6.500	105	58	47	91.01	87.05	83.10	79.14
22270			.2570	F	6.528	2-3/4"	1-7/32"	.818"	67.49	64.56	61.62	58.69
	25626		.2570	F	6.528	3-1/4"	1-11/16"	1.332"	77.42	74.05	70.69	67.32
		26626	.2570	F	6.528	4-3/8"	2-3/8"	1.846"	94.51	90.40	86.29	82.18
22275			.2610	G	6.629	2-3/4"	1-7/32"	.831"	68.52	65.54	62.56	59.58
	25631		.2610	G	6.629	3-1/2"	1-11/16"	1.353"	78.37	74.97	71.56	68.15
		26631	.2610	G	6.629	4-3/8"	2-3/8"	1.875"	95.48	91.33	87.18	83.03
22280			.2656	17/64"	6.746	2-15/16"	1-11/32"	.845"	69.58	66.55	63.53	60.50
	25636		.2656	17/64"	6.746	3-1/2"	1-11/16"	1.376"	79.28	75.83	72.39	68.94
		26636	.2656	17/64"	6.746	4-3/8"	2-3/8"	1.908"	96.40	92.21	88.02	83.83
22285			.2660	H	6.756	2-15/16"	1-11/32"	.846"	70.60	67.53	64.46	61.39
	25641		.2660	H	6.756	3-1/2"	1-11/16"	1.378"	80.22	76.74	73.25	69.76
		26641	.2660	H	6.756	4-3/8"	2-3/8"	1.910"	97.42	93.18	88.95	84.71
22290			.2720	I	6.909	2-15/16"	1-11/32"	.866"	71.63	68.52	65.40	62.29
	25646		.2720	I	6.909	3-1/2"	1-11/16"	1.410"	80.33	76.84	73.34	69.85
		26646	.2720	I	6.909	4-3/8"	2-3/8"	1.954"	97.51	93.27	89.03	84.79
22295			.2756		7.000	75	34	22	72.67	69.51	66.35	63.19
	25651		.2756		7.000	88	43	36	81.24	77.70	74.17	70.64
		26651	.2756		7.000	110	61	50	98.44	94.16	89.88	85.60
22300			.2770	J	7.036	2-15/16"	1-11/32"	.881"	73.67	70.47	67.26	64.06
	25656		.2770	J	7.036	3-1/2"	1-11/16"	1.435"	85.34	81.63	77.92	74.21
		26656	.2770	J	7.036	4-3/8"	2-3/8"	1.989"	103.42	98.92	94.43	89.93
22305			.2810	K	7.137	2-15/16"	1-11/32"	.894"	74.77	71.52	68.27	65.02
	25661		.2810	K	7.137	3-1/2"	1-3/4"	1.456"	86.30	82.54	78.79	75.04
		26661	.2810	K	7.137	4-7/16"	2-7/16"	2.018"	104.40	99.86	95.32	90.78
22310			.2812	9/32"	7.142	2-15/16"	1-11/32"	.895"	75.81	72.51	69.22	65.92
	25666		.2812	9/32"	7.142	3-1/2"	1-3/4"	1.457"	87.23	83.44	79.64	75.85
		26666	.2812	9/32"	7.142	4-7/16"	2-7/16"	2.020"	105.36	100.78	96.20	91.62
22315			.2900	L	7.366	2-15/16"	1-11/32"	.923"	76.82	73.48	70.14	66.80
	25671		.2900	L	7.366	3-1/2"	1-3/4"	1.503"	87.62	83.81	80.00	76.19
		26671	.2900	L	7.366	4-7/16"	2-7/16"	2.083"	105.77	101.17	96.57	91.97
22320			.2950	M	7.493	2-15/16"	1-11/32"	.939"	78.30	74.90	71.49	68.09
	25676		.2950	M	7.493	3-3/4"	1-3/4"	1.529"	88.14	84.30	80.47	76.64
		26676	.2950	M	7.493	4-7/16"	2-7/16"	2.119"	106.28	101.66	97.04	92.42
22325			.2953		7.500	75	34	24	78.30	74.90	71.49	68.09
	25681		.2953		7.500	95	44	39	88.14	84.30	80.47	76.64
		26681	.2953		7.500	115	66	54	106.28	101.66	97.04	92.42
22330			.2969	19/64"	7.541	3-3/32"	1-15/32"	.945"	78.97	75.54	72.10	68.67
	25686		.2969	19/64"	7.541	3-3/4"	1-7/8"	1.539"	94.15	90.06	85.96	81.87
		26686	.2969	19/64"	7.541	4-9/16"	2-9/16"	2.132"	114.75	109.76	104.77	99.78
22335			.3020	N	7.671	3-3/32"	1-15/32"	.961"	82.55	78.96	75.37	71.78
	25691		.3020	N	7.671	3-3/4"	1-7/8"	1.565"	96.27	92.08	87.90	83.71
		26691	.3020	N	7.671	4-9/16"	2-9/16"	2.169"	116.97	111.88	106.80	101.71
22340			.3125	5/16"	7.938	3-3/32"	1-15/32"	.994"	82.83	79.23	75.63	72.03
	25696		.3125	5/16"	7.938	3-3/4"	1-7/8"	1.619"	96.49	92.29	88.10	83.90
		26696	.3125	5/16"	7.938	4-11/16"	2-9/16"	2.244"	117.17	112.08	106.98	101.89

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES		
d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)



Series 1580KH, 1280KH, 1880KH *(continued)*

.3150" - .3750"
(8.000mm - 9.525mm)

Recommended for high nickel, high temperature alloys, cobalt-based alloys, stainless steels, and tool steels >40 Rc

BALIQ® ALTINOS Coating (AlTiN-based)

High performance - high penetration solid submicron grain carbide drill



3xD (1580KH) EDP#	5xD (1280KH) EDP#	7xD (1880KH) EDP#	Decimal	d † Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
22345			.3150		8.000	79	37	25	84.39	80.72	77.05	73.38
	25701		.3150		8.000	95	48	41	100.54	96.17	91.80	87.43
		26701	.3150		8.000	120	69	57	121.37	116.09	110.82	105.54
22350			.3160	O	8.026	3-3/32"	1-15/32"	1.006"	84.39	80.72	77.05	73.38
	25706		.3160	O	8.026	3-3/4"	1-7/8"	1.638"	101.46	97.05	92.64	88.23
		26706	.3160	O	8.026	4-11/16"	2-11/16"	2.270"	123.42	118.05	112.69	107.32
22355			.3230	P	8.204	3-3/32"	1-15/32"	1.028"	85.00	81.30	77.61	73.91
	25711		.3230	P	8.204	3-3/4"	2-3/32"	1.674"	101.73	97.31	92.88	88.46
		26711	.3230	P	8.204	4-11/16"	2-11/16"	2.320"	123.68	118.31	112.93	107.55
22360			.3281	21/64"	8.334	3-3/32"	1-15/32"	1.044"	86.60	82.83	79.07	75.30
	25716		.3281	21/64"	8.334	4"	2-3/32"	1.700"	102.40	97.94	93.49	89.04
		26716	.3281	21/64"	8.334	4-11/16"	2-11/16"	2.356"	124.37	118.97	113.56	108.15
22365			.3320	Q	8.433	3-3/32"	1-15/32"	1.056"	88.14	84.30	80.47	76.64
	25721		.3320	Q	8.433	4"	2-3/32"	1.720"	102.98	98.51	94.03	89.55
		26721	.3320	Q	8.433	4-15/16"	2-15/16"	2.384"	124.99	119.56	114.12	108.69
22370			.3346		8.500	79	37	27	88.49	84.65	80.80	76.95
	25726		.3346		8.500	100	53	44	103.52	99.02	94.52	90.02
		26726	.3346		8.500	125	75	61	125.53	120.08	114.62	109.16
22375			.3390	R	8.611	3-5/16"	1-9/16"	1.079"	90.87	86.92	82.97	79.02
	25731		.3390	R	8.611	4"	2-3/32"	1.757"	106.92	102.27	97.62	92.97
		26731	.3390	R	8.611	4-15/16"	2-15/16"	2.435"	131.47	125.75	120.04	114.32
22380			.3438	11/32"	8.733	3-5/16"	1-9/16"	1.094"	92.87	88.84	84.80	80.76
	25736		.3438	11/32"	8.733	4"	2-3/16"	1.782"	109.55	104.79	100.02	95.26
		26736	.3438	11/32"	8.733	4-15/16"	2-15/16"	2.470"	134.26	128.43	122.59	116.75
22385			.3480	S	8.839	3-5/16"	1-9/16"	1.107"	95.94	91.77	87.60	83.43
	25741		.3480	S	8.839	4"	2-3/16"	1.803"	112.03	107.16	102.29	97.42
		26741	.3480	S	8.839	5"	3"	2.499"	136.82	130.87	124.92	118.97
22390			.3543		9.000	84	40	29	98.39	94.12	89.84	85.56
	25746		.3543		9.000	100	56	47	112.49	107.60	102.71	97.82
		26746	.3543		9.000	125	77	65	137.32	131.35	125.38	119.41
22395			.3580	T	9.093	3-5/16"	1-9/16"	1.139"	102.26	97.81	93.37	88.92
	25751		.3580	T	9.093	4-1/4"	2-9/32"	1.855"	114.62	109.64	104.65	99.67
		26751	.3580	T	9.093	5"	3"	2.571"	144.35	138.07	131.80	125.52
22400			.3594	23/64"	9.129	3-5/16"	1-9/16"	1.144"	102.88	98.41	93.93	89.46
	25756		.3594	23/64"	9.129	4-1/4"	2-9/32"	1.862"	115.06	110.06	105.05	100.05
		26756	.3594	23/64"	9.129	5"	3"	2.581"	144.85	138.56	132.26	125.96
22405			.3680	U	9.347	3-5/16"	1-9/16"	1.171"	104.43	99.89	95.35	90.81
	25761		.3680	U	9.347	4-1/4"	2-9/32"	1.907"	121.96	116.66	111.35	106.05
		26761	.3680	U	9.347	5"	3"	2.643"	153.26	146.60	139.93	133.27
22410			.3740		9.500	84	40	30	105.27	100.69	96.12	91.54
	25766		.3740		9.500	105	58	49	122.56	117.23	111.90	106.57
		26766	.3740		9.500	130	80	68	154.22	147.51	140.81	134.10
22415			.3750	3/8"	9.525	3-1/2"	1-11/16"	1.193"	105.92	101.31	96.71	92.10
	25771		.3750	3/8"	9.525	4-1/4"	2-3/8"	1.943"	125.59	120.13	114.67	109.21
		26771	.3750	3/8"	9.525	5-1/8"	3-1/8"	2.693"	158.29	151.40	144.52	137.64

continued ⟶

Series 1580KH, 1280KH, 1880KH *(continued)*

.3770" - .4921"
(9.576mm - 12.500mm)

3xD (1580KH) EDP#	5xD (1280KH) EDP#	7xD (1880KH) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
22420			.3770	V	9.576	3-1/2"	1-11/16"	1.200"	109.99	105.20	100.42	95.64
	25776		.3770	V	9.576	4-1/4"	2-3/8"	1.954"	126.01	120.53	115.05	109.57
		26776	.3770	V	9.576	5-1/8"	3-1/8"	2.708"	160.78	153.79	146.80	139.81
22425			.3860	W	9.804	3-1/2"	1-11/16"	1.228"	111.91	107.04	102.18	97.31
	25781		.3860	W	9.804	4-1/2"	2-3/8"	2.000"	127.39	121.85	116.31	110.77
		26781	.3860	W	9.804	5-1/8"	3-1/8"	2.772"	161.33	154.32	147.30	140.29
22430			.3906	25/64"	9.921	3-1/2"	1-11/16"	1.243"	113.31	108.38	103.46	98.53
	25786		.3906	25/64"	9.921	4-1/2"	2-3/8"	2.024"	128.34	122.76	117.18	111.60
		26786	.3906	25/64"	9.921	5-1/4"	3-1/4"	2.805"	162.31	155.25	148.20	141.14
22435			.3937		10.000	89	43	32	113.71	108.77	103.82	98.88
	25791		.3937		10.000	115	60	52	129.51	123.88	118.25	112.62
		26791	.3937		10.000	135	83	72	165.51	158.31	151.12	143.92
22440			.3970	X	10.084	3-1/2"	1-11/16"	1.263"	114.71	109.73	104.74	99.75
	25796		.3970	X	10.084	4-1/2"	2-1/2"	2.057"	133.92	128.10	122.27	116.45
		26796	.3970	X	10.084	5-1/4"	3-1/4"	2.851"	169.20	161.84	154.49	147.13
22445			.4040	Y	10.262	3-1/2"	1-11/16"	1.286"	115.49	110.47	105.45	100.43
	25801		.4040	Y	10.262	4-1/2"	2-9/16"	2.094"	134.52	128.67	122.82	116.97
		26801	.4040	Y	10.262	5-3/8"	3-3/8"	2.902"	172.55	165.04	157.54	150.04
22450			.4062	13/32"	10.317	3-1/2"	1-11/16"	1.293"	119.04	113.86	108.69	103.51
	25806		.4062	13/32"	10.317	4-1/2"	2-9/16"	2.105"	137.10	131.14	125.18	119.22
		26806	.4062	13/32"	10.317	5-3/8"	3-3/8"	2.917"	173.52	165.98	158.43	150.89
22455			.4130	Z	10.490	3-1/2"	1-11/16"	1.314"	120.14	114.92	109.69	104.47
	25811		.4130	Z	10.490	4-1/2"	2-5/8"	2.140"	139.25	133.20	127.14	121.09
		26811	.4130	Z	10.490	5-3/8"	3-3/8"	2.966"	176.40	168.73	161.06	153.39
22460			.4134		10.500	89	43	33	120.14	114.92	109.69	104.47
	25816		.4134		10.500	115	67	54	139.25	133.20	127.14	121.09
		26816	.4134		10.500	135	86	75	176.40	168.73	161.06	153.39
22465			.4219	27/64"	10.716	3-3/4"	1-13/16"	1.343"	121.27	116.00	110.72	105.45
	25821		.4219	27/64"	10.716	4-1/2"	2-11/16"	2.186"	141.22	135.08	128.94	122.80
		26821	.4219	27/64"	10.716	5-7/16"	3-7/16"	3.030"	178.60	170.83	163.07	155.30
22470			.4331		11.000	95	46	35	130.16	124.50	118.84	113.18
	25826		.4331		11.000	115	68	57	146.30	139.94	133.58	127.22
		26826	.4331		11.000	135	88	79	185.51	177.44	169.38	161.31
22475			.4375	7/16"	11.113	3-3/4"	1-13/16"	1.392"	130.16	124.50	118.84	113.18
	25831		.4375	7/16"	11.113	4-3/4"	2-13/16"	2.267"	149.26	142.77	136.28	129.79
		26831	.4375	7/16"	11.113	5-7/16"	3-7/16"	3.142"	189.47	181.24	173.00	164.76
22480			.4528		11.500	95	46	37	139.73	133.65	127.58	121.50
	25836		.4528		11.500	120	71	60	154.59	147.87	141.15	134.43
		26836	.4528		11.500	140	91	83	196.20	187.67	179.14	170.61
22485			.4531	29/64"	11.509	3-3/4"	1-13/16"	1.442"	139.73	133.65	127.58	121.50
	25841		.4531	29/64"	11.509	4-3/4"	2-7/8"	2.348"	159.88	152.93	145.98	139.03
		26841	.4531	29/64"	11.509	5-9/16"	3-13/16"	3.254"	202.34	193.55	184.75	175.95
22490			.4688	15/32"	11.908	4"	1-15/16"	1.492"	146.81	140.43	134.04	127.66
	25846		.4688	15/32"	11.908	4-3/4"	2-7/8"	2.429"	163.53	156.42	149.31	142.20
		26846	.4688	15/32"	11.908	5-9/16"	3-13/16"	3.367"	207.40	198.39	189.37	180.35
22495			.4724		12.000	102	49	38	147.25	140.84	134.44	128.04
	25851		.4724		12.000	120	73	62	167.05	159.79	152.52	145.26
		26851	.4724		12.000	140	98	86	212.73	203.48	194.23	184.98
22500			.4844	31/64"	12.304	4"	1-15/16"	1.541"	156.25	149.46	142.66	135.87
	25856		.4844	31/64"	12.304	5-5/16"	3"	2.510"	174.28	166.71	159.13	151.55
		26856	.4844	31/64"	12.304	5-9/16"	3-13/16"	3.479"	218.26	208.77	199.28	189.79
22505			.4921		12.500	102	49	40	164.69	157.53	150.37	143.21
	25861		.4921		12.500	135	76	65	187.07	178.94	170.80	162.67
		26861	.4921		12.500	150	102	90	219.47	209.92	200.38	190.84

GARR TOOL®

† *Metric equivalents are for reference only*

3xD (1580KH) EDP#	5xD (1280KH) EDP#	7xD (1880KH) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
22510			.5000	1/2"	12.700	4"	1-15/16"	1.591"	165.73	158.52	151.32	144.11
	25866		.5000	1/2"	12.700	5-3/8"	3-1/16"	2.591"	188.84	180.63	172.42	164.21
		26866	.5000	1/2"	12.700	6"	4"	3.591"	220.26	210.68	201.11	191.53
22515			.5118		13.000	107	53	41	183.95	175.96	167.96	159.96
	25871		.5118		13.000	135	78	67	214.15	204.84	195.53	186.22
		26871	.5118		13.000	150	102	93	230.59	220.56	210.54	200.51
22520			.5156	33/64"	13.096	4-7/32"	2-3/32"	1.641"	188.31	180.13	171.94	163.75
	25876		.5156	33/64"	13.096	5-3/8"	3-1/8"	2.672"	223.22	213.51	203.81	194.10
		26876	.5156	33/64"	13.096	6"	4"	3.703"	240.29	229.85	219.40	208.95
22525			.5312	17/32"	13.492	4-7/32"	2-3/32"	1.690"	192.63	184.25	175.88	167.50
	25881		.5312	17/32"	13.492	5-11/16"	3-5/16"	2.753"	226.81	216.95	207.09	197.23
		26881	.5312	17/32"	13.492	6-1/8"	4-1/8"	3.815"	244.19	233.57	222.96	212.34
22530			.5315		13.500	110	56	43	196.98	188.42	179.85	171.29
	25886		.5315		13.500	145	84	70	230.31	220.30	210.28	200.27
		26886	.5315		13.500	155	105	97	247.96	237.18	226.40	215.62
22535			.5469	35/64"	13.891	4-5/16"	2-7/32"	1.740"	201.28	192.53	183.78	175.03
	25891		.5469	35/64"	13.891	5-13/16"	3-3/8"	2.834"	242.93	232.36	221.80	211.24
		26891	.5469	35/64"	13.891	6-1/8"	4-1/8"	3.928"	255.71	244.60	233.48	222.36
22540			.5512		14.000	110	56	45	205.65	196.71	187.77	178.83
	25896		.5512		14.000	145	86	73	246.49	235.77	225.06	214.34
		26896	.5512		14.000	155	105	101	259.49	248.20	236.92	225.64
22545			.5625	9/16"	14.288	4-9/16"	2-15/32"	1.790"	227.68	217.78	207.88	197.98
	25901		.5625	9/16"	14.288	5-15/16"	3-1/2"	2.915"	265.56	254.01	242.47	230.92
		26901	.5625	9/16"	14.288	6-1/4"	4-3/8"	4.040"	280.15	267.97	255.79	243.61
22550			.5709		14.500	116	63	46	231.98	221.89	211.81	201.72
	25906		.5709		14.500	150	89	75	267.66	256.03	244.39	232.75
		26906	.5709		14.500	160	109	104	282.37	270.09	257.82	245.54
22555			.5781	37/64"	14.684	4-15/16"	2-9/16"	1.840"	236.12	225.85	215.59	205.32
	25911		.5781	37/64"	14.684	6"	3-1/2"	2.996"	268.40	256.73	245.06	233.39
		26911	.5781	37/64"	14.684	6-1/4"	4-3/8"	4.152"	283.13	270.82	258.51	246.20
22560			.5906		15.000	125	65	48	240.45	230.00	219.54	209.09
	25916		.5906		15.000	150	90	78	271.88	260.06	248.24	236.42
		26916	.5906		15.000	160	112	108	286.81	274.34	261.87	249.40
22565			.5938	19/32"	15.083	4-15/16"	2-9/16"	1.890"	241.78	231.26	220.75	210.24
	25921		.5938	19/32"	15.083	6"	3-9/16"	3.077"	278.97	266.84	254.71	242.58
		26921	.5938	19/32"	15.083	6-3/8"	4-3/8"	4.265"	294.26	281.47	268.67	255.88
22570			.6094	39/64"	15.479	5-1/16"	2-13/16"	1.939"	242.97	232.41	221.84	211.28
	25926		.6094	39/64"	15.479	6-3/16"	3-11/16"	3.158"	313.95	300.30	286.65	273.00
		26926	.6094	39/64"	15.479	6-7/16"	4-7/16"	4.377"	331.13	316.73	302.34	287.94
22575			.6102		15.500	129	71	49	244.24	233.62	223.00	212.38
	25931		.6102		15.500	160	94	80	314.81	301.13	287.44	273.75
		26931	.6102		15.500	165	113	111	332.07	317.64	303.20	288.76
22580			.6250	5/8"	15.875	5-1/4"	3-1/8"	1.989"	245.44	234.77	224.10	213.43
	25936		.6250	5/8"	15.875	6-5/16"	3-3/4"	3.239"	323.50	309.43	295.37	281.30
		26936	.6250	5/8"	15.875	6-9/16"	4-9/16"	4.489"	341.26	326.43	311.59	296.75
22585			.6299		16.000	133	79	51	251.39	240.46	229.53	218.60
	25941		.6299		16.000	160	95	83	327.74	313.49	299.24	284.99
		26941	.6299		16.000	165	117	115	345.74	330.70	315.67	300.64

Series 1600

NEW ITEM

.0787" - .3750"
(2.000mm - 9.525mm)

Z=2 | 25° | 82° | 90° | 120° | 142°

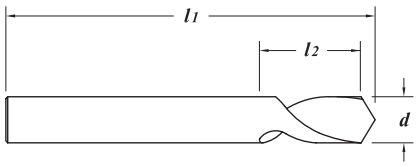
TECH PAGES 320-323

TOLERANCES		
d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

N/C Spotting

Solid submicron grain carbide drill
For spotting to stabilize long drills
Can be used for chamfering
Rough, angled or spherical surfaces
No O.D. clearance
For locating on true position
Live tooling recommended on lathe processes





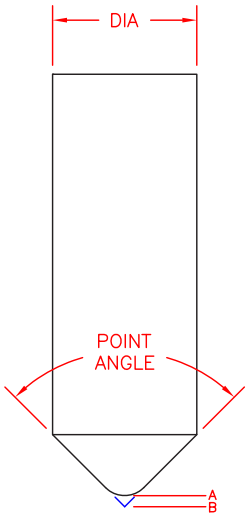
82° EDP#	90° EDP#	120° EDP#	142° EDP#	d † Diameter Decimal	d † Diameter	d † Diameter Metric	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
91650	91500	91572	91240	.0787		2.000	50	10	10.29	9.85	9.40	8.95
91652	91505	91575	91245	.0938	3/32"	2.383	2"	3/8"	11.66	11.15	10.65	10.14
-	91507	-	-	.1181		3.000	38	6	12.87	12.31	11.75	11.19
-	91510	91580	91250	.1181		3.000	50	10	13.74	13.15	12.55	11.95
-	91512	-	-	.1181		3.000	75	10	15.94	15.25	14.55	13.86
-	91514	-	-	.1250	1/8"	3.175	1-1/2"	1/4"	12.87	12.31	11.75	11.19
91656	91000	91100	91260	.1250	1/8"	3.175	2"	3/8"	13.74	13.15	12.55	11.95
-	91002	-	-	.1250	1/8"	3.175	3"	3/8"	15.94	15.25	14.55	13.86
91658	91520	91590	91270	.1575		4.000	50	12	15.87	15.18	14.49	13.80
-	91522	-	-	.1875	3/16"	4.763	2"	3/8"	15.87	15.18	14.49	13.80
-	91524	-	-	.1875	3/16"	4.763	2-1/2"	1/2"	16.43	15.72	15.00	14.29
91660	91010	91110	91280	.1875	3/16"	4.763	3"	3/4"	17.97	17.19	16.41	15.63
-	91012	-	-	.1875	3/16"	4.763	4"	3/4"	21.02	20.11	19.19	18.28
-	91014	-	-	.1969		5.000	50	10	17.26	16.51	15.76	15.01
-	91530	91600	91290	.1969		5.000	65	15	18.88	18.06	17.24	16.42
-	91532	-	-	.1969		5.000	75	15	20.34	19.46	18.57	17.69
-	91534	-	-	.2362		6.000	50	12	19.40	18.56	17.71	16.87
91664	91540	91610	91300	.2362		6.000	65	20	19.85	18.99	18.12	17.26
-	91542	-	-	.2362		6.000	75	20	21.33	20.41	19.48	18.55
-	91544	-	-	.2362		6.000	100	20	24.91	23.83	22.74	21.66
-	91546	-	-	.2500	1/4"	6.350	2"	1/2"	19.40	18.56	17.71	16.87
-	91547	-	-	.2500	1/4"	6.350	2-1/2"	5/8"	19.85	18.99	18.12	17.26
91666	91020	91120	91310	.2500	1/4"	6.350	3"	3/4"	21.33	20.41	19.48	18.55
-	91021	-	-	.2500	1/4"	6.350	4"	3/4"	24.91	23.83	22.74	21.66
-	91022	-	-	.2500	1/4"	6.350	6"	3/4"	36.86	35.26	33.65	32.05
-	91023	-	-	.3125	5/16"	7.938	2"	1/2"	23.51	22.48	21.46	20.44
-	91024	-	-	.3125	5/16"	7.938	2-1/2"	5/8"	24.08	23.03	21.99	20.94
91668	91025	91125	91315	.3125	5/16"	7.938	3"	1"	25.81	24.68	23.56	22.44
-	91026	-	-	.3125	5/16"	7.938	4"	1"	30.73	29.39	28.06	26.72
-	91548	-	-	.3150		8.000	50	12	23.51	22.48	21.46	20.44
-	91549	-	-	.3150		8.000	65	16	24.08	23.03	21.99	20.94
91670	91550	91620	91320	.3150		8.000	75	25	25.81	24.68	23.56	22.44
-	91551	-	-	.3150		8.000	100	25	30.73	29.39	28.06	26.72
-	91028	-	-	.3750	3/8"	9.525	2"	1/2"	25.15	24.06	22.96	21.87
-	91029	-	-	.3750	3/8"	9.525	2-1/2"	5/8"	26.07	24.94	23.80	22.67
91672	91030	91130	91330	.3750	3/8"	9.525	3"	1"	27.99	26.77	25.56	24.34
-	91031	-	-	.3750	3/8"	9.525	4"	1"	34.27	32.78	31.29	29.80
-	91032	-	-	.3750	3/8"	9.525	6"	1"	49.86	47.70	45.53	43.36

GARR TOOL®

† *Metric equivalents are for reference only*

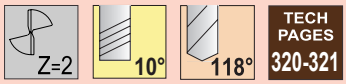
	82° EDP#	90° EDP#	120° EDP#	142° EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	1-11	12-24	25-49	50-100
	-	91558	-	-	.3937		10.000	65	16	33.32	31.87	30.42	28.97
	-	91559	-	-	.3937		10.000	70	20	34.20	32.71	31.23	29.74
	-	91560	91630	91340	.3937		10.000	88	25	38.62	36.94	35.26	33.58
	-	91561	-	-	.3937		10.000	100	25	41.95	40.13	38.30	36.48
	-	91564	-	-	.4375	7/16"	11.113	2-3/4"	3/4"	36.96	35.35	33.75	32.14
	91676	91565	91635	91345	.4375	7/16"	11.113	4"	1"	43.11	41.24	39.36	37.49
	-	91568	-	-	.4724		12.000	65	16	39.38	37.66	35.95	34.24
	-	91569	-	-	.4724		12.000	75	20	40.08	38.34	36.59	34.85
	-	91570	91640	91350	.4724		12.000	100	30	46.41	44.40	42.38	40.36
	-	91038	-	-	.5000	1/2"	12.700	2-1/2"	5/8"	40.63	38.86	37.10	35.33
	-	91039	-	-	.5000	1/2"	12.700	3"	3/4"	41.23	39.44	37.64	35.85
	91680	91040	91140	91360	.5000	1/2"	12.700	4"	1"	48.27	46.17	44.07	41.97
	-	91041	-	-	.5000	1/2"	12.700	6"	1"	72.94	69.77	66.60	63.43
	-	91050	91170	91370	.5512		14.000	100	30	83.18	79.56	75.95	72.33
	91684	91060	91180	-	.5625	9/16"	14.287	4"	1"	90.70	86.76	82.81	78.87
	-	91067	-	-	.6250	5/8"	15.875	3"	3/4"	86.68	82.91	79.14	75.37
	-	91068	-	-	.6250	5/8"	15.875	3-1/2"	1"	87.27	83.48	79.68	75.89
	-	91069	-	-	.6250	5/8"	15.875	4"	1"	96.15	91.97	87.79	83.61
	91686	91070	91190	91390	.6250	5/8"	15.875	5"	1"	111.29	106.45	101.61	96.77
	-	91077	-	-	.6299		16.000	75	20	89.48	85.59	81.70	77.81
	-	91078	-	-	.6299		16.000	88	25	90.14	86.22	82.30	78.38
NEW	-	91079	-	-	.6299		16.000	100	25	98.24	93.97	89.70	85.43
	91688	91080	91200	91400	.6299		16.000	125	30	114.26	109.30	104.33	99.36
	91690	91090	91210	-	.7087		18.000	125	30	156.75	149.93	143.12	136.30
	-	91148	-	-	.7500	3/4"	19.050	3"	3/4"	131.42	125.71	119.99	114.28
	-	91149	-	-	.7500	3/4"	19.050	4"	1"	136.06	130.14	124.23	118.31
	91692	91150	91220	91420	.7500	3/4"	19.050	5"	1"	161.00	154.00	147.00	140.00
	-	91159	-	-	.7874		20.000	100	25	152.02	145.41	138.80	132.19
	-	91160	91230	91430	.7874		20.000	125	30	174.32	166.74	159.16	151.58
	-	91161	-	-	.7874		20.000	150	30	192.49	184.12	175.75	167.38

DIAMETER		DRILL POINT ANGLE			
		82°	90°	120°	142°
2mm	.0787	.003	.002	.001	.001
3/32"	.0938	.003	.003	.002	.001
3mm	.1181	.004	.004	.002	.001
1/8"	.1250	.004	.004	.002	.001
4mm	.1575	.005	.005	.003	.002
3/16"	.1875	.006	.006	.003	.002
5mm	.1969	.007	.006	.003	.002
6mm	.2362	.008	.007	.004	.003
1/4"	.2500	.009	.008	.004	.003
5/16"	.3125	.011	.009	.005	.003
8mm	.3150	.011	.009	.005	.003
3/8"	.3750	.013	.011	.006	.004
10mm	.3937	.014	.012	.007	.004
7/16"	.4375	.015	.013	.008	.005
12mm	.4724	.016	.014	.008	.005
1/2"	.5000	.017	.015	.009	.005
14mm	.5512	.019	.017	.010	.006
9/16"	.5625	.019	.017	.010	.006
5/8"	.6250	.022	.019	.011	.007
16mm	.6299	.022	.019	.011	.007
18mm	.7087	.024	.021	.012	.008
3/4"	.7500	.026	.023	.013	.008
20mm	.7874	.027	.024	.014	.009



Garr Tool series 1600 spotting drills are not only useful for starting holes, but also for leaving the desired chamfer when programmed to the correct depth. Because spotting drills do not come to a true point, but have a small "flat" as shown in the figure to the left, the length deviation from the chart must be taken into account to leave the correct chamfer length. This chart gives the distance from the theoretical drill point 'B' to the actual drill point 'A'. These values can be used to compensate for the "flat" on our spotting drills in your calculations.

Series 1400

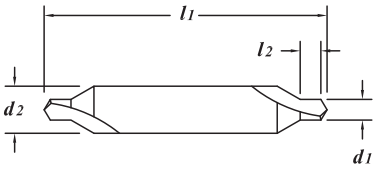


TOLERANCES	
d_1	+.003" –.000" (+.0762 –.0000mm)
d_2	h6
l_1	+.125" –.125" (+3.175 –3.175mm)
l_2	+.008" –.008" (+.203 –.203mm)

Combined Drill and Countersink

Solid submicron grain carbide drill
For center drilling applications
60° ±0°30' included countersink angle
Live tooling recommended on lathe processes
Drill length (l_2) is equal to drill diameter (d_1)
Not able to be altered





EDP #	Number	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Drill Length	1-11	12-24	25-49	50-100
58030	1	.0469	3/64"	1.191	1/8"	1-1/2"	.0469	15.42	14.75	14.08	13.41
58040	2	.0781	5/64"	1.984	3/16"	2"	.0781	24.28	23.22	22.17	21.11
58050	3	.1094	7/64"	2.779	1/4"	2"	.1094	27.65	26.44	25.24	24.04
58060	4	.1250	1/8"	3.175	5/16"	2-1/8"	.1250	38.70	37.02	35.33	33.65
58070	5	.1875	3/16"	4.763	7/16"	2-3/4"	.1875	55.28	52.88	50.47	48.07
58080	6	.2188	7/32"	5.558	1/2"	3"	.2188	73.59	70.39	67.19	63.99



GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Z=2 | 0° | 135° | 3xD | TECH PAGES 320-323

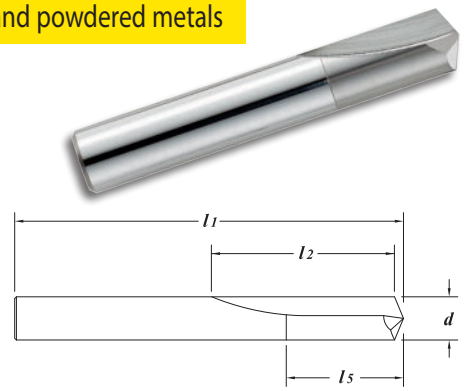
Series 1500

.0625" - .1660"
(1.588mm - 4.216mm)

Recommended for high nickel, cobalt-based, and powdered metals

Hard Metal

Solid submicron grain carbide drill
Straight flute design provides excellent rigidity
Materials 40 Rc and higher
Live tooling recommended on lathe processes
Durana Coating - page 61



EDP#	d † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
59165	.0625	1/16"	1.588	1-3/4"	5/8"	.200"	10.60	10.14	9.68	9.22
59180	.0700	#50	1.778	1-3/4"	3/4"	.224"	10.60	10.14	9.68	9.22
59185	.0730	#49	1.854	1-3/4"	3/4"	.234"	10.60	10.14	9.68	9.22
59190	.0760	#48	1.930	1-3/4"	3/4"	.244"	10.60	10.14	9.68	9.22
59195	.0781	5/64"	1.984	1-3/4"	3/4"	.250"	10.60	10.14	9.68	9.22
59200	.0785	#47	1.994	1-3/4"	7/8"	.252"	10.60	10.14	9.68	9.22
39000	.0787		2.000	50	22	6	10.60	10.14	9.68	9.22
59210	.0810	#46	2.057	2"	7/8"	.260"	10.60	10.14	9.68	9.22
59215	.0820	#45	2.083	2"	7/8"	.263"	10.60	10.14	9.68	9.22
59220	.0860	#44	2.184	2"	7/8"	.276"	10.60	10.14	9.68	9.22
59225	.0890	#43	2.261	2"	7/8"	.285"	10.60	10.14	9.68	9.22
59230	.0935	#42	2.375	2"	7/8"	.300"	10.60	10.14	9.68	9.22
59235	.0938	3/32"	2.383	2"	7/8"	.301"	10.60	10.14	9.68	9.22
59240	.0960	#41	2.438	2"	7/8"	.308"	12.09	11.56	11.04	10.51
59245	.0980	#40	2.489	2"	7/8"	.314"	12.09	11.56	11.04	10.51
39050	.0984		2.500	50	22	8	12.09	11.56	11.04	10.51
59255	.0995	#39	2.527	2"	7/8"	.319"	12.09	11.56	11.04	10.51
59260	.1015	#38	2.578	2"	7/8"	.326"	12.09	11.56	11.04	10.51
59265	.1040	#37	2.642	2"	7/8"	.334"	12.09	11.56	11.04	10.51
59270	.1065	#36	2.705	2"	7/8"	.342"	12.09	11.56	11.04	10.51
59275	.1094	7/64"	2.779	2"	1"	.351"	12.09	11.56	11.04	10.51
59280	.1100	#35	2.794	2"	1"	.353"	12.57	12.02	11.48	10.93
59285	.1110	#34	2.819	2"	1"	.356"	12.57	12.02	11.48	10.93
59290	.1130	#33	2.870	2"	1"	.362"	12.57	12.02	11.48	10.93
59295	.1160	#32	2.946	2"	1"	.372"	12.57	12.02	11.48	10.93
39100	.1181		3.000	50	25	10	12.57	12.02	11.48	10.93
59305	.1200	#31	3.048	2"	1"	.385"	12.57	12.02	11.48	10.93
59310	.1250	1/8"	3.175	2"	1"	.401"	11.59	11.09	10.58	10.08
59315	.1285	#30	3.264	2"	1"	.412"	13.67	13.08	12.48	11.89
59320	.1360	#29	3.454	2"	1"	.436"	13.67	13.08	12.48	11.89
39150	.1378		3.500	50	25	11	13.67	13.08	12.48	11.89
59330	.1405	#28	3.569	2"	1"	.451"	13.67	13.08	12.48	11.89
59335	.1406	9/64"	3.571	2"	1"	.451"	13.67	13.08	12.48	11.89
59340	.1440	#27	3.658	2"	1"	.462"	14.04	13.43	12.82	12.21
59345	.1470	#26	3.734	2"	1"	.471"	14.75	14.11	13.47	12.83
59350	.1495	#25	3.797	2"	1"	.479"	14.75	14.11	13.47	12.83
59355	.1520	#24	3.861	2"	1"	.487"	14.75	14.11	13.47	12.83
59360	.1540	#23	3.912	2"	1"	.494"	14.75	14.11	13.47	12.83
59365	.1562	5/32"	3.967	2-1/2"	1-1/8"	.501"	14.75	14.11	13.47	12.83
59370	.1570	#22	3.988	2-1/2"	1-1/8"	.504"	15.99	15.29	14.60	13.90
39200	.1575		4.000	63	28	13	15.99	15.29	14.60	13.90
59380	.1590	#21	4.039	2-1/2"	1-1/8"	.510"	16.36	15.65	14.94	14.23
59385	.1610	#20	4.089	2-1/2"	1-1/8"	.516"	16.36	15.65	14.94	14.23
59390	.1660	#19	4.216	2-1/2"	1-1/8"	.532"	16.97	16.24	15.50	14.76

continued →

Series 1500 *(continued)*

.1695" - .5000"
(4.305mm - 12.700mm)

EDP#	d † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
59395	.1695	#18	4.305	2-1/2"	1-3/16"	.544"	16.97	16.24	15.50	14.76
59400	.1719	11/64"	4.366	2-1/2"	1-3/16"	.551"	16.97	16.24	15.50	14.76
59405	.1730	#17	4.394	2-1/2"	1-3/16"	.555"	17.34	16.59	15.83	15.08
59410	.1770	#16	4.496	2-1/2"	1-3/16"	.568"	17.34	16.59	15.83	15.08
39250	.1772		4.500	63	28	14	17.34	16.59	15.83	15.08
59420	.1800	#15	4.572	2-1/2"	1-3/16"	.577"	17.34	16.59	15.83	15.08
59425	.1820	#14	4.623	2-1/2"	1-3/16"	.584"	18.31	17.51	16.72	15.92
59430	.1850	#13	4.700	2-1/2"	1-3/16"	.593"	18.31	17.51	16.72	15.92
59435	.1875	3/16"	4.763	2-1/2"	1-3/16"	.601"	17.60	16.83	16.07	15.30
59440	.1890	#12	4.801	2-1/2"	1-3/16"	.606"	18.18	17.39	16.60	15.81
59445	.1910	#11	4.851	2-1/2"	1-3/16"	.613"	18.18	17.39	16.60	15.81
59450	.1935	#10	4.915	2-1/2"	1-1/4"	.621"	19.26	18.43	17.59	16.75
59455	.1960	#9	4.978	2-1/2"	1-1/4"	.629"	19.26	18.43	17.59	16.75
39300	.1969		5.000	63	32	16	19.26	18.43	17.59	16.75
59465	.1990	#8	5.055	2-1/2"	1-1/4"	.638"	19.91	19.04	18.18	17.31
59470	.2010	#7	5.105	2-1/2"	1-1/4"	.645"	19.91	19.04	18.18	17.31
59475	.2031	13/64"	5.159	2-1/2"	1-1/4"	.651"	19.91	19.04	18.18	17.31
59480	.2040	#6	5.182	2-1/2"	1-1/4"	.654"	21.00	20.09	19.17	18.26
59485	.2055	#5	5.220	2-1/2"	1-1/4"	.659"	21.00	20.09	19.17	18.26
59490	.2090	#4	5.309	2-1/2"	1-1/4"	.670"	21.00	20.09	19.17	18.26
59495	.2130	#3	5.410	2-1/2"	1-1/4"	.683"	21.00	20.09	19.17	18.26
39350	.2165		5.500	63	32	18	21.00	20.09	19.17	18.26
59505	.2188	7/32"	5.558	2-1/2"	1-1/2"	.702"	21.00	20.09	19.17	18.26
59510	.2210	#2	5.613	2-1/2"	1-1/2"	.709"	22.46	21.48	20.51	19.53
59515	.2280	#1	5.791	2-1/2"	1-1/2"	.731"	22.46	21.48	20.51	19.53
59525	.2344	15/64"	5.954	2-1/2"	1-1/2"	.752"	25.04	23.95	22.86	21.77
39400	.2362		6.000	63	38	19	25.04	23.95	22.86	21.77
59550	.2500	1/4"	6.350	2-1/2"	1-1/2"	.802"	23.58	22.55	21.53	20.50
59570	.2656	17/64"	6.746	2-1/2"	1-1/2"	.852"	28.58	27.34	26.09	24.85
39500	.2756		7.000	63	38	22	29.29	28.02	26.74	25.47
59600	.2812	9/32"	7.142	2-1/2"	1-1/2"	.902"	29.29	28.02	26.74	25.47
39520	.2953		7.500	63	41	24	30.77	29.44	28.10	26.76
59620	.2969	19/64"	7.541	2-1/2"	1-5/8"	.952"	30.77	29.44	28.10	26.76
59630	.3125	5/16"	7.938	2-1/2"	1-5/8"	1.002"	30.77	29.44	28.10	26.76
39540	.3150		8.000	63	41	26	32.36	30.95	29.55	28.14
59650	.3281	21/64"	8.334	3"	1-5/8"	1.052"	33.32	31.87	30.42	28.97
39560	.3346		8.500	76	41	27	37.21	35.60	33.98	32.36
59670	.3438	11/32"	8.733	3"	1-5/8"	1.103"	37.21	35.60	33.98	32.36
39580	.3543		9.000	76	41	29	40.41	38.65	36.90	35.14
59690	.3594	23/64"	9.129	3"	1-3/4"	1.153"	40.41	38.65	36.90	35.14
59705	.3750	3/8"	9.525	3"	1-3/4"	1.203"	44.06	42.14	40.23	38.31
59720	.3906	25/64"	9.921	3"	1-3/4"	1.253"	49.80	47.63	45.47	43.30
39620	.3937		10.000	76	44	32	49.80	47.63	45.47	43.30
59740	.4062	13/32"	10.317	3"	1-3/4"	1.303"	55.65	53.23	50.81	48.39
39640	.4134		10.500	76	44	34	58.24	55.70	53.17	50.64
59755	.4219	27/64"	10.716	3"	1-3/4"	1.353"	61.27	58.61	55.94	53.28
39660	.4331		11.000	76	44	35	62.38	59.66	56.95	54.24
59765	.4375	7/16"	11.113	3"	1-3/4"	1.403"	62.38	59.66	56.95	54.24
59775	.4531	29/64"	11.509	3"	1-3/4"	1.453"	65.40	62.56	59.71	56.87
59780	.4688	15/32"	11.908	3"	1-3/4"	1.503"	65.40	62.56	59.71	56.87
39700	.4724		12.000	76	44	38	65.40	62.56	59.71	56.87
59790	.4844	31/64"	12.304	3"	1-3/4"	1.554"	65.40	62.56	59.71	56.87
39720	.4921		12.500	76	44	40	66.88	63.98	61.07	58.16
59800	.5000	1/2"	12.700	3"	1-3/4"	1.604"	66.88	63.98	61.07	58.16

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Z=2 | 0° | 135° | 3xD | TECH PAGES 324-327

Series 1500H

.0625" - .1660"
(1.588mm - 4.216mm)

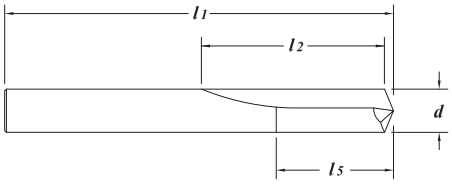
Recommended for high nickel, cobalt-based, and powdered metals

Hard Metal

BALINIT® Durana Coating

Solid submicron grain carbide drill
Straight flute design provides excellent rigidity
Materials 40 Rc and higher
Excellent heat resistance and lubricity
Live tooling recommended on lathe processes
Bright Finish - page 59





EDP#	d † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
59166	.0625	1/16"	1.588	1-3/4"	5/8"	.200"	12.74	12.19	11.63	11.08
59181	.0700	#50	1.778	1-3/4"	3/4"	.224"	12.74	12.19	11.63	11.08
59186	.0730	#49	1.854	1-3/4"	3/4"	.234"	12.74	12.19	11.63	11.08
59191	.0760	#48	1.930	1-3/4"	3/4"	.244"	12.74	12.19	11.63	11.08
59196	.0781	5/64"	1.984	1-3/4"	3/4"	.250"	12.74	12.19	11.63	11.08
59201	.0785	#47	1.994	1-3/4"	7/8"	.252"	12.74	12.19	11.63	11.08
39001	.0787		2.000	50	22	6	12.74	12.19	11.63	11.08
59211	.0810	#46	2.057	2"	7/8"	.260"	12.74	12.19	11.63	11.08
59216	.0820	#45	2.083	2"	7/8"	.263"	12.74	12.19	11.63	11.08
59221	.0860	#44	2.184	2"	7/8"	.276"	12.74	12.19	11.63	11.08
59226	.0890	#43	2.261	2"	7/8"	.285"	12.74	12.19	11.63	11.08
59231	.0935	#42	2.375	2"	7/8"	.300"	12.74	12.19	11.63	11.08
59236	.0938	3/32"	2.383	2"	7/8"	.301"	12.74	12.19	11.63	11.08
59241	.0960	#41	2.438	2"	7/8"	.308"	14.17	13.55	12.94	12.32
59246	.0980	#40	2.489	2"	7/8"	.314"	14.17	13.55	12.94	12.32
39051	.0984		2.500	50	22	8	14.17	13.55	12.94	12.32
59256	.0995	#39	2.527	2"	7/8"	.319"	14.17	13.55	12.94	12.32
59261	.1015	#38	2.578	2"	7/8"	.326"	14.17	13.55	12.94	12.32
59266	.1040	#37	2.642	2"	7/8"	.334"	14.17	13.55	12.94	12.32
59271	.1065	#36	2.705	2"	7/8"	.342"	14.17	13.55	12.94	12.32
59276	.1094	7/64"	2.779	2"	1"	.351"	14.17	13.55	12.94	12.32
59281	.1100	#35	2.794	2"	1"	.353"	14.70	14.06	13.42	12.78
59286	.1110	#34	2.819	2"	1"	.356"	14.70	14.06	13.42	12.78
59291	.1130	#33	2.870	2"	1"	.362"	14.70	14.06	13.42	12.78
59296	.1160	#32	2.946	2"	1"	.372"	14.70	14.06	13.42	12.78
39101	.1181		3.000	50	25	10	14.70	14.06	13.42	12.78
59306	.1200	#31	3.048	2"	1"	.385"	14.70	14.06	13.42	12.78
59311	.1250	1/8"	3.175	2"	1"	.401"	13.70	13.10	12.51	11.91
59316	.1285	#30	3.264	2"	1"	.412"	15.78	15.09	14.41	13.72
59321	.1360	#29	3.454	2"	1"	.436"	15.78	15.09	14.41	13.72
39151	.1378		3.500	50	25	11	15.78	15.09	14.41	13.72
59331	.1405	#28	3.569	2"	1"	.451"	15.78	15.09	14.41	13.72
59336	.1406	9/64"	3.571	2"	1"	.451"	15.78	15.09	14.41	13.72
59341	.1440	#27	3.658	2"	1"	.462"	16.13	15.43	14.73	14.03
59346	.1470	#26	3.734	2"	1"	.471"	16.87	16.14	15.40	14.67
59351	.1495	#25	3.797	2"	1"	.479"	16.87	16.14	15.40	14.67
59356	.1520	#24	3.861	2"	1"	.487"	16.87	16.14	15.40	14.67
59361	.1540	#23	3.912	2"	1"	.494"	16.87	16.14	15.40	14.67
59366	.1562	5/32"	3.967	2-1/2"	1-1/8"	.501"	16.87	16.14	15.40	14.67
59371	.1570	#22	3.988	2-1/2"	1-1/8"	.504"	18.08	17.29	16.51	15.72
39201	.1575		4.000	63	28	13	18.08	17.29	16.51	15.72
59381	.1590	#21	4.039	2-1/2"	1-1/8"	.510"	18.47	17.67	16.86	16.06
59386	.1610	#20	4.089	2-1/2"	1-1/8"	.516"	18.47	17.67	16.86	16.06
59391	.1660	#19	4.216	2-1/2"	1-1/8"	.532"	19.08	18.25	17.42	16.59

continued →

Series 1500H *(continued)*

.1695" - .5000"
(4.305mm - 12.700mm)

EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
59396	.1695	#18	4.305	2-1/2"	1-3/16"	.544"	19.08	18.25	17.42	16.59
59401	.1719	11/64"	4.366	2-1/2"	1-3/16"	.551"	19.08	18.25	17.42	16.59
59406	.1730	#17	4.394	2-1/2"	1-3/16"	.555"	19.45	18.60	17.76	16.91
59411	.1770	#16	4.496	2-1/2"	1-3/16"	.568"	19.45	18.60	17.76	16.91
39251	.1772		4.500	63	28	14	19.45	18.60	17.76	16.91
59421	.1800	#15	4.572	2-1/2"	1-3/16"	.577"	19.45	18.60	17.76	16.91
59426	.1820	#14	4.623	2-1/2"	1-3/16"	.584"	20.39	19.50	18.62	17.73
59431	.1850	#13	4.700	2-1/2"	1-3/16"	.593"	20.39	19.50	18.62	17.73
59436	.1875	3/16"	4.763	2-1/2"	1-3/16"	.601"	19.68	18.82	17.97	17.11
59441	.1890	#12	4.801	2-1/2"	1-3/16"	.606"	21.78	20.83	19.89	18.94
59446	.1910	#11	4.851	2-1/2"	1-3/16"	.613"	21.78	20.83	19.89	18.94
59451	.1935	#10	4.915	2-1/2"	1-1/4"	.621"	22.89	21.89	20.90	19.90
59456	.1960	#9	4.978	2-1/2"	1-1/4"	.629"	22.89	21.89	20.90	19.90
39301	.1969		5.000	63	32	16	22.89	21.89	20.90	19.90
59466	.1990	#8	5.055	2-1/2"	1-1/4"	.638"	23.51	22.48	21.46	20.44
59471	.2010	#7	5.105	2-1/2"	1-1/4"	.645"	23.51	22.48	21.46	20.44
59476	.2031	13/64"	5.159	2-1/2"	1-1/4"	.651"	23.51	22.48	21.46	20.44
59481	.2040	#6	5.182	2-1/2"	1-1/4"	.654"	24.61	23.54	22.47	21.40
59486	.2055	#5	5.220	2-1/2"	1-1/4"	.659"	24.61	23.54	22.47	21.40
59491	.2090	#4	5.309	2-1/2"	1-1/4"	.670"	24.61	23.54	22.47	21.40
59496	.2130	#3	5.410	2-1/2"	1-1/4"	.683"	24.61	23.54	22.47	21.40
39351	.2165		5.500	63	32	18	24.61	23.54	22.47	21.40
59506	.2188	7/32"	5.558	2-1/2"	1-1/2"	.702"	24.61	23.54	22.47	21.40
59511	.2210	#2	5.613	2-1/2"	1-1/2"	.709"	26.08	24.95	23.81	22.68
59516	.2280	#1	5.791	2-1/2"	1-1/2"	.731"	26.08	24.95	23.81	22.68
59526	.2344	15/64"	5.954	2-1/2"	1-1/2"	.752"	28.62	27.38	26.13	24.89
39401	.2362		6.000	63	38	19	28.62	27.38	26.13	24.89
59551	.2500	1/4"	6.350	2-1/2"	1-1/2"	.802"	27.16	25.98	24.80	23.62
39451	.2559		6.500	63	38	21	34.98	33.46	31.94	30.42
59571	.2656	17/64"	6.746	2-1/2"	1-1/2"	.852"	34.98	33.46	31.94	30.42
39501	.2756		7.000	63	38	22	35.70	34.14	32.59	31.04
59601	.2812	9/32"	7.142	2-1/2"	1-1/2"	.902"	35.70	34.14	32.59	31.04
39521	.2953		7.500	63	41	24	37.18	35.56	33.95	32.33
59621	.2969	19/64"	7.541	2-1/2"	1-5/8"	.952"	37.18	35.56	33.95	32.33
59631	.3125	5/16"	7.938	2-1/2"	1-5/8"	1.002"	37.18	35.56	33.95	32.33
39541	.3150		8.000	63	41	26	38.79	37.10	35.42	33.73
59651	.3281	21/64"	8.334	3"	1-5/8"	1.052"	39.73	38.01	36.28	34.55
39561	.3346		8.500	76	41	27	43.64	41.75	39.85	37.95
59671	.3438	11/32"	8.733	3"	1-5/8"	1.103"	43.64	41.75	39.85	37.95
39581	.3543		9.000	76	41	29	47.23	45.18	43.12	41.07
59691	.3594	23/64"	9.129	3"	1-3/4"	1.153"	47.23	45.18	43.12	41.07
39601	.3740		9.500	76	41	30	50.91	48.70	46.48	44.27
59706	.3750	3/8"	9.525	3"	1-3/4"	1.203"	50.91	48.70	46.48	44.27
59721	.3906	25/64"	9.921	3"	1-3/4"	1.253"	57.19	54.70	52.22	49.73
39621	.3937		10.000	76	44	32	57.19	54.70	52.22	49.73
59741	.4062	13/32"	10.317	3"	1-3/4"	1.303"	63.05	60.31	57.57	54.83
59756	.4219	27/64"	10.716	3"	1-3/4"	1.353"	68.71	65.73	62.74	59.75
39661	.4331		11.000	76	44	35	69.78	66.75	63.71	60.68
59766	.4375	7/16"	11.113	3"	1-3/4"	1.403"	69.78	66.75	63.71	60.68
39681	.4528		11.500	76	44	37	71.59	68.48	65.36	62.25
59776	.4531	29/64"	11.509	3"	1-3/4"	1.453"	72.82	69.65	66.49	63.32
59781	.4688	15/32"	11.908	3"	1-3/4"	1.503"	72.82	69.65	66.49	63.32
39701	.4724		12.000	76	44	38	72.82	69.65	66.49	63.32
59791	.4844	31/64"	12.304	3"	1-3/4"	1.554"	72.82	69.65	66.49	63.32
39721	.4921		12.500	76	44	40	74.27	71.04	67.81	64.58
59801	.5000	1/2"	12.700	3"	1-3/4"	1.604"	74.27	71.04	67.81	64.58

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Z=2 | 15° | 135° | 3xD | TECH PAGES 320-323

Series 1510

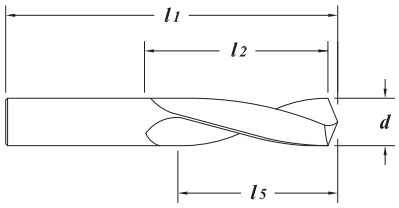
.0625" - .1575"
(1.588mm - 4.000mm)

Recommended for titanium, inconel, hastelloy, waspaloy, and stainless steel

Slow Helix

Solid submicron grain carbide drill
Heavy web for extra rigidity and added strength
Thinned point
Live tooling recommended on lathe processes
Durana Coating - page 66





EDP#	*d* † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
19070	.0625	1/16"	1.588	1-3/4"	5/8"	.200"	7.81	7.47	7.13	6.79
19075	.0635	#52	1.613	1-3/4"	11/16"	.204"	7.94	7.59	7.25	6.90
19080	.0670	#51	1.702	1-3/4"	11/16"	.215"	8.05	7.70	7.35	7.00
19085	.0700	#50	1.778	1-3/4"	11/16"	.224"	8.26	7.90	7.54	7.18
19090	.0730	#49	1.854	1-3/4"	11/16"	.234"	8.44	8.07	7.71	7.34
19095	.0760	#48	1.930	1-3/4"	11/16"	.244"	8.73	8.35	7.97	7.59
19100	.0781	5/64"	1.984	1-3/4"	11/16"	.250"	9.05	8.66	8.26	7.87
19105	.0785	#47	1.994	1-3/4"	3/4"	.252"	9.35	8.94	8.54	8.13
19115	.0787		2.000	45	19	6	9.51	9.10	8.68	8.27
19120	.0810	#46	2.057	1-3/4"	3/4"	.260"	9.65	9.23	8.81	8.39
19125	.0820	#45	2.083	1-3/4"	3/4"	.263"	9.94	9.50	9.07	8.64
19130	.0860	#44	2.184	1-3/4"	3/4"	.276"	10.27	9.82	9.38	8.93
19135	.0890	#43	2.261	1-3/4"	3/4"	.285"	10.57	10.11	9.65	9.19
19140	.0935	#42	2.375	1-3/4"	3/4"	.300"	10.72	10.25	9.79	9.32
19145	.0938	3/32"	2.383	1-3/4"	3/4"	.301"	10.97	10.49	10.02	9.54
19150	.0960	#41	2.438	1-13/16"	13/16"	.308"	11.05	10.57	10.09	9.61
19155	.0980	#40	2.489	1-13/16"	13/16"	.314"	11.20	10.71	10.23	9.74
19160	.0984		2.500	46	21	8	11.28	10.79	10.30	9.81
19165	.0995	#39	2.527	1-13/16"	13/16"	.319"	11.33	10.84	10.34	9.85
19170	.1015	#38	2.578	1-13/16"	13/16"	.326"	11.43	10.93	10.44	9.94
19175	.1040	#37	2.642	1-13/16"	13/16"	.334"	11.53	11.03	10.53	10.03
19180	.1065	#36	2.705	1-13/16"	13/16"	.342"	11.62	11.11	10.61	10.10
19185	.1094	7/64"	2.779	1-13/16"	13/16"	.351"	11.66	11.15	10.65	10.14
19190	.1100	#35	2.794	1-7/8"	7/8"	.353"	11.74	11.23	10.72	10.21
19195	.1110	#34	2.819	1-7/8"	7/8"	.356"	11.88	11.36	10.85	10.33
19200	.1130	#33	2.870	1-7/8"	7/8"	.362"	11.97	11.45	10.93	10.41
19205	.1160	#32	2.946	1-7/8"	7/8"	.372"	12.05	11.53	11.00	10.48
19210	.1181		3.000	48	22	10	12.17	11.64	11.11	10.58
19215	.1200	#31	3.048	1-7/8"	7/8"	.385"	12.29	11.76	11.22	10.69
19220	.1250	1/8"	3.175	1-7/8"	7/8"	.401"	12.42	11.88	11.34	10.80
19225	.1285	#30	3.264	1-15/16"	15/16"	.412"	12.75	12.20	11.64	11.09
19230	.1360	#29	3.454	1-15/16"	15/16"	.436"	13.09	12.52	11.95	11.38
19235	.1378		3.500	49	24	11	13.50	12.91	12.33	11.74
19240	.1405	#28	3.569	1-15/16"	15/16"	.451"	13.67	13.08	12.48	11.89
19245	.1406	9/64"	3.571	1-15/16"	15/16"	.451"	13.82	13.22	12.62	12.02
19250	.1440	#27	3.658	2-1/16"	1"	.462"	15.04	14.39	13.73	13.08
19255	.1470	#26	3.734	2-1/16"	1"	.471"	15.20	14.54	13.88	13.22
19260	.1495	#25	3.797	2-1/16"	1"	.479"	15.39	14.72	14.05	13.38
19265	.1520	#24	3.861	2-1/16"	1"	.487"	15.42	14.75	14.08	13.41
19270	.1540	#23	3.912	2-1/16"	1"	.494"	15.53	14.85	14.18	13.50
19275	.1562	5/32"	3.967	2-1/16"	1"	.501"	15.62	14.94	14.26	13.58
19280	.1570	#22	3.988	2-1/8"	1-1/16"	.504"	16.58	15.86	15.14	14.42
19285	.1575		4.000	54	27	13	16.81	16.08	15.35	14.62

continued →

Series 1510 *(continued)*

.1590" - .3346"
(4.039mm - 8.500mm)

EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
19290	.1590	#21	4.039	2-1/8"	1-1/16"	.510"	17.02	16.28	15.54	14.80
19295	.1610	#20	4.089	2-1/8"	1-1/16"	.516"	17.15	16.40	15.66	14.91
19300	.1660	#19	4.216	2-1/8"	1-1/16"	.532"	17.85	17.07	16.30	15.52
19305	.1695	#18	4.305	2-1/8"	1-1/16"	.544"	18.06	17.27	16.49	15.70
19310	.1719	11/64"	4.366	2-1/8"	1-1/16"	.551"	18.41	17.61	16.81	16.01
19315	.1730	#17	4.394	2-3/16"	1-1/8"	.555"	18.68	17.86	17.05	16.24
19320	.1770	#16	4.496	2-3/16"	1-1/8"	.568"	18.88	18.06	17.24	16.42
19325	.1772		4.500	56	29	14	19.00	18.17	17.35	16.52
19330	.1800	#15	4.572	2-3/16"	1-1/8"	.577"	19.08	18.25	17.42	16.59
19335	.1820	#14	4.623	2-3/16"	1-1/8"	.584"	19.50	18.66	17.81	16.96
19340	.1850	#13	4.700	2-3/16"	1-1/8"	.593"	19.65	18.80	17.94	17.09
19345	.1875	3/16"	4.763	2-3/16"	1-1/8"	.601"	19.73	18.88	18.02	17.16
19350	.1890	#12	4.801	2-1/4"	1-3/16"	.606"	20.38	19.49	18.61	17.72
19355	.1910	#11	4.851	2-1/4"	1-3/16"	.613"	20.62	19.72	18.83	17.93
19360	.1935	#10	4.915	2-1/4"	1-3/16"	.621"	21.56	20.63	19.69	18.75
19365	.1960	#9	4.978	2-1/4"	1-3/16"	.629"	22.13	21.16	20.20	19.24
19370	.1969		5.000	57	30	16	22.24	21.27	20.31	19.34
19375	.1990	#8	5.055	2-1/4"	1-3/16"	.638"	22.41	21.44	20.46	19.49
19380	.2010	#7	5.105	2-1/4"	1-3/16"	.645"	23.07	22.07	21.06	20.06
19385	.2031	13/64"	5.159	2-1/4"	1-3/16"	.651"	23.24	22.23	21.22	20.21
19390	.2040	#6	5.182	2-3/8"	1-1/4"	.654"	23.70	22.67	21.64	20.61
19395	.2055	#5	5.220	2-3/8"	1-1/4"	.659"	24.18	23.13	22.08	21.03
19400	.2090	#4	5.309	2-3/8"	1-1/4"	.670"	24.63	23.56	22.49	21.42
19405	.2130	#3	5.410	2-3/8"	1-1/4"	.683"	25.07	23.98	22.89	21.80
19410	.2165		5.500	60	32	18	25.24	24.15	23.05	21.95
19415	.2188	7/32"	5.558	2-3/8"	1-1/4"	.702"	25.44	24.33	23.23	22.12
19420	.2210	#2	5.613	2-7/16"	1-5/16"	.709"	26.04	24.90	23.77	22.64
19425	.2280	#1	5.791	2-7/16"	1-5/16"	.731"	26.22	25.08	23.94	22.80
19430	.2340	A	5.944	2-7/16"	1-5/16"	.750"	26.28	25.14	23.99	22.85
19435	.2344	15/64"	5.954	2-7/16"	1-5/16"	.752"	26.32	25.18	24.03	22.89
19440	.2362		6.000	64	35	19	26.39	25.25	24.10	22.95
19445	.2380	B	6.045	2-1/2"	1-3/8"	.763"	26.52	25.37	24.21	23.06
19450	.2420	C	6.147	2-1/2"	1-3/8"	.776"	26.69	25.53	24.37	23.21
19455	.2460	D	6.248	2-1/2"	1-3/8"	.789"	26.92	25.75	24.58	23.41
19460	.2500	1/4" / E	6.350	2-1/2"	1-3/8"	.802"	27.08	25.91	24.73	23.55
19465	.2559		6.500	67	37	21	27.74	26.53	25.33	24.12
19470	.2570	F	6.528	2-5/8"	1-7/16"	.824"	28.32	27.09	25.86	24.63
19475	.2610	G	6.629	2-5/8"	1-7/16"	.837"	28.90	27.64	26.39	25.13
19480	.2656	17/64"	6.746	2-5/8"	1-7/16"	.852"	29.49	28.20	26.92	25.64
19485	.2660	H	6.756	2-11/16"	1-1/2"	.853"	30.33	29.01	27.69	26.37
19490	.2720	I	6.909	2-11/16"	1-1/2"	.872"	30.68	29.35	28.01	26.68
19495	.2756		7.000	68	38	22	30.92	29.58	28.23	26.89
19500	.2770	J	7.036	2-11/16"	1-1/2"	.888"	31.20	29.84	28.49	27.13
19505	.2810	K	7.137	2-11/16"	1-1/2"	.901"	31.48	30.11	28.74	27.37
19510	.2812	9/32"	7.142	2-11/16"	1-1/2"	.902"	31.65	30.27	28.90	27.52
19515	.2900	L	7.366	2-3/4"	1-9/16"	.930"	32.82	31.39	29.97	28.54
19520	.2950	M	7.493	2-3/4"	1-9/16"	.946"	35.12	33.59	32.07	30.54
19525	.2953		7.500	70	40	24	35.12	33.59	32.07	30.54
19530	.2969	19/64"	7.541	2-3/4"	1-9/16"	.952"	35.32	33.78	32.25	30.71
19535	.3020	N	7.671	2-15/16"	1-5/8"	.969"	37.19	35.57	33.96	32.34
19540	.3125	5/16"	7.938	2-15/16"	1-5/8"	1.002"	37.34	35.72	34.09	32.47
19545	.3150		8.000	75	43	26	40.07	38.32	36.58	34.84
19550	.3160	O	8.026	2-15/16"	1-11/16"	1.013"	40.07	38.32	36.58	34.84
19555	.3230	P	8.204	2-15/16"	1-11/16"	1.036"	40.41	38.65	36.90	35.14
19560	.3281	21/64"	8.334	2-15/16"	1-11/16"	1.052"	40.65	38.89	37.12	35.35
19565	.3320	Q	8.433	3"	1-11/16"	1.065"	41.60	39.79	37.98	36.17
19570	.3346		8.500	76	43	27	41.99	40.16	38.34	36.51

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
19575	.3390	R	8.611	3"	1-11/16"	1.087"	43.30	41.42	39.53	37.65
19580	.3438	11/32"	8.733	3"	1-11/16"	1.103"	45.06	43.10	41.14	39.18
19585	.3480	S	8.839	3-1/16"	1-3/4"	1.116"	45.68	43.69	41.71	39.72
19590	.3543		9.000	78	44	29	45.95	43.96	41.96	39.96
19595	.3580	T	9.093	3-1/16"	1-3/4"	1.148"	46.13	44.12	42.12	40.11
19600	.3594	23/64"	9.129	3-1/16"	1-3/4"	1.153"	46.44	44.42	42.40	40.38
19605	.3680	U	9.347	3-1/8"	1-13/16"	1.180"	50.86	48.65	46.44	44.23
19615	.3750	3/8"	9.525	3-1/8"	1-13/16"	1.203"	51.74	49.49	47.24	44.99
19620	.3770	V	9.576	3-1/4"	1-7/8"	1.209"	52.74	50.45	48.15	45.86
19625	.3860	W	9.804	3-1/4"	1-7/8"	1.238"	53.84	51.50	49.16	46.82
19630	.3906	25/64"	9.921	3-1/4"	1-7/8"	1.253"	54.67	52.29	49.92	47.54
19635	.3937		10.000	84	49	32	56.61	54.15	51.69	49.23
19640	.3970	X	10.084	3-5/16"	1-15/16"	1.273"	58.27	55.74	53.20	50.67
19645	.4040	Y	10.262	3-5/16"	1-15/16"	1.296"	58.73	56.18	53.62	51.07
19650	.4062	13/32"	10.317	3-5/16"	1-15/16"	1.303"	60.87	58.22	55.58	52.93
19655	.4130	Z	10.490	3-3/8"	2"	1.325"	61.53	58.85	56.18	53.50
19660	.4134		10.500	86	51	34	61.53	58.85	56.18	53.50
19665	.4219	27/64"	10.716	3-3/8"	2"	1.353"	62.20	59.50	56.79	54.09
19670	.4331		11.000	87	52	35	67.56	64.63	61.69	58.75
19675	.4375	7/16"	11.113	3-7/16"	2-1/16"	1.403"	67.56	64.63	61.69	58.75
19685	.4531	29/64"	11.509	3-9/16"	2-1/8"	1.453"	73.27	70.08	66.90	63.71
19690	.4688	15/32"	11.908	3-5/8"	2-1/8"	1.503"	77.50	74.13	70.76	67.39
19695	.4724		12.000	94	56	38	77.77	74.39	71.01	67.63
19700	.4844	31/64"	12.304	3-11/16"	2-3/16"	1.554"	78.38	74.98	71.57	68.16
19705	.4921		12.500	95	56	40	79.26	75.81	72.37	68.92
19710	.5000	1/2"	12.700	3-3/4"	2-1/4"	1.604"	79.83	76.36	72.89	69.42
19720	.5156	33/64"	13.096	4-1/4"	2-3/8"	1.654"	107.28	102.62	97.95	93.29
19725	.5312	17/32"	13.492	4-1/4"	2-3/8"	1.704"	110.07	105.28	100.50	95.71
19730	.5315		13.500	107	60	43	112.91	108.00	103.09	98.18
19735	.5469	35/64"	13.891	4-1/4"	2-3/8"	1.754"	115.69	110.66	105.63	100.60
19740	.5512		14.000	107	60	45	118.51	113.36	108.20	103.05
19745	.5625	9/16"	14.287	4-1/2"	2-1/2"	1.804"	129.23	123.61	117.99	112.37
19755	.5781	37/64"	14.683	4-1/2"	2-1/2"	1.854"	134.62	128.77	122.91	117.06
19760	.5906		15.000	115	65	48	137.36	131.38	125.41	119.44
19765	.5938	19/32"	15.082	4-1/2"	2-1/2"	1.904"	138.15	132.14	126.14	120.13
19770	.6094	39/64"	15.478	4-1/2"	2-1/2"	1.954"	138.92	132.88	126.84	120.80
19780	.6250	5/8"	15.875	4-1/2"	2-1/2"	2.004"	140.48	134.38	128.27	122.16
19785	.6299		16.000	115	65	51	144.22	137.95	131.68	125.41

Series 1510H

NEW ITEM

.0625" - .1575"
(1.588mm - 4.000mm)

Z=2 | 15° | 135° | 3xD | TECH PAGES 324-327

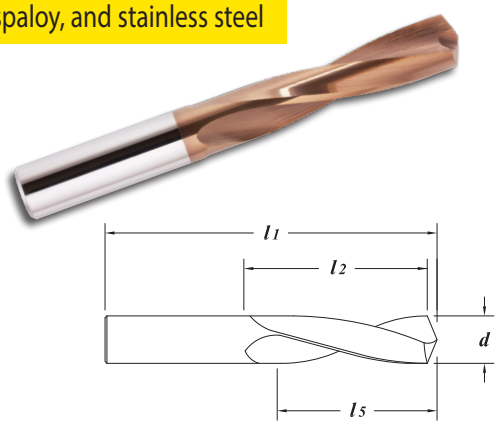
TOLERANCES		
d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Recommended for titanium, inconel, hastelloy, waspaloy, and stainless steel

Slow Helix

BALINIT® Durana Coating

Solid submicron grain carbide drill
Excellent heat resistance and lubricity
Heavy web for extra rigidity and added strength
Thinned point
Live tooling recommended on lathe processes
Bright Finish - page 63



	EDP#	d † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
	19071	.0625	1/16"	1.588	1-3/4"	5/8"	.200"	9.89	9.46	9.03	8.60
	19076	.0635	#52	1.613	1-3/4"	11/16"	.204"	10.03	9.59	9.16	8.72
	19081	.0670	#51	1.702	1-3/4"	11/16"	.215"	10.13	9.69	9.25	8.81
	19086	.0700	#50	1.778	1-3/4"	11/16"	.224"	10.34	9.89	9.44	8.99
	19091	.0730	#49	1.854	1-3/4"	11/16"	.234"	10.55	10.09	9.63	9.17
	19096	.0760	#48	1.930	1-3/4"	11/16"	.244"	10.81	10.34	9.87	9.40
	19101	.0781	5/64"	1.984	1-3/4"	11/16"	.250"	11.14	10.66	10.17	9.69
	19106	.0785	#47	1.994	1-3/4"	3/4"	.252"	11.44	10.95	10.45	9.95
	19116	.0787		2.000	45	19	6	11.59	11.09	10.58	10.08
	19121	.0810	#46	2.057	1-3/4"	3/4"	.260'	11.74	11.23	10.72	10.21
	19126	.0820	#45	2.083	1-3/4"	3/4"	.263"	12.04	11.52	10.99	10.47
NEW	19128	.0827		2.100	45	19	7	12.13	11.61	11.08	10.55
	19131	.0860	#44	2.184	1-3/4"	3/4"	.276"	12.35	11.81	11.28	10.74
	19136	.0890	#43	2.261	1-3/4"	3/4"	.285"	12.66	12.11	11.56	11.01
	19138	.0906		2.300	45	19	7	12.70	12.14	11.59	11.04
	19141	.0935	#42	2.375	1-3/4"	3/4"	.300"	12.80	12.24	11.69	11.13
	19146	.0938	3/32"	2.383	1-3/4"	3/4"	.301"	13.06	12.50	11.93	11.36
	19148	.0945		2.400	46	21	8	13.11	12.54	11.97	11.40
	19151	.0960	#41	2.438	1-13/16"	13/16"	.308"	13.14	12.57	12.00	11.43
	19156	.0980	#40	2.489	1-13/16"	13/16"	.314"	13.29	12.72	12.14	11.56
	19161	.0984		2.500	46	21	8	13.37	12.79	12.21	11.63
	19166	.0995	#39	2.527	1-13/16"	13/16"	.319"	13.44	12.86	12.27	11.69
	19171	.1015	#38	2.578	1-13/16"	13/16"	.326"	13.51	12.93	12.34	11.75
	19176	.1040	#37	2.642	1-13/16"	13/16"	.334"	13.59	13.00	12.41	11.82
	19181	.1065	#36	2.705	1-13/16"	13/16"	.342"	13.70	13.10	12.51	11.91
	19186	.1094	7/64"	2.779	1-13/16"	13/16"	.351"	13.78	13.18	12.58	11.98
	19191	.1100	#35	2.794	1-7/8"	7/8"	.353"	13.83	13.23	12.63	12.03
	19196	.1110	#34	2.819	1-7/8"	7/8"	.356"	13.97	13.37	12.76	12.15
	19201	.1130	#33	2.870	1-7/8"	7/8"	.362"	14.05	13.44	12.83	12.22
	19206	.1160	#32	2.946	1-7/8"	7/8"	.372"	14.15	13.53	12.92	12.30
	19211	.1181		3.000	48	22	10	14.27	13.65	13.03	12.41
	19216	.1200	#31	3.048	1-7/8"	7/8"	.385"	14.36	13.74	13.11	12.49
	19218	.1220		3.100	48	22	10	14.43	13.81	13.18	12.55
	19221	.1250	1/8"	3.175	1-7/8"	7/8"	.401"	14.52	13.89	13.26	12.63
	19226	.1285	#30	3.264	1-15/16"	15/16"	.412"	14.85	14.20	13.56	12.91
	19231	.1360	#29	3.454	1-15/16"	15/16"	.436"	15.17	14.51	13.85	13.19
	19236	.1378		3.500	49	24	11	15.59	14.92	14.24	13.56
	19241	.1405	#28	3.569	1-15/16"	15/16"	.451"	15.78	15.09	14.41	13.72
	19246	.1406	9/64"	3.571	1-15/16"	15/16"	.451"	15.89	15.20	14.51	13.82
	19251	.1440	#27	3.658	2-1/16"	1"	.462"	17.14	16.39	15.65	14.90
	19256	.1470	#26	3.734	2-1/16"	1"	.471"	17.30	16.54	15.79	15.04
	19261	.1495	#25	3.797	2-1/16"	1"	.479"	17.50	16.74	15.98	15.22
	19266	.1520	#24	3.861	2-1/16"	1"	.487"	17.53	16.76	16.00	15.24
	19271	.1540	#23	3.912	2-1/16"	1"	.494"	17.62	16.85	16.09	15.32
	19276	.1562	5/32"	3.967	2-1/16"	1"	.501"	17.71	16.94	16.17	15.40
	19281	.1570	#22	3.988	2-1/8"	1-1/16"	.504"	18.68	17.86	17.05	16.24
	19286	.1575		4.000	54	27	13	18.88	18.06	17.24	16.42

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
19291	.1590	#21	4.039	2-1/8"	1-1/16"	.510"	19.10	18.27	17.44	16.61
19296	.1610	#20	4.089	2-1/8"	1-1/16"	.516"	19.24	18.40	17.57	16.73
19301	.1660	#19	4.216	2-1/8"	1-1/16"	.532"	19.93	19.06	18.20	17.33
19306	.1695	#18	4.305	2-1/8"	1-1/16"	.544"	20.14	19.26	18.39	17.51
19311	.1719	11/64"	4.366	2-1/8"	1-1/16"	.551"	20.52	19.62	18.73	17.84
19316	.1730	#17	4.394	2-3/16"	1-1/8"	.555"	20.77	19.87	18.96	18.06
19321	.1770	#16	4.496	2-3/16"	1-1/8"	.568"	20.99	20.08	19.16	18.25
19326	.1772		4.500	56	29	14	21.07	20.15	19.24	18.32
19331	.1800	#15	4.572	2-3/16"	1-1/8"	.577"	21.16	20.24	19.32	18.40
19336	.1820	#14	4.623	2-3/16"	1-1/8"	.584"	21.60	20.66	19.72	18.78
19341	.1850	#13	4.700	2-3/16"	1-1/8"	.593"	21.76	20.81	19.87	18.92
19346	.1875	3/16"	4.763	2-3/16"	1-1/8"	.601"	21.82	20.87	19.92	18.97
19351	.1890	#12	4.801	2-1/4"	1-3/16"	.606"	23.99	22.95	21.90	20.86
19356	.1910	#11	4.851	2-1/4"	1-3/16"	.613"	24.24	23.19	22.13	21.08
19361	.1935	#10	4.915	2-1/4"	1-3/16"	.621"	25.19	24.09	23.00	21.90
19366	.1960	#9	4.978	2-1/4"	1-3/16"	.629"	25.75	24.63	23.51	22.39
19371	.1969		5.000	57	30	16	25.88	24.75	23.63	22.50
19376	.1990	#8	5.055	2-1/4"	1-3/16"	.638"	26.01	24.88	23.75	22.62
19381	.2010	#7	5.105	2-1/4"	1-3/16"	.645"	26.68	25.52	24.36	23.20
19386	.2031	13/64"	5.159	2-1/4"	1-3/16"	.651"	26.84	25.67	24.51	23.34
19391	.2040	#6	5.182	2-3/8"	1-1/4"	.654"	27.32	26.14	24.95	23.76
19396	.2055	#5	5.220	2-3/8"	1-1/4"	.659"	27.82	26.61	25.40	24.19
19401	.2090	#4	5.309	2-3/8"	1-1/4"	.670"	28.22	26.99	25.77	24.54
19406	.2130	#3	5.410	2-3/8"	1-1/4"	.683"	28.67	27.42	26.18	24.93
19411	.2165		5.500	60	32	18	28.88	27.62	26.37	25.11
19416	.2188	7/32"	5.558	2-3/8"	1-1/4"	.702"	29.05	27.79	26.52	25.26
19421	.2210	#2	5.613	2-7/16"	1-5/16"	.709"	29.66	28.37	27.08	25.79
19426	.2280	#1	5.791	2-7/16"	1-5/16"	.731"	29.83	28.53	27.24	25.94
19431	.2340	A	5.944	2-7/16"	1-5/16"	.750"	29.90	28.60	27.30	26.00
19436	.2344	15/64"	5.954	2-7/16"	1-5/16"	.752"	29.93	28.63	27.33	26.03
19441	.2362		6.000	64	35	19	30.03	28.72	27.42	26.11
19446	.2380	B	6.045	2-1/2"	1-3/8"	.763"	30.13	28.82	27.51	26.20
19451	.2420	C	6.147	2-1/2"	1-3/8"	.776"	30.31	29.00	27.68	26.36
19456	.2460	D	6.248	2-1/2"	1-3/8"	.789"	30.52	29.19	27.87	26.54
19461	.2500	1/4" / E	6.350	2-1/2"	1-3/8"	.802"	30.71	29.37	28.04	26.70
19466	.2559		6.500	67	37	21	34.16	32.67	31.19	29.70
19471	.2570	F	6.528	2-5/8"	1-7/16"	.824"	34.74	33.23	31.72	30.21
19476	.2610	G	6.629	2-5/8"	1-7/16"	.837"	35.32	33.78	32.25	30.71
19481	.2656	17/64"	6.746	2-5/8"	1-7/16"	.852"	35.90	34.34	32.78	31.22
19486	.2660	H	6.756	2-11/16"	1-1/2"	.853"	36.74	35.15	33.55	31.95
19491	.2720	I	6.909	2-11/16"	1-1/2"	.872"	37.09	35.48	33.86	32.25
19496	.2756		7.000	68	38	22	37.34	35.72	34.09	32.47
19501	.2770	J	7.036	2-11/16"	1-1/2"	.888"	37.63	35.99	34.36	32.72
19506	.2810	K	7.137	2-11/16"	1-1/2"	.901"	37.90	36.26	34.61	32.96
19511	.2812	9/32"	7.142	2-11/16"	1-1/2"	.902"	38.03	36.38	34.72	33.07
19516	.2900	L	7.366	2-3/4"	1-9/16"	.930"	39.22	37.51	35.81	34.10
19521	.2950	M	7.493	2-3/4"	1-9/16"	.946"	41.53	39.72	37.92	36.11
19526	.2953		7.500	70	40	24	41.53	39.72	37.92	36.11
19531	.2969	19/64"	7.541	2-3/4"	1-9/16"	.952"	41.70	39.89	38.07	36.26
19536	.3020	N	7.671	2-15/16"	1-5/8"	.989"	43.62	41.72	39.83	37.93
19541	.3125	5/16"	7.938	2-15/16"	1-5/8"	1.002"	43.76	41.86	39.95	38.05
19546	.3150		8.000	75	43	26	46.47	44.45	42.43	40.41
19551	.3160	O	8.026	2-15/16"	1-11/16"	1.013"	46.47	44.45	42.43	40.41
19556	.3230	P	8.204	2-15/16"	1-11/16"	1.036"	46.82	44.78	42.75	40.71
19561	.3281	21/64"	8.334	2-15/16"	1-11/16"	1.052"	47.06	45.01	42.97	40.92
19566	.3320	Q	8.433	3"	1-11/16"	1.065"	48.01	45.93	43.84	41.75
19571	.3346		8.500	76	43	27	48.40	46.30	44.19	42.09

continued →

Series 1510H *(continued)*

.3390" - .6299"
(8.611mm - 16.000mm)

EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
19576	.3390	R	8.611	3"	1-11/16"	1.087"	49.70	47.54	45.38	43.22
19581	.3438	11/32"	8.733	3"	1-11/16"	1.103"	51.47	49.24	47.00	44.76
19586	.3480	S	8.839	3-1/16"	1-3/4"	1.116"	54.36	52.00	49.63	47.27
19591	.3543		9.000	78	44	29	54.67	52.29	49.92	47.54
19596	.3580	T	9.093	3-1/16"	1-3/4"	1.148"	54.80	52.42	50.03	47.65
19601	.3594	23/64"	9.129	3-1/16"	1-3/4"	1.153"	55.14	52.75	50.35	47.95
19606	.3680	U	9.347	3-1/8"	1-13/16"	1.180"	59.56	56.97	54.38	51.79
19611	.3740		9.500	79	46	30	60.04	57.43	54.82	52.21
19616	.3750	3/8"	9.525	3-1/8"	1-13/16"	1.203"	60.44	57.82	55.19	52.56
19621	.3770	V	9.576	3-1/4"	1-7/8"	1.209"	62.71	59.98	57.26	54.53
19626	.3860	W	9.804	3-1/4"	1-7/8"	1.238"	63.80	61.03	58.25	55.48
19631	.3906	25/64"	9.921	3-1/4"	1-7/8"	1.253"	64.60	61.79	58.98	56.17
19636	.3937		10.000	84	49	32	66.56	63.67	60.77	57.88
19641	.3970	X	10.084	3-5/16"	1-15/16"	1.273"	68.24	65.27	62.31	59.34
19646	.4040	Y	10.262	3-5/16"	1-15/16"	1.296"	68.71	65.73	62.74	59.75
19651	.4062	13/32"	10.317	3-5/16"	1-15/16"	1.303"	70.81	67.73	64.65	61.57
19656	.4130	Z	10.490	3-3/8"	2"	1.325"	71.47	68.37	65.26	62.15
19661	.4134		10.500	86	51	34	71.47	68.37	65.26	62.15
19666	.4219	27/64"	10.716	3-3/8"	2"	1.353"	72.14	69.00	65.87	62.73
19671	.4331		11.000	87	52	35	77.50	74.13	70.76	67.39
19676	.4375	7/16"	11.113	3-7/16"	2-1/16"	1.403"	77.50	74.13	70.76	67.39
19681	.4528		11.500	91	54	37	83.21	79.60	75.98	72.36
19686	.4531	29/64"	11.509	3-9/16"	2-1/8"	1.453"	83.21	79.60	75.98	72.36
19691	.4688	15/32"	11.908	3-5/8"	2-1/8"	1.503"	87.43	83.63	79.83	76.03
19696	.4724		12.000	94	56	38	87.72	83.91	80.09	76.28
19701	.4844	31/64"	12.304	3-11/16"	2-3/16"	1.554"	88.32	84.48	80.64	76.80
19706	.4921		12.500	95	56	40	89.22	85.34	81.46	77.58
19711	.5000	1/2"	12.700	3-3/4"	2-1/4"	1.604"	89.79	85.89	81.98	78.08
19716	.5118		13.000	107	60	42	118.91	113.74	108.57	103.40
19721	.5156	33/64"	13.096	4-1/4"	2-3/8"	1.654"	121.70	116.41	111.12	105.83
19726	.5312	17/32"	13.492	4-1/4"	2-3/8"	1.704"	124.50	119.09	113.67	108.26
19731	.5315		13.500	107	60	43	127.31	121.77	116.24	110.70
19736	.5469	35/64"	13.891	4-1/4"	2-3/8"	1.754"	130.09	124.43	118.78	113.12
19741	.5512		14.000	107	60	45	132.93	127.15	121.37	115.59
19746	.5625	9/16"	14.287	4-1/2"	2-1/2"	1.804"	143.65	137.40	131.16	124.91
19751	.5709		14.500	115	65	47	146.34	139.98	133.61	127.25
19756	.5781	37/64"	14.683	4-1/2"	2-1/2"	1.854"	149.03	142.55	136.07	129.59
19761	.5906		15.000	115	65	48	151.77	145.17	138.57	131.97
19766	.5938	19/32"	15.082	4-1/2"	2-1/2"	1.904"	152.56	145.93	139.29	132.66
19771	.6094	39/64"	15.478	4-1/2"	2-1/2"	1.954"	153.34	146.67	140.01	133.34
19776	.6102		15.500	115	65	50	154.12	147.42	140.72	134.02
19781	.6250	5/8"	15.875	4-1/2"	2-1/2"	2.004"	154.92	148.18	141.45	134.71
19786	.6299		16.000	115	65	51	158.67	151.77	144.87	137.97

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

NEW ITEMS

Z=2 | 25° | 135° | 3xD | 5xD | TECH PAGES 320-323

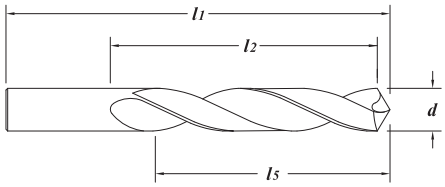
Series 1520, 1205

.0625" - .1015"
(1.588mm - 2.578mm)

General purpose for all material groups



- Solid submicron grain carbide drill
- No spotting required in most applications
- 4-facet self-centering point
- Live tooling recommended on lathe processes
- Durana Coating - page 75



3xD (1520) EDP#	5xD (1205) EDP#	*d* † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
77165		.0625	1/16"	1.588	1-3/4"	5/8"	.200"	7.42	7.10	6.77	6.45
	89165	.0625	1/16"	1.588	1-3/4"	3/4"	.325"	7.42	7.10	6.77	6.45
77170		.0635	#52	1.613	1-3/4"	11/16"	.204"	7.52	7.19	6.87	6.54
	89170	.0635	#52	1.613	1-3/4"	3/4"	.331"	7.52	7.19	6.87	6.54
77175		.0670	#51	1.702	1-3/4"	11/16"	.215"	7.64	7.30	6.97	6.64
	89175	.0670	#51	1.702	1-3/4"	3/4"	.349"	7.64	7.30	6.97	6.64
77180		.0700	#50	1.778	1-3/4"	11/16"	.224"	7.82	7.48	7.14	6.80
	89180	.0700	#50	1.778	1-3/4"	7/8"	.364"	7.82	7.48	7.14	6.80
77185		.0730	#49	1.854	1-3/4"	11/16"	.234"	8.03	7.68	7.33	6.98
	89185	.0730	#49	1.854	1-3/4"	7/8"	.380"	8.03	7.68	7.33	6.98
77190		.0760	#48	1.930	1-3/4"	11/16"	.244"	8.29	7.93	7.57	7.21
	89190	.0760	#48	1.930	1-3/4"	7/8"	.396"	8.29	7.93	7.57	7.21
77195		.0781	5/64"	1.984	1-3/4"	11/16"	.250"	8.60	8.23	7.85	7.48
	89195	.0781	5/64"	1.984	1-3/4"	7/8"	.407"	8.60	8.23	7.85	7.48
77200		.0785	#47	1.994	1-3/4"	3/4"	.252"	8.89	8.50	8.12	7.73
	89200	.0785	#47	1.994	1-3/4"	7/8"	.409"	8.89	8.50	8.12	7.73
77205		.0787		2.000	44	19	6	9.03	8.64	8.24	7.85
	89205	.0787		2.000	44	22	10	9.03	8.64	8.24	7.85
77210		.0810	#46	2.057	1-3/4"	3/4"	.260"	9.18	8.78	8.38	7.98
	89210	.0810	#46	2.057	1-3/4"	7/8"	.422"	9.18	8.78	8.38	7.98
77215		.0820	#45	2.083	1-3/4"	3/4"	.263"	9.45	9.04	8.63	8.22
	89215	.0820	#45	2.083	1-3/4"	7/8"	.427"	9.45	9.04	8.63	8.22
77220		.0860	#44	2.184	1-3/4"	3/4"	.276"	9.76	9.34	8.91	8.49
	89220	.0860	#44	2.184	2"	1"	.448"	9.76	9.34	8.91	8.49
77225		.0890	#43	2.261	1-3/4"	3/4"	.285"	10.04	9.60	9.17	8.73
	89225	.0890	#43	2.261	2"	1"	.463"	10.04	9.60	9.17	8.73
77230		.0935	#42	2.375	1-3/4"	3/4"	.300"	10.18	9.74	9.29	8.85
	89230	.0935	#42	2.375	2"	1"	.487"	10.18	9.74	9.29	8.85
77235		.0938	3/32"	2.383	1-3/4"	3/4"	.301"	10.41	9.96	9.50	9.05
	89235	.0938	3/32"	2.383	2"	1"	.488"	10.41	9.96	9.50	9.05
77240		.0960	#41	2.438	1-13/16"	13/16"	.308"	10.50	10.04	9.59	9.13
	89240	.0960	#41	2.438	2"	1"	.500"	10.50	10.04	9.59	9.13
77245		.0980	#40	2.489	1-13/16"	13/16"	.314"	10.66	10.20	9.73	9.27
	89245	.0980	#40	2.489	2"	1"	.510"	10.66	10.20	9.73	9.27
77250		.0984		2.500	46	21	8	10.72	10.25	9.79	9.32
	89250	.0984		2.500	57	32	13	10.72	10.25	9.79	9.32
77255		.0995	#39	2.527	1-13/16"	13/16"	.319"	10.76	10.30	9.83	9.36
	89255	.0995	#39	2.527	2-1/4"	1-1/4"	.518"	10.76	10.30	9.83	9.36
77260		.1015	#38	2.578	1-13/16"	13/16"	.326"	10.86	10.38	9.91	9.44
	89260	.1015	#38	2.578	2-1/4"	1-1/4"	.529"	10.89	10.42	9.94	9.47

continued →

Series 1520, 1205 *(continued)*

.1040" - .1719"
(2.642mm - 4.366mm)

3xD (1520) EDP#	5xD (1205) EDP#	*d* † Diameter Decimal	*d* † Diameter	*d* † Diameter Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
77265		.1040	#37	2.642	1-13/16"	13/16"	.334"	10.95	10.47	10.00	9.52
	89265	.1040	#37	2.642	2-1/4"	1-1/4"	.542"	11.04	10.56	10.08	9.60
77270		.1065	#36	2.705	1-13/16"	13/16"	.342"	11.02	10.54	10.06	9.58
	89270	.1065	#36	2.705	2-1/4"	1-1/4"	.555"	11.18	10.69	10.21	9.72
77275		.1094	7/64"	2.779	1-13/16"	13/16"	.351"	11.09	10.60	10.12	9.64
	89275	.1094	7/64"	2.779	2-1/4"	1-1/4"	.570"	11.36	10.87	10.37	9.88
77280		.1100	#35	2.794	1-7/8"	7/8"	.353"	11.16	10.67	10.19	9.70
	89280	.1100	#35	2.794	2-1/4"	1-1/4"	.573"	11.49	10.99	10.49	9.99
77285		.1110	#34	2.819	1-7/8"	7/8"	.356"	11.29	10.80	10.31	9.82
	89285	.1110	#34	2.819	2-1/4"	1-1/4"	.578"	11.63	11.12	10.62	10.11
77290		.1130	#33	2.870	1-7/8"	7/8"	.362"	11.36	10.87	10.37	9.88
	89290	.1130	#33	2.870	2-1/4"	1-1/4"	.588"	11.85	11.33	10.82	10.30
77295		.1160	#32	2.946	1-7/8"	7/8"	.372"	11.44	10.95	10.45	9.95
	89295	.1160	#32	2.946	2-1/4"	1-1/4"	.604"	11.97	11.45	10.93	10.41
77300		.1181		3.000	48	22	10	11.58	11.08	10.57	10.07
	89300	.1181		3.000	57	32	16	12.09	11.56	11.04	10.51
77305		.1200	#31	3.048	1-7/8"	7/8"	.385"	11.65	11.14	10.64	10.13
	89305	.1200	#31	3.048	2-1/4"	1-1/4"	.625"	12.17	11.64	11.11	10.58
77310		.1250	1/8"	3.175	1-7/8"	7/8"	.401"	11.78	11.26	10.75	10.24
	89310	.1250	1/8"	3.175	2-1/4"	1-1/4"	.651"	12.32	11.78	11.25	10.71
77315		.1285	#30	3.264	1-15/16"	15/16"	.412"	12.10	11.57	11.05	10.52
	89315	.1285	#30	3.264	2-1/4"	1-1/4"	.669"	12.63	12.08	11.53	10.98
77320		.1360	#29	3.454	1-15/16"	15/16"	.436"	12.42	11.88	11.34	10.80
	89320	.1360	#29	3.454	2-1/2"	1-3/8"	.708"	13.03	12.46	11.90	11.33
77325		.1378		3.500	49	24	11	12.82	12.27	11.71	11.15
	89325	.1378		3.500	63	35	18	13.46	12.87	12.29	11.70
77330		.1405	#28	3.569	1-15/16"	15/16"	.451"	13.00	12.43	11.87	11.30
	89330	.1405	#28	3.569	2-1/2"	1-3/8"	.732"	13.58	12.99	12.40	11.81
77335		.1406	9/64"	3.571	1-15/16"	15/16"	.451"	13.12	12.55	11.98	11.41
	89335	.1406	9/64"	3.571	2-1/2"	1-3/8"	.732"	13.74	13.15	12.55	11.95
77340		.1440	#27	3.658	2-1/16"	1"	.462"	14.28	13.66	13.04	12.42
	89340	.1440	#27	3.658	2-1/2"	1-3/8"	.750"	14.28	13.66	13.04	12.42
77345		.1470	#26	3.734	2-1/16"	1"	.471"	14.42	13.79	13.17	12.54
	89345	.1470	#26	3.734	2-1/2"	1-3/8"	.765"	14.42	13.79	13.17	12.54
77350		.1495	#25	3.797	2-1/16"	1"	.479"	14.62	13.98	13.35	12.71
	89350	.1495	#25	3.797	2-1/2"	1-3/8"	.778"	14.62	13.98	13.35	12.71
77355		.1520	#24	3.861	2-1/16"	1"	.487"	14.64	14.00	13.37	12.73
	89355	.1520	#24	3.861	2-1/2"	1-3/8"	.791"	14.64	14.00	13.37	12.73
77360		.1540	#23	3.912	2-1/16"	1"	.494"	14.74	14.10	13.46	12.82
	89360	.1540	#23	3.912	2-1/2"	1-3/8"	.802"	14.74	14.10	13.46	12.82
77365		.1562	5/32"	3.967	2-1/16"	1"	.501"	14.85	14.20	13.56	12.91
	89365	.1562	5/32"	3.967	2-1/2"	1-3/8"	.813"	14.85	14.20	13.56	12.91
77370		.1570	#22	3.988	2-1/8"	1-1/16"	.504"	15.78	15.09	14.41	13.72
	89370	.1570	#22	3.988	2-1/2"	1-3/8"	.818"	15.78	15.09	14.41	13.72
77375		.1575		4.000	54	27	13	15.97	15.28	14.58	13.89
	89375	.1575		4.000	63	35	21	15.97	15.28	14.58	13.89
77380		.1590	#21	4.039	2-1/8"	1-1/16"	.510"	16.16	15.46	14.75	14.05
	89380	.1590	#21	4.039	2-1/2"	1-3/8"	.828"	16.16	15.46	14.75	14.05
77385		.1610	#20	4.089	2-1/8"	1-1/16"	.516"	16.27	15.57	14.86	14.15
	89385	.1610	#20	4.089	2-1/2"	1-3/8"	.838"	16.27	15.57	14.86	14.15
77390		.1660	#19	4.216	2-1/8"	1-1/16"	.532"	16.94	16.20	15.47	14.73
	89390	.1660	#19	4.216	2-3/4"	1-5/8"	.864"	16.94	16.20	15.47	14.73
77395		.1695	#18	4.305	2-1/8"	1-1/16"	.544"	17.15	16.40	15.66	14.91
	89395	.1695	#18	4.305	2-3/4"	1-5/8"	.883"	17.15	16.40	15.66	14.91
77400		.1719	11/64"	4.366	2-1/8"	1-1/16"	.551"	17.51	16.75	15.99	15.23
	89400	.1719	11/64"	4.366	2-3/4"	1-5/8"	.895"	17.51	16.75	15.99	15.23

GARR TOOL®

† *Metric equivalents are for reference only*

3xD (1520) EDP#	5xD (1205) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
77405		.1730	#17	4.394	2-3/16"	1-1/8"	.555"	17.74	16.97	16.20	15.43
	89405	.1730	#17	4.394	2-3/4"	1-5/8"	.901"	17.74	16.97	16.20	15.43
77410		.1770	#16	4.496	2-3/16"	1-1/8"	.568"	17.94	17.16	16.38	15.60
	89410	.1770	#16	4.496	2-3/4"	1-5/8"	.922"	17.94	17.16	16.38	15.60
77415		.1772		4.500	56	29	14	18.03	17.25	16.46	15.68
	89415	.1772		4.500	70	41	23	18.03	17.25	16.46	15.68
77420		.1800	#15	4.572	2-3/16"	1-1/8"	.577"	18.11	17.33	16.54	15.75
	89420	.1800	#15	4.572	2-3/4"	1-5/8"	.937"	18.11	17.33	16.54	15.75
77425		.1820	#14	4.623	2-3/16"	1-1/8"	.584"	18.53	17.72	16.92	16.11
	89425	.1820	#14	4.623	2-3/4"	1-5/8"	.948"	18.53	17.72	16.92	16.11
77430		.1850	#13	4.700	2-3/16"	1-1/8"	.593"	18.66	17.85	17.04	16.23
	89430	.1850	#13	4.700	2-3/4"	1-5/8"	.963"	18.66	17.85	17.04	16.23
77435		.1875	3/16"	4.763	2-3/16"	1-1/8"	.601"	18.76	17.94	17.13	16.31
	89435	.1875	3/16"	4.763	2-3/4"	1-5/8"	.976"	18.76	17.94	17.13	16.31
77440		.1890	#12	4.801	2-1/4"	1-3/16"	.606"	19.37	18.52	17.68	16.84
	89440	.1890	#12	4.801	2-3/4"	1-5/8"	.984"	19.37	18.52	17.68	16.84
77445		.1910	#11	4.851	2-1/4"	1-3/16"	.613"	19.57	18.72	17.87	17.02
	89445	.1910	#11	4.851	2-3/4"	1-5/8"	.995"	19.57	18.72	17.87	17.02
77450		.1935	#10	4.915	2-1/4"	1-3/16"	.621"	20.52	19.62	18.73	17.84
	89450	.1935	#10	4.915	2-3/4"	1-5/8"	1.008"	20.52	19.62	18.73	17.84
77455		.1960	#9	4.978	2-1/4"	1-3/16"	.629"	21.02	20.11	19.19	18.28
	89455	.1960	#9	4.978	3"	1-3/4"	1.021"	21.02	20.11	19.19	18.28
77460		.1969		5.000	57	30	16	21.15	20.23	19.31	18.39
	89460	.1969		5.000	76	44	26	21.15	20.23	19.31	18.39
77465		.1990	#8	5.055	2-1/4"	1-3/16"	.638"	21.29	20.36	19.44	18.51
	89465	.1990	#8	5.055	3"	1-3/4"	1.036"	21.29	20.36	19.44	18.51
77470		.2010	#7	5.105	2-1/4"	1-3/16"	.645"	21.91	20.96	20.00	19.05
	89470	.2010	#7	5.105	3"	1-3/4"	1.047"	21.91	20.96	20.00	19.05
77475		.2031	13/64"	5.159	2-1/4"	1-3/16"	.651"	22.08	21.12	20.16	19.20
	89475	.2031	13/64"	5.159	3"	1-3/4"	1.058"	22.08	21.12	20.16	19.20
77480		.2040	#6	5.182	2-3/8"	1-1/4"	.654"	22.53	21.55	20.57	19.59
	89480	.2040	#6	5.182	3"	1-3/4"	1.062"	22.53	21.55	20.57	19.59
77485		.2055	#5	5.220	2-3/8"	1-1/4"	.659"	23.00	22.00	21.00	20.00
	89485	.2055	#5	5.220	3"	1-3/4"	1.070"	23.00	22.00	21.00	20.00
77490		.2090	#4	5.309	2-3/8"	1-1/4"	.670"	23.39	22.37	21.36	20.34
	89490	.2090	#4	5.309	3"	1-3/4"	1.088"	23.39	22.37	21.36	20.34
77495		.2130	#3	5.410	2-3/8"	1-1/4"	.683"	23.81	22.77	21.74	20.70
	89495	.2130	#3	5.410	3"	1-3/4"	1.109"	23.81	22.77	21.74	20.70
77500		.2165		5.500	60	32	18	23.99	22.95	21.90	20.86
	89500	.2165		5.500	76	44	29	23.99	22.95	21.90	20.86
77505		.2188	7/32"	5.558	2-3/8"	1-1/4"	.702"	24.16	23.11	22.06	21.01
	89505	.2188	7/32"	5.558	3"	1-3/4"	1.139"	24.16	23.11	22.06	21.01
77510		.2210	#2	5.613	2-7/16"	1-5/16"	.709"	24.76	23.68	22.61	21.53
	89510	.2210	#2	5.613	3"	1-3/4"	1.151"	24.76	23.68	22.61	21.53
77515		.2280	#1	5.791	2-7/16"	1-5/16"	.731"	24.90	23.82	22.73	21.65
	89515	.2280	#1	5.791	3"	1-3/4"	1.187"	24.90	23.82	22.73	21.65
77520		.2340	A	5.944	2-7/16"	1-5/16"	.750"	24.94	23.86	22.77	21.69
	89520	.2340	A	5.944	3-1/4"	2"	1.218"	25.19	24.09	23.00	21.90
77525		.2344	15/64"	5.954	2-7/16"	1-5/16"	.752"	25.02	23.94	22.85	21.76
	89525	.2344	15/64"	5.954	3-1/4"	2"	1.221"	25.25	24.16	23.06	21.96
77530		.2362		6.000	64	35	19	25.10	24.01	22.92	21.83
	89530	.2362		6.000	82	50	31	25.36	24.26	23.15	22.05
77535		.2380	B	6.045	2-1/2"	1-3/8"	.763"	25.19	24.09	23.00	21.90
	89535	.2380	B	6.045	3-1/4"	2"	1.239"	25.44	24.33	23.23	22.12
77540		.2420	C	6.147	2-1/2"	1-3/8"	.776"	25.38	24.28	23.17	22.07
	89540	.2420	C	6.147	3-1/4"	2"	1.260"	25.63	24.52	23.40	22.29

continued →

Series 1520, 1205 *(continued)*

.2460" - .3543"
(6.248mm - 9.000mm)

3xD (1520) EDP#	5xD (1205) EDP#	*d* † Diameter Decimal		*d* † Diameter Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
77545		.2460	D	6.248	2-1/2"	1-3/8"	.789"	25.58	24.46	23.35	22.24
	89545	.2460	D	6.248	3-1/4"	2"	1.281"	25.82	24.70	23.57	22.45
77550		.2500	1/4" / E	6.350	2-1/2"	1-3/8"	.802"	25.75	24.63	23.51	22.39
	89550	.2500	1/4" / E	6.350	3-1/4"	2"	1.302"	26.00	24.87	23.74	22.61
77555		.2559		6.500	67	37	21	26.36	25.21	24.07	22.92
	89555	.2559		6.500	82	50	34	26.63	25.48	24.32	23.16
77560		.2570	F	6.528	2-5/8"	1-7/16"	.824"	26.92	25.75	24.58	23.41
	89560	.2570	F	6.528	3-1/4"	2"	1.338"	27.17	25.99	24.81	23.63
77565		.2610	G	6.629	2-5/8"	1-7/16"	.837"	27.44	26.25	25.05	23.86
	89565	.2610	G	6.629	3-1/2"	2-1/8"	1.359"	27.74	26.53	25.33	24.12
77570		.2656	17/64"	6.746	2-5/8"	1-7/16"	.852"	28.03	26.81	25.59	24.37
	89570	.2656	17/64"	6.746	3-1/2"	2-1/8"	1.383"	28.30	27.07	25.84	24.61
77575		.2660	H	6.756	2-11/16"	1-1/2"	.853"	28.81	27.56	26.30	25.05
	89575	.2660	H	6.756	3-1/2"	2-1/8"	1.385"	29.11	27.84	26.58	25.31
77580		.2720	I	6.909	2-11/16"	1-1/2"	.872"	29.14	27.87	26.61	25.34
	89580	.2720	I	6.909	3-1/2"	2-1/8"	1.416"	29.43	28.15	26.87	25.59
77585		.2756		7.000	68	38	22	29.37	28.09	26.82	25.54
	89585	.2756		7.000	88	54	36	29.67	28.38	27.09	25.80
77590		.2770	J	7.036	2-11/16"	1-1/2"	.888"	29.66	28.37	27.08	25.79
	89590	.2770	J	7.036	3-1/2"	2-1/8"	1.442"	29.93	28.63	27.33	26.03
77595		.2810	K	7.137	2-11/16"	1-1/2"	.901"	29.92	28.62	27.32	26.02
	89595	.2810	K	7.137	3-1/2"	2-1/8"	1.463"	30.20	28.89	27.57	26.26
77600		.2812	9/32"	7.142	2-11/16"	1-1/2"	.902"	30.07	28.77	27.46	26.15
	89600	.2812	9/32"	7.142	3-1/2"	2-1/8"	1.464"	30.39	29.07	27.75	26.43
77605		.2900	L	7.366	2-3/4"	1-9/16"	.930"	31.18	29.82	28.47	27.11
	89605	.2900	L	7.366	3-1/2"	2-1/8"	1.510"	31.48	30.11	28.74	27.37
77610		.2950	M	7.493	2-3/4"	1-9/16"	.946"	33.37	31.92	30.47	29.02
	89610	.2950	M	7.493	3-3/4"	2-3/8"	1.536"	33.70	32.23	30.77	29.30
77615		.2953		7.500	70	40	24	33.37	31.92	30.47	29.02
	89615	.2953		7.500	95	60	39	33.70	32.23	30.77	29.30
77620		.2969	19/64"	7.541	2-3/4"	1-9/16"	.952"	33.53	32.08	30.62	29.16
	89620	.2969	19/64"	7.541	3-3/4"	2-3/8"	1.546"	33.70	32.23	30.77	29.30
77625		.3020	N	7.671	2-15/16"	1-5/8"	.969"	35.34	33.80	32.27	30.73
	89625	.3020	N	7.671	3-3/4"	2-3/8"	1.573"	35.70	34.14	32.59	31.04
77630		.3125	5/16"	7.938	2-15/16"	1-5/8"	1.002"	35.47	33.92	32.38	30.84
	89630	.3125	5/16"	7.938	3-3/4"	2-3/8"	1.627"	35.83	34.28	32.72	31.16
77635		.3150		8.000	75	43	26	38.03	36.38	34.72	33.07
	89635	.3150		8.000	95	60	42	38.44	36.77	35.10	33.43
77640		.3160	O	8.026	2-15/16"	1-11/16"	1.013"	38.03	36.38	34.72	33.07
	89640	.3160	O	8.026	3-3/4"	2-3/8"	1.645"	38.44	36.77	35.10	33.43
77645		.3230	P	8.204	2-15/16"	1-11/16"	1.036"	38.38	36.71	35.04	33.37
	89645	.3230	P	8.204	3-3/4"	2-3/8"	1.682"	38.44	36.77	35.10	33.43
77650		.3281	21/64"	8.334	2-15/16"	1-11/16"	1.052"	38.62	36.94	35.26	33.58
	89650	.3281	21/64"	8.334	4"	2-1/2"	1.708"	39.01	37.31	35.62	33.92
77655		.3320	Q	8.433	3"	1-11/16"	1.065"	39.50	37.79	36.07	34.35
	89655	.3320	Q	8.433	4"	2-1/2"	1.729"	39.93	38.19	36.46	34.72
77660		.3346		8.500	76	43	27	39.87	38.14	36.40	34.67
	89660	.3346		8.500	101	63	44	40.27	38.52	36.77	35.02
77665		.3390	R	8.611	3"	1-11/16"	1.087"	41.15	39.36	37.57	35.78
	89665	.3390	R	8.611	4"	2-1/2"	1.765"	41.57	39.77	37.96	36.15
77670		.3438	11/32"	8.733	3"	1-11/16"	1.103"	42.83	40.96	39.10	37.24
	89670	.3438	11/32"	8.733	4"	2-1/2"	1.790"	43.25	41.37	39.49	37.61
77675		.3480	S	8.839	3-1/16"	1-3/4"	1.116"	43.40	41.51	39.63	37.74
	89675	.3480	S	8.839	4"	2-1/2"	1.812"	43.40	41.51	39.63	37.74
77680		.3543		9.000	78	44	29	43.65	41.76	39.86	37.96
	89680	.3543		9.000	101	63	47	43.65	41.76	39.86	37.96

GARR TOOL®

† *Metric equivalents are for reference only*

3xD (1520) EDP#	5xD (1205) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
77685		.3580	T	9.093	3-1/16"	1-3/4"	1.148"	43.84	41.93	40.03	38.12
	89685	.3580	T	9.093	4-1/4"	2-3/4"	1.864"	44.05	42.13	40.22	38.30
77690		.3594	23/64"	9.129	3-1/16"	1-3/4"	1.153"	44.14	42.22	40.30	38.38
	89690	.3594	23/64"	9.129	4-1/4"	2-3/4"	1.871"	44.36	42.43	40.50	38.57
77695		.3680	U	9.347	3-1/8"	1-13/16"	1.180"	48.33	46.23	44.13	42.03
	89695	.3680	U	9.347	4-1/4"	2-3/4"	1.916"	50.34	48.15	45.96	43.77
77700		.3740		9.500	79	46	30	48.78	46.66	44.54	42.42
	89700	.3740		9.500	107	70	49	50.81	48.60	46.39	44.18
77705		.3750	3/8"	9.525	3-1/8"	1-13/16"	1.203"	49.16	47.03	44.89	42.75
	89705	.3750	3/8"	9.525	4-1/4"	2-3/4"	1.953"	51.21	48.98	46.76	44.53
77710		.3770	V	9.576	3-1/4"	1-7/8"	1.209"	50.09	47.92	45.74	43.56
	89710	.3770	V	9.576	4-1/4"	2-3/4"	1.963"	52.19	49.92	47.65	45.38
77715		.3860	W	9.804	3-1/4"	1-7/8"	1.238"	51.15	48.93	46.70	44.48
	89715	.3860	W	9.804	4-1/2"	2-7/8"	2.010"	53.29	50.97	48.66	46.34
77720		.3906	25/64"	9.921	3-1/4"	1-7/8"	1.253"	51.92	49.67	47.41	45.15
	89720	.3906	25/64"	9.921	4-1/2"	2-7/8"	2.034"	54.08	51.73	49.38	47.03
77725		.3937		10.000	84	49	32	53.79	51.45	49.11	46.77
	89725	.3937		10.000	114	73	52	56.03	53.59	51.16	48.72
77730		.3970	X	10.084	3-5/16"	1-15/16"	1.273"	55.35	52.94	50.54	48.13
	89730	.3970	X	10.084	4-1/2"	2-7/8"	2.067"	57.68	55.18	52.67	50.16
	89735	.4040	Y	10.262	4-1/2"	2-7/8"	2.104"	58.14	55.62	53.09	50.56
77740		.4062	13/32"	10.317	3-5/16"	1-15/16"	1.303"	57.82	55.31	52.79	50.28
	89740	.4062	13/32"	10.317	4-1/2"	2-7/8"	2.115"	60.24	57.62	55.00	52.38
77745		.4130	Z	10.490	3-3/8"	2"	1.325"	58.47	55.92	53.38	50.84
	89745	.4130	Z	10.490	4-1/2"	2-7/8"	2.151"	60.88	58.23	55.59	52.94
77750		.4134		10.500	86	51	34	58.47	55.92	53.38	50.84
	89750	.4134		10.500	114	73	55	60.88	58.23	55.59	52.94
77755		.4219	27/64"	10.716	3-3/8"	2"	1.353"	59.09	56.52	53.95	51.38
	89755	.4219	27/64"	10.716	4-1/2"	2-7/8"	2.197"	61.56	58.88	56.21	53.53
77760		.4331		11.000	87	52	35	64.16	61.37	58.58	55.79
	89760	.4331		11.000	114	73	57	66.85	63.94	61.04	58.13
77765		.4375	7/16"	11.113	3-7/16"	2-1/16"	1.403"	64.16	61.37	58.58	55.79
	89765	.4375	7/16"	11.113	4-1/2"	2-7/8"	2.278"	66.85	63.94	61.04	58.13
77770		.4528		11.500	91	54	37	69.61	66.58	63.56	60.53
	89770	.4528		11.500	120	76	60	72.52	69.37	66.21	63.06
77775		.4531	29/64"	11.509	3-9/16"	2-1/8"	1.453"	69.61	66.58	63.56	60.53
	89775	.4531	29/64"	11.509	4-3/4"	3"	2.359"	72.52	69.37	66.21	63.06
77780		.4688	15/32"	11.908	3-5/8"	2-1/8"	1.503"	73.62	70.42	67.22	64.02
	89780	.4688	15/32"	11.908	4-3/4"	3"	2.441"	76.71	73.37	70.04	66.70
77785		.4724		12.000	94	56	38	73.90	70.69	67.47	64.26
	89785	.4724		12.000	120	76	62	76.95	73.60	70.26	66.91
77790		.4844	31/64"	12.304	3-11/16"	2-3/16"	1.554"	74.45	71.21	67.98	64.74
	89790	.4844	31/64"	12.304	4-3/4"	3"	2.522"	76.95	73.60	70.26	66.91
77795		.4921		12.500	95	56	40	75.31	72.04	68.76	65.49
	89795	.4921		12.500	120	76	65	79.01	75.57	72.14	68.70
77800		.5000	1/2"	12.700	3-3/4"	2-1/4"	1.604"	75.85	72.56	69.26	65.96
	89800	.5000	1/2"	12.700	4-3/4"	3"	2.604"	79.01	75.57	72.14	68.70
77805		.5118		13.000	107	60	42	95.29	91.15	87.00	82.86
	89805	.5118		13.000	127	83	68	99.26	94.94	90.63	86.31
77810		.5156	33/64"	13.096	4-1/4"	2-3/8"	1.654"	97.84	93.59	89.33	85.08
	89810	.5156	33/64"	13.096	5"	3-1/4"	2.685"	101.92	97.49	93.06	88.63
77815		.5312	17/32"	13.492	4-1/4"	2-3/8"	1.704"	100.40	96.03	91.67	87.30
	89815	.5312	17/32"	13.492	5"	3-1/4"	2.766"	104.58	100.03	95.49	90.94
77820		.5315		13.500	107	60	43	102.95	98.47	94.00	89.52
	89820	.5315		13.500	127	83	70	107.25	102.59	97.92	93.26

continued →

Series 1520, 1205 *(continued)*

.5469" - .6299"
(13.891mm - 16.000mm)

	3xD (1520) EDP#	5xD (1205) EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
	77825		.5469	35/64"	13.891	4-1/4"	2-3/8"	1.754"	105.51	100.93	96.34	91.75
		89825	.5469	35/64"	13.891	5"	3-1/4"	2.848"	109.92	105.14	100.36	95.58
	77830		.5512		14.000	107	60	45	108.07	103.37	98.67	93.97
		89830	.5512		14.000	127	83	73	112.59	107.69	102.80	97.90
	77835		.5625	9/16"	14.287	4-1/2"	2-1/2"	1.804"	117.85	112.73	107.60	102.48
		89835	.5625	9/16"	14.287	5"	3-1/4"	2.929"	122.77	117.44	112.10	106.76
NEW	77840		.5709		14.500	115	65	47	120.31	115.08	109.85	104.62
		89840	.5709		14.500	127	83	76	125.33	119.88	114.43	108.98
	77845		.5781	37/64"	14.683	4-1/2"	2-1/2"	1.854"	122.77	117.44	112.10	106.76
		89845	.5781	37/64"	14.683	5-1/4"	3-1/2"	3.010"	127.89	122.33	116.77	111.21
	77850		.5906		15.000	115	65	48	125.28	119.83	114.39	108.94
		89850	.5906		15.000	133	89	78	130.49	124.82	119.14	113.47
	77855		.5938	19/32"	15.082	4-1/2"	2-1/2"	1.904"	125.99	120.52	115.04	109.56
		89855	.5938	19/32"	15.082	5-1/4"	3-1/2"	3.092"	131.25	125.54	119.84	114.13
NEW	77860		.6094	39/64"	15.478	4-1/2"	2-1/2"	1.954"	126.70	121.19	115.68	110.17
		89860	.6094	39/64"	15.478	5-1/4"	3-1/2"	3.173"	131.96	126.23	120.49	114.75
	77865		.6102		15.500	115	65	50	127.41	121.87	116.33	110.79
		89865	.6102		15.500	133	89	81	132.72	126.95	121.18	115.41
	77870		.6250	5/8"	15.875	4-1/2"	2-1/2"	2.004"	128.11	122.54	116.97	111.40
		89870	.6250	5/8"	15.875	5-1/4"	3-1/2"	3.254"	133.45	127.64	121.84	116.04
NEW	77875		.6299		16.000	115	65	51	131.54	125.82	120.10	114.38
		89875	.6299		16.000	133	89	83	137.02	131.07	125.11	119.15

GARR TOOL®

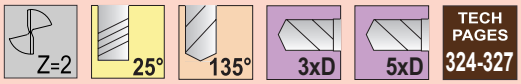
† *Metric equivalents are for reference only*

TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

NEW ITEMS

Series 1520H, 1205H



TECH PAGES 324-327

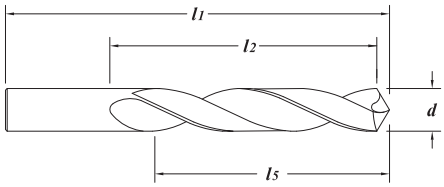
.0625" - .1015"
(1.588mm - 2.578mm)

General purpose for all material groups



BALINIT® Durana Coating

Solid submicron grain carbide drill
Excellent heat resistance and lubricity
No spotting required in most applications
4-facet self-centering point
Live tooling recommended on lathe processes
Bright Finish - page 69



3xD (1520H) EDP#	5xD (1205H) EDP#	*d* † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
77166		.0625	1/16"	1.588	1-3/4"	5/8"	.200"	9.51	9.10	8.68	8.27
	89166	.0625	1/16"	1.588	1-3/4"	3/4"	.325"	9.51	9.10	8.68	8.27
77171		.0635	#52	1.613	1-3/4"	11/16"	.204"	9.63	9.21	8.79	8.37
	89171	.0635	#52	1.613	1-3/4"	3/4"	.331"	9.63	9.21	8.79	8.37
77176		.0670	#51	1.702	1-3/4"	11/16"	.215"	9.75	9.33	8.90	8.48
	89176	.0670	#51	1.702	1-3/4"	3/4"	.349"	9.75	9.33	8.90	8.48
77181		.0700	#50	1.778	1-3/4"	11/16"	.224"	9.90	9.47	9.04	8.61
	89181	.0700	#50	1.778	1-3/4"	7/8"	.364"	9.90	9.47	9.04	8.61
77186		.0730	#49	1.854	1-3/4"	11/16"	.234"	10.12	9.68	9.24	8.80
	89186	.0730	#49	1.854	1-3/4"	7/8"	.380"	10.13	9.69	9.25	8.81
77191		.0760	#48	1.930	1-3/4"	11/16"	.244"	10.38	9.93	9.48	9.03
	89191	.0760	#48	1.930	1-3/4"	7/8"	.396"	10.38	9.93	9.48	9.03
77196		.0781	5/64"	1.984	1-3/4"	11/16"	.250"	10.70	10.23	9.77	9.30
	89196	.0781	5/64"	1.984	1-3/4"	7/8"	.407"	10.72	10.25	9.79	9.32
77201		.0785	#47	1.994	1-3/4"	3/4"	.252"	10.98	10.51	10.03	9.55
	89201	.0785	#47	1.994	1-3/4"	7/8"	.409"	11.01	10.53	10.05	9.57
77206		.0787		2.000	44	19	6	11.13	10.65	10.16	9.68
	89206	.0787		2.000	44	22	10	11.13	10.65	10.16	9.68
77211		.0810	#46	2.057	1-3/4"	3/4"	.260"	11.27	10.78	10.29	9.80
	89211	.0810	#46	2.057	1-3/4"	7/8"	.422"	11.28	10.79	10.30	9.81
77216		.0820	#45	2.083	1-3/4"	3/4"	.263"	11.55	11.04	10.54	10.04
	89216	.0820	#45	2.083	1-3/4"	7/8"	.427"	11.56	11.06	10.55	10.05
77221		.0860	#44	2.184	1-3/4"	3/4"	.276"	11.86	11.34	10.83	10.31
	89221	.0860	#44	2.184	2"	1"	.448"	11.87	11.35	10.84	10.32
77226		.0890	#43	2.261	1-3/4"	3/4"	.285"	12.12	11.59	11.07	10.54
	89226	.0890	#43	2.261	2"	1"	.463"	12.13	11.61	11.08	10.55
77231		.0935	#42	2.375	1-3/4"	3/4"	.300"	12.28	11.75	11.21	10.68
	89231	.0935	#42	2.375	2"	1"	.487"	12.28	11.75	11.21	10.68
77236		.0938	3/32"	2.383	1-3/4"	3/4"	.301"	12.51	11.97	11.42	10.88
	89236	.0938	3/32"	2.383	2"	1"	.488"	12.51	11.97	11.42	10.88
77241		.0960	#41	2.438	1-13/16"	13/16"	.308"	12.59	12.05	11.50	10.95
	89241	.0960	#41	2.438	2"	1"	.500"	12.62	12.07	11.52	10.97
77246		.0980	#40	2.489	1-13/16"	13/16"	.314"	12.75	12.20	11.64	11.09
	89246	.0980	#40	2.489	2"	1"	.510"	12.78	12.22	11.67	11.11
77251		.0984		2.500	46	21	8	12.80	12.24	11.69	11.13
	89251	.0984		2.500	57	32	13	12.80	12.24	11.69	11.13
77256		.0995	#39	2.527	1-13/16"	13/16"	.319"	12.86	12.30	11.74	11.18
	89256	.0995	#39	2.527	2-1/4"	1-1/4"	.518"	12.86	12.30	11.74	11.18
77261		.1015	#38	2.578	1-13/16"	13/16"	.326"	12.97	12.41	11.84	11.28
	89261	.1015	#38	2.578	2-1/4"	1-1/4"	.529"	13.02	12.45	11.89	11.32

Series 1520H, 1205H *(continued)*

.1040" - .1719"
(2.642mm - 4.366mm)

3xD (1520H) EDP#	5xD (1205H) EDP#	*d* † Diameter Decimal	Diameter	Metric	*l*1 Overall Length	*l*2 Flute Length	*l*5 Max Drill Depth	1-11	12-24	25-49	50-100
77266		.1040	#37	2.642	1-13/16"	13/16"	.334"	13.03	12.46	11.90	11.33
	89266	.1040	#37	2.642	2-1/4"	1-1/4"	.542"	13.12	12.55	11.98	11.41
77271		.1065	#36	2.705	1-13/16"	13/16"	.342"	13.11	12.54	11.97	11.40
	89271	.1065	#36	2.705	2-1/4"	1-1/4"	.555"	13.27	12.69	12.12	11.54
77276		.1094	7/64"	2.779	1-13/16"	13/16"	.351"	13.17	12.60	12.02	11.45
	89276	.1094	7/64"	2.779	2-1/4"	1-1/4"	.570"	13.48	12.89	12.31	11.72
77281		.1100	#35	2.794	1-7/8"	7/8"	.353"	13.25	12.67	12.10	11.52
	89281	.1100	#35	2.794	2-1/4"	1-1/4"	.573"	13.58	12.99	12.40	11.81
77286		.1110	#34	2.819	1-7/8"	7/8"	.356"	13.39	12.80	12.22	11.64
	89286	.1110	#34	2.819	2-1/4"	1-1/4"	.578"	13.73	13.13	12.54	11.94
77291		.1130	#33	2.870	1-7/8"	7/8"	.362"	13.47	12.88	12.30	11.71
	89291	.1130	#33	2.870	2-1/4"	1-1/4"	.588"	13.95	13.34	12.74	12.13
77296		.1160	#32	2.946	1-7/8"	7/8"	.372"	13.55	12.96	12.37	11.78
	89296	.1160	#32	2.946	2-1/4"	1-1/4"	.604"	14.05	13.44	12.83	12.22
77301		.1181		3.000	48	22	10	13.66	13.07	12.47	11.88
	89301	.1181		3.000	57	32	16	14.17	13.55	12.94	12.32
77306		.1200	#31	3.048	1-7/8"	7/8"	.385"	13.75	13.16	12.56	11.96
	89306	.1200	#31	3.048	2-1/4"	1-1/4"	.625"	14.28	13.66	13.04	12.42
77311		.1250	1/8"	3.175	1-7/8"	7/8"	.401"	13.88	13.28	12.67	12.07
	89311	.1250	1/8"	3.175	2-1/4"	1-1/4"	.651"	14.40	13.77	13.15	12.52
77316		.1285	#30	3.264	1-15/16"	15/16"	.412"	14.19	13.57	12.96	12.34
	89316	.1285	#30	3.264	2-1/4"	1-1/4"	.669"	14.73	14.09	13.45	12.81
77321		.1360	#29	3.454	1-15/16"	15/16"	.436"	14.52	13.89	13.26	12.63
	89321	.1360	#29	3.454	2-1/2"	1-3/8"	.708"	15.12	14.47	13.81	13.15
77326		.1378		3.500	49	24	11	14.93	14.28	13.63	12.98
	89326	.1378		3.500	63	35	18	15.54	14.86	14.19	13.51
77331		.1405	#28	3.569	1-15/16"	15/16"	.451"	15.08	14.42	13.77	13.11
	89331	.1405	#28	3.569	2-1/2"	1-3/8"	.732"	15.71	15.03	14.34	13.66
77336		.1406	9/64"	3.571	1-15/16"	15/16"	.451"	15.23	14.56	13.90	13.24
	89336	.1406	9/64"	3.571	2-1/2"	1-3/8"	.732"	15.85	15.16	14.47	13.78
77341		.1440	#27	3.658	2-1/16"	1"	.462"	16.38	15.66	14.95	14.24
	89341	.1440	#27	3.658	2-1/2"	1-3/8"	.750"	16.39	15.68	14.96	14.25
77346		.1470	#26	3.734	2-1/16"	1"	.471"	16.54	15.82	15.10	14.38
	89346	.1470	#26	3.734	2-1/2"	1-3/8"	.765"	16.54	15.82	15.10	14.38
77351		.1495	#25	3.797	2-1/16"	1"	.479"	16.69	15.96	15.24	14.51
	89351	.1495	#25	3.797	2-1/2"	1-3/8"	.778"	16.69	15.96	15.24	14.51
77356		.1520	#24	3.861	2-1/16"	1"	.487"	16.74	16.02	15.29	14.56
	89356	.1520	#24	3.861	2-1/2"	1-3/8"	.791"	16.77	16.04	15.31	14.58
77361		.1540	#23	3.912	2-1/16"	1"	.494"	16.84	16.10	15.37	14.64
	89361	.1540	#23	3.912	2-1/2"	1-3/8"	.802"	16.85	16.12	15.38	14.65
77366		.1562	5/32"	3.967	2-1/16"	1"	.501"	16.93	16.19	15.46	14.72
	89366	.1562	5/32"	3.967	2-1/2"	1-3/8"	.813"	16.93	16.19	15.46	14.72
77371		.1570	#22	3.988	2-1/8"	1-1/16"	.504"	17.87	17.09	16.32	15.54
	89371	.1570	#22	3.988	2-1/2"	1-3/8"	.818"	17.87	17.09	16.32	15.54
77376		.1575		4.000	54	27	13	18.06	17.27	16.49	15.70
	89376	.1575		4.000	63	35	21	18.07	17.28	16.50	15.71
77381		.1590	#21	4.039	2-1/8"	1-1/16"	.510"	18.27	17.48	16.68	15.89
	89381	.1590	#21	4.039	2-1/2"	1-3/8"	.828"	18.27	17.48	16.68	15.89
77386		.1610	#20	4.089	2-1/8"	1-1/16"	.516"	18.38	17.58	16.78	15.98
	89386	.1610	#20	4.089	2-1/2"	1-3/8"	.838"	18.38	17.58	16.78	15.98
77391		.1660	#19	4.216	2-1/8"	1-1/16"	.532"	19.04	18.22	17.39	16.56
	89391	.1660	#19	4.216	2-3/4"	1-5/8"	.864"	19.06	18.23	17.40	16.57
77396		.1695	#18	4.305	2-1/8"	1-1/16"	.544"	19.24	18.40	17.57	16.73
	89396	.1695	#18	4.305	2-3/4"	1-5/8"	.883"	19.24	18.40	17.57	16.73
77401		.1719	11/64"	4.366	2-1/8"	1-1/16"	.551"	19.57	18.72	17.87	17.02
	89401	.1719	11/64"	4.366	2-3/4"	1-5/8"	.895"	19.57	18.72	17.87	17.02

