

Carbide Tipped Straight Shank Chucking Reamers

Alésoir à pointe au carbure

Rima con punta de carburo



Reamers

Straight Flute — Right Hand Cut

Carbide Tipped offers excellent wear resistance for general reaming of steel, cast iron, plastics, and other abrasive non-ferrous materials. Longer tool life in production applications.

List No. 5655

STANDARD PACKAGE All sizes — 1 each

Tools are furnished to a +.0003 -.0000 diameter tolerance.

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
3/16	.1875	1/64	1 1/8	4 1/2	4	55212
13/64	.2031	1/64	1 1/8	4 1/2	4	55213
7/32	.2187	3/64	1 1/4	5	4	55214
15/64	.2344	7/32	1 1/2	6	4	55215
1/4	.2500	15/64	1 1/2	6	4	55216
17/64	.2656	15/64	1 1/2	6	4	55217
9/32	.2812	15/64	1 1/2	6	4	55218
19/64	.2969	9/32	1 1/2	6	4	55219
5/16	.3125	9/32	1 1/2	6	4	55220
21/64	.3281	9/32	1 1/2	6	4	55221
11/32	.3437	9/32	1 1/2	6	4	55222
23/64	.3594	5/16	1 3/4	7	4	55223
3/8	.3750	5/16	1 3/4	7	4	55224
25/64	.3906	5/16	1 3/4	7	4	55225
13/32	.4062	5/16	1 3/4	7	4	55226
27/64	.4219	3/8	1 3/4	7	4	55227
7/16	.4375	3/8	1 3/4	7	4	55228
29/64	.4531	3/8	1 3/4	7	4	55229
15/32	.4687	3/8	1 3/4	7	4	55230
31/64	.4844	7/16	2	8	6	55231
1/2	.5000	7/16	2	8	6	55232
33/64	.5156	7/16	2	8	6	55233
17/32	.5312	7/16	2	8	6	55234
35/64	.5469	7/16	2	8	6	55235
9/16	.5625	7/16	2	8	6	55236
37/64	.5781	7/16	2	8	6	55237
19/32	.5938	7/16	2	8	6	55238
39/64	.6094	9/16	2 1/4	9	6	55239
5/8	.6250	9/16	2 1/4	9	6	55240
41/64	.6406	9/16	2 1/4	9	6	55241
21/32	.6562	9/16	2 1/4	9	6	55242

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
43/64	.6719	9/16	2 1/4	9	6	55243
11/16	.6875	9/16	2 1/4	9	6	55244
45/64	.7031	9/16	2 1/4	9	6	55245
23/32	.7187	9/16	2 1/4	9	6	55246
47/64	.7344	5/8	2 1/2	9 1/2	6	55247
3/4	.7500	5/8	2 1/2	9 1/2	6	55248
49/64	.7656	5/8	2 1/2	9 1/2	6	55249
25/32	.7812	5/8	2 1/2	9 1/2	6	55250
51/64	.7969	5/8	2 1/2	9 1/2	6	55251
13/16	.8125	5/8	2 1/2	9 1/2	6	55252
53/64	.8281	5/8	2 1/2	9 1/2	6	55253
27/32	.8437	5/8	2 1/2	9 1/2	6	55254
55/64	.8594	3/4	2 5/8	10	6	55255
7/8	.8750	3/4	2 5/8	10	6	55256
57/64	.8906	3/4	2 5/8	10	6	55257
29/32	.9062	3/4	2 5/8	10	6	55258
59/64	.9219	3/4	2 5/8	10	8	55259
15/16	.9375	3/4	2 5/8	10	8	55260
61/64	.9531	3/4	2 5/8	10	8	55261
31/32	.9687	3/4	2 5/8	10	8	55262
63/64	.9844	7/8	2 3/4	10 1/2	8	55263
1	1.0000	7/8	2 3/4	10 1/2	8	55264
1 1/16	1.0625	7/8	2 3/4	10 1/2	8	55304
1 1/8	1.1250	7/8	2 7/8	11	8	55308
1 3/16	1.1875	1	2 7/8	11	8	55312
1 1/4	1.2500	1	3	11 1/2	8	55316
1 5/16	1.3125	1	3	11 1/2	8	55320
1 3/8	1.3750	1	3 1/4	12	8	55324
1 7/16	1.4375	1 1/4	3 1/4	12	8	55328
1 1/2	1.5000	1 1/4	3 1/2	12 1/2	8	55332

