



End Mills





Make Putnam Tools your first choice for end mills.

Putnam Tools is a name that has been respected in American Industry for decades. In this catalog you will find a wide selection of roughing and finishing end mills, as well as specialty milling tools, to support your metalworking operations. Made from premium materials to exacting specifications, you can trust Putnam Tools to deliver the performance you need at the price that fits your budget.

Putnam Tool's knowledgeable sales application and technical support teams can be called upon to recommend the right end mill for your application and guide you to getting the most from your tool purchase.

Ask your distributor for Putnam Tools for your milling requirements. You'll find a wide range of products to satisfy everyday applications.

Putnam Tools
a brand of Greenfield Industries Inc.
Customer Service: 800.348.2885
Technical Support: 800.392.4281
greenfield.information@gfii.com • www.gfii.com





Style Number	Page Number	Style Number	Page Number	Style Number	Page Number
104	.30	211	.17	428	8
104R	.30	211N	.18	431	7
111	.17	212	.13-16	432	6-7
111N	.18	212N	.18	433	8
112, 112M	.13-16	214	.23-27	434	9-10
112K	.21	215	.23-27	435	9-10
112KS	.21	215B	.28-29	442	6-7
112N	.18	260	.35	444	9-10
113	.22	261	.37	445	9-10
114, 114M	.23-27	263	.37	481	4
115	.23-27	264	.34	482	4
115B	.28-29	265	.36-37	484	5
131	.20	266	.36-37	CRE	.31
132	.19	267	.33-34	M10	.32
181	.12	267N	.34	M12	.32
182	.11	268	.33-34	M15	.32
184	.13	269	.37		

Metalcutting Safety (read this before using Putnam Tools products)

Modern metalcutting operations involve high energy, high spindle or cutter speeds, and high temperatures and cutting forces. Hot, flying chips may be projected from the workpiece during metalcutting. Although advanced cutting tool materials are designed and manufactured to withstand the high cutting forces and temperatures that normally occur in these operations, they are susceptible to fragmenting in service, particularly if they are subjected to over-stress, severe impact, or otherwise abused. Therefore, precautions should be taken to adequately protect workers, observers, and equipment against hot, flying chips, fragmented cutting tools, broken workpieces, or other similar projectiles. Machines should be fully guarded and personal protective equipment should be used at all times.

When grinding advanced cutting tool materials, a suitable means for collection and disposal of dust, mist, or sludge should be provided. Overexposure to dust or mist containing metallic particles can be hazardous to health, particularly if exposure

continues over an extended period of time, and may cause eye, skin, and mucous membrane irritation and temporary or permanent respiratory disease. Certain existing pulmonary and skin conditions may be aggravated by exposure to dust or mist. Adequate ventilation, respiratory protection, and eye protection should be provided when grinding, and workers should avoid breathing of and prolonged skin contact with dust or mist. General Industry Safety and Health Regulations, Part 1910, U.S. Department of Labor, published in Title 29 of the Code of Federal Regulations should be consulted. Obtain a copy from Putnam Tools and read the applicable Material Safety Data Sheet before grinding.

Cutting tools are only one part of the worker/machine-tool system. Many variables exist in machining operations, including the metal removal rate; the workpiece size, shape, strength and rigidity; the chucking and fixturing; the load carrying capability of centers; the cutter and spindle speed and torque limitations; the holder and boring

bar overhang; the available power; and the condition of the tooling and the machine. A safe metalcutting operation must take all of these variables, and others, into consideration.

Putnam Tools has no control over the end use of its products or the environment into which those products are placed. Putnam Tools urges that its customers adhere to the recommended standards of use of their metalcutting machines and tools, and that they follow procedures that ensure safe metalcutting operations. The information included throughout this catalog under the heading "Technical Data" and other recommendations on machining practices referred to herein are only advisory in nature and do not constitute representations or warranties and are not necessarily appropriate for any particular work environment or application.

Style Number	Description	Pages
--------------	-------------	-------

Double End Finishing End Mills

482	.2-Flute, Miniature, Center Cutting, HSS	4
481	.2-Flute, Miniature, Ball Nose, HSS	4
484	.4-Flute, Miniature, Center Cutting, HSS	5
432	.2-Flute, Center Cutting, HSS	6-7
442	.2-Flute, Center Cutting, M42 Cobalt	6-7
431	.2-Flute, Ball Nose, HSS	7
428	.2 Flute, Keyway, Straight Flutes	8
433	.3-Flute, Center Cutting, HSS	8
434	.4-Flute, Non-Center Cutting, HSS	9-10
435	.4-Flute, Center Cutting, HSS	9-10
444	.4-Flute, Non-Center Cutting, M42 Cobalt	9-10
445	.4-Flute, Center Cutting, M42 Cobalt	9-10

Single End Finishing End Mills

182	.2-Flute, Miniature, Center Cutting, HSS	11
181	.2-Flute, Miniature, Ball Nose, HSS	12
184	.4-Flute, Miniature, Non-Center Cutting, HSS	13
112, 112M	.2-Flute, Center Cutting, HSS	13-16
212	.2-Flute, Center Cutting, M42 Cobalt	13-16
111	.2-Flute, Ball Nose, HSS	17
211	.2-Flute, Ball Nose, M42 Cobalt	17
112N	.2-Flute, Center Cutting Necked, HSS	18
212N	.2-Flute, Center Cutting, Necked, M42 Cobalt	18
111N	.2-Flute, Ball Nose, Necked, HSS	18
211N	.2-Flute, Ball Nose, Necked, M42 Cobalt	18
132	.2-Flute, Center Cutting, Aluminum Cutting	19
131	.2-Flute, Ball Nose, Aluminum Cutting	20
112K	.2-Flute, Straight Flutes, Center Cutting, Keyway, HSS	21
112KS	.2-Flute, Center Cutting, Keyway, HSS	21
113	.3-Flute, Center Cutting, HSS	22
114, 114M	.4-Flute, Non-Center Cutting, HSS	23-27
115	.4-Flute, Center Cutting, HSS	23-27
214	.4-Flute, Non-Center Cutting, M42 Cobalt	23-27
215	.4-Flute, Center Cutting, M42 Cobalt	23-27
115B	.4-Flute, Ball Nose, HSS	28-29
215B	.4-Flute, Ball Nose, M42 Cobalt	28-29
104	.4-Flute, Center Cutting, Left-Hand Helix, Left-Hand Cut, HSS	30
104R	.4-Flute, Center Cutting, Left-Hand Helix, Right-Hand Cut, HSS	30
CRE	.4-Flute, Corner Rounding, Center Cutting, HSS	31

Mach IV for Hi-Temp Alloys:

M12	.2-Flute, Center Cutting, T-15 Substrate	32
M15	.4-Flute, Center Cutting, T-15 Substrate	32
M10	.4 Flute, Ball Nose, T-15 Substrate	32

Roughing End Mills

267	.Multi-Flute, Non-Center Cutting, Coarse Profile, M42 Cobalt	33-34
268	.Multi-Flute, Center Cutting, Coarse Profile, M42 Cobalt	33-34
267N	.Multi-Flute, Non-Center Cutting, Necked, Coarse Profile, M42 Cobalt	34
264	.Multi-Flute, Ball Nose, Coarse Profile, M42 Cobalt	34
260	.Multi-Flute, Non-Center Cutting, Flat Profile, Semi Roughing M42 Cobalt	35
265	.Multi-Flute, Non-Center Cutting, Fine Profile, M42 Cobalt	36-37
266, 261	.Multi-Flute, Center Cutting, Fine Profile, M42 Cobalt	36-37
263	.Multi-Flute, Ball Nose, Fine Profile, M42 Cobalt	37
269	.3-Flute, Center Cutting, Extra-Coarse Profile for Aluminum, M42 Cobalt	338

Index

by Style Number	2
by Order Number	39-45

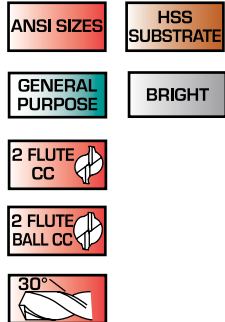
Miniature 2-Flute



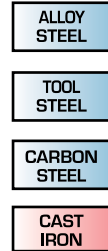
Style 482 • 2-Flute, Miniature, Center Cutting, HSS

Style 481 • 2-Flute, Miniature, Ball Nose, HSS

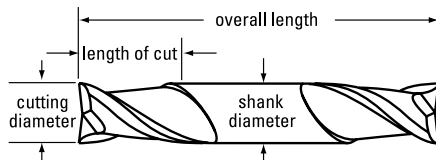
FEATURES



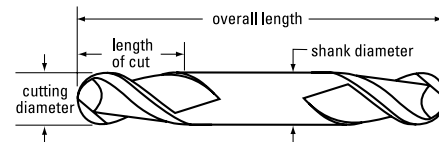
APPLICATIONS



Style 482 Center Cutting Bright



Style 481 Center Cutting Bright



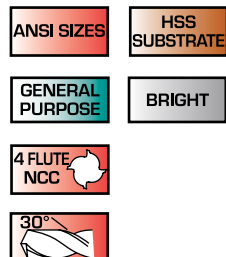
Cutting Diameter			Shank		No. of Flutes	Style 482 Bright
Frac	Decimal	MM	Dia.	LOC		
1/32	.0313	0.79	3/16	3/64	2	94925
1/32	.0313	0.79	3/16	3/32	2 1/4	94905
3/64	.0469	1.19	3/16	1/16	2	94926
3/64	.0469	1.19	3/16	9/64	2 1/4	94906
1/16	.0625	1.59	3/16	3/32	2	94927
1/16	.0625	1.59	3/16	3/16	2 1/4	94907
1/16	.0625	1.59	3/16	7/32	2 1/2	94918
5/64	.0781	1.98	3/16	1/8	2	94928
5/64	.0781	1.98	3/16	15/64	2 1/4	94908
3/32	.0938	2.38	3/16	9/64	2	94929
3/32	.0938	2.38	3/16	9/32	2 1/4	94909
3/32	.0938	2.38	3/16	9/32	2 5/8	94919
7/64	.1094	2.78	3/16	5/32	2	94930
7/64	.1094	2.78	3/16	21/64	2 1/4	94910
1/8	.1250	3.18	3/16	3/16	2	94931
1/8	.1250	3.18	3/16	3/8	2 1/4	94911
1/8	.1250	3.18	3/16	3/4	3 1/8	94920
9/64	.1406	3.57	3/16	7/32	2	94932
9/64	.1406	3.57	3/16	13/32	2 1/4	94912
5/32	.1563	3.97	3/16	15/64	2	94933
5/32	.1563	3.97	3/16	7/16	2 1/4	94913
5/32	.1563	3.97	3/16	7/8	3 1/4	94921
11/64	.1719	4.37	3/16	1/4	2	94934
11/64	.1719	4.37	3/16	1/2	2 1/4	94914
3/16	.1875	4.76	3/16	9/32	2	94935
3/16	.1875	4.76	3/16	1/2	2 1/4	94915

Cutting Diameter			Shank		No. of Flutes	Style 481 Bright
Frac	Decimal	MM	Dia.	LOC		
1/32	.0313	0.79	3/16	3/64	2	93130
1/32	.0313	0.79	3/16	3/32	2 1/4	92840
1/16	.0625	1.59	3/16	3/32	2	93132
1/16	.0625	1.59	3/16	3/16	2 1/4	92842
1/16	.0625	1.59	3/16	7/32	2 1/2	92844
3/32	.0938	2.38	3/16	9/64	2	93134
3/32	.0938	2.38	3/16	9/32	2 1/4	92845
3/32	.0938	2.38	3/16	9/32	2 5/8	92847
1/8	.1250	3.18	3/16	3/16	2	93136
1/8	.1250	3.18	3/16	3/8	2 1/4	92848
1/8	.1250	3.18	3/16	3/4	3 1/8	92850
5/32	.1563	3.97	3/16	15/64	2	93138
5/32	.1563	3.97	3/16	7/16	2 1/4	92851
5/32	.1563	3.97	3/16	7/8	3 1/4	92853
3/16	.1875	4.76	3/16	9/32	2	93140
3/16	.1875	4.76	3/16	1/2	2 1/4	92854
3/16	.1875	4.76	3/16	1	3 3/8	92856

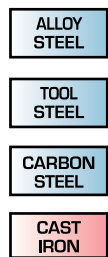


Style 484 • 4-Flute, Miniature, Center Cutting, HSS

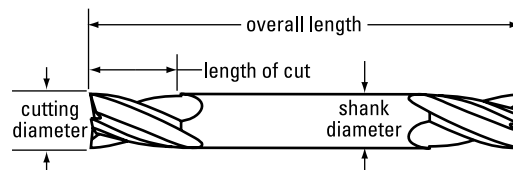
FEATURES



APPLICATIONS



Style 484 HSS Bright



Cutting Diameter			Shank			No. of Flutes	Style 484 Bright
Frac	Decimal	MM	Dia.	LOC	OAL		
1/16	.0625	1.59	3/16	3/32	2	4	94878
3/32	.0938	2.38	3/16	9/64	2	4	94879
3/32	.0938	2.38	3/16	9/32	2 1/4	4	94886
3/32	.0938	2.38	3/16	1/2	2 5/8	4	94896
1/8	.1250	3.18	3/16	3/16	2	4	94880
1/8	.1250	3.18	3/16	3/8	2 1/4	4	94887
1/8	.1250	3.18	3/16	3/4	3 1/8	4	94897
5/32	.1562	3.97	3/16	15/64	2	4	94881
5/32	.1562	3.97	3/16	7/16	2 1/4	4	94888
5/32	.1562	3.97	3/16	7/8	3 1/4	4	94898
3/16	.1875	4.76	3/16	9/32	2	4	94882
3/16	.1875	4.76	3/16	1/2	2 1/4	4	94889
3/16	.1875	4.76	3/16	1	3 3/8	4	94899

General-Purpose

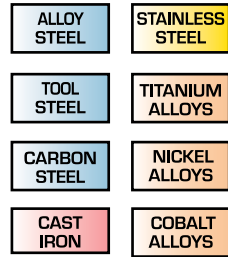


Style 432 • 2-Flute, Center Cutting, HSS
Style 442 • 2-Flute, Center Cutting, M42 Cobalt

FEATURES



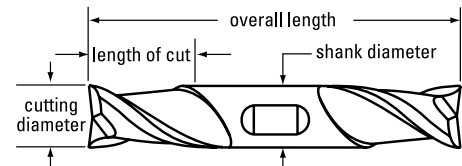
APPLICATIONS



Style 432 HSS Bright



Style 442 M42 Cobalt Bright



							HSS		Cobalt
							Style 432		Style 442
Cutting Diameter			Shank			No. of	Bright	TiN	Bright
Frac	Decimal	MM	Dia.	LOC	OAL	Flutes			
5/64	.0781	1.98	3/8	5/16	3 1/16	2	—	—	91610
3/32	.0938	2.38	3/8	5/16	3 1/16	2	—	—	91611
7/64	.1094	2.78	3/8	3/8	3 1/16	2	94584	—	—
1/8	.1250	3.18	3/8	3/16	2 3/4	2	94950	—	—
1/8	.1250	3.18	3/8	3/8	3 1/16	2	94830	96354	96122
9/64	.1406	3.57	3/8	7/16	3 1/8	2	94585	—	91612
5/32	.1563	3.97	3/8	15/64	2 3/4	2	94951	—	—
5/32	.1563	3.97	3/8	7/16	3 1/8	2	94831	96355	96123
11/64	.1719	4.37	3/8	7/16	3 1/4	2	94586	—	—
3/16	.1875	4.76	3/8	9/32	2 3/4	2	94952	—	—
3/16	.1875	4.76	3/8	7/16	3 1/4	2	94832	96356	96124
13/64	.2031	5.16	3/8	1/2	3 1/4	2	94587	—	—
7/32	.2188	5.56	3/8	21/64	2 7/8	2	94953	—	—
7/32	.2188	5.56	3/8	1/2	3 1/4	2	94833	96357	96125
15/64	.2344	5.95	3/8	1/2	3 3/8	2	94588	—	—
1/4	.2500	6.35	3/8	3/8	2 7/8	2	94954	—	—
1/4	.2500	6.35	3/8	1/2	3 3/8	2	94834	96358	96126
17/64	.2656	6.75	3/8	9/16	3 3/8	2	94589	—	—
9/32	.2813	7.14	3/8	9/16	3 3/8	2	94835	96359	96127
19/64	.2969	7.54	3/8	9/16	3 1/2	2	94590	—	—
5/16	.3125	7.94	3/8	9/16	3 1/2	2	94836	96360	96128
21/64	.3281	8.33	3/8	9/16	3 1/2	2	94591	—	—
11/32	.3438	8.73	3/8	9/16	3 1/2	2	94837	96361	96129
23/64	.3594	9.13	3/8	9/16	3 1/2	2	94592	—	—
3/8	.3750	9.53	3/8	9/16	3 1/2	2	94838	96362	96130
25/64	.3906	9.92	1/2	13/16	4 1/8	2	94593	—	—
13/32	.4063	10.32	1/2	13/16	3 3/4	2	—	—	96131
13/32	.4063	10.32	1/2	13/16	4 1/8	2	94839	96363	—
27/64	.4219	10.72	1/2	13/16	4 1/8	2	94594	—	—
7/16	.4375	11.11	1/2	13/16	3 3/4	2	—	—	96132
7/16	.4375	11.11	1/2	13/16	4 1/8	2	94840	96364	—
29/64	.4531	11.51	1/2	13/16	4 1/8	2	94595	—	—
15/32	.4688	11.91	1/2	13/16	4 1/8	2	94841	—	—
31/64	.4844	12.30	1/2	13/16	4 1/8	2	94596	—	—
1/2	.5000	12.70	1/2	13/16	4 1/8	2	94842	96365	96133

continued on next page

Style 432 • 2-Flute, Center Cutting, HSS
Style 442 • 2-Flute, Center Cutting, M42 Cobalt
 (continued)

Cutting Diameter			Shank			No. of Flutes	HSS		Cobalt
Frac	Decimal	MM	Dia.	LOC	OAL		Style 432 Bright	Style 432 TiN	Style 442 Bright
17/32	.5313	13.49	5/8	1 1/8	4 1/2	2	95400	—	—
9/16	.5625	14.29	5/8	1 1/8	5	2	94843	96366	96134
19/32	.5938	15.08	5/8	1 1/8	4 1/2	2	95401	—	—
5/8	.6250	15.88	5/8	1 1/8	5	2	94844	96367	96135
21/32	.6563	16.67	3/4	1 5/16	5 5/8	2	95402	—	—
11/16	.6875	17.46	3/4	1 5/16	5 5/8	2	94845	—	—
23/32	.7188	18.26	3/4	1 5/16	5 5/8	2	95403	—	—
3/4	.7500	19.05	3/4	1 5/16	5	2	—	—	96136
3/4	.7500	19.05	3/4	1 5/16	5 5/8	2	94846	96368	—
13/16	.8125	20.64	7/8	1 9/16	6 1/8	2	94847	—	—
7/8	.8750	22.23	7/8	1 9/16	5 1/2	2	—	—	96137
7/8	.8750	22.23	7/8	1 9/16	6 1/8	2	94848	96369	—
15/16	.9375	23.81	1	1 5/8	5 7/8	2	94849	—	—
1	1.0000	25.40	1	1 5/8	6 3/8	2	94850	96370	96138

Style 431 • Ball Nose, 2-Flute, Center Cutting, HSS

FEATURES

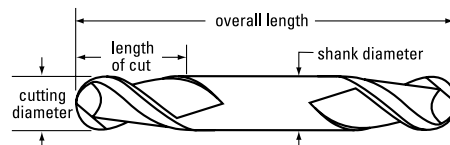
ANSI SIZES	HSS SUBSTRATE
GENERAL PURPOSE	M42 COBALT SUBSTRATE
2 FLUTE CC	BRIGHT
30°	

APPLICATIONS

ALLOY STEEL
TOOL STEEL
CARBON STEEL
CAST IRON



Style 431 HSS Bright



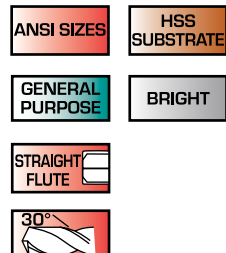
Cutting Diameter			Shank			No. of Flutes	Style 431 Bright
Frac	Decimal	MM	Dia.	LOC	OAL		
1/8	.1250	3.18	3/8	3/16	3 1/8	2	93142
1/8	.1250	3.18	3/8	3/8	3 1/16	2	92857
5/32	.1563	3.97	3/8	7/16	3 1/8	2	92858
3/16	.1875	4.76	3/8	9/32	3 1/4	2	93143
3/16	.1875	4.76	3/8	7/16	3 1/4	2	92859
7/32	.2188	5.56	3/8	1/2	3 1/4	2	92860
1/4	.2500	6.35	3/8	3/8	3 3/8	2	93144
1/4	.2500	6.35	3/8	1/2	3 3/8	2	92861
9/32	.2813	7.14	3/8	9/16	3 3/8	2	92862
5/16	.3125	7.94	3/8	9/16	3 1/2	2	92863
11/32	.3438	8.73	3/8	9/16	3 1/2	2	92864
3/8	.3750	9.53	3/8	9/16	3 1/2	2	92865
7/16	.4375	11.11	1/2	13/16	4 1/8	2	92866
1/2	.5000	12.70	1/2	13/16	4 1/8	2	92867
5/8	.6250	15.88	5/8	1 1/8	5	2	92868
3/4	.7500	19.05	3/4	1 5/16	5 5/8	2	92869
1	1.0000	25.40	1	1 5/8	6 3/8	2	92871

General-Purpose

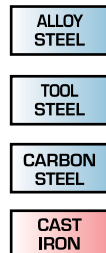


Style 428 • 2-Flute, Keyway, Straight Flutes, Center Cutting

FEATURES



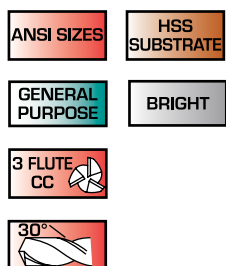
APPLICATIONS



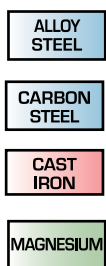
Cutting Diameter			Shank			No. of Flutes	Style 428 Bright
Frac	Decimal	MM	Dia.	LOC	OAL		
1/8	.1250	3.18	3/8	3/8	3 1/16	2	92350
3/16	.1875	4.76	3/8	7/16	3 1/4	2	92351
1/4	.2500	6.35	3/8	1/2	3 3/8	2	92352
5/16	.3125	7.94	3/8	9/16	3 1/2	2	92353
3/8	.3750	9.53	3/8	9/16	3 1/2	2	92354
7/16	.4375	11.11	1/2	13/16	4 1/8	2	92355
1/2	.5000	12.70	1/2	13/16	4 1/8	2	92356