GARR TOOL®

† *Metric equivalents are for reference only*

3xD (1520H) EDP#	5xD (1205H) EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
77406		.1730	#17	4.394	2-3/16"	1-1/8"	.555"	19.84	18.98	18.11	17.25
	89406	.1730	#17	4.394	2-3/4"	1-5/8"	.901"	19.86	19.00	18.13	17.27
77411		.1770	#16	4.496	2-3/16"	1-1/8"	.568"	20.03	19.16	18.29	17.42
	89411	.1770	#16	4.496	2-3/4"	1-5/8"	.922"	20.03	19.16	18.29	17.42
77416		.1772		4.500	56	29	14	20.13	19.25	18.38	17.50
	89416	.1772		4.500	70	41	23	20.14	19.26	18.39	17.51
77421		.1800	#15	4.572	2-3/16"	1-1/8"	.577"	20.23	19.35	18.47	17.59
	89421	.1800	#15	4.572	2-3/4"	1-5/8"	.937"	20.23	19.35	18.47	17.59
77426		.1820	#14	4.623	2-3/16"	1-1/8"	.584"	20.62	19.72	18.83	17.93
	89426	.1820	#14	4.623	2-3/4"	1-5/8"	.948"	20.62	19.72	18.83	17.93
77431		.1850	#13	4.700	2-3/16"	1-1/8"	.593"	20.76	19.86	18.95	18.05
	89431	.1850	#13	4.700	2-3/4"	1-5/8"	.963"	20.77	19.87	18.96	18.06
77436		.1875	3/16"	4.763	2-3/16"	1-1/8"	.601"	20.83	19.92	19.02	18.11
	89436	.1875	3/16"	4.763	2-3/4"	1-5/8"	.976"	20.86	19.95	19.05	18.14
77441		.1890	#12	4.801	2-1/4"	1-3/16"	.606"	22.99	21.99	20.99	19.99
	89441	.1890	#12	4.801	2-3/4"	1-5/8"	.984"	22.99	21.99	20.99	19.99
77446		.1910	#11	4.851	2-1/4"	1-3/16"	.613"	23.20	22.19	21.18	20.17
	89446	.1910	#11	4.851	2-3/4"	1-5/8"	.995"	23.20	22.19	21.18	20.17
77451		.1935	#10	4.915	2-1/4"	1-3/16"	.621"	24.10	23.06	22.01	20.96
	89451	.1935	#10	4.915	2-3/4"	1-5/8"	1.008"	24.10	23.06	22.01	20.96
77456		.1960	#9	4.978	2-1/4"	1-3/16"	.629"	24.63	23.56	22.49	21.42
	89456	.1960	#9	4.978	3"	1-3/4"	1.021"	24.63	23.56	22.49	21.42
77461		.1969		5.000	57	30	16	24.76	23.68	22.61	21.53
	89461	.1969		5.000	76	44	26	24.76	23.68	22.61	21.53
77466		.1990	#8	5.055	2-1/4"	1-3/16"	.638"	24.87	23.79	22.71	21.63
	89466	.1990	#8	5.055	3"	1-3/4"	1.036"	24.86	23.78	22.70	21.62
77471		.2010	#7	5.105	2-1/4"	1-3/16"	.645"	25.53	24.42	23.31	22.20
	89471	.2010	#7	5.105	3"	1-3/4"	1.047"	25.52	24.41	23.30	22.19
77476		.2031	13/64"	5.159	2-1/4"	1-3/16"	.651"	25.68	24.56	23.45	22.33
	89476	.2031	13/64"	5.159	3"	1-3/4"	1.058"	25.68	24.56	23.45	22.33
77481		.2040	#6	5.182	2-3/8"	1-1/4"	.654"	26.14	25.00	23.87	22.73
	89481	.2040	#6	5.182	3"	1-3/4"	1.062"	26.14	25.00	23.87	22.73
77486		.2055	#5	5.220	2-3/8"	1-1/4"	.659"	26.60	25.44	24.29	23.13
	89486	.2055	#5	5.220	3"	1-3/4"	1.070"	26.60	25.44	24.29	23.13
77491		.2090	#4	5.309	2-3/8"	1-1/4"	.670"	27.03	25.85	24.68	23.50
	89491	.2090	#4	5.309	3"	1-3/4"	1.088"	27.03	25.85	24.68	23.50
77496		.2130	#3	5.410	2-3/8"	1-1/4"	.683"	27.42	26.22	25.03	23.84
	89496	.2130	#3	5.410	3"	1-3/4"	1.109"	27.42	26.22	25.03	23.84
77501		.2165		5.500	60	32	18	27.61	26.41	25.21	24.01
	89501	.2165		5.500	76	44	29	27.59	26.39	25.19	23.99
77506		.2188	7/32"	5.558	2-3/8"	1-1/4"	.702"	27.77	26.57	25.36	24.15
	89506	.2188	7/32"	5.558	3"	1-3/4"	1.139"	27.76	26.55	25.35	24.14
77511		.2210	#2	5.613	2-7/16"	1-5/16"	.709"	28.37	27.14	25.90	24.67
	89511	.2210	#2	5.613	3"	1-3/4"	1.151"	28.34	27.10	25.87	24.64
77516		.2280	#1	5.791	2-7/16"	1-5/16"	.731"	28.52	27.28	26.04	24.80
	89516	.2280	#1	5.791	3"	1-3/4"	1.187"	28.51	27.27	26.03	24.79
77521		.2340	A	5.944	2-7/16"	1-5/16"	.750"	28.58	27.34	26.09	24.85
	89521	.2340	A	5.944	3-1/4"	2"	1.218"	28.91	27.65	26.40	25.14
77526		.2344	15/64"	5.954	2-7/16"	1-5/16"	.752"	28.62	27.38	26.13	24.89
	89526	.2344	15/64"	5.954	3-1/4"	2"	1.221"	28.99	27.73	26.47	25.21
77531		.2362		6.000	64	35	19	28.69	27.45	26.20	24.95
	89531	.2362		6.000	82	50	31	29.08	27.82	26.55	25.29
77536		.2380	B	6.045	2-1/2"	1-3/8"	.763"	28.80	27.54	26.29	25.04
	89536	.2380	B	6.045	3-1/4"	2"	1.239"	29.18	27.91	26.64	25.37
77541		.2420	C	6.147	2-1/2"	1-3/8"	.776"	28.98	27.72	26.46	25.20
	89541	.2420	C	6.147	3-1/4"	2"	1.260"	29.36	28.08	26.81	25.53

continued →

Series 1520H, 1205H *(continued)*

.2460" - .3543"
(6.248mm - 9.000mm)

3xD (1520H) EDP#	5xD (1205H) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
77546		.2460	D	6.248	2-1/2"	1-3/8"	.789"	29.18	27.91	26.64	25.37
	89546	.2460	D	6.248	3-1/4"	2"	1.281"	29.57	28.28	27.00	25.71
77551		.2500	1/4" / E	6.350	2-1/2"	1-3/8"	.802"	29.35	28.07	26.80	25.52
	89551	.2500	1/4" / E	6.350	3-1/4"	2"	1.302"	29.72	28.42	27.13	25.84
77556		.2559		6.500	67	37	21	32.76	31.34	29.91	28.49
	89556	.2559		6.500	82	50	34	33.47	32.01	30.56	29.10
77561		.2570	F	6.528	2-5/8"	1-7/16"	.824"	33.32	31.87	30.42	28.97
	89561	.2570	F	6.528	3-1/4"	2"	1.338"	34.05	32.57	31.09	29.61
77566		.2610	G	6.629	2-5/8"	1-7/16"	.837"	33.86	32.38	30.91	29.44
	89566	.2610	G	6.629	3-1/2"	2-1/8"	1.359"	34.57	33.07	31.56	30.06
77571		.2656	17/64"	6.746	2-5/8"	1-7/16"	.852"	34.43	32.93	31.44	29.94
	89571	.2656	17/64"	6.746	3-1/2"	2-1/8"	1.383"	35.14	33.62	32.09	30.56
77576		.2660	H	6.756	2-11/16"	1-1/2"	.853"	35.22	33.69	32.16	30.63
	89576	.2660	H	6.756	3-1/2"	2-1/8"	1.385"	35.94	34.38	32.81	31.25
77581		.2720	I	6.909	2-11/16"	1-1/2"	.872"	35.56	34.01	32.47	30.92
	89581	.2720	I	6.909	3-1/2"	2-1/8"	1.416"	36.27	34.69	33.12	31.54
77586		.2756		7.000	68	38	22	35.80	34.24	32.69	31.13
	89586	.2756		7.000	88	54	36	36.50	34.91	33.33	31.74
77591		.2770	J	7.036	2-11/16"	1-1/2"	.888"	36.08	34.51	32.94	31.37
	89591	.2770	J	7.036	3-1/2"	2-1/8"	1.442"	36.77	35.17	33.57	31.97
77596		.2810	K	7.137	2-11/16"	1-1/2"	.901"	36.32	34.74	33.16	31.58
	89596	.2810	K	7.137	3-1/2"	2-1/8"	1.463"	37.05	35.44	33.83	32.22
77601		.2812	9/32"	7.142	2-11/16"	1-1/2"	.902"	36.48	34.89	33.31	31.72
	89601	.2812	9/32"	7.142	3-1/2"	2-1/8"	1.464"	37.19	35.57	33.96	32.34
77606		.2900	L	7.366	2-3/4"	1-9/16"	.930"	37.58	35.95	34.31	32.68
	89606	.2900	L	7.366	3-1/2"	2-1/8"	1.510"	38.33	36.66	35.00	33.33
77611		.2950	M	7.493	2-3/4"	1-9/16"	.946"	39.76	38.03	36.30	34.57
	89611	.2950	M	7.493	3-3/4"	2-3/8"	1.536"	40.53	38.76	37.00	35.24
77616		.2953		7.500	70	40	24	39.76	38.03	36.30	34.57
	89616	.2953		7.500	95	60	39	40.53	38.76	37.00	35.24
77621		.2969	19/64"	7.541	2-3/4"	1-9/16"	.952"	39.95	38.21	36.48	34.74
	89621	.2969	19/64"	7.541	3-3/4"	2-3/8"	1.546"	40.53	38.76	37.00	35.24
77626		.3020	N	7.671	2-15/16"	1-5/8"	.969"	41.76	39.94	38.13	36.31
	89626	.3020	N	7.671	3-3/4"	2-3/8"	1.573"	42.53	40.68	38.83	36.98
77631		.3125	5/16"	7.938	2-15/16"	1-5/8"	1.002"	41.89	40.07	38.25	36.43
	89631	.3125	5/16"	7.938	3-3/4"	2-3/8"	1.627"	42.69	40.83	38.98	37.12
77636		.3150		8.000	75	43	26	44.46	42.53	40.59	38.66
	89636	.3150		8.000	95	60	42	45.26	43.30	41.33	39.36
77641		.3160	O	8.026	2-15/16"	1-11/16"	1.013"	44.46	42.53	40.59	38.66
	89641	.3160	O	8.026	3-3/4"	2-3/8"	1.645"	45.26	43.30	41.33	39.36
77646		.3230	P	8.204	2-15/16"	1-11/16"	1.036"	44.78	42.83	40.89	38.94
	89646	.3230	P	8.204	3-3/4"	2-3/8"	1.682"	45.26	43.30	41.33	39.36
77651		.3281	21/64"	8.334	2-15/16"	1-11/16"	1.052"	45.03	43.08	41.12	39.16
	89651	.3281	21/64"	8.334	4"	2-1/2"	1.708"	45.84	43.85	41.85	39.86
77656		.3320	Q	8.433	3"	1-11/16"	1.065"	45.93	43.93	41.94	39.94
	89656	.3320	Q	8.433	4"	2-1/2"	1.729"	46.76	44.73	42.69	40.66
77661		.3346		8.500	76	43	27	46.29	44.28	42.26	40.25
	89661	.3346		8.500	101	63	44	47.10	45.06	43.01	40.96
77666		.3390	R	8.611	3"	1-11/16"	1.087"	47.55	45.49	43.42	41.35
	89666	.3390	R	8.611	4"	2-1/2"	1.765"	48.39	46.29	44.18	42.08
77671		.3438	11/32"	8.733	3"	1-11/16"	1.103"	49.23	47.09	44.95	42.81
	89671	.3438	11/32"	8.733	4"	2-1/2"	1.790"	50.07	47.89	45.72	43.54
77676		.3480	S	8.839	3-1/16"	1-3/4"	1.116"	52.07	49.81	47.54	45.28
	89676	.3480	S	8.839	4"	2-1/2"	1.812"	52.06	49.80	47.53	45.27
77681		.3543		9.000	78	44	29	52.34	50.06	47.79	45.51
	89681	.3543		9.000	101	63	47	52.35	50.07	47.80	45.52

GARR TOOL®

† *Metric equivalents are for reference only*

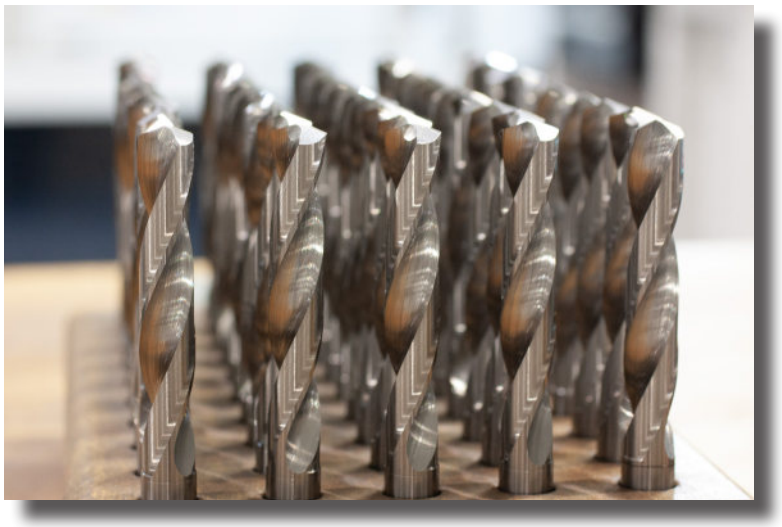
	3xD (1520H) EDP#	5xD (1205H) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
	77686		.3580	T	9.093	3-1/16"	1-3/4"	1.148"	52.51	50.23	47.94	45.66
		89686	.3580	T	9.093	4-1/4"	2-3/4"	1.864"	54.43	52.06	49.70	47.33
	77691		.3594	23/64"	9.129	3-1/16"	1-3/4"	1.153"	52.83	50.53	48.24	45.94
		89691	.3594	23/64"	9.129	4-1/4"	2-3/4"	1.871"	54.76	52.38	50.00	47.62
	77696		.3680	U	9.347	3-1/8"	1-13/16"	1.180"	57.02	54.54	52.06	49.58
		89696	.3680	U	9.347	4-1/4"	2-3/4"	1.916"	60.75	58.11	55.47	52.83
	77701		.3740		9.500	79	46	30	57.47	54.97	52.47	49.97
		89701	.3740		9.500	107	70	49	61.20	58.54	55.88	53.22
	77706		.3750	3/8"	9.525	3-1/8"	1-13/16"	1.203"	57.83	55.32	52.80	50.29
		89706	.3750	3/8"	9.525	4-1/4"	2-3/4"	1.953"	61.61	58.93	56.25	53.57
	77711		.3770	V	9.576	3-1/4"	1-7/8"	1.209"	60.06	57.45	54.84	52.23
		89711	.3770	V	9.576	4-1/4"	2-3/4"	1.963"	63.11	60.37	57.62	54.88
	77716		.3860	W	9.804	3-1/4"	1-7/8"	1.238"	61.11	58.45	55.80	53.14
		89716	.3860	W	9.804	4-1/2"	2-7/8"	2.010"	64.24	61.45	58.65	55.86
	77721		.3906	25/64"	9.921	3-1/4"	1-7/8"	1.253"	61.87	59.18	56.49	53.80
		89721	.3906	25/64"	9.921	4-1/2"	2-7/8"	2.034"	65.01	62.18	59.36	56.53
	77726		.3937		10.000	84	49	32	63.74	60.97	58.20	55.43
		89726	.3937		10.000	114	73	52	66.98	64.06	61.15	58.24
	77731		.3970	X	10.084	3-5/16"	1-15/16"	1.273"	65.30	62.46	59.62	56.78
		89731	.3970	X	10.084	4-1/2"	2-7/8"	2.067"	68.60	65.62	62.63	59.65
	77736		.4040	Y	10.262	3-5/16"	1-15/16"	1.296"	65.76	62.90	60.04	57.18
		89736	.4040	Y	10.262	4-1/2"	2-7/8"	2.104"	69.07	66.07	63.06	60.06
	77741		.4062	13/32"	10.317	3-5/16"	1-15/16"	1.303"	67.79	64.85	61.90	58.95
		89741	.4062	13/32"	10.317	4-1/2"	2-7/8"	2.115"	71.17	68.08	64.98	61.89
	77746		.4130	Z	10.490	3-3/8"	2"	1.325"	68.39	65.42	62.44	59.47
		89746	.4130	Z	10.490	4-1/2"	2-7/8"	2.151"	71.83	68.71	65.58	62.46
	77751		.4134		10.500	86	51	34	68.39	65.42	62.44	59.47
		89751	.4134		10.500	114	73	55	71.83	68.71	65.58	62.46
	77756		.4219	27/64"	10.716	3-3/8"	2"	1.353"	69.05	66.04	63.04	60.04
		89756	.4219	27/64"	10.716	4-1/2"	2-7/8"	2.197"	72.50	69.34	66.19	63.04
	77761		.4331		11.000	87	52	35	74.12	70.90	67.67	64.45
		89761	.4331		11.000	114	73	57	77.77	74.39	71.01	67.63
	77766		.4375	7/16"	11.113	3-7/16"	2-1/16"	1.403"	74.12	70.90	67.67	64.45
		89766	.4375	7/16"	11.113	4-1/2"	2-7/8"	2.278"	77.77	74.39	71.01	67.63
	77771		.4528		11.500	91	54	37	79.56	76.10	72.64	69.18
		89771	.4528		11.500	120	76	60	83.44	79.82	76.19	72.56
	77776		.4531	29/64"	11.509	3-9/16"	2-1/8"	1.453"	79.56	76.10	72.64	69.18
		89776	.4531	29/64"	11.509	4-3/4"	3"	2.359"	83.44	79.82	76.19	72.56
	77781		.4688	15/32"	11.908	3-5/8"	2-1/8"	1.503"	83.59	79.96	76.32	72.69
		89781	.4688	15/32"	11.908	4-3/4"	3"	2.441"	87.63	83.82	80.01	76.20
	77786		.4724		12.000	94	56	38	83.84	80.19	76.55	72.90
		89786	.4724		12.000	120	76	62	87.89	84.07	80.25	76.43
	77791		.4844	31/64"	12.304	3-11/16"	2-3/16"	1.554"	84.41	80.74	77.07	73.40
		89791	.4844	31/64"	12.304	4-3/4"	3"	2.522"	87.89	84.07	80.25	76.43
	77796		.4921		12.500	95	56	40	85.24	81.53	77.83	74.12
		89796	.4921		12.500	120	76	65	89.94	86.03	82.12	78.21
	77801		.5000	1/2"	12.700	3-3/4"	2-1/4"	1.604"	85.79	82.06	78.33	74.60
		89801	.5000	1/2"	12.700	4-3/4"	3"	2.604"	89.94	86.03	82.12	78.21
	77806		.5118		13.000	107	60	42	109.17	104.42	99.68	94.93
		89806	.5118		13.000	127	83	68	113.19	108.27	103.35	98.43
	77811		.5156	33/64"	13.096	4-1/4"	2-3/8"	1.654"	111.73	106.88	102.02	97.16
		89811	.5156	33/64"	13.096	5"	3-1/4"	2.685"	115.84	110.80	105.77	100.73
	77816		.5312	17/32"	13.492	4-1/4"	2-3/8"	1.704"	114.28	109.31	104.34	99.37
		89816	.5312	17/32"	13.492	5"	3-1/4"	2.766"	118.51	113.36	108.20	103.05
NEW	77821		.5315		13.500	107	60	43	116.84	111.76	106.68	101.60
		89821	.5315		13.500	127	83	70	121.16	115.90	110.63	105.36

continued ⟶

Series 1520H, 1205H *(continued)*

.5469" - .6299"
(13.891mm - 16.000mm)

	3xD (1520H) EDP#	5xD (1205H) EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
	77826		.5469	35/64"	13.891	4-1/4"	2-3/8"	1.754"	119.39	114.20	109.01	103.82
		89826	.5469	35/64"	13.891	5"	3-1/4"	2.848"	123.82	118.44	113.05	107.67
	77831		.5512		14.000	107	60	45	121.96	116.66	111.35	106.05
		89831	.5512		14.000	127	83	73	126.51	121.01	115.51	110.01
	77836		.5625	9/16"	14.287	4-1/2"	2-1/2"	1.804"	131.74	126.02	120.29	114.56
		89836	.5625	9/16"	14.287	5"	3-1/4"	2.929"	136.69	130.75	124.80	118.86
	77841		.5709		14.500	115	65	47	134.21	128.37	122.54	116.70
		89841	.5709		14.500	127	83	76	139.24	133.19	127.13	121.08
	77846		.5781	37/64"	14.683	4-1/2"	2-1/2"	1.854"	136.65	130.71	124.77	118.83
		89846	.5781	37/64"	14.683	5-1/4"	3-1/2"	3.010"	141.82	135.65	129.49	123.32
	77851		.5906		15.000	115	65	48	139.16	133.11	127.06	121.01
		89851	.5906		15.000	133	89	78	144.41	138.13	131.85	125.57
	77856		.5938	19/32"	15.082	4-1/2"	2-1/2"	1.904"	139.89	133.80	127.72	121.64
		89856	.5938	19/32"	15.082	5-1/4"	3-1/2"	3.092"	145.19	138.88	132.56	126.25
NEW	77861		.6094	39/64"	15.478	4-1/2"	2-1/2"	1.954"	140.58	134.46	128.35	122.24
		89861	.6094	39/64"	15.478	5-1/4"	3-1/2"	3.173"	145.90	139.56	133.21	126.87
	77866		.6102		15.500	115	65	50	141.30	135.16	129.01	122.87
		89866	.6102		15.500	133	89	81	146.65	140.27	133.90	127.52
	77871		.6250	5/8"	15.875	4-1/2"	2-1/2"	2.004"	142.00	135.83	129.65	123.48
		89871	.6250	5/8"	15.875	5-1/4"	3-1/2"	3.254"	147.40	140.99	134.58	128.17
NEW	77876		.6299		16.000	115	65	51	145.42	139.10	132.77	126.45
		89876	.6299		16.000	133	89	83	150.95	144.39	137.82	131.26



GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d		+.0000" –.0005" (+.0000 –.0127mm)
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Z=3 | 25° | 150° | 3xD | 5xD | TECH PAGES 324-327

Series 1120H, 1100H

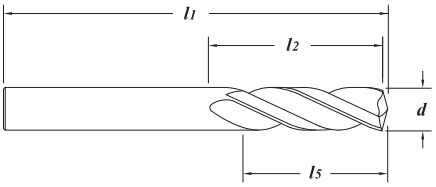
.1094" - .1575"
(2.779mm - 4.000mm)

Recommended for cast iron, tungsten, and materials with high silicon content



BALINIT® Durana Coating

Solid submicron grain carbide drill
Self-centering drill point
Near reamer finishes
Can be used as a core drill
Excellent heat resistance and lubricity
Stub length reduces deflection and vibration
Tighter tolerance holes
Improved roundness and straightness
Live tooling recommended on lathe processes
Series 1100 Bright Finish - page 90



3xD (1120H) EDP#	5xD (1100H) EDP#	*d* † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
78276		.1094	7/64"	2.779	1-13/16"	13/16"	.343"	15.38	14.71	14.04	13.37
	90276	.1094	7/64"	2.779	2-1/4"	1-1/4"	.562"	15.88	15.19	14.50	13.81
78281		.1100	#35	2.794	1-7/8"	7/8"	.345"	15.51	14.84	14.16	13.49
	90281	.1100	#35	2.794	2-1/4"	1-1/4"	.565"	16.05	15.36	14.66	13.96
78286		.1110	#34	2.819	1-7/8"	7/8"	.348"	15.67	14.99	14.31	13.63
78291		.1130	#33	2.870	1-7/8"	7/8"	.354"	15.90	15.21	14.52	13.83
	90291	.1130	#33	2.870	2-1/4"	1-1/4"	.580"	16.47	15.75	15.04	14.32
78296		.1160	#32	2.946	1-7/8"	7/8"	.364"	16.11	15.41	14.71	14.01
	90296	.1160	#32	2.946	2-1/4"	1-1/4"	.596"	16.63	15.91	15.18	14.46
78301		.1181		3.000	48	22	9	16.24	15.53	14.83	14.12
	90301	.1181		3.000	57	32	15	16.77	16.04	15.31	14.58
78306		.1200	#31	3.048	1-7/8"	7/8"	.376"	16.35	15.64	14.93	14.22
	90306	.1200	#31	3.048	2-1/4"	1-1/4"	.616"	16.87	16.14	15.40	14.67
78311		.1250	1/8"	3.175	1-7/8"	7/8"	.392"	16.54	15.82	15.10	14.38
	90311	.1250	1/8"	3.175	2-1/4"	1-1/4"	.642"	17.04	16.30	15.56	14.82
78316		.1285	#30	3.264	1-15/16"	15/16"	.403"	16.91	16.17	15.44	14.70
	90316	.1285	#30	3.264	2-1/4"	1-1/4"	.660"	17.41	16.65	15.90	15.14
78321		.1360	#29	3.454	1-15/16"	15/16"	.426"	17.30	16.54	15.79	15.04
	90321	.1360	#29	3.454	2-1/2"	1-3/8"	.698"	17.92	17.14	16.36	15.58
78326		.1378		3.500	49	24	11	17.80	17.03	16.25	15.48
	90326	.1378		3.500	63	35	18	18.41	17.61	16.81	16.01
78331		.1405	#28	3.569	1-15/16"	15/16"	.440"	17.99	17.20	16.42	15.64
	90331	.1405	#28	3.569	2-1/2"	1-3/8"	.721"	18.61	17.80	16.99	16.18
78336		.1406	9/64"	3.571	1-15/16"	15/16"	.441"	18.17	17.38	16.59	15.80
	90336	.1406	9/64"	3.571	2-1/2"	1-3/8"	.722"	18.78	17.96	17.15	16.33
78341		.1440	#27	3.658	2-1/16"	1"	.451"	19.44	18.59	17.75	16.90
	90341	.1440	#27	3.658	2-1/2"	1-3/8"	.739"	19.45	18.60	17.76	16.91
78346		.1470	#26	3.734	2-1/16"	1"	.461"	19.65	18.80	17.94	17.09
	90346	.1470	#26	3.734	2-1/2"	1-3/8"	.755"	19.67	18.81	17.96	17.10
78351		.1495	#25	3.797	2-1/16"	1"	.469"	19.83	18.96	18.10	17.24
	90351	.1495	#25	3.797	2-1/2"	1-3/8"	.768"	19.84	18.98	18.11	17.25
78356		.1520	#24	3.861	2-1/16"	1"	.476"	19.86	19.00	18.13	17.27
	90356	.1520	#24	3.861	2-1/2"	1-3/8"	.780"	19.86	19.00	18.13	17.27
78361		.1540	#23	3.912	2-1/16"	1"	.483"	20.02	19.15	18.28	17.41
	90361	.1540	#23	3.912	2-1/2"	1-3/8"	.791"	20.03	19.16	18.29	17.42
78366		.1562	5/32"	3.967	2-1/16"	1"	.490"	20.11	19.24	18.36	17.49
	90366	.1562	5/32"	3.967	2-1/2"	1-3/8"	.802"	20.11	19.24	18.36	17.49
78371		.1570	#22	3.988	2-1/8"	1-1/16"	.492"	21.26	20.34	19.41	18.49
	90371	.1570	#22	3.988	2-1/2"	1-3/8"	.806"	21.26	20.34	19.41	18.49
78376		.1575		4.000	54	27	13	21.26	20.34	19.41	18.49
	90376	.1575		4.000	63	35	21	21.26	20.34	19.41	18.49

continued ⟶

Series 1120H, 1100H *(continued)*

.1590" - .2362"
(4.039mm - 6.000mm)

3xD (1120H) EDP#	5xD (1100H) EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
78381		.1590	#21	4.039	2-1/8"	1-1/16"	.498"	21.69	20.75	19.80	18.86
	90381	.1590	#21	4.039	2-1/2"	1-3/8"	.816"	21.74	20.79	19.85	18.90
78386		.1610	#20	4.089	2-1/8"	1-1/16"	.505"	21.69	20.75	19.80	18.86
	90386	.1610	#20	4.089	2-1/2"	1-3/8"	.827"	21.74	20.79	19.85	18.90
78391		.1660	#19	4.216	2-1/8"	1-1/16"	.520"	21.85	20.90	19.95	19.00
	90391	.1660	#19	4.216	2-3/4"	1-5/8"	.852"	21.86	20.91	19.96	19.01
78396		.1695	#18	4.305	2-1/8"	1-1/16"	.531"	21.99	21.03	20.08	19.12
	90396	.1695	#18	4.305	2-3/4"	1-5/8"	.870"	22.00	21.04	20.09	19.13
78401		.1719	11/64"	4.366	2-1/8"	1-1/16"	.539"	22.11	21.15	20.19	19.23
	90401	.1719	11/64"	4.366	2-3/4"	1-5/8"	.883"	22.11	21.15	20.19	19.23
78406		.1730	#17	4.394	2-3/16"	1-1/8"	.542"	23.02	22.02	21.02	20.02
	90406	.1730	#17	4.394	2-3/4"	1-5/8"	.888"	23.02	22.02	21.02	20.02
78411		.1770	#16	4.496	2-3/16"	1-1/8"	.555"	23.26	22.25	21.24	20.23
	90411	.1770	#16	4.496	2-3/4"	1-5/8"	.909"	23.28	22.26	21.25	20.24
78416		.1772		4.500	56	29	14	23.36	22.34	21.33	20.31
	90416	.1772		4.500	70	41	23	23.37	22.35	21.34	20.32
78421		.1800	#15	4.572	2-3/16"	1-1/8"	.564"	23.45	22.43	21.41	20.39
	90421	.1800	#15	4.572	2-3/4"	1-5/8"	.924"	23.49	22.47	21.45	20.43
78426		.1820	#14	4.623	2-3/16"	1-1/8"	.570"	23.94	22.90	21.86	20.82
	90426	.1820	#14	4.623	2-3/4"	1-5/8"	.934'	23.95	22.91	21.87	20.83
78431		.1850	#13	4.700	2-3/16"	1-1/8"	.580"	24.06	23.01	21.97	20.92
	90431	.1850	#13	4.700	2-3/4"	1-5/8"	.950'	24.06	23.01	21.97	20.92
78436		.1875	3/16"	4.763	2-3/16"	1-1/8"	.588"	24.06	23.01	21.97	20.92
	90436	.1875	3/16"	4.763	2-3/4"	1-5/8"	.963"	24.06	23.01	21.97	20.92
78441		.1890	#12	4.801	2-1/4"	1-3/16"	.592"	25.77	24.65	23.53	22.41
	90441	.1890	#12	4.801	2-3/4"	1-5/8"	.970"	25.75	24.63	23.51	22.39
78446		.1910	#11	4.851	2-1/4"	1-3/16"	.599"	26.00	24.87	23.74	22.61
	90446	.1910	#11	4.851	2-3/4"	1-5/8"	.981"	25.98	24.85	23.72	22.59
78451		.1935	#10	4.915	2-1/4"	1-3/16"	.606"	27.05	25.87	24.70	23.52
	90451	.1935	#10	4.915	2-3/4"	1-5/8"	.993"	27.05	25.87	24.70	23.52
78456		.1960	#9	4.978	2-1/4"	1-3/16"	.614"	27.62	26.42	25.22	24.02
	90456	.1960	#9	4.978	3"	1-3/4"	1.006"	27.62	26.42	25.22	24.02
78461		.1969		5.000	57	30	16	27.77	26.57	25.36	24.15
	90461	.1969		5.000	76	44	26	27.76	26.55	25.35	24.14
78466		.1990	#8	5.055	2-1/4"	1-3/16"	.624"	27.93	26.72	25.50	24.29
	90466	.1990	#8	5.055	3"	1-3/4"	1.022"	27.92	26.71	25.49	24.28
78471		.2010	#7	5.105	2-1/4"	1-3/16"	.630"	28.67	27.42	26.18	24.93
	90471	.2010	#7	5.105	3"	1-3/4"	1.032"	28.67	27.42	26.18	24.93
78476		.2031	13/64"	5.159	2-1/4"	1-3/16"	.637"	29.62	28.34	27.05	25.76
	90476	.2031	13/64"	5.159	3"	1-3/4"	1.043"	29.61	28.33	27.04	25.75
	90481	.2040	#6	5.182	3"	1-3/4"	1.047"	29.79	28.49	27.20	25.90
78486		.2055	#5	5.220	2-3/8"	1-1/4"	.644"	29.91	28.61	27.31	26.01
	90486	.2055	#5	5.220	3"	1-3/4"	1.055"	29.90	28.60	27.30	26.00
78491		.2090	#4	5.309	2-3/8"	1-1/4"	.655"	30.36	29.04	27.72	26.40
	90491	.2090	#4	5.309	3"	1-3/4"	1.073"	30.36	29.04	27.72	26.40
78496		.2130	#3	5.410	2-3/8"	1-1/4"	.668"	30.82	29.48	28.14	26.80
	90496	.2130	#3	5.410	3"	1-3/4"	1.094"	30.82	29.48	28.14	26.80
78501		.2165		5.500	60	32	17	31.03	29.68	28.33	26.98
	90501	.2165		5.500	76	44	28	31.03	29.68	28.33	26.98
78506		.2188	7/32"	5.558	2-3/8"	1-1/4"	.686"	31.22	29.87	28.51	27.15
	90506	.2188	7/32"	5.558	3"	1-3/4"	1.123"	31.22	29.87	28.51	27.15
78511		.2210	#2	5.613	2-7/16"	1-5/16"	.693"	31.92	30.54	29.15	27.76
	90511	.2210	#2	5.613	3"	1-3/4"	1.135"	31.90	30.51	29.13	27.74
78516		.2280	#1	5.791	2-7/16"	1-5/16"	.715"	32.05	30.66	29.26	27.87
	90516	.2280	#1	5.791	3"	1-3/4"	1.171"	32.05	30.66	29.26	27.87
78521		.2340	A	5.944	2-7/16"	1-5/16"	.733"	32.22	30.82	29.42	28.02
	90521	.2340	A	5.944	3-1/4"	2"	1.201"	32.50	31.09	29.67	28.26
78526		.2344	15/64"	5.954	2-7/16"	1-5/16"	.735"	32.35	30.94	29.54	28.13
	90526	.2344	15/64"	5.954	3-1/4"	2"	1.203"	32.60	31.19	29.77	28.35
78531		.2362		6.000	64	35	19	32.43	31.02	29.61	28.20
	90531	.2362		6.000	82	50	31	32.69	31.27	29.85	28.43

GARR TOOL®

† *Metric equivalents are for reference only*

3xD (1120H) EDP#	5xD (1100H) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
78536		.2380	B	6.045	2-1/2"	1-3/8"	.746"	32.56	31.14	29.73	28.31
	90536	.2380	B	6.045	3-1/4"	2"	1.222"	32.82	31.39	29.97	28.54
78541		.2420	C	6.147	2-1/2"	1-3/8"	.758"	32.76	31.34	29.91	28.49
	90541	.2420	C	6.147	3-1/4"	2"	1.242"	33.01	31.57	30.14	28.70
78546		.2460	D	6.248	2-1/2"	1-3/8"	.771"	32.95	31.52	30.08	28.65
	90546	.2460	D	6.248	3-1/4"	2"	1.263"	33.24	31.79	30.35	28.90
78551		.2500	1/4" / E	6.350	2-1/2"	1-3/8"	.783"	33.15	31.71	30.27	28.83
	90551	.2500	1/4" / E	6.350	3-1/4"	2"	1.283"	33.43	31.98	30.52	29.07
78556		.2559		6.500	67	37	21	36.71	35.11	33.52	31.92
	90556	.2559		6.500	82	50	33	37.28	35.66	34.04	32.42
78561		.2570	F	6.528	2-5/8"	1-7/16"	.805"	37.33	35.71	34.08	32.46
	90561	.2570	F	6.528	3-1/4"	2"	1.319"	37.90	36.26	34.61	32.96
78566		.2610	G	6.629	2-5/8"	1-7/16"	.818"	37.80	36.16	34.51	32.87
	90566	.2610	G	6.629	3-1/2"	2-1/8"	1.340"	39.53	37.81	36.09	34.37
78571		.2656	17/64"	6.746	2-5/8"	1-7/16"	.832"	38.41	36.74	35.07	33.40
	90571	.2656	17/64"	6.746	3-1/2"	2-1/8"	1.364"	40.17	38.42	36.68	34.93
78576		.2660	H	6.756	2-11/16"	1-1/2"	.834"	39.36	37.65	35.94	34.23
	90576	.2660	H	6.756	3-1/2"	2-1/8"	1.366"	41.14	39.35	37.56	35.77
78581		.2720	I	6.909	2-11/16"	1-1/2"	.852"	39.74	38.02	36.29	34.56
	90581	.2720	I	6.909	3-1/2"	2-1/8"	1.396"	41.57	39.77	37.96	36.15
78586		.2756		7.000	68	38	22	39.97	38.24	36.50	34.76
	90586	.2756		7.000	88	54	36	41.80	39.99	38.17	36.35
78591		.2770	J	7.036	2-11/16"	1-1/2"	.868"	40.27	38.52	36.77	35.02
	90591	.2770	J	7.036	3-1/2"	2-1/8"	1.422"	42.14	40.30	38.47	36.64
78596		.2810	K	7.137	2-11/16"	1-1/2"	.881"	40.61	38.84	37.08	35.31
	90596	.2810	K	7.137	3-1/2"	2-1/8"	1.443"	42.45	40.60	38.76	36.91
78601		.2812	9/32"	7.142	2-11/16"	1-1/2"	.881"	41.79	39.97	38.16	36.34
	90601	.2812	9/32"	7.142	3-1/2"	2-1/8"	1.444"	43.71	41.81	39.91	38.01
78606		.2900	L	7.366	2-3/4"	1-9/16"	.909"	43.11	41.24	39.36	37.49
	90606	.2900	L	7.366	3-1/2"	2-1/8"	1.489"	45.09	43.13	41.17	39.21
78611		.2950	M	7.493	2-3/4"	1-9/16"	.925"	44.18	42.26	40.34	38.42
	90611	.2950	M	7.493	3-3/4"	2-3/8"	1.515"	47.44	45.38	43.31	41.25
78616		.2953		7.500	70	40	23	44.18	42.26	40.34	38.42
	90616	.2953		7.500	95	60	39	47.44	45.38	43.31	41.25
78621		.2969	19/64"	7.541	2-3/4"	1-9/16"	.930"	44.18	42.26	40.34	38.42
	90621	.2969	19/64"	7.541	3-3/4"	2-3/8"	1.524"	47.44	45.38	43.31	41.25
78626		.3020	N	7.671	2-15/16"	1-5/8"	.946"	45.68	43.69	41.71	39.72
	90626	.3020	N	7.671	3-3/4"	2-3/8"	1.550"	47.75	45.67	43.60	41.52
78631		.3125	5/16"	7.938	2-15/16"	1-5/8"	.979"	45.84	43.85	41.85	39.86
	90631	.3125	5/16"	7.938	3-3/4"	2-3/8"	1.604"	47.78	45.71	43.63	41.55
78636		.3150		8.000	75	43	25	48.70	46.59	44.47	42.35
	90636	.3150		8.000	95	60	41	50.77	48.57	46.36	44.15
78641		.3160	O	8.026	2-15/16"	1-11/16"	.990"	48.70	46.59	44.47	42.35
	90641	.3160	O	8.026	3-3/4"	2-3/8"	1.622"	50.77	48.57	46.36	44.15
78646		.3230	P	8.204	2-15/16"	1-11/16"	1.012"	48.70	46.59	44.47	42.35
	90646	.3230	P	8.204	3-3/4"	2-3/8"	1.658"	50.77	48.57	46.36	44.15
78651		.3281	21/64"	8.334	2-15/16"	1-11/16"	1.028"	50.54	48.35	46.15	43.95
	90651	.3281	21/64"	8.334	4"	2-1/2"	1.684"	52.82	50.52	48.23	45.93
78656		.3320	Q	8.433	3"	1-11/16"	1.040"	51.57	49.32	47.08	44.84
	90656	.3320	Q	8.433	4"	2-1/2"	1.704"	53.90	51.56	49.21	46.87
78661		.3346		8.500	76	43	27	51.99	49.73	47.47	45.21
	90661	.3346		8.500	101	63	44	54.31	51.95	49.59	47.23
78666		.3390	R	8.611	3"	1-11/16"	1.062"	53.41	51.08	48.76	46.44
	90666	.3390	R	8.611	4"	2-1/2"	1.740"	55.81	53.38	50.96	48.53
78671		.3438	11/32"	8.733	3"	1-11/16"	1.077"	55.34	52.93	50.53	48.12
	90671	.3438	11/32"	8.733	4"	2-1/2"	1.765"	57.80	55.29	52.77	50.26
78676		.3480	S	8.839	3-1/16"	1-3/4"	1.091"	62.63	59.91	57.18	54.46
	90676	.3480	S	8.839	4"	2-1/2"	1.787"	61.35	58.69	56.02	53.35
78681		.3543		9.000	78	44	28	62.99	60.25	57.51	54.77
	90681	.3543		9.000	101	63	46	61.71	59.03	56.34	53.66

continued →

Series 1120H, 1100H *(continued)*

.3580" - .5000"
(9.093mm - 12.700mm)

3xD (1120H) EDP#	5xD (1100H) EDP#	Decimal	*d* † Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
78686		.3580	T	9.093	3-1/16"	1-3/4"	1.122"	63.14	60.39	57.65	54.90
78691		.3594	23/64"	9.129	3-1/16"	1-3/4"	1.126"	63.57	60.81	58.04	55.28
	90691	.3594	23/64"	9.129	4-1/4"	2-3/4"	1.845"	64.27	61.48	58.68	55.89
78696		.3680	U	9.347	3-1/8"	1-13/16"	1.153"	67.22	64.30	61.37	58.45
	90696	.3680	U	9.347	4-1/4"	2-3/4"	1.889"	67.94	64.99	62.03	59.08
78701		.3740		9.500	79	46	30	68.20	65.23	62.27	59.30
	90701	.3740		9.500	107	70	49	68.93	65.93	62.94	59.94
78706		.3750	3/8"	9.525	3-1/8"	1-13/16"	1.175"	68.20	65.23	62.27	59.30
	90706	.3750	3/8"	9.525	4-1/4"	2-3/4"	1.925"	68.93	65.93	62.94	59.94
78711		.3770	V	9.576	3-1/4"	1-7/8"	1.182"	68.86	65.87	62.87	59.88
	90711	.3770	V	9.576	4-1/4"	2-3/4"	1.936"	71.71	68.60	65.48	62.36
78716		.3860	W	9.804	3-1/4"	1-7/8"	1.210"	72.73	69.56	66.40	63.24
	90716	.3860	W	9.804	4-1/2"	2-7/8"	1.982"	75.64	72.35	69.06	65.77
78721		.3906	25/64"	9.921	3-1/4"	1-7/8"	1.224"	73.62	70.42	67.22	64.02
	90721	.3906	25/64"	9.921	4-1/2"	2-7/8"	2.005"	76.58	73.25	69.92	66.59
78726		.3937		10.000	84	49	31	75.92	72.62	69.32	66.02
	90726	.3937		10.000	114	73	51	78.95	75.52	72.08	68.65
78736		.4040	Y	10.262	3-5/16"	1-15/16"	1.266"	78.42	75.01	71.60	68.19
	90736	.4040	Y	10.262	4-1/2"	2-7/8"	2.074"	81.54	77.99	74.45	70.90
78741		.4062	13/32"	10.317	3-5/16"	1-15/16"	1.273"	80.90	77.39	73.87	70.35
	90741	.4062	13/32"	10.317	4-1/2"	2-7/8"	2.085"	84.09	80.43	76.78	73.12
78746		.4130	Z	10.490	3-3/8"	2"	1.294"	81.63	78.08	74.53	70.98
	90746	.4130	Z	10.490	4-1/2"	2-7/8"	2.120"	84.84	81.15	77.46	73.77
78751		.4134		10.500	86	51	33	81.63	78.08	74.53	70.98
	90751	.4134		10.500	114	73	54	84.84	81.15	77.46	73.77
78756		.4219	27/64"	10.716	3-3/8"	2"	1.322"	82.47	78.88	75.30	71.71
	90756	.4219	27/64"	10.716	4-1/2"	2-7/8"	2.166"	85.69	81.96	78.24	74.51
78761		.4331		11.000	87	52	34	87.87	84.05	80.23	76.41
	90761	.4331		11.000	114	73	56	92.08	88.08	84.07	80.07
78766		.4375	7/16"	11.113	3-7/16"	2-1/16"	1.371"	87.87	84.05	80.23	76.41
	90766	.4375	7/16"	11.113	4-1/2"	2-7/8"	2.246"	92.08	88.08	84.07	80.07
	90771	.4528		11.500	120	76	59	98.99	94.69	90.38	86.08
78776		.4531	29/64"	11.509	3-9/16"	2-1/8"	1.420"	94.48	90.38	86.27	82.16
	90776	.4531	29/64"	11.509	4-3/4"	3"	2.326"	98.99	94.69	90.38	86.08
78781		.4688	15/32"	11.908	3-5/8"	2-1/8"	1.469"	99.38	95.06	90.74	86.42
	90781	.4688	15/32"	11.908	4-3/4"	3"	2.407"	104.09	99.56	95.04	90.51
78786		.4724		12.000	94	56	38	99.66	95.33	90.99	86.66
	90786	.4724		12.000	120	76	62	104.37	99.84	95.30	90.76
78791		.4844	31/64"	12.304	3-11/16"	2-3/16"	1.518"	99.96	95.61	91.27	86.92
	90791	.4844	31/64"	12.304	4-3/4"	3"	2.487"	104.37	99.84	95.30	90.76
78796		.4921		12.500	95	56	39	101.50	97.09	92.67	88.26
	90796	.4921		12.500	120	76	64	106.87	102.22	97.58	92.93
78801		.5000	1/2"	12.700	3-3/4"	2-1/4"	1.567"	102.03	97.59	93.16	88.72
	90801	.5000	1/2"	12.700	4-3/4"	3"	2.567"	106.87	102.22	97.58	92.93

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

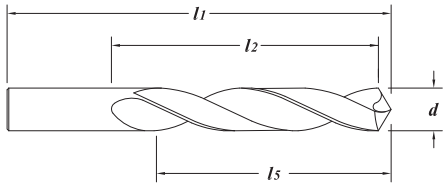
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Series 1200

.0625" - .1575"
(1.588mm - 4.000mm)

Solid submicron grain carbide drill
General purpose jobber style
Cam point (≤1/8" diameter - 4-facet point)
Live tooling recommended on lathe processes
Durana Coating - page 88





EDP#	*d* † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
56165	.0625	1/16"	1.588	1-3/4"	3/4"	.331"	7.42	7.10	6.77	6.45
56170	.0635	#52	1.613	1-3/4"	3/4"	.337"	7.52	7.19	6.87	6.54
56175	.0670	#51	1.702	1-3/4"	3/4"	.355"	7.64	7.30	6.97	6.64
56180	.0700	#50	1.778	1-3/4"	7/8"	.371"	7.82	7.48	7.14	6.80
56185	.0730	#49	1.854	1-3/4"	7/8"	.387"	8.03	7.68	7.33	6.98
56190	.0760	#48	1.930	1-3/4"	7/8"	.403"	8.29	7.93	7.57	7.21
56195	.0781	5/64"	1.984	1-3/4"	7/8"	.414"	8.60	8.23	7.85	7.48
56200	.0785	#47	1.994	1-3/4"	7/8"	.416"	8.89	8.50	8.12	7.73
56205	.0787		2.000	44	22	11	9.03	8.64	8.24	7.85
56210	.0810	#46	2.057	1-3/4"	7/8"	.429"	9.18	8.78	8.38	7.98
56215	.0820	#45	2.083	1-3/4"	7/8"	.435"	9.45	9.04	8.63	8.22
56220	.0860	#44	2.184	2"	1"	.456"	9.76	9.34	8.91	8.49
56225	.0890	#43	2.261	2"	1"	.472"	10.04	9.60	9.17	8.73
56230	.0935	#42	2.375	2"	1"	.496"	10.18	9.74	9.29	8.85
56235	.0938	3/32"	2.383	2"	1"	.497"	10.41	9.96	9.50	9.05
56240	.0960	#41	2.438	2"	1"	.509"	10.50	10.04	9.59	9.13
56245	.0980	#40	2.489	2"	1"	.519"	10.66	10.20	9.73	9.27
56250	.0984		2.500	57	32	13	10.72	10.25	9.79	9.32
56255	.0995	#39	2.527	2-1/4"	1-1/4"	.527"	10.76	10.30	9.83	9.36
56260	.1015	#38	2.578	2-1/4"	1-1/4"	.538"	10.89	10.42	9.94	9.47
56265	.1040	#37	2.642	2-1/4"	1-1/4"	.551"	11.04	10.56	10.08	9.60
56270	.1065	#36	2.705	2-1/4"	1-1/4"	.564"	11.18	10.69	10.21	9.72
56275	.1094	7/64"	2.779	2-1/4"	1-1/4"	.580"	11.36	10.87	10.37	9.88
56280	.1100	#35	2.794	2-1/4"	1-1/4"	.583"	11.49	10.99	10.49	9.99
56285	.1110	#34	2.819	2-1/4"	1-1/4"	.588"	11.63	11.12	10.62	10.11
56290	.1130	#33	2.870	2-1/4"	1-1/4"	.599"	11.85	11.33	10.82	10.30
56295	.1160	#32	2.946	2-1/4"	1-1/4"	.615"	11.97	11.45	10.93	10.41
56300	.1181		3.000	57	32	16	12.09	11.56	11.04	10.51
56305	.1200	#31	3.048	2-1/4"	1-1/4"	.636"	12.17	11.64	11.11	10.58
56310	.1250	1/8"	3.175	2-1/4"	1-1/4"	.663"	12.32	11.78	11.25	10.71
56315	.1285	#30	3.264	2-1/4"	1-1/4"	.681"	12.63	12.08	11.53	10.98
56320	.1360	#29	3.454	2-1/2"	1-3/8"	.721"	13.03	12.46	11.90	11.33
56325	.1378		3.500	63	35	19	13.46	12.87	12.29	11.70
56330	.1405	#28	3.569	2-1/2"	1-3/8"	.745"	13.58	12.99	12.40	11.81
56335	.1406	9/64"	3.571	2-1/2"	1-3/8"	.745"	13.74	13.15	12.55	11.95
56340	.1440	#27	3.658	2-1/2"	1-3/8"	.763"	14.28	13.66	13.04	12.42
56345	.1470	#26	3.734	2-1/2"	1-3/8"	.779"	14.42	13.79	13.17	12.54
56350	.1495	#25	3.797	2-1/2"	1-3/8"	.792"	14.62	13.98	13.35	12.71
56355	.1520	#24	3.861	2-1/2"	1-3/8"	.806"	14.64	14.00	13.37	12.73
56360	.1540	#23	3.912	2-1/2"	1-3/8"	.816"	14.74	14.10	13.46	12.82
56365	.1562	5/32"	3.967	2-1/2"	1-3/8"	.828"	14.85	14.20	13.56	12.91
56370	.1570	#22	3.988	2-1/2"	1-3/8"	.832"	15.78	15.09	14.41	13.72
56375	.1575		4.000	63	35	21	15.97	15.28	14.58	13.89

continued →

Series 1200 *(continued)*

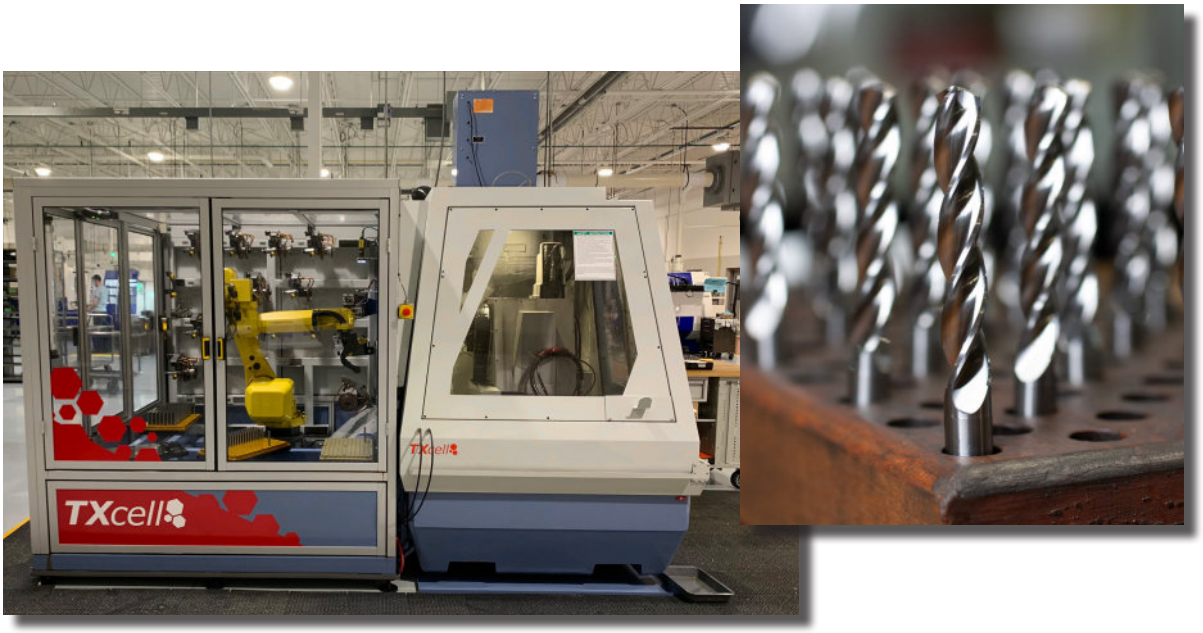
.1590" - .3346"
(4.039mm - 8.500mm)

EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
56380	.1590	#21	4.039	2-1/2"	1-3/8"	.843"	16.16	15.46	14.75	14.05
56385	.1610	#20	4.089	2-1/2"	1-3/8"	.853"	16.27	15.57	14.86	14.15
56390	.1660	#19	4.216	2-3/4"	1-5/8"	.880"	16.94	16.20	15.47	14.73
56395	.1695	#18	4.305	2-3/4"	1-5/8"	.898"	17.15	16.40	15.66	14.91
56400	.1719	11/64"	4.366	2-3/4"	1-5/8"	.911"	17.51	16.75	15.99	15.23
56405	.1730	#17	4.394	2-3/4"	1-5/8"	.917"	17.74	16.97	16.20	15.43
56410	.1770	#16	4.496	2-3/4"	1-5/8"	.938"	17.94	17.16	16.38	15.60
56415	.1772		4.500	70	41	24	18.03	17.25	16.46	15.68
56420	.1800	#15	4.572	2-3/4"	1-5/8"	.954"	18.11	17.33	16.54	15.75
56425	.1820	#14	4.623	2-3/4"	1-5/8"	.965"	18.53	17.72	16.92	16.11
56430	.1850	#13	4.700	2-3/4"	1-5/8"	.981"	18.66	17.85	17.04	16.23
56435	.1875	3/16"	4.763	2-3/4"	1-5/8"	.994"	18.76	17.94	17.13	16.31
56440	.1890	#12	4.801	2-3/4"	1-5/8"	1.002"	19.37	18.52	17.68	16.84
56445	.1910	#11	4.851	2-3/4"	1-5/8"	1.012"	19.57	18.72	17.87	17.02
56450	.1935	#10	4.915	2-3/4"	1-5/8"	1.026"	20.52	19.62	18.73	17.84
56455	.1960	#9	4.978	3"	1-3/4"	1.039"	21.02	20.11	19.19	18.28
56460	.1969		5.000	76	44	26	21.15	20.23	19.31	18.39
56465	.1990	#8	5.055	3"	1-3/4"	1.055"	21.29	20.36	19.44	18.51
56470	.2010	#7	5.105	3"	1-3/4"	1.065"	21.91	20.96	20.00	19.05
56475	.2031	13/64"	5.159	3"	1-3/4"	1.077"	22.08	21.12	20.16	19.20
56480	.2040	#6	5.182	3"	1-3/4"	1.081"	22.53	21.55	20.57	19.59
56485	.2055	#5	5.220	3"	1-3/4"	1.089"	23.00	22.00	21.00	20.00
56490	.2090	#4	5.309	3"	1-3/4"	1.108"	23.39	22.37	21.36	20.34
56495	.2130	#3	5.410	3"	1-3/4"	1.129"	23.81	22.77	21.74	20.70
56500	.2165		5.500	76	44	29	23.99	22.95	21.90	20.86
56505	.2188	7/32"	5.558	3"	1-3/4"	1.160"	24.16	23.11	22.06	21.01
56510	.2210	#2	5.613	3"	1-3/4"	1.171"	24.76	23.68	22.61	21.53
56515	.2280	#1	5.791	3"	1-3/4"	1.208"	24.90	23.82	22.73	21.65
56520	.2340	A	5.944	3-1/4"	2"	1.240"	25.19	24.09	23.00	21.90
56525	.2344	15/64"	5.954	3-1/4"	2"	1.242"	25.25	24.16	23.06	21.96
56530	.2362		6.000	82	50	32	25.36	24.26	23.15	22.05
56535	.2380	B	6.045	3-1/4"	2"	1.262"	25.44	24.33	23.23	22.12
56540	.2420	C	6.147	3-1/4"	2"	1.283"	25.63	24.52	23.40	22.29
56545	.2460	D	6.248	3-1/4"	2"	1.304"	25.82	24.70	23.57	22.45
56550	.2500	1/4" / E	6.350	3-1/4"	2"	1.325"	26.00	24.87	23.74	22.61
56555	.2559		6.500	82	50	34	26.63	25.48	24.32	23.16
56560	.2570	F	6.528	3-1/4"	2"	1.362"	27.17	25.99	24.81	23.63
56565	.2610	G	6.629	3-1/2"	2-1/8"	1.383"	27.74	26.53	25.33	24.12
56570	.2656	17/64"	6.746	3-1/2"	2-1/8"	1.408"	28.30	27.07	25.84	24.61
56575	.2660	H	6.756	3-1/2"	2-1/8"	1.410"	29.11	27.84	26.58	25.31
56580	.2720	I	6.909	3-1/2"	2-1/8"	1.442"	29.43	28.15	26.87	25.59
56585	.2756		7.000	88	54	37	29.67	28.38	27.09	25.80
56590	.2770	J	7.036	3-1/2"	2-1/8"	1.468"	29.93	28.63	27.33	26.03
56595	.2810	K	7.137	3-1/2"	2-1/8"	1.489"	30.20	28.89	27.57	26.26
56600	.2812	9/32"	7.142	3-1/2"	2-1/8"	1.490"	30.39	29.07	27.75	26.43
56605	.2900	L	7.366	3-1/2"	2-1/8"	1.537"	31.48	30.11	28.74	27.37
56610	.2950	M	7.493	3-3/4"	2-3/8"	1.564"	33.70	32.23	30.77	29.30
56615	.2953		7.500	95	60	40	33.70	32.23	30.77	29.30
56620	.2969	19/64"	7.541	3-3/4"	2-3/8"	1.574"	33.70	32.23	30.77	29.30
56625	.3020	N	7.671	3-3/4"	2-3/8"	1.601"	35.70	34.14	32.59	31.04
56630	.3125	5/16"	7.938	3-3/4"	2-3/8"	1.656"	35.83	34.28	32.72	31.16
56635	.3150		8.000	95	60	42	38.44	36.77	35.10	33.43
56640	.3160	O	8.026	3-3/4"	2-3/8"	1.675"	38.44	36.77	35.10	33.43
56645	.3230	P	8.204	3-3/4"	2-3/8"	1.712"	38.44	36.77	35.10	33.43
56650	.3281	21/64"	8.334	4"	2-1/2"	1.739"	39.01	37.31	35.62	33.92
56655	.3320	Q	8.433	4"	2-1/2"	1.760"	39.93	38.19	36.46	34.72
56660	.3346		8.500	101	63	45	40.27	38.52	36.77	35.02

GARR TOOL®

† *Metric equivalents are for reference only*

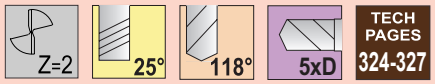
EDP#	*d* † Diameter Decimal		Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
56665	.3390	R	8.611	4"	2-1/2"	1.797"	41.57	39.77	37.96	36.15
56670	.3438	11/32"	8.733	4"	2-1/2"	1.822"	43.25	41.37	39.49	37.61
56675	.3480	S	8.839	4"	2-1/2"	1.845"	43.40	41.51	39.63	37.74
56680	.3543		9.000	101	63	48	43.65	41.76	39.86	37.96
56685	.3580	T	9.093	4-1/4"	2-3/4"	1.898"	44.05	42.13	40.22	38.30
56690	.3594	23/64"	9.129	4-1/4"	2-3/4"	1.905"	44.36	42.43	40.50	38.57
56695	.3680	U	9.347	4-1/4"	2-3/4"	1.951"	50.34	48.15	45.96	43.77
56700	.3740		9.500	107	70	50	50.81	48.60	46.39	44.18
56705	.3750	3/8"	9.525	4-1/4"	2-3/4"	1.988"	51.21	48.98	46.76	44.53
56710	.3770	V	9.576	4-1/4"	2-3/4"	1.998"	52.19	49.92	47.65	45.38
56715	.3860	W	9.804	4-1/2"	2-7/8"	2.046"	53.29	50.97	48.66	46.34
56720	.3906	25/64"	9.921	4-1/2"	2-7/8"	2.070"	54.08	51.73	49.38	47.03
56725	.3937		10.000	114	73	53	56.03	53.59	51.16	48.72
56730	.3970	X	10.084	4-1/2"	2-7/8"	2.104"	57.68	55.18	52.67	50.16
56735	.4040	Y	10.262	4-1/2"	2-7/8"	2.141"	58.14	55.62	53.09	50.56
56740	.4062	13/32"	10.317	4-1/2"	2-7/8"	2.153"	60.24	57.62	55.00	52.38
56745	.4130	Z	10.490	4-1/2"	2-7/8"	2.189"	60.88	58.23	55.59	52.94
56750	.4134		10.500	114	73	56	60.88	58.23	55.59	52.94
56755	.4219	27/64"	10.716	4-1/2"	2-7/8"	2.236"	61.56	58.88	56.21	53.53
56760	.4331		11.000	114	73	58	66.85	63.94	61.04	58.13
56765	.4375	7/16"	11.113	4-1/2"	2-7/8"	2.319"	66.85	63.94	61.04	58.13
56770	.4528		11.500	120	76	61	72.52	69.37	66.21	63.06
56775	.4531	29/64"	11.509	4-3/4"	3"	2.402"	72.52	69.37	66.21	63.06
56780	.4688	15/32"	11.908	4-3/4"	3"	2.485"	76.71	73.37	70.04	66.70
56785	.4724		12.000	120	76	64	76.95	73.60	70.26	66.91
56790	.4844	31/64"	12.304	4-3/4"	3"	2.568"	76.95	73.60	70.26	66.91
56795	.4921		12.500	120	76	2.608"	79.01	75.57	72.14	68.70
56800	.5000	1/2"	12.700	4-3/4"	3"	2.650"	79.01	75.57	72.14	68.70



Drill Manufacturing

Series 1200H

.0625" - .1575"
(1.588mm - 4.000mm)



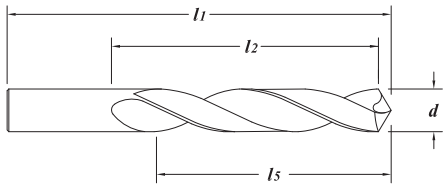
TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)



BALINIT® Durana Coating

Solid submicron grain carbide drill
General purpose jobber style
Excellent heat resistance and lubricity
Cam point (≤1/8" diameter is with 4-facet point)
Live tooling recommended on lathe processes
Bright Finish - page 85



EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
56166	.0625	1/16"	1.588	1-3/4"	3/4"	.331"	9.51	9.10	8.68	8.27
56171	.0635	#52	1.613	1-3/4"	3/4"	.337"	9.63	9.21	8.79	8.37
56181	.0700	#50	1.778	1-3/4"	7/8"	.371"	9.90	9.47	9.04	8.61
56186	.0730	#49	1.854	1-3/4"	7/8"	.387"	10.13	9.69	9.25	8.81
56191	.0760	#48	1.930	1-3/4"	7/8"	.403"	10.38	9.93	9.48	9.03
56196	.0781	5/64"	1.984	1-3/4"	7/8"	.414"	10.72	10.25	9.79	9.32
56206	.0787		2.000	44	22	11	11.13	10.65	10.16	9.68
56216	.0820	#45	2.083	1-3/4"	7/8"	.435"	11.56	11.06	10.55	10.05
56221	.0860	#44	2.184	2"	1"	.456"	11.87	11.35	10.84	10.32
56226	.0890	#43	2.261	2"	1"	.472"	12.13	11.61	11.08	10.55
56231	.0935	#42	2.375	2"	1"	.496"	12.28	11.75	11.21	10.68
56236	.0938	3/32"	2.383	2"	1"	.497"	12.51	11.97	11.42	10.88
56241	.0960	#41	2.438	2"	1"	.509"	12.62	12.07	11.52	10.97
56246	.0980	#40	2.489	2"	1"	.519"	12.78	12.22	11.67	11.11
56251	.0984		2.500	57	32	13	12.80	12.24	11.69	11.13
56256	.0995	#39	2.527	2-1/4"	1-1/4"	.527"	12.86	12.30	11.74	11.18
56261	.1015	#38	2.578	2-1/4"	1-1/4"	.538"	13.02	12.45	11.89	11.32
56266	.1040	#37	2.642	2-1/4"	1-1/4"	.551"	13.12	12.55	11.98	11.41
56271	.1065	#36	2.705	2-1/4"	1-1/4"	.564"	13.27	12.69	12.12	11.54
56276	.1094	7/64"	2.779	2-1/4"	1-1/4"	.580"	13.48	12.89	12.31	11.72
56281	.1100	#35	2.794	2-1/4"	1-1/4"	.583"	13.58	12.99	12.40	11.81
56286	.1110	#34	2.819	2-1/4"	1-1/4"	.588"	13.73	13.13	12.54	11.94
56291	.1130	#33	2.870	2-1/4"	1-1/4"	.599"	13.95	13.34	12.74	12.13
56296	.1160	#32	2.946	2-1/4"	1-1/4"	.615"	14.05	13.44	12.83	12.22
56301	.1181		3.000	57	32	16	14.17	13.55	12.94	12.32
56306	.1200	#31	3.048	2-1/4"	1-1/4"	.636"	14.28	13.66	13.04	12.42
56311	.1250	1/8"	3.175	2-1/4"	1-1/4"	.663"	14.40	13.77	13.15	12.52
56316	.1285	#30	3.264	2-1/4"	1-1/4"	.681"	14.73	14.09	13.45	12.81
56321	.1360	#29	3.454	2-1/2"	1-3/8"	.721"	15.12	14.47	13.81	13.15
56331	.1405	#28	3.569	2-1/2"	1-3/8"	.745"	15.71	15.03	14.34	13.66
56336	.1406	9/64"	3.571	2-1/2"	1-3/8"	.745"	15.85	15.16	14.47	13.78
56341	.1440	#27	3.658	2-1/2"	1-3/8"	.763"	16.39	15.68	14.96	14.25
56346	.1470	#26	3.734	2-1/2"	1-3/8"	.779"	16.54	15.82	15.10	14.38
56351	.1495	#25	3.797	2-1/2"	1-3/8"	.792"	16.69	15.96	15.24	14.51
56356	.1520	#24	3.861	2-1/2"	1-3/8"	.806"	16.77	16.04	15.31	14.58
56361	.1540	#23	3.912	2-1/2"	1-3/8"	.816"	16.85	16.12	15.38	14.65
56366	.1562	5/32"	3.967	2-1/2"	1-3/8"	.828"	16.93	16.19	15.46	14.72
56371	.1570	#22	3.988	2-1/2"	1-3/8"	.832"	17.87	17.09	16.32	15.54

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
56381	.1590	#21	4.039	2-1/2"	1-3/8"	.843"	18.27	17.48	16.68	15.89
56386	.1610	#20	4.089	2-1/2"	1-3/8"	.853"	18.38	17.58	16.78	15.98
56391	.1660	#19	4.216	2-3/4"	1-5/8"	.880"	19.06	18.23	17.40	16.57
56396	.1695	#18	4.305	2-3/4"	1-5/8"	.898"	19.24	18.40	17.57	16.73
56401	.1719	11/64"	4.366	2-3/4"	1-5/8"	.911"	19.57	18.72	17.87	17.02
56411	.1770	#16	4.496	2-3/4"	1-5/8"	.938"	20.03	19.16	18.29	17.42
56421	.1800	#15	4.572	2-3/4"	1-5/8"	.954"	20.23	19.35	18.47	17.59
56426	.1820	#14	4.623	2-3/4"	1-5/8"	.965"	20.62	19.72	18.83	17.93
56436	.1875	3/16"	4.763	2-3/4"	1-5/8"	.994"	20.86	19.95	19.05	18.14
56441	.1890	#12	4.801	2-3/4"	1-5/8"	1.002"	22.99	21.99	20.99	19.99
56446	.1910	#11	4.851	2-3/4"	1-5/8"	1.012"	23.20	22.19	21.18	20.17
56451	.1935	#10	4.915	2-3/4"	1-5/8"	1.026"	24.10	23.06	22.01	20.96
56471	.2010	#7	5.105	3"	1-3/4"	1.065"	25.52	24.41	23.30	22.19
56481	.2040	#6	5.182	3"	1-3/4"	1.081"	26.14	25.00	23.87	22.73
56486	.2055	#5	5.220	3"	1-3/4"	1.089"	26.60	25.44	24.29	23.13
56491	.2090	#4	5.309	3"	1-3/4"	1.108"	27.03	25.85	24.68	23.50
56496	.2130	#3	5.410	3"	1-3/4"	1.129"	27.42	26.22	25.03	23.84
56506	.2188	7/32"	5.558	3"	1-3/4"	1.160"	27.76	26.55	25.35	24.14
56516	.2280	#1	5.791	3"	1-3/4"	1.208"	28.51	27.27	26.03	24.79
56526	.2344	15/64"	5.954	3-1/4"	2"	1.242"	28.99	27.73	26.47	25.21
56541	.2420	C	6.147	3-1/4"	2"	1.283"	29.36	28.08	26.81	25.53
56551	.2500	1/4" / E	6.350	3-1/4"	2"	1.325"	29.72	28.42	27.13	25.84
56561	.2570	F	6.528	3-1/4"	2"	1.362"	34.05	32.57	31.09	29.61
56566	.2610	G	6.629	3-1/2"	2-1/8"	1.383"	34.57	33.07	31.56	30.06
56571	.2656	17/64"	6.746	3-1/2"	2-1/8"	1.408"	35.14	33.62	32.09	30.56
56601	.2812	9/32"	7.142	3-1/2"	2-1/8"	1.490"	37.19	35.57	33.96	32.34
56606	.2900	L	7.366	3-1/2"	2-1/8"	1.537"	38.33	36.66	35.00	33.33
56626	.3020	N	7.671	3-3/4"	2-3/8"	1.601"	42.53	40.68	38.83	36.98
56631	.3125	5/16"	7.938	3-3/4"	2-3/8"	1.656"	42.69	40.83	38.98	37.12
56646	.3230	P	8.204	3-3/4"	2-3/8"	1.712"	45.26	43.30	41.33	39.36
56651	.3281	21/64"	8.334	4"	2-1/2"	1.739"	45.84	43.85	41.85	39.86
56671	.3438	11/32"	8.733	4"	2-1/2"	1.822"	50.07	47.89	45.72	43.54
56696	.3680	U	9.347	4-1/4"	2-3/4"	1.951"	60.75	58.11	55.47	52.83
56706	.3750	3/8"	9.525	4-1/4"	2-3/4"	1.988"	61.61	58.93	56.25	53.57
56731	.3970	X	10.084	4-1/2"	2-7/8"	2.104"	68.60	65.62	62.63	59.65
56741	.4062	13/32"	10.317	4-1/2"	2-7/8"	2.153"	71.17	68.08	64.98	61.89
56756	.4219	27/64"	10.716	4-1/2"	2-7/8"	2.236"	72.50	69.34	66.19	63.04
56766	.4375	7/16"	11.113	4-1/2"	2-7/8"	2.319"	77.77	74.39	71.01	67.63
56801	.5000	1/2"	12.700	4-3/4"	3"	2.650"	89.94	86.03	82.12	78.21

Series 1100

.1094" - .2040"
(2.779mm - 5.182mm)

Z=3 | 25° | 150° | 5xD | TECH PAGES 320-323

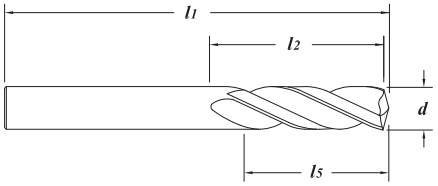
TOLERANCES

d	+.0000" –.0005" (+.0000 –.0127mm)	
l_1	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	> 1/8"	+.125" –.125" (+3.175 –3.175mm)
l_2	≤ 1/8"	+.125" –.062" (+3.175 –1.588mm)
	>1/8"	+.125" –.125" (+3.175 –3.175mm)

Recommended for cast iron, tungsten, and materials with high silicon content

- Solid submicron grain carbide drill
- Self-centering drill point
- Near reamer finishes
- Can be used as a core drill
- Tighter tolerance holes
- Improved roundness and straightness
- Live tooling recommended on lathe processes
- Durana Coating - page 81





EDP#	d † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
90275	.1094	7/64"	2.779	2-1/4"	1-1/4"	.562"	13.80	13.20	12.60	12.00
90280	.1100	#35	2.794	2-1/4"	1-1/4"	.565"	13.95	13.34	12.74	12.13
90285	.1110	#34	2.819	2-1/4"	1-1/4"	.570"	14.12	13.51	12.89	12.28
90290	.1130	#33	2.870	2-1/4"	1-1/4"	.580"	14.35	13.73	13.10	12.48
90295	.1160	#32	2.946	2-1/4"	1-1/4"	.596"	14.55	13.92	13.28	12.65
90300	.1181		3.000	57	32	15	14.65	14.01	13.38	12.74
90305	.1200	#31	3.048	2-1/4"	1-1/4"	.616"	14.75	14.11	13.47	12.83
90310	.1250	1/8"	3.175	2-1/4"	1-1/4"	.642"	14.96	14.31	13.66	13.01
90315	.1285	#30	3.264	2-1/4"	1-1/4"	.660"	15.32	14.65	13.99	13.32
90320	.1360	#29	3.454	2-1/2"	1-3/8"	.698"	15.80	15.11	14.43	13.74
90325	.1378		3.500	63	35	18	16.31	15.60	14.89	14.18
90330	.1405	#28	3.569	2-1/2"	1-3/8"	.721"	16.49	15.77	15.06	14.34
90335	.1406	9/64"	3.571	2-1/2"	1-3/8"	.722"	16.68	15.95	15.23	14.50
90340	.1440	#27	3.658	2-1/2"	1-3/8"	.739"	17.34	16.59	15.83	15.08
90345	.1470	#26	3.734	2-1/2"	1-3/8"	.755"	17.58	16.82	16.05	15.29
90350	.1495	#25	3.797	2-1/2"	1-3/8"	.768"	17.73	16.96	16.19	15.42
90355	.1520	#24	3.861	2-1/2"	1-3/8"	.780"	17.77	17.00	16.22	15.45
90365	.1562	5/32"	3.967	2-1/2"	1-3/8"	.802"	18.01	17.23	16.44	15.66
90375	.1575		4.000	63	35	21	19.15	18.32	17.48	16.65
90380	.1590	#21	4.039	2-1/2"	1-3/8"	.816"	19.61	18.76	17.90	17.05
90385	.1610	#20	4.089	2-1/2"	1-3/8"	.827"	19.61	18.76	17.90	17.05
90390	.1660	#19	4.216	2-3/4"	1-5/8"	.852"	19.77	18.91	18.05	17.19
90395	.1695	#18	4.305	2-3/4"	1-5/8"	.870"	19.90	19.03	18.17	17.30
90400	.1719	11/64"	4.366	2-3/4"	1-5/8"	.883"	20.02	19.15	18.28	17.41
90420	.1800	#15	4.572	2-3/4"	1-5/8"	.924"	21.37	20.44	19.51	18.58
90425	.1820	#14	4.623	2-3/4"	1-5/8"	.934"	21.85	20.90	19.95	19.00
90435	.1875	3/16"	4.763	2-3/4"	1-5/8"	.963"	21.99	21.03	20.08	19.12
90440	.1890	#12	4.801	2-3/4"	1-5/8"	.970"	22.14	21.18	20.21	19.25
90455	.1960	#9	4.978	3"	1-3/4"	1.006"	24.01	22.97	21.92	20.88
90460	.1969		5.000	76	44	26	24.16	23.11	22.06	21.01
90470	.2010	#7	5.105	3"	1-3/4"	1.032"	25.07	23.98	22.89	21.80
90475	.2031	13/64"	5.159	3"	1-3/4"	1.043"	26.01	24.88	23.75	22.62
90480	.2040	#6	5.182	3"	1-3/4"	1.047"	26.17	25.04	23.90	22.76

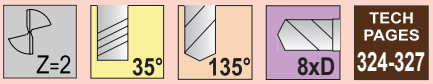
GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	*d* † Diameter Decimal	Diameter	Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
90485	.2055	#5	5.220	3"	1-3/4"	1.055"	26.29	25.15	24.00	22.86
90500	.2165		5.500	76	44	28	27.42	26.22	25.03	23.84
90505	.2188	7/32"	5.558	3"	1-3/4"	1.123"	27.63	26.43	25.23	24.03
90510	.2210	#2	5.613	3"	1-3/4"	1.135"	28.31	27.08	25.85	24.62
90515	.2280	#1	5.791	3"	1-3/4"	1.171"	28.45	27.21	25.98	24.74
90525	.2344	15/64"	5.954	3-1/4"	2"	1.203"	28.89	27.63	26.38	25.12
90530	.2362		6.000	82	50	31	28.97	27.71	26.45	25.19
90550	.2500	1/4" / E	6.350	3-1/4"	2"	1.283"	29.70	28.41	27.12	25.83
90555	.2559		6.500	82	50	33	30.44	29.12	27.79	26.47
90560	.2570	F	6.528	3-1/4"	2"	1.319"	31.08	29.73	28.38	27.03
90565	.2610	G	6.629	3-1/2"	2-1/8"	1.340"	32.69	31.27	29.85	28.43
90570	.2656	17/64"	6.746	3-1/2"	2-1/8"	1.364"	33.35	31.90	30.45	29.00
90575	.2660	H	6.756	3-1/2"	2-1/8"	1.366"	34.30	32.81	31.32	29.83
90580	.2720	I	6.909	3-1/2"	2-1/8"	1.396"	34.72	33.21	31.70	30.19
90585	.2756		7.000	88	54	36	34.97	33.45	31.93	30.41
90600	.2812	9/32"	7.142	3-1/2"	2-1/8"	1.444"	36.87	35.27	33.66	32.06
90605	.2900	L	7.366	3-1/2"	2-1/8"	1.489"	38.24	36.58	34.91	33.25
90620	.2969	19/64"	7.541	3-3/4"	2-3/8"	1.524"	40.61	38.84	37.08	35.31
90625	.3020	N	7.671	3-3/4"	2-3/8"	1.550"	40.91	39.13	37.35	35.57
90630	.3125	5/16"	7.938	3-3/4"	2-3/8"	1.604"	40.95	39.17	37.39	35.61
90635	.3150		8.000	95	60	41	43.94	42.03	40.12	38.21
90640	.3160	O	8.026	3-3/4"	2-3/8"	1.622"	43.94	42.03	40.12	38.21
90650	.3281	21/64"	8.334	4"	2-1/2"	1.684"	45.97	43.97	41.97	39.97
90655	.3320	Q	8.433	4"	2-1/2"	1.704"	47.05	45.00	42.96	40.91
90660	.3346		8.500	101	63	44	47.47	45.41	43.34	41.28
90665	.3390	R	8.611	4"	2-1/2"	1.740"	48.94	46.82	44.69	42.56
90670	.3438	11/32"	8.733	4"	2-1/2"	1.765"	50.99	48.77	46.56	44.34
90680	.3543		9.000	101	63	46	53.03	50.72	48.42	46.11
90690	.3594	23/64"	9.129	4-1/4"	2-3/4"	1.845"	53.90	51.56	49.21	46.87
90705	.3750	3/8"	9.525	4-1/4"	2-3/4"	1.925"	58.54	55.99	53.45	50.90
90725	.3937		10.000	114	73	51	68.05	65.09	62.13	59.17
90745	.4130	Z	10.490	4-1/2"	2-7/8"	2.120"	73.91	70.70	67.48	64.27
90755	.4219	27/64"	10.716	4-1/2"	2-7/8"	2.166"	74.75	71.50	68.25	65.00
90760	.4331		11.000	114	73	56	81.16	77.63	74.10	70.57
90765	.4375	7/16"	11.113	4-1/2"	2-7/8"	2.246"	81.16	77.63	74.10	70.57
90775	.4531	29/64"	11.509	4-3/4"	3"	2.326"	88.08	84.25	80.42	76.59
90780	.4688	15/32"	11.908	4-3/4"	3"	2.407"	93.17	89.12	85.07	81.02
90790	.4844	31/64"	12.304	4-3/4"	3"	2.487"	93.46	89.40	85.33	81.27
90800	.5000	1/2"	12.700	4-3/4"	3"	2.567"	95.92	91.75	87.58	83.41

Series 1800H

.1875" - .3125"
(4.763mm - 7.938mm)



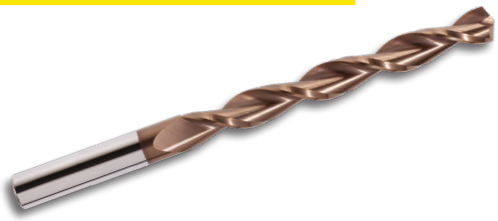
TOLERANCES	
d	+.0000" –.0005" (+.0000 –.0127mm)
l_1	+.125" –.125" (+3.175 –3.175mm)
l_2	+.125" –.125" (+3.175 –3.175mm)

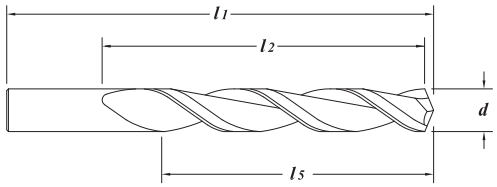
Recommended for deep holes in soft, non-ferrous materials (aluminum, brass, bronze)

Parabolic

BALINIT® Durana Coating

Solid submicron grain carbide drill
Wide open flutes and high helix remove chips quickly
4-facet point
Live tooling recommended on lathe processes





EDP#	*d* † Diameter Decimal	Diameter	Metric	l_1 Overall Length	l_2 Flute Length	l_5 Max Drill Depth	1-11	12-24	25-49	50-100
22436	.1875	3/16"	4.763	3-13/16"	2-5/16"	1.539"	25.88	24.75	23.63	22.50
22441	.1890	#12	4.801	3-13/16"	2-5/16"	1.551"	26.45	25.30	24.15	23.00
22456	.1960	#9	4.978	3-15/16"	2-7/16"	1.609"	28.29	27.06	25.83	24.60
22461	.1969		5.000	100	62	41	28.89	27.63	26.38	25.12
22466	.1990	#8	5.055	3-15/16"	2-7/16"	1.633"	29.37	28.09	26.82	25.54
22471	.2010	#7	5.105	3-15/16"	2-7/16"	1.650"	29.90	28.60	27.30	26.00
22476	.2031	13/64"	5.159	3-15/16"	2-7/16"	1.667"	29.22	27.95	26.68	25.41
22486	.2055	#5	5.220	4"	2-1/2"	1.687"	31.40	30.03	28.67	27.30
22496	.2130	#3	5.410	4"	2-1/2"	1.748"	32.37	30.97	29.56	28.15
22501	.2165		5.500	102	64	45	32.90	31.47	30.04	28.61
22506	.2188	7/32"	5.558	4"	2-1/2"	1.796"	33.40	31.94	30.49	29.04
22511	.2210	#2	5.613	4"	2-1/2"	1.814"	33.88	32.41	30.93	29.46
22516	.2280	#1	5.791	4-1/8"	2-5/8"	1.871"	34.40	32.90	31.41	29.91
22531	.2362		6.000	105	67	49	35.96	34.40	32.83	31.27
22541	.2420	C	6.147	4-1/4"	2-3/4"	1.986"	36.36	34.78	33.20	31.62
22546	.2460	D	6.248	4-1/4"	2-3/4"	2.019"	36.51	34.93	33.34	31.75
22551	.2500	1/4" / E	6.350	4-1/4"	2-3/4"	2.052"	36.71	35.11	33.52	31.92
22556	.2559		6.500	108	70	53	37.93	36.28	34.63	32.98
22561	.2570	F	6.528	4-3/8"	2-7/8"	2.109"	39.53	37.81	36.09	34.37
22566	.2610	G	6.629	4-3/8"	2-7/8"	2.142"	40.61	38.84	37.08	35.31
22571	.2656	17/64"	6.746	4-3/8"	2-7/8"	2.180"	41.78	39.96	38.15	36.33
22576	.2660	H	6.756	4-3/8"	2-7/8"	2.183"	43.15	41.27	39.40	37.52
22581	.2720	I	6.909	4-3/8"	2-7/8"	2.232"	44.45	42.52	40.58	38.65
22586	.2756		7.000	111	73	57	45.78	43.79	41.80	39.81
22596	.2810	K	7.137	4-7/16"	2-15/16"	2.306"	47.78	45.71	43.63	41.55
22606	.2900	L	7.366	4-7/16"	2-15/16"	2.380"	49.90	47.73	45.56	43.39
22631	.3125	5/16"	7.938	4-11/16"	3-3/16"	2.565"	52.16	49.90	47.63	45.36

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	*d* † Diameter Decimal		Metric	*l1* Overall Length	*l2* Flute Length	*l5* Max Drill Depth	1-11	12-24	25-49	50-100
22636	.3150		8.000	119	81	66	55.15	52.76	50.36	47.96
22646	.3230	P	8.204	4-11/16"	3-3/16"	2.651"	57.68	55.18	52.67	50.16
22656	.3320	Q	8.433	4-15/16"	3-7/16"	2.725"	60.24	57.62	55.00	52.38
22661	.3346		8.500	125	87	70	61.50	58.83	56.15	53.48
22666	.3390	R	8.611	4-15/16"	3-7/16"	2.782"	63.43	60.68	57.92	55.16
22696	.3680	U	9.347	5"	3-1/2"	3.020"	70.06	67.01	63.97	60.92
22706	.3750	3/8"	9.525	5-1/8"	3-5/8"	3.078"	70.64	67.57	64.50	61.43
22721	.3906	25/64"	9.921	5-1/4"	3-3/4"	3.206"	77.69	74.32	70.94	67.56
22726	.3937		10.000	133	95	82	80.02	76.54	73.06	69.58
22751	.4134		10.500	137	98	86	93.86	89.78	85.70	81.62
22761	.4331		11.000	138	100	90	101.17	96.77	92.37	87.97
22766	.4375	7/16"	11.113	5-7/16"	3-15/16"	3.591"	101.17	96.77	92.37	87.97
22776	.4531	29/64"	11.509	5-9/16"	4-5/16"	3.719"	102.60	98.14	93.68	89.22
22801	.5000	1/2"	12.700	6"	4-1/2"	4.104"	107.92	103.22	98.53	93.84
22811	.5156	33/64"	13.096	6"	4-1/2"	4.232"	136.40	130.47	124.54	118.61
22831	.5512		14.000	156	117	115	159.93	152.98	146.02	139.07



Series 4100

.0590" - .0820"
(1.499mm - 2.083mm)

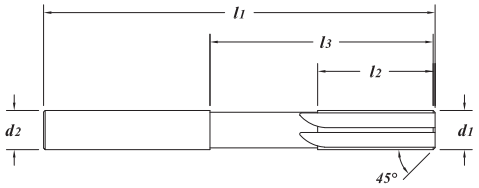
Z=4 | Z=6 | 0° | 45° | TECH PAGES 314-315

TOLERANCES

d_1	.0590" – .2509" (1.498 – 6.372mm)	+.0002" –.0000" (+.0050 –.0000mm)
	.2510" – .5020" (6.375 – 12.750mm)	+.0003" –.0000" (+.0075 –.0000mm)
d_2	.0590" – .2509" (1.498 – 6.372mm)	+.0002" –.0000" (+.0050 –.0000mm)
	.2510" – .5020" (6.375 – 12.750mm)	+.0003" –.0000" (+.0075 –.0000mm)

Solid Carbide Submicron Grain
Straight - RHC Flutes
Standard 45° Lead Chamfer
Neck diameter is .010" ±.002" less than (d_1) fluted diameter





EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
95066	.0590		1.499	.0590"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95069	.0591		1.500	.0591"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95072	.0595	#53	1.511	.0595"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95075	.0600		1.524	.0600"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95078	.0605		1.537	.0605"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95081	.0610		1.549	.0610"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95084	.0615		1.562	.0615"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95087	.0620		1.575	.0620"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95090	.0625	1/16"	1.588	.0625"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95093	.0630		1.600	.0630"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95096	.0635	#52	1.613	.0635"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95099	.0640		1.626	.0640"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95102	.0645		1.638	.0645"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95105	.0650		1.651	.0650"	1-1/2"	3/8"	5/8"	4	14.81	14.17	13.52	12.88
95108	.0660		1.676	.0660"	1-3/4"	1/2"	3/4"	4	14.81	14.17	13.52	12.88
95111	.0670	#51	1.702	.0670"	1-3/4"	1/2"	3/4"	4	14.81	14.17	13.52	12.88
95114	.0680		1.727	.0680"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95117	.0690		1.753	.0690"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95120	.0700	#50	1.778	.0700"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95123	.0710		1.803	.0710"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95126	.0720		1.829	.0720"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95129	.0730	#49	1.854	.0730"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95132	.0740		1.880	.0740"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95135	.0750		1.905	.0750"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95138	.0760	#48	1.930	.0760"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95141	.0770		1.956	.0770"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95144	.0780		1.981	.0780"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95147	.0781	5/64"	1.984	.0781"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95150	.0785	#47	1.994	.0785"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95153	.0787		2.000	.0787"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95156	.0790		2.007	.0790"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95159	.0800		2.032	.0800"	1-3/4"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95162	.0810	#46	2.057	.0810"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95165	.0820	#45	2.083	.0820"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88

† *Metric equivalents are for reference only*

GARR TOOL®

EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
95168	.0830		2.108	.0830"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95171	.0840		2.134	.0840"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95174	.0850		2.159	.0850"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95177	.0860	#44	2.184	.0860"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95180	.0870		2.210	.0870"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95183	.0880		2.235	.0880"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95186	.0890	#43	2.261	.0890"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95189	.0900		2.286	.0900"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95192	.0910		2.311	.0910"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95195	.0915		2.324	.0915"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95198	.0920		2.337	.0920"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95201	.0925		2.350	.0925"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95204	.0930		2.362	.0930"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95207	.0935	#42	2.375	.0935"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95210	.0938	3/32"	2.383	.0938"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95213	.0940		2.388	.0940"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95216	.0945		2.400	.0945"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95219	.0950		2.413	.0950"	2"	1/2"	7/8"	4	14.81	14.17	13.52	12.88
95222	.0960	#41	2.438	.0960"	2-1/4"	5/8"	1"	4	16.65	15.93	15.20	14.48
95225	.0970		2.464	.0970"	2-1/4"	5/8"	1"	4	16.65	15.93	15.20	14.48
95228	.0980	#40	2.489	.0980"	2-1/4"	5/8"	1"	4	16.65	15.93	15.20	14.48
95231	.0984		2.500	.0984"	2-1/4"	5/8"	1"	4	16.65	15.93	15.20	14.48
95234	.0990		2.515	.0990"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95237	.0995	#39	2.527	.0995"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95240	.1000		2.540	.1000"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95243	.1010		2.565	.1010"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95246	.1015	#38	2.578	.1015"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95249	.1020		2.591	.1020"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95252	.1030		2.616	.1030"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95255	.1040	#37	2.642	.1040"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95258	.1050		2.667	.1050"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95261	.1060		2.692	.1060"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95264	.1065	#36	2.705	.1065"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95267	.1070		2.718	.1070"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95270	.1080		2.743	.1080"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95273	.1090		2.769	.1090"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95276	.1094	7/64"	2.779	.1094"	2-1/4"	5/8"	1-1/8"	4	16.65	15.93	15.20	14.48
95279	.1100	#35	2.794	.1100"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95282	.1110	#34	2.819	.1110"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95285	.1120		2.845	.1120"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95288	.1130	#33	2.870	.1130"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95291	.1140		2.896	.1140"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95294	.1150		2.921	.1150"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95297	.1160	#32	2.946	.1160"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95300	.1170		2.972	.1170"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95303	.1180		2.997	.1180"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95306	.1181		3.000	.1181"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95309	.1190		3.023	.1190"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59

continued →

Series 4100 *(continued)*

.1200" - .1550"
(3.048mm - 3.937mm)

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
95312	.1200	#31	3.048	.1200"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95315	.1210		3.073	.1210"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95318	.1220		3.099	.1220"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95321	.1230		3.124	.1230"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95324	.1235		3.137	.1235"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95327	.1240		3.150	.1240"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95330	.1245		3.162	.1245"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95333	.1248		3.170	.1248"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95336	.1250	1/8"	3.175	.1250"	2-1/4"	5/8"	1-1/8"	4	16.78	16.05	15.32	14.59
95339	.1255		3.188	.1255"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95342	.1260		3.200	.1260"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95345	.1265		3.213	.1265"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95348	.1270		3.226	.1270"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95351	.1275		3.239	.1275"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95354	.1280		3.251	.1280"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95357	.1285	#30	3.264	.1285"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95360	.1290		3.277	.1290"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95363	.1300		3.302	.1300"	2-1/4"	5/8"	1-1/8"	4	17.46	16.70	15.94	15.18
95366	.1310		3.327	.1310"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95369	.1320		3.353	.1320"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95372	.1330		3.378	.1330"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95375	.1340		3.404	.1340"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95378	.1350		3.429	.1350"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95381	.1360	#29	3.454	.1360"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95384	.1370		3.480	.1370"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95387	.1378		3.500	.1378"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95390	.1380		3.505	.1380"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95393	.1390		3.531	.1390"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95396	.1400		3.556	.1400"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95399	.1405	#28	3.569	.1405"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95402	.1406	9/64"	3.571	.1406"	2-1/2"	3/4"	1-1/4"	4	19.38	18.54	17.69	16.85
95405	.1410		3.581	.1410"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95408	.1420		3.607	.1420"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95411	.1430		3.632	.1430"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95414	.1440	#27	3.658	.1440"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95417	.1450		3.683	.1450"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95420	.1460		3.708	.1460"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95423	.1470	#26	3.734	.1470"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95426	.1480		3.759	.1480"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95429	.1490		3.785	.1490"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95432	.1495	#25	3.797	.1495"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95435	.1500		3.810	.1500"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95438	.1510		3.835	.1510"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95441	.1520	#24	3.861	.1520"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95444	.1530		3.886	.1530"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95447	.1540	#23	3.912	.1540"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95450	.1545		3.924	.1545"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95453	.1550		3.937	.1550"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
95456	.1555		3.950	.1555"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95459	.1560		3.962	.1560"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95462	.1562	5/32"	3.967	.1562"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95465	.1565		3.975	.1565"	2-1/2"	3/4"	1-1/4"	4	20.98	20.06	19.15	18.24
95468	.1570	#22	3.988	.1570"	2-1/2"	3/4"	1-1/4"	4	23.32	22.31	21.29	20.28
95471	.1575		4.000	.1575"	2-1/2"	3/4"	1-1/4"	4	23.32	22.31	21.29	20.28
95474	.1580		4.013	.1580"	2-1/2"	3/4"	1-1/4"	4	23.32	22.31	21.29	20.28
95477	.1590	#21	4.039	.1590"	2-1/2"	3/4"	1-1/4"	4	23.32	22.31	21.29	20.28
95480	.1600		4.064	.1600"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95483	.1610	#20	4.089	.1610"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95486	.1620		4.115	.1620"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95489	.1630		4.140	.1630"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95492	.1640		4.166	.1640"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95495	.1650		4.191	.1650"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95498	.1660	#19	4.216	.1660"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95501	.1670		4.242	.1670"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95504	.1680		4.267	.1680"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95507	.1690		4.293	.1690"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95510	.1695	#18	4.305	.1695"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95513	.1700		4.318	.1700"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95516	.1710		4.343	.1710"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95519	.1719	11/64"	4.366	.1719"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95522	.1720		4.369	.1720"	2-3/4"	7/8"	1-1/2"	4	23.32	22.31	21.29	20.28
95525	.1730	#17	4.394	.1730"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95528	.1740		4.420	.1740"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95531	.1750		4.445	.1750"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95534	.1760		4.470	.1760"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95537	.1770	#16	4.496	.1770"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95540	.1772		4.500	.1772"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95543	.1780		4.521	.1780"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95546	.1790		4.547	.1790"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95549	.1800	#15	4.572	.1800"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95552	.1810		4.597	.1810"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95555	.1820	#14	4.623	.1820"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95558	.1830		4.648	.1830"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95561	.1840		4.674	.1840"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95564	.1850	#13	4.699	.1850"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95567	.1855		4.712	.1855"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95570	.1860		4.724	.1860"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95573	.1865		4.737	.1865"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95576	.1870		4.750	.1870"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95577	.1873		4.757	.1873"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95579	.1875	3/16"	4.763	.1875"	2-3/4"	7/8"	1-1/2"	4	24.27	23.21	22.16	21.10
95582	.1880		4.775	.1880"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95585	.1885		4.788	.1885"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95588	.1890	#12	4.801	.1890"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95591	.1900		4.826	.1900"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95594	.1910	#11	4.851	.1910"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55

continued →

Series 4100 *(continued)*

.1920" - .2250"
(4.877mm - 5.715mm)

Z=4 | Z=6 | 0° | 45° | TECH PAGES 314-315

TOLERANCES

d_1	.0590" – .2509" (1.498 – 6.372mm)	+.0002" –.0000" (+.0050 –.0000mm)
	.2510" – .5020" (6.375 – 12.750mm)	+.0003" –.0000" (+.0075 –.0000mm)
d_2	.0590" – .2509" (1.498 – 6.372mm)	+.0002" –.0000" (+.0050 –.0000mm)
	.2510" – .5020" (6.375 – 12.750mm)	+.0003" –.0000" (+.0075 –.0000mm)



Solid Carbide Submicron Grain
Neck diameter is .010" ±.002" less than (d_1) fluted diameter

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
95597	.1920		4.877	.1920"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95600	.1930		4.902	.1930"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95603	.1935	#10	4.915	.1935"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95606	.1940		4.928	.1940"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95609	.1950		4.953	.1950"	2-3/4"	7/8"	1-1/2"	4	24.78	23.71	22.63	21.55
95612	.1960	#9	4.978	.1960"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95615	.1969		5.000	.1969"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95618	.1970		5.004	.1970"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95621	.1980		5.029	.1980"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95624	.1990	#8	5.055	.1990"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95627	.2000		5.080	.2000"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95630	.2010	#7	5.105	.2010"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95633	.2020		5.131	.2020"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95636	.2030		5.156	.2030"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95639	.2031	13/64"	5.159	.2031"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95642	.2040	#6	5.182	.2040"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95645	.2050		5.207	.2050"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95648	.2055	#5	5.220	.2055"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95651	.2060		5.232	.2060"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95654	.2070		5.258	.2070"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95657	.2080		5.283	.2080"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95660	.2090	#4	5.309	.2090"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95663	.2100		5.334	.2100"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95666	.2110		5.359	.2110"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95669	.2120		5.385	.2120"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95672	.2130	#3	5.410	.2130"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95675	.2140		5.436	.2140"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95678	.2150		5.461	.2150"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95681	.2160		5.486	.2160"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95684	.2165		5.500	.2165"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95687	.2170		5.512	.2170"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95690	.2180		5.537	.2180"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95693	.2188	7/32"	5.558	.2188"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95696	.2190		5.563	.2190"	3"	1"	1-5/8"	4	28.03	26.81	25.59	24.37
95699	.2200		5.588	.2200"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95702	.2210	#2	5.613	.2210"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95705	.2220		5.639	.2220"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95708	.2230		5.664	.2230"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95711	.2240		5.690	.2240"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95714	.2250		5.715	.2250"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
95717	.2260		5.740	.2260"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95720	.2270		5.766	.2270"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95723	.2280	#1	5.791	.2280"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95726	.2290		5.817	.2290"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95729	.2300		5.842	.2300"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95732	.2310		5.867	.2310"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95735	.2320		5.893	.2320"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95738	.2330		5.918	.2330"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95741	.2340	A	5.944	.2340"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95744	.2344	15/64"	5.954	.2344"	3"	1"	1-5/8"	4	32.69	31.27	29.85	28.43
95747	.2350		5.969	.2350"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95750	.2360		5.994	.2360"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95753	.2362		6.000	.2362"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95756	.2370		6.020	.2370"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95759	.2380	B	6.045	.2380"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95762	.2390		6.071	.2390"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95765	.2400		6.096	.2400"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95768	.2410		6.121	.2410"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95771	.2420	C	6.147	.2420"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95774	.2430		6.172	.2430"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95777	.2440		6.198	.2440"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95780	.2450		6.223	.2450"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95783	.2460	D	6.248	.2460"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95786	.2470		6.274	.2470"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95789	.2480		6.299	.2480"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95792	.2485		6.312	.2485"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95795	.2490		6.325	.2490"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95798	.2495		6.337	.2495"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95799	.2498		6.345	.2498"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95801	.2500	1/4" / E	6.350	.2500"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95802	.2502		6.355	.2502"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95804	.2505		6.363	.2505"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95807	.2510		6.375	.2510"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95810	.2515		6.388	.2515"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95813	.2520		6.401	.2520"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95816	.2530		6.426	.2530"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95819	.2540		6.452	.2540"	3"	1"	1-5/8"	4	33.91	32.44	30.96	29.49
95822	.2550		6.477	.2550"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95825	.2559		6.500	.2559"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95828	.2560		6.502	.2560"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95831	.2570	F	6.528	.2570"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95834	.2580		6.553	.2580"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95837	.2590		6.579	.2590"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95840	.2600		6.604	.2600"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95843	.2610	G	6.629	.2610"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95846	.2620		6.655	.2620"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95849	.2630		6.680	.2630"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95852	.2640		6.706	.2640"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00

continued ⟶

Series 4100 *(continued)*

.2650" - .3070"
(6.731mm - 7.798mm)

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
95855	.2650		6.731	.2650"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95858	.2656	17/64"	6.746	.2656"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95861	.2660	H	6.756	.2660"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95864	.2670		6.782	.2670"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95867	.2680		6.807	.2680"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95870	.2690		6.833	.2690"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95873	.2700		6.858	.2700"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95876	.2710		6.883	.2710"	3-1/4"	1-1/8"	1-3/4"	6	39.10	37.40	35.70	34.00
95879	.2720	I	6.909	.2720"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95882	.2730		6.934	.2730"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95885	.2740		6.960	.2740"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95888	.2750		6.985	.2750"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95891	.2756		7.000	.2756"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95894	.2760		7.010	.2760"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95897	.2770	J	7.036	.2770"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95900	.2780		7.061	.2780"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95903	.2790		7.087	.2790"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95906	.2800		7.112	.2800"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95909	.2810	K	7.137	.2810"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95912	.2812	9/32"	7.142	.2812"	3-1/4"	1-1/8"	1-7/8"	6	39.48	37.76	36.05	34.33
95915	.2820		7.163	.2820"	3-1/4"	1-1/8"	1-7/8"	6	42.73	40.88	39.02	37.16
95918	.2830		7.188	.2830"	3-1/4"	1-1/8"	1-7/8"	6	42.73	40.88	39.02	37.16
95921	.2840		7.214	.2840"	3-1/4"	1-1/8"	1-7/8"	6	42.73	40.88	39.02	37.16
95924	.2850		7.239	.2850"	3-1/4"	1-1/8"	1-7/8"	6	42.73	40.88	39.02	37.16
95927	.2860		7.264	.2860"	3-1/4"	1-1/8"	1-7/8"	6	42.73	40.88	39.02	37.16
95930	.2870		7.290	.2870"	3-1/4"	1-1/8"	1-7/8"	6	42.73	40.88	39.02	37.16
95933	.2880		7.315	.2880"	3-1/4"	1-1/8"	1-7/8"	6	42.73	40.88	39.02	37.16
95936	.2890		7.341	.2890"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95939	.2900	L	7.366	.2900"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95942	.2910		7.391	.2910"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95945	.2920		7.417	.2920"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95948	.2930		7.442	.2930"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95951	.2940		7.468	.2940"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95954	.2950	M	7.493	.2950"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95957	.2953		7.500	.2953"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95960	.2960		7.518	.2960"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95963	.2969	19/64"	7.541	.2969"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95966	.2970		7.544	.2970"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95969	.2980		7.569	.2980"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95972	.2990		7.595	.2990"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95975	.3000		7.620	.3000"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95978	.3010		7.645	.3010"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95981	.3020	N	7.671	.3020"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95984	.3030		7.696	.3030"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95987	.3040		7.722	.3040"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95990	.3050		7.747	.3050"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95993	.3060		7.772	.3060"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
95996	.3070		7.798	.3070"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
95999	.3080		7.823	.3080"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96002	.3090		7.849	.3090"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96005	.3100		7.874	.3100"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96006	.3105		7.887	.3105"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96008	.3110		7.899	.3110"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96011	.3115		7.912	.3115"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96014	.3120		7.925	.3120"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96015	.3123		7.932	.3123"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96017	.3125	5/16"	7.938	.3125"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96021	.3130		7.950	.3130"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96023	.3135		7.963	.3135"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96026	.3140		7.976	.3140"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96029	.3150		8.000	.3150"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96032	.3160	O	8.026	.3160"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96035	.3170		8.052	.3170"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96038	.3180		8.077	.3180"	3-1/4"	1-1/8"	1-7/8"	6	43.06	41.18	39.31	37.44
96041	.3190		8.103	.3190"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96044	.3200		8.128	.3200"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96047	.3210		8.153	.3210"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96050	.3220		8.179	.3220"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96053	.3230	P	8.204	.3230"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96056	.3240		8.230	.3240"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96059	.3250		8.255	.3250"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96062	.3260		8.280	.3260"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96065	.3270		8.306	.3270"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96068	.3280		8.331	.3280"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96071	.3281	21/64"	8.334	.3281"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96074	.3290		8.357	.3290"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96077	.3300		8.382	.3300"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96079	.3310		8.407	.3310"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96083	.3320	Q	8.433	.3320"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96086	.3330		8.458	.3330"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96089	.3340		8.484	.3340"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96092	.3346		8.500	.3346"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96095	.3350		8.509	.3350"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96098	.3360		8.534	.3360"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96101	.3370		8.560	.3370"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96104	.3380		8.585	.3380"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96107	.3390	R	8.611	.3390"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96110	.3400		8.636	.3400"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96113	.3410		8.661	.3410"	3-1/2"	1-1/4"	2"	6	53.05	50.74	48.44	46.13
96116	.3420		8.687	.3420"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96119	.3430		8.712	.3430"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96122	.3438	11/32"	8.733	.3438"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96125	.3440		8.738	.3440"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96128	.3450		8.763	.3450"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96131	.3460		8.788	.3460"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96134	.3470		8.814	.3470"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84

continued →

Series 4100 *(continued)*

.3480" - .3810"
(8.839mm - 9.677mm)









TECH PAGES 314-315

TOLERANCES

d_1	.0590" – .2509" (1.498 – 6.372mm)	+.0002" –.0000" (+.0050 –.0000mm)
	.2510" – .5020" (6.375 – 12.750mm)	+.0003" –.0000" (+.0075 –.0000mm)
d_2	.0590" – .2509" (1.498 – 6.372mm)	+.0002" –.0000" (+.0050 –.0000mm)
	.2510" – .5020" (6.375 – 12.750mm)	+.0003" –.0000" (+.0075 –.0000mm)



Solid Carbide Submicron Grain
Neck diameter is .010" ±.002" less than (d_1) fluted diameter

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
96137	.3480	S	8.839	.3480"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96141	.3490		8.865	.3490"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96143	.3500		8.890	.3500"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96146	.3510		8.915	.3510"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96149	.3520		8.941	.3520"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96152	.3530		8.966	.3530"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96155	.3540		8.992	.3540"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96158	.3543		9.000	.3543"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96161	.3550		9.017	.3550"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96164	.3560		9.042	.3560"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96167	.3570		9.068	.3570"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96170	.3580	T	9.093	.3580"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96173	.3590		9.119	.3590"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96176	.3594	23/64"	9.129	.3594"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96179	.3600		9.144	.3600"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96182	.3610		9.169	.3610"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96185	.3620		9.195	.3620"	3-1/2"	1-1/4"	2"	6	56.17	53.72	51.28	48.84
96191	.3640		9.246	.3640"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96194	.3650		9.271	.3650"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96197	.3660		9.296	.3660"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96199	.3670		9.322	.3670"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96203	.3680	U	9.347	.3680"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96206	.3690		9.373	.3690"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96209	.3700		9.398	.3700"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96212	.3710		9.423	.3710"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96215	.3720		9.449	.3720"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96218	.3730		9.474	.3730"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96221	.3740		9.500	.3740"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96224	.3745		9.512	.3745"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96225	.3748		9.520	.3748"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96227	.3750	3/8"	9.525	.3750"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96230	.3755		9.538	.3755"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96233	.3760		9.550	.3760"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96236	.3765		9.563	.3765"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96239	.3770	V	9.576	.3770"	3-1/2"	1-1/4"	2"	6	57.87	55.35	52.84	50.32
96242	.3780		9.601	.3780"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96245	.3790		9.627	.3790"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96248	.3800		9.652	.3800"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96251	.3810		9.677	.3810"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
96254	.3820		9.703	.3820"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96257	.3830		9.728	.3830"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96260	.3840		9.754	.3840"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96263	.3850		9.779	.3850"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96266	.3860	W	9.804	.3860"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96269	.3870		9.830	.3870"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96272	.3880		9.855	.3880"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96275	.3890		9.881	.3890"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96278	.3900		9.906	.3900"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96281	.3906	25/64"	9.921	.3906"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96284	.3910		9.931	.3910"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96287	.3920		9.957	.3920"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96290	.3930		9.982	.3930"	3-1/2"	1-1/4"	2"	6	67.86	64.91	61.96	59.01
96293	.3937		10.000	.3937"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96296	.3940		10.008	.3940"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96299	.3950		10.033	.3950"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96302	.3960		10.058	.3960"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96305	.3970	X	10.084	.3970"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96308	.3980		10.109	.3980"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96311	.3990		10.135	.3990"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96314	.4000		10.160	.4000"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96317	.4010		10.185	.4010"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96319	.4020		10.211	.4020"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96323	.4030		10.236	.4030"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96326	.4040	Y	10.262	.4040"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96329	.4050		10.287	.4050"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96332	.4060		10.312	.4060"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96335	.4062	13/32"	10.317	.4062"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96338	.4070		10.338	.4070"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96341	.4080		10.363	.4080"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96344	.4090		10.389	.4090"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96347	.4100		10.414	.4100"	3-1/2"	1-1/4"	2"	6	70.27	67.21	64.16	61.10
96350	.4110		10.439	.4110"	3-1/2"	1-1/4"	2"	6	72.73	69.56	66.40	63.24
96353	.4120		10.465	.4120"	3-1/2"	1-1/4"	2"	6	72.73	69.56	66.40	63.24
96356	.4130	Z	10.490	.4130"	3-1/2"	1-1/4"	2"	6	72.73	69.56	66.40	63.24
96359	.4134		10.500	.4134"	3-1/2"	1-1/4"	2"	6	72.73	69.56	66.40	63.24
96362	.4140		10.516	.4140"	3-1/2"	1-1/4"	2"	6	72.73	69.56	66.40	63.24
96365	.4150		10.541	.4150"	3-1/2"	1-1/4"	2"	6	72.73	69.56	66.40	63.24
96366	.4160		10.566	.4160"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96367	.4170		10.592	.4170"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96369	.4190		10.643	.4190"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96374	.4210		10.693	.4210"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96377	.4219	27/64"	10.716	.4219"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96380	.4220		10.719	.4220"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96383	.4230		10.744	.4230"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96386	.4240		10.770	.4240"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24

continued →

Series 4100 *(continued)*

.4250" - .4724"
(10.795mm - 12.000mm)

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
96389	.4250		10.795	.4250"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96392	.4260		10.820	.4260"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96395	.4270		10.846	.4270"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96398	.4280		10.871	.4280"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96404	.4300		10.922	.4300"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96407	.4310		10.947	.4310"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96410	.4320		10.973	.4320"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96413	.4330		10.998	.4330"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96416	.4331		11.000	.4331"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96419	.4340		11.024	.4340"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96422	.4350		11.049	.4350"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96425	.4360		11.074	.4360"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96428	.4365		11.087	.4365"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96431	.4370		11.100	.4370"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96432	.4373		11.107	.4373"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96434	.4375	7/16"	11.113	.4375"	4"	1-3/8"	2-1/8"	6	72.73	69.56	66.40	63.24
96437	.4380		11.125	.4380"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96440	.4385		11.138	.4385"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96443	.4390		11.151	.4390"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96446	.4400		11.176	.4400"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96449	.4410		11.201	.4410"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96455	.4430		11.252	.4430"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96458	.4440		11.278	.4440"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96461	.4450		11.303	.4450"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96467	.4470		11.354	.4470"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96470	.4480		11.379	.4480"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96473	.4490		11.405	.4490"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96476	.4500		11.430	.4500"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96479	.4510		11.455	.4510"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96485	.4528		11.500	.4528"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96488	.4530		11.506	.4530"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96491	.4531	29/64"	11.509	.4531"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96494	.4540		11.532	.4540"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96497	.4550		11.557	.4550"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96500	.4560		11.582	.4560"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96503	.4570		11.608	.4570"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96506	.4580		11.633	.4580"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96512	.4600		11.684	.4600"	4"	1-3/8"	2-1/8"	6	77.96	74.57	71.18	67.79
96515	.4610		11.709	.4610"	4"	1-3/8"	2-1/8"	6	80.30	76.81	73.32	69.83
96527	.4650		11.811	.4650"	4"	1-3/8"	2-1/8"	6	80.30	76.81	73.32	69.83
96530	.4660		11.836	.4660"	4"	1-3/8"	2-1/8"	6	80.30	76.81	73.32	69.83
96533	.4670		11.862	.4670"	4"	1-3/8"	2-1/8"	6	80.30	76.81	73.32	69.83
96539	.4688	15/32"	11.908	.4688"	4"	1-3/8"	2-1/8"	6	80.30	76.81	73.32	69.83
96542	.4690		11.913	.4690"	4"	1-3/8"	2-1/8"	6	80.30	76.81	73.32	69.83
96545	.4700		11.938	.4700"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96548	.4710		11.963	.4710"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96551	.4720		11.989	.4720"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96554	.4724		12.000	.4724"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
96557	.4730		12.014	.4730"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96561	.4740		12.040	.4740"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96563	.4750		12.065	.4750"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96566	.4760		12.090	.4760"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96569	.4770		12.116	.4770"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96572	.4780		12.141	.4780"	4"	1-1/2"	2-1/4"	6	80.30	76.81	73.32	69.83
96578	.4800		12.192	.4800"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96581	.4810		12.217	.4810"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96584	.4820		12.243	.4820"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96590	.4840		12.294	.4840"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96593	.4844	31/64"	12.304	.4844"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96596	.4850		12.319	.4850"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96602	.4870		12.370	.4870"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96608	.4890		12.421	.4890"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96617	.4920		12.497	.4920"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96620	.4921		12.500	.4921"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96623	.4930		12.522	.4930"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96629	.4950		12.573	.4950"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96632	.4960		12.598	.4960"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96635	.4970		12.624	.4970"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96638	.4980		12.649	.4980"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96641	.4990		12.675	.4990"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96644	.4995		12.687	.4995"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96645	.4998		12.695	.4998"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96647	.5000	1/2"	12.700	.5000"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96650	.5005		12.713	.5005"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96653	.5010		12.725	.5010"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35
96656	.5020		12.751	.5020"	4"	1-1/2"	2-1/4"	6	82.05	78.49	74.92	71.35

Series **4100** (Metric)

1.990mm - 10.040mm
(.07835" - .39528")

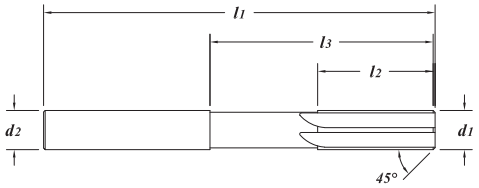
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TOLERANCES

d_1	1.500 – 6.372mm	+.005mm –.000
	6.375 – 12.750mm	+.0075mm –.0000
d_2	1.500 – 6.372mm	+.005mm –.000
	6.375 – 12.750mm	+.0075mm –.0000



Solid Carbide Submicron Grain
Straight - RHC Flutes
Standard 45° Lead Chamfer
Neck diameter is 0.25mm ±0.05 less than (d_1) fluted diameter



EDP#	d_1 Decimal	d_1 Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
96659	.07835	1.990	1.990	50	12	32	4	15.27	14.61	13.94	13.28
96662	.07874	2.000	2.000	50	12	32	4	15.27	14.61	13.94	13.28
96665	.07913	2.010	2.010	50	12	32	4	15.27	14.61	13.94	13.28
96668	.07953	2.020	2.020	50	12	32	4	15.27	14.61	13.94	13.28
96671	.11772	2.990	2.990	65	16	36	4	18.76	17.94	17.13	16.31
96674	.11811	3.000	3.000	65	16	36	4	18.76	17.94	17.13	16.31
96677	.11850	3.010	3.010	65	16	36	4	18.76	17.94	17.13	16.31
96680	.11890	3.020	3.020	65	16	36	4	18.76	17.94	17.13	16.31
96683	.15709	3.990	3.990	75	20	45	4	25.35	24.24	23.14	22.04
96686	.15748	4.000	4.000	75	20	45	4	25.35	24.24	23.14	22.04
96689	.15787	4.010	4.010	75	20	45	4	25.35	24.24	23.14	22.04
96692	.15827	4.020	4.020	75	20	45	4	25.35	24.24	23.14	22.04
96695	.15866	4.030	4.030	75	20	45	4	25.35	24.24	23.14	22.04
96698	.19646	4.990	4.990	100	25	60	4	32.45	31.04	29.63	28.22
96701	.19685	5.000	5.000	100	25	60	4	32.45	31.04	29.63	28.22
96704	.19724	5.010	5.010	100	25	60	4	32.45	31.04	29.63	28.22
96707	.19764	5.020	5.020	100	25	60	4	32.45	31.04	29.63	28.22
96710	.19803	5.030	5.030	100	25	60	4	32.45	31.04	29.63	28.22
96713	.23583	5.990	5.990	100	25	60	4	39.41	37.70	35.98	34.27
96716	.23622	6.000	6.000	100	25	60	4	39.41	37.70	35.98	34.27
96719	.23661	6.010	6.010	100	25	60	4	39.41	37.70	35.98	34.27
96722	.23701	6.020	6.020	100	25	60	4	39.41	37.70	35.98	34.27
96725	.27559	7.000	7.000	100	25	60	6	45.47	43.49	41.52	39.54
96728	.31457	7.990	7.990	120	32	75	6	54.68	52.31	49.93	47.55
96731	.31496	8.000	8.000	120	32	75	6	54.68	52.31	49.93	47.55
96734	.31535	8.010	8.010	120	32	75	6	54.68	52.31	49.93	47.55
96737	.31575	8.020	8.020	120	32	75	6	54.68	52.31	49.93	47.55
96740	.31614	8.030	8.030	120	32	75	6	54.68	52.31	49.93	47.55
96743	.35433	9.000	9.000	120	32	75	6	68.84	65.85	62.85	59.86
96746	.39291	9.980	9.980	130	32	75	6	80.83	77.32	73.80	70.29
96749	.39331	9.990	9.990	130	32	75	6	80.83	77.32	73.80	70.29
96752	.39370	10.000	10.000	130	32	75	6	85.05	81.36	77.66	73.96
96755	.39409	10.010	10.010	130	32	75	6	85.05	81.36	77.66	73.96
96758	.39449	10.020	10.020	130	32	75	6	85.05	81.36	77.66	73.96
96761	.39488	10.030	10.030	130	32	75	6	85.05	81.36	77.66	73.96
96764	.39528	10.040	10.040	130	32	75	6	85.05	81.36	77.66	73.96

GARR TOOL®

EDP#	d_1 Decimal	d_1 Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	Number Flutes	1-11	12-24	25-49	50-100
96767	.47165	11.980	11.980	150	40	100	6	97.38	93.15	88.91	84.68
96770	.47205	11.990	11.990	150	40	100	6	97.38	93.15	88.91	84.68
96773	.47244	12.000	12.000	150	40	100	6	97.38	93.15	88.91	84.68
96776	.47283	12.010	12.010	150	40	100	6	97.38	93.15	88.91	84.68
96779	.47323	12.020	12.020	150	40	100	6	97.38	93.15	88.91	84.68
96782	.47362	12.030	12.030	150	40	100	6	97.38	93.15	88.91	84.68



LHS / RHC

STR / RHC

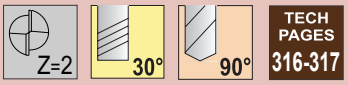
RHS / RHC

Special Reamers - Solid Carbide - 2 Week Delivery

Solid Carbide Submicron Grain
All reamers furnished with a standard 45° Lead Chamfer
All reamers furnished with a standard neck for reach
Neck diameter is .010" ±.002" less than fluted diameter

Diameter Decimal	Diameter Metric	Overall Length	Flute Length	No. of Flutes
.0590" - .0650"	1.499 - 1.651	1-1/2"	3/8"	4
.0660" - .0800"	1.676 - 2.032	1-3/4"	1/2"	4
.0810" - .0950"	2.057 - 2.413	2"	1/2"	4
.0960" - .1300"	2.438 - 3.302	2-1/4"	5/8"	4
.1310" - .1590"	3.327 - 4.039	2-1/2"	3/4"	4
.1600" - .1950"	4.064 - 4.953	2-3/4"	7/8"	4
.1960" - .2540"	4.978 - 6.452	3"	1"	4
.2550" - .3180"	6.477 - 8.077	3-1/4"	1-1/8"	6
.3190" - .4150"	8.103 - 10.541	3-1/2"	1-1/4"	6
.4160" - .4690"	10.566 - 11.913	4"	1-3/8"	6
.4700" - .5020"	11.938 - 12.751	4"	1-1/2"	6
.5030" - .5700"	12.776 - 14.478	4"	1-5/8"	6
.5710" - .7500"	14.503 - 19.050	4"	1-3/4"	6

Series 152M



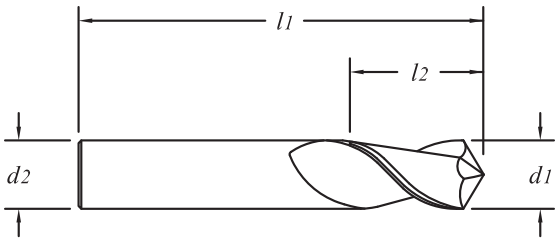
TOLERANCES

d_1	+.000" –.002" (+.000 /–.050mm)
d_2	h6

Drill/End Mill

Solid submicron grain carbide
Included angle to a point - center cutting
Tools do not have drill point geometry
Extremely versatile
Point tolerance ±0°30'





MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
57200	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	11.63	11.12	10.62	10.11
57210	.1875	3/16"	4.763	3/16"	2"	5/8"	15.32	14.65	13.99	13.32
57220	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	19.03	18.21	17.38	16.55
57230	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	24.94	23.86	22.77	21.69
57240	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	30.53	29.21	27.88	26.55
57250	.4375	7/16"	11.113	7/16"	2-3/4"	1"	37.58	35.95	34.31	32.68
57260	.5000	1/2"	12.700	1/2"	3"	1"	56.83	54.36	51.89	49.42
57270	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	91.92	87.92	83.93	79.93
57280	.7500	3/4"	19.050	3/4"	4"	1-1/2"	135.27	129.39	123.51	117.63

† *Metric equivalents are for reference only*

GARR TOOL®

TOLERANCES	
d_1	+.000" –.002" (+.000 /–.050mm)
d_2	h6







TECH PAGES 316-317

Drill/End Mill

TiALN Coating

Solid submicron grain carbide

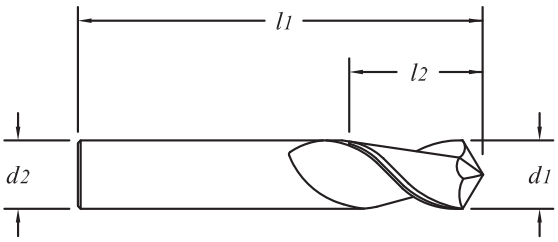
Included angle to a point - center cutting

Tools do not have drill point geometry

Extremely versatile

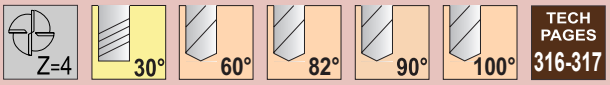
Point tolerance ±0°30'





EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
57207	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	14.32	13.70	13.07	12.45
57217	.1875	3/16"	4.763	3/16"	2"	5/8"	18.01	17.23	16.44	15.66
57227	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	24.56	23.50	22.43	21.36
57237	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	33.29	31.85	30.40	28.95
57247	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	38.88	37.19	35.50	33.81
57257	.4375	7/16"	11.113	7/16"	2-3/4"	1"	47.01	44.97	42.92	40.88
57267	.5000	1/2"	12.700	1/2"	3"	1"	66.32	63.44	60.55	57.67
57277	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	105.58	100.99	96.40	91.81
57287	.7500	3/4"	19.050	3/4"	4"	1-1/2"	151.41	144.83	138.24	131.66

Series 154M

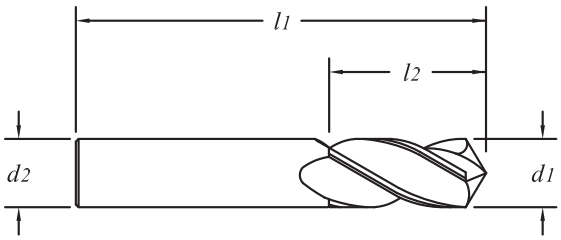


TOLERANCES	
d_1	+.000" –.002" (+.000 /–.050mm)
d_2	h6

Drill/End Mill

Solid submicron grain carbide
Included angle to a point - center cutting
Tools do not have drill point geometry
Extremely versatile
Point tolerance ±0°30'





60° EDP#	82° EDP#	90° EDP#	100° EDP#	d_1 † Decimal	d_1 † Diameter	d_1 † Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
-	-	58198	-	.1181		3.000	3.0	38	12	12.22	11.69	11.16	10.63
-	57346	58200	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	11.63	11.12	10.62	10.11
-	-	58202	-	.1575		4.000	4.0	50	14	16.09	15.39	14.69	13.99
-	57350	58210	57390	.1875	3/16"	4.763	3/16"	2"	5/8"	15.32	14.65	13.99	13.32
-	57352	58212	57392	.1969		5.000	5.0	65	16	19.50	18.66	17.81	16.96
57314	57354	58214	-	.2362		6.000	6.0	65	19	20.00	19.13	18.26	17.39
57316	57356	58220	57396	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	19.03	18.21	17.38	16.55
57318	57358	58230	57398	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	24.94	23.86	22.77	21.69
57320	-	58232	57400	.3150		8.000	8.0	65	22	26.25	25.11	23.97	22.83
57322	57362	58240	57402	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	30.53	29.21	27.88	26.55
57324	-	58242	57404	.3937		10.000	10.0	70	25	37.48	35.85	34.22	32.59
-	-	58252	57408	.4724		12.000	12.0	75	25	59.70	57.10	54.51	51.91
57330	57370	58260	57410	.5000	1/2"	12.700	1/2"	3"	1"	56.83	54.36	51.89	49.42
57332	57372	58270	57412	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	91.92	87.92	83.93	79.93
-	-	58272	57414	.6299		16.000	16.0	88	32	96.50	92.30	88.11	83.91
57336	57376	58280	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	135.27	129.39	123.51	117.63

† *Metric equivalents are for reference only*

GARR TOOL®

TOLERANCES	
d_1	+.000" –.002" (+.000 /–.050mm)
d_2	h6













TECH PAGES 316-317

Drill/End Mill

TiALN Coating

Solid submicron grain carbide

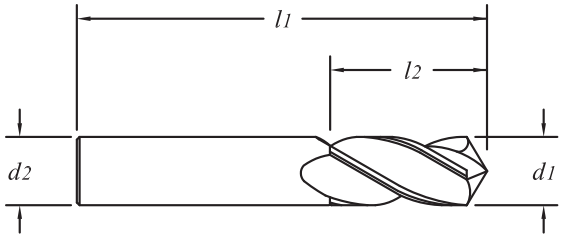
Included angle to a point - center cutting

Tools do not have drill point geometry

Extremely versatile

Point tolerance ±0°30'

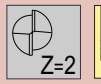




60° EDP#	82° EDP#	90° EDP#	100° EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
-	-	58205	-	.1181		3.000	3.0	38	12	14.90	14.26	13.61	12.96
-	58346	58207	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	14.32	13.70	13.07	12.45
-	58348	58209	58388	.1575		4.000	4.0	50	14	18.78	17.96	17.15	16.33
-	58350	58217	58390	.1875	3/16"	4.763	3/16"	2"	5/8"	18.01	17.23	16.44	15.66
-	-	58219	-	.1969		5.000	5.0	65	16	16.09	15.39	14.69	13.99
58314	58354	58221	58394	.2362		6.000	6.0	65	19	25.54	24.43	23.32	22.21
58316	58356	58227	58396	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	24.56	23.50	22.43	21.36
58318	58358	58237	58398	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	33.29	31.85	30.40	28.95
58320	-	58239	58400	.3150		8.000	8.0	65	22	34.55	33.04	31.54	30.04
58322	58362	58247	58402	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	38.88	37.19	35.50	33.81
58324	58364	58249	58404	.3937		10.000	10.0	70	25	46.94	44.90	42.86	40.82
58326	58366	58257	-	.4375	7/16"	11.113	7/16"	2-3/4"	1"	47.01	44.97	42.92	40.88
58328	-	58259	58408	.4724		12.000	12.0	75	25	69.13	66.12	63.12	60.11
58330	58370	58267	58410	.5000	1/2"	12.700	1/2"	3"	1"	66.32	63.44	60.55	57.67
58332	58372	58277	58412	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	105.58	100.99	96.40	91.81
-	58374	58279	-	.6299		16.000	16.0	88	32	110.17	105.38	100.59	95.80
58336	58376	58287	58416	.7500	3/4"	19.050	3/4"	4"	1-1/2"	151.41	144.83	138.24	131.66
-	58378	58289	-	.7874		20.000	20.0	100	38	214.29	204.97	195.66	186.34

Series 152DA

TOLERANCES	
d_1	+.000" –.002" (+.000 /–.050mm)
d_2	h6







TECH PAGES 318-319

Recommended for drilling and milling in mild steels and non-ferrous materials



Drill/End Mill

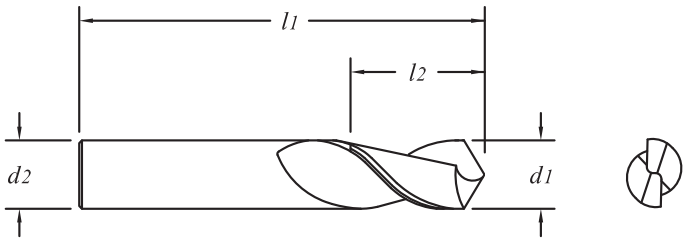
TiALN Coating

Solid submicron grain carbide

Four-facet drill point geometry (NOT to a true point - Reference page 57)

Extremely versatile

Point tolerance ±1°



MATERIAL HARDNESS (Rc)

70

35

0

EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
57421	.1181		3.000	3.0	38	12	14.90	14.26	13.61	12.96
57423	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	14.32	13.70	13.07	12.45
57425	.1575		4.000	4.0	50	14	18.78	17.96	17.15	16.33
57427	.1875	3/16"	4.762	3/16"	2"	5/8"	18.01	17.23	16.44	15.66
57429	.1969		5.000	5.0	65	16	25.06	23.97	22.88	21.79
57431	.2362		6.000	6.0	65	19	25.54	24.43	23.32	22.21
57433	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	24.56	23.50	22.43	21.36
57435	.3125	5/16"	7.937	5/16"	2-1/2"	7/8"	33.29	31.85	30.40	28.95
57437	.3150		8.000	8.0	65	22	34.55	33.04	31.54	30.04
57439	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	38.88	37.19	35.50	33.81
57441	.3937		10.000	10.0	70	25	46.94	44.90	42.86	40.82
57443	.4375	7/16"	11.112	7/16"	2-3/4"	1"	47.01	44.97	42.92	40.88
57445	.4724		12.000	12.0	75	25	69.13	66.12	63.12	60.11
57447	.5000	1/2"	12.700	1/2"	3"	1"	66.32	63.44	60.55	57.67
57449	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	105.58	100.99	96.40	91.81
57451	.6299		16.000	16.0	88	32	110.17	105.38	100.59	95.80
57453	.7500	3/4"	19.050	3/4"	4"	1-1/2"	151.41	144.83	138.24	131.66
57455	.7874		20.000	20.0	100	38	214.29	204.97	195.66	186.34

GARR TOOL®

† *Metric equivalents are for reference only*


Since 1927
Sfar
NTG 6RL


630XW
ROLLOMATIC


TXcell


MX7

Series ARC

.1575" - .3750"
(4.000mm - 9.525mm)



TECH PAGES 291

TOLERANCES

d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
d_3	+.000" –.005" (+.000 –.127mm)

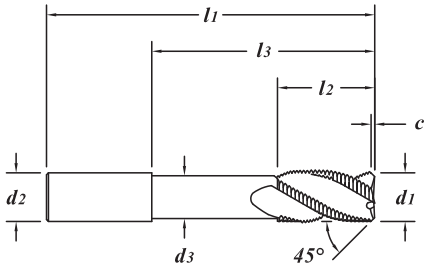
Recommended for aluminum and non-ferrous materials

Aluminum Knuckle Rougher / Ripper

Bright Finish

Solid submicron grain carbide end mill - center cutting
Wave knuckle design to break up chips
Each flute has individual helix angle to break up harmonics
Reduces tool pressure requiring less machine power
Designed for roughing Aluminum Alloys
Ideal for use in extruded Aluminum





