

PAN AMERICAN TOOL CORPORATION

AMERICA'S LARGEST IN-STOCK SOURCE FOR QUALITY AIRCRAFT CUTTING TOOLS



2017



Pan American Tool Corporation was founded in 1986 to supply specialized precision metal cutting tools expressly for the aviation and aerospace industries. From modest beginnings as a family owned and operated regional supplier of precision aircraft tools, the Company today has emerged as a global standard for product quality and value, application knowledge, and responsiveness to customer needs for a myriad of critical cutting tool applications for private, business, commercial and military aviation.

Pan American Tool's headquarters is located in Fort Lauderdale, Florida, with satellite offices in Alabama, Arizona, Oklahoma and Texas. The Company serves its customers through direct sales and service offices in the U.S. and globally in more than 166 countries directly and through Company-certified aviation-product distributors.

Order Entry & Stocking Program Ensures Fast, Accurate Order Fulfillment

Pan American Tool is recognized as an innovator not only for the extent of cutting tool lines it carries, but also for its ground breaking stocking programs that now serve as exemplars for the industry. Stocking programs encompass a computerized tracking system that matches order entry with an inventory of over 3000 standard and specialty cutting tools totaling over five million parts, and highly skilled and experienced order fillers who strive for 100% accuracy on every order. The Company also offers customized customer-stocking programs – all geared toward Pan American Tool's goal of shipping orders 100% complete on the same day the order is received.

Product Quality & Value Help Maximize Productivity

Key components of product quality and absolute customer satisfaction are performance and value. Pan American Tool products are quality built and rugged enough to meet or surpass the industry's highest standards for tool design, performance, durability and suitability for the designated applications. The advanced design and quality inherent in every standard or specialty Pan American Tool-brand allows even the most experienced aircraft and aerospace technicians to maximize productivity on the job, further adding overall value to the user.

Pan American Tool Application Specialists Work closely With Users

Pan American Tool customers increasingly view the Company's field sales specialists as members of their own production and maintenance teams, drawing on the specialist's wealth of product knowledge and specialized metal cutting expertise on applications ranging from AOG emergency repairs and scheduled maintenance/overhaul to the actual production line. Pan American Tool sales specialists also work closely with customer purchasing and stocking managers to help ensure the availability of the right tool at the right location at the right time – every time.

The Industry's Most Complete Line of Precision Standard & Specialized Cutting Tools

Pan American Tool offers an expanding inventory of standard and specialized precision metal cutting tools. Pan American Tool Corporation is proud to supply the aviation and aerospace industries with superior aircraft cutting tools.

TERMS AND CONDITIONS

TERMS: Net 30 days for qualified customers

FREIGHT TERMS: F.O.B. our plant Ft. Lauderdale, Florida

CREDIT: On application by rated companies. Visa, MasterCard, American Express, Discover, and IMPAC Cards accepted.

MINIMUM ORDER: Minimum order is \$50.00. All prices quoted in U.S Dollars. C.O.D. Shipments \$12.50 additional.

WARRANTY: Pan American Tool Corporation tools are guaranteed against all defects in material or workmanship, when used for the purpose for which the tool was designed.

CLAIMS: All claims must be made no later than 10 business days after receipt of merchandise.

RETURNS: A Returned Merchandise Authorization (RMA) must be obtained from Pan American Tool Corp's customer service department prior to returning merchandise. Once an RMA is issued, it will be e-mailed or faxed. A copy of the RMA must accompany the returned items. Once the merchandise is received and inspected, a credit will be issued for the purchase price, less any applicable restocking charges. Items must be in new condition and in the original packaging.

SPECIAL ORDERS: Items that are special orders, specifically items that are fabricated or altered to accommodate customer needs, are not returnable. Once the fabrication process begins, special orders cannot be cancelled.

Prices in this catalog are subject to change without notice.

WARNING: Always wear proper eye protection when working with any cutting tools.

CAGE CODE: 0PFP1

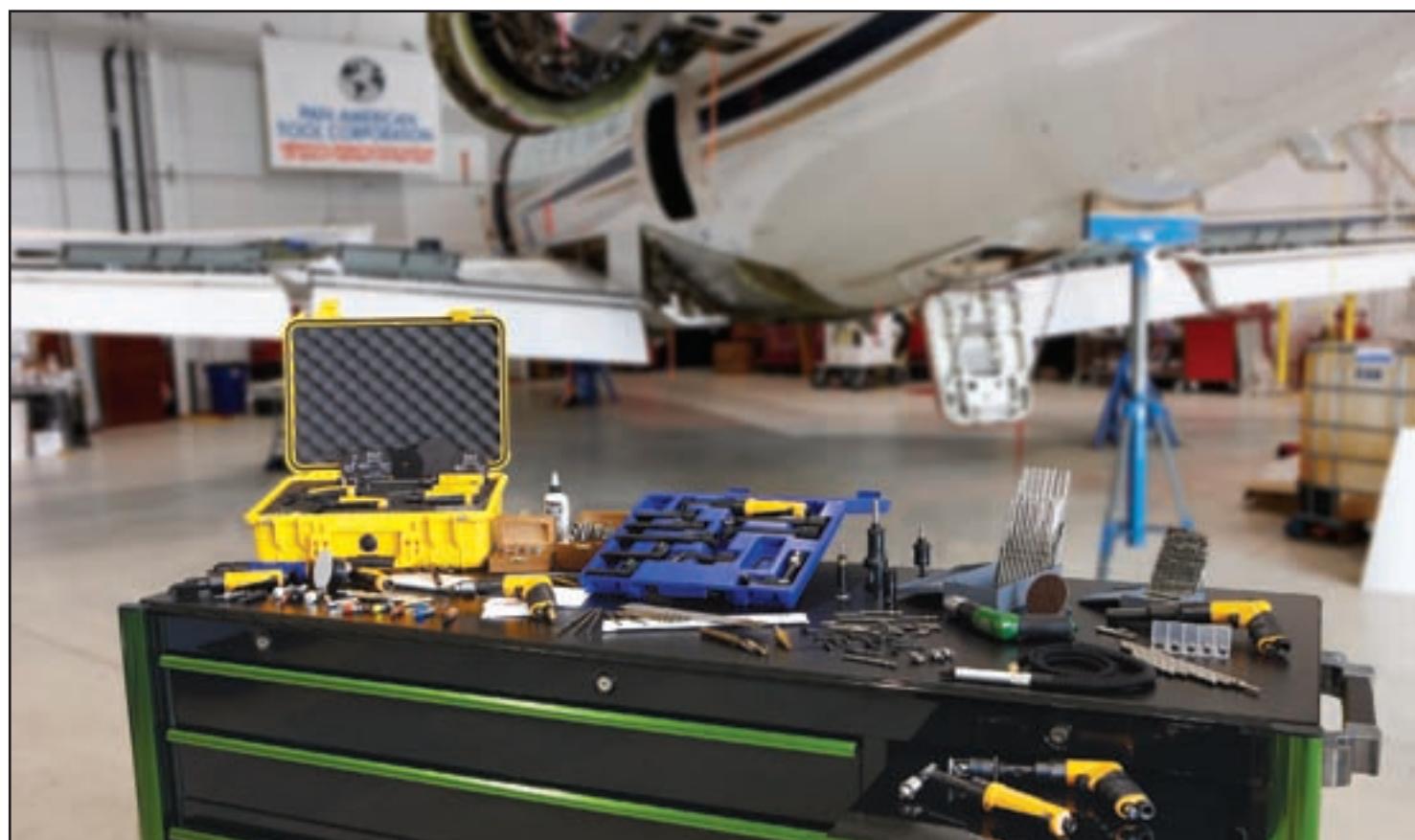


TABLE OF CONTENTS

DRILLS AND TAPS

Cobalt Jobber Drills - Wire Gauge, Fractional, Letter Sizes	7 - 10
Cobalt Aircraft Extension Drills 6" - Number, Fractional, Letter Sizes	11 - 12
Cobalt Aircraft Extension Drills 12" - Number, Fractional, Letter Sizes	13 - 14
Cobalt Aircraft Type D Drills	15
Cobalt Aircraft Stove Burner Drills	15 - 16
Double Margin Drills	17 - 20
Cobalt Metric Jobber Drills	21 - 22
Cobalt Screw Machine Drills	23 - 25
Left Hand Drills	26
Cobalt Silver and Deming Drills	26
Solid Carbide Drills	27 - 30A
Carbide Brad Point Drills, Drill Reamers, Dagger Drills	31 - 32
Aircraft Taper Router Bits and Step Drills	33
Cobalt Drill Sets	34 - 35
Aerospace Taps	36
Joocy-Loob and Drill Stops	37
Threaded Shank Adapter Drills	38 - 42

REAMERS

HSS Piloted Chucking Reamers	44-46
HSS Piloted Threaded Reamers	47-48
HSS Threaded Reamers	48
HSS Standard Chucking Reamers	49-52
HSS Chucking Reamer Sets	52

COUNTERSINKS

High Speed Steel Stop Countersinks	54-57
Pilot Bonding Brushes	57
Carbide Tipped Stop Countersinks with Integral Pilot	58-59
Carbide Tipped Stop Countersinks with Replaceable Pilot	59
Pilots for Carbide Tipped Stop Countersinks	59
Solid Carbide Stop Countersinks	60
Chatterless Countersinks, HSS Hollow Cutters, and Rivet Shavers	61
HSS Counterbores and Pilots	62-63
Reverse Spotfacers/Counterbores and Arbors	64
Micro-Stop Countersink Cages	65-67

INSERT BITS

Insert Bits	69-73
ACR Bits	74-75
Phillips Insert Bits - Bulk Pricing	76
E-Z Grip Friction Drops, Screwbuster, Screw Extractors, Paint Cutters and Extensions	76-77

CLECO FASTENERS

Cleco Fasteners	79-81
Cleco Installation Tools	82-83

CARBIDE BURS

Carbide Burs Single and Double Cut	85-90
Carbide Bur Sets	91

SURFACE CONDITIONING

Nova® Orbital Sander	93
Hook and Loop Disc Holders, Aluminum Oxide Hook and Loop Sanding Discs, and Surface Conditioning Discs	93
Nova® Surface Conditioning Discs and Disc Holders	94
Surface Conditioning Discs Comparative Chart	95
Nova® Pencil Grinder, Phenolic Scraper	95
Super Grade Premium, and Resinoid Reinforced Cut Off Wheels	96
Mounting Mandrel Set	96

NOVA PNEUMATIC TOOLS

Standard Nova® Tools	98 - 110
Flat Offset Dogleg Heads	111
Standard Nova® Tool Kits	112
Compact Nova® Tools	113 - 119
Compact Nova® Tool Kits	120
Nova® Pistol Grip Drills	121 - 128
Nova® Flat Offset Angle Attachments	129
Nova® Optional Accessories	130
Nova® Cleco Installation Tools	131 - 132
Nova® Pencil Grinder, Engraving Pen, and Stylus	133
Nova® Grinders	134 - 135
Decimal Equivalent Chart	136



DRILLS

Cobalt Jobber Drills - Wire Gauge Sizes 1 - 40.....	7
Cobalt Jobber Drills - Wire Gauge Sizes 41 - 80.....	8
Cobalt Jobber Drills - Fractional Sizes.....	9
Cobalt Jobber Drills - Letter Sizes	10
Cobalt Aircraft Extension Drills 6" - Number Sizes 1 - 52.....	11
Cobalt Aircraft Extension Drills 6" - Fractional Sizes	12
Cobalt Aircraft Extension Drills 6" - Letter Sizes.....	12
Cobalt Aircraft Extension Drills 12" - Number Sizes 1 - 52.....	13
Cobalt Aircraft Extension Drills 12" - Fractional Sizes	14
Cobalt Aircraft Extension Drills 12" - Letter Sizes.....	14
Cobalt Aircraft Type D Drills	15
Cobalt Aircraft Stove Burner Drills.....	15
6" Cobalt Aircraft Stove Burner Drills.....	16
Double Margin Drill Information.....	16
Double Margin Drills - Number Sizes.....	17
Double Margin Drills - Fractional and Letter Sizes	17
Piloted Double Margin Drills.....	18
Double Margin 6" Extension Drills - Number Sizes.....	19
Double Margin 6" Extension Drills - Fractional and Letter Sizes	19
Piloted Double Margin Drills - Hi Lok® Sizes.....	20
Cobalt Threaded Shank Double Margin Drills.....	20
Cobalt Metric Jobber Drills 1.00 mm - 5.50 mm	21
Cobalt Metric Jobber Drills 5.60 mm - 10.00 mm	22
Cobalt Screw Machine Drills - Number Sizes 1 - 45.....	23
Cobalt Screw Machine Drills - Number Sizes 46 - 60.....	24
Cobalt Screw Machine Drills - Fractional Sizes	24
Cobalt Screw Machine Drills - Letter Sizes.....	25
Left Hand Drills.....	26
Cobalt Silver and Deming Drills	26
Solid Carbide Drills - Number Sizes 1 - 30	27
Solid Carbide Drills - Number Sizes 31 - 60	28
Solid Carbide Drills - Letter Sizes	29
Solid Carbide Drills - Fractional Sizes.....	30
Carbide Brad Point Drills.....	31
Carbide Drill Reamer.....	31
Carbide Dagger Drills	32
Temporary Sheet Metal Fasteners	32
Aircraft Taper Routers	33
Threaded Shank Taper Router Bits.....	33
Step Drills	33
Cobalt Drill Sets.....	34 - 35
Aerospace Taps.....	36
Joocy-Loob	37
Drill Stops	37
Threaded Shank Adapter Drills - Very Stubby and Extra Long.....	38
Miniature Threaded Shank Adapter Drills	38
Threaded Shank Adapter Drills - Number Sizes 1 - 25 Stubby, Short and Long.....	39
Threaded Shank Adapter Drills - Number Sizes 26 - 60 Stubby, Short and Long.....	40
Threaded Shank Adapter Drills - Fractional Sizes Stubby, Short and Long	41
Threaded Shank Adapter Drills - Letter Sizes Stubby, Short and Long	41
Threaded Shank Adapter Drills - Bulk Price Schedule	42

COBALT JOBBER DRILLS

Cobalt High Speed Steel Jobber Length Drills used for drilling in tough high tensile strength materials like stainless steel, titanium, and inconel. Heavy duty flute construction and 135° split points.

WIRE GAUGE SIZES 1 - 40

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
1	01-001	.2280	2-5/8	3-7/8	12
2	01-002	.2210	2-5/8	3-7/8	12
3	01-003	.2130	2-1/2	3-3/4	12
4	01-004	.2090	2-1/2	3-3/4	12
5	01-005	.2055	2-1/2	3-3/4	12
6	01-006	.2040	2-1/2	3-3/4	12
7	01-007	.2010	2-7/16	3-5/8	12
8	01-008	.1990	2-7/16	3-5/8	12
9	01-009	.1960	2-7/16	3-5/8	12
10	01-010	.1935	2-7/16	3-5/8	12
11	01-011	.1910	2-5/16	3-1/2	12
12	01-012	.1890	2-5/16	3-1/2	12
13	01-013	.1850	2-5/16	3-1/2	12
14	01-014	.1820	2-3/16	3-3/8	12
15	01-015	.1800	2-3/16	3-3/8	12
16	01-016	.1770	2-3/16	3-3/8	12
17	01-017	.1730	2-3/16	3-3/8	12
18	01-018	.1695	2-1/8	3-1/4	12
19	01-019	.1660	2-1/8	3-1/4	12
20	01-020	.1610	2-1/8	3-1/4	12
21	01-021	.1590	2-1/8	3-1/4	12
22	01-022	.1570	2	3-1/8	12
23	01-023	.1540	2	3-1/8	12
24	01-024	.1520	2	3-1/8	12
25	01-025	.1495	1-7/8	3	12
26	01-026	.1470	1-7/8	3	12
27	01-027	.1440	1-7/8	3	12
28	01-028	.1405	1-3/4	2-7/8	12
29	01-029	.1360	1-3/4	2-7/8	12
30	01-030	.1285	1-5/8	2-3/4	12
31	01-031	.1200	1-5/8	2-3/4	12
32	01-032	.1160	1-5/8	2-3/4	12
33	01-033	.1130	1-1/2	2-5/8	12
34	01-034	.1110	1-1/2	2-5/8	12
35	01-035	.1100	1-1/2	2-5/8	12
36	01-036	.1065	1-7/16	2-1/2	12
37	01-037	.1040	1-7/16	2-1/2	12
38	01-038	.1015	1-7/16	2-1/2	12
39	01-039	.0995	1-3/8	2-3/8	12
40	01-040	.0980	1-3/8	2-3/8	12



COBALT JOBBER DRILLS

Cobalt High Speed Steel Jobber Length Drills used for drilling in tough high tensile strength materials like stainless steel, titanium, and inconel. Heavy duty flute construction and 135° split points.



WIRE GAUGE SIZES 41 - 80

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
41	01-041	.0960	1-3/8	2-3/8	12
42	01-042	.0935	1-1/4	2-1/4	12
43	01-043	.0890	1-1/4	2-1/4	12
44	01-044	.0860	1-1/8	2-1/8	12
45	01-045	.0820	1-1/8	2-1/8	12
46	01-046	.0810	1-1/8	2-1/8	12
47	01-047	.0785	1	2	12
48	01-048	.0760	1	2	12
49	01-049	.0730	1	2	12
50	01-050	.0700	1	2	12
51	01-051	.0670	1	2	12
52	01-052	.0635	7/8	1-7/8	12
53*	01-053	.0595	7/8	1-7/8	12
54*	01-054	.0550	7/8	1-7/8	12
55*	01-055	.0520	7/8	1-7/8	12
56*	01-056	.0465	3/4	1-3/4	12
57*	01-057	.0430	3/4	1-3/4	12
58*	01-058	.0420	11/16	1-5/8	12
59*	01-059	.0410	11/16	1-5/8	12
60*	01-060	.0400	11/16	1-5/8	12
61*	01-061	.0390	11/16	1-5/8	12
62*	01-062	.0380	5/8	1-1/2	12
63*	01-063	.0370	5/8	1-1/2	12
64*	01-064	.0360	5/8	1-1/2	12
65*	01-065	.0350	5/8	1-1/2	12
66*	01-066	.0330	1/2	1-3/8	12
67*	01-067	.0320	1/2	1-3/8	12
68*	01-068	.0310	1/2	1-3/8	12
69*	01-069	.0292	1/2	1-3/8	12
70*	01-070	.0280	3/8	1-1/4	12
71*	01-071	.0260	3/8	1-1/4	12
72*	01-072	.0250	5/16	1-1/8	12
73*	01-073	.0240	5/16	1-1/8	12
74*	01-074	.0225	1/4	1	12
75*	01-075	.0210	1/4	1	12
76*	01-076	.0200	3/16	7/8	12
77*	01-077	.0180	3/16	7/8	12
78*	01-078	.0160	3/16	7/8	12
79*	01-079	.0145	1/8	3/4	12
80*	01-080	.0135	1/8	3/4	12

*NON SPLIT POINT

COBALT JOBBER DRILLS

Cobalt High Speed Steel Jobber Length Drills used for drilling in tough high tensile strength materials like stainless steel, titanium, and inconel. Heavy duty flute construction and 135° split points.

FRACTIONAL SIZES

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
1/64*	02-060	.0156	3/16	3/4	12
1/32*	02-058	.0312	1/2	1-3/8	12
3/64*	02-059	.0469	3/4	1-3/4	12
1/16	02-061	.0625	7/8	1-7/8	12
5/64	02-062	.0781	1	2	12
3/32	02-063	.0938	1-1/4	2-1/4	12
7/64	02-064	.1094	1-1/2	2-5/8	12
1/8	02-065	.1250	1-5/8	2-3/4	12
9/64	02-066	.1406	1-3/4	2-7/8	12
5/32	02-067	.1562	2	3-1/8	12
11/64	02-068	.1719	2-1/8	3-1/4	12
3/16	02-069	.1875	2-5/16	3-1/2	12
13/64	02-070	.2031	2-7/16	3-5/8	12
7/32	02-071	.2188	2-1/2	3-3/4	12
15/64	02-072	.2344	2-5/8	3-7/8	12
1/4	02-073	.2500	2-3/4	4	12
17/64	02-074	.2656	2-7/8	4-1/8	12
9/32	02-075	.2812	2-15/16	4-1/4	12
19/64	02-076	.2969	3-1/16	4-3/8	12
5/16	02-077	.3125	3-3/16	4-1/2	12
21/64	02-078	.3281	3-5/16	4-5/8	6
11/32	02-079	.3438	3-7/16	4-3/4	6
23/64	02-080	.3594	3-1/2	4-7/8	6
3/8	02-081	.3750	3-5/8	5	6
25/64	02-082	.3906	3-3/4	5-1/8	6
13/32	02-083	.4062	3-7/8	5-1/4	6
27/64	02-084	.4219	3-15/16	5-3/8	6
7/16	02-085	.4375	4-1/16	5-1/2	6
29/64	02-086	.4531	4-3/16	5-5/8	6
15/32	02-087	.4688	4-5/16	5-3/4	6
31/64	02-088	.4844	4-3/8	5-7/8	6
1/2	02-089	.5000	4-1/2	6	6

*NON SPLIT POINT

COBALT JOBBER DRILLS

Cobalt High Speed Steel Jobber Length Drills used for drilling in tough high tensile strength materials like stainless steel, titanium, and inconel. Heavy duty flute construction and 135° split points.



LETTER SIZES

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
A	03-090	.2340	2-5/8	3-7/8	12
B	03-091	.2380	2-3/4	4	12
C	03-092	.2420	2-3/4	4	12
D	03-093	.2460	2-3/4	4	12
E	03-094	.2500	2-3/4	4	12
F	03-095	.2570	2-7/8	4-1/8	12
G	03-096	.2610	2-7/8	4-1/8	12
H	03-097	.2660	2-7/8	4-1/8	12
I	03-098	.2720	2-7/8	4-1/8	12
J	03-099	.2770	2-7/8	4-1/8	12
K	03-100	.2810	2-15/16	4-1/4	12
L	03-101	.2900	2-15/16	4-1/4	12
M	03-102	.2950	3-1/16	4-3/8	12
N	03-103	.3020	3-1/16	4-3/8	12
O	03-104	.3160	3-3/16	4-1/2	12
P	03-105	.3230	3-5/16	4-5/8	6
Q	03-106	.3320	3-7/16	4-3/4	6
R	03-107	.3390	3-7/16	4-3/4	6
S	03-108	.3480	3-1/2	4-7/8	6
T	03-109	.3580	3-1/2	4-7/8	6
U	03-110	.3680	3-5/8	5	6
V	03-111	.3770	3-5/8	5	6
W	03-112	.3860	3-3/4	5-1/8	6
X	03-113	.3970	3-3/4	5-1/8	6
Y	03-114	.4040	3-7/8	5-1/4	6
Z	03-115	.4130	3-7/8	5-1/4	6

COBALT AIRCRAFT EXTENSION DRILLS

Cobalt High Speed Steel Drills used for drilling in tough high tensile strength materials like stainless steel, titanium, and inconel. Heavy duty flute construction and 135° split points. Extra length for hard to reach holes.

6" OVERALL LENGTH: NUMBER SIZES 1 - 52

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
1	05-200	.2280	2-5/8	12
2	05-201	.2210	2-5/8	12
3	05-202	.2130	2-1/2	12
4	05-203	.2090	2-1/2	12
5	05-204	.2055	2-1/2	12
6	05-205	.2040	2-1/2	12
7	05-206	.2010	2-7/16	12
8	05-207	.1990	2-7/16	12
9	05-208	.1960	2-7/16	12
10	05-209	.1935	2-7/16	12
11	05-210	.1910	2-5/16	12
12	05-211	.1890	2-5/16	12
13	05-212	.1850	2-5/16	12
14	05-213	.1820	2-3/16	12
15	05-214	.1800	2-3/16	12
16	05-215	.1770	2-3/16	12
17	05-216	.1730	2-3/16	12
18	05-217	.1695	2-1/8	12
19	05-218	.1660	2-1/8	12
20	05-219	.1610	2-1/8	12
21	05-220	.1590	2-1/8	12
22	05-221	.1570	2	12
23	05-222	.1540	2	12
24	05-223	.1520	2	12
25	05-224	.1495	1-7/8	12
26	05-225	.1470	1-7/8	12
27	05-226	.1440	1-7/8	12
28	05-227	.1405	1-3/4	12
29	05-228	.1360	1-3/4	12
30	05-229	.1285	1-5/8	12
31	05-230	.1200	1-5/8	12
32	05-231	.1160	1-5/8	12
33	05-232	.1130	1-1/2	12
34	05-233	.1110	1-1/2	12
35	05-234	.1100	1-1/2	12
36	05-235	.1065	1-7/16	12
37	05-236	.1040	1-7/16	12
40	05-239	.0980	1-3/8	12
41	05-240	.0960	1-3/8	12
42	05-241	.0935	1-1/4	12
43	05-242	.0890	1-1/4	12
44	05-243	.0860	1-1/8	12
45	05-244	.0820	1-1/8	12
46	05-245	.0810	1-1/8	12
47	05-246	.0785	1	12
48	05-247	.0760	1	12
49	05-248	.0730	1	12
50	05-249	.0700	1	12
51	05-250	.0670	1	12
52	05-251	.0635	7/8	12

OTHER SIZES AVAILABLE, PRICE UPON REQUEST



www.PANAMERICANTOOL.com



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COBALT AIRCRAFT EXTENSION DRILLS

Cobalt High Speed Steel Drills used for drilling in tough high tensile strength materials like stainless steel, titanium, and inconel. Heavy duty flute construction and 135° split points. Extra length for hard to reach holes.