Style 433 • 3-Flute Center Cutting HSS

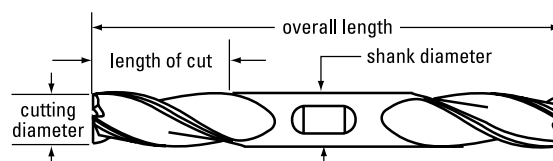
FEATURES



APPLICATIONS



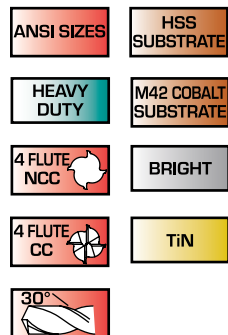
Style 433 Bright



Cutting Diameter			Shank			No. of Flutes	Style 433 Bright
Frac	Decimal	MM	Dia.	LOC	OAL		
1/8	.1250	3.18	3/8	3/8	3 1/16	3	92965
3/16	.1875	4.76	3/8	1/2	3 1/4	3	92966
1/4	.2500	6.35	3/8	5/8	3 3/8	3	92967
5/16	.3125	7.94	3/8	3/4	3 1/2	3	92968
3/8	.3750	9.53	3/8	3/4	3 1/2	3	92969
7/16	.4375	11.11	1/2	1	4 1/8	3	92970
1/2	.5000	12.70	1/2	1	4 1/8	3	92971
9/16	.5625	14.29	5/8	1 3/8	5	3	92972
5/8	.6250	15.88	5/8	1 3/8	5	3	92973
3/4	.7500	19.05	3/4	1 5/8	5 5/8	3	92974

Style 434 • 4-Flute, Non-Center Cutting, HSS
 Style 435 • 4-Flute, Center Cutting, HSS
 Style 444 • 4-Flute, Non-Center Cutting, M42 Cobalt
 Style 445 • 4-Flute, Center Cutting, M42 Cobalt

FEATURES



APPLICATIONS

HSS	M42 Cobalt
ALLOY STEEL	STAINLESS STEEL
TOOL STEEL	TITANIUM ALLOYS
CARBON STEEL	NICKEL ALLOYS
CAST IRON	COBALT ALLOYS



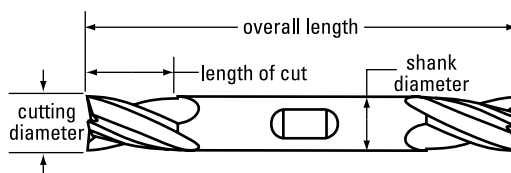
Style 434 TiN



Style 435 Bright



Style 445 M42 Cobalt Bright



								HSS		M42 Cobalt	
Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	Non-CC Style 434		CC Style 435	Non-CC Style 444	CC Style 445
Frac	Decimal	MM					Bright	TiN		Bright	Bright
7/64	.1094	2.78	3/8	3/8	3 1/16	4	94571	—	—	—	—
1/8	.1250	3.18	3/8	3/16	2 3/4	4	94940	—	—	—	—
1/8	.1250	3.18	3/8	3/8	3 1/16	4	94855	96403	94815	96022	96083
9/64	.1406	3.57	3/8	7/16	3 1/8	4	94572	—	—	—	96744
5/32	.1563	3.97	3/8	15/64	2 3/4	4	94941	—	—	—	—
5/32	.1563	3.97	3/8	7/16	3 1/8	4	94856	96404	—	96023	96745
11/64	.1719	4.37	3/8	1/2	3 1/4	4	94573	—	—	—	96746
3/16	.1875	4.76	3/8	9/32	2 3/4	4	94942	—	—	—	—
3/16	.1875	4.76	3/8	1/2	3 1/4	4	94857	96405	94816	96024	96084
13/64	.2031	5.16	3/8	9/16	3 1/4	4	94574	—	—	—	96747
7/32	.2188	5.56	3/8	21/64	2 7/8	4	94943	—	—	—	—
7/32	.2188	5.56	3/8	9/16	3 1/4	4	94858	96406	—	96025	96748
15/64	.2344	5.95	3/8	5/8	3 3/8	4	94575	—	—	—	96749
1/4	.2500	6.35	3/8	3/8	2 7/8	4	94944	—	—	—	—
1/4	.2500	6.35	3/8	5/8	3 3/8	4	94859	96407	94817	96026	96085
17/64	.2656	6.75	3/8	11/16	3 3/8	4	94576	—	—	—	—
9/32	.2813	7.14	3/8	11/16	3 3/8	4	94860	96408	—	96027	96750
19/64	.2969	7.54	3/8	3/4	3 1/2	4	94577	—	—	—	—
5/16	.3125	7.94	3/8	3/4	3 1/2	4	94861	96409	94818	96028	96086
21/64	.3281	8.33	3/8	3/4	3 1/2	4	94578	—	—	—	—
11/32	.3438	8.73	3/8	3/4	3 1/2	4	94862	96410	—	96029	96751
23/64	.3594	9.13	3/8	3/4	3 1/2	4	94579	—	—	—	—
3/8	.3750	9.53	3/8	3/4	3 1/2	4	94863	96411	94819	96030	96087

continued on next page

General-Purpose



Style 434 • 4-Flute, Non-Center Cutting, HSS
 Style 435 • 4-Flute, Center Cutting, HSS
 Style 444 • 4-Flute, Non-Center Cutting, M42 Cobalt
 Style 445 • 4-Flute, Center Cutting, M42 Cobalt
 (continued)

							HSS			M42 Cobalt	
Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	Non-CC Style 434		CC Style 435	Non-CC Style 444	CC Style 445
Frac	Decimal	MM					Bright	TiN	Bright	Bright	Bright
25/64	.3906	9.92	1/2	1	4 1/8	4	94580	—	—	—	—
13/32	.4063	10.32	1/2	1	4 1/8	4	94864	96412	—	96031	96752
27/64	.4219	10.72	1/2	1	4 1/8	4	94581	—	—	—	—
7/16	.4375	11.11	1/2	1	4 1/8	4	94865	96413	—	96032	96753
29/64	.4531	11.51	1/2	1	4 1/8	4	94582	—	—	—	—
15/32	.4688	11.91	1/2	1	4 1/8	4	94866	—	—	—	—
31/64	.4844	12.30	1/2	1	4 1/8	4	94583	—	—	—	—
1/2	.5000	12.70	1/2	1	4 1/8	4	94867	96414	94820	96033	96088
17/32	.5313	13.49	5/8	1 3/8	5	4	95500	—	—	—	—
9/16	.5625	14.29	5/8	1 3/8	5	4	94868	96415	—	96034	96754
19/32	.5938	15.08	5/8	1 3/8	5	4	95501	—	—	—	—
5/8	.6250	15.88	5/8	1 3/8	5	4	94869	96416	94821	96035	96089
11/16	.6875	17.46	3/4	1 5/8	5 5/8	4	94870	—	—	—	—
3/4	.7500	19.05	3/4	1 5/8	5 5/8	4	94871	96417	94822	96036	96090
13/16	.8125	20.64	7/8	1 7/8	6 1/8	4	94872	—	—	—	—
7/8	.8750	22.23	7/8	1 7/8	6 1/8	4	94873	96418	94823	96037	—
15/16	.9375	23.81	1	1 7/8	6 3/8	4	94874	—	—	—	—
1	1.0000	25.40	1	1 7/8	6 3/8	4	94875	96419	94824	96038	96755



Miniature 2-Flute

Style 182 • 2-Flute, Miniature, Center Cutting, HSS

Style 181 • 2-Flute, Ball Nose, Miniature, HSS

FEATURES

ANSI SIZES

HSS
SUBSTRATE

GENERAL
PURPOSE

BRIGHT

2 FLUTE
NCC

2 FLUTE
BALL CC

APPLICATIONS

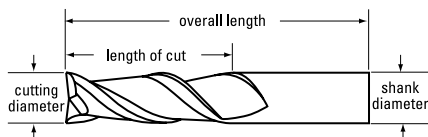
ALLOY
STEEL

TOOL
STEEL

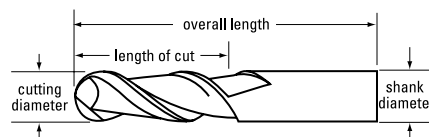
CARBON
STEEL



Style 182 Bright



Style 181 Ball Nose Bright



Cutting Diameter			Shank			No. of Flutes	Style 182 Bright
Frac	Decimal	MM	Dia.	LOC	OAL		
1/32	.0312	0.79	3/16	3/64	1 1/2	2	93068
1/32	.0312	0.79	3/16	3/32	1 1/2	2	91478
3/64	.0469	1.19	3/16	1/16	1 1/2	2	93067
3/64	.0469	1.19	3/16	9/64	1 1/2	2	91477
1/16	.0625	1.59	3/16	3/32	1 1/2	2	93072
1/16	.0625	1.59	3/16	3/16	1 1/2	2	91482
5/64	.0781	1.98	3/16	1/8	1 1/2	2	93071
5/64	.0781	1.98	3/16	15/64	1 1/2	2	91481
3/32	.0938	2.38	3/16	9/64	1 1/2	2	93076
3/32	.0938	2.38	3/16	9/32	1 1/2	2	91487
7/64	.1094	2.78	3/16	5/32	1 1/2	2	93075
7/64	.1094	2.78	3/16	21/64	1 1/2	2	91486
1/8	.1250	3.18	3/16	3/16	1 1/2	2	93080
1/8	.1250	3.18	3/16	3/8	1 1/2	2	91492
9/64	.1406	3.57	3/16	1/4	1 1/2	2	93079
9/64	.1406	3.57	3/16	13/32	1 1/2	2	91491
5/32	.1562	3.97	3/16	1/4	1 1/2	2	93084
5/32	.1562	3.97	3/16	7/16	1 1/2	2	91497
11/64	.1719	4.37	3/16	15/32	1 1/2	2	91496
3/16	.1875	4.76	3/16	9/32	1 1/2	2	93086
3/16	.1875	4.76	3/16	1/2	1 1/2	2	91500

Cutting Diameter			Shank			No. of Flutes	Style 181 Bright
Frac	Decimal	MM	Dia.	LOC	OAL		
1/32	.0312	0.79	3/16	3/64	1 1/2	2	93131
1/32	.0312	0.79	3/16	3/32	1 1/2	2	92841
1/16	.0625	1.59	3/16	3/32	1 1/2	2	93133
1/16	.0625	1.59	3/16	3/16	1 1/2	2	92843
3/32	.0938	2.38	3/16	9/64	1 1/2	2	93135
3/32	.0938	2.38	3/16	9/32	1 1/2	2	92846
1/8	.1250	3.18	3/16	3/16	1 1/2	2	93137
1/8	.1250	3.18	3/16	3/8	1 1/2	2	92849
5/32	.1562	3.97	3/16	7/16	1 1/2	2	92852
3/16	.1875	4.76	3/16	9/16	1 1/2	2	92855

Miniature 4-Flute



Style 184 • 4-Flute, Miniature, Non Center Cutting, HSS

FEATURES

ANSI SIZES

HSS
SUBSTRATE

GENERAL
PURPOSE

BRIGHT

4 FLUTE
NCC

APPLICATIONS

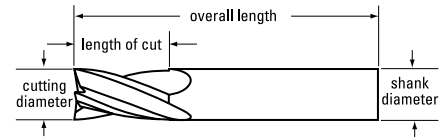
ALLOY
STEEL

TOOL
STEEL

CARBON
STEEL



Style 184 Bright



Cutting Diameter			Shank			No. of	Style 184
Frac	Decimal	MM	Dia.	LOC	OAL	Flutes	Bright
1/16	.0625	1.59	3/16	3/32	1 1/2	4	93043
3/32	.0938	2.38	3/16	9/64	1 1/2	4	93045
3/32	.0938	2.38	3/16	9/32	1 1/2	4	91101
1/8	.1250	3.18	3/16	3/16	1 1/2	4	93047
1/8	.1250	3.18	3/16	3/8	1 1/2	4	91104
5/32	.1562	3.97	3/16	1/4	1 1/2	4	93049
5/32	.1562	3.97	3/16	7/16	1 1/2	4	91107
3/16	.1875	4.76	3/16	9/32	1 1/2	4	93051
3/16	.1875	4.76	3/16	1/2	1 1/2	4	91110

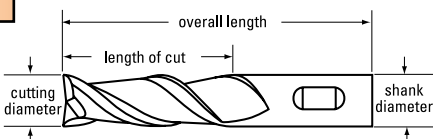
Style 112, 112M • 2-Flute, Center Cutting, HSS Style 212 • 2-Flute, Center Cutting, M42 Cobalt

FEATURES

ANSI SIZES	HSS SUBSTRATE
GENERAL PURPOSE	M42 COBALT SUBSTRATE
2 FLUTE CC	BRIGHT
30°	TiN

APPLICATIONS

HSS	M42 Cobalt
ALLOY STEEL	STAINLESS STEEL
TOOL STEEL	TITANIUM ALLOYS
CARBON STEEL	NICKEL ALLOYS
CAST IRON	COBALT ALLOYS



Style 112 HSS Bright



Style 112 HSS TiN



Style 212 M42 Cobalt Bright

Cutting Diameter			Shank			No. of Flutes	HSS		M42 Cobalt
Frac	Decimal	MM	Dia.	LOC	OAL		Style 112 Bright	TiN	Style 212 Bright
1/8	.1250	3.18	3/8	3/16	2 1/8	2	93092	—	94514
1/8	.1250	3.18	3/8	3/8	2 5/16	2	94180	96335	94675
1/8	.1250	3.18	3/8	3/4	2 5/8	2	—	—	94515
9/64	.1406	3.57	3/8	7/16	2 3/8	2	95200	—	—
5/32	.1563	3.97	3/8	7/16	2 5/16	2	—	—	94516
5/32	.1563	3.97	3/8	7/16	2 3/8	2	95201	—	—
5/32	.1563	3.97	3/8	5/8	2 3/8	2	—	—	94517
5/32	.1563	3.97	3/8	3/4	2 5/8	2	—	—	94518
11/64	.1719	4.37	3/8	7/16	2 3/8	2	95202	—	—
3/16	.1875	4.76	3/8	9/32	2 3/8	2	93093	—	—
3/16	.1875	4.76	3/8	7/16	2 3/8	2	94181	96336	94676
3/16	.1875	4.76	3/8	5/8	2 3/8	2	—	—	94520
3/16	.1875	4.76	3/8	1 1/4	3 1/16	2	—	—	94522
13/64	.2031	5.16	3/8	1/2	2 7/16	2	95203	—	—
7/32	.2188	5.56	3/8	1/4	2 1/8	2	—	—	94523
7/32	.2188	5.56	3/8	1/2	2 3/8	2	—	—	94524
7/32	.2188	5.56	3/8	1/2	2 7/16	2	95204	—	—
7/32	.2188	5.56	3/8	7/8	2 3/4	2	—	—	94525
15/64	.2344	5.95	3/8	1/2	2 7/16	2	95205	—	—
1/4	.2500	6.35	3/8	1/4	2 1/16	2	—	—	94527
1/4	.2500	6.35	3/8	3/8	2 7/16	2	93094	—	—
1/4	.2500	6.35	3/8	1/2	2 7/16	2	94182	96337	94677
1/4	.2500	6.35	3/8	3/4	2 3/4	2	—	—	94528
1/4	.2500	6.35	3/8	1 1/4	3 1/16	2	—	—	94529
1/4	.2500	6.35	3/8	1 3/4	3 9/16	2	—	—	94530
17/64	.2656	6.75	3/8	9/16	2 1/2	2	95206	—	—
9/32	.2813	7.14	3/8	9/16	2 3/8	2	—	—	94531
9/32	.2813	7.14	3/8	9/16	2 1/2	2	95207	—	—
9/32	.2813	7.14	3/8	1	2 3/4	2	—	—	94532
9/32	.2813	7.14	3/8	1 3/8	3 1/8	2	—	—	94533
19/64	.2969	7.54	3/8	9/16	2 1/2	2	95208	—	—
5/16	.3125	7.94	3/8	9/16	2 1/2	2	94183	96338	94678
5/16	.3125	7.94	3/8	1	2 3/4	2	—	—	94535
5/16	.3125	7.94	3/8	1 3/8	3 1/8	2	—	—	94536
5/16	.3125	7.94	3/8	2	3 3/4	2	—	—	94537

continued on next page

General-Purpose



Style 112, 112M • 2-Flute, Center Cutting, HSS
Style 212 • 2-Flute, Center Cutting, M42 Cobalt
 (continued)

Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	HSS		M42 Cobalt
Frac	Decimal	MM					Style 112 Bright	TiN	Style 212 Bright
21/64	.3281	8.33	3/8	9/16	2 1/2	2	95209	—	—
11/32	.3438	8.73	3/8	9/16	2 3/8	2	—	—	94538
11/32	.3438	8.73	3/8	9/16	2 1/2	2	95210	—	—
11/32	.3438	8.73	3/8	1	2 3/4	2	—	—	94539
23/64	.3594	9.13	3/8	9/16	2 1/2	2	95211	—	—
3/8	.3750	9.53	3/8	3/8	2 1/8	2	—	—	94541
3/8	.3750	9.53	3/8	9/16	2 1/2	2	94184	96339	94679
3/8	.3750	9.53	3/8	1	2 3/4	2	91625	96371	—
3/8	.3750	9.53	3/8	1	2 3/4	2	—	—	96169
3/8	.3750	9.53	3/8	1 1/2	3 1/4	2	91645	96376	96177
3/8	.3750	9.53	3/8	2 1/2	4 1/4	2	—	—	94542
25/64	.3906	9.92	3/8	13/16	2 11/16	2	95212	—	—
13/32	.4063	10.32	3/8	13/16	2 1/2	2	—	—	94543
13/32	.4063	10.32	3/8	13/16	2 11/16	2	95213	—	—
27/64	.4219	10.72	3/8	13/16	2 11/16	2	95214	—	—
7/16	.4375	11.11	3/8	13/16	2 11/16	2	94185	96340	96144
7/16	.4375	11.11	3/8	1 1/4	3 1/4	2	—	—	94545
7/16	.4375	11.11	3/8	2 3/4	4 3/4	2	—	—	94548
29/64	.4531	11.51	3/8	13/16	2 11/16	2	95215	—	—
15/32	.4688	11.91	3/8	13/16	2 11/16	2	95216	—	—
15/32	.4688	11.91	1/2	1	3 3/8	2	—	—	94549
31/64	.4844	12.30	3/8	13/16	2 11/16	2	95217	—	—
1/2	.5000	12.70	3/8	13/16	2 11/16	2	94186	96341	96145
1/2	.5000	12.70	1/2	1	3 1/4	2	94187	96342	94680
1/2	.5000	12.70	1/2	1 1/2	3 1/2	2	91626	96372	96170
1/2	.5000	12.70	1/2	2	4	2	91646	96377	96178
1/2	.5000	12.70	1/2	3	5	2	—	—	94550
33/64	.5156	13.10	1/2	1	3 1/4	2	95218	—	—
17/32	.5313	13.49	1/2	1 1/8	3 3/8	2	95219	—	—
35/64	.5469	13.89	1/2	1 1/8	3 3/8	2	95220	—	—
9/16	.5625	14.29	1/2	1 1/8	3 3/8	2	94188	96343	96147
37/64	.5781	14.68	1/2	1 1/8	3 3/8	2	95221	—	—
19/32	.5938	15.08	1/2	1 1/8	3 3/8	2	95222	—	—
39/64	.6094	15.48	5/8	1 5/16	3 3/4	2	95223	—	—
5/8	.6250	15.88	1/2	5/8	2 3/4	2	91660	—	—
5/8	.6250	15.88	1/2	1 1/8	3 3/8	2	94189	96344	96148
5/8	.6250	15.88	5/8	1 5/16	3 3/4	2	94190	96345	94681
5/8	.6250	15.88	5/8	1 5/8	3 3/4	2	91627	96373	96171
5/8	.6250	15.88	5/8	2	4 1/8	2	91647	96378	96179
5/8	.6250	15.88	5/8	4	6 1/8	2	91661	—	—
41/64	.6406	16.27	5/8	1 5/16	3 3/4	2	95224	—	—
21/32	.6563	16.67	1/2	1 5/16	3 5/16	2	91662	—	—
21/32	.6563	16.67	5/8	1 5/16	3 3/4	2	95225	—	—
43/64	.6719	17.07	5/8	1 5/16	3 3/4	2	95226	—	—
11/16	.6875	17.46	1/2	1 5/16	3 5/8	2	94191	—	—
11/16	.6875	17.46	5/8	1 5/16	3 3/4	2	94192	—	—
45/64	.7031	17.86	3/4	1 5/16	3 7/8	2	95227	—	—

continued on next page



Style 112, 112M • 2-Flute, Center Cutting, HSS
Style 212 • 2-Flute, Center Cutting, M42 Cobalt
 (continued)