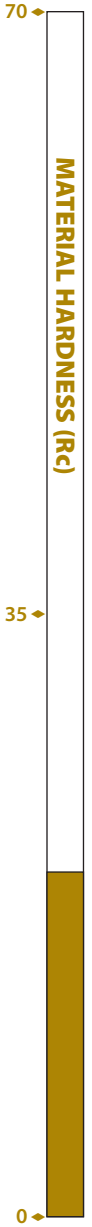
MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	c Chamfer Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
46219	.1575		4.000	6.0	50	8	0.30	-	-	34.17	32.68	31.20	29.71
46222	.1575		4.000	6.0	50	12	0.30	-	-	34.17	32.68	31.20	29.71
46225	.1575		4.000	6.0	65	10	0.30	30	3.2	39.11	37.41	35.71	34.01
46228	.1575		4.000	6.0	75	15	0.30	40	3.2	51.47	49.24	47.00	44.76
46231	.1875	3/16"	4.763	3/16"	2"	5/16"	.015"	-	-	28.99	27.73	26.47	25.21
46234	.1875	3/16"	4.763	3/16"	2"	9/16"	.015"	-	-	28.99	27.73	26.47	25.21
46237	.1875	3/16"	4.763	3/16"	3"	1"	.015"	-	-	40.57	38.81	37.04	35.28
46240	.1875	3/16"	4.763	3/16"	3"	1/2"	.015"	1-1/2"	.160"	44.15	42.23	40.31	38.39
46243	.2362		6.000	6.0	50	12	0.50	-	-	33.90	32.43	30.95	29.48
46246	.2362		6.000	6.0	65	19	0.50	-	-	36.72	35.12	33.53	31.93
46249	.2362		6.000	6.0	100	20	0.50	60	5.2	52.07	49.81	47.54	45.28
46252	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-	-	32.41	31.00	29.59	28.18
46255	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	36.27	34.69	33.12	31.54
46258	.2500	1/4"	6.350	1/4"	4"	1-1/2"	.020"	-	-	46.83	44.79	42.76	40.72
46261	.2500	1/4"	6.350	1/4"	4"	1"	.020"	2"	.220"	50.42	48.22	46.03	43.84
46264	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	-	-	38.67	36.99	35.31	33.63
46267	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	-	40.15	38.40	36.66	34.91
46270	.3125	5/16"	7.938	5/16"	4"	1-1/2"	.020"	-	-	57.51	55.01	52.51	50.01
46273	.3125	5/16"	7.938	5/16"	4"	1"	.020"	2"	.285"	61.09	58.43	55.78	53.12
46276	.3150		8.000	8.0	50	12	0.50	-	-	39.61	37.88	36.16	34.44
46279	.3150		8.000	8.0	65	22	0.50	-	-	41.16	39.37	37.58	35.79
46282	.3150		8.000	8.0	100	40	0.50	-	-	59.54	56.95	54.36	51.77
46285	.3150		8.000	8.0	100	20	0.50	60	7.2	63.11	60.37	57.62	54.88
46288	.3150		8.000	8.0	150	40	0.50	100	7.2	83.77	80.12	76.48	72.84
46291	.3750	3/8"	9.525	3/8"	2"	1/2"	.025"	-	-	45.14	43.18	41.21	39.25
46294	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.025"	-	-	50.15	47.97	45.79	43.61
46297	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.025"	-	-	58.60	56.06	53.51	50.96
46300	.3750	3/8"	9.525	3/8"	4"	1-5/8"	.025"	-	-	63.01	60.27	57.53	54.79
46303	.3750	3/8"	9.525	3/8"	4"	1"	.025"	2"	.345"	66.59	63.69	60.80	57.90
46306	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.025"	4"	.345"	85.50	81.79	78.07	74.35

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	c Chamfer Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
46309	.3937		10.000	10.0	50	16	0.50	-	-	55.81	53.38	50.96	48.53
46312	.3937		10.000	10.0	70	22	0.50	-	-	58.85	56.29	53.73	51.17
46315	.3937		10.000	10.0	100	40	0.50	-	-	73.30	70.11	66.93	63.74
46318	.3937		10.000	10.0	100	20	0.50	60	9.2	76.88	73.54	70.19	66.85
46321	.3937		10.000	10.0	150	40	0.50	100	9.2	96.42	92.22	88.03	83.84
46324	.4724		12.000	12.0	65	19	0.80	-	-	64.16	61.37	58.58	55.79
46327	.4724		12.000	12.0	75	32	0.80	-	-	72.54	69.39	66.23	63.08
46330	.4724		12.000	12.0	100	50	0.80	-	-	85.03	81.33	77.64	73.94
46333	.4724		12.000	12.0	100	25	0.80	60	11.2	88.61	84.76	80.90	77.05
46336	.4724		12.000	12.0	150	40	0.80	100	11.2	120.01	114.80	109.58	104.36
46339	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	61.07	58.41	55.76	53.10
46342	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	69.21	66.20	63.19	60.18
46345	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	80.93	77.41	73.89	70.37
46348	.5000	1/2"	12.700	1/2"	4"	1"	.030"	2"	.470"	84.50	80.83	77.15	73.48
46351	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.030"	4"	.470"	118.17	113.04	107.90	102.76
46354	.6250	5/8"	15.875	5/8"	3"	3/4"	.035"	-	-	108.33	103.62	98.91	94.20
46357	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.035"	-	-	111.52	106.67	101.82	96.97
46360	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.035"	-	-	118.13	112.99	107.86	102.72
46363	.6250	5/8"	15.875	5/8"	4"	1"	.035"	2"	.595"	121.72	116.42	111.13	105.84
46366	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	3"	.595"	170.97	163.54	156.10	148.67
46369	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	4"	.595"	170.97	163.54	156.10	148.67
46372	.6299		16.000	16.0	75	19	1.00	-	-	114.01	109.05	104.10	99.14
46375	.6299		16.000	16.0	88	32	1.00	-	-	116.96	111.87	106.79	101.70
46378	.6299		16.000	16.0	100	50	1.00	-	-	125.21	119.77	114.32	108.88
46381	.6299		16.000	16.0	100	20	1.00	50	15.2	128.79	123.19	117.59	111.99
46384	.6299		16.000	16.0	150	40	1.00	100	15.2	172.80	165.29	157.77	150.26
46387	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.040"	-	-	163.08	155.99	148.90	141.81
46390	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.040"	-	-	228.54	218.60	208.67	198.73
46393	.7500	3/4"	19.050	3/4"	4"	7/8"	.040"	2"	.720"	166.67	159.42	152.18	144.93
46396	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	3"	.720"	275.16	263.20	251.23	239.27
46399	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	4"	.720"	275.16	263.20	251.23	239.27
46402	.7874		20.000	20.0	100	22	1.00	-	-	230.12	220.11	210.11	200.10
46405	.7874		20.000	20.0	100	40	1.00	-	-	230.12	220.11	210.11	200.10
46408	.7874		20.000	20.0	100	30	1.00	50	19.2	233.69	223.53	213.37	203.21
46411	.7874		20.000	20.0	150	40	1.00	100	19.2	285.43	273.02	260.61	248.20
46414	1.000	1"	25.400	1"	4"	1-1/2"	.040"	-	-	276.92	264.88	252.84	240.80
46417	1.000	1"	25.400	1"	5"	2"	.040"	-	-	342.67	327.77	312.87	297.97
46420	1.000	1"	25.400	1"	6"	2"	.040"	3-1/2"	.970"	460.44	440.42	420.40	400.38
46423	1.000	1"	25.400	1"	7"	2"	.040"	4-1/2"	.970"	605.50	579.17	552.85	526.52



Series VHM

.1575" - .3543"
(4.000mm - 9.000mm)

Z=4 | 30° | 45° | TECH PAGES 292-293

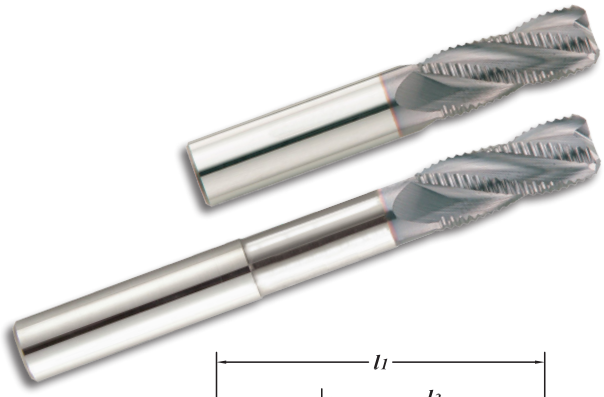
TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
d_3	+.000" –.005" (+.000 –.127mm)

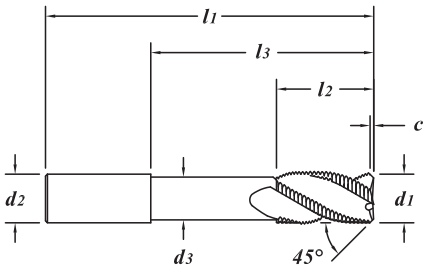
Recommended for stainless steel, inconel, pH materials, cold rolled steel, titanium, cast iron and tool steels under 40Rc

Staggered Flute Knuckle Rougher / Ripper

AlTiN Coating

Solid submicron grain carbide end mill - center cutting
State-of-the-art rougher using VRX technology
Reduces tool pressure for more aggressive machining
Recommended for pocket milling
Variable flute geometry





MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	c Chamfer Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
49450	.1575		4.000	6.0	50	8	0.30	-	-	37.81	36.17	34.52	32.88
49455	.1575		4.000	6.0	50	12	0.30	-	-	37.81	36.17	34.52	32.88
49460	.1575		4.000	6.0	65	10	0.30	30	3.4	43.96	42.05	40.14	38.23
49465	.1575		4.000	6.0	75	15	0.30	40	3.4	56.34	53.89	51.44	48.99
49470	.1875	3/16"	4.763	3/16"	2"	5/16"	.015"	-	-	31.52	30.15	28.78	27.41
49475	.1875	3/16"	4.763	3/16"	2"	9/16"	.015"	-	-	31.52	30.15	28.78	27.41
49480	.1875	3/16"	4.763	3/16"	3"	1"	.015"	-	-	44.21	42.28	40.36	38.44
49485	.1875	3/16"	4.763	3/16"	3"	1/2"	.015"	1-1/2"	.165"	47.78	45.71	43.63	41.55
49490	.2362		6.000	6.0	50	12	0.50	-	-	37.56	35.93	34.29	32.66
49500	.2362		6.000	6.0	65	19	0.50	-	-	41.58	39.78	37.97	36.16
49505	.2362		6.000	6.0	100	15	0.50	40	5.4	57.73	55.22	52.71	50.20
49510	.2362		6.000	6.0	100	20	0.50	60	5.4	57.73	55.22	52.71	50.20
49520	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-	-	36.08	34.51	32.94	31.37
49540	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	41.15	39.36	37.57	35.78
49543	.2500	1/4"	6.350	1/4"	4"	1-1/2"	.020"	-	-	52.49	50.20	47.92	45.64
49547	.2500	1/4"	6.350	1/4"	4"	1"	.020"	2"	.225"	56.05	53.61	51.18	48.74
49550	.2756		7.000	8.0	50	12	0.50	-	-	51.08	48.86	46.64	44.42
49555	.2756		7.000	8.0	65	22	0.50	-	-	55.23	52.83	50.43	48.03
49570	.2812	9/32"	7.142	5/16"	2"	7/16"	.020"	-	-	50.17	47.99	45.81	43.63
49575	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.020"	-	-	54.04	51.69	49.34	46.99
49580	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	-	-	43.84	41.93	40.03	38.12
49600	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	-	47.24	45.19	43.13	41.08
49603	.3125	5/16"	7.938	5/16"	4"	1-1/2"	.020"	-	-	66.61	63.71	60.82	57.92
49605	.3125	5/16"	7.938	5/16"	4"	1"	.020"	2"	.285"	70.18	67.13	64.08	61.03
49610	.3150		8.000	8.0	50	12	0.50	-	-	44.76	42.81	40.87	38.92
49620	.3150		8.000	8.0	65	22	0.50	-	-	48.23	46.13	44.04	41.94
49622	.3150		8.000	8.0	100	40	0.50	-	-	68.63	65.65	62.66	59.68
49623	.3150		8.000	8.0	100	20	0.50	60	7.4	72.22	69.08	65.94	62.80
49624	.3150		8.000	8.0	150	40	0.50	100	7.4	96.08	91.91	87.73	83.55
49625	.3438	11/32"	8.733	3/8"	2"	1/2"	.025"	-	-	56.90	54.43	51.95	49.48
49630	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	.025"	-	-	64.75	61.93	59.12	56.30
49635	.3543		9.000	10.0	50	14	0.50	-	-	69.78	66.75	63.71	60.68
49637	.3543		9.000	10.0	65	22	0.50	-	-	75.85	72.56	69.26	65.96

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	c Chamfer Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
49640	.3750	3/8"	9.525	3/8"	2"	1/2"	.025"	-	-	50.28	48.09	45.91	43.72
49660	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.025"	-	-	57.22	54.74	52.25	49.76
49662	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.025"	-	-	65.70	62.84	59.99	57.13
49664	.3750	3/8"	9.525	3/8"	4"	1-5/8"	.025"	-	-	72.11	68.97	65.84	62.70
49667	.3750	3/8"	9.525	3/8"	4"	1"	.025"	2"	.355"	75.68	72.39	69.10	65.81
49670	.3937		10.000	10.0	50	16	0.50	-	-	61.67	58.99	56.31	53.63
49680	.3937		10.000	10.0	70	22	0.50	-	-	67.01	64.10	61.18	58.27
49682	.3937		10.000	10.0	100	40	0.50	-	-	83.82	80.18	76.53	72.89
49684	.3937		10.000	10.0	100	20	0.50	40	9.4	87.40	83.60	79.80	76.00
49686	.3937		10.000	10.0	100	30	0.50	60	9.4	87.40	83.60	79.80	76.00
49690	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.025"	-	-	67.33	64.41	61.48	58.55
49700	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.025"	-	-	67.33	64.41	61.48	58.55
49710	.4724		12.000	12.0	65	19	0.80	-	-	72.31	69.17	66.02	62.88
49720	.4724		12.000	12.0	75	32	0.80	-	-	80.68	77.18	73.67	70.16
49725	.4724		12.000	12.0	100	50	0.80	-	-	95.58	91.42	87.27	83.11
49730	.4724		12.000	12.0	100	25	0.80	60	11.4	99.15	94.84	90.53	86.22
49735	.4724		12.000	12.0	150	40	0.80	100	11.4	134.79	128.93	123.07	117.21
* 49740	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	69.24	66.23	63.22	60.21
* 49760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	77.37	74.01	70.64	67.28
* 49761	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	91.46	87.48	83.51	79.53
* 49762	.5000	1/2"	12.700	1/2"	4"	1"	.030"	2"	.480"	95.04	90.90	86.77	82.64
* 49764	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.030"	4"	.480"	132.93	127.15	121.37	115.59
* 49765	.5512		14.000	14.0	75	19	0.80	-	-	114.46	109.48	104.51	99.53
* 49770	.5512		14.000	14.0	88	32	0.80	-	-	117.63	112.52	107.40	102.29
* 49780	.6250	5/8"	15.875	5/8"	3"	3/4"	.035"	-	-	120.09	114.87	109.65	104.43
* 49800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.035"	-	-	123.27	117.91	112.55	107.19
* 49820	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.035"	-	-	129.88	124.23	118.59	112.94
* 49824	.6250	5/8"	15.875	5/8"	4"	1"	.035"	2"	.605"	133.46	127.66	121.85	116.05
* 49826	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	3"	.605"	188.31	180.13	171.94	163.75
* 49828	.6250	5/8"	15.875	5/8"	6"	1-1/2"	.035"	4"	.605"	188.31	180.13	171.94	163.75
* 49830	.6299		16.000	16.0	75	19	1.00	-	-	125.38	119.93	114.48	109.03
* 49840	.6299		16.000	16.0	88	32	1.00	-	-	128.69	123.09	117.50	111.90
* 49842	.6299		16.000	16.0	100	50	1.00	-	-	136.94	130.99	125.03	119.08
* 49843	.6299		16.000	16.0	100	20	1.00	50	15.4	140.53	134.42	128.31	122.20
* 49844	.6299		16.000	16.0	150	40	1.00	100	15.4	190.14	181.87	173.61	165.34
* 49850	.7087		18.000	18.0	100	38	1.00	-	-	185.01	176.97	168.92	160.88
* 49860	.7500	3/4"	19.050	3/4"	3"	7/8"	.040"	-	-	173.41	165.87	158.33	150.79
* 49880	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.040"	-	-	177.00	169.30	161.61	153.91
* 49882	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.040"	-	-	245.53	234.85	224.18	213.50
* 49886	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	3"	.730"	295.21	282.37	269.54	256.70
* 49887	.7500	3/4"	19.050	3/4"	6"	1-1/2"	.040"	4"	.730"	295.21	282.37	269.54	256.70
* 49890	.7874		20.000	20.0	75	22	1.00	-	-	245.12	234.47	223.81	213.15
* 49900	.7874		20.000	20.0	100	38	1.00	-	-	250.48	239.59	228.70	217.81
* 49902	.7874		20.000	20.0	100	30	1.00	50	19.4	254.07	243.02	231.98	220.93
* 49904	.7874		20.000	20.0	150	40	1.00	100	19.4	311.52	297.98	284.43	270.89
* 49915	.9843		25.000	25.0	100	25	1.00	-	-	287.27	274.78	262.29	249.80
* 49920	.9843		25.000	25.0	100	38	1.00	-	-	287.27	274.78	262.29	249.80
* 49925	1.000	1"	25.400	1"	4"	1"	.040"	-	-	297.29	284.36	271.44	258.51
* 49930	1.000	1"	25.400	1"	4"	1-1/2"	.040"	-	-	297.29	284.36	271.44	258.51
* 49940	1.000	1"	25.400	1"	5"	2"	.040"	-	-	366.03	350.12	334.20	318.29

* - Tools with weldon flats

Series A3 NEW ITEMS HIGH EFFICIENCY MILLING

.1575" - .2500"
(4.000mm - 6.350mm)

Z=3 | VAR | TECH PAGES 288-290

TOLERANCES	
d_1	+.000" –.001" (+.000mm –.025mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

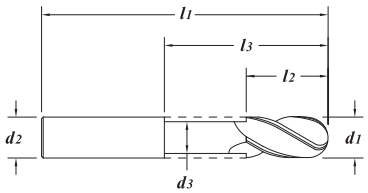
Recommended for aluminum

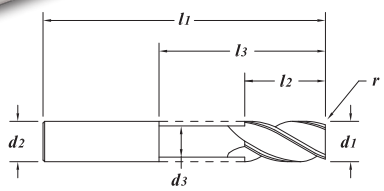
Variable Helix End Mill

Bright Finish

Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling of Aluminum
Proprietary geometry with polished flutes breaks up harmonics
Improved end geometry provides superior floor finishes and increased plunge rates
Capable of running up to 40,000 RPM - reduces vibration and balance issues
Chip splitters and necks can be added within 48 hours







MATERIAL HARDNESS (Rc) 70 35 0

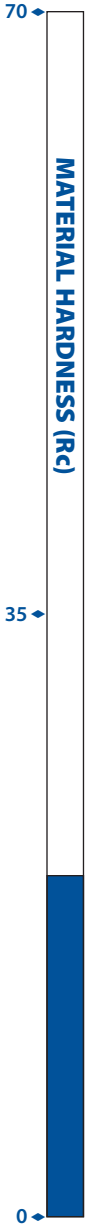
	EDP#	Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	07000	.1575		4.000	6.0	50	12	-	16	3.80	26.47	25.32	24.17	23.02
	07001	.1575		4.000	6.0	50	12	0.20	16	3.80	30.18	28.86	27.55	26.24
	07002	.1575		4.000	6.0	50	12	0.50	16	3.80	30.18	28.86	27.55	26.24
	07003	.1575		4.000	6.0	50	12	1.00	16	3.80	30.18	28.86	27.55	26.24
	07004	.1875	3/16"	4.763	3/16"	2"	1/2"	-	5/8"	.179"	19.17	18.34	17.50	16.67
	07005	.1875	3/16"	4.763	3/16"	2"	1/2"	.015"	5/8"	.179"	21.60	20.66	19.72	18.78
	07006	.1875	3/16"	4.763	3/16"	2"	1/2"	.030"	5/8"	.179"	21.60	20.66	19.72	18.78
	07007	.1875	3/16"	4.763	3/16"	2"	1/2"	.060"	5/8"	.179"	21.60	20.66	19.72	18.78
	07008	.1875	3/16"	4.763	3/16"	2"	1/2"	BALL	5/8"	.179"	21.60	20.66	19.72	18.78
	07009	.1969		5.000	6.0	65	16	-	26	4.70	26.88	25.71	24.54	23.37
	07010	.1969		5.000	6.0	65	16	0.20	26	4.70	32.06	30.67	29.27	27.88
	07011	.1969		5.000	6.0	65	16	0.50	26	4.70	32.06	30.67	29.27	27.88
	07012	.1969		5.000	6.0	65	16	1.00	26	4.70	32.06	30.67	29.27	27.88
	07013	.2362		6.000	6.0	65	19	-	26	5.70	25.79	24.67	23.55	22.43
	07014	.2362		6.000	6.0	65	19	0.20	26	5.70	30.74	29.40	28.07	26.73
	07015	.2362		6.000	6.0	65	19	0.50	26	5.70	30.74	29.40	28.07	26.73
	07016	.2362		6.000	6.0	65	19	1.00	26	5.70	30.74	29.40	28.07	26.73
	07017	.2362		6.000	6.0	65	19	1.50	26	5.70	30.74	29.40	28.07	26.73
	07018	.2362		6.000	6.0	65	19	2.00	26	5.70	30.74	29.40	28.07	26.73
	07019	.2362		6.000	6.0	65	19	BALL	26	5.70	30.74	29.40	28.07	26.73
NEW	07228	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	-	18.48	17.68	16.87	16.07
NEW	07229	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-	-	18.48	17.68	16.87	16.07
	07020	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	-	19.45	18.60	17.76	16.91
	07021	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	24.15	23.10	22.05	21.00
	07022	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	24.15	23.10	22.05	21.00
	07023	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	-	-	24.15	23.10	22.05	21.00
	07024	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.090"	-	-	24.15	23.10	22.05	21.00
	07025	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	BALL	-	-	24.15	23.10	22.05	21.00
	07026	.2500	1/4"	6.350	1/4"	3"	1"	-	-	-	33.28	31.83	30.39	28.94
	07027	.2500	1/4"	6.350	1/4"	3"	1"	.030"	-	-	39.11	37.41	35.71	34.01
	07028	.2500	1/4"	6.350	1/4"	3"	1"	.060"	-	-	39.11	37.41	35.71	34.01
	07029	.2500	1/4"	6.350	1/4"	3"	3/8"	-	1-1/8"	.235"	38.66	36.98	35.30	33.62
	07030	.2500	1/4"	6.350	1/4"	3"	3/8"	.015"	1-1/8"	.235".	44.49	42.56	40.62	38.69
	07031	.2500	1/4"	6.350	1/4"	3"	3/8"	.030"	1-1/8"	.235"	44.49	42.56	40.62	38.69
	07032	.2500	1/4"	6.350	1/4"	3"	3/8"	.060"	1-1/8"	.235"	44.49	42.56	40.62	38.69

GARR TOOL®

† Metric equivalents are for reference only

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
07033	.3150		8.000	8.0	65	19	-	26	7.40	34.49	32.99	31.49	29.99
07034	.3150		8.000	8.0	65	19	0.20	26	7.40	38.99	37.29	35.60	33.90
07035	.3150		8.000	8.0	65	19	0.50	26	7.40	38.99	37.29	35.60	33.90
07036	.3150		8.000	8.0	65	19	1.00	26	7.40	38.99	37.29	35.60	33.90
07037	.3150		8.000	8.0	65	19	1.50	26	7.40	38.99	37.29	35.60	33.90
07038	.3150		8.000	8.0	65	19	2.00	26	7.40	38.99	37.29	35.60	33.90
07039	.3150		8.000	8.0	65	19	3.00	26	7.40	38.99	37.29	35.60	33.90
07040	.3150		8.000	8.0	65	19	BALL	26	7.40	38.99	37.29	35.60	33.90
07041	.3750	3/8"	9.525	3/8"	2-1/2"	1"	-	-	-	33.68	32.22	30.75	29.29
07042	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.010"	-	-	38.32	36.65	34.99	33.32
07043	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.015"	-	-	38.32	36.65	34.99	33.32
07044	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	-	38.32	36.65	34.99	33.32
07045	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	-	38.32	36.65	34.99	33.32
07046	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.060"	-	-	38.32	36.65	34.99	33.32
07047	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.090"	-	-	38.32	36.65	34.99	33.32
07048	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.120"	-	-	38.32	36.65	34.99	33.32
07049	.3750	3/8"	9.525	3/8"	2-1/2"	1"	BALL	-	-	38.32	36.65	34.99	33.32
07050	.3750	3/8"	9.525	3/8"	3"	1-1/4"	-	-	-	46.39	44.37	42.36	40.34
07051	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-	-	52.38	50.11	47.83	45.55
07052	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	-	52.38	50.11	47.83	45.55
07053	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.060"	-	-	52.38	50.11	47.83	45.55
07054	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.120"	-	-	52.38	50.11	47.83	45.55
07055	.3750	3/8"	9.525	3/8"	3"	1/2"	-	1-1/8"	.355"	51.77	49.52	47.27	45.02
07056	.3750	3/8"	9.525	3/8"	3"	1/2"	.015"	1-1/8"	.355"	57.76	55.25	52.74	50.23
07057	.3750	3/8"	9.525	3/8"	3"	1/2"	.030"	1-1/8"	.355"	57.76	55.25	52.74	50.23
07058	.3750	3/8"	9.525	3/8"	3"	1/2"	.060"	1-1/8"	.355"	57.76	55.25	52.74	50.23
07059	.3750	3/8"	9.525	3/8"	3"	1/2"	.090"	1-1/8"	.355"	57.76	55.25	52.74	50.23
07060	.3750	3/8"	9.525	3/8"	3"	1/2"	.120"	1-1/8"	.355"	57.76	55.25	52.74	50.23
07061	.3750	3/8"	9.525	3/8"	4"	1/2"	-	2-1/8"	.355"	62.47	59.75	57.04	54.32
07062	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	2-1/8"	.355"	71.20	68.10	65.01	61.91
07063	.3750	3/8"	9.525	3/8"	4"	1/2"	.020"	2-1/8"	.355"	71.20	68.10	65.01	61.91
07064	.3750	3/8"	9.525	3/8"	4"	1/2"	.030"	2-1/8"	.355"	71.20	68.10	65.01	61.91
07065	.3750	3/8"	9.525	3/8"	4"	1/2"	.060"	2-1/8"	.355"	71.20	68.10	65.01	61.91
07066	.3750	3/8"	9.525	3/8"	4"	1/2"	.090"	2-1/8"	.355"	71.20	68.10	65.01	61.91
07067	.3750	3/8"	9.525	3/8"	4"	1/2"	.120"	2-1/8"	.355"	71.20	68.10	65.01	61.91
07068	.3937		10.000	10.0	70	22	-	30	9.40	56.49	54.03	51.58	49.12
07069	.3937		10.000	10.0	70	22	0.20	30	9.40	64.87	62.05	59.23	56.41
07070	.3937		10.000	10.0	70	22	0.50	30	9.40	64.87	62.05	59.23	56.41
07071	.3937		10.000	10.0	70	22	1.00	30	9.40	64.87	62.05	59.23	56.41
07072	.3937		10.000	10.0	70	22	1.50	30	9.40	64.87	62.05	59.23	56.41
07073	.3937		10.000	10.0	70	22	2.00	30	9.40	64.87	62.05	59.23	56.41
07074	.3937		10.000	10.0	70	22	3.00	30	9.40	64.87	62.05	59.23	56.41
07075	.3937		10.000	10.0	70	22	BALL	30	9.40	64.87	62.05	59.23	56.41
07076	.3937		10.000	10.0	100	40	-	-	-	65.50	62.66	59.81	56.96
07077	.3937		10.000	10.0	100	22	-	55	9.40	76.82	73.48	70.14	66.80
07078	.4724		12.000	12.0	88	26	-	38	11.40	83.40	79.77	76.15	72.52
07079	.4724		12.000	12.0	88	26	0.20	38	11.40	98.46	94.18	89.90	85.62
07212	.4724		12.000	12.0	88	26	0.50	38	11.40	98.46	94.18	89.90	85.62
07081	.4724		12.000	12.0	88	26	1.00	38	11.40	98.46	94.18	89.90	85.62
07082	.4724		12.000	12.0	88	26	1.50	38	11.40	98.46	94.18	89.90	85.62
07083	.4724		12.000	12.0	88	26	2.00	38	11.40	98.46	94.18	89.90	85.62
07084	.4724		12.000	12.0	88	26	3.00	38	11.40	98.46	94.18	89.90	85.62
07085	.4724		12.000	12.0	88	26	4.00	38	11.40	98.46	94.18	89.90	85.62
07086	.4724		12.000	12.0	88	26	BALL	38	11.40	98.46	94.18	89.90	85.62

continued →



Series A3 *(continued)*

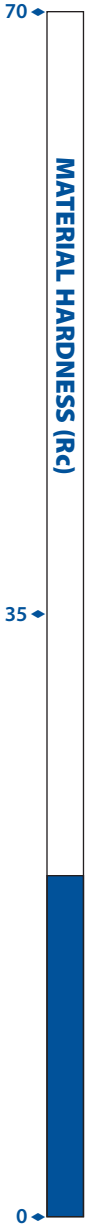
.4724" - .6250"
(12.000mm - 15.875mm)

	EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	07213	.4724		12.000	12.0	88	36	-	-	-	77.34	73.98	70.61	67.25
	07088	.4724		12.000	12.0	88	36	0.20	-	-	92.97	88.92	84.88	80.84
	07089	.4724		12.000	12.0	88	36	0.50	-	-	92.97	88.92	84.88	80.84
	07090	.4724		12.000	12.0	88	36	1.00	-	-	92.97	88.92	84.88	80.84
	07091	.4724		12.000	12.0	88	36	1.50	-	-	92.97	88.92	84.88	80.84
	07092	.4724		12.000	12.0	88	36	2.00	-	-	92.97	88.92	84.88	80.84
	07093	.4724		12.000	12.0	88	36	3.00	-	-	92.97	88.92	84.88	80.84
	07094	.4724		12.000	12.0	88	36	4.00	-	-	92.97	88.92	84.88	80.84
	07095	.4724		12.000	12.0	88	36	BALL	-	-	92.97	88.92	84.88	80.84
	07215	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	55.26	52.86	50.45	48.05
	07216	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	72.55	69.40	66.24	63.09
	07217	.5000	1/2"	12.700	1/2"	3"	1"	BALL	-	-	72.55	69.40	66.24	63.09
	07096	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	55.26	52.86	50.45	48.05
	07097	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	72.55	69.40	66.24	63.09
	07098	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	72.55	69.40	66.24	63.09
	07099	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	72.55	69.40	66.24	63.09
	07100	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	72.55	69.40	66.24	63.09
	07101	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	72.55	69.40	66.24	63.09
	07102	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-	72.55	69.40	66.24	63.09
	07103	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	-	72.55	69.40	66.24	63.09
	07218	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	72.55	69.40	66.24	63.09
	07104	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.190"	-	-	72.55	69.40	66.24	63.09
	07105	.5000	1/2"	12.700	1/2"	3"	1-1/4"	BALL	-	-	72.55	69.40	66.24	63.09
	07219	.5000	1/2"	12.700	1/2"	3"	1/2"	.030"	1-1/2"	.470"	77.94	74.55	71.16	67.77
	07220	.5000	1/2"	12.700	1/2"	3"	1/2"	.090"	1-1/2"	.470"	77.94	74.55	71.16	67.77
NEW	07230	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	-	-	-	72.55	69.40	66.24	63.09
	07221	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	-	74.88	71.62	68.37	65.11
	07222	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.030"	-	-	84.31	80.64	76.98	73.31
	07223	.5000	1/2"	12.700	1/2"	4"	1-5/8"	BALL	-	-	84.31	80.64	76.98	73.31
	07106	.5000	1/2"	12.700	1/2"	4"	2-1/16"	-	-	-	74.88	71.62	68.37	65.11
	07107	.5000	1/2"	12.700	1/2"	4"	2-1/16"	.015"	-	-	84.31	80.64	76.98	73.31
	07108	.5000	1/2"	12.700	1/2"	4"	2-1/16"	.030"	-	-	84.31	80.64	76.98	73.31
	07109	.5000	1/2"	12.700	1/2"	4"	2-1/16"	.060"	-	-	84.31	80.64	76.98	73.31
	07110	.5000	1/2"	12.700	1/2"	4"	2-1/16"	.120"	-	-	84.31	80.64	76.98	73.31
	07224	.5000	1/2"	12.700	1/2"	4"	1/2"	.090"	2"	.470"	95.60	91.44	87.29	83.13
	07225	.5000	1/2"	12.700	1/2"	4"	1/2"	.190"	2"	.470"	95.60	91.44	87.29	83.13
	07111	.5000	1/2"	12.700	1/2"	4"	5/8"	-	2-1/4"	.475"	86.18	82.43	78.69	74.94
	07112	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	2-1/4"	.475"	95.60	91.44	87.29	83.13
	07113	.5000	1/2"	12.700	1/2"	4"	5/8"	.030"	2-1/4"	.475"	95.60	91.44	87.29	83.13
	07114	.5000	1/2"	12.700	1/2"	4"	5/8"	.060"	2-1/4"	.475"	95.60	91.44	87.29	83.13
	07115	.5000	1/2"	12.700	1/2"	4"	5/8"	BALL	2-1/4"	.475"	95.60	91.44	87.29	83.13
	07116	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	118.96	113.78	108.61	103.44
	07214	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	130.38	124.71	119.04	113.37
	07118	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.060"	-	-	130.38	124.71	119.04	113.37
	07119	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.090"	-	-	130.38	124.71	119.04	113.37
	07120	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.120"	-	-	130.38	124.71	119.04	113.37
	07121	.6250	5/8"	15.875	5/8"	4"	3/4"	-	2-3/8"	.590"	129.72	124.08	118.44	112.80
	07122	.6250	5/8"	15.875	5/8"	4"	3/4"	.030"	2-3/8"	.590"	141.14	135.00	128.87	122.73
	07123	.6250	5/8"	15.875	5/8"	4"	3/4"	.060"	2-3/8"	.590"	141.14	135.00	128.87	122.73
	07124	.6250	5/8"	15.875	5/8"	4"	3/4"	.120"	2-3/8"	.590"	141.14	135.00	128.87	122.73
	07125	.6250	5/8"	15.875	5/8"	4"	3/4"	.190"	2-3/8"	.590"	141.14	135.00	128.87	122.73

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	07126	.6299		16.000	16.0	100	24	-	50	15.40	131.93	126.19	120.46	114.72
	07127	.6299		16.000	16.0	100	24	0.50	50	15.40	144.00	137.74	131.48	125.22
	07128	.6299		16.000	16.0	100	24	1.00	50	15.40	144.00	137.74	131.48	125.22
	07129	.6299		16.000	16.0	100	24	1.50	50	15.40	144.00	137.74	131.48	125.22
	07130	.6299		16.000	16.0	100	24	3.00	50	15.40	144.00	137.74	131.48	125.22
NEW	07131	.6299		16.000	16.0	100	24	6.00	50	15.40	144.00	137.74	131.48	125.22
	07132	.6299		16.000	16.0	100	32	-	50	15.40	131.93	126.19	120.46	114.72
	07133	.6299		16.000	16.0	100	32	0.50	50	15.40	144.00	137.74	131.48	125.22
	07134	.6299		16.000	16.0	100	32	1.00	50	15.40	144.00	137.74	131.48	125.22
	07135	.6299		16.000	16.0	100	32	1.50	50	15.40	144.00	137.74	131.48	125.22
	07136	.6299		16.000	16.0	100	32	3.00	50	15.40	144.00	137.74	131.48	125.22
	07137	.6299		16.000	16.0	100	32	6.00	50	15.40	144.00	137.74	131.48	125.22
	07138	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	153.73	147.05	140.36	133.68
	07139	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-	171.15	163.71	156.27	148.83
	07140	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	171.15	163.71	156.27	148.83
	07141	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.060"	-	-	171.15	163.71	156.27	148.83
	07142	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.078"	-	-	171.15	163.71	156.27	148.83
	07143	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.094"	-	-	171.15	163.71	156.27	148.83
	07144	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.120"	-	-	171.15	163.71	156.27	148.83
	07145	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.156"	-	-	171.15	163.71	156.27	148.83
	07146	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.190"	-	-	171.15	163.71	156.27	148.83
	07147	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.250"	-	-	171.15	163.71	156.27	148.83
	07148	.7500	3/4"	19.050	3/4"	4"	1-3/4"	BALL	-	-	171.15	163.71	156.27	148.83
	07149	.7500	3/4"	19.050	3/4"	4"	1"	-	2"	.715"	159.11	152.20	145.28	138.36
	07150	.7500	3/4"	19.050	3/4"	4"	1"	.030"	2"	.715"	176.54	168.86	161.19	153.51
	07151	.7500	3/4"	19.050	3/4"	4"	1"	.060"	2"	.715"	176.54	168.86	161.19	153.51
	07152	.7500	3/4"	19.050	3/4"	4"	1"	.090"	2"	.715"	176.54	168.86	161.19	153.51
	07153	.7500	3/4"	19.050	3/4"	4"	1"	.120"	2"	.715"	176.54	168.86	161.19	153.51
	07154	.7500	3/4"	19.050	3/4"	4"	1"	.125"	2"	.715"	176.54	168.86	161.19	153.51
	07155	.7500	3/4"	19.050	3/4"	4"	1"	.160"	2"	.715"	176.54	168.86	161.19	153.51
	07156	.7500	3/4"	19.050	3/4"	4"	1"	.190"	2"	.715"	176.54	168.86	161.19	153.51
	07157	.7500	3/4"	19.050	3/4"	5"	2-1/4"	-	-	-	204.76	195.86	186.95	178.05
	07158	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.030"	-	-	237.72	227.38	217.05	206.71
	07159	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.060"	-	-	237.72	227.38	217.05	206.71
	07160	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.120"	-	-	237.72	227.38	217.05	206.71
	07161	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.125"	-	-	237.72	227.38	217.05	206.71
	07162	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.190"	-	-	237.72	227.38	217.05	206.71
	07163	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.250"	-	-	237.72	227.38	217.05	206.71
	07226	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	208.14	199.09	190.04	180.99
	07164	.7500	3/4"	19.050	3/4"	6"	1"	-	3-3/8"	.715"	221.43	211.81	202.18	192.55
	07165	.7500	3/4"	19.050	3/4"	6"	1"	.030"	3-3/8"	.715"	257.04	245.86	234.69	223.51
	07166	.7500	3/4"	19.050	3/4"	6"	1"	.060"	3-3/8"	.715"	257.04	245.86	234.69	223.51
	07167	.7500	3/4"	19.050	3/4"	6"	1"	.090"	3-3/8"	.715"	257.04	245.86	234.69	223.51
	07168	.7500	3/4"	19.050	3/4"	6"	1"	.125"	3-3/8"	.715"	257.04	245.86	234.69	223.51
	07169	.7500	3/4"	19.050	3/4"	6"	1"	.250"	3-3/8"	.715"	257.04	245.86	234.69	223.51
	07170	.7500	3/4"	19.050	3/4"	6"	1"	BALL	3-3/8"	.715"	257.04	245.86	234.69	223.51



continued ⟶

Series A3 *(continued)*

.7874" - 1.000"
(20.000mm - 25.400mm)

	EDP#	d_1 † Diameter Decimal		d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	07171	.7874		20.000	20.0	100	30	-	50	19.4	211.11	201.93	192.75	183.57
	07172	.7874		20.000	20.0	100	30	0.50	50	19.4	246.50	235.79	225.07	214.35
	07173	.7874		20.000	20.0	100	30	1.00	50	19.4	246.50	235.79	225.07	214.35
	07174	.7874		20.000	20.0	100	30	1.50	50	19.4	246.50	235.79	225.07	214.35
	07175	.7874		20.000	20.0	100	30	3.00	50	19.4	246.50	235.79	225.07	214.35
	07176	.7874		20.000	20.0	100	30	4.00	50	19.4	246.50	235.79	225.07	214.35
	07177	.7874		20.000	20.0	100	30	5.00	50	19.4	246.50	235.79	225.07	214.35
	07178	.7874		20.000	20.0	100	30	6.00	50	19.4	246.50	235.79	225.07	214.35
	07179	.7874		20.000	20.0	100	30	8.00	50	19.4	246.50	235.79	225.07	214.35
	07180	.7874		20.000	20.0	150	30	-	100	19.40	264.83	253.32	241.80	230.29
	07181	.7874		20.000	20.0	150	30	0.50	100	19.40	328.35	314.07	299.80	285.52
	07182	.7874		20.000	20.0	150	30	1.00	100	19.40	328.35	314.07	299.80	285.52
NEW	07183	.7874		20.000	20.0	150	30	1.50	100	19.40	328.35	314.07	299.80	285.52
	07184	.7874		20.000	20.0	150	30	3.00	100	19.40	328.35	314.07	299.80	285.52
	07185	.7874		20.000	20.0	150	30	4.00	100	19.40	328.35	314.07	299.80	285.52
	07186	.7874		20.000	20.0	150	30	5.00	100	19.40	328.35	314.07	299.80	285.52
NEW	07187	.7874		20.000	20.0	150	30	6.00	100	19.40	328.35	314.07	299.80	285.52
NEW	07188	.7874		20.000	20.0	150	30	8.00	100	19.40	328.35	314.07	299.80	285.52
	07189	1.000	1"	25.400	1"	4"	1-1/4"	-	2"	.950"	235.57	225.32	215.08	204.84
	07190	1.000	1"	25.400	1"	4"	1-1/4"	.060"	2"	.950"	301.55	288.44	275.33	262.22
	07191	1.000	1"	25.400	1"	4-1/2"	1-1/4"	-	2-1/2"	.950"	267.19	255.57	243.96	232.34
	07192	1.000	1"	25.400	1"	4-1/2"	1-1/4"	.030"	2-1/2"	.950"	340.45	325.64	310.84	296.04
	07193	1.000	1"	25.400	1"	4-1/2"	1-1/4"	.060"	2-1/2"	.950"	340.45	325.64	310.84	296.04
	07194	1.000	1"	25.400	1"	4-1/2"	1-1/4"	.120"	2-1/2"	.950"	340.45	325.64	310.84	296.04
	07195	1.000	1"	25.400	1"	4-1/2"	1-1/4"	.125"	2-1/2"	.950"	340.45	325.64	310.84	296.04
	07196	1.000	1"	25.400	1"	5"	1"	-	2-5/8"	.950"	294.29	281.49	268.70	255.90
	07197	1.000	1"	25.400	1"	5"	1"	.030"	2-5/8"	.950"	375.05	358.74	342.44	326.13
	07198	1.000	1"	25.400	1"	5"	1"	.060"	2-5/8"	.950"	375.05	358.74	342.44	326.13
	07199	1.000	1"	25.400	1"	5"	1"	.125"	2-5/8"	.950"	375.05	358.74	342.44	326.13
	07200	1.000	1"	25.400	1"	5"	1"	.250"	2-5/8"	.950"	375.05	358.74	342.44	326.13
	07201	1.000	1"	25.400	1"	5"	1"	BALL	2-5/8"	.950"	375.05	358.74	342.44	326.13
	07202	1.000	1"	25.400	1"	5"	2-1/4"	-	-	-	283.52	271.19	258.87	246.54
	07203	1.000	1"	25.400	1"	5"	2-1/4"	.030"	-	-	364.29	348.45	332.61	316.77
	07204	1.000	1"	25.400	1"	5"	2-1/4"	.060"	-	-	364.29	348.45	332.61	316.77
	07205	1.000	1"	25.400	1"	5"	2-1/4"	.120"	-	-	364.29	348.45	332.61	316.77
	07206	1.000	1"	25.400	1"	5"	2-1/4"	.250"	-	-	364.29	348.45	332.61	316.77
	07207	1.000	1"	25.400	1"	6"	3-1/4"	-	-	-	352.59	337.26	321.93	306.60
	07208	1.000	1"	25.400	1"	6"	3-1/4"	.030"	-	-	413.16	395.20	377.23	359.27
	07209	1.000	1"	25.400	1"	6"	3-1/4"	.060"	-	-	413.16	395.20	377.23	359.27
NEW	07210	1.000	1"	25.400	1"	6"	3-1/4"	.120"	-	-	413.16	395.20	377.23	359.27
	07211	1.000	1"	25.400	1"	6"	3-1/4"	.250"	-	-	413.16	395.20	377.23	359.27

MATERIAL HARDNESS (Rc)
70
35
0

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.001" (+.000 –.025mm)
d_2	h6

HIGH EFFICIENCY MILLING

Series 142M

Z=2 | 41° | TECH PAGES 289

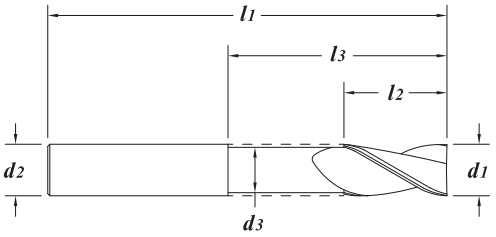
Recommended for aluminum

HSAL End Mill - Square End

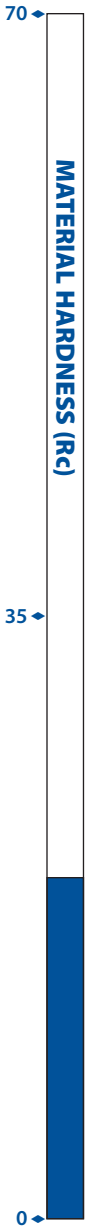
ALUMASTAR Coating

Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling
Specific coating engineered to repel aluminum
Engineered to run at 750-2500 SFM (225-750 M/Min.)
For high speed machining of aluminum
High velocity - high metal removal rate (for spindles 10,000 RPM and above)
Need to use properly balanced holders
Holds perpendicularity
Flats can be added within 48 hours





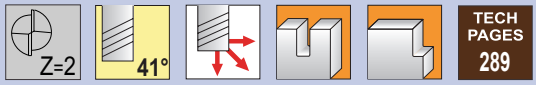
EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
41222	.1575		4.000	6.0	50	12	-	-	26.97	25.80	24.62	23.45
41232	.1575		4.000	6.0	65	6	20	3.7	33.76	32.30	30.83	29.36
41282	.1875	3/16"	4.763	3/16"	2"	9/16"	-	-	20.33	19.45	18.56	17.68
41342	.1969		5.000	6.0	65	16	-	-	27.83	26.62	25.41	24.20
41352	.1969		5.000	6.0	75	8	20	4.7	47.32	45.27	43.21	41.15
41402	.2362		6.000	6.0	65	19	-	-	26.94	25.77	24.60	23.43
41412	.2362		6.000	6.0	75	10	25	5.7	45.80	43.81	41.82	39.83
41462	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	25.60	24.49	23.37	22.26
41542	.2756		7.000	8.0	65	19	-	-	41.32	39.52	37.73	35.93
41602	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	-	-	35.56	34.01	32.47	30.92
41662	.3150		8.000	8.0	65	19	-	-	37.43	35.81	34.18	32.55
41672	.3150		8.000	8.0	75	12	25	7.4	56.49	54.03	51.58	49.12
41722	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	-	-	41.77	39.95	38.14	36.32
41802	.3937		10.000	10.0	70	24	-	-	62.85	60.12	57.38	54.65
41812	.3937		10.000	10.0	75	12	30	9.4	69.60	66.57	63.55	60.52
41822	.3937		10.000	10.0	100	12	35	9.4	83.79	80.15	76.50	72.86
41882	.4724		12.000	12.0	75	32	-	-	70.30	67.24	64.19	61.13
41892	.4724		12.000	12.0	75	16	30	11.4	75.67	72.38	69.09	65.80
41902	.4724		12.000	12.0	100	16	35	11.4	103.24	98.75	94.26	89.77
41912	.4724		12.000	12.0	100	16	40	11.4	103.24	98.75	94.26	89.77
41942	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	66.79	63.89	60.98	58.08
42022	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	133.12	127.34	121.55	115.76
42072	.6299		16.000	16.0	75	16	30	15.4	131.86	126.13	120.39	114.66
42082	.6299		16.000	16.0	100	40	-	-	140.12	134.02	127.93	121.84
42092	.6299		16.000	16.0	100	20	40	15.4	145.48	139.15	132.83	126.50
42102	.6299		16.000	16.0	125	20	60	15.4	185.90	177.82	169.73	161.65
42142	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	170.34	162.93	155.53	148.12
42212	.7874		20.000	20.0	100	32	-	-	228.69	218.75	208.80	198.86
42222	.7874		20.000	20.0	100	20	40	19	234.05	223.87	213.70	203.52
42232	.7874		20.000	20.0	125	20	60	19	271.02	259.24	247.45	235.67
42302	1.000	1"	25.400	1"	4"	1-5/8"	-	-	256.00	244.87	233.74	222.61



Series 142R

.1575" - .4724"
(4.000mm - 12.000mm)

HIGH EFFICIENCY MILLING



TOLERANCES	
d_1	+.000" –.001" (+.000 –.025mm)
d_2	h6
r	+.0005" –.0005" (+.0127 –.0127mm)

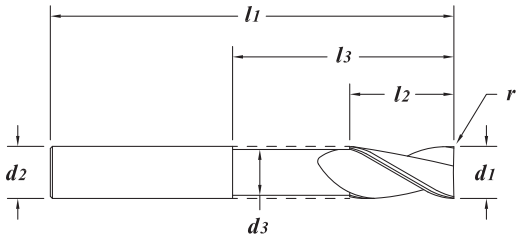
Recommended for aluminum

HSAL End Mill - Corner Radius

ALUMASTAR Coating

Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling
Specific coating engineered to repel aluminum
Engineered to run at 750-2500 SFM (225-750 M/Min.)
For high speed machining of aluminum
High velocity - high metal removal rate (for spindles 10,000 RPM and above)
Need to use properly balanced holders
Holds perpendicularity
Flats can be added within 48 hours





MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
39222	.1575		4.000	6.0	50	12	0.30	-	-	31.57	30.20	28.82	27.45
39232	.1575		4.000	6.0	65	6	0.50	20	3.7	38.59	36.92	35.24	33.56
39242	.1575		4.000	6.0	65	6	1.00	20	3.7	38.59	36.92	35.24	33.56
39282	.1875	3/16"	4.763	3/16"	2"	9/16"	.010"	-	-	23.40	22.39	21.37	20.35
39342	.1969		5.000	6.0	65	16	0.30	-	-	32.57	31.15	29.74	28.32
39352	.1969		5.000	6.0	75	8	0.50	20	4.7	53.21	50.90	48.58	46.27
39362	.1969		5.000	6.0	75	8	1.00	20	4.7	53.21	50.90	48.58	46.27
39402	.2362		6.000	6.0	65	19	0.30	-	-	31.52	30.15	28.78	27.41
39412	.2362		6.000	6.0	75	10	0.50	25	5.7	51.50	49.26	47.02	44.78
39422	.2362		6.000	6.0	75	10	1.00	25	5.7	51.50	49.26	47.02	44.78
39432	.2362		6.000	6.0	75	10	1.50	25	5.7	51.50	49.26	47.02	44.78
39442	.2362		6.000	6.0	75	10	2.00	25	5.7	51.50	49.26	47.02	44.78
39462	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	29.95	28.64	27.34	26.04
39602	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.015"	-	-	39.64	37.92	36.19	34.47
39662	.3150		8.000	8.0	65	19	0.50	-	-	41.70	39.89	38.07	36.26
39672	.3150		8.000	8.0	75	12	0.50	25	7.4	63.55	60.79	58.02	55.26
39682	.3150		8.000	8.0	75	12	1.00	25	7.4	63.55	60.79	58.02	55.26
39692	.3150		8.000	8.0	75	12	2.00	25	7.4	63.55	60.79	58.02	55.26
39702	.3150		8.000	8.0	75	12	3.00	25	7.4	63.55	60.79	58.02	55.26
39722	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	-	-	46.18	44.18	42.17	40.16
39802	.3937		10.000	10.0	70	24	0.50	-	-	70.84	67.76	64.68	61.60
39812	.3937		10.000	10.0	100	12	1.00	35	9.4	95.22	91.08	86.94	82.80
39822	.3937		10.000	10.0	100	12	1.50	35	9.4	95.22	91.08	86.94	82.80
39832	.3937		10.000	10.0	100	12	2.00	35	9.4	95.22	91.08	86.94	82.80
39842	.3937		10.000	10.0	100	12	3.00	35	9.4	95.22	91.08	86.94	82.80
39882	.4724		12.000	12.0	75	32	0.50	-	-	87.62	83.81	80.00	76.19
39892	.4724		12.000	12.0	100	16	0.50	40	11.4	112.62	107.72	102.83	97.93
39902	.4724		12.000	12.0	100	16	1.00	40	11.4	112.62	107.72	102.83	97.93
39912	.4724		12.000	12.0	100	16	1.50	40	11.4	112.62	107.72	102.83	97.93
39922	.4724		12.000	12.0	100	16	2.00	40	11.4	112.62	107.72	102.83	97.93
39932	.4724		12.000	12.0	100	16	3.00	40	11.4	112.62	107.72	102.83	97.93

GARR TOOL®

† *Metric equivalents are for reference only*

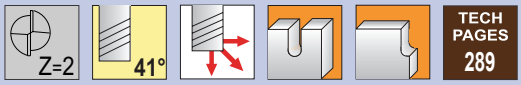
EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
39942	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	83.24	79.62	76.00	72.38
40022	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	143.99	137.73	131.47	125.21
40082	.6299		16.000	16.0	100	40	1.00	-	-	151.58	144.99	138.40	131.81
40092	.6299		16.000	16.0	125	20	1.00	60	15.4	205.98	197.02	188.07	179.11
40102	.6299		16.000	16.0	125	20	2.00	60	15.4	205.98	197.02	188.07	179.11
40142	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	186.88	178.75	170.63	162.50
40182	.7874		20.000	20.0	100	40	1.00	-	-	262.32	250.91	239.51	228.10
40192	.7874		20.000	20.0	150	20	1.00	65	19.0	359.21	343.60	327.98	312.36
40202	.7874		20.000	20.0	150	20	2.00	65	19.0	359.21	343.60	327.98	312.36
40212	.7874		20.000	20.0	150	20	3.00	65	19.0	359.21	343.60	327.98	312.36





Series 142B

HIGH EFFICIENCY MILLING



TOLERANCES	
d_1	+.000" –.001" (+.000 –.025mm)
d_2	h6
ball radius	+.0000" –.0005" (+.0000 –.0127mm)

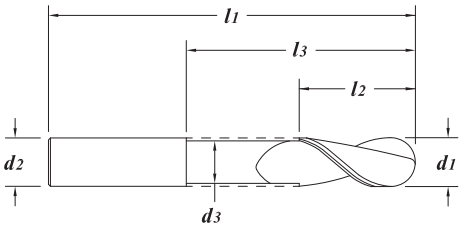
Recommended for aluminum

HSAL End Mill - Ball End

ALUMASTAR Coating



Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling
Specific coating engineered to repel aluminum
Engineered to run at 750-2500 SFM (225-750 M/Min.)
For high speed machining of aluminum
High velocity - high metal removal rate (for spindles 10,000 RPM and above)
Need to use properly balanced holders
Holds perpendicularity
Honed edge on radius for improved finish
Flats can be added within 48 hours



EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
42522	.1575		4.000	6.0	50	12	-	-	31.57	30.20	28.82	27.45
42582	.1875	3/16"	4.763	3/16"	2"	9/16"	-	-	23.40	22.39	21.37	20.35
42642	.1969		5.000	6.0	65	16	-	-	32.57	31.15	29.74	28.32
42702	.2362		6.000	6.0	65	19	-	-	31.52	30.15	28.78	27.41
42762	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	29.95	28.64	27.34	26.04
42764	.2500	1/4"	6.350	1/4"	4"	3/8"	1-1/8"	.235"	51.89	49.63	47.38	45.12
42842	.2756		7.000	8.0	65	19	-	-	45.84	43.85	41.85	39.86
42902	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	-	-	39.64	37.92	36.19	34.47
42962	.3150		8.000	8.0	65	19	-	-	41.70	39.89	38.07	36.26
43022	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	-	-	46.18	44.18	42.17	40.16
43023	.3750	3/8"	9.525	3/8"	4"	1/2"	1-1/8"	.355"	78.88	75.45	72.02	68.59
43102	.3937		10.000	10.0	70	24	-	-	70.84	67.76	64.68	61.60
43182	.4724		12.000	12.0	75	32	-	-	87.62	83.81	80.00	76.19
43242	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	83.24	79.62	76.00	72.38
43243	.5000	1/2"	12.700	1/2"	4"	5/8"	2-1/4"	.475"	106.98	102.33	97.68	93.03
43322	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	143.99	137.73	131.47	125.21
43382	.6299		16.000	16.0	100	40	-	-	151.58	144.99	138.40	131.81
43442	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	186.88	178.75	170.63	162.50
43444	.7500	3/4"	19.050	3/4"	5"	1"	3-1/16"	.715"	256.35	245.20	234.06	222.91
43482	.7874		20.000	20.0	100	32	-	-	262.32	250.91	239.51	228.10
43542	.9843		25.000	25.0	100	38	-	-	303.53	290.33	277.14	263.94
43602	1.000	1"	25.400	1"	4"	1-5/8"	-	-	318.70	304.84	290.99	277.13

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.001" (+.000 –.025mm)
d_2	h6

HIGH EFFICIENCY MILLING

Z=3 | 38° | TECH PAGES 289

Series 143M

.1181" - .3150"
(3.000mm - 8.000mm)

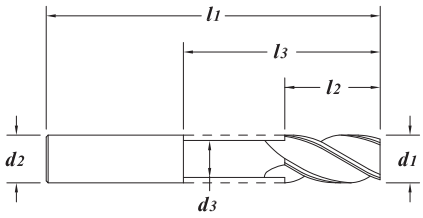
Recommended for aluminum



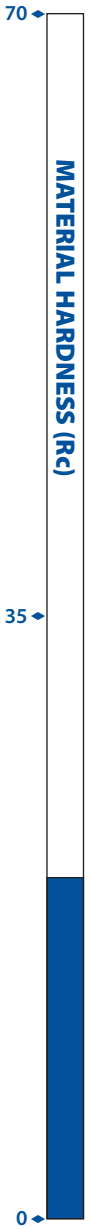
HSAL End Mill - Square End

ALUMASTAR Coating

Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling
Specific coating engineered to repel aluminum
Engineered to run at 750-2500 SFM (225-750 M/Min.)
For high speed machining of aluminum
High velocity - high metal removal rate (for 5,000-20,000 RPM spindles)
Need to use properly balanced holders
Holds perpendicularity
Flats can be added within 48 hours



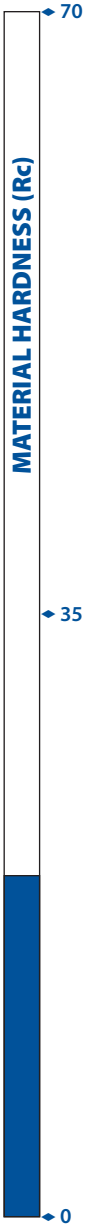
EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
41173	.1181		3.000	3.0	38	6	-	-	20.29	19.40	18.52	17.64
41183	.1181		3.000	3.0	38	12	-	-	20.29	19.40	18.52	17.64
41193	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	-	-	19.76	18.90	18.04	17.18
41203	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	-	-	19.76	18.90	18.04	17.18
41213	.1575		4.000	6.0	50	8	-	-	26.97	25.80	24.62	23.45
41223	.1575		4.000	6.0	50	12	-	-	26.97	25.80	24.62	23.45
41243	.1575		4.000	6.0	65	6	20	3.7	33.76	32.30	30.83	29.36
41273	.1875	3/16"	4.763	3/16"	2"	5/16"	-	-	20.33	19.45	18.56	17.68
41283	.1875	3/16"	4.763	3/16"	2"	9/16"	-	-	20.33	19.45	18.56	17.68
41303	.1875	3/16"	4.763	3/16"	3"	7/32"	3/4"	.170"	38.17	36.51	34.85	33.19
41313	.1875	3/16"	4.763	3/16"	3"	1"	-	-	32.81	31.38	29.96	28.53
41343	.1969		5.000	6.0	65	16	-	-	27.83	26.62	25.41	24.20
41363	.1969		5.000	6.0	75	8	20	4.7	47.32	45.27	43.21	41.15
41403	.2362		6.000	6.0	65	19	-	-	26.94	25.77	24.60	23.43
41423	.2362		6.000	6.0	75	10	25	5.7	45.80	43.81	41.82	39.83
39735	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	24.29	23.23	22.18	21.12
39737	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-	24.29	23.23	22.18	21.12
41453	.2500	1/4"	6.350	1/4"	2-1/2"	3/8"	-	-	25.60	24.49	23.37	22.26
41463	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	25.60	24.49	23.37	22.26
41473	.2500	1/4"	6.350	1/4"	3"	1"	-	-	38.81	37.13	35.44	33.75
41475	.2500	1/4"	6.350	1/4"	3"	1-1/4"	-	-	38.81	37.13	35.44	33.75
41493	.2500	1/4"	6.350	1/4"	4"	3/8"	1-1/8"	.235"	46.28	44.26	42.25	40.24
41503	.2500	1/4"	6.350	1/4"	4"	3/8"	2-1/8"	.235"	51.65	49.40	47.16	44.91
41511	.2500	1/4"	6.350	1/4"	4"	1-1/2"	-	-	40.92	39.14	37.36	35.58
41513	.2500	1/4"	6.350	1/4"	4"	1-5/8"	-	-	40.92	39.14	37.36	35.58
41543	.2756		7.000	8.0	65	19	-	-	41.32	39.52	37.73	35.93
41563	.2756		7.000	8.0	75	12	25	6.4	62.08	59.38	56.68	53.98
41593	.3125	5/16"	7.938	5/16"	2-1/2"	7/16"	-	-	35.56	34.01	32.47	30.92
41603	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	-	-	35.56	34.01	32.47	30.92
41623	.3125	5/16"	7.938	5/16"	4"	7/16"	1-1/8"	.297"	60.72	58.08	55.44	52.80
39739	.3150		8.000	8.0	50	12	-	-	33.60	32.14	30.68	29.22
41663	.3150		8.000	8.0	65	19	-	-	37.43	35.81	34.18	32.55
41683	.3150		8.000	8.0	75	12	25	7.4	56.49	54.03	51.58	49.12
41685	.3150		8.000	8.0	75	26	-	-	50.95	48.73	46.52	44.30
41687	.3150		8.000	8.0	75	30	-	-	50.95	48.73	46.52	44.30
41693	.3150		8.000	8.0	100	12	55	7.4	69.26	66.25	63.24	60.23



continued →

Series 143M *(continued)*

.3750" - .6299"
(9.525mm - 16.000mm)



EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
39741	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	37.41	35.78	34.16	32.53
41713	.3750	3/8"	9.525	3/8"	2-1/2"	1/2"	-	-	41.77	39.95	38.14	36.32
39743	.3750	3/8"	9.525	3/8"	2-1/2"	3/4"	-	-	41.77	39.95	38.14	36.32
41723	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	-	-	41.77	39.95	38.14	36.32
41733	.3750	3/8"	9.525	3/8"	3"	1"	-	-	53.84	51.50	49.16	46.82
41735	.3750	3/8"	9.525	3/8"	3"	1-1/4"	-	-	53.84	51.50	49.16	46.82
41737	.3750	3/8"	9.525	3/8"	3-1/2"	1-1/2"	-	-	57.78	55.26	52.75	50.24
41763	.3750	3/8"	9.525	3/8"	4"	1/2"	2-1/8"	.355"	70.59	67.52	64.45	61.38
41773	.3750	3/8"	9.525	3/8"	4"	1-5/8"	-	-	59.86	57.26	54.65	52.05
42363	.3750	3/8"	9.525	3/8"	4"	2"	-	-	59.86	57.26	54.65	52.05
41783	.3750	3/8"	9.525	3/8"	6"	1/2"	4"	.355"	106.95	102.30	97.65	93.00
39745	.3937		10.000	10.0	50	14	-	-	57.75	55.24	52.73	50.22
41803	.3937		10.000	10.0	70	24	-	-	62.85	60.12	57.38	54.65
41805	.3937		10.000	10.0	75	30	-	-	66.18	63.31	60.43	57.55
41843	.3937		10.000	10.0	100	12	35	9.4	83.79	80.15	76.50	72.86
41853	.3937		10.000	10.0	100	12	55	9.4	89.15	85.27	81.40	77.52
41863	.3937		10.000	10.0	150	12	110	9.4	124.92	119.49	114.06	108.63
39747	.4724		12.000	12.0	65	16	-	-	65.94	63.07	60.21	57.34
39749	.4724		12.000	12.0	75	26	-	-	70.30	67.24	64.19	61.13
41883	.4724		12.000	12.0	75	32	-	-	70.30	67.24	64.19	61.13
41893	.4724		12.000	12.0	100	50	-	-	91.92	87.92	83.93	79.93
41903	.4724		12.000	12.0	100	16	40	11.4	103.24	98.75	94.26	89.77
41913	.4724		12.000	12.0	100	16	55	11.4	103.24	98.75	94.26	89.77
41923	.4724		12.000	12.0	150	16	110	11.4	157.81	150.95	144.09	137.23
39751	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	62.56	59.84	57.12	54.40
39753	.5000	1/2"	12.700	1/2"	2-1/2"	3/4"	-	-	62.56	59.84	57.12	54.40
41933	.5000	1/2"	12.700	1/2"	3"	5/8"	-	-	66.79	63.89	60.98	58.08
39755	.5000	1/2"	12.700	1/2"	3"	1"	-	-	66.79	63.89	60.98	58.08
41943	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	66.79	63.89	60.98	58.08
41945	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	-	-	85.26	81.55	77.85	74.14
41963	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	87.33	83.53	79.74	75.94
41965	.5000	1/2"	12.700	1/2"	4"	1-3/4"	-	-	87.33	83.53	79.74	75.94
41973	.5000	1/2"	12.700	1/2"	4"	2"	-	-	87.33	83.53	79.74	75.94
41983	.5000	1/2"	12.700	1/2"	4"	5/8"	2-1/8"	.475"	98.06	93.80	89.53	85.27
41993	.5000	1/2"	12.700	1/2"	6"	5/8"	4-1/8"	.475"	149.93	143.41	136.89	130.37
42003	.5000	1/2"	12.700	1/2"	6"	3-1/8"	-	-	128.48	122.89	117.31	111.72
39757	.6250	5/8"	15.875	5/8"	3"	3/4"	-	-	123.76	118.38	113.00	107.62
42013	.6250	5/8"	15.875	5/8"	3-1/2"	3/4"	-	-	127.33	121.79	116.26	110.72
39759	.6250	5/8"	15.875	5/8"	3-1/2"	1"	-	-	127.33	121.79	116.26	110.72
42016	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	127.33	121.79	116.26	110.72
42021	.6250	5/8"	15.875	5/8"	4"	1-1/2"	-	-	133.12	127.34	121.55	115.76
42023	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	133.12	127.34	121.55	115.76
42025	.6250	5/8"	15.875	5/8"	4"	1-3/4"	-	-	133.12	127.34	121.55	115.76
42373	.6250	5/8"	15.875	5/8"	4"	2-1/8"	-	-	133.12	127.34	121.55	115.76
42033	.6250	5/8"	15.875	5/8"	6"	3/4"	2-3/8"	.590"	185.81	177.73	169.65	161.57
42043	.6250	5/8"	15.875	5/8"	6"	3/4"	4-3/8"	.590"	196.54	187.99	179.45	170.90
42053	.6250	5/8"	15.875	5/8"	6"	3-1/4"	-	-	175.08	167.46	159.85	152.24
42083	.6299		16.000	16.0	100	40	-	-	140.12	134.02	127.93	121.84
42103	.6299		16.000	16.0	100	20	40	15.4	145.48	139.15	132.83	126.50
42113	.6299		16.000	16.0	125	20	60	15.4	185.90	177.82	169.73	161.65
42123	.6299		16.000	16.0	150	20	110	15.4	206.90	197.90	188.91	179.91

GARR TOOL®

† *Metric equivalents are for reference only*

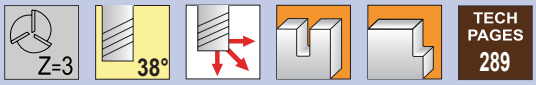
EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
42133	.7500	3/4"	19.050	3/4"	4"	1"	-	-	170.34	162.93	155.53	148.12
42136	.7500	3/4"	19.050	3/4"	4"	1-1/4"	-	-	170.34	162.93	155.53	148.12
42141	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	170.34	162.93	155.53	148.12
42143	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	170.34	162.93	155.53	148.12
42145	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	170.34	162.93	155.53	148.12
42153	.7500	3/4"	19.050	3/4"	5"	2-1/4"	-	-	224.92	215.14	205.36	195.58
42155	.7500	3/4"	19.050	3/4"	5"	2-1/2"	-	-	224.92	215.14	205.36	195.58
42163	.7500	3/4"	19.050	3/4"	6"	1"	2-1/2"	.715"	244.67	234.04	223.40	212.76
42173	.7500	3/4"	19.050	3/4"	6"	1"	4-3/8"	.715"	252.25	241.29	230.32	219.35
42193	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	237.16	226.85	216.54	206.23
42203	.7874		20.000	20.0	100	25	-	-	228.69	218.75	208.80	198.86
42213	.7874		20.000	20.0	100	32	-	-	228.69	218.75	208.80	198.86
42223	.7874		20.000	20.0	100	20	40	19.0	234.05	223.87	213.70	203.52
42226	.7874		20.000	20.0	125	20	60	19.0	271.02	259.24	247.45	235.67
42233	.7874		20.000	20.0	150	20	85	19.0	314.05	300.40	286.74	273.09
42236	.7874		20.000	20.0	150	20	110	19.0	319.44	305.55	291.66	277.77
42243	.9843		25.000	25.0	100	38	-	-	263.88	252.41	240.93	229.46
42283	.9843		25.000	25.0	100	25	50	24.0	269.22	257.51	245.81	234.10
42286	.9843		25.000	25.0	125	25	65	24.0	336.50	321.87	307.24	292.61
42291	.9843		25.000	25.0	150	25	90	24.0	422.12	403.77	385.41	367.06
42293	1.000	1"	25.400	1"	4"	1"	-	-	256.00	244.87	233.74	222.61
42303	1.000	1"	25.400	1"	4"	1-5/8"	-	-	256.00	244.87	233.74	222.61
42313	1.000	1"	25.400	1"	5"	2"	-	-	316.02	302.28	288.54	274.80
42343	1.000	1"	25.400	1"	6"	1-1/4"	3-3/8"	.960"	409.45	391.64	373.84	356.04
42353	1.000	1"	25.400	1"	6"	3-1/4"	-	-	393.38	376.28	359.17	342.07



Series 143R

.1181" - .2362"
(3.000mm - 6.000mm)

HIGH EFFICIENCY MILLING



TOLERANCES	
d_1	+.000" –.001" (+.000 –.025mm)
d_2	h6
r	+.0005" –.0005" (+.0127 –.0127mm)

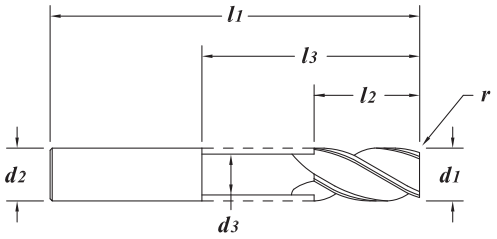
Recommended for aluminum



HSAL End Mill - Corner Radius

ALUMASTAR Coating

Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling
Specific coating engineered to repel aluminum
Engineered to run at 750-2500 SFM (225-750 M/Min.)
For high speed machining of aluminum
High velocity - high metal removal rate (for 5,000-20,000 RPM spindles)
Need to use properly balanced holders
Holds perpendicularity
Flats can be added within 48 hours



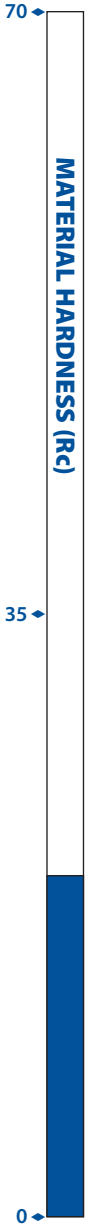
MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
39113	.1181		3.000	3.0	38	6	0.20	-	-	23.38	22.36	21.35	20.33
39123	.1181		3.000	3.0	38	6	0.50	-	-	23.38	22.36	21.35	20.33
39133	.1181		3.000	3.0	38	12	0.20	-	-	23.38	22.36	21.35	20.33
39143	.1181		3.000	3.0	38	12	0.50	-	-	23.38	22.36	21.35	20.33
39153	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.010"	-	-	22.69	21.70	20.72	19.73
39163	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.020"	-	-	22.69	21.70	20.72	19.73
39173	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.010"	-	-	22.69	21.70	20.72	19.73
39183	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	-	-	22.69	21.70	20.72	19.73
39193	.1575		4.000	6.0	50	8	0.20	-	-	31.57	30.20	28.82	27.45
39203	.1575		4.000	6.0	50	8	0.50	-	-	31.57	30.20	28.82	27.45
39213	.1575		4.000	6.0	50	12	0.20	-	-	31.57	30.20	28.82	27.45
39223	.1575		4.000	6.0	50	12	0.30	-	-	31.57	30.20	28.82	27.45
39225	.1575		4.000	6.0	50	12	0.50	-	-	31.57	30.20	28.82	27.45
39243	.1575		4.000	6.0	65	6	0.30	20	3.7	38.59	36.92	35.24	33.56
39253	.1575		4.000	6.0	65	6	0.50	20	3.7	38.59	36.92	35.24	33.56
39263	.1575		4.000	6.0	65	6	1.00	20	3.7	38.59	36.92	35.24	33.56
39265	.1875	3/16"	4.763	3/16"	2"	5/16"	.010"	-	-	23.40	22.39	21.37	20.35
39275	.1875	3/16"	4.763	3/16"	2"	5/16"	.020"	-	-	23.40	22.39	21.37	20.35
39280	.1875	3/16"	4.763	3/16"	2"	5/16"	.030"	-	-	23.40	22.39	21.37	20.35
39283	.1875	3/16"	4.763	3/16"	2"	9/16"	.010"	-	-	23.40	22.39	21.37	20.35
39285	.1875	3/16"	4.763	3/16"	2"	9/16"	.020"	-	-	23.40	22.39	21.37	20.35
39293	.1875	3/16"	4.763	3/16"	2"	9/16"	.030"	-	-	23.40	22.39	21.37	20.35
39303	.1875	3/16"	4.763	3/16"	3"	7/32"	.010"	3/4"	.170"	42.85	40.99	39.12	37.26
39313	.1875	3/16"	4.763	3/16"	3"	7/32"	.030"	3/4"	.170"	42.85	40.99	39.12	37.26
39343	.1969		5.000	6.0	65	16	0.30	-	-	32.57	31.15	29.74	28.32
39363	.1969		5.000	6.0	75	8	0.30	20	4.7	53.21	50.90	48.58	46.27
39373	.1969		5.000	6.0	75	8	0.50	20	4.7	53.21	50.90	48.58	46.27
39383	.1969		5.000	6.0	75	8	1.00	20	4.7	53.21	50.90	48.58	46.27
39403	.2362		6.000	6.0	65	19	0.30	-	-	31.52	30.15	28.78	27.41
39423	.2362		6.000	6.0	75	10	0.30	25	5.7	51.50	49.26	47.02	44.78
39433	.2362		6.000	6.0	75	10	0.50	25	5.7	51.50	49.26	47.02	44.78
39436	.2362		6.000	6.0	75	10	1.00	25	5.7	51.50	49.26	47.02	44.78
39439	.2362		6.000	6.0	75	10	1.50	25	5.7	51.50	49.26	47.02	44.78
39443	.2362		6.000	6.0	75	10	2.00	25	5.7	51.50	49.26	47.02	44.78

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
39314	.2500	1/4"	6.350	1/4"	2"	1/2"	.010"	-	-	28.42	27.18	25.95	24.71
39316	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-	-	28.42	27.18	25.95	24.71
39318	.2500	1/4"	6.350	1/4"	2"	1/2"	.020"	-	-	28.42	27.18	25.95	24.71
39453	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	-	29.95	28.64	27.34	26.04
39463	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	29.95	28.64	27.34	26.04
39320	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	29.95	28.64	27.34	26.04
39473	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	29.95	28.64	27.34	26.04
39483	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	-	45.41	43.44	41.46	39.49
39493	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	1-1/8"	.235"	51.89	49.63	47.38	45.12
40403	.2500	1/4"	6.350	1/4"	4"	3/8"	.030"	1-1/8"	.235"	51.89	49.63	47.38	45.12
39503	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	2-1/8"	.235"	57.22	54.74	52.25	49.76
39543	.2756		7.000	8.0	65	19	0.30	-	-	45.84	43.85	41.85	39.86
39563	.2756		7.000	8.0	75	12	0.30	25	6.4	69.84	66.80	63.77	60.73
39322	.3125	5/16"	7.938	5/16"	2"	1/2"	.010"	-	-	36.26	34.68	33.11	31.53
39324	.3125	5/16"	7.938	5/16"	2"	1/2"	.020"	-	-	36.26	34.68	33.11	31.53
39593	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.010"	-	-	39.64	37.92	36.19	34.47
39603	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.015"	-	-	39.64	37.92	36.19	34.47
39326	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.020"	-	-	39.64	37.92	36.19	34.47
39613	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.030"	-	-	39.64	37.92	36.19	34.47
39623	.3125	5/16"	7.938	5/16"	4"	7/16"	.015"	1-1/8"	.297"	68.21	65.24	62.28	59.31
39633	.3125	5/16"	7.938	5/16"	4"	7/16"	.030"	1-1/8"	.297"	68.21	65.24	62.28	59.31
39328	.3150		8.000	8.0	50	12	0.50	-	-	37.95	36.30	34.65	33.00
39663	.3150		8.000	8.0	65	19	0.50	-	-	41.70	39.89	38.07	36.26
39683	.3150		8.000	8.0	75	12	0.50	25	7.4	63.55	60.79	58.02	55.26
39688	.3150		8.000	8.0	75	12	1.00	25	7.4	63.55	60.79	58.02	55.26
39693	.3150		8.000	8.0	75	12	2.00	25	7.4	63.55	60.79	58.02	55.26
39698	.3150		8.000	8.0	75	12	3.00	25	7.4	63.55	60.79	58.02	55.26
39330	.3750	3/8"	9.525	3/8"	2"	1/2"	.010"	-	-	42.68	40.82	38.97	37.11
39332	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	-	42.68	40.82	38.97	37.11
39703	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	-	-	46.18	44.18	42.17	40.16
39713	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	-	-	46.18	44.18	42.17	40.16
39334	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	-	-	46.18	44.18	42.17	40.16
39723	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	-	-	46.18	44.18	42.17	40.16
39733	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	-	-	46.18	44.18	42.17	40.16
39734	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.120"	-	-	46.18	44.18	42.17	40.16
39738	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	-	59.55	56.96	54.37	51.78
39763	.3750	3/8"	9.525	3/8"	4"	1/2"	.030"	2-1/8"	.355"	78.88	75.45	72.02	68.59
39773	.3750	3/8"	9.525	3/8"	4"	1/2"	.060"	2-1/8"	.355"	78.88	75.45	72.02	68.59
39783	.3750	3/8"	9.525	3/8"	6"	1/2"	.030"	4"	.355"	115.17	110.17	105.16	100.15
39336	.3937		10.000	10.0	50	14	0.50	-	-	64.17	61.38	58.59	55.80
39803	.3937		10.000	10.0	70	24	0.50	-	-	70.84	67.76	64.68	61.60
39843	.3937		10.000	10.0	100	12	0.50	35	9.4	95.22	91.08	86.94	82.80
39848	.3937		10.000	10.0	100	12	1.00	35	9.4	95.22	91.08	86.94	82.80
39853	.3937		10.000	10.0	100	12	1.50	35	9.4	95.22	91.08	86.94	82.80
39863	.3937		10.000	10.0	100	12	2.00	35	9.4	95.22	91.08	86.94	82.80
39873	.3937		10.000	10.0	100	12	3.00	35	9.4	95.22	91.08	86.94	82.80
39344	.4724		12.000	12.0	65	16	0.50	-	-	76.88	73.54	70.19	66.85
39883	.4724		12.000	12.0	75	32	0.50	-	-	87.62	83.81	80.00	76.19
39346	.4724		12.000	12.0	75	32	0.75	-	-	87.62	83.81	80.00	76.19
39348	.4724		12.000	12.0	75	32	1.00	-	-	87.62	83.81	80.00	76.19
39903	.4724		12.000	12.0	100	16	0.50	40	11.4	112.62	107.72	102.83	97.93
39907	.4724		12.000	12.0	100	16	1.00	40	11.4	112.62	107.72	102.83	97.93
39911	.4724		12.000	12.0	100	16	1.50	40	11.4	112.62	107.72	102.83	97.93
39915	.4724		12.000	12.0	100	16	2.00	40	11.4	112.62	107.72	102.83	97.93
39919	.4724		12.000	12.0	100	16	3.00	40	11.4	112.62	107.72	102.83	97.93



continued ⟶

Series 143R *(continued)*

.5000" - 1.000"
(12.700mm - 25.400mm)

MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
39353	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	73.04	69.86	66.69	63.51
39355	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	73.04	69.86	66.69	63.51
39923	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	83.24	79.62	76.00	72.38
39933	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	83.24	79.62	76.00	72.38
39356	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	83.24	79.62	76.00	72.38
39943	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	83.24	79.62	76.00	72.38
39953	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	83.24	79.62	76.00	72.38
39963	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	-	83.24	79.62	76.00	72.38
39965	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	83.24	79.62	76.00	72.38
39967	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.190"	-	-	83.24	79.62	76.00	72.38
39972	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.015"	-	-	96.26	92.07	87.89	83.70
39973	.5000	1/2"	12.700	1/2"	4"	2"	.010"	-	-	96.26	92.07	87.89	83.70
40413	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	96.26	92.07	87.89	83.70
40423	.5000	1/2"	12.700	1/2"	4"	2"	.060"	-	-	96.26	92.07	87.89	83.70
40433	.5000	1/2"	12.700	1/2"	4"	5/8"	.010"	2-1/8"	.475"	106.98	102.33	97.68	93.03
39983	.5000	1/2"	12.700	1/2"	4"	5/8"	.030"	2-1/8"	.475"	106.98	102.33	97.68	93.03
40443	.5000	1/2"	12.700	1/2"	4"	5/8"	.060"	2-1/8"	.475"	106.98	102.33	97.68	93.03
40453	.5000	1/2"	12.700	1/2"	4"	5/8"	.120"	2-1/8"	.475"	106.98	102.33	97.68	93.03
39993	.5000	1/2"	12.700	1/2"	6"	5/8"	.030"	4-1/8"	.475"	160.55	153.57	146.59	139.61
39366	.6250	5/8"	15.875	5/8"	3"	3/4"	.010"	-	-	134.31	128.47	122.63	116.79
39368	.6250	5/8"	15.875	5/8"	3"	3/4"	.020"	-	-	134.31	128.47	122.63	116.79
39369	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	-	-	138.18	132.18	126.17	120.16
39370	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	138.18	132.18	126.17	120.16
40463	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.015"	-	-	143.99	137.73	131.47	125.21
39372	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.020"	-	-	143.99	137.73	131.47	125.21
40023	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	143.99	137.73	131.47	125.21
40473	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.060"	-	-	143.99	137.73	131.47	125.21
40483	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.120"	-	-	143.99	137.73	131.47	125.21
40485	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.190"	-	-	143.99	137.73	131.47	125.21
40033	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	2-3/8"	.590"	205.88	196.93	187.98	179.03
40043	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-3/8"	.590"	216.64	207.22	197.80	188.38
40083	.6299		16.000	16.0	100	40	1.00	-	-	151.58	144.99	138.40	131.81
40103	.6299		16.000	16.0	100	20	1.00	40	15.4	156.94	150.12	143.29	136.47
40113	.6299		16.000	16.0	125	20	2.00	60	15.4	205.98	197.02	188.07	179.11
40118	.6299		16.000	16.0	125	20	3.00	60	15.4	205.98	197.02	188.07	179.11
40123	.6299		16.000	16.0	125	20	4.00	60	15.4	205.98	197.02	188.07	179.11
39374	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.020"	-	-	186.88	178.75	170.63	162.50
40133	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.015"	-	-	186.88	178.75	170.63	162.50
39376	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.020"	-	-	186.88	178.75	170.63	162.50
40143	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	186.88	178.75	170.63	162.50
40153	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.060"	-	-	186.88	178.75	170.63	162.50
40493	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.120"	-	-	186.88	178.75	170.63	162.50
40495	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.190"	-	-	186.88	178.75	170.63	162.50
40497	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.250"	-	-	186.88	178.75	170.63	162.50
40503	.7500	3/4"	19.050	3/4"	6"	1"	.015"	2-1/2"	.715"	278.50	266.39	254.28	242.17
40163	.7500	3/4"	19.050	3/4"	6"	1"	.030"	2-1/2"	.715"	278.50	266.39	254.28	242.17
40513	.7500	3/4"	19.050	3/4"	6"	1"	.060"	2-1/2"	.715"	278.50	266.39	254.28	242.17
40523	.7500	3/4"	19.050	3/4"	6"	1"	.120"	2-1/2"	.715"	278.50	266.39	254.28	242.17
40171	.7500	3/4"	19.050	3/4"	6"	1"	.015"	4"	.715"	286.06	273.63	261.19	248.75
40173	.7500	3/4"	19.050	3/4"	6"	1"	.030"	4-3/8"	.715"	286.06	273.63	261.19	248.75
40183	.7874		20.000	20.0	100	32	1.00	-	-	262.32	250.91	239.51	228.10
40223	.7874		20.000	20.0	100	20	1.00	40	19.0	267.67	256.04	244.40	232.76
40225	.7874		20.000	20.0	150	20	1.00	65	19.0	359.21	343.60	327.98	312.36
40226	.7874		20.000	20.0	150	20	2.00	65	19.0	359.21	343.60	327.98	312.36
40229	.7874		20.000	20.0	150	20	3.00	65	19.0	359.21	343.60	327.98	312.36
40231	.7874		20.000	20.0	150	20	4.00	65	19.0	359.21	343.60	327.98	312.36
40243	.9843		25.000	25.0	100	38	1.00	-	-	303.53	290.33	277.14	263.94
40293	1.000	1"	25.400	1"	4"	1-5/8"	.030"	-	-	318.70	304.84	290.99	277.13
40303	1.000	1"	25.400	1"	4"	1-5/8"	.060"	-	-	318.70	304.84	290.99	277.13
40313	1.000	1"	25.400	1"	4"	1-5/8"	.120"	-	-	318.70	304.84	290.99	277.13
40343	1.000	1"	25.400	1"	6"	1-1/4"	.030"	3-3/8"	.960"	467.05	446.74	426.44	406.13
40353	1.000	1"	25.400	1"	6"	1-1/4"	.060"	3-3/8"	.960"	467.05	446.74	426.44	406.13
40363	1.000	1"	25.400	1"	6"	1-1/4"	.120"	3-3/8"	.960"	467.05	446.74	426.44	406.13
NEW 40366	1.000	1"	25.400	1"	6"	1-1/4"	.030"	4"	.960"	467.05	446.74	426.44	406.13

GARR TOOL®

† *Metric equivalents are for reference only*

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.2362" - .5000"
(6.000mm - 12.700mm)

HIGH EFFICIENCY MILLING






TECH PAGES 304-305

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6

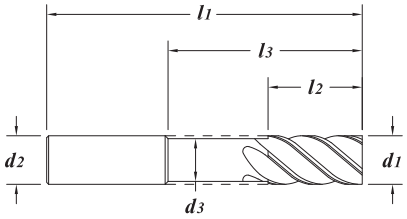
Recommended for titanium and steels under 40Rc

Multi-Flute End Mill - Square End

AlCrN Coating

Solid submicron grain carbide end mill - non-center cutting
Multiple flutes for increased feed rates
Odd number of flutes to naturally break up harmonics
Engineered for High Efficiency Milling
Up to 8% Radial (ap) engagement
Can be used to finish most steels under 40Rc, as well as aluminum
Conventional grind for better finish cutting and less push off when finishing
Regrindable





MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	Number Flutes	1-11	12-24	25-49	50-100
98390	.2362		6.000	6.0	50	12	-	-	7	25.67	24.55	23.44	22.32
98392	.2362		6.000	6.0	65	19	-	-	7	28.93	27.68	26.42	25.16
98394	.2362		6.000	6.0	100	38	-	-	7	48.21	46.11	44.02	41.92
98396	.2362		6.000	6.0	100	10	60	5.4	7	51.78	49.53	47.28	45.03
98398	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	7	24.62	23.55	22.48	21.41
98400	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	7	27.92	26.71	25.49	24.28
98402	.2500	1/4"	6.350	1/4"	4"	1-1/2"	-	-	7	46.25	44.24	42.23	40.22
98404	.3125	5/16"	7.938	5/16"	2"	7/16"	-	-	7	36.56	34.97	33.38	31.79
98406	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	-	-	7	39.84	38.10	36.37	34.64
98408	.3125	5/16"	7.938	5/16"	4"	1-1/2"	-	-	7	63.11	60.37	57.62	54.88
98410	.3150		8.000	8.0	50	12	-	-	7	37.05	35.44	33.83	32.22
98412	.3150		8.000	8.0	65	22	-	-	7	41.27	39.48	37.68	35.89
98414	.3150		8.000	8.0	100	38	-	-	7	65.71	62.85	60.00	57.14
98416	.3150		8.000	8.0	100	12	60	7.4	7	69.29	66.28	63.26	60.25
98418	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	7	43.99	42.08	40.16	38.25
98420	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	-	-	7	47.00	44.96	42.91	40.87
98422	.3750	3/8"	9.525	3/8"	3"	1-1/4"	-	-	7	60.51	57.88	55.25	52.62
98424	.3750	3/8"	9.525	3/8"	4"	2"	-	-	7	67.83	64.88	61.93	58.98
98426	.3937		10.000	10.0	50	16	-	-	7	51.23	49.01	46.78	44.55
98428	.3937		10.000	10.0	70	22	-	-	7	56.37	53.92	51.47	49.02
98430	.3937		10.000	10.0	100	38	-	-	7	85.46	81.74	78.03	74.31
98432	.3937		10.000	10.0	100	50	-	-	7	85.46	81.74	78.03	74.31
98434	.3937		10.000	10.0	100	16	60	9.4	7	89.04	85.17	81.30	77.43
98436	.4724		12.000	12.0	75	26	-	-	9	73.22	70.04	66.85	63.67
98438	.4724		12.000	12.0	75	32	-	-	9	73.22	70.04	66.85	63.67
98440	.4724		12.000	12.0	100	42	-	-	9	100.48	96.11	91.74	87.37
98442	.4724		12.000	12.0	100	52	-	-	9	100.48	96.11	91.74	87.37
98444	.4724		12.000	12.0	150	19	105	11.4	9	141.65	135.49	129.33	123.17
98446	.5000	1/2"	12.700	1/2"	3"	1"	-	-	9	70.30	67.24	64.19	61.13
98448	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	9	70.30	67.24	64.19	61.13
98450	.5000	1/2"	12.700	1/2"	4"	5/8"	2-1/8"	.470"	9	98.70	94.41	90.12	85.83
98452	.5000	1/2"	12.700	1/2"	4"	1-1/2"	-	-	9	95.13	90.99	86.86	82.72
98454	.5000	1/2"	12.700	1/2"	4"	2-1/8"	-	-	9	95.13	90.99	86.86	82.72

GARR TOOL®

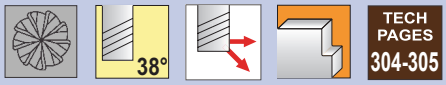
† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	Number Flutes	1-11	12-24	25-49	50-100
98456	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	9	144.76	138.47	132.17	125.88
98458	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	9	154.61	147.88	141.16	134.44
98460	.6250	5/8"	15.875	5/8"	6"	3-1/4"	-	-	9	212.73	203.48	194.23	184.98
98462	.6250	5/8"	15.875	5/8"	6"	3/4"	4-1/8"	.590"	9	216.30	206.90	197.49	188.09
98464	.6299		16.000	16.0	88	32	-	-	9	151.02	144.45	137.89	131.32
98466	.6299		16.000	16.0	100	42	-	-	9	161.21	154.20	147.19	140.18
98468	.6299		16.000	16.0	150	60	-	-	9	221.82	212.18	202.53	192.89
98470	.6299		16.000	16.0	150	80	-	-	9	221.82	212.18	202.53	192.89
98472	.6299		16.000	16.0	150	22	102	15.4	9	225.40	215.60	205.80	196.00
98474	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	11	214.91	205.57	196.22	186.88
98476	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	11	214.91	205.57	196.22	186.88
98478	.7500	3/4"	19.050	3/4"	5"	2-1/8"	-	-	11	288.48	275.94	263.39	250.85
98480	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	11	337.56	322.88	308.21	293.53
98484	.7874		20.000	20.0	100	26	-	-	11	279.19	267.05	254.91	242.77
98486	.7874		20.000	20.0	100	38	-	-	11	279.19	267.05	254.91	242.77
98488	.7874		20.000	20.0	150	60	-	-	11	351.62	336.34	321.05	305.76
98490	.7874		20.000	20.0	150	80	-	-	11	351.62	336.34	321.05	305.76
98494	1.000	1"	25.400	1"	4"	1-1/2"	-	-	13	296.36	283.47	270.59	257.70
98496	1.000	1"	25.400	1"	5"	2-1/4"	-	-	13	396.68	379.43	362.19	344.94
98498	1.000	1"	25.400	1"	6"	3-1/4"	-	-	13	516.74	494.27	471.81	449.34
98500	1.000	1"	25.400	1"	7"	4-1/4"	-	-	13	694.86	664.65	634.44	604.23

Series TMR

.4724"
(12.000mm)

HIGH EFFICIENCY MILLING



TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025mm –.025mm)

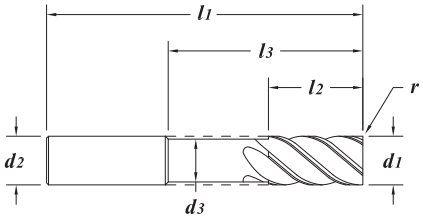
Recommended for titanium and steels under 40Rc



Multi-Flute End Mill - Corner Radius

AlCrN Coating

Solid submicron grain carbide end mill - non-center cutting
Multiple flutes for increased feed rates
Odd number of flutes to naturally break up harmonics
Engineered for High Efficiency Milling
Up to 8% Radial (ap) engagement
Can be used to finish most steels under 40Rc, as well as aluminum
Conventional grind for better finish cutting and less push off when finishing
Regrindable



MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	Number Flutes	1-11	12-24	25-49	50-100
98502	.4724	12.000	12.0	75	26	0.30	-	-	7	89.04	85.17	81.30	77.43
98504	.4724	12.000	12.0	75	26	0.50	-	-	7	89.04	85.17	81.30	77.43
98508	.4724	12.000	12.0	75	26	1.00	-	-	7	89.04	85.17	81.30	77.43
98516	.4724	12.000	12.0	75	26	4.00	-	-	7	89.04	85.17	81.30	77.43
98518	.4724	12.000	12.0	75	32	0.50	-	-	7	89.04	85.17	81.30	77.43
98522	.4724	12.000	12.0	75	32	1.00	-	-	7	89.04	85.17	81.30	77.43
98524	.4724	12.000	12.0	75	32	1.50	-	-	7	89.04	85.17	81.30	77.43
98528	.4724	12.000	12.0	75	32	3.00	-	-	7	89.04	85.17	81.30	77.43
98532	.4724	12.000	12.0	100	42	0.50	-	-	7	105.48	100.89	96.31	91.72
98538	.4724	12.000	12.0	100	42	1.50	-	-	7	105.48	100.89	96.31	91.72
98544	.4724	12.000	12.0	100	42	4.00	-	-	7	105.48	100.89	96.31	91.72
98546	.4724	12.000	12.0	100	52	0.50	-	-	7	105.48	100.89	96.31	91.72
98550	.4724	12.000	12.0	100	52	1.00	-	-	7	105.48	100.89	96.31	91.72
98552	.4724	12.000	12.0	100	52	1.50	-	-	7	105.48	100.89	96.31	91.72
98556	.4724	12.000	12.0	100	52	3.00	-	-	7	105.48	100.89	96.31	91.72
98560	.4724	12.000	12.0	150	19	0.50	105	11.4	7	146.34	139.98	133.61	127.25
98564	.4724	12.000	12.0	150	19	1.00	105	11.4	7	146.34	139.98	133.61	127.25
98570	.4724	12.000	12.0	150	19	3.00	105	11.4	7	146.34	139.98	133.61	127.25

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	*d1* † Diameter Decimal	Diameter	Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*r* Corner Radius	*l3* Reach Length	*d3* Neck Diameter	Number Flutes	1-11	12-24	25-49	50-100
98574	.5000	1/2"	12.700	1/2"	3"	1"	.010"	-	-	7	85.42	81.71	77.99	74.28
98576	.5000	1/2"	12.700	1/2"	3"	1"	.020"	-	-	7	85.42	81.71	77.99	74.28
98578	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	7	85.42	81.71	77.99	74.28
98580	.5000	1/2"	12.700	1/2"	3"	1"	.060"	-	-	7	85.42	81.71	77.99	74.28
98582	.5000	1/2"	12.700	1/2"	3"	1"	.090"	-	-	7	85.42	81.71	77.99	74.28
98584	.5000	1/2"	12.700	1/2"	3"	1"	.120"	-	-	7	85.42	81.71	77.99	74.28
98586	.5000	1/2"	12.700	1/2"	3"	1"	.125"	-	-	7	85.42	81.71	77.99	74.28
98588	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	7	85.42	81.71	77.99	74.28
98590	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	7	85.42	81.71	77.99	74.28
98592	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	7	85.42	81.71	77.99	74.28
98594	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	7	85.42	81.71	77.99	74.28
98598	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	-	7	85.42	81.71	77.99	74.28
98600	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	7	85.42	81.71	77.99	74.28
98602	.5000	1/2"	12.700	1/2"	4"	5/8"	.010"	2-1/8"	.470"	7	104.52	99.98	95.43	90.89
98604	.5000	1/2"	12.700	1/2"	4"	5/8"	.020"	2-1/8"	.470"	7	104.52	99.98	95.43	90.89
98606	.5000	1/2"	12.700	1/2"	4"	5/8"	.030"	2-1/8"	.470"	7	104.52	99.98	95.43	90.89
98608	.5000	1/2"	12.700	1/2"	4"	5/8"	.060"	2-1/8"	.470"	7	104.52	99.98	95.43	90.89
98610	.5000	1/2"	12.700	1/2"	4"	5/8"	.120"	2-1/8"	.470"	7	104.52	99.98	95.43	90.89
98612	.5000	1/2"	12.700	1/2"	4"	5/8"	.125"	2-1/8"	.470"	7	104.52	99.98	95.43	90.89
98614	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.010"	-	-	7	100.95	96.56	92.17	87.78
98616	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.020"	-	-	7	100.95	96.56	92.17	87.78
98618	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	-	7	100.95	96.56	92.17	87.78
98620	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.060"	-	-	7	100.95	96.56	92.17	87.78
98622	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.010"	-	-	7	100.95	96.56	92.17	87.78
98626	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	-	7	100.95	96.56	92.17	87.78
98628	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.060"	-	-	7	100.95	96.56	92.17	87.78
98630	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.120"	-	-	7	100.95	96.56	92.17	87.78
98632	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.125"	-	-	7	100.95	96.56	92.17	87.78
98634	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.010"	-	-	7	151.78	145.18	138.58	131.98
98636	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	7	151.78	145.18	138.58	131.98
98638	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	7	151.78	145.18	138.58	131.98
98640	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	7	151.78	145.18	138.58	131.98
98642	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	7	151.78	145.18	138.58	131.98
98644	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.125"	-	-	7	151.78	145.18	138.58	131.98
98646	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.010"	-	-	7	164.98	157.81	150.63	143.46
98648	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.020"	-	-	7	164.98	157.81	150.63	143.46
98652	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.060"	-	-	7	164.98	157.81	150.63	143.46
98654	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.120"	-	-	7	164.98	157.81	150.63	143.46
98658	.6250	5/8"	15.875	5/8"	6"	3-1/4"	.010"	-	-	7	227.11	217.24	207.36	197.49
98660	.6250	5/8"	15.875	5/8"	6"	3-1/4"	.020"	-	-	7	227.11	217.24	207.36	197.49
98662	.6250	5/8"	15.875	5/8"	6"	3-1/4"	.030"	-	-	7	227.11	217.24	207.36	197.49
98666	.6250	5/8"	15.875	5/8"	6"	3-1/4"	.120"	-	-	7	227.11	217.24	207.36	197.49
98670	.6250	5/8"	15.875	5/8"	6"	3/4"	.010"	4-1/8"	.590"	7	230.71	220.68	210.65	200.62
98672	.6250	5/8"	15.875	5/8"	6"	3/4"	.020"	4-1/8"	.590"	7	230.71	220.68	210.65	200.62
98674	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-1/8"	.590"	7	230.71	220.68	210.65	200.62
98678	.6250	5/8"	15.875	5/8"	6"	3/4"	.120"	4-1/8"	.590"	7	230.71	220.68	210.65	200.62

continued →

Series TMR *(continued)*

.6299" - .7874"
(16.000mm - 20.000mm)

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	Number Flutes	1-11	12-24	25-49	50-100
98680	.6299		16.000	16.0	88	32	0.50	-	-	7	158.38	151.49	144.61	137.72
98690	.6299		16.000	16.0	88	32	3.00	-	-	7	158.38	151.49	144.61	137.72
98696	.6299		16.000	16.0	100	42	0.50	-	-	7	168.42	161.10	153.77	146.45
98700	.6299		16.000	16.0	100	42	1.00	-	-	7	168.42	161.10	153.77	146.45
98704	.6299		16.000	16.0	100	42	2.00	-	-	7	168.42	161.10	153.77	146.45
98706	.6299		16.000	16.0	100	42	3.00	-	-	7	168.42	161.10	153.77	146.45
98708	.6299		16.000	16.0	100	42	4.00	-	-	7	168.42	161.10	153.77	146.45
98710	.6299		16.000	16.0	100	42	5.00	-	-	7	168.42	161.10	153.77	146.45
98712	.6299		16.000	16.0	150	60	0.50	-	-	7	236.19	225.92	215.65	205.38
98716	.6299		16.000	16.0	150	60	1.00	-	-	7	236.19	225.92	215.65	205.38
98720	.6299		16.000	16.0	150	60	2.00	-	-	7	236.19	225.92	215.65	205.38
98722	.6299		16.000	16.0	150	60	3.00	-	-	7	236.19	225.92	215.65	205.38
98724	.6299		16.000	16.0	150	60	4.00	-	-	7	236.19	225.92	215.65	205.38
98726	.6299		16.000	16.0	150	60	5.00	-	-	7	236.19	225.92	215.65	205.38
98732	.6299		16.000	16.0	150	80	1.00	-	-	7	236.19	225.92	215.65	205.38
98738	.6299		16.000	16.0	150	80	3.00	-	-	7	236.19	225.92	215.65	205.38
98744	.6299		16.000	16.0	150	22	0.50	102	15.4	7	239.78	229.35	218.93	208.50
98752	.6299		16.000	16.0	150	22	2.00	102	15.4	7	239.78	229.35	218.93	208.50
98754	.6299		16.000	16.0	150	22	3.00	102	15.4	7	239.78	229.35	218.93	208.50
98760	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.010"	-	-	9	226.37	216.52	206.68	196.84
98764	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	9	226.37	216.52	206.68	196.84
98766	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	9	226.37	216.52	206.68	196.84
98770	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.190"	-	-	9	226.37	216.52	206.68	196.84
98772	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.250"	-	-	9	226.37	216.52	206.68	196.84
98774	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.010"	-	-	9	226.37	216.52	206.68	196.84
98778	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	9	226.37	216.52	206.68	196.84
98784	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.190"	-	-	9	226.37	216.52	206.68	196.84
98788	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.010"	-	-	9	313.98	300.33	286.68	273.03
98790	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.020"	-	-	9	313.98	300.33	286.68	273.03
98794	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.060"	-	-	9	313.98	300.33	286.68	273.03
98796	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.120"	-	-	9	313.98	300.33	286.68	273.03
98800	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.250"	-	-	9	313.98	300.33	286.68	273.03
98802	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.010"	-	-	9	372.96	356.74	340.53	324.31
98804	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.020"	-	-	9	372.96	356.74	340.53	324.31
98806	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	9	372.96	356.74	340.53	324.31
98808	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.060"	-	-	9	372.96	356.74	340.53	324.31
98814	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.250"	-	-	9	372.96	356.74	340.53	324.31
98816	.7500	3/4"	19.050	3/4"	6"	1"	.010"	4-1/8"	.720"	9	376.54	360.17	343.80	327.43
98820	.7500	3/4"	19.050	3/4"	6"	1"	.030"	4-1/8"	.720"	9	376.54	360.17	343.80	327.43
98822	.7500	3/4"	19.050	3/4"	6"	1"	.060"	4-1/8"	.720"	9	376.54	360.17	343.80	327.43
98830	.7874		20.000	20.0	100	26	0.50	-	-	9	308.06	294.67	281.27	267.88
98834	.7874		20.000	20.0	100	26	1.00	-	-	9	308.06	294.67	281.27	267.88
98864	.7874		20.000	20.0	100	38	6.00	-	-	9	308.06	294.67	281.27	267.88
98866	.7874		20.000	20.0	150	60	0.50	-	-	9	378.70	362.23	345.77	329.30
98876	.7874		20.000	20.0	150	60	3.00	-	-	9	378.70	362.23	345.77	329.30
98882	.7874		20.000	20.0	150	60	6.00	-	-	9	378.70	362.23	345.77	329.30
98884	.7874		20.000	20.0	150	80	0.50	-	-	9	378.70	362.23	345.77	329.30

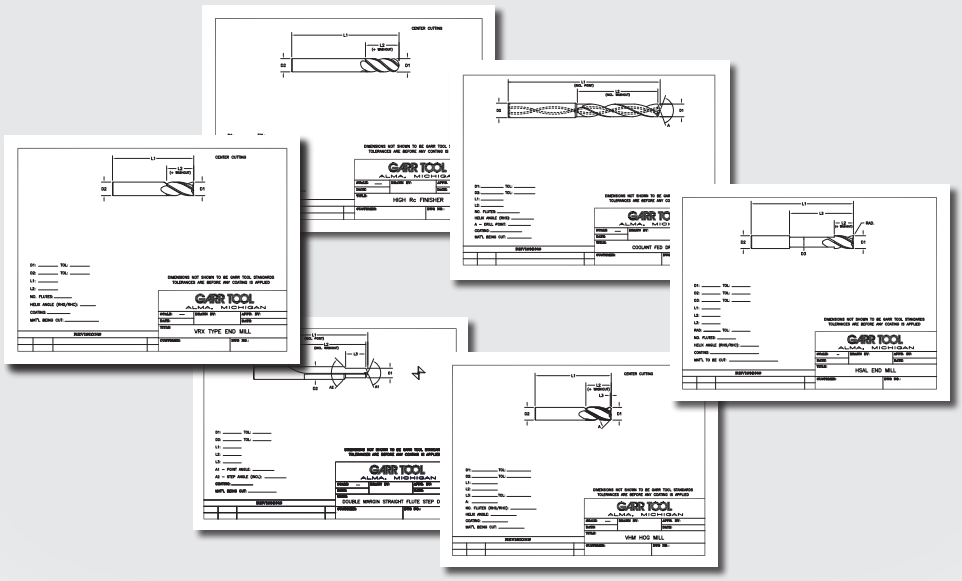
GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter			d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	Number Flutes	1-11	12-24	25-49	50-100
	Decimal		Metric											
98920	1.000	1"	25.400	1"	4"	1-1/2"	.015"	-	-	11	356.72	341.21	325.70	310.19
98924	1.000	1"	25.400	1"	4"	1-1/2"	.060"	-	-	11	356.72	341.21	325.70	310.19
98928	1.000	1"	25.400	1"	4"	1-1/2"	.120"	-	-	11	356.72	341.21	325.70	310.19
98934	1.000	1"	25.400	1"	5"	2-1/4"	.015"	-	-	11	438.92	419.84	400.75	381.67
98936	1.000	1"	25.400	1"	5"	2-1/4"	.030"	-	-	11	438.92	419.84	400.75	381.67
98942	1.000	1"	25.400	1"	5"	2-1/4"	.120"	-	-	11	438.92	419.84	400.75	381.67
98944	1.000	1"	25.400	1"	5"	2-1/4"	.190"	-	-	11	438.92	419.84	400.75	381.67
98946	1.000	1"	25.400	1"	5"	2-1/4"	.250"	-	-	11	438.92	419.84	400.75	381.67
98948	1.000	1"	25.400	1"	6"	3-1/4"	.030"	-	-	11	572.46	547.57	522.68	497.79
98950	1.000	1"	25.400	1"	6"	3-1/4"	.060"	-	-	11	572.46	547.57	522.68	497.79
98954	1.000	1"	25.400	1"	6"	3-1/4"	.190"	-	-	11	572.46	547.57	522.68	497.79
98958	1.000	1"	25.400	1"	7"	4-1/4"	.030"	-	-	11	750.54	717.90	685.27	652.64
98966	1.000	1"	25.400	1"	7"	4-1/4"	.250"	-	-	11	750.54	717.90	685.27	652.64







Access an assortment of 'fill-in-the-blank' prints from our website to aid in the quoting of custom tooling.

www.garrtool.com

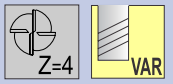
GARR TOOL®

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)
ball radius	+.000" –.001" (+.000 –.025mm)

NEW ITEMS

Series V4S, V4R, V4B

.1562" - .2188"
(3.967mm - 5.558mm)



TECH PAGES 296-297

Recommended for titanium, inconel, and stainless steel

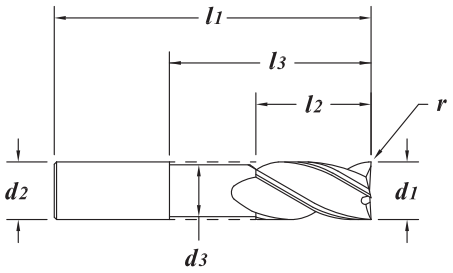


Variable Helix End Mill

AlCrN Coating

Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling
Helix geometry varies over length of flutes
Variable flute design helps with chip evacuation in slots and pockets
Variable rake aids in chip formation
PCT (Polish Carbide Treatment) enhances tool life
Minimizes burr on part
Smaller diameters can be modified with a flat within 48 hours

The combination of an extended flute length with a weldon flat may cause the flute washout to reach inside some end mill holders



	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50171	-	.1562	5/32"	3.967	1/4"	2"	1/2"	-	-	-	23.64	22.62	21.59	20.56
	50172	-	.1562	5/32"	3.967	1/4"	2"	1/2"	.010"	-	-	25.70	24.59	23.47	22.35
	50173	-	.1562	5/32"	3.967	1/4"	2"	1/2"	.015"	-	-	25.70	24.59	23.47	22.35
	50174	-	.1562	5/32"	3.967	1/4"	2"	1/2"	.020"	-	-	25.70	24.59	23.47	22.35
	50175	-	.1562	5/32"	3.967	1/4"	2"	1/2"	.030"	-	-	25.70	24.59	23.47	22.35
	50176	-	.1562	5/32"	3.967	1/4"	2"	1/2"	BALL	-	-	25.70	24.59	23.47	22.35
	50177	-	.1575		4.000	6.0	50	12	-	-	-	26.32	25.18	24.03	22.89
	50178	-	.1575		4.000	6.0	50	12	0.20	-	-	26.74	25.58	24.41	23.25
	50179	-	.1575		4.000	6.0	50	12	0.30	-	-	26.74	25.58	24.41	23.25
	50180	-	.1575		4.000	6.0	50	12	0.50	-	-	26.74	25.58	24.41	23.25
	50181	-	.1575		4.000	6.0	50	12	BALL	-	-	26.74	25.58	24.41	23.25
	50182	-	.1875	3/16"	4.763	1/4"	2"	1/2"	-	-	-	23.18	22.18	21.17	20.16
	50183	-	.1875	3/16"	4.763	1/4"	2"	1/2"	.010"	-	-	25.20	24.10	23.01	21.91
	50184	-	.1875	3/16"	4.763	1/4"	2"	1/2"	.015"	-	-	25.20	24.10	23.01	21.91
	50185	-	.1875	3/16"	4.763	1/4"	2"	1/2"	.020"	-	-	25.20	24.10	23.01	21.91
	50186	-	.1875	3/16"	4.763	1/4"	2"	1/2"	.030"	-	-	25.20	24.10	23.01	21.91
	50187	-	.1875	3/16"	4.763	1/4"	2"	1/2"	BALL	-	-	25.20	24.10	23.01	21.91
	50188	-	.1969		5.000	6.0	65	20	-	-	-	28.16	26.94	25.71	24.49
	50189	-	.1969		5.000	6.0	65	20	0.20	-	-	29.03	27.76	26.50	25.24
	50190	-	.1969		5.000	6.0	65	20	0.30	-	-	29.03	27.76	26.50	25.24
	50191	-	.1969		5.000	6.0	65	20	0.50	-	-	29.03	27.76	26.50	25.24
	50192	-	.1969		5.000	6.0	65	20	BALL	-	-	29.03	27.76	26.50	25.24
	50193	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	-	-	-	25.61	24.50	23.38	22.27
NEW	50194	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.010"	-	-	27.95	26.73	25.52	24.30
NEW	50195	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.015"	-	-	27.95	26.73	25.52	24.30
NEW	50196	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.020"	-	-	27.95	26.73	25.52	24.30
	50197	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.030"	-	-	27.95	26.73	25.52	24.30
	50198	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	BALL	-	-	27.95	26.73	25.52	24.30

70
35
0
MATERIAL HARDNESS (Rc)

continued →

Series V4S, V4R, V4B *(continued)*

.2362" - .2500"
(6.000mm - 6.350mm)

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal		d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
50236	-	.2362		6.000	6.0	65	12	-	-	-	24.73	23.65	22.58	21.50
50199	-	.2362		6.000	6.0	65	12	0.30	-	-	28.11	26.88	25.66	24.44
50200	-	.2362		6.000	6.0	65	12	0.50	-	-	28.11	26.88	25.66	24.44
50201	-	.2362		6.000	6.0	65	12	0.75	-	-	28.11	26.88	25.66	24.44
50202	-	.2362		6.000	6.0	65	12	1.00	-	-	28.11	26.88	25.66	24.44
50203	-	.2362		6.000	6.0	65	12	1.50	-	-	28.11	26.88	25.66	24.44
50252	-	.2362		6.000	6.0	65	12	BALL	-	-	28.11	26.88	25.66	24.44
50237	-	.2362		6.000	6.0	65	19	-	-	-	24.73	23.65	22.58	21.50
50204	-	.2362		6.000	6.0	65	19	0.30	-	-	28.11	26.88	25.66	24.44
50205	-	.2362		6.000	6.0	65	19	0.50	-	-	28.11	26.88	25.66	24.44
50206	-	.2362		6.000	6.0	65	19	1.00	-	-	28.11	26.88	25.66	24.44
50253	-	.2362		6.000	6.0	65	19	BALL	-	-	28.11	26.88	25.66	24.44
50540	-	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	-	21.15	20.23	19.31	18.39
50489	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.010"	-	-	24.40	23.34	22.28	21.22
50490	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.015"	-	-	24.40	23.34	22.28	21.22
50491	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-	-	24.40	23.34	22.28	21.22
50708	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.030"	-	-	24.40	23.34	22.28	21.22
50709	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.040"	-	-	24.40	23.34	22.28	21.22
50710	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.060"	-	-	24.40	23.34	22.28	21.22
50711	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.090"	-	-	24.40	23.34	22.28	21.22
50560	-	.2500	1/4"	6.350	1/4"	2"	3/8"	BALL	-	-	24.40	23.34	22.28	21.22
50645	-	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-	-	21.15	20.23	19.31	18.39
50614	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.010"	-	-	24.40	23.34	22.28	21.22
50616	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-	-	24.40	23.34	22.28	21.22
50618	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.020"	-	-	24.40	23.34	22.28	21.22
50712	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.030"	-	-	24.40	23.34	22.28	21.22
50713	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.040"	-	-	24.40	23.34	22.28	21.22
50714	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.060"	-	-	24.40	23.34	22.28	21.22
50715	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.090"	-	-	24.40	23.34	22.28	21.22
50238	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	-	23.86	22.83	21.79	20.75
50207	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	-	27.03	25.85	24.68	23.50
50208	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	27.03	25.85	24.68	23.50
50620	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	27.03	25.85	24.68	23.50
50209	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	27.03	25.85	24.68	23.50
50716	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.040"	-	-	27.03	25.85	24.68	23.50
50210	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	-	-	27.03	25.85	24.68	23.50
50717	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.090"	-	-	27.03	25.85	24.68	23.50
50254	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	BALL	-	-	27.03	25.85	24.68	23.50
50653	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	-	-	-	36.31	34.73	33.15	31.57
50493	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	-	40.03	38.29	36.55	34.81
50677	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	BALL	-	-	40.03	38.29	36.55	34.81

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50654	-	.2500	1/4"	6.350	1/4"	4"	1-1/2"	-	-	-	39.07	37.37	35.67	33.97
	50681	-	.2500	1/4"	6.350	1/4"	4"	1-1/2"	BALL	-	-	42.86	41.00	39.13	37.27
	50655	-	.2500	1/4"	6.350	1/4"	4"	1-3/4"	-	-	-	39.07	37.37	35.67	33.97
	50718	-	.2500	1/4"	6.350	1/4"	4"	1-3/4"	.020"	-	-	42.86	41.00	39.13	37.27
NEW	50682	-	.2500	1/4"	6.350	1/4"	4"	1-3/4"	BALL	-	-	42.86	41.00	39.13	37.27
	50656	-	.2500	1/4"	6.350	1/4"	4"	2"	-	-	-	39.07	37.37	35.67	33.97
	50683	-	.2500	1/4"	6.350	1/4"	4"	2"	BALL	-	-	42.86	41.00	39.13	37.27
	50651	-	.2500	1/4"	6.350	1/4"	3"	3/8"	-	1-1/8"	.237"	45.77	43.78	41.79	39.80
	50678	-	.2500	1/4"	6.350	1/4"	3"	3/8"	BALL	1-1/8"	.237"	49.54	47.39	45.23	43.08
	50600	-	.2500	1/4"	6.350	1/4"	4"	3/8"	-	1-1/8"	.237"	48.73	46.61	44.49	42.37
	50211	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	1-1/4"	.230"	52.37	50.09	47.82	45.54
	50474	-	.2500	1/4"	6.350	1/4"	4"	3/8"	BALL	1-1/8"	.237"	52.37	50.09	47.82	45.54
	50679	-	.2500	1/4"	6.350	1/4"	4"	3/8"	BALL	1-1/2"	.237"	52.37	50.09	47.82	45.54
	50652	-	.2500	1/4"	6.350	1/4"	4"	3/8"	-	2"	.237"	48.73	46.61	44.49	42.37
	50680	-	.2500	1/4"	6.350	1/4"	4"	3/8"	BALL	2"	.237"	52.37	50.09	47.82	45.54
	50719	-	.2500	1/4"	6.350	1/4"	6"	3/8"	.010"	4"	.230"	65.94	63.07	60.21	57.34
	50684	-	.2500	1/4"	6.350	1/4"	6"	3/8"	BALL	4"	.230"	65.94	63.07	60.21	57.34
	50720	-	.3125	5/16"	7.937	5/16"	2"	3/8"	.030"	-	-	33.32	31.87	30.42	28.97
	50541	-	.3125	5/16"	7.937	5/16"	2"	7/16"	-	-	-	29.21	27.94	26.67	25.40
	50622	-	.3125	5/16"	7.937	5/16"	2"	7/16"	.010"	-	-	33.32	31.87	30.42	28.97
	50624	-	.3125	5/16"	7.937	5/16"	2"	7/16"	.015"	-	-	33.32	31.87	30.42	28.97
	50492	-	.3125	5/16"	7.937	5/16"	2"	7/16"	.020"	-	-	33.32	31.87	30.42	28.97
	50721	-	.3125	5/16"	7.937	5/16"	2"	7/16"	.125"	-	-	33.32	31.87	30.42	28.97
	50561	-	.3125	5/16"	7.937	5/16"	2"	7/16"	BALL	-	-	33.32	31.87	30.42	28.97
	50239	-	.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	-	-	-	34.02	32.54	31.06	29.58
	50626	-	.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.010"	-	-	36.60	35.01	33.42	31.83
	50628	-	.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.015"	-	-	36.60	35.01	33.42	31.83
	50212	-	.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.020"	-	-	36.60	35.01	33.42	31.83
	50213	-	.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.030"	-	-	36.60	35.01	33.42	31.83
	50722	-	.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.060"	-	-	36.60	35.01	33.42	31.83
	50723	-	.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	.125"	-	-	36.60	35.01	33.42	31.83
	50255	-	.3125	5/16"	7.937	5/16"	2-1/2"	13/16"	BALL	-	-	36.60	35.01	33.42	31.83
	50657	-	.3125	5/16"	7.937	5/16"	3"	1-1/4"	-	-	-	46.43	44.41	42.39	40.37
	50724	-	.3125	5/16"	7.937	5/16"	3"	1-1/4"	.015"	-	-	51.06	48.84	46.62	44.40
	50725	-	.3125	5/16"	7.937	5/16"	3"	1-1/4"	.030"	-	-	51.06	48.84	46.62	44.40
	50726	-	.3125	5/16"	7.937	5/16"	3"	1-1/4"	.060"	-	-	51.06	48.84	46.62	44.40
	50685	-	.3125	5/16"	7.937	5/16"	3"	1-1/4"	BALL	-	-	51.06	48.84	46.62	44.40
	50658	-	.3125	5/16"	7.937	5/16"	3"	7/16"	-	1-1/2"	.295"	57.55	55.04	52.54	50.04
	50686	-	.3125	5/16"	7.937	5/16"	3"	7/16"	BALL	1-1/2"	.295"	62.18	59.48	56.77	54.07
	50602	-	.3150		8.000	8.0	50	12	-	-	-	30.27	28.95	27.64	26.32
	50630	-	.3150		8.000	8.0	50	12	0.50	-	-	34.56	33.06	31.55	30.05
	50240	-	.3150		8.000	8.0	65	22	-	-	-	35.25	33.72	32.18	30.65
	50214	-	.3150		8.000	8.0	65	22	0.50	-	-	37.98	36.33	34.68	33.03
	50356	-	.3150		8.000	8.0	65	22	0.75	-	-	37.98	36.33	34.68	33.03
	50215	-	.3150		8.000	8.0	65	22	1.00	-	-	37.98	36.33	34.68	33.03
	50727	-	.3150		8.000	8.0	65	22	1.20	-	-	37.98	36.33	34.68	33.03
	50357	-	.3150		8.000	8.0	65	22	1.50	-	-	37.98	36.33	34.68	33.03
	50358	-	.3150		8.000	8.0	65	22	2.00	-	-	37.98	36.33	34.68	33.03
	50728	-	.3150		8.000	8.0	65	22	3.00	-	-	37.98	36.33	34.68	33.03
	50256	-	.3150		8.000	8.0	65	22	BALL	-	-	37.98	36.33	34.68	33.03

continued →

Series V4S, V4R, V4B *(continued)*

.3150" - .3937"
(8.000mm - 10.000mm)

MATERIAL HARDNESS (Rc)
70
35
0

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
50659	-	.3150		8.000	8.0	75	32	-	-	-	48.36	46.26	44.15	42.05
50687	-	.3150		8.000	8.0	75	32	BALL	-	-	53.23	50.92	48.60	46.29
50660	-	.3150		8.000	8.0	100	12	-	50	7.50	66.56	63.67	60.77	57.88
50688	-	.3150		8.000	8.0	100	12	BALL	50	7.50	71.93	68.81	65.68	62.55
50542	-	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	-	34.45	32.96	31.46	29.96
50632	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.010"	-	-	39.34	37.63	35.92	34.21
50729	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.015"	-	-	39.34	37.63	35.92	34.21
50494	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	-	39.34	37.63	35.92	34.21
50634	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	-	-	39.34	37.63	35.92	34.21
50730	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.060"	-	-	39.34	37.63	35.92	34.21
50732	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.090"	-	-	39.34	37.63	35.92	34.21
50733	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.120"	-	-	39.34	37.63	35.92	34.21
50734	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.125"	-	-	39.34	37.63	35.92	34.21
50562	-	.3750	3/8"	9.525	3/8"	2"	1/2"	BALL	-	-	39.34	37.63	35.92	34.21
50241	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	-	-	-	40.15	38.40	36.66	34.91
50216	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.010"	-	-	42.76	40.90	39.04	37.18
50735	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.015"	-	-	42.76	40.90	39.04	37.18
50217	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	-	42.76	40.90	39.04	37.18
50218	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	-	42.76	40.90	39.04	37.18
50736	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.040"	-	-	42.76	40.90	39.04	37.18
50219	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.060"	-	-	42.76	40.90	39.04	37.18
50636	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.090"	-	-	42.76	40.90	39.04	37.18
50737	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.120"	-	-	42.76	40.90	39.04	37.18
50738	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.125"	-	-	42.76	40.90	39.04	37.18
50257	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	BALL	-	-	42.76	40.90	39.04	37.18
50661	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	-	-	-	51.21	48.98	46.76	44.53
50739	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-	-	56.28	53.83	51.39	48.94
50637	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	-	56.28	53.83	51.39	48.94
50740	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.060"	-	-	56.28	53.83	51.39	48.94
50689	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	BALL	-	-	56.28	53.83	51.39	48.94
50662	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	-	-	-	57.87	55.35	52.84	50.32
50741	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.015"	-	-	63.33	60.58	57.82	55.07
50742	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.030"	-	-	63.33	60.58	57.82	55.07
50743	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.060"	-	-	63.33	60.58	57.82	55.07
50744	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.120"	-	-	63.33	60.58	57.82	55.07
50690	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	BALL	-	-	63.33	60.58	57.82	55.07
50745	-	.3750	3/8"	9.525	3/8"	6"	2-1/2"	.060	-	-	87.69	83.88	80.06	76.25
50604	-	.3750	3/8"	9.525	3/8"	4"	1/2"	-	1-1/8"	.355"	70.27	67.21	64.16	61.10
50220	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.020"	1-7/8"	.350"	75.58	72.29	69.01	65.72
50476	-	.3750	3/8"	9.525	3/8"	4"	1/2"	BALL	1-1/8"	.355"	75.58	72.29	69.01	65.72
50606	-	.3937		10.000	10.0	50	14	-	-	-	44.25	42.33	40.40	38.48
50638	-	.3937		10.000	10.0	50	14	0.50	-	-	47.48	45.42	43.35	41.29
50242	-	.3937		10.000	10.0	70	22	-	-	-	48.13	46.04	43.94	41.85
50746	-	.3937		10.000	10.0	70	22	0.25	-	-	51.64	49.39	47.15	44.90
50221	-	.3937		10.000	10.0	70	22	0.50	-	-	51.64	49.39	47.15	44.90
50359	-	.3937		10.000	10.0	70	22	0.75	-	-	51.64	49.39	47.15	44.90
50360	-	.3937		10.000	10.0	70	22	1.00	-	-	51.64	49.39	47.15	44.90
50361	-	.3937		10.000	10.0	70	22	1.50	-	-	51.64	49.39	47.15	44.90
50362	-	.3937		10.000	10.0	70	22	2.00	-	-	51.64	49.39	47.15	44.90
50747	-	.3937		10.000	10.0	70	22	3.00	-	-	51.64	49.39	47.15	44.90
50258	-	.3937		10.000	10.0	70	22	BALL	-	-	51.64	49.39	47.15	44.90
50608	-	.3937		10.000	10.0	70	26	-	-	-	48.13	46.04	43.94	41.85
NEW 50748	-	.3937		10.000	10.0	70	26	1.50	-	-	51.64	49.39	47.15	44.90
50663	-	.3937		10.000	10.0	70	30	-	-	-	48.13	46.04	43.94	41.85
50691	-	.3937		10.000	10.0	70	30	BALL	-	-	51.64	49.39	47.15	44.90

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50749	-	.3937		10.000	10.0	70	22	0.50	30	9.40	62.76	60.03	57.30	54.57
	50750	-	.3937		10.000	10.0	100	12	0.30	50	9.40	91.31	87.34	83.37	79.40
	50692	-	.3937		10.000	10.0	100	14	BALL	50	9.40	91.31	87.34	83.37	79.40
	50450	50449	.4724		12.000	12.0	75	26	-	-	-	62.54	59.82	57.10	54.38
	50363	50369	.4724		12.000	12.0	75	26	0.30	-	-	76.05	72.74	69.44	66.13
	50364	50370	.4724		12.000	12.0	75	26	0.50	-	-	76.05	72.74	69.44	66.13
	50365	50366	.4724		12.000	12.0	75	26	0.75	-	-	76.05	72.74	69.44	66.13
	50367	50371	.4724		12.000	12.0	75	26	1.00	-	-	76.05	72.74	69.44	66.13
	50372	50373	.4724		12.000	12.0	75	26	1.50	-	-	76.05	72.74	69.44	66.13
	50374	50375	.4724		12.000	12.0	75	26	2.00	-	-	76.05	72.74	69.44	66.13
	50470	-	.4724		12.000	12.0	75	26	BALL	-	-	76.05	72.74	69.44	66.13
	50243	50283	.4724		12.000	12.0	75	32	-	-	-	62.54	59.82	57.10	54.38
	50222	50270	.4724		12.000	12.0	75	32	0.50	-	-	76.05	72.74	69.44	66.13
	50223	50271	.4724		12.000	12.0	75	32	1.00	-	-	76.05	72.74	69.44	66.13
	50259	50291	.4724		12.000	12.0	75	32	BALL	-	-	76.05	72.74	69.44	66.13
	50664	-	.4724		12.000	12.0	88	36	-	-	-	80.49	76.99	73.49	69.99
	50751	-	.4724		12.000	12.0	88	36	0.30	-	-	85.46	81.74	78.03	74.31
	50752	-	.4724		12.000	12.0	88	36	0.50	-	-	85.46	81.74	78.03	74.31
	50753	-	.4724		12.000	12.0	88	36	1.00	-	-	85.46	81.74	78.03	74.31
	50754	-	.4724		12.000	12.0	88	36	1.50	-	-	85.46	81.74	78.03	74.31
	50755	-	.4724		12.000	12.0	88	36	3.00	-	-	85.46	81.74	78.03	74.31
	50693	-	.4724		12.000	12.0	88	36	BALL	-	-	85.46	81.74	78.03	74.31
	50564	-	.4724		12.000	12.0	100	42	-	-	-	83.58	79.95	76.31	72.68
	50566	-	.4724		12.000	12.0	100	42	0.30	-	-	88.50	84.66	80.81	76.96
	50568	-	.4724		12.000	12.0	100	42	0.50	-	-	88.50	84.66	80.81	76.96
	50570	-	.4724		12.000	12.0	100	42	1.00	-	-	88.50	84.66	80.81	76.96
	50572	-	.4724		12.000	12.0	100	42	2.00	-	-	88.50	84.66	80.81	76.96
	50574	-	.4724		12.000	12.0	100	42	3.00	-	-	88.50	84.66	80.81	76.96
	50576	-	.4724		12.000	12.0	100	42	BALL	-	-	88.50	84.66	80.81	76.96
	50665	-	.4724		12.000	12.0	100	48	-	-	-	83.58	79.95	76.31	72.68
	50756	-	.4724		12.000	12.0	100	48	0.30	-	-	88.50	84.66	80.81	76.96
	50757	-	.4724		12.000	12.0	100	48	0.50	-	-	88.50	84.66	80.81	76.96
NEW	50758	-	.4724		12.000	12.0	100	48	1.00	-	-	88.50	84.66	80.81	76.96
NEW	50759	-	.4724		12.000	12.0	100	48	1.50	-	-	88.50	84.66	80.81	76.96
NEW	50760	-	.4724		12.000	12.0	100	48	3.00	-	-	88.50	84.66	80.81	76.96
	50761	-	.4724		12.000	12.0	100	48	4.00	-	-	88.50	84.66	80.81	76.96
	50694	-	.4724		12.000	12.0	100	48	BALL	-	-	88.50	84.66	80.81	76.96
	50695	-	.4724		12.000	12.0	100	14	BALL	50	11.40	100.73	96.35	91.97	87.59
	50543	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-	56.33	53.88	51.43	48.98
	50640	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	65.35	62.51	59.67	56.83
	50762	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.015"	-	-	65.35	62.51	59.67	56.83
	50496	50497	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	65.35	62.51	59.67	56.83
	50642	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	65.35	62.51	59.67	56.83
	50763	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	-	-	65.35	62.51	59.67	56.83
	50764	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.090"	-	-	65.35	62.51	59.67	56.83
	50765	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.120"	-	-	65.35	62.51	59.67	56.83
	50644	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.125"	-	-	65.35	62.51	59.67	56.83
	50766	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.156"	-	-	65.35	62.51	59.67	56.83
	50767	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.190"	-	-	65.35	62.51	59.67	56.83
	50563	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	BALL	-	-	65.35	62.51	59.67	56.83

continued →

Series V4S, V4R, V4B *(continued)*

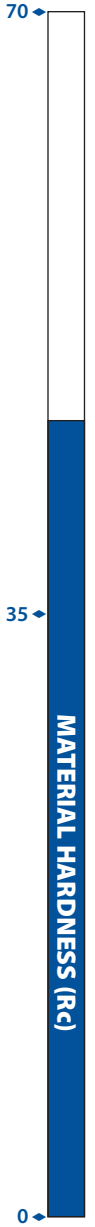
.5000"
(12.700mm)