TOOL COATING SERVICE

Tool Coatings enhance cutting tool performance for increased productivity and lower overall tooling cost. Benefits include increased surface hardness, lubricity & heat resistance and decreased chemical reactivity. Results include reduced friction & torque, higher speeds & feeds, increased tool life, decreased galling & chip welding and improved surface finish. **PLEASE INQUIRE.**

TiN — Titanium Nitride

TiCN — Titanium Carbonitride

TiAlN — Titanium Aluminum Nitride

AlTiN — Aluminum Titanium Nitride

CrN — Chromium Nitride

CrC — Chromium Carbide

DLC — Diamond Like Carbon

Carbide Tipped Flute Long Carbide Straight Shank Chucking Reamers

Alésoir à pointe au carbure

Rima con punta de carburo



List No. 5659

STANDARD All sizes — 1 each

PACKAGE

DIAMETER TOLERANCES +.0003", -.0000"

Carbide Full Length of Flutes specially designed for precision reaming in **deep holes** and for long production runs. **Carbide Tipped** offers excellent wear resistance for general reaming of steel, cast iron, plastics, and other abrasive non-ferrous materials. Longer tool life in production applications.

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
1/4	.2500	15/64	1 1/2	6	4	55516
9/32	.2812	15/64	1 1/2	6	4	55518*
5/16	.3125	9/32	1 1/2	6	4	55520
11/32	.3437	9/32	1 1/2	6	4	55522*
3/8	.3750	5/16	1 3/4	7	4	55524
7/16	.4375	3/8	1 3/4	7	4	55528
15/32	.4687	3/8	1 3/4	7	4	55530*
1/2	.5000	7/16	2	8	6	55532
9/16	.5625	7/16	2	8	6	55536
5/8	.6250	9/16	2	9	6	55540
11/16	.6875	9/16	2	9	6	55544
3/4	.7500	5/8	2	9 1/2	6	55548
25/32	.7812	5/8	2	9 1/2	6	55550*
13/16	.8125	5/8	2	9 1/2	6	55552
7/8	.8750	3/4	2 1/4	10	6	55556
15/16	.9375	3/4	2 1/4	10	8	55560
31/32	.9687	3/4	2 1/4	10	8	55562*
1	1.0000	7/8	2 1/4	10 1/2	8	55564
1 1/16	1.0625	7/8	2 1/4	10 1/2	8	55334
1 1/8	1.1250	7/8	2 1/4	11	8	55338
1 1/4	1.2500	1	2 1/2	11 1/2	8	55342
1 3/8	1.3750	1	2 1/2	12	8	55346

* Available While Supplies Last



MORSE®
Modifications
&
Specials

High Speed Steel
Cobalt
Carbide Tipped
Solid Carbide
Coatings

Complete Tool Design
And Manufacturing Services
From Blueprint Specials to
Modified Regulars

Expansion Straight Shank Chucking Reamers

High Speed Steel
Straight Flute — Right Hand Cut

Expansion Reamers are expandable to permit many regrinds to the original reamer size. Recommended for reaming a wide range of materials.

Alésoir expansible en bout

Rima de expansión



List No. 1733

STANDARD PACKAGE All sizes — 1 each

NOTE: Expansion feature is for expansion and regrind to the original reamer size only. Not to be used as an adjustable reamer for producing different hole sizes. Expansion screw should never be loosened to achieve a smaller reamer size.