							HSS		M42 Cobalt
Cutting Diameter			Shank			No. of	Style 112		Style 212
Frac	Decimal	MM	Dia.	LOC	OAL	Flutes	Bright	TiN	Bright
23/32	.7188	18.26	1/2	1 5/16	3 5/16	2	91663	—	—
23/32	.7188	18.26	3/4	1 5/16	3 7/8	2	95228	—	—
47/64	.7344	18.65	3/4	1 5/16	3 7/8	2	95229	—	—
3/4	.7500	19.05	1/2	1 5/16	3 5/8	2	94193	96346	96150
3/4	.7500	19.05	5/8	1 5/16	3 3/4	2	94194	96347	96151
3/4	.7500	19.05	3/4	3/4	3	2	91664	—	—
3/4	.7500	19.05	3/4	1 5/16	3 7/8	2	94195	96348	94682
3/4	.7500	19.05	3/4	1 3/4	4	2	91629	96374	96172
3/4	.7500	19.05	3/4	2 1/4	4 1/2	2	91649	96379	96180
3/4	.7500	19.05	3/4	4	6 1/4	2	91666	—	—
49/64	.7656	19.45	3/4	1 1/2	4 1/4	2	95230	—	—
25/32	.7813	19.84	1/2	1 1/2	3 1/2	2	91669	—	—
25/32	.7813	19.84	3/4	1 1/2	4 1/4	2	95231	—	—
51/64	.7969	20.24	3/4	1 1/2	4 1/4	2	95232	—	—
13/16	.8125	20.64	1/2	1 1/2	3 5/16	2	—	—	94551
13/16	.8125	20.64	5/8	1 1/2	4	2	94196	—	—
13/16	.8125	20.64	3/4	1 1/2	3 3/4	2	—	—	94552
13/16	.8125	20.64	3/4	1 1/2	4 1/8	2	94197	—	—
53/64	.8281	21.03	7/8	1	4 1/4	2	95233	—	—
27/32	.8438	21.43	7/8	1 1/2	4 1/4	2	95234	—	—
55/64	.8594	21.83	7/8	1 1/2	4 1/4	2	95235	—	—
7/8	.8750	22.23	1/2	1 1/2	3 1/2	2	91671	—	—
7/8	.8750	22.23	5/8	1 1/2	4	2	94198	96349	96153
7/8	.8750	22.23	3/4	1 1/2	4 1/8	2	94199	96350	96154
7/8	.8750	22.23	7/8	1 1/2	4 1/8	2	94200	—	—
7/8	.8750	22.23	7/8	2	4 1/4	2	91628	—	—
7/8	.8750	22.23	7/8	2 1/2	4 3/4	2	91648	—	—
57/64	.8906	22.62	7/8	1 1/2	4 1/8	2	95236	—	—
29/32	.9063	23.02	7/8	1 1/2	4 1/8	2	95237	—	—
59/64	.9219	23.42	7/8	1 1/2	4 1/8	2	95238	—	—
15/16	.9375	23.81	5/8	1 1/2	4	2	94201	—	—
15/16	.9375	23.81	3/4	1 1/2	4 1/8	2	94202	—	—
15/16	.9375	23.81	7/8	1 1/2	4 3/16	2	94203	—	—
31/32	.9688	24.61	1	1 5/8	4 1/2	2	95240	—	—
1	1.0000	25.40	1/2	1 1/2	3 1/2	2	91673	—	—
1	1.0000	25.40	5/8	1 1/2	4	2	94204	96351	96155
1	1.0000	25.40	3/4	1 1/2	4 1/8	2	94205	96352	96156
1	1.0000	25.40	7/8	1 1/2	4 3/16	2	94206	—	—
1	1.0000	25.40	1	1 5/8	4 1/2	2	94207	96353	94683
1	1.0000	25.40	1	2 1/4	4 3/4	2	91630	96375	96173
1	1.0000	25.40	1	3	5 1/2	2	91650	96380	96181
1 1/16	1.0625	26.99	3/4	3/4	3 3/4	2	91674	—	—
1 1/8	1.1250	28.58	3/4	1 1/2	3 7/8	2	91261	—	—
1 1/8	1.1250	28.58	7/8	1 5/8	4 1/8	2	94208	—	—
1 1/8	1.1250	28.58	1	3	5 1/2	2	91651	—	—
1 1/8	1.1250	28.58	1	1 5/8	4 1/2	2	94209	—	—

continued on next page

General-Purpose



Style 112, 112M • 2-Flute, Center Cutting, HSS
Style 212 • 2-Flute, Center Cutting, M42 Cobalt
 (continued)

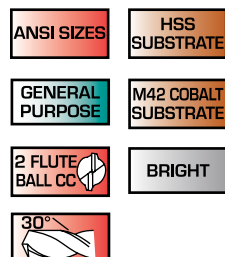
Cutting Diameter		Shank Dia.	LOC	OAL	No. of Flutes	HSS		M42 Cobalt
Frac	Decimal					Style 112 Bright	TiN	Style 212 Bright
1 1/4	1.2500	31.75	3/4	1 1/2	3 3/4	2	—	97001
1 1/4	1.2500	31.75	3/4	1 1/2	3 7/8	2	91262	—
1 1/4	1.2500	31.75	3/4	1 5/8	3 7/8	2	—	94554
1 1/4	1.2500	31.75	7/8	1 5/8	4 5/16	2	94210	—
1 1/4	1.2500	31.75	1	1 5/8	4 1/2	2	94211	—
1 1/4	1.2500	31.75	1	2 1/4	4 3/4	2	91632	—
1 1/4	1.2500	31.75	1	3	5 1/2	2	91652	—
1 1/4	1.2500	31.75	1 1/4	1 5/8	4 1/2	2	94212	94684
1 1/4	1.2500	31.75	1 1/4	2 1/4	4 3/4	2	—	96174
1 1/4	1.2500	31.75	1 1/4	3	5 1/2	2	91654	96182
1 3/8	1.3750	34.93	3/4	1 1/2	3 7/8	2	91263	—
1 3/8	1.3750	34.93	1	1 5/8	4 1/2	2	94213	—
1 3/8	1.3750	34.93	1	2 1/4	4 3/4	2	91633	—
1 3/8	1.3750	34.93	1	3	5 1/2	2	91653	—
1 1/2	1.5000	38.10	3/4	1 5/8	3 7/8	2	—	94555
1 1/2	1.5000	38.10	1	1 5/8	4 1/2	2	94214	—
1 1/2	1.5000	38.10	1 1/4	1 5/8	4 1/2	2	94215	94685
1 1/2	1.5000	38.10	1 1/4	3	5 1/2	2	91655	—
1 5/8	1.6250	41.28	1 1/4	1 5/8	4 1/2	2	94216	—
1 3/4	1.7500	44.45	3/4	1 1/2	3 7/8	2	91265	—
1 3/4	1.7500	44.45	1 1/4	1 5/8	4 1/2	2	94217	—
1 7/8	1.8750	47.63	1 1/4	1 5/8	4 1/2	2	94218	—
2	2.0000	50.80	3/4	1 1/2	3 7/8	2	91266	—
2	2.0000	50.80	3/4	1 5/8	4 1/8	2	—	94556
2	2.0000	50.80	1 1/4	1 5/8	4 1/2	2	94219	96160
2	2.0000	50.80	1 1/4	2 1/4	4 3/4	2	91639	—
2	2.0000	50.80	1 1/4	3	5 1/2	2	91659	—

Cutting Diameter		Shank Dia.	LOC	OAL	No. of Flutes	HSS
MM	Dec. In.					Style 112M Bright
3	.1181	9.52	9.52	58.74	2	95420
4	.1575	9.52	11.11	60.32	2	95421
5	.1969	9.52	12.70	61.91	2	95422
6	.2362	9.52	12.70	61.91	2	95423
7	.2756	9.52	14.29	63.50	2	95424
8	.3150	9.52	14.29	63.50	2	95425
9	.3543	9.52	14.29	63.50	2	95426
10	.3937	9.52	20.64	68.26	2	95427
11	.4331	9.52	20.64	68.26	2	95428
12	.4724	12.70	20.64	82.55	2	95429
13	.5118	12.70	28.57	85.72	2	95430
14	.5512	12.70	28.57	85.72	2	95431
15	.5906	12.70	28.57	85.72	2	95432
16	.6299	15.88	33.34	95.25	2	95433
17	.6693	15.88	33.34	95.25	2	95434
18	.7087	15.88	33.34	95.25	2	95435
19	.7480	19.05	33.34	98.42	2	95436
20	.7874	15.88	38.10	101.60	2	95437
24	.9449	25.40	41.27	114.30	2	95441
25	.9843	25.40	41.27	114.30	2	95442



Style 111 • 2-Flute, Ball Nose, HSS
Style 211 • 2-Flute, Ball Nose, M42 Cobalt

FEATURES



APPLICATIONS

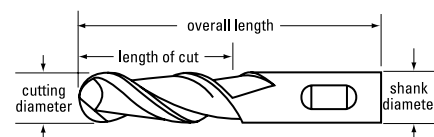
HSS	M42 Cobalt
ALLOY STEEL	STAINLESS STEEL
TOOL STEEL	TITANIUM ALLOYS
CARBON STEEL	NICKEL ALLOYS
CAST IRON	COBALT ALLOYS



Style 111 HSS Bright



Style 211 M42 Cobalt Bright



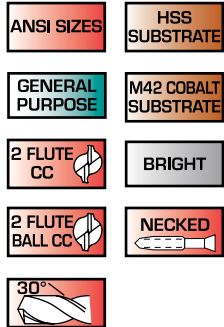
Cutting Diameter			Shank			No. of Flutes	HSS	M42 Cobalt
Frac	Decimal	MM	Dia.	LOC	OAL		Style 111 Bright	Style 211 Bright
1/8	.1250	3.18	3/8	3/8	2 5/16	2	94320	94690
5/32	.1563	3.97	3/8	7/16	2 5/16	2	—	94696
3/16	.1875	4.76	3/8	1/2	2 3/8	2	94321	94691
7/32	.2188	5.56	3/8	1/2	2 3/8	2	—	94697
1/4	.2500	6.35	3/8	5/8	2 7/16	2	94322	94692
9/32	.2813	7.14	3/8	9/16	2 3/8	2	—	94698
5/16	.3125	7.94	3/8	3/4	2 1/2	2	94323	94693
3/8	.3750	9.53	3/8	3/4	2 1/2	2	94324	94694
7/16	.4375	11.11	1/2	1	3	2	94325	96004
1/2	.5000	12.70	1/2	1	3	2	94326	94695
9/16	.5625	14.29	1/2	1 1/8	3 1/8	2	94327	—
5/8	.6250	15.88	1/2	1 1/8	3 3/8	2	94328	—
5/8	.6250	15.88	5/8	1 3/8	3 1/2	2	94329	96005
3/4	.7500	19.05	1/2	1 5/16	3 5/8	2	94330	—
3/4	.7500	19.05	3/4	1 5/8	3 7/8	2	94331	96006
13/16	.8125	20.64	3/4	2	4 1/4	2	94332	—
7/8	.8750	22.23	3/4	2	4 1/4	2	94333	96007
7/8	.8750	22.23	7/8	2	4 1/4	2	94334	—
15/16	.9375	23.81	3/4	2 1/4	4 1/2	2	94335	—
1	1.0000	25.40	3/4	2 1/4	4 1/2	2	94336	—
1	1.0000	25.40	1	2 1/4	4 3/4	2	94337	96008
1 1/8	1.1250	28.58	3/4	1 1/2	3 7/8	2	91271	—
1 1/8	1.1250	28.58	1	2 1/4	4 3/4	2	94338	—
1 1/4	1.2500	31.75	3/4	1 1/2	3 7/8	2	91272	—
1 1/4	1.2500	31.75	1 1/4	2 1/2	5	2	94339	—
1 3/8	1.3750	34.93	3/4	1 1/2	3 7/8	2	91273	—
1 3/8	1.3750	34.93	1 1/4	2 1/2	5 1/16	2	94340	—
1 1/2	1.5000	38.10	3/4	1 1/2	3 7/8	2	91274	—
1 1/2	1.5000	38.10	1 1/4	2 1/2	5	2	94341	—

General-Purpose



- Style 112N • 2-Flute with Extended Neck, Center Cutting, HSS
- Style 212N • 2-Flute with Extended Neck, Center Cutting, M42 Cobalt
- Style 111N • 2-Flute, Ball Nose with Extended Neck, HSS
- Style 211N • 2-Flute, Ball Nose with Extended Neck, M42 Cobalt

FEATURES



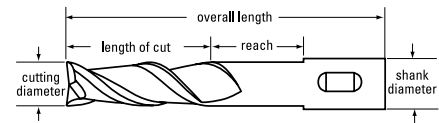
APPLICATIONS

HSS	M42 Cobalt
ALLOY STEEL	STAINLESS STEEL
TOOL STEEL	TITANIUM ALLOYS
CARBON STEEL	NICKEL ALLOYS
CAST IRON	COBALT ALLOYS

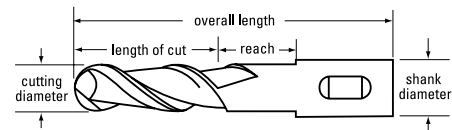
Cutting Diameter			Shank			No. of Flutes	HSS	M42 Cobalt
Frac	Decimal	MM	Dia.	LOC	OAL		Style 112N Bright	Style 212N Bright
1/8	.1250	3.18	3/8	3/8	2 3/8	2	94305	96161
3/16	.1875	4.76	3/8	1/2	2 11/16	2	94306	96162
1/4	.2500	6.35	3/8	5/8	3 1/16	2	94307	96163
5/16	.3125	7.94	3/8	3/4	3 5/16	2	94308	96164
3/8	.3750	9.53	3/8	3/4	3 5/16	2	94309	96165
1/2	.5000	12.70	1/2	1	4	2	94310	96166
5/8	.6250	15.88	5/8	1 3/8	4 5/8	2	94311	—
3/4	.7500	19.05	3/4	1 5/8	5 1/4	2	—	96167
3/4	.7500	19.05	3/4	1 5/8	5 3/8	2	94312	—
7/8	.8750	22.23	7/8	2	6	2	94313	—
1	1.0000	25.40	1	2 1/2	7 1/4	2	94314	96168
1 1/4	1.2500	31.75	1 1/4	3	7 1/4	2	94315	—



Style 112N HSS Bright



Style 111N HSS Bright



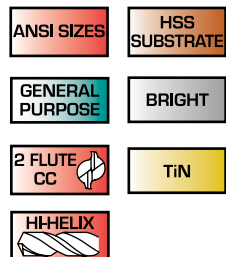
Cutting Diameter			Shank			No. of Flutes	HSS	M42 Cobalt
Frac	Decimal	MM	Dia.	LOC	OAL		Style 111N Bright	Style 211N Bright
1/8	.1250	3.18	3/8	3/8	2 3/8	2	92950	96014
3/16	.1875	4.76	3/8	1/2	2 11/16	2	92951	96015
1/4	.2500	6.35	3/8	5/8	3 1/16	2	92952	96016
5/16	.3125	7.94	3/8	3/4	3 5/16	2	92953	96017
3/8	.3750	9.53	3/8	3/4	3 5/16	2	92954	96018
7/16	.4375	11.11	1/2	1	3 3/4	2	92955	—
1/2	.5000	12.70	1/2	1	4	2	92956	96019
5/8	.6250	15.88	5/8	1 3/8	4 5/8	2	92957	—
3/4	.7500	19.05	3/4	1 5/8	5 3/8	2	92958	96020
1	1.0000	25.40	1	2 1/2	7 1/4	2	92960	96021



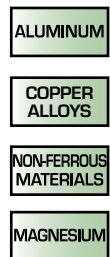
Single End Finishing End Mills For Aluminum

Style 132 • 2-Flute, Center Cutting, Hi-Helix for Aluminum, HSS

FEATURES



APPLICATIONS



Style 132 HSS Bright



Style 132 HSS TiN

Cutting Diameter			Shank			No. of Flutes	Style 132	
Frac	Decimal	MM	Dia.	LOC	OAL		Bright	TiN
1/4	.2500	6.35	3/8	5/8	2 7/16	2	93950	91325
1/4	.2500	6.35	3/8	1 1/4	3 1/16	2	93970	—
1/4	.2500	6.35	3/8	1 3/4	3 9/16	2	93985	—
5/16	.3125	7.94	3/8	3/4	2 1/2	2	93951	91326
5/16	.3125	7.94	3/8	1 3/8	3 1/8	2	93971	—
5/16	.3125	7.94	3/8	2	3 3/4	2	93986	—
3/8	.3750	9.53	3/8	3/4	2 1/2	2	93952	91327
3/8	.3750	9.53	3/8	1 1/2	3 1/4	2	93972	—
3/8	.3750	9.53	3/8	2 1/2	4 1/4	2	93987	—
7/16	.4375	11.11	3/8	1	2 11/16	2	93953	91328
7/16	.4375	11.11	1/2	1 3/4	3 3/4	2	93973	—
7/16	.4375	11.11	1/2	2 3/4	4 3/4	2	93988	—
1/2	.5000	12.70	1/2	1 1/4	3 1/4	2	93954	91329
1/2	.5000	12.70	1/2	2	4	2	93974	—
1/2	.5000	12.70	1/2	3	5	2	93989	—
5/8	.6250	15.88	1/2	1 3/8	3 3/8	2	93955	91330
5/8	.6250	15.88	5/8	1 5/8	3 3/4	2	93956	91332
5/8	.6250	15.88	5/8	2 1/2	4 5/8	2	93975	—
5/8	.6250	15.88	5/8	4	6 1/8	2	93990	—
3/4	.7500	19.05	1/2	1 5/8	3 5/8	2	93957	91331
3/4	.7500	19.05	3/4	1 5/8	3 7/8	2	93958	91333
3/4	.7500	19.05	3/4	3	5 1/4	2	93976	—
3/4	.7500	19.05	3/4	4	6 1/4	2	93991	—
7/8	.8750	22.23	3/4	1 7/8	4 1/8	2	93959	—
7/8	.8750	22.23	7/8	1 7/8	4 1/8	2	93960	91334
7/8	.8750	22.23	7/8	3 1/2	5 3/4	2	93977	—
7/8	.8750	22.23	7/8	5	7 1/4	2	93992	—
1	1.0000	25.40	3/4	1 7/8	4 1/8	2	93961	—
1	1.0000	25.40	1	2	4 1/2	2	93962	91335
1	1.0000	25.40	1	4	6 1/2	2	93978	—
1	1.0000	25.40	1	6	8 1/2	2	93993	—
1 1/4	1.2500	31.75	1 1/4	2	4 1/2	2	93963	91338
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	2	93979	—
1 1/4	1.2500	31.75	1 1/4	6	8 1/2	2	93994	—
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	2	93964	—
1 1/2	1.5000	38.10	1 1/4	4	6 1/2	2	93980	—
1 1/2	1.5000	38.10	1 1/4	8	10 1/2	2	93995	—
1 3/4	1.7500	44.45	1 1/4	2	4 1/2	2	93965	—
2	2.0000	50.80	1 1/4	2	4 1/2	2	93982	—

Single End Finishing End Mills

For Aluminum



Style 131 • 2-Flute, Ball Nose, Hi-Helix for Aluminum HSS

FEATURES

ANSI SIZES

HSS
SUBSTRATE

GENERAL
PURPOSE

BRIGHT

2 FLUTE
BALL CC

TiN

HI-HELIX

APPLICATIONS

ALUMINUM

COPPER
ALLOYS

NON-FERROUS
MATERIALS

MAGNESIUM



Style 131 HSS Bright



Style 131 HSS TiN

Cutting Diameter			Shank				No. of	Style 131	
Frac	Decimal	MM	Dia.	LOC	OAL	Flutes		Bright	TiN
1/4	.2500	6.35	3/8	5/8	2 7/16	2		91400	96394
1/4	.2500	6.35	3/8	1 1/4	3 1/8	2		91418	—
1/4	.2500	6.35	3/8	1 3/4	3 9/16	2		91417	—
5/16	.3125	7.94	3/8	3/4	2 1/2	2		91401	96395
5/16	.3125	7.94	3/8	1 3/8	3 1/8	2		91420	—
3/8	.3750	9.53	3/8	3/4	2 1/2	2		91402	96396
3/8	.3750	9.53	3/8	1 1/2	3 1/4	2		91422	—
3/8	.3750	9.53	3/8	2 1/2	4 1/4	2		91421	—
1/2	.5000	12.70	1/2	1 1/4	3 1/4	2		91404	96398
1/2	.5000	12.70	1/2	2	4	2		91426	—
1/2	.5000	12.70	1/2	3	5	2		91425	—
5/8	.6250	15.88	5/8	1 5/8	3 3/4	2		91407	96399
5/8	.6250	15.88	5/8	2 1/2	4 5/8	2		91428	—
3/4	.7500	19.05	3/4	1 5/8	3 7/8	2		91408	96400
3/4	.7500	19.05	3/4	3	5 1/4	2		91430	—
3/4	.7500	19.05	3/4	4	6 1/4	2		91429	—
1	1.0000	25.40	1	4	6 1/2	2		91434	—



Style 112K • 2-Flute, Keyway, Center Cutting, HSS
Style 112KS • 2-Flute, Keyway, Straight Flutes, Center Cutting, HSS

FEATURES

KEYWAY
SIZES

HSS
SUBSTRATE

GENERAL
PURPOSE

BRIGHT

2 FLUTE
CC

STRAIGHT
FLUTE

APPLICATIONS

ALLOY
STEEL

COPPER
ALLOYS

CAST
IRON

MAGNESIUM



Style 112K Bright

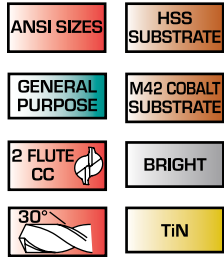


Style 112KS Bright

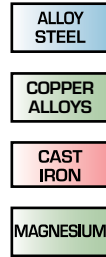
Cutting Diameter	Shank				Key Slot	No. of	Style 112K	Style 112KS
Decimal	MM	Dia.	LOC	OAL	Width	Flutes	Bright	Bright
.1220	3.10	3/8	3/8	2 5/16	1/8	2	92417	92447
.1230	3.12	3/8	3/8	2 5/16	1/8	2	92285	92300
.1240	3.15	3/8	3/8	2 5/16	1/8	2	92405	92435
.1845	4.69	3/8	3/8	2 3/8	3/16	2	92418	92448
.1855	4.71	3/8	3/8	2 3/8	3/16	2	92286	92301
.1865	4.74	3/8	3/8	2 3/8	3/16	2	92406	92436
.2470	6.27	3/8	1/2	2 7/16	1/4	2	92419	92449
.2480	6.30	3/8	1/2	2 7/16	1/4	2	92287	92302
.2490	6.32	3/8	1/2	2 7/16	1/4	2	92402	92437
.3095	7.86	3/8	9/16	2 1/2	5/16	2	92420	92450
.3105	7.89	3/8	9/16	2 1/2	5/16	2	92288	92303
.3115	7.91	3/8	9/16	2 1/2	5/16	2	92408	92438
.3720	9.45	3/8	9/16	2 1/2	3/8	2	92421	92451
.3730	9.47	3/8	9/16	2 1/2	3/8	2	92289	92304
.3740	9.50	3/8	9/16	2 1/2	3/8	2	92409	92439
.4970	12.62	1/2	1	3 1/4	1/2	2	92422	92452
.4980	12.65	1/2	1	3 1/4	1/2	2	92290	92305
.4990	12.67	1/2	1	3 1/4	1/2	2	92410	92440
.6220	15.80	5/8	1 5/16	3 3/4	5/8	2	92423	92453
.6230	15.82	5/8	1 5/16	3 3/4	5/8	2	92291	92306
.6240	15.85	5/8	1 5/16	3 3/4	5/8	2	92411	92441
.7470	18.97	3/4	1 5/16	3 7/8	3/4	2	92425	92455
.7480	19.00	3/4	1 5/16	3 7/8	3/4	2	92293	92308
.7490	19.02	3/4	1 5/16	3 7/8	3/4	2	92413	92443
.8720	22.15	7/8	1 1/2	4 1/8	7/8	2	92424	92454
.8730	22.17	7/8	1 1/2	4 1/8	7/8	2	92292	92307
.8740	22.20	7/8	1 1/2	4 1/8	7/8	2	92412	92442
.9970	25.32	1	1 5/8	4 1/2	1	2	92426	92456
.9980	25.35	1	1 5/8	4 1/2	1	2	92294	92309
.9990	25.37	1	1 5/8	4 1/2	1	2	92414	92444
1.2470	31.67	1 1/4	1 5/8	4 1/2	1 1/4	2	92427	92457
1.2480	31.70	1 1/4	1 5/8	4 1/2	1 1/4	2	92295	—
1.2490	31.72	1 1/4	1 5/8	4 1/2	1 1/4	2	92415	92445
1.4970	38.02	1 1/4	1 5/8	4 1/2	1 1/2	2	92428	92458
1.4980	38.05	1 1/4	1 5/8	4 1/2	1 1/2	2	92296	—
1.4990	38.07	1 1/4	1 5/8	4 1/2	1 1/2	2	92416	92446