6" OVERALL LENGTH: FRACTIONAL SIZES

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
1/16	04-100	.0625	7/8	12
5/64	04-101	.0781	1	12
3/32	04-102	.0938	1-1/4	12
7/64	04-103	.1094	1-1/2	12
1/8	04-104	.1250	1-5/8	12
9/64	04-105	.1406	1-3/4	12
5/32	04-106	.1562	2	12
11/64	04-107	.1719	2-1/8	12
3/16	04-108	.1875	2-5/16	12
13/64	04-109	.2031	2-7/16	12
7/32	04-110	.2188	2-1/2	12
15/64	04-111	.2344	2-5/8	12
1/4	04-112	.2500	2-3/4	12
17/64	04-125	.2656	2-7/8	12
9/32	04-114	.2812	2-15/16	12
19/64	04-116	.2969	3-1/16	6
5/16	04-115	.3125	3-3/16	6
21/64	04-121	.3281	3-5/16	6
11/32	04-120	.3438	3-7/16	6
23/64	04-124	.3594	3-1/2	6
3/8	04-113	.3750	3-5/8	6
25/64	04-118	.3906	3-3/4	6
13/32	04-119	.4062	3-7/8	6
27/64	04-126	.4219	3-15/16	6
7/16	04-117	.4375	4-1/16	6

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

6" OVERALL LENGTH: LETTER SIZES

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
B	06-418	.2380	2-3/4	6
C	06-408	.2420	2-3/4	6
D	06-403	.2460	2-3/4	6
F	06-402	.2570	2-7/8	6
G	06-401	.2610	2-7/8	6
I	06-413	.2720	2 7/8	6
J	06-404	.2770	2-7/8	6
K	06-405	.2810	2-15/16	6
M	06-409	.2950	3-1/16	6
N	06-410	.3020	3-1/16	6
U	06-407	.3680	3-5/8	6
W	06-416	.3860	3-3/4	6

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

COBALT AIRCRAFT EXTENSION DRILLS

Cobalt High Speed Steel Drills used for drilling in tough high tensile strength materials like stainless steel, titanium, and inconel. Heavy duty flute construction and 135° split points. Extra length for hard to reach holes.

12" OVERALL LENGTH: NUMBER SIZES 1 - 52

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
1	07-401	.2280	2-5/8	6
2	07-402	.2210	2-5/8	6
3	07-403	.2130	2-1/2	6
4	07-404	.2090	2-1/2	6
5	07-405	.2055	2-1/2	6
6	07-406	.2040	2-1/2	6
7	07-407	.2010	2-7/16	6
8	07-408	.1990	2-7/16	6
9	07-409	.1960	2-7/16	6
10	07-410	.1935	2-7/16	12
11	07-411	.1910	2-5/16	12
12	07-412	.1890	2-5/16	12
13	07-413	.1850	2-5/16	12
14	07-414	.1820	2-5/16	12
15	07-415	.1800	2-3/16	12
16	07-416	.1770	2-3/16	12
17	07-417	.1730	2-3/16	12
18	07-418	.1695	2-1/8	12
19	07-419	.1660	2-1/8	12
20	07-420	.1610	2-1/8	12
21	07-421	.1590	2-1/8	12
22	07-422	.1570	2	12
23	07-423	.1540	2	12
24	07-424	.1520	2	12
25	07-425	.1495	1-7/8	12
26	07-426	.1470	1-7/8	12
27	07-427	.1440	1-7/8	12
28	07-428	.1405	1-3/4	12
29	07-429	.1360	1-3/4	12
30	07-430	.1285	1-5/8	12
31	07-431	.1200	1-5/8	12
32	07-432	.1160	1-5/8	12
33	07-433	.1130	1-1/2	12
34	07-434	.1110	1-1/2	12
35	07-435	.1100	1-1/2	12
36	07-436	.1065	1-7/16	12
37	07-437	.1040	1-7/16	12
38	07-438	.1015	1-7/16	12
39	07-439	.0995	1-3/8	12
40	07-440	.0980	1-3/8	12
41	07-441	.0960	1-3/8	12
42	07-442	.0935	1-1/4	12
43	07-443	.0890	1-1/4	12
44	07-444	.0860	1 1/8	12
45	07-445	.0820	1 1/8	12
46	07-446	.0810	1 1/8	12
47	07-447	.0785	1	12
48	07-448	.0760	1	12
49	07-449	.0730	1	12
50	07-450	.0700	1	12
51	07-451	.0670	1	12
52	07-452	.0635	7/8	12

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

COBALT AIRCRAFT EXTENSION DRILLS

Cobalt High Speed Steel Drills used for drilling in tough high tensile strength materials like stainless steel, titanium, and inconel. Heavy duty flute construction and 135° split points. Extra length for hard to reach holes.

12" OVERALL LENGTH: FRACTIONAL SIZES

DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
1/16	06-300	.0625	7/8	12
5/64	06-301	.0781	1	12
3/32	06-302	.0938	1-1/4	12
7/64	06-303	.1094	1-1/2	12
1/8	06-304	.1250	1-5/8	12
9/64	06-305	.1406	1-3/4	12
5/32	06-306	.1562	2	12
11/64	06-307	.1719	2-1/8	12
3/16	06-308	.1875	2-5/16	12
13/64	06-309	.2031	2-7/16	12
7/32	06-310	.2188	2-1/2	12
15/64	06-311	.2344	2-5/8	6
1/4	06-312	.2500	2-3/4	6
17/64	06-325	.2656	2-7/8	6
9/32	06-316	.2812	2-15/16	6
19/64	06-317	.2969	3-1/16	6
5/16	06-313	.3125	3-1/16	6
21/64	06-326	.3281	3-5/16	6
11/32	06-321	.3438	3-7/16	6
23/64	06-322	.3594	3-1/2	6
3/8	06-314	.3750	3-5/8	6
25/64	06-327	.3906	3-3/4	3
13/32	06-320	.4062	3-7/8	3
27/64	06-324	.4219	3-15/16	3
7/16	06-318	.4375	4-1/16	3
29/64	06-328	.4531	4-3/16	3
15/32	06-315	.4688	4-5/16	3
31/64	06-329	.4844	4-3/8	3
1/2	06-319	.5000	4-1/2	3

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

12" OVERALL LENGTH: LETTER SIZES

LETTER SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
C	06-500	.2420	2-3/4	6
D	06-501	.2460	2-3/4	6
F	06-502	.2570	2-3/4	6
O	06-510	.3160	2-3/4	6
U	06-519	.3680	2-3/4	6

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

COBALT AIRCRAFT TYPE D DRILLS

Cobalt High Speed Steel Type D Jobber Length Drills designed for handling the higher thrust loads required when drilling high tensile and heat resistant alloy steels. Jobber length with short flutes, a heavy web and 135° P-9 split points gives the tool more rigidity, eliminating vibration and flexing. This results in a more accurate hole and longer tool life. It is an ideal tool for portable drilling applications



DIAMETER NUMBER	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
40	01-040D	.0980	13/16	2-3/8	12
30	01-030D	.1285	15/16	2-3/4	12
21	01-021D	.1590	1-1/16	3-1/4	12
13	01-013D	.1850	1-1/8	3-1/2	12
10	01-010D	.1935	1-3/16	3-5/8	12
1/4	02-073D	.2500	1-3/8	4	12

COBALT AIRCRAFT STOVE BURNER DRILLS

Cobalt High Speed Steel Jobber Length Drill 135° Split Point designed for tough applications in titanium, stainless, heat treated materials and aluminum alloys. They are made with no body clearance (margins) to permit greater edge strength, abrasion resistance, and to improve roundness of the hole



DRILL SIZE	PART NUMBER	DRILL DIAMETER	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
5	13-SB05	.2055	2-1/2	3-3/4	12
6	13-SB06	.2040	2-1/2	3-3/4	12
8	13-SB08	.1990	2-7/16	3-5/8	12
10	13-SB10	.1935	2-7/16	3-5/8	12
11	13-SB11	.1910	2-5/16	3-1/2	12
12	13-SB12	.1890	2-5/16	3-1/2	12
13	13-SB13	.1850	2-5/16	3-1/2	12
15	13-SB15	.1800	2-5/16	3-3/8	12
16	13-SB16	.1770	2-3/16	3-3/8	12
20	13-SB20	.1610	2-1/8	3-1/4	12
21	13-SB21	.1590	2-1/8	3-1/4	12
27	13-SB27	.1440	1-7/8	3	12
30	13-SB30	.1285	1-5/8	2-3/4	12
40	13-SB40	.0980	1-3/8	2-3/8	12
1/8	13-SB65	.1250	1-5/8	2-3/4	12
5/32	13-SB67	.1562	2	3-1/8	12
3/16	13-SB69	.1875	2-5/16	3-1/2	12
D	13-SB93	.2460	2-3/4	4	12
1/4	13-SB73	.2500	2-3/4	4	12
5/16	13-SB77	.3125	3-3/16	4-1/2	12

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

6" COBALT AIRCRAFT STOVE BURNER DRILLS

Cobalt High Speed Steel Jobber Length Drill designed for tough applications in titanium, stainless, heat treated materials, and aluminum alloys. They are made with no body clearance (margins) to permit greater edge strength, abrasion resistance, and to improve roundness of the hole.



NUMBER SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
5	14-SB05	.2055	2-1/2	12
6	14-SB06	.2040	2-1/2	12
8	14-SB08	.1990	2-7/16	12
10	14-SB10	.1935	2-7/16	12
11	14-SB11	.1910	2-5/16	12
12	14-SB12	.1890	2-5/16	12
13	14-SB13	.1850	2-5/16	12
15	14-SB15	.1800	2-5/16	12
16	14-SB16	.1770	2-3/16	12
20	14-SB20	.1610	2-1/8	12
21	14-SB21	.1590	2-1/8	12
27	14-SB27	.1440	1-7/8	12
30	14-SB30	.1285	1-5/8	12
40	14-SB40	.0980	1-3/8	12
1/8	14-SB65	.1250	1-5/8	12
5/32	14-SB67	.1562	2	12
3/16	14-SB69	.1875	2-5/16	12
D	14-SB93	.2460	2-3/4	12
1/4	14-SB73	.2500	2-3/4	6
5/16	14-SB77	.3125	3-3/16	6

OTHER SIZES AVAILABLE, WITH OR WITHOUT PILOTS, PRICE UPON REQUEST

DOUBLE MARGIN DRILLS

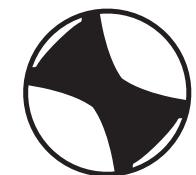
Double margin drills have an additional margin ground behind the leading margin, providing twice the number of contact points. This second margin performs various functions to improve hole quality.



DOUBLE MARGIN DRILL CLOSE UP



SINGLE MARGIN DRILL



DOUBLE MARGIN DRILL

- The trailing margin burnishes the cavity, making a true hole and smoother finish, helping to provide a more concentric drilled hole.
- A reamer finish can be achieved with double margin drills, eliminating a second operation.
- When a double margin drill is used with a drill bushing, the four margins locate in the bushing, providing increased bushing support in excess of 200%.
- When intermittent cutting is required, the double margin drill performs in two ways: enhanced margin support in the first cavity cut, and support on breakthrough, which stops the drill from wandering when in contact with the work piece.
- Drill back taper is more tightly controlled than a regular drill, enhancing a rounder hole location.
- 135 degree split point provides immediate self-centering on contact with the work piece, and reduces thrust, due to its notch-type web thinning at the chisel edge length. The split point is excellent for drilling harder materials (titanium, stainless steel, and high temperature alloys).
- The bronze-gold drill color is an easy way to identify these tools as being cobalt aircraft drills, and is easy to group when resharpening.

With all these features incorporated in this double margin drill, it is excellent for hand drilling.

DOUBLE MARGIN DRILLS

Jobber Length Cobalt 135° Split Point

Designed for close tolerance drilling in titanium, stainless, heat treated material and aluminum alloys. When the drill point penetrates enough for the second margin to contact the wall of the hole, the point is stabilized and true cylindrical geometry is established. Smooth accurate holes are produced and reaming can often be eliminated.



NUMBER SIZES

SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
5	13-DM05	.2055	2-1/2	3-3/4	12
6	13-DM06	.2040	2-1/2	3-3/4	12
8	13-DM08	.1990	2-7/16	3-5/8	12
10	13-DM10	.1935	2-7/16	3-5/8	12
11	13-DM11	.1910	2-5/16	3-1/2	12
12	13-DM12	.1890	2-5/16	3-1/2	12
---	13-DM70A	.1870	2-5/16	3-1/2	12
13	13-DM13	.1850	2-5/16	3-1/2	12
15	13-DM15	.1800	2-3/16	3-3/8	12
16	13-DM16	.1770	2-3/16	3-3/8	12
19	13-DM19	.1660	2-1/8	3-1/4	12
20	13-DM20	.1610	2-1/8	3-1/4	12
21	13-DM21	.1590	2-1/8	3-1/4	12
27	13-DM27	.1440	1-7/8	3	12
30	13-DM30	.1285	1-5/8	2-3/4	12
40	13-DM40	.0980	1-3/8	2-3/8	12

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

FRACTIONAL AND LETTER SIZES

SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
3/32	13-DM63	.0938	1-1/4	2-1/4	12
7/64	13-DM64	.1094	1-1/2	2-5/8	12
1/8	13-DM65	.1250	1-5/8	2-3/4	12
9/64	13-DM66	.1406	1-3/4	2-7/8	12
5/32	13-DM67	.1562	2	3-1/8	12
11/64	13-DM68	.1719	2-1/8	3-1/4	12
3/16	13-DM69	.1875	2-5/16	3-1/2	12
13/64	13-DM70	.2031	2-7/16	3-5/8	12
7/32	13-DM71	.2188	2-1/2	3-3/4	12
15/64	13-DM72	.2344	2-5/8	3-7/8	12
1/4	13-DM73	.2500	2-3/4	4	12
17/64	13-DM74	.2656	2-7/8	4-1/8	12
9/32	13-DM75	.2812	2-15/16	4-1/4	12
5/16	13-DM77	.3125	3-3/16	4-1/2	12
3/8	13-DM81	.3750	3-5/8	5	6
A	13-DM90	.2340	2-5/8	3-7/8	12
D	13-DM93	.2460	2-3/4	4	12
F	13-DM95	.2570	2-7/8	4-1/8	12
G	13-DM96	.2610	2-7/8	4-1/8	12

OTHER SIZES AVAILABLE, PRICE UPON REQUEST



PILOTED DOUBLE MARGIN DRILLS

Jobber Length Cobalt 135° Split Point

Designed for close tolerance drilling in titanium, stainless, heat treated material and aluminum alloys. When the drill point penetrates enough for the second margin to contact the wall of the hole, the point is stabilized and true cylindrical geometry is established. Smooth accurate holes are produced and reaming can often be eliminated.



SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	PILOT DIAMETER	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PILOT LENGTH INCHES	PIECES PER PACKAGE
30x40	13-100	.1285	.0980	1-5/8	2-3/4	1/4	6
27x40	13-106	.1440	.0980	1-7/8	3	1/4	6
21x40	13-114	.1590	.0980	2-1/8	3-1/4	1/4	6
21x30	13-107	.1590	.1285	2-1/8	3-1/4	1/4	6
20x40	13-117	.1610	.0980	2-1/8	3-1/4	1/4	6
20x30	13-115	.1610	.1285	2-1/8	3-1/4	1/4	6
16x40	13-118	.1770	.0980	2-3/16	3-3/8	1/4	6
16x30	13-119	.1770	.1285	2-3/16	3-3/8	1/4	6
13x40	13-121	.1850	.0980	2-5/16	3-1/2	1/4	6
13x30	13-128	.1850	.1285	2-5/16	3-1/2	1/4	6
13x21	13-135	.1850	.1590	2-5/16	3-1/2	1/4	6
12x40	13-142	.1890	.0980	2-5/16	3-1/2	1/4	6
12x30	13-149	.1890	.1285	2-5/16	3-1/2	1/4	6
12x21	13-156	.1890	.1590	2-5/16	3-1/2	1/4	6
11x30	13-170	.1910	.1285	2-5/16	3-1/2	1/4	6
11x21	13-163	.1910	.1590	2-5/16	3-1/2	1/4	6
10x40	13-184	.1935	.0980	2-7/16	3-5/8	1/4	6
10x30	13-177	.1935	.1285	2-7/16	3-5/8	1/4	6
10x21	13-191	.1935	.1590	2-7/16	3-5/8	1/4	6
Dx13	13-205	.2460	.1850	2-3/4	4	5/16	6
Dx3/16	13-198	.2460	.1875	2-3/4	4	5/16	6
1/4x30	13-230	.2500	.1285	2-3/4	4	5/16	6
1/4x21	13-327	.2500	.1590	2-3/4	4	5/16	6
1/4x11	13-223	.2500	.1910	2-3/4	4	5/16	6
1/4x10	13-216	.2500	.1935	2-3/4	4	5/16	6
5/16x1/4	13-244	.3125	.2500	3-3/16	4-1/2	5/16	6
3/8x1/4	13-250	.3750	.2500	3-5/8	5	3/8	6
3/8x5/16	13-255	.3750	.3125	3-5/8	5	3/8	6

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

DOUBLE MARGIN 6" OVERALL LENGTH EXTENSION DRILLS

Cobalt 135° Split Point

Designed for close tolerance drilling in titanium, stainless, heat treated material and aluminum alloys. When the drill point penetrates enough for the second margin to contact the wall of the hole, the point is stabilized and true cylindrical geometry is established. Smooth accurate holes are produced and reaming can often be eliminated.



NUMBER SIZES

SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
5	14-DM05	.2055	2-1/2	6	6
6	14-DM06	.2040	2-1/2	6	6
8	14-DM08	.1990	2-7/16	6	6
10	14-DM10	.1935	2-7/16	6	6
11	14-DM11	.1910	2-5/16	6	6
12	14-DM12	.1890	2-5/16	6	6
13	14-DM13	.1850	2-3/16	6	6
15	14-DM15	.1800	2-3/16	6	6
16	14-DM16	.1770	2-3/16	6	6
19	14-DM19	.1660	2-1/8	6	6
20	14-DM20	.1610	2-1/8	6	6
21	14-DM21	.1590	2-1/8	6	6
27	14-DM27	.1440	1-7/8	6	6
30	14-DM30	.1285	1-5/8	6	6
40	14-DM40	.0980	1-3/8	6	6

PILOTED EXTENSIONS AND OTHER SIZES AVAILABLE,
PRICE UPON REQUEST

FRACTIONAL AND LETTER SIZES

SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
3/32	14-DM63	.0938	1-1/4	6	6
7/64	14-DM64	.1094	1-1/2	6	6
1/8	14-DM65	.1250	1-5/8	6	6
9/64	14-DM66	.1406	1-3/4	6	6
5/32	14-DM67	.1562	2	6	6
11/64	14-DM68	.1719	2-1/8	6	6
3/16	14-DM69	.1875	2-5/16	6	6
7/32	14-DM71	.2188	2-1/2	6	6
1/4	14-DM73	.2500	2-3/4	6	6
5/16	14-DM77	.3125	3-3/16	6	6
3/8	14-DM81	.3750	3-5/8	6	6
D	14-DM93	.2460	2-3/4	6	6
F	14-DM95	.2570	2-7/8	6	6
G	14-DM96	.2610	2-7/8	6	6

PILOTED EXTENSIONS AND OTHER SIZES AVAILABLE,
PRICE UPON REQUEST



PILOTED DOUBLE MARGIN DRILLS - HI LOK® SIZES

PART NUMBER	DECIMAL EQUIVALENT INCHES	PILOT DIAMETER	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PILOT LENGTH INCHES	PIECES PER PACKAGE
13-400	.2000	.1870	2-7/16	3-5/8	1/4	6
13-410	.2158	.2000	2-5/8	3-3/4	1/4	6
13-420	.2314	.2158	2-3/4	4	1/4	6
13-430	.2470	.2314	2-3/4	4	5/16	6
13-440	.2621	.2470	2-7/8	4-1/8	5/16	6
13-450	.2782	.2621	2-15/16	4-1/4	5/16	6

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

COBALT THREADED SHANK DOUBLE MARGIN DRILLS

Designed for close tolerance drilling in titanium, stainless, heat treated material and aluminum alloys. When the drill point penetrates enough for the second margin to contact the wall of the hole, the point is stabilized and true cylindrical geometry is established. Smooth, accurate holes are produced and reaming can often be eliminated.

SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	OVERALL LENGTH INCHES
40	15-DM40	.0980	1-3/4
30	15-DM30	.1285	1-3/4
27	15-DM27	.1440	1-3/4
21	15-DM21	.1590	1-3/4
20	15-DM20	.1610	1-3/4
16	15-DM16	.1770	1-3/4
13	15-DM13	.1850	1-3/4
12	15-DM12	.1890	1-3/4
11	15-DM11	.1910	1-3/4
10	15-DM10	.1935	1-3/4
8	15-DM08	.1990	1-3/4
6	15-DM06	.2040	1-3/4
1/8	15-DM65	.1250	1-3/4
5/32	15-DM67	.1562	1-3/4
3/16	15-DM69	.1875	1-3/4
1/4	15-DM73	.2500	1-3/4
D	15-DM93	.2460	1-3/4

SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	OVERALL LENGTH INCHES
40	16-DM40	.0980	1-1/4
30	16-DM30	.1285	1-1/4
27	16-DM27	.1440	1-1/4
21	16-DM21	.1590	1-1/4
20	16-DM20	.1610	1-1/4
16	16-DM16	.1770	1-1/4
13	16-DM13	.1850	1-1/4
12	16-DM12	.1890	1-1/4
11	16-DM11	.1910	1-1/4
10	16-DM10	.1935	1-1/4
1/4	16-DM73	.2500	1-1/4
D	16-DM93	.2460	1-1/4

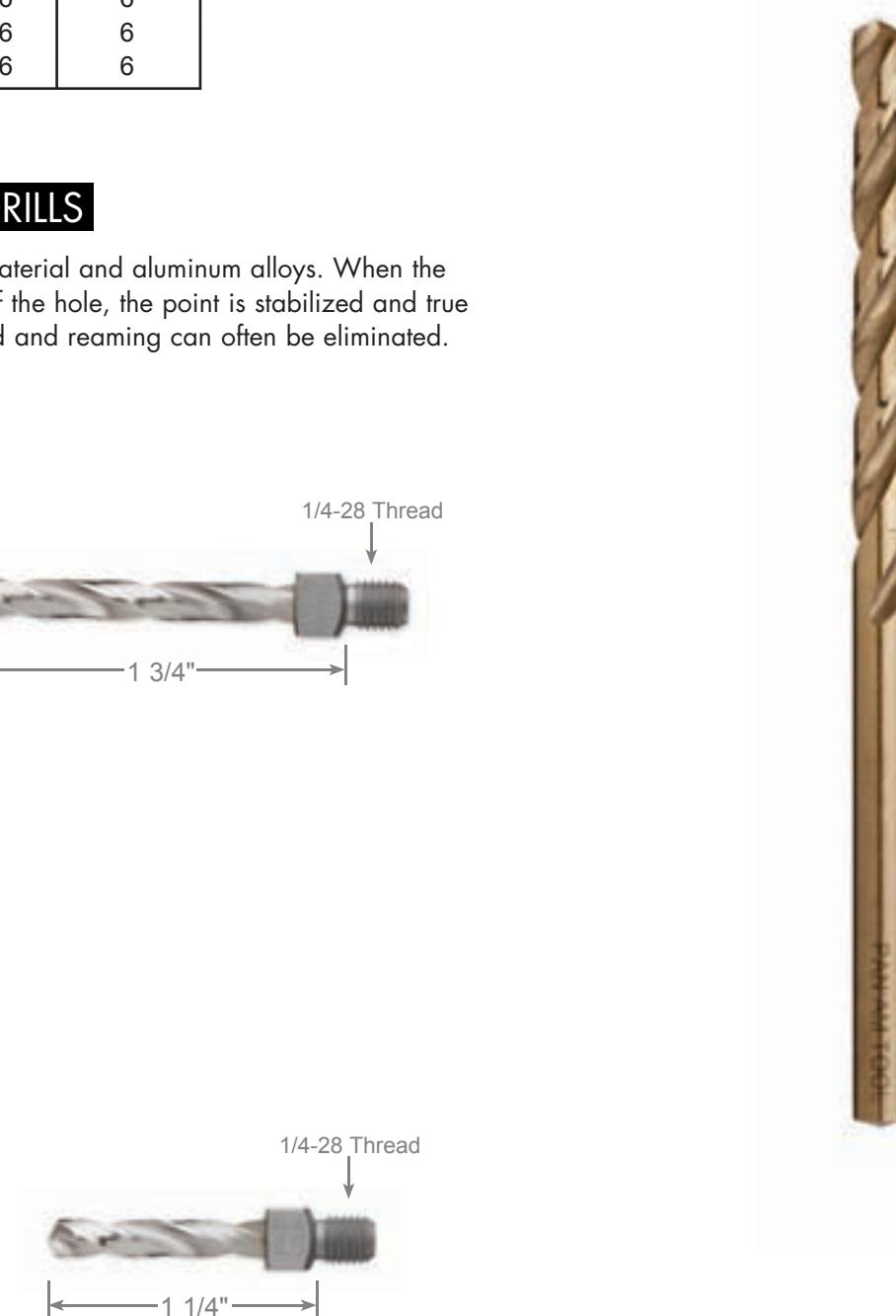
OTHER SIZES AVAILABLE, CAN BE SUPPLIED WITH PILOTS,
PRICE UPON REQUEST

COBALT METRIC JOBBER DRILLS

Cobalt High Speed Steel Jobber Length Drills used for drilling in tough high tensile strength materials like stainless steel, titanium and inconel. Heavy duty flute construction and 135° split points.

METRIC SIZES 1.00 - 5.50 MM

DRILL SIZE MM	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
1.00	08-100	.0394	11/16	1-5/8	10
1.10	08-110	.0433	3/4	1-3/4	10
1.20	08-120	.0472	7/8	1-7/8	10
1.30	08-130	.0512	7/8	1-7/8	10
1.40	08-140	.0551	7/8	1-7/8	10
1.50	08-150	.0591	7/8	1-7/8	10
1.60	08-160	.0630	7/8	1-7/8	10
1.70	08-170	.0669	1	2	10
1.80	08-180	.0709	1	2	10
1.90	08-190	.0748	1	2	10
2.00	08-200	.0787	1	2-1/8	10
2.10	08-210	.0827	1-1/8	2-1/8	10
2.20	08-220	.0866	1-1/4	2-1/4	10
2.30	08-230	.0906	1-1/4	2-1/4	10
2.40	08-240	.0945	1-3/8	2-3/8	10
2.50	08-250	.0984	1-3/8	2-3/8	10
2.60	08-260	.1024	1-7/16	2-1/2	10
2.70	08-270	.1063	1-7/16	2-1/2	10
2.80	08-280	.1102	1-1/2	2-5/8	10
2.90	08-290	.1142	1-5/8	2-3/4	10
3.00	08-300	.1181	1-5/8	2-3/4	10
3.10	08-310	.1220	1-5/8	2-3/4	10
3.20	08-320	.1260	1-5/8	2-3/4	10
3.30	08-330	.1299	1-3/4	2-7/8	10
3.40	08-340	.1339	1-3/4	2-7/8	10
3.50	08-350	.1378	1-3/4	2-7/8	10
3.60	08-360	.1417	1-7/8	3	10
3.70	08-370	.1457	1-7/8	3	10
3.80	08-380	.1496	1-7/8	3	10
3.90	08-390	.1535	2	3-1/8	10
4.00	08-400	.1575	2-1/8	3-1/4	10
4.10	08-410	.1614	2-1/8	3-1/4	10
4.20	08-420	.1654	2-1/8	3-1/4	10
4.30	08-430	.1693	2-1/8	3-1/4	10
4.40	08-440	.1732	2-3/16	3-3/8	10
4.50	08-450	.1772	2-3/16	3-3/8	10
4.60	08-460	.1811	2-3/16	3-3/8	10
4.70	08-470	.1850	2-5/16	3-1/2	10
4.80	08-480	.1890	2-5/16	3-1/2	10
4.90	08-490	.1929	2-7/16	3-5/8	10
5.00	08-500	.1969	2-7/16	3-5/8	10
5.10	08-510	.2008	2-7/16	3-5/8	10
5.20	08-520	.2047	2-1/2	3-3/4	10
5.30	08-530	.2087	2-1/2	3-3/4	10
5.40	08-540	.2126	2-1/2	3-3/4	10
5.50	08-550	.2165	2-1/2	3-3/4	10



COBALT METRIC JOBBER DRILLS

Cobalt High Speed Steel Jobber Length Drills used for drilling in tough high tensile strength materials like stainless steel, titanium and inconel. Heavy duty flute construction and 135° split points.



