NG TOOL

MANUFACTURING DREAMS


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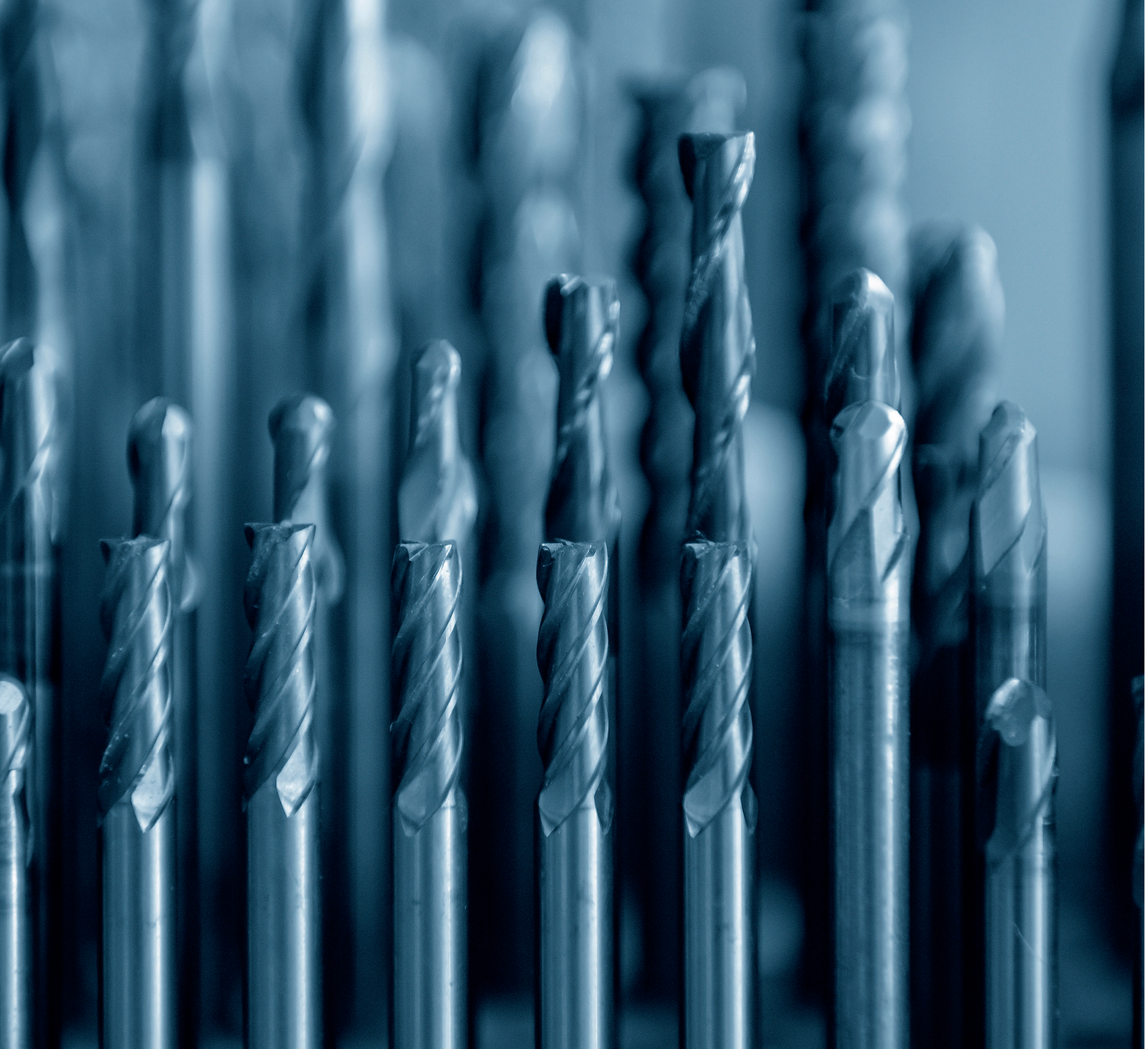


GENERAL INDEX

NG Tooling Solutions designs and manufactures high-quality solid-carbide cutting tools. Our primary customers serve industries including aerospace, energy, automotive, medical, electronics, and moldmaking, among others.

NG TOOL was founded to meet both general and application-specific needs of the manufacturing industry. Our broad product range is designed to provide solutions for industries that demand maximum production performance.

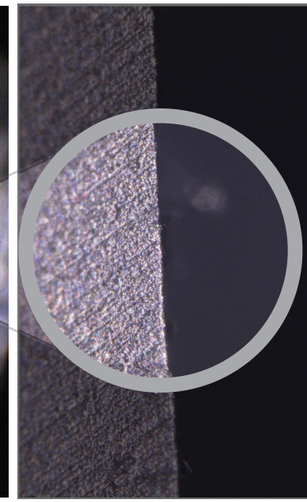
Our offering includes end mills, drills, and highly complex custom cutting tools developed around each customer?s specific requirements.

By combining the experience of our qualified engineers with advanced CNC production technology, we design and manufacture cutting tools for the most demanding applications. We work closely with our customers to deliver products that help them achieve their production goals.

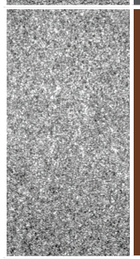
Our advanced equipment allows us to manufacture tools with greater precision and complexity.

We use specialized inspection equipment to ensure our tools meet optimal tolerance requirements.

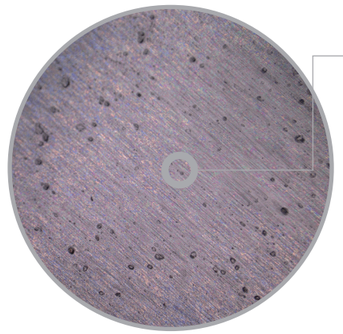
Our thorough inspection process allows us to verify that every tool meets our high quality standards.



CARBIDE GRADES

MICRO STRUCTURE	CARBIDE GRADES	WC (wt.%)	Co (wt.%)	Other (wt.%)	Grain Size	Density (g/cm^3)	Hardness (HRA)	Transverse Rupture Strength (psi, min)
	**NG-CARB-01**	89.4	10	0.6	Submicron 0.7 µm	14.4	91.9	526,000
		Submicron-grain carbide. Its versatility makes it suitable for milling, drilling, and reaming ferrous, nonferrous, and refractory materials.						
	**NG-CARB-02**	86.7	12	1.3	Ultrafine 0.4 µm	14.1	92.6	675,000
		Ultrafine-grain carbide. Its key features include increased impact and wear resistance.						
	**NG-CARB-03**	89.15	10	0.85	Ultrafine 0.6 µm	14.37	92.3	656,000
		Ultrafine-grain carbide. Its high cobalt content increases impact resistance. Ideal for demanding roughing applications in nonferrous materials.						
	**NG-CARB-04**	89.9	9	1.1	Nano 0.2 µm	14.44	94	575,000
		Ultrafine-grain carbide. Optimized for machining hardened materials from 50 to 65 HRC. Engineered to resist wear from materials such as high-speed steel, hardened steel, and composites.						

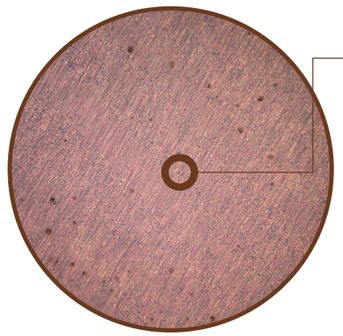
COATINGS



CRONALUM

This general-purpose coating is ideal for iron-based materials. It provides exceptional wear resistance and high-temperature performance.