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
50452	50453	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	60.04	57.43	54.82	52.21
50379	50380	.5000	1/2"	12.700	1/2"	3"	1"	.010"	-	-	72.94	69.77	66.60	63.43
50768	-	.5000	1/2"	12.700	1/2"	3"	1"	.015"	-	-	72.94	69.77	66.60	63.43
50381	50382	.5000	1/2"	12.700	1/2"	3"	1"	.020"	-	-	72.94	69.77	66.60	63.43
50383	50384	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	72.94	69.77	66.60	63.43
50385	50386	.5000	1/2"	12.700	1/2"	3"	1"	.060"	-	-	72.94	69.77	66.60	63.43
50769	-	.5000	1/2"	12.700	1/2"	3"	1"	.090"	-	-	72.94	69.77	66.60	63.43
50770	-	.5000	1/2"	12.700	1/2"	3"	1"	.120"	-	-	72.94	69.77	66.60	63.43
50771	-	.5000	1/2"	12.700	1/2"	3"	1"	.125"	-	-	72.94	69.77	66.60	63.43
50772	-	.5000	1/2"	12.700	1/2"	3"	1"	.190"	-	-	72.94	69.77	66.60	63.43
50472	50473	.5000	1/2"	12.700	1/2"	3"	1"	BALL	-	-	72.94	69.77	66.60	63.43
50244	50284	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	60.04	57.43	54.82	52.21
50224	50272	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	72.94	69.77	66.60	63.43
50773	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	72.94	69.77	66.60	63.43
50225	50273	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	72.94	69.77	66.60	63.43
50226	50274	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	72.94	69.77	66.60	63.43
50227	50275	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	72.94	69.77	66.60	63.43
50774	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-	72.94	69.77	66.60	63.43
50775	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	-	72.94	69.77	66.60	63.43
50776	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	72.94	69.77	66.60	63.43
50777	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.156"	-	-	72.94	69.77	66.60	63.43
50778	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.190"	-	-	72.94	69.77	66.60	63.43
50260	50292	.5000	1/2"	12.700	1/2"	3"	1-1/4"	BALL	-	-	72.94	69.77	66.60	63.43
50666	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	-	-	-	78.14	74.75	71.35	67.95
50779	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.010"	-	-	83.15	79.53	75.92	72.30
50780	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.015"	-	-	83.15	79.53	75.92	72.30
50781	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.020"	-	-	83.15	79.53	75.92	72.30
50782	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.030"	-	-	83.15	79.53	75.92	72.30
50783	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.060"	-	-	83.15	79.53	75.92	72.30
50784	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.090"	-	-	83.15	79.53	75.92	72.30
50785	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.120"	-	-	83.15	79.53	75.92	72.30
50696	-	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	BALL	-	-	83.15	79.53	75.92	72.30
50578	50579	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	-	81.24	77.70	74.17	70.64
50580	50581	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.010"	-	-	86.22	82.47	78.72	74.97
50582	50583	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.020"	-	-	86.22	82.47	78.72	74.97
50584	50585	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.030"	-	-	86.22	82.47	78.72	74.97
50586	50587	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.040"	-	-	86.22	82.47	78.72	74.97
50588	50589	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.060"	-	-	86.22	82.47	78.72	74.97
50590	50591	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.120"	-	-	86.22	82.47	78.72	74.97
50592	50593	.5000	1/2"	12.700	1/2"	4"	1-5/8"	BALL	-	-	86.22	82.47	78.72	74.97
50646	-	.5000	1/2"	12.700	1/2"	4"	1-3/4"	-	-	-	81.24	77.70	74.17	70.64
50647	-	.5000	1/2"	12.700	1/2"	4"	2"	-	-	-	81.24	77.70	74.17	70.64
50245	50285	.5000	1/2"	12.700	1/2"	4"	2-1/8"	-	-	-	81.24	77.70	74.17	70.64
50786	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.010"	-	-	86.22	82.47	78.72	74.97
50787	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.015"	-	-	86.22	82.47	78.72	74.97
50788	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.020"	-	-	86.22	82.47	78.72	74.97
50789	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	-	86.22	82.47	78.72	74.97
50790	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.060"	-	-	86.22	82.47	78.72	74.97
50791	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.090"	-	-	86.22	82.47	78.72	74.97
50792	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.120"	-	-	86.22	82.47	78.72	74.97
50793	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.125"	-	-	86.22	82.47	78.72	74.97
50794	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.190"	-	-	86.22	82.47	78.72	74.97
50261	50293	.5000	1/2"	12.700	1/2"	4"	2-1/8"	BALL	-	-	86.22	82.47	78.72	74.97

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50668	-	.5000	1/2"	12.700	1/2"	6"	3"	-	-	-	116.92	111.84	106.75	101.67
	50795	-	.5000	1/2"	12.700	1/2"	6"	3"	.020"	-	-	121.92	116.62	111.32	106.02
	50796	-	.5000	1/2"	12.700	1/2"	6"	3"	.030"	-	-	121.92	116.62	111.32	106.02
	50797	-	.5000	1/2"	12.700	1/2"	6"	3"	.060"	-	-	121.92	116.62	111.32	106.02
	50798	-	.5000	1/2"	12.700	1/2"	6"	3"	.120"	-	-	121.92	116.62	111.32	106.02
	50799	-	.5000	1/2"	12.700	1/2"	6"	3"	.190"	-	-	121.92	116.62	111.32	106.02
	50699	-	.5000	1/2"	12.700	1/2"	6"	3"	BALL			121.92	116.62	111.32	106.02
	50610	-	.5000	1/2"	12.700	1/2"	4"	5/8"	-	2-1/4"	.475"	93.38	89.32	85.26	81.20
	50228	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.020"	2-1/4"	.470"	98.42	94.14	89.86	85.58
	50900	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.030"	2-1/4"	.470"	98.42	94.14	89.86	85.58
	50901	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.060"	2-1/4"	.470"	98.42	94.14	89.86	85.58
	50902	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.120"	2-1/4"	.470"	98.42	94.14	89.86	85.58
	50478	-	.5000	1/2"	12.700	1/2"	4"	5/8"	BALL	2-1/4"	.475"	98.42	94.14	89.86	85.58
	50667	-	.5000	1/2"	12.700	1/2"	6"	5/8"	-	3-1/8"	.475"	129.16	123.54	117.93	112.31
	50235	-	.5000	1/2"	12.700	1/2"	6"	5/8"	-	4-1/8"	.475"	129.16	123.54	117.93	112.31
	50594	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.020"	4-1/8"	.470"	134.15	128.32	122.48	116.65
	50596	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.030"	4-1/8"	.470"	134.15	128.32	122.48	116.65
NEW	50697	-	.5000	1/2"	12.700	1/2"	6"	5/8"	BALL	3-1/8"	.475"	134.15	128.32	122.48	116.65
	50598	-	.5000	1/2"	12.700	1/2"	6"	5/8"	BALL	4-1/8"	.475"	134.15	128.32	122.48	116.65
	50698	-	.5000	1/2"	12.700	1/2"	6"	1"	BALL	4-1/2"	.475"	134.15	128.32	122.48	116.65
	50545	50546	.6250	5/8"	15.875	5/8"	3"	3/4"	-	-	-	104.75	100.20	95.64	91.09
	50903	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.010"	-	-	113.00	108.09	103.17	98.26
	50904	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.015"	-	-	113.00	108.09	103.17	98.26
	50498	50499	.6250	5/8"	15.875	5/8"	3"	3/4"	.020"	-	-	113.00	108.09	103.17	98.26
	50500	50501	.6250	5/8"	15.875	5/8"	3"	3/4"	.030"	-	-	113.00	108.09	103.17	98.26
	50502	50503	.6250	5/8"	15.875	5/8"	3"	3/4"	.060"	-	-	113.00	108.09	103.17	98.26
NEW	50905	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.090"	-	-	113.00	108.09	103.17	98.26
	50906	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.120"	-	-	113.00	108.09	103.17	98.26
	50907	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.125"	-	-	113.00	108.09	103.17	98.26
NEW	50908	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.156"	-	-	113.00	108.09	103.17	98.26
	50909	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.190"	-	-	113.00	108.09	103.17	98.26
NEW	50910	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.250"	-	-	113.00	108.09	103.17	98.26
	50246	50286	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	110.77	105.95	101.14	96.32
	50911	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.010"	-	-	116.13	111.08	106.03	100.98
	50912	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	-	-	116.13	111.08	106.03	100.98
	50229	50277	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	116.13	111.08	106.03	100.98
	50534	50535	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	116.13	111.08	106.03	100.98
	50536	50537	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.040"	-	-	116.13	111.08	106.03	100.98
	50538	50539	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	116.13	111.08	106.03	100.98
NEW	50913	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.090"	-	-	116.13	111.08	106.03	100.98
	50230	50278	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	116.13	111.08	106.03	100.98
	50914	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.125"	-	-	116.13	111.08	106.03	100.98
NEW	50915	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.156"	-	-	116.13	111.08	106.03	100.98
	50916	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.190"	-	-	116.13	111.08	106.03	100.98
	50917	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.250"	-	-	116.13	111.08	106.03	100.98
	50262	50294	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	BALL	-	-	116.13	111.08	106.03	100.98



continued ⟶

Series V4S, V4R, V4B *(continued)*

.6250" - .6299"
(15.875mm - 16.000mm)

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50669	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	-	-	-	118.30	113.16	108.01	102.87
	50918	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.010"	-	-	126.25	120.76	115.27	109.78
	50919	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.015"	-	-	126.25	120.76	115.27	109.78
NEW	50920	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.020"	-	-	126.25	120.76	115.27	109.78
	50921	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.030"	-	-	126.25	120.76	115.27	109.78
	50922	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.060"	-	-	126.25	120.76	115.27	109.78
NEW	50923	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.090"	-	-	126.25	120.76	115.27	109.78
	50924	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.120"	-	-	126.25	120.76	115.27	109.78
NEW	50925	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.125"	-	-	126.25	120.76	115.27	109.78
NEW	50926	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.156"	-	-	126.25	120.76	115.27	109.78
	50927	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.190"	-	-	126.25	120.76	115.27	109.78
	50928	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.250"	-	-	126.25	120.76	115.27	109.78
	50700	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	BALL	-	-	126.25	120.76	115.27	109.78
	50612	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	118.30	113.16	108.01	102.87
	50670	-	.6250	5/8"	15.875	5/8"	4"	1-3/4"	-	-	-	118.30	113.16	108.01	102.87
	50701	-	.6250	5/8"	15.875	5/8"	4"	1-3/4"	BALL	-	-	126.25	120.76	115.27	109.78
	50547	-	.6299		16.000	16.0	75	19	-	-	-	109.53	104.76	100.00	95.24
	50504	-	.6299		16.000	16.0	75	19	0.50	-	-	117.97	112.84	107.71	102.58
	50506	-	.6299		16.000	16.0	75	19	1.00	-	-	117.97	112.84	107.71	102.58
	50508	-	.6299		16.000	16.0	75	19	3.00	-	-	117.97	112.84	107.71	102.58
NEW	50929	-	.6299		16.000	16.0	75	19	4.00	-	-	117.97	112.84	107.71	102.58
NEW	50930	-	.6299		16.000	16.0	75	19	5.00	-	-	117.97	112.84	107.71	102.58
NEW	50931	-	.6299		16.000	16.0	75	19	6.00	-	-	117.97	112.84	107.71	102.58
	50247	50287	.6299		16.000	16.0	88	32	-	-	-	115.58	110.55	105.53	100.50
	50231	50279	.6299		16.000	16.0	88	32	0.50	-	-	121.20	115.93	110.66	105.39
	50409	50410	.6299		16.000	16.0	88	32	0.75	-	-	121.20	115.93	110.66	105.39
	50411	50412	.6299		16.000	16.0	88	32	1.00	-	-	121.20	115.93	110.66	105.39
	50413	50414	.6299		16.000	16.0	88	32	1.50	-	-	121.20	115.93	110.66	105.39
	50415	50416	.6299		16.000	16.0	88	32	2.00	-	-	121.20	115.93	110.66	105.39
	50932	-	.6299		16.000	16.0	88	32	2.50	-	-	121.20	115.93	110.66	105.39
	50417	50418	.6299		16.000	16.0	88	32	3.00	-	-	121.20	115.93	110.66	105.39
	50933	-	.6299		16.000	16.0	88	32	4.00	-	-	121.20	115.93	110.66	105.39
	50934	-	.6299		16.000	16.0	88	32	5.00	-	-	121.20	115.93	110.66	105.39
NEW	50935	-	.6299		16.000	16.0	88	32	6.00	-	-	121.20	115.93	110.66	105.39
	50263	50295	.6299		16.000	16.0	88	32	BALL	-	-	121.20	115.93	110.66	105.39
	50671	-	.6299		16.000	16.0	100	48	-	-	-	122.87	117.52	112.18	106.84
	50936	-	.6299		16.000	16.0	100	48	0.50	-	-	128.87	123.27	117.66	112.06
	50937	-	.6299		16.000	16.0	100	48	1.00	-	-	128.87	123.27	117.66	112.06
	50938	-	.6299		16.000	16.0	100	48	1.50	-	-	128.87	123.27	117.66	112.06
	50939	-	.6299		16.000	16.0	100	48	2.00	-	-	128.87	123.27	117.66	112.06
	50940	-	.6299		16.000	16.0	100	48	3.00	-	-	128.87	123.27	117.66	112.06
	50941	-	.6299		16.000	16.0	100	48	4.00	-	-	128.87	123.27	117.66	112.06
	50942	-	.6299		16.000	16.0	100	48	5.00	-	-	128.87	123.27	117.66	112.06
	50943	-	.6299		16.000	16.0	100	48	6.00	-	-	128.87	123.27	117.66	112.06
	50702	-	.6299		16.000	16.0	100	48	BALL	-	-	128.87	123.27	117.66	112.06

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50548	-	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	154.74	148.02	141.29	134.56
NEW	50944	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.010"	-	-	163.00	155.91	148.83	141.74
NEW	50945	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.015"	-	-	163.00	155.91	148.83	141.74
NEW	50946	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.020"	-	-	163.00	155.91	148.83	141.74
	50556	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	163.00	155.91	148.83	141.74
NEW	50947	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.060"	-	-	163.00	155.91	148.83	141.74
NEW	50948	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.120"	-	-	163.00	155.91	148.83	141.74
	50549	50550	.7500	3/4"	19.050	3/4"	4"	1"	-	-	-	158.13	151.25	144.38	137.50
NEW	50949	-	.7500	3/4"	19.050	3/4"	4"	1"	.010"	-	-	166.54	159.30	152.06	144.82
NEW	50950	-	.7500	3/4"	19.050	3/4"	4"	1"	.015"	-	-	166.54	159.30	152.06	144.82
	50510	50511	.7500	3/4"	19.050	3/4"	4"	1"	.020"	-	-	166.54	159.30	152.06	144.82
	50512	50513	.7500	3/4"	19.050	3/4"	4"	1"	.030"	-	-	166.54	159.30	152.06	144.82
	50514	50515	.7500	3/4"	19.050	3/4"	4"	1"	.060"	-	-	166.54	159.30	152.06	144.82
	50951	-	.7500	3/4"	19.050	3/4"	4"	1"	.090"	-	-	166.54	159.30	152.06	144.82
NEW	50952	-	.7500	3/4"	19.050	3/4"	4"	1"	.120"	-	-	166.54	159.30	152.06	144.82
	50953	-	.7500	3/4"	19.050	3/4"	4"	1"	.190"	-	-	166.54	159.30	152.06	144.82
NEW	50954	-	.7500	3/4"	19.050	3/4"	4"	1"	.250"	-	-	166.54	159.30	152.06	144.82
NEW	50955	-	.7500	3/4"	19.050	3/4"	4"	1"	.3125"	-	-	166.54	159.30	152.06	144.82
	50248	50288	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	158.13	151.25	144.38	137.50
	50956	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.010"	-	-	166.54	159.30	152.06	144.82
NEW	50957	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-	166.54	159.30	152.06	144.82
	50516	50517	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.020"	-	-	166.54	159.30	152.06	144.82
	50232	50280	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	166.54	159.30	152.06	144.82
	50518	50519	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	166.54	159.30	152.06	144.82
	50958	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.090"	-	-	166.54	159.30	152.06	144.82
	50520	50521	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	166.54	159.30	152.06	144.82
	50959	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.125"	-	-	166.54	159.30	152.06	144.82
	50960	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.156"	-	-	166.54	159.30	152.06	144.82
	50961	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.190"	-	-	166.54	159.30	152.06	144.82
	50962	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.250"	-	-	166.54	159.30	152.06	144.82
NEW	50963	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.3125"	-	-	166.54	159.30	152.06	144.82
	50264	50296	.7500	3/4"	19.050	3/4"	4"	1-1/2"	BALL	-	-	166.54	159.30	152.06	144.82
	50551	50552	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	158.13	151.25	144.38	137.50
	50964	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.010"	-	-	166.54	159.30	152.06	144.82
	50965	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-	166.54	159.30	152.06	144.82
	50522	50523	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.020"	-	-	166.54	159.30	152.06	144.82
	50524	50525	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	166.54	159.30	152.06	144.82
	50526	50527	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.060"	-	-	166.54	159.30	152.06	144.82
	50966	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.090"	-	-	166.54	159.30	152.06	144.82
NEW	50967	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.120"	-	-	166.54	159.30	152.06	144.82
	50968	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.125"	-	-	166.54	159.30	152.06	144.82
	50969	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.156"	-	-	166.54	159.30	152.06	144.82
	50970	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.190"	-	-	166.54	159.30	152.06	144.82
	50971	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.250"	-	-	166.54	159.30	152.06	144.82
NEW	50972	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.3125"	-	-	166.54	159.30	152.06	144.82

continued →

Series V4S, V4R, V4B *(continued)*

.7500" - .7874"
(19.050mm - 20.000mm)

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50553	50554	.7500	3/4"	19.050	3/4"	5"	2-1/8"	-	-	-	212.23	203.01	193.78	184.55
	50973	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.010"	-	-	231.02	220.98	210.93	200.89
NEW	50974	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.015"	-	-	231.02	220.98	210.93	200.89
	50975	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.020"	-	-	231.02	220.98	210.93	200.89
	50976	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.030"	-	-	231.02	220.98	210.93	200.89
	50977	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.060"	-	-	231.02	220.98	210.93	200.89
	50978	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.090"	-	-	231.02	220.98	210.93	200.89
NEW	50979	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.120"	-	-	231.02	220.98	210.93	200.89
	50980	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.125"	-	-	231.02	220.98	210.93	200.89
	50981	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.156"	-	-	231.02	220.98	210.93	200.89
70 NEW	50982	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.190"	-	-	231.02	220.98	210.93	200.89
	50983	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.250"	-	-	231.02	220.98	210.93	200.89
NEW	50984	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.3125"	-	-	231.02	220.98	210.93	200.89
	50672	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	-	-	-	212.23	203.01	193.78	184.55
	50985	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.010"	-	-	231.02	220.98	210.93	200.89
	50986	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.015"	-	-	231.02	220.98	210.93	200.89
	50987	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.020"	-	-	231.02	220.98	210.93	200.89
	50988	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-	231.02	220.98	210.93	200.89
	50989	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.060"	-	-	231.02	220.98	210.93	200.89
	50990	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.090"	-	-	231.02	220.98	210.93	200.89
NEW	50991	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.120"	-	-	231.02	220.98	210.93	200.89
	50992	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.125"	-	-	231.02	220.98	210.93	200.89
NEW	50993	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.156"	-	-	231.02	220.98	210.93	200.89
	50994	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.190"	-	-	231.02	220.98	210.93	200.89
	50995	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.250"	-	-	231.02	220.98	210.93	200.89
NEW	50996	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.3125"	-	-	231.02	220.98	210.93	200.89
	50703	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	BALL	-	-	231.02	220.98	210.93	200.89
	50555	-	.7874		20.000	20.0	100	25	-	-	-	213.65	204.36	195.07	185.78
	50249	50289	.7874		20.000	20.0	100	38	-	-	-	213.65	204.36	195.07	185.78
NEW	50997	-	.7874		20.000	20.0	100	38	0.50	-	-	235.72	225.47	215.22	204.97
	50528	-	.7874		20.000	20.0	100	38	1.00	-	-	235.72	225.47	215.22	204.97
35	50530	-	.7874		20.000	20.0	100	38	2.00	-	-	235.72	225.47	215.22	204.97
	50998	-	.7874		20.000	20.0	100	38	2.50	-	-	235.72	225.47	215.22	204.97
	50532	-	.7874		20.000	20.0	100	38	3.00	-	-	235.72	225.47	215.22	204.97
	50999	-	.7874		20.000	20.0	100	38	4.00	-	-	235.72	225.47	215.22	204.97
	50121	-	.7874		20.000	20.0	100	38	5.00	-	-	235.72	225.47	215.22	204.97
NEW	50122	-	.7874		20.000	20.0	100	38	6.00	-	-	235.72	225.47	215.22	204.97
NEW	50123	-	.7874		20.000	20.0	100	38	8.00	-	-	235.72	225.47	215.22	204.97
	50265	50297	.7874		20.000	20.0	100	38	BALL	-	-	235.72	225.47	215.22	204.97
	50673	-	.7874		20.000	20.0	100	48	-	-	-	213.65	204.36	195.07	185.78
	50124	-	.7874		20.000	20.0	100	48	0.50	-	-	235.72	225.47	215.22	204.97
NEW	50125	-	.7874		20.000	20.0	100	48	1.00	-	-	235.72	225.47	215.22	204.97
	50126	-	.7874		20.000	20.0	100	48	1.50	-	-	235.72	225.47	215.22	204.97
	50127	-	.7874		20.000	20.0	100	48	2.00	-	-	235.72	225.47	215.22	204.97
	50128	-	.7874		20.000	20.0	100	48	2.50	-	-	235.72	225.47	215.22	204.97
	50129	-	.7874		20.000	20.0	100	48	3.00	-	-	235.72	225.47	215.22	204.97
	50131	-	.7874		20.000	20.0	100	48	4.00	-	-	235.72	225.47	215.22	204.97
	50132	-	.7874		20.000	20.0	100	48	5.00	-	-	235.72	225.47	215.22	204.97
NEW	50133	-	.7874		20.000	20.0	100	48	6.00	-	-	235.72	225.47	215.22	204.97
NEW	50134	-	.7874		20.000	20.0	100	48	8.00	-	-	235.72	225.47	215.22	204.97
	50704	-	.7874		20.000	20.0	100	48	BALL	-	-	235.72	225.47	215.22	204.97

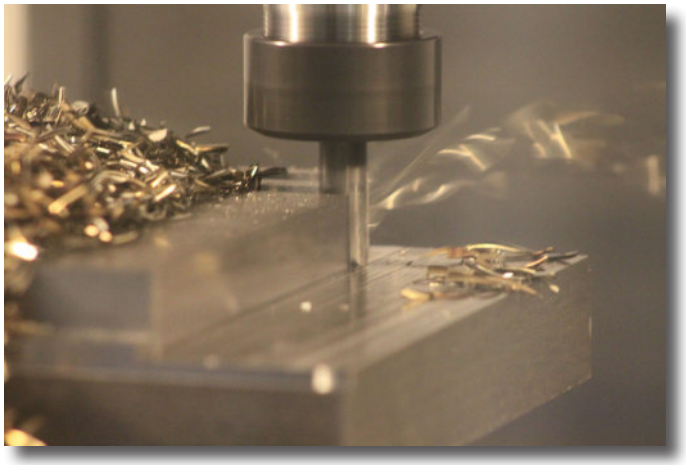
MATERIAL HARDNESS (Rc)
0

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50674	-	.7874		20.000	20.0	150	60	-	-	-	268.07	256.41	244.76	233.10
	50135	-	.7874		20.000	20.0	150	60	0.50	-	-	289.78	277.18	264.58	251.98
	50136	-	.7874		20.000	20.0	150	60	1.00	-	-	289.78	277.18	264.58	251.98
NEW	50137	-	.7874		20.000	20.0	150	60	3.00	-	-	289.78	277.18	264.58	251.98
	50138	-	.7874		20.000	20.0	150	60	6.00	-	-	289.78	277.18	264.58	251.98
NEW	50705	-	.7874		20.000	20.0	150	60	BALL	-	-	289.78	277.18	264.58	251.98
	50250	50290	1.000	1"	25.400	1"	4"	1-1/2"	-	-	-	236.23	225.96	215.69	205.42
NEW	50139	-	1.000	1"	25.400	1"	4"	1-1/2"	.020"			284.34	271.98	259.61	247.25
	50233	50281	1.000	1"	25.400	1"	4"	1-1/2"	.030"	-	-	284.34	271.98	259.61	247.25
NEW	50141	-	1.000	1"	25.400	1"	4"	1-1/2"	.060"	-	-	284.34	271.98	259.61	247.25
NEW	50142	-	1.000	1"	25.400	1"	4"	1-1/2"	.090"	-	-	284.34	271.98	259.61	247.25
NEW	50143	-	1.000	1"	25.400	1"	4"	1-1/2"	.120"	-	-	284.34	271.98	259.61	247.25
	50557	-	1.000	1"	25.400	1"	4"	1-1/2"	.125"	-	-	284.34	271.98	259.61	247.25
NEW	50144	-	1.000	1"	25.400	1"	4"	1-1/2"	.156"	-	-	284.34	271.98	259.61	247.25
	50145	-	1.000	1"	25.400	1"	4"	1-1/2"	.190"	-	-	284.34	271.98	259.61	247.25
	50146	-	1.000	1"	25.400	1"	4"	1-1/2"	.250"	-	-	284.34	271.98	259.61	247.25
NEW	50147	-	1.000	1"	25.400	1"	4"	1-1/2"	.3125"	-	-	284.34	271.98	259.61	247.25
	50148	-	1.000	1"	25.400	1"	4"	1-1/2"	.375"	-	-	284.34	271.98	259.61	247.25
	50266	50298	1.000	1"	25.400	1"	4"	1-1/2"	BALL	-	-	284.34	271.98	259.61	247.25
	50675	-	1.000	1"	25.400	1"	4-1/2"	2"	-	-	-	277.83	265.75	253.67	241.59
NEW	50149	-	1.000	1"	25.400	1"	4-1/2"	2"	.020"			317.10	303.31	289.53	275.74
	50151	-	1.000	1"	25.400	1"	4-1/2"	2"	.030"	-	-	317.10	303.31	289.53	275.74
NEW	50152	-	1.000	1"	25.400	1"	4-1/2"	2"	.060"	-	-	317.10	303.31	289.53	275.74
NEW	50153	-	1.000	1"	25.400	1"	4-1/2"	2"	.090"	-	-	317.10	303.31	289.53	275.74
NEW	50154	-	1.000	1"	25.400	1"	4-1/2"	2"	.120"	-	-	317.10	303.31	289.53	275.74
NEW	50155	-	1.000	1"	25.400	1"	4-1/2"	2"	.156"	-	-	317.10	303.31	289.53	275.74
NEW	50156	-	1.000	1"	25.400	1"	4-1/2"	2"	.190"	-	-	317.10	303.31	289.53	275.74
NEW	50157	-	1.000	1"	25.400	1"	4-1/2"	2"	.250"	-	-	317.10	303.31	289.53	275.74
NEW	50158	-	1.000	1"	25.400	1"	4-1/2"	2"	.3125"	-	-	317.10	303.31	289.53	275.74
	50706	-	1.000	1"	25.400	1"	4-1/2"	2"	BALL	-	-	317.10	303.31	289.53	275.74
	50234	50282	1.000	1"	25.400	1"	5"	2-1/8"	.030"	-	-	349.85	334.64	319.43	304.22
	50676	-	1.000	1"	25.400	1"	5"	2-1/2"	-	-	-	316.23	302.48	288.73	274.98
NEW	50159	-	1.000	1"	25.400	1"	5"	2-1/2"	.020"	-	-	349.85	334.64	319.43	304.22
NEW	50161	-	1.000	1"	25.400	1"	5"	2-1/2"	.030"	-	-	349.85	334.64	319.43	304.22
	50162	-	1.000	1"	25.400	1"	5"	2-1/2"	.060"	-	-	349.85	334.64	319.43	304.22
NEW	50163	-	1.000	1"	25.400	1"	5"	2-1/2"	.090"	-	-	349.85	334.64	319.43	304.22
NEW	50164	-	1.000	1"	25.400	1"	5"	2-1/2"	.120"	-	-	349.85	334.64	319.43	304.22
NEW	50165	-	1.000	1"	25.400	1"	5"	2-1/2"	.156"	-	-	349.85	334.64	319.43	304.22
NEW	50166	-	1.000	1"	25.400	1"	5"	2-1/2"	.190"	-	-	349.85	334.64	319.43	304.22
	50167	-	1.000	1"	25.400	1"	5"	2-1/2"	.250"	-	-	349.85	334.64	319.43	304.22
NEW	50168	-	1.000	1"	25.400	1"	5"	2-1/2"	.3125"	-	-	349.85	334.64	319.43	304.22
	50707	-	1.000	1"	25.400	1"	5"	2-1/2"	BALL	-	-	349.85	334.64	319.43	304.22

NOTES



V4-S series in 1018 material

GARR TOOL is on social media!

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Send us your videos!

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Series V5

NEW ITEMS

HIGH EFFICIENCY MILLING

.2362" - .3125"
(6.000mm - 7.938mm)

Z=5 | VAR | TECH PAGES 298-299

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Recommended for titanium and tool steels under 45Rc

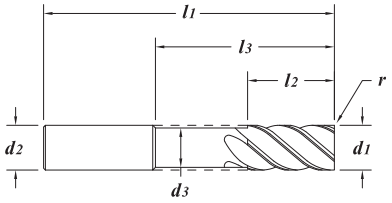


Variable Helix End Mill

AlCrN Coating

Solid submicron grain carbide end mill - center cutting
Engineered for High Efficiency Milling
Staggered flutes to control harmonics
Variable flute design helps with chip evacuation in slots and pockets
PCT (Polish Carbide Treatment) enhances tool life
12mm and larger tools offered with weldon flat
.375" and larger diameters can be modified within 48 hours

The combination of an extended flute length with a weldon flat may cause the flute washout to reach inside some end mill holders



MATERIAL HARDNESS (Rc)
70
35
0

EDP# (plain)	EDP# (weldon)	d1 † Diameter Decimal	Diameter	Metric	d2 Shank Diameter	l1 Overall Length	l2 Flute Length	r Corner Radius	l3 Reach Length	d3 Neck Diameter	1-11	12-24	25-49	50-100
50000	-	.2362		6.000	6.0	50	13	-	-	-	22.92	21.92	20.93	19.93
50001	-	.2362		6.000	6.0	50	13	0.5	-	-	26.51	25.36	24.20	23.05
50002	-	.2362		6.000	6.0	65	19	-	-	-	25.83	24.71	23.58	22.46
50003	-	.2362		6.000	6.0	65	19	0.5	-	-	29.37	28.09	26.82	25.54
50004	-	.2362		6.000	6.0	65	13	-	20	5.4	34.45	32.96	31.46	29.96
50005	-	.2362		6.000	6.0	65	13	0.5	20	5.4	38.00	36.34	34.69	33.04
50006	-	.2362		6.000	6.0	65	13	1.0	20	5.4	38.00	36.34	34.69	33.04
50007	-	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	-	21.15	20.23	19.31	18.39
51000	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.010"	-	-	25.51	24.40	23.29	22.18
50008	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.015"	-	-	25.51	24.40	23.29	22.18
51001	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-	-	25.51	24.40	23.29	22.18
50009	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.030"	-	-	25.51	24.40	23.29	22.18
51002	-	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-	-	22.00	21.04	20.09	19.13
51003	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.010"	-	-	25.51	24.40	23.29	22.18
51004	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-	-	25.51	24.40	23.29	22.18
50011	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	-	24.93	23.85	22.76	21.68
51005	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	-	28.23	27.01	25.78	24.55
50012	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	28.23	27.01	25.78	24.55
50013	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	28.23	27.01	25.78	24.55
50014	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	28.23	27.01	25.78	24.55
50015	-	.2500	1/4"	6.350	1/4"	3"	1"	-	-	-	38.09	36.43	34.78	33.12
51006	-	.2500	1/4"	6.350	1/4"	3"	1"	.010"	-	-	41.86	40.04	38.22	36.40
51007	-	.2500	1/4"	6.350	1/4"	3"	1"	.015"	-	-	41.86	40.04	38.22	36.40
50016	-	.2500	1/4"	6.350	1/4"	3"	1"	.030"	-	-	41.86	40.04	38.22	36.40
50113	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	-	41.86	40.04	38.22	36.40
50017	-	.2500	1/4"	6.350	1/4"	4"	1/2"	.015"	1-1/4"	.235"	54.74	52.36	49.98	47.60
51008	-	.2500	1/4"	6.350	1/4"	4"	1/2"	.015"	2-1/8"	.235"	54.74	52.36	49.98	47.60
50023	-	.2756		7.000	8.0	65	22	0.2	-	-	45.46	43.48	41.51	39.53
50018	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	-	-	-	35.57	34.02	32.48	30.93
50019	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.015"	-	-	38.28	36.62	34.95	33.29
50021	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	-	38.28	36.62	34.95	33.29
50022	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	-	-	38.28	36.62	34.95	33.29

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50024	-	.3150		8.000	8.0	65	22	0.2	-	-	39.72	37.99	36.27	34.54
	50025	-	.3150		8.000	8.0	65	22	0.5	-	-	39.72	37.99	36.27	34.54
	50026	-	.3150		8.000	8.0	75	19	-	26	7.2	61.67	58.99	56.31	53.63
	50027	-	.3150		8.000	8.0	75	19	0.5	26	7.2	66.73	63.83	60.93	58.03
	50028	-	.3150		8.000	8.0	75	19	1.0	26	7.2	66.73	63.83	60.93	58.03
	50029	-	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	-	35.91	34.35	32.79	31.23
	50031	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.015"	-	-	41.12	39.34	37.55	35.76
	50032	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	-	41.12	39.34	37.55	35.76
	50033	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	-	-	41.12	39.34	37.55	35.76
	50034	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	-	-	-	41.96	40.14	38.31	36.49
	50035	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.015"	-	-	44.71	42.77	40.82	38.88
	50036	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	-	44.71	42.77	40.82	38.88
	50037	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	-	44.71	42.77	40.82	38.88
	50038	-	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.060"	-	-	44.71	42.77	40.82	38.88
	51009	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-	-	58.83	56.28	53.72	51.16
	50114	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	-	58.83	56.28	53.72	51.16
	51010	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.015"	-	-	66.22	63.34	60.46	57.58
	50039	-	.3750	3/8"	9.525	3/8"	4"	2"	-	-	-	60.56	57.93	55.29	52.66
	50041	-	.3750	3/8"	9.525	3/8"	4"	2"	.030"	-	-	66.22	63.34	60.46	57.58
	51011	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	1-1/8"	.355"	79.02	75.58	72.15	68.71
	50042	-	.3750	3/8"	9.525	3/8"	4"	7/8"	.015"	1-7/8"	.355"	79.02	75.58	72.15	68.71
	51012	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	2-1/8"	.355"	104.47	99.92	95.38	90.84
	51013	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	3-1/8"	.355"	104.47	99.92	95.38	90.84
	51014	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	4-1/8"	.355"	104.47	99.92	95.38	90.84
	50043	-	.3937		10.000	10.0	70	22	-	-	-	50.32	48.14	45.95	43.76
	51015	-	.3937		10.000	10.0	70	22	0.30	-	-	53.99	51.65	49.30	46.95
	50044	-	.3937		10.000	10.0	70	22	0.50	-	-	53.99	51.65	49.30	46.95
	51016	-	.3937		10.000	10.0	70	22	0.75	-	-	53.99	51.65	49.30	46.95
	51017	-	.3937		10.000	10.0	70	22	1.00	-	-	53.99	51.65	49.30	46.95
	50045	-	.3937		10.000	10.0	75	22	-	32	9.0	69.76	66.73	63.69	60.66
	50046	-	.3937		10.000	10.0	75	22	0.50	32	9.0	75.26	71.98	68.71	65.44
NEW	51018	-	.3937		10.000	10.0	75	22	0.75	32	9.0	75.26	71.98	68.71	65.44
	50047	-	.3937		10.000	10.0	75	22	1.00	32	9.0	75.26	71.98	68.71	65.44
	51019	-	.4724		12.000	12.0	65	19	-	-	-	61.26	58.60	55.93	53.27
	51020	-	.4724		12.000	12.0	65	19	0.50	-	-	71.25	68.16	65.06	61.96
	50484	50485	.4724		12.000	12.0	75	26	-	-	-	65.37	62.52	59.68	56.84
	51021	-	.4724		12.000	12.0	75	26	0.30	-	-	79.51	76.05	72.60	69.14
	50486	50487	.4724		12.000	12.0	75	26	0.50	-	-	79.51	76.05	72.60	69.14
	51022	-	.4724		12.000	12.0	75	26	0.75	-	-	79.51	76.05	72.60	69.14
	51023	-	.4724		12.000	12.0	75	26	1.00	-	-	79.51	76.05	72.60	69.14
	50112	-	.4724		12.000	12.0	75	26	2.00	-	-	79.51	76.05	72.60	69.14
	50115	-	.4724		12.000	12.0	75	26	2.50	-	-	79.51	76.05	72.60	69.14
	50048	50299	.4724		12.000	12.0	75	32	-	-	-	65.37	62.52	59.68	56.84
	51024	-	.4724		12.000	12.0	75	32	0.30	-	-	79.51	76.05	72.60	69.14
	50049	50300	.4724		12.000	12.0	75	32	0.50	-	-	79.51	76.05	72.60	69.14
	51025	-	.4724		12.000	12.0	75	32	0.75	-	-	79.51	76.05	72.60	69.14
	51026	-	.4724		12.000	12.0	75	32	1.00	-	-	79.51	76.05	72.60	69.14
	51027	-	.4724		12.000	12.0	100	38	-	-	-	87.37	83.57	79.77	75.97
	51028	-	.4724		12.000	12.0	100	38	0.50	-	-	92.52	88.50	84.47	80.45
	50423	-	.4724		12.000	12.0	100	42	-	-	-	87.37	83.57	79.77	75.97
	50425	-	.4724		12.000	12.0	100	42	0.30	-	-	92.52	88.50	84.47	80.45
	50427	-	.4724		12.000	12.0	100	42	0.50	-	-	92.52	88.50	84.47	80.45
	50429	-	.4724		12.000	12.0	100	42	1.00	-	-	92.52	88.50	84.47	80.45
	50431	-	.4724		12.000	12.0	100	42	2.00	-	-	92.52	88.50	84.47	80.45
	51029	-	.4724		12.000	12.0	100	52	-	-	-	87.37	83.57	79.77	75.97
	51030	-	.4724		12.000	12.0	100	52	0.50	-	-	92.52	88.50	84.47	80.45
	50051	50301	.4724		12.000	12.0	100	26	-	38	10.8	100.11	95.76	91.40	87.05
	50052	50302	.4724		12.000	12.0	100	26	0.50	38	10.8	105.26	100.68	96.11	91.53
	50053	50303	.4724		12.000	12.0	100	26	1.00	38	10.8	105.26	100.68	96.11	91.53

continued →

Series V5 *(continued)*

.5000"
(12.700mm)

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
50054	50304	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-	58.74	56.19	53.63	51.08
50106	50305	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	68.33	65.36	62.39	59.42
50055	50306	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	68.33	65.36	62.39	59.42
50107	50307	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	68.33	65.36	62.39	59.42
50056	50308	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	62.77	60.04	57.31	54.58
50108	50309	.5000	1/2"	12.700	1/2"	3"	1"	.010"	-	-	76.27	72.95	69.64	66.32
50057	50310	.5000	1/2"	12.700	1/2"	3"	1"	.020"	-	-	76.27	72.95	69.64	66.32
50109	50311	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	76.27	72.95	69.64	66.32
50058	50312	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	62.77	60.04	57.31	54.58
50111	50313	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	76.27	72.95	69.64	66.32
50059	50314	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	76.27	72.95	69.64	66.32
50061	50315	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	76.27	72.95	69.64	66.32
50062	50316	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	76.27	72.95	69.64	66.32
50063	50317	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.045"	-	-	76.27	72.95	69.64	66.32
50064	50318	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	76.27	72.95	69.64	66.32
50065	50319	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-	76.27	72.95	69.64	66.32
50433	50435	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.010"	-	-	90.13	86.21	82.29	78.37
51031	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.015"	-	-	90.13	86.21	82.29	78.37
51032	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	-	90.13	86.21	82.29	78.37
50436	50437	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	-	84.93	81.24	77.54	73.85
50438	50439	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.010"	-	-	90.13	86.21	82.29	78.37
50440	50441	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.020"	-	-	90.13	86.21	82.29	78.37
50442	50443	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.030"	-	-	90.13	86.21	82.29	78.37
50444	50445	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.040"	-	-	90.13	86.21	82.29	78.37
50446	50447	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.060"	-	-	90.13	86.21	82.29	78.37
50067	50321	.5000	1/2"	12.700	1/2"	4"	2-1/8"	-	-	-	84.93	81.24	77.54	73.85
51033	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.015"	-	-	90.13	86.21	82.29	78.37
50068	50322	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	-	90.13	86.21	82.29	78.37
51034	-	.5000	1/2"	12.700	1/2"	6"	1"	.030"	-	-	127.47	121.92	116.38	110.84
51035	-	.5000	1/2"	12.700	1/2"	6"	3-1/8"	-	-	-	121.79	116.49	111.20	105.90
51036	-	.5000	1/2"	12.700	1/2"	6"	3-1/8"	.030"	-	-	127.47	121.92	116.38	110.84
51037	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	1-1/2"	.475"	102.89	98.42	93.94	89.47
51038	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	2-1/4"	.475"	102.89	98.42	93.94	89.47
50066	50320	.5000	1/2"	12.700	1/2"	4"	1-1/4"	.030"	2-1/4"	.475"	102.89	98.42	93.94	89.47
51039	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	3-3/8"	.475"	140.25	134.16	128.06	121.96
51040	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	4-1/8"	.475"	140.25	134.16	128.06	121.96

MATERIAL HARDNESS (Rc)
70
35
0

GARR TOOL®

† *Metric equivalents are for reference only*

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
50069	50323	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	115.81	110.77	105.74	100.70
51041	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	121.42	116.14	110.86	105.58
50071	50324	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	121.42	116.14	110.86	105.58
50072	50325	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	121.42	116.14	110.86	105.58
50401	50402	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	121.42	116.14	110.86	105.58
51042	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	123.68	118.31	112.93	107.55
51043	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	131.99	126.25	120.51	114.77
51044	-	.6250	5/8"	15.875	5/8"	4"	2-1/8"	-	-	-	123.68	118.31	112.93	107.55
51045	-	.6250	5/8"	15.875	5/8"	4"	2-1/8"	.030"	-	-	131.99	126.25	120.51	114.77
51046	-	.6250	5/8"	15.875	5/8"	6"	2-1/2"	.030"	-	-	181.69	173.79	165.89	157.99
50403	50404	.6250	5/8"	15.875	5/8"	6"	3-1/8"	.030"	-	-	181.69	173.79	165.89	157.99
51047	-	.6250	5/8"	15.875	5/8"	6"	3-1/8"	.060"	-	-	181.69	173.79	165.89	157.99
51048	-	.6250	5/8"	15.875	5/8"	6"	3-1/2"	.030"	-	-	181.69	173.79	165.89	157.99
51049	-	.6250	5/8"	15.875	5/8"	4"	3/4"	.030"	1-5/8"	.590"	143.09	136.87	130.65	124.43
50073	50326	.6250	5/8"	15.875	5/8"	4"	1-1/4"	.030"	2-1/4"	.590"	143.09	136.87	130.65	124.43
51050	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	2-3/8"	.590"	194.45	186.00	177.54	169.09
51051	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	3-3/8"	.590"	194.45	186.00	177.54	169.09
51052	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-1/8"	.590"	194.45	186.00	177.54	169.09
51053	-	.6299		16.000	16.0	75	19	-	-	-	117.59	112.48	107.36	102.25
51054	-	.6299		16.000	16.0	75	19	0.50	-	-	123.31	117.95	112.59	107.23
50074	50327	.6299		16.000	16.0	88	32	-	-	-	120.82	115.57	110.31	105.06
50075	50328	.6299		16.000	16.0	88	32	0.50	-	-	126.70	121.19	115.68	110.17
50420	-	.6299		16.000	16.0	88	32	1.00	-	-	126.70	121.19	115.68	110.17
51055	-	.6299		16.000	16.0	88	32	2.00	-	-	126.70	121.19	115.68	110.17
50422	-	.6299		16.000	16.0	88	32	3.00	-	-	126.70	121.19	115.68	110.17
50424	-	.6299		16.000	16.0	88	32	4.00	-	-	126.70	121.19	115.68	110.17
50430	-	.6299		16.000	16.0	100	40	0.50	-	-	134.72	128.87	123.01	117.15
50432	-	.6299		16.000	16.0	100	40	1.00	-	-	134.72	128.87	123.01	117.15
50434	-	.6299		16.000	16.0	100	40	3.00	-	-	134.72	128.87	123.01	117.15
50076	50329	.6299		16.000	16.0	100	32	-	50	14.4	139.62	133.55	127.48	121.41
50077	-	.6299		16.000	16.0	100	32	0.50	50	14.4	145.84	139.50	133.16	126.82
50426	-	.6299		16.000	16.0	100	32	1.00	50	14.4	145.84	139.50	133.16	126.82
51056	-	.6299		16.000	16.0	100	32	2.00	50	14.4	145.84	139.50	133.16	126.82
50428	-	.6299		16.000	16.0	100	32	3.00	50	14.4	145.84	139.50	133.16	126.82
50078	-	.7087		18.000	18.0	100	32	0.75	-	-	181.88	173.98	166.07	158.16

continued →

Series V5 *(continued)*

.7500"
(19.050mm)

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
50079	50332	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	161.60	154.57	147.55	140.52
51103	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.015"	-	-	170.43	163.02	155.61	148.20
50081	50333	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	170.42	163.01	155.60	148.19
51057	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.060"	-	-	170.43	163.02	155.61	148.20
51105	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.120"	-	-	170.43	163.02	155.61	148.20
51107	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.015"	-	-	174.12	166.55	158.98	151.41
51058	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.030"	-	-	174.12	166.55	158.98	151.41
51109	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.060"	-	-	174.12	166.55	158.98	151.41
50082	50334	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	165.31	158.13	150.94	143.75
51111	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-	174.12	166.55	158.98	151.41
50083	50335	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	174.12	166.55	158.98	151.41
50084	50336	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	174.12	166.55	158.98	151.41
51059	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.078"	-	-	174.12	166.55	158.98	151.41
50085	50337	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	174.12	166.55	158.98	151.41
51113	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.190"	-	-	174.12	166.55	158.98	151.41
51060	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	-	165.31	158.13	150.94	143.75
51115	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.015"	-	-	174.12	166.55	158.98	151.41
51061	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	174.12	166.55	158.98	151.41
51119	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.060"	-	-	174.12	166.55	158.98	151.41
51062	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	165.31	158.13	150.94	143.75
51121	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-	174.12	166.55	158.98	151.41
51063	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	174.12	166.55	158.98	151.41
51123	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.060"	-	-	174.12	166.55	158.98	151.41
50086	50338	.7500	3/4"	19.050	3/4"	5"	2-1/8"	-	-	-	221.88	212.23	202.59	192.94
51125	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.015"	-	-	241.53	231.03	220.53	210.03
50087	50339	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.030"	-	-	241.53	231.03	220.53	210.03
51064	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.060"	-	-	241.53	231.03	220.53	210.03
51065	-	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.120"	-	-	241.53	231.03	220.53	210.03
51127	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.015"	-	-	241.53	231.03	220.53	210.03
51066	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.030"	-	-	241.53	231.03	220.53	210.03
51129	-	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.060"	-	-	241.53	231.03	220.53	210.03
51131	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.015"	-	-	241.53	231.03	220.53	210.03
51067	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-	241.53	231.03	220.53	210.03
51133	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.060"	-	-	241.53	231.03	220.53	210.03
51135	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.015"	-	-	241.53	231.03	220.53	210.03
51068	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.030"	-	-	241.53	231.03	220.53	210.03
51137	-	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.060"	-	-	241.53	231.03	220.53	210.03
50089	50341	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	259.66	248.37	237.08	225.79
51139	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.015"	-	-	286.90	274.43	261.95	249.48
50091	50342	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	286.90	274.43	261.95	249.48
51141	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.060"	-	-	286.90	274.43	261.95	249.48
51143	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.015"	-	-	361.84	346.10	330.37	314.64
51145	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.030"	-	-	361.84	346.10	330.37	314.64
51147	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.060"	-	-	361.84	346.10	330.37	314.64
51069	-	.7500	3/4"	19.050	3/4"	4"	1"	.030"	2"	.705"	186.91	178.78	170.66	162.53
51070	-	.7500	3/4"	19.050	3/4"	5"	1"	.030"	2-1/2"	.705"	254.33	243.28	232.22	221.16
50088	50340	.7500	3/4"	19.050	3/4"	5-1/2"	1-1/2"	.030"	3-1/4"	.705"	299.74	286.70	273.67	260.64
51071	-	.7500	3/4"	19.050	3/4"	6"	1"	.030"	4-1/8"	.705"	299.74	286.70	273.67	260.64

MATERIAL HARDNESS (Rc)
70
35
0

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	50092	50343	.7874		20.000	20.0	100	38	-	-	-	223.34	213.63	203.92	194.21
	51072	-	.7874		20.000	20.0	100	38	0.50	-	-	246.43	235.72	225.00	214.29
	50093	50344	.7874		20.000	20.0	100	38	0.75	-	-	246.43	235.72	225.00	214.29
	51073	-	.7874		20.000	20.0	100	38	1.00	-	-	246.43	235.72	225.00	214.29
	51074	-	.7874		20.000	20.0	100	38	1.50	-	-	246.43	235.72	225.00	214.29
	51075	-	.7874		20.000	20.0	100	38	2.00	-	-	246.43	235.72	225.00	214.29
	51076	-	.7874		20.000	20.0	100	38	3.00	-	-	246.43	235.72	225.00	214.29
	51077	-	.9843		25.000	25.0	100	38	-	-	-	255.07	243.98	232.89	221.80
	51078	-	.9843		25.000	25.0	100	38	0.50	-	-	282.45	270.17	257.89	245.61
NEW	51079	-	.9843		25.000	25.0	100	38	0.75	-	-	282.45	270.17	257.89	245.61
	51080	-	.9843		25.000	25.0	100	38	1.50	-	-	282.45	270.17	257.89	245.61
	51081	-	.9843		25.000	25.0	100	38	3.00	-	-	282.45	270.17	257.89	245.61
	50094	-	1.000	1"	25.400	1"	4"	1-1/4"	-	-	-	246.96	236.23	225.49	214.75
	50095	-	1.000	1"	25.400	1"	4"	1-1/4"	.030"	-	-	297.28	284.35	271.43	258.50
NEW	51082	-	1.000	1"	25.400	1"	4"	1-1/4"	.120"	-	-	297.28	284.35	271.43	258.50
	-	50348	1.000	1"	25.400	1"	4"	1-1/2"	-	-	-	237.46	227.14	216.81	206.49
	-	50349	1.000	1"	25.400	1"	4"	1-1/2"	.030"	-	-	285.84	273.42	260.99	248.56
	-	50350	1.000	1"	25.400	1"	4"	1-1/2"	.060"	-	-	285.84	273.42	260.99	248.56
	51083	-	1.000	1"	25.400	1"	4"	1-1/2"	.120"	-	-	297.28	284.35	271.43	258.50
NEW	50116	-	1.000	1"	25.400	1"	4"	1-1/2"	.125"	-	-	297.28	284.35	271.43	258.50
	50097	-	1.000	1"	25.400	1"	4"	1-3/4"	-	-	-	246.96	236.23	225.49	214.75
	50098	-	1.000	1"	25.400	1"	4"	1-3/4"	.030"	-	-	297.28	284.35	271.43	258.50
	50099	-	1.000	1"	25.400	1"	4"	1-3/4"	.060"	-	-	297.28	284.35	271.43	258.50
	51084	-	1.000	1"	25.400	1"	4"	1-3/4"	.120"	-	-	297.28	284.35	271.43	258.50
	51085	-	1.000	1"	25.400	1"	4-1/2"	2"	.030"	-	-	331.51	317.10	302.68	288.27
	51086	-	1.000	1"	25.400	1"	4-1/2"	2"	.060"	-	-	331.51	317.10	302.68	288.27
	51087	-	1.000	1"	25.400	1"	4-1/2"	2"	.120"	-	-	331.51	317.10	302.68	288.27
	51088	-	1.000	1"	25.400	1"	4-1/2"	2"	.250"	-	-	331.51	317.10	302.68	288.27
	51089	-	1.000	1"	25.400	1"	5"	2-1/2"	.030"	-	-	365.75	349.84	333.94	318.04
	51090	-	1.000	1"	25.400	1"	5"	2-5/8"	.030"	-	-	365.75	349.84	333.94	318.04
	50104	50354	1.000	1"	25.400	1"	6"	3-1/4"	-	-	-	430.63	411.91	393.18	374.46
	50105	-	1.000	1"	25.400	1"	6"	3-1/4"	.030"	-	-	477.02	456.28	435.54	414.80
	51091	-	1.000	1"	25.400	1"	6"	3-3/8"	.060"	-	-	477.02	456.28	435.54	414.80
	51092	-	1.000	1"	25.400	1"	7"	4-1/4"	.030"	-	-	582.12	556.81	531.50	506.19
	51093	-	1.000	1"	25.400	1"	7"	4-1/4"	.060"	-	-	582.12	556.81	531.50	506.19
	51094	-	1.000	1"	25.400	1"	5"	1-1/4"	.030"	2-5/8"	.940"	378.56	362.10	345.64	329.18
	50101	-	1.000	1"	25.400	1"	5-1/2"	1-3/4"	.030"	3-1/4"	.940"	485.02	463.94	442.85	421.76
	50102	50352	1.000	1"	25.400	1"	5-1/2"	1-3/4"	.060"	3-1/4"	.940"	485.02	463.94	442.85	421.76
	51095	-	1.000	1"	25.400	1"	6"	1-1/4"	.030"	3-3/8"	.940"	489.82	468.52	447.23	425.93
	51096	-	1.000	1"	25.400	1"	7"	1-1/4"	.030"	4-1/4"	.940"	595.15	569.27	543.40	517.52

Series V5C - Chip Splitter

.4724" - .6299"
(12.000mm - 16.000mm)

HIGH EFFICIENCY MILLING

Z=5 | VAR | TECH PAGES 298-299

TOLERANCES

d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

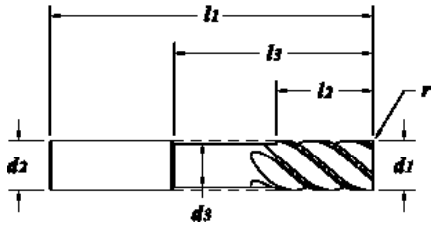
Recommended for titanium and tool steels under 45Rc



Variable Helix End Mill

AlCrN Coating

Solid submicron grain carbide end mill - center cutting
Chip splitter to help break long chips
Engineered for High Efficiency Milling
Staggered flutes to control harmonics
Variable flute design helps with chip evacuation in slots and pockets
PCT (Polish Carbide Treatment) enhances tool life



MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
50801	.4724		12.000	12.0	100	42	0.30	-	-	98.80	94.50	90.21	85.91
50800	.4724		12.000	12.0	100	42	1.00	-	-	98.80	94.50	90.21	85.91
50803	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	69.05	66.04	63.04	60.04
50807	.5000	1/2"	12.700	1/2"	3"	1"	.015"	-	-	82.55	78.96	75.37	71.78
50805	.5000	1/2"	12.700	1/2"	3"	1"	.020"	-	-	82.55	78.96	75.37	71.78
50809	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	82.55	78.96	75.37	71.78
50811	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	82.55	78.96	75.37	71.78
50810	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	82.55	78.96	75.37	71.78
50815	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	82.55	78.96	75.37	71.78
50813	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	82.55	78.96	75.37	71.78
50820	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-	82.55	78.96	75.37	71.78
50825	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.010"	-	-	96.40	92.21	88.02	83.83
50817	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	-	96.40	92.21	88.02	83.83
50830	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	-	91.21	87.24	83.28	79.31
50819	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.030"	-	-	96.40	92.21	88.02	83.83
50835	.5000	1/2"	12.700	1/2"	4"	2-1/8"	-	-	-	91.21	87.24	83.28	79.31
50836	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	-	96.40	92.21	88.02	83.83
50821	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	1-1/2"	.475"	109.17	104.42	99.68	94.93
50823	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	128.95	123.34	117.74	112.13
50840	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	128.95	123.34	117.74	112.13
50827	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	131.22	125.51	119.81	114.10
50829	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	139.53	133.46	127.40	121.33
50845	.6250	5/8"	15.875	5/8"	4"	2-1/8"	.030"	-	-	139.53	133.46	127.40	121.33
50831	.6250	5/8"	15.875	5/8"	6"	2-1/2"	.030"	-	-	189.22	180.99	172.77	164.54
50833	.6299		16.000	16.0	100	40	0.50	-	-	142.26	136.07	129.89	123.70
50837	.6299		16.000	16.0	100	40	1.00	-	-	142.26	136.07	129.89	123.70

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
50839	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	169.46	162.10	154.73	147.36
50841	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	178.27	170.52	162.77	155.02
50843	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	181.99	174.08	166.16	158.25
50847	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	181.99	174.08	166.16	158.25
50850	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	181.99	174.08	166.16	158.25
50849	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	173.17	165.64	158.11	150.58
50851	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	181.99	174.08	166.16	158.25
50855	.7500	3/4"	19.050	3/4"	5"	2-1/8"	.030"	-	-	249.38	238.54	227.69	216.85
50853	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.030"	-	-	249.38	238.54	227.69	216.85
50857	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-	249.38	238.54	227.69	216.85
50859	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.015"	-	-	249.38	238.54	227.69	216.85
50861	.7500	3/4"	19.050	3/4"	5"	2-3/4"	.030"	-	-	249.38	238.54	227.69	216.85
50863	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	267.52	255.89	244.26	232.63
50860	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	294.76	281.94	269.13	256.31
50867	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.015"	-	-	369.69	353.62	337.54	321.47
50869	1.000	1"	25.400	1"	5"	2-1/2"	.030"	-	-	373.61	357.37	341.12	324.88
50871	1.000	1"	25.400	1"	5"	2-5/8"	.030"	-	-	373.61	357.37	341.12	324.88
50873	1.000	1"	25.400	1"	6"	3-1/4"	.030"	-	-	484.89	463.80	442.72	421.64



Series VX-7 NEW ITEMS HIGH EFFICIENCY MILLING

.3150" - .4724"
(8.000mm - 12.000mm)

Z=7 | 38° | TECH PAGES 302-303

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

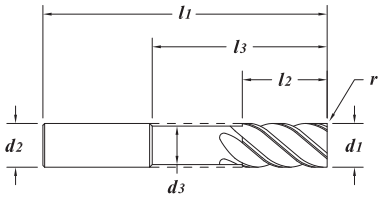
Recommended for titanium, stainless, and tool steels under 45Rc

Seven-Flute End Mill

BALIQ® ALCRONOS Coating (AlCrN-Based)

Solid submicron grain carbide end mill - non-center cutting
Engineered for High Efficiency Milling
Multiple flutes for increased feed rates
Staggered flute geometry
PCT (Polish Carbide Treatment) enhances tool life
Up to 15% Radial (ae) engagement





MATERIAL HARDNESS (Rc)
70
35
0

	EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	64100	.3150		8.000	8.0	65	22	-	-	-	53.99	51.65	49.30	46.95
	64102	.3150		8.000	8.0	65	22	0.50	-	-	59.48	56.89	54.31	51.72
	64104	.3150		8.000	8.0	65	22	1.00	-	-	59.48	56.89	54.31	51.72
	64105	.3150		8.000	8.0	75	27	1.60	-	-	72.94	69.77	66.60	63.43
	64106	.3150		8.000	8.0	75	32	-	-	-	66.75	63.84	60.94	58.04
	64108	.3150		8.000	8.0	75	32	0.50	-	-	72.94	69.77	66.60	63.43
	64110	.3150		8.000	8.0	75	32	1.00	-	-	72.94	69.77	66.60	63.43
NEW	64267	.3750	3/8"	9.525	3/8"	2"	5/8"	-	-	-	49.94	47.77	45.60	43.43
NEW	64268	.3750	3/8"	9.525	3/8"	2"	5/8"	.010"	-	-	57.05	54.57	52.09	49.61
NEW	64269	.3750	3/8"	9.525	3/8"	2"	5/8"	.015"	-	-	57.05	54.57	52.09	49.61
NEW	64270	.3750	3/8"	9.525	3/8"	2"	5/8"	.020"	-	-	57.05	54.57	52.09	49.61
NEW	64271	.3750	3/8"	9.525	3/8"	2"	5/8"	.030"	-	-	57.05	54.57	52.09	49.61
	64112	.3750	3/8"	9.525	3/8"	2-1/2"	1"	-	-	-	58.67	56.12	53.57	51.02
	64114	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	-	64.24	61.45	58.65	55.86
	64116	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	-	64.24	61.45	58.65	55.86
	64117	.3750	3/8"	9.525	3/8"	3"	1"	.025"	-	-	78.14	74.75	71.35	67.95
	64118	.3750	3/8"	9.525	3/8"	3"	1-1/2"	-	-	-	70.76	67.68	64.61	61.53
	64120	.3750	3/8"	9.525	3/8"	3"	1-1/2"	.020"	-	-	78.14	74.75	71.35	67.95
	64122	.3750	3/8"	9.525	3/8"	3"	1-1/2"	.030"	-	-	78.14	74.75	71.35	67.95
	64123	.3750	3/8"	9.525	3/8"	3"	1-1/2"	.060"	-	-	78.14	74.75	71.35	67.95
	64246	.3750	3/8"	9.525	3/8"	4"	7/8"	.015"	1-7/8"	.355"	101.71	97.28	92.86	88.44
	64124	.3937		10.000	10.0	70	25	-	-	-	68.70	65.71	62.73	59.74
	64126	.3937		10.000	10.0	70	25	0.50	-	-	75.83	72.53	69.24	65.94
	64128	.3937		10.000	10.0	70	25	1.00	-	-	75.83	72.53	69.24	65.94
	64130	.4724		12.000	12.0	75	26	-	-	-	82.48	78.89	75.31	71.72
	64132	.4724		12.000	12.0	75	26	0.50	-	-	100.42	96.05	91.69	87.32
	64134	.4724		12.000	12.0	75	26	1.00	-	-	100.42	96.05	91.69	87.32
	64136	.4724		12.000	12.0	75	32	-	-	-	82.48	78.89	75.31	71.72
	64138	.4724		12.000	12.0	75	32	0.50	-	-	100.42	96.05	91.69	87.32
	64140	.4724		12.000	12.0	75	32	1.00	-	-	100.42	96.05	91.69	87.32
	64141	.4724		12.000	12.0	100	42	1.00	-	-	121.80	116.50	111.21	105.91
	64142	.4724		12.000	12.0	100	50	-	-	-	110.76	105.94	101.13	96.31
	64144	.4724		12.000	12.0	100	50	0.50	-	-	121.80	116.50	111.21	105.91
	64146	.4724		12.000	12.0	100	50	1.00	-	-	121.80	116.50	111.21	105.91

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	64218	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-	77.07	73.72	70.37	67.02
	64220	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.015"	-	-	89.80	85.90	81.99	78.09
	64222	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	89.80	85.90	81.99	78.09
	64223	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	-	-	89.80	85.90	81.99	78.09
	64224	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	80.10	76.62	73.13	69.65
	64226	.5000	1/2"	12.700	1/2"	3"	1"	.015"	-	-	97.27	93.04	88.81	84.58
	64228	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	97.27	93.04	88.81	84.58
	64148	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	80.10	76.62	73.13	69.65
	64150	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	97.27	93.04	88.81	84.58
	64152	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	97.27	93.04	88.81	84.58
	64154	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	97.27	93.04	88.81	84.58
	64156	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	97.27	93.04	88.81	84.58
	64157	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	97.27	93.04	88.81	84.58
	64158	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	-	-	-	104.17	99.64	95.11	90.58
	64160	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.030"	-	-	114.82	109.82	104.83	99.84
	64161	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	2-1/8"	.475"	128.62	123.02	117.43	111.84
	64242	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	-	106.87	102.22	97.58	92.93
	64244	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.015"	-	-	117.52	112.41	107.30	102.19
	64162	.5000	1/2"	12.700	1/2"	4"	2"	-	-	-	106.87	102.22	97.58	92.93
	64163	.5000	1/2"	12.700	1/2"	4"	2"	.015"	-	-	117.52	112.41	107.30	102.19
	64164	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	117.52	112.41	107.30	102.19
	64165	.5000	1/2"	12.700	1/2"	4"	2"	.125"	-	-	117.52	112.41	107.30	102.19
NEW	64248	.5512		14.000	14.0	88	32	0.50	-	-	143.31	137.08	130.85	124.62
	64166	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	135.99	130.08	124.16	118.25
	64168	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	148.65	142.19	135.72	129.26
	64170	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	148.65	142.19	135.72	129.26
NEW	64171	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	148.65	142.19	135.72	129.26
	64172	.6250	5/8"	15.875	5/8"	4"	1-3/4"	-	-	-	143.18	136.95	130.73	124.50
	64174	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.030"	-	-	156.71	149.90	143.08	136.27
	64176	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.060"	-	-	156.71	149.90	143.08	136.27
	64177	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.120"	-	-	156.71	149.90	143.08	136.27
	64250	.6250	5/8"	15.875	5/8"	4"	2"	.120"	-	-	156.71	149.90	143.08	136.27
	64178	.6299		16.000	16.0	88	32	-	-	-	145.51	139.18	132.86	126.53
	64180	.6299		16.000	16.0	88	32	0.50	-	-	158.64	151.75	144.85	137.95
	64182	.6299		16.000	16.0	88	32	1.00	-	-	158.64	151.75	144.85	137.95
	64230	.6299		16.000	16.0	88	32	2.00	-	-	158.64	151.75	144.85	137.95
	64231	.6299		16.000	16.0	100	40	1.00	-	-	166.49	159.25	152.01	144.77
	64232	.6299		16.000	16.0	100	40	1.50	-	-	166.49	159.25	152.01	144.77
	64234	.6299		16.000	16.0	125	65	0.50	-	-	209.33	200.23	191.13	182.03
	64236	.6299		16.000	16.0	125	65	3.00	-	-	209.33	200.23	191.13	182.03
	64252	.7500	3/4"	19.050	3/4"	3"	1"	-	-	-	176.90	169.21	161.52	153.83
	64254	.7500	3/4"	19.050	3/4"	3"	1"	.030"	-	-	195.07	186.59	178.11	169.63
	64184	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	186.22	178.12	170.03	161.93
	64186	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	204.72	195.82	186.92	178.02
	64188	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	204.72	195.82	186.92	178.02
	64190	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	204.72	195.82	186.92	178.02
	64256	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	186.23	178.13	170.04	161.94
	64258	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	204.72	195.82	186.92	178.02
	64260	.7500	3/4"	19.050	3/4"	5"	1"	.030"	3"	.730"	288.37	275.84	263.30	250.76

continued →

Series VX-7 *(continued)*

.7500" - 1.0000"
(19.050mm - 25.400mm)

	EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	64192	.7500	3/4"	19.050	3/4"	5"	2-1/4"	-	-	-	245.23	234.56	223.90	213.24
	64194	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.030"	-	-	277.27	265.21	253.16	241.10
	64238	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.060"	-	-	277.27	265.21	253.16	241.10
NEW	64262	.7500	3/4"	19.050	3/4"	5"	2-1/4"	.120"	-	-	277.27	265.21	253.16	241.10
NEW	64264	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.060"	-	-	277.27	265.21	253.16	241.10
	64266	.7500	3/4"	19.050	3/4"	6"	1-1/8"	.120"	3-5/8"	.730"	336.93	322.28	307.63	292.98
	64196	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	287.04	274.56	262.08	249.60
	64198	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	325.81	311.64	297.48	283.31
	64200	.7874		20.000	20.0	100	38	-	-	-	249.19	238.36	227.52	216.69
	64202	.7874		20.000	20.0	100	38	0.50	-	-	285.07	272.68	260.28	247.89
	64204	.7874		20.000	20.0	100	38	1.00	-	-	285.07	272.68	260.28	247.89
	64206	1.000	1"	25.400	1"	4"	1-1/2"	-	-	-	270.81	259.04	247.26	235.49
	64208	1.000	1"	25.400	1"	4"	1-1/2"	.030"	-	-	334.04	319.52	304.99	290.47
	64240	1.000	1"	25.400	1"	4"	1-1/2"	.125"	-	-	334.05	319.53	305.00	290.48
	64210	1.000	1"	25.400	1"	5"	2"	-	-	-	353.38	338.02	322.65	307.29
	64212	1.000	1"	25.400	1"	5"	2-1/2"	-	-	-	353.38	338.02	322.65	307.29
	64213	1.000	1"	25.400	1"	5"	2-1/2"	.030"	-	-	406.56	388.88	371.21	353.53
	64214	1.000	1"	25.400	1"	6"	3-1/4"	-	-	-	450.47	430.88	411.30	391.71
	64216	1.000	1"	25.400	1"	6"	3-1/4"	.030"	-	-	515.95	493.52	471.08	448.65



MATERIAL HARDNESS (Rc)
70
35
0

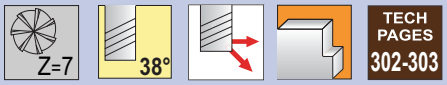
GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

HIGH EFFICIENCY MILLING

Series VX-7C - Chip Splitter



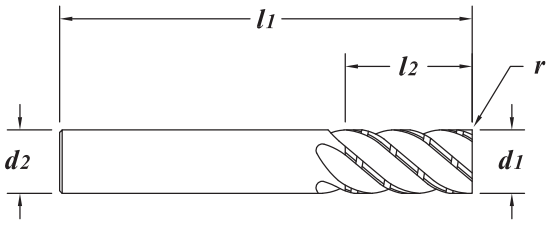
Recommended for titanium, stainless, and tool steels under 45Rc

Seven-Flute End Mill

BALIQ® ALCRONOS Coating (AlCrN-Based)

Solid submicron grain carbide end mill - non-center cutting
Chip splitter to help break long chips
Engineered for High Efficiency Milling
Multiple flutes for increased feed rates
Staggered flute geometry
PCT (Polish Carbide Treatment) enhances tool life
Up to 15% Radial (ae) engagement





EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
64300	.3750	3/8"	9.525	3/8"	2-1/2"	1"	-	65.50	62.66	59.81	56.96
64302	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.020"	71.08	67.99	64.90	61.81
64304	.3750	3/8"	9.525	3/8"	2-1/2"	1"	.030"	71.08	67.99	64.90	61.81
64310	.4724		12.000	12.0	100	50	0.50	130.35	124.69	119.02	113.35
64316	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	98.35	94.07	89.80	85.52
64318	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	98.35	94.07	89.80	85.52
64322	.5000	1/2"	12.700	1/2"	3"	1"	.030"	105.81	101.21	96.61	92.01
64330	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	105.81	101.21	96.61	92.01
64332	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	105.81	101.21	96.61	92.01
64338	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	-	112.71	107.81	102.91	98.01
64342	.5000	1/2"	12.700	1/2"	3-1/2"	1-1/2"	.030"	123.36	118.00	112.63	107.27
64346	.5000	1/2"	12.700	1/2"	4"	2"	-	115.41	110.40	105.38	100.36
64348	.5000	1/2"	12.700	1/2"	4"	2"	.030"	126.06	120.58	115.10	109.62
64352	.5000	1/2"	12.700	1/2"	4"	2"	.125"	126.06	120.58	115.10	109.62
64360	.6250	5/8"	15.875	5/8"	4"	1-3/4"	-	153.43	146.76	140.09	133.42
64364	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.030"	166.96	159.70	152.44	145.18
64368	.6299		16.000	16.0	100	40	0.75	176.73	169.05	161.36	153.68
64369	.6299		16.000	16.0	100	40	1.00	176.73	169.05	161.36	153.68
64372	.6299		16.000	16.0	100	50	1.00	176.73	169.05	161.36	153.68
64380	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	215.41	206.04	196.68	187.31
64386	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	336.48	321.85	307.22	292.59
64389	.7874		20.000	20.0	100	38	0.50	297.88	284.93	271.98	259.03
64400	1.000	1"	25.400	1"	5"	2-1/2"	.030"	419.38	401.15	382.91	364.68

Series VRX

NEW ITEMS

.0591" - .1181"
(1.500mm - 3.000mm)

Z=4 | 41° | TECH PAGES 294-295

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Recommended for inconel, pH materials, titanium and tool steels >40Rc



Square End, Corner Radius, Ball End

AlTiN Coating

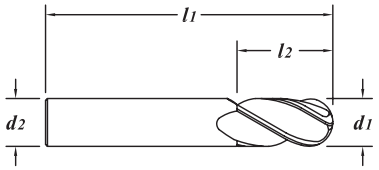
Solid submicron grain carbide end mill - center cutting

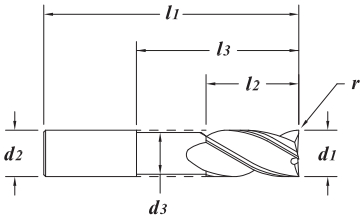
Excellent for High Efficiency Milling

Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity

Staggered flute geometry

The combination of an extended flute length with a weldon flat may cause the flute washout to reach inside some end mill holders





MATERIAL HARDNESS (Rc)
70
35
0

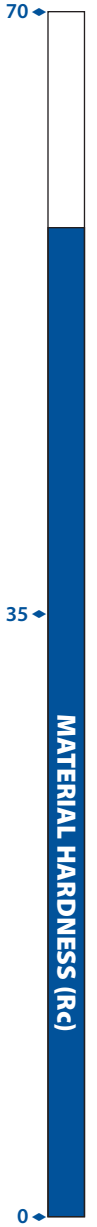
EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
61084	-	.0591		1.500	3.0	38	3.0	-	-	-	15.08	14.42	13.77	13.11
61086	-	.0591		1.500	3.0	38	3.0	0.20	-	-	17.10	16.36	15.61	14.87
61088	-	.0591		1.500	3.0	38	3.0	BALL	-	-	17.10	16.36	15.61	14.87
61090	-	.0591		1.500	3.0	38	6.0	-	-	-	15.08	14.42	13.77	13.11
61092	-	.0591		1.500	3.0	38	6.0	0.20	-	-	17.10	16.36	15.61	14.87
61094	-	.0591		1.500	3.0	38	6.0	BALL	-	-	17.10	16.36	15.61	14.87
61096	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	-	-	-	14.21	13.60	12.98	12.36
61098	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	.010"	-	-	16.11	15.41	14.71	14.01
61100	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	BALL	-	-	16.11	15.41	14.71	14.01
61102	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	-	-	-	14.21	13.60	12.98	12.36
61104	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	.010"	-	-	16.11	15.41	14.71	14.01
61106	-	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	BALL	-	-	16.11	15.41	14.71	14.01
61108	-	.0787		2.000	3.0	38	4.0	-	-	-	14.21	13.60	12.98	12.36
61110	-	.0787		2.000	3.0	38	4.0	0.20	-	-	16.11	15.41	14.71	14.01
61112	-	.0787		2.000	3.0	38	4.0	BALL	-	-	16.11	15.41	14.71	14.01
61114	-	.0787		2.000	3.0	38	8.0	-	-	-	14.21	13.60	12.98	12.36
61116	-	.0787		2.000	3.0	38	8.0	0.20	-	-	16.11	15.41	14.71	14.01
61118	-	.0787		2.000	3.0	38	8.0	BALL	-	-	16.11	15.41	14.71	14.01
61120	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	-	-	-	13.57	12.98	12.39	11.80
61122	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.010"	-	-	15.53	14.85	14.18	13.50
61124	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	BALL	-	-	15.53	14.85	14.18	13.50
61126	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	-	-	-	13.57	12.98	12.39	11.80
61128	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.010"	-	-	15.53	14.85	14.18	13.50
61130	-	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	BALL	-	-	15.53	14.85	14.18	13.50
61877	-	.1181		3.000	3.0	38	8	-	-	-	12.75	12.20	11.64	11.09
27420	-	.1181		3.000	3.0	50	8	0.20	-	-	14.34	13.72	13.09	12.47
61132	-	.1181		3.000	3.0	50	8	0.30	-	-	14.34	13.72	13.09	12.47
27425	-	.1181		3.000	3.0	50	8	0.50	-	-	14.34	13.72	13.09	12.47
61134	-	.1181		3.000	3.0	50	8	BALL	-	-	14.34	13.72	13.09	12.47
61887	-	.1181		3.000	3.0	38	12	-	-	-	12.75	12.20	11.64	11.09
27430	-	.1181		3.000	3.0	50	12	0.20	-	-	14.34	13.72	13.09	12.47
61136	-	.1181		3.000	3.0	50	12	0.30	-	-	14.34	13.72	13.09	12.47
27435	-	.1181		3.000	3.0	50	12	0.50	-	-	14.34	13.72	13.09	12.47
61138	-	.1181		3.000	3.0	50	12	BALL	-	-	14.34	13.72	13.09	12.47

GARR TOOL®

† *Metric equivalents are for reference only*

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
61917	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	-	-	-	12.75	12.20	11.64	11.09
27440	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.010"	-	-	14.34	13.72	13.09	12.47
61140	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.015"	-	-	14.34	13.72	13.09	12.47
61073		.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.030"	-	-	14.34	13.72	13.09	12.47
61142	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	BALL	-	-	14.34	13.72	13.09	12.47
61144	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	-	-	-	12.75	12.20	11.64	11.09
61146	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.010"	-	-	14.34	13.72	13.09	12.47
61148	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.015"	-	-	14.34	13.72	13.09	12.47
61074		.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	.030"	-	-	14.34	13.72	13.09	12.47
61149	-	.1250	1/8"	3.175	1/8"	1-1/2"	3/8"	BALL	-	-	14.34	13.72	13.09	12.47
61927	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	-	-	-	12.75	12.20	11.64	11.09
27450	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.010"	-	-	14.34	13.72	13.09	12.47
61150	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.015"	-	-	14.34	13.72	13.09	12.47
27455	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	-	-	14.34	13.72	13.09	12.47
61075		.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.030"	-	-	14.34	13.72	13.09	12.47
61152	-	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	BALL	-	-	14.34	13.72	13.09	12.47
61154	-	.1562	5/32"	3.967	3/16"	2"	5/16"	-	-	-	16.80	16.07	15.34	14.61
27460	-	.1562	5/32"	3.967	3/16"	2"	5/16"	.010"	-	-	19.77	18.91	18.05	17.19
61156	-	.1562	5/32"	3.967	3/16"	2"	5/16"	.015"	-	-	19.77	18.91	18.05	17.19
61076		.1562	5/32"	3.967	3/16"	2"	5/16"	.030"	-	-	19.77	18.91	18.05	17.19
61077		.1562	5/32"	3.967	3/16"	2"	5/16"	BALL	-	-	19.77	18.91	18.05	17.19
61158	-	.1562	5/32"	3.967	3/16"	2"	1/2"	-	-	-	16.80	16.07	15.34	14.61
27470	-	.1562	5/32"	3.967	3/16"	2"	1/2"	.010"	-	-	19.77	18.91	18.05	17.19
61160	-	.1562	5/32"	3.967	3/16"	2"	1/2"	.015"	-	-	19.77	18.91	18.05	17.19
61078		.1562	5/32"	3.967	3/16"	2"	1/2"	.030"	-	-	19.77	18.91	18.05	17.19
61079		.1562	5/32"	3.967	3/16"	2"	1/2"	BALL	-	-	19.77	18.91	18.05	17.19
61162	-	.1575		4.000	6.0	50	8	-	-	-	23.93	22.89	21.85	20.81
27480	-	.1575		4.000	6.0	50	8	0.30	-	-	24.30	23.24	22.19	21.13
61164	-	.1575		4.000	6.0	50	8	0.50	-	-	24.30	23.24	22.19	21.13
28470	-	.1575		4.000	6.0	50	8	BALL	-	-	24.30	23.24	22.19	21.13
61977	-	.1575		4.000	6.0	50	12	-	-	-	23.93	22.89	21.85	20.81
27490	-	.1575		4.000	6.0	50	12	0.30	-	-	24.30	23.24	22.19	21.13
27495	-	.1575		4.000	6.0	50	12	0.50	-	-	24.30	23.24	22.19	21.13
28480	-	.1575		4.000	6.0	50	12	BALL	-	-	24.30	23.24	22.19	21.13
61166	-	.1575		4.000	6.0	65	19	-	-	-	26.54	25.39	24.23	23.08
61168	-	.1575		4.000	6.0	65	19	0.30	-	-	26.93	25.76	24.59	23.42
62007	-	.1875	3/16"	4.763	3/16"	2"	5/16"	-	-	-	16.08	15.38	14.68	13.98
27500	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.010"	-	-	18.01	17.23	16.44	15.66
61170	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.015"	-	-	18.01	17.23	16.44	15.66
61172	-	.1875	3/16"	4.763	3/16"	2"	5/16"	.020"	-	-	18.01	17.23	16.44	15.66
28490	-	.1875	3/16"	4.763	3/16"	2"	5/16"	BALL	-	-	18.01	17.23	16.44	15.66
61174	-	.1875	3/16"	4.763	3/16"	2"	7/16"	-	-	-	16.08	15.38	14.68	13.98
61176	-	.1875	3/16"	4.763	3/16"	2"	7/16"	.010"	-	-	18.01	17.23	16.44	15.66
61178	-	.1875	3/16"	4.763	3/16"	2"	7/16"	.015"	-	-	18.01	17.23	16.44	15.66
62017	-	.1875	3/16"	4.763	3/16"	2"	9/16"	-	-	-	16.08	15.38	14.68	13.98
27520	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.010"	-	-	18.01	17.23	16.44	15.66
61180	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.015"	-	-	18.01	17.23	16.44	15.66
27521	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.020"	-	-	18.01	17.23	16.44	15.66
61182	-	.1875	3/16"	4.763	3/16"	2"	9/16"	.030"	-	-	18.01	17.23	16.44	15.66
28500	-	.1875	3/16"	4.763	3/16"	2"	9/16"	BALL	-	-	18.01	17.23	16.44	15.66
61184	-	.1875	3/16"	4.763	3/16"	3"	1"	.010"	-	-	30.82	29.48	28.14	26.80
61186	-	.1875	3/16"	4.763	3/16"	3"	1-1/4"	.010"	-	-	30.82	29.48	28.14	26.80
63100	-	.1875	3/16"	4.763	3/16"	4"	5/16"	.010"	-	-	33.55	32.09	30.63	29.17
61188	-	.1969		5.000	6.0	50	10	-	-	-	23.44	22.42	21.40	20.38
27522	-	.1969		5.000	6.0	50	10	0.30	-	-	23.82	22.78	21.75	20.71
61190	-	.1969		5.000	6.0	50	10	0.50	-	-	23.82	22.78	21.75	20.71
28510	-	.1969		5.000	6.0	50	10	BALL	-	-	23.82	22.78	21.75	20.71

continued →



Series VRX *(continued)*

.1969" - .2500"
(5.000mm - 6.350mm)

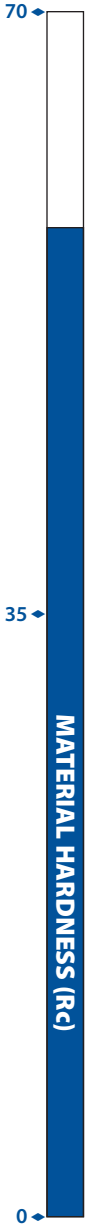
EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
62057	-	.1969		5.000	6.0	65	15	-	-	-	25.60	24.49	23.37	22.26
27524	-	.1969		5.000	6.0	65	15	0.30	-	-	26.38	25.23	24.09	22.94
27526	-	.1969		5.000	6.0	65	15	0.50	-	-	26.38	25.23	24.09	22.94
27528	-	.1969		5.000	6.0	65	15	1.00	-	-	26.38	25.23	24.09	22.94
28520	-	.1969		5.000	6.0	65	15	BALL	-	-	26.38	25.23	24.09	22.94
63110	-	.1969		5.000	6.0	100	10	0.30	-	-	50.55	48.36	46.16	43.96
61192	-	.1969		5.000	6.0	100	10	0.30	55	4.70	59.20	56.63	54.05	51.48
61194	-	.2188	7/32"	5.558	1/4"	2"	3/8"	-	-	-	19.76	18.90	18.04	17.18
61196	-	.2188	7/32"	5.558	1/4"	2"	3/8"	.010"	-	-	22.91	21.91	20.92	19.92
27525	-	.2188	7/32"	5.558	1/4"	2"	3/8"	.015"	-	-	22.91	21.91	20.92	19.92
61198	-	.2188	7/32"	5.558	1/4"	2"	3/8"	BALL	-	-	22.91	21.91	20.92	19.92
61200	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	-	-	-	22.43	21.45	20.48	19.50
61202	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.010"	-	-	25.40	24.30	23.19	22.09
27530	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.015"	-	-	25.40	24.30	23.19	22.09
61204	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	.020"	-	-	25.40	24.30	23.19	22.09
61206	-	.2188	7/32"	5.558	1/4"	2-1/2"	3/4"	BALL	-	-	25.40	24.30	23.19	22.09
61208	-	.2188	7/32"	5.558	1/4"	3"	1-1/4"	.015"	-	-	37.65	36.01	34.38	32.74
63120	-	.2188	7/32"	5.558	1/4"	4"	3/8"	.015"	-	-	48.82	46.70	44.57	42.45
61210	-	.2188	7/32"	5.558	1/4"	4"	3/8"	.015"	2-1/4"	.205"	57.47	54.97	52.47	49.97
62077	-	.2362		6.000	6.0	50	12	-	-	-	19.93	19.06	18.20	17.33
27535	-	.2362		6.000	6.0	50	12	0.30	-	-	23.05	22.04	21.04	20.04
61212	-	.2362		6.000	6.0	50	12	0.50	-	-	23.05	22.04	21.04	20.04
61214	-	.2362		6.000	6.0	50	12	0.75	-	-	23.05	22.04	21.04	20.04
28530	-	.2362		6.000	6.0	50	12	BALL	-	-	23.05	22.04	21.04	20.04
62087	-	.2362		6.000	6.0	65	19	-	-	-	22.46	21.48	20.51	19.53
61216	-	.2362		6.000	6.0	65	19	0.20	-	-	25.54	24.43	23.32	22.21
27540	-	.2362		6.000	6.0	65	19	0.30	-	-	25.54	24.43	23.32	22.21
27545	-	.2362		6.000	6.0	65	19	0.50	-	-	25.54	24.43	23.32	22.21
61218	-	.2362		6.000	6.0	65	19	0.75	-	-	25.54	24.43	23.32	22.21
27547	-	.2362		6.000	6.0	65	19	1.00	-	-	25.54	24.43	23.32	22.21
27548	-	.2362		6.000	6.0	65	19	1.50	-	-	25.54	24.43	23.32	22.21
28540	-	.2362		6.000	6.0	65	19	BALL	-	-	25.54	24.43	23.32	22.21
61220	-	.2362		6.000	6.0	75	26	0.30	-	-	38.00	36.34	34.69	33.04
61222	-	.2362		6.000	6.0	75	26	0.50	-	-	38.00	36.34	34.69	33.04
61224	-	.2362		6.000	6.0	75	38	0.30	-	-	38.00	36.34	34.69	33.04
61226	-	.2362		6.000	6.0	75	38	0.50	-	-	38.00	36.34	34.69	33.04
63130	-	.2362		6.000	6.0	100	12	0.30	32	5.70	49.29	47.15	45.00	42.86
62137	-	.2500	1/4"	6.350	1/4"	2"	3/8"	-	-	-	19.12	18.29	17.46	16.63
61228	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.010"	-	-	21.32	20.39	19.47	18.54
27560	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.015"	-	-	22.17	21.21	20.24	19.28
61230	-	.2500	1/4"	6.350	1/4"	2"	3/8"	.020"	-	-	22.17	21.21	20.24	19.28
28570	-	.2500	1/4"	6.350	1/4"	2"	3/8"	BALL	-	-	22.17	21.21	20.24	19.28
61232	-	.2500	1/4"	6.350	1/4"	2"	1/2"	-	-	-	19.12	18.29	17.46	16.63
61234	-	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-	-	22.17	21.21	20.24	19.28
62147	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	-	21.69	20.75	19.80	18.86
27570	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	-	24.56	23.50	22.43	21.36
27580	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	24.56	23.50	22.43	21.36
61236	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	24.56	23.50	22.43	21.36
27581	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	24.56	23.50	22.43	21.36
61238	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.040"	-	-	24.56	23.50	22.43	21.36
27583	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	-	-	24.56	23.50	22.43	21.36
28580	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	BALL	-	-	24.56	23.50	22.43	21.36

MATERIAL HARDNESS (Rc)
70
35
0

GARR TOOL®

† *Metric equivalents are for reference only*

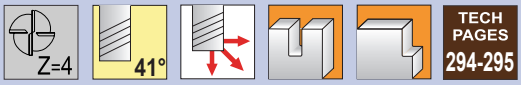
EDP# (plain)	EDP# (weldon)	*d1* † Diameter Decimal	*d1* † Diameter	Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*r* Corner Radius	*l3* Reach Length	*d3* Neck Diameter	1-11	12-24	25-49	50-100
61240	-	.2500	1/4"	6.350	1/4"	3"	1"	.015"	-	-	36.40	34.82	33.23	31.65
61241	-	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	-	36.40	34.82	33.23	31.65
61242	-	.2500	1/4"	6.350	1/4"	3"	1-1/2"	.015"	-	-	36.40	34.82	33.23	31.65
61244	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	3/4"	.240"	47.60	45.53	43.46	41.39
63140	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	1-1/4"	.240"	47.60	45.53	43.46	41.39
61246	-	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	2-1/8"	.240"	47.60	45.53	43.46	41.39
27585	-	.2756		7.000	8.0	50	12	0.30	-	-	35.96	34.40	32.83	31.27
27590	-	.2756		7.000	8.0	65	22	0.30	-	-	39.53	37.81	36.09	34.37
61248	-	.2812	9/32"	7.142	5/16"	2"	7/16"	-	-	-	30.25	28.93	27.62	26.30
27595	-	.2812	9/32"	7.142	5/16"	2"	7/16"	.015"	-	-	34.66	33.15	31.65	30.14
61250	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	-	-	-	35.40	33.86	32.32	30.78
61252	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.010"	-	-	38.10	36.44	34.79	33.13
27597	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.015"	-	-	38.10	36.44	34.79	33.13
61254	-	.2812	9/32"	7.142	5/16"	2-1/2"	13/16"	.020"	-	-	38.10	36.44	34.79	33.13
63150	-	.2812	9/32"	7.142	5/16"	4"	7/16"	.015"	-	-	65.83	62.96	60.10	57.24
62207	-	.3125	5/16"	7.938	5/16"	2"	7/16"	-	-	-	26.43	25.28	24.13	22.98
61256	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.010"	-	-	30.29	28.97	27.66	26.34
61258	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.015"	-	-	30.29	28.97	27.66	26.34
27600	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	-	-	30.29	28.97	27.66	26.34
61260	-	.3125	5/16"	7.938	5/16"	2"	7/16"	.030"	-	-	30.29	28.97	27.66	26.34
28610	-	.3125	5/16"	7.938	5/16"	2"	7/16"	BALL	-	-	30.29	28.97	27.66	26.34
62217	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	-	-	-	30.92	29.58	28.23	26.89
27610	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.010"	-	-	33.29	31.85	30.40	28.95
61262	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.015"	-	-	33.29	31.85	30.40	28.95
27620	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	-	33.29	31.85	30.40	28.95
27622	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	-	-	33.29	31.85	30.40	28.95
61264	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.040"	-	-	33.29	31.85	30.40	28.95
27624	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.060"	-	-	33.29	31.85	30.40	28.95
28620	-	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	BALL	-	-	33.29	31.85	30.40	28.95
61266	-	.3125	5/16"	7.938	5/16"	3"	1-1/4"	.015"	-	-	46.41	44.40	42.38	40.36
63160	-	.3125	5/16"	7.938	5/16"	4"	7/16"	.020"	1-7/8"	.300"	64.19	61.40	58.61	55.82
62257	-	.3150		8.000	8.0	50	12	-	-	-	27.52	26.32	25.13	23.93
61268	-	.3150		8.000	8.0	50	12	0.30	-	-	31.41	30.04	28.68	27.31
27630	-	.3150		8.000	8.0	50	12	0.50	-	-	31.41	30.04	28.68	27.31
61270	-	.3150		8.000	8.0	50	12	0.75	-	-	31.41	30.04	28.68	27.31
28630	-	.3150		8.000	8.0	50	12	BALL	-	-	31.41	30.04	28.68	27.31
62267	-	.3150		8.000	8.0	65	22	-	-	-	32.05	30.66	29.26	27.87
27635	-	.3150		8.000	8.0	65	22	0.30	-	-	34.55	33.04	31.54	30.04
27640	-	.3150		8.000	8.0	65	22	0.50	-	-	34.55	33.04	31.54	30.04
61272	-	.3150		8.000	8.0	65	22	0.75	-	-	34.55	33.04	31.54	30.04
27642	-	.3150		8.000	8.0	65	22	1.00	-	-	34.55	33.04	31.54	30.04
27643	-	.3150		8.000	8.0	65	22	1.50	-	-	34.55	33.04	31.54	30.04
61274	-	.3150		8.000	8.0	65	22	2.00	-	-	34.55	33.04	31.54	30.04
28640	-	.3150		8.000	8.0	65	22	BALL	-	-	34.55	33.04	31.54	30.04
61276	-	.3150		8.000	8.0	75	38	0.50	-	-	48.39	46.29	44.18	42.08
61278	-	.3150		8.000	8.0	100	50	0.50	-	-	55.28	52.88	50.47	48.07
63170	-	.3150		8.000	8.0	100	12	0.50	47	7.60	66.40	63.51	60.63	57.74
61280	-	.3438	11/32"	8.733	3/8"	2"	1/2"	-	-	-	35.34	33.80	32.27	30.73
27645	-	.3438	11/32"	8.733	3/8"	2"	1/2"	.020"	-	-	40.45	38.69	36.93	35.17
61282	-	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	-	-	-	41.29	39.49	37.70	35.90
27650	-	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	.020"	-	-	43.98	42.06	40.15	38.24
61284	-	.3438	11/32"	8.733	3/8"	3"	1-1/4"	.015"	-	-	57.88	55.36	52.85	50.33



continued →

Series VRX *(continued)*

.3438" - .3937"
(8.733mm - 10.000mm)



TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Recommended for inconel, pH materials, titanium and tool steels >40Rc



AlTiN Coating

Solid submicron grain carbide end mill - center cutting

Excellent for High Efficiency Milling

Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity

Staggered flute geometry

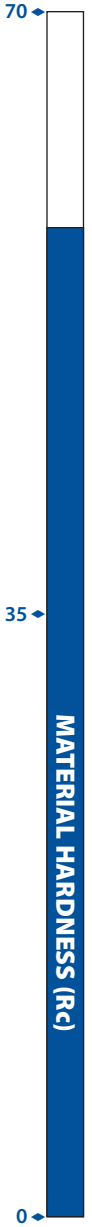
MATERIAL HARDNESS (Rc)
70
35
0

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	63180	-	.3438	11/32"	8.733	3/8"	4"	1/2"	.020"	-	-	70.48	67.42	64.35	61.29
	27655	-	.3543		9.000	10.0	50	14	0.50	-	-	48.83	46.71	44.58	42.46
	62287	-	.3543		9.000	10.0	65	22	-	-	-	49.50	47.34	45.19	43.04
	27657	-	.3543		9.000	10.0	65	22	0.50	-	-	53.08	50.78	48.47	46.16
	62317	-	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	-	31.22	29.87	28.51	27.15
	27658	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.010"	-	-	35.75	34.20	32.64	31.09
	61286	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.015"	-	-	35.75	34.20	32.64	31.09
	27660	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	-	35.75	34.20	32.64	31.09
	27662	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	-	-	35.75	34.20	32.64	31.09
	61288	-	.3750	3/8"	9.525	3/8"	2"	1/2"	.060"	-	-	35.75	34.20	32.64	31.09
	28670	-	.3750	3/8"	9.525	3/8"	2"	1/2"	BALL	-	-	35.75	34.20	32.64	31.09
NEW	28676	-	.3750	3/8"	9.525	3/8"	2"	5/8"	.045"	-	-	35.75	34.20	32.64	31.09
	62327	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	-	-	-	36.49	34.90	33.32	31.73
	27670	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	-	-	38.88	37.19	35.50	33.81
	61290	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	-	-	38.88	37.19	35.50	33.81
	27680	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	-	-	38.88	37.19	35.50	33.81
	27682	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	-	-	38.88	37.19	35.50	33.81
	61292	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.040"	-	-	38.88	37.19	35.50	33.81
	61294	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.050"	-	-	38.88	37.19	35.50	33.81
	27684	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	-	-	38.88	37.19	35.50	33.81
	61296	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.094"	-	-	38.88	37.19	35.50	33.81
	28680	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	BALL	-	-	38.88	37.19	35.50	33.81
	61298	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.015"	-	-	51.16	48.94	46.71	44.49
	61299	-	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	-	51.16	48.94	46.71	44.49
	61300	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	.015"	-	-	57.58	55.08	52.57	50.07
	61302	-	.3750	3/8"	9.525	3/8"	4"	1-1/2"	BALL	-	-	57.58	55.08	52.57	50.07
	61304	-	.3750	3/8"	9.525	3/8"	4"	2"	.015"	-	-	57.58	55.08	52.57	50.07
	61306	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	1-1/8"	.360"	68.71	65.73	62.74	59.75
	63190	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.020"	1-7/8"	.360"	68.71	65.73	62.74	59.75
	61308	-	.3750	3/8"	9.525	3/8"	4"	1/2"	.015"	2-1/8"	.360"	68.71	65.73	62.74	59.75
	61310	-	.3750	3/8"	9.525	3/8"	6"	1/2"	.015"	3-1/8"	.360"	90.85	86.90	82.95	79.00
	61312	-	.3937		10.000	10.0	50	16	-	-	-	40.24	38.49	36.74	34.99
	27690	-	.3937		10.000	10.0	50	16	0.50	-	-	43.16	41.28	39.41	37.53
	61314	-	.3937		10.000	10.0	50	16	1.00	-	-	43.16	41.28	39.41	37.53
	28690	-	.3937		10.000	10.0	50	16	BALL	-	-	43.16	41.28	39.41	37.53
	62397	-	.3937		10.000	10.0	70	22	-	-	-	43.76	41.86	39.95	38.05
	27698	-	.3937		10.000	10.0	70	22	0.30	-	-	46.94	44.90	42.86	40.82
	27700	-	.3937		10.000	10.0	70	22	0.50	-	-	46.94	44.90	42.86	40.82
	61316	-	.3937		10.000	10.0	70	22	0.75	-	-	46.94	44.90	42.86	40.82
	27702	-	.3937		10.000	10.0	70	22	1.00	-	-	46.94	44.90	42.86	40.82
	28700	-	.3937		10.000	10.0	70	22	BALL	-	-	46.94	44.90	42.86	40.82
	61318	-	.3937		10.000	10.0	70	32	0.50	-	-	46.94	44.90	42.86	40.82
	61320	-	.3937		10.000	10.0	100	38	0.50	-	-	72.90	69.73	66.56	63.39
	61322	-	.3937		10.000	10.0	100	50	0.50	-	-	72.90	69.73	66.56	63.39
	63200	-	.3937		10.000	10.0	100	14	0.50	47	9.50	84.03	80.38	76.72	73.07

GARR TOOL®

† *Metric equivalents are for reference only*

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
27705	-	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.020"	-	-	47.01	44.97	42.92	40.88
28705	-	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	BALL	-	-	47.01	44.97	42.92	40.88
62437	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	-	-	-	43.87	41.97	40.06	38.15
27708	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	.010"	-	-	47.01	44.97	42.92	40.88
27710	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	.020"	-	-	47.01	44.97	42.92	40.88
28710	-	.4375	7/16"	11.113	7/16"	2-3/4"	7/8"	BALL	-	-	47.01	44.97	42.92	40.88
63210	-	.4375	7/16"	11.113	7/16"	6"	1"	.020"	-	-	101.35	96.94	92.54	88.13
62475	-	.4724		12.000	12.0	65	19	-	-	-	53.27	50.95	48.64	46.32
27712	-	.4724		12.000	12.0	65	19	0.30	-	-	61.96	59.27	56.57	53.88
27715	-	.4724		12.000	12.0	65	19	0.50	-	-	61.96	59.27	56.57	53.88
28715	-	.4724		12.000	12.0	65	19	BALL	-	-	61.96	59.27	56.57	53.88
61324	-	.4724		12.000	12.0	75	26	-	-	-	56.83	54.36	51.89	49.42
61326	-	.4724		12.000	12.0	75	26	0.50	-	-	69.13	66.12	63.12	60.11
62485	-	.4724		12.000	12.0	75	32	-	-	-	56.83	54.36	51.89	49.42
27718	-	.4724		12.000	12.0	75	32	0.30	-	-	69.13	66.12	63.12	60.11
27720	-	.4724		12.000	12.0	75	32	0.50	-	-	69.13	66.12	63.12	60.11
61328	-	.4724		12.000	12.0	75	32	0.75	-	-	69.13	66.12	63.12	60.11
27722	-	.4724		12.000	12.0	75	32	1.00	-	-	69.13	66.12	63.12	60.11
27730	-	.4724		12.000	12.0	75	32	1.50	-	-	69.13	66.12	63.12	60.11
27735	-	.4724		12.000	12.0	75	32	2.00	-	-	69.13	66.12	63.12	60.11
61330	-	.4724		12.000	12.0	75	32	3.00	-	-	69.13	66.12	63.12	60.11
28720	-	.4724		12.000	12.0	75	32	BALL	-	-	69.13	66.12	63.12	60.11
61332	-	.4724		12.000	12.0	100	38	-	-	-	77.51	74.14	70.77	67.40
61334	-	.4724		12.000	12.0	100	38	0.50	-	-	81.89	78.33	74.77	71.21
61336	-	.4724		12.000	12.0	100	42	-	-	-	77.51	74.14	70.77	67.40
61338	-	.4724		12.000	12.0	100	42	0.50	-	-	81.89	78.33	74.77	71.21
61340	-	.4724		12.000	12.0	100	52	-	-	-	77.51	74.14	70.77	67.40
61342	-	.4724		12.000	12.0	100	52	0.50	-	-	81.89	78.33	74.77	71.21
63220	-	.4724		12.000	12.0	150	19	0.50	57	11.50	121.96	116.66	111.35	106.05
62525	62527	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-	51.08	48.86	46.64	44.42
27739	27738	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	59.42	56.84	54.25	51.67
61344	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.015"	-	-	59.42	56.84	54.25	51.67
27741	27740	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	59.42	56.84	54.25	51.67
27743	27742	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	59.42	56.84	54.25	51.67
61346	-	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	-	-	59.42	56.84	54.25	51.67
28751	28750	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	BALL	-	-	59.42	56.84	54.25	51.67
61348	-	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	54.58	52.21	49.83	47.46
61350	-	.5000	1/2"	12.700	1/2"	3"	1"	.015"	-	-	66.32	63.44	60.55	57.67
61352	-	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	66.32	63.44	60.55	57.67
61354	-	.5000	1/2"	12.700	1/2"	3"	1"	.060"	-	-	66.32	63.44	60.55	57.67
61356	-	.5000	1/2"	12.700	1/2"	3"	1"	.125"	-	-	66.32	63.44	60.55	57.67
61358	-	.5000	1/2"	12.700	1/2"	3"	1"	BALL	-	-	66.32	63.44	60.55	57.67
62535	62537	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	54.58	52.21	49.83	47.46
27751	27750	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	66.32	63.44	60.55	57.67
61360	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	66.32	63.44	60.55	57.67
27761	27760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	66.32	63.44	60.55	57.67
27763	27762	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	66.32	63.44	60.55	57.67
61362	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.040"	-	-	66.32	63.44	60.55	57.67
61364	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.050"	-	-	66.32	63.44	60.55	57.67
27767	27764	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	66.32	63.44	60.55	57.67
61366	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.078"	-	-	66.32	63.44	60.55	57.67
63398	63399	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-	66.32	63.44	60.55	57.67



continued →

Series VRX *(continued)*

.5000" - .6250"
(12.700mm - 15.875mm)

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
61368	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.094"	-	-	66.32	63.44	60.55	57.67
61370	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.100"	-	-	66.32	63.44	60.55	57.67
27769	27768	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	-	66.32	63.44	60.55	57.67
61372	-	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	66.32	63.44	60.55	57.67
28761	28760	.5000	1/2"	12.700	1/2"	3"	1-1/4"	BALL	-	-	66.32	63.44	60.55	57.67
28771	28770	.5000	1/2"	12.700	1/2"	4"	5/8"	BALL	-	-	78.37	74.97	71.56	68.15
61374	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	-	-	-	73.85	70.64	67.43	64.22
63401	63400	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.010"	-	-	78.37	74.97	71.56	68.15
61376	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.015"	-	-	78.37	74.97	71.56	68.15
63411	63410	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	-	78.37	74.97	71.56	68.15
63421	63420	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.060"	-	-	78.37	74.97	71.56	68.15
63424	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.125"	-	-	78.37	74.97	71.56	68.15
61378	-	.5000	1/2"	12.700	1/2"	4"	1-1/2"	BALL	-	-	78.37	74.97	71.56	68.15
61380	-	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.015"	-	-	78.37	74.97	71.56	68.15
61382	-	.5000	1/2"	12.700	1/2"	4"	1-3/4"	.015"	-	-	78.37	74.97	71.56	68.15
62565	62567	.5000	1/2"	12.700	1/2"	4"	2"	-	-	-	73.85	70.64	67.43	64.22
63431	63430	.5000	1/2"	12.700	1/2"	4"	2"	.010"	-	-	78.37	74.97	71.56	68.15
61384	-	.5000	1/2"	12.700	1/2"	4"	2"	.015"	-	-	78.37	74.97	71.56	68.15
63441	63440	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	78.37	74.97	71.56	68.15
63451	63450	.5000	1/2"	12.700	1/2"	4"	2"	.060"	-	-	78.37	74.97	71.56	68.15
61386	-	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.015"	-	-	78.37	74.97	71.56	68.15
63241	63240	.5000	1/2"	12.700	1/2"	6"	2"	.020"	-	-	110.84	106.02	101.20	96.38
61388	-	.5000	1/2"	12.700	1/2"	6"	2-1/2"	.015"	-	-	110.84	106.02	101.20	96.38
61390	-	.5000	1/2"	12.700	1/2"	6"	2-1/2"	.030"	-	-	110.84	106.02	101.20	96.38
61392	-	.5000	1/2"	12.700	1/2"	6"	3-1/4"	.030"	-	-	110.84	106.02	101.20	96.38
61394	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	1-1/2"	.480"	89.46	85.57	81.68	77.79
61396	-	.5000	1/2"	12.700	1/2"	4"	5/8"	.015"	2-1/4"	.480"	89.46	85.57	81.68	77.79
63231	63230	.5000	1/2"	12.700	1/2"	4"	5/8"	.020"	2-1/4"	.480"	89.46	85.57	81.68	77.79
61398	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	3-3/8"	.480"	121.92	116.62	111.32	106.02
61400	-	.5000	1/2"	12.700	1/2"	6"	5/8"	.015"	4-1/8"	.480"	121.92	116.62	111.32	106.02
27766	27765	.5512		14.000	14.0	75	19	0.50	-	-	97.85	93.60	89.34	85.09
28781	28780	.5512		14.000	14.0	75	19	BALL	-	-	97.85	93.60	89.34	85.09
27771	27770	.5512		14.000	14.0	88	32	0.50	-	-	100.57	96.20	91.82	87.45
28786	28785	.5512		14.000	14.0	88	32	BALL	-	-	100.57	96.20	91.82	87.45
63261	63260	.5512		14.000	14.0	150	50	0.50	-	-	145.16	138.85	132.54	126.23
63251	-	.5512		14.000	14.0	150	19	0.50	57	13.50	155.86	149.08	142.31	135.53
62625	62627	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	-	-	-	90.76	86.81	82.87	78.92
61402	-	.6250	5/8"	15.875	5/8"	3"	3/4"	-	-	-	97.84	93.59	89.33	85.08
63461	63460	.6250	5/8"	15.875	5/8"	3"	3/4"	.010"	-	-	102.73	98.26	93.80	89.33
61404	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.015"	-	-	102.73	98.26	93.80	89.33
27781	27780	.6250	5/8"	15.875	5/8"	3"	3/4"	.025"	-	-	102.73	98.26	93.80	89.33
61406	-	.6250	5/8"	15.875	5/8"	3"	3/4"	.060"	-	-	102.73	98.26	93.80	89.33
28796	28795	.6250	5/8"	15.875	5/8"	3"	3/4"	BALL	-	-	102.73	98.26	93.80	89.33
62655	62657	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	100.71	96.33	91.95	87.57
27791	27790	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.010"	-	-	105.58	100.99	96.40	91.81
61408	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	-	-	105.58	100.99	96.40	91.81
61410	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	105.58	100.99	96.40	91.81
27801	27800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.025"	-	-	105.58	100.99	96.40	91.81
61412	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	105.58	100.99	96.40	91.81
61414	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.040"	-	-	105.58	100.99	96.40	91.81
27803	27802	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	105.58	100.99	96.40	91.81
61416	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.078"	-	-	105.58	100.99	96.40	91.81
61418	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.094"	-	-	105.58	100.99	96.40	91.81
27805	27804	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	-	105.58	100.99	96.40	91.81
61420	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.125"	-	-	105.58	100.99	96.40	91.81
28801	28800	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	BALL	-	-	105.58	100.99	96.40	91.81

MATERIAL HARDNESS (Rc)
70
35
0

GARR TOOL®

† *Metric equivalents are for reference only*

EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
61422	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	-	-	-	107.55	102.87	98.20	93.52
63501	63500	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.010"	-	-	114.77	109.78	104.79	99.80
61424	-	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.015"	-	-	114.77	109.78	104.79	99.80
63511	63510	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.030"	-	-	114.77	109.78	104.79	99.80
63521	63520	.6250	5/8"	15.875	5/8"	4"	1-1/2"	.060"	-	-	114.77	109.78	104.79	99.80
61426	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	107.55	102.87	98.20	93.52
61428	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.015"	-	-	114.77	109.78	104.79	99.80
61430	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	114.77	109.78	104.79	99.80
61432	-	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.060"	-	-	114.77	109.78	104.79	99.80
62675	62677	.6250	5/8"	15.875	5/8"	4"	1-3/4"	-	-	-	107.55	102.87	98.20	93.52
63531	63530	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.010"	-	-	114.77	109.78	104.79	99.80
63541	63540	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.030"	-	-	114.77	109.78	104.79	99.80
63551	63550	.6250	5/8"	15.875	5/8"	4"	1-3/4"	.060"	-	-	114.77	109.78	104.79	99.80
63281	63280	.6250	5/8"	15.875	5/8"	6"	2"	.025"	-	-	157.99	151.12	144.25	137.38
63283	-	.6250	5/8"	15.875	5/8"	6"	2"	.090"	-	-	157.99	151.12	144.25	137.38
63285	-	.6250	5/8"	15.875	5/8"	6"	2"	.125"	-	-	157.99	151.12	144.25	137.38
28806	28805	.6250	5/8"	15.875	5/8"	6"	2"	BALL	-	-	157.99	151.12	144.25	137.38
61434	-	.6250	5/8"	15.875	5/8"	6"	2-1/2"	.030"	-	-	157.99	151.12	144.25	137.38
61436	-	.6250	5/8"	15.875	5/8"	6"	3-1/4"	.030"	-	-	157.99	151.12	144.25	137.38
61438	-	.6250	5/8"	15.875	5/8"	4"	3/4"	.030"	1-5/8"	.600"	125.87	120.40	114.92	109.45
61440	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	2-3/8"	.600"	169.10	161.74	154.39	147.04
63271	63270	.6250	5/8"	15.875	5/8"	6"	3/4"	.025"	3-1/4"	.600"	169.10	161.74	154.39	147.04
61442	-	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-1/8"	.600"	169.10	161.74	154.39	147.04
61444	-	.6299		16.000	16.0	75	19	-	-	-	102.26	97.81	93.37	88.92
27809	-	.6299		16.000	16.0	75	19	0.30	-	-	107.24	102.58	97.91	93.25
27811	27810	.6299		16.000	16.0	75	19	0.50	-	-	107.24	102.58	97.91	93.25
61446	-	.6299		16.000	16.0	75	19	1.00	-	-	107.24	102.58	97.91	93.25
28811	28810	.6299		16.000	16.0	75	19	BALL	-	-	107.24	102.58	97.91	93.25
62715	62717	.6299		16.000	16.0	88	32	-	-	-	105.05	100.49	95.92	91.35
27819	27818	.6299		16.000	16.0	88	32	0.30	-	-	110.17	105.38	100.59	95.80
27821	27820	.6299		16.000	16.0	88	32	0.50	-	-	110.17	105.38	100.59	95.80
61448	-	.6299		16.000	16.0	88	32	0.75	-	-	110.17	105.38	100.59	95.80
27823	27822	.6299		16.000	16.0	88	32	1.00	-	-	110.17	105.38	100.59	95.80
61450	-	.6299		16.000	16.0	88	32	1.50	-	-	110.17	105.38	100.59	95.80
27825	27824	.6299		16.000	16.0	88	32	2.00	-	-	110.17	105.38	100.59	95.80
61452	-	.6299		16.000	16.0	88	32	3.00	-	-	110.17	105.38	100.59	95.80
28821	28820	.6299		16.000	16.0	88	32	BALL	-	-	110.17	105.38	100.59	95.80
63581	63580	.6299		16.000	16.0	100	38	0.30	-	-	117.15	112.06	106.96	101.87
61454	-	.6299		16.000	16.0	100	38	0.50	-	-	117.15	112.06	106.96	101.87
61456	-	.6299		16.000	16.0	100	42	0.50	-	-	117.15	112.06	106.96	101.87
63291	63290	.6299		16.000	16.0	150	19	0.50	82	15.25	169.10	161.74	154.39	147.04
27831	-	.7087		18.000	18.0	75	22	0.80	-	-	154.69	147.96	141.24	134.51
28831	-	.7087		18.000	18.0	75	22	BALL	-	-	154.69	147.96	141.24	134.51
27836	27835	.7087		18.000	18.0	100	38	0.80	-	-	158.17	151.29	144.42	137.54
28836	28835	.7087		18.000	18.0	100	38	BALL	-	-	158.17	151.29	144.42	137.54
63301	-	.7087		18.000	18.0	150	25	0.80	82	17.25	246.48	235.76	225.05	214.33
61458	-	.7500	3/4"	19.050	3/4"	3"	7/8"	-	-	-	140.67	134.55	128.44	122.32
27841	27840	.7500	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	148.19	141.75	135.30	128.86
61460	-	.7500	3/4"	19.050	3/4"	3"	7/8"	.060"	-	-	148.19	141.75	135.30	128.86
28841	28840	.7500	3/4"	19.050	3/4"	3"	7/8"	BALL	-	-	148.19	141.75	135.30	128.86
61462	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	-	-	-	143.75	137.50	131.25	125.00
61464	-	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.030"	-	-	151.41	144.83	138.24	131.66
62775	62777	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	143.75	137.50	131.25	125.00
27851	27850	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-	151.41	144.83	138.24	131.66
27861	27860	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	151.41	144.83	138.24	131.66
27865	27864	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	151.41	144.83	138.24	131.66
27867	27866	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	151.41	144.83	138.24	131.66
28861	28860	.7500	3/4"	19.050	3/4"	4"	1-1/2"	BALL	-	-	151.41	144.83	138.24	131.66

continued →

Series VRX *(continued)*

.7500" - .8661"
(19.050mm - 22.000mm)

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	61466	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	-	-	-	143.75	137.50	131.25	125.00
	61468	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.015"	-	-	151.41	144.83	138.24	131.66
	61470	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	151.41	144.83	138.24	131.66
	61472	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.060"	-	-	151.41	144.83	138.24	131.66
	61474	-	.7500	3/4"	19.050	3/4"	4"	1-5/8"	BALL	-	-	151.41	144.83	138.24	131.66
	62785	62787	.7500	3/4"	19.050	3/4"	4"	1-3/4"	-	-	-	143.75	137.50	131.25	125.00
	63601	63600	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.015"	-	-	151.41	144.83	138.24	131.66
	27869	27868	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.030"	-	-	151.41	144.83	138.24	131.66
	63611	63610	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.060"	-	-	151.41	144.83	138.24	131.66
	61476	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.094"	-	-	151.41	144.83	138.24	131.66
	63621	63620	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.120"	-	-	151.41	144.83	138.24	131.66
	61478	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	.190"	-	-	151.41	144.83	138.24	131.66
	61480	-	.7500	3/4"	19.050	3/4"	4"	1-3/4"	BALL	-	-	151.41	144.83	138.24	131.66
	62795	62797	.7500	3/4"	19.050	3/4"	5"	2"	-	-	-	192.94	184.55	176.16	167.77
	63631	63630	.7500	3/4"	19.050	3/4"	5"	2"	.015"	-	-	210.01	200.88	191.75	182.62
	63311	63310	.7500	3/4"	19.050	3/4"	5"	2"	.030"	-	-	210.01	200.88	191.75	182.62
	63641	63640	.7500	3/4"	19.050	3/4"	5"	2"	.060"	-	-	210.01	200.88	191.75	182.62
	61482	-	.7500	3/4"	19.050	3/4"	5"	2"	.094"	-	-	210.01	200.88	191.75	182.62
	61484	-	.7500	3/4"	19.050	3/4"	5"	2"	.125"	-	-	210.01	200.88	191.75	182.62
	28866	28865	.7500	3/4"	19.050	3/4"	5"	2"	BALL	-	-	210.01	200.88	191.75	182.62
	61486	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	-	-	-	192.94	184.55	176.16	167.77
	61488	-	.7500	3/4"	19.050	3/4"	5"	2-1/2"	.030"	-	-	210.01	200.88	191.75	182.62
	62805	62807	.7500	3/4"	19.050	3/4"	6"	3"	-	-	-	225.79	215.97	206.16	196.34
	63651	63650	.7500	3/4"	19.050	3/4"	6"	3"	.015"	-	-	249.47	238.62	227.78	216.93
	63661	63660	.7500	3/4"	19.050	3/4"	6"	3"	.030"	-	-	249.47	238.62	227.78	216.93
	63671	63670	.7500	3/4"	19.050	3/4"	6"	3"	.060"	-	-	249.47	238.62	227.78	216.93
	61490	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	225.79	215.97	206.16	196.34
	61492	-	.7500	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	249.47	238.62	227.78	216.93
	61494	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	-	-	-	283.58	271.25	258.92	246.59
	61496	-	.7500	3/4"	19.050	3/4"	7"	4-1/4"	.030"	-	-	314.64	300.96	287.28	273.60
	63321	63320	.7500	3/4"	19.050	3/4"	6"	1"	.030"	3-1/4"	.730"	260.66	249.33	237.99	226.66
	63323	-	.7500	3/4"	19.050	3/4"	6"	1"	.060"	3-1/4"	.730"	260.66	249.33	237.99	226.66
	63325	-	.7500	3/4"	19.050	3/4"	6"	1"	.090"	3-1/4"	.730"	260.66	249.33	237.99	226.66
	63327	-	.7500	3/4"	19.050	3/4"	6"	1"	.125"	3-1/4"	.730"	260.66	249.33	237.99	226.66
NEW	63329	-	.7500	3/4"	19.050	3/4"	6"	1"	.190"	3-1/4"	.730"	260.66	249.33	237.99	226.66
	61498	-	.7874		20.000	20.0	75	22	-	-	-	189.92	181.67	173.41	165.15
	61500	-	.7874		20.000	20.0	75	22	0.50	-	-	209.56	200.45	191.34	182.23
	27871	27870	.7874		20.000	20.0	75	22	1.00	-	-	209.56	200.45	191.34	182.23
	28871	28870	.7874		20.000	20.0	75	22	BALL	-	-	209.56	200.45	191.34	182.23
	62825	62827	.7874		20.000	20.0	100	38	-	-	-	194.21	185.77	177.32	168.88
	27879	27878	.7874		20.000	20.0	100	38	0.50	-	-	214.29	204.97	195.66	186.34
	61502	-	.7874		20.000	20.0	100	38	0.75	-	-	214.29	204.97	195.66	186.34
	27881	27880	.7874		20.000	20.0	100	38	1.00	-	-	214.29	204.97	195.66	186.34
	27891	27890	.7874		20.000	20.0	100	38	1.50	-	-	214.29	204.97	195.66	186.34
	61504	-	.7874		20.000	20.0	100	38	3.00	-	-	214.29	204.97	195.66	186.34
	28881	28880	.7874		20.000	20.0	100	38	BALL	-	-	214.29	204.97	195.66	186.34
	61506	-	.7874		20.000	20.0	100	42	0.50	-	-	214.29	204.97	195.66	186.34
	61508	-	.7874		20.000	20.0	125	52	0.50	-	-	237.57	227.24	216.91	206.58
	63331	63330	.7874		20.000	20.0	150	25	1.00	82	19.30	274.52	262.58	250.65	238.71
	27911	-	.8661		22.000	22.0	100	38	1.00	-	-	235.39	225.16	214.92	204.69

GARR TOOL®

† *Metric equivalents are for reference only*

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter Decimal		d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	61510	-	.9843		25.000	25.0	100	26	-	-	-	221.79	212.15	202.50	192.86
	61512	-	.9843		25.000	25.0	100	26	0.50	-	-	245.59	234.92	224.24	213.56
	62855	62857	.9843		25.000	25.0	100	38	-	-	-	221.79	212.15	202.50	192.86
	61514	-	.9843		25.000	25.0	100	38	0.50	-	-	245.59	234.92	224.24	213.56
	27941	27940	.9843		25.000	25.0	100	38	1.00	-	-	245.59	234.92	224.24	213.56
	27951	-	.9843		25.000	25.0	100	38	1.50	-	-	245.59	234.92	224.24	213.56
	61516	-	.9843		25.000	25.0	100	38	3.00	-	-	245.59	234.92	224.24	213.56
	28901	28900	.9843		25.000	25.0	100	38	BALL	-	-	245.59	234.92	224.24	213.56
	61518	-	.9843		25.000	25.0	100	42	-	-	-	221.79	212.15	202.50	192.86
NEW	61520	-	.9843		25.000	25.0	100	42	0.50	-	-	245.59	234.92	224.24	213.56
	61522	-	.9843		25.000	25.0	125	50	0.50	-	-	306.61	293.28	279.95	266.62
	63351	63350	.9843		25.000	25.0	125	50	1.00	-	-	306.61	293.28	279.95	266.62
	63361	63360	.9843		25.000	25.0	150	32	1.00	82	24.40	411.17	393.29	375.42	357.54
	61524	-	1.000	1"	25.400	1"	4"	1"	-	-	-	214.75	205.41	196.08	186.74
	27959	27958	1.000	1"	25.400	1"	4"	1"	.015"	-	-	258.50	247.26	236.02	224.78
	27961	27960	1.000	1"	25.400	1"	4"	1"	.035"	-	-	258.50	247.26	236.02	224.78
	-	27962	1.000	1"	25.400	1"	4"	1"	.060"	-	-	258.50	247.26	236.02	224.78
	28911	28910	1.000	1"	25.400	1"	4"	1"	BALL	-	-	258.50	247.26	236.02	224.78
	62885	62887	1.000	1"	25.400	1"	4"	1-1/2"	-	-	-	214.75	205.41	196.08	186.74
	27967	27966	1.000	1"	25.400	1"	4"	1-1/2"	.015"	-	-	258.50	247.26	236.02	224.78
	61526	-	1.000	1"	25.400	1"	4"	1-1/2"	.025"	-	-	258.50	247.26	236.02	224.78
	27971	27970	1.000	1"	25.400	1"	4"	1-1/2"	.035"	-	-	258.50	247.26	236.02	224.78
	27981	27980	1.000	1"	25.400	1"	4"	1-1/2"	.060"	-	-	258.50	247.26	236.02	224.78
	27991	-	1.000	1"	25.400	1"	4"	1-1/2"	.090"	-	-	258.50	247.26	236.02	224.78
	61528	-	1.000	1"	25.400	1"	4"	1-1/2"	.125"	-	-	258.50	247.26	236.02	224.78
	61530	-	1.000	1"	25.400	1"	4"	1-1/2"	.190"	-	-	258.50	247.26	236.02	224.78
	61532	-	1.000	1"	25.400	1"	4"	1-1/2"	.250"	-	-	258.50	247.26	236.02	224.78
	28916	28915	1.000	1"	25.400	1"	4"	1-1/2"	BALL	-	-	258.50	247.26	236.02	224.78
	61534	-	1.000	1"	25.400	1"	4"	1-5/8"	.030"	-	-	258.50	247.26	236.02	224.78
	62895	62897	1.000	1"	25.400	1"	4"	1-3/4"	-	-	-	214.75	205.41	196.08	186.74
	28001	28000	1.000	1"	25.400	1"	4"	1-3/4"	.015"	-	-	258.50	247.26	236.02	224.78
	61536	-	1.000	1"	25.400	1"	4"	1-3/4"	.030"	-	-	258.50	247.26	236.02	224.78
	28011	28012	1.000	1"	25.400	1"	4"	1-3/4"	.060"	-	-	258.50	247.26	236.02	224.78
	28021	-	1.000	1"	25.400	1"	4"	1-3/4"	.090"	-	-	258.50	247.26	236.02	224.78
	61538	-	1.000	1"	25.400	1"	4"	1-3/4"	.125"	-	-	258.50	247.26	236.02	224.78
	61540	-	1.000	1"	25.400	1"	4"	1-3/4"	.190"	-	-	258.50	247.26	236.02	224.78
	61542	-	1.000	1"	25.400	1"	4"	1-3/4"	.250"	-	-	258.50	247.26	236.02	224.78
	62905	62907	1.000	1"	25.400	1"	5"	2"	-	-	-	287.47	274.97	262.47	249.97
	63369	63368	1.000	1"	25.400	1"	5"	2"	.015"	-	-	318.04	304.22	290.39	276.56
	63371	63370	1.000	1"	25.400	1"	5"	2"	.035"	-	-	318.04	304.22	290.39	276.56
	63373	63372	1.000	1"	25.400	1"	5"	2"	.060"	-	-	318.04	304.22	290.39	276.56
	63375	63374	1.000	1"	25.400	1"	5"	2"	.090"	-	-	318.04	304.22	290.39	276.56
	61544	-	1.000	1"	25.400	1"	5"	2"	.125"	-	-	318.04	304.22	290.39	276.56
	61546	-	1.000	1"	25.400	1"	5"	2"	.250"	-	-	318.04	304.22	290.39	276.56
	28931	28930	1.000	1"	25.400	1"	5"	2"	BALL	-	-	318.04	304.22	290.39	276.56
	61548	-	1.000	1"	25.400	1"	5"	2-1/2"	-	-	-	287.47	274.97	262.47	249.97
	61550	-	1.000	1"	25.400	1"	5"	2-1/2"	.030"	-	-	318.04	304.22	290.39	276.56
	62915	62917	1.000	1"	25.400	1"	6"	3"	-	-	-	374.44	358.16	341.88	325.60
	61552	-	1.000	1"	25.400	1"	6"	3-1/4"	.030"	-	-	414.81	396.77	378.74	360.70
	61554	-	1.000	1"	25.400	1"	7"	4-1/4"	.030"	-	-	506.18	484.18	462.17	440.16
	61556	-	1.000	1"	25.400	1"	7"	4-1/4"	.060"	-	-	506.18	484.18	462.17	440.16
	61558	-	1.000	1"	25.400	1"	6"	1-1/4"	.030"	2-5/8"	.980"	429.63	410.95	392.27	373.59
	63381	63380	1.000	1"	25.400	1"	6"	1-1/4"	.035"	3-1/4"	.980"	429.63	410.95	392.27	373.59
	61560	-	1.000	1"	25.400	1"	6"	1-1/4"	.060"	3-1/4"	.980"	429.63	410.95	392.27	373.59
	61562	-	1.000	1"	25.400	1"	7"	1-1/4"	.030"	4-1/4"	.980"	521.00	498.34	475.69	453.04

Series VRX-6

.2362" - .4724"
(6.000mm - 12.000mm)

HIGH EFFICIENCY MILLING

Z=6 | 37° | TECH PAGES 300-301

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Recommended for inconel, pH materials, titanium and tool steels >40Rc

Square End, Corner Radius

AlTiN Coating

Solid submicron grain carbide end mill - center cutting

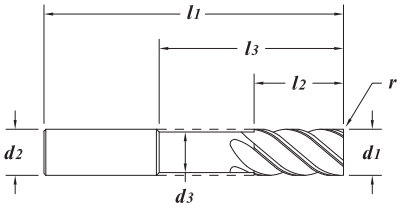
6 flutes for better finish and longer tool life

Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity

Staggered flute geometry

Engineered for High Efficiency Milling





EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
60101	.2362		6.000	6.0	65	20	-	-	-	22.46	21.48	20.51	19.53
60103	.2362		6.000	6.0	65	20	0.50	-	-	27.54	26.35	25.15	23.95
60100	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	-	21.69	20.75	19.80	18.86
60102	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	-	26.54	25.39	24.23	23.08
60104	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	26.54	25.39	24.23	23.08
60105	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	26.54	25.39	24.23	23.08
60106	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	26.54	25.39	24.23	23.08
60162	.3150		8.000	8.0	65	22	-	-	-	32.05	30.66	29.26	27.87
60107	.3150		8.000	8.0	65	22	0.50	-	-	37.27	35.65	34.03	32.41
60109	.3750	3/8"	9.525	3/8"	2"	1/2"	-	-	-	31.22	29.87	28.51	27.15
60111	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	-	38.00	36.34	34.69	33.04
60108	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	-	-	-	36.49	34.90	33.32	31.73
60110	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	-	-	41.79	39.97	38.16	36.34
60113	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	-	-	41.79	39.97	38.16	36.34
60112	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	-	-	41.79	39.97	38.16	36.34
60114	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	-	-	41.79	39.97	38.16	36.34
60184	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	-	54.99	52.60	50.21	47.82
60164	.3937		10.000	10.0	70	22	-	-	-	43.76	41.86	39.95	38.05
60115	.3937		10.000	10.0	70	22	0.50	-	-	50.52	48.32	46.13	43.93
60117	.3937		10.000	10.0	70	22	1.00	-	-	50.52	48.32	46.13	43.93
60119	.4724		12.000	12.0	65	20	-	-	-	53.27	50.95	48.64	46.32
60121	.4724		12.000	12.0	65	20	0.50	-	-	66.22	63.34	60.46	57.58
60123	.4724		12.000	12.0	75	26	-	-	-	56.83	54.36	51.89	49.42
60125	.4724		12.000	12.0	75	26	0.75	-	-	73.88	70.66	67.45	64.24
60166	.4724		12.000	12.0	75	32	-	-	-	56.83	54.36	51.89	49.42
60127	.4724		12.000	12.0	75	32	0.50	-	-	73.88	70.66	67.45	64.24
60129	.4724		12.000	12.0	75	32	1.00	-	-	73.88	70.66	67.45	64.24

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	*d1* † Diameter Decimal	Diameter	Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length	*r* Corner Radius	*l3* Reach Length	*d3* Neck Diameter	1-11	12-24	25-49	50-100
60131	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-	51.08	48.86	46.64	44.42
60185	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	63.50	60.74	57.98	55.22
60157	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.015"	-	-	63.50	60.74	57.98	55.22
60133	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	63.50	60.74	57.98	55.22
60159	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	63.50	60.74	57.98	55.22
60189	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	-	-	63.50	60.74	57.98	55.22
60186	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.125"	-	-	63.50	60.74	57.98	55.22
60135	.5000	1/2"	12.700	1/2"	3"	1"	-	-	-	54.58	52.21	49.83	47.46
60201	.5000	1/2"	12.700	1/2"	3"	1"	.030"	-	-	70.89	67.80	64.72	61.64
60116	.5000	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	54.58	52.21	49.83	47.46
60118	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	70.89	67.80	64.72	61.64
60120	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	70.89	67.80	64.72	61.64
60122	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	70.89	67.80	64.72	61.64
60124	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	70.89	67.80	64.72	61.64
60126	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	70.89	67.80	64.72	61.64
60128	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	70.89	67.80	64.72	61.64
60137	.5000	1/2"	12.700	1/2"	4"	1-1/2"	-	-	-	73.85	70.64	67.43	64.22
60139	.5000	1/2"	12.700	1/2"	4"	1-1/2"	.030"	-	-	83.97	80.32	76.67	73.02
60190	.5000	1/2"	12.700	1/2"	4"	1-5/8"	-	-	-	73.85	70.64	67.43	64.22
60194	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.030"	-	-	83.97	80.32	76.67	73.02
60196	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.060"	-	-	83.97	80.32	76.67	73.02
60130	.5000	1/2"	12.700	1/2"	4"	2-1/8"	-	-	-	73.85	70.64	67.43	64.22
60132	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.010"	-	-	83.97	80.32	76.67	73.02
60134	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.020"	-	-	83.97	80.32	76.67	73.02
60136	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	-	83.97	80.32	76.67	73.02
60200	.5000	1/2"	12.700	1/2"	4"	2-1/8"	.060"	-	-	83.97	80.32	76.67	73.02
60141	.6250	5/8"	15.875	5/8"	3"	3/4"	-	-	-	97.84	93.59	89.33	85.08
60143	.6250	5/8"	15.875	5/8"	3"	3/4"	.020"	-	-	109.68	104.91	100.14	95.37
60138	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	100.71	96.33	91.95	87.57
60140	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	-	-	112.73	107.83	102.93	98.03
60145	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	112.73	107.83	102.93	98.03
60142	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	112.73	107.83	102.93	98.03
60144	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	112.73	107.83	102.93	98.03
60146	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.125"	-	-	112.73	107.83	102.93	98.03
60148	.6250	5/8"	15.875	5/8"	4"	1-5/8"	-	-	-	107.55	102.87	98.20	93.52
60150	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	120.39	115.16	109.92	104.69
60168	.6299		16.000	16.0	88	32	-	-	-	105.05	100.49	95.92	91.35
60170	.6299		16.000	16.0	88	32	0.50	-	-	117.55	112.44	107.33	102.22
60174	.6299		16.000	16.0	100	40	-	-	-	111.71	106.85	102.00	97.14
60176	.6299		16.000	16.0	100	40	0.50	-	-	124.99	119.56	114.12	108.69
60180	.6299		16.000	16.0	100	32	-	50	14.50	122.29	116.97	111.66	106.34
60182	.6299		16.000	16.0	100	32	0.50	50	14.50	135.57	129.68	123.78	117.89
60152	.7500	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	143.75	137.50	131.25	125.00
60154	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	-	-	161.33	154.32	147.30	140.29
60147	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.020"	-	-	161.33	154.32	147.30	140.29
60156	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	161.33	154.32	147.30	140.29
60158	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	161.33	154.32	147.30	140.29
60160	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.125"	-	-	161.33	154.32	147.30	140.29
60149	.7500	3/4"	19.050	3/4"	6"	3"	-	-	-	225.79	215.97	206.16	196.34
60151	.7500	3/4"	19.050	3/4"	6"	3"	.030"	-	-	262.61	251.20	239.78	228.36
60188	1.000	1"	25.400	1"	4"	1-1/2"	.125"	-	-	274.83	262.88	250.93	238.98
60153	1.000	1"	25.400	1"	6"	3"	.030"	-	-	436.63	417.65	398.66	379.68
60155	1.000	1"	25.400	1"	7"	1-1/4"	-	4-1/8"	.980"	471.50	451.00	430.50	410.00

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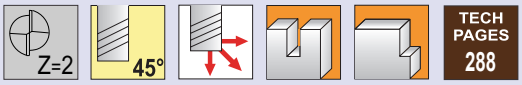
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TOLERANCES	
d_1	+.000" –.001" (+.000 –.025mm)
d_2	h6