METRIC SIZES 5.60 - 10.00 MM

DRILL SIZE MM	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
5.60	08-560	.2205	2-5/8	3-7/8	10
5.70	08-570	.2244	2-5/8	3-7/8	10
5.80	08-580	.2283	2-5/8	3-7/8	10
5.90	08-590	.2323	2-5/8	3-7/8	10
6.00	08-600	.2362	2-3/4	4	10
6.10	08-610	.2402	2-3/4	4	10
6.20	08-620	.2441	2-3/4	4	10
6.30	08-630	.2480	2-3/4	4	10
6.40	08-640	.2520	2-7/8	4-1/8	10
6.50	08-650	.2559	2-7/8	4-1/8	10
6.60	08-660	.2598	2-7/8	4-1/8	10
6.70	08-670	.2638	2-7/8	4-1/8	10
6.80	08-680	.2677	2-7/8	4-1/8	10
6.90	08-690	.2717	2-7/8	4-1/8	10
7.00	08-700	.2756	2-7/8	4-1/8	10
7.10	08-710	.2795	2-15/16	4-1/4	10
7.20	08-720	.2835	2-15/16	4-1/4	10
7.30	08-730	.2874	2-15/16	4-1/4	10
7.40	08-740	.2913	3-1/16	4-3/8	10
7.50	08-750	.2953	3-1/16	4-3/8	10
7.60	08-760	.2992	3-1/16	4-3/8	10
7.70	08-770	.3031	3-1/16	4-1/2	10
7.80	08-780	.3071	3-1/16	4-1/2	10
7.90	08-790	.3110	3-1/16	4-1/2	10
8.00	08-800	.3150	3-1/16	4-1/2	10
8.10	08-810	.3189	3-5/16	4-5/8	10
8.20	08-820	.3228	3-5/16	4-5/8	10
8.30	08-830	.3268	3-5/16	4-5/8	10
8.40	08-840	.3307	3-7/16	4-3/4	10
8.50	08-850	.3346	3-7/16	4-3/4	10
8.60	08-860	.3386	3-7/16	4-3/4	10
8.70	08-870	.3425	3-7/16	4-3/4	10
8.80	08-880	.3465	3-1/2	4-7/8	10
8.90	08-890	.3504	3-1/2	4-7/8	10
9.00	08-900	.3543	3-1/2	4-7/8	10
9.10	08-910	.3583	3-1/2	4-7/8	5
9.20	08-920	.3622	3-5/8	5	5
9.30	08-930	.3661	3-5/8	5	5
9.40	08-940	.3701	3-5/8	5	5
9.50	08-950	.3740	3-5/8	5	5
9.60	08-960	.3780	3-1/4	5-1/8	5
9.70	08-970	.3819	3-3/4	5-1/8	5
9.80	08-980	.3858	3-3/4	5-1/8	5
9.90	08-990	.3898	3-3/4	5-1/8	5
10.00	08-1000	.3937	3-3/4	5-1/8	5

COBALT SCREW MACHINE DRILLS

Cobalt High Speed Steel 135°: Screw machine drills designed to use in screw machines or where short drills are required. Ground from solid bright finish for increased accuracy, wear resistance, lubricity, reducing chip welding and galling to improve chip flow in mild steels, soft materials (aluminum, copper, bronze, brass) and nonferrous materials.



NUMBER SIZES 1 - 45

NUMBER SIZE	PART NUMBER	OVERALL LENGTH INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
1	35-101	2-7/16	1-5/16	12
2	35-102	2-7/16	1-5/16	12
3	35-103	2-3/8	1-1/4	12
4	35-104	2-3/8	1-1/4	12
5	35-105	2-3/8	1-1/4	12
6	35-106	2-3/8	1-1/4	12
7	35-107	2-1/4	1-3/16	12
8	35-108	2-1/4	1-3/16	12
9	35-109	2-1/4	1-3/16	12
10	35-110	2-1/4	1-3/16	12
11	35-111	2-1/4	1-3/16	12
12	35-112	2-1/4	1-3/16	12
13	35-113	2-3/16	1-1/8	12
14	35-114	2-3/16	1-1/8	12
15	35-115	2-3/16	1-1/8	12
16	35-116	2-3/16	1-1/8	12
17	35-117	2-3/16	1-1/8	12
18	35-118	2-1/8	1-1/16	12
19	35-119	2-1/8	1-1/16	12
20	35-120	2-1/8	1-1/16	12
21	35-121	2-1/8	1-1/16	12
22	35-122	2-1/8	1-1/16	12
23	35-123	2-1/16	1	12
24	35-124	2-1/16	1	12
25	35-125	2-1/16	1	12
26	35-126	2-1/16	1	12
27	35-127	2-1/16	1	12
28	35-128	1-15/16	15/16	12
29	35-129	1-15/16	15/16	12
30	35-130	1-15/16	15/16	12
31	35-131	1-7/8	7/8	12
32	35-132	1-7/8	7/8	12
33	35-133	1-7/8	7/8	12
34	35-134	1-7/8	7/8	12
35	35-135	1-7/8	7/8	12
36	35-136	1-13/16	13/16	12
37	35-137	1-13/16	13/16	12
38	35-138	1-13/16	13/16	12
39	35-139	1-13/16	13/16	12
40	35-140	1-13/16	13/16	12
41	35-141	1-13/16	13/16	12
42	35-142	1-3/4	3/4	12
43	35-143	1-3/4	3/4	12
44	35-144	1-3/4	3/4	12
45	35-145	1-3/4	3/4	12



COBALT SCREW MACHINE DRILLS

NUMBER SIZES 46 - 60

NUMBER SIZE	PART NUMBER	OVERALL LENGTH INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
46	35-146	1-3/4	3/4	12
47	35-147	1-3/4	3/4	12
48	35-148	1-11/16	11/16	12
49	35-149	1-11/16	11/16	12
50	35-150	1-11/16	11/16	12
51	35-151	1-11/16	11/16	12
52	35-152	1-11/16	11/16	12
53	35-153	1-5/8	5/8	12
54	35-154	1-5/8	5/8	12
55	35-155	1-5/8	5/8	12
56	35-156	1-3/8	1/2	12
57	35-157	1-3/8	1/2	12
58	35-158	1-3/8	1/2	12
59	35-159	1-3/8	1/2	12
60	35-160	1-3/8	1/2	12

FRACTIONAL SIZES

FRACTIONAL SIZE	PART NUMBER	OVERALL LENGTH INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
1/16	35-061	1-5/8	5/8	12
5/64	35-062	1-11/16	11/16	12
3/32	35-063	1-3/4	3/4	12
7/64	35-064	1-13/16	13/16	12
1/8	35-065	1-7/8	7/8	12
9/64	35-066	1-15/16	15/16	12
5/32	35-067	2-1/16	1	12
11/64	35-068	2-1/8	1-1/16	12
3/16	35-069	2-3/16	1-1/8	12
13/64	35-070	2-1/4	1-3/16	12
7/32	35-071	2-3/8	1-1/4	12
15/64	35-072	2-7/16	1-5/16	12
1/4	35-073	2-1/2	1-3/8	12
17/64	35-074	2 5/8	1-7/16	12
9/32	35-075	2-11/16	1-1/2	12
19/64	35-076	2-3/4	1-9/16	12
5/16	35-077	2-13/16	1-5/8	12
21/64	35-078	2-15/16	1-11/16	6
11/32	35-079	3	1-11/16	6
23/64	35-080	3-1/16	1-3/4	6
3/8	35-081	3-1/8	1-13/16	6
25/64	35-082	3-1/4	1-7/8	6
13/32	35-083	3-15/16	1-15/16	6
27/64	35-084	3-3/8	2	6
7/16	35-085	3-7/16	2-1/16	6
29/64	35-086	3-9/16	2-1/8	6
15/32	35-087	3-5/8	2-1/8	6
31/64	35-088	3-11/16	2-3/16	6
1/2	35-089	3-3/4	2 1/4	6

COBALT SCREW MACHINE DRILLS

Cobalt High Speed Steel 135°

Screw machine drills designed to use in screw machines or where short drills are required. Ground from solid bright finish for increased accuracy, wear resistance, lubricity, reducing chip welding and galling to improve chip flow in mild steels, soft materials (aluminum, copper, bronze, brass) and nonferrous materials.



LETTER SIZES

LETTER SIZE	PART NUMBER	OVERALL LENGTH INCHES	FLUTE LENGTH INCHES	PIECES PER PACKAGE
A	35-201	2-7/16	1-5/16	12
B	35-202	2-1/2	1-3/8	12
C	35-203	2-1/2	1-3/8	12
D	35-204	2-1/2	1-3/8	12
E	35-205	2-1/2	1-3/8	12
F	35-206	2-5/8	1-7/16	12
G	35-207	2-5/8	1-7/16	12
H	35-208	2-11/16	1-1/2	12
I	35-209	2-11/16	1-1/2	6
J	35-210	2-11/16	1-1/2	6
K	35-211	2-11/16	1-1/2	6
L	35-212	2-3/4	1-9/16	6
M	35-213	2-3/4	1-9/16	6
N	35-214	2-13/16	1-5/8	6
O	35-215	2-15/16	1-11/16	6
P	35-216	2-15/16	1-11/16	6
Q	35-217	3	1-11/16	6
R	35-218	3	1-11/16	6
S	35-219	3-1/16	1-3/4	6
T	35-220	3-1/16	1-3/4	6
U	35-221	3-1/8	1-13/16	6
V	35-222	3-1/4	1-7/8	6
W	35-223	3-1/4	1-7/8	6
X	35-224	3-5/16	1-15/16	6
Y	35-225	3-5/16	1-15/16	6
Z	35-226	3-3/8	2	6

HIGH SPEED STEEL LEFT HAND JOBBER DRILLS

Jobber Length 118° Drill Point. For use in left hand spindle rotation on screw machines and drill heads.
Can be used as a screw extractor for drilling out broken studs or fasteners.



DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
3/32"	30-353	.0938	1-1/4	2-1/4	12
#40	34-040	.0980	1-3/8	2-3/8	12
1/8"	30-386	.1250	1-5/8	2-3/4	12
#30	34-030	.1285	1-5/8	2-3/4	12
#21	34-021	.1590	2-1/8	3-1/4	12
#20	34-020	.1610	2-1/8	3-1/4	12
3/16"	30-180	.1875	2-5/16	3-1/2	12
#10	34-010	.1935	2-7/16	3-5/8	12

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

COBALT SILVER AND DEMING DRILLS

Cobalt High Speed Steel drills with $\frac{1}{2}$ " reduced shank especially useful in portable drilling equipment and CNC machines. They have 118° points and are precision ground for a high degree of concentricity between the shank and body diameter.



SILVER AND DEMING - 1/2" SHANK

DIAMETER INCHES	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
17/32	07-200	.5310	3-1/8	6	1
9/16	07-201	.5625	3-1/8	6	1
19/32	07-202	.5938	3-1/8	6	1
5/8	07-203	.6250	3-1/8	6	1
21/32	07-204	.6562	3-1/8	6	1
11/16	07-205	.6875	3-1/8	6	1
23/32	07-206	.7188	3-1/8	6	1
3/4	07-207	.7500	3-1/8	6	1
25/32	07-208	.7812	3-1/8	6	1
13/16	07-209	.8125	3-1/8	6	1
27/32	07-210	.8438	3-1/8	6	1
7/8	07-211	.8750	3-1/8	6	1
29/32	07-212	.9062	3-1/8	6	1
15/16	07-213	.9375	3-1/8	6	1
31/32	07-214	.9688	3-1/8	6	1
1	07-215	1.0000	3-1/8	6	1

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

SOLID CARBIDE DRILLS

- Precision Ground Micrograin 10% Cobalt 118° Drill Point
- Recommended for use on Cast Iron, Aluminum, Plastic, Composites, Nonferrous Alloys, and Highly Abrasive Materials



NUMBER SIZES 1 - 30

DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
1	09-001	.2280	1-3/4	3	1
2	09-002	.2210	1-3/4	3	1
3	09-003	.2130	1-3/4	3	1
4	09-004	.2090	1-3/4	3	1
5	09-005	.2055	1-3/4	3	1
6	09-006	.2040	1-3/4	3	1
7	09-007	.2010	1-3/4	3	1
8	09-008	.1990	1-3/4	3	1
9	09-009	.1960	1-3/4	3	1
10	09-010	.1935	1-5/8	2-3/4	1
11	09-011	.1910	1-5/8	2-3/4	1
12	09-012	.1890	1-5/8	2-3/4	1
13	09-013	.1850	1-5/8	2-3/4	1
14	09-014	.1820	1-5/8	2-3/4	1
15	09-015	.1800	1-5/8	2-3/4	1
16	09-016	.1770	1-5/8	2-3/4	1
17	09-017	.1730	1-5/8	2-3/4	1
18	09-018	.1695	1-5/8	2-3/4	1
19	09-019	.1660	1-5/8	2-3/4	1
20	09-020	.1610	1-3/8	2-1/2	1
21	09-021	.1590	1-3/8	2-1/2	1
22	09-022	.1570	1-3/8	2-1/2	1
23	09-023	.1540	1-3/8	2-1/2	1
24	09-024	.1520	1-3/8	2-1/2	1
25	09-025	.1495	1-3/8	2-1/2	1
26	09-026	.1470	1-3/8	2-1/2	1
27	09-027	.1440	1-3/8	2-1/2	1
28	09-028	.1405	1-3/8	2-1/2	1
29	09-029	.1360	1-3/8	2-1/2	1
30	09-030	.1285	1-1/4	2-1/4	1



SOLID CARBIDE DRILLS

- Precision Ground Micrograin 10% Cobalt 118° Drill Point
- Recommended for use on Cast Iron, Aluminum, Plastic, Composites, Nonferrous Alloys, and Highly Abrasive Materials



NUMBER SIZES 31 - 60

DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
31	09-031	.1200	1-1/4	2-1/4	1
32	09-032	.1160	1-1/4	2-1/4	1
33	09-033	.1130	1-1/4	2-1/4	1
34	09-034	.1110	1-1/4	2-1/4	1
35	09-035	.1100	1-1/4	2-1/4	1
36	09-036	.1065	1-1/4	2-1/4	1
37	09-037	.1040	1-1/4	2-1/4	1
38	09-038	.1015	1-1/4	2-1/4	1
39	09-039	.0995	1-1/4	2-1/4	1
40	09-040	.0980	1	2	1
41	09-041	.0960	1	2	1
42	09-042	.0935	1	2	1
43	09-043	.0890	1	2	1
44	09-044	.0860	1	2	1
45	09-045	.0820	7/8	1-3/4	1
46	09-046	.0810	7/8	1-3/4	1
47	09-047	.0785	7/8	1-3/4	1
48	09-048	.0760	7/8	1-3/4	1
49	09-049	.0730	7/8	1-3/4	1
50	09-050	.0700	7/8	1-3/4	1
51	09-051	.0670	3/4	1-1/2	1
52	09-052	.0635	3/4	1-1/2	1
53	09-053	.0595	3/4	1-1/2	1
54	09-054	.0550	3/4	1-1/2	1
55	09-055	.0520	3/4	1-1/2	1
56	09-056	.0426	3/4	1-1/2	1
57	09-057	.0430	3/4	1-1/2	1
58	09-058	.0420	3/4	1-1/2	1
59	09-059	.0410	3/4	1-1/2	1
60	09-060	.0400	3/4	1-1/2	1

SOLID CARBIDE DRILLS

- Precision Ground Micrograin 10% Cobalt 118° Drill Point
- Recommended for use on Cast Iron, Aluminum, Plastic, Composites, Nonferrous Alloys, and Highly Abrasive Materials



LETTER SIZES

DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
A	09-131	.2340	2	3-1/4	1
B	09-132	.2380	2	3-1/4	1
C	09-133	.2420	2	3-1/4	1
D	09-134	.2460	2	3-1/4	1
E	09-135	.2500	2	3-1/4	1
F	09-136	.2570	2	3-1/4	1
G	09-137	.2610	2-1/4	3-1/2	1
H	09-138	.2660	2-1/4	3-1/2	1
I	09-139	.2720	2-1/4	3-1/2	1
J	09-140	.2770	2-1/4	3-1/2	1
K	09-141	.2810	2-1/4	3-1/2	1
L	09-142	.2900	2-1/4	3-1/2	1
M	09-143	.2950	2-3/8	3-3/4	1
N	09-144	.3020	2-3/8	3-3/4	1
O	09-145	.3160	2-3/8	3-3/4	1
P	09-146	.3230	2-3/8	3-3/4	1
Q	09-147	.3220	2-1/2	4	1
R	09-148	.3390	2-1/2	4	1
S	09-149	.3480	2-1/2	4	1
T	09-150	.3450	2-3/4	4-1/4	1
U	09-151	.3680	2-3/4	4-1/4	1
V	09-152	.3770	2-3/4	4-1/4	1
W	09-153	.3860	2-7/8	4-1/2	1
X	09-154	.3970	2-7/8	4-1/2	1
Y	09-155	.4040	2-7/8	4-1/2	1
Z	09-156	.4130	2-7/8	4-1/2	1



SOLID CARBIDE DRILLS

- Precision Ground Micrograin 10% Cobalt 118° Drill Point
- Recommended for use on Cast Iron, Aluminum, Plastic, Composites, Nonferrous Alloys, and Highly Abrasive Materials



FRACTIONAL SIZES

DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
1/64	09-058A	.0156	3/16	3/4	1
1/32	09-059A	.0312	1/2	1-1/2	1
3/64	09-060A	.0469	3/4	1-1/2	1
1/16	09-061	.0625	3/4	1-1/2	1
5/64	09-062	.0781	7/8	1-3/4	1
3/32	09-063	.0938	1	2	1
7/64	09-064	.1094	1-1/4	2-1/4	1
1/8	09-065	.1250	1-1/4	2-1/4	1
9/64	09-066	.1406	1-3/8	2-1/2	1
5/32	09-067	.1562	1-3/8	2-1/2	1
11/64	09-068	.1719	1-5/8	2-3/4	1
3/16	09-069	.1875	1-5/8	2-3/4	1
13/64	09-070	.2031	1-3/4	3	1
7/32	09-071	.2188	1-3/4	3	1
15/64	09-072	.2344	2	3-1/4	1
1/4	09-073	.2500	2	3-1/4	1
17/64	09-074	.2656	2-1/8	3-1/2	1
9/32	09-075	.2812	2-1/8	3-1/2	1
19/64	09-076	.2969	2-3/8	3-3/4	1
5/16	09-077	.3125	2-3/8	3-3/4	1
21/64	09-078	.3281	2-1/2	4	1
11/32	09-079	.3438	2-1/2	4	1
23/64	09-080	.3594	2-3/4	4-1/4	1
3/8	09-081	.3750	2-3/4	4-1/4	1
25/64	09-082	.3906	2-7/8	4-1/2	1
13/32	09-083	.4062	2-7/8	4-1/2	1
27/64	09-084	.4219	2-7/8	4-1/2	1
7/16	09-085	.4375	2-7/8	4-1/2	1
29/64	09-086	.4531	3	4-3/4	1
15/32	09-087	.4688	3	4-3/4	1
31/64	09-088	.4844	3	4-3/4	1
1/2	09-089	.5000	3	4-3/4	1

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

SOLID CARBIDE DRILLS

- Precision Ground Micrograin 10% Cobalt 118° Drill Point
- Recommended for use on Cast Iron, Aluminum, Plastic, Composites, Nonferrous Alloys, and Highly Abrasive Materials



METRIC SIZES

DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
1.00	48-832	.0394	5/8	1-1/2	1
1.50	09-173	.0591	3/4	1-1/2	1
2.00	51-284	.0787	7/8	1-3/4	1
2.50	42-698	.0984	1	2-1/4	1
3.00	51-285	.1181	1-1/4	2-1/4	1
3.50	51-286	.1378	1-3/8	2-1/2	1
4.00	42-479	.1575	1-3/8	2-1/2	1
4.50	43-535	.1772	1-5/8	2-3/4	1
5.00	42-480	.1969	1-3/4	3	1
5.50	43-677	.2165	1-3/4	3	1
6.00	41-715	.2362	2	3-3/4	1
6.50	48-082	.2559	2	3-3/4	1
7.00	41-716	.2756	2-1/4	3-1/2	1
7.50	09-174	.2953	2-3/8	3-3/4	1
8.00	09-175	.3150	2-3/8	3-3/4	1
8.50	09-176	.3346	2-1/2	4	1
9.00	09-157	.3543	2-1/2	4	1
9.50	09-177	.3740	2-3/4	4-1/4	1
10.00	09-178	.3937	2-7/8	4-1/2	1
10.50	09-179	.4134	2-7/8	4-1/2	1
11.00	09-180	.4331	2-7/8	4-1/2	1
11.50	09-181	.4528	3	4-3/4	1
12.00	09-182	.4724	3	4-3/4	1
12.50	09-183	.4921	3	4-3/4	1

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

CARBIDE BRAD POINT DRILLS

- Specifically designed for drilling graphite and aramid fiber (KEVLAR®) reinforced composite materials. The specially modified tip of the drill bit keeps the composite fibers in tension while cutting them in shear which results in no delaminating eliminating "fuzz" or "fray" when the drill bit exits the material creating a more precise hole.



DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
#10	47-196	.1935	1.25	3	1
#21	47-197	.1590	1.25	3	1
#30	47-198	.1285	1.25	3	1
#40	47-199	.0980	1.25	3	1
3/32"	47-200	.0938	1.25	3	1
1/8"	47-201	.1250	1.25	3	1
5/32"	47-202	.1562	1.25	3	1
3/16"	47-203	.1875	1.25	3	1
1/4"	47-204	.2500	1.25	3	1

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

CARBIDE DRILL REAMER

Generally used for opening pre-drilled holes in composite materials. Manufactured in solid carbide. Carbide combination drill reamers allow you to drill and ream in one operation, eliminating multiple tools and steps. Also known as a "one-shot" drill-reamer, this tool can be used for hand drilling through a bushing or with power or positive feed drill motors. These drills are excellent for drilling graphite composites.



DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
#10	50-850	.1935	6	1
#21	50-689	.1590	6	1
#30	49-713	.1285	6	1
#40	50-698	.0980	6	1
3/32"	43-756	.0938	6	1
1/8"	40-927	.1250	6	1
5/32"	40-928	.1562	6	1
3/16"	43-757	.1875	6	1
1/4"	50-186	.2500	6	1

THREADED SHANK AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST

CARBIDE DAGGER DRILLS

Carbide Dagger Drills are used to produce holes in composite materials and/or graphite-aluminum stack ups in thicknesses of 1/4" or less. The dagger drill has proven to be the best drill for drilling on backed carbon fiber because of its ability to reduce delamination and at the same time produce a precise hole.



DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
#6	49-353	.2040	6	1
#8	49-354	.1990	6	1
#10	43-099	.1935	6	1
#12	49-356	.1890	6	1
#20	49-357	.1610	6	1
#21	49-358	.1590	6	1
#30	43-694	.1285	6	1
#40	44-992	.0980	6	1
3/32"	43-755	.0938	6	1
1/8"	43-702	.1250	6	1
5/32"	48-158	.1562	6	1
3/16"	43-613	.8125	6	1
1/4"	49-359A	.2500	6	1

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

TEMPORARY SHEET METAL FASTENERS

Ideal for close tolerance positioning of thinner layers of material. Great for composites and honeycomb materials, will not damage the work surface or elongate the drill hole.



Features

- Quick and easy installation and removal
- Speed nut spins up and down with the flick of a finger
- No pliers or installation tools required
- Indefinitely reusable and economical
- Color-coded for easy size and identification
- Non-marking to protect the work surface
- Unique tips provide maximum gripping strength

Great For
Composites &
Honeycomb

PART NUMBER	SIZE	GRIP INCHES	COLOR
20-401	3/32"	0-1/2	Red
20-402	1/8"	0-1/2	Yellow
20-403	5/32"	0-1/2	Blue
20-416	#16	0-1/2	Black
20-427	#27	0-1/2	Clear
20-401HD	3/32"	0-1	Red
20-402HD	1/8"	0-1	Yellow
20-403HD	5/32"	0-1	Blue
20-404HD	3/16"	0-1	Black
20-405HD	1/4"	0-1	White

AIRCRAFT TAPER ROUTER

High Speed R.H. Helix, R.H. Cut Taper 1/4 Per Foot: Two-flute Taper routers are used for cutting, trimming and routing around cowling, door sills and plexi-glass, trimming on wing terminals in bulkheads and ribs on fuselage. The advantages over taper pin reamers and drills are the ability to cut without drilling first, easier guiding along the pattern and easier cutting without buildup.