Style 113 • 3-Flute, Center Cutting, HSS

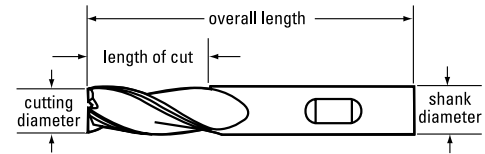
FEATURES



APPLICATIONS



Style 113 HSS Bright



Cutting Diameter		Shank		LOC	OAL	No. of Flutes	Style 113 Bright
MM	Dec. In.	Dia. MM					
1/8	.1250	3.18	3/8	3/8	2 5/16	3	92977
3/16	.1875	4.76	3/8	1/2	2 3/8	3	92978
1/4	.2500	6.35	3/8	5/8	2 7/16	3	92979
1/4	.2500	6.35	3/8	1 1/4	3 1/16	3	93005
5/16	.3125	7.94	3/8	3/4	2 1/2	3	92980
5/16	.3125	7.94	3/8	1 3/8	3 1/8	3	93006
3/8	.3750	9.53	3/8	3/4	2 1/2	3	92981
3/8	.3750	9.53	3/8	1 1/2	3 1/4	3	93007
7/16	.4375	11.11	3/8	1	2 11/16	3	92982
7/16	.4375	11.11	1/2	1 3/4	3 3/4	3	93008
1/2	.5000	12.70	3/8	1	2 11/16	3	92983
1/2	.5000	12.70	1/2	1 1/4	3 1/4	3	92984
1/2	.5000	12.70	1/2	2	4	3	93009
9/16	.5625	14.29	1/2	1 3/8	3 3/8	3	92985
5/8	.6250	15.88	1/2	1 3/8	3 3/8	3	92986
5/8	.6250	15.88	5/8	1 5/8	3 3/4	3	92988
5/8	.6250	15.88	5/8	2 1/2	4 5/8	3	93010
3/4	.7500	19.05	1/2	1 5/8	3 5/8	3	92987
3/4	.7500	19.05	5/8	1 5/8	3 3/4	3	92989
3/4	.7500	19.05	3/4	1 5/8	3 7/8	3	92994
3/4	.7500	19.05	3/4	3	5 1/4	3	93011
7/8	.8750	22.23	5/8	1 7/8	4	3	92990
7/8	.8750	22.23	3/4	1 7/8	4 1/8	3	92996
7/8	.8750	22.23	7/8	1 7/8	4 1/8	3	92992
7/8	.8750	22.23	7/8	3 1/2	5 3/4	3	93012
1	1.0000	25.40	5/8	1 7/8	4	3	92991
1	1.0000	25.40	3/4	1 7/8	4 1/8	3	92999
1	1.0000	25.40	1	2	4 1/2	3	92995
1	1.0000	25.40	1	4	6 1/2	3	93013
1 1/8	1.1250	28.58	1	2	4 1/2	3	92997
1 1/4	1.2500	31.75	1	2	4 1/2	3	92998
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	3	93014
1 1/2	1.5000	38.10	1	2	4 1/2	3	93000
2	2.0000	50.80	2	8	11 3/4	3	94381*

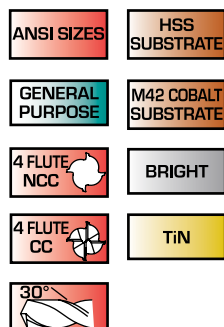
* Indicates positive-lok (dual combination shank)



General-Purpose

Style 114, 114M • 4-Flute, Non-Center Cutting, HSS
 Style 115 • 4-Flute, Center Cutting, HSS
 Style 214 • 4-Flute, Non-Center Cutting, M42 Cobalt
 Style 215 • 4-Flute, Center Cutting, M42 Cobalt

FEATURES



APPLICATIONS

HSS	M42 Cobalt
ALLOY STEEL	TITANIUM ALLOYS
TOOL STEEL	NICKEL ALLOYS
CAST IRON	COBALT ALLOYS
COPPER ALLOYS	STAINLESS STEEL



Style 114 HSS Bright



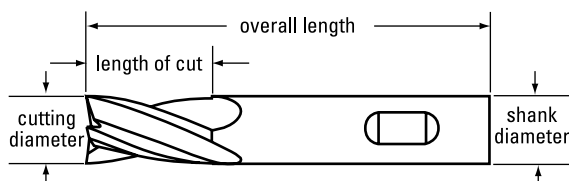
Style 115 HSS Bright



Style 215 M42 Cobalt Bright



Style 215 M42 Cobalt TiN



							HSS				M42 Cobalt			
Cutting Diameter			Shank Dia.	LOC		No. of Flutes	Non CC Style 114		CC Style 115		Non CC Style 214	CC Style 215		
Frac	Decimal	MM					Bright	TiN	Bright	TiN	Bright	Bright	TiN	
1/8	.1250	3.18	3/8	3/16	2 1/8	4	—	—	—	—	—	94774	—	
1/8	.1250	3.18	3/8	3/8	2 5/16	4	94225	96420	94061	96455	96039	94620	—	
1/8	.1250	3.18	3/8	3/4	2 5/8	4	—	—	—	—	—	94775	—	
9/64	.1406	3.57	3/8	1/2	2 3/8	4	95300	—	—	—	—	—	—	
5/32	.1563	3.97	3/8	7/16	2 3/8	4	—	—	—	—	—	94776	—	
5/32	.1563	3.97	3/8	1/2	2 3/8	4	95301	—	—	—	—	—	—	
5/32	.1563	3.97	3/8	3/4	2 5/8	4	—	—	—	—	—	94777	—	
11/64	.1719	4.37	3/8	1/2	2 3/8	4	95302	—	—	—	—	—	—	
3/16	.1875	4.76	3/8	3/16	2 1/16	4	—	—	—	—	—	94778	—	
3/16	.1875	4.76	3/8	9/32	2 3/16	4	93058	—	—	—	—	—	—	
3/16	.1875	4.76	3/8	1/2	2 3/8	4	94226	96421	—	—	96040	94621	—	
3/16	.1875	4.76	3/8	5/8	2 1/2	4	—	—	—	—	—	94779	—	
3/16	.1875	4.76	3/8	3/4	2 5/8	4	—	—	—	—	—	94780	—	
3/16	.1875	4.76	3/8	1 1/4	3 1/16	4	—	—	—	—	—	94781	—	
13/64	.2031	5.16	3/8	1/2	2 3/8	4	95303	—	94062	96456	—	—	—	
7/32	.2188	5.56	3/8	5/8	2 7/16	4	95304	—	—	—	—	94782	—	
7/32	.2188	5.56	3/8	7/8	2 3/4	4	—	—	—	—	—	94783	—	
7/32	.2188	5.56	3/8	1 1/4	3 1/16	4	—	—	—	—	—	94784	—	
15/64	.2344	5.95	3/8	5/8	2 7/16	4	95305	—	—	—	—	—	—	
1/4	.2500	6.35	3/8	1/4	2 1/16	4	—	—	—	—	—	94785	—	
1/4	.2500	6.35	3/8	3/8	2 1/4	4	93059	—	—	—	—	—	—	
1/4	.2500	6.35	3/8	5/8	2 7/16	4	94227	96422	94063	96457	96041	94622	96302	
1/4	.2500	6.35	3/8	7/8	2 11/16	4	—	—	—	—	—	94786	—	
1/4	.2500	6.35	3/8	1 1/4	3 1/16	4	94271	96446	94077	96465	96070	96113	—	
1/4	.2500	6.35	3/8	1 3/4	3 9/16	4	94288	96438	94089	96473	96060	96105	—	
17/64	.2656	6.75	3/8	5/8	2 7/16	4	95306	—	—	—	—	—	—	
9/32	.2813	7.14	3/8	5/8	2 7/16	4	95307	—	—	—	—	94787	—	
9/32	.2813	7.14	3/8	1	2 3/4	4	—	—	—	—	—	94788	—	
19/64	.2969	7.54	3/8	3/4	2 1/2	4	95308	—	—	—	—	—	—	

continued on next page

General-Purpose



Style 114, 114M • 4-Flute, Non-Center Cutting, HSS
 Style 115 • 4-Flute, Center Cutting, HSS
 Style 214 • 4-Flute, Non-Center Cutting, M42 Cobalt
 Style 215 • 4-Flute, Center Cutting, M42 Cobalt

(continued)

							HSS				M42 Cobalt		
Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	Non CC Style 114		CC Style 115		Non CC Style 214	CC Style 215	
Frac	Decimal	MM					Bright	TiN	Bright	TiN	Bright	Bright	TiN
5/16	.3125	7.94	3/8	5/8	2 1/16	4	—	—	—	—	—	94789	—
5/16	.3125	7.94	3/8	3/4	2 1/2	4	94228	96423	94064	96458	96042	94623	96303
5/16	.3125	7.94	3/8	1	2 3/4	4	—	—	—	—	—	94790	—
5/16	.3125	7.94	3/8	1 3/8	3 1/8	4	94272	96447	94078	96466	96071	96114	—
5/16	.3125	7.94	3/8	2	3 3/4	4	94289	96439	94090	96474	96061	96106	—
21/64	.3281	8.33	3/8	3/4	2 1/2	4	95309	—	—	—	—	—	—
11/32	.3438	8.73	3/8	3/4	2 1/2	4	95310	—	—	—	—	—	—
23/64	.3594	9.13	3/8	3/4	2 1/2	4	95311	—	—	—	—	—	—
3/8	.3750	9.53	3/8	3/4	2 1/2	4	94229	96424	94065	96459	96043	94624	96304
3/8	.3750	9.53	3/8	1	2 3/4	4	—	—	—	—	—	94791	—
3/8	.3750	9.53	3/8	1 1/2	3 1/4	4	94273	96448	94079	96467	96072	94645	96318
3/8	.3750	9.53	3/8	2 1/2	4 1/4	4	94290	96440	94091	96475	96062	94660	—
25/64	.3906	9.92	3/8	1	2 11/16	4	95312	—	—	—	—	—	—
13/32	.4063	10.32	3/8	1	2 11/16	4	95313	—	—	—	—	94792	—
27/64	.4219	10.72	3/8	1	2 11/16	4	95314	—	—	—	—	—	—
7/16	.4375	11.11	3/8	7/16	2 7/16	4	—	—	—	—	—	94793	—
7/16	.4375	11.11	3/8	1	2 11/16	4	94230	96425	—	—	96044	94794	—
7/16	.4375	11.11	1/2	1 1/4	3 1/4	4	—	—	—	—	—	94795	—
7/16	.4375	11.11	1/2	1 3/4	3 3/4	4	94274	96449	—	—	96073	94796	—
7/16	.4375	11.11	1/2	2 3/4	4 3/4	4	—	—	—	—	—	94797	—
29/64	.4531	11.51	3/8	1	2 11/16	4	95315	—	—	—	—	—	—
15/32	.4688	11.91	3/8	1	2 11/16	4	95316	—	—	—	—	—	—
15/32	.4688	11.91	1/2	1 1/4	3 1/8	4	—	—	94798	—	—	—	—
31/64	.4844	12.30	3/8	1	2 11/16	4	95317	—	—	—	—	—	—
1/2	.5000	12.70	3/8	1	2 11/16	4	94231	96426	—	—	96045	94800	—
1/2	.5000	12.70	1/2	1/2	2 1/2	4	—	—	—	—	—	94799	—
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4	94232	96427	94066	96460	96046	94625	96305
1/2	.5000	12.70	1/2	1 1/4	3 1/4	6	—	—	—	—	—	94626	96306
1/2	.5000	12.70	1/2	1 5/8	3 5/8	4	—	—	—	—	—	94801	—
1/2	.5000	12.70	1/2	2	4	4	94275	96450	94080	96468	96074	94646	96319
1/2	.5000	12.70	1/2	3	5	4	94291	96441	94092	96476	96063	94661	96314
33/64	.5156	13.10	1/2	1 1/4	3 1/4	4	95318	—	—	—	—	—	—
17/32	.5313	13.49	1/2	1 3/8	3 3/8	4	95319	—	—	—	—	—	—
35/64	.5469	13.89	1/2	1 3/8	3 3/8	4	95320	—	—	—	—	—	—
9/16	.5625	14.29	1/2	1 3/8	3 3/8	4	94233	96428	—	—	96047	94802	—
37/64	.5781	14.68	1/2	1 3/8	3 3/8	4	95321	—	—	—	—	—	—
19/32	.5938	15.08	1/2	1 3/8	3 3/8	4	95322	—	—	—	—	—	—
39/64	.6094	15.48	5/8	1 5/8	3 3/4	4	95323	—	—	—	—	—	—
5/8	.6250	15.88	1/2	1 3/8	3 3/8	4	94234	96429	—	—	96048	—	—
5/8	.6250	15.88	5/8	5/8	2 3/8	4	—	—	94056	—	—	—	—
5/8	.6250	15.88	5/8	1 5/8	3 3/4	4	94235	96430	94067	96461	96049	94627	96307
5/8	.6250	15.88	5/8	1 5/8	3 3/4	6	—	—	—	—	—	94628	96308
5/8	.6250	15.88	5/8	2 1/2	4 5/8	4	94276	96451	94081	96469	96075	94647	—
5/8	.6250	15.88	5/8	4	6 1/8	4	94292	96442	94093	96477	96064	94662	96315
41/64	.6406	16.27	5/8	1 5/8	3 3/4	4	95324	—	—	—	—	—	—
21/32	.6563	16.67	5/8	1 5/8	3 3/4	4	95325	—	—	—	—	—	—
43/64	.6719	17.07	5/8	1 5/8	3 3/4	4	95326	—	—	—	—	—	—

continued on next page



General-Purpose

Style 114, 114M • 4-Flute, Non-Center Cutting, HSS
 Style 115 • 4-Flute, Center Cutting, HSS
 Style 214 • 4-Flute, Non-Center Cutting, M42 Cobalt
 Style 215 • 4-Flute, Center Cutting, M42 Cobalt
 (continued)

								HSS				M42 Cobalt				
Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	Non CC Style 114		CC Style 115		Non CC Style 214		CC Style 215			
Frac	Decimal	MM					Bright	TiN	Bright	TiN	Bright	Bright	TiN			
11/16	.6875	17.46	1/2	1 5/8	3 5/8	4	94236	—	—	—	—	—	—	—		
11/16	.6875	17.46	5/8	1 5/8	3 3/4	4	94237	—	94057	—	—	—	94803	—		
45/64	.7031	17.86	3/4	1 5/8	3 7/8	4	95327	—	—	—	—	—	—	—		
23/32	.7188	18.26	3/4	1 5/8	3 7/8	4	95328	—	—	—	—	—	—	—		
47/64	.7344	18.65	3/4	1 5/8	3 7/8	4	95329	—	—	—	—	—	—	—		
3/4	.7500	19.05	1/2	1 5/8	3 5/8	4	94238	96431	—	—	96050	—	—	—		
3/4	.7500	19.05	5/8	1	1 5/8	4	—	—	—	—	—	94804	—	—		
3/4	.7500	19.05	5/8	1 5/8	3 3/4	4	94239	96432	—	—	96051	—	—	—		
3/4	.7500	19.05	3/4	3/4	3	4	—	—	94058	—	—	—	—	—		
3/4	.7500	19.05	3/4	1 5/8	3 7/8	4	94240	96433	94069	96462	96052	94629	96309	—		
3/4	.7500	19.05	3/4	1 5/8	3 7/8	6	—	—	—	—	—	94630	96310	—		
3/4	.7500	19.05	3/4	2	4 1/4	4	—	—	94099	—	—	—	—	—		
3/4	.7500	19.05	3/4	2	4 1/4	6	—	—	—	—	—	94637	—	—		
3/4	.7500	19.05	3/4	2 1/4	4 1/2	4	—	—	94059	—	—	94805	—	—		
3/4	.7500	19.05	3/4	3	5 1/4	4	94277	96452	94082	96470	96076	94648	96321	—		
3/4	.7500	19.05	3/4	3	5 1/4	6	—	—	—	—	—	94649	—	—		
3/4	.7500	19.05	3/4	4	6 1/4	4	94293	96443	94094	96478	96065	94663	96316	—		
3/4	.7500	19.05	3/4	4	6 1/4	6	—	—	—	—	—	94664	96317	—		
49/64	.7656	19.45	3/4	1 7/8	4 1/4	4	95330	—	—	—	—	—	—	—		
25/32	.7813	19.84	1/2	1 5/8	3 5/8	4	95360	—	—	—	—	—	—	—		
25/32	.7813	19.84	3/4	1 7/8	4 1/4	4	95331	—	—	—	—	—	—	—		
51/64	.7969	20.24	3/4	1 7/8	4 1/4	4	95332	—	—	—	—	—	—	—		
13/16	.8125	20.64	5/8	1 7/8	4	6	94241	—	—	—	—	—	—	—		
13/16	.8125	20.64	3/4	1 7/8	4 1/8	4	94242	—	—	—	—	94806	—	—		
55/64	.8594	21.83	7/8	1 7/8	4 1/4	4	95335	—	—	—	—	—	—	—		
7/8	.8750	22.23	1/2	1 5/8	3 5/8	4	95361	—	—	—	—	—	—	—		
7/8	.8750	22.23	1/2	1 7/8	4	4	—	—	—	—	—	94807	—	—		
7/8	.8750	22.23	5/8	1 7/8	4	6	94243	—	—	—	—	—	—	—		
7/8	.8750	22.23	3/4	1 7/8	4 1/8	4	94244	96434	—	—	96053	94808	—	—		
7/8	.8750	22.23	7/8	1 7/8	4 1/8	4	94245	—	94070	96463	—	96100	—	—		
7/8	.8750	22.23	7/8	3 1/2	5 3/4	4	94278	96453	94083	96471	96077	—	—	—		
7/8	.8750	22.23	7/8	5	7 1/4	4	94294	96444	94095	96479	96066	—	—	—		
59/64	.9219	23.42	7/8	1 7/8	4 1/8	4	95338	—	—	—	—	—	—	—		
15/16	.9375	23.81	5/8	1 7/8	4	6	94246	—	—	—	—	—	—	—		
15/16	.9375	23.81	3/4	1 7/8	4 1/8	4	94247	—	—	—	—	—	—	—		
15/16	.9375	23.81	7/8	1 7/8	4 3/16	4	94248	—	—	—	—	94809	—	—		
31/32	.9688	24.61	1	2	4 1/2	4	95340	—	—	—	—	—	—	—		
63/64	.9844	25.00	1	2	4 1/2	4	95341	—	—	—	—	—	—	—		
1	1.0000	25.40	1/2	1 7/8	4 1/8	4	—	—	—	—	—	94825	—	—		
1	1.0000	25.40	5/8	1 7/8	4	6	94249	96435	—	—	96054	—	—	—		
1	1.0000	25.40	3/4	1 7/8	4 1/8	4	94250	96436	—	—	96055	94826	—	—		
1	1.0000	25.40	7/8	1 7/8	4 3/16	4	94251	—	—	—	—	—	—	—		
1	1.0000	25.40	1	2	4 1/2	4	94252	96437	94071	96464	96056	94631	96311	—		
1	1.0000	25.40	1	2	4 1/2	6	—	—	—	—	—	94632	96312	—		
1	1.0000	25.40	1	3	5 1/2	4	91319	—	91175	—	—	94827	—	—		
1	1.0000	25.40	1	3	5 1/2	6	—	—	94100	—	—	94638	—	—		

1-inch and larger sizes continued on next page

General-Purpose



Style 114, 114M • 4-Flute, Non-Center Cutting, HSS
 Style 115 • 4-Flute, Center Cutting, HSS
 Style 214 • 4-Flute, Non-Center Cutting, M42 Cobalt
 Style 215 • 4-Flute, Center Cutting, M42 Cobalt

(continued)

							HSS				M42 Cobalt			
Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	Non CC		CC		Non CC		CC	
Frac	Decimal	MM					Style 114		Style 115		Style 214		Style 215	
							Bright	TiN	Bright	TiN	Bright		Bright	TiN
1	1.0000	25.40	1	4	6 1/2	4	94279	96454	94084	96472	96078		94650	96323
1	1.0000	25.40	1	4	6 1/2	6	—	—	—	—	—		94651	96324
1	1.0000	25.40	1	6	8 1/2	4	94295	96445	94096	96480	96067		94665	—
1	1.0000	25.40	1	6	8 1/2	6	—	—	—	—	—		94666	—
1 1/16	1.0625	26.99	3/4	1 1/2	3 7/8	6	—	—	—	—	—		94639	—
1 1/16	1.0625	26.99	3/4	2	4 1/4	6	94265	—	—	—	—		—	—
1 1/8	1.1250	28.58	3/4	1 1/2	3 7/8	6	91251	—	—	—	—		94641	—
1 1/8	1.1250	28.58	7/8	2	4 5/16	6	94253	—	—	—	—		—	—
1 1/8	1.1250	28.58	1	2	4 1/2	4	—	—	94072	—	—		—	—
1 1/8	1.1250	28.58	1	2	4 1/2	6	94254	—	—	—	—		—	—
1 1/8	1.1250	28.58	1	4	6 1/2	6	94280	—	—	—	—		—	—
1 3/16	1.1875	30.16	3/4	1 1/2	3 7/8	6	—	—	—	—	—		94642	—
1 3/16	1.1875	30.16	3/4	2	4 1/4	6	94266	—	—	—	—		—	—
1 1/4	1.2500	31.75	3/4	1 1/2	3 7/8	6	91252	—	—	—	—		94643	—
1 1/4	1.2500	31.75	7/8	2	4 5/16	6	94255	—	—	—	—		—	—
1 1/4	1.2500	31.75	1	2	4 1/2	6	94256	—	—	—	—		94644	—
1 1/4	1.2500	31.75	1	4	6 1/2	6	94281	—	—	—	—		—	—
1 1/4	1.2500	31.75	1 1/4	2	4 1/2	4	91238	—	94073	—	—		94633	—
1 1/4	1.2500	31.75	1 1/4	2	4 1/2	6	94257	—	—	—	96057		94634	—
1 1/4	1.2500	31.75	1 1/4	3	5 1/2	4	91320	—	91176	—	—		—	—
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	4	91243	—	94085	—	—		94652	—
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	6	94282	—	—	—	96079		94653	—
1 1/4	1.2500	31.75	1 1/4	6	8 1/2	4	—	—	94097	—	—		94667	—
1 1/4	1.2500	31.75	1 1/4	6	8 1/2	6	94296	—	—	—	96068		94668	—
1 3/8	1.3750	34.93	3/4	1 1/2	3 7/8	6	91253	—	—	—	—		—	—
1 3/8	1.3750	34.93	3/4	2	4 3/8	6	—	—	—	—	—		94654	—
1 3/8	1.3750	34.93	1	2	4 1/2	6	94258	—	—	—	—		—	—
1 3/8	1.3750	34.93	1	4	6 1/2	6	94283	—	—	—	—		—	—
1 1/2	1.5000	38.10	3/4	1 1/2	3 7/8	6	91254	—	—	—	—		—	—
1 1/2	1.5000	38.10	3/4	2	4 3/8	6	—	—	—	—	—		94655	—
1 1/2	1.5000	38.10	1	2	4 1/2	6	94259	—	—	—	—		—	—
1 1/2	1.5000	38.10	1	4	6 1/2	6	94284	—	—	—	—		—	—
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	4	91239	—	94074	—	—		94635	—
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	6	94260	—	—	—	96058		94636	—
1 1/2	1.5000	38.10	1 1/4	3	5 1/2	4	91321	—	91177	—	—		—	—
1 1/2	1.5000	38.10	1 1/4	4	6 1/2	4	91244	—	94086	—	—		96121	—
1 1/2	1.5000	38.10	1 1/4	4	6 1/2	6	94285	—	—	—	96080		—	—
1 1/2	1.5000	38.10	1 1/4	8	10 1/2	6	94297	—	94098	—	96069		—	—
1 5/8	1.6250	41.28	3/4	2	4 3/8	6	—	—	—	—	—		94656	—
1 5/8	1.6250	41.28	3/4	2	4 1/2	4	94267	—	—	—	—		—	—
1 5/8	1.6250	41.28	1 1/4	2	4 1/2	6	94261	—	—	—	—		—	—
1 3/4	1.7500	44.45	3/4	1 1/2	3 7/8	6	91255	—	—	—	—		—	—
1 3/4	1.7500	44.45	3/4	2	4 3/8	6	—	—	—	—	—		94657	—
1 3/4	1.7500	44.45	1 1/4	2	4 1/2	4	91240	—	—	—	—		—	—
1 3/4	1.7500	44.45	1 1/4	2	4 1/2	6	94262	—	94075	—	—		96103	—
1 3/4	1.7500	44.45	1 1/4	4	6 1/2	6	94286	—	94087	—	96081		—	—

continued on next page



Style 114, 114M • 4-Flute, Non-Center Cutting, HSS
 Style 115 • 4-Flute, Center Cutting, HSS
 Style 214 • 4-Flute, Non-Center Cutting, M42 Cobalt
 Style 215 • 4-Flute, Center Cutting, M42 Cobalt
 (continued)