This coating enables higher cutting speeds, resulting in a direct increase in productivity.



TITRALUM

Even at high temperatures, this coating provides superior abrasive-wear resistance and greater tool toughness. Its exceptional performance makes it ideal for the most demanding machining operations.

NOTE: Other coatings are available upon request

GENERAL-PURPOSE SQUARE END MILL INDEX

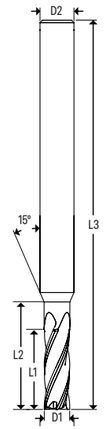
FEATURES

STB	Stub length
STD	Standard length
XL	Extra-long length
Z	Number of flutes
	Center cutting
	Variable helix
SE	Square end mill
in	Imperial
mm	Metric
D2 h6	Ground shank (h6)
30° α	30° helix
RH	Right-hand cut

APPLICATIONS

	Profiling
	Axial cutting
	Ramping
	Slotting

TABLE GUIDE



L1: Length of cut

L2: Reach length

L3: Overall length

D1: Cutting diameter

D2: Shank diameter

UC: Uncoated

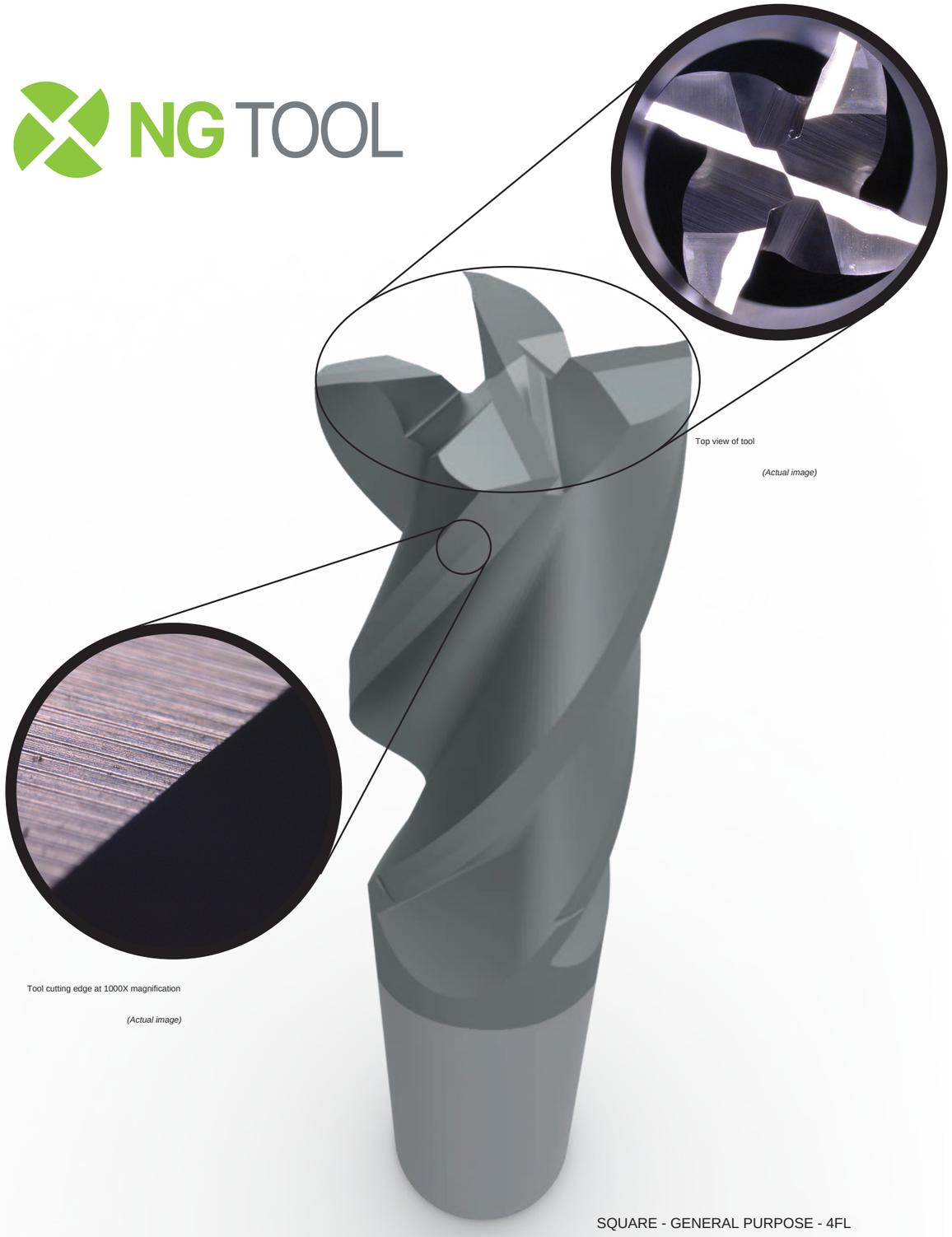
CRONALUM: Coated

PRODUCT IDENTIFICATION

NGOXXXXXXX

Company code | Family code | Product number

NG TOOL



Top view of tool

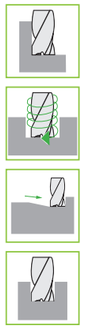
(Actual image)

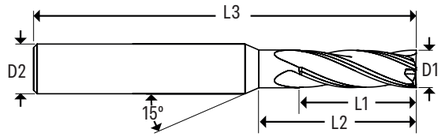
Tool cutting edge at 1000X magnification

(Actual image)

SQUARE - GENERAL PURPOSE - 4FL

NG-100

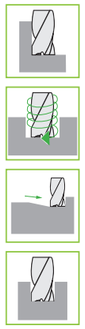


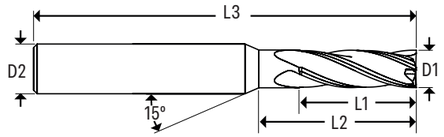


TOL +0.000
-0.002

D1	L1	L2	D2	L3	Z	UC	CRONALUM
3/64	1/8	3/16	1/8	1 1/2	4	NG0100002	NG0100019
1/16	1/8	3/16	1/8	1 1/2	4	NG0100003	NG0100020
5/64	1/8	3/16	1/8	1 1/2	4	NG0100004	NG0100021
3/32	3/16	1/4	1/8	1 1/2	4	NG0100005	NG0100022
7/64	3/16	1/4	1/8	1 1/2	4	NG0100006	NG0100023
1/8	1/4	-	1/8	1 1/2	4	NG0100007	NG0100024
5/32	3/8	1/2	3/16	2	4	NG0100008	NG0100025
3/16	3/8	-	3/16	2	4	NG0100009	NG0100026
1/4	1/2	-	1/4	2	4	NG0100010	NG0100027
5/16	1/2	-	5/16	2 1/2	4	NG0100011	NG0100028
3/8	5/8	-	3/8	2 1/2	4	NG0100012	NG0100029
7/16	3/4	-	7/16	2 3/4	4	NG0100013	NG0100030
1/2	3/4	-	1/2	3	4	NG0100014	NG0100031
5/8	1	-	5/8	3 1/2	4	NG0100015	NG0100032
3/4	1	-	3/4	4	4	NG0100016	NG0100033
1	1	-	1	4	4	NG0100017	NG0100034