SIZE	PART NUMBER	SHANK DIAMETER INCHES	NOMINAL DIAMETER AT SMALL END INCHES	LARGE END INCHES	FLUTE END INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
1	15-301	.0980	.0810	.0980	.13/16	2	12
2	15-302	.1280	.1100	.1280	.7/8	2-1/4	12
3	15-303	.1875	.1650	.1875	1-1/16	2-1/2	12
4	15-304	.2500	.2240	.2500	1-1/4	2-3/4	12

THREADED SHANK TAPER ROUTER BITS

SIZE	PART NUMBER	NOMINAL DIAMETER AT SMALL END INCHES	LENGTH INCHES
1	15-305	.0810	1-1/4
2	15-306	.1100	1-1/4
3	15-307	.1650	1-1/4



STEP DRILLS

Titanium Nitride Coated: Titanium Nitride Coated bits last up to 6 times longer than non-coated high speed steel bits. They penetrate 75% faster and require 25% less effort to use.



SIZE	PART NUMBER	NO. OF HOLE SIZES	HOLE SIZES	SHANK SIZE	STEP DEPTH
1	38-301TiN	13	1/8 to 1/2	1/4	1/8
2	38-302TiN	6	3/16 to 1/2	1/4	3/8
3	38-303TiN	9	1/4 to 3/4	3/8	1/8
4	38-304TiN	12	3/16 to 7/8	3/8	1/8
1, 2, 3, 4	38-310TiN	Complete Set - One of all 4 sizes in a case.			



COBALT DRILL SETS

Cobalt High Speed Steel Jobber Length Drills are used for drilling in tough high tensile strength materials like stainless steel, titanium and inconel. Heavy duty flute construction and 135° split points.



**60 Piece
Numbered Set**
#1- #60
Part #16-401



**13 Piece
Fractional Set**
1/16"- 1/4" by 64ths
Part #16-410



**26 Piece
Letter Set**
A thru Z
Part #16-403



**21 Piece
Fractional Set**
1/16"- 3/8" by 64ths
Part #16-505



**29 Piece
Fractional Set**
1/16"- 1/2" by 64ths
Part #16-402



**8 Piece
Silver & Deming Set**
9/16"- 1" by 16ths
Part #16-404

COBALT DRILL SETS

Cobalt High Speed Steel Jobber Length Drills are used for drilling in tough high tensile strength materials like stainless steel, titanium and inconel. Heavy duty flute construction and 135° split points.



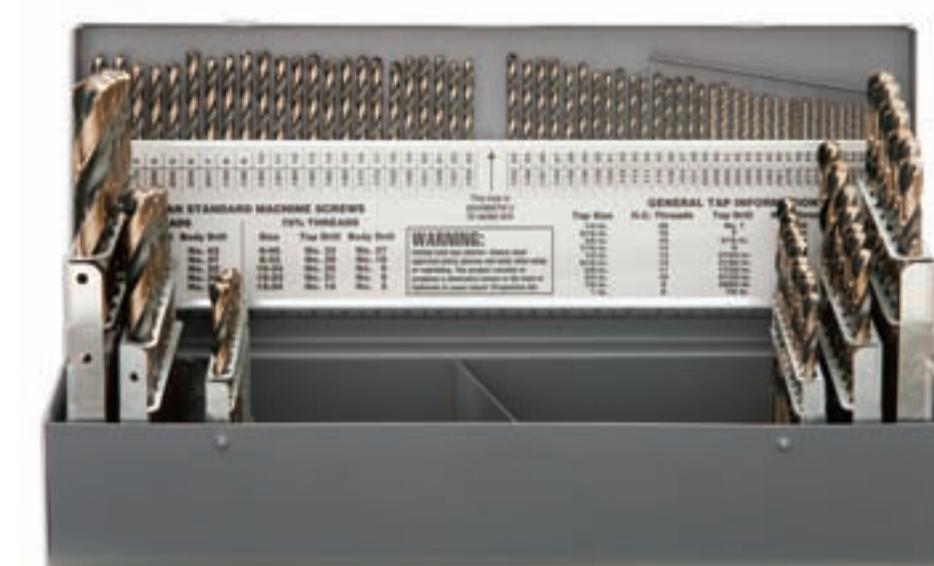
**25 Piece
Metric Drill Set**
M1.00 - M13.00 by .5mm
Part #16-420



**50 Piece
Metric Drill Set**
M1.00 - M5.90 by .10mm
Part #16-409



**41 Piece
Metric Drill Set**
M6.00 - M10.00 by .10mm
Part #16-411



115 Piece Set
Includes 1/16"- 1/2" by 64ths
#1- #60 and A thru Z
Part #16-412



AEROSPACE TAPS

High Speed Steel - UNJC UNJF. Military specification MIL-S-8879. The "J" Screw thread is used for aerospace designs and for highly stressed applications requiring high fatigue strength.



PART NUMBER	DESCRIPTION	NUMBER OF FLUTES	PIECES PER PACKAGE
23-400	4/40 TAPER	3	12
23-401	4/40 PLUG	3	12
23-402	4/40 BOTTOM	3	12
23-408	6/32 TAPER	3	12
23-409	6/32 PLUG	3	12
23-410	6/32 BOTTOM	3	12
23-411	8/32 TAPER	4	12
23-412	8/32 PLUG	4	12
23-413	8/32 BOTTOM	4	12
23-414	10/24 TAPER	4	12
23-415	10/24 PLUG	4	12
23-416	10/24 BOTTOM	4	12
23-417	10/32 TAPER	4	12
23-418	10/32 PLUG	4	12
23-419	10/32 BOTTOM	4	12
23-420	12/24 TAPER	4	12
23-421	12/24 PLUG	4	12
23-422	12/24 BOTTOM	4	12
23-423	1/4-20 TAPER	4	12
23-424	1/4-20 PLUG	4	12
23-425	1/4-20 BOTTOM	4	12
23-426	1/4-28 TAPER	4	12
23-427	1/4-28 PLUG	4	12
23-428	1/4-28 BOTTOM	4	12
23-429	5/16-18 TAPER	4	12
23-430	5/16-18 PLUG	4	12
23-431	5/16-18 BOTTOM	4	12
23-432	5/16-24 TAPER	4	12
23-433	5/16-24 PLUG	4	12
23-434	5/16-24 BOTTOM	4	12
23-435	3/8-16 TAPER	4	12
23-441	3/8-16 PLUG	4	12
23-442	3/8-16 BOTTOM	4	12
23-438	3/8-24 TAPER	4	12
23-439	3/8-24 PLUG	4	12
23-440	3/8-24 BOTTOM	4	12
23-443	7/16 -14 TAPER	4	12
23-444	7/16 -14 PLUG	4	12
23-445	7/16 -14 BOTTOM	4	12
23-446	7/16 -20 TAPER	4	12
23-447	7/16 -20 PLUG	4	12
23-448	7/16 -20 BOTTOM	4	12

JOOCY - LOOB

Multi-Purpose self-cooling machining, dry film, and anti-seize agent. A radically different non-staining "greaseless grease", reduce the co-efficient of friction between the cutting edge of tools and most metals that are drilled or tapped.



- Reduces friction
- Safe for all material surfaces
- Cooling agent enables machining without heat

Part #20-396

DRILL STOPS

- Designed to reduce drill breakage by controlling the depth of the drilled hole
- Coiled spring cushions the drill motor impact on breakthrough
- Smooth face reduces surface marring
- Drill stops are heat treated to prevent galling in use



DRILL SIZE	PART NUMBER	LENGTH	HOLE SIZE	COLOR	PIECES PER PACKAGE
50	30-637	1-5/16	.0730	BLACK	25
40	30-635	1-5/16	.0990	ZINC	25
30	30-636	1-5/16	.1300	COPPER	25
27	30-633	1-5/16	.1460	ZINC	25
21	30-639	1-1/2	.1610	BLACK	25
20	30-632	1-1/2	.1630	ZINC	25
16	30-634	1-1/2	.1790	BLACK	25
12	30-638	1-1/2	.1910	BRASS	25
10	30-641	1-1/2	.1950	BRASS	25
1/4	30-642	2-1/8	.2530	COPPER	25
5/16	30-640	2-1/8	.3150	COPPER	25

OTHER SIZES AVAILABLE, PRICE UPON REQUEST



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36

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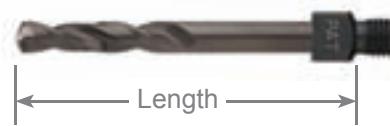
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37

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THREADED SHANK ADAPTER DRILLS

Cobalt High Speed Steel Threaded Shank drills made to NAS 965 Type D specifications. Surface treated for drilling hard, tough high tensile strength material. They will have significantly greater tool life than Type B high speed steel threaded drills resulting in a lower cost per hole. 135° split points prevent "walking"



Cobalt 1/4-28 Thread



Very Stubby Series Extra Long Series

SIZE	DECIMAL EQUIVALENT INCHES	MILLIMETER EQUIVALENT	LENGTH VERY STUBBY	PART NUMBER	LENGTH EXTRA LONG	PART NUMBER
50	.0700	1.78	3/8	10-450	-----	-----
40	.0980	2.49	3/8	10-440	2-1/2	10-140
30	.1285	3.26	3/8	10-430	2-3/4	10-130
27	.1440	3.66	3/8	10-427	3	10-127
26	.1470	3.73	3/8	10-426	-----	-----
21	.1590	4.04	3/8	10-421	3	10-121
20	.1610	4.09	3/8	10-420	3	10-120
16	.1770	4.50	3/8	10-416	3	10-116
13	.1850	4.70	3/8	10-413	3	10-113
12	.1890	4.80	3/8	10-412	3	10-112
11	.1910	4.85	3/8	10-411	3	10-111
10	.1935	4.92	3/8	10-410	3	10-110
8	.1990	5.06	3/8	10-408	3	10-108
5	.2055	5.22	3/8	10-405	3	10-105
1/4	.2500	6.35	3/8	11-413	3	10-150

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

MINIATURE THREADED SHANK ADAPTER DRILLS

SIZE	PART NUMBER	MILLIMETER EQUIVALENT	LENGTH INCHES	DECIMAL EQUIVALENT INCHES
51	10-051	1.702	1	.0670
52	10-052	1.613	1	.0635
53	10-053	1.511	1	.0595
54	10-054	1.397	1	.0550
55	10-055	1.321	1	.0520
56	10-056	1.181	1	.0465
57	10-057	1.092	1	.0430
58	10-058	1.067	1	.0420
59	10-059	1.041	1	.0410
60	10-060	1.016	1	.0400

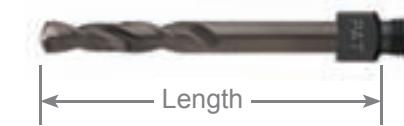
OTHER SIZES AVAILABLE, PRICE UPON REQUEST



Length

THREADED SHANK ADAPTER DRILLS

Cobalt High Speed Steel Threaded Shank drills made to NAS 965 Type D specifications. Surface treated for drilling hard, tough high tensile strength material. They will have significantly greater tool life than Type B high speed steel threaded drills resulting in a lower cost per hole. 135° split points prevent "walking"



Cobalt 1/4-28 Thread



NUMBER SIZES 1 - 25 Stubby Series Short Series Long Series

SIZE	DECIMAL EQUIVALENT INCHES	MILLIMETER EQUIVALENT	STUBBY SERIES LENGTH	PART NUMBER	SHORT SERIES LENGTH	PART NUMBER	LONG SERIES LENGTH	PART NUMBER
1	.2280	5.79	5/8	10-301	1-1/4	10-001	2-1/8	10-201
2	.2210	5.61	5/8	10-302	1-1/4	10-002	2-1/8	10-202
3	.2130	5.41	5/8	10-303	1-1/4	10-003	2-1/8	10-203
4	.2090	5.31	5/8	10-304	1-1/4	10-004	2-1/8	10-204
5	.2055	5.22	5/8	10-305	1-1/4	10-005	2-1/8	10-205
6	.2040	5.18	5/8	10-306	1-1/4	10-006	2-1/8	10-206
7	.2010	5.11	5/8	10-307	1-1/4	10-007	2-1/8	10-207
8	.1990	5.06	5/8	10-308	1-1/4	10-008	2-1/8	10-208
9	.1960	4.98	9/16	10-309	1-1/4	10-009	2-1/8	10-209
10	.1935	4.92	9/16	10-310	1-1/4	10-010	2-1/8	10-210
11	.1910	4.85	9/16	10-311	1-1/4	10-011	2-1/8	10-211
12	.1890	4.80	9/16	10-312	1-1/4	10-012	2-1/8	10-212
13	.1850	4.70	9/16	10-313	1-1/4	10-013	2-1/8	10-213
14	.1820	4.62	9/16	10-314	1-1/4	10-014	2-1/8	10-214
15	.1800	4.57	9/16	10-315	1-1/4	10-015	2-1/8	10-215
16	.1770	4.50	9/16	10-316	1-1/4	10-016	2-1/8	10-216
17	.1730	4.39	9/16	10-317	1-1/4	10-017	2-1/8	10-217
18	.1695	4.30	9/16	10-318	1-1/4	10-018	2-1/8	10-218
19	.1660	4.22	9/16	10-319	1-1/4	10-019	2-1/8	10-219
20	.1610	4.09	9/16	10-320	1-1/4	10-020	2-1/8	10-220
21	.1590	4.04	9/16	10-321	1-1/4	10-021	2-1/8	10-221
22	.1570	3.99	9/16	10-322	1-1/4	10-022	2-1/8	10-222
23	.1540	3.91	9/16	10-323	1-1/4	10-023	2-1/8	10-223
24	.1520	3.86	9/16	10-324	1-1/4	10-024	2-1/8	10-224
25	.1495	3.80	9/16	10-325	1-1/4	10-025	2-1/8	10-225

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

THREADED SHANK ADAPTER DRILLS

Cobalt High Speed Steel Threaded Shank drills made to NAS 965 Type D specifications. Surface treated for drilling hard, tough high tensile strength material. They will have significantly greater tool life than Type B high speed steel threaded drills resulting in a lower cost per hole. 135° split points prevent "walking"



NUMBER SIZES 26 - 60 Stubby Series Short Series Long Series

SIZE	DECIMAL EQUIVALENT INCHES	MILLIMETER EQUIVALENT	STUBBY SERIES LENGTH	PART NUMBER	SHORT SERIES LENGTH	PART NUMBER	LONG SERIES LENGTH	PART NUMBER
26	.1470	3.73	9/16	10-326	1-1/4	10-026	2-1/8	10-226
27	.1440	3.66	9/16	10-327	1-1/4	10-027	2-1/8	10-227
28	.1405	3.57	9/16	10-328	1-1/4	10-028	2-1/8	10-228
29	.1360	3.45	9/16	10-329	1-1/4	10-029	2-1/8	10-229
30	.1285	3.27	9/16	10-330	1-1/4	10-030	2-1/8	10-230
31	.1200	3.05	9/16	10-331	1-1/4	10-031	2-1/8	10-231
32	.1160	2.95	9/16	10-332	1-1/4	10-032	2-1/8	10-232
33	.1130	2.87	9/16	10-333	1-1/4	10-033	2-1/8	10-233
34	.1110	2.82	9/16	10-334	1-1/4	10-034	2-1/8	10-234
35	.1100	2.79	1/2	10-335	1-1/4	10-035	2-1/8	10-235
36	.1065	2.71	1/2	10-336	1-1/4	10-036	2-1/8	10-236
37	.1040	2.64	1/2	10-337	1-1/4	10-037	2-1/8	10-237
38	.1015	2.58	1/2	10-338	1-1/4	10-038	2-1/8	10-238
39	.0995	2.53	1/2	10-339	1-1/4	10-039	2-1/8	10-239
40	.0980	2.49	1/2	10-340	1	10-040	2-1/8	10-240
41	.0960	2.44	1/2	10-341	1	10-041	2-1/8	10-241
42	.0935	2.37	1/2	10-342	1	10-042	2-1/8	10-242
43	.0890	2.26	1/2	10-343	1	10-043	2-1/8	10-243
44	.0860	2.18	1/2	10-344	1	10-044	2-1/8	10-244
45	.0820	2.08	1/2	10-345	1	10-045	2-1/8	10-245
46	.0810	2.06	1/2	10-346	1	10-046	2-1/8	10-246
47	.0785	1.99	1/2	10-347	1	10-047	2-1/8	10-247
48	.0760	1.93	1/2	10-348	1	10-048	2-1/8	10-248
49	.0730	1.85	1/2	10-349	1	10-049	2-1/8	10-249
50	.0700	1.78	1/2	10-350	1	10-050	2-1/8	10-250
60	.0400	1.016	1/2	10-360	1	10-060	2-1/8	10-260

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

THREADED SHANK ADAPTER DRILLS

Cobalt High Speed Steel Threaded Shank drills made to NAS 965 Type D specifications. Surface treated for drilling hard, tough high tensile strength material. They will have significantly greater tool life than Type B high speed steel threaded drills resulting in a lower cost per hole. 135° split points prevent "walking"



FRACTIONAL SIZES Stubby Series Short Series Long Series

SIZE	DECIMAL EQUIVALENT INCHES	MILLIMETER EQUIVALENT	STUBBY SERIES LENGTH	PART NUMBER	SHORT SERIES LENGTH	PART NUMBER	LONG SERIES LENGTH	PART NUMBER
3/32	.0938	2.38	1/2	11-303	1	11-103	2-1/8	11-203
7/64	.1094	2.77	1/2	11-304	1	11-104	2-1/8	11-204
1/8	.1250	3.17	1/2	11-305	1	11-105	2-1/8	11-205
9/64	.1406	3.57	9/16	11-306	1-1/4	11-106	2-1/8	11-206
5/32	.1562	3.97	9/16	11-307	1-1/4	11-107	2-1/8	11-207
11/64	.1719	4.36	9/16	11-308	1-1/4	11-108	2-1/8	11-208
3/16	.1875	4.76	9/16	11-309	1-1/4	11-109	2-1/8	11-209
7/32	.2188	5.56	5/8	11-311	1-1/4	11-111	2-1/8	11-211
15/64	.2344	5.95	5/8	11-312	1-1/4	11-112	2-1/8	11-212
1/4	.2500	6.35	5/8	11-313	1-1/4	11-113	2-1/8	11-213
9/32	.2812	7.14	5/8	11-315	1-1/4	11-115	2-1/8	11-215
19/64	.2969	7.54	5/8	11-316	1-1/4	11-116	2-1/8	11-216
5/16	.3125	7.94	5/8	11-317	1-1/4	11-117	2-1/8	11-217
3/8	.3750	9.52	3/4	11-321	1-1/4	11-121	2-1/8	11-221

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

LETTER SIZES Stubby Series Short Series Long Series

SIZE	DECIMAL EQUIVALENT INCHES	MILLIMETER EQUIVALENT	STUBBY SERIES LENGTH	PART NUMBER	SHORT SERIES LENGTH	PART NUMBER	LONG SERIES LENGTH	PART NUMBER
A	.2340	5.94	5/8	12-301	1-1/4	12-101	2-1/8	12-201
B	.2380	6.04	5/8	12-302	1-1/4	12-102	2-1/8	12-202
C	.2420	6.15	5/8	12-303	1-1/4	12-103	2-1/8	12-203
D	.2460	6.25	5/8	12-304	1-1/4	12-104	2-1/8	12-204
F	.2570	6.53	5/8	12-306	1-1/4	12-106	2-1/8	12-206
G	.2610	6.63	5/8	12-307	1-1/4	12-107	2-1/8	12-207
H	.2660	5/8	5/8	12-308	1-1/4	12-108	2-1/8	12-208
J	.2770	7.03	5/8	12-310	1-1/4	12-110	2-1/8	12-210
K	.2810	7.14	5/8	12-311	1-1/4	12-111	2-1/8	12-211
L	.2900	7.37	5/8	12-312	1-1/4	12-112	2-1/8	12-212
M	.2950	7.49	5/8	12-313	1-1/4	12-113	2-1/8	12-213
N	.3020	7.67	5/8	12-314	1-1/4	12-114	2-1/8	12-214
O	.3160	8.03	5/8	12-315	1-1/4	12-115	2-1/8	12-215
U	.3680	9.34	3/4	12-321	1-1/4	12-121	2-1/8	12-221

OTHER SIZES AVAILABLE, PRICE UPON REQUEST



THREADED SHANK ADAPTER DRILLS

Cobalt High Speed Steel Threaded Shank drills made to NAS 965 Type D specifications. Surface treated for drilling hard, tough high tensile strength material. They will have significantly greater tool life than Type B high speed steel threaded drills resulting in a lower cost per hole. 135° split points prevent "walking"

**Cobalt
1/4-28 Thread
100 Piece Price
Order in Quantity and Save 25%**



BULK PRICING

SIZE	DECIMAL EQUIVALENT INCHES	MILLIMETER EQUIVALENT	PART NUMBERS			
			VERY STUBBY SERIES	STUBBY SERIES	SHORT SERIES	LONG SERIES
#40	.0980	2.49	10-440BULK	10-340BULK	10-040BULK	10-240BULK
#30	.1285	3.26	10-430BULK	10-330BULK	10-030BULK	10-230BULK
#27	.1440	3.66	--	10-327BULK	10-027BULK	10-227BULK
#21	.1590	4.04	10-421BULK	10-321BULK	10-021BULK	10-221BULK
#20	.1610	4.09	--	10-320BULK	10-020BULK	10-220BULK
#19	.1660	4.22	--	10-319BULK	10-019BULK	10-219BULK
#16	.1770	4.50	--	10-316BULK	10-016BULK	10-216BULK
#13	.1850	4.70	--	10-313BULK	10-013BULK	10-213BULK
#12	.1890	4.80	--	10-312BULK	10-012BULK	10-212BULK
#11	.1910	4.85	--	10-311BULK	10-011BULK	10-211BULK
#10	.1935	4.92	10-410BULK	10-310BULK	10-010BULK	10-210BULK
#8	.1990	5.06	--	10-308BULK	10-008BULK	10-208BULK
D	.2460	6.25	--	12-304BULK	12-104BULK	12-204BULK
1/4	.2500	6.35	--	11-313BULK	11-113BULK	11-213BULK

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

ALL SIZES 100 PIECES PER PACKAGE

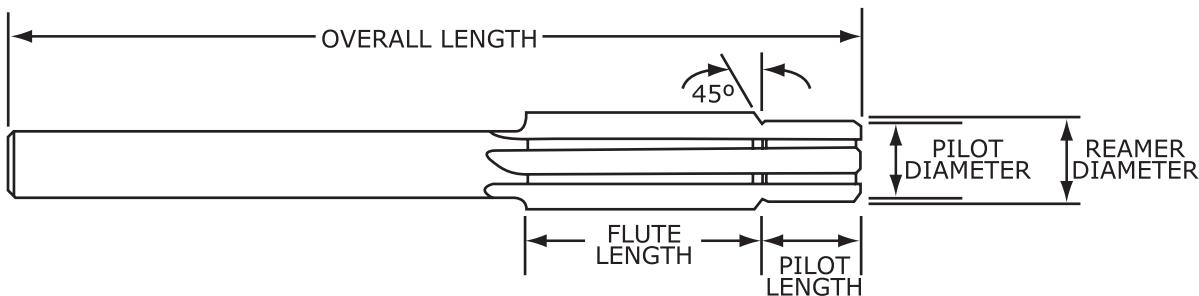
REAMERS

HSS Piloted Chucking Reamers	44 - 46
HSS Piloted Threaded Reamers	47 - 48
HSS Threaded Reamers	48
HSS Standard Chucking Reamers.....	49 - 52
HSS Chucking Reamer Sets.....	52



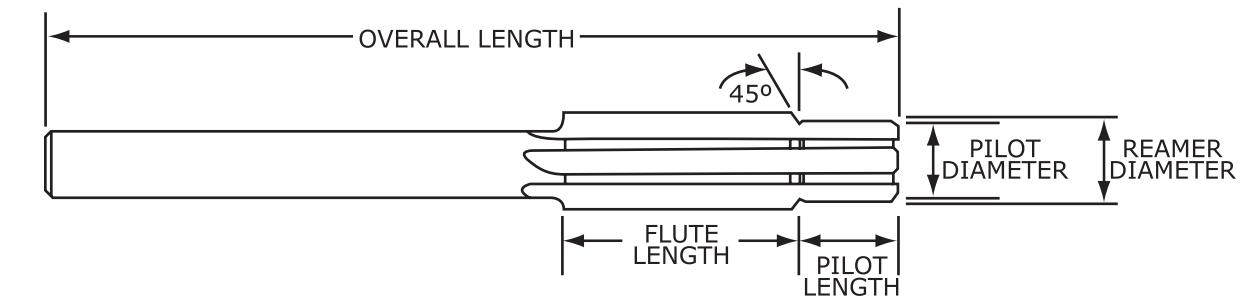
HIGH SPEED STEEL PILOTED CHUCKING REAMERS

Straight Shank, Straight Flute



HIGH SPEED STEEL PILOTED CHUCKING REAMERS

Straight Shank, Straight Flute



PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	FLUTES		PILOT LENGTH INCHES	OVERALL LENGTH INCHES
			NO.	LENGTH		
31-219	.1610	.1250	6	13/16"	5/16	4-1/2
33-737	.1850	.1600	6	13/16"	5/16	4-1/2
31-602	.1860	.1540	6	13/16"	5/16	4-1/2
33-090	.1870	.1600	6	13/16"	5/16	4-1/2
44-100	.1870	.1740	6	13/16"	5/16	4-1/2
44-410	.1875	.1600	6	13/16"	5/16	4-1/2
99-200	.1985	.1845	6	15/16"	5/16	5
31-604	.1985	.1850	6	15/16"	5/16	5
33-738	.1985	.1945	6	15/16"	5/16	5
44-150	.2000	.1870	6	15/16"	5/16	5
44-160	.2031	.1875	6	15/16"	5/16	5
33-739	.2130	.1950	6	15/16"	5/16	5
99-300	.2130	.1985	6	15/16"	5/16	5
31-207	.2140	.1970	6	15/16"	5/16	5
44-200	.2158	.2000	6	15/16"	5/16	5
33-290	.2160	.1980	6	15/16"	5/16	5
44-210	.2188	.2031	6	15/16"	5/16	5
44-250	.2314	.2158	6	1-1/8"	3/8	6
31-605	.2330	.2140	6	1-1/8"	3/8	6
33-740	.2340	.2130	6	1-1/8"	3/8	6
44-260	.2344	.2180	6	1-1/8"	3/8	6
99-500	.2435	.2340	6	1-1/8"	3/8	6
33-741	.2455	.2340	6	1-1/8"	3/8	6
31-222	.2460	.2330	6	1-1/8"	3/8	6
44-300	.2470	.2314	6	1-1/8"	3/8	6
44-310	.2500	.2344	6	1-1/8"	3/8	6
33-742	.2600	.2460	6	1-1/8"	3/8	6
33-340	.2610	.2310	6	1-1/8"	3/8	6
31-600	.2610	.2450	6	1-1/8"	3/8	6
31-221	.2620	.2470	6	1-1/8"	3/8	6
44-350	.2621	.2470	6	1-1/8"	3/8	6
44-360	.2656	.2500	6	1-1/8"	3/8	6
33-743	.2755	.2600	6	1-1/8"	3/8	6
31-215	.2770	.2610	6	1-1/8"	3/8	6