							HSS				M42 Cobalt			
Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	Non CC Style 114		CC Style 115		Non CC Style 214		CC Style 215	
Frac	Decimal	MM					Bright	TiN	Bright	TiN	Bright		Bright	TiN
1 7/8	1.8750	47.63	3/4	2	4 1/2	4	94268	—	—	—	—	—	—	—
1 7/8	1.8750	47.63	3/4	2	4 3/8	6	—	—	—	—	—	—	94658	—
1 7/8	1.8750	47.63	1 1/4	2	4 1/2	8	94263	—	—	—	—	—	—	—
2	2.0000	50.80	3/4	1 1/2	3 7/8	8	91256	—	—	—	—	—	—	—
2	2.0000	50.80	3/4	2	4 1/2	6	—	—	—	—	—	—	94659	—
2	2.0000	50.80	1 1/4	2	4 1/2	4	91242	—	—	—	—	—	—	—
2	2.0000	50.80	1 1/4	2	4 1/2	6	91241	—	94076	—	—	—	96104	—
2	2.0000	50.80	1 1/4	2	4 1/2	8	94264	—	—	—	96059	—	—	—
2	2.0000	50.80	1 1/4	3	5 1/2	6	91323	—	—	—	—	—	—	—
2	2.0000	50.80	1 1/4	4	6 1/2	6	91245	—	94088	—	—	—	—	—
2	2.0000	50.80	1 1/4	4	6 1/2	8	94287	—	—	—	96082	—	—	—
2	2.0000	50.80	2	3	6 3/4	6	94420*	—	—	—	—	—	96000*	—
2	2.0000	50.80	2	4	7 3/4	6	94421*	—	91150*	—	—	—	94640*	—
2	2.0000	50.80	2	5	8 3/4	6	94422*	—	—	—	—	—	96001*	—
2	2.0000	50.80	2	6	9 3/4	4	—	—	91126*	—	—	—	—	—
2	2.0000	50.80	2	6	9 3/4	6	94423*	—	91151*	—	—	—	96002*	—
2	2.0000	50.80	2	8	11 3/4	6	94424*	—	—	—	—	—	96003*	—
2	2.0000	50.80	2	10	13 3/4	6	94425*	—	—	—	—	—	—	—
2	2.0000	50.80	2	12	15 3/4	6	94426*	—	—	—	—	—	—	—
2 1/2	2.5000	63.50	2	5	8 3/4	6	94428*	—	—	—	—	—	—	—
2 1/2	2.5000	63.50	2	6	9 3/4	6	94429*	—	—	—	—	—	—	—
2 1/2	2.5000	63.50	2 1/2	6	10	6	94433*	—	—	—	—	—	—	—
2 1/2	2.5000	63.50	2	8	11 3/4	6	94430*	—	—	—	—	—	—	—

* Indicates positive-lok (dual combination shank)

		HSS				
Cutting Diameter		Shank		LOC	OAL	No. of Flutes
MM	Dec. In.	Dia. MM	Dec. In.			
3	.1181	9.52	9.52	58.74	4	95443
4	.1575	9.52	12.70	60.32	4	95444
5	.1969	9.52	15.88	61.91	4	95445
6	.2362	9.52	15.88	61.91	4	95446
7	.2756	9.52	19.05	63.50	4	95447
8	.3150	9.52	19.05	63.50	4	95448
9	.3543	9.52	19.05	63.50	4	95449
10	.3937	9.52	25.40	68.26	4	95450
11	.4331	9.52	25.40	68.26	4	95451
12	.4724	12.70	31.75	82.55	4	95452
13	.5118	12.70	34.92	85.72	4	95453
14	.5512	12.70	34.92	85.72	4	95454

		HSS				
Cutting Diameter		Shank		LOC	OAL	No. of Flutes
MM	Dec. In.	Dia. MM	Dec. In.			
15	.5906	12.70	34.92	85.72	4	95455
16	.6299	15.88	41.27	95.25	4	95456
17	.6693	15.88	41.27	95.25	4	95457
18	.7087	15.88	41.27	95.25	4	95458
19	.7480	19.05	41.27	98.42	4	95459
20	.7874	15.88	47.63	101.60	4	95460
21	.8268	15.88	47.63	101.60	4	95461
22	.8661	22.23	47.63	104.78	4	95462
23	.9055	22.23	47.63	104.78	4	95463
24	.9449	25.40	50.80	114.30	4	95464
25	.9843	25.40	50.80	114.30	4	95465

General-Purpose



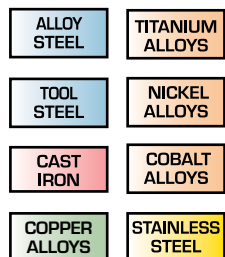
Style 115B • 4-Flute, Center Cutting, HSS
Style 215B • 4-Flute, Ball Nose, M42 Cobalt

FEATURES



APPLICATION

HSS **M42 Cobalt**



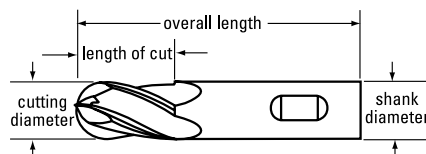
Style 115B HSS Bright



Style 115B HSS TiN



Style 215B M42 Cobalt Bright



							HSS		M42 Cobalt
Cutting Diameter			Shank			No. of	Style 115B		Style 215B
Frac	Decimal	MM	Dia.	LOC	OAL	Flutes	Bright	TiN	Bright
1/8	.1250	3.18	3/8	3/8	2 5/16	4	—	—	94600
3/16	.1875	4.76	3/8	1/2	2 3/8	4	—	—	94601
1/4	.2500	6.35	3/8	5/8	2 7/16	4	—	—	94602
1/4	.2500	6.35	3/8	3/4	2 7/16	4	94010	—	94597
1/4	.2500	6.35	3/8	1	2 13/16	4	94011	96481	—
1/4	.2500	6.35	3/8	1	3 1/16	4	—	—	96009
1/4	.2500	6.35	3/8	1 1/4	3 1/16	4	94012	—	94598
1/4	.2500	6.35	3/8	1 1/2	3 9/16	4	94013	—	—
1/4	.2500	6.35	3/8	1 3/4	3 9/16	4	—	—	94599
5/16	.3125	7.94	3/8	3/4	2 1/2	4	—	—	94603
5/16	.3125	7.94	3/8	1	2 1/2	4	94014	—	—
5/16	.3125	7.94	3/8	1 1/2	3 1/8	4	94015	—	—
3/8	.3750	9.53	3/8	3/4	2 1/2	4	—	—	94604
3/8	.3750	9.53	3/8	1	2 1/2	4	94016	96482	—
3/8	.3750	9.53	3/8	1	2 3/4	4	—	—	94608
3/8	.3750	9.53	3/8	1 1/2	3 1/4	4	94017	—	96010
3/8	.3750	9.53	3/8	2	3 3/4	4	94018	96483	—
3/8	.3750	9.53	3/8	2 1/2	4 1/4	4	94019	—	94610
1/2	.5000	12.70	1/2	1	3	4	94020	96484	—
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4	—	—	94605
1/2	.5000	12.70	1/2	1 1/2	3 1/2	4	94021	—	—
1/2	.5000	12.70	1/2	2	4	4	94042	96485	96011
1/2	.5000	12.70	1/2	2 1/2	4 1/2	4	94022	—	94610
1/2	.5000	12.70	1/2	3	5	4	94023	—	94615
5/8	.6250	15.88	5/8	1 1/4	3 3/8	4	94024	—	—
5/8	.6250	15.88	5/8	1 5/8	3 3/4	4	—	—	94606
5/8	.6250	15.88	5/8	1 3/4	3 7/8	4	94025	—	—
5/8	.6250	15.88	5/8	2 1/2	4 5/8	4	94043	—	—
5/8	.6250	15.88	5/8	3	5 1/8	4	94026	—	—
3/4	.7500	19.05	3/4	1 1/2	3 3/4	4	94028	96487	—
3/4	.7500	19.05	3/4	1 5/8	3 7/8	4	—	—	94607
3/4	.7500	19.05	3/4	2 1/4	4 1/2	4	94029	—	—
3/4	.7500	19.05	3/4	3	5 1/4	4	94044	96488	96012
3/4	.7500	19.05	3/4	3 3/4	6	4	94030	—	—
3/4	.7500	19.05	3/4	4	6 1/8	4	94616	—	—
3/4	.7500	19.05	3/4	4 1/2	6 3/4	4	94031	—	—
7/8	.8750	22.23	7/8	1 7/8	4 1/8	4	—	—	94617

continued on next page



Style 115B • 4-Flute, Ball Nose, HSS
Style 215B • 4-Flute, Ball Nose, M42 Cobalt
 (continued)

Cutting Diameter			Shank		OAL	No. of Flutes	HSS		M42 Cobalt
Frac	Decimal	MM	Dia.	LOC			Style 115B Bright	Style 115B TiN	Style 215B Bright
1	1.0000	25.40	1	2	4 1/2	4	94033	96489	94609
1	1.0000	25.40	1	3	5 1/2	4	94034	—	96013
1	1.0000	25.40	1	4	6 1/2	4	94045	—	94618
1	1.0000	25.40	1	6	8 1/2	4	94036	—	94619
1 1/4	1.2500	31.75	1 1/4	2	4 1/2	4	94037	—	94611
1 1/4	1.2500	31.75	1 1/4	2	4 1/2	6	—	—	94612
1 1/4	1.2500	31.75	1 1/4	4 1/2	7	4	94046	—	—
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	4	94040	—	94613
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	6	—	—	94614
1 1/2	1.5000	38.10	1 1/4	6	8 1/2	4	94041	—	—
1 1/2	1.5000	38.10	1 1/2	6	9 1/4	6	94472*	—	—
2	2.0000	50.80	1 1/2	3	5 7/8	6	94474*	—	—

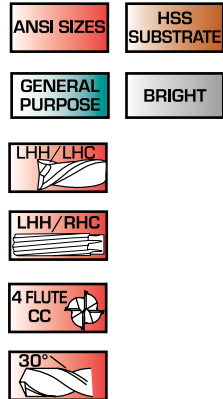
* Indicates positive-lok (dual combination shank)

General-Purpose

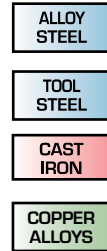


Style 104 • 4-Flute, Left-Hand Helix, Left-Hand Cut, HSS
Style 104R • 4-Flute, Left-Hand Helix, Right-Hand Cut, HSS

FEATURES



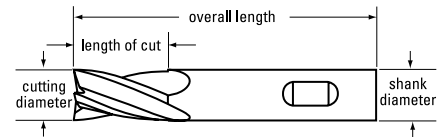
APPLICATIONS



Style 104 HSS Bright



Style 104R HSS Bright

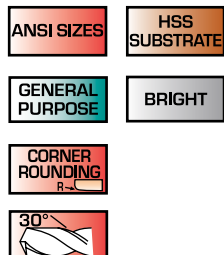


HSS

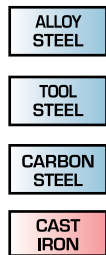
Cutting Diameter			Shank			No. of Flutes	HSS	
Frac	Decimal	MM	Dia.	LOC	OAL		Style 104 Bright	Style 104R Bright
3/16	.1875	4.76	3/8	1/2	2 3/8	4	94766	—
1/4	.2500	6.35	3/8	5/8	2 7/16	4	94767	93105
1/4	.2500	6.35	3/8	1 1/4	3 1/16	4	—	92315
5/16	.3125	7.94	3/8	3/4	2 1/2	4	94768	93106
5/16	.3125	7.94	3/8	1 3/8	3 1/8	4	—	92316
3/8	.3750	9.53	3/8	3/4	2 1/2	4	94769	93107
3/8	.3750	9.53	3/8	1 1/2	3 1/4	4	—	92317
7/16	.4375	11.11	3/8	1	2 11/16	4	—	93108
7/16	.4375	11.11	1/2	1 3/4	3 3/4	4	—	92318
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4	94771	93109
1/2	.5000	12.70	1/2	2	4	4	—	92319
5/8	.6250	15.88	5/8	1 5/8	3 3/4	4	94772	93110
5/8	.6250	15.88	5/8	2 1/2	4 5/8	4	—	92320
3/4	.7500	19.05	3/4	1 3/4	4	4	—	93111
3/4	.7500	19.05	3/4	3	5 1/4	4	—	92321
1	1.0000	25.40	1	2	4 1/2	4	—	93113
1	1.0000	25.40	1	4	6 1/2	4	—	92323
1 1/4	1.2500	31.75	1	2	4 1/2	6	—	93115
1 1/2	1.5000	38.10	1	2	4 1/2	6	—	93117
2	2.0000	50.80	1 1/4	2	4 1/2	8	—	93123

Style CRE Corner Rounding, Single End

FEATURES



APPLICATIONS



Style CRE Bright

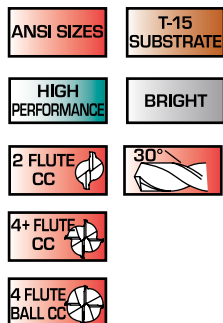
Cutting Diameter				Shank			No. of	Style CRE
Frac.	Dec. In.	MM	Radius	Dia.	LOC	OAL	Flutes	Bright
7/16	.4375	11.11	1/16	3/8	3/8	2 1/2	4	91675
1/2	.5000	12.70	3/32	3/8	1	2 1/2	4	91676
5/8	.6250	15.88	1/8	1/2	1/2	3	4	91677
3/4	.7500	19.05	5/32	1/2	3/4	3	4	91678
7/8	.8750	22.23	3/16	1/2	1/2	2 15/16	4	91685
7/8	.8750	22.23	3/16	3/4	1/2	3 1/8	4	91679
1	1.0000	25.40	1/4	1/2	3/4	3	4	91686
1	1.0000	25.40	1/4	3/4	3/8	3 1/4	4	91680
1 1/8	1.1250	28.58	5/16	1/2	1/2	3 1/4	4	91687
1 1/8	1.1250	28.58	5/16	7/8	3/4	3 1/2	4	91681
1 1/4	1.2500	31.75	3/8	1/2	1/2	3 1/2	4	91688
1 1/4	1.2500	31.75	3/8	7/8	3/4	3 3/4	4	91682
1 3/8	1.3750	34.93	7/16	1	1/2	4	4	91683
1 1/2	1.5000	38.10	1/2	1	1	4 1/8	4	91684

Mach IV for Hi-Temp Alloys



Style M12 Mach IV 2-Flute, Center Cutting, Single End
 Style M15 Mach IV 4-Flute, Center Cutting, Single End
 Style M10 Mach IV 4-Flute, Ball Nose, Single End

FEATURES



APPLICATIONS



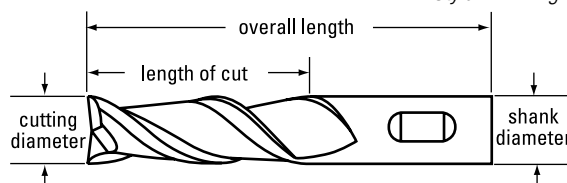
Cutting Diameter			Shank		OAL	No. of Flutes	Style M12 Bright
Fract.	Dec. In.	MM	Dia.	LOC			
1/8	.1250	3.18	3/8	3/8	2 5/16	2	94730
3/16	.1875	4.76	3/8	3/8	2 3/8	2	94731
5/16	.3125	7.94	3/8	9/16	2 1/2	2	94733
3/8	.3750	9.53	3/8	9/16	2 1/2	2	94734
5/8	.6250	15.88	5/8	1 5/16	3 3/4	2	94737
7/8	.8750	22.23	7/8	1 1/2	4 1/8	2	94739

Cutting Diameter			Shank		OAL	No. of Flutes	Style M15 Bright
Fract.	Dec. In.	MM	Dia.	LOC			
1/8	.1250	3.18	3/8	3/8	2 5/16	4	94710
3/16	.1875	4.76	3/8	1/2	2 3/8	4	94711
1/4	.2500	6.35	3/8	5/8	2 7/16	4	94712
5/16	.3125	7.94	3/8	3/4	2 1/2	4	94713
3/8	.3750	9.53	3/8	3/4	2 1/2	4	94714
7/16	.4375	11.11	3/8	1	2 11/16	4	94715
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4	94716
5/8	.6250	15.88	5/8	1 5/8	3 3/4	6	94717
3/4	.7500	19.05	3/4	1 5/8	3 7/8	6	94718
7/8	.8750	22.23	7/8	1 7/8	4 1/8	6	94719
1	1.0000	25.40	1	2	4 1/2	6	94720

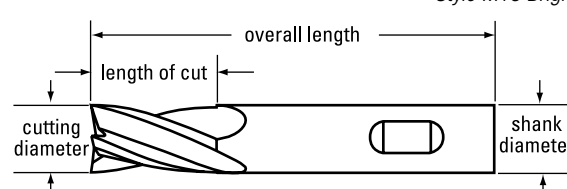
Cutting Diameter			Shank		OAL	No. of Flutes	Style M10 Bright
Fract.	Dec. In.	MM	Dia.	LOC			
3/16	.1875	4.76	3/8	1/2	2 3/8	4	94750
1/4	.2500	6.35	3/8	5/8	2 7/16	4	94751
3/8	.3750	9.53	3/8	3/4	2 1/2	4	94753
7/16	.4375	11.11	3/8	1	2 11/16	4	94754
1/2	.5000	12.70	1/2	1	3	4	94755
1	1.0000	25.40	1	2	4 1/2	4	94758



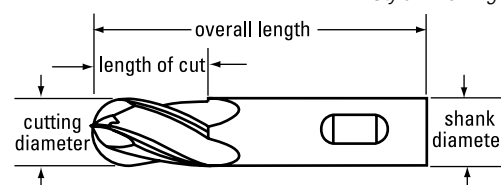
Style M12 Bright



Style M15 Bright



Style M10 Bright



Multi-Flute Coarse Profile

Style 267 • Non-Center Cutting, Coarse Profile, M42 Cobalt Rougher

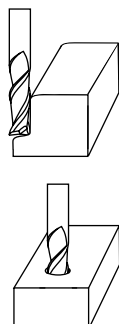
Style 268 • Center Cutting, Coarse Profile, M42 Cobalt Rougher