NG-114

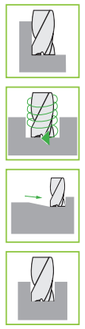


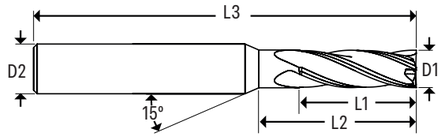


TOL +0.000
-0.050

D1	L1	L2	D2	L3	Z	UC	CRONALUM
1	2.5	5	3	38	4	NG0114001	NG0114009
1.5	3	6	3	38	4	NG0114002	NG0114010
2	4	7.5	3	38	4	NG0114003	NG0114011
3	6	-	3	38	4	NG0114004	NG0114012
6	12	-	6	50	4	NG0114005	NG0114013
8	12	-	8	50	4	NG0114006	NG0114014
10	15	-	10	50	4	NG0114007	NG0114015
12	15	-	12	63	4	NG0114008	NG0114016

NG-102





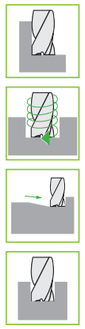
TOL +0.000
-0.002

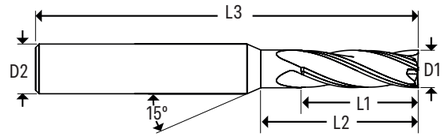
D1	L1	L2	D2	L3	Z	UC	CRONALUM
3/64	3/16	1/4	1/8	1 1/2	4	NG0102003	NG0102045
1/16	1/4	5/16	1/8	1 1/2	4	NG0102004	NG0102046
5/64	1/4	5/16	1/8	1 1/2	4	NG0102005	NG0102047
3/32	3/8	7/16	1/8	1 1/2	4	NG0102006	NG0102048
7/64	1/2	9/16	1/8	1 1/2	4	NG0102007	NG0102049
1/8	1/2	-	1/8	1 1/2	4	NG0102008	NG0102050
9/64	9/16	3/4	3/16	2	4	NG0102009	NG0102051
5/32	9/16	3/4	3/16	2	4	NG0102010	NG0102052
11/64	9/16	3/4	3/16	2	4	NG0102011	NG0102053
3/16	5/8	-	3/16	2	4	NG0102012	NG0102054
13/64	5/8	7/8	1/4	2 1/2	4	NG0102013	NG0102055
7/32	5/8	7/8	1/4	2 1/2	4	NG0102014	NG0102056
15/64	3/4	1	1/4	2 1/2	4	NG0102015	NG0102057
1/4	3/4	-	1/4	2 1/2	4	NG0102016	NG0102058
17/64	7/8	1 1/8	5/16	2 1/2	4	NG0102017	NG0102059
9/32	7/8	1 1/8	5/16	2 1/2	4	NG0102018	NG0102060
19/64	7/8	1 1/8	5/16	2 1/2	4	NG0102019	NG0102061
5/16	7/8	-	5/16	2 1/2	4	NG0102020	NG0102062
21/64	7/8	1 1/8	3/8	2 1/2	4	NG0102021	NG0102063
11/32	7/8	1 1/8	3/8	2 1/2	4	NG0102022	NG0102064

NG TOOL | GENERAL-PURPOSE SQUARE END MILLS

Standard Family
NG-102

NG-102





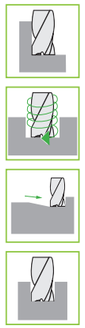
TOL +0.000
-0.002

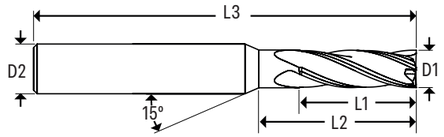
D1	L1	L2	D2	L3	Z	UC	CRONALUM
23/64	1	1 1/4	3/8	2 1/2	4	NG0102023	NG0102065
3/8	1	-	3/8	2 1/2	4	NG0102024	NG0102066
25/64	1	1 1/4	7/16	2 3/4	4	NG0102025	NG0102067
13/32	1	1 1/4	7/16	2 3/4	4	NG0102026	NG0102068
27/64	1	1 1/4	7/16	2 3/4	4	NG0102027	NG0102069
7/16	1	-	7/16	2 3/4	4	NG0102028	NG0102070
29/64	1	1 1/4	1/2	3	4	NG0102029	NG0102071
15/32	1	1 1/4	1/2	3	4	NG0102030	NG0102072
31/64	1	1 1/4	1/2	3	4	NG0102031	NG0102073
1/2	1	-	1/2	3	4	NG0102032	NG0102074
9/16	1 1/4	-	9/16	3 1/2	4	NG0102033	NG0102075
5/8	1 1/2	-	5/8	3 1/2	4	NG0102034	NG0102076
11/16	1 1/2	1 7/8	3/4	4	4	NG0102035	NG0102077
3/4	1 1/2	-	3/4	4	4	NG0102036	NG0102078
7/8	1 1/2	-	7/8	4	4	NG0102037	NG0102079
1	1 1/2	-	1	4	4	NG0102038	NG0102080
1 1/8	2	2 1/2	1 1/4	4 1/2	4	NG0102039	NG0102081
1 1/4	2	-	1 1/4	4 1/2	4	NG0102040	NG0102082
1 3/8	2	-	1 1/4	4 1/2	4	NG0102041*	NG0102083*
1 1/2	2	-	1 1/4	4 1/2	4	NG0102042*	NG0102084*

*Made to order

NG-116

SE | STD | Z | mm | 30° | D2 h6 | RH



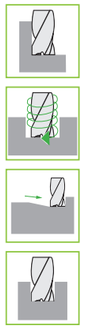


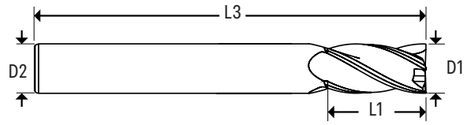
TOL +0.000
-0.050

D1	L1	L2	D2	L3	Z	UC	CRONALUM
1	4	4.5	3	38	4	NG0116001	NG0116023
1.5	6	8	3	38	4	NG0116002	NG0116024
2	8	10	3	38	4	NG0116003	NG0116025
2.5	12	14.5	3	38	4	NG0116004	NG0116026
3	12	-	3	38	4	NG0116005	NG0116027
3.5	12	16	4	50	4	NG0116006	NG0116028
4	14	-	4	50	4	NG0116007	NG0116029
4.5	14	18.5	6	51	4	NG0116008	NG0116030
5	16	21	6	64	4	NG0116009	NG0116031
6	20	-	6	64	4	NG0116010	NG0116032
7	22	27.5	8	64	4	NG0116011	NG0116033
8	22	-	8	64	4	NG0116012	NG0116034
9	22	28	10	64	4	NG0116013	NG0116035
10	25	-	10	64	4	NG0116014	NG0116036
11	25	32	12	84	4	NG0116015	NG0116037
12	25	-	12	84	4	NG0116016	NG0116038
14	32	-	14	84	4	NG0116017	NG0116039
16	38	-	16	89	4	NG0116018	NG0116040
18	40	54	20	100	4	NG0116019	NG0116041
20	40	-	20	100	4	NG0116020	NG0116042