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
3/8	.3750	5/16	3/4	7	6	22901
13/32	.4062	5/16	3/4	7	6	22902
7/16	.4375	3/8	7/8	7	6	22903
15/32	.4688	3/8	7/8	7	6	22904
1/2	.5000	7/16	1	8	6	22905
17/32	.5313	7/16	1	8	6	22906
9/16	.5625	7/16	1 1/8	8	6	22907
19/32	.5938	7/16	1 1/8	8	6	22908
5/8	.6250	9/16	1 1/4	9	6	22909
21/32	.6562	9/16	1 1/4	9	6	22910
11/16	.6875	9/16	1 1/4	9	6	22911
23/32	.7188	9/16	1 1/4	9	6	22912
3/4	.7500	5/8	1 3/8	9 1/2	6	22913
25/32	.7812	5/8	1 3/8	9 1/2	6	22914
13/16	.8125	5/8	1 3/8	9 1/2	6	22915
27/32	.8438	5/8	1 3/8	9 1/2	6	22916
7/8	.8750	3/4	1 1/2	10	6	22917
29/32	.9062	3/4	1 1/2	10	6	22918
15/16	.9375	3/4	1 1/2	10	6	22919
31/32	.9688	3/4	1 1/2	10	6	22920
1	1.0000	7/8	1 5/8	10 1/2	8	22921
1 1/16	1.0625	7/8	1 5/8	10 1/2	8	22922
1 1/8	1.1250	7/8	1 3/4	11	8	22923
1 3/16	1.1875	1	1 3/4	11	8	22924
1 1/4	1.2500	1	1 7/8	11 1/2	8	22925

Carbide Tipped Expansion Straight Shank Chucking Reamers

Straight Flute — Right Hand Cut

Expansion Reamers are expandable to permit many regrinds to the original reamer size. **Carbide Tipped** offers excellent wear resistance for general reaming of steel, cast iron, plastics, and other abrasive non-ferrous materials. Longer tool life in production applications.

Alésoir à pointe au carbure

Rima con punta de carburo



List No. 5733

NOTE: Expansion feature is for expansion and regrind to the original reamer size only. Not to be used as an adjustable reamer for producing different hole sizes. Expansion screw should never be loosened to achieve a smaller reamer size.

STANDARD PACKAGE All sizes — 1 each

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
3/8	.3750	5/16	1	7	4	56003
7/16	.4375	3/8	1	7	4	56004
1/2	.5000	7/16	1	8	6	56005
9/16	.5625	7/16	1 1/8	8	6	56007
5/8	.6250	9/16	1 1/4	9	6	56009
11/16	.6875	9/16	1 1/4	9	6	56011
3/4	.7500	5/8	1 3/8	9 1/2	6	56013

(continued)

Carbide Tipped Expansion Chucking Reamers (continued)

List No. 5733

Alésoir à pointe au carbure

Rima con punta de carburo

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
13/16	.8125	5/8	13/8	9 1/2	6	56015
27/32	.8437	5/8	13/8	9 1/2	6	56016*
7/8	.8750	3/4	1 1/2	10	6	56017
15/16	.9375	3/4	1 1/2	10	8	56019
1	1.000	7/8	1 5/8	10 1/2	8	56021
1 1/16	1.0625	7/8	1 5/8	10 1/2	8	56023
1 1/8	1.1250	7/8	1 3/4	11	8	56025
1 3/16	1.1875	1	1 3/4	11	8	56026
1 1/4	1.2500	1	1 7/8	11 1/2	8	56027
1 3/8	1.3750	1	2	12	8	56029
1 1/2	1.5000	1 1/4	2 1/8	12 1/2	8	56031
1 11/16	1.6875	1 1/4	2 1/8	12 1/2	8	56039*
1 13/16	1.8125	1 1/4	2 1/8	12 1/2	8	56040*
1 7/8	1.8750	1 1/4	2 1/8	12 1/2	8	56041*
1 15/16	1.9375	1 1/4	2 1/8	12 1/2	8	56042*

*Available While Supplies Last

Right Hand Helix Straight Shank Chucking Reamers

High Speed Steel — Right Hand Cut

Right Hand Helix pulls chips out of the hole in blind hole and through hole applications, bridges interruptions and provides better finish and sizing than straight flute reamers. Recommended for reaming a wide range of materials.