FEATURES

ANSI SIZES	M42 COBALT SUBSTRATE
HEAVY DUTY	BRIGHT
COARSE PROFILE	TiN
30°	TiCN
4+ FLUTE NCC	TiAlN
4+ FLUTE CC	

APPLICATIONS

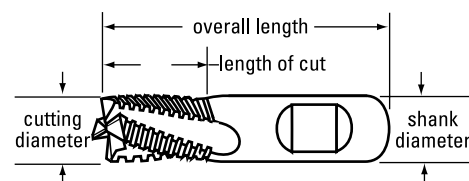
FREE-MACH STAINLESS
ALLOY STEEL
MED CARBON STEEL
LOW CARBON STEEL



Style 267 Non-Center Cutting TiN



Style 268 Center Cutting TiCN



Cutting Diameter			Shank		No. of		NON-CENTER CUTTING				CENTER CUTTING			
Frac	Decimal	MM	Dia.	LOC	OAL	Flutes	Style 267				Style 268			
							Bright	TiN	TiCN	TiAlN	Bright	TiN	TiCN	TiAlN
1/4	.2500	6.35	3/8	1/4	2 1/16	4	—	—	—	—	97737	97838	97937	—
1/4	.2500	6.35	3/8	5/8	2 7/16	4	97101	97169	97669	—	97738	97839	97938	—
1/4	.2500	6.35	3/8	1 1/4	3 1/8	4	97074	—	97614	—	97739	—	—	—
5/16	.3125	7.94	3/8	3/4	2 1/2	4	97075	97005	97615	—	97740	97840	97940	—
3/8	.3750	9.53	3/8	3/8	2 5/32	4	—	—	—	—	97741	97841	97941	97531
3/8	.3750	9.53	3/8	3/4	2 1/2	4	97102	97170	97670	—	97742	97842	97942	97542
3/8	.3750	9.53	3/8	1 1/2	3 1/4	4	97076	—	97616	—	97743	97843	97943	—
7/16	.4375	11.11	1/2	1 1/4	3 1/4	4	97077	97007	—	—	—	—	—	—
1/2	.5000	12.70	1/2	1/2	2 1/2	4	—	—	—	—	97745	97845	97945	97545
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4	97103	97171	97671	—	97746	97846	97946	97546
1/2	.5000	12.70	1/2	2	4	4	97104	97172	97672	—	97747	97847	97947	—
1/2	.5000	12.70	1/2	3	5	4	97078	—	—	—	—	—	—	—
9/16	.5625	14.29	1/2	1 3/8	3 3/8	4	97079	97009	97613	—	—	—	—	—
5/8	.6250	15.88	5/8	5/8	2 3/4	4	—	—	—	—	97748	97848	97948	97548
5/8	.6250	15.88	5/8	1 5/8	3 3/4	4	97105	97173	97673	—	97749	97849	97949	97549
5/8	.6250	15.88	5/8	2 1/2	4 5/8	4	97106	97174	97674	—	97756	97856	97956	—
3/4	.7500	19.05	3/4	3/4	2 7/8	4	—	—	—	—	97759	97859	97959	97559
3/4	.7500	19.05	3/4	1 5/8	3 7/8	4	97107	97175	97675	97575	97760	97860	97960	97560
3/4	.7500	19.05	3/4	3	5 1/4	4	97108	97176	97676	—	97761	97861	97961	—
3/4	.7500	19.05	3/4	4	6 1/4	4	97080	97010	97620	—	—	—	—	—
7/8	.8750	22.23	3/4	1 7/8	4 1/8	5	97111	97011	97611	—	—	—	—	—
7/8	.8750	22.23	7/8	1 7/8	4 1/8	5	97109	97177	97677	—	—	—	—	—
7/8	.8750	22.23	7/8	3 1/2	5 3/4	5	97110	97178	97678	—	—	—	—	—
1	1.0000	25.40	3/4	2	4 1/4	5	97114	97182	—	—	—	—	—	—
1	1.0000	25.40	1	1	3 1/2	5	—	—	—	—	97773	97873	97973	97553
1	1.0000	25.40	1	2	4 1/2	5	97112	97180	97680	97580	97763	97863	97963	97563
1	1.0000	25.40	1	3	5 1/2	5	97081	97021	97621	—	97764	97864	97964	—
1	1.0000	25.40	1	4	6 1/2	5	97113	97181	97681	97581	97768	97868	97968	—
1	1.0000	25.40	1	6	8 1/2	5	97082	97012	97612	—	—	—	—	—
1 1/8	1.1250	28.58	3/4	2	4 1/4	6	97083	—	—	—	—	—	—	—
1 1/4	1.2500	31.75	3/4	2	4 1/4	6	97117	97185	—	—	—	—	—	—
1 1/4	1.2500	31.75	1 1/4	2	4 1/2	5	97115	97183	97683	97583	97777	97877	97977	—
1 1/4	1.2500	31.75	1 1/4	3	5 1/2	6	97084	97014	97634	—	97779	97879	97979	—
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	6	97116	97184	97684	97584	97780	—	—	—
1 1/4	1.2500	31.75	1 1/4	6	8 1/2	6	97085	97015	97635	—	—	—	—	—

continued on next page

Multi-Flute Coarse Profile



Style 267 • Non-Center Cutting, Coarse Profile, M42 Cobalt Rougher

Style 268 • Center Cutting, Coarse Profile, M42 Cobalt Rougher

(continued)

Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	NON-CENTER CUTTING Style 267				CENTER CUTTING Style 268			
Frac	Decimal	MM					Bright	TiN	TiCN	TiAlN	Bright	TiN	TiCN	TiAlN
1 1/2	1.5000	38.10	3/4	2	4 1/4	6	97120	—	—	—	—	—	—	—
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	6	97118	97186	97686	—	—	—	—	—
1 1/2	1.5000	38.10	1 1/4	3	5 1/2	6	97086	—	—	—	97781	97881	—	—
1 1/2	1.5000	38.10	1 1/4	4	6 1/2	6	97119	97187	97687	—	—	—	—	—
1 1/2	1.5000	38.10	1 1/4	6	8 1/2	6	97087	97017	97617	—	—	—	—	—
1 3/4	1.7500	44.45	1 1/4	2	4 1/2	6	97088	—	—	—	—	—	—	—
2	2.0000	50.80	3/4	2	4 1/4	8	97123	—	—	—	—	—	—	—
2	2.0000	50.80	1 1/4	2	4 1/2	8	97121	97189	97631	—	—	—	—	—
2	2.0000	50.80	1 1/4	4	6 1/2	8	97122	97190	97690	—	—	—	—	—
2	2.0000	50.80	2	2	5 3/4	8	97089	97198	97618	—	—	—	—	—
2	2.0000	50.80	2	3	6 3/4	8	97090	97199	97619	—	97782	—	97982	—
2	2.0000	50.80	2	4	7 3/4	8	97124	97192	—	97592	—	—	—	—
2	2.0000	50.80	2	6	9 3/4	8	97125	97193	97693	—	97784	—	97984	—
2	2.0000	50.80	2	8	11 3/4	8	97126	97194	97694	—	—	—	—	—
2	2.0000	50.80	2	10	13 3/4	8	97091	—	—	—	—	—	—	—
2 1/2	2.5000	63.50	2	8	11 3/4	8	97128	—	—	—	—	—	—	—
2 1/2	2.5000	63.50	2	10	13 3/4	8	97129	—	—	—	—	—	—	—

Style 267N • Non-Center Cutting, Coarse Profile, M42 Cobalt Rougher with Extended Neck

Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	NON CENTER CUTTING Style 267N	
Frac	Decimal	MM					Bright	
3/4	.7500	19.05	3/4	7/8	4 5/8	4	97248	
1	1.0000	25.40	1	2 1/2	6 1/2	5	97250	
1 1/4	1.2500	31.75	1 1/4	2 1/2	6 1/2	6	97252	
1 1/2	1.5000	38.10	1 1/4	2 1/2	6 1/2	6	97255	
1 1/2	1.5000	38.10	1 1/4	2 1/2	7 1/2	6	97256	
1 1/2	1.5000	38.10	1 1/4	2 1/2	10 1/2	6	97257	
2	2.0000	50.80	1 1/4	2 1/2	7 3/4	8	97258	
2	2.0000	50.80	1 1/4	2 1/2	9 3/4	8	97259	
2	2.0000	50.80	2	2 1/2	11 3/4	8	97260	



Style 267N Non-Center Cutting Bright

Style 264 • Ball Nose, Coarse Profile, M42 Cobalt Rougher

Cutting Diameter			Shank Dia.	LOC	OAL	No. of Flutes	CENTER CUTTING Style 264		
Frac	Decimal	MM					Bright	TiN	TiCN
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4	97277	97377	97477
5/8	.6250	15.88	5/8	1 5/8	3 3/4	4	97278	—	—
3/4	.7500	19.05	3/4	1 5/8	3 7/8	4	97279	97379	97479
3/4	.7500	19.05	3/4	3	5 1/4	4	97291	—	97491
1	1.0000	25.40	1	2	4 1/2	5	97280	97380	97480
1	1.0000	25.40	1	4	6 1/2	5	97292	—	97492
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	6	97283	—	—

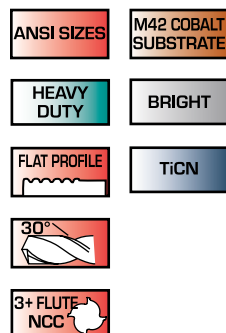


Style 264 Ball Nose TiCN

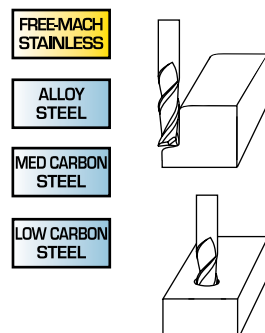
Multi-Flute Flat Profile Semi-Roughing

Style 260 • Non-Center Cutting, Flat Profile, M42 Cobalt Semi-Roughing End Mill

FEATURES



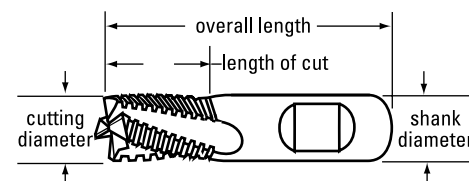
APPLICATIONS



Style 260 Non-Center Cutting Bright



Style 260 Non-Center Cutting TiCN



NON CENTER CUTTING

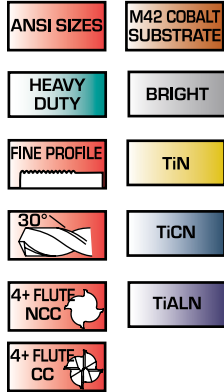
Cutting Diameter			Shank			No. of Flutes	Style 260	
Frac	Decimal	MM	Dia.	LOC	OAL		Bright	TiCN
1/4	.2500	6.35	3/8	5/8	2 7/16	3	92251	92151
3/8	.3750	9.53	3/8	3/4	2 1/2	4	92252	—
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4	92253	—
1/2	.5000	12.70	1/2	2	4	4	92254	92154
5/8	.6250	15.88	5/8	1 5/8	3 3/4	4	92255	92155
5/8	.6250	15.88	5/8	2 1/2	4 5/8	4	92256	92156
3/4	.7500	19.05	3/4	1 5/8	3 7/8	4	92257	92157
3/4	.7500	19.05	3/4	3	5 1/4	4	92258	92158
7/8	.8750	22.23	3/4	1 3/4	4	5	92259	92159
1	1.0000	25.40	3/4	1 1/2	3 3/4	5	92260	—
1	1.0000	25.40	1	2	4 1/2	5	92261	92161
1 1/4	1.2500	31.75	1 1/4	2	4 1/2	6	92264	—
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	6	92265	92165
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	6	92266	—
1 1/2	1.5000	38.10	1 1/4	4	6 1/2	6	92267	—
2	2.0000	50.80	1 1/4	2	4 1/2	8	92268	—
2	2.0000	50.80	1 1/4	4	6 1/2	8	92269	—
2	2.0000	50.80	2	6	9 3/4	8	92271	92171

Multi-Flute Fine Profile

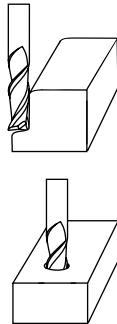


Style 265 • Non-Center Cutting, Fine Profile, M42 Cobalt Rougher
Style 266, 261(MM) • Center Cutting, Fine Profile, M42 Cobalt Rougher

FEATURES



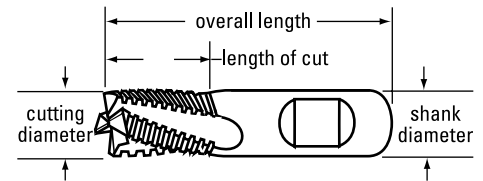
APPLICATIONS



Style 265 Non-Center Cutting TiAlN



Style 266 Center Cutting TiN



Cutting Diameter			Shank		LOC		No. of Flutes	NON CENTER CUTTING				CENTER CUTTING			
Frac	Decimal	MM	Dia.					Style 265				Style 266			
								Bright	TiN	TiCN	TiAlN	Bright	TiN	TiCN	TiAlN
3/16	.1875	4.76	3/8	1/2	2 3/8	4		97700	97800	—	—	—	—	—	—
1/4	.2500	6.35	3/8	1/4	2 1/16	4		—	—	—	—	97720	97820	97920	—
1/4	.2500	6.35	3/8	5/8	2 7/16	4		97701	97801	—	—	97201	—	97401	—
1/4	.2500	6.35	3/8	1 1/4	3 1/8	4		97702	97802	—	—	97202	—	—	—
5/16	.3125	7.94	3/8	3/4	2 1/2	4		97703	97803	—	—	97203	—	97403	—
3/8	.3750	9.53	3/8	3/8	2 5/32	4		—	—	—	—	97721	97821	97921	97521
3/8	.3750	9.53	3/8	3/4	2 1/2	4		97704	97804	97904	—	97205	97305	97405	97505
3/8	.3750	9.53	3/8	1 1/2	3 1/4	4		97705	97805	—	—	97206	97306	97406	—
7/16	.4375	11.11	1/2	1 1/4	3 1/4	4		97706	97806	—	—	—	—	—	—
1/2	.5000	12.70	1/2	1/2	2 1/2	4		—	—	—	—	97722	97822	97922	97512
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4		97707	97807	97907	—	97208	97308	97408	97508
1/2	.5000	12.70	1/2	2	4	4		97708	97808	97908	—	97209	97309	97409	—
1/2	.5000	12.70	1/2	3	5	4		97709	—	—	—	—	—	—	—
9/16	.5625	14.29	1/2	1 3/8	3 3/8	4		97710	97810	—	—	—	—	—	—
5/8	.6250	15.88	5/8	5/8	2 3/4	4		—	—	—	—	97723	97823	97923	97503
5/8	.6250	15.88	5/8	1 5/8	3 3/4	4		97711	97811	97911	—	97211	97311	97411	—
5/8	.6250	15.88	5/8	2 1/2	4 5/8	4		97712	97812	97912	—	97212	97312	97412	—
3/4	.7500	19.05	3/4	3/4	2 7/8	4		—	—	—	—	97215	97315	97415	97515
3/4	.7500	19.05	3/4	1 5/8	3 7/8	4		97713	97813	97913	—	97213	97313	97413	97513
3/4	.7500	19.05	3/4	3	5 1/4	4		97714	97814	97914	—	97214	97314	97414	—
3/4	.7500	19.05	3/4	4	6 1/4	4		97715	97815	97915	—	—	—	—	—
7/8	.8750	22.23	3/4	1 7/8	4 1/8	5		97293	97393	97493	—	—	—	—	—
7/8	.8750	22.23	7/8	7/8	3 1/8	5		—	—	—	—	97726	97826	97926	—
7/8	.8750	22.23	7/8	1 7/8	4 1/8	5		97294	97394	97494	—	97727	—	97927	—
1	1.0000	25.40	3/4	2	4 1/4	5		97295	97395	97425	—	—	—	—	—
1	1.0000	25.40	1	1	3 1/2	5		—	—	—	—	97728	97828	97928	97528
1	1.0000	25.40	1	2	4 1/2	5		97296	97396	97496	97596	97216	97316	97416	97516
1	1.0000	25.40	1	3	5 1/2	5		97297	97397	97497	—	97217	97317	97417	—
1	1.0000	25.40	1	4	6 1/2	5		97298	97398	97498	97598	97218	97318	97418	—
1	1.0000	25.40	1	6	8 1/2	5		97299	97399	97499	—	—	—	—	—
1 1/4	1.2500	31.75	3/4	2	4 1/4	6		97228	97328	—	—	—	—	—	—
1 1/4	1.2500	31.75	1 1/4	2	4 1/2	6		97222	97322	97422	97522	97730	97830	97930	97530
1 1/4	1.2500	31.75	1 1/4	3	5 1/2	6		97223	97323	97423	—	97731	97831	97931	—
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	6		97226	97326	97426	97526	97732	97832	97932	—
1 1/4	1.2500	31.75	1 1/4	6	8 1/2	6		97227	97327	97427	—	—	—	—	—

continued on next page

Multi-Flute Fine Profile

Style 265 • Non-Center Cutting, Fine Profile, M42 Cobalt Rougher
Style 266, 261(MM) • Center Cutting, Fine Profile, M42 Cobalt Rougher
 (continued)

Cutting Diameter			Shank		LOC	OAL	No. of Flutes	NON CENTER CUTTING Style 265				CENTER CUTTING Style 266			
Frac	Decimal	MM	Dia.					Bright	TiN	TiCN	TiAlN	Bright	TiN	TiCN	TiAlN
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	6	6	97231	97331	97431	—	—	—	—	—
1 1/2	1.5000	38.10	1 1/4	3	5 1/2	6	6	97232	97332	97432	—	—	—	—	—
1 1/2	1.5000	38.10	1 1/4	4	6 1/2	6	6	97233	97333	97433	—	—	—	—	—
1 1/2	1.5000	38.10	1 1/4	6	8 1/2	6	6	97235	—	97435	—	—	—	—	—
1 3/4	1.7500	44.45	1 1/4	2	4 1/2	6	6	97253	—	—	—	—	—	—	—
2	2.0000	50.80	1 1/4	2	4 1/2	8	8	97236	97336	97436	—	—	—	—	—
2	2.0000	50.80	1 1/4	4	6 1/2	8	8	97237	97337	97437	—	—	—	—	—
2	2.0000	50.80	2	2	5 3/4	8	8	97238	—	—	—	—	—	—	—
2	2.0000	50.80	2	3	6 3/4	6	6	—	—	—	—	97734	—	—	—
2	2.0000	50.80	2	4	7 3/4	8	8	97240	97340	—	—	97735	—	97935	—
2	2.0000	50.80	2	6	9 3/4	8	8	97241	97341	—	97541	—	—	—	—
2	2.0000	50.80	2	8	11 3/4	8	8	97224	97353	97424	—	—	—	—	—
2	2.0000	50.80	2	10	13 3/4	8	8	97225	—	—	—	—	—	—	—

Cutting Diameter		Shank Dia.	LOC	OAL	No. of Flutes	CENTER CUTTING Style 261	
MM	Dec. In.					Bright	TiCN
6	.2362	6	13	57	3	92178	—
8	.3150	10	19	69	3	92179	—
10	.3937	10	22	72	4	92180	92380
10	.3937	10	45	95	4	92181	92381
12	.4724	12	26	83	4	92182	92382
12	.4724	12	53	110	4	92183	92383
14	.5512	12	26	83	4	92184	—
16	.6299	16	32	92	4	92185	92385
16	.6299	16	63	123	4	92186	—
18	.7087	16	32	92	4	92187	92387
20	.7874	20	38	104	4	92188	—
20	.7874	20	75	141	4	92189	—
30	1.1811	25	90	166	6	92192	—

Style 263 • Ball Nose, Fine Profile, M42 Cobalt Rougher

Cutting Diameter			Shank		LOC	OAL	No. of Flutes	CENTER CUTTING Style 263		
Frac	Decimal	MM	Dia.					Bright	TiN	TiCN
1/2	.5000	12.70	1/2	1 1/4	3 1/4	4	4	97242	97342	97442
5/8	.6250	15.88	5/8	1 5/8	3 3/4	4	4	97243	—	—
3/4	.7500	19.05	3/4	1 5/8	3 7/8	4	4	97244	97344	97444
3/4	.7500	19.05	3/4	3	5 1/4	4	4	97286	—	97486
1	1.0000	25.40	1	2	4 1/2	5	5	97245	—	97445
1	1.0000	25.40	1	4	6 1/2	5	5	97287	—	97487
2	2.0000	50.80	2	6	9 3/4	6	6	97290	—	—



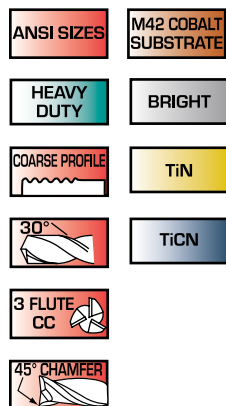
Style 263 Ball Nose TiN

3-Flute Extra Coarse for Aluminum

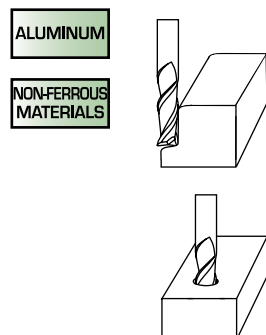


Style 269 • Center Cutting, Extra Coarse Profile, for Aluminum, M42 Cobalt Rougher

FEATURES



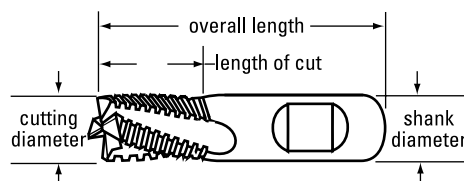
APPLICATIONS



Style 269 for Aluminum Bright



Style 269 for Aluminum TiCN



CENTER CUTTING

Cutting Diameter			Shank		LOC		No. of Flutes	Style 269		
Frac	Decimal	MM	Dia.		OAL			Bright	TiN	TiCN
3/16	.1875	4.76	3/8	1/2	2 3/8	3	3	97053	—	—
1/4	.2500	6.35	3/8	5/8	2 7/16	3	3	97055	—	—
1/4	.2500	6.35	3/8	1 1/8	2 15/16	3	3	97057	—	—
5/16	.3125	7.94	3/8	3/4	2 1/2	3	3	97058	—	—
3/8	.3750	9.53	3/8	3/4	2 1/2	3	3	97130	—	97657
3/8	.3750	9.53	3/8	1 1/2	3 1/4	3	3	97059	—	—
1/2	.5000	12.70	1/2	1 1/4	3 1/4	3	3	97131	97636	97658
1/2	.5000	12.70	1/2	2	4	3	3	97132	97638	97659
1/2	.5000	12.70	1/2	3	5	3	3	97060	97639	—
5/8	.6250	15.88	5/8	1 5/8	3 3/4	3	3	97133	—	97660
5/8	.6250	15.88	5/8	2 1/2	4 5/8	3	3	97134	—	97661
3/4	.7500	19.05	3/4	1 5/8	3 7/8	3	3	97135	97637	97662
3/4	.7500	19.05	3/4	2 1/4	4 1/2	3	3	97136	97640	97663
3/4	.7500	19.05	3/4	3	5 1/4	3	3	97061	—	97641
3/4	.7500	19.05	3/4	4	6 1/4	3	3	97062	—	97642
7/8	.8750	22.23	3/4	1 1/2	3 3/4	3	3	97138	—	—
7/8	.8750	22.23	7/8	1 7/8	4 1/8	3	3	97137	—	—
1	1.0000	25.40	3/4	1 1/2	3 3/4	3	3	97141	—	—
1	1.0000	25.40	1	2	4 1/2	3	3	97139	—	97666
1	1.0000	25.40	1	3	5 1/2	3	3	97140	—	97667
1	1.0000	25.40	1	4	6 1/2	3	3	97064	—	97644
1	1.0000	25.40	1	6	8 1/2	3	3	97065	—	97645
1 1/4	1.2500	31.75	3/4	1 1/2	3 3/4	3	3	97144	—	—
1 1/4	1.2500	31.75	1 1/4	3	5 1/2	3	3	97143	—	97603
1 1/4	1.2500	31.75	1 1/4	4	6 1/2	3	3	97066	—	97646
1 1/4	1.2500	31.75	1 1/4	6	8 1/2	3	3	97067	—	97647
1 1/2	1.5000	38.10	3/4	1 1/2	3 3/4	3	3	97147	—	—
1 1/2	1.5000	38.10	3/4	2	4 1/2	3	3	—	97648	—
1 1/2	1.5000	38.10	1 1/4	2	4 1/2	3	3	97145	—	97605
1 1/2	1.5000	38.10	1 1/4	4	6 1/2	3	3	97068	—	—
2	2.0000	50.80	3/4	3/4	3	3	3	97150	—	—
2	2.0000	50.80	1 1/4	4	6 1/2	3	3	97069	—	—
2	2.0000	50.80	2	6	9 3/4	3	3	97072	—	—