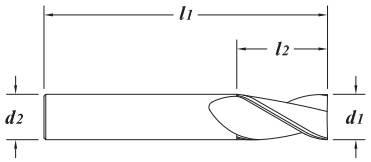
TECH PAGES 288

Recommended for aluminum and titanium

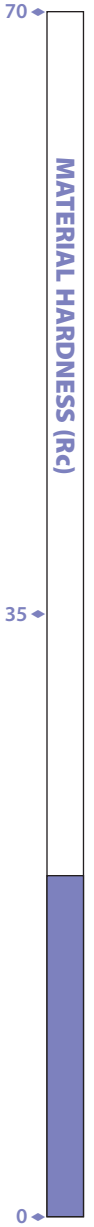
Square End

Solid submicron grain carbide end mill - center cutting
High performance machining
Rigid work holding, machine stability and part integrity are critical!
Excellent choice for slotting
Polished cylindrical O.D. margin reduces chatter
Sharp corners (Can be modified with a corner radius)
Designed for spindles between 3,000-8,000 RPM, 1% diameter for chip load



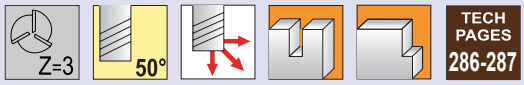


EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
08910	.1181		3.000	3.0	38	8	12.09	11.56	11.04	10.51
08920	.1181		3.000	3.0	50	12	14.57	13.94	13.30	12.67
85160	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	11.35	10.86	10.36	9.87
85170	.1250	1/8"	3.175	1/8"	2"	1/2"	13.67	13.08	12.48	11.89
08950	.1575		4.000	6.0	50	8	19.65	18.80	17.94	17.09
08960	.1575		4.000	6.0	50	12	19.65	18.80	17.94	17.09
85180	.1875	3/16"	4.763	3/16"	2"	5/16"	14.17	13.55	12.94	12.32
85190	.1875	3/16"	4.763	3/16"	2"	9/16"	14.17	13.55	12.94	12.32
08990	.1969		5.000	6.0	50	10	18.50	17.70	16.89	16.09
09000	.1969		5.000	6.0	65	15	20.57	19.68	18.78	17.89
09010	.2362		6.000	6.0	50	12	15.76	15.07	14.39	13.70
09020	.2362		6.000	6.0	65	25	16.93	16.19	15.46	14.72
09030	.2362		6.000	6.0	100	50	30.68	29.35	28.01	26.68
85200	.2500	1/4"	6.350	1/4"	2"	1/2"	14.93	14.28	13.63	12.98
85220	.2500	1/4"	6.350	1/4"	2-1/2"	1"	16.13	15.43	14.73	14.03
85240	.2500	1/4"	6.350	1/4"	4"	2"	29.14	27.87	26.61	25.34
85300	.3125	5/16"	7.938	5/16"	3"	1-1/8"	34.06	32.58	31.10	29.62
09240	.3150		8.000	8.0	65	20	23.76	22.73	21.69	20.66
09040	.3150		8.000	8.0	75	30	35.89	34.33	32.77	31.21
09050	.3150		8.000	8.0	100	50	40.03	38.29	36.55	34.81
85400	.3750	3/8"	9.525	3/8"	2"	5/8"	25.22	24.12	23.03	21.93
85420	.3750	3/8"	9.525	3/8"	2-1/2"	1"	28.18	26.95	25.73	24.50
85440	.3750	3/8"	9.525	3/8"	4"	2"	42.10	40.27	38.44	36.61
09060	.3937		10.000	10.0	50	16	29.35	28.07	26.80	25.52
09070	.3937		10.000	10.0	70	25	34.30	32.81	31.32	29.83
09080	.3937		10.000	10.0	100	50	53.65	51.32	48.98	46.65
09090	.4724		12.000	12.0	65	20	43.84	41.93	40.03	38.12
09100	.4724		12.000	12.0	75	32	47.40	45.34	43.28	41.22
09110	.4724		12.000	12.0	100	50	65.30	62.46	59.62	56.78
85500	.5000	1/2"	12.700	1/2"	2-1/2"	3/4"	41.40	39.60	37.80	36.00
85520	.5000	1/2"	12.700	1/2"	3"	1-1/4"	45.14	43.18	41.21	39.25
85540	.5000	1/2"	12.700	1/2"	4"	2"	61.61	58.93	56.25	53.57
85600	.6250	5/8"	15.875	5/8"	3-1/2"	1-5/8"	87.04	83.26	79.47	75.69
85620	.6250	5/8"	15.875	5/8"	6"	3"	126.98	121.46	115.94	110.42
09120	.6299		16.000	16.0	88	40	91.39	87.42	83.44	79.47
09130	.6299		16.000	16.0	150	75	126.98	121.46	115.94	110.42
09140	.7087		18.000	18.0	100	45	134.02	128.19	122.37	116.54
85700	.7500	3/4"	19.050	3/4"	4"	1-3/4"	127.63	122.08	116.53	110.98
85720	.7500	3/4"	19.050	3/4"	6"	3"	202.29	193.49	184.70	175.90
09350	.7874		20.000	20.0	100	38	170.38	162.98	155.57	148.16
09150	.7874		20.000	20.0	150	75	213.10	203.83	194.57	185.30
09160	.9843		25.000	25.0	100	45	197.94	189.33	180.73	172.12
09170	.9843		25.000	25.0	150	75	328.37	314.09	299.82	285.54
85800	1.000	1"	25.400	1"	4"	1-3/4"	190.90	182.60	174.30	166.00
85820	1.000	1"	25.400	1"	6"	3"	343.91	328.96	314.00	299.05



Series 253MA, 853MA

.1181" - .5512"
(3.000mm - 14.000mm)



TECH PAGES 286-287

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

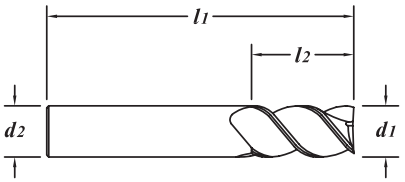
Recommended for stainless steel



Square End

AlTiN Coating

Solid submicron grain carbide end mill - center cutting
High performance machining
Rigid work holding, machine stability and part integrity are critical!
Dry or semi-dry machining
Slots stainless steel at an axial depth of 25% of diameter
Sharp corners (Can be modified with a corner radius)
Bright Finish - page 182
TiCN Coated - page 184



EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
10347	.1181		3.000	3.0	38	8	14.81	14.17	13.52	12.88
10357	.1181		3.000	3.0	50	12	17.85	17.07	16.30	15.52
86137	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	14.06	13.45	12.84	12.23
86147	.1250	1/8"	3.175	1/8"	2"	1/2"	16.96	16.23	15.49	14.75
10387	.1575		4.000	6.0	50	8	23.93	22.89	21.85	20.81
10397	.1575		4.000	6.0	50	12	23.93	22.89	21.85	20.81
86157	.1875	3/16"	4.763	3/16"	2"	5/16"	16.08	15.38	14.68	13.98
86167	.1875	3/16"	4.763	3/16"	2"	9/16"	16.08	15.38	14.68	13.98
86187	.1875	3/16"	4.763	3/16"	3"	1"	28.04	26.82	25.60	24.38
10407	.1969		5.000	5.0	50	8	19.06	18.23	17.40	16.57
10417	.1969		5.000	5.0	50	14	19.06	18.23	17.40	16.57
10507	.1969		5.000	6.0	50	8	23.44	22.42	21.40	20.38
10517	.1969		5.000	6.0	65	16	25.60	24.49	23.37	22.26
10017	.2362		6.000	6.0	50	12	19.93	19.06	18.20	17.33
10027	.2362		6.000	6.0	65	19	22.46	21.48	20.51	19.53
10037	.2362		6.000	6.0	75	32	34.63	33.12	31.62	30.11
86207	.2500	1/4"	6.350	1/4"	2"	1/2"	19.12	18.29	17.46	16.63
86227	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	21.69	20.75	19.80	18.86
86247	.2500	1/4"	6.350	1/4"	3"	1-1/4"	33.15	31.71	30.27	28.83
86267	.3125	5/16"	7.938	5/16"	2"	7/16"	26.43	25.28	24.13	22.98
86277	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	30.92	29.58	28.23	26.89
86287	.3125	5/16"	7.938	5/16"	4"	1-1/4"	48.58	46.46	44.35	42.24
10427	.3150		8.000	8.0	50	11	27.52	26.32	25.13	23.93
10047	.3150		8.000	8.0	65	20	32.05	30.66	29.26	27.87
10057	.3150		8.000	8.0	75	32	44.18	42.26	40.34	38.42
86307	.3750	3/8"	9.525	3/8"	2"	1/2"	31.22	29.87	28.51	27.15
86327	.3750	3/8"	9.525	3/8"	2-1/2"	1"	36.49	34.90	33.32	31.73
86347	.3750	3/8"	9.525	3/8"	3-1/2"	1-1/2"	52.66	50.37	48.08	45.79
10067	.3937		10.000	10.0	50	12	36.14	34.57	33.00	31.43
10077	.3937		10.000	10.0	75	25	51.05	48.83	46.61	44.39
10087	.3937		10.000	10.0	88	38	64.63	61.82	59.01	56.20
86367	.4375	7/16"	11.113	7/16"	2-1/2"	9/16"	43.87	41.97	40.06	38.15
86377	.4375	7/16"	11.113	7/16"	2-3/4"	1"	43.87	41.97	40.06	38.15
86387	.4375	7/16"	11.113	7/16"	4"	2"	70.15	67.10	64.05	61.00
10097	.4724		12.000	12.0	65	16	53.27	50.95	48.64	46.32
10107	.4724		12.000	12.0	75	26	56.83	54.36	51.89	49.42
10117	.4724		12.000	12.0	100	50	77.57	74.20	70.82	67.45
86407	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	51.08	48.86	46.64	44.42
86427	.5000	1/2"	12.700	1/2"	3"	1"	54.58	52.21	49.83	47.46
86447	.5000	1/2"	12.700	1/2"	4"	2"	73.85	70.64	67.43	64.22
10437	.5512		14.000	14.0	65	16	79.55	76.09	72.63	69.17
10447	.5512		14.000	14.0	75	25	85.17	81.47	77.76	74.06
10457	.5512		14.000	14.0	100	50	103.37	98.88	94.38	89.89

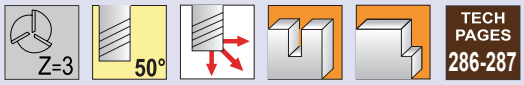
GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
86467	.5625	9/16"	14.288	9/16"	3"	7/8"	85.41	81.70	77.98	74.27
86477	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	90.76	86.81	82.87	78.92
86507	.6250	5/8"	15.875	5/8"	3"	7/8"	90.56	86.63	82.69	78.75
86527	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	100.71	96.33	91.95	87.57
86547	.6250	5/8"	15.875	5/8"	6"	2-1/2"	147.28	140.88	134.47	128.07
10137	.6299		16.000	16.0	88	32	60.81	58.17	55.52	52.88
10147	.6299		16.000	16.0	150	65	147.28	140.88	134.47	128.07
10167	.7087		18.000	18.0	100	38	150.12	143.59	137.07	130.54
86607	.7500	3/4"	19.050	3/4"	3-1/2"	1"	143.75	137.50	131.25	125.00
86627	.7500	3/4"	19.050	3/4"	4"	1-1/2"	143.75	137.50	131.25	125.00
86647	.7500	3/4"	19.050	3/4"	6"	3"	225.79	215.97	206.16	196.34
10187	.7874		20.000	20.0	100	38	194.21	185.77	177.32	168.88
10197	.7874		20.000	20.0	150	75	243.62	233.02	222.43	211.84
86697	1.000	1"	25.400	1"	4"	1-1/8"	214.75	205.41	196.08	186.74
86727	1.000	1"	25.400	1"	4"	2"	214.75	205.41	196.08	186.74
86747	1.000	1"	25.400	1"	6"	3-1/4"	374.44	358.16	341.88	325.60

Series 253M, 853M

.1181" - .5512"
(3.000mm - 14.000mm)



TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

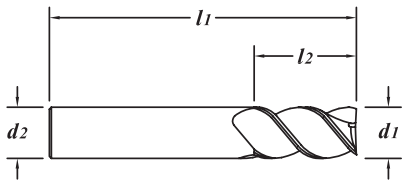
Recommended for aluminum and stainless steel



Square End

Bright Finish

Solid submicron grain carbide end mill - center cutting
High performance machining
Rigid work holding, machine stability and part integrity are critical!
Slots aluminum at an axial depth of 25% of diameter
Sharp corners (Can be modified with a corner radius)
AlTiN Coating - page 180
TiCN Coated - page 184



MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
10340	.1181		3.000	3.0	38	8	12.09	11.56	11.04	10.51
10350	.1181		3.000	3.0	50	12	14.57	13.94	13.30	12.67
86130	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	11.35	10.86	10.36	9.87
86140	.1250	1/8"	3.175	1/8"	2"	1/2"	13.67	13.08	12.48	11.89
10380	.1575		4.000	6.0	50	8	19.65	18.80	17.94	17.09
10390	.1575		4.000	6.0	50	12	19.65	18.80	17.94	17.09
86150	.1875	3/16"	4.763	3/16"	2"	5/16"	13.37	12.79	12.21	11.63
86160	.1875	3/16"	4.763	3/16"	2"	9/16"	13.37	12.79	12.21	11.63
86180	.1875	3/16"	4.763	3/16"	3"	1"	23.84	22.80	21.77	20.73
10400	.1969		5.000	5.0	50	8	14.86	14.21	13.57	12.92
10410	.1969		5.000	5.0	50	14	14.86	14.21	13.57	12.92
10010	.2362		6.000	6.0	50	12	15.76	15.07	14.39	13.70
10020	.2362		6.000	6.0	65	19	16.93	16.19	15.46	14.72
10030	.2362		6.000	6.0	75	32	29.06	27.80	26.53	25.27
86200	.2500	1/4"	6.350	1/4"	2"	1/2"	14.93	14.28	13.63	12.98
86220	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	16.13	15.43	14.73	14.03
86240	.2500	1/4"	6.350	1/4"	3"	1-1/4"	27.62	26.42	25.22	24.02
86260	.3125	5/16"	7.938	5/16"	2"	7/16"	20.41	19.53	18.64	17.75
86270	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	22.63	21.65	20.66	19.68
86280	.3125	5/16"	7.938	5/16"	4"	1-1/4"	38.01	36.36	34.70	33.05
10420	.3150		8.000	8.0	50	11	21.53	20.59	19.66	18.72
10040	.3150		8.000	8.0	65	20	23.76	22.73	21.69	20.66
10050	.3150		8.000	8.0	75	32	35.89	34.33	32.77	31.21
86300	.3750	3/8"	9.525	3/8"	2"	1/2"	25.22	24.12	23.03	21.93
86320	.3750	3/8"	9.525	3/8"	2-1/2"	1"	28.18	26.95	25.73	24.50
86340	.3750	3/8"	9.525	3/8"	3-1/2"	1-1/2"	42.10	40.27	38.44	36.61
10060	.3937		10.000	10.0	50	12	29.35	28.07	26.80	25.52
10070	.3937		10.000	10.0	75	25	41.61	39.80	37.99	36.18
10080	.3937		10.000	10.0	88	38	52.41	50.13	47.85	45.57
86360	.4375	7/16"	11.113	7/16"	2-1/2"	9/16"	34.40	32.90	31.41	29.91
86370	.4375	7/16"	11.113	7/16"	2-3/4"	1"	34.40	32.90	31.41	29.91
86380	.4375	7/16"	11.113	7/16"	4"	2"	57.93	55.41	52.89	50.37
10090	.4724		12.000	12.0	65	16	43.84	41.93	40.03	38.12
10100	.4724		12.000	12.0	75	26	47.40	45.34	43.28	41.22
10110	.4724		12.000	12.0	100	50	65.30	62.46	59.62	56.78
86400	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	41.63	39.82	38.01	36.20
86420	.5000	1/2"	12.700	1/2"	3"	1"	45.14	43.18	41.21	39.25
86440	.5000	1/2"	12.700	1/2"	4"	2"	61.61	58.93	56.25	53.57
10430	.5512		14.000	14.0	65	16	68.57	65.59	62.61	59.63
10440	.5512		14.000	14.0	75	25	74.19	70.96	67.74	64.51
10450	.5512		14.000	14.0	100	50	89.70	85.80	81.90	78.00

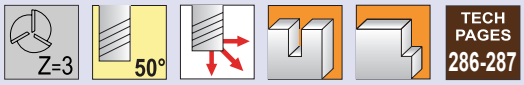
GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
86460	.5625	9/16"	14.288	9/16"	3"	7/8"	74.45	71.21	67.98	64.74
86470	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	77.08	73.73	70.38	67.03
86480	.5625	9/16"	14.288	9/16"	6"	2-1/2"	116.96	111.87	106.79	101.70
86500	.6250	5/8"	15.875	5/8"	3"	7/8"	79.60	76.14	72.68	69.22
86520	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	87.04	83.26	79.47	75.69
86540	.6250	5/8"	15.875	5/8"	6"	2-1/2"	126.98	121.46	115.94	110.42
10120	.6299		16.000	16.0	75	20	83.78	80.14	76.49	72.85
10130	.6299		16.000	16.0	88	32	91.39	87.42	83.44	79.47
10140	.6299		16.000	16.0	150	65	126.98	121.46	115.94	110.42
10160	.7087		18.000	18.0	100	38	134.00	128.17	122.35	116.52
10170	.7087		18.000	18.0	150	75	190.90	182.60	174.30	166.00
86600	.7500	3/4"	19.050	3/4"	3-1/2"	1"	127.63	122.08	116.53	110.98
86620	.7500	3/4"	19.050	3/4"	4"	1-1/2"	127.63	122.08	116.53	110.98
86640	.7500	3/4"	19.050	3/4"	6"	3"	202.29	193.49	184.70	175.90
10460	.7874		20.000	20.0	75	22	155.25	148.50	141.75	135.00
10180	.7874		20.000	20.0	100	38	170.38	162.98	155.57	148.16
10190	.7874		20.000	20.0	150	75	213.10	203.83	194.57	185.30
10480	.9843		25.000	25.0	100	50	197.94	189.33	180.73	172.12
10490	.9843		25.000	25.0	150	82	328.37	314.09	299.82	285.54
86690	1.000	1"	25.400	1"	4"	1-1/8"	190.90	182.60	174.30	166.00
86720	1.000	1"	25.400	1"	4"	2"	190.90	182.60	174.30	166.00
86740	1.000	1"	25.400	1"	6"	3-1/4"	343.91	328.96	314.00	299.05

Series 253MC

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6



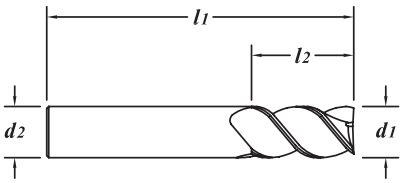
Recommended for aluminum and 303 stainless steel

Square End

TiCN Coated

Solid submicron grain carbide end mill - center cutting
High performance machining
Rigid work holding, machine stability and part integrity are critical!
Improved abrasion resistance and lubricity
Slots aluminum and stainless steel at an axial depth of 25% of diameter
Sharp corners (Can be modified with a corner radius)
AlTiN Coating - page 180
Bright Finish - page 182





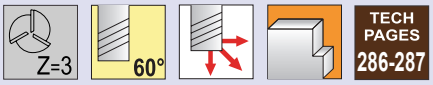
EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
86154	.1875	3/16"	4.763	3/16"	2"	5/16"	15.76	15.07	14.39	13.70
86164	.1875	3/16"	4.763	3/16"	2"	9/16"	15.76	15.07	14.39	13.70
86184	.1875	3/16"	4.763	3/16"	3"	1"	27.16	25.98	24.80	23.62
86204	.2500	1/4"	6.350	1/4"	2"	1/2"	18.27	17.48	16.68	15.89
86224	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	20.95	20.04	19.13	18.22
86244	.2500	1/4"	6.350	1/4"	3"	1-1/4"	32.42	31.01	29.60	28.19
86264	.3125	5/16"	7.938	5/16"	2"	7/16"	25.63	24.52	23.40	22.29
86274	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	29.06	27.80	26.53	25.27
86284	.3125	5/16"	7.938	5/16"	4"	1-1/4"	46.02	44.02	42.02	40.02
86304	.3750	3/8"	9.525	3/8"	2"	1/2"	30.44	29.12	27.79	26.47
86324	.3750	3/8"	9.525	3/8"	2-1/2"	1"	33.40	31.94	30.49	29.04
86344	.3750	3/8"	9.525	3/8"	3-1/2"	1-1/2"	50.07	47.89	45.72	43.54
86364	.4375	7/16"	11.113	7/16"	2-1/2"	9/16"	42.14	40.30	38.47	36.64
86374	.4375	7/16"	11.113	7/16"	2-3/4"	1"	42.14	40.30	38.47	36.64
86384	.4375	7/16"	11.113	7/16"	4"	2"	67.56	64.63	61.69	58.75
86404	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	49.36	47.21	45.07	42.92
86424	.5000	1/2"	12.700	1/2"	3"	1"	52.85	50.56	48.26	45.96
86444	.5000	1/2"	12.700	1/2"	4"	2"	71.27	68.17	65.07	61.97
86464	.5625	9/16	14.288	9/16"	3"	7/8"	84.84	81.15	77.46	73.77
86474	.5625	9/16	14.288	9/16"	3-1/2"	1-1/4"	89.13	85.25	81.38	77.50
86484	.5625	9/16	14.288	9/16"	6"	2-1/2"	133.83	128.01	122.19	116.37
86504	.6250	5/8"	15.875	5/8"	3"	7/8"	89.98	86.06	82.15	78.24
86524	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	99.06	94.75	90.45	86.14
86544	.6250	5/8"	15.875	5/8"	6"	2-1/2"	143.85	137.60	131.34	125.09
86604	.7500	3/4"	19.050	3/4"	3-1/2"	1"	141.40	135.26	129.11	122.96
86624	.7500	3/4"	19.050	3/4"	4"	1-1/2"	141.40	135.26	129.11	122.96
86644	.7500	3/4"	19.050	3/4"	6"	3"	221.55	211.92	202.28	192.65
86694	1.000	1"	25.400	1"	4"	1-1/8"	211.62	202.42	193.22	184.02
86724	1.000	1"	25.400	1"	4"	2"	211.62	202.42	193.22	184.02
86744	1.000	1"	25.400	1"	6"	3-1/4"	371.15	355.01	338.88	322.74

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

Series 263M, 263MC, 263MA, 863MA



TECH PAGES 286-287

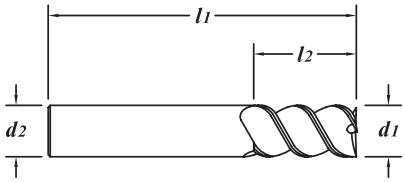
Recommended for steels, stainless steel, high-temperature alloys



Square End

Bright Finish, TiCN, or AlTiN Coating

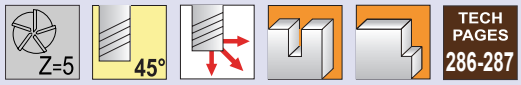
Solid submicron grain carbide end mill - center cutting
High performance profiling
Rigid work holding, machine stability and part integrity are critical!
Modified end gash - will not cut square corner
Can be modified with a corner radius



(263M) BRIGHT EDP#	(263MC) TiCN EDP#	(263MA/863MA) AlTiN EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
23010	-	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	16.13	15.43	14.73	14.03
23020	-	-	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	22.63	21.65	20.66	19.68
23030	-	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	28.18	26.95	25.73	24.50
23040	-	-	.4375	7/16"	11.113	7/16"	2-3/4"	1"	34.40	32.90	31.41	29.91
23050	-	-	.5000	1/2"	12.700	1/2"	3"	1"	45.14	43.18	41.21	39.25
23060	-	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	87.04	83.26	79.47	75.69
23070	-	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	127.63	122.08	116.53	110.98
23080	-	-	1.000	1"	25.400	1"	4"	1-1/2"	190.90	182.60	174.30	166.00
-	23014	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	20.95	20.04	19.13	18.22
-	23024	-	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	29.06	27.80	26.53	25.27
-	23034	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	34.63	33.12	31.62	30.11
-	23044	-	.4375	7/16"	11.113	7/16"	2-3/4"	1"	42.14	40.30	38.47	36.64
-	23054	-	.5000	1/2"	12.700	1/2"	3"	1"	52.85	50.56	48.26	45.96
-	23064	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	99.06	94.75	90.45	86.14
-	23074	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	141.40	135.26	129.11	122.96
-	23084	-	1.000	1"	25.400	1"	4"	1-1/2"	211.62	202.42	193.22	184.02
-	-	23517	.2362		6.000	6.0	65	13	22.46	21.48	20.51	19.53
-	-	23017	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	21.69	20.75	19.80	18.86
-	-	23027	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	30.92	29.58	28.23	26.89
-	-	23527	.3150		8.000	8.0	65	19	32.05	30.66	29.26	27.87
-	-	23037	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	36.49	34.90	33.32	31.73
-	-	23537	.3937		10.000	10.0	70	22	43.76	41.86	39.95	38.05
-	-	23047	.4375	7/16"	11.113	7/16"	2-3/4"	1"	43.87	41.97	40.06	38.15
-	-	23547	.4724		12.000	12.0	75	26	56.83	54.36	51.89	49.42
-	-	23057	.5000	1/2"	12.700	1/2"	3"	1"	54.58	52.21	49.83	47.46
-	-	23067	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	100.71	96.33	91.95	87.57
-	-	23557	.6299		16.000	16.0	88	32	105.05	100.49	95.92	91.35
-	-	23077	.7500	3/4"	19.050	3/4"	4"	1-1/2"	143.75	137.50	131.25	125.00
-	-	23087	1.000	1"	25.400	1"	4"	1-1/2"	214.75	205.41	196.08	186.74

Series 255MA, 855MA

.1181" - .4724"
(3.000mm - 12.000mm)



TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

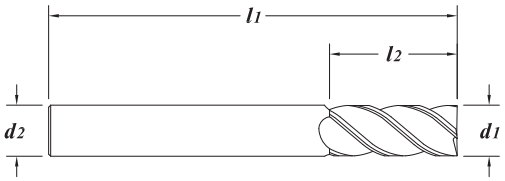
Recommended for steels, stainless steel, and exotics

Square End

AlTiN Coating

Solid submicron grain carbide end mill - center cutting
High performance milling
Rigid work holding, machine stability and part integrity are critical!
Dry or semi-dry machining
Improved finishes in titanium
Heavy core, Sharp corners
Bright Finish - page 188
TiCN Coated - page 190





MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
40047	.1181		3.000	3.0	38	8	14.81	14.17	13.52	12.88
40057	.1181		3.000	3.0	50	12	17.85	17.07	16.30	15.52
52087	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	14.06	13.45	12.84	12.23
52097	.1250	1/8"	3.175	1/8"	2"	1/2"	16.96	16.23	15.49	14.75
40087	.1575		4.000	6.0	50	8	23.93	22.89	21.85	20.81
40097	.1575		4.000	6.0	50	12	23.93	22.89	21.85	20.81
52107	.1875	3/16"	4.763	3/16"	2"	5/16"	16.08	15.38	14.68	13.98
52127	.1875	3/16"	4.763	3/16"	2"	9/16"	16.08	15.38	14.68	13.98
40107	.1969		5.000	5.0	50	8	19.06	18.23	17.40	16.57
40127	.1969		5.000	5.0	50	14	19.06	18.23	17.40	16.57
40117	.1969		5.000	6.0	50	8	23.44	22.42	21.40	20.38
40137	.1969		5.000	6.0	65	16	25.60	24.49	23.37	22.26
40207	.2362		6.000	6.0	50	10	19.93	19.06	18.20	17.33
40227	.2362		6.000	6.0	65	20	22.46	21.48	20.51	19.53
40247	.2362		6.000	6.0	100	32	37.18	35.56	33.95	32.33
52207	.2500	1/4"	6.350	1/4"	2"	3/8"	19.12	18.29	17.46	16.63
52227	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	21.69	20.75	19.80	18.86
52237	.2500	1/4"	6.350	1/4"	3"	1-1/8"	33.15	31.71	30.27	28.83
52247	.2500	1/4"	6.350	1/4"	4"	1-1/4"	35.65	34.10	32.55	31.00
52307	.3125	5/16"	7.938	5/16"	2"	7/16"	26.43	25.28	24.13	22.98
52327	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	30.92	29.58	28.23	26.89
52347	.3125	5/16"	7.938	5/16"	4"	1-1/4"	48.58	46.46	44.35	42.24
40307	.3150		8.000	8.0	50	11	27.52	26.32	25.13	23.93
40327	.3150		8.000	8.0	65	21	32.05	30.66	29.26	27.87
40347	.3150		8.000	8.0	100	32	50.58	48.38	46.18	43.98
40367	.3543		9.000	10.0	65	22	49.50	47.34	45.19	43.04
52407	.3750	3/8"	9.525	3/8"	2"	1/2"	31.22	29.87	28.51	27.15
52427	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	36.49	34.90	33.32	31.73
52437	.3750	3/8"	9.525	3/8"	3"	1-1/4"	46.58	44.55	42.53	40.50
52447	.3750	3/8"	9.525	3/8"	3-1/2"	1-1/2"	52.66	50.37	48.08	45.79
40407	.3937		10.000	10.0	50	12	36.14	34.57	33.00	31.43
40427	.3937		10.000	10.0	70	22	43.76	41.86	39.95	38.05
40447	.3937		10.000	10.0	88	38	64.63	61.82	59.01	56.20
52507	.4375	7/16"	11.113	7/16"	2-1/2"	9/16"	43.87	41.97	40.06	38.15
52527	.4375	7/16"	11.113	7/16"	2-3/4"	1"	43.87	41.97	40.06	38.15
52547	.4375	7/16"	11.113	7/16"	4"	2"	70.15	67.10	64.05	61.00
40507	.4724		12.000	12.0	65	16	53.27	50.95	48.64	46.32
40527	.4724		12.000	12.0	75	32	56.83	54.36	51.89	49.42
40547	.4724		12.000	12.0	100	50	77.57	74.20	70.82	67.45

GARR TOOL®

† Metric equivalents are for reference only

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
52607	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	51.08	48.86	46.64	44.42
52627	.5000	1/2"	12.700	1/2"	3"	1-1/4"	54.58	52.21	49.83	47.46
52647	.5000	1/2"	12.700	1/2"	4"	2"	73.85	70.64	67.43	64.22
52707	.6250	5/8"	15.875	5/8"	3"	3/4"	90.56	86.63	82.69	78.75
52727	.6250	5/8"	15.875	5/8"	3-1/2"	1-5/8"	100.71	96.33	91.95	87.57
52747	.6250	5/8"	15.875	5/8"	6"	2-1/2"	147.28	140.88	134.47	128.07
40607	.6299		16.000	16.0	75	20	94.73	90.61	86.49	82.37
40627	.6299		16.000	16.0	88	41	105.05	100.49	95.92	91.35
40647	.6299		16.000	16.0	150	63	147.28	140.88	134.47	128.07
52807	.7500	3/4"	19.050	3/4"	3"	7/8"	127.59	122.05	116.50	110.95
52827	.7500	3/4"	19.050	3/4"	4"	1-5/8"	143.75	137.50	131.25	125.00
52837	.7500	3/4"	19.050	3/4"	5"	2"	192.94	184.55	176.16	167.77
52847	.7500	3/4"	19.050	3/4"	6"	3-1/4"	225.79	215.97	206.16	196.34
40727	.7874		20.000	20.0	100	41	194.21	185.77	177.32	168.88
40747	.7874		20.000	20.0	150	82	243.62	233.02	222.43	211.84
40787	.9843		25.000	25.0	100	28	221.79	212.15	202.50	192.86
40827	.9843		25.000	25.0	100	50	221.79	212.15	202.50	192.86
40847	.9843		25.000	25.0	150	82	358.89	343.29	327.68	312.08
52897	1.000	1"	25.400	1"	4"	1-1/8"	214.75	205.41	196.08	186.74
52927	1.000	1"	25.400	1"	4"	2"	214.75	205.41	196.08	186.74
52947	1.000	1"	25.400	1"	6"	3-1/4"	374.44	358.16	341.88	325.60



End Mill Manufacturing

Series 255M, 855M

.1181" - .5000"
(3.000mm - 12.700mm)

Z=5 | 45° | TECH PAGES 286-287

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

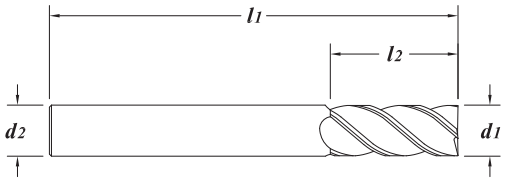
Recommended for steels, stainless steel, and exotics



Square End

Bright Finish

Solid submicron grain carbide end mill - center cutting
High performance milling
Rigid work holding, machine stability and part integrity are critical!
Improved finishes in titanium
Heavy core
Sharp corners
AlTiN Coating - page 186
TiCN Coated - page 190



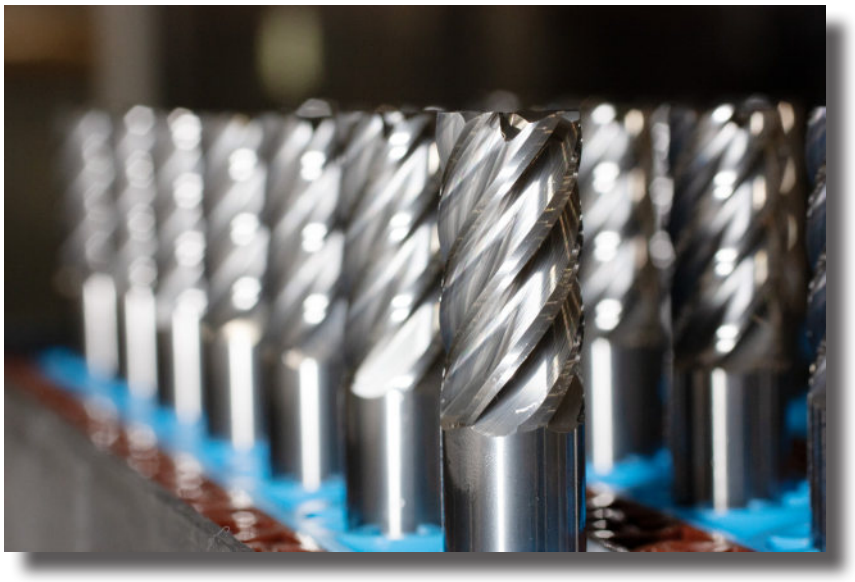
MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
40040	.1181		3.000	3.0	38	8	12.09	11.56	11.04	10.51
40050	.1181		3.000	3.0	50	12	14.57	13.94	13.30	12.67
52080	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	11.35	10.86	10.36	9.87
52090	.1250	1/8"	3.175	1/8"	2"	1/2"	13.67	13.08	12.48	11.89
40080	.1575		4.000	6.0	50	8	19.65	18.80	17.94	17.09
40090	.1575		4.000	6.0	50	12	19.65	18.80	17.94	17.09
52100	.1875	3/16"	4.763	3/16"	2"	5/16"	13.37	12.79	12.21	11.63
52120	.1875	3/16"	4.763	3/16"	2"	9/16"	13.37	12.79	12.21	11.63
40100	.1969		5.000	5.0	50	8	14.86	14.21	13.57	12.92
40120	.1969		5.000	5.0	50	14	14.86	14.21	13.57	12.92
40200	.2362		6.000	6.0	50	10	15.76	15.07	14.39	13.70
40220	.2362		6.000	6.0	65	20	16.93	16.19	15.46	14.72
40240	.2362		6.000	6.0	100	32	30.68	29.35	28.01	26.68
52200	.2500	1/4"	6.350	1/4"	2"	3/8"	14.93	14.28	13.63	12.98
52220	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	16.13	15.43	14.73	14.03
52240	.2500	1/4"	6.350	1/4"	4"	1-1/4"	29.14	27.87	26.61	25.34
52300	.3125	5/16"	7.938	5/16"	2"	7/16"	20.41	19.53	18.64	17.75
52320	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	22.63	21.65	20.66	19.68
52340	.3125	5/16"	7.938	5/16"	4"	1-1/4"	38.01	36.36	34.70	33.05
40320	.3150		8.000	8.0	65	21	23.76	22.73	21.69	20.66
40340	.3150		8.000	8.0	100	32	40.03	38.29	36.55	34.81
52400	.3750	3/8"	9.525	3/8"	2"	1/2"	25.22	24.12	23.03	21.93
52420	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	28.18	26.95	25.73	24.50
52440	.3750	3/8"	9.525	3/8"	3-1/2"	1-1/2"	42.10	40.27	38.44	36.61
40420	.3937		10.000	10.0	70	22	34.30	32.81	31.32	29.83
40440	.3937		10.000	10.0	88	38	52.41	50.13	47.85	45.57
52500	.4375	7/16"	11.113	7/16"	2-1/2"	9/16"	34.40	32.90	31.41	29.91
52520	.4375	7/16"	11.113	7/16"	2-3/4"	1"	34.40	32.90	31.41	29.91
52540	.4375	7/16"	11.113	7/16"	4"	2"	57.93	55.41	52.89	50.37
40520	.4724		12.000	12.0	75	32	47.40	45.34	43.28	41.22
40540	.4724		12.000	12.0	100	50	65.30	62.46	59.62	56.78
52600	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	41.63	39.82	38.01	36.20
52620	.5000	1/2"	12.700	1/2"	3"	1-1/4"	45.14	43.18	41.21	39.25
52640	.5000	1/2"	12.700	1/2"	4"	2"	61.61	58.93	56.25	53.57

GARR TOOL®

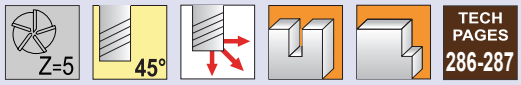
† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
52700	.6250	5/8"	15.875	5/8"	3"	3/4"	79.60	76.14	72.68	69.22
52720	.6250	5/8"	15.875	5/8"	3-1/2"	1-5/8"	87.04	83.26	79.47	75.69
52740	.6250	5/8"	15.875	5/8"	6"	2-1/2"	126.98	121.46	115.94	110.42
40600	.6299		16.000	16.0	75	20	83.78	80.14	76.49	72.85
40620	.6299		16.000	16.0	88	41	91.39	87.42	83.44	79.47
40640	.6299		16.000	16.0	150	63	126.98	121.46	115.94	110.42
52800	.7500	3/4"	19.050	3/4"	3"	7/8"	114.47	109.49	104.52	99.54
52820	.7500	3/4"	19.050	3/4"	4"	1-5/8"	127.63	122.08	116.53	110.98
52830	.7500	3/4"	19.050	3/4"	5"	2"	172.76	165.25	157.74	150.23
52840	.7500	3/4"	19.050	3/4"	6"	3-1/4"	202.29	193.49	184.70	175.90
40700	.7874		20.000	20.0	75	22	155.25	148.50	141.75	135.00
40720	.7874		20.000	20.0	100	41	170.38	162.98	155.57	148.16
40740	.7874		20.000	20.0	150	82	213.10	203.83	194.57	185.30
40780	.9843		25.000	25.0	100	28	197.94	189.33	180.73	172.12
40820	.9843		25.000	25.0	100	50	197.94	189.33	180.73	172.12
40840	.9843		25.000	25.0	150	82	328.37	314.09	299.82	285.54
52890	1.000	1"	25.400	1"	4"	1-1/8"	190.90	182.60	174.30	166.00
52920	1.000	1"	25.400	1"	4"	2"	190.90	182.60	174.30	166.00
52940	1.000	1"	25.400	1"	6"	3-1/4"	343.91	328.96	314.00	299.05



Series 255MC

.1875" - 1.000"
(4.763mm - 25.400mm)



TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

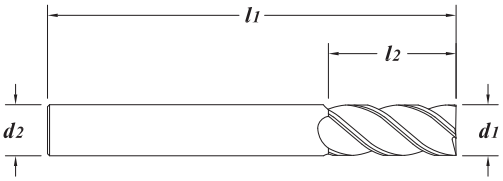
Recommended for steels, stainless steel, and exotics

Square End

TiCN Coated

Solid submicron grain carbide end mill - center cutting
High performance milling
Rigid work holding, machine stability and part integrity are critical!
Improved abrasion resistance and lubricity
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Heavy core
Sharp corners
AlTiN Coating - page 186
Bright Finsh - page 188





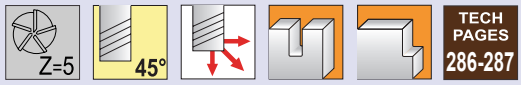
EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
52104	.1875	3/16"	4.763	3/16"	2"	5/16"	15.76	15.07	14.39	13.70
52124	.1875	3/16"	4.763	3/16"	2"	9/16"	15.76	15.07	14.39	13.70
52204	.2500	1/4"	6.350	1/4"	2"	3/8"	18.27	17.48	16.68	15.89
52224	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	20.95	20.04	19.13	18.22
52244	.2500	1/4"	6.350	1/4"	4"	1-1/4"	34.35	32.86	31.36	29.87
52304	.3125	5/16"	7.938	5/16"	2"	7/16"	25.63	24.52	23.40	22.29
52324	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	29.06	27.80	26.53	25.27
52344	.3125	5/16"	7.938	5/16"	4"	1-1/4"	46.02	44.02	42.02	40.02
52404	.3750	3/8"	9.525	3/8"	2"	1/2"	30.44	29.12	27.79	26.47
52424	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	34.63	33.12	31.62	30.11
52444	.3750	3/8"	9.525	3/8"	3-1/2"	1-1/2"	50.07	47.89	45.72	43.54
52504	.4375	7/16"	11.113	7/16"	2-1/2"	9/16"	42.14	40.30	38.47	36.64
52524	.4375	7/16"	11.113	7/16"	2-3/4"	1"	42.14	40.30	38.47	36.64
52544	.4375	7/16"	11.113	7/16"	4"	2"	67.56	64.63	61.69	58.75
52604	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	49.36	47.21	45.07	42.92
52624	.5000	1/2"	12.700	1/2"	3"	1-1/4"	52.85	50.56	48.26	45.96
52644	.5000	1/2"	12.700	1/2"	4"	2"	71.27	68.17	65.07	61.97
52704	.6250	5/8"	15.875	5/8"	3"	3/4"	89.98	86.06	82.15	78.24
52724	.6250	5/8"	15.875	5/8"	3-1/2"	1-5/8"	99.06	94.75	90.45	86.14
52744	.6250	5/8"	15.875	5/8"	6"	2-1/2"	143.85	137.60	131.34	125.09
52804	.7500	3/4"	19.050	3/4"	3"	7/8"	127.25	121.72	116.18	110.65
52824	.7500	3/4"	19.050	3/4"	4"	1-5/8"	141.40	135.26	129.11	122.96
52844	.7500	3/4"	19.050	3/4"	6"	3-1/4"	221.55	211.92	202.28	192.65
52894	1.000	1"	25.400	1"	4"	1-1/8"	211.62	202.42	193.22	184.02
52924	1.000	1"	25.400	1"	4"	2"	211.62	202.42	193.22	184.02
52944	1.000	1"	25.400	1"	6"	3-1/4"	371.15	355.01	338.88	322.74

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Series 255RA, 855RA



.1181" - .3125"
(3.000mm - 7.938mm)

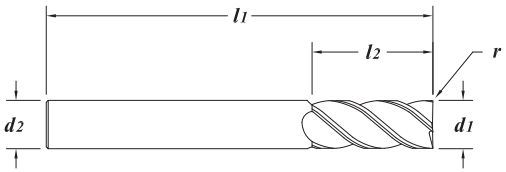
Recommended for steels, stainless steel, and exotics

Corner Radius

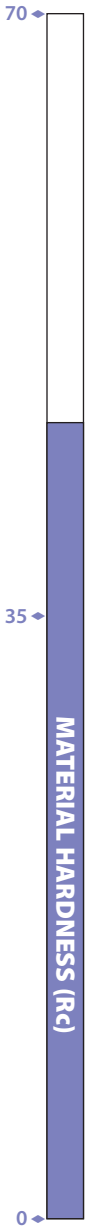
AlTiN Coating

Solid submicron grain carbide end mill - center cutting
High performance milling
Rigid work holding, machine stability and part integrity are critical!
Dry or semi-dry machining
Improved finishes in titanium
Heavy core





EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
83527	.1181		3.000	3.0	38	8	0.20	16.17	15.47	14.76	14.06
83537	.1181		3.000	3.0	38	8	0.50	16.17	15.47	14.76	14.06
83547	.1181		3.000	3.0	50	12	0.20	19.38	18.54	17.69	16.85
83550	.1181		3.000	3.0	50	12	0.30	19.38	18.54	17.69	16.85
83557	.1181		3.000	3.0	50	12	0.50	19.38	18.54	17.69	16.85
83567	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.010"	15.36	14.70	14.03	13.36
83577	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.020"	15.36	14.70	14.03	13.36
83587	.1250	1/8"	3.175	1/8"	2"	1/2"	.010"	18.88	18.06	17.24	16.42
83597	.1250	1/8"	3.175	1/8"	2"	1/2"	.020"	18.88	18.06	17.24	16.42
83600	.1250	1/8"	3.175	1/8"	2"	1/2"	.030"	18.88	18.06	17.24	16.42
83607	.1575		4.000	6.0	50	8	0.30	26.07	24.94	23.80	22.67
83617	.1575		4.000	6.0	50	8	0.50	26.07	24.94	23.80	22.67
83627	.1575		4.000	6.0	50	12	0.30	26.07	24.94	23.80	22.67
83637	.1575		4.000	6.0	50	12	0.50	26.07	24.94	23.80	22.67
83647	.1875	3/16"	4.763	3/16"	2"	5/16"	.010"	19.32	18.48	17.64	16.80
83657	.1875	3/16"	4.763	3/16"	2"	5/16"	.020"	19.32	18.48	17.64	16.80
83667	.1875	3/16"	4.763	3/16"	2"	9/16"	.010"	19.32	18.48	17.64	16.80
83677	.1875	3/16"	4.763	3/16"	2"	9/16"	.020"	19.32	18.48	17.64	16.80
83680	.1875	3/16"	4.763	3/16"	2"	9/16"	.030"	19.32	18.48	17.64	16.80
83707	.1969		5.000	6.0	65	15	0.30	28.43	27.19	25.96	24.72
83717	.1969		5.000	6.0	65	15	0.50	28.43	27.19	25.96	24.72
83767	.2362		6.000	6.0	50	12	0.30	24.53	23.46	22.40	21.33
83777	.2362		6.000	6.0	50	12	0.50	24.53	23.46	22.40	21.33
83780	.2362		6.000	6.0	65	19	0.20	27.54	26.35	25.15	23.95
83787	.2362		6.000	6.0	65	19	0.30	27.54	26.35	25.15	23.95
83797	.2362		6.000	6.0	65	19	0.50	27.54	26.35	25.15	23.95
83807	.2362		6.000	6.0	65	19	1.00	27.54	26.35	25.15	23.95
83827	.2500	1/4"	6.350	1/4"	2"	3/8"	.015"	23.61	22.58	21.56	20.53
83837	.2500	1/4"	6.350	1/4"	2"	3/8"	.030"	23.61	22.58	21.56	20.53
83845	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	26.54	25.39	24.23	23.08
83847	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	26.54	25.39	24.23	23.08
83857	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	26.54	25.39	24.23	23.08
83877	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	26.54	25.39	24.23	23.08
83907	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	38.11	36.45	34.80	33.14
83927	.3125	5/16"	7.938	5/16"	2"	7/16"	.020"	32.23	30.83	29.43	28.03
83937	.3125	5/16"	7.938	5/16"	2"	7/16"	.030"	32.23	30.83	29.43	28.03
83940	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.010"	35.93	34.36	32.80	31.24
83947	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	35.93	34.36	32.80	31.24
83957	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	35.93	34.36	32.80	31.24
83977	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.060"	35.93	34.36	32.80	31.24



continued →

Series 255RA, 855RA *(continued)*

.3150" - 1.000"
(8.000mm - 25.400mm)

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
83987	.3150		8.000	8.0	50	12	0.50	33.42	31.97	30.51	29.06
83997	.3150		8.000	8.0	50	12	1.00	33.42	31.97	30.51	29.06
84000	.3150		8.000	8.0	65	22	0.30	37.27	35.65	34.03	32.41
84007	.3150		8.000	8.0	65	22	0.50	37.27	35.65	34.03	32.41
84017	.3150		8.000	8.0	65	22	1.00	37.27	35.65	34.03	32.41
84027	.3150		8.000	8.0	65	22	1.50	37.27	35.65	34.03	32.41
84087	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	38.00	36.34	34.69	33.04
84097	.3750	3/8"	9.525	3/8"	2"	1/2"	.030"	38.00	36.34	34.69	33.04
84100	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	41.79	39.97	38.16	36.34
84107	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	41.79	39.97	38.16	36.34
84117	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	41.79	39.97	38.16	36.34
84137	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	41.79	39.97	38.16	36.34
84147	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	54.99	52.60	50.21	47.82
84167	.3937		10.000	10.0	70	22	0.50	50.52	48.32	46.13	43.93
84177	.3937		10.000	10.0	70	22	1.00	50.52	48.32	46.13	43.93
84257	.4724		12.000	12.0	75	32	0.30	73.88	70.66	67.45	64.24
84267	.4724		12.000	12.0	75	32	0.50	73.88	70.66	67.45	64.24
84277	.4724		12.000	12.0	75	32	1.00	73.88	70.66	67.45	64.24
84287	.4724		12.000	12.0	75	32	1.50	73.88	70.66	67.45	64.24
84307	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	70.89	67.80	64.72	61.64
84317	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	70.89	67.80	64.72	61.64
84327	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	70.89	67.80	64.72	61.64
84337	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	70.89	67.80	64.72	61.64
84357	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	70.89	67.80	64.72	61.64
84367	.5000	1/2"	12.700	1/2"	4"	2"	.030"	83.97	80.32	76.67	73.02
84377	.5000	1/2"	12.700	1/2"	4"	2"	.060"	83.97	80.32	76.67	73.02
84397	.5000	1/2"	12.700	1/2"	4"	2"	.120"	83.97	80.32	76.67	73.02
84467	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	112.73	107.83	102.93	98.03
84487	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	112.73	107.83	102.93	98.03
84497	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	112.73	107.83	102.93	98.03
84507	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	112.73	107.83	102.93	98.03
84567	.6299		16.000	16.0	88	32	1.00	117.55	112.44	107.33	102.22
84577	.6299		16.000	16.0	88	32	2.00	117.55	112.44	107.33	102.22
84587	.6299		16.000	16.0	150	65	1.00	175.55	167.92	160.28	152.65
84597	.6299		16.000	16.0	150	65	2.00	175.55	167.92	160.28	152.65
84667	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	161.33	154.32	147.30	140.29
84687	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	161.33	154.32	147.30	140.29
84697	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	161.33	154.32	147.30	140.29
84700	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.120"	161.33	154.32	147.30	140.29
84707	.7500	3/4"	19.050	3/4"	5"	2"	.030"	223.38	213.66	203.95	194.24
84717	.7500	3/4"	19.050	3/4"	5"	2"	.060"	223.38	213.66	203.95	194.24
84747	.7500	3/4"	19.050	3/4"	5"	2"	.120"	223.38	213.66	203.95	194.24
84757	.7500	3/4"	19.050	3/4"	5"	2"	.190"	223.38	213.66	203.95	194.24
84767	.7874		20.000	20.0	100	38	1.00	228.31	218.38	208.46	198.53
84777	.7874		20.000	20.0	100	38	3.00	228.31	218.38	208.46	198.53
84887	.9843		25.000	25.0	100	38	1.00	261.27	249.91	238.55	227.19
84897	.9843		25.000	25.0	100	38	3.00	261.27	249.91	238.55	227.19
84957	1.000	1"	25.400	1"	4"	1-1/2"	.015"	274.83	262.88	250.93	238.98
84967	1.000	1"	25.400	1"	4"	1-1/2"	.030"	274.83	262.88	250.93	238.98
84970	1.000	1"	25.400	1"	4"	1-1/2"	.060"	274.83	262.88	250.93	238.98
84977	1.000	1"	25.400	1"	4"	1-1/2"	.120"	274.83	262.88	250.93	238.98
84987	1.000	1"	25.400	1"	5"	2"	.030"	337.97	323.28	308.58	293.89
84990	1.000	1"	25.400	1"	5"	2"	.060"	337.97	323.28	308.58	293.89
84997	1.000	1"	25.400	1"	5"	2"	.120"	337.97	323.28	308.58	293.89
85007	1.000	1"	25.400	1"	5"	2"	.190"	337.97	323.28	308.58	293.89

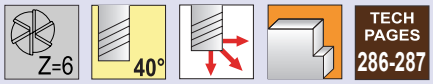
GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

NEW ITEM

Series 246M, 246MC, 246MA, 846M, 846MA



TECH PAGES 286-287

Recommended for steels

Square End

Bright Finish, TiCN, or AlTiN Coating

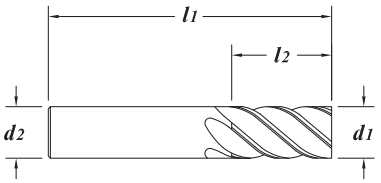
Solid submicron grain carbide end mill - center cutting

High performance finishing in a variety of steels

Rigid work holding, machine stability and part integrity are critical!

Excellent durability



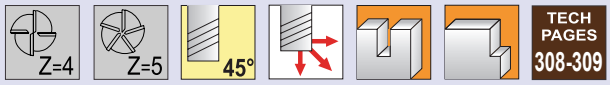


(246M/846M) BRIGHT EDP#	(246MC) TiCN EDP#	(246MA/846MA) AlTiN EDP#	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
51110	-	-	.1875	3/16"	4.763	3/16"	2"	5/8"	13.37	12.79	12.21	11.63
51510	-	-	.1969		5.000	5.0	50	16	14.86	14.21	13.57	12.92
51520	-	-	.2362		6.000	6.0	65	20	16.93	16.19	15.46	14.72
51150	-	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	16.13	15.43	14.73	14.03
51190	-	-	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	22.63	21.65	20.66	19.68
51530	-	-	.3150		8.000	8.0	65	22	23.76	22.73	21.69	20.66
51230	-	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	28.18	26.95	25.73	24.50
51540	-	-	.3937		10.000	10.0	70	25	34.30	32.81	31.32	29.83
51270	-	-	.4375	7/16"	11.113	7/16"	2-3/4"	1"	34.40	32.90	31.41	29.91
51310	-	-	.5000	1/2"	12.700	1/2"	3"	1"	45.14	43.18	41.21	39.25
51330	-	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	87.04	83.26	79.47	75.69
51560	-	-	.6299		16.000	16.0	88	32	91.39	87.42	83.44	79.47
51350	-	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	127.63	122.08	116.53	110.98
51370	-	-	1.000	1"	25.400	1"	4"	1-1/2"	190.90	182.60	174.30	166.00
51400	-	-	1.250	1-1/4"	31.750	1-1/4"	4-1/2"	2"	557.35	533.12	508.88	484.65
51430	-	-	1.250	1-1/4"	31.750	1-1/4"	6"	3"	729.58	697.86	666.14	634.42
-	51114	-	.1875	3/16"	4.763	3/16"	2"	5/8"	15.76	15.07	14.39	13.70
-	51154	-	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	20.95	20.04	19.13	18.22
-	51194	-	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	29.06	27.80	26.53	25.27
-	51234	-	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	34.63	33.12	31.62	30.11
-	51274	-	.4375	7/16"	11.113	7/16"	2-3/4"	1"	42.14	40.30	38.47	36.64
-	51314	-	.5000	1/2"	12.700	1/2"	3"	1"	52.85	50.56	48.26	45.96
-	51334	-	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	99.06	94.75	90.45	86.14
-	51354	-	.7500	3/4"	19.050	3/4"	4"	1-1/2"	141.40	135.26	129.11	122.96
-	51374	-	1.000	1"	25.400	1"	4"	1-1/2"	211.58	202.38	193.18	183.98
-	51404	-	1.250	1-1/4"	31.750	1-1/4"	4-1/2"	2"	590.76	565.07	539.39	513.70
-	51434	-	1.250	1-1/4"	31.750	1-1/4"	6"	3"	767.36	734.00	700.63	667.27
-	-	51117	.1875	3/16"	4.763	3/16"	2"	5/8"	16.08	15.38	14.68	13.98
-	-	51517	.1969		5.000	5.0	50	16	19.06	18.23	17.40	16.57
NEW	-	-	51597	.1969		5.000	6.0	65	16	25.60	24.49	23.37	22.26
-	-	51527	.2362		6.000	6.0	65	20	22.46	21.48	20.51	19.53
-	-	51157	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	21.69	20.75	19.80	18.86
-	-	51197	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	30.92	29.58	28.23	26.89
-	-	51537	.3150		8.000	8.0	65	22	32.05	30.66	29.26	27.87
-	-	51237	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	36.49	34.90	33.32	31.73
-	-	51547	.3937		10.000	10.0	70	25	43.76	41.86	39.95	38.05
-	-	51277	.4375	7/16"	11.113	7/16"	2-3/4"	1"	43.87	41.97	40.06	38.15
-	-	51557	.4724		12.000	12.0	75	26	56.83	54.36	51.89	49.42
-	-	51317	.5000	1/2"	12.700	1/2"	3"	1"	54.58	52.21	49.83	47.46
-	-	51337	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	100.71	96.33	91.95	87.57
-	-	51567	.6299		16.000	16.0	88	32	105.05	100.49	95.92	91.35
-	-	51357	.7500	3/4"	19.050	3/4"	4"	1-1/2"	143.75	137.50	131.25	125.00
-	-	51577	.7874		20.000	20.0	100	38	194.21	185.77	177.32	168.88
-	-	51587	.9843		25.000	25.0	100	38	221.79	212.15	202.50	192.86
-	-	51377	1.000	1"	25.400	1"	4"	1-1/2"	214.75	205.41	196.08	186.74
-	-	51407	1.250	1-1/4"	31.750	1-1/4"	4-1/2"	2"	596.45	570.52	544.58	518.65
-	-	51437	1.250	1-1/4"	31.750	1-1/4"	6"	3"	768.68	735.26	701.84	668.42

Series 545MA

HIGH ROCKWELL END MILLS

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6



TECH PAGES 308-309

Recommended for inconel, tool steels, hardened die mold >40Rc

Square End

BALINIT® Durana Coating

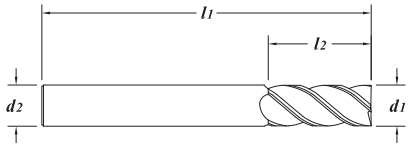
Solid submicron grain carbide end mill - center cutting

High performance tool for use in high Rockwell and difficult to machine materials

Corner Radius - page 195

Ball End - page 196





MATERIAL HARDNESS (Rc)

70

35

0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	Number of Flutes	1-11	12-24	25-49	50-100
21200	.1181		3.000	3.0	38	12	4	15.63	14.95	14.27	13.59
21230	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	4	14.86	14.21	13.57	12.92
21260	.1575		4.000	6.0	50	12	4	25.25	24.16	23.06	21.96
21290	.1875	3/16"	4.763	3/16"	2"	9/16"	4	18.66	17.85	17.04	16.23
21320	.1969		5.000	6.0	65	15	4	27.67	26.47	25.26	24.06
21350	.2362		6.000	6.0	65	19	4	26.83	25.66	24.50	23.33
21380	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	4	25.85	24.73	23.60	22.48
21410	.2756		7.000	8.0	65	22	5	40.50	38.74	36.98	35.22
21440	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	5	35.10	33.57	32.05	30.52
21470	.3150		8.000	8.0	65	22	5	36.89	35.29	33.68	32.08
21500	.3543		9.000	10.0	65	22	5	54.20	51.84	49.49	47.13
21530	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	5	40.69	38.92	37.15	35.38
21560	.3937		10.000	10.0	70	22	5	49.11	46.97	44.84	42.70
21620	.4724		12.000	12.0	75	32	5	72.00	68.87	65.74	62.61
21660	.5000	1/2"	12.700	1/2"	3"	1-1/4"	5	68.46	65.48	62.51	59.53
21710	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	5	108.70	103.97	99.25	94.52
21740	.6299		16.000	16.0	88	32	5	114.31	109.34	104.37	99.40
21800	.7500	3/4"	19.050	3/4"	4"	1-1/2"	5	155.69	148.92	142.15	135.38
21830	.7874		20.000	20.0	100	38	5	220.09	210.52	200.95	191.38
21890	.9843		25.000	25.0	100	38	5	275.17	263.21	251.24	239.28
21920	1.000	1"	25.400	1"	4"	1-1/2"	5	266.05	254.49	242.92	231.35

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

HIGH ROCKWELL END MILLS

Series 545RA

Z=4 | Z=5 | 45° | TECH PAGES 308-309

Recommended for inconel, tool steels, hardened die mold >40Rc

Corner Radius

BALINIT® Durana Coating

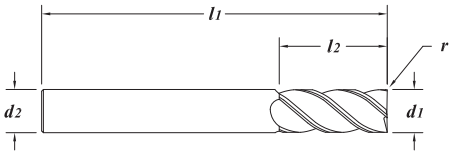
Solid submicron grain carbide end mill - center cutting

High performance tool for use in high Rockwell and difficult to machine materials

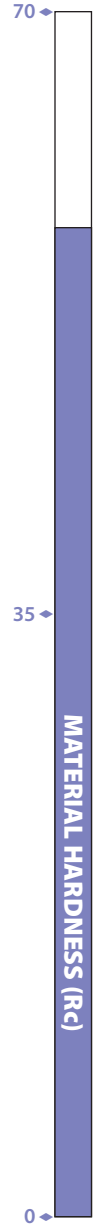
Square End - page 194

Ball End - page 196



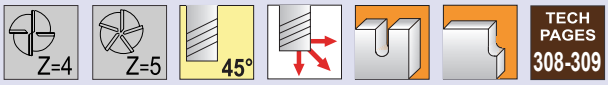


EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	Number of Flutes	1-11	12-24	25-49	50-100
21202	.1181		3.000	3.0	38	12	0.20	4	17.07	16.32	15.58	14.84
21212	.1181		3.000	3.0	38	12	0.50	4	17.07	16.32	15.58	14.84
21232	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.010"	4	16.22	15.51	14.81	14.10
21242	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	4	16.22	15.51	14.81	14.10
21262	.1575		4.000	6.0	50	12	0.30	4	27.52	26.32	25.13	23.93
21292	.1875	3/16"	4.763	3/16"	2"	9/16"	.010"	4	20.38	19.49	18.61	17.72
21302	.1875	3/16"	4.763	3/16"	2"	9/16"	.020"	4	20.38	19.49	18.61	17.72
21322	.1969		5.000	6.0	65	15	0.30	4	30.02	28.71	27.41	26.10
21342	.2362		6.000	6.0	65	19	0.20	4	29.07	27.81	26.54	25.28
21352	.2362		6.000	6.0	65	19	0.50	4	29.07	27.81	26.54	25.28
21372	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	4	28.01	26.80	25.58	24.36
21382	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	4	28.01	26.80	25.58	24.36
21392	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	4	28.01	26.80	25.58	24.36
21412	.2756		7.000	8.0	65	22	0.50	5	43.93	42.02	40.11	38.20
21432	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.010"	5	37.93	36.28	34.63	32.98
21442	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.015"	5	37.93	36.28	34.63	32.98
21452	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	5	37.93	36.28	34.63	32.98
21462	.3150		8.000	8.0	65	22	0.20	5	39.93	38.19	36.46	34.72
21472	.3150		8.000	8.0	65	22	0.50	5	39.93	38.19	36.46	34.72
21502	.3543		9.000	10.0	65	22	0.50	5	59.00	56.43	53.87	51.30
21522	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	5	44.14	42.22	40.30	38.38
21532	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	5	44.14	42.22	40.30	38.38
21542	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	5	44.14	42.22	40.30	38.38
21552	.3937		10.000	10.0	70	22	0.20	5	53.31	51.00	48.68	46.36
21562	.3937		10.000	10.0	70	22	0.50	5	53.31	51.00	48.68	46.36
21612	.4724		12.000	12.0	75	32	0.50	5	78.76	75.34	71.91	68.49
21622	.4724		12.000	12.0	75	32	1.00	5	78.76	75.34	71.91	68.49
21642	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	5	74.82	71.57	68.31	65.06
21652	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	5	74.82	71.57	68.31	65.06
21662	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	5	74.82	71.57	68.31	65.06
21672	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	5	74.82	71.57	68.31	65.06
21692	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.010"	5	119.00	113.83	108.65	103.48
21702	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	5	119.00	113.83	108.65	103.48
21712	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	5	119.00	113.83	108.65	103.48
21722	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	5	119.00	113.83	108.65	103.48
21732	.6299		16.000	16.0	88	32	0.50	5	125.27	119.82	114.38	108.93
21742	.6299		16.000	16.0	88	32	1.00	5	125.27	119.82	114.38	108.93
21772	.7087		18.000	18.0	100	38	0.50	5	178.78	171.01	163.23	155.46
21802	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	5	171.07	163.64	156.20	148.76
21812	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	5	171.07	163.64	156.20	148.76
21822	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	5	171.07	163.64	156.20	148.76
21832	.7874		20.000	20.0	100	38	0.50	5	241.86	231.34	220.83	210.31
21922	1.000	1"	25.400	1"	4"	1-1/2"	.015"	5	292.38	279.66	266.95	254.24
21932	1.000	1"	25.400	1"	4"	1-1/2"	.030"	5	292.38	279.66	266.95	254.24
21942	1.000	1"	25.400	1"	4"	1-1/2"	.060"	5	292.38	279.66	266.95	254.24



Series 545BA

HIGH ROCKWELL END MILLS



TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)

Recommended for inconel, tool steels, hardened die mold >40Rc

Ball End

BALINIT® Durana Coating

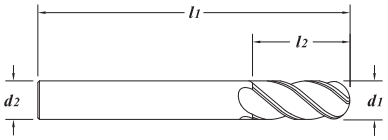
Solid submicron grain carbide end mill - center cutting

High performance tool for use in high Rockwell and difficult to machine materials

Square End - page 194

Corner Radius - page 195





MATERIAL HARDNESS (Rc) 70 35 0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	Number of Flutes	1-11	12-24	25-49	50-100
21204	.1181		3.000	3.0	38	12	4	17.07	16.32	15.58	14.84
21234	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	4	16.22	15.51	14.81	14.10
21264	.1575		4.000	6.0	50	12	4	27.52	26.32	25.13	23.93
21294	.1875	3/16"	4.763	3/16"	2"	9/16"	4	20.38	19.49	18.61	17.72
21324	.1969		5.000	6.0	65	15	4	30.02	28.71	27.41	26.10
21354	.2362		6.000	6.0	65	19	4	29.07	27.81	26.54	25.28
21384	.2500	1/4"	6.353	1/4"	2-1/2"	3/4"	4	28.01	26.80	25.58	24.36
21414	.2756		7.000	8.0	65	22	5	43.93	42.02	40.11	38.20
21444	.3125	5/16"	7.938	5/16"	2-1/2"	13/16"	5	37.93	36.28	34.63	32.98
21474	.3150		8.000	8.0	65	22	5	39.93	38.19	36.46	34.72
21504	.3543		9.000	10.0	65	22	5	59.00	56.43	53.87	51.30
21534	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	5	44.14	42.22	40.30	38.38
21564	.3937		10.000	10.0	70	22	5	53.31	51.00	48.68	46.36
21624	.4724		12.000	12.0	75	32	5	78.76	75.34	71.91	68.49
21664	.5000	1/2"	12.700	1/2"	3"	1-1/4"	5	74.82	71.57	68.31	65.06
21714	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	5	119.00	113.83	108.65	103.48
21744	.6299		16.000	16.0	88	32	5	125.27	119.82	114.38	108.93
21774	.7087		18.000	18.0	100	38	5	178.78	171.01	163.23	155.46
21804	.7500	3/4"	19.050	3/4"	4"	1-1/2"	5	171.07	163.64	156.20	148.76
21924	1.000	1"	25.400	1"	4"	1-1/2"	5	292.38	279.66	266.95	254.24

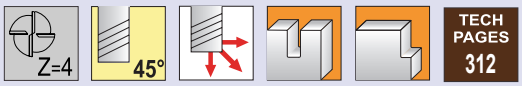
GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000mm –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

HIGH FEED END MILLS

Series H-45



TECH PAGES 312

Recommended for die mold applications

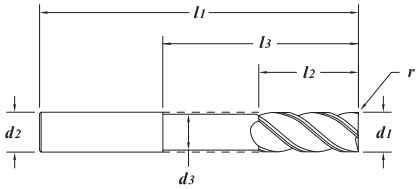
Corner Radius

BALINIT® Durana Coating

Solid submicron grain carbide end mill - center cutting
For light axial / radial depths of cut
Rigid work holding, machine stability and part integrity are critical!
Recommended for high Rockwell materials
Modified reach lengths available within 48 hours



* - tool has 3° per side blend angle to shank
* - tool has reduced diameter shank



	EDP#	d_1 † Decimal	d_1 † Diameter	d_1 † Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	48300	.1181		3.000	6.0	65	3	0.75	15.0	2.80	38.63	36.95	35.27	33.59
	48305	.1250	1/8"	3.175	1/8"	3"	1/8"	.015"	-	-	29.19	27.92	26.65	25.38
	48310	.1250	1/8"	3.175	1/8"	3"	1/8"	.030"	-	-	29.19	27.92	26.65	25.38
	48315	.1250	1/8"	3.175	3/16"	2-1/2"	1/8"	.010"	3/4"	.115"	34.29	32.80	31.31	29.82
	48320	.1250	1/8"	3.175	3/16"	2-1/2"	1/8"	.015"	3/4"	.115"	34.29	32.80	31.31	29.82
	48325	.1250	1/8"	3.175	3/16"	2-1/2"	1/8"	.020"	3/4"	.115"	34.29	32.80	31.31	29.82
*	48330	.1250	1/8"	3.175	3/16"	3"	1/8"	.030"	*	-	31.29	29.93	28.57	27.21
	48335	.1575		4.000	6.0	65	4	1.00	20.0	3.70	37.09	35.48	33.86	32.25
	48340	.1875	3/16"	4.763	3/16"	3"	3/16"	.015"	-	-	33.66	32.20	30.73	29.27
	48345	.1875	3/16"	4.763	3/16"	3"	3/16"	.030"	-	-	33.66	32.20	30.73	29.27
	48350	.1875	3/16"	4.763	3/16"	3"	3/16"	.060"	-	-	33.66	32.20	30.73	29.27
	48355	.1875	3/16"	4.763	1/4"	2-1/2"	3/16"	.020"	7/8"	.175"	36.02	34.45	32.89	31.32
	48360	.1875	3/16"	4.763	1/4"	2-1/2"	3/16"	.030"	7/8"	.175"	36.02	34.45	32.89	31.32
	48365	.1875	3/16"	4.763	1/4"	2-1/2"	3/16"	.060"	7/8"	.175"	36.02	34.45	32.89	31.32
	48370	.1875	3/16"	4.763	1/4"	4"	3/16"	.020"	1-1/2"	.175"	52.07	49.81	47.54	45.28
	48375	.1875	3/16"	4.763	1/4"	4"	3/16"	.030"	1-1/2"	.175"	52.07	49.81	47.54	45.28
*	48380	.1875	3/16"	4.763	1/4"	4"	3/16"	.030"	*	-	52.07	49.81	47.54	45.28
*	48385	.1969		5.000	6.0	100	5	1.20	* 10.0	4.90	53.98	51.63	49.29	46.94
	48390	.2362		6.000	6.0	100	6	1.50	30.0	5.70	51.20	48.97	46.75	44.52
	48395	.2500	1/4"	6.350	1/4"	3"	1/4"	.015"	-	-	38.89	37.20	35.51	33.82
	48400	.2500	1/4"	6.350	1/4"	3"	1/4"	.030"	-	-	38.89	37.20	35.51	33.82
	48405	.2500	1/4"	6.350	1/4"	3"	1/4"	.060"	-	-	38.89	37.20	35.51	33.82
*	48410	.2756		7.000	6.0	100	7	1.50	*	-	81.01	77.48	73.96	70.44
	48415	.3125	5/16"	7.938	5/16"	2-1/2"	5/16"	.020"	-	-	35.93	34.36	32.80	31.24
	48420	.3125	5/16"	7.938	5/16"	3"	5/16"	.078"	1-5/8"	.300"	57.34	54.85	52.35	49.86
	48425	.3125	5/16"	7.938	5/16"	3"	5/16"	.094"	1-5/8"	.300"	57.34	54.85	52.35	49.86
	48430	.3150		8.000	8.0	75	8	2.00	-	-	51.62	49.38	47.13	44.89
	48435	.3150		8.000	8.0	100	8	2.00	40.0	7.70	66.95	64.04	61.13	58.22
	48440	.3750	3/8"	9.525	3/8"	3"	3/8"	.015"	-	-	54.53	52.16	49.79	47.42
	48445	.3750	3/8"	9.525	3/8"	3"	3/8"	.030"	-	-	54.53	52.16	49.79	47.42
	48450	.3750	3/8"	9.525	3/8"	3"	3/8"	.060"	-	-	54.53	52.16	49.79	47.42
	48455	.3750	3/8"	9.525	3/8"	3"	3/8"	.094"	2.00"	.365"	62.32	59.61	56.90	54.19
	48460	.3750	3/8"	9.525	3/8"	4"	3/8"	.030"	2-1/2"	.365"	69.37	66.35	63.34	60.32
	48465	.3750	3/8"	9.525	3/8"	4"	3/8"	.094"	2-1/2"	.365"	69.37	66.35	63.34	60.32
	48470	.3937		10.000	10.0	100	10	2.00	50.0	9.70	85.64	81.92	78.19	74.47
	48475	.4724		12.000	12.0	100	12	3.00	60.0	11.70	95.12	90.98	86.85	82.71
	48480	.5000	1/2"	12.700	1/2"	3"	1/2"	.015"	-	-	70.89	67.80	64.72	61.64
	48485	.5000	1/2"	12.700	1/2"	3"	1/2"	.030"	-	-	70.89	67.80	64.72	61.64
	48490	.5000	1/2"	12.700	1/2"	3"	1/2"	.060"	-	-	70.89	67.80	64.72	61.64
	48495	.5000	1/2"	12.700	1/2"	3"	1/2"	.125"	-	-	70.89	67.80	64.72	61.64
	48500	.5000	1/2"	12.700	1/2"	4"	1/2"	.125"	-	-	83.97	80.32	76.67	73.02

Series 350MX, 950MX

DIE MOLD CUTTERS



TOLERANCES	
d_1	+.000" –.001" (+.000 –.025mm)
d_2	h6
ball radius	+.0000" –.0005" (+.0000 –.0127mm)

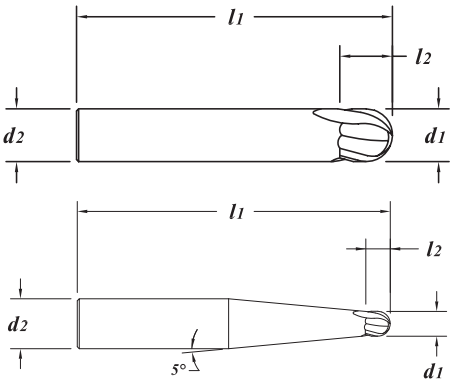
Recommended for die mold applications

Die Mold Cutter - Ball End

BALINIT® Durana Coating

Solid submicron grain carbide end mill - center cutting
High performance machining in the die mold industry
Rigid work holding, machine stability and part integrity are critical!
≤5mm (.1969") diameter have 5° per side taper to shank
Recommended for high Rockwell materials
Can be modified with a neck in 48 hours



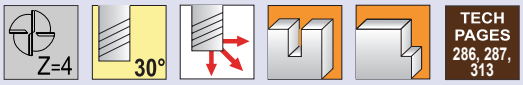


EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
14210	.0312	1/32"	0.792	1/4"	3"	1/32"	60.36	57.74	55.11	52.49
15210	.0394		1.000	6.0	75	1	60.36	57.74	55.11	52.49
15220	.0591		1.500	6.0	75	1.5	60.36	57.74	55.11	52.49
14220	.0625	1/16"	1.588	1/4"	3"	1/16"	60.36	57.74	55.11	52.49
15230	.0787		2.000	6.0	75	2	60.36	57.74	55.11	52.49
14230	.0938	3/32"	2.383	1/4"	3"	3/32"	60.36	57.74	55.11	52.49
15240	.1181		3.000	6.0	75	3	58.98	56.42	53.85	51.29
14240	.1250	1/8"	3.175	1/4"	3"	1/8"	58.98	56.42	53.85	51.29
15250	.1575		4.000	6.0	75	4	58.12	55.59	53.07	50.54
14250	.1875	3/16"	4.763	1/4"	3"	3/16"	58.12	55.59	53.07	50.54
15260	.1969		5.000	6.0	75	5	58.12	55.59	53.07	50.54
15270	.2362		6.000	6.0	75	6	56.91	54.44	51.96	49.49
14260	.2500	1/4"	6.350	1/4"	3"	1/4"	56.91	54.44	51.96	49.49
14270	.3125	5/16"	7.938	5/16"	4"	5/16"	69.70	66.67	63.64	60.61
15280	.3150		8.000	8.0	100	8	69.70	66.67	63.64	60.61
14280	.3750	3/8"	9.525	3/8"	4"	3/8"	77.12	73.77	70.41	67.06
15290	.3937		10.000	10.0	100	10	83.43	79.81	76.18	72.55
15300	.4724		12.000	12.0	100	12	101.05	96.66	92.26	87.87
14290	.5000	1/2"	12.700	1/2"	4"	1/2"	112.53	107.64	102.74	97.85

GARR TOOL®

† Metric equivalents are for reference only

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6



TECH PAGES 286, 287, 313

Recommended for graphite, fiber-reinforced plastics, carbon fiber

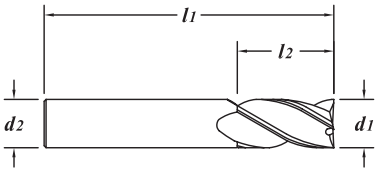
Square End

Diamond Coating

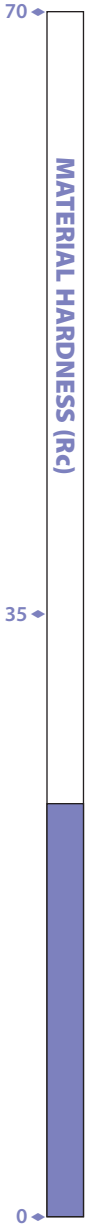
Solid grade C-2 carbide end mill - center cutting

Crystalline diamond coating

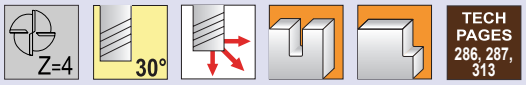




EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
10018	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	73.26	70.07	66.89	63.70
46018	.0394		1.000	3.0	38	4	77.11	73.76	70.40	67.05
10028	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	73.26	70.07	66.89	63.70
46028	.0591		1.500	3.0	38	6	77.11	73.76	70.40	67.05
10038	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	70.92	67.84	64.75	61.67
46038	.0787		2.000	3.0	38	8	74.67	71.42	68.18	64.93
10058	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	69.67	66.64	63.61	60.58
46058	.1181		3.000	3.0	38	12	69.30	66.29	63.27	60.26
10078	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	65.81	62.95	60.09	57.23
46078	.1575		4.000	4.0	50	14	110.73	105.92	101.10	96.29
10118	.1875	3/16"	4.763	3/16"	2"	5/8"	105.20	100.63	96.05	91.48
46098	.1969		5.000	5.0	50	16	127.64	122.09	116.54	110.99
46108	.2362		6.000	6.0	65	20	130.17	124.51	118.85	113.19
10158	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	123.66	118.28	112.91	107.53
10198	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	147.95	141.52	135.08	128.65
46128	.3150		8.000	8.0	65	20	174.64	167.05	159.45	151.86
10238	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	165.78	158.58	151.37	144.16
46148	.3937		10.000	10.0	70	25	193.42	185.01	176.60	168.19
46168	.4724		12.000	12.0	75	25	212.04	202.82	193.60	184.38
10318	.5000	1/2"	12.700	1/2"	3"	1"	201.43	192.68	183.92	175.16
13338	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	291.12	278.47	265.81	253.15
46188	.6299		16.000	16.0	88	32	354.48	339.06	323.65	308.24
13358	.7500	3/4"	19.050	3/4"	4"	1-1/2"	550.79	526.85	502.90	478.95
13378	1.000	1"	25.400	1"	4"	1-1/2"	865.35	827.73	790.10	752.48



Series 210RD



TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

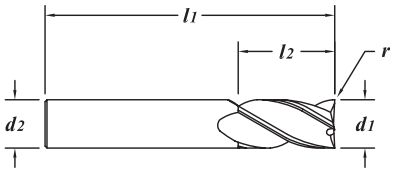
Recommended for graphite, fiber-reinforced plastics, carbon fiber



Corner Radius

Diamond Coating

Solid grade C-2 carbide end mill - center cutting
Crystalline diamond coating
For stronger corners and part radius

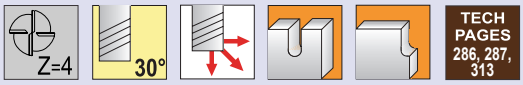


EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
24118	.1181		3.000	3.0	38	12	0.50	96.00	91.83	87.65	83.48
80018	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.015"	91.20	87.23	83.27	79.30
80028	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	91.20	87.23	83.27	79.30
24148	.1575		4.000	4.0	50	14	0.30	138.72	132.69	126.66	120.63
24158	.1575		4.000	4.0	50	14	0.50	138.72	132.69	126.66	120.63
80058	.1875	3/16"	4.763	3/16"	2"	5/8"	.015"	131.80	126.07	120.34	114.61
80068	.1875	3/16"	4.763	3/16"	2"	5/8"	.020"	131.80	126.07	120.34	114.61
24178	.2362		6.000	6.0	65	20	0.50	148.03	141.59	135.16	128.72
24208	.2362		6.000	6.0	65	20	1.50	148.03	141.59	135.16	128.72
80108	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	140.63	134.52	128.40	122.29
80118	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	140.63	134.52	128.40	122.29
80128	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	140.63	134.52	128.40	122.29
24248	.3150		8.000	8.0	65	20	1.00	185.64	177.57	169.50	161.43
80248	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	176.88	169.19	161.50	153.81
80258	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	176.88	169.19	161.50	153.81
24318	.3937		10.000	10.0	70	25	1.00	206.21	197.24	188.28	179.31
24378	.4724		12.000	12.0	75	25	0.50	226.75	216.89	207.03	197.17
24398	.4724		12.000	12.0	75	25	1.00	226.75	216.89	207.03	197.17
80328	.5000	1/2"	12.700	1/2"	3"	1"	.030"	215.41	206.04	196.68	187.31
80348	.5000	1/2"	12.700	1/2"	3"	1"	.060"	215.41	206.04	196.68	187.31

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)



Recommended for graphite, fiber-reinforced plastics, carbon fiber

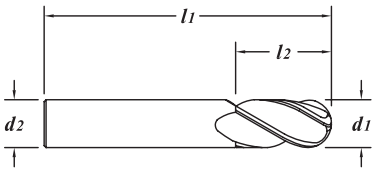


Ball End

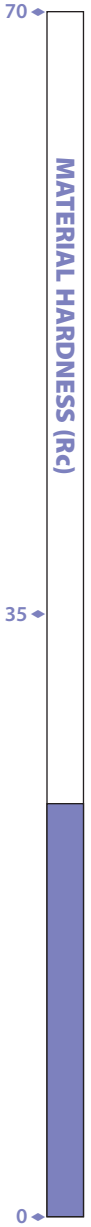
Diamond Coating

Solid grade C-2 carbide end mill - center cutting

Crystalline diamond coating

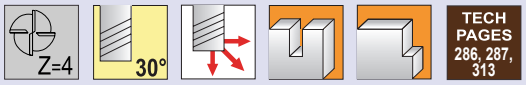


EDP#	d_1 † Diameter Decimal	Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
15018	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	99.04	94.73	90.43	86.12
48018	.0394		1.000	3.0	38	4	104.26	99.73	95.19	90.66
15028	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	99.04	94.73	90.43	86.12
48028	.0591		1.500	3.0	38	6	104.26	99.73	95.19	90.66
15038	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	96.72	92.51	88.31	84.10
48038	.0787		2.000	3.0	38	8	101.79	97.36	92.94	88.51
15058	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	95.04	90.90	86.77	82.64
48058	.1181		3.000	3.0	38	12	96.00	91.83	87.65	83.48
15078	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	91.20	87.23	83.27	79.30
48078	.1575		4.000	4.0	50	14	138.72	132.69	126.66	120.63
15118	.1875	3/16"	4.763	3/16"	2"	5/8"	131.80	126.07	120.34	114.61
48098	.1969		5.000	5.0	50	16	144.96	138.66	132.35	126.05
48108	.2362		6.000	6.0	65	20	148.03	141.59	135.16	128.72
15158	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	140.63	134.52	128.40	122.29
15198	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	158.40	151.51	144.63	137.74
48128	.3150		8.000	8.0	65	20	185.64	177.57	169.50	161.43
15238	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	176.88	169.19	161.50	153.81
48168	.4724		12.000	12.0	75	25	226.75	216.89	207.03	197.17
15318	.5000	1/2"	12.700	1/2"	3"	1"	215.41	206.04	196.68	187.31



Series 610D

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6



Recommended for graphite, fiber-reinforced plastics, carbon fiber

Extra Length - Square End

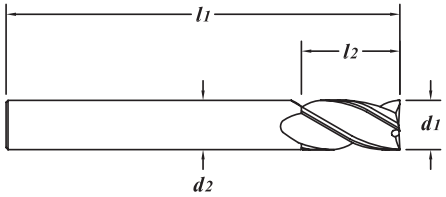
Diamond Coating

Solid grade C-2 carbide end mill - center cutting

Crystalline diamond coating

Can be modified with a neck in 48 hours





MATERIAL HARDNESS (Rc)

70

35

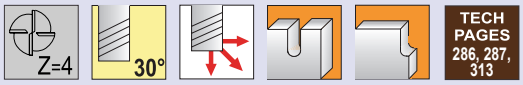
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EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
94028	.1181		3.000	3.0	75	20	106.18	101.56	96.95	92.33
38038	.1250	1/8"	3.175	1/8"	3"	1"	100.88	96.49	92.11	87.72
94068	.1575		4.000	4.0	75	25	142.07	135.89	129.72	123.54
38048	.1875	3/16"	4.763	3/16"	4"	1"	134.95	129.09	123.22	117.35
38058	.2500	1/4"	6.350	1/4"	3"	1"	144.60	138.31	132.03	125.74
38068	.2500	1/4"	6.350	1/4"	4"	1"	150.17	143.64	137.11	130.58
38078	.2500	1/4"	6.350	1/4"	6"	1-1/2"	171.87	164.40	156.92	149.45
38098	.3125	5/16"	7.938	5/16"	4"	1"	176.05	168.40	160.74	153.09
94168	.3150		8.000	8.0	100	25	210.58	201.42	192.27	183.11
38128	.3750	3/8"	9.525	3/8"	4"	1"	196.05	187.53	179.00	170.48
38138	.3750	3/8"	9.525	3/8"	6"	1-1/2"	216.67	207.25	197.83	188.41
94208	.3937		10.000	10.0	100	25	235.09	224.87	214.65	204.43
94248	.4724		12.000	12.0	100	25	259.60	248.31	237.03	225.74
38168	.5000	1/2"	12.700	1/2"	4"	1"	246.64	235.92	225.19	214.47
38178	.5000	1/2"	12.700	1/2"	4"	2"	246.64	235.92	225.19	214.47

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)



Recommended for graphite, fiber-reinforced plastics, carbon fiber



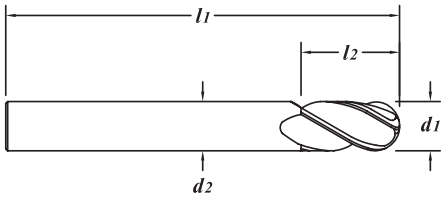
Extra Length - Ball End

Diamond Coating

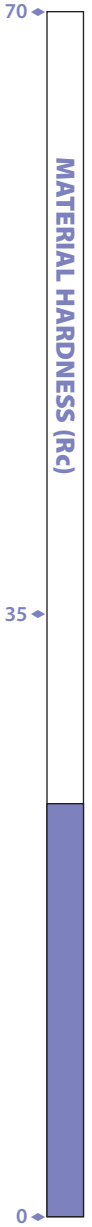
Solid grade C-2 carbide end mill - center cutting

Crystalline diamond coating

Can be modified with a neck in 48 hours



EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
99028	.1181		3.000	3.0	75	20	129.69	124.05	118.41	112.77
40038	.1250	1/8"	3.175	1/8"	3"	1"	123.21	117.85	112.50	107.14
99068	.1575		4.000	4.0	75	25	161.36	154.34	147.33	140.31
40048	.1875	3/16"	4.763	3/16"	4"	1"	153.28	146.62	139.95	133.29
99108	.2362		6.000	6.0	100	25	177.34	169.63	161.92	154.21
99128	.2362		6.000	6.0	150	38	196.91	188.35	179.79	171.23
40058	.2500	1/4"	6.350	1/4"	3"	1"	162.92	155.84	148.75	141.67
40068	.2500	1/4"	6.350	1/4"	4"	1"	168.50	161.17	153.85	146.52
40078	.2500	1/4"	6.350	1/4"	6"	1-1/2"	187.07	178.94	170.80	162.67
40098	.3125	5/16"	7.938	5/16"	4"	1"	194.37	185.92	177.47	169.02
99168	.3150		8.000	8.0	100	25	226.55	216.70	206.85	197.00
40128	.3750	3/8"	9.525	3/8"	4"	1"	214.38	205.06	195.74	186.42
40138	.3750	3/8"	9.525	3/8"	6"	1-1/2"	226.83	216.96	207.10	197.24
99208	.3937		10.000	10.0	100	25	251.08	240.16	229.25	218.33
40168	.5000	1/2"	12.700	1/2"	4"	1"	261.84	250.46	239.07	227.69
40178	.5000	1/2"	12.700	1/2"	4"	2"	261.84	250.46	239.07	227.69



INTRODUCING . . .

GARR Technical Advisor

Features ease of use, including an extensive material list and setup versatility

Uses a dynamic function based on spindle interface, toolholding, stability of workpiece and *most importantly*, specific material condition

Adaptability of the GARR Technical Advisor is beneficial when setup factors are sub-optimal

CHECK IT OUT ON OUR WEBSITE

Solid micrograin carbide tested for drilling of carbon fiber and glass-filled composites

These specials are built to order uncoated in two weeks

Having a quality dust collection system helps prolong tool life and quality of parts

'Clamping' of part to table can cause stress fractures in material



SERIES 780 - 8-FACET POINT

Double angle drill point geometry reduces cutting forces to eliminate exit burrs

Works well in carbon fiber especially when the honeycomb core is either titanium or aluminum

Works in glass-filled epoxy, harder plastics, softer steels, CFRP (Carbon Fiber Reinforced Plastic), and aluminum

Can be coated with a variety of coatings depending on your application



SERIES 805 - CARBON FIBER

Designed for drilling CFRP and plastics

Good in both multidirectional fibers and unidirectional fibers

90° center cutting point for better entry and exit hole with little to no delamination

Parabolic flute shape for less tool pressure on the material, and also for better chip flow in soft plastics

Add BALINIT® MAYURA coating for longer tool life than uncoated tools, and shorter lead times than Diamond Coating

ROUTERS

Solid micrograin carbide tested for milling of carbon fiber and glass-filled composites

These specials are built to order uncoated in two weeks

There are many challenges to machining composite materials. Keeping the material from delaminating is key. Our tools have higher rake angles and combinations of left hand and/or right hand spirals to help eliminate 'fraying' of the laminate.

Please specify what type of end cut your job requires (*i.e. - no end cut, burr type, end mill type, or drill point*)

Having a quality dust collection system helps prolong tool life and quality of parts

'Clamping' of part to table can cause stress fractures in material

Please specify what coating, if any, your job requires:

- Polycrystalline Diamond
- Amorphous Diamond / BALINIT® MAYURA
- AlCrN Coated



SERIES 700 - FIBERGLASS ROUTER

For cutting glass-filled epoxies

End cut examples



Burr Type | Drill Point



SERIES 701 - KEVLAR ROUTER

Gives a clean edge when trimming Aramid Fibers (Kevlar)

End cut examples



Burr Type | Drill Point



SERIES 702 - CARBON FIBER ROUTER

For trim milling of single-layer panels



SERIES 703 - CARBON FIBER ROUTER

For rough cutting of stacked panels with or without honeycomb cores

Solid micrograin carbide tested for milling of carbon fiber and glass-filled composites

These specials are built to order uncoated in two weeks

There are many challenges to machining composite materials. Keeping the material from delaminating is key. Our tools have higher rake angles and combinations of left hand and/or right hand spirals to help eliminate 'fraying' of the laminate.

Please specify what type of end cut your job requires (*i.e. - no end cut, burr type, end mill type, or drill point*)

Having a quality dust collection system helps prolong tool life and quality of parts

'Clamping' of part to table can cause stress fractures in material

Please specify what coating, if any, your job requires:

- Polycrystalline Diamond
- Amorphous Diamond / BALINIT® MAYURA
- AlCrN Coated



SERIES 704 - COMPRESSION ROUTER - 4 FLUTE

For profile milling of carbon fiber





SERIES 705 - COMPRESSION ROUTER - 2 FLUTE

For slotting of carbon fiber





SERIES 706 - SINGLE FLUTE ROUTER

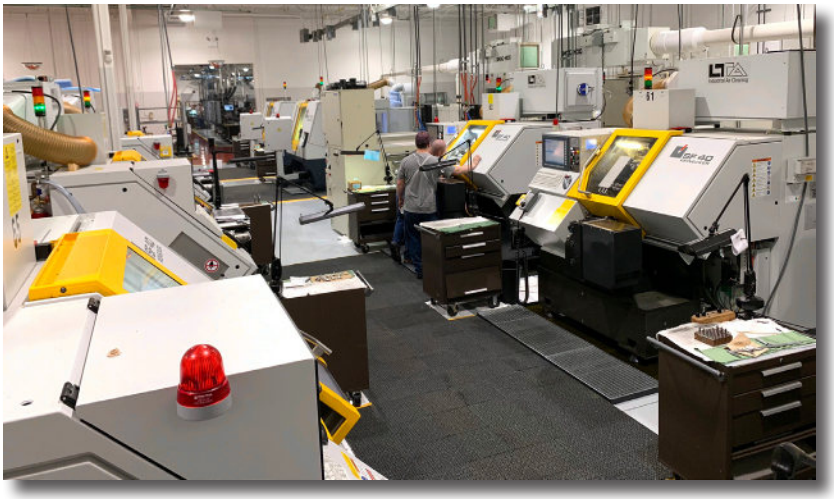
For aluminum and soft plastics







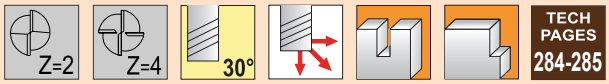
Blank Prep



TOLERANCES

d_1	≤ .030"	+.000" –.001" (+.000 –.025mm)
	≥ 1/32"	+.000" –.002" (+.000 –.050mm)
d_2	h6	

Series 160M, 170M, 860M, 870M



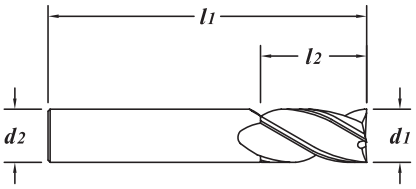
TECH PAGES 284-285

.0200" - .2362"
(0.508mm - 6.000mm)

Stub Length - Square End

Solid submicron grain carbide end mill - center cutting
Shorter flute length for rigidity
Extremely versatile
TiALN Coated - page 211
Standard Length - page 218
Extended length - page 238





(160M/860M) 2 Flute EDP#	(170M/870M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
01350	-	.0200	.0200"	0.508	1/8"	1-1/2"	.030"	18.40	17.60	16.80	16.00
01360	-	.0210	.0210"	0.533	1/8"	1-1/2"	.032"	18.40	17.60	16.80	16.00
01370	-	.0220	.0220"	0.559	1/8"	1-1/2"	.033"	18.18	17.39	16.60	15.81
01380	-	.0230	.0230"	0.584	1/8"	1-1/2"	.035"	18.18	17.39	16.60	15.81
01390	-	.0240	.0240"	0.610	1/8"	1-1/2"	.036"	18.18	17.39	16.60	15.81
01400	-	.0250	.0250"	0.635	1/8"	1-1/2"	.038"	17.15	16.40	15.66	14.91
01410	-	.0260	.0260"	0.660	1/8"	1-1/2"	.039"	17.15	16.40	15.66	14.91
01420	-	.0270	.0270"	0.686	1/8"	1-1/2"	.041"	15.38	14.71	14.04	13.37
01430	-	.0280	.0280"	0.711	1/8"	1-1/2"	.042"	15.38	14.71	14.04	13.37
01440	-	.0290	.0290"	0.737	1/8"	1-1/2"	.044"	15.38	14.71	14.04	13.37
01450	-	.0300	.0300"	0.762	1/8"	1-1/2"	.045"	15.38	14.71	14.04	13.37
01010	02010	.0312	1/32"	0.792	1/8"	1-1/2"	1/16"	11.19	10.70	10.22	9.73
01510	02510	.0394		1.000	3.0	38	2	11.75	11.24	10.73	10.22
01020	02020	.0469	3/64"	1.191	1/8"	1-1/2"	3/32"	11.19	10.70	10.22	9.73
01520	02520	.0591		1.500	3.0	38	3	11.75	11.24	10.73	10.22
01030	02030	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	8.88	8.49	8.11	7.72
01530	02530	.0787		2.000	3.0	38	4	9.34	8.93	8.53	8.12
01040	02040	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	8.40	8.03	7.67	7.30
01540	02540	.0984		2.500	3.0	38	5	8.84	8.46	8.07	7.69
01550	02550	.1181		3.000	3.0	38	6	8.63	8.25	7.88	7.50
01050	02050	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	8.18	7.82	7.47	7.11
01560	02560	.1378		3.500	4.0	50	7	12.06	11.54	11.01	10.49
01060	02060	.1562	5/32"	3.967	3/16"	2"	5/16"	11.48	10.98	10.48	9.98
01570	02570	.1575		4.000	4.0	50	8	11.41	10.91	10.42	9.92
01580	02580	.1772		4.500	5.0	50	9.5	15.15	14.49	13.83	13.17
01070	02070	.1875	3/16"	4.763	3/16"	2"	3/8"	10.86	10.38	9.91	9.44
01590	02590	.1969		5.000	5.0	50	10	14.12	13.51	12.89	12.28
01080	02080	.2188	7/32"	5.558	1/4"	2"	7/16"	14.40	13.77	13.15	12.52
01600	02600	.2362		6.000	6.0	50	12	14.96	14.31	13.66	13.01

continued ⟶

Series 160M, 170M, 860M, 870M *(continued)*

.2500" - 1.000"
(6.350mm - 25.400mm)

(160M/860M) 2 Flute EDP#	(170M/870M) 4 Flute EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
01090	02090	.2500	1/4"	6.350	1/4"	2"	1/2"	14.19	13.57	12.96	12.34
01610	02610	.2756		7.000	7.0	50	12	19.45	18.60	17.76	16.91
01100	02100	.3125	5/16"	7.938	5/16"	2"	1/2"	19.42	18.58	17.73	16.89
01620	02620	.3150		8.000	8.0	50	12	20.41	19.53	18.64	17.75
01630	02630	.3543		9.000	9.0	50	14	25.22	24.12	23.03	21.93
01110	02110	.3750	3/8"	9.525	3/8"	2"	5/8"	23.99	22.95	21.90	20.86
01640	02640	.3937		10.000	10.0	50	16	27.88	26.66	25.45	24.24
01650	02650	.4331		11.000	11.0	65	19	32.58	31.16	29.75	28.33
01120	02120	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	29.66	28.37	27.08	25.79
01660	02660	.4724		12.000	12.0	65	19	41.63	39.82	38.01	36.20
01130	02130	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	39.56	37.84	36.12	34.40
01140	02140	.6250	5/8"	15.875	5/8"	3"	3/4"	75.61	72.33	69.04	65.75
-	02670	.6299		16.000	16.0	75	19	79.58	76.12	72.66	69.20
01150	02150	.7500	3/4"	19.050	3/4"	3"	1"	108.76	104.03	99.30	94.57
-	02680	.7874		20.000	20.0	75	25	147.49	141.08	134.66	128.25
-	02160	1.000	1"	25.400	1"	3"	1"	187.14	179.00	170.87	162.73



MATERIAL HARDNESS (Rc)
70
35
0

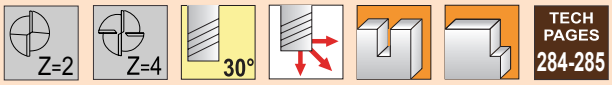


Micro Tool Manufacturing

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6



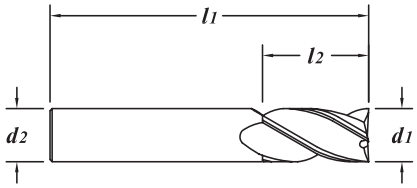
TECH PAGES 284-285

Stub Length - Square End

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Shorter flute length for rigidity
Dry or semi-dry machining
Extremely versatile
Bright Finish - page 209
Standard Length - page 222
Extended length - page 241

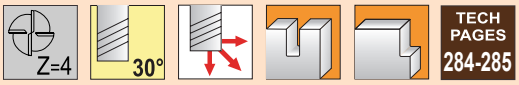




(160MA/860MA) 2 Flute EDP#	(170MA/870MA) 4 Flute EDP#	d_1 † Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
01017	02017	.0312	1/32"	0.792	1/8"	1-1/2"	1/16"	13.88	13.28	12.67	12.07
01517	02517	.0394		1.000	3.0	38	2	14.47	13.84	13.21	12.58
01027	02027	.0469	3/64"	1.191	1/8"	1-1/2"	3/32"	13.88	13.28	12.67	12.07
01527	02527	.0591		1.500	3.0	38	3	14.47	13.84	13.21	12.58
01037	02037	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	11.58	11.08	10.57	10.07
01537	02537	.0787		2.000	3.0	38	4	12.04	11.52	10.99	10.47
01047	02047	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	11.10	10.62	10.13	9.65
01547	02547	.0984		2.500	3.0	38	5	11.53	11.03	10.53	10.03
01557	02557	.1181		3.000	3.0	38	6	11.30	10.81	10.32	9.83
01057	02057	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	10.86	10.38	9.91	9.44
01567	02567	.1378		3.500	4.0	50	7	14.75	14.11	13.47	12.83
01067	02067	.1562	5/32"	3.967	3/16"	2"	5/16"	14.16	13.54	12.93	12.31
01577	02577	.1575		4.000	4.0	50	8	14.12	13.51	12.89	12.28
01587	02587	.1772		4.500	5.0	50	9.5	19.35	18.51	17.67	16.83
01077	02077	.1875	3/16"	4.763	3/16"	2"	3/8"	13.56	12.97	12.38	11.79
01597	02597	.1969		5.000	5.0	50	10	18.31	17.51	16.72	15.92
01087	02087	.2188	7/32"	5.558	1/4"	2"	7/16"	18.61	17.80	16.99	16.18
01607	02607	.2362		6.000	6.0	50	12	19.15	18.32	17.48	16.65
01097	02097	.2500	1/4"	6.350	1/4"	2"	1/2"	18.40	17.60	16.80	16.00
01617	02617	.2756		7.000	7.0	50	12	25.44	24.33	23.23	22.12
01107	02107	.3125	5/16"	7.938	5/16"	2"	1/2"	25.42	24.31	23.21	22.10
01627	02627	.3150		8.000	8.0	50	12	26.43	25.28	24.13	22.98
01637	02637	.3543		9.000	9.0	50	14	31.21	29.85	28.50	27.14
01117	02117	.3750	3/8"	9.525	3/8"	2"	5/8"	29.97	28.67	27.36	26.06
01647	02647	.3937		10.000	10.0	50	16	34.67	33.17	31.66	30.15
01657	02657	.4331		11.000	11.0	65	19	42.03	40.21	38.38	36.55
01127	02127	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	39.11	37.41	35.71	34.01
01667	02667	.4724		12.000	12.0	65	19	51.08	48.86	46.64	44.42
01137	02137	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	49.01	46.88	44.75	42.62
01147	02147	.6250	5/8"	15.875	5/8"	3"	3/4"	86.58	82.82	79.05	75.29
-	02677	.6299		16.000	16.0	75	19	90.52	86.58	82.65	78.71
01157	02157	.7500	3/4"	19.050	3/4"	3"	1"	121.88	116.58	111.28	105.98
-	02687	.7874		20.000	20.0	75	25	168.16	160.85	153.54	146.23
-	02167	1.000	1"	25.400	1"	3"	1"	207.82	198.78	189.75	180.71

Series 170R, 870R

.0625" - .3150"
(1.588mm - 8.000mm)

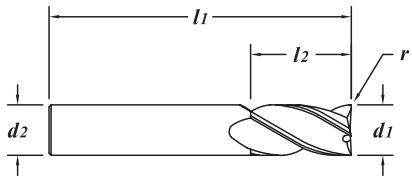


TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Stub Length - Corner Radius

Solid submicron grain carbide end mill - center cutting
For stronger corners and part radius
Extremely versatile
TiALN Coating - page 214
Standard Length - page 224
Extended Length - page 243





MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
30701	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	.010"	10.47	10.01	9.56	9.10
30703	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	.015"	10.47	10.01	9.56	9.10
30705	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.010"	9.88	9.45	9.02	8.59
30707	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.015"	9.88	9.45	9.02	8.59
30709	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.020"	9.88	9.45	9.02	8.59
30711	.1181		3.000	3.0	38	6	0.20	10.12	9.68	9.24	8.80
30713	.1181		3.000	3.0	38	6	0.50	10.12	9.68	9.24	8.80
30715	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.010"	9.63	9.21	8.79	8.37
30717	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.015"	9.63	9.21	8.79	8.37
30719	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.020"	9.63	9.21	8.79	8.37
30721	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.030"	9.63	9.21	8.79	8.37
30904	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.040"	9.63	9.21	8.79	8.37
30909	.1562	5/32"	3.967	3/16"	2"	5/16"	.015"	13.48	12.89	12.31	11.72
30911	.1562	5/32"	3.967	3/16"	2"	5/16"	.030"	13.48	12.89	12.31	11.72
30913	.1562	5/32"	3.967	3/16"	2"	5/16"	.060"	13.48	12.89	12.31	11.72
30723	.1575		4.000	4.0	50	8	0.30	13.47	12.88	12.30	11.71
30725	.1575		4.000	4.0	50	8	0.50	13.47	12.88	12.30	11.71
30727	.1875	3/16"	4.763	3/16"	2"	3/8"	.010"	12.79	12.23	11.68	11.12
30729	.1875	3/16"	4.763	3/16"	2"	3/8"	.015"	12.79	12.23	11.68	11.12
30731	.1875	3/16"	4.763	3/16"	2"	3/8"	.020"	12.79	12.23	11.68	11.12
30733	.1875	3/16"	4.763	3/16"	2"	3/8"	.030"	12.79	12.23	11.68	11.12
30735	.1969		5.000	5.0	50	10	0.30	16.77	16.04	15.31	14.58
30737	.1969		5.000	5.0	50	10	0.50	16.77	16.04	15.31	14.58
30739	.2362		6.000	6.0	50	12	0.50	17.61	16.84	16.08	15.31
30741	.2362		6.000	6.0	50	12	0.80	17.61	16.84	16.08	15.31
30743	.2362		6.000	6.0	50	12	1.00	17.61	16.84	16.08	15.31
30745	.2362		6.000	6.0	50	12	1.50	17.61	16.84	16.08	15.31
30747	.2362		6.000	6.0	50	12	2.00	17.61	16.84	16.08	15.31
30749	.2500	1/4"	6.350	1/4"	2"	1/2"	.010"	16.69	15.96	15.24	14.51
30751	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	16.69	15.96	15.24	14.51
30753	.2500	1/4"	6.350	1/4"	2"	1/2"	.020"	16.69	15.96	15.24	14.51
30755	.2500	1/4"	6.350	1/4"	2"	1/2"	.030"	16.69	15.96	15.24	14.51
30757	.2500	1/4"	6.350	1/4"	2"	1/2"	.045"	16.69	15.96	15.24	14.51
30759	.2500	1/4"	6.350	1/4"	2"	1/2"	.060"	16.69	15.96	15.24	14.51
30761	.3125	5/16"	7.938	5/16"	2"	1/2"	.015"	22.83	21.84	20.84	19.85
30763	.3125	5/16"	7.938	5/16"	2"	1/2"	.020"	22.83	21.84	20.84	19.85
30765	.3125	5/16"	7.938	5/16"	2"	1/2"	.030"	22.83	21.84	20.84	19.85
30767	.3125	5/16"	7.938	5/16"	2"	1/2"	.045"	22.83	21.84	20.84	19.85
30769	.3125	5/16"	7.938	5/16"	2"	1/2"	.060"	22.83	21.84	20.84	19.85
30771	.3150		8.000	8.0	50	12	0.50	24.04	22.99	21.95	20.90
30773	.3150		8.000	8.0	50	12	0.80	24.04	22.99	21.95	20.90
30775	.3150		8.000	8.0	50	12	1.00	24.04	22.99	21.95	20.90
30777	.3150		8.000	8.0	50	12	1.50	24.04	22.99	21.95	20.90
30779	.3150		8.000	8.0	50	12	2.00	24.04	22.99	21.95	20.90
30781	.3150		8.000	8.0	50	12	2.50	24.04	22.99	21.95	20.90
30783	.3150		8.000	8.0	50	12	3.00	24.04	22.99	21.95	20.90

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
30785	.3750	3/8"	9.525	3/8"	2"	5/8"	.010"	28.20	26.97	25.75	24.52
30787	.3750	3/8"	9.525	3/8"	2"	5/8"	.015"	28.20	26.97	25.75	24.52
30789	.3750	3/8"	9.525	3/8"	2"	5/8"	.020"	28.20	26.97	25.75	24.52
30791	.3750	3/8"	9.525	3/8"	2"	5/8"	.030"	28.20	26.97	25.75	24.52
30793	.3750	3/8"	9.525	3/8"	2"	5/8"	.045"	28.20	26.97	25.75	24.52
30795	.3750	3/8"	9.525	3/8"	2"	5/8"	.060"	28.20	26.97	25.75	24.52
30797	.3937		10.000	10.0	50	16	0.50	32.81	31.38	29.96	28.53
30799	.3937		10.000	10.0	50	16	0.80	32.81	31.38	29.96	28.53
30801	.3937		10.000	10.0	50	16	1.00	32.81	31.38	29.96	28.53
30803	.3937		10.000	10.0	50	16	1.50	32.81	31.38	29.96	28.53
30805	.3937		10.000	10.0	50	16	2.00	32.81	31.38	29.96	28.53
30807	.3937		10.000	10.0	50	16	2.50	32.81	31.38	29.96	28.53
30809	.3937		10.000	10.0	50	16	3.00	32.81	31.38	29.96	28.53
30811	.3937		10.000	10.0	50	16	3.20	32.81	31.38	29.96	28.53
30813	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.010"	34.89	33.37	31.86	30.34
30815	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.015"	34.89	33.37	31.86	30.34
30817	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.020"	34.89	33.37	31.86	30.34
30819	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.030"	34.89	33.37	31.86	30.34
30821	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.045"	34.89	33.37	31.86	30.34
30823	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.060"	34.89	33.37	31.86	30.34
30825	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.090"	34.89	33.37	31.86	30.34
30827	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.125"	34.89	33.37	31.86	30.34
30829	.4724		12.000	12.0	65	19	0.50	48.94	46.82	44.69	42.56
30831	.4724		12.000	12.0	65	19	0.80	48.94	46.82	44.69	42.56
30833	.4724		12.000	12.0	65	19	1.00	48.94	46.82	44.69	42.56
30835	.4724		12.000	12.0	65	19	1.50	48.94	46.82	44.69	42.56
30837	.4724		12.000	12.0	65	19	2.00	48.94	46.82	44.69	42.56
30839	.4724		12.000	12.0	65	19	2.50	48.94	46.82	44.69	42.56
30841	.4724		12.000	12.0	65	19	3.00	48.94	46.82	44.69	42.56
30843	.4724		12.000	12.0	65	19	3.20	48.94	46.82	44.69	42.56
30845	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	46.52	44.50	42.47	40.45
30847	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.015"	46.52	44.50	42.47	40.45
30849	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	46.52	44.50	42.47	40.45
30851	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	46.52	44.50	42.47	40.45
30853	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.045"	46.52	44.50	42.47	40.45
30855	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	46.52	44.50	42.47	40.45
30857	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.090"	46.52	44.50	42.47	40.45
30859	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.125"	46.52	44.50	42.47	40.45
30861	.6250	5/8"	15.875	5/8"	3"	3/4"	.015"	88.99	85.12	81.25	77.38
30863	.6250	5/8"	15.875	5/8"	3"	3/4"	.020"	88.99	85.12	81.25	77.38
30865	.6250	5/8"	15.875	5/8"	3"	3/4"	.030"	88.99	85.12	81.25	77.38
30867	.6250	5/8"	15.875	5/8"	3"	3/4"	.045"	88.99	85.12	81.25	77.38
30869	.6250	5/8"	15.875	5/8"	3"	3/4"	.060"	88.99	85.12	81.25	77.38
30871	.6250	5/8"	15.875	5/8"	3"	3/4"	.090"	88.99	85.12	81.25	77.38
30873	.6299		16.000	16.0	75	19	0.50	93.62	89.55	85.48	81.41
30875	.6299		16.000	16.0	75	19	1.00	93.62	89.55	85.48	81.41
30877	.6299		16.000	16.0	75	19	2.00	93.62	89.55	85.48	81.41
30879	.6299		16.000	16.0	75	19	2.50	93.62	89.55	85.48	81.41
30881	.6299		16.000	16.0	75	19	3.00	93.62	89.55	85.48	81.41
30883	.6299		16.000	16.0	75	19	4.00	93.62	89.55	85.48	81.41
30885	.6299		16.000	16.0	75	19	5.00	93.62	89.55	85.48	81.41
30887	.7500	3/4"	19.050	3/4"	3"	1"	.015"	127.97	122.41	116.84	111.28
30889	.7500	3/4"	19.050	3/4"	3"	1"	.020"	127.97	122.41	116.84	111.28
30891	.7500	3/4"	19.050	3/4"	3"	1"	.030"	127.97	122.41	116.84	111.28
30893	.7500	3/4"	19.050	3/4"	3"	1"	.045"	127.97	122.41	116.84	111.28
30895	.7500	3/4"	19.050	3/4"	3"	1"	.060"	127.97	122.41	116.84	111.28
30897	.7500	3/4"	19.050	3/4"	3"	1"	.090"	127.97	122.41	116.84	111.28
30899	.7500	3/4"	19.050	3/4"	3"	1"	.125"	127.97	122.41	116.84	111.28
30901	.7500	3/4"	19.050	3/4"	3"	1"	.250"	127.97	122.41	116.84	111.28

Series 170RA, 870RA

.0625" - .3150"
(1.588mm - 8.000mm)

Z=4 | 30° | TECH PAGES 284-285

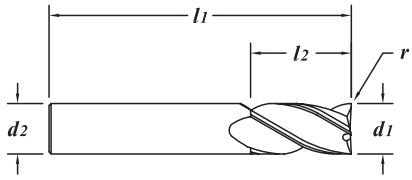
TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)



Stub Length - Corner Radius

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Dry or semi-dry machining
For stronger corners and part radius
Extremely versatile
Bright Finish - page 212
Standard Length - page 227
Extended Length - page 246



EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
30702	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	.010"	13.14	12.57	12.00	11.43
30704	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	.015"	13.14	12.57	12.00	11.43
30706	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.010"	12.57	12.02	11.48	10.93
30708	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.015"	12.57	12.02	11.48	10.93
30710	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	.020"	12.57	12.02	11.48	10.93
30712	.1181		3.000	3.0	38	6	0.20	12.81	12.25	11.70	11.14
30714	.1181		3.000	3.0	38	6	0.50	12.81	12.25	11.70	11.14
30716	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.010"	12.32	11.78	11.25	10.71
30718	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.015"	12.32	11.78	11.25	10.71
30720	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.020"	12.32	11.78	11.25	10.71
30722	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.030"	12.32	11.78	11.25	10.71
30906	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.040"	12.32	11.78	11.25	10.71
30910	.1562	5/32"	3.967	3/16"	2"	5/16"	.015"	16.16	15.46	14.75	14.05
30912	.1562	5/32"	3.967	3/16"	2"	5/16"	.030"	16.16	15.46	14.75	14.05
30914	.1562	5/32"	3.967	3/16"	2"	5/16"	.060"	16.16	15.46	14.75	14.05
30724	.1575		4.000	4.0	50	8	0.30	16.15	15.44	14.74	14.04
30726	.1575		4.000	4.0	50	8	0.50	16.15	15.44	14.74	14.04
30728	.1875	3/16"	4.763	3/16"	2"	3/8"	.010"	15.48	14.81	14.13	13.46
30730	.1875	3/16"	4.763	3/16"	2"	3/8"	.015"	15.48	14.81	14.13	13.46
30732	.1875	3/16"	4.763	3/16"	2"	3/8"	.020"	15.48	14.81	14.13	13.46
30734	.1875	3/16"	4.763	3/16"	2"	3/8"	.030"	15.48	14.81	14.13	13.46
30736	.1969		5.000	5.0	50	10	0.30	20.95	20.04	19.13	18.22
30738	.1969		5.000	5.0	50	10	0.50	20.95	20.04	19.13	18.22
24117	.1969		5.000	5.0	50	16	0.30	25.05	23.97	22.88	21.79
30740	.2362		6.000	6.0	50	12	0.50	21.79	20.85	19.90	18.95
30742	.2362		6.000	6.0	50	12	0.80	21.79	20.85	19.90	18.95
30744	.2362		6.000	6.0	50	12	1.00	21.79	20.85	19.90	18.95
30746	.2362		6.000	6.0	50	12	1.50	21.79	20.85	19.90	18.95
30748	.2362		6.000	6.0	50	12	2.00	21.79	20.85	19.90	18.95
30750	.2500	1/4"	6.350	1/4"	2"	1/2"	.010"	20.91	20.00	19.09	18.18
30752	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	20.91	20.00	19.09	18.18
30754	.2500	1/4"	6.350	1/4"	2"	1/2"	.020"	20.91	20.00	19.09	18.18
30756	.2500	1/4"	6.350	1/4"	2"	1/2"	.030"	20.91	20.00	19.09	18.18
30758	.2500	1/4"	6.350	1/4"	2"	1/2"	.045"	20.91	20.00	19.09	18.18
30760	.2500	1/4"	6.350	1/4"	2"	1/2"	.060"	20.91	20.00	19.09	18.18
30762	.3125	5/16"	7.938	5/16"	2"	1/2"	.015"	28.82	27.57	26.31	25.06
30764	.3125	5/16"	7.938	5/16"	2"	1/2"	.020"	28.82	27.57	26.31	25.06
30766	.3125	5/16"	7.938	5/16"	2"	1/2"	.030"	28.82	27.57	26.31	25.06
30768	.3125	5/16"	7.938	5/16"	2"	1/2"	.045"	28.82	27.57	26.31	25.06
30770	.3125	5/16"	7.938	5/16"	2"	1/2"	.060"	28.82	27.57	26.31	25.06
30772	.3150		8.000	8.0	50	12	0.50	30.03	28.72	27.42	26.11
30774	.3150		8.000	8.0	50	12	0.80	30.03	28.72	27.42	26.11
30776	.3150		8.000	8.0	50	12	1.00	30.03	28.72	27.42	26.11
30778	.3150		8.000	8.0	50	12	1.50	30.03	28.72	27.42	26.11
30780	.3150		8.000	8.0	50	12	2.00	30.03	28.72	27.42	26.11
30782	.3150		8.000	8.0	50	12	2.50	30.03	28.72	27.42	26.11
30784	.3150		8.000	8.0	50	12	3.00	30.03	28.72	27.42	26.11

MATERIAL HARDNESS (Rc)
70
35
0

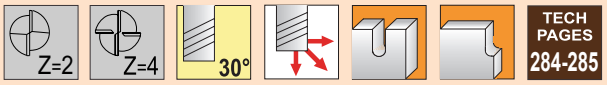
GARR TOOL®

† Metric equivalents are for reference only

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
30786	.3750	3/8"	9.525	3/8"	2"	5/8"	.010"	34.19	32.70	31.22	29.73
30788	.3750	3/8"	9.525	3/8"	2"	5/8"	.015"	34.19	32.70	31.22	29.73
30790	.3750	3/8"	9.525	3/8"	2"	5/8"	.020"	34.19	32.70	31.22	29.73
30792	.3750	3/8"	9.525	3/8"	2"	5/8"	.030"	34.19	32.70	31.22	29.73
30794	.3750	3/8"	9.525	3/8"	2"	5/8"	.045"	34.19	32.70	31.22	29.73
30796	.3750	3/8"	9.525	3/8"	2"	5/8"	.060"	34.19	32.70	31.22	29.73
30798	.3937		10.000	10.0	50	16	0.50	39.59	37.87	36.15	34.43
30800	.3937		10.000	10.0	50	16	0.80	39.59	37.87	36.15	34.43
30802	.3937		10.000	10.0	50	16	1.00	39.59	37.87	36.15	34.43
30804	.3937		10.000	10.0	50	16	1.50	39.59	37.87	36.15	34.43
30806	.3937		10.000	10.0	50	16	2.00	39.59	37.87	36.15	34.43
30808	.3937		10.000	10.0	50	16	2.50	39.59	37.87	36.15	34.43
30810	.3937		10.000	10.0	50	16	3.00	39.59	37.87	36.15	34.43
30812	.3937		10.000	10.0	50	16	3.20	39.59	37.87	36.15	34.43
30814	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.010"	44.34	42.42	40.49	38.56
30816	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.015"	44.34	42.42	40.49	38.56
30818	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.020"	44.34	42.42	40.49	38.56
30820	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.030"	44.34	42.42	40.49	38.56
30822	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.045"	44.34	42.42	40.49	38.56
30824	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.060"	44.34	42.42	40.49	38.56
30826	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.090"	44.34	42.42	40.49	38.56
30828	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	.125"	44.34	42.42	40.49	38.56
30830	.4724		12.000	12.0	65	19	0.50	58.41	55.87	53.33	50.79
30832	.4724		12.000	12.0	65	19	0.80	58.41	55.87	53.33	50.79
30834	.4724		12.000	12.0	65	19	1.00	58.41	55.87	53.33	50.79
30836	.4724		12.000	12.0	65	19	1.50	58.41	55.87	53.33	50.79
30838	.4724		12.000	12.0	65	19	2.00	58.41	55.87	53.33	50.79
30840	.4724		12.000	12.0	65	19	2.50	58.41	55.87	53.33	50.79
30842	.4724		12.000	12.0	65	19	3.00	58.41	55.87	53.33	50.79
30844	.4724		12.000	12.0	65	19	3.20	58.41	55.87	53.33	50.79
30846	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	55.96	53.53	51.09	48.66
30848	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.015"	55.96	53.53	51.09	48.66
30850	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	55.96	53.53	51.09	48.66
30852	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	55.96	53.53	51.09	48.66
30854	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.045"	55.96	53.53	51.09	48.66
30856	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.060"	55.96	53.53	51.09	48.66
30858	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.090"	55.96	53.53	51.09	48.66
30860	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.125"	55.96	53.53	51.09	48.66
30862	.6250	5/8"	15.875	5/8"	3"	3/4"	.015"	99.94	95.59	91.25	86.90
30864	.6250	5/8"	15.875	5/8"	3"	3/4"	.020"	99.94	95.59	91.25	86.90
30866	.6250	5/8"	15.875	5/8"	3"	3/4"	.030"	99.94	95.59	91.25	86.90
30868	.6250	5/8"	15.875	5/8"	3"	3/4"	.045"	99.94	95.59	91.25	86.90
30870	.6250	5/8"	15.875	5/8"	3"	3/4"	.060"	99.94	95.59	91.25	86.90
30872	.6250	5/8"	15.875	5/8"	3"	3/4"	.090"	99.94	95.59	91.25	86.90
30874	.6299		16.000	16.0	75	19	0.50	104.56	100.01	95.47	90.92
30876	.6299		16.000	16.0	75	19	1.00	104.56	100.01	95.47	90.92
30878	.6299		16.000	16.0	75	19	2.00	104.56	100.01	95.47	90.92
30880	.6299		16.000	16.0	75	19	2.50	104.56	100.01	95.47	90.92
30882	.6299		16.000	16.0	75	19	3.00	104.56	100.01	95.47	90.92
30884	.6299		16.000	16.0	75	19	4.00	104.56	100.01	95.47	90.92
30886	.6299		16.000	16.0	75	19	5.00	104.56	100.01	95.47	90.92
30888	.7500	3/4"	19.050	3/4"	3"	1"	.015"	141.11	134.97	128.84	122.70
30890	.7500	3/4"	19.050	3/4"	3"	1"	.020"	141.11	134.97	128.84	122.70
30892	.7500	3/4"	19.050	3/4"	3"	1"	.030"	141.11	134.97	128.84	122.70
30894	.7500	3/4"	19.050	3/4"	3"	1"	.045"	141.11	134.97	128.84	122.70
30896	.7500	3/4"	19.050	3/4"	3"	1"	.060"	141.11	134.97	128.84	122.70
30898	.7500	3/4"	19.050	3/4"	3"	1"	.090"	141.11	134.97	128.84	122.70
30900	.7500	3/4"	19.050	3/4"	3"	1"	.125"	141.11	134.97	128.84	122.70
30902	.7500	3/4"	19.050	3/4"	3"	1"	.250"	141.11	134.97	128.84	122.70



Series 180M, 190M, 980M, 990M



TECH PAGES 284-285

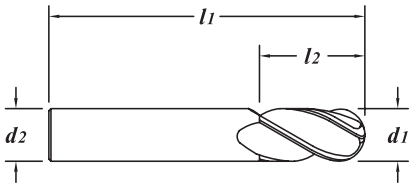
TOLERANCES

d_1	≤ .030"	+.000" –.001" (+.000 –.025mm)
	≥ 1/32"	+.000" –.002" (+.000 –.050mm)
d_2	h6	
ball radius	+.000" –.001" (+.000 –.025mm)	

Stub Length - Ball End

Solid submicron grain carbide end mill - center cutting
Shorter flute length for rigidity
Extremely versatile
TiALN Coating - page 217
Standard Length - page 230
Extended length - page 249





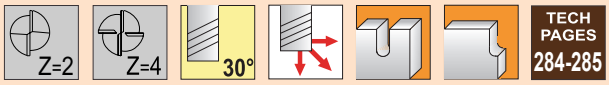
MATERIAL HARDNESS (Rc)
70
35
0

(180M/980M) 2 Flute EDP#	(190M/990M) 4 Flute EDP#	Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
03350	-	.0200	.0200"	0.508	1/8"	1-1/2"	.030"	22.99	21.99	20.99	19.99
03400	-	.0250	.0250"	0.635	1/8"	1-1/2"	.038"	22.21	21.24	20.28	19.31
03450	-	.0300	.0300"	0.762	1/8"	1-1/2"	.045"	19.14	18.30	17.47	16.64
03010	04010	.0312	1/32"	0.792	1/8"	1-1/2"	1/16"	14.19	13.57	12.96	12.34
03510	04510	.0394		1.000	3.0	38	2	14.90	14.26	13.61	12.96
03020	04020	.0469	3/64"	1.191	1/8"	1-1/2"	3/32"	14.19	13.57	12.96	12.34
03520	-	.0591		1.500	3.0	38	3	14.90	14.26	13.61	12.96
03030	04030	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	10.47	10.01	9.56	9.10
03530	04530	.0787		2.000	3.0	38	4	11.01	10.53	10.05	9.57
03040	04040	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	9.88	9.45	9.02	8.59
03540	04540	.0984		2.500	3.0	38	5	10.38	9.93	9.48	9.03
03550	04550	.1181		3.000	3.0	38	6	10.12	9.68	9.24	8.80
03050	04050	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	9.63	9.21	8.79	8.37
03560	04560	.1378		3.500	4.0	50	7	14.17	13.55	12.94	12.32
03060	04060	.1562	5/32"	3.967	3/16"	2"	5/16"	13.48	12.89	12.31	11.72
03570	04570	.1575		4.000	4.0	50	8	13.47	12.88	12.30	11.71
03580	04580	.1772		4.500	5.0	50	9.5	17.80	17.03	16.25	15.48
03070	04070	.1875	3/16"	4.763	3/16"	2"	3/8"	12.79	12.23	11.68	11.12
03590	04590	.1969		5.000	5.0	50	10	16.77	16.04	15.31	14.58
03080	04080	.2188	7/32"	5.558	1/4"	2"	7/16"	16.96	16.23	15.49	14.75
03600	04600	.2362		6.000	6.0	50	12	17.61	16.84	16.08	15.31
03090	04090	.2500	1/4"	6.350	1/4"	2"	1/2"	16.69	15.96	15.24	14.51
03610	04610	.2756		7.000	7.0	50	12	23.03	22.03	21.03	20.03
03100	04100	.3125	5/16"	7.938	5/16"	2"	1/2"	22.83	21.84	20.84	19.85
03620	04620	.3150		8.000	8.0	50	12	24.04	22.99	21.95	20.90
03630	04630	.3543		9.000	9.0	50	14	29.68	28.39	27.10	25.81
03110	04110	.3750	3/8"	9.525	3/8"	2"	5/8"	28.20	26.97	25.75	24.52
03640	04640	.3937		10.000	10.0	50	16	32.81	31.38	29.96	28.53
03120	04120	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	34.89	33.37	31.86	30.34
03660	04660	.4724		12.000	12.0	65	19	48.94	46.82	44.69	42.56
03130	04130	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	46.52	44.50	42.47	40.45
03150	04150	.7500	3/4"	19.050	3/4"	3"	1"	127.97	122.41	116.84	111.28

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)



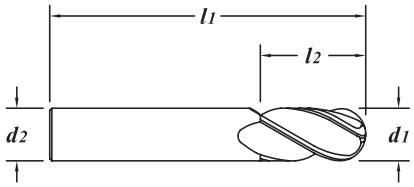
TECH PAGES 284-285

Stub Length - Ball End

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Shorter flute length for rigidity
Dry or semi-dry machining
Extremely versatile
Bright Finish - page 216
Standard Length - page 234
Extended length - page 252





(180MA/980MA) 2 Flute EDP#	(190MA/990MA) 4 Flute EDP#	Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
03017	04017	.0312	1/32"	0.792	1/8"	1-1/2"	1/16"	16.91	16.17	15.44	14.70
03517	04517	.0394		1.000	3.0	38	2	17.61	16.84	16.08	15.31
03027	04027	.0469	3/64"	1.191	1/8"	1-1/2"	3/32"	16.91	16.17	15.44	14.70
03527	04527	.0591		1.500	3.0	38	3	17.61	16.84	16.08	15.31
03037	04037	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"	13.14	12.57	12.00	11.43
03537	04537	.0787		2.000	3.0	38	4	13.70	13.10	12.51	11.91
03047	04047	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"	12.57	12.02	11.48	10.93
03547	04547	.0984		2.500	3.0	38	5	13.09	12.52	11.95	11.38
03557	04557	.1181		3.000	3.0	38	6	12.81	12.25	11.70	11.14
03057	04057	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	12.32	11.78	11.25	10.71
03567	04567	.1378		3.500	4.0	50	7	16.87	16.14	15.40	14.67
03067	04067	.1562	5/32"	3.967	3/16"	2"	5/16"	16.16	15.46	14.75	14.05
03577	04577	.1575		4.000	4.0	50	8	16.15	15.44	14.74	14.04
03587	04587	.1772		4.500	5.0	50	9.5	22.00	21.04	20.09	19.13
03077	04077	.1875	3/16"	4.763	3/16"	2"	3/8"	15.48	14.81	14.13	13.46
03597	04597	.1969		5.000	5.0	50	10	20.95	20.04	19.13	18.22
03087	04087	.2188	7/32"	5.558	1/4"	2"	7/16"	21.16	20.24	19.32	18.40
03607	04607	.2362		6.000	6.0	50	12	21.79	20.85	19.90	18.95
03097	04097	.2500	1/4"	6.350	1/4"	2"	1/2"	20.91	20.00	19.09	18.18
03617	04617	.2756		7.000	7.0	50	12	29.04	27.78	26.51	25.25
03107	04107	.3125	5/16"	7.938	5/16"	2"	1/2"	28.82	27.57	26.31	25.06
03627	04627	.3150		8.000	8.0	50	12	30.03	28.72	27.42	26.11
03637	04637	.3543		9.000	9.0	50	14	35.68	34.13	32.58	31.03
03117	04117	.3750	3/8"	9.525	3/8"	2"	5/8"	34.19	32.70	31.22	29.73
03647	04647	.3937		10.000	10.0	50	16	39.59	37.87	36.15	34.43
03657	04657	.4331		11.000	11.0	65	19	47.18	45.13	43.08	41.03
03127	04127	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"	44.34	42.42	40.49	38.56
03667	04667	.4724		12.000	12.0	65	19	58.41	55.87	53.33	50.79
03137	04137	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	55.96	53.53	51.09	48.66
-	04147	.6250	5/8"	15.875	5/8"	3"	3/4"	99.94	95.59	91.25	86.90
-	04157	.7500	3/4"	19.050	3/4"	3"	1"	141.11	134.97	128.84	122.70
-	04687	.7874		20.000	20.0	75	25	194.18	185.74	177.29	168.85

Series 220M, 223M, 230M, 820M, 823M, 830M

.0200" - .2362"
(0.508mm - 6.000mm)

Z=2 Z=3 Z=4 30°

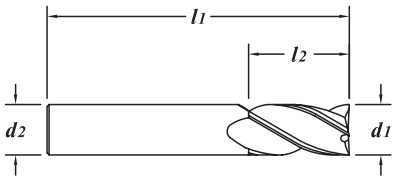
TECH PAGES 284-285

TOLERANCES		
d_1	≤ .030"	+.000" –.001" (+.000 –.025mm)
	≥ 1/32"	+.000" –.002" (+.000 –.050mm)
d_2	h6	

Standard Length - Square End

Solid submicron grain carbide end mill - center cutting
Extremely versatile
TiN Coating - page 220
TiCN Coating - page 221
TiALN Coating - page 222
Stub Length - page 209
Extended length - page 238