Alésoir machine

Rima de máquina



List No. 1653

45° Chamfer for reaming of most materials

STANDARD PACKAGE All sizes — 1 each

SIZE	DEC. EQUIV.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
1/16	.0625	1/2	2 1/2	4	21701
5/64	.0781	3/4	3	4	21702
3/32	.0938	3/4	3	4	21703
7/64	.1094	7/8	3 1/2	4	21704
1/8	.1250	7/8	3 1/2	4	21705
9/64	.1406	1	4	4	21706
5/32	.1562	1	4	6	21707
11/64	.1719	1 1/8	4 1/2	6	21708
3/16	.1875	1 1/8	4 1/2	6	21709
13/64	.2031	1 1/4	5	6	21710
7/32	.2188	1 1/4	5	6	21711
15/64	.2344	1 1/2	6	6	21712
1/4	.2500	1 1/2	6	6	21713
17/64	.2656	1 1/2	6	6	21714
9/32	.2812	1 1/2	6	6	21715
19/64	.2969	1 1/2	6	6	21716
5/16	.3125	1 1/2	6	6	21717
21/64	.3281	1 1/2	6	6	21718
11/32	.3438	1 1/2	6	6	21719
23/64	.3594	1 3/4	7	6	21720
3/8	.3750	1 3/4	7	6	21721
25/64	.3906	1 3/4	7	6	21722
13/32	.4062	1 3/4	7	6	21723
27/64	.4219	1 3/4	7	6	21724
7/16	.4375	1 3/4	7	6	21725
29/64	.4531	1 3/4	7	6	21726
15/32	.4688	1 3/4	7	6	21727

SIZE	DEC. EQUIV.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
31/64	.4844	2	8	6	21728
1/2	.5000	2	8	6	21729
17/32	.5313	2	8	6	21730
9/16	.5625	2	8	8	21731
19/32	.5938	2	8	8	21732
5/8	.6250	2 1/4	9	8	21733
21/32	.6562	2 1/4	9	8	21734
11/16	.6875	2 1/4	9	8	21735
23/32	.7188	2 1/4	9	8	21736
3/4	.7500	2 1/2	9 1/2	8	21737
25/32	.7812	2 1/2	9 1/2	8	21738
13/16	.8125	2 1/2	9 1/2	8	21739
27/32	.8438	2 1/2	9 1/2	8	21740
7/8	.8750	2 5/8	10	8	21741
29/32	.9062	2 5/8	10	8	21742
15/16	.9375	2 5/8	10	8	21743
31/32	.9688	2 5/8	10	8	21744
1	1.0000	2 3/4	10 1/2	8	21745
1 1/16	1.0625	2 3/4	10 1/2	8	21746
1 1/8	1.1250	2 7/8	11	10	21747
1 3/16	1.1875	2 7/8	11	10	21748
1 1/4	1.2500	3	11 1/2	10	21749
1 5/16	1.3125	3	11 1/2	10	21750
1 3/8	1.3750	3 1/4	12	10	21751
1 7/16	1.4375	3 1/4	12	10	21752
1 1/2	1.5000	3 1/2	12 1/2	10	21753

Carbide Tipped Right Hand Helix Straight Shank Chuckling Reamers

Alésoir à pointe au carbure Rima con punta de carburo



List No. 5653

Diameter Tolerance **+0.0003/-0**

STANDARD PACKAGE All sizes — 1 each

Right Hand Cut

Right Hand Helix pulls chips out of the hole in blind hole and through hole applications, bridges interruptions and provides better finish and sizing than straight flute reamers. **Carbide Tipped** offers excellent wear resistance for general reaming of steel, cast iron, plastics, and other abrasive non-ferrous materials. Longer tool life in production applications.