By Order Number

Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.
91101.	184.	13	91417.	131.	20	91674.	112.	15	92271.	260.	35	92416.	112K.	21
91104.	184.	13	91418.	131.	20	91675.	CRE.	31	92285.	112K.	21	92417.	112K.	21
91107.	184.	13	91420.	131.	20	91676.	CRE.	31	92286.	112K.	21	92418.	112K.	21
91110.	184.	13	91421.	131.	20	91677.	CRE.	31	92287.	112K.	21	92419.	112K.	21
91126.	115.	27	91422.	131.	20	91678.	CRE.	31	92288.	112K.	21	92420.	112K.	21
91150.	115.	27	91425.	131.	20	91679.	CRE.	31	92289.	112K.	21	92421.	112K.	21
91151.	115.	27	91426.	131.	20	91680.	CRE.	31	92290.	112K.	21	92422.	112K.	21
91175.	115.	25	91428.	131.	20	91681.	CRE.	31	92291.	112K.	21	92423.	112K.	21
91176.	115.	26	91429.	131.	20	91682.	CRE.	31	92292.	112K.	21	92424.	112K.	21
91177.	115.	26	91430.	131.	20	91683.	CRE.	31	92293.	112K.	21	92425.	112K.	21
91238.	114.	26	91434.	131.	20	91684.	CRE.	31	92294.	112K.	21	92426.	112K.	21
91239.	114.	26	91477.	182.	11	91685.	CRE.	31	92295.	112K.	21	92427.	112K.	21
91240.	114.	26	91478.	182.	11	91686.	CRE.	31	92296.	112K.	21	92428.	112K.	21
91241.	114.	27	91481.	182.	11	91687.	CRE.	31	92300.	112KS.	21	92435.	112KS.	21
91242.	114.	27	91482.	182.	11	91688.	CRE.	31	92301.	112KS.	21	92436.	112KS.	21
91243.	114.	26	91486.	182.	11	92151.	260.	35	92302.	112KS.	21	92437.	112KS.	21
91244.	114.	26	91487.	182.	11	92154.	260.	35	92303.	112KS.	21	92438.	112KS.	21
91245.	114.	27	91491.	182.	11	92155.	260.	35	92304.	112KS.	21	92439.	112KS.	21
91251.	114.	26	91492.	182.	11	92156.	260.	35	92305.	112KS.	21	92440.	112KS.	21
91252.	114.	26	91496.	182.	11	92157.	260.	35	92306.	112KS.	21	92441.	112KS.	21
91253.	114.	26	91497.	182.	11	92158.	260.	35	92307.	112KS.	21	92442.	112KS.	21
91254.	114.	26	91500.	182.	11	92159.	260.	35	92308.	112KS.	21	92443.	112KS.	21
91255.	114.	26	91610.	442.	6	92161.	260.	35	92309.	112KS.	21	92444.	112KS.	21
91256.	114.	27	91611.	442.	6	92165.	260.	35	92315.	104R.	30	92445.	112KS.	21
91261.	112.	15	91612.	442.	6	92171.	260.	35	92316.	104R.	30	92446.	112KS.	21
91262.	112.	15	91625.	112.	14	92178.	261.	37	92317.	104R.	30	92447.	112KS.	21
91263.	112.	16	91626.	112.	14	92179.	261.	37	92318.	104R.	30	92448.	112KS.	21
91265.	112.	16	91627.	112.	14	92180.	261.	37	92319.	104R.	30	92449.	112KS.	21
91266.	112.	16	91628.	112.	15	92181.	261.	37	92320.	104R.	30	92450.	112KS.	21
91271.	111.	17	91629.	112.	15	92182.	261.	37	92321.	104R.	30	92451.	112KS.	21
91272.	111.	17	91630.	112.	15	92183.	261.	37	92323.	104R.	30	92452.	112KS.	21
91273.	111.	17	91632.	112.	15	92184.	261.	37	92350.	428.	8	92453.	112KS.	21
91274.	111.	17	91633.	112.	16	92185.	261.	37	92351.	428.	8	92454.	112KS.	21
91319.	114.	25	91639.	112.	16	92186.	261.	37	92352.	428.	8	92455.	112KS.	21
91320.	114.	26	91645.	112.	14	92187.	261.	37	92353.	428.	8	92456.	112KS.	21
91321.	114.	26	91646.	112.	14	92188.	261.	37	92354.	428.	8	92457.	112KS.	21
91323.	114.	27	91647.	112.	14	92189.	261.	37	92355.	428.	8	92458.	112KS.	21
91325.	132.	19	91648.	112.	15	92192.	261.	37	92356.	428.	8	92783.	264.	34
91326.	132.	19	91649.	112.	15	92251.	260.	35	92380.	261.	37	92840.	481.	4
91327.	132.	19	91650.	112.	15	92252.	260.	35	92381.	261.	37	92841.	181.	12
91328.	132.	19	91651.	112.	15	92253.	260.	35	92382.	261.	37	92842.	481.	4
91329.	132.	19	91652.	112.	15	92254.	260.	35	92383.	261.	37	92843.	181.	12
91330.	132.	19	91653.	112.	16	92255.	260.	35	92385.	261.	37	92844.	481.	4
91331.	132.	19	91654.	112.	16	92256.	260.	35	92387.	261.	37	92845.	481.	4
91332.	132.	19	91655.	112.	16	92257.	260.	35	92402.	112K.	21	92846.	181.	12
91333.	132.	19	91659.	112.	16	92258.	260.	35	92405.	112K.	21	92847.	481.	4
91334.	132.	19	91660.	112.	14	92259.	260.	35	92406.	112K.	21	92848.	481.	4
91335.	132.	19	91661.	112.	14	92260.	260.	35	92408.	112K.	21	92849.	181.	12
91338.	132.	19	91662.	112.	14	92261.	260.	35	92409.	112K.	21	92850.	481.	4
91400.	131.	20	91663.	112.	14	92264.	260.	35	92410.	112K.	21	92851.	481.	4
91401.	131.	20	91664.	112.	15	92265.	260.	35	92411.	112K.	21	92852.	181.	12
91402.	131.	20	91666.	112.	15	92266.	260.	35	92412.	112K.	21	92853.	481.	4
91404.	131.	20	91669.	112.	15	92267.	260.	35	92413.	112K.	21	92854.	481.	4
91407.	131.	20	91671.	112.	15	92268.	260.	35	92414.	112K.	21	92855.	181.	12
91408.	131.	20	91673.	112.	15	92269.	260.	35	92415.	112K.	21	92856.	481.	4

By Order Number



Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.
92857.	431	7	92999.	113	22	93144.	431	7	94025.	115B	28	94096.	115	26
92858.	431	7	93000.	113	22	93950.	132	19	94026.	115B	28	94097.	115	26
92859.	431	7	93005.	113	22	93951.	132	19	94028.	115B	28	94098.	115	26
92860.	431	7	93006.	113	22	93952.	132	19	94029.	115B	28	94099.	115	25
92861.	431	7	93007.	113	22	93953.	132	19	94030.	115B	28	94100.	115	25
92862.	431	7	93008.	113	22	93954.	132	19	94031.	115B	28	94180.	112	13
92863.	431	7	93009.	113	22	93955.	132	19	94033.	115B	29	94181.	112	13
92864.	431	7	93010.	113	22	93956.	132	19	94034.	115B	29	94182.	112	13
92865.	431	7	93011.	113	22	93957.	132	19	94036.	115B	29	94183.	112	13
92866.	431	7	93012.	113	22	93958.	132	19	94037.	115B	29	94184.	112	14
92867.	431	7	93013.	113	22	93959.	132	19	94040.	115B	29	94185.	112	14
92868.	431	7	93014.	113	22	93960.	132	19	94041.	115B	29	94186.	112	14
92869.	431	7	93043.	184	13	93961.	132	19	94042.	115B	28	94187.	112	14
92871.	431	7	93045.	184	13	93962.	132	19	94043.	115B	28	94188.	112	14
92950.	111N	18	93047.	184	13	93963.	132	19	94044.	115B	28	94189.	112	14
92951.	111N	18	93049.	184	13	93964.	132	19	94045.	115B	29	94190.	112	14
92952.	111N	18	93051.	184	13	93965.	132	19	94046.	115B	29	94191.	112	14
92953.	111N	18	93058.	114	23	93970.	132	19	94056.	115	24	94192.	112	14
92954.	111N	18	93059.	114	23	93971.	132	19	94057.	115	25	94193.	112	15
92955.	111N	18	93067.	182	11	93972.	132	19	94058.	115	25	94194.	112	15
92956.	111N	18	93068.	182	11	93973.	132	19	94059.	115	25	94195.	112	15
92957.	111N	18	93071.	182	11	93974.	132	19	94061.	115	23	94196.	112	15
92958.	111N	18	93072.	182	11	93975.	132	19	94062.	115	23	94197.	112	15
92960.	111N	18	93075.	182	11	93976.	132	19	94063.	115	23	94198.	112	15
92965.	433	8	93076.	182	11	93977.	132	19	94064.	115	24	94199.	112	15
92966.	433	8	93079.	182	11	93978.	132	19	94065.	115	24	94200.	112	15
92967.	433	8	93080.	182	11	93979.	132	19	94066.	115	24	94201.	112	15
92968.	433	8	93084.	182	11	93980.	132	19	94067.	115	24	94202.	112	15
92969.	433	8	93086.	182	11	93982.	132	19	94069.	115	25	94203.	112	15
92970.	433	8	93092.	112	13	93985.	132	19	94070.	115	25	94204.	112	15
92971.	433	8	93093.	112	13	93986.	132	19	94071.	115	25	94205.	112	15
92972.	433	8	93094.	112	13	93987.	132	19	94072.	115	26	94206.	112	15
92973.	433	8	93105.	104R	30	93988.	132	19	94073.	115	26	94207.	112	15
92974.	433	8	93106.	104R	30	93989.	132	19	94074.	115	26	94208.	112	15
92977.	113	22	93107.	104R	30	93990.	132	19	94075.	115	26	94209.	112	15
92978.	113	22	93108.	104R	30	93991.	132	19	94076.	115	27	94210.	112	15
92979.	113	22	93109.	104R	30	93992.	132	19	94077.	115	23	94211.	112	15
92980.	113	22	93110.	104R	30	93993.	132	19	94078.	115	24	94212.	112	16
92981.	113	22	93111.	104R	30	93994.	132	19	94079.	115	24	94213.	112	16
92982.	113	22	93113.	104R	30	93995.	132	19	94080.	115	24	94214.	112	16
92983.	113	22	93115.	104R	30	94010.	115B	28	94081.	115	24	94215.	112	16
92984.	113	22	93117.	104R	30	94011.	115B	28	94082.	115	25	94216.	112	16
92985.	113	22	93123.	104R	30	94012.	115B	28	94083.	115	25	94217.	112	16
92986.	113	22	93130.	481	4	94013.	115B	28	94084.	115	26	94218.	112	16
92987.	113	22	93131.	181	12	94014.	115B	28	94085.	115	26	94219.	112	16
92988.	113	22	93132.	481	4	94015.	115B	28	94086.	115	26	94225.	114	23
92989.	113	22	93133.	181	12	94016.	115B	28	94087.	115	26	94226.	114	23
92990.	113	22	93134.	481	4	94017.	115B	28	94088.	115	27	94227.	114	23
92991.	113	22	93135.	181	12	94018.	115B	28	94089.	115	23	94228.	114	24
92992.	113	22	93136.	481	4	94019.	115B	28	94090.	115	24	94229.	114	24
92994.	113	22	93137.	181	12	94020.	115B	28	94091.	115	24	94230.	114	24
92995.	113	22	93138.	481	4	94021.	115B	28	94092.	115	24	94231.	114	24
92996.	113	22	93140.	481	4	94022.	115B	28	94093.	115	24	94232.	114	24
92997.	113	22	93142.	431	7	94023.	115B	28	94094.	115	25	94233.	114	24
92998.	113	22	93143.	431	7	94024.	115B	28	94095.	115	25	94234.	114	24



By Order Number

Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.
94235.	114	24	94292.	114	24	94516.	212	13	94594.	432	6	94649.	215	25
94236.	114	25	94293.	114	25	94517.	212	13	94595.	432	6	94650.	215	26
94237.	114	25	94294.	114	25	94518.	212	13	94596.	432	6	94651.	215	26
94238.	114	25	94295.	114	26	94520.	212	13	94597.	215B	28	94652.	215	26
94239.	114	25	94296.	114	26	94522.	212	13	94598.	215B	28	94653.	215	26
94240.	114	25	94297.	114	26	94523.	212	13	94599.	215B	28	94654.	215	26
94241.	114	25	94305.	112N	18	94524.	212	13	94600.	215B	28	94655.	215	26
94242.	114	25	94306.	112N	18	94525.	212	13	94601.	215B	28	94656.	215	26
94243.	114	25	94307.	112N	18	94527.	212	13	94602.	215B	28	94657.	215	26
94244.	114	25	94308.	112N	18	94528.	212	13	94603.	215B	28	94658.	215	27
94245.	114	25	94309.	112N	18	94529.	212	13	94604.	215B	28	94659.	215	27
94246.	114	25	94310.	112N	18	94530.	212	13	94605.	215B	28	94660.	215	24
94247.	114	25	94311.	112N	18	94531.	212	13	94606.	215B	28	94661.	215	24
94248.	114	25	94312.	112N	18	94532.	212	13	94607.	215B	28	94662.	215	24
94249.	114	25	94313.	112N	18	94533.	212	13	94608.	215B	28	94663.	215	25
94250.	114	25	94314.	112N	18	94535.	212	13	94609.	215B	29	94664.	215	25
94251.	114	25	94315.	112N	18	94536.	212	13	94610.	215B	28	94665.	215	26
94252.	114	25	94320.	111	17	94537.	212	13	94611.	215B	29	94666.	215	26
94253.	114	26	94321.	111	17	94538.	212	14	94612.	215B	29	94667.	215	26
94254.	114	26	94322.	111	17	94539.	212	14	94613.	215B	29	94668.	215	26
94255.	114	26	94323.	111	17	94541.	212	14	94614.	215B	29	94675.	212	13
94256.	114	26	94324.	111	17	94542.	212	14	94615.	215B	28	94676.	212	13
94257.	114	26	94325.	111	17	94543.	212	14	94616.	115B	28	94677.	212	13
94258.	114	26	94326.	111	17	94545.	212	14	94617.	215B	29	94678.	212	13
94259.	114	26	94327.	111	17	94548.	212	14	94618.	215B	29	94679.	212	14
94260.	114	26	94328.	111	17	94549.	212	14	94619.	215B	29	94680.	212	14
94261.	114	26	94329.	111	17	94550.	212	14	94620.	215	23	94681.	212	14
94262.	114	26	94330.	111	17	94551.	212	15	94621.	215	23	94682.	212	15
94263.	114	27	94331.	111	17	94552.	212	15	94622.	215	23	94683.	212	15
94264.	114	27	94332.	111	17	94554.	212	15	94623.	215	24	94684.	212	16
94265.	114	26	94333.	111	17	94555.	212	16	94624.	215	24	94685.	212	16
94266.	114	26	94334.	111	17	94556.	212	16	94625.	215	24	94690.	211	17
94267.	114	26	94335.	111	17	94571.	434	9	94626.	215	24	94691.	211	17
94268.	114	27	94336.	111	17	94572.	434	9	94627.	215	24	94692.	211	17
94271.	114	23	94337.	111	17	94573.	434	9	94628.	215	24	94693.	211	17
94272.	114	24	94338.	111	17	94574.	434	9	94629.	215	25	94694.	211	17
94273.	114	24	94339.	111	17	94575.	434	9	94630.	215	25	94695.	211	17
94274.	114	24	94340.	111	17	94576.	434	9	94631.	215	25	94696.	211	17
94275.	114	24	94341.	111	17	94577.	434	9	94632.	215	25	94697.	211	17
94276.	114	24	94381.	113	22	94578.	434	9	94633.	215	26	94698.	211	17
94277.	114	25	94420.	114	27	94579.	434	9	94634.	215	26	94710.	M15	32
94278.	114	25	94421.	114	27	94580.	434	10	94635.	215	26	94711.	M15	32
94279.	114	26	94422.	114	27	94581.	434	10	94636.	215	26	94712.	M15	32
94280.	114	26	94423.	114	27	94582.	434	10	94637.	215	25	94713.	M15	32
94281.	114	26	94424.	114	27	94583.	434	10	94638.	215	25	94714.	M15	32
94282.	114	26	94425.	114	27	94584.	432	6	94639.	215	26	94715.	M15	32
94283.	114	26	94426.	114	27	94585.	432	6	94640.	215	27	94716.	M15	32
94284.	114	26	94428.	114	27	94586.	432	6	94641.	215	26	94717.	M15	32
94285.	114	26	94429.	114	27	94587.	432	6	94642.	215	26	94718.	M15	32
94286.	114	26	94430.	114	27	94588.	432	6	94643.	215	26	94719.	M15	32
94287.	114	27	94433.	114	27	94589.	432	6	94644.	215	26	94720.	M15	32
94288.	114	23	94472.	115B	29	94590.	432	6	94645.	215	24	94730.	M12	32
94289.	114	24	94474.	115B	29	94591.	432	6	94646.	215	24	94731.	M12	32
94290.	114	24	94514.	212	13	94592.	432	6	94647.	215	24	94733.	M12	32
94291.	114	24	94515.	212	13	94593.	432	6	94648.	215	25	94734.	M12	32

By Order Number



Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.
94737	M12	32	94820	435	9	94886	484	5	95211	112	14	95326	114	24
94739	M12	32	94821	435	10	94887	484	5	95212	112	14	95327	114	25
94750	M10	32	94822	435	10	94888	484	5	95213	112	14	95328	114	25
94751	M10	32	94823	435	10	94889	484	5	95214	112	14	95329	114	25
94753	M10	32	94824	435	10	94896	484	5	95215	112	14	95330	114	25
94754	M10	32	94825	215	25	94897	484	5	95216	112	14	95331	114	25
94755	M10	32	94826	215	25	94898	484	5	95217	112	14	95332	114	25
94758	M10	32	94827	215	25	94899	484	5	95218	112	14	95335	114	25
94766	104	30	94830	432	6	94905	482	4	95219	112	14	95338	114	25
94767	104	30	94831	432	6	94906	482	4	95220	112	14	95340	114	25
94768	104	30	94832	432	6	94907	482	4	95221	112	14	95341	114	25
94769	104	30	94833	432	6	94908	482	4	95222	112	14	95360	114	25
94771	104	30	94834	432	6	94909	482	4	95223	112	14	95361	114	25
94772	104	30	94835	432	6	94910	482	4	95224	112	14	95400	432	7
94774	215	23	94836	432	6	94911	482	4	95225	112	14	95401	432	7
94775	215	23	94837	432	6	94912	482	4	95226	112	14	95402	432	7
94776	215	23	94838	432	6	94913	482	4	95227	112	14	95403	432	7
94777	215	23	94839	432	6	94914	482	4	95228	112	14	95420	112M	16
94778	215	23	94840	432	6	94915	482	4	95229	112	14	95421	112M	16
94779	215	23	94841	432	6	94918	482	4	95230	112	15	95422	112M	16
94780	215	23	94842	432	6	94919	482	4	95231	112	15	95423	112M	16
94781	215	23	94843	432	7	94920	482	4	95232	112	15	95424	112M	16
94782	215	23	94844	432	7	94921	482	4	95233	112	15	95425	112M	16
94783	215	23	94845	432	7	94925	482	4	95234	112	15	95426	112M	16
94784	215	23	94846	432	7	94926	482	4	95235	112	15	95427	112M	16
94785	215	23	94847	432	7	94927	482	4	95236	112	15	95428	112M	16
94786	215	23	94848	432	7	94928	482	4	95237	112	15	95429	112M	16
94787	215	23	94849	432	7	94929	482	4	95238	112	15	95430	112M	16
94788	215	23	94850	432	7	94930	482	4	95240	112	15	95431	112M	16
94789	215	24	94855	434	9	94931	482	4	95300	114	23	95432	112M	16
94790	215	24	94856	434	9	94932	482	4	95301	114	23	95433	112M	16
94791	215	24	94857	434	9	94933	482	4	95302	114	23	95434	112M	16
94792	215	24	94858	434	9	94934	482	4	95303	114	23	95435	112M	16
94793	215	24	94859	434	9	94935	482	4	95304	114	23	95436	112M	16
94794	215	24	94860	434	9	94940	434	9	95305	114	23	95437	112M	16
94795	215	24	94861	434	9	94941	434	9	95306	114	23	95441	112M	16
94796	215	24	94862	434	9	94942	434	9	95307	114	23	95442	112M	16
94797	215	24	94863	434	9	94943	434	9	95308	114	23	95443	114M	27
94798	115	24	94864	434	10	94944	434	9	95309	114	24	95444	114M	27
94799	215	24	94865	434	10	94950	432	6	95310	114	24	95445	114M	27
94800	215	24	94866	434	10	94951	432	6	95311	114	24	95446	114M	27
94801	215	24	94867	434	10	94952	432	6	95312	114	24	95447	114M	27
94802	215	24	94868	434	10	94953	432	6	95313	114	24	95448	114M	27
94803	215	25	94869	434	10	94954	432	6	95314	114	24	95449	114M	27
94804	215	25	94870	434	10	95200	112	13	95315	114	24	95450	114M	27
94805	215	25	94871	434	10	95201	112	13	95316	114	24	95451	114M	27
94806	215	25	94872	434	10	95202	112	13	95317	114	24	95452	114M	27
94807	215	25	94873	434	10	95203	112	13	95318	114	24	95453	114M	27
94808	215	25	94874	434	10	95204	112	13	95319	114	24	95454	114M	27
94809	215	25	94875	434	10	95205	112	13	95320	114	24	95455	114M	27
94815	435	9	94878	484	5	95206	112	13	95321	114	24	95456	114M	27
94816	435	9	94879	484	5	95207	112	13	95322	114	24	95457	114M	27
94817	435	9	94880	484	5	95208	112	13	95323	114	24	95458	114M	27
94818	435	9	94881	484	5	95209	112	13	95324	114	24	95459	114M	27
94819	435	9	94882	484	5	95210	112	14	95325	114	24	95460	114M	27