MATERIAL HARDNESS (Rc)
70
35
0

(220M/820M) 2 Flute EDP#	(223M/823M) 3 Flute EDP#	(230M/830M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
11650	-	13650	.0200	.0200"	0.508	1/8"	1-1/2"	.060"	18.40	17.60	16.80	16.00
11660	-	-	.0210	.0210"	0.533	1/8"	1-1/2"	.063"	18.40	17.60	16.80	16.00
11670	-	-	.0220	.0220"	0.559	1/8"	1-1/2"	.066"	18.18	17.39	16.60	15.81
11680	-	-	.0230	.0230"	0.584	1/8"	1-1/2"	.069"	18.18	17.39	16.60	15.81
11690	-	-	.0240	.0240"	0.610	1/8"	1-1/2"	.072"	18.18	17.39	16.60	15.81
11700	-	13700	.0250	.0250"	0.635	1/8"	1-1/2"	.075"	17.15	16.40	15.66	14.91
11710	-	-	.0260	.0260"	0.660	1/8"	1-1/2"	.078"	17.15	16.40	15.66	14.91
11720	-	-	.0270	.0270"	0.686	1/8"	1-1/2"	.081"	15.38	14.71	14.04	13.37
11730	-	-	.0280	.0280"	0.711	1/8"	1-1/2"	.084"	15.38	14.71	14.04	13.37
11740	-	-	.0290	.0290"	0.737	1/8"	1-1/2"	.087"	15.38	14.71	14.04	13.37
11750	-	13750	.0300	.0300"	0.762	1/8"	1-1/2"	.090"	15.38	14.71	14.04	13.37
11010	12010	13010	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	11.19	10.70	10.22	9.73
45010	37010	46010	.0394		1.000	3.0	38	4	11.75	11.24	10.73	10.22
11020	12020	13020	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	11.19	10.70	10.22	9.73
45020	37020	46020	.0591		1.500	3.0	38	6	11.75	11.24	10.73	10.22
11030	12030	13030	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	10.38	9.93	9.48	9.03
11040	12040	13040	.0781	5/64"	1.984	1/8"	1-1/2"	1/4"	10.38	9.93	9.48	9.03
45030	37030	46030	.0787		2.000	3.0	38	8	10.89	10.42	9.94	9.47
11050	12050	13050	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	9.82	9.39	8.97	8.54
45040	37040	46040	.0984		2.500	3.0	38	12	10.30	9.86	9.41	8.96
11060	12060	13060	.1094	7/64"	2.779	1/8"	1-1/2"	3/8"	9.82	9.39	8.97	8.54
45050	37050	46050	.1181		3.000	3.0	38	12	9.52	9.11	8.69	8.28
11070	12070	13070	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	9.06	8.67	8.27	7.88
45060	37060	46060	.1378		3.500	4.0	50	12	14.09	13.48	12.86	12.25
11080	12080	13080	.1406	9/64"	3.571	3/16"	2"	9/16"	13.40	12.82	12.23	11.65
11090	12090	13090	.1562	5/32"	3.967	3/16"	2"	9/16"	13.40	12.82	12.23	11.65
45070	37070	46070	.1575		4.000	4.0	50	14	13.36	12.78	12.20	11.62
11100	12100	13100	.1719	11/64"	4.366	3/16"	2"	9/16"	13.40	12.82	12.23	11.65
45080	37080	46080	.1772		4.500	5.0	50	14	16.35	15.64	14.93	14.22
11110	12110	13110	.1875	3/16"	4.763	3/16"	2"	5/8"	12.72	12.17	11.61	11.06
92070	93070	94070	.1969		5.000	5.0	50	16	15.30	14.63	13.97	13.30
45090	37090	46090	.1969		5.000	5.0	65	16	15.59	14.92	14.24	13.56
11120	12120	13120	.2031	13/64"	5.159	1/4"	2-1/2"	5/8"	16.84	16.10	15.37	14.64
11130	12130	13130	.2188	7/32"	5.558	1/4"	2-1/2"	5/8"	16.84	16.10	15.37	14.64
11140	12140	13140	.2344	15/64"	5.954	1/4"	2-1/2"	3/4"	16.84	16.10	15.37	14.64
45100	37100	46100	.2362		6.000	6.0	65	19	16.09	15.39	14.69	13.99

GARR TOOL®

† *Metric equivalents are for reference only*

Series 220M, 223M, 230M, 820M, 823M, 830M *(continued)*

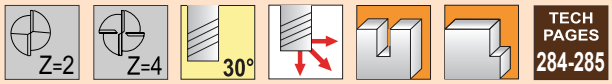
.2500" - 1.250"
(6.350mm - 31.750mm)

(220M/820M) 2 Flute EDP#	(223M/823M) 3 Flute EDP#	(230M/830M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
11150	12150	13150	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	15.32	14.65	13.99	13.32
11160	12160	13160	.2656	17/64"	6.746	5/16"	2-1/2"	7/8"	26.88	25.71	24.54	23.37
45110	37110	46110	.2756		7.000	7.0	65	22	22.10	21.14	20.18	19.22
11170	12170	13170	.2812	9/32"	7.142	5/16"	2-1/2"	7/8"	26.88	25.71	24.54	23.37
11180	12180	13180	.2969	19/64"	7.541	5/16"	2-1/2"	7/8"	26.88	25.71	24.54	23.37
11190	12190	13190	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	21.49	20.56	19.62	18.69
45120	37120	46120	.3150		8.000	8.0	65	22	22.56	21.58	20.60	19.62
11200	12200	13200	.3281	21/64"	8.334	3/8"	2-1/2"	7/8"	31.83	30.45	29.06	27.68
11210	12210	13210	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	31.83	30.45	29.06	27.68
45130	37130	46130	.3543		9.000	9.0	65	22	28.11	26.88	25.66	24.44
11220	12220	13220	.3594	23/64"	9.129	3/8"	2-1/2"	7/8"	31.83	30.45	29.06	27.68
11230	12230	13230	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	26.78	25.62	24.45	23.29
11240	12240	13240	.3906	25/64"	9.921	7/16"	2-3/4"	7/8"	38.07	36.41	34.76	33.10
45140	37140	46140	.3937		10.000	10.0	70	25	32.58	31.16	29.75	28.33
11250	12250	13250	.4062	13/32"	10.317	7/16"	2-3/4"	7/8"	38.07	36.41	34.76	33.10
11260	12260	13260	.4219	27/64"	10.716	7/16"	2-3/4"	7/8"	38.07	36.41	34.76	33.10
45150	37150	46150	.4331		11.000	11.0	75	25	34.30	32.81	31.32	29.83
11270	12270	13270	.4375	7/16"	11.113	7/16"	2-3/4"	1"	32.66	31.24	29.82	28.40
11280	12280	13280	.4531	29/64"	11.509	1/2"	3"	1"	51.27	49.04	46.81	44.58
11290	-	13290	.4688	15/32"	11.908	1/2"	3"	1"	51.27	49.04	46.81	44.58
45160	37160	46160	.4724		12.000	12.0	75	25	45.03	43.08	41.12	39.16
11300	12300	13300	.4844	31/64"	12.304	1/2"	3"	1"	51.27	49.04	46.81	44.58
11310	12310	13310	.5000	1/2"	12.700	1/2"	3"	1"	42.87	41.01	39.14	37.28
45170	37170	46170	.5512		14.000	14.0	88	32	76.89	73.55	70.20	66.86
11320	12320	13320	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	73.24	70.06	66.87	63.69
11330	12330	13330	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	82.69	79.09	75.50	71.90
45180	37180	46180	.6299		16.000	16.0	88	38	86.83	83.05	79.28	75.50
11340	12340	13340	.6875	11/16"	17.463	3/4"	4"	1-1/2"	137.70	131.71	125.73	119.74
45190	37190	46190	.7087		18.000	18.0	100	38	127.31	121.77	116.24	110.70
11350	12350	13350	.7500	3/4"	19.050	3/4"	4"	1-1/2"	121.22	115.95	110.68	105.41
45200	37200	46200	.7874		20.000	20.0	100	38	161.85	154.81	147.78	140.74
45210	37210	46210	.8661		22.000	22.0	100	38	179.86	172.04	164.22	156.40
11360	12360	13360	.8750	7/8"	22.225	7/8"	4"	1-1/2"	174.46	166.87	159.29	151.70
45220	37220	46220	.9843		25.000	25.0	100	38	188.05	179.87	171.70	163.52
11370	12370	13370	1.000	1"	25.400	1"	4"	1-1/2"	181.37	173.48	165.60	157.71
-	-	13390	1.250	1-1/4"	31.750	1-1/4"	4-1/2"	2"	529.49	506.47	483.45	460.43



Series 220MT, 230MT

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6



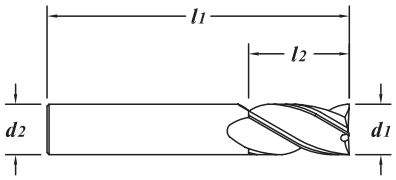
TECH PAGES 284-285

Standard Length - Square End

TiN Coating

Solid submicron grain carbide end mill - center cutting
Improved lubricity
Extremely versatile
Bright Finish - page 218
TiCN Coating - page 221
TiALN Coating - page 222





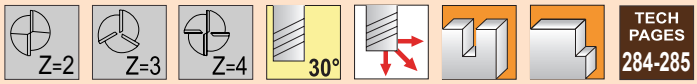
(220MT) 2 Flute EDP#	(230MT) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
11073	13073	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	10.66	10.20	9.73	9.27
11113	13113	.1875	3/16"	4.763	3/16"	2"	5/8"	14.28	13.66	13.04	12.42
11153	13153	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	18.53	17.72	16.92	16.11
11193	13193	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	25.79	24.67	23.55	22.43
11233	13233	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	31.08	29.73	28.38	27.03
11273	13273	.4375	7/16"	11.113	7/16"	2-3/4"	1"	37.88	36.23	34.59	32.94
11313	13313	.5000	1/2"	12.700	1/2"	3"	1"	48.10	46.01	43.92	41.83
11333	13333	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	90.70	86.76	82.81	78.87
11353	13353	.7500	3/4"	19.050	3/4"	4"	1-1/2"	130.41	124.74	119.07	113.40
-	13373	1.000	1"	25.400	1"	4"	1-1/2"	197.40	188.82	180.23	171.65



GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6



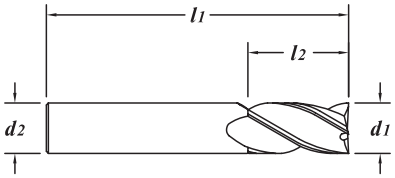
TECH PAGES 284-285

Standard Length - Square End

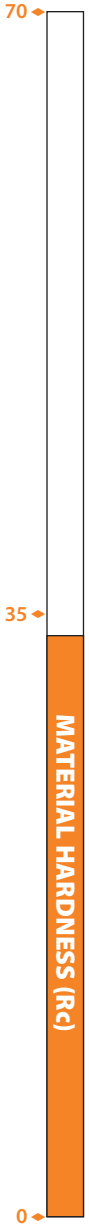
TiCN Coating

Solid submicron grain carbide end mill - center cutting
Improved abrasion resistance and lubricity
Extremely versatile
Bright Finish - page 218
TiN Coating - page 220
TiALN Coating - page 222
Extended length - page 240





(220MC) 2 Flute EDP#	(223MC) 3 Flute EDP#	(230MC) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
11014	12014	13014	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	13.57	12.98	12.39	11.80
11024	12024	13024	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	13.57	12.98	12.39	11.80
11034	12034	13034	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	12.78	12.22	11.67	11.11
11044	12044	13044	.0781	5/64"	1.984	1/8"	1-1/2"	1/4"	12.78	12.22	11.67	11.11
11054	12054	13054	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	12.20	11.67	11.14	10.61
11064	12064	13064	.1094	7/64"	2.779	1/8"	1-1/2"	3/8"	12.20	11.67	11.14	10.61
11074	12074	13074	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	11.44	10.95	10.45	9.95
11084	12084	13084	.1406	9/64"	3.571	3/16"	2"	9/16"	15.78	15.09	14.41	13.72
11094	12094	13094	.1562	5/32"	3.967	3/16"	2"	9/16"	15.78	15.09	14.41	13.72
11104	12104	13104	.1719	11/64"	4.366	3/16"	2"	9/16"	15.78	15.09	14.41	13.72
11114	12114	13114	.1875	3/16"	4.763	3/16"	2"	5/8"	15.08	14.42	13.77	13.11
11124	12124	13124	.2031	13/64"	5.159	1/4"	2-1/2"	5/8"	21.65	20.71	19.77	18.83
11134	12134	13134	.2188	7/32"	5.558	1/4"	2-1/2"	5/8"	21.65	20.71	19.77	18.83
11144	12144	13144	.2344	15/64"	5.954	1/4"	2-1/2"	3/4"	21.65	20.71	19.77	18.83
11154	12154	13154	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	20.14	19.26	18.39	17.51
11164	12164	13164	.2656	17/64"	6.746	5/16"	2-1/2"	7/8"	33.32	31.87	30.42	28.97
11174	12174	13174	.2812	9/32"	7.142	5/16"	2-1/2"	7/8"	33.32	31.87	30.42	28.97
11184	12184	13184	.2969	19/64"	7.541	5/16"	2-1/2"	7/8"	33.32	31.87	30.42	28.97
11194	12194	13194	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	27.92	26.71	25.49	24.28
11204	12204	13204	.3281	21/64"	8.334	3/8"	2-1/2"	7/8"	38.27	36.61	34.94	33.28
11214	12214	13214	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	38.27	36.61	34.94	33.28
11224	12224	13224	.3594	23/64"	9.129	3/8"	2-1/2"	7/8"	38.27	36.61	34.94	33.28
11234	12234	13234	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	33.20	31.76	30.31	28.87
11244	12244	13244	.3906	25/64"	9.921	7/16"	2-3/4"	7/8"	45.79	43.80	41.81	39.82
11254	12254	13254	.4062	13/32"	10.317	7/16"	2-3/4"	7/8"	45.79	43.80	41.81	39.82
11264	-	13264	.4219	27/64"	10.716	7/16"	2-3/4"	7/8"	45.79	43.80	41.81	39.82
11274	12274	13274	.4375	7/16"	11.113	7/16"	2-3/4"	1"	40.41	38.65	36.90	35.14
11284	-	13284	.4531	29/64"	11.509	1/2"	3"	1"	59.00	56.43	53.87	51.30
11294	12294	13294	.4688	15/32"	11.908	1/2"	3"	1"	59.00	56.43	53.87	51.30
-	12304	13304	.4844	31/64"	12.304	1/2"	3"	1"	59.00	56.43	53.87	51.30
11314	12314	13314	.5000	1/2"	12.700	1/2"	3"	1"	50.62	48.42	46.22	44.02
11324	12324	13324	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	85.28	81.58	77.87	74.16
11334	12334	13334	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	94.73	90.61	86.49	82.37
11344	-	13344	.6875	11/16"	17.463	3/4"	4"	1-1/2"	151.46	144.87	138.29	131.70
11354	12354	13354	.7500	3/4"	19.050	3/4"	4"	1-1/2"	135.01	129.14	123.27	117.40
11364	-	13364	.8750	7/8"	22.225	7/8"	4"	1-1/2"	195.14	186.66	178.17	169.69
11374	12374	13374	1.000	1"	25.400	1"	4"	1-1/2"	202.04	193.26	184.47	175.69
-	-	13394	1.250	1-1/4"	31.750	1-1/4"	4-1/2"	2"	562.93	538.45	513.98	489.50



Series 220MA, 223MA, 230MA, 820MA, 823MA, 830MA

.0312" - .3594"
(0.792mm - 9.129mm)

Z=2 Z=3 Z=4 30°

TECH PAGES 284-285

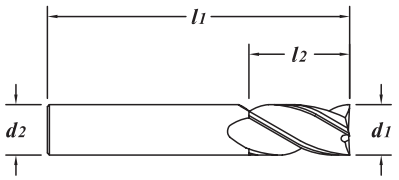
TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

Standard Length - Square End

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Dry or semi-dry machining
Extremely versatile
Bright Finish - page 218
TiN Coating - page 220
TiCN Coating - page 221
Stub Length - page 211
Extended Length - page 241





MATERIAL HARDNESS (Rc) 70 35 0

(220MA/820MA) 2 Flute EDP#	(223MA/823MA) 3 Flute EDP#	(230MA/830MA) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
11017	12017	13017	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	13.88	13.28	12.67	12.07
45017	37017	46017	.0394		1.000	3.0	38	4	14.44	13.82	13.19	12.56
11027	12027	13027	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	13.88	13.28	12.67	12.07
45027	37027	46027	.0591		1.500	3.0	38	6	14.44	13.82	13.19	12.56
11037	12037	13037	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	13.09	12.52	11.95	11.38
11047	12047	13047	.0781	5/64"	1.984	1/8"	1-1/2"	1/4"	13.09	12.52	11.95	11.38
45037	37037	46037	.0787		2.000	3.0	38	8	13.58	12.99	12.40	11.81
11057	12057	13057	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	12.51	11.97	11.42	10.88
45047	37047	46047	.0984		2.500	3.0	38	12	13.02	12.45	11.89	11.32
11067	12067	13067	.1094	7/64"	2.779	1/8"	1-1/2"	3/8"	12.51	11.97	11.42	10.88
45057	37057	46057	.1181		3.000	3.0	38	12	12.22	11.69	11.16	10.63
11077	12077	13077	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	11.75	11.24	10.73	10.22
45067	37067	46067	.1378		3.500	4.0	50	12	16.78	16.05	15.32	14.59
11087	12087	13087	.1406	9/64"	3.571	3/16"	2"	9/16"	16.09	15.39	14.69	13.99
11097	12097	13097	.1562	5/32"	3.967	3/16"	2"	9/16"	16.09	15.39	14.69	13.99
45077	37077	46077	.1575		4.000	4.0	50	14	16.05	15.36	14.66	13.96
11107	12107	13107	.1719	11/64"	4.366	3/16"	2"	9/16"	16.09	15.39	14.69	13.99
45087	37087	46087	.1772		4.500	5.0	50	14	20.55	19.66	18.76	17.87
11117	12117	13117	.1875	3/16"	4.763	3/16"	2"	5/8"	15.39	14.72	14.05	13.38
92077	93077	94077	.1969		5.000	5.0	50	16	19.90	19.03	18.17	17.30
45097	37097	46097	.1969		5.000	5.0	65	16	21.15	20.23	19.31	18.39
11127	12127	13127	.2031	13/64"	5.159	1/4"	2-1/2"	5/8"	22.41	21.44	20.46	19.49
11137	12137	13137	.2188	7/32"	5.558	1/4"	2-1/2"	5/8"	22.41	21.44	20.46	19.49
11147	12147	13147	.2344	15/64"	5.954	1/4"	2-1/2"	3/4"	22.41	21.44	20.46	19.49
45107	37107	46107	.2362		6.000	6.0	65	19	21.64	20.70	19.76	18.82
11157	12157	13157	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	20.88	19.98	19.07	18.16
11167	12167	13167	.2656	17/64"	6.746	5/16"	2-1/2"	7/8"	35.20	33.67	32.14	30.61
45117	37117	46117	.2756		7.000	7.0	65	22	30.41	29.08	27.76	26.44
11177	12177	13177	.2812	9/32"	7.142	5/16"	2-1/2"	7/8"	35.20	33.67	32.14	30.61
11187	12187	13187	.2969	19/64"	7.541	5/16"	2-1/2"	7/8"	35.20	33.67	32.14	30.61
11197	12197	13197	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	29.82	28.52	27.23	25.93
45127	37127	46127	.3150		8.000	8.0	65	22	30.89	29.55	28.20	26.86
11207	12207	13207	.3281	21/64"	8.334	3/8"	2-1/2"	7/8"	40.15	38.40	36.66	34.91
11217	12217	13217	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	40.15	38.40	36.66	34.91
45137	37137	46137	.3543		9.000	9.0	65	22	36.42	34.84	33.25	31.67
11227	12227	13227	.3594	23/64"	9.129	3/8"	2-1/2"	7/8"	40.15	38.40	36.66	34.91

GARR TOOL®

† *Metric equivalents are for reference only*

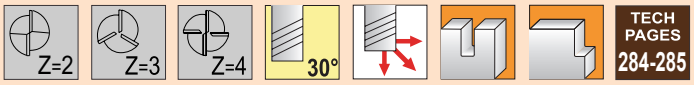
(220MA/820MA) 2 Flute EDP#	(223MA/823MA) 3 Flute EDP#	(230MA/830MA) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
11237	12237	13237	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	35.08	33.55	32.03	30.50
11247	12247	13247	.3906	25/64"	9.921	7/16"	2-3/4"	7/8"	47.53	45.46	43.40	41.33
45147	37147	46147	.3937		10.000	10.0	70	25	42.03	40.21	38.38	36.55
11257	12257	13257	.4062	13/32"	10.317	7/16"	2-3/4"	7/8"	47.53	45.46	43.40	41.33
11267	12267	13267	.4219	27/64"	10.716	7/16"	2-3/4"	7/8"	47.53	45.46	43.40	41.33
45157	37157	46157	.4331		11.000	11.0	75	25	43.76	41.86	39.95	38.05
11277	12277	13277	.4375	7/16"	11.113	7/16"	2-3/4"	1"	42.14	40.30	38.47	36.64
11287	12287	13287	.4531	29/64"	11.509	1/2"	3"	1"	60.73	58.09	55.45	52.81
11297	12297	13297	.4688	15/32"	11.908	1/2"	3"	1"	60.73	58.09	55.45	52.81
45167	37167	46167	.4724		12.000	12.0	75	25	54.48	52.11	49.74	47.37
11307	12307	13307	.4844	31/64"	12.304	1/2"	3"	1"	60.73	58.09	55.45	52.81
11317	12317	13317	.5000	1/2"	12.700	1/2"	3"	1"	52.34	50.06	47.79	45.51
45177	37177	46177	.5512		14.000	14.0	88	32	90.56	86.63	82.69	78.75
11327	12327	13327	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	86.91	83.13	79.35	75.57
11337	12337	13337	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	96.37	92.18	87.99	83.80
45187	37187	46187	.6299		16.000	16.0	88	38	100.51	96.14	91.77	87.40
11347	12347	13347	.6875	11/16"	17.463	3/4"	4"	1-1/2"	153.85	147.16	140.47	133.78
45197	37197	46197	.7087		18.000	18.0	100	38	143.44	137.20	130.97	124.73
11357	12357	13357	.7500	3/4"	19.050	3/4"	4"	1-1/2"	137.37	131.40	125.42	119.45
45207	37207	46207	.7874		20.000	20.0	100	38	185.70	177.63	169.55	161.48
45217	37217	46217	.8661		22.000	22.0	100	38	203.69	194.83	185.98	177.12
11367	12367	13367	.8750	7/8"	22.225	7/8"	4"	1-1/2"	198.29	189.67	181.05	172.43
45227	37227	46227	.9843		25.000	25.0	100	38	211.89	202.68	193.46	184.25
11377	12377	13377	1.000	1"	25.400	1"	4"	1-1/2"	205.18	196.26	187.34	178.42
-	-	13397	1.250	1-1/4"	31.750	1-1/4"	4-1/2"	2"	564.03	539.51	514.98	490.46



End Mill Manufacturing

Series 220R, 223R, 230R, 820R, 823R, 830R

.0625" - .3125"
(1.588mm - 7.938mm)



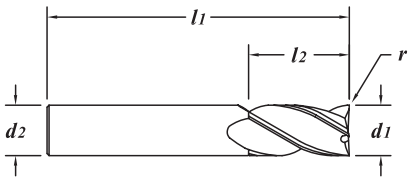
TECH PAGES 284-285

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Standard Length - Corner Radius

Solid submicron grain carbide end mill - center cutting
For stronger corners and part radius
Extremely versatile
TiALN Coating - page 227
Stub Length - page 212
Extended Length - page 243





70
35
0

MATERIAL HARDNESS (Rc)

(220R/820R) 2 Flute EDP#	(223R/823R) 3 Flute EDP#	(230R/830R) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
79580	36100	80580	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	.010"	13.40	12.82	12.23	11.65
79590	36102	80590	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	.015"	13.40	12.82	12.23	11.65
79600	36104	80600	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.010"	12.81	12.25	11.70	11.14
79610	36106	80610	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.015"	12.81	12.25	11.70	11.14
79620	36108	80620	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.020"	12.81	12.25	11.70	11.14
36500	36110	24070	.1181		3.000	3.0	38	12	0.20	12.22	11.69	11.16	10.63
36502	36112	24080	.1181		3.000	3.0	38	12	0.50	12.22	11.69	11.16	10.63
79000	36114	80000	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.010"	11.63	11.12	10.62	10.11
79010	36116	80010	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.015"	11.63	11.12	10.62	10.11
79020	36118	80020	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	11.63	11.12	10.62	10.11
79030	36120	80030	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.030"	11.63	11.12	10.62	10.11
-	-	80035	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.040"	11.63	11.12	10.62	10.11
36504	36122	24090	.1575		4.000	4.0	50	14	0.30	16.09	15.39	14.69	13.99
36506	36124	24100	.1575		4.000	4.0	50	14	0.50	16.09	15.39	14.69	13.99
79040	36126	80040	.1875	3/16"	4.763	3/16"	2"	5/8"	.010"	15.32	14.65	13.99	13.32
79050	36128	80050	.1875	3/16"	4.763	3/16"	2"	5/8"	.015"	15.32	14.65	13.99	13.32
79060	36130	80060	.1875	3/16"	4.763	3/16"	2"	5/8"	.020"	15.32	14.65	13.99	13.32
79070	36132	80070	.1875	3/16"	4.763	3/16"	2"	5/8"	.030"	15.32	14.65	13.99	13.32
-	-	80080	.1875	3/16"	4.763	3/16"	2"	5/8"	.060"	15.32	14.65	13.99	13.32
36508	36134	24110	.1969		5.000	5.0	65	16	0.30	19.50	18.66	17.81	16.96
36510	36136	24120	.1969		5.000	5.0	65	16	0.50	19.50	18.66	17.81	16.96
36512	36138	24170	.2362		6.000	6.0	65	19	0.50	20.00	19.13	18.26	17.39
36514	36140	24180	.2362		6.000	6.0	65	19	0.80	20.00	19.13	18.26	17.39
36516	36142	24190	.2362		6.000	6.0	65	19	1.00	20.00	19.13	18.26	17.39
36518	36144	24200	.2362		6.000	6.0	65	19	1.50	20.00	19.13	18.26	17.39
36520	36146	24210	.2362		6.000	6.0	65	19	2.00	20.00	19.13	18.26	17.39
36522	36148	80090	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	19.03	18.21	17.38	16.55
79100	36150	80100	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	19.03	18.21	17.38	16.55
79110	36152	80110	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	19.03	18.21	17.38	16.55
79120	36154	80120	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	19.03	18.21	17.38	16.55
79130	36156	80130	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.045"	19.03	18.21	17.38	16.55
79140	36158	80140	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	19.03	18.21	17.38	16.55
79160	36160	80160	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.015"	24.94	23.86	22.77	21.69
79170	36162	80170	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.020"	24.94	23.86	22.77	21.69
79180	36164	80180	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.030"	24.94	23.86	22.77	21.69
79190	36166	80190	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.045"	24.94	23.86	22.77	21.69
79200	36168	80200	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.060"	24.94	23.86	22.77	21.69

GARR TOOL®

† *Metric equivalents are for reference only*

(220R/820R) 2 Flute EDP#	(223R/823R) 3 Flute EDP#	(230R/830R) 4 Flute EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
36524	36170	24220	.3150		8.000	8.0	65	22	0.50	26.25	25.11	23.97	22.83
36526	36172	24230	.3150		8.000	8.0	65	22	0.80	26.25	25.11	23.97	22.83
36528	36174	24240	.3150		8.000	8.0	65	22	1.00	26.25	25.11	23.97	22.83
36530	36176	24250	.3150		8.000	8.0	65	22	1.50	26.25	25.11	23.97	22.83
36532	36178	24260	.3150		8.000	8.0	65	22	2.00	26.25	25.11	23.97	22.83
36534	36180	24270	.3150		8.000	8.0	65	22	2.50	26.25	25.11	23.97	22.83
36536	36182	24280	.3150		8.000	8.0	65	22	3.00	26.25	25.11	23.97	22.83
36538	36184	80220	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	30.53	29.21	27.88	26.55
79230	36186	80230	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	30.53	29.21	27.88	26.55
79240	36188	80240	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	30.53	29.21	27.88	26.55
79250	36190	80250	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	30.53	29.21	27.88	26.55
79260	36192	80260	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.045"	30.53	29.21	27.88	26.55
79270	36194	80270	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	30.53	29.21	27.88	26.55
36540	36196	24290	.3937		10.000	10.0	70	25	0.50	37.48	35.85	34.22	32.59
36542	36198	24300	.3937		10.000	10.0	70	25	0.80	37.48	35.85	34.22	32.59
36544	36200	24310	.3937		10.000	10.0	70	25	1.00	37.48	35.85	34.22	32.59
36546	36202	24320	.3937		10.000	10.0	70	25	1.50	37.48	35.85	34.22	32.59
36548	36204	24330	.3937		10.000	10.0	70	25	2.00	37.48	35.85	34.22	32.59
36550	36206	24340	.3937		10.000	10.0	70	25	2.50	37.48	35.85	34.22	32.59
36552	36208	24350	.3937		10.000	10.0	70	25	3.00	37.48	35.85	34.22	32.59
36554	36210	24360	.3937		10.000	10.0	70	25	3.20	37.48	35.85	34.22	32.59
36556	36212	80700	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.010"	37.58	35.95	34.31	32.68
36558	36214	80705	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.015"	37.58	35.95	34.31	32.68
36560	36216	80710	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.020"	37.58	35.95	34.31	32.68
36562	36218	80715	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.030"	37.58	35.95	34.31	32.68
36564	36220	80720	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.045"	37.58	35.95	34.31	32.68
36566	36222	80725	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.060"	37.58	35.95	34.31	32.68
36568	36224	80730	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.090"	37.58	35.95	34.31	32.68
36570	36226	80735	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.125"	37.58	35.95	34.31	32.68
36572	36228	24370	.4724		12.000	12.0	75	25	0.50	59.70	57.10	54.51	51.91
36574	36230	24380	.4724		12.000	12.0	75	25	0.80	59.70	57.10	54.51	51.91
36576	36232	24390	.4724		12.000	12.0	75	25	1.00	59.70	57.10	54.51	51.91
36578	36234	24400	.4724		12.000	12.0	75	25	1.50	59.70	57.10	54.51	51.91
36580	36236	24410	.4724		12.000	12.0	75	25	2.00	59.70	57.10	54.51	51.91
36582	36238	24420	.4724		12.000	12.0	75	25	2.50	59.70	57.10	54.51	51.91
36584	36240	24430	.4724		12.000	12.0	75	25	3.00	59.70	57.10	54.51	51.91
36586	36242	24440	.4724		12.000	12.0	75	25	3.20	59.70	57.10	54.51	51.91
36588	36244	80290	.5000	1/2"	12.700	1/2"	3"	1"	.010"	56.83	54.36	51.89	49.42
79300	36246	80300	.5000	1/2"	12.700	1/2"	3"	1"	.015"	56.83	54.36	51.89	49.42
79310	36248	80310	.5000	1/2"	12.700	1/2"	3"	1"	.020"	56.83	54.36	51.89	49.42
79320	36250	80320	.5000	1/2"	12.700	1/2"	3"	1"	.030"	56.83	54.36	51.89	49.42
79330	36252	80330	.5000	1/2"	12.700	1/2"	3"	1"	.045"	56.83	54.36	51.89	49.42
79340	36254	80340	.5000	1/2"	12.700	1/2"	3"	1"	.060"	56.83	54.36	51.89	49.42
79350	36256	80350	.5000	1/2"	12.700	1/2"	3"	1"	.090"	56.83	54.36	51.89	49.42
79360	36258	80360	.5000	1/2"	12.700	1/2"	3"	1"	.125"	56.83	54.36	51.89	49.42
79370	36260	80370	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	91.92	87.92	83.93	79.93
79380	36262	80380	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	91.92	87.92	83.93	79.93
79390	36264	80390	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	91.92	87.92	83.93	79.93
79400	36266	80400	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.045"	91.92	87.92	83.93	79.93
79410	36268	80410	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	91.92	87.92	83.93	79.93
79420	36270	80420	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.090"	91.92	87.92	83.93	79.93



continued →

Series 220R, 223R, 230R, 820R, 823R, 830R *(continued)*

.6299" - 1.000"
(16.000mm - 25.400mm)

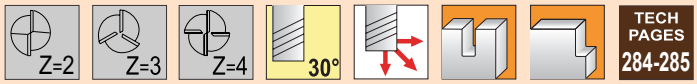
(220R/820R) 2 Flute EDP#	(223R/823R) 3 Flute EDP#	(230R/830R) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
36590	36272	24450	.6299		16.000	16.0	88	38	0.50	96.50	92.30	88.11	83.91
36592	36274	24460	.6299		16.000	16.0	88	38	1.00	96.50	92.30	88.11	83.91
36594	36276	24470	.6299		16.000	16.0	88	38	2.00	96.50	92.30	88.11	83.91
36596	36278	24480	.6299		16.000	16.0	88	38	2.50	96.50	92.30	88.11	83.91
36598	36280	24490	.6299		16.000	16.0	88	38	3.00	96.50	92.30	88.11	83.91
36600	36282	24500	.6299		16.000	16.0	88	38	4.00	96.50	92.30	88.11	83.91
36602	36284	24510	.6299		16.000	16.0	88	38	5.00	96.50	92.30	88.11	83.91
79440	36286	80440	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	135.27	129.39	123.51	117.63
79450	36288	80450	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.020"	135.27	129.39	123.51	117.63
79460	36290	80460	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	135.27	129.39	123.51	117.63
79470	36292	80470	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.045"	135.27	129.39	123.51	117.63
79480	36294	80480	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	135.27	129.39	123.51	117.63
79490	36296	80490	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.090"	135.27	129.39	123.51	117.63
79500	36298	80500	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.125"	135.27	129.39	123.51	117.63
79630	36300	80630	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.250"	135.27	129.39	123.51	117.63
36604	36302	24520	.7874		20.000	20.0	100	38	0.50	190.44	182.16	173.88	165.60
36606	36304	24530	.7874		20.000	20.0	100	38	1.00	190.44	182.16	173.88	165.60
36608	36306	24540	.7874		20.000	20.0	100	38	2.00	190.44	182.16	173.88	165.60
36610	36308	24550	.7874		20.000	20.0	100	38	3.00	190.44	182.16	173.88	165.60
36612	36310	24560	.7874		20.000	20.0	100	38	5.00	190.44	182.16	173.88	165.60
79510	36312	80510	1.000	1"	25.400	1"	4"	1-1/2"	.015"	234.65	224.44	214.24	204.04
79520	36314	80520	1.000	1"	25.400	1"	4"	1-1/2"	.020"	234.65	224.44	214.24	204.04
79530	36316	80530	1.000	1"	25.400	1"	4"	1-1/2"	.030"	234.65	224.44	214.24	204.04
79540	36318	80540	1.000	1"	25.400	1"	4"	1-1/2"	.045"	234.65	224.44	214.24	204.04
79550	36320	80550	1.000	1"	25.400	1"	4"	1-1/2"	.060"	234.65	224.44	214.24	204.04
79560	36322	80560	1.000	1"	25.400	1"	4"	1-1/2"	.090"	234.65	224.44	214.24	204.04
79570	36324	80570	1.000	1"	25.400	1"	4"	1-1/2"	.125"	234.65	224.44	214.24	204.04
79640	36326	80640	1.000	1"	25.400	1"	4"	1-1/2"	.250"	234.65	224.44	214.24	204.04

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Series 220RA, 223RA, 230RA, 823RA, 830RA



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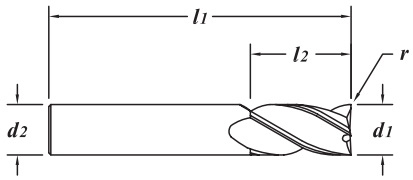
.0625" - .3125"
(1.588mm - 7.938mm)

Standard Length - Corner Radius

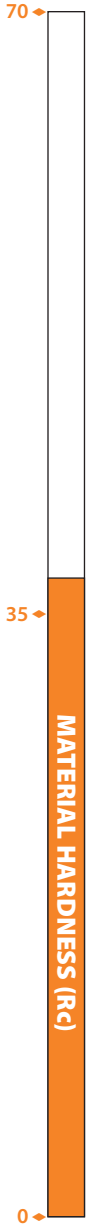
TiALN Coating

Solid submicron grain carbide end mill - center cutting
Dry or semi-dry machining
For stronger corners and part radius
Extremely versatile
Bright Finish - page 224
Stub Length - page 214
Extended Length - page 246





(220RA) 2 Flute EDP#	(223RA/823RA) 3 Flute EDP#	(230RA/830RA) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
79587	36101	80587	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	.010"	16.09	15.39	14.69	13.99
79597	36103	80597	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	.015"	16.09	15.39	14.69	13.99
79607	36105	80607	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.010"	15.50	14.83	14.15	13.48
79617	36107	80617	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.015"	15.50	14.83	14.15	13.48
79627	36109	80627	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	.020"	15.50	14.83	14.15	13.48
-	36111	24077	.1181		3.000	3.0	38	12	0.20	14.34	13.72	13.09	12.47
-	36113	24087	.1181		3.000	3.0	38	12	0.50	14.34	13.72	13.09	12.47
79007	36115	80007	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.010"	14.32	13.70	13.07	12.45
79017	36117	80017	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.015"	14.32	13.70	13.07	12.45
79027	36119	80027	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	14.32	13.70	13.07	12.45
79037	36121	80037	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.030"	14.32	13.70	13.07	12.45
-	-	80038	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.040"	14.32	13.70	13.07	12.45
-	36123	24097	.1575		4.000	4.0	50	14	0.30	18.78	17.96	17.15	16.33
-	36125	24107	.1575		4.000	4.0	50	14	0.50	18.78	17.96	17.15	16.33
79047	36127	80047	.1875	3/16"	4.763	3/16"	2"	5/8"	.010"	18.01	17.23	16.44	15.66
79057	36129	80057	.1875	3/16"	4.763	3/16"	2"	5/8"	.015"	18.01	17.23	16.44	15.66
79067	36131	80067	.1875	3/16"	4.763	3/16"	2"	5/8"	.020"	18.01	17.23	16.44	15.66
79077	36133	80077	.1875	3/16"	4.763	3/16"	2"	5/8"	.030"	18.01	17.23	16.44	15.66
-	-	80087	.1875	3/16"	4.763	3/16"	2"	5/8"	.060"	18.01	17.23	16.44	15.66
-	-	24117	.1969		5.000	5.0	50	16	0.30	25.06	23.97	22.88	21.79
-	36135	24119	.1969		5.000	5.0	65	16	0.30	25.06	23.97	22.88	21.79
-	36137	24127	.1969		5.000	5.0	65	16	0.50	25.06	23.97	22.88	21.79
-	36139	24177	.2362		6.000	6.0	65	19	0.50	25.54	24.43	23.32	22.21
-	36141	24187	.2362		6.000	6.0	65	19	0.80	25.54	24.43	23.32	22.21
-	36143	24197	.2362		6.000	6.0	65	19	1.00	25.54	24.43	23.32	22.21
-	36145	24207	.2362		6.000	6.0	65	19	1.50	25.54	24.43	23.32	22.21
-	36147	24217	.2362		6.000	6.0	65	19	2.00	25.54	24.43	23.32	22.21
-	36149	80097	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	24.56	23.50	22.43	21.36
79107	36151	80107	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	24.56	23.50	22.43	21.36
79117	36153	80117	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	24.56	23.50	22.43	21.36
79127	36155	80127	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	24.56	23.50	22.43	21.36
79137	36157	80137	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.045"	24.56	23.50	22.43	21.36
79147	36159	80147	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	24.56	23.50	22.43	21.36
79167	36161	80167	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.015"	33.29	31.85	30.40	28.95
79177	36163	80177	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.020"	33.29	31.85	30.40	28.95
79187	36165	80187	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.030"	33.29	31.85	30.40	28.95
79197	36167	80197	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.045"	33.29	31.85	30.40	28.95
79207	36169	80207	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	.060"	33.29	31.85	30.40	28.95



continued →

Series 220RA, 223RA, 230RA, 823RA, 830RA *(continued)*

.3150" - .6299"
(8.000mm - 16.000mm)

(220RA) 2 Flute EDP#	(223RA/823RA) 3 Flute EDP#	(230RA/830RA) 4 Flute EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
-	36171	24227	.3150		8.000	8.0	65	22	0.50	34.55	33.04	31.54	30.04
-	36173	24237	.3150		8.000	8.0	65	22	0.80	34.55	33.04	31.54	30.04
-	36175	24247	.3150		8.000	8.0	65	22	1.00	34.55	33.04	31.54	30.04
-	36177	24257	.3150		8.000	8.0	65	22	1.50	34.55	33.04	31.54	30.04
-	36179	24267	.3150		8.000	8.0	65	22	2.00	34.55	33.04	31.54	30.04
-	36181	24277	.3150		8.000	8.0	65	22	2.50	34.55	33.04	31.54	30.04
-	36183	24287	.3150		8.000	8.0	65	22	3.00	34.55	33.04	31.54	30.04
-	36185	80227	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	38.88	37.19	35.50	33.81
79237	36187	80237	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	38.88	37.19	35.50	33.81
79247	36189	80247	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	38.88	37.19	35.50	33.81
79257	36191	80257	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	38.88	37.19	35.50	33.81
79267	36193	80267	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.045"	38.88	37.19	35.50	33.81
79277	36195	80277	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	38.88	37.19	35.50	33.81
-	36197	24297	.3937		10.000	10.0	70	25	0.50	46.94	44.90	42.86	40.82
-	36199	24307	.3937		10.000	10.0	70	25	0.80	46.94	44.90	42.86	40.82
-	36201	24317	.3937		10.000	10.0	70	25	1.00	46.94	44.90	42.86	40.82
-	36203	24327	.3937		10.000	10.0	70	25	1.50	46.94	44.90	42.86	40.82
-	36205	24337	.3937		10.000	10.0	70	25	2.00	46.94	44.90	42.86	40.82
-	36207	24347	.3937		10.000	10.0	70	25	2.50	46.94	44.90	42.86	40.82
-	36209	24357	.3937		10.000	10.0	70	25	3.00	46.94	44.90	42.86	40.82
-	36211	24367	.3937		10.000	10.0	70	25	3.20	46.94	44.90	42.86	40.82
-	36213	80279	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.010"	47.01	44.97	42.92	40.88
-	36215	80281	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.015"	47.01	44.97	42.92	40.88
-	36217	80283	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.020"	47.01	44.97	42.92	40.88
-	36219	80285	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.030"	47.01	44.97	42.92	40.88
-	36221	80287	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.045"	47.01	44.97	42.92	40.88
-	36223	80289	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.060"	47.01	44.97	42.92	40.88
-	36225	80291	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.090"	47.01	44.97	42.92	40.88
-	36227	80293	.4375	7/16"	11.113	7/16"	2-3/4"	1"	.125"	47.01	44.97	42.92	40.88
-	36229	24377	.4724		12.000	12.0	75	25	0.50	69.13	66.12	63.12	60.11
-	36231	24387	.4724		12.000	12.0	75	25	0.80	69.13	66.12	63.12	60.11
-	36233	24397	.4724		12.000	12.0	75	25	1.00	69.13	66.12	63.12	60.11
-	36235	24407	.4724		12.000	12.0	75	25	1.50	69.13	66.12	63.12	60.11
-	36237	24417	.4724		12.000	12.0	75	25	2.00	69.13	66.12	63.12	60.11
-	36239	24427	.4724		12.000	12.0	75	25	2.50	69.13	66.12	63.12	60.11
-	36241	24437	.4724		12.000	12.0	75	25	3.00	69.13	66.12	63.12	60.11
-	36243	24447	.4724		12.000	12.0	75	25	3.20	69.13	66.12	63.12	60.11
-	36245	80297	.5000	1/2"	12.700	1/2"	3"	1"	.010"	66.32	63.44	60.55	57.67
79307	36247	80307	.5000	1/2"	12.700	1/2"	3"	1"	.015"	66.32	63.44	60.55	57.67
79317	36249	80317	.5000	1/2"	12.700	1/2"	3"	1"	.020"	66.32	63.44	60.55	57.67
79327	36251	80327	.5000	1/2"	12.700	1/2"	3"	1"	.030"	66.32	63.44	60.55	57.67
79337	36253	80337	.5000	1/2"	12.700	1/2"	3"	1"	.045"	66.32	63.44	60.55	57.67
79347	36255	80347	.5000	1/2"	12.700	1/2"	3"	1"	.060"	66.32	63.44	60.55	57.67
79357	36257	80357	.5000	1/2"	12.700	1/2"	3"	1"	.090"	66.32	63.44	60.55	57.67
79367	36259	80367	.5000	1/2"	12.700	1/2"	3"	1"	.125"	66.32	63.44	60.55	57.67
79377	36261	80377	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	105.58	100.99	96.40	91.81
-	36263	80387	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	105.58	100.99	96.40	91.81
79397	36265	80397	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	105.58	100.99	96.40	91.81
79407	36267	80407	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.045"	105.58	100.99	96.40	91.81
79417	36269	80417	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	105.58	100.99	96.40	91.81
79427	36271	80427	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.090"	105.58	100.99	96.40	91.81
-	36273	24457	.6299		16.000	16.0	88	38	0.50	110.17	105.38	100.59	95.80
-	36275	24467	.6299		16.000	16.0	88	38	1.00	110.17	105.38	100.59	95.80
-	36277	24477	.6299		16.000	16.0	88	38	2.00	110.17	105.38	100.59	95.80
-	36279	24487	.6299		16.000	16.0	88	38	2.50	110.17	105.38	100.59	95.80
-	36281	24497	.6299		16.000	16.0	88	38	3.00	110.17	105.38	100.59	95.80
-	36283	24507	.6299		16.000	16.0	88	38	4.00	110.17	105.38	100.59	95.80
-	36285	24517	.6299		16.000	16.0	88	38	5.00	110.17	105.38	100.59	95.80

MATERIAL HARDNESS (Rc)
70
35
0

GARR TOOL®

† *Metric equivalents are for reference only*

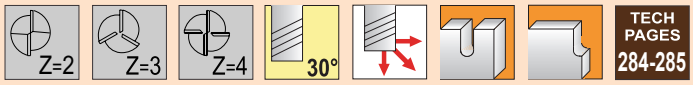
(220RA) 2 Flute EDP#	(223RA/823RA) 3 Flute EDP#	(230RA/830RA) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
79447	36287	80447	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.015"	151.41	144.83	138.24	131.66
79457	36289	80457	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.020"	151.41	144.83	138.24	131.66
79467	36291	80467	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.030"	151.41	144.83	138.24	131.66
79477	36293	80477	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.045"	151.41	144.83	138.24	131.66
79487	36295	80487	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.060"	151.41	144.83	138.24	131.66
79497	36297	80497	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.090"	151.41	144.83	138.24	131.66
79507	36299	80507	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.125"	151.41	144.83	138.24	131.66
79637	36301	80637	.7500	3/4"	19.050	3/4"	4"	1-1/2"	.250"	151.41	144.83	138.24	131.66
-	36303	24527	.7874		20.000	20.0	100	38	0.50	214.29	204.97	195.66	186.34
-	36305	24537	.7874		20.000	20.0	100	38	1.00	214.29	204.97	195.66	186.34
-	36307	24547	.7874		20.000	20.0	100	38	2.00	214.29	204.97	195.66	186.34
-	36309	24557	.7874		20.000	20.0	100	38	3.00	214.29	204.97	195.66	186.34
-	36311	24567	.7874		20.000	20.0	100	38	5.00	214.29	204.97	195.66	186.34
-	36313	80517	1.000	1"	25.400	1"	4"	1-1/2"	.015"	258.50	247.26	236.02	224.78
-	36315	80527	1.000	1"	25.400	1"	4"	1-1/2"	.020"	258.50	247.26	236.02	224.78
79537	36317	80537	1.000	1"	25.400	1"	4"	1-1/2"	.030"	258.50	247.26	236.02	224.78
-	36319	80547	1.000	1"	25.400	1"	4"	1-1/2"	.045"	258.50	247.26	236.02	224.78
79557	36321	80557	1.000	1"	25.400	1"	4"	1-1/2"	.060"	258.50	247.26	236.02	224.78
-	36323	80567	1.000	1"	25.400	1"	4"	1-1/2"	.090"	258.50	247.26	236.02	224.78
79577	36325	80577	1.000	1"	25.400	1"	4"	1-1/2"	.125"	258.50	247.26	236.02	224.78
79647	36327	80647	1.000	1"	25.400	1"	4"	1-1/2"	.250"	258.50	247.26	236.02	224.78



End Mill Manufacturing

Series 320M, 323M, 330M, 920M, 923M, 930M

.0200" - .2656"
(0.508mm - 6.746mm)



TECH PAGES 284-285

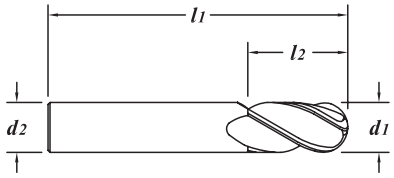
TOLERANCES

d_1	≤ .030"	+.000" –.001" (+.000 –.025mm)
	≥ 1/32"	+.000" –.002" (+.000 –.050mm)
d_2	h6	
ball radius	+.000" –.001" (+.000 –.025mm)	

Standard Length - Ball End

Solid submicron grain carbide end mill - center cutting
Extremely versatile
TiN Coating - page 232
TiCN Coating - page 233
TiALN Coating - page 234
Stub Length - page 216
Extended length - page 249





70
35
0

MATERIAL HARDNESS (Rc)

(320M/920M) 2 Flute EDP#	(323M/923M) 3 Flute EDP#	(330M/930M) 4 Flute EDP#	Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
16650	-	-	.0200	.0200"	0.508	1/8"	1-1/2"	.060"	22.99	21.99	20.99	19.99
16700	-	-	.0250	.0250"	0.635	1/8"	1-1/2"	.075"	22.21	21.24	20.28	19.31
16750	-	-	.0300	.0300"	0.762	1/8"	1-1/2"	.090"	19.14	18.30	17.47	16.64
16010	17010	18010	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	14.19	13.57	12.96	12.34
47010	38010	48010	.0394		1.000	3.0	38	4	14.90	14.26	13.61	12.96
16020	17020	18020	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	14.19	13.57	12.96	12.34
47020	38020	48020	.0591		1.500	3.0	38	6	14.90	14.26	13.61	12.96
16030	17030	18030	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	13.40	12.82	12.23	11.65
16040	17040	18040	.0781	5/64"	1.984	1/8"	1-1/2"	1/4"	13.40	12.82	12.23	11.65
47030	38030	48030	.0787		2.000	3.0	38	8	14.05	13.44	12.83	12.22
16050	17050	18050	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	12.81	12.25	11.70	11.14
47040	38040	48040	.0984		2.500	3.0	38	12	13.47	12.88	12.30	11.71
16060	17060	18060	.1094	7/64"	2.779	1/8"	1-1/2"	3/8"	12.81	12.25	11.70	11.14
47050	38050	48050	.1181		3.000	3.0	38	12	12.22	11.69	11.16	10.63
16070	17070	18070	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	11.63	11.12	10.62	10.11
47060	38060	48060	.1378		3.500	4.0	50	12	17.94	17.16	16.38	15.60
16080	17080	18080	.1406	9/64"	3.571	3/16"	2"	9/16"	17.05	16.31	15.57	14.83
16090	17090	18090	.1562	5/32"	3.967	3/16"	2"	9/16"	17.05	16.31	15.57	14.83
47070	38070	48070	.1575		4.000	4.0	50	14	16.09	15.39	14.69	13.99
16100	17100	18100	.1719	11/64"	4.366	3/16"	2"	9/16"	17.05	16.31	15.57	14.83
47080	38080	48080	.1772		4.500	5.0	50	14	20.25	19.37	18.49	17.61
16110	17110	18110	.1875	3/16"	4.763	3/16"	2"	5/8"	15.32	14.65	13.99	13.32
97070	98070	99070	.1969		5.000	5.0	50	16	18.61	17.80	16.99	16.18
47090	38090	48090	.1969		5.000	5.0	65	16	19.50	18.66	17.81	16.96
16120	17120	18120	.2031	13/64"	5.159	1/4"	2-1/2"	5/8"	19.84	18.98	18.11	17.25
16130	17130	18130	.2188	7/32"	5.558	1/4"	2-1/2"	5/8"	19.84	18.98	18.11	17.25
16140	17140	18140	.2344	15/64"	5.954	1/4"	2-1/2"	3/4"	19.84	18.98	18.11	17.25
47100	38100	48100	.2362		6.000	6.0	65	19	20.00	19.13	18.26	17.39
16150	17150	18150	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	19.03	18.21	17.38	16.55
16160	17160	18160	.2656	17/64"	6.746	5/16"	2-1/2"	7/8"	29.79	28.49	27.20	25.90

GARR TOOL®

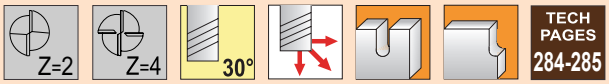
† *Metric equivalents are for reference only*

.2756" - 1.000"
(7.00mm - 25.40mm)

(320M/920M) 2 Flute EDP#	(323M/923M) 3 Flute EDP#	(330M/930M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
47110	38110	48110	.2756		7.000	7.0	65	22	25.67	24.55	23.44	22.32
16170	17170	18170	.2812	9/32"	7.142	5/16"	2-1/2"	7/8"	29.79	28.49	27.20	25.90
16180	-	18180	.2969	19/64"	7.541	5/16"	2-1/2"	7/8"	29.79	28.49	27.20	25.90
16190	17190	18190	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	24.94	23.86	22.77	21.69
47120	38120	48120	.3150		8.000	8.0	65	22	26.25	25.11	23.97	22.83
16200	17200	18200	.3281	21/64"	8.334	3/8"	2-1/2"	7/8"	35.65	34.10	32.55	31.00
16210	17210	18210	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	35.65	34.10	32.55	31.00
47130	38130	48130	.3543		9.000	9.0	65	22	32.07	30.68	29.28	27.89
16220	-	18220	.3594	23/64"	9.129	3/8"	2-1/2"	7/8"	35.65	34.10	32.55	31.00
16230	17230	18230	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	30.53	29.21	27.88	26.55
16240	17240	18240	.3906	25/64"	9.921	7/16"	2-3/4"	7/8"	43.87	41.97	40.06	38.15
47140	38140	48140	.3937		10.000	10.0	70	25	37.48	35.85	34.22	32.59
16250	17250	18250	.4062	13/32"	10.317	7/16"	2-3/4"	7/8"	43.87	41.97	40.06	38.15
16260	17260	18260	.4219	27/64"	10.716	7/16"	2-3/4"	7/8"	43.87	41.97	40.06	38.15
47150	38150	48150	.4331		11.000	11.0	75	25	39.46	37.74	36.03	34.31
16270	17270	18270	.4375	7/16"	11.113	7/16"	2-3/4"	1"	37.58	35.95	34.31	32.68
16280	-	18280	.4531	29/64"	11.509	1/2"	3"	1"	62.84	60.10	57.37	54.64
16290	17290	18290	.4688	15/32"	11.908	1/2"	3"	1"	62.84	60.10	57.37	54.64
47160	38160	48160	.4724		12.000	12.0	75	25	59.70	57.10	54.51	51.91
16300	-	18300	.4844	31/64"	12.304	1/2"	3"	1"	62.84	60.10	57.37	54.64
16310	17310	18310	.5000	1/2"	12.700	1/2"	3"	1"	56.83	54.36	51.89	49.42
47170	38170	48170	.5512		14.000	14.0	88	32	86.91	83.13	79.35	75.57
16320	17320	18320	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	82.78	79.18	75.58	71.98
16330	17330	18330	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	91.92	87.92	83.93	79.93
47180	38180	48180	.6299		16.000	16.0	88	38	96.50	92.30	88.11	83.91
16340	17340	18340	.6875	11/16"	17.463	3/4"	4"	1-1/2"	153.02	146.37	139.71	133.06
47190	-	48190	.7087		18.000	18.0	100	38	142.01	135.84	129.66	123.49
16350	17350	18350	.7500	3/4"	19.050	3/4"	4"	1-1/2"	135.27	129.39	123.51	117.63
47200	38200	48200	.7874		20.000	20.0	100	38	190.44	182.16	173.88	165.60
47210	-	48210	.8661		22.000	22.0	100	38	211.55	202.36	193.16	183.96
16360	17360	18360	.8750	7/8"	22.225	7/8"	4"	1-1/2"	216.72	207.30	197.87	188.45
47220	-	-	.9843		25.000	25.0	100	38	221.77	212.12	202.48	192.84
16370	17370	18370	1.000	1"	25.400	1"	4"	1-1/2"	234.65	224.44	214.24	204.04



Series 320MT, 330MT



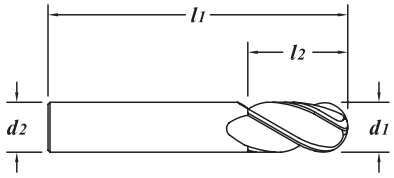
TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)

Standard Length - Ball End

TiN Coating

Solid submicron grain carbide end mill - center cutting
Improved lubricity
Extremely versatile
Bright Finish - page 230
TiCN Coating - page 233
TiALN Coating - page 234



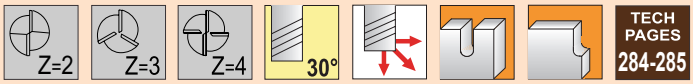


(320MT) 2 Flute EDP#	(330MT) 4 Flute EDP#	d_1 † Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
16073	18073	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	13.20	12.63	12.05	11.48
16113	18113	.1875	3/16"	4.763	3/16"	2"	5/8"	16.92	16.18	15.45	14.71
16153	18153	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	22.23	21.26	20.30	19.33
16193	18193	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	29.27	28.00	26.72	25.45
16233	18233	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	34.86	33.34	31.83	30.31
16273	18273	.4375	7/16"	11.113	7/16"	2-3/4"	1"	42.78	40.92	39.06	37.20
16313	18313	.5000	1/2"	12.700	1/2"	3"	1"	62.07	59.37	56.67	53.97
16333	18333	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	99.94	95.59	91.25	86.90
16353	18353	.7500	3/4"	19.050	3/4"	4"	1-1/2"	144.44	138.16	131.88	125.60
16373	18373	1.000	1"	25.400	1"	4"	1-1/2"	250.69	239.79	228.89	217.99

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)



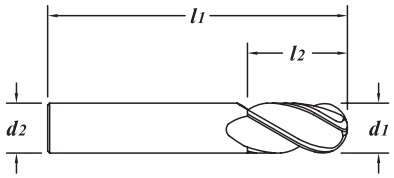
TECH PAGES 284-285

Standard Length - Ball End

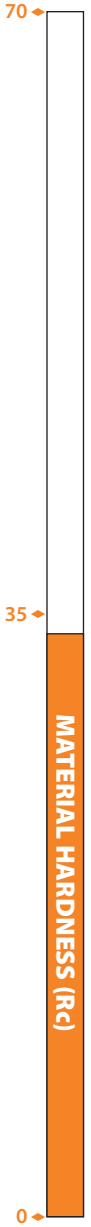
TiCN Coating

Solid submicron grain carbide end mill - center cutting
Improved abrasion resistance and lubricity
Extremely versatile
Bright Finish - page 230
TiN Coating - page 232
TiALN Coating - page 234
Extended length - page 251



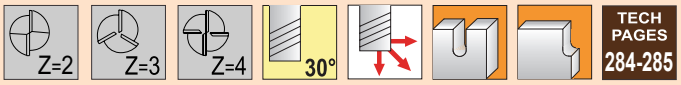


(320MC) 2 Flute EDP#	(323MC) 3 Flute EDP#	(330MC) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
16014	17014	18014	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	16.56	15.84	15.12	14.40
16024	17024	18024	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	16.56	15.84	15.12	14.40
16034	17034	18034	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	15.78	15.09	14.41	13.72
16044	17044	18044	.0781	5/64"	1.984	1/8"	1-1/2"	1/4"	15.78	15.09	14.41	13.72
16054	17054	18054	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	15.18	14.52	13.86	13.20
16064	17064	18064	.1094	7/64"	2.779	1/8"	1-1/2"	3/8"	15.18	14.52	13.86	13.20
16074	17074	18074	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	14.00	13.39	12.78	12.17
16084	17084	18084	.1406	9/64"	3.571	3/16"	2"	9/16"	19.45	18.60	17.76	16.91
16094	17094	18094	.1562	5/32"	3.967	3/16"	2"	9/16"	19.45	18.60	17.76	16.91
16104	-	18104	.1719	11/64"	4.366	3/16"	2"	9/16"	19.45	18.60	17.76	16.91
16114	17114	18114	.1875	3/16"	4.763	3/16"	2"	5/8"	17.69	16.92	16.15	15.38
16124	17124	18124	.2031	13/64"	5.159	1/4"	2-1/2"	5/8"	24.64	23.57	22.50	21.43
16134	17134	18134	.2188	7/32"	5.558	1/4"	2-1/2"	5/8"	24.64	23.57	22.50	21.43
16144	17144	18144	.2344	15/64"	5.954	1/4"	2-1/2"	3/4"	24.64	23.57	22.50	21.43
16154	17154	18154	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	23.84	22.80	21.77	20.73
-	17164	18164	.2656	17/64"	6.746	5/16"	2-1/2"	7/8"	36.21	34.64	33.06	31.49
16174	17174	18174	.2812	9/32"	7.142	5/16"	2-1/2"	7/8"	36.21	34.64	33.06	31.49
-	-	18184	.2969	19/64"	7.541	5/16"	2-1/2"	7/8"	36.21	34.64	33.06	31.49
16194	17194	18194	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	31.42	30.05	28.69	27.32
16204	-	-	.3281	21/64"	8.334	3/8"	2-1/2"	7/8"	42.10	40.27	38.44	36.61
-	17214	18214	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	42.10	40.27	38.44	36.61
16224	-	18224	.3594	23/64"	9.129	3/8"	2-1/2"	7/8"	42.10	40.27	38.44	36.61
16234	17234	18234	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	36.97	35.37	33.76	32.15
16244	-	18244	.3906	25/64"	9.921	7/16"	2-3/4"	7/8"	51.57	49.32	47.08	44.84
16254	17254	18254	.4062	13/32"	10.317	7/16"	2-3/4"	7/8"	51.57	49.32	47.08	44.84
-	-	18264	.4219	27/64"	10.716	7/16"	2-3/4"	7/8"	51.57	49.32	47.08	44.84
16274	17274	18274	.4375	7/16"	11.113	7/16"	2-3/4"	1"	45.31	43.34	41.37	39.40
-	-	18284	.4531	29/64"	11.509	1/2"	3"	1"	70.58	67.51	64.44	61.37
-	17294	18294	.4688	15/32"	11.908	1/2"	3"	1"	70.58	67.51	64.44	61.37
16304	17304	18304	.4844	31/64"	12.304	1/2"	3"	1"	70.58	67.51	64.44	61.37
16314	17314	18314	.5000	1/2"	12.700	1/2"	3"	1"	64.58	61.78	58.97	56.16
16324	17324	18324	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	94.79	90.67	86.55	82.43
16334	17334	18334	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	103.97	99.45	94.93	90.41
-	17344	-	.6875	11/16"	17.463	3/4"	4"	1-1/2"	166.77	159.52	152.27	145.02
16354	17354	18354	.7500	3/4"	19.050	3/4"	4"	1-1/2"	149.03	142.55	136.07	129.59
16364	17364	18364	.8750	7/8"	22.225	7/8"	4"	1-1/2"	237.39	227.07	216.75	206.43
16374	17374	18374	1.000	1"	25.400	1"	4"	1-1/2"	255.33	244.23	233.13	222.03



Series 320MA, 323MA, 330MA, 920MA, 923MA, 930MA

.0312" - .3150"
(0.792mm - 8.000mm)



TECH PAGES 284-285

TOLERANCES

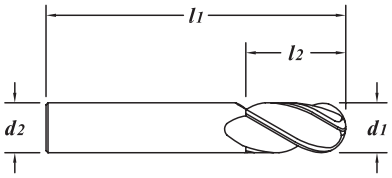
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)



Standard Length - Ball End

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Dry or semi-dry machining
Extremely versatile
Bright Finish - page 230
TiN Coating - page 232
TiCN Coating - page 233
Stub Length - page 217
Extended length - page 252



MATERIAL HARDNESS (Rc)
70
35
0

(320MA/920MA) 2 Flute EDP#	(323MA/923MA) 3 Flute EDP#	(330MA/930MA) 4 Flute EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
16017	17017	18017	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	16.87	16.14	15.40	14.67
47017	38017	48017	.0394		1.000	3.0	38	4	17.60	16.83	16.07	15.30
16027	17027	18027	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	16.87	16.14	15.40	14.67
47027	38027	48027	.0591		1.500	3.0	38	6	17.60	16.83	16.07	15.30
16037	17037	18037	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	16.09	15.39	14.69	13.99
16047	17047	18047	.0781	5/64"	1.984	1/8"	1-1/2"	1/4"	16.09	15.39	14.69	13.99
47037	38037	48037	.0787		2.000	3.0	38	8	16.76	16.03	15.30	14.57
16057	17057	18057	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	15.50	14.83	14.15	13.48
47047	38047	48047	.0984		2.500	3.0	38	12	16.15	15.44	14.74	14.04
16067	17067	18067	.1094	7/64"	2.779	1/8"	1-1/2"	3/8"	15.50	14.83	14.15	13.48
47057	38057	48057	.1181		3.000	3.0	38	12	14.90	14.26	13.61	12.96
16077	17077	18077	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	14.32	13.70	13.07	12.45
47067	38067	48067	.1378		3.500	4.0	50	12	20.62	19.72	18.83	17.93
16087	17087	18087	.1406	9/64"	3.571	3/16"	2"	9/16"	19.77	18.91	18.05	17.19
16097	17097	18097	.1562	5/32"	3.967	3/16"	2"	9/16"	19.77	18.91	18.05	17.19
47077	38077	48077	.1575		4.000	4.0	50	14	18.78	17.96	17.15	16.33
16107	17107	18107	.1719	11/64"	4.366	3/16"	2"	9/16"	19.77	18.91	18.05	17.19
47087	38087	48087	.1772		4.500	5.0	50	14	24.45	23.39	22.32	21.26
16117	17117	18117	.1875	3/16"	4.763	3/16"	2"	5/8"	18.01	17.23	16.44	15.66
97077	98077	99077	.1969		5.000	5.0	50	16	22.80	21.81	20.82	19.83
47097	38097	48097	.1969		5.000	5.0	65	16	25.06	23.97	22.88	21.79
16127	17127	18127	.2031	13/64"	5.159	1/4"	2-1/2"	5/8"	25.40	24.30	23.19	22.09
16137	17137	18137	.2188	7/32"	5.558	1/4"	2-1/2"	5/8"	25.40	24.30	23.19	22.09
16147	17147	18147	.2344	15/64"	5.954	1/4"	2-1/2"	3/4"	25.40	24.30	23.19	22.09
47107	38107	48107	.2362		6.000	6.0	65	19	25.54	24.43	23.32	22.21
16157	17157	18157	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	24.56	23.50	22.43	21.36
16167	17167	18167	.2656	17/64"	6.746	5/16"	2-1/2"	7/8"	38.10	36.44	34.79	33.13
47117	38117	48117	.2756		7.000	7.0	65	22	33.96	32.48	31.01	29.53
16177	17177	18177	.2812	9/32"	7.142	5/16"	2-1/2"	7/8"	38.10	36.44	34.79	33.13
16187	17187	18187	.2969	19/64"	7.541	5/16"	2-1/2"	7/8"	38.10	36.44	34.79	33.13
16197	17197	18197	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	33.29	31.85	30.40	28.95
47127	38127	48127	.3150		8.000	8.0	65	22	34.55	33.04	31.54	30.04

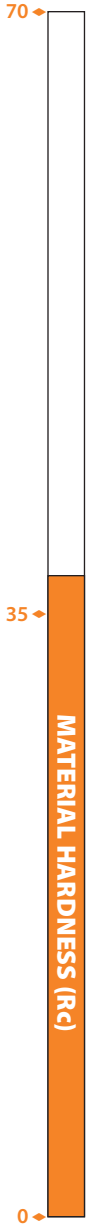
GARR TOOL®

† *Metric equivalents are for reference only*

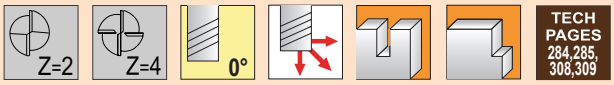
Series 320MA, 323MA, 330MA, 920MA, 923MA, 930MA *(continued)*

.3281" - 1.000"
(8.334mm - 25.400mm)

(320MA/920MA) 2 Flute EDP#	(323MA/923MA) 3 Flute EDP#	(330MA/930MA) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
16207	17207	18207	.3281	21/64"	8.334	3/8"	2-1/2"	7/8"	43.98	42.06	40.15	38.24
16217	17217	18217	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	43.98	42.06	40.15	38.24
47137	38137	48137	.3543		9.000	9.0	65	22	40.38	38.62	36.87	35.11
16227	17227	18227	.3594	23/64"	9.129	3/8"	2-1/2"	7/8"	43.98	42.06	40.15	38.24
16237	17237	18237	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	38.88	37.19	35.50	33.81
16247	17247	18247	.3906	25/64"	9.921	7/16"	2-3/4"	7/8"	53.30	50.99	48.67	46.35
47147	38147	48147	.3937		10.000	10.0	70	25	46.94	44.90	42.86	40.82
16257	17257	18257	.4062	13/32"	10.317	7/16"	2-3/4"	7/8"	53.30	50.99	48.67	46.35
16267	-	18267	.4219	27/64"	10.716	7/16"	2-3/4"	7/8"	53.30	50.99	48.67	46.35
47157	38157	48157	.4331		11.000	11.0	75	25	48.91	46.78	44.66	42.53
16277	17277	18277	.4375	7/16"	11.113	7/16"	2-3/4"	1"	47.01	44.97	42.92	40.88
16287	17287	18287	.4531	29/64"	11.509	1/2"	3"	1"	72.31	69.17	66.02	62.88
16297	17297	18297	.4688	15/32"	11.908	1/2"	3"	1"	72.31	69.17	66.02	62.88
47167	38167	48167	.4724		12.000	12.0	75	25	69.13	66.12	63.12	60.11
16307	17307	18307	.4844	31/64"	12.304	1/2"	3"	1"	72.31	69.17	66.02	62.88
16317	17317	18317	.5000	1/2"	12.700	1/2"	3"	1"	66.32	63.44	60.55	57.67
47177	38177	48177	.5512		14.000	14.0	88	32	100.57	96.20	91.82	87.45
16327	17327	18327	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	96.44	92.25	88.05	83.86
16337	17337	18337	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	105.58	100.99	96.40	91.81
47187	38187	48187	.6299		16.000	16.0	88	38	110.17	105.38	100.59	95.80
16347	17347	18347	.6875	11/16"	17.463	3/4"	4"	1-1/2"	169.14	161.79	154.43	147.08
47197	38197	48197	.7087		18.000	18.0	100	38	158.17	151.29	144.42	137.54
16357	17357	18357	.7500	3/4"	19.050	3/4"	4"	1-1/2"	151.41	144.83	138.24	131.66
47207	38207	48207	.7874		20.000	20.0	100	38	214.29	204.97	195.66	186.34
47217	38217	48217	.8661		22.000	22.0	100	38	235.39	225.16	214.92	204.69
-	17367	18367	.8750	7/8"	22.225	7/8"	4"	1-1/2"	240.57	230.11	219.65	209.19
47227	38227	48227	.9843		25.000	25.0	100	38	245.59	234.92	224.24	213.56
16377	17377	18377	1.000	1"	25.400	1"	4"	1-1/2"	258.50	247.26	236.02	224.78



Series 222M, 234M, 334MA

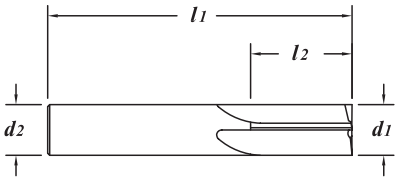


TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)

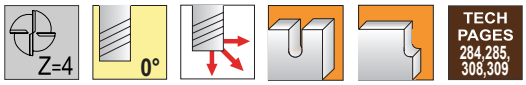
Standard Length - Straight Flute - Square End

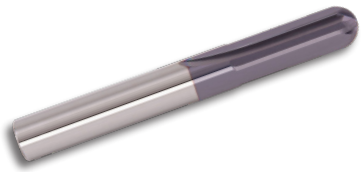
Solid submicron grain carbide end mill - center cutting
For cutting high Rc materials
Helps to hold perpendicularity





(222M) 2 Flute EDP#	(234M) 4 Flute EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
81070	82070	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	10.07	9.64	9.20	8.76
81110	82110	.1875	3/16"	4.763	3/16"	2"	5/8"	14.12	13.51	12.89	12.28
81150	82150	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	17.03	16.29	15.55	14.81
81190	82190	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	23.87	22.84	21.80	20.76
81230	82230	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	29.74	28.45	27.15	25.86
81270	82270	.4375	7/16"	11.113	7/16"	2-3/4"	1"	36.29	34.72	33.14	31.56
81310	82310	.5000	1/2"	12.700	1/2"	3"	1"	47.60	45.53	43.46	41.39
81330	82330	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	91.87	87.88	83.88	79.89
81350	82350	.7500	3/4"	19.050	3/4"	4"	1-1/2"	134.69	128.83	122.98	117.12
81370	82370	1.000	1"	25.400	1"	4"	1-1/2"	221.62	211.98	202.35	192.71

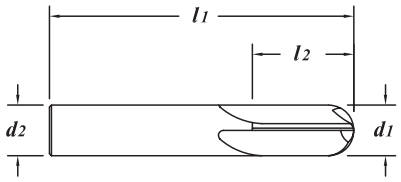




Standard Length - Straight Flute - Ball End

TiALN Coating

Solid submicron grain carbide end mill - center cutting
For cutting high Rc materials
Helps to hold perpendicularity

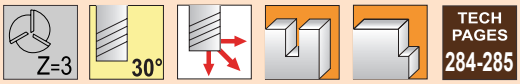


(334MA) 4 Flute EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
84077	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	14.89	14.25	13.60	12.95
84115	.1875	3/16"	4.763	3/16"	2"	5/8"	19.02	18.19	17.37	16.54
84157	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	25.19	24.09	23.00	21.90
84237	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	40.01	38.27	36.53	34.79

GARR TOOL®

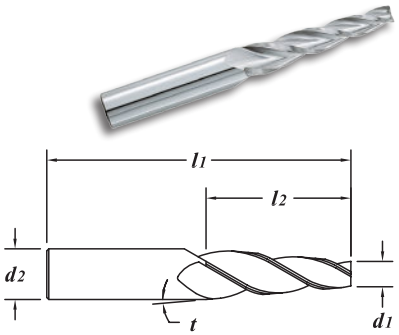
† Metric equivalents are for reference only

TOLERANCES	
d_1	+.003" –.000" (+.075 –.000mm)
d_2	h6

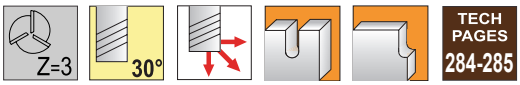


Standard Length - Tapered - Square End

Solid submicron grain carbide end mill - center cutting
Excellent for holding draft angles in mold and die applications

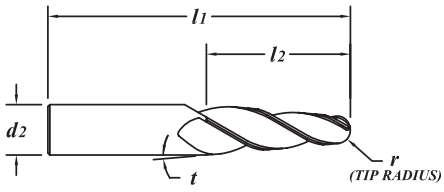


(273M) EDP#	d_2 Shank Diameter	t Taper Per Side	d_1 † Tip Diameter Decimal	Tip Diameter Metric	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
49010	1/4"	1°	.1250	3.175	3"	1-1/2"	33.01	31.57	30.14	28.70
49020	1/4"	1° 30′	.1250	3.175	3"	1-1/2"	33.01	31.57	30.14	28.70
49030	1/4"	2°	.1250	3.175	3"	1"	33.01	31.57	30.14	28.70
49040	1/4"	3°	.1250	3.175	3"	1-1/4"	33.01	31.57	30.14	28.70
49050	1/4"	5°	.1250	3.175	3"	3/4"	33.01	31.57	30.14	28.70
49060	1/4"	7°	.1250	3.175	3"	1/2"	33.01	31.57	30.14	28.70
49070	3/8"	1°	.1875	4.763	3-1/2"	1-3/4"	49.58	47.42	45.27	43.11
49080	3/8"	1° 30′	.1875	4.763	3-1/2"	1-3/4"	49.58	47.42	45.27	43.11
49090	3/8"	2°	.1875	4.763	3-1/2"	1-3/4"	49.58	47.42	45.27	43.11
49100	3/8"	3°	.1562	3.967	3-1/2"	1-3/4"	49.58	47.42	45.27	43.11
49110	3/8"	5°	.1250	3.175	3-1/2"	1-1/2"	49.58	47.42	45.27	43.11
49120	3/8"	7°	.1562	3.967	3-1/2"	1"	49.58	47.42	45.27	43.11
49130	1/2"	3°	.2500	6.350	4"	2"	68.29	65.32	62.35	59.38
49140	1/2"	5°	.2500	6.350	4"	1-1/2"	68.29	65.32	62.35	59.38
49150	1/2"	7°	.1875	4.763	4"	1-5/16"	68.29	65.32	62.35	59.38



Standard Length - Tapered - Ball End

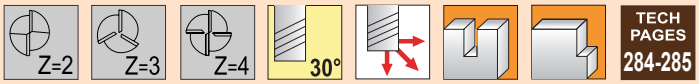
Solid submicron grain carbide end mill - center cutting
Excellent for holding draft angles in mold and die applications
Radius tolerance +.003" –.000" (+.075mm –.000mm)



(373M) EDP#	d_2 Shank Diameter	t Taper Per Side	r † Tip Radius Decimal	Tip Radius Metric	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
50010	1/4"	1°	.0620	1.575	3"	1-1/2"	36.62	35.02	33.43	31.84
50020	1/4"	1° 30′	.0620	1.575	3"	1-1/2"	36.62	35.02	33.43	31.84
50030	1/4"	2°	.0620	1.575	3"	1"	36.62	35.02	33.43	31.84
50040	1/4"	3°	.0620	1.575	3"	1-1/4"	36.62	35.02	33.43	31.84
50050	1/4"	5°	.0620	1.575	3"	3/4"	36.62	35.02	33.43	31.84
50060	1/4"	7°	.0620	1.575	3"	1/2"	36.62	35.02	33.43	31.84
50070	3/8"	1°	.0930	2.362	3-1/2"	1-3/4"	55.05	52.66	50.26	47.87
50080	3/8"	1° 30′	.0930	2.362	3-1/2"	1-3/4"	55.05	52.66	50.26	47.87
50090	3/8"	2°	.0930	2.362	3-1/2"	1-3/4"	55.05	52.66	50.26	47.87
50100	3/8"	3°	.0780	1.981	3-1/2"	1-3/4"	55.05	52.66	50.26	47.87
50110	3/8"	5°	.0620	1.575	3-1/2"	1-1/2"	55.05	52.66	50.26	47.87
50120	3/8"	7°	.0780	1.981	3-1/2"	1"	55.05	52.66	50.26	47.87
50130	1/2"	3°	.1250	3.175	4"	2"	78.50	75.09	71.67	68.26
50140	1/2"	5°	.1250	3.175	4"	1-1/2"	78.50	75.09	71.67	68.26
50150	1/2"	7°	.0930	2.362	4"	1-5/16"	78.50	75.09	71.67	68.26

Series 620M, 623M, 630M, 640M, 643M, 650M

.1181" - .3150"
(3.000mm - 8.000mm)



TECH PAGES 284-285

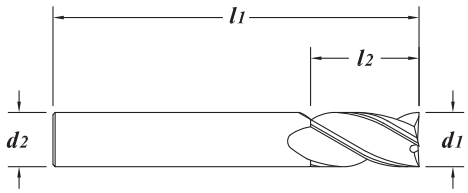
TOLERANCES

d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

Extra Length

Solid submicron grain carbide end mill - center cutting
Extended reach
Can be modified with a neck within 48 hours
Extremely versatile
TiCN Coating - page 240
TiALN Coating - page 241
Stub Length - page 209
Standard length - page 218





MATERIAL HARDNESS (Rc)
70
35
0

(620M/640M) 2 Flute EDP#	(623M/643M) 3 Flute EDP#	(630M/650M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
92010	93010	94010	.1181		3.000	3.0	50	16	12.72	12.17	11.61	11.06
92020	93020	94020	.1181		3.000	3.0	75	20	21.60	20.66	19.72	18.78
92030	93030	94030	.1181		3.000	3.0	75	25	21.60	20.66	19.72	18.78
41010	54510	42010	.1250	1/8"	3.175	1/8"	2"	5/8"	13.29	12.72	12.14	11.56
41020	54520	42020	.1250	1/8"	3.175	1/8"	3"	3/4"	20.53	19.64	18.74	17.85
41030	54530	42030	.1250	1/8"	3.175	1/8"	3"	1"	20.53	19.64	18.74	17.85
92040	93040	94040	.1575		4.000	4.0	50	16	13.36	12.78	12.20	11.62
92050	93050	94050	.1575		4.000	4.0	75	20	22.10	21.14	20.18	19.22
92060	93060	94060	.1575		4.000	4.0	75	25	22.10	21.14	20.18	19.22
41040	54540	42040	.1875	3/16"	4.763	3/16"	3"	1"	22.64	21.66	20.67	19.69
41050	54550	42050	.1875	3/16"	4.763	3/16"	3"	1-1/8"	22.64	21.66	20.67	19.69
41060	54560	42060	.1875	3/16"	4.763	3/16"	4"	1"	25.01	23.93	22.84	21.75
92080	93080	94080	.1969		5.000	5.0	75	20	23.84	22.80	21.77	20.73
92090	93090	94090	.1969		5.000	5.0	75	25	23.84	22.80	21.77	20.73
92100	93100	94100	.2362		6.000	6.0	75	25	27.62	26.42	25.22	24.02
92110	93110	94110	.2362		6.000	6.0	100	25	29.14	27.87	26.61	25.34
92120	93120	94120	.2362		6.000	6.0	100	32	29.14	27.87	26.61	25.34
92130	93130	94130	.2362		6.000	6.0	150	38	39.43	37.72	36.00	34.29
41070	54570	42070	.2500	1/4"	6.350	1/4"	3"	1"	26.22	25.08	23.94	22.80
41080	54580	42080	.2500	1/4"	6.350	1/4"	4"	1"	27.69	26.49	25.28	24.08
41090	54590	42090	.2500	1/4"	6.350	1/4"	4"	1-1/2"	27.69	26.49	25.28	24.08
41100	54600	42100	.2500	1/4"	6.350	1/4"	6"	1-1/2"	37.44	35.82	34.19	32.56
41110	54610	42110	.3125	5/16"	7.938	5/16"	3"	1"	32.36	30.95	29.55	28.14
41120	54620	42120	.3125	5/16"	7.938	5/16"	4"	1"	36.13	34.56	32.99	31.42
41130	54630	42130	.3125	5/16"	7.938	5/16"	4"	1-5/8"	36.13	34.56	32.99	31.42
41140	54640	42140	.3125	5/16"	7.938	5/16"	6"	1-1/2"	53.58	51.25	48.92	46.59
92140	93140	94140	.3150		8.000	8.0	75	25	34.09	32.60	31.12	29.64
92150	93150	94150	.3150		8.000	8.0	100	25	38.01	36.36	34.70	33.05
92160	93160	94160	.3150		8.000	8.0	100	41	38.01	36.36	34.70	33.05
92170	93170	94170	.3150		8.000	8.0	150	50	54.95	52.56	50.17	47.78

GARR TOOL®

† *Metric equivalents are for reference only*

(620M/640M) 2 Flute EDP#	(623M/643M) 3 Flute EDP#	(630M/650M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
41150	54650	42150	.3750	3/8"	9.525	3/8"	3"	1"	36.41	34.83	33.24	31.66
41160	54660	42160	.3750	3/8"	9.525	3/8"	4"	1"	39.97	38.24	36.50	34.76
41170	54670	42170	.3750	3/8"	9.525	3/8"	4"	2"	39.97	38.24	36.50	34.76
41180	54680	42180	.3750	3/8"	9.525	3/8"	6"	1-1/2"	58.26	55.73	53.19	50.66
41190	54690	42190	.3750	3/8"	9.525	3/8"	6"	3"	58.26	55.73	53.19	50.66
92180	93180	94180	.3937		10.000	10.0	75	25	39.53	37.81	36.09	34.37
92190	93190	94190	.3937		10.000	10.0	100	25	50.96	48.74	46.53	44.31
92200	93200	94200	.3937		10.000	10.0	100	50	50.96	48.74	46.53	44.31
92210	93210	94210	.3937		10.000	10.0	150	38	67.03	64.12	61.20	58.29
92220	93220	94220	.3937		10.000	10.0	150	75	67.03	64.12	61.20	58.29
41200	54700	42200	.4375	7/16"	11.113	7/16"	4"	1"	55.03	52.64	50.24	47.85
41210	54710	42210	.4375	7/16"	11.113	7/16"	4"	2"	55.03	52.64	50.24	47.85
41220	54720	42220	.4375	7/16"	11.113	7/16"	6"	1-1/2"	73.15	69.97	66.79	63.61
41230	54730	42230	.4375	7/16"	11.113	7/16"	6"	3"	73.15	69.97	66.79	63.61
92230	93230	94230	.4724		12.000	12.0	100	25	62.07	59.37	56.67	53.97
92240	93240	94240	.4724		12.000	12.0	100	50	62.07	59.37	56.67	53.97
92250	93250	94250	.4724		12.000	12.0	150	50	84.63	80.95	77.27	73.59
92260	93260	94260	.4724		12.000	12.0	150	75	84.63	80.95	77.27	73.59
41240	54740	42240	.5000	1/2"	12.700	1/2"	4"	1"	58.54	55.99	53.45	50.90
41250	54750	42250	.5000	1/2"	12.700	1/2"	4"	2"	58.54	55.99	53.45	50.90
41260	54760	42260	.5000	1/2"	12.700	1/2"	6"	1-1/2"	84.63	80.95	77.27	73.59
41270	54770	42270	.5000	1/2"	12.700	1/2"	6"	3"	84.63	80.95	77.27	73.59
92270	93270	94270	.5512		14.000	14.0	100	25	85.20	81.50	77.79	74.09
92280	93280	94280	.5512		14.000	14.0	100	50	85.20	81.50	77.79	74.09
92290	93290	94290	.5512		14.000	14.0	150	50	111.09	106.26	101.43	96.60
92300	93300	94300	.5512		14.000	14.0	150	75	111.09	106.26	101.43	96.60
41280	54780	42280	.5625	9/16"	14.288	9/16"	6"	2"	111.10	106.27	101.44	96.61
41290	54790	42290	.5625	9/16"	14.288	9/16"	6"	3"	111.10	106.27	101.44	96.61
41300	54800	42300	.6250	5/8"	15.875	5/8"	6"	2"	120.62	115.38	110.13	104.89
41310	54810	42310	.6250	5/8"	15.875	5/8"	6"	3"	120.62	115.38	110.13	104.89
92310	93310	94310	.6299		16.000	16.0	150	50	120.62	115.38	110.13	104.89
92320	93320	94320	.6299		16.000	16.0	150	75	120.62	115.38	110.13	104.89
92330	93330	94330	.7087		18.000	18.0	150	50	181.37	173.48	165.60	157.71
92340	93340	94340	.7087		18.000	18.0	150	75	181.37	173.48	165.60	157.71
41320	54820	42320	.7500	3/4"	19.050	3/4"	6"	2"	192.17	183.81	175.46	167.10
41330	54830	42330	.7500	3/4"	19.050	3/4"	6"	3"	192.17	183.81	175.46	167.10
92350	93350	94350	.7874		20.000	20.0	150	50	202.43	193.63	184.83	176.03
92360	93360	94360	.7874		20.000	20.0	150	75	202.43	193.63	184.83	176.03
92370	93370	94370	.9843		25.000	25.0	150	50	311.94	298.38	284.81	271.25
-	93380	94380	.9843		25.000	25.0	150	75	311.94	298.38	284.81	271.25
41340	54840	42340	1.000	1"	25.400	1"	6"	2"	326.69	312.49	298.28	284.08
41350	54850	42350	1.000	1"	25.400	1"	6"	3"	326.69	312.49	298.28	284.08
-	-	42360	1.000	1"	25.400	1"	6"	4"	343.87	328.92	313.97	299.02
-	-	42390	1.250	1-1/4"	31.750	1-1/4"	6"	3"	693.11	662.97	632.84	602.70

Series 620MC, 623MC, 630MC

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

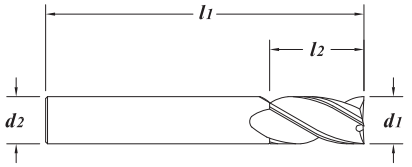
Z=2 | Z=3 | Z=4 | 30° | TECH PAGES 284-285

Extra Length

TiCN Coating

Solid submicron grain carbide end mill - center cutting
Extended reach
Improved abrasion resistance and lubricity
Can be modified with a neck within 48 hours
Extremely versatile
Bright Finish - page 238
TiALN Coating - page 241
Standard length - page 221





MATERIAL HARDNESS (Rc): 70 – 35 – 0

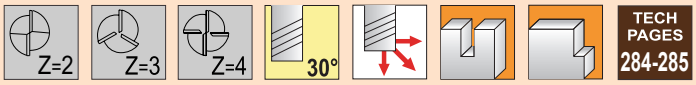
(620MC) 2 Flute EDP#	(623MC) 3 Flute EDP#	(630MC) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
41014	54514	42014	.1250	1/8"	3.175	1/8"	2"	5/8"	15.66	14.98	14.30	13.62
41024	54524	42024	.1250	1/8"	3.175	1/8"	3"	3/4"	23.40	22.39	21.37	20.35
41034	54534	42034	.1250	1/8"	3.175	1/8"	3"	1"	23.40	22.39	21.37	20.35
41044	54544	42044	.1875	3/16"	4.763	3/16"	3"	1"	25.98	24.85	23.72	22.59
41054	54554	42054	.1875	3/16"	4.763	3/16"	3"	1-1/8"	25.98	24.85	23.72	22.59
41064	54564	42064	.1875	3/16"	4.763	3/16"	4"	1"	28.87	27.61	26.36	25.10
41074	54574	42074	.2500	1/4"	6.350	1/4"	3"	1"	31.06	29.71	28.36	27.01
41084	54584	42084	.2500	1/4"	6.350	1/4"	4"	1"	32.90	31.47	30.04	28.61
41094	54594	42094	.2500	1/4"	6.350	1/4"	4"	1-1/2"	32.90	31.47	30.04	28.61
41104	54604	42104	.2500	1/4"	6.350	1/4"	6"	1-1/2"	46.47	44.45	42.43	40.41
41114	54614	42114	.3125	5/16"	7.938	5/16"	3"	1"	38.81	37.13	35.44	33.75
41124	54624	42124	.3125	5/16"	7.938	5/16"	4"	1"	44.11	42.20	40.28	38.36
41134	54634	42134	.3125	5/16"	7.938	5/16"	4"	1-5/8"	44.11	42.20	40.28	38.36
41144	54644	42144	.3125	5/16"	7.938	5/16"	6"	1-1/2"	64.37	61.57	58.77	55.97
41154	54654	42154	.3750	3/8"	9.525	3/8"	3"	1"	42.85	40.99	39.12	37.26
41164	54664	42164	.3750	3/8"	9.525	3/8"	4"	1"	48.01	45.93	43.84	41.75
41174	54674	42174	.3750	3/8"	9.525	3/8"	4"	2"	48.01	45.93	43.84	41.75
41184	54684	42184	.3750	3/8"	9.525	3/8"	6"	1-1/2"	69.07	66.07	63.06	60.06
41194	54694	42194	.3750	3/8"	9.523	3/8"	6"	3"	69.07	66.07	63.06	60.06
41204	54704	42204	.4375	7/16"	11.113	7/16"	4"	1"	64.68	61.86	59.05	56.24
41214	54714	42214	.4375	7/16"	11.113	7/16"	4"	2"	64.68	61.86	59.05	56.24
41224	54724	42224	.4375	7/16"	11.113	7/16"	6"	1-1/2"	86.83	83.05	79.28	75.50
-	54734	42234	.4375	7/16"	11.113	7/16"	6"	3"	86.83	83.05	79.28	75.50
41244	54744	42244	.5000	1/2"	12.700	1/2"	4"	1"	68.17	65.21	62.24	59.28
41254	54754	42254	.5000	1/2"	12.700	1/2"	4"	2"	68.17	65.21	62.24	59.28
41264	54764	42264	.5000	1/2"	12.700	1/2"	6"	1-1/2"	98.30	94.03	89.75	85.48
41274	54774	42274	.5000	1/2"	12.700	1/2"	6"	3"	98.30	94.03	89.75	85.48
41284	54784	42284	.5625	9/16"	14.288	9/16"	6"	2"	127.97	122.41	116.84	111.28
41294	-	42294	.5625	9/16"	14.288	9/16"	6"	3"	127.97	122.41	116.84	111.28
41304	54804	42304	.6250	5/8"	15.875	5/8"	6"	2"	137.49	131.52	125.54	119.56
41314	54814	42314	.6250	5/8"	15.875	5/8"	6"	3"	137.49	131.52	125.54	119.56
41324	54824	42324	.7500	3/4"	19.050	3/4"	6"	2"	211.43	202.24	193.04	183.85
41334	54834	42334	.7500	3/4"	19.050	3/4"	6"	3"	211.43	202.24	193.04	183.85
41344	54844	42344	1.000	1"	25.400	1"	6"	2"	353.97	338.58	323.19	307.80
41354	54854	42354	1.000	1"	25.400	1"	6"	3"	353.97	338.58	323.19	307.80
-	-	42364	1.000	1"	25.400	1"	6"	4"	371.14	355.00	338.87	322.73
-	-	42394	1.250	1-1/4"	31.750	1-1/4"	6"	3"	730.89	699.12	667.34	635.56

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

Series 620MA, 623MA, 630MA, 640MA, 643MA, 650MA



TECH PAGES 284-285

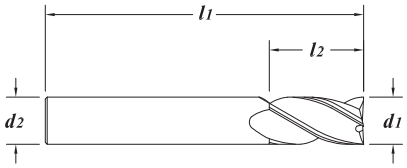
.1181" - .3150"
(3.000mm - 8.000mm)

Extra Length

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Extended reach
Dry or semi-dry machining
Can be modified with a neck within 48 hours
Extremely versatile
Bright Finish - page 238
TiCN Coating - page 240
Stub Length - page 211
Standard length - page 222





(620MA/640MA) 2 Flute EDP#	(623MA/643MA) 3 Flute EDP#	(630MA/650MA) 4 Flute EDP#	d_1 † Diameter Decimal		Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
92017	93017	94017	.1181		3.000	3.0	50	16	14.85	14.20	13.56	12.91
92027	93027	94027	.1181		3.000	3.0	75	20	24.29	23.23	22.18	21.12
92037	93037	94037	.1181		3.000	3.0	75	25	24.29	23.23	22.18	21.12
41017	54517	42017	.1250	1/8"	3.175	1/8"	2"	5/8"	16.01	15.31	14.62	13.92
41027	54527	42027	.1250	1/8"	3.175	1/8"	3"	3/4"	23.82	22.78	21.75	20.71
41037	54537	42037	.1250	1/8"	3.175	1/8"	3"	1"	23.82	22.78	21.75	20.71
92047	93047	94047	.1575		4.000	4.0	50	16	16.05	15.36	14.66	13.96
92057	93057	94057	.1575		4.000	4.0	75	20	26.28	25.14	23.99	22.85
92067	93067	94067	.1575		4.000	4.0	75	25	26.28	25.14	23.99	22.85
41047	54547	42047	.1875	3/16"	4.763	3/16"	3"	1"	26.84	25.67	24.51	23.34
41057	54557	42057	.1875	3/16"	4.763	3/16"	3"	1-1/8"	26.84	25.67	24.51	23.34
41067	54567	42067	.1875	3/16"	4.763	3/16"	4"	1"	29.90	28.60	27.30	26.00
92087	93087	94087	.1969		5.000	5.0	75	20	29.37	28.09	26.82	25.54
92097	93097	94097	.1969		5.000	5.0	75	25	29.37	28.09	26.82	25.54
92107	93107	94107	.2362		6.000	6.0	75	25	33.15	31.71	30.27	28.83
92117	93117	94117	.2362		6.000	6.0	100	25	35.65	34.10	32.55	31.00
92127	93127	94127	.2362		6.000	6.0	100	32	35.65	34.10	32.55	31.00
92137	93137	94137	.2362		6.000	6.0	150	38	48.61	46.50	44.38	42.27
41077	54577	42077	.2500	1/4"	6.350	1/4"	3"	1"	31.79	30.40	29.02	27.64
41087	54587	42087	.2500	1/4"	6.350	1/4"	4"	1"	34.19	32.70	31.22	29.73
41097	54597	42097	.2500	1/4"	6.350	1/4"	4"	1-1/2"	34.19	32.70	31.22	29.73
41107	54607	42107	.2500	1/4"	6.350	1/4"	6"	1-1/2"	46.63	44.61	42.58	40.55
41117	54617	42117	.3125	5/16"	7.938	5/16"	3"	1"	40.69	38.92	37.15	35.38
41127	54627	42127	.3125	5/16"	7.938	5/16"	4"	1"	46.68	44.65	42.62	40.59
41137	54637	42137	.3125	5/16"	7.938	5/16"	4"	1-5/8"	46.68	44.65	42.62	40.59
41147	54647	42147	.3125	5/16"	7.938	5/16"	6"	1-1/2"	68.05	65.09	62.13	59.17
92147	93147	94147	.3150		8.000	8.0	75	25	42.38	40.54	38.69	36.85
92157	93157	94157	.3150		8.000	8.0	100	25	48.58	46.46	44.35	42.24
92167	93167	94167	.3150		8.000	8.0	100	41	48.58	46.46	44.35	42.24
92177	93177	94177	.3150		8.000	8.0	150	50	69.41	66.40	63.38	60.36

continued →

Series 620MA, 623MA, 630MA, 640MA, 643MA, 650MA *(continued)*

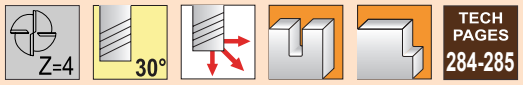
.3750" - 1.250"
(9.525mm - 31.750mm)

(620MA/640MA) 2 Flute EDP#	(623MA/643MA) 3 Flute EDP#	(630MA/650MA) 4 Flute EDP#	d_1 † Diameter Decimal		d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
41157	54657	42157	.3750	3/8"	9.525	3/8"	3"	1"	44.75	42.80	40.86	38.91
41167	54667	42167	.3750	3/8"	9.525	3/8"	4"	1"	50.55	48.36	46.16	43.96
41177	54677	42177	.3750	3/8"	9.525	3/8"	4"	2"	50.55	48.36	46.16	43.96
41187	54687	42187	.3750	3/8"	9.525	3/8"	6"	1-1/2"	72.73	69.56	66.40	63.24
41197	54697	42197	.3750	3/8"	9.525	3/8"	6"	3"	72.73	69.56	66.40	63.24
92187	93187	94187	.3937		10.000	10.0	75	25	48.98	46.85	44.72	42.59
92197	93197	94197	.3937		10.000	10.0	100	25	63.19	60.45	57.70	54.95
92207	93207	94207	.3937		10.000	10.0	100	50	63.19	60.45	57.70	54.95
92217	93217	94217	.3937		10.000	10.0	150	38	84.24	80.58	76.91	73.25
92227	93227	94227	.3937		10.000	10.0	150	75	84.24	80.58	76.91	73.25
41207	54707	42207	.4375	7/16"	11.113	7/16"	4"	1"	67.26	64.34	61.41	58.49
41217	54717	42217	.4375	7/16"	11.113	7/16"	4"	2"	67.26	64.34	61.41	58.49
41227	54727	42227	.4375	7/16"	11.113	7/16"	6"	1-1/2"	90.37	86.44	82.51	78.58
41237	54737	42237	.4375	7/16"	11.113	7/16"	6"	3"	90.37	86.44	82.51	78.58
92237	93237	94237	.4724		12.000	12.0	100	25	74.29	71.06	67.83	64.60
92247	93247	94247	.4724		12.000	12.0	100	50	74.29	71.06	67.83	64.60
92257	93257	94257	.4724		12.000	12.0	150	50	101.83	97.41	92.98	88.55
92267	93267	94267	.4724		12.000	12.0	150	75	101.83	97.41	92.98	88.55
41247	54747	42247	.5000	1/2"	12.700	1/2"	4"	1"	70.77	67.69	64.62	61.54
41257	54757	42257	.5000	1/2"	12.700	1/2"	4"	2"	70.77	67.69	64.62	61.54
41267	54767	42267	.5000	1/2"	12.700	1/2"	6"	1-1/2"	101.83	97.41	92.98	88.55
41277	54777	42277	.5000	1/2"	12.700	1/2"	6"	3"	101.83	97.41	92.98	88.55
92277	93277	94277	.5512		14.000	14.0	100	25	98.88	94.58	90.28	85.98
92287	93287	94287	.5512		14.000	14.0	100	50	98.88	94.58	90.28	85.98
-	93297	94297	.5512		14.000	14.0	150	50	131.39	125.68	119.96	114.25
92307	93307	94307	.5512		14.000	14.0	150	75	131.39	125.68	119.96	114.25
41287	54787	42287	.5625	9/16"	14.288	9/16"	6"	2"	131.39	125.68	119.96	114.25
-	54797	42297	.5625	9/16"	14.288	9/16"	6"	3"	131.39	125.68	119.96	114.25
41307	54807	42307	.6250	5/8"	15.875	5/8"	6"	2"	140.93	134.81	128.68	122.55
41317	54817	42317	.6250	5/8"	15.875	5/8"	6"	3"	140.93	134.81	128.68	122.55
92317	93317	94317	.6299		16.000	16.0	150	50	140.93	134.81	128.68	122.55
92327	93327	94327	.6299		16.000	16.0	150	75	140.93	134.81	128.68	122.55
-	-	94337	.7087		18.000	18.0	150	50	204.87	195.97	187.06	178.15
-	93347	94347	.7087		18.000	18.0	150	75	204.87	195.97	187.06	178.15
41327	54827	42327	.7500	3/4"	19.050	3/4"	6"	2"	215.67	206.29	196.92	187.54
41337	54837	42337	.7500	3/4"	19.050	3/4"	6"	3"	215.67	206.29	196.92	187.54
92357	93357	94357	.7874		20.000	20.0	150	50	232.97	222.84	212.71	202.58
92367	93367	94367	.7874		20.000	20.0	150	75	232.97	222.84	212.71	202.58
-	93377	94377	.9843		25.000	25.0	150	50	342.46	327.57	312.68	297.79
92387	93387	94387	.9843		25.000	25.0	150	75	342.46	327.57	312.68	297.79
41347	54847	42347	1.000	1"	25.400	1"	6"	2"	357.20	341.67	326.14	310.61
41357	54857	42357	1.000	1"	25.400	1"	6"	3"	357.20	341.67	326.14	310.61
-	-	42367	1.000	1"	25.400	1"	6"	4"	374.39	358.12	341.84	325.56
-	-	42397	1.250	1-1/4"	31.750	1-1/4"	6"	3"	732.22	700.38	668.55	636.71

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)



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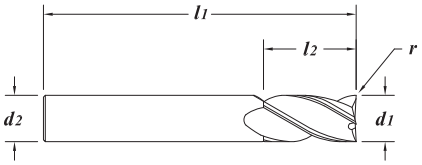
Series 630R

.1250" - .3125"
(3.175mm - 7.938mm)

Extra Length - Corner Radius

Solid submicron grain carbide end mill - center cutting
Extended reach
For stronger corners and part radius
Can be modified with a neck within 48 hours
Extremely versatile
TiALN Coating - page 246
Stub length - page 212
Standard length - page 224





EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
20100	.1250	1/8"	3.175	1/8"	3"	1"	.010"	24.15	23.10	22.05	21.00
20110	.1250	1/8"	3.175	1/8"	3"	1"	.015"	24.15	23.10	22.05	21.00
20120	.1250	1/8"	3.175	1/8"	3"	1"	.020"	24.15	23.10	22.05	21.00
20130	.1250	1/8"	3.175	1/8"	3"	1"	.030"	24.15	23.10	22.05	21.00
20140	.1250	1/8"	3.175	1/8"	3"	1"	.045"	24.15	23.10	22.05	21.00
20150	.1875	3/16"	4.763	3/16"	3"	1"	.010"	26.63	25.48	24.32	23.16
20160	.1875	3/16"	4.763	3/16"	3"	1"	.015"	26.63	25.48	24.32	23.16
20170	.1875	3/16"	4.763	3/16"	3"	1"	.020"	26.63	25.48	24.32	23.16
20180	.1875	3/16"	4.763	3/16"	3"	1"	.030"	26.63	25.48	24.32	23.16
20190	.1875	3/16"	4.763	3/16"	3"	1"	.045"	26.63	25.48	24.32	23.16
20200	.1875	3/16"	4.763	3/16"	3"	1"	.060"	26.63	25.48	24.32	23.16
20210	.1875	3/16"	4.763	3/16"	4"	1"	.010"	28.67	27.42	26.18	24.93
20220	.1875	3/16"	4.763	3/16"	4"	1"	.015"	28.67	27.42	26.18	24.93
20230	.1875	3/16"	4.763	3/16"	4"	1"	.020"	28.67	27.42	26.18	24.93
20240	.1875	3/16"	4.763	3/16"	4"	1"	.030"	28.67	27.42	26.18	24.93
20250	.1875	3/16"	4.763	3/16"	4"	1"	.045"	28.67	27.42	26.18	24.93
20260	.1875	3/16"	4.763	3/16"	4"	1"	.060"	28.67	27.42	26.18	24.93
20270	.2500	1/4"	6.350	1/4"	3"	1"	.010"	30.83	29.49	28.15	26.81
20280	.2500	1/4"	6.350	1/4"	3"	1"	.020"	30.83	29.49	28.15	26.81
20290	.2500	1/4"	6.350	1/4"	3"	1"	.030"	30.83	29.49	28.15	26.81
20300	.2500	1/4"	6.350	1/4"	3"	1"	.045"	30.83	29.49	28.15	26.81
20310	.2500	1/4"	6.350	1/4"	3"	1"	.060"	30.83	29.49	28.15	26.81
20320	.2500	1/4"	6.350	1/4"	4"	1"	.010"	32.43	31.02	29.61	28.20
20330	.2500	1/4"	6.350	1/4"	4"	1"	.020"	32.43	31.02	29.61	28.20
20340	.2500	1/4"	6.350	1/4"	4"	1"	.030"	32.43	31.02	29.61	28.20
20350	.2500	1/4"	6.350	1/4"	4"	1"	.045"	32.43	31.02	29.61	28.20
20360	.2500	1/4"	6.350	1/4"	4"	1"	.060"	32.43	31.02	29.61	28.20
20370	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.010"	42.17	40.34	38.50	36.67
20380	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.020"	42.17	40.34	38.50	36.67
20390	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.030"	42.17	40.34	38.50	36.67
20400	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.045"	42.17	40.34	38.50	36.67
20410	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.060"	42.17	40.34	38.50	36.67
20420	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.010"	42.49	40.65	38.80	36.95
20430	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.020"	42.49	40.65	38.80	36.95
20440	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.030"	42.49	40.65	38.80	36.95
20450	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.045"	42.49	40.65	38.80	36.95
20460	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.060"	42.49	40.65	38.80	36.95
20470	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.090"	42.49	40.65	38.80	36.95
20480	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.125"	42.49	40.65	38.80	36.95



continued →

Series 630R *(continued)*

.3750" - .6250"
(9.525mm - 15.875mm)

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
20490	.3750	3/8"	9.525	3/8"	4"	1"	.010"	47.01	44.97	42.92	40.88
20500	.3750	3/8"	9.525	3/8"	4"	1"	.020"	47.01	44.97	42.92	40.88
20510	.3750	3/8"	9.525	3/8"	4"	1"	.030"	47.01	44.97	42.92	40.88
20520	.3750	3/8"	9.525	3/8"	4"	1"	.045"	47.01	44.97	42.92	40.88
20530	.3750	3/8"	9.525	3/8"	4"	1"	.060"	47.01	44.97	42.92	40.88
20540	.3750	3/8"	9.525	3/8"	4"	1"	.090"	47.01	44.97	42.92	40.88
20550	.3750	3/8"	9.525	3/8"	4"	1"	.125"	47.01	44.97	42.92	40.88
20560	.3750	3/8"	9.525	3/8"	4"	2"	.010"	47.01	44.97	42.92	40.88
20570	.3750	3/8"	9.525	3/8"	4"	2"	.020"	47.01	44.97	42.92	40.88
20580	.3750	3/8"	9.525	3/8"	4"	2"	.030"	47.01	44.97	42.92	40.88
20590	.3750	3/8"	9.525	3/8"	4"	2"	.045"	47.01	44.97	42.92	40.88
20600	.3750	3/8"	9.525	3/8"	4"	2"	.060"	47.01	44.97	42.92	40.88
20610	.3750	3/8"	9.525	3/8"	4"	2"	.090"	47.01	44.97	42.92	40.88
20620	.3750	3/8"	9.525	3/8"	4"	2"	.125"	47.01	44.97	42.92	40.88
20630	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.010"	64.57	61.77	58.96	56.15
20640	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.020"	64.57	61.77	58.96	56.15
20650	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.030"	64.57	61.77	58.96	56.15
20660	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.045"	64.57	61.77	58.96	56.15
20670	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.060"	64.57	61.77	58.96	56.15
20680	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.090"	64.57	61.77	58.96	56.15
20690	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.125"	64.57	61.77	58.96	56.15
20700	.5000	1/2"	12.700	1/2"	4"	1"	.015"	66.11	63.24	60.36	57.49
20710	.5000	1/2"	12.700	1/2"	4"	1"	.020"	66.11	63.24	60.36	57.49
20720	.5000	1/2"	12.700	1/2"	4"	1"	.030"	66.11	63.24	60.36	57.49
20730	.5000	1/2"	12.700	1/2"	4"	1"	.045"	66.11	63.24	60.36	57.49
20740	.5000	1/2"	12.700	1/2"	4"	1"	.060"	66.11	63.24	60.36	57.49
20750	.5000	1/2"	12.700	1/2"	4"	1"	.090"	66.11	63.24	60.36	57.49
20760	.5000	1/2"	12.700	1/2"	4"	1"	.125"	66.11	63.24	60.36	57.49
20770	.5000	1/2"	12.700	1/2"	4"	2"	.015"	66.11	63.24	60.36	57.49
20780	.5000	1/2"	12.700	1/2"	4"	2"	.020"	66.11	63.24	60.36	57.49
20790	.5000	1/2"	12.700	1/2"	4"	2"	.030"	66.11	63.24	60.36	57.49
20800	.5000	1/2"	12.700	1/2"	4"	2"	.045"	66.11	63.24	60.36	57.49
20810	.5000	1/2"	12.700	1/2"	4"	2"	.060"	66.11	63.24	60.36	57.49
20820	.5000	1/2"	12.700	1/2"	4"	2"	.090"	66.11	63.24	60.36	57.49
20830	.5000	1/2"	12.700	1/2"	4"	2"	.125"	66.11	63.24	60.36	57.49
20840	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.015"	93.64	89.57	85.50	81.43
20850	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.020"	93.64	89.57	85.50	81.43
20860	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.030"	93.64	89.57	85.50	81.43
20870	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.045"	93.64	89.57	85.50	81.43
20880	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.060"	93.64	89.57	85.50	81.43
20890	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.090"	93.64	89.57	85.50	81.43
20900	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.125"	93.64	89.57	85.50	81.43
20910	.6250	5/8"	15.875	5/8"	6"	2"	.010"	137.70	131.71	125.73	119.74
20920	.6250	5/8"	15.875	5/8"	6"	2"	.015"	137.70	131.71	125.73	119.74
20930	.6250	5/8"	15.875	5/8"	6"	2"	.020"	137.70	131.71	125.73	119.74
20940	.6250	5/8"	15.875	5/8"	6"	2"	.030"	137.70	131.71	125.73	119.74
20950	.6250	5/8"	15.875	5/8"	6"	2"	.045"	137.70	131.71	125.73	119.74
20960	.6250	5/8"	15.875	5/8"	6"	2"	.060"	137.70	131.71	125.73	119.74
20970	.6250	5/8"	15.875	5/8"	6"	2"	.090"	137.70	131.71	125.73	119.74
20980	.6250	5/8"	15.875	5/8"	6"	2"	.125"	137.70	131.71	125.73	119.74

MATERIAL HARDNESS (Rc)
70
35
0

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
20990	.7500	3/4"	19.050	3/4"	6"	3"	.015"	225.98	216.15	206.33	196.50
21000	.7500	3/4"	19.050	3/4"	6"	3"	.020"	225.98	216.15	206.33	196.50
21010	.7500	3/4"	19.050	3/4"	6"	3"	.030"	225.98	216.15	206.33	196.50
21020	.7500	3/4"	19.050	3/4"	6"	3"	.045"	225.98	216.15	206.33	196.50
21030	.7500	3/4"	19.050	3/4"	6"	3"	.060"	225.98	216.15	206.33	196.50
21040	.7500	3/4"	19.050	3/4"	6"	3"	.090"	225.98	216.15	206.33	196.50
21050	.7500	3/4"	19.050	3/4"	6"	3"	.125"	225.98	216.15	206.33	196.50
21140	.7500	3/4"	19.050	3/4"	6"	3"	.250"	225.98	216.15	206.33	196.50
21060	1.000	1"	25.400	1"	6"	3"	.015"	384.26	367.55	350.85	334.14
21070	1.000	1"	25.400	1"	6"	3"	.020"	384.26	367.55	350.85	334.14
21080	1.000	1"	25.400	1"	6"	3"	.030"	384.26	367.55	350.85	334.14
21090	1.000	1"	25.400	1"	6"	3"	.045"	384.26	367.55	350.85	334.14
21100	1.000	1"	25.400	1"	6"	3"	.060"	384.26	367.55	350.85	334.14
21110	1.000	1"	25.400	1"	6"	3"	.090"	384.26	367.55	350.85	334.14
21120	1.000	1"	25.400	1"	6"	3"	.125"	384.26	367.55	350.85	334.14
21130	1.000	1"	25.400	1"	6"	3"	.250"	384.26	367.55	350.85	334.14





Series 630RA

.1250" - .3125"
(3.175mm - 7.938mm)

Z=4 | 30° | TECH PAGES 284-285

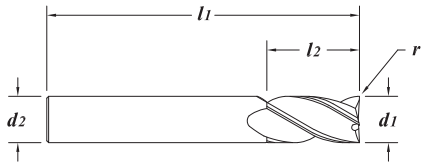
TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
r	+.001" –.001" (+.025 –.025mm)

Extra Length - Corner Radius

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Extended reach
For stronger corners and part radius
Dry or semi-dry machining
Can be modified with a neck within 48 hours
Extremely versatile
Bright Finish - page 243
Stub length - page 214
Standard length - page 227





MATERIAL HARDNESS (Rc)
70
35
0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
20107	.1250	1/8"	3.175	1/8"	3"	1"	.010"	27.44	26.25	25.05	23.86
20117	.1250	1/8"	3.175	1/8"	3"	1"	.015"	27.44	26.25	25.05	23.86
20127	.1250	1/8"	3.175	1/8"	3"	1"	.020"	27.44	26.25	25.05	23.86
20137	.1250	1/8"	3.175	1/8"	3"	1"	.030"	27.44	26.25	25.05	23.86
20147	.1250	1/8"	3.175	1/8"	3"	1"	.045"	27.44	26.25	25.05	23.86
20157	.1875	3/16"	4.763	3/16"	3"	1"	.010"	30.82	29.48	28.14	26.80
20167	.1875	3/16"	4.763	3/16"	3"	1"	.015"	30.82	29.48	28.14	26.80
20177	.1875	3/16"	4.763	3/16"	3"	1"	.020"	30.82	29.48	28.14	26.80
20187	.1875	3/16"	4.763	3/16"	3"	1"	.030"	30.82	29.48	28.14	26.80
20197	.1875	3/16"	4.763	3/16"	3"	1"	.045"	30.82	29.48	28.14	26.80
20207	.1875	3/16"	4.763	3/16"	3"	1"	.060"	30.82	29.48	28.14	26.80
20217	.1875	3/16"	4.763	3/16"	4"	1"	.010"	33.55	32.09	30.63	29.17
20227	.1875	3/16"	4.763	3/16"	4"	1"	.015"	33.55	32.09	30.63	29.17
20237	.1875	3/16"	4.763	3/16"	4"	1"	.020"	33.55	32.09	30.63	29.17
20247	.1875	3/16"	4.763	3/16"	4"	1"	.030"	33.55	32.09	30.63	29.17
20257	.1875	3/16"	4.763	3/16"	4"	1"	.045"	33.55	32.09	30.63	29.17
20267	.1875	3/16"	4.763	3/16"	4"	1"	.060"	33.55	32.09	30.63	29.17
20277	.2500	1/4"	6.350	1/4"	3"	1"	.010"	36.40	34.82	33.23	31.65
20287	.2500	1/4"	6.350	1/4"	3"	1"	.020"	36.40	34.82	33.23	31.65
20297	.2500	1/4"	6.350	1/4"	3"	1"	.030"	36.40	34.82	33.23	31.65
20307	.2500	1/4"	6.350	1/4"	3"	1"	.045"	36.40	34.82	33.23	31.65
20317	.2500	1/4"	6.350	1/4"	3"	1"	.060"	36.40	34.82	33.23	31.65
20327	.2500	1/4"	6.350	1/4"	4"	1"	.010"	38.96	37.27	35.57	33.88
20337	.2500	1/4"	6.350	1/4"	4"	1"	.020"	38.96	37.27	35.57	33.88
20347	.2500	1/4"	6.350	1/4"	4"	1"	.030"	38.96	37.27	35.57	33.88
20357	.2500	1/4"	6.350	1/4"	4"	1"	.045"	38.96	37.27	35.57	33.88
20367	.2500	1/4"	6.350	1/4"	4"	1"	.060"	38.96	37.27	35.57	33.88
20377	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.010"	51.35	49.12	46.88	44.65
20387	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.020"	51.35	49.12	46.88	44.65
20397	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.030"	51.35	49.12	46.88	44.65
20407	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.045"	51.35	49.12	46.88	44.65
20417	.2500	1/4"	6.350	1/4"	6"	1-1/2"	.060"	51.35	49.12	46.88	44.65
20427	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.010"	53.06	50.75	48.45	46.14
20437	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.020"	53.06	50.75	48.45	46.14
20447	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.030"	53.06	50.75	48.45	46.14
20457	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.045"	53.06	50.75	48.45	46.14
20467	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.060"	53.06	50.75	48.45	46.14
20477	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.090"	53.06	50.75	48.45	46.14
20487	.3125	5/16"	7.938	5/16"	4"	1-5/8"	.125"	53.06	50.75	48.45	46.14

GARR TOOL®

† *Metric equivalents are for reference only*

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
20497	.3750	3/8"	9.525	3/8"	4"	1"	.010"	57.58	55.08	52.57	50.07
20507	.3750	3/8"	9.525	3/8"	4"	1"	.020"	57.58	55.08	52.57	50.07
20517	.3750	3/8"	9.525	3/8"	4"	1"	.030"	57.58	55.08	52.57	50.07
20527	.3750	3/8"	9.525	3/8"	4"	1"	.045"	57.58	55.08	52.57	50.07
20537	.3750	3/8"	9.525	3/8"	4"	1"	.060"	57.58	55.08	52.57	50.07
20547	.3750	3/8"	9.525	3/8"	4"	1"	.090"	57.58	55.08	52.57	50.07
20557	.3750	3/8"	9.525	3/8"	4"	1"	.125"	57.58	55.08	52.57	50.07
20567	.3750	3/8"	9.525	3/8"	4"	2"	.010"	57.58	55.08	52.57	50.07
20577	.3750	3/8"	9.525	3/8"	4"	2"	.020"	57.58	55.08	52.57	50.07
20587	.3750	3/8"	9.525	3/8"	4"	2"	.030"	57.58	55.08	52.57	50.07
20597	.3750	3/8"	9.525	3/8"	4"	2"	.045"	57.58	55.08	52.57	50.07
20607	.3750	3/8"	9.525	3/8"	4"	2"	.060"	57.58	55.08	52.57	50.07
20617	.3750	3/8"	9.525	3/8"	4"	2"	.090"	57.58	55.08	52.57	50.07
20627	.3750	3/8"	9.525	3/8"	4"	2"	.125"	57.58	55.08	52.57	50.07
20637	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.010"	79.72	76.25	72.79	69.32
20647	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.020"	79.72	76.25	72.79	69.32
20657	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.030"	79.72	76.25	72.79	69.32
20667	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.045"	79.72	76.25	72.79	69.32
20677	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.060"	79.72	76.25	72.79	69.32
20687	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.090"	79.72	76.25	72.79	69.32
20697	.3750	3/8"	9.525	3/8"	6"	1-1/2"	.125"	79.72	76.25	72.79	69.32
21157	.4375	7/16"	11.113	7/16"	4"	1"	.010"	77.00	73.66	70.31	66.96
21167	.4375	7/16"	11.113	7/16"	4"	1"	.015"	77.00	73.66	70.31	66.96
21177	.4375	7/16"	11.113	7/16"	4"	1"	.020"	77.00	73.66	70.31	66.96
21187	.4375	7/16"	11.113	7/16"	4"	1"	.030"	77.00	73.66	70.31	66.96
21227	.4375	7/16"	11.113	7/16"	4"	1"	.125"	77.00	73.66	70.31	66.96
20707	.5000	1/2"	12.700	1/2"	4"	1"	.015"	78.37	74.97	71.56	68.15
20717	.5000	1/2"	12.700	1/2"	4"	1"	.020"	78.37	74.97	71.56	68.15
20727	.5000	1/2"	12.700	1/2"	4"	1"	.030"	78.37	74.97	71.56	68.15
20737	.5000	1/2"	12.700	1/2"	4"	1"	.045"	78.37	74.97	71.56	68.15
20747	.5000	1/2"	12.700	1/2"	4"	1"	.060"	78.37	74.97	71.56	68.15
20757	.5000	1/2"	12.700	1/2"	4"	1"	.090"	78.37	74.97	71.56	68.15
20767	.5000	1/2"	12.700	1/2"	4"	1"	.125"	78.37	74.97	71.56	68.15
20777	.5000	1/2"	12.700	1/2"	4"	2"	.015"	78.37	74.97	71.56	68.15
20787	.5000	1/2"	12.700	1/2"	4"	2"	.020"	78.37	74.97	71.56	68.15
20797	.5000	1/2"	12.700	1/2"	4"	2"	.030"	78.37	74.97	71.56	68.15
20807	.5000	1/2"	12.700	1/2"	4"	2"	.045"	78.37	74.97	71.56	68.15
20817	.5000	1/2"	12.700	1/2"	4"	2"	.060"	78.37	74.97	71.56	68.15
20827	.5000	1/2"	12.700	1/2"	4"	2"	.090"	78.37	74.97	71.56	68.15
20837	.5000	1/2"	12.700	1/2"	4"	2"	.125"	78.37	74.97	71.56	68.15
20847	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.015"	110.84	106.02	101.20	96.38
20857	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.020"	110.84	106.02	101.20	96.38
20867	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.030"	110.84	106.02	101.20	96.38
20877	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.045"	110.84	106.02	101.20	96.38
20887	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.060"	110.84	106.02	101.20	96.38
20897	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.090"	110.84	106.02	101.20	96.38
20907	.5000	1/2"	12.700	1/2"	6"	1-1/2"	.125"	110.84	106.02	101.20	96.38
20917	.6250	5/8"	15.875	5/8"	6"	2"	.010"	157.99	151.12	144.25	137.38
20927	.6250	5/8"	15.875	5/8"	6"	2"	.015"	157.99	151.12	144.25	137.38
20937	.6250	5/8"	15.875	5/8"	6"	2"	.020"	157.99	151.12	144.25	137.38
20947	.6250	5/8"	15.875	5/8"	6"	2"	.030"	157.99	151.12	144.25	137.38
20957	.6250	5/8"	15.875	5/8"	6"	2"	.045"	157.99	151.12	144.25	137.38
20967	.6250	5/8"	15.875	5/8"	6"	2"	.060"	157.99	151.12	144.25	137.38
20977	.6250	5/8"	15.875	5/8"	6"	2"	.090"	157.99	151.12	144.25	137.38
20987	.6250	5/8"	15.875	5/8"	6"	2"	.125"	157.99	151.12	144.25	137.38

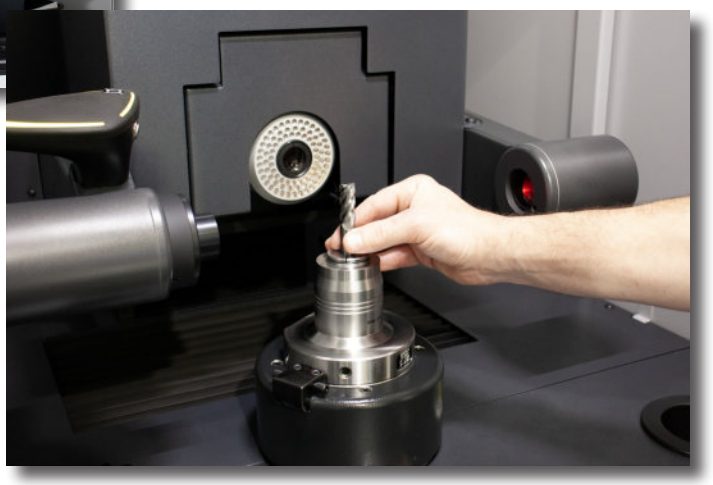
continued →

Series 630RA *(continued)*

.7500" - 1.000"
(19.050mm - 25.400mm)

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
20997	.7500	3/4"	19.050	3/4"	6"	3"	.015"	249.47	238.62	227.78	216.93
21007	.7500	3/4"	19.050	3/4"	6"	3"	.020"	249.47	238.62	227.78	216.93
21017	.7500	3/4"	19.050	3/4"	6"	3"	.030"	249.47	238.62	227.78	216.93
21027	.7500	3/4"	19.050	3/4"	6"	3"	.045"	249.47	238.62	227.78	216.93
21037	.7500	3/4"	19.050	3/4"	6"	3"	.060"	249.47	238.62	227.78	216.93
21047	.7500	3/4"	19.050	3/4"	6"	3"	.090"	249.47	238.62	227.78	216.93
21057	.7500	3/4"	19.050	3/4"	6"	3"	.125"	249.47	238.62	227.78	216.93
21147	.7500	3/4"	19.050	3/4"	6"	3"	.250"	249.47	238.62	227.78	216.93
21067	1.000	1"	25.400	1"	6"	3"	.015"	414.81	396.77	378.74	360.70
21077	1.000	1"	25.400	1"	6"	3"	.020"	414.81	396.77	378.74	360.70
21087	1.000	1"	25.400	1"	6"	3"	.030"	414.81	396.77	378.74	360.70
21097	1.000	1"	25.400	1"	6"	3"	.045"	414.81	396.77	378.74	360.70
21107	1.000	1"	25.400	1"	6"	3"	.060"	414.81	396.77	378.74	360.70
21117	1.000	1"	25.400	1"	6"	3"	.090"	414.81	396.77	378.74	360.70
21127	1.000	1"	25.400	1"	6"	3"	.125"	414.81	396.77	378.74	360.70
21137	1.000	1"	25.400	1"	6"	3"	.250"	414.81	396.77	378.74	360.70





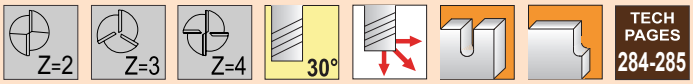
MATERIAL HARDNESS (Rc)
70
35
0

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)

Series 720M, 723M, 730M, 740M, 743M, 750M



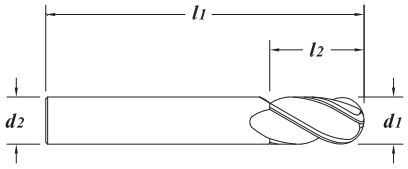
TECH PAGES 284-285

.1181" - .3150"
(3.000mm - 8.000mm)

Extra Length - Ball End

Solid submicron grain carbide end mill - center cutting
Extended reach
Can be modified with a neck within 48 hours
Extremely versatile
TiCN Coating - page 251
TiALN Coating - page 252
Stub Length - page 216
Standard length - page 230





(720M/740M) 2 Flute EDP#	(723M/743M) 3 Flute EDP#	(730M/750M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
97010	98010	99010	.1181		3.000	3.0	50	16	15.43	14.76	14.09	13.42
97020	98020	99020	.1181		3.000	3.0	75	20	25.42	24.31	23.21	22.10
97030	98030	99030	.1181		3.000	3.0	75	25	25.42	24.31	23.21	22.10
43010	55510	44010	.1250	1/8"	3.175	1/8"	2"	5/8"	15.65	14.97	14.29	13.61
43020	55520	44020	.1250	1/8"	3.175	1/8"	3"	3/4"	24.15	23.10	22.05	21.00
43030	55530	44030	.1250	1/8"	3.175	1/8"	3"	1"	24.15	23.10	22.05	21.00
97040	98040	99040	.1575		4.000	4.0	50	16	16.09	15.39	14.69	13.99
97050	98050	99050	.1575		4.000	4.0	75	20	25.96	24.83	23.70	22.57
97060	98060	99060	.1575		4.000	4.0	75	25	25.96	24.83	23.70	22.57
43040	55540	44040	.1875	3/16"	4.763	3/16"	3"	1"	26.63	25.48	24.32	23.16
43050	55550	44050	.1875	3/16"	4.763	3/16"	3"	1-1/8"	26.63	25.48	24.32	23.16
43060	55560	44060	.1875	3/16"	4.763	3/16"	4"	1"	28.67	27.42	26.18	24.93
97080	98080	99080	.1969		5.000	5.0	75	20	28.04	26.82	25.60	24.38
97090	98090	99090	.1969		5.000	5.0	75	25	28.04	26.82	25.60	24.38
97100	98100	99100	.2362		6.000	6.0	75	25	32.45	31.04	29.63	28.22
97110	98110	99110	.2362		6.000	6.0	100	25	34.16	32.67	31.19	29.70
97120	98120	99120	.2362		6.000	6.0	100	32	34.16	32.67	31.19	29.70
97130	98130	99130	.2362		6.000	6.0	150	38	44.39	42.46	40.53	38.60
43070	55570	44070	.2500	1/4"	6.350	1/4"	3"	1"	30.83	29.49	28.15	26.81
43080	55580	44080	.2500	1/4"	6.350	1/4"	4"	1"	32.43	31.02	29.61	28.20
43090	55590	44090	.2500	1/4"	6.350	1/4"	4"	1-1/2"	32.43	31.02	29.61	28.20
43100	55600	44100	.2500	1/4"	6.350	1/4"	6"	1-1/2"	42.17	40.34	38.50	36.67
43110	55610	44110	.3125	5/16"	7.938	5/16"	3"	1"	38.09	36.43	34.78	33.12
43120	55620	44120	.3125	5/16"	7.938	5/16"	4"	1"	42.49	40.65	38.80	36.95
43130	55630	44130	.3125	5/16"	7.938	5/16"	4"	1-5/8"	42.49	40.65	38.80	36.95
43140	55640	44140	.3125	5/16"	7.938	5/16"	6"	1-1/2"	63.05	60.31	57.57	54.83
97140	98140	99140	.3150		8.000	8.0	75	25	40.09	38.35	36.60	34.86
97150	98150	99150	.3150		8.000	8.0	100	25	44.75	42.80	40.86	38.91
97160	98160	99160	.3150		8.000	8.0	100	41	44.75	42.80	40.86	38.91
97170	98170	99170	.3150		8.000	8.0	150	50	64.70	61.89	59.07	56.26

continued →

Series 720M, 723M, 730M, 740M, 743M, 750M *(continued)*

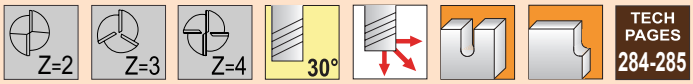
.3750" - 1.000"
(9.525mm - 25.400mm)

(720M/740M) 2 Flute EDP#	(723M/743M) 3 Flute EDP#	(730M/750M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
43150	55650	44150	.3750	3/8"	9.525	3/8"	3"	1"	42.85	40.99	39.12	37.26
43160	55660	44160	.3750	3/8"	9.525	3/8"	4"	1"	47.01	44.97	42.92	40.88
43170	55670	44170	.3750	3/8"	9.525	3/8"	4"	2"	47.01	44.97	42.92	40.88
43180	55680	44180	.3750	3/8"	9.525	3/8"	6"	1-1/2"	65.26	62.43	59.59	56.75
43190	55690	44190	.3750	3/8"	9.525	3/8"	6"	3"	65.26	62.43	59.59	56.75
97180	98180	99180	.3937		10.000	10.0	75	25	46.30	44.29	42.27	40.26
97190	98190	99190	.3937		10.000	10.0	100	25	60.69	58.05	55.41	52.77
97200	98200	99200	.3937		10.000	10.0	100	50	60.69	58.05	55.41	52.77
97210	98210	99210	.3937		10.000	10.0	150	38	78.06	74.67	71.27	67.88
97220	98220	99220	.3937		10.000	10.0	150	75	78.06	74.67	71.27	67.88
43200	55700	44200	.4375	7/16"	11.113	7/16"	4"	1"	64.72	61.91	59.09	56.28
43210	55710	44210	.4375	7/16"	11.113	7/16"	4"	2"	64.72	61.91	59.09	56.28
43220	-	44220	.4375	7/16"	11.113	7/16"	6"	1-1/2"	84.13	80.48	76.82	73.16
43230	-	44230	.4375	7/16"	11.113	7/16"	6"	3"	84.13	80.48	76.82	73.16
97230	98230	99230	.4724		12.000	12.0	100	25	69.67	66.64	63.61	60.58
97240	98240	99240	.4724		12.000	12.0	100	50	69.67	66.64	63.61	60.58
97250	98250	99250	.4724		12.000	12.0	150	50	93.62	89.55	85.48	81.41
97260	98260	99260	.4724		12.000	12.0	150	75	93.62	89.55	85.48	81.41
43240	55740	44240	.5000	1/2"	12.700	1/2"	4"	1"	66.11	63.24	60.36	57.49
43250	55750	44250	.5000	1/2"	12.700	1/2"	4"	2"	66.11	63.24	60.36	57.49
43260	55760	44260	.5000	1/2"	12.700	1/2"	6"	1-1/2"	93.64	89.57	85.50	81.43
43270	55770	44270	.5000	1/2"	12.700	1/2"	6"	3"	93.64	89.57	85.50	81.43
97270	98270	-	.5512		14.000	14.0	100	25	96.27	92.08	87.90	83.71
97280	-	-	.5512		14.000	14.0	100	50	96.27	92.08	87.90	83.71
97290	-	99290	.5512		14.000	14.0	150	50	130.67	124.99	119.31	113.63
97300	98300	-	.5512		14.000	14.0	150	75	130.67	124.99	119.31	113.63
43280	55780	44280	.5625	9/16"	14.288	9/16"	6"	2"	130.66	124.98	119.30	113.62
-	55790	44290	.5625	9/16"	14.288	9/16"	6"	3"	130.66	124.98	119.30	113.62
43300	55800	44300	.6250	5/8"	15.875	5/8"	6"	2"	137.70	131.71	125.73	119.74
43310	55810	44310	.6250	5/8"	15.875	5/8"	6"	3"	137.70	131.71	125.73	119.74
97310	98310	99310	.6299		16.000	16.0	150	50	137.68	131.69	125.71	119.72
97320	98320	99320	.6299		16.000	16.0	150	75	137.68	131.69	125.71	119.72
97340	98340	99340	.7087		18.000	18.0	150	75	211.80	202.59	193.38	184.17
43320	55820	44320	.7500	3/4"	19.050	3/4"	6"	2"	225.98	216.15	206.33	196.50
43330	55830	44330	.7500	3/4"	19.050	3/4"	6"	3"	225.98	216.15	206.33	196.50
97350	98350	99350	.7874		20.000	20.0	150	50	232.88	222.75	212.63	202.50
97360	98360	99360	.7874		20.000	20.0	150	75	232.88	222.75	212.63	202.50
-	98370	-	.9843		25.000	25.0	150	50	369.52	353.45	337.39	321.32
97380	98380	-	.9843		25.000	25.0	150	75	369.52	353.45	337.39	321.32
43340	55840	44340	1.000	1"	25.400	1"	6"	2"	384.26	367.55	350.85	334.14
43350	55850	44350	1.000	1"	25.400	1"	6"	3"	384.26	367.55	350.85	334.14