NG-104

SE | XL | Z | in | 30° | D2 h6 | RH



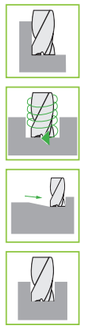


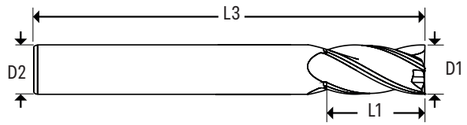
TOL +0.000
-0.002

D1	L1	L2	D2	L3	Z	UC	CRONALUM
1/8	3/4	-	1/8	3	4	NG0104001	NG0104042
1/8	1	-	1/8	3	4	NG0104002	NG0104043
3/16	1 1/4	-	3/16	3	4	NG0104003	NG0104044
3/16	1	-	3/16	4	4	NG0104004	NG0104045
1/4	1 1/8	-	1/4	3	4	NG0104005	NG0104046
1/4	1	-	1/4	4	4	NG0104006	NG0104047
1/4	1 1/2	-	1/4	4	4	NG0104007	NG0104048
1/4	1 1/2	-	1/4	6	4	NG0104008	NG0104049
5/16	1 1/8	-	5/16	3	4	NG0104009	NG0104050
5/16	1	-	5/16	4	4	NG0104010	NG0104051
5/16	1 5/8	-	5/16	4	4	NG0104011	NG0104052
5/16	1 1/2	-	5/16	6	4	NG0104012	NG0104053
3/8	1 1/8	-	3/8	3	4	NG0104013	NG0104054
3/8	1	-	3/8	4	4	NG0104014	NG0104055
3/8	1 1/2	-	3/8	4	4	NG0104015	NG0104056
3/8	2	-	3/8	4	4	NG0104016	NG0104057
3/8	1 1/2	-	3/8	6	4	NG0104017	NG0104058
3/8	3	-	3/8	6	4	NG0104018	NG0104059
7/16	1	-	7/16	4	4	NG0104019	NG0104060
7/16	2	-	7/16	4	4	NG0104020	NG0104061
7/16	1 1/2	-	7/16	6	4	NG0104021	NG0104062

NG-104

SE | XL | Z | in | 30° | D2 h6 | RH



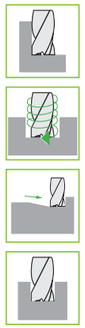


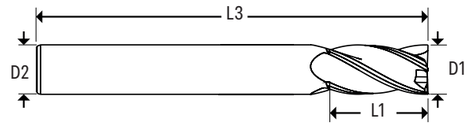
TOL +0.000
-0.002

D1	L1	L2	D2	L3	Z	UC	CRONALUM
7/16	3	-	7/16	6	4	NG0104022	NG0104063
1/2	1 1/4	-	1/2	3	4	NG0104023	NG0104064
1/2	1	-	1/2	4	4	NG0104024	NG0104065
1/2	1 1/2	-	1/2	4	4	NG0104025	NG0104066
1/2	2	-	1/2	4	4	NG0104026	NG0104067
1/2	1 1/2	-	1/2	6	4	NG0104027	NG0104068
1/2	3	-	1/2	6	4	NG0104028	NG0104069
5/8	2 1/2	-	5/8	5	4	NG0104029	NG0104070
5/8	1 1/2	-	5/8	6	4	NG0104030	NG0104071
5/8	3	-	5/8	6	4	NG0104031	NG0104072
3/4	2	-	3/4	5	4	NG0104032	NG0104073
3/4	2 1/2	-	3/4	5	4	NG0104033	NG0104074
3/4	1 1/2	-	3/4	6	4	NG0104034	NG0104075
3/4	3	-	3/4	6	4	NG0104035	NG0104076
3/4	4	-	3/4	7	4	NG0104036	NG0104077
1	2	-	1	4 1/2	4	NG0104037	NG0104078
1	2 1/2	-	1	5	4	NG0104038	NG0104079
1	3	-	1	6	4	NG0104039	NG0104080
1	4	-	1	7	4	NG0104040	NG0104081
1 1/4	3	-	1 1/4	6	4	NG0104041	NG0104082

NG-118

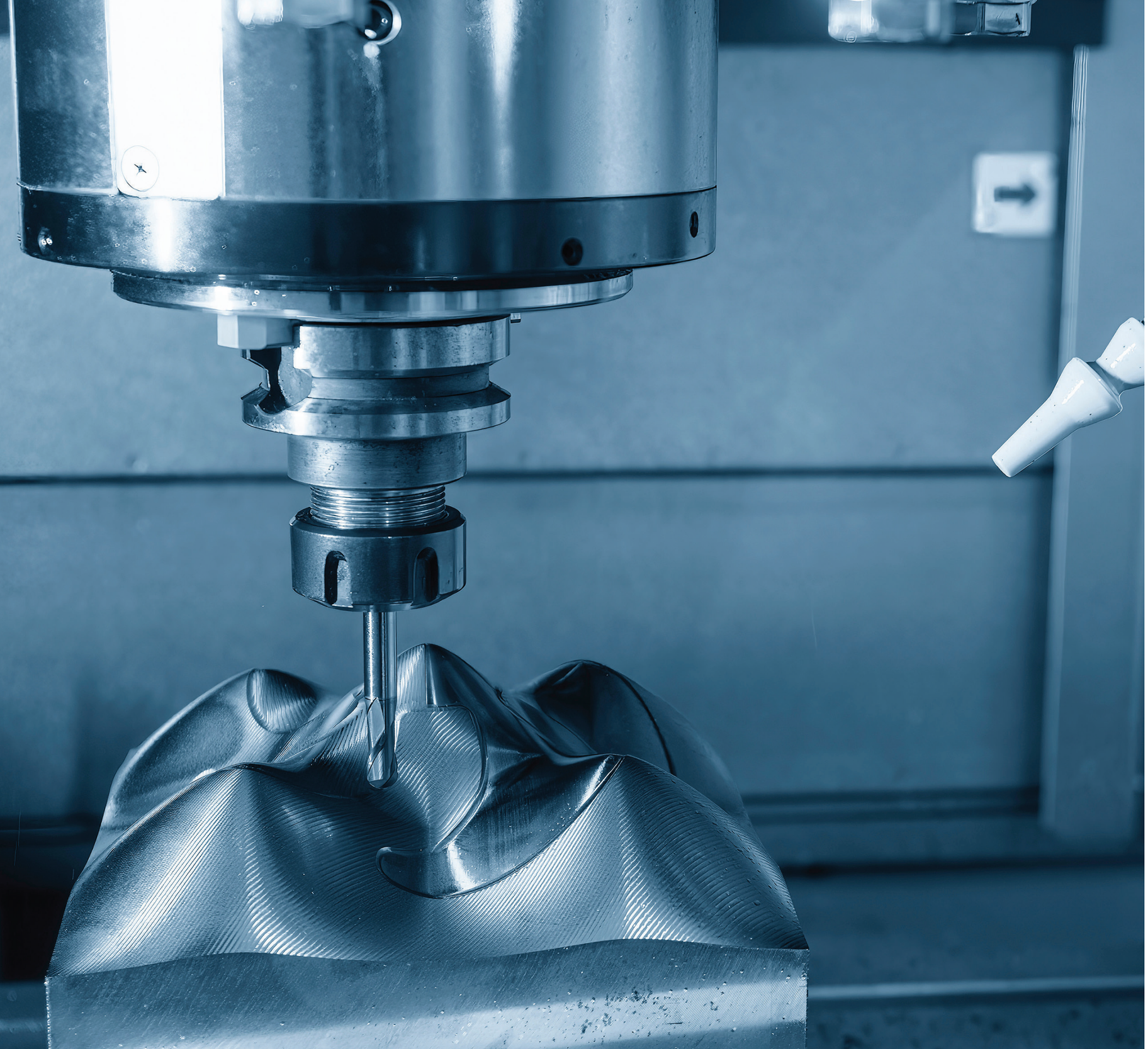
SE | XL | Z | mm | 30° | D2 h6 | RH





TOL +0.000
-0.050

D1	L1	L2	D2	L3	Z	UC	CRONALUM
3	25	-	3	76	4	NG0118001	NG0118008
6	29	-	6	76	4	NG0118002	NG0118009
8	29	-	8	76	4	NG0118003	NG0118010
10	45	-	10	100	4	NG0118004	NG0118011
12	50	-	12	100	4	NG0118005	NG0118012
16	63	-	16	125	4	NG0118006	NG0118013
20	63	-	20	125	4	NG0118007	NG0118014