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
1/4	.2500	15/64	1 1/2	6	4	55151*
9/32	.2812	15/64	1 1/2	6	4	55152*
7/16	.4375	3/8	1 3/4	7	4	55157*
15/32	.4687	3/8	1 3/4	7	4	55158*
17/32	.5312	7/16	2	8	6	55168*
9/16	.5625	7/16	2	8	6	55160*
19/32	.5938	7/16	2	8	6	55169*

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
11/16	.6875	9/16	2 1/4	9	6	55162*
25/32	.7812	5/8	2 1/2	9 1/2	6	55172*
13/16	.8125	5/8	2 1/2	9 1/2	6	55164*
27/32	.8437	5/8	2 1/2	9 1/2	6	55173*
29/32	.9062	3/4	2 5/8	10	6	55174*
31/32	.9687	3/4	2 5/8	10	8	55175*
1 1/8	1.1250	7/8	2 7/8	11	8	55177*

* Available While Supplies Last

Carbide Tipped Left Hand Helix Straight Shank Chuckling Reamers

Alésoir à pointe au carbure Rima con punta de carburo



List No. 5651

Tools are furnished to a **+0.0003 -0.0000** diameter tolerance.

Right Hand Cut

Left Hand Helix, for through holes only, pushes chips ahead of the reamer, bridges interruptions and provides better finish and sizing than straight flute reamers.

Carbide Tipped offers excellent wear resistance for general reaming of steel, cast iron, plastics and other abrasive non-ferrous materials. Longer tool life in production applications.

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
1/4	.2500	15/64	1 1/2	6	4	55101*
9/32	.2812	15/64	1 1/2	6	4	55102*
5/16	.3125	9/32	1 1/2	6	4	55103*
7/16	.4375	3/8	1 3/4	7	4	55107*
15/32	.4688	3/8	1 3/4	7	4	55108*
9/16	.5625	7/16	2	8	6	55110*
19/32	.5938	7/16	2	8	6	55119*

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
11/16	.6875	9/16	2 1/4	9	6	55112*
23/32	.7188	9/16	2 1/4	9	6	55121*
27/32	.8438	5/8	2 1/2	9 1/2	6	55123*
29/32	.9062	3/4	2 5/8	10	6	55124*
15/16	.9375	3/4	2 5/8	10	8	55116*
31/32	.9688	3/4	2 5/8	10	8	55125*
1 3/16	1.1875	1	2 7/8	11	8	55128*
1 1/4	1.2500	1	3	11 1/2	8	55129*

* Available While Supplies Last

Left Hand Helix Straight Shank Chucking Reamers

High Speed Steel — Right Hand Cut

45° Chamfer for reaming of most materials. **Left Hand Helix**, for through holes only, pushes chips ahead of the reamer, bridges interruptions and provides better finish and sizing than straight flute reamers.

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
5/64	.0781	.0720	3/4	3	4	21885*
3/32	.0938	.0880	3/4	3	4	21886*
7/64	.1094	.1030	7/8	3 1/2	4	21887*
1/8	.1250	.1190	7/8	3 1/2	4	21888*
9/64	.1406	.1350	1	4	4	21889*
5/32	.1562	.1510	1	4	6	21890*
11/64	.1719	.1645	1 1/8	4 1/2	6	21891*
13/64	.2031	.1945	1 1/4	5	6	21893*
7/32	.2188	.2075	1 1/4	5	6	21894*
15/64	.2344	.2265	1 1/2	6	6	21895*
1/4	.2500	.2405	1 1/2	6	6	21896*
9/32	.2812	.2485	1 1/2	6	6	21898*
19/64	.2969	.2792	1 1/2	6	6	21899*
5/16	.3125	.2792	1 1/2	6	6	21900*
21/64	.3281	.2792	1 1/2	6	6	21901*
23/64	.3594	.3105	1 3/4	7	6	21903*
25/64	.3906	.3105	1 3/4	7	6	21905*
13/32	.4062	.3105	1 3/4	7	6	21906*
27/64	.4219	.3730	1 3/4	7	6	21907*
7/16	.4375	.3730	1 3/4	7	6	21908*
29/64	.4531	.3730	1 3/4	7	6	21909*
15/32	.4688	.3730	1 3/4	7	6	21910*