By Order Number

Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.
95461.	114M	27	96048.	214	24	96126.	442	6	96314.	215	24	96394.	131	20
95462.	114M	27	96049.	214	24	96127.	442	6	96315.	215	24	96395.	131	20
95463.	114M	27	96050.	214	25	96128.	442	6	96316.	215	25	96396.	131	20
95464.	114M	27	96051.	214	25	96129.	442	6	96317.	215	25	96398.	131	20
95465.	114M	27	96052.	214	25	96130.	442	6	96318.	215	24	96399.	131	20
95500.	434	10	96053.	214	25	96131.	442	6	96319.	215	24	96400.	131	20
95501.	434	10	96054.	214	25	96132.	442	6	96321.	215	25	96403.	434	9
96000.	215	27	96055.	214	25	96133.	442	6	96323.	215	26	96404.	434	9
96001.	215	27	96056.	214	25	96134.	442	7	96324.	215	26	96405.	434	9
96002.	215	27	96057.	214	26	96135.	442	7	96335.	112	13	96406.	434	9
96003.	215	27	96058.	214	26	96136.	442	7	96336.	112	13	96407.	434	9
96004.	211	17	96059.	214	27	96137.	442	7	96337.	112	13	96408.	434	9
96005.	211	17	96060.	214	23	96138.	442	7	96338.	112	13	96409.	434	9
96006.	211	17	96061.	214	24	96144.	212	14	96339.	112	14	96410.	434	9
96007.	211	17	96062.	214	24	96145.	212	14	96340.	112	14	96411.	434	9
96008.	211	17	96063.	214	24	96147.	212	14	96341.	112	14	96412.	434	10
96009.	215B	28	96064.	214	24	96148.	212	14	96342.	112	14	96413.	434	10
96010.	215B	28	96065.	214	25	96150.	212	15	96343.	112	14	96414.	434	10
96011.	215B	28	96066.	214	25	96151.	212	15	96344.	112	14	96415.	434	10
96012.	215B	28	96067.	214	26	96153.	212	15	96345.	112	14	96416.	434	10
96013.	215B	29	96068.	214	26	96154.	212	15	96346.	112	15	96417.	434	10
96014.	211N	18	96069.	214	26	96155.	212	15	96347.	112	15	96418.	434	10
96015.	211N	18	96070.	214	23	96156.	212	15	96348.	112	15	96419.	434	10
96016.	211N	18	96071.	214	24	96160.	212	16	96349.	112	15	96420.	114	23
96017.	211N	18	96072.	214	24	96161.	212N	18	96350.	112	15	96421.	114	23
96018.	211N	18	96073.	214	24	96162.	212N	18	96351.	112	15	96422.	114	23
96019.	211N	18	96074.	214	24	96163.	212N	18	96352.	112	15	96423.	114	24
96020.	211N	18	96075.	214	24	96164.	212N	18	96353.	112	15	96424.	114	24
96021.	211N	18	96076.	214	25	96165.	212N	18	96354.	432	6	96425.	114	24
96022.	444	9	96077.	214	25	96166.	212N	18	96355.	432	6	96426.	114	24
96023.	444	9	96078.	214	26	96167.	212N	18	96356.	432	6	96427.	114	24
96024.	444	9	96079.	214	26	96168.	212N	18	96357.	432	6	96428.	114	24
96025.	444	9	96080.	214	26	96169.	212	14	96358.	432	6	96429.	114	24
96026.	444	9	96081.	214	26	96170.	212	14	96359.	432	6	96430.	114	24
96027.	444	9	96082.	214	27	96171.	212	14	96360.	432	6	96431.	114	25
96028.	444	9	96083.	445	9	96172.	212	15	96361.	432	6	96432.	114	25
96029.	444	9	96084.	445	9	96173.	212	15	96362.	432	6	96433.	114	25
96030.	444	9	96085.	445	9	96174.	212	16	96363.	432	6	96434.	114	25
96031.	444	10	96086.	445	9	96177.	212	14	96364.	432	6	96435.	114	25
96032.	444	10	96087.	445	9	96178.	212	14	96365.	432	6	96436.	114	25
96033.	444	10	96088.	445	10	96179.	212	14	96366.	432	7	96437.	114	25
96034.	444	10	96089.	445	10	96180.	212	15	96367.	432	7	96438.	114	23
96035.	444	10	96090.	445	10	96181.	212	15	96368.	432	7	96439.	114	24
96036.	444	10	96100.	215	25	96182.	212	16	96369.	432	7	96440.	114	24
96037.	444	10	96103.	215	26	96302.	215	23	96370.	432	7	96441.	114	24
96038.	444	10	96104.	215	27	96303.	215	24	96371.	112	14	96442.	114	24
96039.	214	23	96105.	215	23	96304.	215	24	96372.	112	14	96443.	114	25
96040.	214	23	96106.	215	24	96305.	215	24	96373.	112	14	96444.	114	25
96041.	214	23	96113.	215	23	96306.	215	24	96374.	112	15	96445.	114	26
96042.	214	24	96114.	215	24	96307.	215	24	96375.	112	15	96446.	114	23
96043.	214	24	96121.	215	26	96308.	215	24	96376.	112	14	96447.	114	24
96044.	214	24	96122.	442	6	96309.	215	25	96377.	112	14	96448.	114	24
96045.	214	24	96123.	442	6	96310.	215	25	96378.	112	14	96449.	114	24
96046.	214	24	96124.	442	6	96311.	215	25	96379.	112	15	96450.	114	24
96047.	214	24	96125.	442	6	96312.	215	25	96380.	112	15	96451.	114	24

By Order Number



Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.
96452.	114	25	97012.	267	33	97118.	267	34	97203.	266	36	97296.	265	36
96453.	114	25	97014.	267	33	97119.	267	34	97205.	266	36	97297.	265	36
96454.	114	26	97015.	267	33	97120.	267	34	97206.	266	36	97298.	265	36
96455.	115	23	97017.	267	34	97121.	267	34	97208.	266	36	97299.	265	36
96456.	115	23	97021.	267	33	97122.	267	34	97209.	266	36	97305.	266	36
96457.	115	23	97053.	269	37	97123.	267	34	97211.	266	36	97306.	266	36
96458.	115	24	97055.	269	37	97124.	267	34	97212.	266	36	97308.	266	36
96459.	115	24	97057.	269	37	97125.	267	34	97213.	266	36	97309.	266	36
96460.	115	24	97058.	269	37	97126.	267	34	97214.	266	36	97311.	266	36
96461.	115	24	97059.	269	37	97128.	267	34	97215.	266	36	97312.	266	36
96462.	115	25	97060.	269	37	97129.	267	34	97216.	266	36	97313.	266	36
96463.	115	25	97061.	269	37	97130.	269	37	97217.	266	36	97314.	266	36
96464.	115	25	97062.	269	37	97131.	269	37	97218.	266	36	97315.	266	36
96465.	115	23	97064.	269	37	97132.	269	37	97222.	265	36	97316.	266	36
96466.	115	24	97065.	269	37	97133.	269	37	97223.	265	36	97317.	266	36
96467.	115	24	97066.	269	37	97134.	269	37	97224.	265	37	97318.	266	36
96468.	115	24	97067.	269	37	97135.	269	37	97225.	265	37	97322.	265	36
96469.	115	24	97068.	269	37	97136.	269	37	97226.	265	36	97323.	265	36
96470.	115	25	97069.	269	37	97137.	269	37	97227.	265	36	97326.	265	36
96471.	115	25	97072.	269	37	97138.	269	37	97228.	265	36	97327.	265	36
96472.	115	26	97074.	267	33	97139.	269	37	97231.	265	37	97328.	265	36
96473.	115	23	97075.	267	33	97140.	269	37	97232.	265	37	97331.	265	37
96474.	115	24	97076.	267	33	97141.	269	37	97233.	265	37	97332.	265	37
96475.	115	24	97077.	267	33	97143.	269	37	97235.	265	37	97333.	265	37
96476.	115	24	97078.	267	33	97144.	269	37	97236.	265	37	97336.	265	37
96477.	115	24	97079.	267	33	97145.	269	37	97237.	265	37	97337.	265	37
96478.	115	25	97080.	267	33	97147.	269	37	97238.	265	37	97340.	265	37
96479.	115	25	97081.	267	33	97150.	269	37	97240.	265	37	97341.	265	37
96480.	115	26	97082.	267	33	97169.	267	33	97241.	265	37	97342.	263	37
96481.	115B	28	97083.	267	33	97170.	267	33	97242.	263	37	97344.	263	37
96482.	115B	28	97084.	267	33	97171.	267	33	97243.	263	37	97353.	265	37
96483.	115B	28	97085.	267	33	97172.	267	33	97244.	263	37	97377.	264	34
96484.	115B	28	97086.	267	34	97173.	267	33	97245.	263	37	97379.	264	34
96485.	115B	28	97087.	267	34	97174.	267	33	97248.	267N	34	97380.	264	34
96487.	115B	28	97088.	267	34	97175.	267	33	97250.	267N	34	97393.	265	36
96488.	115B	28	97089.	267	34	97176.	267	33	97252.	267N	34	97394.	265	36
96489.	115B	29	97090.	267	34	97177.	267	33	97253.	265	37	97395.	265	36
96744.	445	9	97091.	267	34	97178.	267	33	97255.	267N	34	97396.	265	36
96745.	445	9	97101.	267	33	97180.	267	33	97256.	267N	34	97397.	265	36
96746.	445	9	97102.	267	33	97181.	267	33	97257.	267N	34	97398.	265	36
96747.	445	9	97103.	267	33	97182.	267	33	97258.	267N	34	97399.	265	36
96748.	445	9	97104.	267	33	97183.	267	33	97259.	267N	34	97401.	266	36
96749.	445	9	97105.	267	33	97184.	267	33	97260.	267N	34	97403.	266	36
96750.	445	9	97106.	267	33	97185.	267	33	97277.	264	34	97405.	266	36
96751.	445	9	97107.	267	33	97186.	267	34	97278.	264	34	97406.	266	36
96752.	445	10	97108.	267	33	97187.	267	34	97279.	264	34	97408.	266	36
96753.	445	10	97109.	267	33	97189.	267	34	97280.	264	34	97409.	266	36
96754.	445	10	97110.	267	33	97190.	267	34	97286.	263	37	97411.	266	36
96755.	445	10	97111.	267	33	97192.	267	34	97287.	263	37	97412.	266	36
97001.	112	16	97112.	267	33	97193.	267	34	97290.	263	37	97413.	266	36
97005.	267	33	97113.	267	33	97194.	267	34	97291.	264	34	97414.	266	36
97007.	267	33	97114.	267	33	97198.	267	34	97292.	264	34	97415.	266	36
97009.	267	33	97115.	267	33	97199.	267	34	97293.	265	36	97416.	266	36
97010.	267	33	97116.	267	33	97201.	266	36	97294.	265	36	97417.	266	36
97011.	267	33	97117.	267	33	97202.	266	36	97295.	265	36	97418.	266	36



By Order Number

Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.	Order No.	Style No.	Page No.
97422.	265	36	97584.	267	33	97686.	267	34	97779.	268	33	97913.	265	36
97423.	265	36	97592.	267	34	97687.	267	34	97780.	268	33	97914.	265	36
97424.	265	37	97596.	265	36	97690.	267	34	97781.	268	34	97915.	265	36
97425.	265	36	97598.	265	36	97693.	267	34	97782.	268	34	97920.	266	36
97426.	265	36	97603.	269	37	97694.	267	34	97784.	268	34	97921.	266	36
97427.	265	36	97605.	269	37	97698.	268	33	97800.	265	36	97922.	266	36
97431.	265	37	97611.	267	33	97700.	265	36	97801.	265	36	97923.	266	36
97432.	265	37	97612.	267	33	97701.	265	36	97802.	265	36	97926.	266	36
97433.	265	37	97613.	267	33	97702.	265	36	97803.	265	36	97927.	266	36
97435.	265	37	97614.	267	33	97703.	265	36	97804.	265	36	97928.	266	36
97436.	265	37	97615.	267	33	97704.	265	36	97805.	265	36	97930.	266	36
97437.	265	37	97616.	267	33	97705.	265	36	97806.	265	36	97931.	266	36
97442.	263	37	97617.	267	34	97706.	265	36	97807.	265	36	97932.	266	36
97444.	263	37	97618.	267	34	97707.	265	36	97808.	265	36	97935.	266	37
97445.	263	37	97619.	267	34	97708.	265	36	97810.	265	36	97937.	268	33
97477.	264	34	97620.	267	33	97709.	265	36	97811.	265	36	97938.	268	33
97479.	264	34	97621.	267	33	97710.	265	36	97812.	265	36	97940.	268	33
97480.	264	34	97631.	267	34	97711.	265	36	97813.	265	36	97941.	268	33
97486.	263	37	97634.	267	33	97712.	265	36	97814.	265	36	97942.	268	33
97487.	263	37	97635.	267	33	97713.	265	36	97815.	265	36	97943.	268	33
97491.	264	34	97636.	269	37	97714.	265	36	97820.	266	36	97945.	268	33
97492.	264	34	97637.	269	37	97715.	265	36	97821.	266	36	97946.	268	33
97493.	265	36	97638.	269	37	97720.	266	36	97822.	266	36	97947.	268	33
97494.	265	36	97639.	269	37	97721.	266	36	97823.	266	36	97948.	268	33
97496.	265	36	97640.	269	37	97722.	266	36	97826.	266	36	97949.	268	33
97497.	265	36	97641.	269	37	97723.	266	36	97828.	266	36	97956.	268	33
97498.	265	36	97642.	269	37	97726.	266	36	97830.	266	36	97959.	268	33
97499.	265	36	97644.	269	37	97727.	266	36	97831.	266	36	97960.	268	33
97503.	266	36	97645.	269	37	97728.	266	36	97832.	266	36	97961.	268	33
97505.	266	36	97646.	269	37	97730.	266	36	97838.	268	33	97963.	268	33
97508.	266	36	97647.	269	37	97731.	266	36	97839.	268	33	97964.	268	33
97512.	266	36	97648.	269	37	97732.	266	36	97840.	268	33	97968.	268	33
97513.	266	36	97657.	269	37	97734.	266	37	97841.	268	33	97973.	268	33
97515.	266	36	97658.	269	37	97735.	266	37	97842.	268	33	97977.	268	33
97516.	266	36	97659.	269	37	97737.	268	33	97843.	268	33	97979.	268	33
97521.	266	36	97660.	269	37	97738.	268	33	97845.	268	33	97982.	268	34
97522.	265	36	97661.	269	37	97739.	268	33	97846.	268	33	97984.	268	34
97526.	265	36	97662.	269	37	97740.	268	33	97847.	268	33			
97528.	266	36	97663.	269	37	97741.	268	33	97848.	268	33			
97530.	266	36	97666.	269	37	97742.	268	33	97849.	268	33			
97531.	268	33	97667.	269	37	97743.	268	33	97856.	268	33			
97541.	265	37	97669.	267	33	97745.	268	33	97859.	268	33			
97542.	268	33	97670.	267	33	97746.	268	33	97860.	268	33			
97545.	268	33	97671.	267	33	97747.	268	33	97861.	268	33			
97546.	268	33	97672.	267	33	97748.	268	33	97863.	268	33			
97548.	268	33	97673.	267	33	97749.	268	33	97864.	268	33			
97549.	268	33	97674.	267	33	97756.	268	33	97873.	268	33			
97553.	268	33	97675.	267	33	97759.	268	33	97877.	268	33			
97559.	268	33	97676.	267	33	97760.	268	33	97879.	268	33			
97560.	268	33	97677.	267	33	97761.	268	33	97881.	268	34			
97563.	268	33	97678.	267	33	97763.	268	33	97904.	265	36			
97575.	267	33	97680.	267	33	97764.	268	33	97907.	265	36			
97580.	267	33	97681.	267	33	97768.	268	33	97908.	265	36			
97581.	267	33	97683.	267	33	97773.	268	33	97911.	265	36			
97583.	267	33	97684.	267	33	97777.	268	33	97912.	265	36			

Notes

[illegible]

This image shows a blank sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Decimal Equivalents

FRACTIONAL - RED • WIRE GAGE - PURPLE • LETTER - BLUE • METRIC - GREEN

DRILL SIZE	DECIMAL INCHES	DRILL SIZE	DECIMAL INCHES	DRILL SIZE	DECIMAL INCHES	DRILL SIZE	DECIMAL INCHES	DRILL SIZE	DECIMAL INCHES	DRILL SIZE	DECIMAL INCHES
0.30mm	.0118	1.40mm	.0551	3.20mm	.1260	7/32	.2188	8.60mm	.3386	37/64	.5781
0.32mm	.0126	1.45mm	.0571	30	.1285	5.60mm	.2205	R	.3390	14.75mm	.5807
80	.0135	1.50mm	.0591	3.30mm	.1299	2	.2210	8.70mm	.3425	15.00mm	.5906
0.35mm	.0138	53	.0595	3.40mm	.1339	5.70mm	.2244	11/32	.3438	19/32	.5938
79	.0145	1.55mm	.0610	29	.1360	1	.2280	8.80mm	.3465	15.25mm	.6004
0.38mm	.0150	1/16	.0625	3.50mm	.1378	5.80mm	.2283	S	.3480	39/64	.6094
1/64	.0156	1.60mm	.0630	28	.1405	5.90mm	.2323	8.90mm	.3504	15.50mm	.6102
0.40mm	.0157	52	.0635	9/64	.1406	A	.2340	9.00mm	.3543	15.75mm	.6201
78	.0160	1.65mm	.0650	3.60mm	.1417	15/64	.2344	T	.3580	5/8	.6250
0.42mm	.0165	1.70mm	.0669	27	.1440	6.00mm	.2362	9.10mm	.3583	16.00mm	.6299
0.45mm	.0177	51	.0670	3.70mm	.1457	B	.2380	23/64	.3594	16.25mm	.6398
77	.0180	1.75mm	.0689	26	.1470	6.10mm	.2402	9.20mm	.3622	41/64	.6406
0.48mm	.0189	50	.0700	25	.1495	C	.2420	9.30mm	.3661	16.50mm	.6496
0.50mm	.0197	1.80mm	.0709	3.80mm	.1496	6.20mm	.2441	U	.3680	21/32	.6562
76	.0200	1.85mm	.0728	24	.1520	D	.2460	9.40mm	.3701	16.75mm	.6594
75	.0210	49	.0730	3.90mm	.1535	6.30mm	.2480	9.50mm	.3740	17.00mm	.6693
0.55mm	.0217	1.90mm	.0748	23	.1540	1/4	.2500	3/8	.3750	43/64	.6719
74	.0225	48	.0760	5/32	.1562	E	.2500	V	.3770	17.25mm	.6791
0.60mm	.0236	1.95mm	.0768	22	.1570	6.40mm	.2520	9.60mm	.3780	11/16	.6875
73	.0240	5/64	.0781	4.00mm	.1575	6.50mm	.2559	9.70mm	.3819	17.50mm	.6890
0.62mm	.0244	47	.0785	21	.1590	F	.2570	9.80mm	.3858	45/64	.7031
72	.0250	2.00mm	.0787	20	.1610	6.60mm	.2598	W	.3860	18.00mm	.7087
0.65mm	.0256	2.05mm	.0807	4.10mm	.1614	G	.2610	9.90mm	.3898	23/32	.7188
71	.0260	46	.0810	4.20mm	.1654	6.70mm	.2638	25/64	.3906	18.50mm	.7283
0.70mm	.0276	45	.0820	19	.1660	17/64	.2656	1.00mm	.3937	47/64	.7344
70	.0280	2.10mm	.0827	4.30mm	.1693	H	.2660	X	.3970	19.00mm	.7480
69	.0292	2.15mm	.0846	18	.1695	6.80mm	.2677	1.20mm	.4016	3/4	.7500
0.75mm	.0295	44	.0860	11/64	.1719	6.90mm	.2717	Y	.4040	49/64	.7656
68	.0310	2.20mm	.0866	17	.1730	I	.2720	13/32	.4062	19.50mm	.7677
1/32	.0312	2.25mm	.0886	4.40mm	.1732	7.00mm	.2756	Z	.4130	25/32	.7812
0.80mm	.0315	43	.0890	16	.1770	J	.2770	10.50mm	.4134	20.00mm	.7874
67	.0320	2.30mm	.0906	4.50mm	.1772	7.10mm	.2795	27/64	.4219	51/64	.7969
66	.0330	2.35mm	.0925	15	.1800	K	.2810	10.80mm	.4252	20.50mm	.8071
0.85mm	.0335	42	.0935	4.60mm	.1811	9/32	.2812	11.00mm	.4331	13/16	.8125
65	.0350	3/32	.0938	14	.1820	7.20mm	.2835	7/16	.4375	21.00mm	.8268
0.90mm	.0354	2.40mm	.0945	4.70mm	.1850	7.30mm	.2874	11.20mm	.4409	53/64	.8281
64	.0360	41	.0960	13	.1850	L	.2900	11.50mm	.4528	27/32	.8438
63	.0370	2.45mm	.0965	3/16	.1875	7.40mm	.2913	29/64	.4531	21.50mm	.8465
0.95mm	.0374	40	.0980	12	.1890	M	.2950	11.80mm	.4646	55/64	.8594
62	.0380	2.50mm	.0984	4.8mm	.1890	7.50mm	.2953	15/32	.4688	22.00mm	.8661
61	.0390	39	.0995	11	.1910	19/64	.2969	12.00mm	.4724	7/8	.8750
1.00mm	.0394	38	.1015	4.90mm	.1929	7.60mm	.2992	12.20mm	.4803	22.50mm	.8858
60	.0400	2.60mm	.1024	10	.1935	N	.3020	31/64	.4844	57/64	.8906
59	.0410	37	.1040	9	.1960	7.70mm	.3031	12.50mm	.4921	23.00mm	.9055
1.05mm	.0413	2.70mm	.1063	5.00mm	.1969	7.80mm	.3071	1/2	.5000	29/32	.9062
58	.0420	36	.1065	8	.1990	7.90mm	.3110	12.80mm	.5039	59/64	.9219
57	.0430	7/64	.1094	5.10mm	.2008	5/16	.3125	13.00mm	.5118	23.50mm	.9252
1.10mm	.0433	35	.1100	7	.2010	8.00mm	.3150	33/64	.5156	15/16	.9375
1.15mm	.0453	2.80mm	.1102	13/64	.2031	O	.3160	13.20mm	.5197	24.00mm	.9449
56	.0465	34	.1110	6	.2040	8.10mm	.3189	17/32	.5312	61/64	.9531
3/64	.0469	33	.1130	5.20mm	.2047	8.20mm	.3228	13.50mm	.5315	24.50mm	.9646
1.20mm	.0472	2.90mm	.1142	5	.2055	P	.3230	13.80mm	.5433	31/32	.9688
1.25mm	.0492	32	.1160	5.30mm	.2087	8.30mm	.3268	35/64	.5469	25.00mm	.9843
1.30mm	.0512	3.00mm	.1181	4	.2090	21/64	.3281	14.00mm	.5512	63/64	.9844
55	.0520	31	.1200	5.40mm	.2126	8.40mm	.3307	14.25mm	.5610	1	1.0000
1.35mm	.0531	3.10mm	.1220	3	.2130	Q	.3320	9/16	.5625		
54	.0550	1/8	.1250	5.50mm	.2165	8.50mm	.3346	14.50mm	.5709		



A MEMBER OF THE TDC GROUP

Greenfield Industries Inc.

2501 Davis Creek Road, Seneca, SC 29678

Contact Us:

telephone USA and Canada – 800.348.2885
International – 706.650.4196
Technical Support – 800.892.4281

fax USA – 800.892.4290
Canada – 800.387.6649
International – 706.854.4054

email USA – standard.distributors@gfii.com
National Accounts – national.distributors@gfii.com
Canada – canada.distributors@gfii.com
International – international.distributors@gfii.com
Technical Support – greenfield.information@gfii.com



©2013 Greenfield Industries, Inc. Seneca, SC USA
All rights reserved. Catalog Number PUT2013

Distributed by:



www.gfii.com