GENERAL-PURPOSE CORNER-RADIUS END MILL INDEX

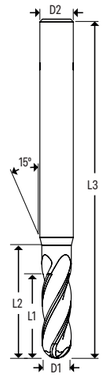
FEATURES

STB	Stub length
STD	Standard length
XL	Extra-long length
Z	Number of flutes
	Center cutting
BE	Corner-radius end mill
in	Imperial
mm	Metric
D2 h6	Ground shank (h6)
30° α	30° helix
RH	Right-hand cut

APPLICATIONS

	Slotting
	Contour milling
	Profiling

TABLE GUIDE



L1: Length of cut

L2: Reach length

L3: Overall length

D1: Cutting diameter

D2: Shank diameter

UC: Uncoated

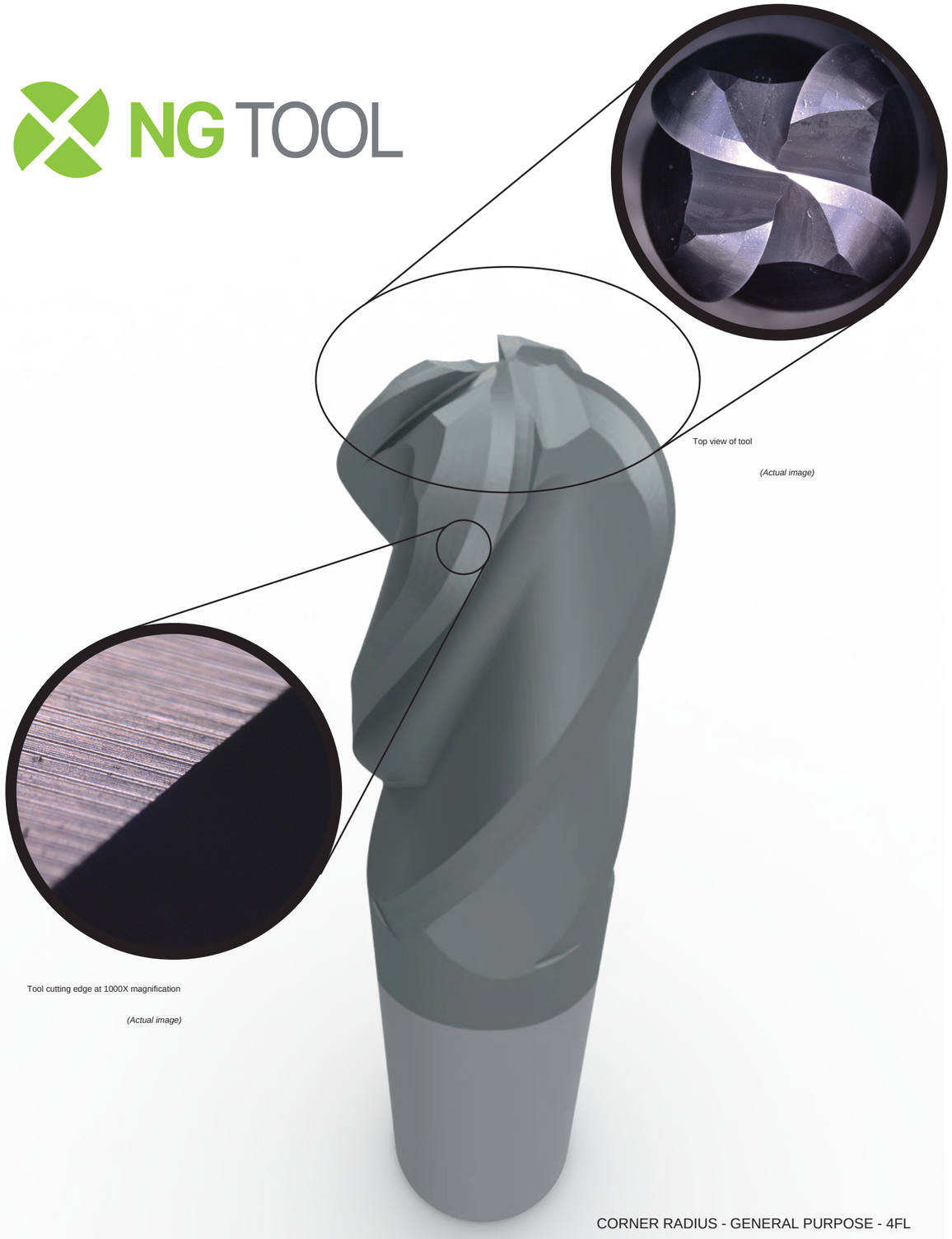
CRONALUM: Coated

PRODUCT IDENTIFICATION

NGOXXXXXXX

Company code | Family code | Product number

NG TOOL



Top view of tool

(Actual image)

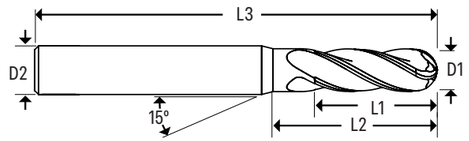
Tool cutting edge at 1000X magnification

(Actual image)

CORNER RADIUS - GENERAL PURPOSE - 4FL

NG-106

BE | STB | Z | in | 30° | D2 h6 | RH

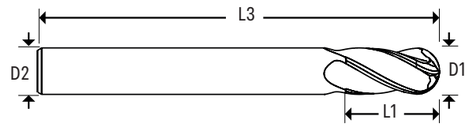


TOL +0.000
-0.002

D1	L1	L2	D2	L3	Z	UC	CRONALUM
3/64	1/8	3/16	1/8	1 1/2	4	NG0106002	NG0106019
1/16	1/8	3/16	1/8	1 1/2	4	NG0106003	NG0106020
5/64	1/8	3/16	1/8	1 1/2	4	NG0106004	NG0106021
3/32	3/16	1/4	1/8	1 1/2	4	NG0106005	NG0106022
7/64	3/16	1/4	1/8	1 1/2	4	NG0106006	NG0106023
1/8	1/4	-	1/8	1 1/2	4	NG0106007	NG0106024
5/32	3/8	1/2	3/16	2	4	NG0106008	NG0106025
3/16	3/8	-	3/16	2	4	NG0106009	NG0106026
1/4	1/2	-	1/4	2	4	NG0106010	NG0106027
5/16	1/2	-	5/16	2 1/2	4	NG0106011	NG0106028
3/8	5/8	-	3/8	2 1/2	4	NG0106012	NG0106029
7/16	3/4	-	7/16	2 3/4	4	NG0106013	NG0106030
1/2	3/4	-	1/2	3	4	NG0106014	NG0106031
5/8	1	-	5/8	3 1/2	4	NG0106015	NG0106032
3/4	1	-	3/4	4	4	NG0106016	NG0106033
1	1	-	1	4	4	NG0106017	NG0106034