CARBIDE AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST

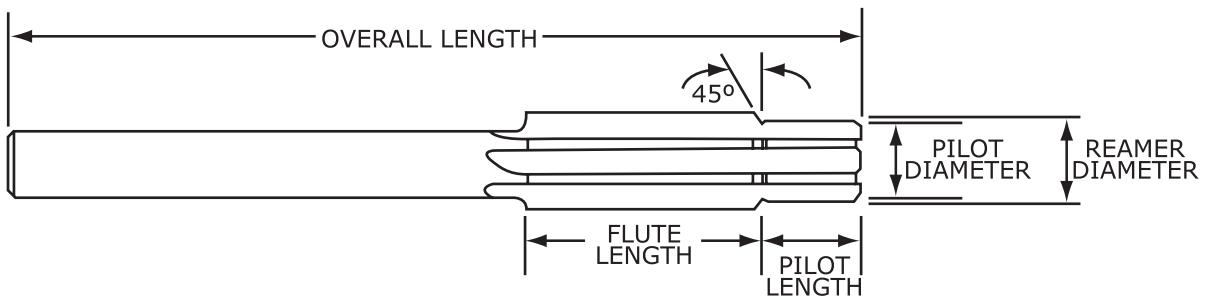
PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	FLUTES		PILOT LENGTH INCHES	OVERALL LENGTH INCHES
			NO.	LENGTH		
30-378	.2780	.2620	6	1-1/8"	3/8	6
44-400	.2782	.2621	6	1-1/8"	3/8	6
30-368	.2810	.2670	6	1-1/8"	3/8	6
44-320	.2812	.2656	6	1-1/8"	3/8	6
99-701	.2910	.2755	6	1-1/8"	3/8	6
31-601	.2920	.2770	6	1-1/8"	3/8	6
44-450	.2939	.2782	6	1-1/8"	3/8	6
44-460	.2969	.2812	6	1-1/8"	3/8	6
99-702	.3075	.2910	6	1-1/8"	3/8	6
44-500	.3090	.2939	6	1-1/8"	3/8	6
31-216	.3100	.2920	6	1-3/16"	5/16	6
44-510	.3125	.2969	6	1-1/8"	3/8	6
99-703	.3225	.3075	6	1-1/8"	3/8	6
31-217	.3230	.3100	6	1-1/8"	3/8	6
44-550	.3251	.3090	6	1-1/8"	3/8	6
44-560	.3281	.3125	6	1-1/8"	3/8	6
99-704	.3380	.3225	6	1-1/8"	3/8	6
30-394	.3390	.3230	6	1-1/8"	3/8	6
31-218	.3390	.3350	6	1-3/16"	5/16	6
44-600	.3407	.3251	6	1-1/8"	3/8	6
44-610	.3438	.3281	6	1-1/4"	1/2	6
99-705	.3535	.3380	6	1-1/4"	1/2	7
44-620	.3594	.3438	6	1-1/4"	1/2	7
99-706	.3700	.3535	6	1-1/4"	1/2	7
30-409	.3710	.3550	6	1-1/4"	1/2	7
33-630	.3750	.3494	6	1-1/4"	1/2	7
44-630	.3750	.3594	6	1-1/4"	1/2	7
99-707	.3850	.3700	6	1-1/4"	1/2	7
34-116	.3860	.3720	6	1-1/4"	1/2	7
44-640	.3906	.3750	6	1-1/4"	1/2	7
99-708	.4005	.3850	6	1-1/4"	1/2	7
31-603	.4010	.3860	6	1-1/4"	1/2	7
44-650	.4062	.3906	6	1-1/4"	1/2	7

CARBIDE AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST



HIGH SPEED STEEL PILOTED CHUCKING REAMERS

Straight Shank, Straight Flute

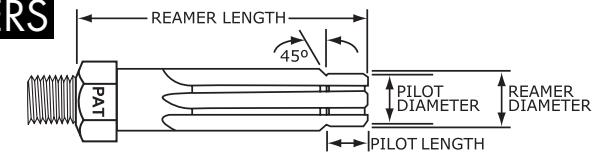


PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	FLUTES		PILOT LENGTH INCHES	OVERALL LENGTH INCHES
			NO.	LENGTH		
99-709	.4160	.4005	6	1-1/4"	1/2	7
44-660	.4219	.4062	6	1-1/4"	1/2	7
99-710	.4325	.4160	6	1-1/4"	1/2	7
99-719	.4375	.4219	6	1-1/4"	1/2	7
99-711	.4485	.4325	6	1-1/4"	1/2	7
99-720	.4531	.4375	6	1-1/4"	1/2	7
99-712	.4640	.4405	6	1-1/4"	1/2	7
99-721	.4688	.4531	6	1-1/4"	1/2	7
99-713	.4795	.4640	6	1-1/2"	1/2	8
99-722	.4844	.4688	6	1-1/2"	1/2	8
99-714	.4950	.4795	6	1-1/2"	1/2	8
99-723	.5000	.4844	6	1-1/2"	1/2	8
99-715	.5110	.4950	6	1-1/2"	1/2	8
99-724	.5156	.5000	6	1-1/2"	1/2	8
99-716	.5265	.5110	6	1-1/2"	1/2	8
99-725	.5312	.5156	6	1-1/2"	1/2	8
99-726	.5469	.5312	8	1-1/2"	1/2	8
99-727	.5625	.5469	8	1-1/2"	1/2	8
99-728	.5781	.5625	8	1-1/2"	1/2	8
99-729	.5938	.5781	8	1-1/2"	1/2	8
99-730	.6094	.5938	8	1-1/2"	1/2	9
99-731	.6250	.6094	8	1-3/4"	1/2	9

CARBIDE AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST

HIGH SPEED STEEL PILOTED THREADED REAMERS

1/4-28 Threaded Shank, Straight Flute



PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	PILOT LENGTH INCHES	OVERALL LENGTH INCHES	SHANK THREAD
45-219	.1610	.1250	5/16	2-1/2	1/4-28
45-080	.1850	.1600	5/16	2-1/2	1/4-28
45-602	.1860	.1540	5/16	2-1/2	1/4-28
45-090	.1870	.1600	5/16	2-1/2	1/4-28
45-100	.1870	.1740	5/16	2-1/2	1/4-28
45-410A	.1875	.1600	5/16	2-1/2	1/4-28
45-110	.1985	.1850	5/16	2-1/2	1/4-28
45-150A	.2000	.1870	5/16	2-1/2	1/4-28
45-738	.1985	.1945	5/16	2-1/2	1/4-28
45-160	.2130	.1980	5/16	2-1/2	1/4-28
45-160A	.2031	.1875	5/16	2-1/2	1/4-28
45-739	.2130	.1950	5/16	2-1/2	1/4-28
45-170	.2140	.1970	1/2	2-1/4	1/4-28
45-200	.2158	.2000	5/16	2-1/2	1/4-28
45-210	.2160	.1980	5/16	2-1/2	1/4-28
45-210A	.2188	.2031	5/16	2-1/2	1/4-28
45-250	.2314	.2158	3/8	2-1/2	1/4-28
45-605	.2330	.2140	3/8	2-1/2	1/4-28
45-740	.2340	.2130	3/8	2-1/2	1/4-28
45-260	.2344	.2180	3/8	2-1/2	1/4-28
45-741	.2455	.2340	3/8	2-1/2	1/4-28
45-290	.2460	.2330	3/8	2-1/4	1/4-28
45-300	.2470	.2314	3/8	2-1/2	1/4-28
45-310	.2500	.2344	3/8	2-1/2	1/4-28
45-340	.2600	.2310	3/8	2-1/4	1/4-28
45-742	.2600	.2460	3/8	2-1/2	1/4-28
45-345	.2610	.2450	3/8	2-1/2	1/4-28
45-221	.2620	.2470	3/8	2-1/2	1/4-28
45-350	.2621	.2470	3/8	2-1/2	1/4-28
45-360	.2656	.2500	3/8	2-1/2	1/4-28
45-743	.2755	.2600	3/8	2-1/2	1/4-28
45-215	.2770	.2610	3/8	2-1/2	1/4-28
45-378	.2780	.2620	3/8	2-1/2	1/4-28
45-400	.2782	.2621	3/8	2-1/2	1/4-28
45-410	.2812	.2656	3/8	2-1/2	1/4-28
45-601	.2920	.2770	3/8	2-1/2	1/4-28
45-450	.2939	.2782	3/8	2-1/2	1/4-28
45-460	.2969	.2812	1/2	2-1/4	1/4-28
45-500	.3090	.2939	3/8	2-1/2	1/4-28
45-316	.3100	.2920	3/8	2-1/2	1/4-28
45-510	.3125	.2969	3/8	2-1/2	1/4-28
45-217	.3230	.3100	3/8	2-1/2	1/4-28
45-550	.3251	.3090	3/8	2-1/2	1/4-28
45-560	.3281	.3125	1/2	2-1/4	1/4-28
45-394	.3390	.3230	3/8	2-1/2	1/4-28
45-218	.3390	.3350	3/8	2-1/2	1/4-28
45-600	.3407	.3251	3/8	2-1/2	1/4-28
45-660	.3438	.3281	1/2	2-1/4	1/4-28
45-670	.3595	.3438	1/2	2-1/4	1/4-28

CARBIDE AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST



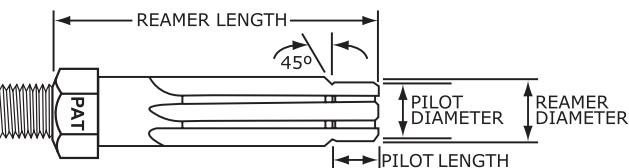
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HIGH SPEED STEEL PILOTED THREADED REAMERS

1/4-28 Threaded Shank, Straight Flute

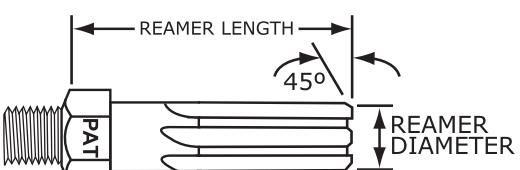


PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	PILOT LENGTH INCHES	OVERALL LENGTH INCHES	SHANK THREAD
45-409	.3710	.3550	1/2	2-1/2	1/4-28
45-630	.3750	.3594	1/2	2-1/2	1/4-28
45-680	.3750	.3494	1/2	2-1/2	1/4-28
45-640	.3906	.3750	1/2	2-1/2	1/4-28
45-708	.4005	.3850	1/2	2-1/2	1/4-28
45-603	.4010	.3860	1/2	2-1/2	1/4-28
45-650	.4062	.3906	1/2	2-1/2	1/4-28
45-660A	.4219	.4062	1/2	2-1/2	1/4-28
45-719	.4375	.4219	1/2	2-1/2	1/4-28
45-720	.4531	.4375	1/2	2-1/2	1/4-28
45-721	.4688	.4531	1/2	2-1/2	1/4-28
45-722	.4844	.4688	1/2	2-1/2	1/4-28
45-723	.5000	.4844	1/2	2-1/2	1/4-28
45-725	.5312	.5156	1/2	2-1/2	1/4-28
45-727	.5625	.5469	1/2	2-1/2	1/4-28
45-728	.5781	.5625	1/2	2-1/2	1/4-2
45-729	.5938	.5781	1/2	2-1/2	1/4-28
45-731	.6250	.6094	1/2	2-1/2	1/4-28

CARBIDE AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST

HIGH SPEED STEEL THREADED REAMERS

Threaded Shank - No Pilot

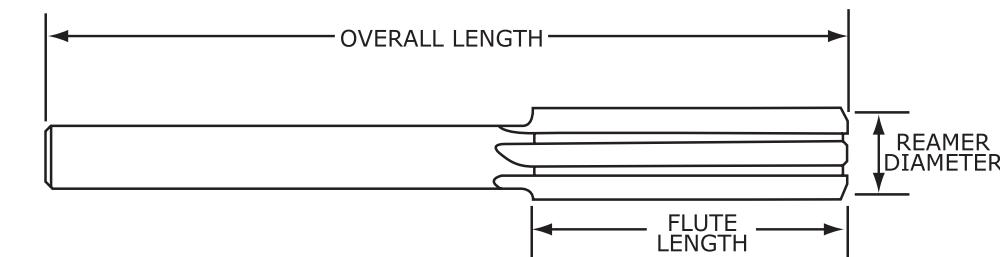


PART NUMBER	REAMER DIAMETER	REAMER LENGTH INCHES	SHANK THREAD
31-166	.1935 (#10)	5/8	1/4-28
36-163	.1910 (#11)	5/8	1/4-28
36-161	.1850 (#13)	5/8	1/4-28
31-167	.1590 (#21)	5/8	1/4-28
31-090	.1285 (#30)	5/8	1/4-28
31-208	.2500 (1/4")	5/8	1/4-28
31-170	.1935 (#10)	1	1/4-28
36-164	.1910 (#11)	1	1/4-28
36-162	.1850 (#13)	1	1/4-28
31-171	.1590 (#21)	1	1/4-28
31-091	.1285 (#30)	1	1/4-28
31-168	.2500 (1/4")	1	1/4-28

CARBIDE AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST

HIGH SPEED STEEL STANDARD CHUCKING REAMERS

Straight Shank, Straight Flute - No Pilot



PART NUMBER	REAMER DIAMETER	DECIMAL EQUIVALENT	FLUTES		OVERALL LENGTH INCHES
			NO.	LENGTH	
47-060	#60	.0400	4	1/2"	2-1/2
47-059	#59	.0410	4	1/2"	2-1/2
47-058	#58	.0420	4	1/2"	2-1/2
47-057	#57	.0430	4	1/2"	2-1/2
47-056	#56	.0465	4	1/2"	2-1/2
47-055	#55	.0520	4	1/2"	2-1/2
47-054	#54	.0550	4	1/2"	2-1/2
47-053	#53	.0595	4	1/2"	2-1/2
47-061	1/16"	.0625	4	1/2"	2-1/2
47-052	#52	.0635	4	1/2"	2-1/2
47-051	#51	.0670	4	3/4"	3
47-050	#50	.0700	4	3/4"	3
47-049	#49	.0730	4	3/4"	3
47-048	#48	.0760	4	3/4"	3
47-062	5/64"	.0781	4	3/4"	3
47-047	#47	.0785	4	3/4"	3
47-046	#46	.0810	4	3/4"	3
47-045	#45	.0820	4	3/4"	3
47-044	#44	.0860	4	3/4"	3
47-043	#43	.0890	4	3/4"	3
47-042	#42	.0935	4	3/4"	3
47-063	3/32"	.0938	4	3/4"	3
47-041	#41	.0960	4	7/8"	3-1/2
47-040	#40	.0980	4	7/8"	3-1/2
47-039	#39	.0995	4	7/8"	3-1/2
47-038	#38	.1015	4	7/8"	3-1/2
47-037	#37	.1040	4	7/8"	3-1/2
47-036	#36	.1065	4	7/8"	3-1/2
47-064	7/64"	.1094	4	7/8"	3-1/2

CARBIDE AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST



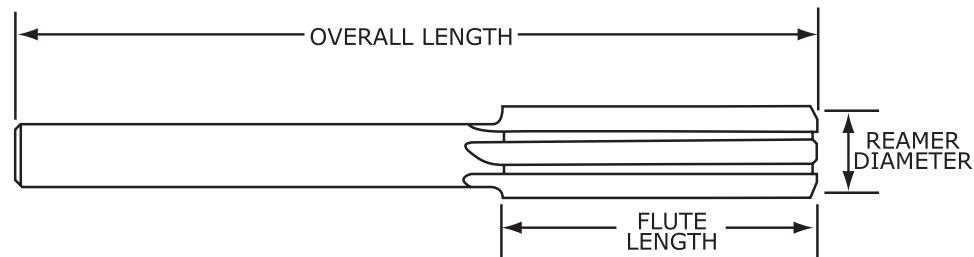
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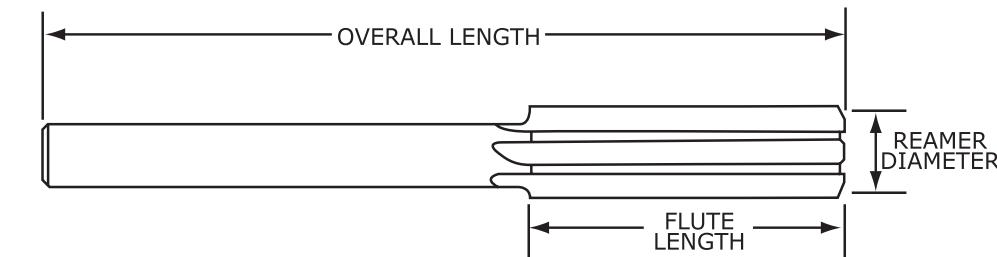
HIGH SPEED STEEL STANDARD CHUCKING REAMERS

Straight Shank, Straight Flute - No Pilot



HIGH SPEED STEEL STANDARD CHUCKING REAMERS

Straight Shank, Straight Flute - No Pilot



PART NUMBER	REAMER DIAMETER	DECIMAL EQUIVALENT	FLUTES		OVERALL LENGTH INCHES
			NO.	LENGTH	
47-035	#35	.1100	4	7/8"	3-1/2
47-034	#34	.1110	4	7/8"	3-1/2
47-033	#33	.1130	4	7/8"	3-1/2
47-032	#32	.1160	4	7/8"	3-1/2
47-031	#31	.1200	4	7/8"	3-1/2
47-065	1/8"	.1250	4	7/8"	3-1/2
47-030	#30	.1285	4	7/8"	3-1/2
47-029	#29	.1360	4	1"	4
47-028	#28	.1405	4	1"	4
47-066	9/64"	.1406	4	1"	4
47-027	#27	.1440	4	1"	4
47-026	#26	.1470	4	1"	4
47-025	#25	.1495	4	1"	4
47-024	#24	.1520	4	1"	4
47-023	#23	.1540	4	1"	4
47-067	5/32"	.1562	4	1"	4
47-022	#22	.1570	6	1"	4
47-021	#21	.1590	6	1-1/8"	4-1/2
47-020	#20	.1610	6	1-1/8"	4-1/2
47-019	#19	.1660	6	1-1/8"	4-1/2
47-018	#18	.1695	6	1-1/8"	4-1/2
47-068	11/64"	.1719	6	1-1/8"	4-1/2
47-017	#17	.1730	6	1-1/8"	4-1/2
47-016	#16	.1770	6	1-1/8"	4-1/2
47-015	#15	.1800	6	1-1/8"	4-1/2
47-014	#14	.1820	6	1-1/8"	4-1/2
47-013	#13	.1850	6	1-1/8"	4-1/2
47-069	3/16"	.1875	6	1-1/8"	4-1/2
47-012	#12	.1890	6	1-1/8"	4-1/2
47-011	#11	.1910	6	1-1/4"	5
47-010	#10	.1935	6	1-1/4"	5
47-009	#9	.1960	6	1-1/4"	5
47-008	#8	.1990	6	1-1/4"	5

CARBIDE AND OTHER SIZES AVAILABLE, PRICE ON REQUEST

PART NUMBER	REAMER DIAMETER	DECIMAL EQUIVALENT	FLUTES		OVERALL LENGTH INCHES
			NO.	LENGTH	
47-007	#7	.2010	6	1-1/4"	5
47-070	13/64"	.2031	6	1-1/4"	5
47-006	#6	.2040	6	1-1/4"	5
47-005	#5	.2055	6	1-1/4"	5
47-004	#4	.2090	6	1-1/4"	5
47-003	#3	.2130	6	1-1/4"	5
47-071	7/32"	.2188	6	1-1/4"	5
47-002	#2	.2210	6	1-1/2"	6
47-001	#1	.2280	6	1-1/2"	6
47-090	"A"	.2340	6	1-1/2"	6
47-072	15/64"	.2344	6	1-1/2"	6
47-091	"B"	.2380	6	1-1/2"	6
47-092	"C"	.2420	6	1-1/2"	6
47-093	"D"	.2460	6	1-1/2"	6
47-073	1/4"	.2500	6	1-1/2"	6
47-094	"E"	.2500	6	1-1/2"	6
47-095	"F"	.2570	6	1-1/2"	6
47-096	"G"	.2610	6	1-1/2"	6
47-074	17/64"	.2656	6	1-1/2"	6
47-097	"H"	.2660	6	1-1/2"	6
47-098	"I"	.2720	6	1-1/2"	6
47-099	"J"	.2770	6	1-1/2"	6
47-100	"K"	.2810	6	1-1/2"	6
47-075	9/32"	.2812	6	1-1/2"	6
47-101	"L"	.2900	6	1-1/2"	6
47-102	"M"	.2950	6	1-1/2"	6
47-076	19/64"	.2969	6	1-1/2"	6
47-103	"N"	.3020	6	1-1/2"	6
47-077	5/16"	.3125	6	1-1/2"	6
47-104	"O"	.3160	6	1-1/2"	6
47-105	"P"	.3230	6	1-1/2"	6
47-078	21/64"	.3281	6	1-1/2"	6
47-106	"Q"	.3320	6	1-1/2"	6
47-107	"R"	.3390	6	1-1/2"	6
47-079	11/32"	.3438	6	1-1/2"	6
47-108	"S"	.3480	6	1-3/4"	7
47-109	"T"	.3580	6	1-3/4"	7
47-080	23/64"	.3594	6	1-3/4"	7

CARBIDE AND OTHER SIZES AVAILABLE, PRICE ON REQUEST



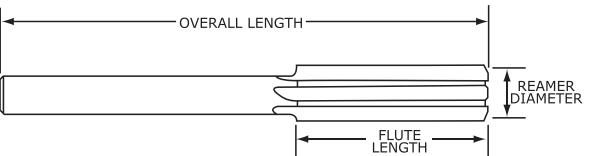
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HIGH SPEED STEEL STANDARD CHUCKING REAMERS

Straight Shank, Straight Flute - No Pilot



PART NUMBER	REAMER DIAMETER	DECIMAL EQUIVALENT	FLUTES		OVERALL LENGTH INCHES
			NO.	LENGTH	
47-110	"U"	.3680	6	1-3/4"	7
47-081	3/8"	.3750	6	1-3/4"	7
47-111	"V"	.3770	6	1-3/4"	7
47-112	"W"	.3860	6	1-3/4"	7
47-082	25/64"	.3906	6	1-3/4"	7
47-113	"X"	.3970	6	1-3/4"	7
47-114	"Y"	.4040	6	1-3/4"	7
47-083	13/32"	.4062	6	1-3/4"	7
47-115	"Z"	.4130	6	1-3/4"	7
47-084	27/64"	.4219	6	1-3/4"	7
47-085	7/16"	.4375	6	1-3/4"	7
47-086	29/64"	.4531	6	1-3/4"	7
47-087	15/32"	.4688	6	1-3/4"	7
47-088	31/64"	.4844	6	2"	8
47-089	1/2"	.5000	6	2"	8
47-116	33/64"	.5156	6	2"	8
47-117	17/32"	.5312	6	2"	8
47-118	35/64"	.5469	8	2"	8
47-119	9/16"	.5625	8	2"	8
47-120	37/64"	.5781	8	2"	8
47-121	19/32"	.5938	8	2"	8
47-122	39/64"	.6094	8	2-1/4"	8
47-123	5/8"	.6250	8	2-1/4"	8

CARBIDE AND OTHER SIZES AVAILABLE, PRICE UPON REQUEST

HIGH SPEED STEEL CHUCKING REAMER SETS

FRACTIONAL REAMERS

- 1/16" to 1/2" by 64ths
- 29 Pieces
- Part #46-100



NUMBER SIZE REAMERS

- #1 - #60
- 60 Pieces
- Part #46-200



LETTER SIZE REAMERS

- "A" - "Z"
- 26 Pieces
- Part #46-300



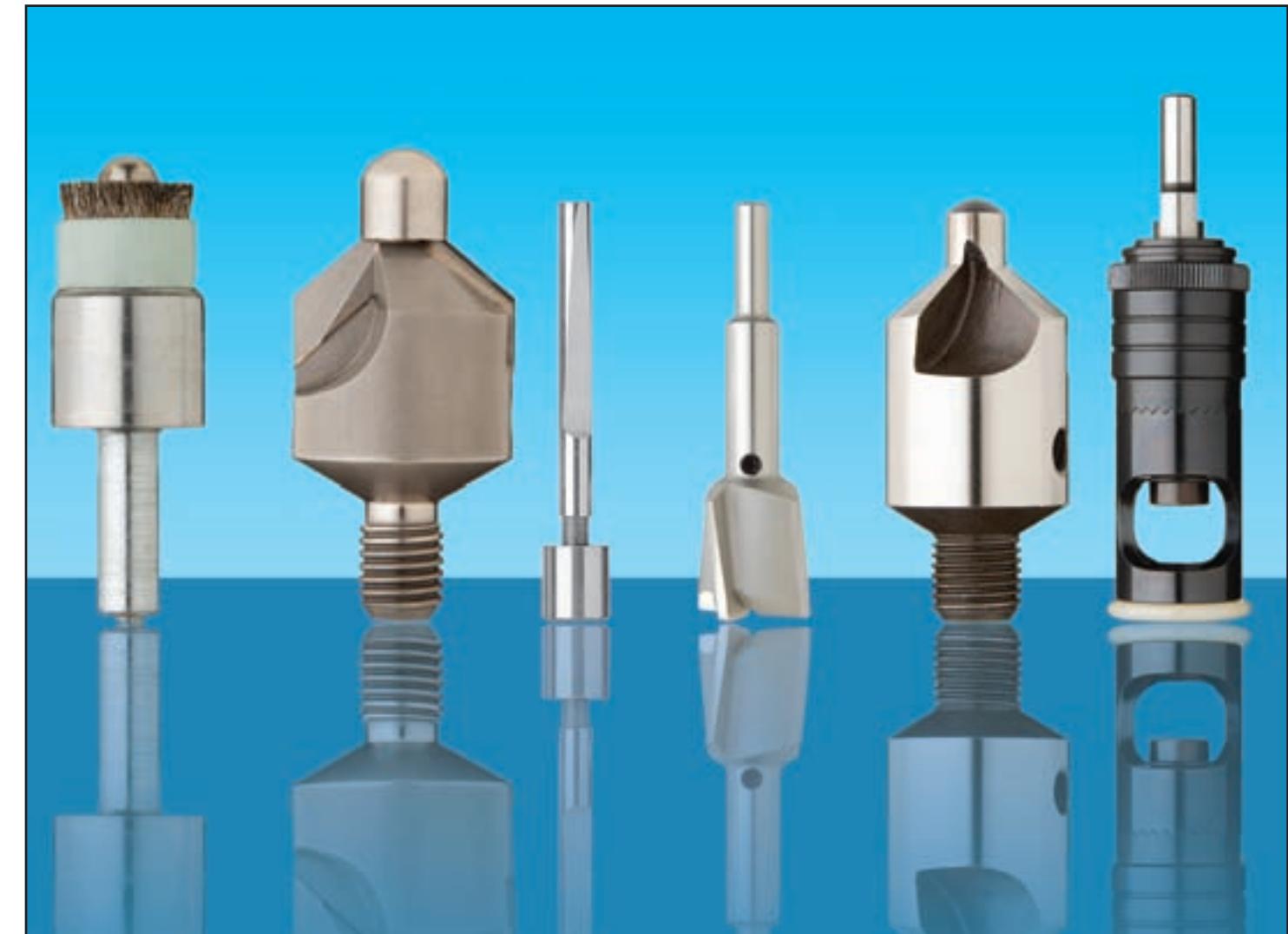
PART #46-400 • BUY ALL 3 SETS



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COUNTERSINKS

High Speed Steel Stop Countersinks 100°	54 - 56
High Speed Steel Stop Countersinks 82° and 120°	57
Pilot Bonding Brushes	57
Carbide Tipped Stop Countersinks with Integral Pilot	58 - 59
Carbide Tipped Stop Countersinks with Replaceable Pilot	59
Pilots for Carbide Tipped Stop Countersinks	59
Solid Carbide Stop Countersinks 100°	60
Threaded Shank Chatterless Countersinks	61
High Speed Steel 6 Flute Chatterless Countersinks	61
High Speed Steel Hollow Cutters	61
Rivet Shavers	61
High Speed Steel Counterbores with 1/4 Shank	62
High Speed Steel Counterbores - No Radius	62
Counterbore Pilots	63
Reverse Spotfacers / Counterbores	64
Plain Arbors for Reverse Spotfacers / Counterbores	64
Micro-Stop Countersink Cages	65 - 66
Micro-Stop Countersink Cages Needle Bearing	67

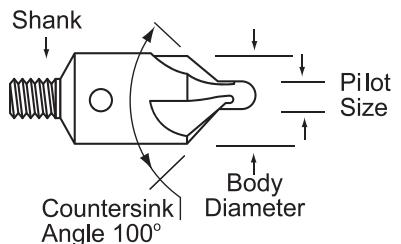


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HIGH SPEED STEEL STOP COUNTERSINKS

Three Flute, Integral Pilot, 1/4-28 Threaded Shank, 100°

Countersink cutters may be used in all popular adjustable or micro-stop countersinking units utilizing a threaded shank drive. Made from the finest high speed tool steel. Precision ground to exacting tolerances and form relieved to insure concentricity of countersink angle.