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)



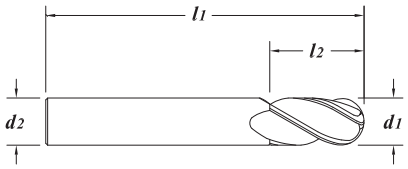
TECH PAGES 284-285

Extra Length - Ball End

TiCN Coating

Solid submicron grain carbide end mill - center cutting
Extended reach
Improved abrasion resistance and lubricity
Can be modified with a neck within 48 hours
Extremely versatile
Bright Finish - page 249
TiALN Coating - page 252
Standard length - page 233

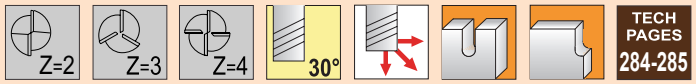




(720MC) 2 Flute EDP#	(723MC) 3 Flute EDP#	(730MC) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
43014	55514	44014	.1250	1/8"	3.175	1/8"	2"	5/8"	18.01	17.23	16.44	15.66
43024	55524	44024	.1250	1/8"	3.175	1/8"	3"	3/4"	27.05	25.87	24.70	23.52
43034	55534	44034	.1250	1/8"	3.175	1/8"	3"	1"	27.05	25.87	24.70	23.52
43044	55544	44044	.1875	3/16"	4.763	3/16"	3"	1"	29.95	28.64	27.34	26.04
43054	55554	44054	.1875	3/16"	4.763	3/16"	3"	1-1/8"	29.95	28.64	27.34	26.04
43064	55564	44064	.1875	3/16"	4.763	3/16"	4"	1"	32.53	31.12	29.70	28.29
43074	55574	44074	.2500	1/4"	6.350	1/4"	3"	1"	35.65	34.10	32.55	31.00
43084	55584	44084	.2500	1/4"	6.350	1/4"	4"	1"	37.65	36.01	34.38	32.74
43094	55594	44094	.2500	1/4"	6.350	1/4"	4"	1-1/2"	37.65	36.01	34.38	32.74
43104	55604	44104	.2500	1/4"	6.350	1/4"	6"	1-1/2"	51.16	48.94	46.71	44.49
43114	55614	44114	.3125	5/16"	7.938	5/16"	3"	1"	44.55	42.61	40.68	38.74
43124	55624	44124	.3125	5/16"	7.938	5/16"	4"	1"	50.52	48.32	46.13	43.93
43134	-	44134	.3125	5/16"	7.938	5/16"	4"	1-5/8"	50.52	48.32	46.13	43.93
43144	55644	44144	.3125	5/16"	7.938	5/16"	6"	1-1/2"	73.85	70.64	67.43	64.22
43154	55654	44154	.3750	3/8"	9.525	3/8"	3"	1"	49.29	47.15	45.00	42.86
43164	55664	44164	.3750	3/8"	9.525	3/8"	4"	1"	55.04	52.65	50.25	47.86
43174	55674	44174	.3750	3/8"	9.525	3/8"	4"	2"	55.04	52.65	50.25	47.86
43184	55684	44184	.3750	3/8"	9.525	3/8"	6"	1-1/2"	76.07	72.77	69.46	66.15
-	55694	44194	.3750	3/8"	9.525	3/8"	6"	3"	76.07	72.77	69.46	66.15
-	-	44204	.4375	7/16"	11.113	7/16"	4"	1"	74.39	71.16	67.92	64.69
-	-	44214	.4375	7/16"	11.113	7/16"	4"	2"	74.39	71.16	67.92	64.69
43224	55724	44224	.4375	7/16"	11.113	7/16"	6"	1-1/2"	97.80	93.54	89.29	85.04
-	-	44234	.4375	7/16"	11.113	7/16"	6"	3"	97.80	93.54	89.29	85.04
43244	55744	44244	.5000	1/2"	12.700	1/2"	4"	1"	75.77	72.48	69.18	65.89
43254	55754	44254	.5000	1/2"	12.700	1/2"	4"	2"	75.77	72.48	69.18	65.89
43264	55764	44264	.5000	1/2"	12.700	1/2"	6"	1-1/2"	107.32	102.65	97.99	93.32
43274	55774	44274	.5000	1/2"	12.700	1/2"	6"	3"	107.32	102.65	97.99	93.32
-	-	44284	.5625	9/16"	14.288	9/16"	6"	2"	147.57	141.15	134.74	128.32
-	-	44294	.5625	9/16"	14.288	9/16"	6"	3"	147.57	141.15	134.74	128.32
43304	55804	44304	.6250	5/8"	15.875	5/8"	6"	2"	154.56	147.84	141.12	134.40
-	-	44314	.6250	5/8"	15.875	5/8"	6"	3"	154.56	147.84	141.12	134.40
43324	55824	44324	.7500	3/4"	19.050	3/4"	6"	2"	245.24	234.58	223.91	213.25
43334	55834	44334	.7500	3/4"	19.050	3/4"	6"	3"	245.24	234.58	223.91	213.25
-	55844	44344	1.000	1"	25.400	1"	6"	2"	411.55	393.66	375.76	357.87
43354	55854	44354	1.000	1"	25.400	1"	6"	3"	411.55	393.66	375.76	357.87

Series 720MA, 723MA, 730MA, 740MA, 743MA, 750MA

.1181" - .3150"
(3.000mm - 8.000mm)



TECH PAGES 284-285

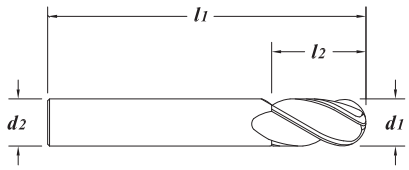
TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)

Extra Length - Ball End

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Extended reach
Dry or semi-dry machining
Can be modified with a neck within 48 hours
Extremely versatile
Bright Finish - page 249
TiCN Coating - page 251
Stub Length - page 217
Standard length - page 234





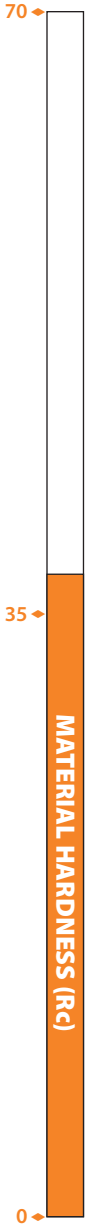
MATERIAL HARDNESS (Rc)
70
35
0

(720MA/740MA) 2 Flute EDP#	(723MA/743MA) 3 Flute EDP#	(730MA/750MA) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
97017	98017	99017	.1181		3.000	3.0	50	16	17.58	16.82	16.05	15.29
97027	98027	99027	.1181		3.000	3.0	75	20	28.11	26.88	25.66	24.44
97037	98037	99037	.1181		3.000	3.0	75	25	28.11	26.88	25.66	24.44
43017	55517	44017	.1250	1/8"	3.175	1/8"	2"	5/8"	18.32	17.52	16.73	15.93
43027	55527	44027	.1250	1/8"	3.175	1/8"	3"	3/4"	27.44	26.25	25.05	23.86
43037	55537	44037	.1250	1/8"	3.175	1/8"	3"	1"	27.44	26.25	25.05	23.86
97047	98047	99047	.1575		4.000	4.0	50	16	18.78	17.96	17.15	16.33
97057	98057	99057	.1575		4.000	4.0	75	20	30.15	28.84	27.53	26.22
97067	98067	99067	.1575		4.000	4.0	75	25	30.15	28.84	27.53	26.22
43047	55547	44047	.1875	3/16"	4.763	3/16"	3"	1"	30.82	29.48	28.14	26.80
43057	55557	44057	.1875	3/16"	4.763	3/16"	3"	1-1/8"	30.82	29.48	28.14	26.80
43067	55567	44067	.1875	3/16"	4.763	3/16"	4"	1"	33.55	32.09	30.63	29.17
97087	98087	99087	.1969		5.000	5.0	75	20	33.58	32.12	30.66	29.20
97097	98097	99097	.1969		5.000	5.0	75	25	33.58	32.12	30.66	29.20
97107	98107	99107	.2362		6.000	6.0	75	25	38.00	36.34	34.69	33.04
97117	98117	99117	.2362		6.000	6.0	100	25	40.65	38.89	37.12	35.35
97127	98127	99127	.2362		6.000	6.0	100	32	40.65	38.89	37.12	35.35
97137	98137	99137	.2362		6.000	6.0	150	38	53.56	51.23	48.90	46.57
43077	55577	44077	.2500	1/4"	6.350	1/4"	3"	1"	36.40	34.82	33.23	31.65
43087	55587	44087	.2500	1/4"	6.350	1/4"	4"	1"	38.96	37.27	35.57	33.88
43097	55597	44097	.2500	1/4"	6.350	1/4"	4"	1-1/2"	38.96	37.27	35.57	33.88
43107	55607	44107	.2500	1/4"	6.350	1/4"	6"	1-1/2"	51.35	49.12	46.88	44.65
43117	-	44117	.3125	5/16"	7.938	5/16"	3"	1"	46.41	44.40	42.38	40.36
43127	55627	44127	.3125	5/16"	7.938	5/16"	4"	1"	53.06	50.75	48.45	46.14
43137	55637	44137	.3125	5/16"	7.938	5/16"	4"	1-5/8"	53.06	50.75	48.45	46.14
43147	55647	44147	.3125	5/16"	7.938	5/16"	6"	1-1/2"	77.50	74.13	70.76	67.39
97147	98147	99147	.3150		8.000	8.0	75	25	48.39	46.29	44.18	42.08
97157	98157	99157	.3150		8.000	8.0	100	25	55.28	52.88	50.47	48.07
97167	98167	99167	.3150		8.000	8.0	100	41	55.28	52.88	50.47	48.07
97177	98177	99177	.3150		8.000	8.0	150	50	79.15	75.71	72.27	68.83

GARR TOOL®

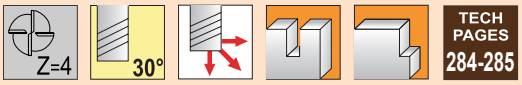
† Metric equivalents are for reference only

(720MA/740MA) 2 Flute EDP#	(723MA/743MA) 3 Flute EDP#	(730MA/750MA) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
43157	55657	44157	.3750	3/8"	9.525	3/8"	3"	1"	51.16	48.94	46.71	44.49
43167	55667	44167	.3750	3/8"	9.525	3/8"	4"	1"	57.58	55.08	52.57	50.07
43177	55677	44177	.3750	3/8"	9.525	3/8"	4"	2"	57.58	55.08	52.57	50.07
43187	55687	44187	.3750	3/8"	9.525	3/8"	6"	1-1/2"	79.72	76.25	72.79	69.32
43197	55697	44197	.3750	3/8"	9.525	3/8"	6"	3"	79.72	76.25	72.79	69.32
97187	98187	99187	.3937		10.000	10.0	75	25	55.78	53.35	50.93	48.50
97197	98197	99197	.3937		10.000	10.0	100	25	72.90	69.73	66.56	63.39
97207	98207	99207	.3937		10.000	10.0	100	50	72.90	69.73	66.56	63.39
97217	98217	99217	.3937		10.000	10.0	150	38	95.24	91.10	86.96	82.82
97227	98227	99227	.3937		10.000	10.0	150	75	95.24	91.10	86.96	82.82
43207	-	44207	.4375	7/16"	11.113	7/16"	4"	1"	77.00	73.66	70.31	66.96
-	55717	44217	.4375	7/16"	11.113	7/16"	4"	2"	77.00	73.66	70.31	66.96
43227	-	44227	.4375	7/16"	11.113	7/16"	6"	1-1/2"	101.35	96.94	92.54	88.13
43237	55737	44237	.4375	7/16"	11.113	7/16"	6"	3"	101.35	96.94	92.54	88.13
97237	-	99237	.4724		12.000	12.0	100	25	81.89	78.33	74.77	71.21
97247	98247	99247	.4724		12.000	12.0	100	50	81.89	78.33	74.77	71.21
97257	98257	99257	.4724		12.000	12.0	150	50	110.84	106.02	101.20	96.38
97267	98267	99267	.4724		12.000	12.0	150	75	110.84	106.02	101.20	96.38
43247	55747	44247	.5000	1/2"	12.700	1/2"	4"	1"	78.37	74.97	71.56	68.15
43257	55757	44257	.5000	1/2"	12.700	1/2"	4"	2"	78.37	74.97	71.56	68.15
43267	55767	44267	.5000	1/2"	12.700	1/2"	6"	1-1/2"	110.84	106.02	101.20	96.38
43277	55777	44277	.5000	1/2"	12.700	1/2"	6"	3"	110.84	106.02	101.20	96.38
97277	-	99277	.5512		14.000	14.0	100	25	109.96	105.18	100.40	95.62
-	-	99287	.5512		14.000	14.0	100	50	109.96	105.18	100.40	95.62
97297	-	99297	.5512		14.000	14.0	150	50	150.97	144.41	137.84	131.28
-	-	99307	.5512		14.000	14.0	150	75	150.97	144.41	137.84	131.28
43287	-	44287	.5625	9/16"	14.288	9/16"	6"	2"	150.97	144.41	137.84	131.28
43297	-	44297	.5625	9/16"	14.288	9/16"	6"	3"	150.97	144.41	137.84	131.28
43307	55807	44307	.6250	5/8"	15.875	5/8"	6"	2"	157.99	151.12	144.25	137.38
43317	55817	44317	.6250	5/8"	15.875	5/8"	6"	3"	157.99	151.12	144.25	137.38
97317	98317	99317	.6299		16.000	16.0	150	50	157.99	151.12	144.25	137.38
97327	98327	99327	.6299		16.000	16.0	150	75	157.99	151.12	144.25	137.38
-	98337	99337	.7087		18.000	18.0	150	50	235.32	225.09	214.86	204.63
-	-	99347	.7087		18.000	18.0	150	75	235.32	225.09	214.86	204.63
43327	55827	44327	.7500	3/4"	19.050	3/4"	6"	2"	249.47	238.62	227.78	216.93
43337	55837	44337	.7500	3/4"	19.050	3/4"	6"	3"	249.47	238.62	227.78	216.93
97357	98357	99357	.7874		20.000	20.0	150	50	263.43	251.98	240.52	229.07
97367	98367	99367	.7874		20.000	20.0	150	75	263.43	251.98	240.52	229.07
-	-	99377	.9843		25.000	25.0	150	50	400.04	382.65	365.25	347.86
-	-	99387	.9843		25.000	25.0	150	75	400.04	382.65	365.25	347.86
-	55847	44347	1.000	1"	25.400	1"	6"	2"	414.81	396.77	378.74	360.70
43357	55857	44357	1.000	1"	25.400	1"	6"	3"	414.81	396.77	378.74	360.70



Series 435M, 435MA

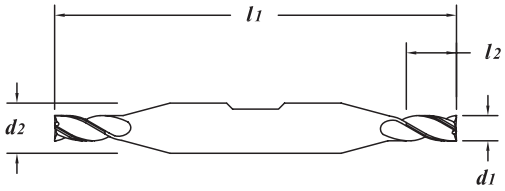
TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	-.0001" -.0005" (-.0025 - .0127mm)



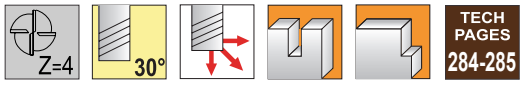
Standard Length - Double End - 3/8" Shank



Solid submicron grain carbide end mill - center cutting
Common 3/8" diameter shank with weldon flat
For strength and adaptability when converting from high speed steel



(435M) EDP#	Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
34010	.1250	1/8"	3.175	3/8"	3"	3/8"	39.46	37.74	36.03	34.31
34020	.1562	5/32"	3.967	3/8"	3"	7/16"	39.46	37.74	36.03	34.31
34030	.1875	3/16"	4.763	3/8"	3"	1/2"	39.46	37.74	36.03	34.31
34050	.2500	1/4"	6.350	3/8"	3"	5/8"	39.46	37.74	36.03	34.31
34060	.2812	9/32"	7.142	3/8"	4"	11/16"	45.34	43.37	41.40	39.43
34070	.3125	5/16"	7.938	3/8"	4"	3/4"	45.34	43.37	41.40	39.43
34090	.3750	3/8"	9.525	3/8"	4"	3/4"	45.34	43.37	41.40	39.43

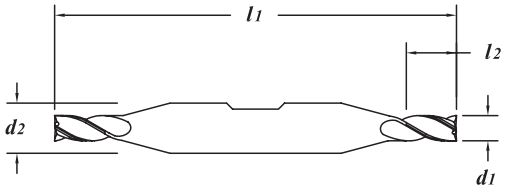




Standard Length - Double End - 3/8" Shank

TiALN Coated

Solid submicron grain carbide end mill - center cutting
Common 3/8" diameter shank with weldon flat
For strength and adaptability when converting from high speed steel
Dry or semi-dry machining

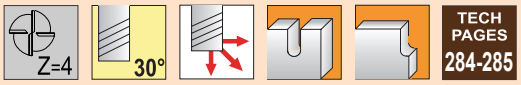


(435MA) EDP#	Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
34017	.1250	1/8"	3.175	3/8"	3"	3/8"	51.93	49.68	47.42	45.16
34027	.1562	5/32"	3.967	3/8"	3"	7/16"	51.93	49.68	47.42	45.16
34037	.1875	3/16"	4.763	3/8"	3"	1/2"	51.93	49.68	47.42	45.16
34047	.2188	7/32"	5.558	3/8"	3"	9/16"	51.93	49.68	47.42	45.16
34057	.2500	1/4"	6.350	3/8"	3"	5/8"	51.93	49.68	47.42	45.16
34067	.2812	9/32"	7.142	3/8"	4"	11/16"	61.17	58.51	55.85	53.19
34077	.3125	5/16"	7.938	3/8"	4"	3/4"	61.17	58.51	55.85	53.19
34097	.3750	3/8"	9.525	3/8"	4"	3/4"	61.17	58.51	55.85	53.19

† *Metric equivalents are for reference only*

TOLERANCES

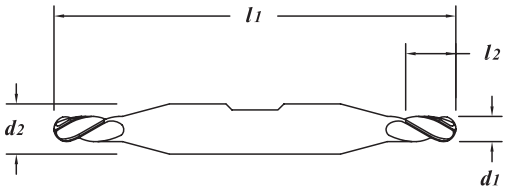
d_1	+.000" –.002" (+.000 –.050mm)
d_2	-.0001" -.0005" (-.0025 - .0127mm)
ball radius	+.000" –.001" (+.000 –.025mm)



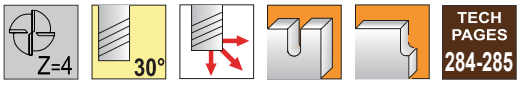
Standard Length - Double End - 3/8" Shank - Ball End



Solid submicron grain carbide end mill - center cutting
Common 3/8" diameter shank with weldon flat
For strength and adaptability when converting from high speed steel



(535M) EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
36010	.1250	1/8"	3.175	3/8"	3"	3/8"	46.41	44.40	42.38	40.36
36030	.1875	3/16"	4.763	3/8"	3"	1/2"	46.41	44.40	42.38	40.36

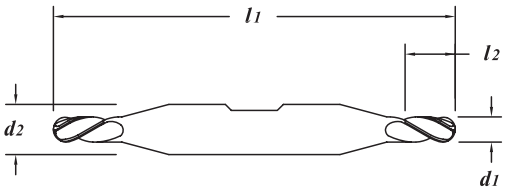


Standard Length - Double End - 3/8" Shank - Ball End



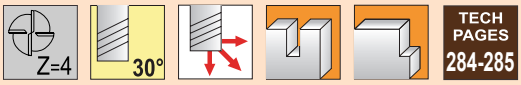
TiALN Coated

Solid submicron grain carbide end mill - center cutting
Common 3/8" diameter shank with weldon flat
For strength and adaptability when converting from high speed steel
Dry or semi-dry machining



(535MA) EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
36017	.1250	1/8"	3.175	3/8"	3"	3/8"	58.88	56.32	53.76	51.20
36027	.1562	5/32"	3.967	3/8"	3"	7/16"	58.88	56.32	53.76	51.20
36037	.1875	3/16"	4.763	3/8"	3"	1/2"	58.88	56.32	53.76	51.20
36057	.2500	1/4"	6.350	3/8"	3"	5/8"	58.88	56.32	53.76	51.20
36077	.3125	5/16"	7.938	3/8"	4"	3/4"	69.15	66.14	63.14	60.13

Series 430M



TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6

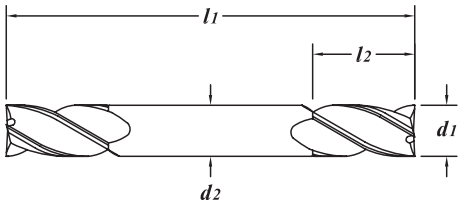
Standard Length - Double End

Solid submicron grain carbide end mill - center cutting

Extremely versatile

TiALN Coating - page 257





70

35

0

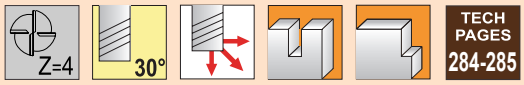
MATERIAL HARDNESS (Rc)

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
30030	.0625	1/16"	1.588	1/8"	2"	3/16"	23.89	22.85	21.81	20.77
30040	.0938	3/32"	2.383	1/8"	2"	1/4"	23.89	22.85	21.81	20.77
30050	.1250	1/8"	3.175	1/8"	2"	3/8"	17.26	16.51	15.76	15.01
30060	.1562	5/32"	3.967	3/16"	2-1/2"	7/16"	24.66	23.58	22.51	21.44
30070	.1875	3/16"	4.763	3/16"	2-1/2"	1/2"	20.63	19.73	18.84	17.94
30090	.2500	1/4"	6.350	1/4"	2-1/2"	5/8"	25.02	23.94	22.85	21.76
30100	.3125	5/16"	7.938	5/16"	3-1/2"	3/4"	32.66	31.24	29.82	28.40
30110	.3750	3/8"	9.525	3/8"	3-1/2"	3/4"	42.18	40.35	38.51	36.68
30130	.5000	1/2"	12.700	1/2"	4"	1"	67.36	64.43	61.50	58.57

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6



TECH PAGES 284-285

Standard Length - Double End

TiALN Coating

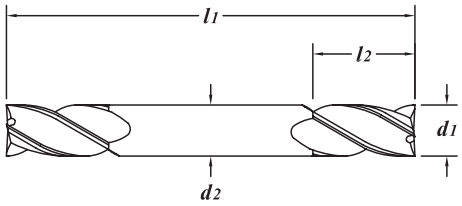
Solid submicron grain carbide end mill - center cutting

Dry or semi-dry machining

Extremely versatile

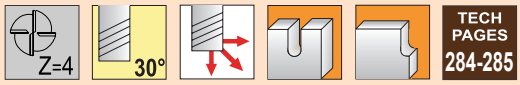
Bright Finish - page 256





(430MA/450MA) EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
30017	.0312	1/32"	0.792	1/8"	2"	3/32"	27.92	26.71	25.49	24.28
30027	.0469	3/64"	1.191	1/8"	2"	1/8"	27.92	26.71	25.49	24.28
30037	.0625	1/16"	1.588	1/8"	2"	3/16"	27.92	26.71	25.49	24.28
30047	.0938	3/32"	2.383	1/8"	2"	1/4"	27.92	26.71	25.49	24.28
30057	.1250	1/8"	3.175	1/8"	2"	3/8"	21.30	20.37	19.45	18.52
30067	.1562	5/32"	3.967	3/16"	2-1/2"	7/16"	30.94	29.59	28.25	26.90
30077	.1875	3/16"	4.763	3/16"	2-1/2"	1/2"	26.93	25.76	24.59	23.42
30087	.2188	7/32"	5.558	1/4"	2-1/2"	9/16"	35.80	34.24	32.69	31.13
30607	.2362		6.000	6.0	65	16	34.65	33.14	31.64	30.13
30097	.2500	1/4"	6.350	1/4"	2-1/2"	5/8"	33.37	31.92	30.47	29.02
30107	.3125	5/16"	7.938	5/16"	3-1/2"	3/4"	48.50	46.39	44.28	42.17
30117	.3750	3/8"	9.525	3/8"	3-1/2"	3/4"	58.04	55.52	52.99	50.47
30127	.4375	7/16"	11.113	7/16"	4"	7/8"	78.30	74.90	71.49	68.09
30137	.5000	1/2"	12.700	1/2"	4"	1"	85.71	81.98	78.26	74.53

Series 530M



TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)

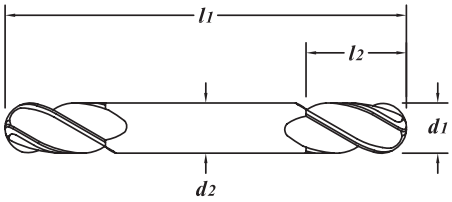
Standard Length - Double End - Ball End

Solid submicron grain carbide end mill - center cutting

Extremely versatile

TiALN Coating - page 259





MATERIAL HARDNESS (Rc)

70

35

0

EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
32050	.1250	1/8"	3.175	1/8"	2"	3/8"	19.83	18.96	18.10	17.24
32070	.1875	3/16"	4.763	3/16"	2-1/2"	1/2"	24.29	23.23	22.18	21.12
32090	.2500	1/4"	6.350	1/4"	2-1/2"	5/8"	28.82	27.57	26.31	25.06
32110	.3750	3/8"	9.525	3/8"	3-1/2"	3/4"	48.54	46.43	44.32	42.21
32130	.5000	1/2"	12.700	1/2"	4"	1"	77.46	74.10	70.73	67.36

GARR TOOL®

† *Metric equivalents are for reference only*

TOLERANCES	
d_1	+.000" –.002" (+.000 –.050mm)
d_2	h6
ball radius	+.000" –.001" (+.000 –.025mm)







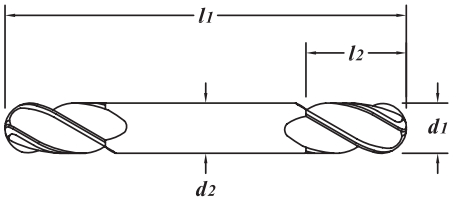

TECH PAGES 284-285

Standard Length - Double End - Ball End

TiALN Coating

Solid submicron grain carbide end mill - center cutting
Dry or semi-dry machining
Extremely versatile
Bright Finish - page 258

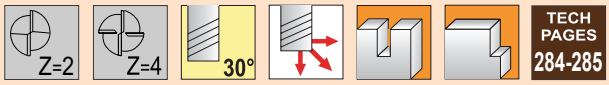




EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
32017	.0312	1/32"	0.792	1/8"	2"	3/32"	31.52	30.15	28.78	27.41
32027	.0469	3/64"	1.191	1/8"	2"	1/8"	31.52	30.15	28.78	27.41
32037	.0625	1/16"	1.588	1/8"	2"	3/16"	31.52	30.15	28.78	27.41
32047	.0938	3/32"	2.383	1/8"	2"	1/4"	31.52	30.15	28.78	27.41
32057	.1250	1/8"	3.175	1/8"	2"	3/8"	23.87	22.84	21.80	20.76
32067	.1562	5/32"	3.967	3/16"	2-1/2"	7/16"	34.65	33.14	31.64	30.13
32077	.1875	3/16"	4.763	3/16"	2-1/2"	1/2"	30.58	29.25	27.92	26.59
32097	.2500	1/4"	6.350	1/4"	2-1/2"	5/8"	37.16	35.54	33.93	32.31
32117	.3750	3/8"	9.525	3/8"	3-1/2"	3/4"	64.38	61.58	58.78	55.98
32137	.5000	1/2"	12.700	1/2"	4"	1"	95.82	91.65	87.49	83.32

Series 280M, 290M, 380M, 390M

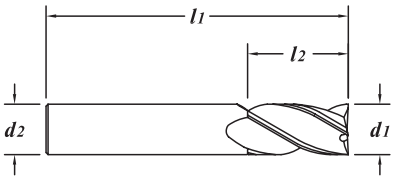
TOLERANCES	
d_1	+.001" –.000" (+.025 –.000mm)
d_2	h6



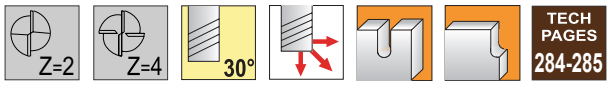
Standard Length - N/C Tolerance - Square End



Solid submicron grain carbide end mill - center cutting
Excellent for keyways
Tight tolerance for precision machining
For use when matching tools are necessary



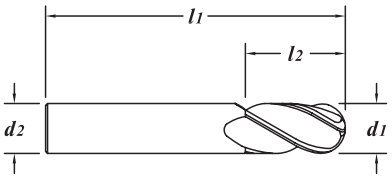
(280M) 2 Flute EDP#	(290M) 4 Flute EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
25010	26010	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	14.74	14.10	13.46	12.82
25020	26020	.0938	3/32"	2.383	1/8"	1-1/2"	5/16"	13.97	13.37	12.76	12.15
25030	26030	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	13.56	12.97	12.38	11.79
25040	26040	.1875	3/16"	4.763	3/16"	2"	9/16"	18.03	17.25	16.46	15.68
25050	* 26050	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	20.73	19.83	18.93	18.03
* 25070	* 26070	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	38.10	36.44	34.79	33.13
* 25090	* 26090	.5000	1/2"	12.700	1/2"	3"	1"	61.03	58.38	55.72	53.07
-	* 26100	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	108.64	103.92	99.19	94.47



Standard Length - N/C Tolerance - Ball End



Solid submicron grain carbide end mill - center cutting
Excellent for keyways
Tight tolerance for precision machining
For use when matching tools are necessary
Ball radius tolerance +.0005" –.0000" (+.0127mm –.0000mm)



(380M) 2 Flute EDP#	(390M) 4 Flute EDP#	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
27010	28010	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	16.97	16.24	15.50	14.76
27030	28030	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	15.59	14.92	14.24	13.56
-	28040	.1875	3/16"	4.763	3/16"	2"	9/16"	20.73	19.83	18.93	18.03
27050	28050	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	23.87	22.84	21.80	20.76
-	28060	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	34.12	32.64	31.15	29.67
* 27070	* 28070	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	43.84	41.93	40.03	38.12
-	* 28090	.5000	1/2"	12.700	1/2"	3"	1"	70.21	67.16	64.10	61.05
-	* 28100	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	124.98	119.55	114.11	108.68

MATERIAL HARDNESS (Rc)
70
35
0

* - Tools with weldon flats

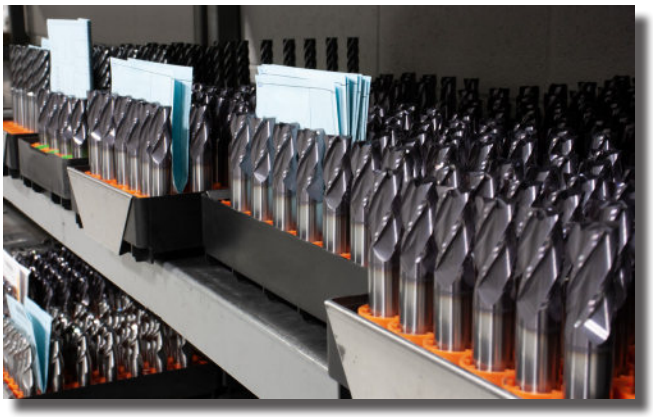
GARR TOOL®

† *Metric equivalents are for reference only*





Tool Packaging



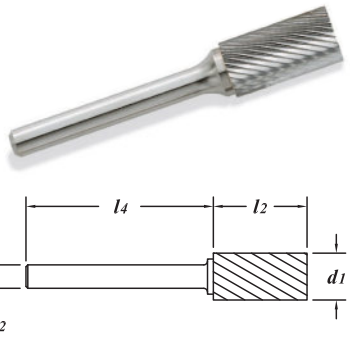




SA (1/4" Steel Shank)

Carbide Rotary Files - Cylindrical Shape

Submicron Grain Carbide
A - Aluminum Cut
D - Double Cut
* - Solid Carbide



EDP#	TOOL #	d1 † Diameter Decimal	d1 † Diameter	d1 † Diameter Metric	d2 Shank Diameter	l2 Flute Length	l4 Shank Length	1-11	12-24	25-49	50-100
60010	* SA-14	.1875	3/16"	4.763	1/4"	5/8"	1-3/8"	9.94	9.50	9.07	8.64
60012	* SA-14D	.1875	3/16"	4.763	1/4"	5/8"	1-3/8"	9.94	9.50	9.07	8.64
60020	* SA-1	.2500	1/4"	6.350	1/4"	5/8"	1-3/8"	8.84	8.46	8.07	7.69
60021	* SA-1A	.2500	1/4"	6.350	1/4"	5/8"	1-3/8"	11.10	10.62	10.13	9.65
60022	* SA-1D	.2500	1/4"	6.350	1/4"	5/8"	1-3/8"	8.84	8.46	8.07	7.69
60030	SA-2	.3125	5/16"	7.938	1/4"	3/4"	1-3/4"	12.35	11.81	11.28	10.74
60032	SA-2D	.3125	5/16"	7.938	1/4"	3/4"	1-3/4"	12.35	11.81	11.28	10.74
60040	SA-3	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	13.32	12.74	12.16	11.58
60041	SA-3A	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	17.92	17.14	16.36	15.58
60042	SA-3D	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	13.32	12.74	12.16	11.58
60050	SA-4	.4375	7/16"	11.113	1/4"	1"	1-3/4"	18.38	17.58	16.78	15.98
60052	SA-4D	.4375	7/16"	11.113	1/4"	1"	1-3/4"	18.38	17.58	16.78	15.98
60060	SA-5	.5000	1/2"	12.700	1/4"	1"	1-3/4"	19.62	18.77	17.91	17.06
60061	SA-5A	.5000	1/2"	12.700	1/4"	1"	1-3/4"	25.42	24.31	23.21	22.10
60062	SA-5D	.5000	1/2"	12.700	1/4"	1"	1-3/4"	19.62	18.77	17.91	17.06
60070	SA-6	.6250	5/8"	15.875	1/4"	1"	1-3/4"	23.76	22.73	21.69	20.66
60071	SA-6A	.6250	5/8"	15.875	1/4"	1"	1-3/4"	39.82	38.09	36.36	34.63
60072	SA-6D	.6250	5/8"	15.875	1/4"	1"	1-3/4"	23.76	22.73	21.69	20.66
60080	SA-7	.7500	3/4"	19.050	1/4"	1"	1-3/4"	37.62	35.98	34.35	32.71
60081	SA-7A	.7500	3/4"	19.050	1/4"	1"	1-3/4"	45.13	43.16	41.20	39.24
60082	SA-7D	.7500	3/4"	19.050	1/4"	1"	1-3/4"	37.62	35.98	34.35	32.71
60090	SA-9	1.000	1"	25.400	1/4"	1"	1-3/4"	51.31	49.08	46.85	44.62
60091	SA-9A	1.000	1"	25.400	1/4"	1"	1-3/4"	61.54	58.86	56.19	53.51
60092	SA-9D	1.000	1"	25.400	1/4"	1"	1-3/4"	51.31	49.08	46.85	44.62

Basic Rotary File Cut Styles Available



Standard Cut | Chipbreaker Cut | Double Cut (D) | Diamond Cut (add 20%) | Aluminum Cut (A) | End Cut (add 10%)

Double Cut and Aluminum Cut rotary files are in stock where indicated by (D) and (A) in the catalog tables.

GARR TOOL®

† *Metric equivalents are for reference only*

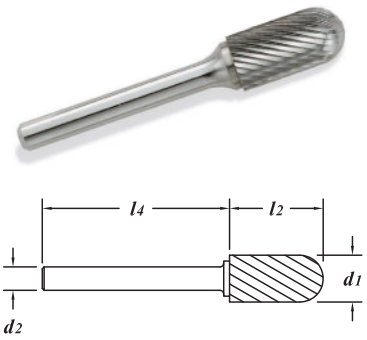
Carbide Rotary Files - Cylindrical-Radius Shape

Submicron Grain Carbide

A - Aluminum Cut

D - Double Cut

* - Solid Carbide



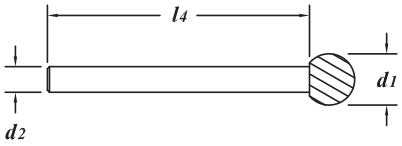
EDP#	TOOL #	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_2 Flute Length	l_4 Shank Length	1-11	12-24	25-49	50-100
61010	* SC-14	.1875	3/16"	4.763	1/4"	5/8"	1-3/8"	11.25	10.76	10.27	9.78
61012	* SC-14D	.1875	3/16"	4.763	1/4"	5/8"	1-3/8"	11.25	10.76	10.27	9.78
61020	* SC-1	.2500	1/4"	6.350	1/4"	5/8"	1-3/8"	10.58	10.12	9.66	9.20
61021	* SC-1A	.2500	1/4"	6.350	1/4"	5/8"	1-3/8"	13.97	13.37	12.76	12.15
61022	* SC-1D	.2500	1/4"	6.350	1/4"	5/8"	1-3/8"	10.58	10.12	9.66	9.20
61030	SC-2	.3125	5/16"	7.938	1/4"	3/4"	1-3/4"	12.35	11.81	11.28	10.74
61032	SC-2D	.3125	5/16"	7.938	1/4"	3/4"	1-3/4"	12.35	11.81	11.28	10.74
61040	SC-3	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	14.42	13.79	13.17	12.54
61041	SC-3A	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	25.00	23.91	22.83	21.74
61042	SC-3D	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	14.42	13.79	13.17	12.54
61050	SC-4	.4375	7/16"	11.113	1/4"	1"	1-3/4"	20.86	19.95	19.05	18.14
61052	SC-4D	.4375	7/16"	11.113	1/4"	1"	1-3/4"	20.86	19.95	19.05	18.14
61060	SC-5	.5000	1/2"	12.700	1/4"	1"	1-3/4"	21.62	20.68	19.74	18.80
61061	SC-5A	.5000	1/2"	12.700	1/4"	1"	1-3/4"	32.87	31.44	30.01	28.58
61062	SC-5D	.5000	1/2"	12.700	1/4"	1"	1-3/4"	21.62	20.68	19.74	18.80
61070	SC-6	.6250	5/8"	15.875	1/4"	1"	1-3/4"	28.88	27.62	26.37	25.11
61071	SC-6A	.6250	5/8"	15.875	1/4"	1"	1-3/4"	45.02	43.07	41.11	39.15
61072	SC-6D	.6250	5/8"	15.875	1/4"	1"	1-3/4"	28.88	27.62	26.37	25.11
61080	SC-7	.7500	3/4"	19.050	1/4"	1"	1-3/4"	42.49	40.65	38.80	36.95
61081	SC-7A	.7500	3/4"	19.050	1/4"	1"	1-3/4"	62.50	59.79	57.07	54.35
61082	SC-7D	.7500	3/4"	19.050	1/4"	1"	1-3/4"	42.49	40.65	38.80	36.95

SD (1/4" Steel Shank)

Carbide Rotary Files - Ball Shape

Submicron Grain Carbide
A - Aluminum Cut
D - Double Cut
* - Solid Carbide





EDP#	TOOL #	d1 † Diameter Decimal	Diameter	Metric	d2 Shank Diameter	l2 Flute Length	l4 Shank Length	1-11	12-24	25-49	50-100
62010	* SD-14	.1875	3/16"	4.763	1/4"	-	2"	11.25	10.76	10.27	9.78
62012	* SD-14D	.1875	3/16"	4.763	1/4"	-	2"	11.25	10.76	10.27	9.78
62020	* SD-1	.2500	1/4"	6.350	1/4"	-	2"	11.25	10.76	10.27	9.78
62021	* SD-1A	.2500	1/4"	6.350	1/4"	-	2"	17.83	17.05	16.28	15.50
62022	* SD-1D	.2500	1/4"	6.350	1/4"	-	2"	11.25	10.76	10.27	9.78
62030	SD-2	.3125	5/16"	7.938	1/4"	-	1-3/4"	10.58	10.12	9.66	9.20
62032	SD-2D	.3125	5/16"	7.938	1/4"	-	1-3/4"	10.58	10.12	9.66	9.20
62040	SD-3	.3750	3/8"	9.525	1/4"	-	1-3/4"	11.48	10.98	10.48	9.98
62041	SD-3A	.3750	3/8"	9.525	1/4"	-	1-3/4"	18.57	17.77	16.96	16.15
62042	SD-3D	.3750	3/8"	9.525	1/4"	-	1-3/4"	11.48	10.98	10.48	9.98
62050	SD-4	.4375	7/16"	11.113	1/4"	-	1-3/4"	16.68	15.95	15.23	14.50
62052	SD-4D	.4375	7/16"	11.113	1/4"	-	1-3/4"	16.68	15.95	15.23	14.50
62060	SD-5	.5000	1/2"	12.700	1/4"	-	1-3/4"	17.22	16.47	15.72	14.97
62061	SD-5A	.5000	1/2"	12.700	1/4"	-	1-3/4"	23.01	22.01	21.01	20.01
62062	SD-5D	.5000	1/2"	12.700	1/4"	-	1-3/4"	17.22	16.47	15.72	14.97
62070	SD-6	.6250	5/8"	15.875	1/4"	-	1-3/4"	19.24	18.40	17.57	16.73
62071	SD-6A	.6250	5/8"	15.875	1/4"	-	1-3/4"	39.82	38.09	36.36	34.63
62072	SD-6D	.6250	5/8"	15.875	1/4"	-	1-3/4"	19.24	18.40	17.57	16.73
62080	SD-7	.7500	3/4"	19.050	1/4"	-	1-3/4"	27.40	26.21	25.02	23.83
62082	SD-7D	.7500	3/4"	19.050	1/4"	-	1-3/4"	27.40	26.21	25.02	23.83
62090	SD-9	1.000	1"	25.400	1/4"	-	1-3/4"	50.82	48.61	46.40	44.19
62092	SD-9D	1.000	1"	25.400	1/4"	-	1-3/4"	50.82	48.61	46.40	44.19

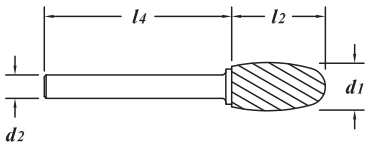
GARR TOOL®

† *Metric equivalents are for reference only*

Carbide Rotary Files - Egg Shape

Submicron Grain Carbide
A - Aluminum Cut
D - Double Cut
* - Solid Carbide



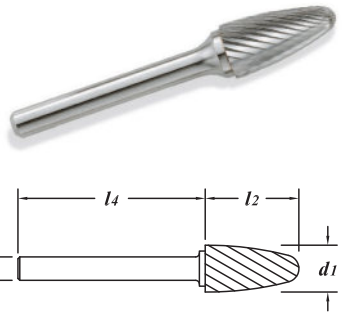


EDP#	TOOL #	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_2 Flute Length	l_4 Shank Length	1-11	12-24	25-49	50-100
63010	* SE-1	.2500	1/4"	6.350	1/4"	3/8"	2"	11.56	11.06	10.55	10.05
63012	* SE-1D	.2500	1/4"	6.350	1/4"	3/8"	2"	11.56	11.06	10.55	10.05
63020	SE-3	.3750	3/8"	9.525	1/4"	5/8"	1-3/4"	16.05	15.36	14.66	13.96
63021	SE-3A	.3750	3/8"	9.525	1/4"	5/8"	1-3/4"	23.26	22.25	21.24	20.23
63022	SE-3D	.3750	3/8"	9.525	1/4"	5/8"	1-3/4"	16.05	15.36	14.66	13.96
63030	SE-5	.5000	1/2"	12.700	1/4"	7/8"	1-3/4"	20.54	19.65	18.75	17.86
63031	SE-5A	.5000	1/2"	12.700	1/4"	7/8"	1-3/4"	33.40	31.94	30.49	29.04
63032	SE-5D	.5000	1/2"	12.700	1/4"	7/8"	1-3/4"	20.54	19.65	18.75	17.86
63040	SE-6	.6250	5/8"	15.875	1/4"	1"	1-3/4"	30.16	28.85	27.54	26.23
63041	SE-6A	.6250	5/8"	15.875	1/4"	1"	1-3/4"	49.55	47.40	45.24	43.09
63042	SE-6D	.6250	5/8"	15.875	1/4"	1"	1-3/4"	30.16	28.85	27.54	26.23
63050	SE-7	.7500	3/4"	19.050	1/4"	1"	1-3/4"	41.57	39.77	37.96	36.15
63052	SE-7D	.7500	3/4"	19.050	1/4"	1"	1-3/4"	41.57	39.77	37.96	36.15

SF (1/4" Steel Shank)

Carbide Rotary Files - Tree-Radius Shape

Submicron Grain Carbide
A - Aluminum Cut
D - Double Cut
* - Solid Carbide



EDP#	TOOL #	*d1* † Diameter Decimal	Diameter	Metric	*d2* Shank Diameter	*l2* Flute Length	*l4* Shank Length	1-11	12-24	25-49	50-100
64010	* SF-1	.2500	1/4"	6.350	1/4"	5/8"	2"	11.56	11.06	10.55	10.05
64011	* SF-1A	.2500	1/4"	6.350	1/4"	5/8"	2"	17.83	17.05	16.28	15.50
64012	* SF-1D	.2500	1/4"	6.350	1/4"	5/8"	2"	11.56	11.06	10.55	10.05
64020	SF-3	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	13.93	13.32	12.72	12.11
64021	SF-3A	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	22.46	21.48	20.51	19.53
64022	SF-3D	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	13.93	13.32	12.72	12.11
64030	SF-5	.5000	1/2"	12.700	1/4"	1"	1-3/4"	20.86	19.95	19.05	18.14
64031	SF-5A	.5000	1/2"	12.700	1/4"	1"	1-3/4"	31.79	30.40	29.02	27.64
64032	SF-5D	.5000	1/2"	12.700	1/4"	1"	1-3/4"	20.86	19.95	19.05	18.14
64040	SF-6	.6250	5/8"	15.875	1/4"	1"	1-3/4"	28.88	27.62	26.37	25.11
64041	SF-6A	.6250	5/8"	15.875	1/4"	1"	1-3/4"	44.19	42.27	40.35	38.43
64042	SF-6D	.6250	5/8"	15.875	1/4"	1"	1-3/4"	28.88	27.62	26.37	25.11
64050	SF-14	.7500	3/4"	19.050	1/4"	1-1/4"	1-3/4"	44.48	42.55	40.61	38.68
64052	SF-14D	.7500	3/4"	19.050	1/4"	1-1/4"	1-3/4"	44.48	42.55	40.61	38.68

† *Metric equivalents are for reference only*

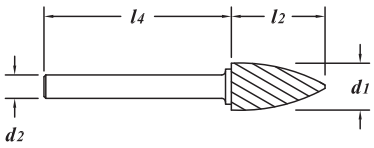
Carbide Rotary Files - Tree-Pointed Shape

Submicron Grain Carbide

D - Double Cut

* - Solid Carbide





EDP#	TOOL #	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_2 Flute Length	l_4 Shank Length	1-11	12-24	25-49	50-100
65010	* SG-1	.2500	1/4"	6.350	1/4"	5/8"	2"	11.56	11.06	10.55	10.05
65012	* SG-1D	.2500	1/4"	6.350	1/4"	5/8"	2"	11.56	11.06	10.55	10.05
65020	SG-3	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	14.86	14.21	13.57	12.92
65022	SG-3D	.3750	3/8"	9.525	1/4"	3/4"	1-3/4"	14.86	14.21	13.57	12.92
65030	SG-13	.5000	1/2"	12.700	1/4"	3/4"	1-3/4"	19.90	19.03	18.17	17.30
65032	SG-13D	.5000	1/2"	12.700	1/4"	3/4"	1-3/4"	19.90	19.03	18.17	17.30
65040	SG-5	.5000	1/2"	12.700	1/4"	1"	1-3/4"	20.57	19.68	18.78	17.89
65042	SG-5D	.5000	1/2"	12.700	1/4"	1"	1-3/4"	20.57	19.68	18.78	17.89
65050	SG-6	.6250	5/8"	15.875	1/4"	1"	1-3/4"	28.88	27.62	26.37	25.11
65052	SG-6D	.6250	5/8"	15.875	1/4"	1"	1-3/4"	28.88	27.62	26.37	25.11
65060	SG-7	.7500	3/4"	19.050	1/4"	1"	1-3/4"	38.19	36.53	34.87	33.21
65062	SG-7D	.7500	3/4"	19.050	1/4"	1"	1-3/4"	38.19	36.53	34.87	33.21

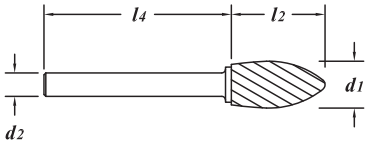
SH (1/4" Steel Shank)

Carbide Rotary Files - Flame Shape

Submicron Grain Carbide

D - Double Cut





EDP#	TOOL #	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_2 Flute Length	l_4 Shank Length	1-11	12-24	25-49	50-100
66010	SH-2	.3125	5/16"	7.938	1/4"	3/4"	1-3/4"	14.12	13.51	12.89	12.28
66012	SH-2D	.3125	5/16"	7.938	1/4"	3/4"	1-3/4"	14.12	13.51	12.89	12.28
66020	SH-5	.5000	1/2"	12.700	1/4"	1-1/4"	1-3/4"	28.88	27.62	26.37	25.11
66022	SH-5D	.5000	1/2"	12.700	1/4"	1-1/4"	1-3/4"	28.88	27.62	26.37	25.11
66030	SH-6	.6250	5/8"	15.875	1/4"	1-7/16"	1-3/4"	37.86	36.21	34.57	32.92
66032	SH-6D	.6250	5/8"	15.875	1/4"	1-7/16"	1-3/4"	37.86	36.21	34.57	32.92
66040	SH-7	.7500	3/4"	19.050	1/4"	1-5/8"	1-3/4"	46.52	44.50	42.47	40.45
66042	SH-7D	.7500	3/4"	19.050	1/4"	1-5/8"	1-3/4"	46.52	44.50	42.47	40.45

GARR TOOL®

† *Metric equivalents are for reference only*

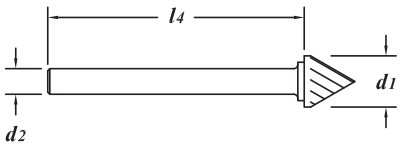
Carbide Rotary Files - Taper Shape *(60° Included Angle)*

Submicron Grain Carbide

D - Double Cut

** - Solid Carbide/Double End



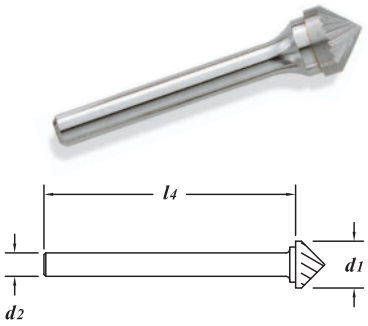


EDP#	TOOL #	d1 † Diameter Decimal	d1 † Diameter	d1 † Diameter Metric	d2 Shank Diameter	l4 Shank Length	1-11	12-24	25-49	50-100
67010	**SJ-1	.2500	1/4"	6.350	1/4"	1-11/16"	14.54	13.90	13.27	12.64
67012	**SJ-1D	.2500	1/4"	6.350	1/4"	1-11/16"	14.54	13.90	13.27	12.64
67020	SJ-3	.3750	3/8"	9.525	1/4"	1-3/4"	12.20	11.67	11.14	10.61
67022	SJ-3D	.3750	3/8"	9.525	1/4"	1-3/4"	12.20	11.67	11.14	10.61
67030	SJ-5	.5000	1/2"	12.700	1/4"	1-3/4"	15.04	14.39	13.73	13.08
67032	SJ-5D	.5000	1/2"	12.700	1/4"	1-3/4"	15.04	14.39	13.73	13.08
67040	SJ-6	.6250	5/8"	15.875	1/4"	1-3/4"	20.04	19.17	18.30	17.43
67042	SJ-6D	.6250	5/8"	15.875	1/4"	1-3/4"	20.04	19.17	18.30	17.43
67050	SJ-7	.7500	3/4"	19.050	1/4"	1-3/4"	26.30	25.16	24.01	22.87
67052	SJ-7D	.7500	3/4"	19.050	1/4"	1-3/4"	26.30	25.16	24.01	22.87

SK (1/4" Steel Shank)

Carbide Rotary Files - Taper Shape *(90° Included Angle)*

Submicron Grain Carbide
D - Double Cut
** - Solid Carbide/Double End



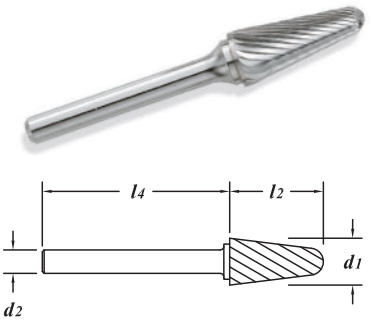
EDP#	TOOL #	d_1 † Diameter Decimal	d_1 † Diameter	d_1 † Diameter Metric	d_2 Shank Diameter	l_4 Shank Length	1-11	12-24	25-49	50-100
68010	**SK-1	.2500	1/4"	6.350	1/4"	1-11/16"	14.54	13.90	13.27	12.64
68012	**SK-1D	.2500	1/4"	6.350	1/4"	1-11/16"	14.54	13.90	13.27	12.64
68020	SK-3	.3750	3/8"	9.525	1/4"	1-3/4"	12.20	11.67	11.14	10.61
68022	SK-3D	.3750	3/8"	9.525	1/4"	1-3/4"	12.20	11.67	11.14	10.61
68030	SK-5	.5000	1/2"	12.700	1/4"	1-3/4"	15.04	14.39	13.73	13.08
68032	SK-5D	.5000	1/2"	12.700	1/4"	1-3/4"	15.04	14.39	13.73	13.08
68040	SK-6	.6250	5/8"	15.875	1/4"	1-3/4"	20.04	19.17	18.30	17.43
68042	SK-6D	.6250	5/8"	15.875	1/4"	1-3/4"	20.04	19.17	18.30	17.43
68050	SK-7	.7500	3/4"	19.050	1/4"	1-3/4"	26.30	25.16	24.01	22.87
68052	SK-7D	.7500	3/4"	19.050	1/4"	1-3/4"	26.30	25.16	24.01	22.87
68070	SK-9	1.000	1"	25.400	1/4"	1-3/4"	42.18	40.35	38.51	36.68
68072	SK-9D	1.000	1"	25.400	1/4"	1-3/4"	42.18	40.35	38.51	36.68

GARR TOOL®

† *Metric equivalents are for reference only*

Carbide Rotary Files - Cone-Radius Shape *(14° Included Angle)*

Submicron Grain Carbide
A - Aluminum Cut
D - Double Cut
* - Solid Carbide

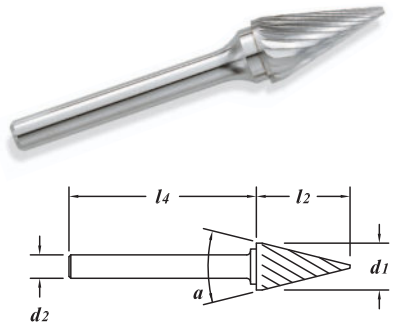


EDP#	TOOL #	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	l_2 Flute Length	l_4 Shank Length	1-11	12-24	25-49	50-100
69010	* SL-1	.2500	1/4"	6.350	1/4"	5/8"	2"	11.56	11.06	10.55	10.05
69012	* SL-1D	.2500	1/4"	6.350	1/4"	5/8"	2"	11.56	11.06	10.55	10.05
69020	SL-2	.3125	5/16"	7.938	1/4"	7/8"	1-3/4"	13.80	13.20	12.60	12.00
69022	SL-2D	.3125	5/16"	7.938	1/4"	7/8"	1-3/4"	13.80	13.20	12.60	12.00
69030	SL-3	.3750	3/8"	9.525	1/4"	1-1/16"	1-3/4"	16.36	15.65	14.94	14.23
69031	SL-3A	.3750	3/8"	9.525	1/4"	1-1/16"	1-3/4"	27.27	26.08	24.90	23.71
69032	SL-3D	.3750	3/8"	9.525	1/4"	1-1/16"	1-3/4"	16.36	15.65	14.94	14.23
69040	SL-4	.5000	1/2"	12.700	1/4"	1-1/8"	1-3/4"	19.90	19.03	18.17	17.30
69041	SL-4A	.5000	1/2"	12.700	1/4"	1-1/8"	1-3/4"	33.79	32.32	30.85	29.38
69042	SL-4D	.5000	1/2"	12.700	1/4"	1-1/8"	1-3/4"	19.90	19.03	18.17	17.30
69050	SL-5	.6250	5/8"	15.875	1/4"	1-3/16"	1-3/4"	39.15	37.44	35.74	34.04
69051	SL-5A	.6250	5/8"	15.875	1/4"	1-3/16"	1-3/4"	53.30	50.99	48.67	46.35
69052	SL-5D	.6250	5/8"	15.875	1/4"	1-3/16"	1-3/4"	39.15	37.44	35.74	34.04
69060	SL-7	.7500	3/4"	19.050	1/4"	1-1/2"	1-3/4"	51.67	49.42	47.18	44.93
69062	SL-7D	.7500	3/4"	19.050	1/4"	1-1/2"	1-3/4"	51.67	49.42	47.18	44.93

SM (1/4" Steel Shank)

Carbide Rotary Files - Cone Flat Shape *(no radius)*

Submicron Grain Carbide
D - Double Cut
* - Solid Carbide



EDP#	TOOL #	*d1* † Diameter Decimal	Diameter	Metric	*d2* Shank Diameter	*a* Included Angle	*l2* Flute Length	*l4* Shank Length	1-11	12-24	25-49	50-100
70010	* SM-1	.2500	1/4"	6.350	1/4"	22°	1/2"	2"	11.56	11.06	10.55	10.05
70012	* SM-1D	.2500	1/4"	6.350	1/4"	22°	1/2"	2"	11.56	11.06	10.55	10.05
70020	SM-4	.3750	3/8"	9.525	1/4"	28°	5/8"	1-3/4"	16.36	15.65	14.94	14.23
70022	SM-4D	.3750	3/8"	9.525	1/4"	28°	5/8"	1-3/4"	16.36	15.65	14.94	14.23
70030	SM-5	.5000	1/2"	12.700	1/4"	28°	7/8"	1-3/4"	20.54	19.65	18.75	17.86
70032	SM-5D	.5000	1/2"	12.700	1/4"	28°	7/8"	1-3/4"	20.54	19.65	18.75	17.86
70040	SM-6	.6250	5/8"	15.875	1/4"	31°	1"	1-3/4"	27.28	26.09	24.91	23.72
70042	SM-6D	.6250	5/8"	15.875	1/4"	31°	1"	1-3/4"	27.28	26.09	24.91	23.72

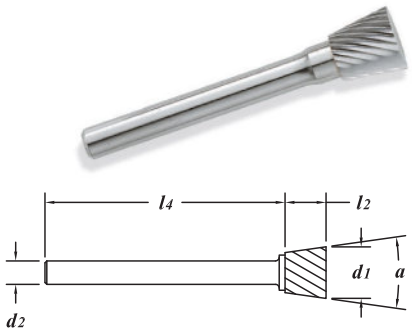


GARR TOOL®

† *Metric equivalents are for reference only*

Carbide Rotary Files - Inverted Cone Shape

Submicron Grain Carbide
D - Double Cut
* - Solid Carbide



EDP#	TOOL #	d_1 † Diameter Decimal	Diameter	Metric	d_2 Shank Diameter	a Included Angle	l_2 Flute Length	l_4 Shank Length	1-11	12-24	25-49	50-100
71010	* SN-1	.2500	1/4"	6.350	1/4"	10°	5/16"	2"	11.56	11.06	10.55	10.05
71012	* SN-1D	.2500	1/4"	6.350	1/4"	10°	5/16"	2"	11.56	11.06	10.55	10.05
71020	SN-2	.3750	3/8"	9.525	1/4"	13°	3/8"	1-3/4"	14.42	13.79	13.17	12.54
71022	SN-2D	.3750	3/8"	9.525	1/4"	13°	3/8"	1-3/4"	14.42	13.79	13.17	12.54
71030	SN-3	.5000	1/2"	12.700	1/4"	16°	1/2"	1-3/4"	19.90	19.03	18.17	17.30
71032	SN-3D	.5000	1/2"	12.700	1/4"	16°	1/2"	1-3/4"	19.90	19.03	18.17	17.30



3/16" Diameter (3/16" Shank)

Solid Carbide Rotary Files

Submicron Grain Carbide

D - Double Cut



EDP#	TOOL #	d_1 † Diameter Decimal	Diameter	Metric	l_1 Overall Length	a Included Angle	l_2 Flute Length	1-11	12-24	25-49	50-100
72010	SA-81	.1875	3/16"	4.763	2"	-	5/8"	12.64	12.09	11.54	10.99
72012	SA-81D	.1875	3/16"	4.763	2"	-	5/8"	12.64	12.09	11.54	10.99
72020	SC-81	.1875	3/16"	4.763	2"	-	5/8"	12.64	12.09	11.54	10.99
72030	SD-81	.1875	3/16"	4.763	2"	-	-	12.64	12.09	11.54	10.99
72032	SD-81D	.1875	3/16"	4.763	2"	-	-	12.64	12.09	11.54	10.99
72040	SE-81	.1875	3/16"	4.763	2"	-	9/32"	12.64	12.09	11.54	10.99
72042	SE-81D	.1875	3/16"	4.763	2"	-	9/32"	12.64	12.09	11.54	10.99
72050	SF-81	.1875	3/16"	4.763	2"	-	1/2"	12.64	12.09	11.54	10.99
72052	SF-81D	.1875	3/16"	4.763	2"	-	1/2"	12.64	12.09	11.54	10.99
72060	SG-81	.1875	3/16"	4.763	2"	-	1/2"	12.64	12.09	11.54	10.99
72062	SG-81D	.1875	3/16"	4.763	2"	-	1/2"	12.64	12.09	11.54	10.99
72070	SJ-81	.1875	3/16"	4.763	2"	60°	-	12.64	12.09	11.54	10.99
72072	SJ-81D	.1875	3/16"	4.763	2"	60°	-	12.64	12.09	11.54	10.99
72080	SK-81	.1875	3/16"	4.763	2"	90°	-	12.64	12.09	11.54	10.99
72082	SK-81D	.1875	3/16"	4.763	2"	90°	-	12.64	12.09	11.54	10.99
72090	SL-81	.1875	3/16"	4.763	2"	14°	1/2"	12.64	12.09	11.54	10.99
72092	SL-81D	.1875	3/16"	4.763	2"	14°	1/2"	12.64	12.09	11.54	10.99
72100	SM-81	.1875	3/16"	4.763	2"	12°	5/8"	12.64	12.09	11.54	10.99
72110	SN-81	.1875	3/16"	4.763	2"	10°	1/4"	12.64	12.09	11.54	10.99
72112	SN-81D	.1875	3/16"	4.763	2"	10°	1/4"	12.64	12.09	11.54	10.99

GARR TOOL®

† *Metric equivalents are for reference only*

Carbide Rotary Files

Submicron Grain Carbide

D - Double Cut≤



SA-51

SB-51

SC-51

SD-51

SE-51

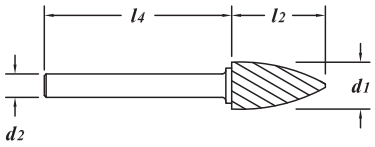


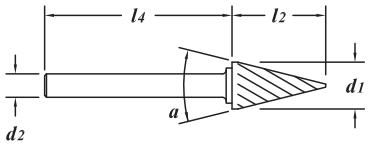
SF-51

SG-51

SM-51

SN-51





EDP#	TOOL #	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	a Included Angle	l_2 Flute Length	l_4 Shank Length	1-11	12-24	25-49	50-100
73010	SA-51	.2500	1/4"	6.350	1/8"	-	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73012	SA-51D	.2500	1/4"	6.350	1/8"	-	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73020	SB-51	.2500	1/4"	6.350	1/8"	-	3/16"	1-1/2"	12.06	11.54	11.01	10.49
73022	SB-51D	.2500	1/4"	6.350	1/8"	-	3/16"	1-1/2"	12.06	11.54	11.01	10.49
73030	SC-51	.2500	1/4"	6.350	1/8"	-	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73032	SC-51D	.2500	1/4"	6.350	1/8"	-	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73040	SD-51	.2500	1/4"	6.350	1/8"	-	-	1-1/2"	12.06	11.54	11.01	10.49
73042	SD-51D	.2500	1/4"	6.350	1/8"	-	-	1-1/2"	12.06	11.54	11.01	10.49
73050	SE-51	.2500	1/4"	6.350	1/8"	-	3/8"	1-1/2"	12.06	11.54	11.01	10.49
73052	SE-51D	.2500	1/4"	6.350	1/8"	-	3/8"	1-1/2"	12.06	11.54	11.01	10.49
73060	SF-51	.2500	1/4"	6.350	1/8"	-	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73062	SF-51D	.2500	1/4"	6.350	1/8"	-	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73070	SG-51	.2500	1/4"	6.350	1/8"	-	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73072	SG-51D	.2500	1/4"	6.350	1/8"	-	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73080	SM-51	.2500	1/4"	6.350	1/8"	22°	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73082	SM-51D	.2500	1/4"	6.350	1/8"	22°	1/2"	1-1/2"	12.06	11.54	11.01	10.49
73090	SN-51	.2500	1/4"	6.350	1/8"	10°	1/4"	1-1/2"	12.06	11.54	11.01	10.49
73092	SN-51D	.2500	1/4"	6.350	1/8"	10°	1/4"	1-1/2"	12.06	11.54	11.01	10.49

CAD drawings representative for dimension placement

1/8" Diameter (1/8" Shank)

Solid Carbide Rotary Files

Submicron Grain Carbide

D - Double Cut



SA-41
SA-42
SA-43
SC-41
SC-42
SD-41
SD-42
SE-41
SF-42

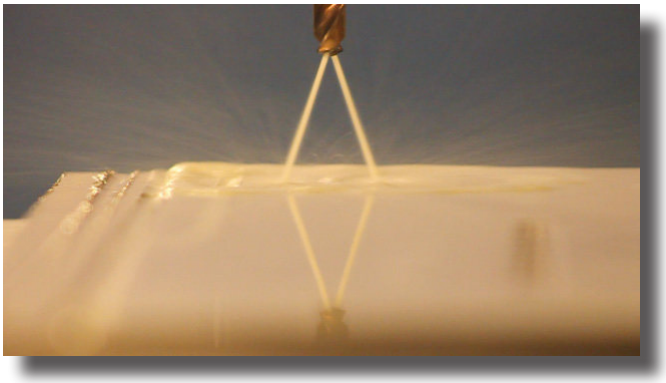


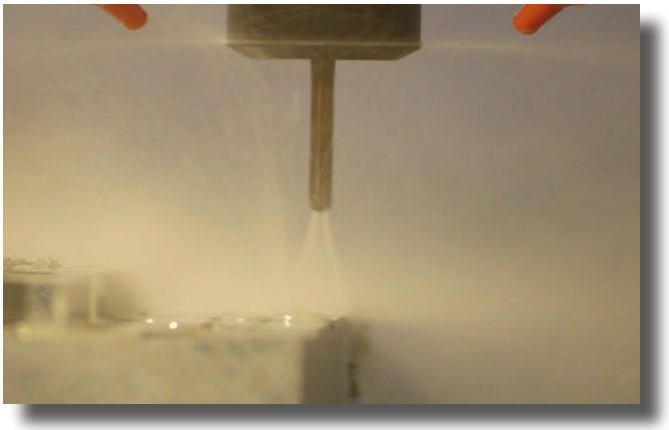
SG-43
SH-41
SJ-42
SK-42
SL-41
SL-42
SM-41
SM-43
SN-42

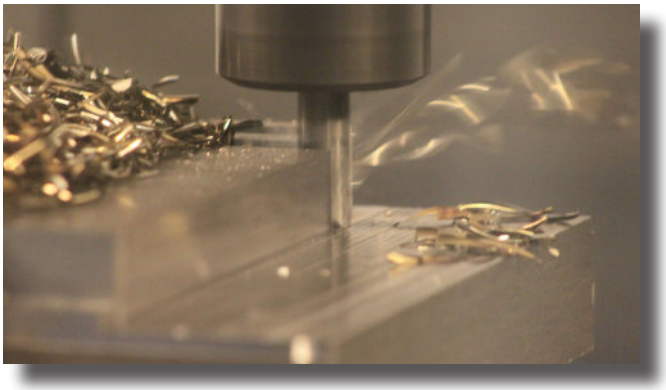
EDP#	TOOL #	d_1 † Diameter Decimal	Diameter	Metric	l_1 Overall Length	a Included Angle	l_2 Flute Length	1-11	12-24	25-49	50-100
74010	SA-41	.0625	1/16"	1.588	1-1/2"	-	1/4"	7.14	6.83	6.52	6.21
74012	SA-41D	.0625	1/16"	1.588	1-1/2"	-	1/4"	7.14	6.83	6.52	6.21
74020	SA-42	.0938	3/32"	2.383	1-1/2"	-	7/16"	7.14	6.83	6.52	6.21
74022	SA-42D	.0938	3/32"	2.383	1-1/2"	-	7/16"	7.14	6.83	6.52	6.21
74030	SA-43	.1250	1/8"	3.175	1-1/2"	-	9/16"	7.14	6.83	6.52	6.21
74032	SA-43D	.1250	1/8"	3.175	1-1/2"	-	9/16"	7.14	6.83	6.52	6.21
74040	SC-41	.0938	3/32"	2.383	1-1/2"	-	7/16"	7.14	6.83	6.52	6.21
74042	SC-41D	.0938	3/32"	2.383	1-1/2"	-	7/16"	7.14	6.83	6.52	6.21
74050	SC-42	.1250	1/8"	3.175	1-1/2"	-	9/16"	7.14	6.83	6.52	6.21
74052	SC-42D	.1250	1/8"	3.175	1-1/2"	-	9/16"	7.14	6.83	6.52	6.21
74060	SD-41	.0938	3/32"	2.383	1-1/2"	-	-	7.14	6.83	6.52	6.21
74062	SD-41D	.0938	3/32"	2.383	1-1/2"	-	-	7.14	6.83	6.52	6.21
74070	SD-42	.1250	1/8"	3.175	1-1/2"	-	-	7.14	6.83	6.52	6.21
74072	SD-42D	.1250	1/8"	3.175	1-1/2"	-	-	7.14	6.83	6.52	6.21
74080	SE-41	.1250	1/8"	3.175	1-1/2"	-	7/32"	7.14	6.83	6.52	6.21
74082	SE-41D	.1250	1/8"	3.175	1-1/2"	-	7/32"	7.14	6.83	6.52	6.21
74090	SF-42	.1250	1/8"	3.175	1-1/2"	-	1/2"	7.14	6.83	6.52	6.21
74092	SF-42D	.1250	1/8"	3.175	1-1/2"	-	1/2"	7.14	6.83	6.52	6.21
74100	SG-43	.1250	1/8"	3.175	1-1/2"	-	3/8"	7.14	6.83	6.52	6.21
74102	SG-43D	.1250	1/8"	3.175	1-1/2"	-	3/8"	7.14	6.83	6.52	6.21
74110	SH-41	.1250	1/8"	3.175	1-1/2"	-	1/4"	7.14	6.83	6.52	6.21
74112	SH-41D	.1250	1/8"	3.175	1-1/2"	-	1/4"	7.14	6.83	6.52	6.21
74120	SJ-42	.1250	1/8"	3.175	1-1/2"	60°	-	7.14	6.83	6.52	6.21
74122	SJ-42D	.1250	1/8"	3.175	1-1/2"	60°	-	7.14	6.83	6.52	6.21
74130	SK-42	.1250	1/8"	3.175	1-1/2"	90°	-	7.14	6.83	6.52	6.21
74132	SK-42D	.1250	1/8"	3.175	1-1/2"	90°	-	7.14	6.83	6.52	6.21
74140	SL-41	.1250	1/8"	3.175	1-1/2"	8°	3/8"	7.14	6.83	6.52	6.21
74142	SL-41D	.1250	1/8"	3.175	1-1/2"	8°	3/8"	7.14	6.83	6.52	6.21
74150	SL-42	.1250	1/8"	3.175	1-1/2"	8°	1/2"	7.14	6.83	6.52	6.21
74152	SL-42D	.1250	1/8"	3.175	1-1/2"	8°	1/2"	7.14	6.83	6.52	6.21
74160	SM-41	.1250	1/8"	3.175	1-1/2"	12°	3/8"	7.14	6.83	6.52	6.21
74162	SM-41D	.1250	1/8"	3.175	1-1/2"	12°	3/8"	7.14	6.83	6.52	6.21
74170	SM-43	.1250	1/8"	3.175	1-1/2"	7°	5/8"	7.14	6.83	6.52	6.21
74172	SM-43D	.1250	1/8"	3.175	1-1/2"	7°	5/8"	7.14	6.83	6.52	6.21
74180	SN-42	.1250	1/8"	3.175	1-1/2"	10°	3/16"	7.14	6.83	6.52	6.21
74182	SN-42D	.1250	1/8"	3.175	1-1/2"	10°	3/16"	7.14	6.83	6.52	6.21

GARR TOOL®

† *Metric equivalents are for reference only*







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Troubleshooting for Drills

PROBLEM	SUGGESTIONS
Chipping on point	Reduce feed rate
	Check part rigidity
	Constant feed rate
	Verify speeds and feeds
	Minimum drill overhang
	Reduce number of peck cycles
Chipping on O.D.	Reduce feed rate
	Confirm concentricity of drill in holder
	Check coolant flow and location
	Check part rigidity
Breakage	Reduce feed rate
	Check your program - is 'R' clearing the part
	Check coolant flow and location
	Check part rigiditiy
Heavy wear on corners	Increase feed rate
	Check coolant flow and location
	Confirm concentricity of drill in holder
	Check part rigidity
Long, stringy chips	Increase feed rate
	Increase hone relief
	Constant feed rate
	Increase number of peck cycles
Excessive noise	Check drill
	Check part rigidity
	Check for proper speeds and feeds
Tool life	Lower speeds and feeds
	Check coolant flow and location
	Confirm concentricity of drill in holder
	Confirm coolant concentration
Hole too small	Increase feed rate
	Confirm coolant concentration
	Confirm drill diameter
Hole too large	Reduce feed rate
	Slow feed rate to start hole
	Increase RPMs
	Spot hole
Chip welding	Increase RPMs by 20%
	Confirm coolant concentration
	Check coolant flow and location
Chip packing	Add a peck cycle to clear chips
	Increase RPMs
	Reduce feed rate
	Check coolant flow and location

Troubleshooting for End Mills

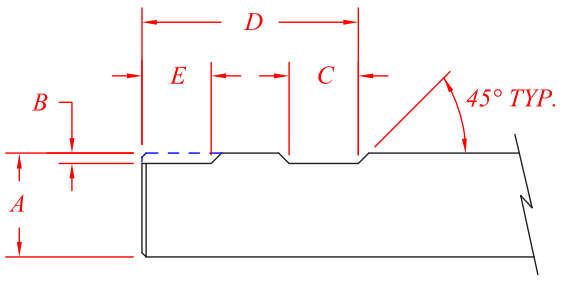
PROBLEM	SUGGESTIONS
Chipping	Check part rigidity
	Verify speeds and feeds
	Confirm concentricity of end mill in holder
	Decrease ramp angle or slow down approach
	Check coolant flow and location
Breakage	Decrease feed rate
	Decrease axial depth
	Use shorter tool or stub holder
	Resharpen earlier
Chattering	Too light of a cut
	Leave more stock for finish pass
	Decrease axial depth
	Adjust speeds and feeds
Part finish	Confirm concentricity of end mill in holder
	Decrease feed rate
	Use different style of end mill
	Check coolant flow and location
	Check part rigidity
Burr	Change end mill sooner / too much wear
	Verify speeds and feeds
	Increase spindle speed
	Decrease feed rate
	Use different style of end mill
Excessive noise	Check part rigidity
	Verify speeds and feeds
	Too light of a cut
	Confirm concentricity of end mill in holder
Tool life	Work material harder than expected
	Verify speeds and feeds
	Recutting chips
	Too light of a cut
	Use different style of end mill
Wear	Speed too fast
	Too light of a feed
	Confirm concentricity of end mill in holder
	Verify speeds and feeds
Chip welding	Verify speeds and feeds
	Check coolant flow and location
	Use different style of end mill
Chip packing	Check coolant flow and location
	Decrease axial depth
	Adjust speeds and feeds
	Use different style of end mill
Wall not straight	Decrease feed rate
	Decrease axial depth
	Use shorter tool or stub holder
	Use different style of end mill

Troubleshooting for Reamers

PROBLEM	SUGGESTIONS
Hole diameter too large	Check part rigidity
	Verify speeds and feeds
	Confirm concentricity of reamer in holder
	Confirm diameter of reamer
	Check coolant flow and location
Hole diameter too small	Leave more stock before reaming
	Reamer worn
	Check coolant flow and concentration
	Resharpen earlier
Hole not straight	Hole was not drilled properly
	Leave more stock before reaming
	Confirm concentricity of reamer in holder
	Check part rigidity
Part finish	Reamer worn
	Verify speeds and feeds
	Confirm concentricity of reamer in holder
	Check coolant flow and location
	Check part rigidity
Tool life	Work material harder than expected
	Verify speeds and feeds
	Not evacuating chips properly
	Too light of a cut
Wear	Speed too fast
	Too light of a feed
	Confirm concentricity of reamer in holder
	Check coolant flow, location, and concentration
Not evacuating	Verify speeds and feeds
	Check coolant flow, location, and concentration
	Reamer worn

Weldon Flat Specs

STANDARD WELDON SHANK DIMENSIONS					
Diameter (A)		B	C	D	E
3/8"	.3750"	.050" - .065"	.280" - .282"	.921"	-
7/16"	.4375"	.050" - .065"	.312" - .314"	.991"	-
1/2"	.5000"	.060" - .075"	.330" - .332"	1.055"	-
9/16"	.5625"	.065" - .080"	.400" - .402"	1.154"	-
5/8"	.6250"	.065" - .080"	.400" - .402"	1.154"	-
3/4"	.7500"	.075" - .090"	.455" - .457"	1.242"	-
7/8"	.8750"	.065" - .080"	.455" - .457"	1.242"	.500"
1"	1.0000"	.075" - .090"	.515" - .517"	1.398"	.500"
1-1/4"	1.2500"	.094" - .109"	.515" - .517"	1.398"	.500"



$$SFM = \frac{\pi \times Diameter \times RPM}{12}$$

$$CPT = \frac{IPM}{RPM \times Number\ of\ Teeth}$$

$$RPM = \frac{SFM \times 3.82}{Diameter}$$

$$IPM = RPM \times Number\ of\ Teeth \times CPT$$

Chip Thinning Calculation:

$$\frac{.50\left(\frac{Diameter}{Radial\ Stepover}\right)}{\sqrt{\left(\frac{Diameter}{Radial\ Stepover}\right)-1}} \times CPT_{\text{(Actual)}} = CPT_{\text{(Programmed)}}$$

Example below:

$$\frac{.50\left(\frac{0.50}{.015}\right)}{\sqrt{\left(\frac{0.50}{.015}\right)-1}} = \frac{16.667}{5.6} = 2.93 \times .0015 = .0045$$

(Chip Thinning reference charts on pages 306-307)

For additional help:
Check out our web site, the MC-20 machinist calculator or, if you have a smartphone, search for the feedrate calculator from the App Store.

h6 TOLERANCE FOR SHRINK FIT HOLDERS *(as taken from the Machinery's Handbook)*		
SHANK DIAMETER		TOLERANCE
Decimal	Nominal	
≤ .1181"	≤ 3mm	-.00000" / -.00024"
> .1181" - .2362"	> 3mm - 6mm	-.00000" / -.00032"
> .2362" - .3937"	> 6mm - 10mm	-.00000" / -.00035"
> .3937" - .7087"	> 10mm - 18mm	-.00000" / -.00043"
> .7087" - 1.1811"	> 18mm - 30mm	-.00000" / -.00050"
> 1.1811"	> 30mm	-.00000" / -.00050"

Definitions of Tool Coatings on GARR TOOL Standard Products



TiN
(Titanium Nitride)

A general purpose coating, BALINIT® A has low heat resistance and good lubricity.



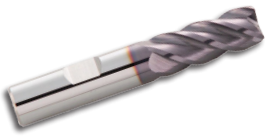
TiCN
(Titanium Carbonitride)

With good abrasion resistance, BALINIT® B is recommended for aluminum, brass and bronze applications. It has low heat resistance and good lubricity.



TiAlN
(Titanium Aluminum Nitride)

BALINIT® FUTURA is a multi-layer coating with good thermal stability for increased speeds and feeds. It is designed for semi-dry to dry cutting of most steels, high-nickel alloys, stainless steel and cast iron and has excellent heat resistance, good lubricity. It is useful in materials that are 40Rc and under.



AlTiN
(Aluminum Titanium Nitride)

BALINIT® LATUMA is a single-layer coating whose hardness, oxidation resistance and thermal stability were optimized for material hardness above 38Rc as well as high-speed machining of materials that are difficult to work (titanium alloys, Inconel).



ALUMASTAR®
(Titanium Diboride)

A thin film coating with a low affinity for aluminum, ALUMASTAR® is ideal for machining aluminum alloys. The resistance to adhesion of aluminum allows higher speeds or feeds. Its coating thickness is intentionally kept lower in order to maintain a sharp edge.



CRYSTALLINE DIAMOND
(CVD)

Improved productivity in composites. Excellent choice for cutting graphite and fiberglass. Can be added to a special for milling or drilling applications.



AlCrN
(Aluminum Chromium Nitride)

Aluminum Chromium-based coatings have excellent wear resistance, thermal shock stability, and hot hardness. BALINIT® ALNOVA is well suited for Titanium, Inconel, and carbon fiber.



DURANA
(AlTiN-based with TiSiXN)

With a combination of AlTiN-based and TiSiXN layers, BALINIT® DURANA has a high degree of ductility and superior abrasive wear resistance even at extreme service temperatures, resulting in vastly improved performance during demanding machining operations and longer tool service life.



ALTINOS
(AlTiN-based)

This premium AlTiN-based coating, BALIQ® ALTINOS is highly wear-resistant, even at high operating temperatures, making it particularly beneficial even up to HRC 56. With its perfectly smooth surface, this coating offers significant performance advantages such as optimum chip removal and reduced built-up edge formation.



ALCRONOS
(AlCrN-based)

BALIQ® ALCRONOS, an AlCrN-based coating is considerably less prone to built-up edge formation. Its revolutionary smooth coating, with excellent adhesion to the substrate, ensures outstanding surfaces and high production quality, especially in ductile alloys like 300 series stainless and steels up to HRC 50.

SFM (M/Min.) / RPM Conversion Charts

	DIAMETER														
	.0625"	.0938"	.1250"	.1562"	.1875"	.2188"	.2500"	.3125"	.3750"	.4375"	.5000"	.6250"	.7500"	.8750"	1.000"
	1/16"	3/32"	1/8"	5/32"	3/16"	7/32"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1"
SFM	**RPM**														
50	3050	2040	1530	1220	1020	875	765	610	510	440	380	310	250	220	190
75	4580	3060	2290	1830	1530	1310	1150	920	760	570	570	460	380	330	285
100	6100	4080	3050	2450	2040	1750	1530	1220	1020	760	760	610	510	440	385
125	7630	5100	3820	3050	2550	2180	1920	1530	1270	950	950	770	630	550	475
150	9150	6120	4570	3670	3060	2620	2290	1830	1530	1140	1140	920	760	660	575
175	10,680	7140	5350	4270	3570	3060	2680	2140	1780	1330	1330	1080	880	770	665
200	12,200	8150	6100	4900	4070	3500	3100	2450	2000	1500	1500	1200	1000	875	750
300	18,500	12,200	9200	7300	6100	5250	4600	3700	3100	2300	2300	1800	1500	1300	1100
400	24,500	16,300	12,200	9800	8150	7000	6100	4900	4100	3050	3050	2450	2050	1750	1525
500	30,500	20,400	15,300	12,200	10,200	8700	7600	6100	5100	3800	3800	3100	2500	2200	1900
750	45,800	36,700	22,900	18,300	15,300	13,100	11,500	9200	7600	5700	5700	4600	3800	3770	2850
1000	-	40,800	30,600	24,500	20,400	17,500	15,300	12,200	10,200	7650	7650	6100	5100	4400	3800
1500	-	-	40,800	36,700	30,600	26,200	22,900	18,300	15,300	11,300	11,300	9200	7600	6500	5700
2000	-	-	-	49,000	40,800	35,000	30,600	24,400	20,400	15,300	15,300	12,200	10,200	8700	7600
3000	-	-	-	-	-	52,500	45,900	36,600	30,600	22,900	22,900	18,300	15,300	13,100	11,400
4000	-	-	-	-	-	-	-	48,800	40,800	30,600	30,600	24,400	20,400	17,500	15,200
5000	-	-	-	-	-	-	-	-	51,000	38,200	38,200	30,600	25,500	21,800	19,000

	DIAMETER														
	.0394"	.0787"	.1181"	.1575"	.1969"	.2362"	.3150"	.3937"	.4724"	.5512"	.6299"	.7087"	.7874"	.8661"	.9843"
	1.0mm	2.0mm	3.0mm	4.0mm	5.0mm	6.0mm	8.0mm	10.0mm	12.0mm	14.0mm	16.0mm	18.0mm	20.0mm	22.0mm	25.0mm
M/Min.	**RPM**														
15	4800	2400	1600	1200	960	800	600	480	400	340	300	265	240	220	190
22	7000	3500	2300	1750	1400	1170	875	700	585	500	440	390	350	320	280
30	10,000	4800	3200	2400	1900	1590	1200	955	800	685	600	530	480	440	380
38	12,100	6000	4000	3025	2420	2020	1515	1210	1000	870	760	670	600	550	485
45	14,300	7200	4800	3600	2870	2390	1790	1430	1200	1020	900	800	710	650	575
53	16,880	8440	5630	4220	3375	2815	2110	1690	1400	1200	1055	940	845	770	675
60	19,110	9550	6370	4780	3825	3185	2390	1910	1590	1365	1200	1060	955	870	765
90	28,770	14,350	9550	7165	5735	4780	3585	2870	2390	2050	1790	1590	1430	1300	1150
120	38,220	19,100	12,750	9550	7645	6370	4780	3820	3185	2730	2490	2120	1910	1740	1530
150	47,770	23,885	15,925	11,950	9550	7965	5970	4780	3980	3410	2990	2650	2390	2170	1900
230	-	36,625	24,400	18,315	14,650	12,210	9150	7325	6100	5230	4580	4070	3660	3330	2930
300	-	47,770	31,850	23,885	19,110	15,925	11,950	9550	7960	6825	5970	5300	4780	4340	3820
450	-	-	47,770	35,830	28,660	23,885	17,915	14,330	11,950	10,240	8960	7960	7170	6510	5730
600	-	-	-	47,770	38,220	31,850	23,885	19,100	15,920	13,650	12,000	10,600	9550	8685	7600
900	-	-	-	-	-	47,770	35,830	28,660	23,885	20,475	17,900	15,900	14,330	13,030	11,500
1200	-	-	-	-	-	-	47,770	38,210	31,850	27,300	23,885	21,230	19,100	17,370	15,300
1500	-	-	-	-	-	-	-	47,770	39,810	34,210	29,860	26,540	23,885	21,710	19,100

GARR TOOL General Purpose Milling Guide

	ISO Material	HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz) 1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
S	**COBALT BASE ALLOYS**												
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	60 - 90 50 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"	.0025" - .0035" .0015" - .0020"
	NICKEL BASE ALLOYS												
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	55 - 90 45 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"	.0025" - .0035" .0015" - .0020"
	IRON BASE ALLOYS												
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	55 - 90 50 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"	.0025" - .0035" .0015" - .0020"
	TITANIUM ALLOYS												
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		100 - 150	.0003" - .0008"	.0003" - .0008"	.0005" - .0012"	.0005" - .0012"	.0008" - .0015"	.0010" - .0015"	.0013" - .0020"	.0018" - .0025"	.0020" - .0030"	.0025" - .0035"
	5553 / Beta Titanium		90 - 120	.0003" - .0008"	.0003" - .0008"	.0004" - .0010"	.0004" - .0010"	.0005" - .0012"	.0008" - .0014"	.0010" - .0016"	.0010" - .0020"	.0015" - .0025"	.0015" - .0025"
M	**STAINLESS STEELS**												
	13/8, 15/5, 17-4, pH Types	< 40 > 40	100 - 150 80 - 100	.0002" - .0005" .0002" - .0004"	.0003" - .0006" .0002" - .0004"	.0003" - .0007" .0002" - .0006"	.0006" - .0009" .0003" - .0007"	.0008" - .0012" .0004" - .0008"	.0013" - .0018" .0007" - .0012"	.0010" - .0020" .0008" - .0015"	.0012" - .0025" .0010" - .0016"	.0012" - .0020" .0013" - .0017"	.0020" - .0028" .0015" - .0020"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	100 - 150 80 - 100	.0003" - .0006" .0002" - .0004"	.0003" - .0007" .0002" - .0005"	.0005" - .0010" .0004" - .0007"	.0008" - .0015" .0005" - .0010"	.0009" - .0013" .0005" - .0010"	.0010" - .0018" .0007" - .0010"	.0015" - .0020" .0009" - .0015"	.0018" - .0022" .0012" - .0018"	.0018" - .0035" .0015" - .0025"	.0023" - .0036" .0020" - .0030"
	400 Series - 403, 405, 420, 455	< 40 > 40	150 - 200 100 - 150	.0005" - .0008" .0003" - .0007"	.0007" - .0010" .0004" - .0008"	.0009" - .0015" .0006" - .0010"	.0009" - .0014" .0007" - .0011"	.0011" - .0015" .0008" - .0012"	.0013" - .0018" .0009" - .0015"	.0015" - .0025" .0012" - .0020"	.0020" - .0035" .0018" - .0030"	.0022" - .0040" .0020" - .0035"	.0030" - .0046" .0024" - .0042"
P	**HIGH STRENGTH TOOL STEELS**												
	A2, D2, P20, H13, S7, O1	< 40 > 40	150 - 200 100 - 150	.0003" - .0008" .0003" - .0005"	.0003" - .0008" .0003" - .0005"	.0005" - .0010" .0003" - .0008"	.0010" - .0015" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0014" - .0024" .0010" - .0015"	.0018" - .0026" .0012" - .0018"	.0020" - .0028" .0014" - .0020"	.0022" - .0030" .0015" - .0022"
	MEDIUM ALLOY TOOL STEELS												
	4140, 4340, 52100, 6150, 8620	< 40 > 40	150 - 200 100 - 150	.0003" - .0008" .0003" - .0005"	.0003" - .0008" .0003" - .0005"	.0005" - .0010" .0003" - .0008"	.0010" - .0015" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0014" - .0024" .0010" - .0015"	.0018" - .0026" .0012" - .0018"	.0020" - .0028" .0014" - .0020"	.0022" - .0030" .0015" - .0022"
	CARBON STEELS												
	1000's - 1018, 1020, 12L14	< 40	150 - 200	.0003" - .0008"	.0003" - .0008"	.0005" - .0010"	.0010" - .0015"	.0012" - .0020"	.0012" - .0020"	.0014" - .0024"	.0018" - .0026"	.0020" - .0028"	.0022" - .0030"
K	**CAST MATERIAL**												
	Ductile Iron		175 - 225	.0005" - .0008"	.0008" - .0012"	.0010" - .0015"	.0015" - .0025"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0045" - .0055"
	Gray Iron		175 - 225	.0005" - .0008"	.0008" - .0012"	.0010" - .0015"	.0015" - .0025"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0045" - .0055"
N	**NON-FERROUS**												
	Aluminum		300 - 500	.0003" - .0005"	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
	Magnesium		300 - 500	.0003" - .0005"	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
	Copper		250 - 450	.0003" - .0005"	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
	Brass, Bronze		200 - 400	.0003" - .0005"	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
O	**COMPOSITE (non-ISO)**												
	Fiberglass, Plastics, G10		200 - 400	.0003" - .0005"	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
	Graphite		(See Graphite Chart - page 313)										

When plunging into a solid, drop feed by approximately 50%. 20% of diameter for basic engagement parameters.

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

GARR TOOL General Purpose Milling Guide

	ISO Material	HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz) 1.5mm	3.0mm	5.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**COBALT BASE ALLOYS**												
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	24 - 35 20 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051	.064 - .089 .038 - .051
	NICKEL BASE ALLOYS												
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	22 - 35 18 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051	.064 - .089 .038 - .051
	IRON BASE ALLOYS												
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	22 - 35 20 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051	.064 - .089 .038 - .051
	TITANIUM ALLOYS												
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		39 - 59	.008 - .020	.008 - .020	.013 - .030	.013 - .030	.020 - .038	.025 - .038	.033 - .051	.046 - .064	.051 - .076	.064 - .089
	5553 / Beta Titanium		35 - 47	.008 - .020	.008 - .020	.010 -.025	.010 - .025	.013 - .030	.020 - .036	.025 - .041	.025 - .051	.038 - .064	.038 - .064
M	**STAINLESS STEELS**												
	13/8, 15/5, 17-4, pH Types	< 40 > 40	39 - 59 31 - 39	.005 - .013 .005 - .010	.008 - .015 .005 - .010	.008 - .018 .005 - .015	.015 - .023 .008 - .018	.020 - .030 .010 - .020	.033 - .046 .018 - .030	.025 - .051 .020 - .038	.030 - .064 .025 - .041	.030 - .051 .033 - .043	.051 - .071 .038 - .051
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	39 - 59 31 - 39	.008 - .015 .005 - .010	.008 - .018 .005 - .013	.013 - .025 .010 - .018	.020 - .038 .013 - .025	.023 - .033 .013 - .025	.025 - .046 .018 - .025	.038 - .051 .023 - .038	.046 - .056 .030 - .046	.046 - .089 .038 - .064	.058 - .091 .051 - .076
	400 Series - 403, 405, 420, 455	< 40 > 40	59 - 79 39 - 59	.013 - .020 .008 - .018	.018 - .025 .010 - .020	.023 - .038 .015 - .025	.023 - .036 .018 - .028	.028 - .038 .020 - .030	.033 - .046 .023 - .038	.038 - .064 .030 - .051	.051 - .089 .046 - .076	.056 - .102 .051 - .089	.076 - .117 .061 - .107
P	**HIGH STRENGTH TOOL STEELS**												
	A2, D2, P20, H13, S7, O1	< 40 > 40	59 - 79 39 - 59	.008 - .020 .008 - .013	.008 - .020 .008 - .013	.013 - .025 .008 - .020	.025 - .038 .013 - .025	.030 - .051 .013 - .025	.030 - .051 .013 - .025	.036 - .061 .025 - .038	.046 - .066 .030 - .046	.051 - .071 .036 - .051	.056 - .076 .038 - .056
	MEDIUM ALLOY TOOL STEELS												
	4140, 4340, 52100, 6150, 8620	< 40 > 40	59 - 79 39 - 59	.008 - .020 .008 - .013	.008 - .020 .008 - .013	.013 - .025 .008 - .020	.025 - .038 .013 - .025	.030 - .051 .013 - .025	.030 - .051 .013 - .025	.036 - .061 .025 - .038	.046 - .066 .030 - .046	.051 - .071 .036 - .051	.056 - .076 .038 - .056
	CARBON STEELS												
	1000's - 1018, 1020, 12L14	< 40	59 - 79	.008 - .020	.008 - .020	.013 - .025	.025 - .038	.030 - .051	.030 - .051	.036 - .061	.046 - .066	.051 - .071	.056 - .076
K	**CAST MATERIAL**												
	Ductile Iron		69 - 89	.013 - .020	.020 - .031	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114	.114 - .140
	Gray Iron		69 - 89	.013 - .020	.020 - .031	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114	.114 - .140
N	**NON-FERROUS**												
	Aluminum		118 - 197	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Magnesium		118 - 197	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Copper		98 - 177	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Brass, Bronze		79 - 157	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
O	**COMPOSITE (non-ISO)**												
	Fiberglass, Plastics, G10		79 - 157	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Graphite	(See Graphite Chart - page 313)											

When plunging into a solid, drop feed by approximately 50%. 20% of diameter for basic engagement parameters.

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

GARR TOOL High Performance Milling Guide for 246MA, 253MA, 255MA, 263MA

	ISO Material	HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)								
				1/8″	3/16″	1/4″	5/16″	3/8″	1/2″	5/8″	3/4″	1″
S	**COBALT BASE ALLOYS**											
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	70 - 110 50 - 90	.0008″ - .0020″ .0005″ - .0015″	.0004″ - .0010″ .0004″ - .0007″	.0007″ - .0012″ .0005″ - .0011″	.0010″ - .0018″ .0008″ - .0014″	.0010″ - .0020″ .0010″ - .0017″	.0018″ - .0028″ .0015″ - .0025″	.0023″ - .0031″ .0021″ - .0028″	.0027″ - .0034″ .0024″ - .0030″	.0029″ - .0036″ .0025″ - .0031″
	NICKEL BASE ALLOYS											
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	65 - 110 55 - 90	.0005″ - .0009″ .0003″ - .0008″	.0005″ - .0009″ .0004″ - .0007″	.0007″ - .0013″ .0007″ - .0012″	.0010″ - .0017″ .0009″ - .0015″	.0010″ - .0020″ .0010″ - .0018″	.0020″ - .0028″ .0015″ - .0025″	.0025″ - .0032″ .0022″ - .0030″	.0029″ - .0036″ .0026″ - .0033″	.0030″ - .0038″ .0029″ - .0035″
	IRON BASE ALLOYS											
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	65 - 110 55 - 90	.0005″ - .0010″ .0003″ - .0008″	.0008″ - .0010″ .0004″ - .0008″	.0006″ - .0012″ .0005″ - .0010″	.0007″ - .0015″ .0006″ - .0013″	.0011″ - .0016″ .0008″ - .0014″	.0018″ - .0026″ .0013″ - .0023″	.0025″ - .0030″ .0022″ - .0028″	.0026″ - .0034″ .0025″ - .0031″	.0032″ - .0038″ .0030″ - .0035″
	TITANIUM ALLOYS											
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		125 - 175	.0005″ - .0010″	.0005″ - .0012″	.0008″ - .0015″	.0010″ - .0022″	.0018″ - .0027″	.0023″ - .0032″	.0025″ - .0033″	.0027″ - .0035″	.0028″ - .0037″
	5553 / Beta Titanium		100 - 150	.0004″ - .0010″	.0004″ - .0010″	.0006″ - .0014″	.0008″ - .0017″	.0015″ - .0025″	.0022″ - .0028″	.0024″ - .0030″	.0026″ - .0032″	.0028″ - .0035″
M	**STAINLESS STEELS**											
	13/8, 15/5, 17-4, PH Types	< 40 > 40	175 - 225 135 - 175	.0005″ - .0007″ .0002″ - .0004″	.0004″ - .0008″ .0002″ - .0006″	.0007″ - .0010″ .0003″ - .0007″	.0008″ - .0012″ .0004″ - .0008″	.0013″ - .0018″ .0007″ - .0012″	.0010″ - .0020″ .0008″ - .0015″	.0012″ - .0025″ .0010″ - .0016″	.0012″ - .0020″ .0013″ - .0017″	.0020″ - .0028″ .0015″ - .0020″
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	200 - 225 155 - 200	.0003″ - .0007″ .0002″ - .0005″	.0005″ - .0010″ .0004″ - .0007″	.0008″ - .0015″ .0005″ - .0010″	.0009″ - .0013″ .0005″ - .0010″	.0010″ - .0018″ .0007″ - .0010″	.0015″ - .0020″ .0009″ - .0015″	.0018″ - .0022″ .0012″ - .0018″	.0018″ - .0035″ .0015″ - .0025″	.0023″ - .0036″ .0020″ - .0030″
	400 Series - 403, 405, 420, 455	< 40 > 40	200 - 225 150 - 200	.0007″ - .0010″ .0004″ - .0008″	.0009″ - .0015″ .0006″ - .0010″	.0009″ - .0014″ .0007″ - .0011″	.0011″ - .0015″ .0008″ - .0012″	.0013″ - .0018″ .0009″ - .0015″	.0015″ - .0025″ .0012″ - .0020″	.0020″ - .0035″ .0018″ - .0030″	.0022″ - .0040″ .0020″ - .0035″	.0030″ - .0046″ .0024″ - .0042″
P	**HIGH STRENGTH TOOL STEELS**											
	A2, D2, P20, H13, S2, O1	< 40 > 40	225 - 325 150 - 225	.0005″ - .0008″ .0003″ - .0005″	.0008″ - .0015″ .0005″ - .0010″	.0015″ - .0020″ .0008″ - .0012″	.0015″ - .0023″ .0010″ - .0015″	.0015″ - .0025″ .0010″ - .0018″	.0020″ - .0030″ .0015″ - .0020″	.0020″ - .0030″ .0015″ - .0020″	.0025″ - .0035″ .0018″ - .0025″	.0030″ - .0040″ .0020″ - .0030″
	MEDIUM ALLOY TOOL STEELS											
	4140, 4340, 52100, 6150, 8620	< 40 > 40	225 - 325 150 - 225	.0005″ - .0008″ .0003″ - .0005″	.0008″ - .0015″ .0005″ - .0010″	.0015″ - .0020″ .0008″ - .0012″	.0015″ - .0023″ .0010″ - .0015″	.0015″ - .0025″ .0010″ - .0018″	.0020″ - .0030″ .0015″ - .0020″	.0020″ - .0030″ .0015″ - .0020″	.0025″ - .0035″ .0018″ - .0025″	.0030″ - .0040″ .0020″ - .0030″
	CARBON STEELS											
	1000's - 1018, 1020, 12L14	< 40	225 - 325	.0005″ - .0008″	.0008″ - .0015″	.0015″ - .0020″	.0015″ - .0023″	.0015″ - .0025″	.0020″ - .0030″	.0020″ - .0030″	.0025″ - .0035″	.0030″ - .0040″
K	**CAST MATERIAL**											
	Ductile Iron		225 - 325	.0010″ - .0015″	.0015″ - .0020″	.0020″ - .0030″	.0025″ - .0035″	.0025″ - .0035″	.0030″ - .0045″	.0040″ - .0050″	.0040″ - .0050″	.0050″ - .0060″
	Gray Iron		300 - 400	.0015″ - .0025″	.0020″ - .0030″	.0025″ - .0035″	.0030″ - .0040″	.0030″ - .0040″	.0040″ - .0050″	.0050″ - .0060″	.0060″ - .0070″	.0060″ - .0070″
N	**NON-FERROUS**											
	Aluminum		300 - 500	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
	Magnesium		300 - 500	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
	Copper		250 - 450	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
	Brass, Bronze		200 - 400	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
O	**COMPOSITE (non-ISO)**											
	Fiberglass, Plastics, G10		200 - 400	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"	.0068" - .0090"
	Graphite		(See Graphite Chart - page 313)									

Beryllium added to any material adds hardness and some nickel content. If tool displays chatter, increase feed (IPM) up to 30% and reduce speed (RPM) by 10%.
More detailed information is available on succeeding pages regarding the following materials: Aluminum, High Rockwell Steels, Graphite, and VRX end mills

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

GARR TOOL®

GARR TOOL High Performance Milling Guide for 846MA, 853MA, 855MA, 863MA

ISO Material		HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)								
				3.0mm	5.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**COBALT BASE ALLOYS**											
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	28 - 43 20 - 35	.020 - .051 .013 - .038	.010 - .025 .010 - .018	.018 - .030 .013 - .028	.025 - .046 .020 - .036	.025 - .051 .025 - .043	.046 - .071 .038 - .064	.058 - .079 .053 - .071	.069 - .086 .061 - .076	.074 - .091 .064 - .079
	NICKEL BASE ALLOYS											
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	26 - 43 22 - 35	.013 - .023 .008 - .020	.013 - .023 .010 - .018	.018 - .033 .018 - .030	.025 - .041 .023 - .038	.025 - .051 .025 - .046	.051 - .071 .038 - .064	.064 - .081 .056 - .076	.074 - .091 .066 - .084	.076 - .097 .074 - .089
	IRON BASE ALLOYS											
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	26 - 43 22 - 35	.013 - .025 .008 - .020	.020 - .025 .010 - .020	.015 - .030 .013 - .025	.018 - .038 .015 - .033	.028 - .041 .020 - .036	.046 - .066 .033 - .058	.064 - .076 .056 - .071	.066 - .086 .064 - .079	.081 - .097 .076 - .089
	TITANIUM ALLOYS											
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		49 - 69	.013 - .025	.013 - .030	.020 - .038	.025 - .056	.046 - .069	.058 - .081	.064 - .084	.069 - .089	.071 - .094
	5553 / Beta Titanium		39 - 59	.010 - .025	.010 - .025	.015 - .036	.020 - .041	.038 - .064	.056 - .071	.061 - .076	.066 - .081	.071 - .089
M	**STAINLESS STEELS**											
	13/8, 15/5, 17-4, PH Types	< 40 > 40	69 - 89 53 - 69	.013 - .018 .005 - .010	.010 - .020 .005 - .015	.018 - .025 .007 - .018	.020 - .030 .010 - .020	.033 - .046 .018 - .030	.025 - .051 .020 - .038	.030 - .064 .025 - .041	.030 - .051 .033 - .043	.051 - .071 .038 - .051
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	79 - 89 61 - 79	.008 - .018 .005 - .013	.013 - .025 .010 - .018	.020 - .038 .013 - .025	.023 - .033 .013 - .025	.025 - .046 .018 - .025	.038 - .051 .023 - .038	.046 - .056 .030 - .046	.046 - .089 .038 - .064	.058 - .091 .051 - .076
	400 Series - 403, 405, 420, 455	< 40 > 40	79 - 89 59 - 79	.018 - .025 .010 - .020	.023 - .038 .015 - .025	.023 - .036 .018 - .028	.028 - .038 .020 - .030	.033 - .046 .023 - .038	.038 - .064 .030 - .051	.051 - .089 .046 - .076	.056 - .102 .051 - .089	.076 - .117 .061 - .107
P	**HIGH STRENGTH TOOL STEELS**											
	A2, D2, P20, H13, S2, O1	< 40 > 40	89 - 128 59 - 89	.013 - .020 .008 - .013	.020 - .038 .013 - .025	.038 - .051 .020 - .030	.038 - .058 .025 - .038	.038 - .064 .025 - .046	.051 - .076 .038 - .051	.051 - .076 .038 - .051	.064 - .089 .046 - .064	.076 - .102 .051 - .076
	MEDIUM ALLOY TOOL STEELS											
	4140, 4340, 52100, 6150, 8620	< 40 > 40	89 - 128 59 - 89	.013 - .020 .008 - .013	.020 - .038 .013 - .025	.038 - .051 .020 - .030	.038 - .058 .025 - .038	.038 - .064 .025 - .046	.051 - .076 .038 - .051	.051 - .076 .038 - .051	.064 - .089 .046 - .064	.076 - .102 .051 - .076
	CARBON STEELS											
	1000's - 1018, 1020, 12L14	< 40	89 - 128	.013 - .020	.020 - .038	.038 - .051	.038 - .058	.038 - .064	.051 - .076	.051 - .076	.064 - .089	.076 - .102
K	**CAST MATERIAL**											
	Ductile Iron		89 - 128	.025 - .038	.038 - .051	.051 - .076	.064 - .089	.064 - .089	.076 - .114	.102 - .127	.102 - .127	.127 - .152
	Gray Iron		118 - 157	.038 - .064	.051 - .076	.064 - .089	.076 - .102	.076 - .102	.102 - .127	.127 - .152	.152 - .178	.152 - .178
N	**NON-FERROUS**											
	Aluminum		118 - 197	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Magnesium		118 - 197	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Copper		98 - 177	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Brass, Bronze		79 - 157	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
O	**COMPOSITE (non-ISO)**											
	Fiberglass, Plastics, G10		79 - 157	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Graphite		(See Graphite Chart - page 313)									

Beryllium added to any material adds hardness and some nickel content. If tool displays chatter, increase feed (IPM) up to 30% and reduce speed (RPM) by 10%.
More detailed information is available on succeeding pages regarding the following materials: Aluminum, High Rockwell Steels, Graphite, and VRX end mills

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

GARR TOOL Milling Guide for Aluminum (Machining Centers with Low-Range HP/Torque)

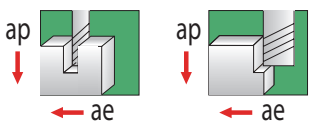
Series 242M/842M/A3 End Mills

NOTES: Spindle interface must be scrutinized when using 5/8" diameter and larger end mills

	SLOTTING		PROFILING
	Axial = .5xD	Axial = 1xD	Axial ≤ 1xD Radial ≤ .5xD
	SFM = 400 - 600	SFM = 300 - 450	SFM = 500 - 650
Diameter	CPT (Fz) = .5% - 1.5% of diameter	CPT (Fz) = .5% - 1% of diameter	CPT (Fz) = 1% - 2% of diameter
1/8"	.0006" - .0018"	.0006" - .0012"	.0012" - .0024"
3/16"	.0009" - .0028"	.0009" - .0018"	.0018" - .0036"
1/4"	.0013" - .0038"	.0013" - .0025"	.0025" - .0050"
5/16"	.0016" - .0047"	.0016" - .0031"	.0031" - .0062"
3/8"	.0019" - .0056"	.0019" - .0037"	.0037" - .0074"
1/2"	.0025" - .0075"	.0025" - .0050"	.0050" - .0100"
5/8"	.0031" - .0094"	.0031" - .0062"	.0062" - .0120"
3/4"	.0038" - .0110"	.0038" - .0075"	.0075" - .0150"
1"	.0050" - .0150"	.0050" - .0100"	.0100" - .0200"

	SLOTTING		PROFILING
	Axial = .5xD	Axial = 1xD	Axial ≤ 1xD Radial ≤ 0.5xD
	M/Min. = 125 - 180	M/Min. = 90 - 140	M/Min. = 150 - 200
Diameter	CPT (Fz) = .5% - 1.5% of diameter	CPT (Fz) = .5% - 1% of diameter	CPT (Fz) = 1% - 2% of diameter
3.0mm	.015 - .045	.015 - .030	.030 - .060
4.0mm	.020 - .060	.020 - .040	.040 - .080
6.0mm	.030 - .090	.030 - .060	.060 - .120
8.0mm	.040 - .120	.040 - .080	.080 - .160
10.0mm	.050 - .150	.050 - .100	.100 - .200
12.0mm	.060 - .180	.060 - .120	.120 - .240
16.0mm	.080 - .240	.080 - .160	.160 - .320
20.0mm	.100 - .300	.100 - .200	.200 - .400
25.0mm	.125 - .375	.125 - .250	.250 - .500

	Slotting Pocket Milling	Profiling Side Milling
Axial (ap)	up to 1xD	up to 1xD
Radial (ae)	1xD	up to 50% of Dia.



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

GARR TOOL®

GARR TOOL Milling Guide for Aluminum (Machining Centers with Mid-Range HP/Torque)

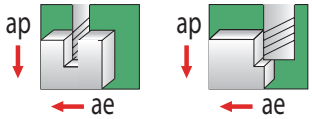
Series 142M/143M/A3 End Mills

NOTES: In cases for tools with slower SFM (M/Min.), reference Series 242M/842M
Spindle interface must be scrutinized when using 5/8" diameter and larger end mills

	SLOTTING		PROFILING
	Axial = .5xD	Axial = 1xD	Axial ≤ 1xD Radial ≤ .5xD
	SFM = 1500 - 2000	SFM = 750 - 1500	SFM = 1500 - 2000
Diameter	CPT (Fz) = 1.5% - 2.5% of diameter	CPT (Fz) = 1% - 2% of diameter	CPT (Fz) = 1.5% - 2.5% of diameter
1/8"	.0019" - .0031"	.0013" - .0025"	.0019" - .0031"
3/16"	.0028" - .0047"	.0018" - .0037"	.0028" - .0047"
1/4"	.0037" - .0062"	.0025" - .0050"	.0037" - .0062"
5/16"	.0052" - .0078"	.0031" - .0062"	.0052" - .0078"
3/8"	.0055" - .0094"	.0037" - .0074"	.0055" - .0094"
1/2"	.0075" - .0125"	.0050" - .0100"	.0075" - .0125"
5/8"	.0093" - .0156"	.0062" - .0125"	.0093" - .0156"
3/4"	.0112" - .0188"	.0075" - .0150"	.0112" - .0188"
1"	.0150" - .0250"	.0100" - .0200"	.0150" - .0250"

	SLOTTING		PROFILING
	Axial = .5xD	Axial = 1xD	Axial ≤ 1xD Radial ≤ 0.5xD
	M/Min. = 450 - 760	M/Min. = 225 - 450	M/Min. = 450 - 760
Diameter	CPT (Fz) = 1.5% - 2.5% of diameter	CPT (Fz) = 1% - 2% of diameter	CPT (Fz) = 1.5% - 2.5% of diameter
3.0mm	.045 - .075	.030 - .060	.045 - .075
4.0mm	.060 - .100	.040 - .080	.060 - .100
6.0mm	.090 - .150	.060 - .120	.090 - .150
8.0mm	.120 - .200	.080 - .160	.120 - .200
10.0mm	.150 - .250	.100 - .200	.150 - .250
12.0mm	.180 - .300	.120 - .240	.180 - .300
16.0mm	.240 - .400	.160 - .320	.240 - .400
20.0mm	.300 - .500	.200 - .400	.300 - .500
25.0mm	.375 - .625	.250 - .500	.375 - .625

	Slotting Pocket Milling	Profiling Side Milling
Axial (ap)	up to 1xD	up to 1xD
Radial (ae)	1xD	up to 50% of Dia.



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

GARR TOOL Milling Guide for Aluminum (Machining Centers with High-Range HP/Torque)

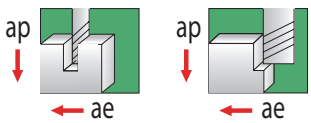
Series A3 End Mills

NOTES: Contact your OEM for your machine's optimal running parameters
CPT parameters shown are for 2xD LOC tooling and 2.5xD Reach Lengths
Spindle interface must be scrutinized when using 5/8" diameter and larger end mills
Preferred tool holders: Rego Fix powRgrip or Shrink Fit

	SLOTTING		PROFILING	FINISHING
	Axial = .5xD	Axial = 1xD	Axial = 2xD Radial = 30%-40%xD	Axial = Max LOC Radial = 2.5%xD
	SFM = Maximum RPM	SFM = Maximum RPM	SFM = Maximum RPM	SFM = up to 80% Max RPM
Diameter	CPT (Fz) = 1.5% - 3% of diameter	CPT (Fz) = 1% - 2% of diameter	CPT (Fz) = 2% - 3% of diameter	CPT (Fz) = 1% of diameter
3/16"	.0028" - .0056"	.0018" - .0037"	.0037" - .0056"	.0018"
1/4"	.0037" - .0074"	.0025" - .0050"	.0050" - .0075"	.0025"
5/16"	.0052" - .0104"	.0031" - .0062"	.0062" - .0094"	.0031"
3/8"	.0055" - .0110"	.0037" - .0074"	.0075" - .0112"	.0037"
1/2"	.0075" - .0150"	.0050" - .0100"	.0100" - .0150"	.0050"
5/8"	.0093" - .0186"	.0062" - .0125"	.0125" - .0187"	.0062"
3/4"	.0112" - .0224"	.0075" - .0150"	.0150" - .0225"	.0075"
1"	.0150" - .0300"	.0100" - .0200"	.0200" - .0300"	.0100"

	SLOTTING		PROFILING	FINISHING
	Axial = .5xD	Axial = 1xD	Axial = 2xD Radial = 30%-40%xD	Axial = Max LOC Radial = 2.5%xD
	M/Min. = Maximum RPM	M/Min. = Maximum RPM	M/Min. = Maximum RPM	M/Min. = up to 80% Max RPM
Diameter	CPT (Fz) = 1.5% - 3% of diameter	CPT (Fz) = 1% - 2% of diameter	CPT (Fz) = 2% - 3% of diameter	CPT (Fz) = 1% of diameter
4.0mm	.060 - .120	.040 - .080	.080 - .120	.040
6.0mm	.090 - .180	.060 - .120	.120 - .180	.060
8.0mm	.120 - .240	.080 - .160	.160 - .240	.080
10.0mm	.150 - .300	.100 - .200	.200 - .300	.100
12.0mm	.180 - .360	.120 - .240	.240 - .360	.120
16.0mm	.240 - .480	.160 - .320	.320 - .480	.160
20.0mm	.300 - .600	.200 - .400	.400 - .600	.200
25.0mm	.375 - .750	.250 - .500	.500 - .750	.250

	Slotting Pocket Milling	Profiling Side Milling
Axial (ap)	up to 1xD	up to 2xD
Radial (ae)	1xD	up to 50% of Dia.



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

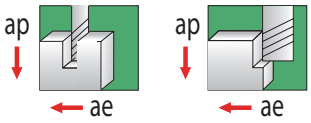
GARR TOOL®

GARR TOOL Milling Guide for ARC Series 3-Flute Rougher

ISO Material		SFM (Vc)	CHIPLOAD PER TOOTH (Fz)							
			3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
S	**TITANIUM ALLOYS**									
	Titanium: 6AL4V, CP	150 - 250	.0005" - .0008"	.0007" - .0010"	.0008" - .0013"	.0012" - .0018"	.0015" - .0023"	.0018" - .0028"	.0020" - .0035"	.0025" - .0045"
N	**NON-FERROUS**									
	Aluminum	700 - 1000	.0010" - .0020"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0030" - .0040"	.0040" - .0050"	.0050" - .0060"	.0060" - .0070
	Copper, Brass, Bronze	300 - 500	.0008" - .0013"	.0012" - .0018"	.0015" - .0023"	.0018" - .0028"	.0020" - .0035"	.0025" - .0045"	.0030" - .0050"	.0040" - .0060"

ISO Material		M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)							
			4.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**TITANIUM ALLOYS**									
	Titanium: 6AL4V, CP	40 - 80	.010 - .020	.015 - .025	.020 - .035	.025 - .050	.035 - .055	.045 - .075	.050 - .090	.060 - .115
N	**NON-FERROUS**									
	Aluminum	200 - 350	.025 - .050	.040 - .065	.050 - .075	.060 - .090	.075 - .100	.100 - .125	.125 - .150	.150 - .180
	Copper, Brass, Bronze	80 - 150	.020 - .035	.025 - .050	.035 - .055	.045 - .075	.050 - .090	.060 - .115	.075 - .125	.100 - .150

	Slotting	Profiling
Axial (ap)	1xD	2xD
Radial (ae)	1xD	0.5xD



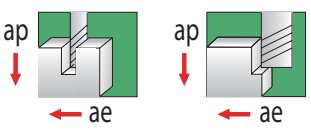
ARC SERIES TOOLS ARE NOT DESIGNED FOR OVER 28Rc MATERIALS

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

GARR TOOL Milling Guide for VHM Series 4-Flute Rougher

ISO Material		SFM (Vc)	CHIPLOAD PER TOOTH (Fz)							
			3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
S	**NICKEL BASE ALLOYS**									
	High Temperature Alloys: Inconel 625/718, A286	100 - 175	.0007" - .0010"	.0008" - .0010"	.0010" - .0015"	.0010" - .0015"	.0010" - .0015"	.0012" - .0020"	.0015" - .0025"	.0015" - .0025"
	TITANIUM ALLOYS									
	Titanium: 6AL4V, CP	150 - 200	.0008" - .0010"	.0010" - .0015"	.0010" - .0020"	.0015" - .0020"	.0020" - .0030"	.0025" - .0030"	.0030" - .0035"	.0030" - .0040"
M	**STAINLESS STEELS**									
	Stainless Steel: 303	290 - 375	.0008" - .0010"	.0010" - .0015"	.0013" - .0020"	.0015" - .0020"	.0020" - .0030"	.0025" - .0035"	.0030" - .0040"	.0035" - .0045"
	Stainless Steel: 304, 316, 400 Series, Kovar, Invar	250 - 300	.0006" - .0010"	.0008" - .0015"	.0010" - .0020"	.0012" - .0020"	.0015" - .0020"	.0020" - .0025"	.0025" - .0030"	.0025" - .0035"
	Stainless Steel: 304L, 316L, 8620, 17/4, 15/5, 13/8, PH Mat'l	200 - 250	.0006" - .0008"	.0007" - .0010"	.0008" - .0010"	.0010" - .0015"	.0010" - .0020"	.0015" - .0025"	.0020" - .0030"	.0020" - .0030"
P	**HIGH STRENGTH TOOL STEELS**									
	High Strength Tool Steel: 4130, 4140, A2, D2, P20, H13	250 - 400	.0006" - .0008"	.0007" - .0010"	.0008" - .0010"	.0010" - .0015"	.0010" - .0020"	.0015" - .0025"	.0020" - .0030"	.0020" - .0030"
	CARBON STEELS									
	Carbon Steels: 1000 Series	275 - 425	.0006" - .0008"	.0008" - .0012"	.0010" - .0015"	.0010" - .0020"	.0015" - .0025"	.0020" - .0025"	.0020" - .0030"	.0025" - .0035"
K	**CAST MATERIAL**									
	Cast Iron	400 - 500	.0010" - .0020"	.0010" - .0020"	.0015" - .0020"	.0015" - .0025"	.0020" - .0035"	.0025" - .0035"	.0030" - .0040"	.0040" - .0050"

	Slotting	Profiling
Axial (ap)	0.5xD	2xD
Radial (ae)	1xD	0.2xD



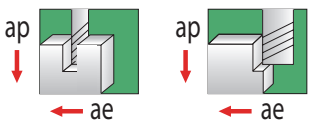
NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL®

GARR TOOL Milling Guide for VHM Series 4-Flute Rougher

	ISO Material	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)							
			4.0mm	5.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**NICKEL BASE ALLOYS**										
	High Temperature Alloys: Inconel 625/718, A286	30 - 55	.008 - .015	.018 - .025	.020 - .025	.025 - .038	.025 - .038	.025 - .038	.030 - .050	.038 - .063	.038 - .063
	TITANIUM ALLOYS										
	Titanium: 6AL4V, CP	45 - 60	.010 - .020	.020 - .025	.025 - .038	.025 - .050	.038 - .050	.050 - .076	.063 - .076	.076 - .089	.076 - .102
M	**STAINLESS STEELS**										
	Stainless Steel: 303	90 - 115	.010 - .020	.020 - .025	.025 - .038	.033 - .050	.038 - .050	.050 - .076	.063 - .089	.076 - .102	.089 - .114
	Stainless Steel: 304, 316, 400 Series, Kovar, Invar	75 - 90	.008 - .015	.015 - .025	.020 - .038	.025 - .050	.030 - .050	.038 - .050	.050 - .063	.063 - .076	.063 - .089
	Stainless Steel: 304L, 316L, 8620, 17/4, 15/5, 13/8, PH Mat'l	60 - 75	.008 - .015	.015 - .020	.018 - .025	.020 - .025	.025 - .038	.025 - .050	.038 - .063	.050 - .076	.050 - .076
P	**HIGH STRENGTH TOOL STEELS**										
	High Strength Tool Steel: 4130, 4140, A2, D2, P20, H13	75 - 125	.006 - .015	.015 - .020	.018 - .025	.020 - .025	.025 - .038	.025 - .050	.038 - .063	.050 - .076	.050 - .076
	CARBON STEELS										
	Carbon Steels: 1000 Series	85 - 130	.008 - .015	.015 - .020	.020 - .030	.025 - .038	.025 - .050	.038 - .063	.050 - .063	.050 - .076	.063 - .089
K	**CAST MATERIAL**										
	Cast Iron	125 - 150	.013 - .025	.025 - .050	.025 - .050	.038 - .050	.038 - .063	.050 - .089	.063 - .089	.076 - .102	.102 - .127

	Slotting	Profiling
Axial (ap)	0.5xD	2xD
Radial (ae)	1xD	0.2xD



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

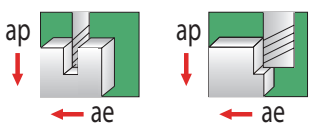
GARR TOOL High Performance Milling Guide for VRX

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 5/8" DIAMETER AND LARGER END MILLS

	ISO Material	HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)									
				1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
S	**COBALT BASE ALLOYS**												
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	75 - 150 60 - 125	.0003" - .0006" .0003" - .0005"	.0004" - .0007" .0003" - .0006"	.0005" - .0008" .0004" - .0007"	.0007" - .0012" .0006" - .0010"	.0008" - .0015" .0007" - .0013"	.0010" - .0019" .0009" - .0017"	.0014" - .0024" .0012" - .0020"	.0016" - .0030" .0014" - .0026"	.0020" - .0038" .0018" - .0034"	.0028" - .0048" .0024" - .0040"
	NICKEL BASE ALLOYS												
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	75 - 150 60 - 125	.0003" - .0006" .0003" - .0005"	.0004" - .0007" .0003" - .0006"	.0005" - .0008" .0004" - .0007"	.0007" - .0012" .0006" - .0010"	.0008" - .0015" .0007" - .0013"	.0010" - .0019" .0009" - .0017"	.0014" - .0024" .0012" - .0020"	.0016" - .0030" .0014" - .0026"	.0020" - .0038" .0018" - .0034"	.0028" - .0048" .0024" - .0040"
	IRON BASE ALLOYS												
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	75 - 150 60 - 125	.0003" - .0006" .0003" - .0005"	.0004" - .0007" .0003" - .0006"	.0005" - .0008" .0004" - .0007"	.0007" - .0012" .0006" - .0010"	.0008" - .0015" .0007" - .0013"	.0010" - .0019" .0009" - .0017"	.0014" - .0024" .0012" - .0020"	.0016" - .0030" .0014" - .0026"	.0020" - .0038" .0018" - .0034"	.0028" - .0048" .0024" - .0040"
	TITANIUM ALLOYS												
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		175 - 300	.0003" - .0006"	.0004" - .0007"	.0005" - .0008"	.0007" - .0014"	.0008" - .0017"	.0010" - .0021"	.0014" - .0028"	.0016" - .0034"	.0020" - .0042"	.0028" - .0056"
	5553 / Beta Titanium		125 - 225	.0003" - .0006"	.0003" - .0007"	.0004" - .0008"	.0007" - .0012"	.0008" - .0015"	.0010" - .0019"	.0014" - .0024"	.0016" - .0030"	.0020" - .0038"	.0028" - .0048"
M	**STAINLESS STEELS**												
	13/8, 15/5, 17-4, pH Types	< 40 > 40	175 - 300 150 - 225	.0003" - .0006" .0003" - .0005"	.0004" - .0007" .0003" - .0006"	.0005" - .0008" .0004" - .0007"	.0007" - .0012" .0006" - .0010"	.0008" - .0015" .0007" - .0013"	.0010" - .0019" .0009" - .0017"	.0014" - .0024" .0012" - .0020"	.0016" - .0030" .0014" - .0026"	.0020" - .0038" .0018" - .0034"	.0028" - .0048" .0022" - .0040"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	200 - 325 175 - 250	.0003" - .0006" .0003" - .0005"	.0004" - .0007" .0003" - .0006"	.0005" - .0008" .0004" - .0007"	.0007" - .0012" .0006" - .0011"	.0008" - .0015" .0007" - .0014"	.0010" - .0019" .0009" - .0018"	.0014" - .0024" .0012" - .0022"	.0016" - .0030" .0014" - .0028"	.0020" - .0038" .0018" - .0036"	.0028" - .0048" .0024" - .0044"
	400 Series - 403, 405, 420, 455	< 40 > 40	225 - 350 175 - 250	.0003" - .0006" .0003" - .0005"	.0004" - .0007" .0003" - .0006"	.0005" - .0008" .0004" - .0007"	.0007" - .0013" .0006" - .0011"	.0008" - .0016" .0007" - .0014"	.0010" - .0020" .0009" - .0018"	.0014" - .0026" .0012" - .0022"	.0016" - .0032" .0014" - .0028"	.0024" - .0043" .0018" - .0036"	.0028" - .0052" .0024" - .0044"
P	**HIGH STRENGTH TOOL STEELS**												
	A2, D2, P20, H13, S7, O1	< 40 > 40	175 - 300 125 - 275	.0004" - .0007" .0003" - .0005"	.0005" - .0008" .0003" - .0005"	.0006" - .0010" .0005" - .0008"	.0008" - .0013" .0007" - .0010"	.0009" - .0016" .0008" - .0013"	.0011" - .0020" .0010" - .0017"	.0016" - .0026" .0014" - .0020"	.0018" - .0032" .0016" - .0026"	.0022" - .0040" .0020" - .0034"	.0032" - .0052" .0028" - .0040"
	MEDIUM ALLOY TOOL STEELS												
	4140, 4340, 52100, 6150, 8620	< 40 > 40	250 - 400 225 - 300	.0004" - .0007" .0003" - .0005"	.0005" - .0008" .0003" - .0005"	.0006" - .0010" .0005" - .0008"	.0008" - .0014" .0007" - .0011"	.0009" - .0017" .0008" - .0014"	.0011" - .0021" .0010" - .0018"	.0016" - .0026" .0014" - .0022"	.0018" - .0034" .0016" - .0028"	.0022" - .0042" .0020" - .0036"	.0032" - .0056" .0028" - .0044"
	CARBON STEELS												
	1000's - 1018, 1020, 12L14	< 40	300 - 425	.0004" - .0007"	.0005" - .0008"	.0006" - .0010"	.0008" - .0015"	.0009" - .0018"	.0011" - .0022"	.0016" - .0030"	.0018" - .0036"	.0022" - .0044"	.0032" - .0060"
K	**CAST MATERIAL**												
	Ductile Iron		300 - 425	.0004" - .0007"	.0005" - .0008"	.0006" - .0010"	.0009" - .0016"	.0010" - .0019"	.0012" - .0023"	.0018" - .0032"	.0020" - .0038"	.0024" - .0046"	.0036" - .0064"
	Gray Iron		325 - 475	.0005" - .0008"	.0007" - .0010"	.0007" - .0012"	.0010" - .0017"	.0011" - .0020"	.0013" - .0024"	.0020" - .0034"	.0022" - .0040"	.0026" - .0048"	.0040" - .0068"

	Slotting Pocket Milling	Profiling Side Milling
Axial (ap)	up to 1.5xD	up to 2xD
Radial (ae)	1xD	5% - 15% of Dia.



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

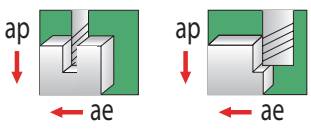
GARR TOOL®

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 16mm DIAMETER AND LARGER END MILLS

	ISO Material	HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz) 1.5mm	3.0mm	5.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**COBALT BASE ALLOYS**												
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	25 - 45 20 - 40	.008 - .015 .008 - .012	.010 - .018 .008 - .015	.013 - .020 .010 - .018	.018 - .030 .015 - .025	.020 - .038 .018 - .033	.025 - .048 .023 - .043	.036 - .061 .030 - .051	.041 - .076 .036 - .066	.051 - .097 .046 - .086	.071 - .122 .061 - .102
	NICKEL BASE ALLOYS												
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	25 - 45 20 - 40	.008 - .015 .008 - .012	.010 - .018 .008 - .015	.013 - .020 .010 - .018	.018 - .030 .015 - .025	.020 - .038 .018 - .033	.025 - .048 .023 - .043	.036 - .061 .030 - .051	.041 - .076 .036 - .066	.051 - .097 .046 - .086	.071 - .122 .061 - .102
	IRON BASE ALLOYS												
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	25 - 45 20 - 40	.008 - .015 .008 - .012	.010 - .018 .008 - .015	.013 - .020 .010 - .018	.018 - .030 .015 - .025	.020 - .038 .018 - .033	.025 - .048 .023 - .043	.036 - .061 .030 - .051	.041 - .076 .036 - .066	.051 - .097 .046 - .086	.071 - .122 .061 - .102
	TITANIUM ALLOYS												
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		55 - 90	.008 - .015	.010 - .018	.013 - .020	.018 - .036	.020 - .043	.025 - .053	.036 - .071	.041 - .086	.051 - .107	.071 - .142
	5553 / Beta Titanium		40 - 70	.008 - .015	.008 - .018	.010 - .020	.018 - .030	.020 - .038	.025 - .048	.036 - .061	.041 - .076	.051 - .097	.071 - .122
M	**STAINLESS STEELS**												
	13/8, 15/5, 17-4, pH Types	< 40 > 40	55 - 90 45 - 70	.008 - .015 .008 - .013	.010 - .018 .008 - .015	.013 - .020 .010 - .018	.018 - .030 .015 - .025	.020 - .038 .018 - .033	.025 - .048 .023 - .043	.036 - .061 .030 - .051	.041 - .076 .036 - .066	.051 - .097 .046 - .086	.071 - .122 .056 - .102
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	60 - 100 55 - 75	.008 - .015 .008 - .013	.010 - .018 .008 - .015	.013 - .020 .010 - .018	.018 - .030 .015 - .028	.020 - .038 .018 - .036	.025 - .048 .023 - .046	.036 - .061 .030 - .056	.041 - .076 .036 - .071	.051 - .097 .046 - .091	.071 - .122 .061 - .112
	400 Series - 403, 405, 420, 455	< 40 > 40	70 - 110 55 - 75	.008 - .015 .008 - .013	.010 - .018 .008 - .015	.013 - .020 .010 - .018	.018 - .033 .015 - .028	.020 - .041 .018 - .036	.025 - .051 .023 - .046	.036 - .066 .030 - .056	.041 - .081 .036 - .071	.061 - .109 .046 - .091	.071 - .132 .061 - .112
P	**HIGH STRENGTH TOOL STEELS**												
	A2, D2, P20, H13, S7, O1	< 40 > 40	55 - 90 40 - 85	.010 - .018 .008 - .013	.013 - .020 .008 - .013	.015 - .025 .013 - .020	.020 - .033 .018 - .025	.023 - .041 .020 - .033	.028 - .051 .025 - .043	.041 - .066 .036 - .051	.046 - .081 .041 - .066	.056 - .102 .051 - .086	.081 - .132 .071 - .102
	MEDIUM ALLOY TOOL STEELS												
	4140, 4340, 52100, 6150, 8620	< 40 > 40	75 - 120 70 - 90	.010 - .018 .008 - .013	.013 - .020 .008 - .013	.015 - .025 .013 - .020	.020 - .036 .018 - .028	.023 - .043 .020 - .036	.028 - .053 .025 - .046	.041 - .071 .036 - .056	.046 - .086 .041 - .071	.056 - .107 .051 - .091	.081 - .142 .071 - .112
	CARBON STEELS												
	1000's - 1018, 1020, 12L14	< 40	90 - 130	.010 - .018	.013 - .020	.015 - .025	.020 - .038	.023 - .046	.028 - .056	.041 - .076	.046 - .091	.056 - .112	.081 - .152
K	**CAST MATERIAL**												
	Ductile Iron		90 - 130	.010 - .018	.013 - .020	.015 - .025	.023 - .041	.025 - .048	.030 - .058	.046 - .081	.051 - .097	.061 - .117	.091 - .163
	Gray Iron		100 - 145	.013 - .020	.018 - .025	.018 - .030	.025 - .043	.028 - .051	.033 - .061	.051 - .086	.056 - .102	.066 - .122	.102 - .173

	Slotting Pocket Milling	Profiling Side Milling
Axial (ap)	up to 1.5xD	up to 2xD
Radial (ae)	1xD	5% - 15% of Dia.