NG-120

BE | STB | Z | mm | 30° | D2 h6 | RH

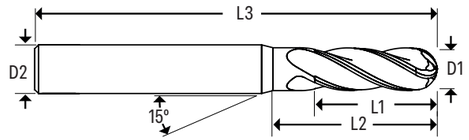


TOL +0.000
-0.050

D1	L1	L2	D2	L3	Z	UC	CRONALUM
3	6	-	3	38	4	NG0120001	NG0120006
6	12	-	6	50	4	NG0120002	NG0120007
8	12	-	8	50	4	NG0120003	NG0120008
10	15	-	10	50	4	NG0120004	NG0120009
12	15	-	12	63	4	NG0120005	NG0120010

NG-107

TOL +0.000
-0.002



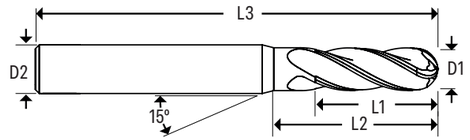
D1	L1	L2	D2	L3	Z	UC	CRONALUM
3/64	3/16	1/4	1/8	1 1/2	4	NG0107002	NG0107043
1/16	1/4	5/16	1/8	1 1/2	4	NG0107003	NG0107044
5/64	1/4	5/16	1/8	1 1/2	4	NG0107004	NG0107045
3/32	3/8	7/16	1/8	1 1/2	4	NG0107005	NG0107046
7/64	1/2	9/16	1/8	1 1/2	4	NG0107006	NG0107047
1/8	1/2	-	1/8	1 1/2	4	NG0107007	NG0107048
9/64	9/16	3/4	3/16	2	4	NG0107008	NG0107049
5/32	9/16	3/4	3/16	2	4	NG0107009	NG0107050
11/64	9/16	3/4	3/16	2	4	NG0107010	NG0107051
3/16	5/8	-	3/16	2	4	NG0107011	NG0107052
13/64	5/8	7/8	1/4	2 1/2	4	NG0107012	NG0107053
7/32	5/8	7/8	1/4	2 1/2	4	NG0107013	NG0107054
15/64	3/4	1	1/4	2 1/2	4	NG0107014	NG0107055
1/4	3/4	-	1/4	2 1/2	4	NG0107015	NG0107056
17/64	7/8	1 1/8	5/16	2 1/2	4	NG0107016	NG0107057
9/32	7/8	1 1/8	5/16	2 1/2	4	NG0107017	NG0107058
19/64	7/8	1 1/8	5/16	2 1/2	4	NG0107018	NG0107059
5/16	7/8	-	5/16	2 1/2	4	NG0107019	NG0107060
21/64	7/8	1 1/8	3/8	2 1/2	4	NG0107020	NG0107061
11/32	7/8	1 1/8	3/8	2 1/2	4	NG0107021	NG0107062

NG TOOL | GENERAL-PURPOSE CORNER-RADIUS END MILLS

Standard Family
NG-107

NG-107

TOL +0.000
-0.002

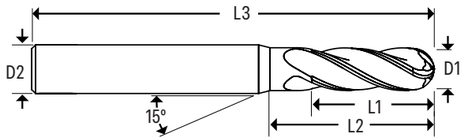


D1	L1	L2	D2	L3	Z	UC	CRONALUM
23/64	1	1 1/4	3/8	2 1/2	4	NG0107022	NG0107063
3/8	1	-	3/8	2 1/2	4	NG0107023	NG0107064
25/64	1	1 1/4	7/16	2 3/4	4	NG0107024	NG0107065
13/32	1	1 1/4	7/16	2 3/4	4	NG0107025	NG0107066
27/64	1	1 1/4	7/16	2 3/4	4	NG0107026	NG0107067
7/16	1	-	7/16	2 3/4	4	NG0107027	NG0107068
29/64	1	1 1/4	1/2	3	4	NG0107028	NG0107069
15/32	1	1 1/4	1/2	3	4	NG0107029	NG0107070
31/64	1	1 1/4	1/2	3	4	NG0107030	NG0107071
1/2	1	-	1/2	3	4	NG0107031	NG0107072
9/16	1 1/4	-	9/16	3 1/2	4	NG0107032	NG0107073
5/8	1 1/2	-	5/8	3 1/2	4	NG0107033	NG0107074
11/16	1 1/2	1 7/8	3/4	4	4	NG0107034	NG0107075
3/4	1 1/2	-	3/4	4	4	NG0107035	NG0107076
7/8	1 1/2	-	7/8	4	4	NG0107036	NG0107077
12/31	1 1/2	-	12/31	4	4	NG0107037	NG0107078
1 1/8	2	2 1/2	1 1/4	4 1/2	4	NG0107038	NG0107079
1 1/4	2	-	1 1/4	4 1/2	4	NG0107039	NG0107080
1 3/8	2	-	1 1/4	4 1/2	4	NG0107040*	NG0107081*
1 1/2	2	-	1 1/4	4 1/2	4	NG0107041*	NG0107082*

*Made to order

NG-121

BE | STD | Z | mm | 30° | D2 h6 | RH

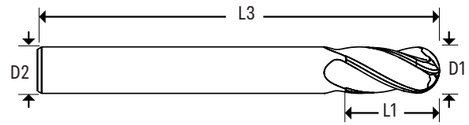


TOL +0.000
-0.050

D1	L1	L2	D2	L3	Z	UC	CRONALUM
1	4	4.5	3	38	4	NG0121001	NG0121023
1.5	6	8	3	38	4	NG0121002	NG0121024
2	8	10	3	38	4	NG0121003	NG0121025
2.5	12	14.5	3	38	4	NG0121004	NG0121026
3	12	-	3	38	4	NG0121005	NG0121027
3.5	12	16	4	50	4	NG0121006	NG0121028
4	14	-	4	50	4	NG0121007	NG0121029
4.5	14	18.5	6	51	4	NG0121008	NG0121030
5	16	21	6	64	4	NG0121009	NG0121031
6	20	-	6	64	4	NG0121010	NG0121032
7	22	27.5	8	64	4	NG0121011	NG0121033
8	22	-	8	64	4	NG0121012	NG0121034
9	22	28	10	64	4	NG0121013	NG0121035
10	25	-	10	64	4	NG0121014	NG0121036
11	25	32	12	84	4	NG0121015	NG0121037
12	25	-	12	84	4	NG0121016	NG0121038
14	32	-	14	84	4	NG0121017	NG0121039
16	38	-	16	89	4	NG0121018	NG0121040
18	40	54	20	100	4	NG0121019	NG0121041
20	40	-	20	100	4	NG0121020	NG0121042

NG-108

BE | XL | Z | in | 30° | D2 h6 | RH

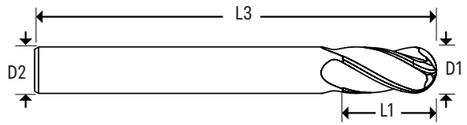


TOL +0.000
-0.002

D1	L1	L2	D2	L3	Z	UC	CRONALUM
1/8	3/4	-	1/8	3	4	NG0108001	NG0108041
1/8	1	-	1/8	3	4	NG0108002	NG0108042
3/16	1 1/4	-	3/16	3	4	NG0108003	NG0108043
3/16	1	-	3/16	4	4	NG0108004	NG0108044
1/4	1 1/8	-	1/4	3	4	NG0108005	NG0108045
1/4	1	-	1/4	4	4	NG0108006	NG0108046
1/4	1 1/2	-	1/4	4	4	NG0108007	NG0108047
1/4	1 1/2	-	1/4	6	4	NG0108008	NG0108048
5/16	1 1/8	-	5/16	3	4	NG0108009	NG0108049
5/16	1	-	5/16	4	4	NG0108010	NG0108050
5/16	1 5/8	-	5/16	4	4	NG0108011	NG0108051
5/16	1 1/2	-	5/16	6	4	NG0108012	NG0108052
3/8	1 1/8	-	3/8	3	4	NG0108013	NG0108053
3/8	1	-	3/8	4	4	NG0108014	NG0108054
3/8	1 1/2	-	3/8	4	4	NG0108015	NG0108055
3/8	2	-	3/8	4	4	NG0108016	NG0108056
3/8	1 1/2	-	3/8	6	4	NG0108017	NG0108057
3/8	3	-	3/8	6	4	NG0108018	NG0108058
7/16	1	-	7/16	4	4	NG0108019	NG0108059
7/16	2	-	7/16	4	4	NG0108020	NG0108060