5/16

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
18-570	40	.0980	5/16	1/4-28
18-560	30	.1285	5/16	1/4-28
18-505	21	.1590	5/16	1/4-28
18-506	13	.1850	5/16	1/4-28
18-509	10	.1935	5/16	1/4-28

3/8

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
27-435	3/32	.0938	3/8	1/4-28
27-201	40	.0980	3/8	1/4-28
27-221	1/8	.1250	3/8	1/4-28
27-202	30	.1285	3/8	1/4-28
27-203	27	.1440	3/8	1/4-28
27-218	26	.1470	3/8	1/4-28
27-211	5/32	.1562	3/8	1/4-28
27-204	21	.1590	3/8	1/4-28
27-205	20	.1610	3/8	1/4-28
27-206	19	.1660	3/8	1/4-28
27-207	16	.1770	3/8	1/4-28
27-208	13	.1850	3/8	1/4-28
27-212	3/16	.1875	3/8	1/4-28
27-209	12	.1890	3/8	1/4-28
27-210	10	.1935	3/8	1/4-28
27-215	8	.1990	3/8	1/4-28
27-439	7/32	.2187	3/8	1/4-28
27-216	"D"	.2460	3/8	1/4-28
27-213	1/4	.2500	3/8	1/4-28

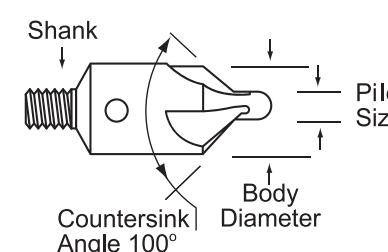
OTHER SIZES AVAILABLE, PRICE UPON REQUEST

HIGH SPEED STEEL STOP COUNTERSINKS

Three Flute, Integral Pilot, 1/4-28 Threaded Shank, 100°

Countersink cutters may be used in all popular adjustable or micro-stop countersinking units utilizing a threaded shank drive. Made from the finest high speed tool steel. Precision ground to exacting tolerances and form relieved to insure concentricity of countersink angle.

7/16



1/2



PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
27-222	3/32	.0938	7/16	1/4-28
27-226	40	.0980	7/16	1/4-28
27-233	1/8	.1250	7/16	1/4-28
27-227	30	.1285	7/16	1/4-28
27-236	27	.1440	7/16	1/4-28
27-235	5/32	.1562	7/16	1/4-28
27-228	21	.1590	7/16	1/4-28
27-234	19	.1660	7/16	1/4-28
27-237	13	.1850	7/16	1/4-28
27-232	3/16	.1875	7/16	1/4-28
27-225	12	.1890	7/16	1/4-28
27-224	11	.1910	7/16	1/4-28
27-229	10	.1935	7/16	1/4-28
27-199	"D"	.2460	7/16	1/4-28
27-230	1/4	.2500	7/16	1/4-28
27-231	5/16	.3125	7/16	1/4-28

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
27-260	3/32	.0938	1/2	1/4-28
27-251	40	.0980	1/2	1/4-28
27-261	1/8	.1250	1/2	1/4-28
27-252	30	.1285	1/2	1/4-28
27-253	27	.1440	1/2	1/4-28
27-262	5/32	.1562	1/2	1/4-28
27-254	21	.1590	1/2	1/4-28
27-269	20	.1610	1/2	1/4-28
27-298	19	.1660	1/2	1/4-28
27-255	16	.1770	1/2	1/4-28
27-256	13	.1850	1/2	1/4-28
27-263	3/16	.1875	1/2	1/4-28
27-268	12	.1890	1/2	1/4-28
27-243	11	.1910	1/2	1/4-28
27-257	10	.1935	1/2	1/4-28
27-258	8	.1990	1/2	1/4-28
27-245	7	.2010	1/2	1/4-28
27-242	6	.2040	1/2	1/4-28
27-259	5	.2055	1/2	1/4-28
27-241	4	.2090	1/2	1/4-28
27-244	3	.2130	1/2	1/4-28
27-264	7/32	.2188	1/2	1/4-28
27-240	"A"	.2340	1/2	1/4-28
27-273	"B"	.2380	1/2	1/4-28
27-270	"D"	.2460	1/2	1/4-28
27-265	1/4	.2500	1/2	1/4-28
27-238	"F"	.2570	1/2	1/4-28
27-246	"G"	.2610	1/2	1/4-28
27-247	"J"	.2770	1/2	1/4-28
27-239	9/32	.2812	1/2	1/4-28
27-271	"N"	.3020	1/2	1/4-28
27-272	--	.3090	1/2	1/4-28
27-266	5/16	.3125	1/2	1/4-28
27-248	"P"	.3230	1/2	1/4-28
27-249	"R"	.3390	1/2	1/4-28
27-267	3/8	.3750	1/2	1/4-28

OTHER SIZES AVAILABLE, PRICE UPON REQUEST



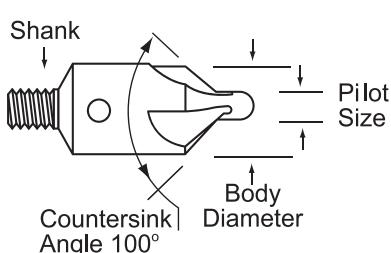
HIGH SPEED STEEL STOP COUNTERSINKS

Three Flute, Integral Pilot, 1/4-28 Threaded Shank, 100°

Countersink cutters may be used in all popular adjustable or micro-stop countersinking units utilizing a threaded shank drive. Made from the finest high speed tool steel. Precision ground to exacting tolerances and form relieved to insure concentricity of countersink angle.

9/16

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
27-333	1/4	.2500	9/16	1/4-28
27-331	.390	.3900	9/16	1/4-28
27-332	.405	.4050	9/16	1/4-28



5/8

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
27-276	40	.0980	5/8	1/4-28
27-277	30	.1285	5/8	1/4-28
27-275	27	.1440	5/8	1/4-28
27-278	21	.1590	5/8	1/4-28
27-284	13	.1850	5/8	1/4-28
27-283	3/16	.1875	5/8	1/4-28
27-279	10	.1935	5/8	1/4-28
27-285	"D"	.2460	5/8	1/4-28
27-280	1/4	.2500	5/8	1/4-28
27-292	"G"	.2610	5/8	1/4-28
27-294	"J"	.2770	5/8	1/4-28
27-286	--	.3090	5/8	1/4-28
27-281	5/16	.3125	5/8	1/4-28
27-287	--	.3250	5/8	1/4-28
27-293	"R"	.3390	5/8	1/4-28
27-288	--	.3450	5/8	1/4-28
27-297	--	.3610	5/8	1/4-28
27-289	--	.3710	5/8	1/4-28
27-282	3/8	.3750	5/8	1/4-28
27-290	"Y"	.4040	5/8	1/4-28

3/4

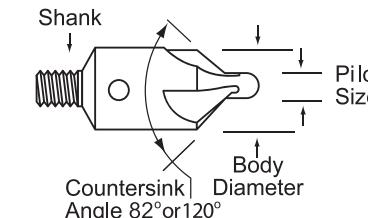
PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
27-313	3/16	.1875	3/4	3/8-24
27-309	10	.1935	3/4	3/8-24
27-301	"D"	.2460	3/4	3/8-24
27-310	1/4	.2500	3/4	3/8-24
27-311	5/16	.3125	3/4	3/8-24
27-312	3/8	.3750	3/4	3/8-24
27-314	7/16	.4375	3/4	3/8-24

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

HIGH SPEED STEEL STOP COUNTERSINKS 82° & 120°

Three Flute, Integral Pilot, 1/4-28 Threaded Shank, 82° and 120°

Countersink cutters may be used in all popular adjustable or micro-stop countersinking units utilizing a threaded shank drive. Made from the finest high speed tool steel. Precision ground to exacting tolerances and form relieved to insure concentricity of countersink angle.



82°

1/2

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
18-038	#40	.0980	1/2	1/4-28
18-042	#30	.1285	1/2	1/4-28
18-021	#27	.1440	1/2	1/4-28
18-043	#21	.1590	1/2	1/4-28
18-045	3/16	.1875	1/2	1/4-28
18-048	#13	.1850	1/2	1/4-28
18-044	#10	.1935	1/2	1/4-28
18-027	1/4	.2500	1/2	1/4-28

120°

1/2

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
18-049	#40	.0980	1/2	1/4-28
18-050	#30	.1285	1/2	1/4-28
18-051	#21	.1590	1/2	1/4-28
18-052	#10	.1935	1/2	1/4-28
18-053	1/4	.2500	1/2	1/4-28

PILOT BONDING BRUSHES

Pilot bonding brushes are used for removing paint, primer and rust from around bolt or rivet holes.



PART NUMBER	BODY SIZE	PILOT SIZE	PILOT DIAMETER
32-001	1/2	3/32 (#40)	.0938
32-002	1/2	1/8 (#30)	.1285
32-003	1/2	5/32 (#21)	.1562
32-004	1/2	3/16 (#10)	.1875
32-005	1/2	1/4	.2500

.005 Stainless Wire Brush Material

MFS = 20,000 RPM

OTHER SIZES AVAILABLE, PRICE UPON REQUEST



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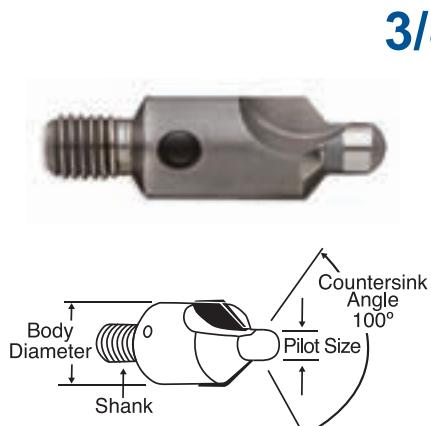


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CARBIDE TIPPED STOP COUNTERSINKS WITH INTEGRAL PILOT

100° Countersink Angle, 2 Flute Integral Pilot, 1/4-28 Threaded Shank

Carbide tipped countersinks are designed for cutting highly abrasive materials such as composites and difficult to machine materials where longer tool life is desired. The tool body is made of high-speed steel.



3/8

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
36-542	3/32	.0938	3/8	1/4-28
36-548	#40	.0980	3/8	1/4-28
36-545	1/8	.1250	3/8	1/4-28
36-543	#30	.1285	3/8	1/4-28
36-546	#27	.1440	3/8	1/4-28
36-547	5/32	.1560	3/8	1/4-28
36-541	#21	.1590	3/8	1/4-28
36-544	#20	.1610	3/8	1/4-28
36-549	#16	.1770	3/8	1/4-28
36-550	#13	.1850	3/8	1/4-28
36-551	3/16	.1875	3/8	1/4-28
36-540	#10	.1930	3/8	1/4-28
36-552	1/4	.2500	3/8	1/4-28

CARBIDE TIPPED STOP COUNTERSINKS WITH INTEGRAL PILOT

100° Countersink Angle, 2 Flute Integral Pilot, 1/4-28 Threaded Shank

Carbide tipped countersinks are designed for cutting highly abrasive materials such as composites and difficult to machine materials where longer tool life is desired. The tool body is made of high-speed steel.



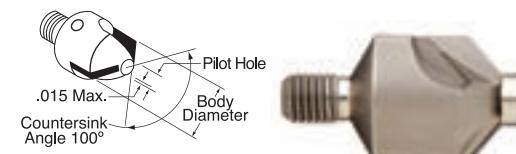
5/8

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
36-563	#40	.0980	5/8	1/4-28
36-564	#30	.1280	5/8	1/4-28
36-565	#21	.1590	5/8	1/4-28
36-567	"D"	.2460	5/8	1/4-28
36-568	1/4	.2500	5/8	1/4-28
36-569	"G"	.2610	5/8	1/4-28
36-570	5/16	.3125	5/8	1/4-28
36-566	#10	.1930	5/8	1/4-28

CARBIDE TIPPED STOP COUNTERSINKS WITH REPLACEABLE PILOTS

100° Countersink Angle, Replaceable Pilot, 1/4-28 Threaded Shank

Carbide tipped countersinks are designed for cutting highly abrasive materials such as composites and difficult to machine materials where longer tool life is desired. Replaceable pilot construction allows for replacement of damaged pilots and substitution of various pilot diameters with the same countersink.

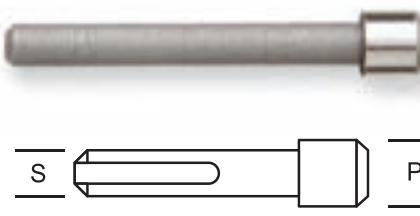


1/2

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT	BODY DIAMETER	SHANK SIZE
36-909	3/32	.0938	1/2	1/4-28
36-453	#40	.0980	1/2	1/4-28
36-556	1/8	.1250	1/2	1/4-28
36-452	#30	.1285	1/2	1/4-28
36-503	#27	.1440	1/2	1/4-28
36-553	5/32	.1560	1/2	1/4-28
36-557	#21	.1590	1/2	1/4-28
36-451	#20	.1610	1/2	1/4-28
36-502	#16	.1770	1/2	1/4-28
36-554	#13	.1850	1/2	1/4-28
36-539	3/16	.1875	1/2	1/4-28
36-789	#12	.1890	1/2	1/4-28
36-450	#11	.1910	1/2	1/4-28
36-449	#10	.1930	1/2	1/4-28
36-448	#8	.1990	1/2	1/4-28
36-558	#7	.2010	1/2	1/4-28
36-555	#6	.2040	1/2	1/4-28
36-501	#5	.2050	1/2	1/4-28
36-447	7/32	.2180	1/2	1/4-28
36-559	"D"	.2460	1/2	1/4-28
36-560	1/4	.2500	1/2	1/4-28
36-561	"G"	.2610	1/2	1/4-28
36-562	5/16	.3125	1/2	1/4-28

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

PILOTS FOR CARBIDE TIPPED STOP COUNTERSINKS



PART NUMBER	SHANK DIAMETER	PILOT SIZE
15-102	3/32	#30
15-103	3/32	#21
15-104	3/32	#10
15-105	3/32	#12
15-106	3/32	1/4
15-112	3/32	#13
15-123	3/32	"D"
15-126	3/32	"G"
15-127	3/32	#8
15-107	1/8	#30
15-108	1/8	#21
15-109	1/8	#12
15-110	1/8	#10
15-111	1/8	1/4

OTHER SIZES AVAILABLE, PRICE UPON REQUEST



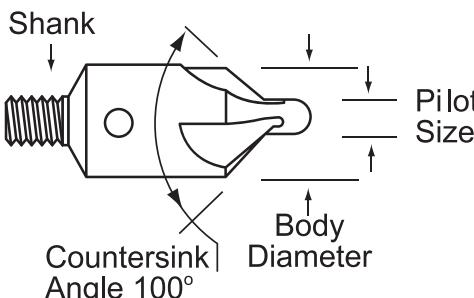
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SOLID CARBIDE STOP COUNTERSINKS - 100°

Solid Carbide Head Welded to a Steel 1/4-28 Threaded Shank
Three flute design gives excellent wear resistance to highly abrasive materials and difficult to machine materials. Precision ground for concentricity.



3/8

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
36-700	#40	.0900	3/8	1/4-28
36-701	#30	.1285	3/8	1/4-28
36-702	#21	.1850	3/8	1/4-28
36-703	#20	.1610	3/8	1/4-28
36-704	#10	.1935	3/8	1/4-28

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

1/2

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
36-710	#40	.0980	1/2	1/4-28
36-711	1/8	.1250	1/2	1/4-28
36-712	#30	.1285	1/2	1/4-28
36-713	#21	.1850	1/2	1/4-28
36-714	#20	.1610	1/2	1/4-28
36-715	#13	.1850	1/2	1/4-28
36-716	3/16	.1875	1/2	1/4-28
36-717	#10	.1935	1/2	1/4-28
36-718	"D"	.2460	1/2	1/4-28
36-719	1/4	.2500	1/2	1/4-28

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

THREADED SHANK CHATTERLESS COUNTERSINKS

PART NUMBER	SIZE	SHANK
43-653	5/16" X 100°	1/4-28
43-652	3/8" X 100°	1/4-28



HIGH SPEED STEEL 6 FLUTE CHATTERLESS COUNTERSINKS

PART NUMBER	SIZE	SHANK DIAMETER	SHANK LENGTH INCHES	OVERALL LENGTH INCHES
33-503	1/4" X 100°	1/4	-	2
33-504	5/16" X 100°	1/4	1	2
33-505	3/8" X 100°	1/4	1	2
33-506	1/2" X 100°	1/4	1	2
33-507	5/8" X 100°	3/8	1-1/8	2-1/2
33-508	3/4" X 100°	3/8	1-5/16	2-3/4
33-510	1/4" X 82°	1/4	-	2
33-511	5/16" X 82°	1/4	1	2
33-512	3/8" X 82°	1/4	1	2
33-513	1/2" X 82°	1/4	1	2



HIGH SPEED STEEL HOLLOW CUTTERS

Designed to fit standard stop countersinking units so that their cutting depth can be controlled. These tools are used for collar removal on Hi-Shear® fasteners. New improved stronger 4 flute design for longer tool life.

PART NUMBER	"D"	"A"	FASTENER SIZE	FASTENER TYPE	SHANK SIZE
29-908X	.375	.1230	1/8	Hi-Shear®	1/4-28
29-909X	.375	.1540	5/32	Hi-Shear®	1/4-28
29-910X	.438	.1855	3/16	Hi-Shear®	1/4-28
29-911X	.500	.2460	1/4	Hi-Shear®	1/4-28
29-912X	.562	.3085	5/16	Hi-Shear®	1/4-28
29-913X	.625	.3730	3/8	Hi-Shear®	1/4-28



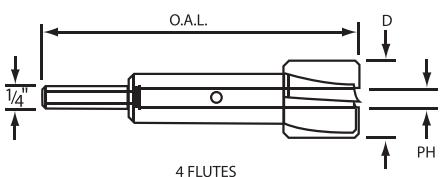
RIVET SHAVERS

2 Flute Carbide Tipped For Long Cutting Life

PART NUMBER	BODY DIAMETER INCHES	SHANK SIZE
30-601	5/16	1/4-28
30-602	3/8	1/4-28
30-603	7/16	1/4-28
30-604	1/2	1/4-28
30-605	9/16	1/4-28
30-606	5/8	1/4-28



HIGH SPEED STEEL COUNTERBORES WITH 1/4 SHANK



PART NUMBER	SIZE "D"	PILOT HOLE "PH"	SHANK DIAMETER INCHES	OVERALL LENGTH INCHES	FLUTE LENGTH INCHES
18-200	1/4	3/32	1/4	2-3/8	5/8
18-201	9/32	3/32	1/4	2-3/8	5/8
18-202	5/16	3/32	1/4	2-3/8	5/8
18-203	11/32	3/32	1/4	2-3/8	5/8
18-204	3/8	3/32	1/4	2-3/8	5/8
18-205	13/32	1/8	1/4	2-13/16	5/8
18-206	7/16	1/8	1/4	2-13/16	5/8
18-207	29/64	1/8	1/4	2-13/16	5/8
18-208	15/32	1/8	1/4	2-13/16	5/8
18-209	1/2	1/8	1/4	2-13/16	5/8
18-210	17/32	1/8	1/4	2-13/16	5/8
18-211	9/16	1/8	1/4	2-13/16	5/8
18-212	19/32	1/8	1/4	2-13/16	5/8
18-213	5/8	1/8	1/4	2-13/16	5/8
18-214	21/32	3/16	1/4	3-1/8	3/4
18-215	11/16	3/16	1/4	3-1/8	3/4
18-216	23/32	3/16	1/4	3-1/8	3/4
18-217	3/4	3/16	1/4	3-1/8	3/4
18-218	25/32	3/16	1/4	3-1/8	3/4
18-219	13/16	3/16	1/4	3-1/8	7/8
18-220	27/32	3/16	1/4	3-1/8	7/8
18-221	7/8	3/16	1/4	3-1/8	7/8
18-222	29/32	3/16	1/4	3-1/8	7/8
18-223	15/16	3/16	1/4	3-1/8	7/8
18-224	31/32	3/16	1/4	3-1/8	7/8
18-225	1	3/16	1/4	3-1/8	7/8
18-226	1-1/16	3/16	1/4	2-3/4	3/4
18-227	1-1/8	3/16	1/4	2-3/4	3/4
18-228	1-3/16	3/16	1/4	2-3/4	3/4
18-229	1-1/4	3/16	1/4	2-3/4	3/4

SUPPLIED WITH .032 RADIUS

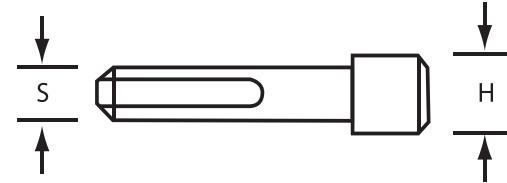
HIGH SPEED STEEL COUNTERBORES - NO RADIUS

PART NUMBER	SIZE	PILOT HOLE	OVERALL LENGTH INCHES	FLUTE LENGTH INCHES
18-207SQ	29/64	1/8	2-13/16	5/8
18-211SQ	9/16	1/8	2-13/16	5/8

SUPPLIED WITH NO RADIUS

COUNTERBORE PILOTS

Pilots for Interchangeable Pilot Counterbores.



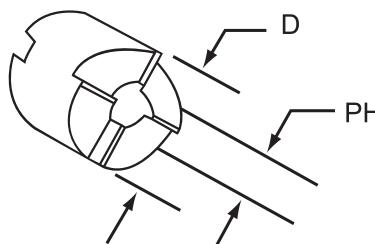
PART NUMBER	PILOT DIAMETER "H"	DECIMAL EQUIVALENT INCHES	SHANK DIAMETER INCHES "S"
18-419	#40	.0980	3/32
18-701	1/8	.1250	3/32
18-708	1/8	.1250	1/8
18-418	#30	.1285	3/32
18-420	#30	.1285	1/8
18-404	5/32	.1562	3/32
18-403	5/32	.1562	1/8
18-714	5/32	.1562	5/32
18-740	#21	.1590	1/8
18-407	#21	.1590	3/32
18-739	#20	.1610	3/32
18-406	#20	.1610	1/8
36-160	#13	.1850	1/8
18-703	3/16	.1875	3/32
18-703A	3/16	.1875	1/8
18-715	3/16	.1875	5/32
18-703B	3/16	.1875	3/16
18-702	#10	.1935	3/32
18-702A	#10	.1935	1/8
18-704	7/32	.2188	3/32
18-718	7/32	.2188	3/16
18-705	1/4	.2500	3/32
18-705A	1/4	.2500	1/8
18-716	1/4	.2500	5/32
18-719	1/4	.2500	3/16
18-744	"F"	.2570	1/8
18-414	9/32	.2812	1/8
18-720	9/32	.2812	5/32
18-706	5/16	.3125	3/32
18-707A	5/16	.3125	1/8
18-721	5/16	.3125	5/32
18-416	5/16	.3125	3/16
34-941	3/8	.3750	1/8
33-110	3/8	.3750	5/32
18-417	3/8	.3750	3/16
18-722	7/16	.4375	1/8
18-712	7/16	.4375	3/16
18-723	1/2	.5000	1/8
33-107	1/2	.5000	3/16



REVERSE SPOTFACERS / COUNTERBORES

High Speed Reverse Spotfacers

Reverse spotfacers are designed for use in restricted areas where conventional spotfacers cannot be used.
All cutters furnished standard with 1/32" corner radius.