* Available While Supplies Last

Taper Shank Chucking Reamers

High Speed Steel — Morse Taper Shank
Straight Flute — Right Hand Cut

SIZE	MORSE TAPER NO.	DEC. EQUIV.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
1/4	1	.2500	1 1/2	6	6	22311
5/16	1	.3125	1 1/2	6	6	22313
11/32	1	.3438	1 1/2	6	6	22314
3/8	1	.3750	1 3/4	7	6	22315
13/32	1	.4062	1 3/4	7	6	22316
7/16	1	.4375	1 3/4	7	6	22317
15/32	1	.4688	1 3/4	7	6	22318
1/2	1	.5000	2	8	6	22319
17/32	1	.5313	2	8	6	22320
9/16	1	.5625	2	8	8	22321
19/32	1	.5938	2	8	8	22322
5/8	2	.6250	2 1/4	9	8	22323
21/32	2	.6562	2 1/4	9	8	22324
11/16	2	.6875	2 1/4	9	8	22325
23/32	2	.7188	2 1/4	9	8	22326
3/4	2	.7500	2 1/2	9 1/2	8	22327

Alésoir machine

Rima de máquina



List No. 1652

Diameter Tolerances

up to 1/2" — +.0002/-0

over 1/2" to 5/8" — +.0003/-0

over 5/8" to 1 1/2" — +.0001/+ .0004

STANDARD PACKAGE All sizes - 1 each

SIZE	DEC. EQUIV.	SHANK DIA.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
31/64	.4844	.4355	2	8	6	21911*
17/32	.5313	.4355	2	8	6	21913*
9/16	.5625	.4355	2	8	8	21914*
19/32	.5938	.4355	2	8	8	21915*
21/32	.6562	.5615	2 1/4	9	8	21917*
11/16	.6875	.5615	2 1/4	9	8	21918*
23/32	.7188	.5615	2 1/4	9	8	21919*
3/4	.7500	.6240	2 1/2	9 1/2	8	21920*
27/32	.8438	.6240	2 1/2	9 1/2	8	21923*
29/32	.9062	.7490	2 5/8	10	8	21925*
15/16	.9375	.7490	2 5/8	10	8	21926*
31/32	.9688	.7490	2 5/8	10	8	21927*
1	1.0000	.8740	2 3/4	10 1/2	8	21928*
11/16	1.0625	.8740	2 3/4	10 1/2	8	21929*
13/16	1.1875	.9990	2 7/8	11	10	21931*
1 1/4	1.2500	.9990	3	11 1/2	10	21932*
1 5/16	1.3125	.9990	3	11 1/2	10	21933*
1 3/8	1.3750	.9990	3 1/4	12	10	21934*
1 7/16	1.4375	1.2490	3 1/4	12	10	21935*
1 1/2	1.5000	1.2490	3 1/2	12 1/2	10	21936*

Alésoir machine

Rima de máquina



List No. 1656

45° Chamfer for reaming of most materials.

SIZE	MORSE TAPER NO.	DEC. EQUIV.	FLUTE LENGTH	OAL	NO. OF FLUTES	EDP NO.
29/32	2	.7812	2 1/2	9 1/2	8	22328
19/16	2	.8125	2 1/2	9 1/2	8	22329
27/32	2	.8438	2 1/2	9 1/2	8	22330
7/8	2	.8750	2 5/8	10	8	22331
29/32	2	.9062	2 5/8	10	8	22332
15/16	3	.9375	2 5/8	10	8	22333
31/32	3	.9688	2 5/8	10	8	22334
1	3	1.0000	2 3/4	10 1/2	8	22335
1 1/16	3	1.0625	2 3/4	10 1/2	8	22336
1 1/8	3	1.1250	2 7/8	11	10	22337
1 3/16	3	1.1875	2 7/8	11	10	22338
1 1/4	4	1.2500	3	11 1/2	10	22339
1 5/16	4	1.3125	3	11 1/2	10	22340
1 3/8	4	1.3750	3 1/4	12	10	22341
1 7/16	4	1.4375	3 1/4	12	10	22342
1 1/2	4	1.5000	3 1/2	12 1/2	10	22343