NG-108

BE | XL | Z | in | 30° | D2 h6 | RH

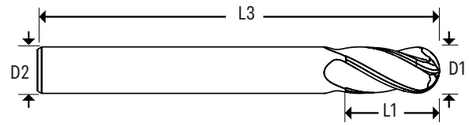


TOL +0.000
-0.002

D1	L1	L2	D2	L3	Z	UC	CRONALUM
7/16	1 1/2	-	7/16	6	4	NG0108021	NG0108061
7/16	3	-	7/16	6	4	NG0108022	NG0108062
1/2	1 1/4	-	1/2	3	4	NG0108023	NG0108063
1/2	1	-	1/2	4	4	NG0108024	NG0108064
1/2	1 1/2	-	1/2	4	4	NG0108025	NG0108065
1/2	2	-	1/2	4	4	NG0108026	NG0108066
1/2	1 1/2	-	1/2	6	4	NG0108027	NG0108067
1/2	3	-	1/2	6	4	NG0108028	NG0108068
5/8	2 1/2	-	5/8	5	4	NG0108029	NG0108069
5/8	1 1/2	-	5/8	6	4	NG0108030	NG0108070
5/8	3	-	5/8	6	4	NG0108031	NG0108071
3/4	2 1/2	-	3/4	5	4	NG0108032	NG0108072
3/4	1 1/2	-	3/4	6	4	NG0108033	NG0108073
3/4	3	-	3/4	6	4	NG0108034	NG0108074
3/4	4	-	3/4	7	4	NG0108035	NG0108075
1	2	-	1	4 1/2	4	NG0108036	NG0108076
1	2 1/2	-	1	5	4	NG0108037	NG0108077
1	3	-	1	6	4	NG0108038	NG0108078
1	4	-	1	7	4	NG0108039	NG0108079
1 1/4	3	-	1 1/4	6	4	NG0108040	NG0108080

NG-122

BE | XL | Z | mm | 30° | D2 h6 | RH



TOL +0.000
-0.050

D1	L1	L2	D2	L3	Z	UC	CRONALUM
3	25	-	3	76	4	NG0122001	NG0122008
6	29	-	6	76	4	NG0122002	NG0122009
8	29	-	8	76	4	NG0122003	NG0122010
10	45	-	10	100	4	NG0122004	NG0122011
12	50	-	12	100	4	NG0122005	NG0122012
16	63	-	16	125	4	NG0122006	NG0122013
20	63	-	20	125	4	NG0122007	NG0122014

4-FLUTE GENERAL-PURPOSE SQUARE & CORNER-RADIUS END MILLS - IMPERIAL

NG0: 100, 101, 102, 103, 104, 105, 106, 107, 108

Not recommended for high-silicon aluminum >10% or composites, plastics, or graphite.

Low-silicon aluminum (<10%)

(1427-1948) SFM (ft/min)

	Slotting	Profiling	Roughing	Both	Finishing
Axial	<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
Radial	full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
1/8″	0.0015	0.0015	0.0015	0.0016	0.0015
1/4″	0.0040	0.0045	0.0040	0.0045	0.0040
3/8″	0.0060	0.0065	0.0060	0.0065	0.0060
1/2″	0.0080	0.0080	0.0080	0.0085	0.0080
3/4″	0.0105	0.0100	0.0105	0.0100	0.0105
1″	0.0130	0.0150	0.0130	0.0150	0.0130

Copper and brass

(515-774) SFM (ft/min)

Slotting	Profiling	Roughing	Both	Finishing
<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
0.0012	0.0014	0.0009	0.0014	0.0009
0.0017	0.0018	0.0012	0.0020	0.0012
0.0027	0.0026	0.0016	0.0027	0.0016
0.0033	0.0036	0.0033	0.0036	0.0033
0.0039	0.0046	0.0036	0.0046	0.0036
0.0052	0.0059	0.0046	0.0052	0.0046

Steels

(298-449) SFM (ft/min)

	Slotting	Profiling	Roughing	Both	Finishing
Axial	<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
Radial	full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
1/8″	0.0008	0.0012	0.0008	0.0012	0.0008
1/4″	0.0018	0.0018	0.0018	0.0018	0.0018
3/8″	0.0030	0.0030	0.0030	0.0030	0.0030
1/2″	0.0032	0.0032	0.0032	0.0032	0.0032
3/4″	0.0035	0.0035	0.0035	0.0035	0.0035
1″	0.0045	0.0045	0.0045	0.0045	0.0045

Cast iron

(322-515) SFM (ft/min)

Slotting	Profiling	Roughing	Both	Finishing
<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
0.0013	0.0016	0.0010	0.0016	0.0010
0.0018	0.0020	0.0013	0.0020	0.0013
0.0029	0.0029	0.0017	0.0029	0.0017
0.0033	0.0039	0.0033	0.0039	0.0033
0.0036	0.0046	0.0039	0.0046	0.0039
0.0046	0.0059	0.0052	0.0059	0.0052

Stainless steels

(164-361) SFM (ft/min)

	Slotting	Profiling	Roughing	Both	Finishing
Axial	<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
Radial	full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
1/8″	0.0010	0.0008	0.0010	0.0008	0.0010
1/4″	0.0020	0.0020	0.0020	0.0020	0.0020
3/8″	0.0030	0.0030	0.0030	0.0030	0.0030
1/2″	0.0030	0.0030	0.0030	0.0030	0.0030
3/4″	0.0032	0.0032	0.0032	0.0032	0.0032
1″	0.0035	0.0035	0.0035	0.0035	0.0035

Superalloys (nickel- and chromium-based)

(102-151) SFM (ft/min)

Slotting	Profiling	Roughing	Both	Finishing
<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
0.0004	0.0005	0.0004	0.0005	0.0004
0.0009	0.0013	0.0009	0.0013	0.0009
0.0015	0.0020	0.0015	0.0020	0.0015
0.0023	0.0025	0.0023	0.0025	0.0023
0.0030	0.0035	0.0030	0.0035	0.0030
0.0040	0.0045	0.0040	0.0045	0.0040

Hardened steel > 48 HRC

(102-164) SFM (ft/min)

	Slotting	Profiling	Roughing	Both	Finishing
Axial	<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
Radial	full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
1/8″	0.0010	0.0012	0.0010	0.0012	0.0010
1/4″	0.0020	0.0021	0.0020	0.0021	0.0020
3/8″	0.0026	0.0029	0.0026	0.0029	0.0026
1/2″	0.0033	0.0033	0.0033	0.0033	0.0033
3/4″	0.0036	0.0039	0.0036	0.0039	0.0036
1″	0.0039	0.0046	0.0039	0.0046	0.0039

Titanium

(151-256) SFM (ft/min)

Slotting	Profiling	Roughing	Both	Finishing
<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
0.0004	0.0005	0.0004	0.0005	0.0004
0.0009	0.0009	0.0009	0.0009	0.0009
0.0014	0.0014	0.0014	0.0014	0.0014
0.0018	0.0018	0.0018	0.0018	0.0018
0.0025	0.0025	0.0025	0.0025	0.0025
0.0035	0.0035	0.0035	0.0035	0.0035

IPT (in/tooth)

SPEEDS AND FEEDS

4-FLUTE GENERAL-PURPOSE SQUARE & CORNER-RADIUS END MILLS - METRIC

NG0: 114, 115, 116, 117, 118, 119, 120, 121, 122

Not recommended for high-silicon aluminum >10% or composites, plastics, or graphite.