PART NUMBER	"D" CUTTER DIAMETER	"PH" PILOT HOLE
26-101	1/4	3/32
26-102	1/4	1/8
26-103	5/16	3/32
26-104	5/16	1/8
26-105	5/16	5/32
26-106	3/8	1/8
18-603	3/8	5/32
26-107	3/8	3/16
26-108	7/16	1/8
26-133	7/16	5/32
26-109	7/16	3/16
26-110	1/2	3/16
26-111	1/2	1/4
26-112	9/16	3/16
26-113	9/16	1/4
18-605	5/8	1/8
26-114	5/8	3/16
26-115	5/8	1/4
26-116	5/8	5/16
26-117	11/16	1/4
26-118	11/16	5/16
26-119	3/4	1/4
26-120	3/4	3/8
26-131	3/4	5/16
18-756	13/16	1/4
26-132	7/8	5/16
26-121	7/8	3/8
26-122	1	3/8
26-123	1	1/2

MICRO-STOP COUNTERSINK CAGES

All Bronze Bushing Construction • .001 Increment Depth Adjustment • Positive Adjustment Lock



1 1/4 Capacity Countersink Cage 3/8-24 Thread

Part #19-358

- 1/4" Shaft Travel
- 1-1/4" Cutter Capacity
- 3/8" Diameter Chucking Shank
- 3/8-24 Threaded Shaft with Polished Foot
- Rated at 3,000 RPM



7/16 Capacity Midget Countersink Cage With Nylon Footpiece

Part #19-370

- 1/4" Diameter Chucking Shank
- 9/32" Shaft Travel
- 7/16" Cutter Capacity
- 1/4-28 Threaded Shaft
- Nylon Threaded No-Mar Foot Piece
- Rated at 3,000 RPM



5/8 Capacity Countersink Cage With Nylon Footpiece

Part #19-360

- 1/4" Diameter Chucking Shank
- 9/32" Shaft Travel
- 9/16" Cutter Capacity
- 1/4-28 Threaded Shaft
- Rated at 3,000 RPM



Countersink Cage

Part #19-362

- 1/4-28 Threaded Shank
- 3/32" Shaft Travel
- 1/2" Cutter Capacity
- 1/4-28 Threaded Shaft
- Rated at 3,000 RPM

PLAIN ARBORS FOR REVERSE SPOTFACERS / COUNTERBORES

Arbors For Use With Reverse Spotfacers / Counterbores



PART NUMBER	PILOT DIAMETER
27-101	3/32
27-102	1/8
27-103	5/32
27-104	3/16
27-105	1/4
27-106	5/16
27-107	3/8
27-108	1/2



Micro-Stop Countersink Cage

Part #19-364 - polished foot piece

- Heavy Duty-rated up to 10,000 RPM
- Precision Twin Radial Ball Bearing Construction
- Will fit any motor 3/8-24 spindle
- 9/32" Shaft Travel
- 5/8" Cutter Capacity
- 1/4-28 Threaded Shaft with Polished or Nylon Foot Piece



1 3/8 Capacity Countersink Cage 3/8-24 Thread

Part #19-368

- 3/8" Diameter Chucking Shank
- 1/4" Shaft Travel
- 1-3/8" Cutter Capacity
- 3/8-24 Threaded Shaft with Polished Foot
- Rated at 3,000 RPM

MICRO-STOP COUNTERSINK CAGES

All Bronze Bushing Construction • .001 Increment Depth Adjustment • Positive Adjustment Lock



5/8 Heavy Duty Bearing Countersink Cage

Part #19-363

- 1/4" Diameter Chucking Shank
- Precision Heavy Duty Twin Radial Ball Bearing Construction
- 9/32" Shaft Travel
- 5/8" Cutter Capacity
- 1/4-28 Threaded Shaft with Polished Foot
- Rated at 10,000 RPM



5/8 Heavy Duty Bearing Countersink Cage - Nylon Footpiece

Part #19-366

- 1/4" Diameter Chucking Shank
- Precision Heavy Duty Twin Radial Ball Bearing Construction
- 9/32" Shaft Travel
- 5/8" Cutter Capacity
- 1/4-28 Threaded Shaft
- Rated at 10,000 RPM

Part #90-018 Replacement Nylon Foot Piece

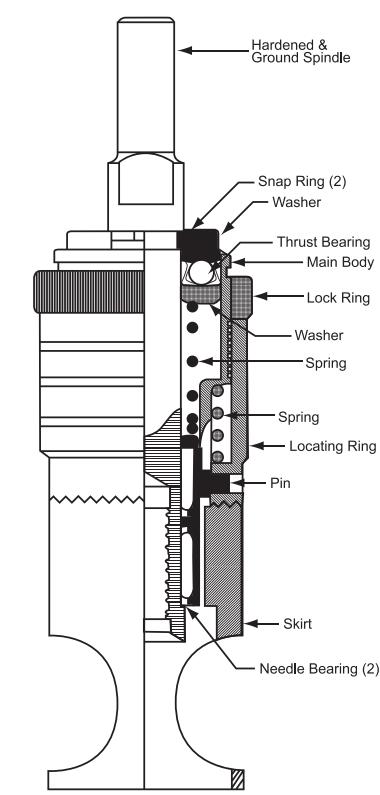
MICRO-STOP COUNTERSINK CAGES NEEDLE BEARING



Needle Bearing Micro-Stop Countersink Cage

Part #19-367

- 1/4" Diameter Chucking Shank
- 9/32" Shaft Travel
- 5/8" Cutter Capacity
- 1/4-28 Threaded Shaft with Polished Foot
- Rated at 10,000 RPM



5/8 Capacity Countersink Cage

Part #19-359

- 1/4" Diameter Chucking Shank
- 9/32" Shaft Travel
- 5/8" Cutter Capacity
- 1/4-28 Threaded Shaft with Polished Foot
- Rated at 3,000 RPM



1/2 Capacity Midget Countersink Cage

Part #19-361

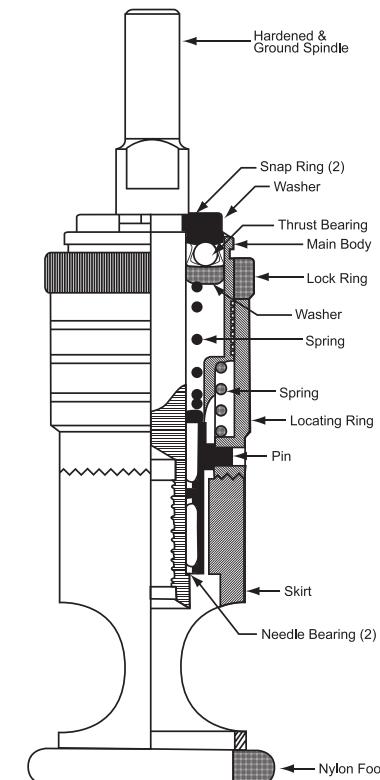
- 1/4" Diameter Chucking Shank
- 9/32" Shaft Travel
- 1/2" Cutter Capacity
- 1/4-28 Threaded Shaft with Polished Foot
- Rated at 3,000 RPM



Needle Bearing Micro-Stop Countersink Cage

Part #19-365

- 1/4" Diameter Chucking Shank
- 9/32" Shaft Travel
- 5/8" Cutter Capacity
- 1/4-28 Threaded Shaft
- Rated at 10,000 RPM
- Nylon Threaded No-Mar Foot Piece



INSERT BITS

Phillips Insert Bits	69
B.N.A.E. Insert Bits	69
Phillips Power Bits	70
Slotted Insert Bits	70
Power Slotted Bits	70
1/4" Nova® Threaded Bit Adapter	70
Torq-Set® Insert Bits	71
Torq-Set® Power Bits	71
Tri-Wing® Insert Bits	72
Tri-Wing® Power Bits	72
Hi-Torque® Drivers	72
Insert Bit Holders	73
Hex Socket Head Insert Bits	73
Torx® Insert Bits	73
Phillips Insert Bits - ACR	74
Slotted Insert Bits - ACR	74
Phillips Power Bits - ACR	75
Torq-Set® Insert Bits - ACR	75
Torq-Set® Power Bits - ACR	75
Phillips Insert Bits - Bulk Price Schedule	76
E-Z Grip™ Friction Drops	76
Screw Buster	76
Carbon Steel Screw Extractors	77
Paint Cutters	77
Paint Cutter Arbor and Extensions	77



PHILLIPS INSERT BITS 1/4 HEX

INDUSTRY NUMBER	PAT PART NUMBER X HARDNESS	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
440-0X	28-000X	1	1/4 HEX	0	25
440-1X	28-001X	1		1	25
440-2X	28-002X	1		2	25
440-215X	28-215X	1-1/2		2	25
440-22X	28-220X	2		2	25
440-225X	28-225X	2-1/2		2	25
440-3X	28-003X	1		3	25
440-4X	28-004X	1-1/4		4	25

X-SERIES WILL BE SUPPLIED UNLESS NON X-SERIES IS SPECIFIED, ACR BITS AVAILABLE PAGE 74

PHILLIPS INSERT BITS 1/4 HEX - LIMITED CLEARANCE

INDUSTRY NUMBER	PAT PART NUMBER X HARDNESS	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
446-0X	28-100X	1	1/4 HEX	0	25
446-1X	28-101X	1		1	25
446-2X	28-102X	1		2	25
446-22TX	28-122X	2		2	25
446-3X	28-103X	1		3	25

X-SERIES WILL BE SUPPLIED UNLESS NON X-SERIES IS SPECIFIED, ACR BITS AVAILABLE PAGE 74

PHILLIPS INSERT BITS 5/16 HEX

INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
480-1X	28-201X	1-1/4	5/16 HEX	1	25
480-2X	28-202X	1-1/4		2	25
480-3X	28-203X	1-1/4		3	25
480-4X	28-204X	1-1/4		4	25

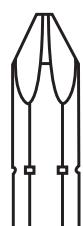
PHILLIPS INSERT BITS 5/16 SQUARE

INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
830-1X	28-401X	1-1/8	5/16 SQUARE	1	25
830-2X	28-402X	1-1/8		2	25
830-3X	28-403X	1-1/8		3	25
830-4X	28-404X	1-1/8		4	25

X-SERIES WILL BE SUPPLIED UNLESS NON X-SERIES IS SPECIFIED

B.N.A.E. INSERT BITS

INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
BNAE #4	30-304	1-1/8		4MM	25
BNAE #5	30-305	1-1/8	1/4	5MM	25
BNAE #6	30-306	1-1/8	HEX	6MM	25
BNAE #8	30-308	1-1/8		8MM	25



PHILLIPS POWER BITS

INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
491X	28-801X	1-15/16		1	25
492X	28-802X	1-15/16		2	25
493X	28-803X	1-15/16		3	25
491AX	28-901X	2-3/4		1	25
492AX	28-902X	2-3/4		2	25
493AX	28-903X	2-3/4	1/4	3	25
491BX	29-101X	3-1/2	HEX	1	25
492BX	29-102X	3-1/2		2	25
493BX	29-103X	3-1/2		3	25
491CX	29-201X	6		1	25
492CX	29-202X	6		2	25
493CX	29-203X	6		3	25

ACR BITS AVAILABLE PAGE 75

SLOTTED INSERT BITS

INDUSTRY NUMBER	PAT PART NUMBER	BLADE WIDTH	SHANK SIZE	SCREW SIZE	OVERALL LENGTH INCHES	BLADE THICKNESS	PIECES PER PACKAGE
445-0X	29-700X	.154		3F-4R	1	.030	25
445-1X	29-701X	3/16"		4F-5R	1	.034	25
445-2X	29-702X	7/32"	1/4	6F-8R	1	.040	25
445-3X	29-703X	1/4"	HEX	8F-10R	1	.042	25
445-4X	29-704X	9/32"		10F-12R	1	.046	25
445-5X	29-705X	5/16"		12F-14R	1-1/2	.050	25
445-6X	29-706X	23/64"		14F-16R	1-1/2	.055	25

ACR BITS AVAILABLE PAGE 74

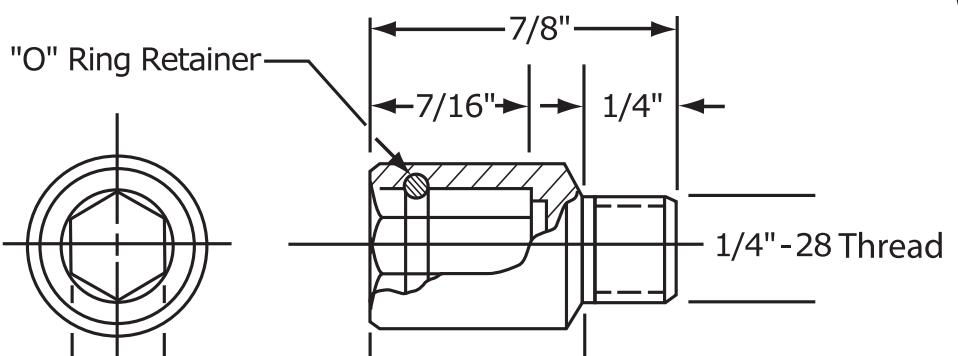
POWER SLOTTED BITS

INDUSTRY NUMBER	PAT PART NUMBER	BLADE WIDTH	SHANK SIZE	SCREW SIZE	OVERALL LENGTH INCHES	BLADE THICKNESS	PIECES PER PACKAGE
320-0X	29-720X	.151		3F-4R	1-15/16	.030	25
320-1X	29-721X	.187		4F-5R	1-15/16	.034	25
320-2X	29-722X	.250	1/4	5F-6R	1-15/16	.036	25
320-3X	29-723X	.250	HEX	6F-8R	1-15/16	.038	25
320-4X	29-724X	.275		8F-10R	1-15/16	.042	25

1/4" NOVA® THREADED BIT ADAPTER

1/4"-28 Threaded shank for use with 1/4" hex shank insert bits. Perfect for close quarter applications.

Part #28-450



TORQ-SET® INSERT BITS

INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
212-0	28-700	1		0	25
212-1	28-701	1		1	25
212-2	28-702	1		2	25
212-3	28-703	1		3	25
212-4	28-704	1	1/4	4	25
212-5	28-705	1	HEX	5	25
212-6	28-706	1		6	25
212-8	28-708	1		8	25
212-10	28-710	1		10	25
212-1/4	28-711	1		1/4	25
212-8A	28-712	1-1/4		8	25
212-10A	28-713	1-1/4		10	25
212-1/4A	28-714	1-1/4	5/16	1/4	25
212-5/16A	28-715	1-1/4	HEX	5/16	25
212-3/8A	28-716	1-1/4		3/8	25

ACR BITS AVAILABLE PAGE 75

TORQ-SET® POWER BITS

INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
170-0	28-750	1-1/4		0	25
170-1	28-751	1-1/4		1	25
170-2	28-752	1-1/4		2	25
170-3	28-753	1-1/4	1/4	3	25
170-4	28-754	1-1/4	HEX	4	25
170-5	28-755	1-1/4		5	25
170-6	28-756	1-1/4		6	25
170-8	28-758	1-1/4		8	25
170-10	28-760	1-1/4		10	25
170-1/4B	28-761	1-1/4		1/4	25
170-5/16B	28-762	1-1/4		5/16	25
170-3/8B	28-763	1-1/4		3/8	25
170-8A	28-759	1-1/4		8	25
170-10A	28-769	1-1/4	5/16	10	25
170-1/4A	28-767	1-1/4	HEX	1/4	25
170-5/16A	28-764	1-1/4		5/16	25
170-3/8A	28-765	1-1/4		3/8	25
170-1/4	28-771	1-1/4		1/4	5
170-5/16	28-770	1-1/4	7/16	5/16	5
170-3/8	28-774	1-1/4	HEX	3/8	5
170-7/16	28-766	1-1/4		7/16	5
170-1/2	28-773	1-1/4	5/8	1/2	5
170-9/16	28-772	1-1/4	HEX	9/16	5
265-2	28-422	3-1/2		2	5
265-3	28-413	3-1/2		3	5
265-4	28-411	3-1/2	1/4	4	5
265-5	28-412	3-1/2	HEX	5	5
265-6	28-415	3-1/2		6	5
265-8	28-414	3-1/2		8	5
265-10	28-410	3-1/2		10	5

ACR BITS AVAILABLE PAGE 75



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70



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71

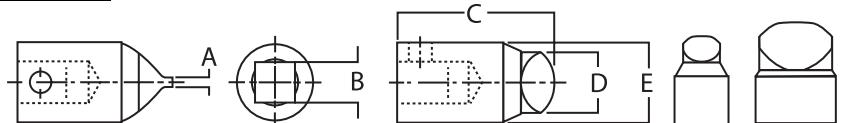
TRI-WING® INSERT BITS

INDUSTRY NUMBER	PAT PART NUMBER	RECESS SIZE	SHANK SIZE	OVERALL LENGTH INCHES	SCREW SIZE	PIECES PER PACKAGE
TWD-0	28-500	#0		1	#0	25
TWD-1	28-501	#1		1	#2	25
TWD-2	28-502	#2	1/4	1	#4	25
TWD-3	28-503	#3	HEX	1	#6	25
TWD-4	28-504	#4		1	#8	25
TWD-5	28-505	#5		1	#10	25
TWD-6	28-506	#6		1	1/4	25
TWD-7	28-507	#7		1	5/16	25
TWD-8	28-508	#8		1	3/8	25
TWE-4	28-509	#4		1-1/4	#8	5
TWE-5	28-510	#5		1-1/4	#10	5
TWE-6	28-511	#6	5/16	1-1/4	1/4	5
TWE-7	28-512	#7	HEX	1-1/4	5/16	5
TWE-8	28-513	#8		1-1/4	3/8	5

TRI-WING® POWER BITS

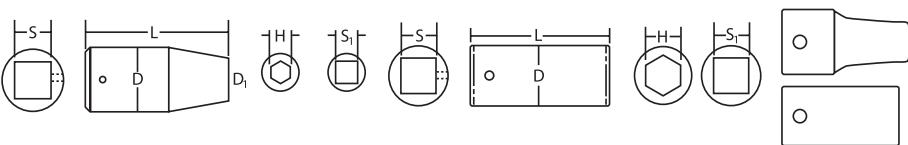
INDUSTRY NUMBER	PAT PART NUMBER	RECESS SIZE	SHANK SIZE	OVERALL LENGTH INCHES	SCREW SIZE	PIECES PER PACKAGE
TW-0	28-600	#0		1-1/4	#0	25
TW-1	28-601	#1		1-1/4	#2	25
TW-2	28-602	#2	1/4	1-1/4	#4	25
TW-3	28-603	#3	HEX	1-1/4	#6	25
TW-4	28-604	#4		1-1/4	#8	25
TW-5	28-605	#5		1-1/4	#10	25
TWB-6	28-606	#6		1-1/4	1/4	25
TWB-7	28-607	#7		1-1/4	5/16	5
TWB-8	28-608	#8		1-1/4	3/8	5

HI-TORQUE® DRIVERS



INDUSTRY NUMBER	PAT PART NUMBER	"A" BLADE THICKNESS	"D" BLADE WIDTH	"B" DRIVE SIZE	"C" LENGTH INCHES	"E" BODY DIAMETER INCHES	RECESS	SCREW SIZE
HTS-0	29-300	.029	.167	1/4	1	1/2	0	0,1,2
HTS-1	29-301	.049	.274	1/4	1	1/2	1	3,4,5,6
HTS-2	29-302	.059	.295	1/4	1	1/2	2	8
HTS-3	29-303	.059	.377	1/4	1	1/2	3	10
HTS-3A	29-303A	.059	.377	3/8	1	3/4	3	10
HTS-4	29-304	.073	.502	1/4	1	1/2	4	1/4
HTS-4A	29-304A	.073	.502	3/8	1	3/4	4	1/4
HTS-5	29-305	.079	.629	3/8	1-1/4	3/4	5	5/16
HTS-6	29-306	.095	.745	3/8	1-1/4	3/4	6	3/8
HTS-7	29-307	.112	.884	1/2	1-5/8	1	7	7/16
HTS-8	29-308	.142	.995	1/2	1-5/8	1	8	1/2
HTS-9	29-309	.162	1.136	1/2	1-5/8	1-1/4	9	9/16
HTS-10	29-310	.182	1.250	1/2	1-5/8	1-1/4	10	5/8

INSERT BIT HOLDERS

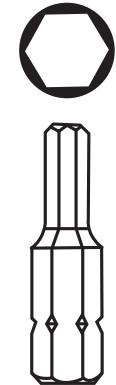


INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	DRIVE SIZE	HEX SIZE	PIECES PER PACKAGE
825	29-400	1	1/4 SQUARE	1/4	1
838	29-401	1-1/4	3/8 SQUARE	1/4	1
835	29-402	1-1/4	3/8 SQUARE	5/16	1
858	29-404	1-1/2	1/2 SQUARE	1/4	1
855	29-405	1-3/4	1/2 SQUARE	5/16	1
490	30-619	2-1/8	1/4 HEX	1/4 HEX	1
490-MAG	30-619M	2-1/8	1/4 HEX	1/4 HEX	1



HEX SOCKET HEAD INSERT BITS

INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	DRIVE SIZE	SHANK SIZE	PIECES PER PACKAGE
185-00	29-611X	1	1/16		25
185-0	29-600X	1	5/64		25
185-1	29-601X	1	3/32		25
185-9	29-609X	1	7/64		25
185-2	29-602X	1	1/8	1/4	25
185-10	29-610X	1	9/64	HEX	25
185-3	29-603X	1-5/16	5/32		25
185-4	29-604X	1-5/16	3/16		25
185-5	29-605X	1-5/16	7/32		25
185-6	29-606X	1	1/4		25
185-7	29-607X	1	5/16		25
185-8	29-608X	1-1/4	3/8		25



TORX® INSERT BITS

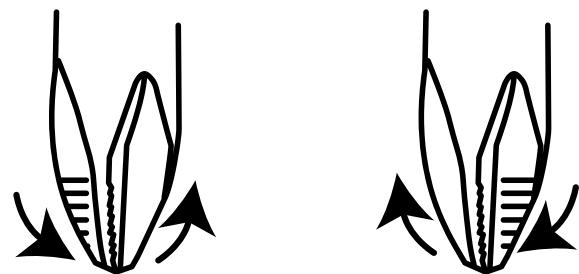
INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	DRIVE SIZE	SHANK SIZE	PIECES PER PACKAGE
440-TX-05	29-505X	1	T-5		25
440-TX-06	29-506X	1	T-6		25
440-TX-07	29-507X	1	T-7		25
440-TX-08	29-508X	1	T-8		25
440-TX-09	29-509X	1	T-9	1/4	25
440-TX-10	29-510X	1	T-10	HEX	25
440-TX-15	29-515X	1	T-15		25
440-TX-20	29-520X	1	T-20		25
440-TX-25	29-525X	1	T-25		25
440-TX-27	29-527X	1	T-27		25
440-TX-30	29-530X	1	T-30		25
440-TX-40	29-540X	1	T-40		25



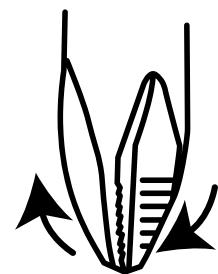
ANTI-CAMOUT RIBS



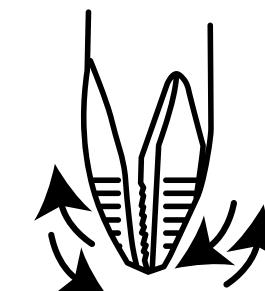
For Removal



For Driving



For Both Removal
And Driving



ACR stands for the "anti-camout ribs" that are formed on screw driver tips and may also occur in screw sockets. The ribs adhere securely to screws to minimize camout while reducing worker fatigue. ACR drivers can reduce camout by 30% to 40%.

PHILLIPS INSERT BITS - ACR

DESCRIPTION	INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE INCHES	POINT SIZE	PIECES PER PACKAGE
1/4 HEX INSERT	440-1XACR	28-001XACR	1	1/4	1	25
	440-2XACR	28-002XACR	1	1/4	2	25
	440-3XACR	28-003XACR	1	1/4	3	25
	440-4XACR	28-004XACR	1-1/4	1/4	4	25

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST

1/4 HEX INSERT LIMITED CLEARANCE	446-1XACR	28-101XACR	1	1/4	1	25
	446-2XACR	28-102XACR	1	1/4	2	25
	446-3XACR	28-103XACR	1	1/4	3	25

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST

1/4 HEX INSERT	480-2XACR	28-202XACR	1-1/4	5/16	2	25
	480-3XACR	28-203XACR	1-1/4	5/16	3	25

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST

SLOTTED INSERT BITS - ACR

INDUSTRY NUMBER	PAT PART NUMBER	BLADE WIDTH	SHANK SIZE	SCREW SIZE	OVERALL LENGTH INCHES	BLADE THICKNESS	PIECES PER PACKAGE
445-1X	29-701XACR	3/16"		4F-5R	1	.034	25
445-2X	29-702XACR	7/32"	1/4	6F-8R	1	.040	25
445-3X	29-703XACR	1/4"	HEX	8F-10R	1	.042	25
445-4X	29-704XACR	9/32"		10F-12R	1	.046	25

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST



PHILLIPS POWER BITS - ACR

DESCRIPTION	INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE INCHES	POINT SIZE	PIECES PER PACKAGE
1/4 HEX INSERT	491X ACR	28-801XACR	1-15/16	1/4	1	25
	492X ACR	28-802XACR	1-15/16	1/4	2	25
	492AX ACR	28-902XACR	2-3/4	1/4	2	25
	492BX ACR	29-102XACR	3-1/2	1/4	2	25
	492CX ACR	29-202XACR	6	1/4	2	25
	493X ACR	28-803XACR	1-15/16	1/4	3	25

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST



TORQ-SET INSERT BITS - ACR

DESCRIPTION	INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
1/4 HEX INSERT	212-2ACR	28-702ACR	1		2	25
	212-3ACR	28-703ACR	1		3	25
	212-4ACR	28-704ACR	1		4	25
	212-5ACR	28-705ACR	1	1/4	5	25
	212-6ACR	28-706ACR	1	HEX	6	25
	212-8ACR	28-708ACR	1		8	25
	212-10ACR	28-710ACR	1		10	25
	212-1-1/4ACR	28-711ACR	1		1/4	25
	5/16 HEX INSERT	212-1/4A-ACR	28-714ACR	1-1/4	5/16 HEX	1/4

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST



TORQ-SET POWER BITS - ACR

DESCRIPTION	INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
1/4 HEX INSERT	170-4ACR	28-754ACR	1-1/4		4	25
	170-6ACR	28-756ACR	1-1/4	1/4	6	25
	170-8ACR	28-758ACR	1-1/4	HEX	8	25
	170-10ACR	28-760ACR	1-1/4		10	25
	170-1-1/4BACR	28-761ACR	1-1/4		1/4	25

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST



PHILLIPS INSERT BITS



BULK PRICE SCHEDULE

DESCRIPTION	INDUSTRY NUMBER	PAT PART NUMBER	SHANK SIZE	POINT SIZE	OVERALL LENGTH INCHES	PIECES PER CARTON
1/4" Hex Insert	440-1X	28-001X	1/4	1	1	1000
	440-2X	28-002X		2	1	1000
	440-3X	28-003X		HEX	1	1000
	440-4X	28-004X		4	1-1/4	300
1/4" Hex Insert Limited Clearance	446-1X	28-101X	1/4	1	1	1000
	446-2X	28-102X		2	1	1000
	446-3X	28-103X		3	1	500
5/16" Hex Insert	480-1X	28-201X	5/16	1	1-1/4	500
	480-2X	28-202X		2	1-1/4	500
	480-3X	28-203X		HEX	1-1/4	500
	480-4X	28-204X		4	1-1/4	500

X-SERIES WILL BE SUPPLIED UNLESS NON X-SERIES IS SPECIFIED.