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

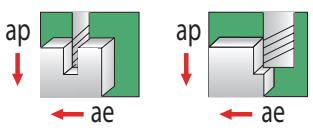
GARR TOOL High Performance Milling Guide for V4

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 5/8" DIAMETER AND LARGER END MILLS

	ISO Material	HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)						
				1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
S	**COBALT BASE ALLOYS**									
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	90 - 185 75 - 150	.0008" - .0015" .0006" - .0013"	.0009" - .0018" .0007" - .0016"	.0011" - .0022" .0009" - .0020"	.0016" - .0030" .0012" - .0026"	.0018" - .0036" .0014" - .0032"	.0022" - .0044" .0018" - .0040"	.0032" - .0060" .0024" - .0052"
	NICKEL BASE ALLOYS									
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	90 - 185 75 - 150	.0008" - .0015" .0006" - .0013"	.0009" - .0018" .0007" - .0016"	.0011" - .0022" .0009" - .0020"	.0016" - .0030" .0012" - .0026"	.0018" - .0036" .0014" - .0032"	.0022" - .0044" .0018" - .0040"	.0032" - .0060" .0024" - .0052"
	IRON BASE ALLOYS									
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	90 - 185 75 - 150	.0008" - .0015" .0006" - .0013"	.0009" - .0018" .0007" - .0016"	.0011" - .0022" .0009" - .0020"	.0016" - .0030" .0012" - .0026"	.0018" - .0036" .0014" - .0032"	.0022" - .0044" .0018" - .0040"	.0032" - .0060" .0024" - .0052"
	TITANIUM ALLOYS									
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		200 - 375	.0009" - .0017"	.0010" - .0020"	.0012" - .0024"	.0018" - .0034"	.0020" - .0040"	.0024" - .0048"	.0036" - .0068"
	5553 / Beta Titanium		150 - 280	.0009" - .0015"	.0010" - .0018"	.0012" - .0022"	.0018" - .0030"	.0020" - .0036"	.0024" - .0044"	.0032" - .0060"
M	**STAINLESS STEELS**									
	13/8, 15/5, 17-4, pH Types	< 40 > 40	225 - 375 175 - 275	.0008" - .0015" .0006" - .0013"	.0009" - .0018" .0007" - .0016"	.0011" - .0022" .0009" - .0020"	.0016" - .0030" .0012" - .0026"	.0018" - .0036" .0014" - .0032"	.0022" - .0044" .0018" - .0040"	.0032" - .0060" .0024" - .0052"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	250 - 400 175 - 275	.0008" - .0016" .0006" - .0013"	.0009" - .0018" .0007" - .0016"	.0011" - .0022" .0009" - .0020"	.0016" - .0030" .0012" - .0026"	.0018" - .0036" .0014" - .0032"	.0022" - .0044" .0018" - .0040"	.0032" - .0060" .0024" - .0052"
	400 Series - 403, 405, 420, 455	< 40 > 40	225 - 425 175 - 325	.0008" - .0016" .0006" - .0014"	.0009" - .0019" .0007" - .0017"	.0011" - .0023" .0009" - .0021"	.0016" - .0032" .0012" - .0028"	.0018" - .0038" .0014" - .0034"	.0022" - .0046" .0018" - .0042"	.0032" - .0064" .0024" - .0056"
P	**HIGH STRENGTH TOOL STEELS**									
	A2, D2, P20, H13, S7, O1	< 40 > 40	225 - 400 150 - 325	.0008" - .0016" .0006" - .0013"	.0011" - .0019" .0010" - .0016"	.0013" - .0023" .0012" - .0020"	.0016" - .0032" .0012" - .0026"	.0022" - .0038" .0020" - .0032"	.0026" - .0056" .0024" - .0040"	.0040" - .0064" .0036" - .0052"
	MEDIUM ALLOY TOOL STEELS									
	4140, 4340, 52100, 6150, 8620	< 40 > 40	350 - 500 250 - 375	.0008" - .0017" .0006" - .0014"	.0011" - .0020" .0010" - .0017"	.0013" - .0024" .0012" - .0020"	.0016" - .0034" .0012" - .0028"	.0022" - .0040" .0020" - .0034"	.0026" - .0048" .0024" - .0040"	.0040" - .0068" .0036" - .0056"
	CARBON STEELS									
	1000's - 1018, 1020, 12L14	< 40	375 - 600	.0010" - .0018"	.0011" - .0021"	.0013" - .0025"	.0020" - .0036"	.0022" - .0042"	.0026" - .0050"	.0040" - .0072"
K	**CAST MATERIAL**									
	Ductile Iron		350 - 525	.0010" - .0018"	.0013" - .0022"	.0015" - .0026"	.0020" - .0036"	.0026" - .0044"	.0030" - .0052"	.0040" - .0072"
	Gray Iron		450 - 590	.0011" - .0020"	.0014" - .0023"	.0016" - .0027"	.0022" - .0040"	.0028" - .0046"	.0032" - .0054"	.0044" - .0080"

	Slotting Pocket Milling	Profiling Side Milling
Axial (ap)	up to 1.5xD	up to 2xD
Radial (ae)	1xD	5% - 15% of Dia.



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

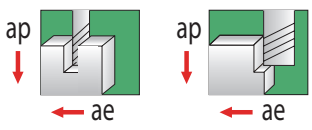
GARR TOOL®

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 16mm DIAMETER AND LARGER END MILLS

	ISO Material	HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)						
				6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**COBALT BASE ALLOYS**									
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	27 - 57 25 - 45	.020 - .038 .015 - .033	.023 - .046 .018 - .041	.028 - .056 .023 - .051	.041 - .076 .030 - .066	.046 - .091 .036 - .081	.056 - .112 .046 - .102	.081 - .152 .061 - .132
	NICKEL BASE ALLOYS									
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	27 - 57 25 - 45	.020 - .038 .015 - .033	.023 - .046 .018 - .041	.028 - .056 .023 - .051	.041 - .076 .030 - .066	.046 - .091 .036 - .081	.056 - .112 .046 - .102	.081 - .152 .061 - .132
	IRON BASE ALLOYS									
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	27 - 57 25 - 45	.020 - .038 .015 - .033	.023 - .046 .018 - .041	.028 - .056 .023 - .051	.041 - .076 .030 - .066	.046 - .091 .036 - .081	.056 - .112 .046 - .102	.081 - .152 .061 - .132
	TITANIUM ALLOYS									
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		60 - 115	.023 - .043	.025 - .051	.030 - .061	.046 - .086	.051 - .102	.061 - .122	.091 - .173
	5553 / Beta Titanium		45 - 85	.023 - .038	.025 - .046	.030 - .056	.046 - .076	.051 - .091	.061 - .112	.081 - .152
M	**STAINLESS STEELS**									
	13/8, 15/5, 17-4, pH Types	< 40 > 40	70 - 115 55 - 85	.020 - .038 .015 - .033	.023 - .046 .018 - .041	.028 - .056 .023 - .051	.041 - .076 .030 - .066	.046 - .091 .036 - .081	.056 - .112 .046 - .102	.081 - .152 .061 - .132
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	75 - 120 55 - 85	.020 - .038 .015 - .033	.023 - .046 .018 - .041	.028 - .056 .023 - .051	.041 - .076 .030 - .066	.046 - .091 .036 - .081	.056 - .112 .046 - .102	.081 - .152 .061 - .132
	400 Series - 403, 405, 420, 455	< 40 > 40	70 - 130 55 - 100	.020 - .041 .015 - .036	.023 - .048 .018 - .043	.028 - .058 .023 - .053	.041 - .081 .030 - .071	.046 - .097 .036 - .086	.056 - .117 .046 - .107	.081 - .163 .061 - .142
P	**HIGH STRENGTH TOOL STEELS**									
	A2, D2, P20, H13, S7, O1	< 40 > 40	70 - 120 45 - 100	.020 - .041 .015 - .033	.028 - .048 .025 - .041	.033 - .058 .030 - .051	.041 - .081 .030 - .066	.056 - .097 .051 - .081	.066 - .142 .061 - .102	.102 - .163 .091 - .132
	MEDIUM ALLOY TOOL STEELS									
	4140, 4340, 52100, 6150, 8620	< 40 > 40	110 - 150 75 - 115	.020 - .043 .015 - .036	.028 - .051 .025 - .043	.033 - .061 .030 - .051	.041 - .086 .030 - .071	.056 - .102 .051 - .086	.066 - .122 .061 - .102	.102 - .173 .091 - .142
	CARBON STEELS									
	1000's - 1018, 1020, 12L14	< 40	115 - 180	.025 - .046	.028 - .053	.033 - .064	.051 - .091	.056 - .107	.066 - .127	.102 - .183
K	**CAST MATERIAL**									
	Ductile Iron		110 - 160	.025 - .046	.033 - .056	.038 - .066	.051 - .091	.066 - .112	.076 - .132	.102 - .183
	Gray Iron		135 - 180	.028 - .051	.036 - .058	.041 - .069	.056 - .102	.071 - .117	.081 - .137	.112 - .203

	Slotting Pocket Milling	Profiling Side Milling
Axial (ap)	up to 1.5xD	up to 2xD
Radial (ae)	1xD	5% - 15% of Dia.



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

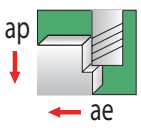
GARR TOOL High Performance Milling Guide for V5, V5C
(HIGH EFFICIENCY MILLING)

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 5/8" DIAMETER AND LARGER END MILLS

ISO Material		HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)						
				1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
S	**COBALT BASE ALLOYS**									
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	105 - 220 90 - 180	.0009" - .0016" .0007" - .0014"	.0010" - .0019" .0008" - .0017"	.0012" - .0023" .0010" - .0021"	.0018" - .0032" .0014" - .0028"	.0020" - .0038" .0016" - .0034"	.0024" - .0046" .0020" - .0042"	.0036" - .0064" .0028" - .0056"
	NICKEL BASE ALLOYS									
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	105 - 220 90 - 180	.0009" - .0016" .0007" - .0014"	.0010" - .0019" .0008" - .0017"	.0012" - .0023" .0010" - .0021"	.0018" - .0032" .0014" - .0028"	.0020" - .0038" .0016" - .0034"	.0024" - .0046" .0020" - .0042"	.0036" - .0064" .0028" - .0056"
	IRON BASE ALLOYS									
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	105 - 220 90 - 180	.0009" - .0016" .0007" - .0014"	.0010" - .0019" .0008" - .0017"	.0012" - .0023" .0010" - .0021"	.0018" - .0032" .0014" - .0028"	.0020" - .0038" .0016" - .0034"	.0024" - .0046" .0020" - .0042"	.0036" - .0064" .0028" - .0056"
	TITANIUM ALLOYS									
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		240 - 450	.0010" - .0018"	.0011" - .0021"	.0013" - .0025"	.0020" - .0036"	.0022" - .0042"	.0026" - .0050"	.0040" - .0072"
	5553 / Beta Titanium		180 - 340	.0010" - .0016"	.0011" - .0019"	.0013" - .0023"	.0020" - .0032"	.0022" - .0038"	.0026" - .0046"	.0040" - .0064"
M	**STAINLESS STEELS**									
	13/8, 15/5, 17-4, pH Types	< 40 > 40	300 - 450 210 - 330	.0009" - .0016" .0007" - .0014"	.0010" - .0019" .0008" - .0017"	.0012" - .0023" .0010" - .0021"	.0018" - .0032" .0014" - .0028"	.0020" - .0038" .0016" - .0034"	.0024" - .0046" .0020" - .0042"	.0036" - .0064" .0028" - .0056"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	300 - 480 210 - 330	.0009" - .0016" .0007" - .0014"	.0010" - .0019" .0008" - .0017"	.0012" - .0023" .0010" - .0021"	.0018" - .0032" .0014" - .0028"	.0020" - .0038" .0016" - .0034"	.0024" - .0046" .0020" - .0042"	.0036" - .0064" .0028" - .0056"
	400 Series - 403, 405, 420, 455	< 40 > 40	270 - 510 210 - 390	.0009" - .0017" .0007" - .0015"	.0010" - .0020" .0008" - .0018"	.0012" - .0024" .0010" - .0022"	.0018" - .0034" .0014" - .0030"	.0020" - .0040" .0016" - .0036"	.0024" - .0048" .0020" - .0044"	.0036" - .0068" .0028" - .0060"
P	**HIGH STRENGTH TOOL STEELS**									
	A2, D2, P20, H13, S7, O1	< 40 > 40	270 - 480 180 - 390	.0009" - .0017" .0007" - .0014"	.0010" - .0020" .0008" - .0017"	.0012" - .0024" .0010" - .0021"	.0018" - .0034" .0014" - .0028"	.0020" - .0040" .0016" - .0034"	.0024" - .0048" .0020" - .0042"	.0036" - .0068" .0028" - .0056"
	MEDIUM ALLOY TOOL STEELS									
	4140, 4340, 52100, 6150, 8620	< 40 > 40	420 - 600 300 - 450	.0009" - .0018" .0007" - .0015"	.0010" - .0021" .0008" - .0018"	.0012" - .0025" .0010" - .0022"	.0018" - .0036" .0014" - .0030"	.0020" - .0042" .0016" - .0036"	.0024" - .0050" .0020" - .0044"	.0036" - .0072" .0028" - .0060"
	CARBON STEELS									
	1000's - 1018, 1020, 12L14	< 40	450 - 720	.0011" - .0019"	.0012" - .0022"	.0014" - .0026"	.0022" - .0038"	.0024" - .0044"	.0028" - .0052"	.0044" - .0076"
K	**CAST MATERIAL**									
	Ductile Iron		420 - 630	.0011" - .0019"	.0012" - .0022"	.0014" - .0026"	.0022" - .0038"	.0024" - .0044"	.0028" - .0052"	.0044" - .0076"
	Gray Iron		540 - 710	.0012" - .0021"	.0013" - .0024"	.0015" - .0028"	.0024" - .0042"	.0026" - .0048"	.0030" - .0056"	.0048" - .0084"

	Profile/Trochoidal Milling
Axial (ap)	up to 2xD
Radial (ae)	5% - 15% of Dia.



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

GARR TOOL®

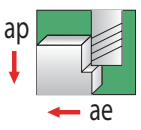
GARR TOOL High Performance Milling Guide for V5, V5C
(HIGH EFFICIENCY MILLING)

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 16mm DIAMETER AND LARGER END MILLS

	ISO Material	HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz) 6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**COBALT BASE ALLOYS**									
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	30 - 70 27 - 55	.023 - .041 .018 - .036	.025 - .048 .020 - .043	.030 - .058 .025 - .053	.046 - .081 .036 - .071	.051 - .097 .041 - .086	.061 - .117 .051 - .107	.091 - .163 .071 - .142
	NICKEL BASE ALLOYS									
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	30 - 70 27 - 55	.023 - .041 .018 - .036	.025 - .048 .020 - .043	.030 - .058 .025 - .053	.046 - .081 .036 - .071	.051 - .097 .041 - .086	.061 - .117 .051 - .107	.091 - .163 .071 - .142
	IRON BASE ALLOYS									
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	30 - 70 27 - 55	.023 - .041 .018 - .036	.025 - .048 .020 - .043	.030 - .058 .025 - .053	.046 - .081 .036 - .071	.051 - .097 .041 - .086	.061 - .117 .051 - .107	.091 - .163 .071 - .142
	TITANIUM ALLOYS									
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		75 - 135	.025 - .046	.028 - .053	.033 - .064	.051 - .091	.056 - .107	.066 - .127	.102 - .183
	5553 / Beta Titanium		55 - 105	.025 - .041	.028 - .048	.033 - .058	.051 - .081	.056 - .097	.066 - .117	.102 - .163
M	**STAINLESS STEELS**									
	13/8, 15/5, 17-4, pH Types	< 40 > 40	90 - 135 65 - 100	.023 - .041 .018 - .036	.025 - .048 .020 - .043	.030 - .058 .025 - .053	.046 - .081 .036 - .071	.051 - .097 .041 - .086	.061 - .117 .051 - .107	.091 - .163 .071 - .142
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	90 - 145 65 - 100	.023 - .041 .018 - .036	.025 - .048 .020 - .043	.030 - .058 .025 - .053	.046 - .081 .036 - .071	.051 - .097 .041 - .086	.061 - .117 .051 - .107	.091 - .163 .071 - .142
	400 Series - 403, 405, 420, 455	< 40 > 40	85 - 155 65 - 120	.023 - .043 .018 - .038	.025 - .051 .020 - .046	.030 - .061 .025 - .056	.046 - .086 .036 - .076	.051 - .102 .041 - .091	.061 - .122 .051 - .112	.091 - .173 .071 - .152
P	**HIGH STRENGTH TOOL STEELS**									
	A2, D2, P20, H13, S7, O1	< 40 > 40	85 - 145 55 - 120	.023 - .043 .018 - .036	.025 - .051 .020 - .043	.030 - .061 .025 - .053	.046 - .086 .036 - .071	.051 - .102 .041 - .086	.061 - .122 .051 - .107	.091 - .173 .071 - .142
	MEDIUM ALLOY TOOL STEELS									
	4140, 4340, 52100, 6150, 8620	< 40 > 40	130 - 180 90 - 135	.023 - .046 .018 - .038	.025 - .053 .020 - .046	.030 - .064 .025 - .056	.046 - .091 .036 - .076	.051 - .107 .041 - .091	.061 - .127 .051 - .112	.091 - .183 .071 - .152
	CARBON STEELS									
	1000's - 1018, 1020, 12L14	< 40	135 - 220	.028 - .048	.030 - .056	.036 - .066	.056 - .097	.061 - .112	.071 - .132	.112 - .193
K	**CAST MATERIAL**									
	Ductile Iron		130 - 190	.028 - .048	.030 - .056	.036 - .066	.056 - .097	.061 - .112	.071 - .132	.112 - .193
	Gray Iron		170 - 215	.030 - .053	.033 - .061	.038 - .071	.061 - .107	.066 - .122	.076 - .142	.122 - .213

	Profile/Trochoidal Milling
Axial (ap)	up to 2xD
Radial (ae)	5% - 15% of Dia.



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

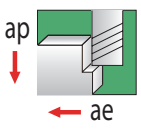
GARR TOOL High Performance Milling Guide for VRX-6
(HIGH EFFICIENCY MILLING)

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 5/8" DIAMETER AND LARGER END MILLS

	ISO Material	HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)					
				1/4"	3/8"	1/2"	5/8"	3/4"	1"
S	**COBALT BASE ALLOYS**								
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	115 - 230 95 - 190	.0006" - .0012" .0004" - .0010"	.0006" - .0014" .0005" - .0013"	.0011" - .0023" .0008" - .0020"	.0011" - .0023" .0009" - .0021"	.0012" - .0028" .0010" - .0026"	.0022" - .0046" .0016" - .0040"
	NICKEL BASE ALLOYS								
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	115 - 230 95 - 190	.0006" - .0013" .0003" - .0007"	.0008" - .0016" .0007" - .0015"	.0012" - .0024" .0008" - .0020"	.0012" - .0025" .0011" - .0022"	.0016" - .0032" .0014" - .0030"	.0024" - .0048" .0016" - .0040"
	IRON BASE ALLOYS								
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	115 - 230 95 - 190	.0006" - .0012" .0003" - .0007"	.0008" - .0014" .0005" - .0013"	.0011" - .0023" .0007" - .0019"	.0012" - .0024" .0010" - .0022"	.0016" - .0028" .0010" - .0026"	.0022" - .0046" .0014" - .0038"
	TITANIUM ALLOYS								
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		250 - 470	.0010" - .0015"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0030" - .0050"	.0040" - .0060"
	5553 / Beta Titanium		185 - 350	.0008" - .0014"	.0012" - .0022"	.0016" - .0028"	.0023" - .0034"	.0024" - .0044"	.0032" - .0056"
M	**STAINLESS STEELS**								
	13/8, 15/5, 17-4, pH Types	< 40 > 40	280 - 470 215 - 345	.0008" - .0015" .0006" - .0013"	.0010" - .0017" .0009" - .0016"	.0016" - .0030" .0012" - .0026"	.0018" - .0031" .0013" - .0028"	.0020" - .0034" .0018" - .0032"	.0032" - .0060" .0024" - .0052"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	310 - 500 215 - 345	.0008" - .0015" .0006" - .0013"	.0010" - .0017" .0008" - .0015"	.0016" - .0030" .0012" - .0026"	.0017" - .0028" .0014" - .0024"	.0020" - .0034" .0016" - .0030"	.0032" - .0060" .0022" - .0038"
	400 Series - 403, 405, 420, 455	< 40 > 40	280 - 530 215 - 405	.0008" - .0016" .0006" - .0014"	.0010" - .0018" .0009" - .0017"	.0016" - .0032" .0012" - .0028"	.0020" - .0035" .0013" - .0030"	.0020" - .0036" .0018" - .0034"	.0032" - .0064" .0024" - .0056"
P	**HIGH STRENGTH TOOL STEELS**								
	A2, D2, P20, H13, S7, O1	< 40 > 40	280 - 500 185 - 410	.0008" - .0015" .0006" - .0013"	.0013" - .0023" .0012" - .0020"	.0018" - .0029" .0014" - .0022"	.0024" - .0034" .0020" - .0028"	.0034" - .0044" .0024" - .0032"	.0036" - .0048" .0030" - .0040"
	MEDIUM ALLOY TOOL STEELS								
	4140, 4340, 52100, 6150, 8620	< 40 > 40	435 - 625 310 - 470	.0010" - .0016" .0007" - .0012"	.0013" - .0024" .0012" - .0020"	.0018" - .0029" .0014" - .0022"	.0024" - .0034" .0020" - .0028"	.0034" - .0044" .0024" - .0032"	.0036" - .0048" .0030" - .0040"
	CARBON STEELS								
	1000's - 1018, 1020, 12L14	< 40	465 - 750	.0010" - .0017"	.0013" - .0025"	.0018" - .0029"	.0024" - .0034"	.0034" - .0044"	.0036" - .0048"
K	**CAST MATERIAL**								
	Ductile Iron		435 - 660	.0012" - .0019"	.0015" - .0026"	.0024" - .0038"	.0026" - .0050"	.0030" - .0052"	.0048" - .0076"
	Gray Iron		560 - 740	.0013" - .0021"	.0016" - .0027"	.0026" - .0042"	.0028" - .0052"	.0032" - .0064"	.0052" - .0084"

	Profile/Trochoidal Milling
Axial (ap)	up to 2xD
Radial (ae)	5% - 15% of Dia.



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

GARR TOOL®

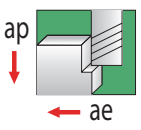
GARR TOOL High Performance Milling Guide for VRX-6
(HIGH EFFICIENCY MILLING)

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 16mm DIAMETER AND LARGER END MILLS

	ISO Material	HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz) 6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**COBALT BASE ALLOYS**									
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	35 - 70 30 - 57	.015 - .030 .010 - .025	.015 - .033 .010 - .030	.015 - .036 .013 - .033	.028 - .058 .020 - .051	.028 - .058 .023 - .053	.030 - .071 .025 - .066	.056 - .117 .041 - .102
	NICKEL BASE ALLOYS									
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	35 - 70 30 - 57	.015 - .033 .008 - .018	.020 - .035 .013 - .028	.020 - .041 .018 - .038	.030 - .061 .020 - .051	.030 - .064 .028 - .056	.041 - .081 .036 - .076	.061 - .122 .041 - .102
	IRON BASE ALLOYS									
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	35 - 70 30 - 57	.015 - .030 .008 - .018	.020 - .033 .010 - .025	.020 - .036 .013 - .033	.028 - .058 .018 - .048	.030 - .061 .025 - .056	.041 - .071 .025 - .066	.056 - .117 .036 - .097
	TITANIUM ALLOYS									
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		75 - 140	.025 - .038	.030 - .050	.038 - .064	.051 - .076	.064 - .089	.076 - .127	.102 - .152
	5553 / Beta Titanium		57 - 110	.020 - .036	.025 - .046	.030 - .056	.041 - .071	.058 - .086	.061 - .112	.081 - .142
M	**STAINLESS STEELS**									
	13/8, 15/5, 17-4, pH Types	< 40 > 40	85 - 140 65 - 105	.020 - .038 .015 - .033	.023 - .040 .020 - .038	.025 - .043 .023 - .041	.041 - .076 .030 - .066	.046 - .079 .033 - .071	.051 - .086 .046 - .081	.081 - .152 .061 - .132
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	95 - 150 65 - 105	.020 - .038 .015 - .033	.023 - .040 .018 - .035	.025 - .043 .020 - .038	.041 - .076 .030 - .066	.043 - .071 .036 - .061	.051 - .086 .041 - .076	.081 - .152 .056 - .097
	400 Series - 403, 405, 420, 455	< 40 > 40	85 - 160 65 - 125	.020 - .041 .015 - .036	.023 - .043 .020 - .040	.025 - .046 .023 - .043	.041 - .081 .030 - .071	.051 - .089 .033 - .076	.051 - .091 .046 - .086	.081 - .163 .061 - .142
P	**HIGH STRENGTH TOOL STEELS**									
	A2, D2, P20, H13, S7, O1	< 40 > 40	85 - 150 57 - 125	.020 - .038 .015 - .033	.025 - .048 .022 - .042	.033 - .058 .030 - .051	.046 - .061 .041 - .056	.061 - .086 .051 - .071	.086 - .112 .061 - .081	.091 - .122 .076 - .102
	MEDIUM ALLOY TOOL STEELS									
	4140, 4340, 52100, 6150, 8620	< 40 > 40	130 - 190 95 - 140	.025 - .041 .018 - .030	.029 - .051 .025 - .041	.033 - .061 .030 - .051	.046 - .061 .041 - .056	.061 - .086 .051 - .071	.086 - .112 .061 - .081	.091 - .122 .076 - .102
	CARBON STEELS									
	1000's - 1018, 1020, 12L14	< 40	140 - 230	.025 - .043	.029 - .053	.033 - .064	.046 - .061	.061 - .086	.086 - .112	.091 - .122
K	**CAST MATERIAL**									
	Ductile Iron		130 - 200	.030 - .048	.034 - .056	.038 - .066	.061 - .097	.066 - .127	.076 - .132	.122 - .193
	Gray Iron		170 - 225	.033 - .053	.037 - .061	.041 - .069	.066 - .107	.071 - .132	.081 - .163	.132 - .213

	Profile/Trochoidal Milling
Axial (ap)	up to 2xD
Radial (ae)	5% - 15% of Dia.



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

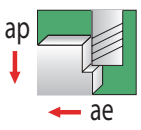
GARR TOOL High Performance Milling Guide for VX-7, VX-7C
(HIGH EFFICIENCY MILLING)

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 5/8" DIAMETER AND LARGER END MILLS

ISO Material		HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)				
				3/8"	1/2"	5/8"	3/4"	1"
S	**COBALT BASE ALLOYS**							
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	120 - 240 100 - 195	.0013" - .0026" .0010" - .0024"	.0019" - .0036" .0014" - .0031"	.0021" - .0043" .0017" - .0038"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	NICKEL BASE ALLOYS							
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	120 - 240 100 - 195	.0013" - .0026" .0010" - .0024"	.0019" - .0036" .0014" - .0031"	.0021" - .0043" .0017" - .0038"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	IRON BASE ALLOYS							
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	120 - 240 100 - 195	.0013" - .0026" .0010" - .0024"	.0019" - .0036" .0014" - .0031"	.0021" - .0043" .0017" - .0038"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	TITANIUM ALLOYS							
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		260 - 490	.0014" - .0028"	.0021" - .0040"	.0026" - .0048"	.0028" - .0056"	.0042" - .0080"
	5553 / Beta Titanium		195 - 365	.0014" - .0026"	.0021" - .0036"	.0026" - .0043"	.0028" - .0052"	.0042" - .0072"
M	**STAINLESS STEELS**							
	13/8, 15/5, 17-4, pH Types	< 40 > 40	290 - 490 225 - 360	.0013" - .0026" .0010" - .0024"	.0019" - .0036" .0014" - .0031"	.0022" - .0043" .0017" - .0039"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	325 - 520 225 - 360	.0013" - .0026" .0010" - .0024"	.0019" - .0036" .0014" - .0031"	.0022" - .0043" .0017" - .0039"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	400 Series - 403, 405, 420, 455	< 40 > 40	290 - 555 225 - 425	.0013" - .0028" .0010" - .0025"	.0019" - .0038" .0014" - .0034"	.0022" - .0046" .0017" - .0041"	.0026" - .0056" .0020" - .0050"	.0038" - .0076" .0028" - .0068"
P	**HIGH STRENGTH TOOL STEELS**							
	A2, D2, P20, H13, S7, O1	< 40 > 40	290 - 520 195 - 425	.0016" - .0028" .0014" - .0024"	.0024" - .0038" .0022" - .0031"	.0026" - .0046" .0024" - .0038"	.0032" - .0056" .0028" - .0048"	.0048" - .0076" .0044" - .0062"
	MEDIUM ALLOY TOOL STEELS							
	4140, 4340, 52100, 6150, 8620	< 40 > 40	455 - 650 325 - 490	.0016" - .0029" .0014" - .0024"	.0024" - .0040" .0022" - .0033"	.0026" - .0048" .0024" - .0040"	.0032" - .0058" .0028" - .0048"	.0048" - .0080" .0044" - .0066"
	CARBON STEELS							
	1000's - 1018, 1020, 12L14	< 40	490 - 780	.0016" - .0030"	.0024" - .0043"	.0026" - .0050"	.0032" - .0060"	.0048" - .0086"
K	**CAST MATERIAL**							
	Ductile Iron		455 - 685	.0018" - .0031"	.0029" - .0046"	.0031" - .0053"	.0036" - .0062"	.0058" - .0092"
	Gray Iron		585 - 770	.0019" - .0032"	.0031" - .0048"	.0034" - .0055"	.0038" - .0064"	.0062" - .0096"

	Profile/Trochoidal Milling
Axial (ap)	up to 2xD
Radial (ae)	5% - 15% of Dia.



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

GARR TOOL®

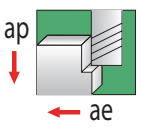
GARR TOOL High Performance Milling Guide for VX-7, VX-7C
(HIGH EFFICIENCY MILLING)

NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 16mm DIAMETER AND LARGER END MILLS

ISO Material		HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)					
				8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**COBALT BASE ALLOYS**								
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	35 - 75 30 - 60	.024 - .046 .018 - .040	.033 - .066 .025 - .061	.048 - .091 .036 - .079	.053 - .109 .043 - .097	.066 - .132 .051 - .122	.097 - .183 .071 - .157
	NICKEL BASE ALLOYS								
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	35 - 75 30 - 60	.024 - .046 .018 - .040	.033 - .066 .025 - .061	.048 - .091 .036 - .079	.053 - .109 .043 - .097	.066 - .132 .051 - .122	.097 - .183 .071 - .157
	IRON BASE ALLOYS								
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	35 - 75 30 - 60	.024 - .046 .018 - .040	.033 - .066 .025 - .061	.048 - .091 .036 - .079	.053 - .109 .043 - .097	.066 - .132 .051 - .122	.097 - .183 .071 - .157
	TITANIUM ALLOYS								
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		80 - 150	.026 - .051	.036 - .071	.053 - .102	.066 - .122	.071 - .142	.107 - .203
	5553 / Beta Titanium		60 - 110	.026 - .046	.036 - .066	.053 - .091	.066 - .109	.071 - .132	.107 - .183
M	**STAINLESS STEELS**								
	13/8, 15/5, 17-4, pH Types	< 40 > 40	90 - 150 70 - 110	.024 - .046 .018 - .040	.033 - .066 .025 - .061	.048 - .091 .036 - .079	.056 - .109 .043 - .099	.066 - .132 .051 - .122	.097 - .183 .071 - .157
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	100 - 160 70 - 110	.024 - .052 .018 - .040	.033 - .066 .025 - .061	.048 - .091 .036 - .079	.056 - .109 .043 - .099	.066 - .132 .051 - .122	.097 - .183 .071 - .157
	400 Series - 403, 405, 420, 455	< 40 > 40	90 - 170 70 - 130	.024 - .051 .018 - .043	.033 - .071 .025 - .064	.048 - .097 .036 - .086	.056 - .117 .043 - .104	.066 - .142 .051 - .127	.097 - .193 .071 - .173
P	**HIGH STRENGTH TOOL STEELS**								
	A2, D2, P20, H13, S7, O1	< 40 > 40	90 - 160 60 - 130	.032 - .051 .026 - .040	.041 - .071 .036 - .061	.061 - .097 .056 - .079	.066 - .117 .061 - .097	.081 - .142 .071 - .122	.122 - .193 .112 - .157
	MEDIUM ALLOY TOOL STEELS								
	4140, 4340, 52100, 6150, 8620	< 40 > 40	140 - 200 100 - 150	.032 - .053 .026 - .040	.041 - .074 .036 - .061	.061 - .102 .056 - .084	.066 - .122 .061 - .102	.081 - .147 .071 - .122	.122 - .203 .112 - .168
	CARBON STEELS								
	1000's - 1018, 1020, 12L14	< 40	150 - 240	.032 - .053	.041 - .076	.061 - .109	.066 - .127	.081 - .152	.122 - .218
K	**CAST MATERIAL**								
	Ductile Iron		140 - 210	.035 - .057	.046 - .079	.074 - .117	.079 - .135	.091 - .157	.147 - .234
	Gray Iron		180 - 235	.036 - .060	.048 - .081	.079 - .122	.086 - .140	.097 - .163	.157 - .244

	Profile/Trochoidal Milling
Axial (ap)	up to 2xD
Radial (ae)	5% - 15% of Dia.

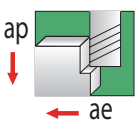


NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL Milling Guide for TMS / TMR
(HIGH EFFICIENCY MILLING)

NOTE - CHIP THINNING CALCULATION ALREADY APPLIED
CHIPLOAD PER TOOTH (Fz) AT 2% RADIAL ENGAGEMENT (USING PROGRAMMED CALCULATION - SEE PAGE 306)
SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 5/8" DIAMETER AND LARGER END MILLS

ISO Material		SFM (Vc)	CHIPLOAD PER TOOTH (Fz)						
			1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
S	**TITANIUM ALLOYS**								
	6Al-4V	250 - 400	.0020" - .0042"	.0030" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"	.0080" - .0143"
	5553	150 - 250	.0015" - .0028"	.0018" - .0035"	.0025" - .0043"	.0030" - .0055"	.0035" - .0065"	.0042" - .0080"	.0052" - .0095"
M	**STAINLESS STEELS**								
	Free Machining (303)	300 - 400	.0020" - .0042"	.0027" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"	.0080" - .0143"
	Austenitic (304 / 304L)	225 - 350	.0017" - .0035"	.0025" - .0043"	.0030" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"
	Martensitic (17-4 / 416)	200 - 250	.0015" - .0028"	.0018" - .0035"	.0025" - .0043"	.0030" - .0055"	.0035" - .0065"	.0042" - .0080"	.0052" - .0095"
P	**MEDIUM ALLOY TOOL STEELS**								
	8620	250 - 400	.0017" - .0035"	.0025" - .0043"	.0030" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"
	4140, D2, S7	250 - 350	.0015" - .0028"	.0018" - .0035"	.0025" - .0043"	.0030" - .0055"	.0035" - .0065"	.0042" - .0080"	.0052" - .0095"
	CARBON STEELS								
	1000 Series, A36, 12L14	300 - 500	.0020" - .0042"	.0027" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"	.0080" - .0143"
	CAST STEELS								
	Steel	250 - 350	.0020" - .0042"	.0027" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"	.0080" - .0143"
K	**CAST MATERIAL**								
	Ductile Iron	250 - 350	.0020" - .0042"	.0027" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"	.0080" - .0143"
	Gray Iron	250 - 350	.0020" - .0042"	.0027" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"	.0080" - .0143"
N	**NON-FERROUS**								
	Aluminum (6061-T6)	300 - 500	.0020" - .0042"	.0027" - .0052"	.0035" - .0065"	.0043" - .0078"	.0052" - .0095"	.0065" - .0115"	.0080" - .0143"
	Copper, Brass	175 - 350	.0017" - .0042"	.0025" - .0052"	.0030" - .0065"	.0035" - .0078"	.0043" - .0095"	.0052" - .0115"	.0065" - .0143"



ap = full flute length
ae = 2%

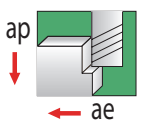
NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL®

GARR TOOL Milling Guide for TMS / TMR
(HIGH EFFICIENCY MILLING)

NOTE - CHIP THINNING CALCULATION ALREADY APPLIED
CHIPLOAD PER TOOTH (Fz) AT 2% RADIAL ENGAGEMENT (USING PROGRAMMED CALCULATION - SEE PAGE 307)
SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 16mm DIAMETER AND LARGER END MILLS

ISO Material		M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)						
			6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**TITANIUM ALLOYS**								
	6Al-4V	98 - 157	.051 - .107	.076 - .132	.089 - .165	.109 - .198	.132 - .241	.165 - .292	.132 - .363
	5553	59 - 98	.038 - .071	.046 - .089	.064 - .109	.076 - .140	.089 - .165	.107 - .203	.132 - .241
M	**STAINLESS STEELS**								
	Free Machining (303)	118 - 157	.051 - .107	.069 - 132	.089 - .165	.109 - .198	.132 - .241	.165 - .292	.132 - .363
	Austenitic (304 / 304L)	89 - 138	.043 - .089	.064 - .109	.076 - .132	.089 - .165	.109 - .198	.132 - .241	.165 - .292
	Martensitic (17-4 / 416)	79 - 98	.038 - .071	.046 - .089	.064 - .109	.076 - .140	.089 - .165	.107 - .203	.132 - .241
P	**MEDIUM ALLOY TOOL STEELS**								
	8620	98 - 157	.043 - .089	.064 - .109	.076 - .132	.089 - .165	.109 - .198	.132 - .241	.165 - .292
	4140, D2, S7	98 - 138	.038 - .071	.046 - .089	.064 - .109	.076 - .140	.089 - .165	.107 - .203	.132 - .241
	CARBON STEELS								
	1000 Series, A36, 12L14	118 - 197	.051 - .107	.069 - .132	.089 - .165	.109 - .198	.132 - .241	.165 - .292	.203 - .363
	CAST STEELS								
	Steel	98 - 138	.051 - .107	.069 - .132	.089 - .165	.109 - .198	.132 - .241	.165 - .292	.203 - .363
K	**CAST MATERIAL**								
	Ductile Iron	98 - 138	.051 - .107	.069 - .132	.089 - .165	.109 - .198	.132 - .241	.165 - .292	.203 - .363
	Gray Iron	98 - 138	.051 - .107	.069 - .132	.089 - .165	.109 - .198	.132 - .241	.165 - .292	.203 - .363
N	**NON-FERROUS**								
	Aluminum (6061-T6)	90 - 150	.050 - .105	.075 - .130	.090 - .165	.105 - .200	.130 - .240	.165 - .292	.203 - .363
	Copper, Brass	60 - 110	.043 - .105	.064 - .130	.076 - .165	.089 - .200	.109 - .240	.132 - .292	.165 - .363

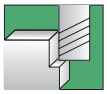


ap = full flute length
ae = 2%

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

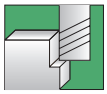
Chip Thinning Calculations for TMS / TMR End Mills

ae = 3%



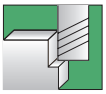
3% Radial Engagement (.03 x d)	
Actual (CPT)	Programmed (CPT)
.0002"	.0005"
.0003"	.0010"
.0005"	.0015"
.0007"	.0020"
.0009"	.0025"
.0010"	.0030"
.0012"	.0035"
.0014"	.0040"
.0015"	.0045"
.0017"	.0050"
.0019"	.0055"
.0020"	.0060"
.0022"	.0065"
.0024"	.0070"
.0026"	.0075"
.0027"	.0080"
.0029"	.0085"
.0031"	.0090"
.0032"	.0095"
.0034"	.0100"
.0036"	.0105"
.0037"	.0110"
.0039"	.0115"
.0041"	.0120"
.0043"	.0125"
.0044"	.0130"
.0046"	.0135"
.0048"	.0140"
.0049"	.0145"
.0051"	.0150"
.0053"	.0155"
.0054"	.0160"
.0056"	.0165"
.0058"	.0170"
.0060"	.0175"
.0061"	.0180"
.0063"	.0185"
.0065"	.0190"
.0066"	.0195"
.0068"	.0200"

ae = 2%



2% Radial Engagement (.02 x d)	
Actual (CPT)	Programmed (CPT)
.0001"	.0005"
.0003"	.0010"
.0004"	.0015"
.0006"	.0020"
.0007"	.0025"
.0008"	.0030"
.0010"	.0035"
.0011"	.0040"
.0013"	.0045"
.0014"	.0050"
.0015"	.0055"
.0017"	.0060"
.0018"	.0065"
.0020"	.0070"
.0021"	.0075"
.0022"	.0080"
.0024"	.0085"
.0025"	.0090"
.0027"	.0095"
.0028"	.0100"
.0029"	.0105"
.0031"	.0110"
.0032"	.0115"
.0034"	.0120"
.0035"	.0125"
.0036"	.0130"
.0038"	.0135"
.0039"	.0140"
.0041"	.0145"
.0042"	.0150"
.0043"	.0155"
.0045"	.0160"
.0046"	.0165"
.0048"	.0170"
.0049"	.0175"
.0050"	.0180"
.0052"	.0185"
.0053"	.0190"
.0055"	.0195"
.0056"	.0200"

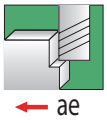
ae = 1%



1% Radial Engagement (.01 x d)	
Actual (CPT)	Programmed (CPT)
.0001"	.0005"
.0002"	.0010"
.0003"	.0015"
.0004"	.0020"
.0005"	.0025"
.0006"	.0030"
.0007"	.0035"
.0008"	.0040"
.0009"	.0045"
.0010"	.0050"
.0011"	.0055"
.0012"	.0060"
.0013"	.0065"
.0014"	.0070"
.0015"	.0075"
.0016"	.0080"
.0017"	.0085"
.0018"	.0090"
.0019"	.0095"
.0020"	.0100"
.0021"	.0105"
.0022"	.0110"
.0023"	.0115"
.0024"	.0120"
.0025"	.0125"
.0026"	.0130"
.0027"	.0135"
.0028"	.0140"
.0029"	.0145"
.0030"	.0150"
.0031"	.0155"
.0032"	.0160"
.0033"	.0165"
.0034"	.0170"
.0035"	.0175"
.0036"	.0180"
.0037"	.0185"
.0038"	.0190"
.0039"	.0195"
.0040"	.0200"

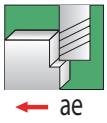
Chip Thinning Calculations for TMS / TMR End Mills

ae = 3%



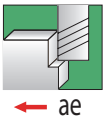
3% Radial Engagement (.03 x d)	
Actual (CPT)	Programmed (CPT)
.0043mm	.0127mm
.0086mm	.0254mm
.0130mm	.0381mm
.0173mm	.0508mm
.0216mm	.0635mm
.0259mm	.0762mm
.0302mm	.0889mm
.0345mm	.1016mm
.0389mm	.1143mm
.0432mm	.1270mm
.0475mm	.1397mm
.0518mm	.1524mm
.0561mm	.1651mm
.0605mm	.1778mm
.0648mm	.1905mm
.0691mm	.2032mm
.0734mm	.2159mm
.0777mm	.2286mm
.0820mm	.2413mm
.0864mm	.2540mm
.0907mm	.2667mm
.0950mm	.2794mm
.0993mm	.2921mm
.1036mm	.3048mm
.1080mm	.3175mm
.1123mm	.3302mm
.1166mm	.3429mm
.1209mm	.3556mm
.1252mm	.3683mm
.1295mm	.3810mm
.1339mm	.3937mm
.1382mm	.4064mm
.1425mm	.4191mm
.1468mm	.4318mm
.1511mm	.4445mm
.1554mm	.4572mm
.1598mm	.4699mm
.1641mm	.4826mm
.1684mm	.4953mm
.1727mm	.5080mm

ae = 2%



2% Radial Engagement (.02 x d)	
Actual (CPT)	Programmed (CPT)
.0036mm	.0127mm
.0071mm	.0254mm
.0107mm	.0381mm
.0142mm	.0508mm
.0178mm	.0635mm
.0213mm	.0762mm
.0249mm	.0889mm
.0284mm	.1016mm
.0320mm	.1143mm
.0356mm	.1270mm
.0391mm	.1397mm
.0427mm	.1524mm
.0462mm	.1651mm
.0498mm	.1778mm
.0533mm	.1905mm
.0569mm	.2032mm
.0605mm	.2159mm
.0640mm	.2286mm
.0676mm	.2413mm
.0711mm	.2540mm
.0747mm	.2667mm
.0782mm	.2794mm
.0818mm	.2921mm
.0853mm	.3048mm
.0889mm	.3175mm
.0925mm	.3302mm
.0960mm	.3429mm
.0996mm	.3556mm
.1031mm	.3683mm
.1067mm	.3810mm
.1102mm	.3937mm
.1138mm	.4064mm
.1173mm	.4191mm
.1209mm	.4318mm
.1245mm	.4445mm
.1280mm	.4572mm
.1316mm	.4699mm
.1351mm	.4826mm
.1387mm	.4953mm
.1422mm	.5080mm

ae = 1%



1% Radial Engagement (.01 x d)	
Actual (CPT)	Programmed (CPT)
.0025mm	.0127mm
.0051mm	.0254mm
.0076mm	.0381mm
.0102mm	.0508mm
.0127mm	.0635mm
.0152mm	.0762mm
.0178mm	.0889mm
.0203mm	.1016mm
.0229mm	.1143mm
.0254mm	.1270mm
.0279mm	.1397mm
.0305mm	.1524mm
.0330mm	.1651mm
.0356mm	.1778mm
.0381mm	.1905mm
.0406mm	.2032mm
.0432mm	.2159mm
.0457mm	.2286mm
.0483mm	.2413mm
.0508mm	.2540mm
.0533mm	.2667mm
.0559mm	.2794mm
.0584mm	.2921mm
.0610mm	.3048mm
.0635mm	.3175mm
.0660mm	.3302mm
.0686mm	.3429mm
.0711mm	.3556mm
.0737mm	.3683mm
.0762mm	.3810mm
.0787mm	.3937mm
.0813mm	.4064mm
.0838mm	.4191mm
.0864mm	.4318mm
.0889mm	.4445mm
.0914mm	.4572mm
.0940mm	.4699mm
.0965mm	.4826mm
.0991mm	.4953mm
.1016mm	.5080mm

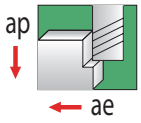
GARR TOOL Milling Guide for High Rc Finishers in Hardened Steel

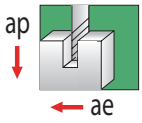
(Reference Series: 545MA, 545BA, 545RA, VRX)

	38 - 45 HRC		45 - 50 HRC		50 - 55 HRC		55 - 60 HRC		60 - 65 HRC		65 - 70 HRC	
	SFM = 450		SFM = 250		SFM = 175		SFM = 125		SFM = 75		SFM = 60	
DIAMETER	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)
1/8"	13750	.0009"	7650	.0008"	5350	.0006"	3820	.0005"	2300	.0004"	1850	.0003"
3/16"	9200	.0012"	5100	.0010"	3570	.0008"	2550	.0007"	1530	.0006"	1225	.0004"
1/4"	6900	.0015"	3850	.0012"	2675	.0010"	1910	.0008"	1150	.0007"	925	.0006"
3/8"	4600	.0018"	2550	.0015"	1800	.0012"	1275	.0010"	765	.0009"	615	.0008"
1/2"	3450	.0022"	1950	.0018"	1350	.0014"	955	.0012"	575	.0012"	460	.0010"
5/8"	2750	.0027"	1550	.0022"	1100	.0020"	765	.0018"	460	.0015"	370	.0013"
3/4"	2300	.0030"	1275	.0027"	900	.0025"	640	.0022"	390	.0017"	310	.0017"
1"	1720	.0033"	960	.0030"	675	.0027"	480	.0025"	290	.0023"	230	.0019"

	Profiling / Side Milling
Axial (ap)	1xD
Radial (ae)	5% of Dia.

	Slotting / Pocket Milling
Axial (ap)	5% of Dia.
Radial (ae)	1xD





High Speed Machining

	38 - 45 HRC		45 - 50 HRC		50 - 55 HRC		55 - 60 HRC		60 - 65 HRC		65 - 70 HRC	
	SFM = 1200		SFM = 1000		SFM = 800		SFM = 600		SFM = 450		SFM = 375	
DIAMETER	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)
1/8"	36670	.0006"	30600	.0005"	24500	.0004"	18340	.0004"	13750	.0003"	11460	.0002"
3/16"	24450	.0009"	20400	.0008"	16300	.0006"	12230	.0005"	9200	.0004"	7650	.0003"
1/4"	18340	.0012"	15300	.0010"	12230	.0008"	9200	.0007"	6900	.0005"	5750	.0004"
3/8"	12225	.0015"	10200	.0012"	8150	.0010"	6100	.0008"	4600	.0007"	3850	.0006"
1/2"	9170	.0018"	7650	.0015"	6100	.0012"	4600	.0010"	3450	.0009"	2870	.0008"
5/8"	7335	.0022"	6100	.0018"	4900	.0014"	3700	.0012"	2750	.0011"	2300	.0010"
3/4"	6115	.0027"	5100	.0022"	4100	.0020"	3100	.0018"	2300	.0014"	1900	.0013"
1"	4585	.0030"	3820	.0027"	3100	.0025"	2300	.0022"	1720	.0019"	1450	.0017"

	Profiling / Side Milling
Axial (ap)	1xD
Radial (ae)	2% of Dia.

	Slotting / Pocket Milling
Axial (ap)	2% of Dia.
Radial (ae)	1xD

D = Tool Diameter

Example: 2% of Dia., when D = 1/2" (.02 x .500") = .010" per pass

Preferable method is to run tools with air blast to keep chips away from the cutting edge.
If air is not available, either coolant spray or dry machining is acceptable.

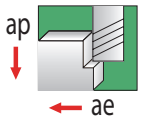
NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL Milling Guide for High Rc Finishers in Hardened Steel

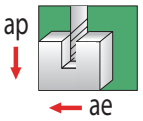
(Reference Series: 545MA, 545BA, 545RA, VRX)

	38 - 45 HRC		45 - 50 HRC		50 - 55 HRC		55 - 60 HRC		60 - 65 HRC		65 - 70 HRC	
	M/Min. = 135		M/Min. = 75		M/Min. = 50		M/Min. = 40		M/Min. = 25		M/Min. = 20	
DIAMETER	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)
3.0mm	14500	.025	8100	.020	5650	.015	4050	.010	2400	.008	1950	.007
4.0mm	10900	.030	6100	.025	4200	.020	3000	.015	1800	.010	1450	.008
6.0mm	7300	.035	4050	.030	2800	.025	2000	.020	1200	.015	970	.010
8.0mm	5450	.040	3000	.035	2100	.030	1500	.025	900	.020	725	.015
12.0mm	3650	.055	2000	.045	1400	.035	1000	.030	600	.025	480	.020
16.0mm	2700	.065	1500	.055	1050	.050	750	.045	450	.030	360	.025
18.0mm	2400	.075	1350	.065	950	.060	675	.055	400	.045	320	.030
20.0mm	2150	.078	1200	.070	850	.065	600	.058	360	.050	290	.040
25.0mm	1750	.080	1000	.075	700	.070	500	.060	300	.055	250	.045

	Profiling / Side Milling
Axial (ap)	1xD
Radial (ae)	5% of Dia.



	Slotting / Pocket Milling
Axial (ap)	5% of Dia.
Radial (ae)	1xD



High Speed Machining

	38 - 45 HRC		45 - 50 HRC		50 - 55 HRC		55 - 60 HRC		60 - 65 HRC		65 - 70 HRC	
	M/Min. = 365		M/Min. = 305		M/Min. = 240		M/Min. = 180		M/Min. = 135		M/Min. = 115	
DIAMETER	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)	RPM	CPT (Fz)
3.0mm	38800	.020	32300	.015	25800	.008	19400	.008	14500	.007	12100	.005
4.0mm	29100	.025	24200	.020	19400	.015	14500	.010	10900	.008	9100	.007
6.0mm	19400	.030	16100	.025	12900	.020	9700	.015	7300	.010	6050	.008
8.0mm	14500	.035	12100	.030	9700	.025	7250	.020	5450	.015	4500	.010
12.0mm	9700	.045	8075	.035	6450	.030	4850	.025	3650	.020	3000	.015
16.0mm	7250	.055	6050	.045	4850	.035	3600	.030	2700	.025	2300	.020
18.0mm	6450	.065	5400	.055	4300	.050	3200	.045	2400	.030	2000	.025
20.0mm	5800	.070	4850	.060	3850	.055	2900	.050	2150	.040	1800	.028
25.0mm	4650	.075	3870	.065	3100	.060	2300	.055	1750	.045	1450	.030

	Profiling / Side Milling
Axial (ap)	1xD
Radial (ae)	2% of Dia.

	Slotting / Pocket Milling
Axial (ap)	2% of Dia.
Radial (ae)	1xD

D = Tool Diameter

Example: 2% of Dia., when D = 12mm (.02 x 12mm) = .24mm per pass

Preferable method is to run tools with air blast to keep chips away from the cutting edge.
If air is not available, either coolant spray or dry machining is acceptable.

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

GARR TOOL Milling Guide for Die Mold Cutters

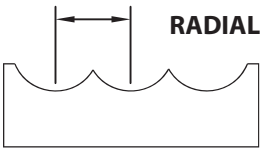
Roughing

(Reference series: 350MX)

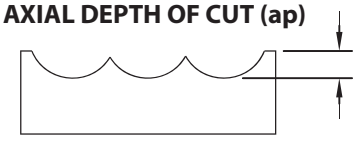
	RPM		CHIPLOAD PER TOOTH (Fz)	
DIAMETER	40 - 50 HRC	50 - 60 HRC	40 - 50 HRC	50 - 60 HRC
1/32"	20,000 - 40,000	20,000 - 40,000	.0005" - .0007"	.0004" - .0005"
1/16"	20,000 - 40,000	20,000 - 40,000	.0010" - .0015"	.0008" - .0010"
3/32"	20,000 - 32,000	20,000 - 30,000	.0015" - .0020"	.0010" - .0015"
1/8"	18,000 - 24,000	15,000 - 20,000	.0020" - .0025"	.0015" - .0020"
3/16"	12,000 - 16,000	10,000 - 14,000	.0030" - .0040"	.0020" - .0030"
1/4"	9,000 - 12,000	7,500 - 10,000	.0040" - .0050"	.0025" - .0040"
5/16"	7,000 - 10,000	6,000 - 8,500	.0050" - .0065"	.0035" - .0050"
3/8"	6,000 - 8,000	5,000 - 7,000	.0060" - .0075"	.0045" - .0060"
1/2"	4,500 - 6,000	4,000 - 5,500	.0080" - .0100"	.0055" - .0080"
5/8"	3,500 - 5,000	3,000 - 4,500	.0090" - .0110"	.0065" - .0090"
3/4"	3,000 - 4,000	2,500 - 3,500	.0100" - .0120"	.0075" - .0100"
1"	2,300 - 3,000	2,000 - 2,500	.0110" - .0130"	.0085" - .0110"

Semi-Finishing and Finishing

	RPM		CHIPLOAD PER TOOTH (Fz)	
DIAMETER	40 - 50 HRC	50 - 60 HRC	40 - 50 HRC	50 - 60 HRC
1/32"	20,000 - 40,000	20,000 - 40,000	.0004" - .0005"	.0003" - .0004"
1/16"	20,000 - 40,000	20,000 - 40,000	.0008" - .0010"	.0005" - .0008"
3/32"	20,000 - 40,000	20,000 - 40,000	.0010" - .0015"	.0008" - .0012"
1/8"	20,000 - 40,000	20,000 - 36,000	.0015" - .0020"	.0010" - .0015"
3/16"	20,000 - 32,000	20,000 - 25,000	.0020" - .0030"	.0015" - .0020"
1/4"	18,000 - 25,000	15,000 - 18,000	.0025" - .0040"	.0020" - .0030"
5/16"	14,000 - 19,000	12,000 - 14,000	.0035" - .0050"	.0025" - .0040"
3/8"	12,000 - 16,000	10,000 - 12,000	.0045" - .0060"	.0030" - .0045"
1/2"	9,000 - 12,000	7,500 - 9,000	.0055" - .0080"	.0040" - .0060"
5/8"	6,500 - 9,000	5,000 - 7,000	.0065" - .0090"	.0050" - .0070"
3/4"	5,500 - 7,500	4,000 - 6,000	.0075" - .0100"	.0060" - .0080"
1"	4,000 - 6,000	3,500 - 5,500	.0085" - .0110"	.0070" - .0090"



RADIAL STEP OVER (ae)



AXIAL DEPTH OF CUT (ap)

Roughing	
Axial (ap)	15% - 25% of Dia.
Radial (ae)	20% - 30% of Dia.

Semi-Finishing	
Axial (ap)	5% - 8% of Dia.
Radial (ae)	2% - 5% of Dia.

Finishing	
Axial (ap)	1% - 3% of Dia.
Radial (ae)	.5% - 1% of Dia.

High pressure air is recommended for clearing chips away from the cut.

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

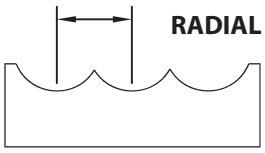
Roughing

(Reference series: 950MX)

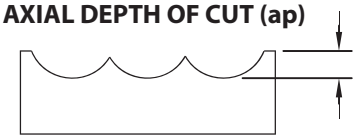
	RPM		CHIPLOAD PER TOOTH (Fz)	
DIAMETER	40 - 50 HRC	50 - 60 HRC	40 - 50 HRC	50 - 60 HRC
1.0mm	20,000 - 40,000	20,000 - 40,000	.013 - .018	.010 - .013
1.5mm	20,000 - 40,000	20,000 - 40,000	.025 - .038	.020 - .025
2.0mm	20,000 - 32,000	20,000 - 30,000	.038 - .050	.025 - .038
3.0mm	18,000 - 24,000	15,000 - 20,000	.050 - .065	.038 - .050
4.0mm	12,000 - 16,000	10,000 - 14,000	.075 - .100	.050 - .075
6.0mm	9,000 - 12,000	7,500 - 10,000	.100 - .125	.065 - .100
8.0mm	7,000 - 10,000	6,000 - 8,500	.125 - .165	.088 - .125
10.0mm	6,000 - 8,000	5,000 - 7,000	.150 - .190	.110 - .150
12.0mm	4,500 - 6,000	4,000 - 5,500	.200 - .250	.140 - .200
16.0mm	3,500 - 5,000	3,000 - 4,500	.225 - .275	.165 - .225
20.0mm	3,000 - 4,000	2,500 - 3,500	.250 - .300	.190 - .250
25.0mm	2,300 - 3,000	2,000 - 2,500	.275 - .325	.215 - .275

Semi-Finishing and Finishing

	RPM		CHIPLOAD PER TOOTH (Fz)	
DIAMETER	40 - 50 HRC	50 - 60 HRC	40 - 50 HRC	50 - 60 HRC
1.0mm	20,000 - 40,000	20,000 - 40,000	.010 - .013	.008 - .010
1.5mm	20,000 - 40,000	20,000 - 40,000	.020 - .025	.013 - .020
2.0mm	20,000 - 40,000	20,000 - 40,000	.025 - .038	.020 - .030
3.0mm	20,000 - 40,000	20,000 - 36,000	.038 - .050	.025 - .038
4.0mm	20,000 - 32,000	20,000 - 25,000	.050 - .075	.038 - .050
6.0mm	18,000 - 25,000	15,000 - 18,000	.065 - .100	.050 - .075
8.0mm	14,000 - 19,000	12,000 - 14,000	.088 - .125	.065 - .100
10.0mm	12,000 - 16,000	10,000 - 12,000	.110 - .150	.075 - .110
12.0mm	9,000 - 12,000	7,500 - 9,000	.140 - .200	.100 - .150
16.0mm	6,500 - 9,000	5,000 - 7,000	.165 - .225	.125 - .175
20.0mm	5,500 - 7,500	4,000 - 6,000	.190 - .250	.150 - .200
25.0mm	4,000 - 6,000	3,500 - 5,500	.215 - .275	.175 - .225



RADIAL STEP OVER (ae)



AXIAL DEPTH OF CUT (ap)

Roughing	
Axial (ap)	15% - 25% of Dia.
Radial (ae)	20% - 30% of Dia.

Semi-Finishing	
Axial (ap)	5% - 8% of Dia.
Radial (ae)	2% - 5% of Dia.

Finishing	
Axial (ap)	1% - 3% of Dia.
Radial (ae)	.5% - 1% of Dia.

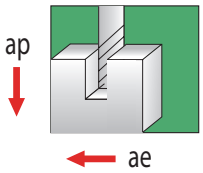
High pressure air is recommended for clearing chips away from the cut.

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

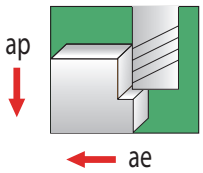
GARR TOOL Milling Guide for H-45 High Feed End Mills

	UP TO 40 HRC			40 - 45 HRC			45 - 55 HRC			55 - 60 HRC		
DIAMETER	SPEED RPM	FEED IN/MIN	FEED MM/MIN	SPEED RPM	FEED IN/MIN	FEED MM/MIN	SPEED RPM	FEED IN/MIN	FEED MM/MIN	SPEED RPM	FEED IN/MIN	FEED MM/MIN
3.0mm	16000	-	3100	13000	-	2032	11300	-	1778	9700	-	889
1/8"	15200	120	-	12000	80	-	10700	70	-	9200	35	-
4.0mm	12100	-	3700	9700	-	2540	8500	-	2159	7300	-	1016
3/16"	10200	160	-	8200	110	-	7100	90	-	6100	45	-
5.0mm	9700	-	4000	7700	-	2667	6800	-	2286	5800	-	1143
6.0mm	8100	-	4600	6500	-	3048	5700	-	2540	4900	-	1270
1/4"	7650	180	-	6100	120	-	5400	100	-	4600	50	-
5/16"	6100	195	-	4900	130	-	4300	110	-	3700	55	-
8.0mm	6050	-	4950	4850	-	3302	4300	-	2794	3650	-	1397
3/8"	5100	200	-	4100	135	-	3600	115	-	3100	60	-
10.0mm	4850	-	5100	3900	-	3429	3400	-	2921	2900	-	1524
12.0mm	4050	-	6400	3200	-	4064	2800	-	3429	2400	-	1651
1/2"	3800	240	-	3100	160	-	2700	135	-	2300	65	-

	Slotting Pocket Milling
Axial (ap)	0.3 x Radius
Radial (ae)	1 x D



	Profiling Side Milling
Axial (ap)	1 x D
Radial (ae)	0.3 x Radius



D = Tool Diameter

Example: Axial = 0.3 x radius, when D = 1/2" with .060" corner radius (.3 x .060") = .018" per pass

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

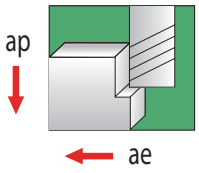
GARR TOOL Milling Guide for Diamond Coated End Mills in Graphite

DIAMETER	RPM	CHIPLOAD PER TOOTH (Fz)
1/32" - 1/16"	15,000 - 35,000	.0005" - .0010"
1/16" - 1/8"	8,000 - 31,000	.0008" - .0015"
1/8" - 3/16"	8,000 - 31,000	.0010" - .0020"
3/16" - 1/4"	8,000 - 25,000	.0010" - .0020"
1/4" - 5/16"	6,000 - 23,000	.0020" - .0040"
5/16" - 3/8"	6,000 - 20,000	.0020" - .0040"
3/8" - 1/2"	6,000 - 20,000	.0030" - .0050"
1/2" - 5/8"	4,500 - 15,000	.0050" - .0060"
5/8" - 3/4"	4,500 - 12,000	.0060" - .0070"
3/4" - 1"	4,500 - 12,000	.0070" - .0080"

DIAMETER	RPM	CHIPLOAD PER TOOTH (Fz)
1.0 - 3.0mm	15,000 - 35,000	.015 - .030
3.0 - 6.0mm	8,000 - 31,000	.030 - .050
6.0 - 10.0mm	6,000 - 31,000	.050 - .100
10.0 - 12.0mm	6,000 - 25,000	.080 - .130
16.0 - 20.0mm	4,500 - 15,000	.130 - .150
20.0 - 25.0mm	4,500 - 12,000	.150 - .200

Generally, tools will run at maximum RPM in relation to the corresponding parameters below:

	Slotting	Profiling
Axial (ap)	5% of Dia.	1xD
Radial (ae)	1xD	10% of Dia.



These recommendations are suggested for use primarily in graphite cutting applications.
Rigid work holding, machine stability and part integrity are critical!

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

GARR TOOL Reaming Guide

ISO Material		HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)			
				.0590" - .1250"	.1251" - .2500"	.2501" - .3750"	.3751" - .5020"
S	**COBALT BASE ALLOYS**						
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	80 - 120 60 - 80	.0003" - .0008"	.0005" - .0010"	.0008" - .0012"	.0010" - .0015"
	NICKEL BASE ALLOYS						
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	100 - 125 80 - 110	.0003" - .0008"	.0005" - .0010"	.0008" - .0012"	.0010" - .0015"
	IRON BASE ALLOYS						
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	150 - 175 120 - 150	.0004" - .0009"	.0006" - .0012"	.0009" - .0013"	.0010" - .0017"
	TITANIUM ALLOYS						
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		120 - 150	.0004" - .0009"	.0006" - .0012"	.0009" - .0013"	.0010" - .0017"
	5553 / Beta Titanium		90 - 110	.0004" - .0007"	.0006" - .0010"	.0009" - .0011"	.0010" - .0015"
M	**STAINLESS STEELS**						
	13/8, 15/5, 17-4, pH Types	< 40 > 40	100 - 125 80 - 110	.0004" - .0009"	.0006" - .0012"	.0009" - .0013"	.0010" - .0017"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	100 - 125 80 - 110	.0004" - .0009"	.0006" - .0012"	.0009" - .0013"	.0010" - .0017"
	400 Series - 403, 405, 420, 455	< 40 > 40	100 - 125 80 - 110	.0004" - .0009"	.0006" - .0012"	.0009" - .0013"	.0010" - .0017"
P	**HIGH STRENGTH TOOL STEELS**						
	A2, D2, P20, H13, S7, O1	< 40 > 40	100 - 125 80 - 110	.0003" - .0008"	.0005" - .0010"	.0008" - .0012"	.0010" - .0015"
	MEDIUM ALLOY TOOL STEELS						
	4140, 4340, 52100, 6150, 8620	< 40 > 40	100 - 125 80 - 110	.0004" - .0009"	.0006" - .0012"	.0009" - .0013"	.0010" - .0017"
	CARBON STEELS						
	1000's - 1018, 1020, 12L14	< 40	100 - 125	.0004" - .0009"	.0006" - .0012"	.0009" - .0013"	.0010" - .0017"
K	**CAST MATERIAL**						
	Ductile Iron		150 - 225	.0005" - .0010"	.0007" - .0012"	.0010" - .0015"	.0010" - .0018"
	Gray Iron		125 - 200	.0005" - .0010"	.0007" - .0012"	.0010" - .0015"	.0010" - .0018"
N	**NON-FERROUS**						
	Aluminum (6061, 7075)		225	.0005" - .0010"	.0007" - .0012"	.0010" - .0015"	.0010" - .0018"
	Magnesium		225	.0005" - .0010"	.0007" - .0012"	.0010" - .0015"	.0010" - .0018"
	Copper		225	.0005" - .0010"	.0007" - .0012"	.0010" - .0015"	.0010" - .0018"
	Brass, Bronze		125 - 200	.0005" - .0010"	.0007" - .0012"	.0010" - .0015"	.0010" - .0018"
O	**COMPOSITE (non-ISO)**						
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		150	.0003" - .0008"	.0005" - .0010"	.0008" - .0012"	.0010" - .0015"

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

ISO Material		HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)			
				1.50 - 3.00mm	3.01 - 6.00mm	6.01 - 9.00mm	9.01 - 13.00mm
S	**COBALT BASE ALLOYS**						
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	25 - 40 15 - 25	.008 - .020	.013 - .025	.020 - .030	.025 - .040
	NICKEL BASE ALLOYS						
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	30 - 40 25 - 35	.008 - .020	.013 - .025	.020 - .030	.025 - .040
	IRON BASE ALLOYS						
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	45 - 50 35 - 45	.010 - .023	.015 - .030	.023 - .035	.025 - .045
	TITANIUM ALLOYS						
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		40 - 45	.010 - .023	.015 - .030	.023 - .035	.025 - .045
	5553 / Beta Titanium		30 - 35	.010 - .020	.015 - .025	.023 - .030	.025 - .040
M	**STAINLESS STEELS**						
	13/8, 15/5, 17-4, pH Types	< 40 > 40	30 - 40 25 - 35	.010 - .023	.015 - .030	.023 - .035	.025 - .045
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	30 - 40 25 - 35	.010 - .023	.015 - .030	.023 - .035	.025 - .045
	400 Series - 403, 405, 420, 455	< 40 > 40	30 - 40 25 - 35	.010 - .023	.015 - .030	.023 - .035	.025 - .045
P	**HIGH STRENGTH TOOL STEELS**						
	A2, D2, P20, H13, S7, O1	< 40 > 40	30 - 40 25 - 35	.008 - .020	.013 - .025	.020 - .030	.025 - .040
	MEDIUM ALLOY TOOL STEELS						
	4140, 4340, 52100, 6150, 8620	< 40 > 40	30 - 40 25 - 35	.010 - .023	.015 - .030	.023 - .035	.025 - .045
	CARBON STEELS						
	1000's - 1018, 1020, 12L14	< 40	30 - 40	.010 - .023	.015 - .030	.023 - .035	.025 - .045
K	**CAST MATERIAL**						
	Ductile Iron		45 - 70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
	Gray Iron		35 - 70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
N	**NON-FERROUS**						
	Aluminum (6061, 7075)		70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
	Magnesium		70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
	Copper		70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
	Brass, Bronze		40 - 60	.013 - .025	.018 - .025	.025 - .040	.025 - .050
O	**COMPOSITE (non-ISO)**						
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		40 - 45	.008 - .020	.013 - .025	.020 - .030	.025 - .040

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

GARR TOOL Milling Guide for Drill Mills

* Chamfering *

	ISO Material	HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)							
			154M, 154MA 152M, 152MA	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
S	**COBALT BASE ALLOYS**										
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	60 - 90 50 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"
	NICKEL BASE ALLOYS										
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	55 - 90 45 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"
	IRON BASE ALLOYS										
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	55 - 90 50 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"
	TITANIUM ALLOYS										
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		100 - 150	.0003" - .0008"	.0005" - .0012"	.0005" - .0012"	.0008" - .0015"	.0010" - .0015"	.0013" - .0020"	.0018" - .0025"	.0025" - .0035"
	5553 / Beta Titanium		90 - 120	.0003" - .0008"	.0004" - .0010"	.0004" - .0010"	.0005" - .0012"	.0008" - .0014"	.0010" - .0016"	.0010" - .0020"	.0015" - .0025"
M	**STAINLESS STEELS**										
	13/8, 15/5, 17-4, pH Types	< 40 > 40	100 - 150 80 - 100	.0003" - .0006" .0002" - .0004"	.0003" - .0007" .0002" - .0006"	.0006" - .0009" .0003" - .0007"	.0008" - .0012" .0004" - .0008"	.0013" - .0018" .0007" - .0012"	.0010" - .0020" .0008" - .0015"	.0012" - .0025" .0010" - .0016"	.0012" - .0020" .0013" - .0017"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	150 - 225 125 - 220	.0002" - .0006" .0003" - .0005"	.0005" - .0008" .0003" - .0007"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0012"	.0010" - .0018" .0009" - .0015"	.0015" - .0025" .0013" - .0018"	.0018" - .0028" .0013" - .0018"	.0022" - .0032" .0017" - .0025"
	400 Series - 403, 405, 420, 455	< 40 > 40	150 - 200 100 - 150	.0007" - .0010" .0004" - .0008"	.0009" - .0015" .0006" - .0010"	.0009" - .0014" .0007" - .0011"	.0011" - .0015" .0008" - .0012"	.0013" - .0018" .0009" - .0015"	.0015" - .0025" .0012" - .0020"	.0020" - .0035" .0018" - .0030"	.0030" - .0046" .0024" - .0042"
P	**HIGH STRENGTH TOOL STEELS**										
	A2, D2, P20, H13, S7, O1	< 40 > 40	150 - 200 100 - 150	.0003" - .0008" .0003" - .0005"	.0005" - .0010" .0003" - .0008"	.0010" - .0015" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0014" - .0024" .0010" - .0015"	.0018" - .0026" .0012" - .0018"	.0020" - .0028" .0015" - .0022"
	MEDIUM ALLOY TOOL STEELS										
	4140, 4340, 52100, 6150, 8620	< 40 > 40	150 - 200 100 - 150	.0003" - .0008" .0003" - .0005"	.0005" - .0010" .0003" - .0008"	.0010" - .0015" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0014" - .0024" .0010" - .0015"	.0018" - .0026" .0012" - .0018"	.0020" - .0028" .0015" - .0022"
	CARBON STEELS										
	1000's - 1018, 1020, 12L14	< 40	150 - 200	.0003" - .0008"	.0005" - .0010"	.0010" - .0015"	.0012" - .0020"	.0012" - .0020"	.0014" - .0024"	.0018" - .0026"	.0020" - .0028"
K	**CAST MATERIAL**										
	Ductile Iron		175 - 225	.0008" - .0012"	.0010" - .0015"	.0015" - .0025"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"
	Gray Iron		175 - 225	.0008" - .0012"	.0010" - .0015"	.0015" - .0025"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"
N	**NON-FERROUS**										
	Aluminum (6061, 7075)		300 - 500	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"
	Magnesium		300 - 500	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"
	Copper		250 - 450	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"
	Brass, Bronze		200 - 400	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"
O	**COMPOSITE (non-ISO)**										
	Glass Epoxy, Fiberglass, Plastics		200 - 400	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"

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

* Chamfering *

ISO Material		HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)								
			154M, 154MA 152M, 152MA	3.0mm	4.0mm	5.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.00mm	20.0mm
S	**COBALT BASE ALLOYS**											
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	24 - 35 20 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051
	NICKEL BASE ALLOYS											
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	22 - 35 18 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051
	IRON BASE ALLOYS											
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	22 - 35 20 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051
	TITANIUM ALLOYS											
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		20 - 31	.008 - .020	.008 - .020	.013 - .030	.013 - .030	.020 - .038	.025 - .038	.033 - .051	.046 - .064	.051 - .076
	5553 / Beta Titanium		35 - 47	.008 - .020	.008 - .020	.010 - .025	.010 - .025	.013 - .030	.020 - .036	.025 - .041	.025 - .051	.038 - .064
M	**STAINLESS STEELS**											
	13/8, 15/5, 17-4, pH Types	< 40 > 40	39 - 59 31 - 39	.008 - .015 .005 - .010	.008 - .015 .005 - .010	.008 - .018 .005 - .015	.015 - .023 .008 - .018	.020 - .030 .010 - .020	.033 - .046 .018 - .030	.025 - .051 .020 - .038	.030 - .064 .025 - .041	.030 - .051 .033 - .043
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	59 - 89 49 - 87	.005 - .015 .008 - .013	.005 - .015 .008 - .013	.013 - .020 .008 - .018	.020 - .038 .013 - .025	.038 - .046 .020 - .030	.025 - .046 .018 - .030	.038 - .064 .033 - .046	.046 - .071 .038 - .058	.056 - .081 .043 - .064
	400 Series - 403, 405, 420, 455	< 40 > 40	59 - 79 39 - 59	.018 - .025 .010 - .020	.018 - .025 .010 - .020	.023 - .038 .015 - .025	.023 - .036 .018 - .028	.028 - .038 .020 - .030	.033 - .046 .023 - .038	.038 - .064 .030 - .051	.051 - .089 .046 - .076	.056 - .102 .051 - .089
P	**HIGH STRENGTH TOOL STEELS**											
	A2, D2, P20, H13, S7, O1	< 40 > 40	59 - 79 39 - 59	.008 - .020 .008 - .013	.008 - .020 .008 - .013	.013 - .025 .008 - .020	.025 - .038 .013 - .025	.030 - .051 .013 - .025	.030 - .051 .013 - .025	.036 - .061 .025 - .038	.046 - .066 .030 - .046	.051 - .071 .036 - .051
	MEDIUM ALLOY TOOL STEELS											
	4140, 4340, 52100, 6150, 8620	< 40 > 40	59 - 79 39 - 59	.008 - .020 .008 - .013	.008 - .020 .008 - .013	.013 - .025 .008 - .020	.025 - .038 .013 - .025	.030 - .051 .013 - .025	.030 - .051 .013 - .025	.036 - .061 .025 - .038	.046 - .066 .030 - .046	.051 - .071 .036 - .051
	CARBON STEELS											
	1000's - 1018, 1020, 12L14	< 40	59 - 79	.008 - .020	.008 - .020	.013 - .025	.025 - .038	.030 - .051	.030 - .051	.036 - .061	.046 - .066	.051 - .071
K	**CAST MATERIAL**											
	Ductile Iron		69 - 89	.020 - .031	.023 - .035	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114
	Gray Iron		69 - 89	.020 - .031	.023 - .035	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114
N	**NON-FERROUS**											
	Aluminum (6061, 7075)		118 - 197	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178
	Magnesium		118 - 197	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178
	Copper		98 - 177	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178
	Brass, Bronze		98 - 157	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178
O	**COMPOSITE (non-ISO)**											
	Glass Epoxy, Fiberglass, Plastics		79 - 157	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178

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

GARR TOOL Drilling Guide for Drill Mills

* Through Hole *

	ISO Material	HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)							
			152DA	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
S	**COBALT BASE ALLOYS**										
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	60 - 90 50 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"
	NICKEL BASE ALLOYS										
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	55 - 90 45 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"
	IRON BASE ALLOYS										
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	55 - 90 50 - 80	.0004" - .0008" .0003" - .0006"	.0004" - .0008" .0003" - .0006"	.0005" - .0010" .0003" - .0008"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0015"	.0015" - .0030" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0015" - .0020"
	TITANIUM ALLOYS										
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		100 - 150	.0003" - .0008"	.0005" - .0012"	.0005" - .0012"	.0008" - .0015"	.0010" - .0015"	.0013" - .0020"	.0018" - .0025"	.0025" - .0035"
	5553 / Beta Titanium		90 - 120	.0003" - .0008"	.0004" - .0010"	.0004" - .0010"	.0005" - .0012"	.0008" - .0014"	.0010" - .0016"	.0010" - .0020"	.0015" - .0025"
M	**STAINLESS STEELS**										
	13/8, 15/5, 17-4, pH Types	< 40 > 40	100 - 150 80 - 100	.0003" - .0006" .0002" - .0004"	.0003" - .0007" .0002" - .0006"	.0006" - .0009" .0003" - .0007"	.0008" - .0012" .0004" - .0008"	.0013" - .0018" .0007" - .0012"	.0010" - .0020" .0008" - .0015"	.0012" - .0025" .0010" - .0016"	.0012" - .0020" .0013" - .0017"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	150 - 225 125 - 220	.0002" - .0006" .0003" - .0005"	.0005" - .0008" .0003" - .0007"	.0008" - .0015" .0005" - .0010"	.0010" - .0018" .0008" - .0012"	.0010" - .0018" .0009" - .0015"	.0015" - .0025" .0013" - .0018"	.0018" - .0028" .0013" - .0018"	.0022" - .0032" .0017" - .0025"
	400 Series - 403, 405, 420, 455	< 40 > 40	150 - 200 100 - 150	.0007" - .0010" .0004" - .0008"	.0009" - .0015" .0006" - .0010"	.0009" - .0014" .0007" - .0011"	.0011" - .0015" .0008" - .0012"	.0013" - .0018" .0009" - .0015"	.0015" - .0025" .0012" - .0020"	.0020" - .0035" .0018" - .0030"	.0030" - .0046" .0024" - .0042"
P	**HIGH STRENGTH TOOL STEELS**										
	A2, D2, P20, H13, S7, O1	< 40 > 40	150 - 200 100 - 150	.0003" - .0008" .0003" - .0005"	.0005" - .0010" .0003" - .0008"	.0010" - .0015" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0014" - .0024" .0010" - .0015"	.0018" - .0026" .0012" - .0018"	.0020" - .0028" .0015" - .0022"
	MEDIUM ALLOY TOOL STEELS										
	4140, 4340, 52100, 6150, 8620	< 40 > 40	150 - 200 100 - 150	.0003" - .0008" .0003" - .0005"	.0005" - .0010" .0003" - .0008"	.0010" - .0015" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0012" - .0020" .0005" - .0010"	.0014" - .0024" .0010" - .0015"	.0018" - .0026" .0012" - .0018"	.0020" - .0028" .0015" - .0022"
	CARBON STEELS										
	1000's - 1018, 1020, 12L14	< 40	150 - 200	.0003" - .0008"	.0005" - .0010"	.0010" - .0015"	.0012" - .0020"	.0012" - .0020"	.0014" - .0024"	.0018" - .0026"	.0020" - .0028"
K	**CAST MATERIAL**										
	Ductile Iron		175 - 225	.0008" - .0012"	.0010" - .0015"	.0015" - .0025"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"
	Gray Iron		175 - 225	.0008" - .0012"	.0010" - .0015"	.0015" - .0025"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"
N	**NON-FERROUS**										
	Aluminum (6061, 7075)		300 - 500	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"
	Magnesium		300 - 500	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"
	Copper		250 - 450	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"
	Brass, Bronze		200 - 400	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"
O	**COMPOSITE (non-ISO)**										
	Glass Epoxy, Fiberglass, Plastics		200 - 400	.0006" - .0010"	.0008" - .0014"	.0012" - .0020"	.0014" - .0028"	.0020" - .0030"	.0035" - .0048"	.0050" - .0060"	.0058" - .0070"

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

* Through Hole *

ISO Material		HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)								
			152DA	3.0mm	4.0mm	5.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.00mm	20.0mm
S	**COBALT BASE ALLOYS**											
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	24 - 35 20 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051
	NICKEL BASE ALLOYS											
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	22 - 35 18 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051
	IRON BASE ALLOYS											
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	22 - 35 20 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051
	TITANIUM ALLOYS											
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		20 - 31	.008 - .020	.008 - .020	.013 - .030	.013 - .030	.020 - .038	.025 - .038	.033 - .051	.046 - .064	.051 - .076
	5553 / Beta Titanium		35 - 47	.008 - .020	.008 - .020	.010 - .025	.010 - .025	.013 - .030	.020 - .036	.025 - .041	.025 - .051	.038 - .064
M	**STAINLESS STEELS**											
	13/8, 15/5, 17-4, pH Types	< 40 > 40	39 - 59 31 - 39	.008 - .015 .005 - .010	.008 - .015 .005 - .010	.008 - .018 .005 - .015	.015 - .023 .008 - .018	.020 - .030 .010 - .020	.033 - .046 .018 - .030	.025 - .051 .020 - .038	.030 - .064 .025 - .041	.030 - .051 .033 - .043
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	59 - 89 49 - 87	.005 - .015 .008 - .013	.005 - .015 .008 - .013	.013 - .020 .008 - .018	.020 - .038 .013 - .025	.038 - .046 .020 - .030	.025 - .046 .018 - .030	.038 - .064 .033 - .046	.046 - .071 .038 - .058	.056 - .081 .043 - .064
	400 Series - 403, 405, 420, 455	< 40 > 40	59 - 79 39 - 59	.018 - .025 .010 - .020	.018 - .025 .010 - .020	.023 - .038 .015 - .025	.023 - .036 .018 - .028	.028 - .038 .020 - .030	.033 - .046 .023 - .038	.038 - .064 .030 - .051	.051 - .089 .046 - .076	.056 - .102 .051 - .089
P	**HIGH STRENGTH TOOL STEELS**											
	A2, D2, P20, H13, S7, O1	< 40 > 40	59 - 79 39 - 59	.008 - .020 .008 - .013	.008 - .020 .008 - .013	.013 - .025 .008 - .020	.025 - .038 .013 - .025	.030 - .051 .013 - .025	.030 - .051 .013 - .025	.036 - .061 .025 - .038	.046 - .066 .030 - .046	.051 - .071 .036 - .051
	MEDIUM ALLOY TOOL STEELS											
	4140, 4340, 52100, 6150, 8620	< 40 > 40	59 - 79 39 - 59	.008 - .020 .008 - .013	.008 - .020 .008 - .013	.013 - .025 .008 - .020	.025 - .038 .013 - .025	.030 - .051 .013 - .025	.030 - .051 .013 - .025	.036 - .061 .025 - .038	.046 - .066 .030 - .046	.051 - .071 .036 - .051
	CARBON STEELS											
	1000's - 1018, 1020, 12L14	< 40	59 - 79	.008 - .020	.008 - .020	.013 - .025	.025 - .038	.030 - .051	.030 - .051	.036 - .061	.046 - .066	.051 - .071
K	**CAST MATERIAL**											
	Ductile Iron		69 - 89	.020 - .031	.023 - .035	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114
	Gray Iron		69 - 89	.020 - .031	.023 - .035	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114
N	**NON-FERROUS**											
	Aluminum (6061, 7075)		118 - 197	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178
	Magnesium		118 - 197	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178
	Copper		98 - 177	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178
	Brass, Bronze		98 - 157	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178
O	**COMPOSITE (non-ISO)**											
	Glass Epoxy, Fiberglass, Plastics		79 - 157	.015 - .025	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178

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	SFM (by Series)			
			1100	1200, 1205, 1520	1500, 1510	1600
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	- -	45 - 70 35 - 60	45 - 70 35 - 60	30 - 55 20 - 45
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	- -	45 - 70 35 - 60	45 - 70 35 - 60	30 - 55 20 - 45
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	- -	45 - 70 35 - 60	45 - 70 35 - 60	30 - 55 20 - 45
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		-	60 - 90	60 - 90	45 - 75
	5553 / Beta Titanium		-	45 - 65	45 - 65	30 - 50
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	- -	50 - 80 35 - 60	50 - 80 35 - 60	35 - 65 20 - 45
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	- -	45 - 75 35 - 55	45 - 75 35 - 55	30 - 60 20 - 40
	400 Series - 403, 405, 420, 455	< 40 > 40	- -	60 - 90 40 - 65	60 - 90 40 - 65	45 - 75 25 - 50
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	- -	80 - 130 60 - 110	80 - 130 60 - 110	65 - 110 45 - 90
	Thompson Shaft, Armor Plate (Class 1)	> 50	-	-	45 - 80	30 - 60
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	- -	100 - 140 70 - 120	100 - 140 70 - 120	65 - 120 55 - 100
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	-	120 - 170	120 - 170	105 - 150
K	**CAST MATERIAL**					
	Ductile Iron		70 - 140	120 - 170	120 - 170	105 - 150
	Gray Iron		70 - 165	120 - 190	120 - 190	105 - 170
N	**NON-FERROUS**					
	Aluminum (6061, 7075)		-	200 - 300	-	160 - 250
	Magnesium		-	120 - 215	-	80 - 165
	Copper		-	100 - 165	-	60 - 125
	Brass, Bronze		-	120 - 215	-	80 - 165
O	**COMPOSITE (non-ISO)**					
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		140	100 - 230	105 - 230	-

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GARR TOOL General Purpose Drilling Guide (Bright Finish)

ISO Material		HRC	CHIPLOAD PER TOOTH (Fz)				
			1/16" - 1/8"	1/8" - 1/4"	1/4" - 3/8"	3/8" - 1/2"	1/2" - 5/8"
S	**COBALT BASE ALLOYS**						
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	.0003" - .0008" .0002" - .0006"	.0006" - .0011" .0004" - .0009"	.0010" - .0017" .0008" - .0015"	.0014" - .0024" .0012" - .0022"	.0019" - .0032" .0017" - .0030"
	NICKEL BASE ALLOYS						
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	.0003" - .0008" .0002" - .0006"	.0006" - .0011" .0004" - .0009"	.0010" - .0017" .0008" - .0015"	.0014" - .0024" .0012" - .0022"	.0019" - .0032" .0017" - .0030"
	IRON BASE ALLOYS						
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	.0003" - .0008" .0002" - .0006"	.0006" - .0011" .0004" - .0009"	.0010" - .0017" .0008" - .0015"	.0014" - .0024" .0012" - .0022"	.0019" - .0032" .0017" - .0030"
	TITANIUM ALLOYS						
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		.0004" - .0009"	.0008" - .0014"	.0012" - .0020"	.0016" - .0027"	.0021" - .0033"
	5553 / Beta Titanium		.0003" - .0007"	.0006" - .0011"	.0010" - .0017"	.0014" - .0024"	.0019" - .0030"
M	**STAINLESS STEELS**						
	13/8, 15/5, 17-4, pH Types	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
	400 Series - 403, 405, 420, 455	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
P	**HIGH STRENGTH TOOL STEELS**						
	A2, D2, P20, H13, S7, O1	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
	Thompson Shaft, Armor Plate (Class 1)	> 50	.0002" - .0006"	.0005" - .0009"	.0009" - .0015"	.0013" - .0022"	.0018" - .0028"
	MEDIUM ALLOY TOOL STEELS						
	4140, 4340, 52100, 6150, 8620	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
	CARBON STEELS						
	1000's - 1018, 1020, 12L14	< 40	.0005" - .0010"	.0008" - .0014"	.0012" - .0020"	.0016" - .0027"	.0021" - .0033"
K	**CAST MATERIAL**						
	Ductile Iron		.0005" - .0010"	.0008" - .0014"	.0012" - .0020"	.0016" - .0027"	.0021" - .0033"
	Gray Iron		.0005" - .0010"	.0008" - .0014"	.0012" - .0020"	.0016" - .0027"	.0021" - .0033"
N	**NON-FERROUS**						
	Aluminum (6061, 7075)		.0006" - .0011"	.0009" - .0015"	.0013" - .0021"	.0017" - .0028"	.0022" - .0034"
	Magnesium		.0005" - .0010"	.0009" - .0014"	.0013" - .0020"	.0017" - .0027"	.0022" - .0033"
	Copper		.0004" - .0008"	.0008" - .0012"	.0012" - .0018"	.0016" - .0025"	.0021" - .0031"
	Brass, Bronze		.0005" - .0009"	.0009" - .0013"	.0013" - .0019"	.0017" - .0026"	.0022" - .0032"
O	**COMPOSITE (non-ISO)**						
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		.0003" - .0008"	.0007" - .0012"	.0011" - .0018"	.0015" - .0025"	.0020" - .0031"

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	M/Min. (by Series)			
			1100	1200, 1205, 1520	1500, 1510	1600
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	- -	14 - 21 10 - 18	14 - 21 10 - 18	10 - 17 6 - 14
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	- -	14 - 21 10 - 18	14 - 21 10 - 18	10 - 17 6 - 14
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	- -	14 - 21 10 - 18	14 - 21 10 - 18	10 - 17 6 - 14
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		-	18 - 27	18 - 27	14 - 23
	5553 / Beta Titanium		-	14 - 20	14 - 20	10 - 15
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	-	15 - 25 10 - 18	15 - 25 10 - 18	10 - 20 6 - 14
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	-	14 - 23 10 - 17	14 - 23 10 - 17	10 - 18 6 - 12
	400 Series - 403, 405, 420, 455	< 40 > 40	-	18 - 27 12 - 20	18 - 27 12 - 20	14 - 23 8 - 15
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	- -	25 - 40 18 - 34	25 - 40 18 - 34	20 - 34 14 - 27
	Thompson Shaft, Armor Plate (Class 1)	> 50	-	-	14 - 25	10 - 20
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	-	30 - 43 21 - 37	30 - 43 21 - 37	20 - 37 17 - 30
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	-	37 - 52	37 - 52	32 - 45
K	**CAST MATERIAL**					
	Ductile Iron		21 - 43	37 - 52	37 - 52	32 - 45
	Gray Iron		21 - 50	37 - 58	37 - 58	32 - 52
N	**NON-FERROUS**					
	Aluminum (6061, 7075)		-	60 - 90	-	50 - 75
	Magnesium		-	37 - 65	-	25 - 50
	Copper		-	30 - 50	-	18 - 38
	Brass, Bronze		-	37 - 65	-	25 - 50
O	**COMPOSITE (non-ISO)**					
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		43	30 - 70	32 - 70	-

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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

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GARR TOOL General Purpose Drilling Guide (Durana Coated)

ISO Material		HRC	SFM (by Series)			
			1100H, 1120H	1200H, 1205H, 1520H	1500H, 1510H	1800H
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	- -	55 - 75 45 - 65	55 - 75 45 - 65	- -
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	- -	55 - 80 45 - 70	55 - 80 45 - 70	- -
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	- -	55 - 80 45 - 70	55 - 80 45 - 70	- -
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		-	70 - 100	70 - 100	-
	5553 / Beta Titanium		-	55 - 75	55 - 75	-
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	- -	60 - 90 45 - 70	60 - 90 45 - 70	- -
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	- -	55 - 85 45 - 65	55 - 85 45 - 65	- -
	400 Series - 403, 405, 420, 455	< 40 > 40	- -	70 - 100 50 - 75	70 - 100 50 - 75	- -
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	- -	90 - 140 70 - 120	90 - 140 70 - 120	- -
	Thompson Shaft, Armor Plate (Class 1)	> 50	-	-	55 - 90	-
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	- -	110 - 150 80 - 130	110 - 150 80 - 130	- -
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	-	130 - 180	130 - 180	-
K	**CAST MATERIAL**					
	Ductile Iron		80 - 150	130 - 180	130 - 180	-
	Gray Iron		80 - 175	130 - 200	130 - 200	-
N	**NON-FERROUS**					
	Aluminum (6061, 7075)		-	200 - 300	-	200 - 300
	Magnesium		-	130 - 225	-	130 - 225
	Copper		-	110 - 175	-	110 - 175
	Brass, Bronze		-	130 - 225	-	130 - 225
O	**COMPOSITE (non-ISO)**					
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		160	125 - 250	125 - 250	-

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GARR TOOL General Purpose Drilling Guide (Durana Coated)

ISO Material		HRC	CHIPLOAD PER TOOTH (Fz)				
			1/16" - 1/8"	1/8" - 1/4"	1/4" - 3/8"	3/8" - 1/2"	1/2" - 5/8"
S	**COBALT BASE ALLOYS**						
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	.0003" - .0008" .0002" - .0006"	.0006" - .0011" .0004" - .0009"	.0010" - .0017" .0008" - .0015"	.0014" - .0024" .0012" - .0022"	.0019" - .0032" .0017" - .0030"
	NICKEL BASE ALLOYS						
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	.0003" - .0008" .0002" - .0006"	.0006" - .0011" .0004" - .0009"	.0010" - .0017" .0008" - .0015"	.0014" - .0024" .0012" - .0022"	.0019" - .0032" .0017" - .0030"
	IRON BASE ALLOYS						
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	.0003" - .0008" .0002" - .0006"	.0006" - .0011" .0004" - .0009"	.0010" - .0017" .0008" - .0015"	.0014" - .0024" .0012" - .0022"	.0019" - .0032" .0017" - .0030"
	TITANIUM ALLOYS						
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		.0004" - .0009"	.0008" - .0014"	.0012" - .0020"	.0016" - .0027"	.0021" - .0033"
	5553 / Beta Titanium		.0003" - .0007"	.0006" - .0011"	.0010" - .0017"	.0014" - .0024"	.0019" - .0030"
M	**STAINLESS STEELS**						
	13/8, 15/5, 17-4, pH Types	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
	400 Series - 403, 405, 420, 455	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
P	**HIGH STRENGTH TOOL STEELS**						
	A2, D2, P20, H13, S7, O1	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
	Thompson Shaft, Armor Plate (Class 1)	> 50	.0002" - .0006"	.0005" - .0009"	.0009" - .0015"	.0013" - .0022"	.0018" - .0028"
	MEDIUM ALLOY TOOL STEELS						
	4140, 4340, 52100, 6150, 8620	< 40 > 40	.0004" - .0009" .0003" - .0007"	.0007" - .0013" .0006" - .0011"	.0011" - .0019" .0010" - .0017"	.0015" - .0026" .0014" - .0024"	.0020" - .0032" .0019" - .0030"
	CARBON STEELS						
	1000's - 1018, 1020, 12L14	< 40	.0005" - .0010"	.0008" - .0014"	.0012" - .0020"	.0016" - .0027"	.0021" - .0033"
K	**CAST MATERIAL**						
	Ductile Iron		.0005" - .0010"	.0008" - .0014"	.0012" - .0020"	.0016" - .0027"	.0021" - .0033"
	Gray Iron		.0005" - .0010"	.0008" - .0014"	.0012" - .0020"	.0016" - .0027"	.0021" - .0033"
N	**NON-FERROUS**						
	Aluminum (6061, 7075)		.0006" - .0011"	.0009" - .0015"	.0013" - .0021"	.0017" - .0028"	.0022" - .0034"
	Magnesium		.0005" - .0010"	.0009" - .0014"	.0013" - .0020"	.0017" - .0027"	.0022" - .0033"
	Copper		.0004" - .0008"	.0008" - .0012"	.0012" - .0018"	.0016" - .0025"	.0021" - .0031"
	Brass, Bronze		.0005" - .0009"	.0009" - .0013"	.0013" - .0019"	.0017" - .0026"	.0022" - .0032"
O	**COMPOSITE (non-ISO)**						
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		.0003" - .0008"	.0007" - .0012"	.0011" - .0018"	.0015" - .0025"	.0020" - .0031"

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	- -	17 - 23 13 - 20	17 - 23 13 - 20	- -
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	- -	17 - 25 13 - 21	17 - 25 13 - 21	- -
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	- -	17 - 25 13 - 21	17 - 25 13 - 21	- -
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		-	21 - 30	21 - 30	-
	5553 / Beta Titanium		-	17 - 23	17 - 23	-
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	- -	18 - 27 13 - 21	18 - 27 13 - 21	- -
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	- -	17 - 26 13 - 20	17 - 26 13 - 20	- -
	400 Series - 403, 405, 420, 455	< 40 > 40	- -	21 - 30 15 - 23	21 - 30 15 - 23	- -
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	- -	27 - 43 21 - 37	27 - 43 21 - 37	- -
	Thompson Shaft, Armor Plate (Class 1)	> 50	-	-	17 - 27	-
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	- -	34 - 45 25 - 40	34 - 45 25 - 40	- -
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	-	40 - 55	40 - 55	-
K	**CAST MATERIAL**					
	Ductile Iron		25 - 45	40 - 55	40 - 55	-
	Gray Iron		25 - 53	40 - 60	40 - 60	-
N	**NON-FERROUS**					
	Aluminum (6061, 7075)		-	60 - 90	-	60 - 90
	Magnesium		-	40 - 68	-	40 - 68
	Copper		-	34 - 53	-	34 - 53
	Brass, Bronze		-	40 - 68	-	40 - 68
O	**COMPOSITE (non-ISO)**					
	Glass Epoxy, Fiberglass, Plastics, Graphite, G10		50	38 - 75	-	-

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	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 High Performance Drilling Guide for Mini Drills

(Series 1550H,1250H,1850H)

ISO Material		HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)		
				.0312" - .0390"	.0394" - .0787"	.0791" - .1250"
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	70 - 100 50 - 85	.0002" - .0004" .0002" - .0004"	.0004" - .0007" .0003" - .0006"	.0006" - .0010" .0005" - .0009"
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	70 - 100 50 - 85	.0002" - .0004" .0002" - .0004"	.0004" - .0007" .0003" - .0006"	.0006" - .0010" .0005" - .0009"
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	70 - 100 50 - 85	.0002" - .0004" .0002" - .0004"	.0004" - .0007" .0003" - .0006"	.0006" - .0010" .0005" - .0009"
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		90 - 130	.0003" - .0006"	.0004" - .0008"	.0006" - .0012"
	5553 / Beta Titanium		75 - 115	.0002" - .0004"	.0003" - .0006"	.0005" - .0010"
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	95 - 135 80 - 125	.0002" - .0004" .0002" - .0004"	.0004" - .0007" .0003" - .0006"	.0006" - .0010" .0005" - .0009"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	90 - 125 80 - 115	.0002" - .0004" .0002" - .0004"	.0004" - .0007" .0003" - .0006"	.0006" - .0010" .0005" - .0009"
	400 Series - 403, 405, 420, 455	< 40 > 40	100 - 150 80 - 125	.0002" - .0004" .0002" - .0004"	.0004" - .0007" .0003" - .0006"	.0006" - .0010" .0005" - .0009"
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	100 - 175 60 - 80	.0003" - .0006" .0002" - .0004"	.0004" - .0008" .0003" - .0006"	.0006" - .0012" .0005" - .0010"
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	125 - 175 80 - 125	.0004" - .0008" .0003" - .0005"	.0006" - .0012" .0004" - .0008"	.0008" - .0015" .0006" - .0012"
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	125 - 175	.0004" - .0008"	.0006" - .0012"	.0008" - .0015"
K	**CAST MATERIAL**					
	Ductile Iron		100 - 200	.0004" - .0008"	.0006" - .0012"	.0008" - .0015"
	Gray Iron		80 - 175	.0004" - .0008"	.0006" - .0012"	.0008" - .0015"
N	**NON-FERROUS**					
	Aluminum 2014, 2024, 6061-(T1-T6), 7075, Extruded		125 - 300	.0004" - .0008"	.0006" - .0012"	.0008" - .0015"
	Magnesium		125 - 250	.0004" - .0008"	.0006" - .0012"	.0008" - .0015"
	Copper		125 - 250	.0004" - .0008"	.0006" - .0012"	.0008" - .0015"
	Brass		100 - 250	.0003" - .0008"	.0004" - .0012"	.0006" - .0015"
	Bronze		80 - 250	.0003" - .0008"	.0004" - .0012"	.0006" - .0015"

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GARR TOOL High Performance Drilling Guide for Mini Drills

(Series 1550H,1250H,1850H)

	ISO Material	HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)		
				0.79 - 0.99mm	1.00 - 2.00mm	2.01 - 3.17mm
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	20 - 30 15 - 25	.005 - .010 .005 - .010	.010 - .018 .008 - .015	.015 - .025 .013 - .023
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	20 - 30 15 - 25	.008 - .013 .005 - .010	.010 - .018 .008 - .015	.015 - .025 .013 - .023
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	20 - 30 15 - 25	.005 - .013 .005 - .010	.010 - .020 .008 - .018	.013 - .025 .010 - .023
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		25 - 40	.008 - .015	.010 - .020	.015 - .030
	5553 / Beta Titanium		20 - 35	.005 - .010	.008 - .015	.013 - .025
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	30 - 40 25 - 40	.005 - .010 .005 - .010	.010 - .018 .008 - .015	.015 - .025 .013 - .023
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	25 - 40 25 - 35	.005 - .010 .005 - .010	.010 - .018 .008 - .015	.015 - .025 .013 - .023
	400 Series - 403, 405, 420, 455	< 40 > 40	30 - 45 25 - 40	.005 - .010 .005 - .010	.010 - .018 .008 - .015	.015 - .025 .013 - .023
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	30 - 50 20 - 25	.008 - .015 .005 - .010	.010 - .020 .008 - .015	.015 - .030 .013 - .025
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	40 - 50 25 - 40	.010 - .020 .008 - .013	.015 - .030 .010 - .020	.020 - .038 .015 - .030
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	40 - 50	.010 - .020	.015 - .030	.020 - .038
K	**CAST MATERIAL**					
	Ductile Iron		30 - 60	.010 - .020	.015 - .030	.020 - .038
	Gray Iron		25 - 50	.010 - .020	.015 - .030	.020 - .038
N	**NON-FERROUS**					
	Aluminum 2014, 2024, 6061-(T1-T6), 7075, Extruded		40 - 90	.010 - .020	.015 - .030	.020 - .038
	Magnesium		40 - 75	.010 - .020	.015 - .030	.020 - .038
	Copper		40 - 75	.010 - .020	.015 - .030	.020 - .038
	Brass		30 - 75	.008 - .020	.010 - .030	.015 - .038
	Bronze		25 - 75	.008 - .020	.010 - .030	.015 - .038

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

GARR TOOL HTD 12 High Performance Drilling Guide

	ISO Material	HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz) 1/8" - 1/4"	1/4" - 3/8"	3/8" - 1/2"
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	110 70	.0006" - .0016" .0004" - .0012"	.0016" - .0022" .0012" - .0018"	.0022" - .0035" .0018" - .0031"
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	120 80	.0006" - .0016" .0004" - .0012"	.0016" - .0022" .0012" - .0018"	.0022" - .0035" .0018" - .0031"
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	120 80	.0006" - .0016" .0004" - .0012"	.0016" - .0022" .0012" - .0018"	.0022" - .0035" .0018" - .0031"
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		170	.0006" - .0026"	.0026" - .0040"	.0040" - .0055"
	5553 / Beta Titanium		120	.0005" - .0023"	.0023" - .0034"	.0034" - .0047"
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	150 105	.0006" - .0018" .0005" - .0013"	.0018" - .0035" .0013" - .0030"	.0035" - .0049" .0030" - .0043"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	150 105	.0006" - .0018" .0005" - .0013"	.0018" - .0035" .0013" - .0030"	.0035" - .0049" .0030" - .0043"
	400 Series - 403, 405, 420, 455	< 40 > 40	160 105	.0006" - .0018" .0005" - .0013"	.0018" - .0035" .0013" - .0030"	.0035" - .0049" .0030" - .0043"
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	170 105	.0008" - .0026" .0006" - .0020"	.0026" - .0038" .0020" - .0032"	.0038" - .0050" .0032" - .0043"
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	260 110	.0008" - .0026" .0006" - .0020"	.0026" - .0038" .0020" - .0032"	.0038" - .0050" .0032" - .0043"
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	320	.0008" - .0029"	.0030" - .0045"	.0045" - .0060"
K	**CAST MATERIAL**					
	Ductile Iron		340	.0008" - .0029"	.0029" - .0045"	.0045" - .0060"
	Gray Iron		350	.0008" - .0029"	.0029" - .0045"	.0045" - .0060"
N	**NON-FERROUS**					
	Aluminum 2014, 2024, 6061-(T1-T6), 7075		400	.0016" - .0030"	.0030" - .0046"	.0046" - .0062"
	Aluminum Die Cast		375	.0014" - .0027"	.0027" - .0040"	.0040" - .0054"
	Magnesium		275	.0014" - .0026"	.0026" - .0037"	.0037" - .0049"
	Copper		250	.0013" - .0024"	.0024" - .0031"	.0031" - .0044"
	Brass		360	.0016" - .0030"	.0030" - .0044"	.0044" - .0060"
	Bronze		260	.0013" - .0024"	.0024" - .0031"	.0031" - .0044"

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GARR TOOL HTD 12 High Performance Drilling Guide

ISO Material		HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)		
				3.0 - 6.0mm	6.0 - 10.0mm	10.0 - 13.0mm
S	**COBALT BASE ALLOYS**					
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	33 21	.015 - .041 .010 - .030	.041 - .056 .030 - .046	.056 - .089 .046 - .079
	NICKEL BASE ALLOYS					
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	36 24	.015 - .041 .010 - .030	.041 - .056 .030 - .046	.056 - .089 .046 - .079
	IRON BASE ALLOYS					
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	36 24	.015 - .041 .010 - .030	.041 - .056 .030 - .046	.056 - .089 .046 - .079
	TITANIUM ALLOYS					
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		52	.015 - .066	.066 - .102	.102 - .140
	5553 / Beta Titanium		36	.013 - .058	.058 - .086	.086 - .119
M	**STAINLESS STEELS**					
	13/8, 15/5, 17-4, pH Types	< 40 > 40	45 32	.015 - .046 .013 - .033	.046 - .089 .033 - .076	.089 - .124 .076 - .109
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	45 32	.015 - .046 .013 - .033	.046 - .089 .033 - .076	.089 - .124 .076 - .109
	400 Series - 403, 405, 420, 455	< 40 > 40	48 32	.015 - .046 .013 - .033	.046 - .089 .033 - .076	.089 - .124 .076 - .109
P	**HIGH STRENGTH TOOL STEELS**					
	A2, D2, P20, H13, S7, O1	< 40 > 40	52 32	.020 - .066 .015 - .051	.066 - .097 .051 - .081	.097 - .127 .081 - .109
	MEDIUM ALLOY TOOL STEELS					
	4140, 4340, 52100, 6150, 8620	< 40 > 40	79 33	.020 - .066 .015 - .051	.066 - .097 .051 - .081	.097 - .127 .081 - .109
	CARBON STEELS					
	1000's - 1018, 1020, 12L14	< 40	97	.020 - .074	.074 - .114	.114 - .152
K	**CAST MATERIAL**					
	Ductile Iron		103	.020 - .074	.074 - .114	.114 - .152
	Gray Iron		106	.020 - .074	.074 - .114	.114 - .152
N	**NON-FERROUS**					
	Aluminum 2014, 2024, 6061-(T1-T6), 7075		122	.041 - .076	.076 - .117	.117 - .157
	Aluminum Die Cast		114	.036 - .069	.069 - .102	.102 - .137
	Magnesium		83	.036 - .066	.066 - .094	.094 - .124
	Copper		76	.033 - .061	.061 - .079	.079 - .112
	Brass		109	.041 - .076	.076 - .112	.112 - .152
	Bronze		79	.033 - .061	.061 - .079	.079 - .112

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

GARR TOOL High Performance Drilling Guide

ISO Material		HRC	SFM (Vc)		CHIPLOAD PER TOOTH (Fz)				
			NON-COOLANT	COOLANT FED	1/8" - 1/4"	1/4" - 3/8"	3/8" - 1/2"	1/2" - 5/8"	5/8" - 3/4"
S	**COBALT BASE ALLOYS**								
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	80 60	100 75	.0008" - .0015" .0005" - .0012"	.0012" - .0020" .0009" - .0017"	.0017" - .0026" .0014" - .0023"	.0022" - .0032" .0019" - .0029"	.0027" - .0038" .0024" - .0035"
	NICKEL BASE ALLOYS								
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	90 70	110 75	.0008" - .0015" .0005" - .0012"	.0012" - .0020" .0009" - .0017"	.0017" - .0026" .0014" - .0023"	.0022" - .0032" .0019" - .0029"	.0027" - .0038" .0024" - .0035"
	IRON BASE ALLOYS								
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	90 60	115 75	.0008" - .0015" .0005" - .0012"	.0012" - .0020" .0009" - .0017"	.0017" - .0026" .0014" - .0023"	.0022" - .0032" .0019" - .0029"	.0027" - .0038" .0024" - .0035"
	TITANIUM ALLOYS								
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		110	135	.0010" - .0018"	.0015" - .0023"	.0020" - .0029"	.0025" - .0035"	.0030" - .0041"
	5553 / Beta Titanium		70	100	.0008" - .0015"	.0012" - .0020"	.0017" - .0026"	.0022" - .0032"	.0027" - .0038"
M	**STAINLESS STEELS**								
	13/8, 15/5, 17-4, pH Types	< 40 > 40	100 80	120 90	.0010" - .0017" .0007" - .0015"	.0014" - .0022" .0011" - .0020"	.0019" - .0028" .0016" - .0026"	.0024" - .0034" .0021" - .0032"	.0029" - .0040" .0026" - .0038"
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	90 70	110 80	.0010" - .0017" .0007" - .0015"	.0014" - .0022" .0011" - .0020"	.0019" - .0028" .0016" - .0026"	.0024" - .0034" .0021" - .0032"	.0029" - .0040" .0026" - .0038"
	400 Series - 403, 405, 420, 455	< 40 > 40	110 80	130 105	.0010" - .0017" .0007" - .0015"	.0014" - .0022" .0011" - .0020"	.0019" - .0028" .0016" - .0026"	.0024" - .0034" .0021" - .0032"	.0029" - .0040" .0026" - .0038"
P	**HIGH STRENGTH TOOL STEELS**								
	A2, D2, P20, H13, S7, O1	< 40 > 40	160 130	200 150	.0011" - .0020" .0007" - .0014"	.0015" - .0025" .0011" - .0019"	.0020" - .0031" .0016" - .0025"	.0025" - .0037" .0021" - .0031"	.0030" - .0043" .0026" - .0037"
	MEDIUM ALLOY TOOL STEELS								
	4140, 4340, 52100, 6150, 8620	< 40 > 40	175 145	215 170	.0011" - .0020" .0007" - .0014"	.0015" - .0025" .0011" - .0019"	.0020" - .0031" .0016" - .0025"	.0025" - .0037" .0021" - .0031"	.0030" - .0043" .0026" - .0037"
	CARBON STEELS								
	1000's - 1018, 1020, 12L14	< 40	225	275	.0014" - .0023"	.0018" - .0027"	.0023" - .0033"	.0028" - .0039"	.0033" - .0045"
K	**CAST MATERIAL**								
	Ductile Iron		250	350	.0015" - .0023"	.0019" - .0028"	.0024" - .0034"	.0029" - .0040"	.0034" - .0046"
	Gray Iron		275	375	.0016" - .0024"	.0020" - .0029"	.0025" - .0035"	.0030" - .0041"	.0035" - .0047"
N	**NON-FERROUS**								
	Aluminum 2014, 2024, 6061-(T1-T6), 7075		350	425	.0023" - .0033"	.0027" - .0038"	.0033" - .0044"	.0038" - .0050"	.0043" - .0056"
	Aluminum Die Cast		300	375	.0018" - .0028"	.0022" - .0033"	.0027" - .0039"	.0032" - .0045"	.0037" - .0051"
	Magnesium		275	350	.0020" - .0030"	.0024" - .0035"	.0029" - .0041"	.0034" - .0047"	.0039" - .0053"
	Copper		200	300	.0017" - .0025"	.0021" - .0030"	.0026" - .0036"	.0031" - .0042"	.0036" - .0048"
	Brass		250	350	.0020" - .0032"	.0024" - .0037"	.0029" - .0043"	.0034" - .0049"	.0039" - .0055"
	Bronze		200	275	.0018" - .0025"	.0022" - .0030"	.0027" - .0036"	.0032" - .0042"	.0037" - .0048"

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

	ISO Material	HRC	M/Min. (Vc)		CHIPLOAD PER TOOTH (Fz)				
			NON-COOLANT	COOLANT FED	3.0 - 6.0mm	6.0 - 10.0mm	10.0 - 13.0mm	13.0 - 16.0mm	16.0 - 20.0mm
S	**COBALT BASE ALLOYS**								
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	25 20	30 25	.020 - .038 .013 - .030	.030 - .051 .023 - .043	.043 - .066 .036 - .058	.056 - .081 .048 - .074	.069 - .097 .061 - .089
	NICKEL BASE ALLOYS								
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	25 20	35 25	.020 - .038 .013 - .030	.030 - .051 .023 - .043	.043 - .066 .036 - .058	.056 - .081 .048 - .074	.069 - .097 .061 - .089
	IRON BASE ALLOYS								
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	25 20	35 25	.020 - .038 .013 - .030	.030 - .051 .023 - .043	.043 - .066 .036 - .058	.056 - .081 .048 - .074	.069 - .097 .061 - .089
	TITANIUM ALLOYS								
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		35	40	.025 - .046	.038 - .058	.051 - .074	.064 - .089	.076 - .104
	5553 / Beta Titanium		20	30	.020 - .038	.030 - .051	.043 - .066	.056 - .081	.069 - .097
M	**STAINLESS STEELS**								
	13/8, 15/5, 17-4, pH Types	< 40 > 40	30 25	35 25	.025 - .043 .018 - .038	.036 - .056 .028 - .051	.048 - .071 .041 - .066	.061 - .086 .053 - .081	.074 - .102 .066 - .097
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	25 20	35 25	.025 - .043 .018 - .038	.036 - .056 .028 - .051	.048 - .071 .041 - .066	.061 - .086 .053 - .081	.074 - .102 .066 - .097
	400 Series - 403, 405, 420, 455	< 40 > 40	35 25	40 30	.025 - .043 .018 - .038	.036 - .056 .028 - .051	.048 - .071 .041 - .066	.061 - .086 .053 - .081	.074 - .102 .066 - .097
P	**HIGH STRENGTH TOOL STEELS**								
	A2, D2, P20, H13, S7, O1	< 40 > 40	50 40	60 45	.028 - .051 .018 - .036	.038 - .064 .028 - .048	.051 - .079 .041 - .064	.064 - .094 .053 - .079	.076 - .109 .066 - .094
	MEDIUM ALLOY TOOL STEELS								
	4140, 4340, 52100, 6150, 8620	< 40 > 40	55 45	65 50	.028 - .051 .018 - .036	.038 - .064 .028 - .048	.051 - .079 .041 - .064	.064 - .094 .053 - .079	.076 - .109 .066 - .094
	CARBON STEELS								
	1000's - 1018, 1020, 12L14	< 40	70	85	.036 - .058	.048 - .069	.058 - .064	.071 - .099	.084 - .114
K	**CAST MATERIAL**								
	Ductile Iron		75	105	.038 - .058	.048 - .071	.061 - .086	.074 - .102	.086 - .117
	Gray Iron		85	115	.041 - .061	.051 - .074	.064 - .089	.076 - .104	.089 - .119
N	**NON-FERROUS**								
	Aluminum 2014, 2024, 6061-(T1-T6), 7075		105	130	.058 - .084	.069 - .097	.084 - .112	.097 - .127	.109 - .142
	Aluminum Die Cast		90	115	.046 - .071	.056 - .084	.069 - .099	.081 - .114	.094 - .130
	Magnesium		85	105	.051 - .076	.061 - .089	.074 - .104	.086 - .119	.099 - .135
	Copper		60	90	.043 - .064	.053 - .076	.066 - .091	.079 - .107	.091 - .122
	Brass		75	105	.051 - .081	.061 - .094	.074 - .109	.086 - .124	.099 - .140
	Bronze		60	85	.048 - .064	.056 - .076	.069 - .091	.081 - .107	.094 - .122

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

GARR TOOL Drilling Guide for Aluminum Series 3-Flute Drills

				CHIPLOAD PER TOOTH (Fz)					
ISO Material		Type	SFM (Vc)	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"
N	NON-FERROUS								
	Aluminum Alloy	6061	450 - 650	.0020" - .0040"	.0025" - .0050"	.0035" - .0060"	.0045" - .0070"	.0055" - .0080"	.0065" - .0100"
	Cast Aluminum	380	300 - 500	.0015" - .0030"	.0020" - .0040"	.0030" - .0050"	.0030" - .0060"	.0035" - .0070"	.0040" - .0080"
	Magnesium		250 - 500	.0015" - .0030"	.0020" - .0040"	.0030" - .0050"	.0030" - .0060"	.0035" - .0070"	.0040" - .0080"
	Copper & Brass		250 - 400	.0010" - .0025"	.0020" - .0030"	.0020" - .0030"	.0020" - .0040"	.0030" - .0050"	.0030" - .0060"
	Titanium	6Al-4V	100 - 300	.0010" - .0020"	.0020" - .0030"	.0020" - .0030"	.0020" - .0040"	.0030" - .0050"	.0030" - .0060"

				CHIPLOAD PER TOOTH (Fz)					
ISO Material		Type	M/Min. (Vc)	4.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.0mm
N	NON-FERROUS								
	Aluminum Alloy	6061	140 - 200	.050 - .100	.065 - .125	.090 - .150	.115 - .175	.150 - .200	.165 - .250
	Cast Aluminum	380	90 - 150	.038 - .075	.050 - .100	.075 - .125	.075 - .150	.090 - .175	.100 - .200
	Magnesium		75 - 150	.038 - .075	.050 - .100	.075 - .125	.075 - .150	.090 - .175	.100 - .200
	Copper, Brass		75 - 120	.025 - .060	.050 - .075	.050 - .075	.050 - .100	.075 - .125	.075 - .150
	Titanium	6Al-4V	30 - 90	.025 - .050	.050 - .075	.050 - .075	.050 - .100	.075 - .125	.075 - .150



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

OPERATING PARAMETERS		
TOOL DIAMETER	Vc	
	1500 SFM	3000 SFM
	RPM (n)	
1/16"	45,000	90,000
1/8"	45,000	90,000
3/16"	30,000	60,000
1/4"	23,000	45,000
3/8"	15,000	30,000
1/2"	11,000	22,000
3/4"	7,500	15,000
1"	5,500	10,000

Speeds and Feeds

Carbide burrs typically operate between 1500 and 3000 SFM. Solid carbide burrs that are 1/8" diameter or less can typically be run at speeds up to 75,000 RPM (n). Burrs ranging in size from 3/16" to 3/8" diameter can utilize a 30,000 RPM (n) grinder. Burrs ranging in size from 1/4" to 1/2" diameter can utilize a 22,000 RPM (n) grinder. These are general speed recommendations that may need to be adjusted for optimal performance.

Safety Information

Always wear the appropriate personal protective equipment, such as safety glasses and protective clothing, when using solid carbide or HSS cutting tools. Machines should be fully guarded. Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

BURR TROUBLESHOOTING OPTIONS	
PROBLEM	POSSIBLE SOLUTIONS
Broken Braze	Excessive Force Heat from rubbing shank Dull tool
Chatter	Improper location in collet Bad grinder bearings Bent shank Unstable control of process Lack of rigid setup
Plugged Flutes	Use coarser burr Working in soft material Use an anti-stick agent Faster RPM Slower RPM Lighter cuts
Excessive Vibration	Improper location in collet Bad grinder bearings Bent shank Unstable control of process Faster RPM Slower RPM Faster feed Slower feed Lack of rigid setup
Poor Finish	Improper location in collet Bad grinder bearings Bent shank Unstable control of process Faster RPM Slower RPM Switch to finer cut Don't use double cut Faster feed Lack of rigid setup
Poor Tool Life	Heat from rubbing shank Improper location in collet Bad grinder bearings Bent shank Unstable control of process Faster RPM Slower RPM Don't use double cut Faster feed Slower feed Cutting abrasive material Lack of rigid setup

Hardness Conversion Chart

ROCKWELL HARDNESS (HRb)	ROCKWELL HARDNESS (HRc)	BRINELL HARDNESS (HB)	VICKERS HARDNESS (HV)	TENSILE STRENGTH (N/mm^2)	PSI ($1000\ lb/in^2$)
67	-	116	122	401	58
70	-	121	127	432	63
73	-	126	132	448	65
75	-	131	137	455	66
77	-	137	143	463	67
80	-	143	150	479	69
82	-	149	156	494	72
84	-	156	163	525	76
86	-	163	171	540	78
89	-	170	178	556	81
91	-	179	188	602	88
93	-	187	196	632	92
96	-	197	212	664	97
97	-	207	218	695	101
98	-	212	222	710	103
-	20	217	228	741	107
-	21	223	234	756	110
-	22	229	241	772	112
-	23	235	247	787	114
-	24	241	255	818	118
-	25	248	261	849	123
-	27	255	269	865	125
-	28	262	275	895	130
-	29	269	284	911	132
-	30	277	292	942	136
-	31	285	300	973	141
-	32	293	308	988	143
-	33	302	318	1019	147
-	34	311	327	1050	152
-	35	321	337	1096	159
-	37	331	349	1127	163
-	38	341	359	1158	168
-	39	352	370	1189	172
-	40	363	381	1235	179
-	41	375	395	1266	183
-	42	388	408	1312	190
-	44	401	422	1359	197
-	45	415	437	1420	206
-	46	429	452	1467	212
-	48	444	470	1513	219
-	50	461	497	1559	226
-	51	477	517	1621	235
-	52	495	532	1668	241
-	54	543	572	1729	250
-	56	514	609	1807	262
-	57	555	630	1884	273
-	59	578	670	1961	284
-	60	601	698	2039	295
-	61	-	720	-	-
-	62	-	746	-	-
-	63	-	772	-	-
-	64	-	800	-	-
-	65	-	832	-	-
-	66	-	865	-	-
-	67	-	900	-	-
-	68	-	940	-	-

Conversions from each scale are approximate

Decimal Equivalent Chart

Diameter	Decimal Equiv.
#80	.0135
0.35mm	.0138
#79	.0145
1/64"	.0156
0.40mm	.0158
#78	.0160
0.45mm	.0177
#77	.0180
0.50mm	.0197
#76	.0200
#75	.0210
0.55mm	.0217
#74	.0225
0.60mm	.0236
#73	.0240
#72	.0250
0.65mm	.0256
#71	.0260
0.70mm	.0276
#70	.0280
#69	.0292
0.75mm	.0295
#68	.0310
1/32"	.0312
0.80mm	.0315
#67	.0320
#66	.0330
0.85mm	.0335
#65	.0350
0.90mm	.0354
#64	.0360
#63	.0370
0.95mm	.0374
#62	.0380
#61	.0390
1.00mm	.0394
#60	.0400
#59	.0410
1.05mm	.0413
#58	.0420
#57	.0430
1.10mm	.0433
1.15mm	.0453
#56	.0465
3/64"	.0469
1.20mm	.0472
1.25mm	.0492
1.30mm	.0512
#55	.0520
1.35mm	.0531
#54	.0550
1.40mm	.0551
1.45mm	.0571
1.50mm	.0591
#53	.0595
1.55mm	.0610
1/16"	.0625
1.60mm	.0630
#52	.0635
1.65mm	.0650
1.70mm	.0669
#51	.0670
1.75mm	.0689
#50	.0700
1.80mm	.0709
1.85mm	.0728

Diameter	Decimal Equiv.
#49	.0730
1.90mm	.0748
#48	.0760
1.95mm	.0768
5/64"	.0781
#47	.0785
2.00mm	.0787
2.05mm	.0807
#46	.0810
#45	.0820
2.10mm	.0827
2.15mm	.0846
#44	.0860
2.20mm	.0866
2.25mm	.0886
#43	.0890
2.30mm	.0906
2.35mm	.0925
#42	.0935
3/32"	.0938
2.40mm	.0945
#41	.0960
2.45mm	.0965
#40	.0980
2.50mm	.0984
#39	.0995
#38	.1015
2.60mm	.1024
#37	.1040
2.70mm	.1063
#36	.1065
2.75mm	.1083
7/64"	.1094
#35	.1100
2.80mm	.1102
#34	.1110
#33	.1130
2.90mm	.1142
#32	.1160
3.00mm	.1181
#31	.1200
3.10mm	.1220
1/8"	.1250
3.20mm	.1260
3.25mm	.1280
#30	.1285
3.30mm	.1299
3.40mm	.1339
#29	.1360
3.50mm	.1378
#28	.1405
9/64"	.1406
3.60mm	.1417
#27	.1440
3.70mm	.1457
#26	.1470
3.75mm	.1476
#25	.1495
3.80mm	.1496
#24	.1520
3.90mm	.1535
#23	.1540
5/32"	.1562
#22	.1570
4.00mm	.1575
#21	.1590
#20	.1610

Diameter	Decimal Equiv.
4.10mm	.1614
4.20mm	.1654
#19	.1660
4.25mm	.1673
4.30mm	.1693
#18	.1695
11/64"	.1719
#17	.1730
4.40mm	.1732
#16	.1770
4.50mm	.1772
#15	.1800
4.60mm	.1811
#14	.1820
#13	.1850
4.70mm	.1850
4.75mm	.1870
3/16"	.1875
4.80mm	.1890
#12	.1890
#11	.1910
4.90mm	.1929
#10	.1935
#9	.1960
5.00mm	.1969
#8	.1990
5.10mm	.2008
#7	.2010
13/64"	.2031
#6	.2040
5.20mm	.2047
#5	.2055
5.25mm	.2067
5.30mm	.2087
#4	.2090
5.40mm	.2126
#3	.2130
5.50mm	.2165
7/32"	.2188
5.60mm	.2205
#2	.2210
5.70mm	.2244
5.75mm	.2264
#1	.2280
5.80mm	.2283
5.90mm	.2323
A	.2340
15/64"	.2344
6.00mm	.2362
B	.2380
6.10mm	.2402
C	.2420
6.20mm	.2441
D	.2460
6.25mm	.2461
6.30mm	.2480
1/4"	.2500
E	.2500
6.40mm	.2520
6.50mm	.2559
F	.2570
6.60mm	.2598
G	.2610
6.70mm	.2638
17/64"	.2656
6.75mm	.2657
H	.2660

Diameter	Decimal Equiv.
6.80mm	.2677
6.90mm	.2717
I	.2720
7.00mm	.2756
J	.2770
7.10mm	.2795
K	.2810
9/32"	.2812
7.20mm	.2835
7.25mm	.2854
7.30mm	.2874
L	.2900
7.40mm	.2913
M	.2950
7.50mm	.2953
19/64"	.2969
7.60mm	.2992
N	.3020
7.70mm	.3031
7.75mm	.3051
7.80mm	.3071
7.90mm	.3110
5/16"	.3125
8.00mm	.3150
O	.3160
8.10mm	.3189
8.20mm	.3228
P	.3230
8.25mm	.3248
8.30mm	.3268
21/64"	.3281
8.40mm	.3307
Q	.3320
8.50mm	.3346
8.60mm	.3386
R	.3390
8.70mm	.3425
11/32"	.3438
8.75mm	.3445
8.80mm	.3465
S	.3480
8.90mm	.3504
9.00mm	.3543
T	.3580
9.10mm	.3583
23/64"	.3594
9.20mm	.3622
9.25mm	.3642
9.30mm	.3661
U	.3680
9.40mm	.3701
9.50mm	.3740
3/8"	.3750
V	.3770
9.60mm	.3780
9.70mm	.3819
9.75mm	.3839
9.80mm	.3858
W	.3860
9.90mm	.3898
25/64"	.3906
10.00mm	.3937
X	.3970
Y	.4040
13/32"	.4062
Z	.4130
10.50mm	.4134

Diameter	Decimal Equiv.
27/64"	.4219
11.00mm	.4331
7/16"	.4375
11.50mm	.4528
29/64"	.4531
15/32"	.4688
12.00mm	.4724
31/64"	.4844
12.50mm	.4921
1/2"	.5000
13.00mm	.5118
33/64"	.5156
17/32"	.5312
13.50mm	.5315
35/64"	.5469
14.00mm	.5512
9/16"	.5625
14.50mm	.5709
37/64"	.5781
15.00mm	.5906
19/32"	.5938
39/64"	.6094
15.50mm	.6102
5/8"	.6250
16.00mm	.6299
41/64"	.6406
16.50mm	.6496
21/32"	.6562
17.00mm	.6693
43/64"	.6719
11/16"	.6875
17.50mm	.6890
45/64"	.7031
18.00mm	.7087
23/32"	.7188
18.50mm	.7283
47/64"	.7344
19.00mm	.7480
3/4"	.7500
49/64"	.7656
19.50mm	.7677
25/32"	.7812
20.00mm	.7874
51/64"	.7969
20.50mm	.8071
13/16"	.8125
21.00mm	.8268
53/64"	.8281
27/32"	.8438
21.50mm	.8465
55/64"	.8594
22.00mm	.8661
7/8"	.8750
22.50mm	.8858
57/64"	.8906
23.00mm	.9055
29/32"	.9062
59/64"	.9219
23.50mm	.9252
15/16"	.9375
24.00mm	.9449
61/64"	.9531
24.50mm	.9646
31/32"	.9688
25.00mm	.9843
63/64"	.9844
1"	1.0000

GARR TOOL Training Center





Standards

Every GARR carbide cutting tool is manufactured from premium submicron grain carbide, unless otherwise noted.

Each of our styles of end mills is center cutting, unless otherwise noted.

Altered Standards - 48 Hour Delivery

Many special tooling needs can be satisfied by adding a flat, a corner radius, or by making a minor diameter change to one of our standard tools. Garr Tool Company will ship altered standards within 48 hours - 12 pieces or less. Contact us for pricing.

GARR TOOL cannot be responsible for tools altered by other parties.

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Blueprint and non-blueprint specials will be quoted within 24 hours. Uncoated tooling made from stock material will be manufactured to your specifications within two weeks.

Solid carbide cutting tools which are 1" or less in diameter and up to 12" in length can be produced from premium submicron grain carbide in the time it takes most manufacturers to quote and order material.

Garr Tool Company can take care of your special round tooling needs. We deliver!

Reconditioning Service

With our state-of-the-art reconditioning department, you can expect quality reground tools at competitive prices. Let us be your 'local' source for regrinding.

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Our web site, *www.garrtool.com*, enhances the level of customer service you have come to expect from us. Increase the speed and accuracy of special pricing requests by e-mailing prints for quote to *sales@garrtool.com*.

A collection of 'fill-in-the-blank' prints is available for download from our website to aid in quoting of specials.

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