Low-silicon aluminum (<10%)

(435-594) SMM (m/min)

	Slotting	Profiling	Roughing	Both	Finishing
Axial	<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
Radial	full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
3	0.0381	0.0381	0.0381	0.0406	0.0381
6	0.1016	0.1143	0.1016	0.1143	0.1016
10	0.1524	0.1651	0.1524	0.1651	0.1524
12	0.2032	0.2032	0.2032	0.2159	0.2032
20	0.2667	0.2540	0.2667	0.2540	0.2667
25	0.3302	0.3810	0.3302	0.3810	0.3302

Copper and brass

(157-236) SMM (m/min)

Slotting	Profiling	Roughing	Both	Finishing
<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
0.0297	0.0363	0.0231	0.0363	0.0231
0.0429	0.0462	0.0297	0.0495	0.0297
0.0693	0.0660	0.0396	0.0693	0.0396
0.0826	0.0925	0.0826	0.0925	0.0826
0.0991	0.1156	0.0925	0.1156	0.0925
0.1321	0.1486	0.1156	0.1321	0.1156

Steels

(91-137) SMM (m/min)

	Slotting	Profiling	Roughing	Both	Finishing
Axial	<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
Radial	full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
3	0.0203	0.0305	0.0203	0.0305	0.0203
6	0.0462	0.0457	0.0462	0.0457	0.0462
10	0.0762	0.0762	0.0762	0.0762	0.0762
12	0.0813	0.0813	0.0813	0.0813	0.0813
20	0.0889	0.0889	0.0889	0.0889	0.0889
25	0.1143	0.1143	0.1143	0.1143	0.1143

Cast iron

(98-157)SMM (m/min)

Slotting	Profiling	Roughing	Both	Finishing
<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
0.0330	0.0396	0.0264	0.0396	0.0264
0.0462	0.0495	0.0330	0.0495	0.0330
0.0726	0.0726	0.0429	0.0726	0.0429
0.0826	0.0991	0.0826	0.0991	0.0826
0.0925	0.1156	0.0991	0.1156	0.0991
0.1156	0.1486	0.1321	0.1486	0.1321

Stainless steels

(50-110) SMM (m/min)

	Slotting	Profiling	Roughing	Both	Finishing
Axial	<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
Radial	full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
3	0.0254	0.0203	0.0254	0.0203	0.0254
6	0.0508	0.0508	0.0508	0.0508	0.0508
10	0.0762	0.0762	0.0762	0.0762	0.0762
12	0.0762	0.0759	0.0762	0.0759	0.0762
20	0.0813	0.0813	0.0813	0.0813	0.0813
25	0.0889	0.0889	0.0889	0.0889	0.0889

Superalloys (nickel- and chromium-based)

(31-46) SMM (m/min)

Slotting	Profiling	Roughing	Both	Finishing
<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
0.0099	0.0132	0.0099	0.0132	0.0099
0.0229	0.0330	0.0229	0.0330	0.0229
0.0381	0.0495	0.0381	0.0495	0.0381
0.0584	0.0635	0.0584	0.0635	0.0584
0.0762	0.0889	0.0762	0.0889	0.0762
0.1016	0.1143	0.1016	0.1143	0.1016

Hardened steel > 48 HRC

(31-50) SMM (m/min)

	Slotting	Profiling	Roughing	Both	Finishing
Axial	<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
Radial	full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
3	0.0264	0.0297	0.0264	0.0297	0.0264
6	0.0495	0.0528	0.0495	0.0528	0.0495
10	0.0660	0.0726	0.0660	0.0726	0.0660
12	0.0826	0.0826	0.0826	0.0826	0.0826
20	0.0925	0.0991	0.0925	0.0991	0.0925
25	0.0991	0.1156	0.0991	0.1156	0.0991

Titanium

(46-78) SMM (m/min)

Slotting	Profiling	Roughing	Both	Finishing
<(1xD)	<(1xD)	1.5xD	1xD	<(1xD)
full	full	(.3-.5)xD	(.1-.15)xD	(.010-.015)
0.0099	0.0132	0.0099	0.0132	0.0099
0.0231	0.0231	0.0231	0.0231	0.0231
0.0356	0.0356	0.0356	0.0356	0.0356
0.0462	0.0462	0.0462	0.0462	0.0462
0.0635	0.0635	0.0635	0.0635	0.0635
0.0889	0.0889	0.0889	0.0889	0.0889

MMPT (mm/tooth)

SPEEDS AND FEEDS

CONVERSION TABLE

INCHES	DECIMAL	MILLIMETERS
1/64	0.0156	0.397
1/32	0.0313	0.794
1/16	0.0625	1.588
5/64	0.0781	1.984
3/32	0.0938	2.381
7/64	0.1094	2.778
1/8	0.1250	3.175
9/64	0.1406	3.572
5/32	0.1563	3.969
11/64	0.1719	4.366
3/16	0.1875	4.763
13/64	0.2031	5.159
7/32	0.2188	5.556
15/64	0.2344	5.953
1/4	0.2500	6.350
17/64	0.2656	6.747
19/64	0.2969	7.541
5/16	0.3125	7.938
21/64	0.3281	8.334
11/32	0.3438	8.731
23/64	0.3594	9.128
3/8	0.3750	9.525
25/64	0.3906	9.922
13/32	0.4063	10.319
27/64	0.4219	10.716
7/16	0.4375	11.113
29/64	0.4531	11.509
15/32	0.4688	11.906
31/64	0.4844	12.303
1/2	0.5000	12.700
33/64	0.5156	13.097
17/32	0.5313	13.494
35/64	0.5469	13.891
37/64	0.5781	14.684

INCHES	DECIMAL	MILLIMETERS
19/32	0.5938	15.081
39/64	0.6094	15.478
5/8	0.6250	15.875
41/64	0.6406	16.272
21/32	0.6563	16.669
43/64	0.6719	17.066
11/16	0.6875	17.463
45/64	0.7031	17.859
23/32	0.7188	18.256
47/64	0.7344	18.653
3/4	0.7500	19.050
49/64	0.7656	19.447
25/32	0.7813	19.844
51/64	0.7969	20.241
13/16	0.8125	20.638
53/64	0.8281	21.034
55/64	0.8594	21.828
7/8	0.8750	22.225
57/64	0.8906	22.622
29/32	0.9063	23.019
15/16	0.9375	23.813
61/64	0.9531	24.209
31/32	0.9688	24.606
1	1.0000	25.400
1 1/16	1.0625	26.988
1 1/8	1.1250	28.575
1 1/4	1.2500	31.750
1 1/2	1.5000	38.100
1 5/8	1.6250	41.275
1 3/4	1.7500	44.450
1 7/8	1.8750	47.625
2	2.0000	50.800
3	3.0000	76.200
4	4.0000	101.600

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