E-Z GRIP™ FRICTION DROPS



The instant traction your tools need to lock onto worn or stripped fastener heads for easy removal. Works on screws, nuts, bolts, and all types of fasteners.

- Easy To Use, No Waiting
- Eliminates Cutting Chiseling, or Drilling
- Extends The Life of Tools
- Keeps Fasteners Heads From Stripping
- Gives Pipe Wrenches and Pliers Greater Gripping Power
- Hundreds of Commercial Uses
- Contains over 200 Applications per Ounce
- Non-Toxic
- 3 Oz. Bottle
- Part #42-708

SCREW BUSTER

- .401 shank accepts a 3/8" square drive bit holder.
- Won't separate from rivet gun when used with quick change spring.
- Part #34-540



RIVET GUN NOT SUPPLIED

CARBON STEEL SCREW EXTRACTORS

This spiral flute extractor is excellent for removing broken screws, bolts and thread parts without damaging the threads in the hole. Drill hole in broken part and insert extractor. Turn counter clockwise with wrench to remove broken part



INDUSTRY NUMBER	PAT PART NUMBER	DRILL SIZE	SCREW SIZES	SMALL END DIAMETER	LARGE END DIAMETER	FLUTE LENGTH	OVERALL LENGTH INCHES	PIECES PER PACKAGE
#1	29-801	5/64	3/32-5/32	.060	1/8	13/16	2	12
#2	29-802	7/64	5/32-7/32	.080	3/16	7/8	2-1/2	12
#3	29-803	5/32	7/32-9/32	1/8	1/4	1	2-3/4	12
#4	29-804	1/4	9/32-3/8	3/16	5/16	1-1/4	3	12
#5	29-805	17/64	3/8-5/8	1/4	7/16	1-1/2	3-3/8	1
#6	29-806	13/32	3/4-1	3/8	19/32	1-3/4	3-3/4	1
#7	29-807	17/32	1"-1-3/8	1/2	23/32	2-1/4	4-1/8	1

PAINT CUTTERS

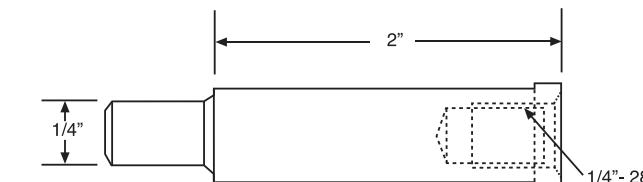
Designed to help reduce paint from chipping during the screw removal process. The Paint Cutter is used to cut a ring in the paint around the head of the screw, reducing the chance of excess paint chipping.

PART NUMBER	DESCRIPTION	"A"	SHANK SIZE
36-511	#4 Paint Cutter	.254	1/4-28
36-512	#6 Paint Cutter	.280	1/4-2
36-513	#8 Paint Cutter	.302	1/4-28
36-514	#10 Paint Cutter	.360	1/4-28
36-517	1/4" Paint Cutter	.462	1/4-28



PAINT CUTTER ARBOR AND EXTENSIONS

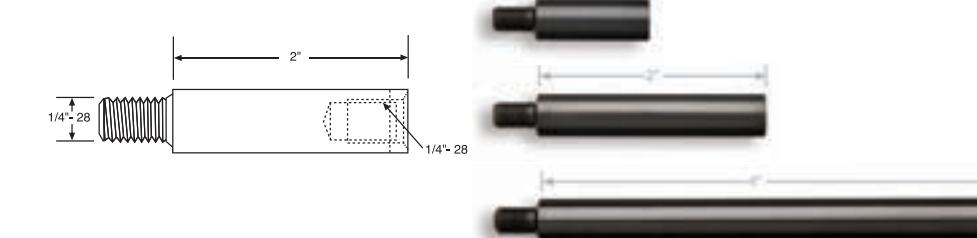
PART NUMBER	LENGTH INCHES
36-666	2
36-667	3
36-668	5
36-669	7
36-670	9



Dual Threaded

These tools have a 1/4-28 threaded shank for insertion into a threaded shank pneumatic tool and a 1/4-28 female thread to hold threaded shank tools.

PART NUMBER	LENGTH INCHES
36-671	1
36-672	2
36-673	4



CLECO FASTENERS

Temporary Sheet Metal Fasteners	79
Cleco Fasteners - P Series	80
Cleco Fasteners - PHD, Heavy Duty Series	80
Cleco Fasteners - PMIN, Miniature Series.....	80
Cleco Fasteners - PHN, Hex Nut Series.....	80
Cleco Fasteners - PWN, Wing Nut Series	81
Cleco Fasteners - PLHN, Long Hex Nut Series.....	81
Cleco Fasteners - PLWN, Long Wing Nut Series	81
Cleco Fasteners - PSG, Side Grip Clamps.....	81
Cleco Pliers With Soft Handle	82
Nova® Pneumatic Cleco Installation Tool - Straight Handle	82
Nova® Pneumatic Cleco Installation Tool - Pistol Grip	82
Nova® Hex Nut Cleco Installation Tool	83



TEMPORARY SHEET METAL FASTENERS

Ideal for close tolerance positioning of thinner layers of material. Great for composites and honeycomb materials.
Will not damage the work surface or elongate the drill hole.



Features

- Quick and easy installation and removal
- Speed nut spins up and down with the flick of a finger
- No pliers or installation tools required
- Indefinitely reusable and economical
- Color-coded for easy size and identification
- Non-marking to protect the work surface
- Unique tips provide maximum gripping strength

*Great For
Composites &
Honeycomb*

PART NUMBER	SIZE	GRIP INCHES	COLOR
20-401	3/32"	0-1/2	Red
20-402	1/8"	0-1/2	Yellow
20-403	5/32"	0-1/2	Blue
20-416	#16	0-1/2	Black
20-427	#27	0-1/2	Clear
20-401HD	3/32"	0-1	Red
20-402HD	1/8"	0-1	Yellow
20-403HD	5/32"	0-1	Blue
20-404HD	3/16"	0-1	Black
20-405HD	1/4"	0-1	White



CLECO FASTENERS

Temporary Fasteners For Precise Holding Of Materials

P SERIES - Standard Series, plier operated

PART NUMBER	DIAMETER	COLOR CODE	GRIP INCHES	DRILL SIZE
20-101	3/32	Zinc	0-1/4	#40
20-102	1/8	Copper	0-1/4	#30
20-103	5/32	Black	0-1/4	#21
20-104	3/16	Brass	0-1/4	#10
20-106	1/4	Copper	0-1/4	1/4"



PHD SERIES - Heavy Duty Series for thicker applications, plier operated

PART NUMBER	DIAMETER	COLOR CODE	GRIP INCHES	DRILL SIZE
20-101HD	3/32	Zinc	0-1/2	#40
20-102HD	1/8	Copper	0-1/2	#30
20-103HD	5/32	Black	0-1/2	#21
20-104HD	3/16	Brass	0-1/2	#10
20-106HD	1/4	Copper	0-1/2	1/4"



PMIN SERIES - Miniature Series - Stubby

PART NUMBER	DIAMETER	COLOR CODE	GRIP INCHES	DRILL SIZE
20-101MIN	3/32	Zinc	0-1/4	#40
20-102MIN	1/8	Copper	0-1/4	#30
20-103MIN	5/32	Black	0-1/4	#21
20-104MIN	3/16	Brass	0-1/4	#10



PHN SERIES - Hex Nut Series for high production applications

PART NUMBER	DIAMETER	COLOR CODE	GRIP INCHES	DRILL SIZE
20-101HN	3/32	Zinc	0-1/2	#40
20-102HN	1/8	Copper	0-1/2	#30
20-103HN	5/32	Black	0-1/2	#21
20-104HN	3/16	Brass	0-1/2	#10
20-105HN	7/32	Black	0-1/2	3/16"
20-106HN	1/4	Copper	0-1/2	1/4"
20-107HN	5/16	Black	0-1/2	5/16"



Poly No-Mar Cap Included

CLECO FASTENERS

Temporary Fasteners For Precise Holding Of Materials

PWN SERIES - Wing Nut Series for high clamping force applications

PART NUMBER	DIAMETER	COLOR CODE	GRIP INCHES	DRILL SIZE
20-101WN	3/32	Zinc	0-1/2	#40
20-102WN	1/8	Copper	0-1/2	#30
20-103WN	5/32	Black	0-1/2	#21
20-104WN	3/16	Brass	0-1/2	#10
20-106WN	1/4	Copper	0-1/2	1/4"
20-110WN	#27	Green	0-1/2	#27



Poly No-Mar Cap Included

PLHN SERIES - Long Hex Nut Series for high production applications

PART NUMBER	DIAMETER	COLOR CODE	GRIP INCHES	DRILL SIZE
20-101LHN	3/32	Zinc	0-1	#40
20-102LHN	1/8	Copper	0-1	#30
20-103LHN	5/32	Black	0-1	#21
20-104LHN	3/16	BRASS	0-1	#10
20-105LHN	7/32	Black	0-1	3/16"
20-106LHN	1/4	Copper	0-1	1/4"
20-107LHN	5/16	Black	0-1	5/16"
20-113LHN	3/8	Black	0-1	3/8
20-110LHN	#27	Green	0-1	#27
20-111LHN	#16	Yellow	0-1	#16



Poly No-Mar Cap Included

PLWN SERIES - Long Wing Nut Series

PART NUMBER	DIAMETER	COLOR CODE	GRIP INCHES	DRILL SIZE
20-101LWN	3/32	Zinc	0-1	#40
20-102LWN	1/8	Copper	0-1	#30
20-103LWN	5/32	Black	0-1	#21
20-104LWN	3/16	Brass	0-1	#10
20-105LWN	7/32	Black	0-1	3/16"
20-106LWN	1/4	Copper	0-1	1/4"
20-107LWN	5/16	Black	0-1	5/16"
20-110LWN	#27	Green	0-1	#27



Poly No-Mar Cap Included

PSG SERIES - Side Grip Clamps

PART NUMBER	CLAMP CAPACITY	DEPTH OF REACH	BODY LENGTH
20-200	0-1/2"	1/2"	2-3/16"
20-201	0-3/4"	1/2"	2-7/16"
20-202	0-1/2"	1"	2-3/16"
20-203	0-3/4"	1"	2-7/16"



OTHER SIZES AVAILABLE, PRICE UPON REQUEST



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CLECO INSTALLATION TOOLS

CLECO PLIERS WITH SOFT HANDLE

- Installs Cleco-Lok® C, CC, CL & CHD fasteners
- Installs Monogram® M, MM, ML, MEL & MHD fasteners
- Installs Kwik-Lok® K, KK, KT, KL, KEL & KHD fasteners
- Made from forged steel and nickel plated to resist wear and abuse.
- Pliers are compatible with all spring-loaded types of sheet metal clamps.
- PART #20-108



NOVA® PNEUMATIC CLECO INSTALLATION TOOL

- Ergonomic Handle
- 360° Swivel Mount
- Straight Handle
- Weight .75 Lbs.
- Lever Throttle
- Quiet Operation
- 6' Hose
- Air Inlet 1/4 NPT
- PART #20-109



NOVA® PNEUMATIC CLECO INSTALLATION PISTOL GRIP TOOL

- Ergonomic Handle
- 360° Swivel Mount
- Pistol Grip
- Weight 1 Lb. 6 Oz.
- Trigger Throttle
- Quiet Operation
- Air Inlet 1/4 NPT
- PART #20-112



NOVA® HEX NUT CLECO INSTALLATION TOOL



- 2000 RPM
- Reversing Button Located for Superior Control
- Feathering Trigger Allows Operator Complete Control of Speed
- Air Inlet 1/4-18 NPT
- Maximum Air Pressure: 90 PSI
- Rubber Grip for Operator Comfort
- Quiet Smooth Operation
- One Year Warranty

Weight 2.1 Lbs.

Part #20-115

Swivel Air Regulator Included*



Part #60-123

* Also Sold Separately On Page 130



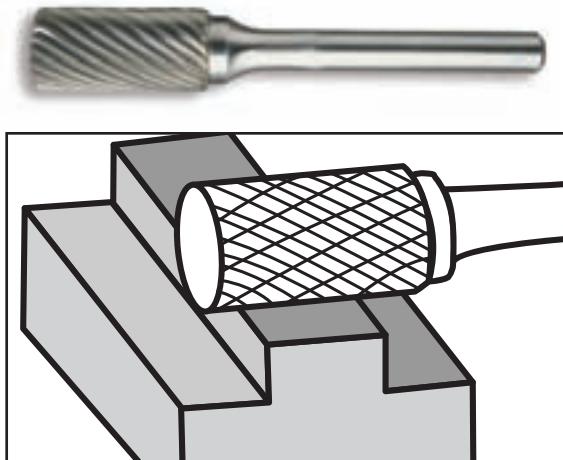
CARBIDE BURS

Cylindrical Carbide Burs 1/4" Shank Size	85
Cylindrical End Cut Carbide Burs 1/4" Shank Size.....	85
Cylinder Radius End Carbide Burs 1/4" Shank Size.....	85
Ball Carbide Burs 1/4" Shank Size.....	86
Oval Carbide Burs 1/4" Shank Size	86
Tree Radius End Carbide Burs 1/4" Shank Size	86
Tree Carbide Burs 1/4" Shank Size	86
Flame Carbide Burs 1/4" Shank Size.....	87
Cone 90° Carbide Burs 1/4" Shank Size	87
14° Taper Radius End Carbide Burs 1/4" Shank Size	87
Cone Pointed End Carbide Burs 1/4" Shank Size	87
Inverted Taper Carbide Burs 1/4" Shank Size	87
Cylindrical Carbide Burs 1/8" Shank Size.....	88
Cylindrical End Cut Carbide Burs 1/8" Shank Size.....	88
Cylindrical Radius End Carbide Burs 1/8" Shank Size	88
Ball Carbide Burs 1/8" Shank Size.....	88
Oval Carbide Burs 1/8" Shank Size	88
Tree Radius End Carbide Burs 1/8" Shank Size	88
Tree Carbide Burs 1/8" Shank Size	89
Flame Carbide Burs 1/8" Shank Size.....	89
Cone 60° Carbide Burs 1/8" Shank Size	89
Cone 90° Carbide Burs 1/8" Shank Size	89
14° Taper Radius End Carbide Burs 1/8" Shank Size	89
Cone Pointed End Carbide Burs 1/8" Shank Size	89
Inverted Tape Carbide Burs 1/8" Shank Size.....	89
Cylindrical Carbide Burs 1/4" x 6" Long Shank Size.....	90
Cylinder Radius End Carbide Burs 1/4" x 6" Long Shank Size	90
Ball Carbide Burs 1/4" x 6" Long Shank Size	90
Tree Radius End Carbide Burs 1/4" x 6" Long Shank Size	90
Tree Carbide Burs 1/4" x 6" Long Shank Size	90
14° Taper Radius End Carbide Burs 1/4" x 6" Long Shank Size	90
Carbide Bur Sets	91



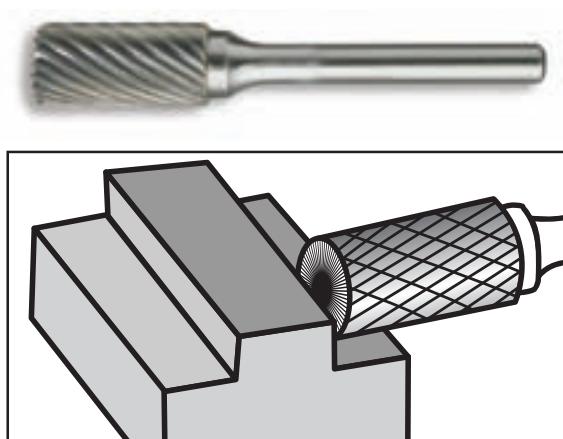
CYLINDRICAL 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
34-644	34-644D	SA-11	1/8	1/2
34-645	34-645D	SA-14	3/16	5/8
30-372	30-372D	SA-1	1/4	5/8
33-936	33-936D	SA-1L	1/4	1
34-646	34-646D	SA-2	5/16	3/4
30-471	30-471D	SA-3	3/8	3/4
30-006	30-006D	SA-3L	3/8	1
34-647	34-647D	SA-4	7/16	1
30-858	30-858D	SA-5	1/2	1
30-162	30-162D	SA-6	5/8	1
30-065	30-065D	SA-7	3/4	1
30-009	30-009D	SA-9	1	1



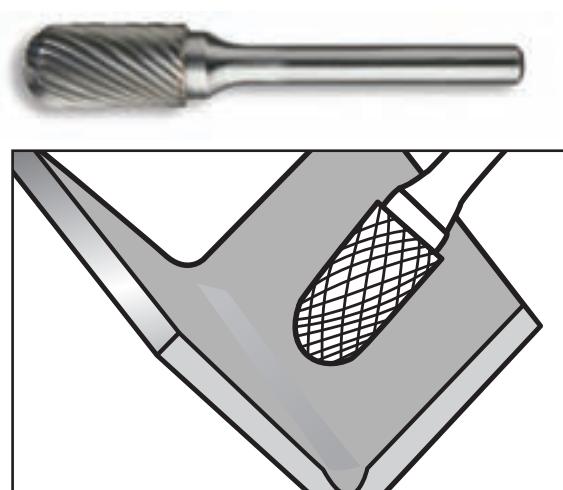
CYLINDRICAL END CUT 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
34-648	34-648D	SB-11	1/8	1/2
34-649	34-649D	SB-14	3/16	5/8
30-046	30-046D	SB-1	1/4	5/8
30-496	30-496D	SB-1L	1/4	1
34-650	34-650D	SB-2	5/16	3/4
34-651	34-651D	SB-3	3/8	3/4
34-652	34-652D	SB-3L	3/8	1
34-653	34-653D	SB-4	7/16	1
30-448	30-448D	SB-5	1/2	1
34-654	34-654D	SB-6	5/8	1
34-655	34-655D	SB-7	3/4	1
34-656	34-656D	SB-9	1	1



CYLINDER RADIUS END 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-912	30-912D	SC-11	1/8	1/2
34-633	34-633D	SC-14	3/16	5/8
30-787	30-787D	SC-1	1/4	5/8
34-634	34-634D	SC-1L	1/4	1
34-635	34-635D	SC-2	5/16	3/4
34-636	34-636D	SC-3	3/8	3/4
34-637	34-637D	SC-3L	3/8	1
34-638	34-638D	SC-4	7/16	1
30-476	30-476D	SC-5	1/2	1
30-369	30-369D	SC-6	5/8	1
34-639	34-639D	SC-7	3/4	1
34-640	34-640D	SC-9	1	1



BALL 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-213	30-213D	SD-11	1/8	3/32
30-297	30-297D	SD-14	3/16	1/8
30-538	30-538D	SD-1	1/4	7/32
30-511	30-511D	SD-2	5/16	1/4
34-641	34-641D	SD-3	3/8	5/16
34-642	34-642D	SD-4	7/16	3/8
30-011	30-011D	SD-5	1/2	7/16
34-643	34-643D	SD-6	5/8	9/16
30-002	30-002D	SD-7	3/4	11/16
30-537	30-537D	SD-9	1	15/16

OVAL 1/4" SHANK SIZE

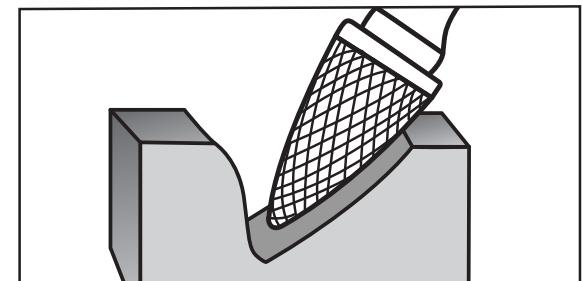
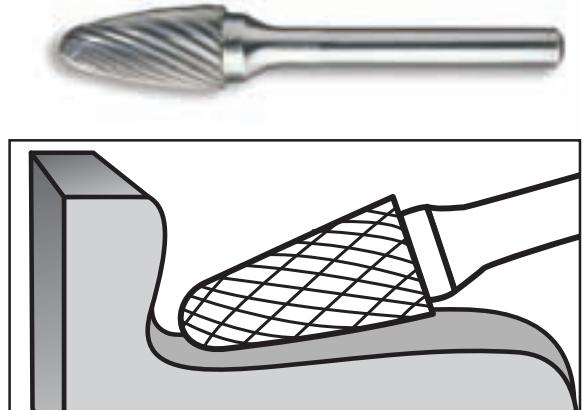
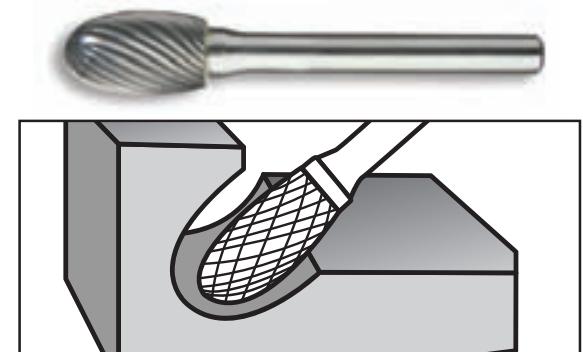
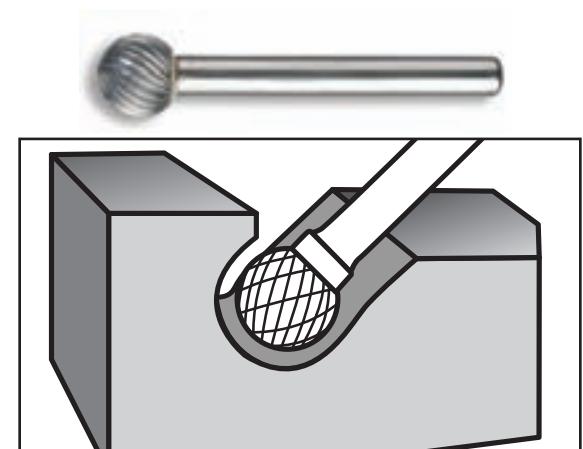
SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-913	30-913D	SE-11	3/16	5/16
30-512	30-512D	SE-1	1/4	3/8
34-657	34-657D	SE-3	3/8	5/8
30-575	30-575D	SE-5	1/2	7/8
34-658	34-658D	SE-6	5/8	1

TREE RADIUS END 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
34-660	34-660D	SF-11	1/8	1/2
30-788	30-788D	SF-1	1/4	3/4
34-661	34-661D	SF-3	3/8	3/4
34-662	34-662D	SF-4	7/16	1
34-663	34-663D	SF-13	1/2	3/4
30-449	30-449D	SF-5	1/2	1
34-664	34-664D	SF-6	5/8	1
34-665	34-665D	SF-7	3/4	1

TREE 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-418	30-418D	SG-1	1/4	5/8
30-474	30-474D	SG-2	5/16	3/4
59-062	59-062D	SG-3	3/8	3/4
30-473	30-473D	SG-13	1/2	3/4
30-446	30-446D	SG-5	1/2	1
30-866	30-866D	SG-6	5/8	1
34-685	34-685D	SG-7	3/4	1
34-686	34-686D	SG-15	3/4	1 1/2



FLAME 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-901	30-901D	SH-1	1/4	5/8
34-667	34-667D	SH-2	5/16	3/4
30-780	30-780D	SH-5	1/2	1 1/4
34-668	34-668D	SH-6	5/8	1 7/16
34-669	34-669D	SH-7	3/4	1 5/8

CONE 90° 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-902	30-902D	SK-1	1/4	1/8
34-683	34-683D	SK-3	3/8	3/16
30-784	30-784D	SK-5	1/2	1/4
30-089	30-089D	SK-6	5/8	5/16
30-092	30-092D	SK-7	3/4	3/8
34-684	34-684D	SK-9	1"	1/2

14° TAPER RADIUS END 1/4" SHANK SIZE

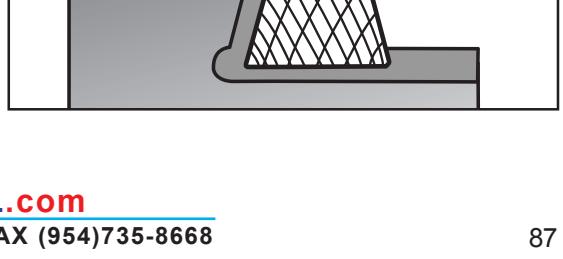
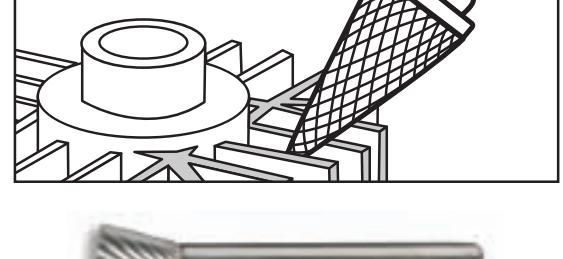
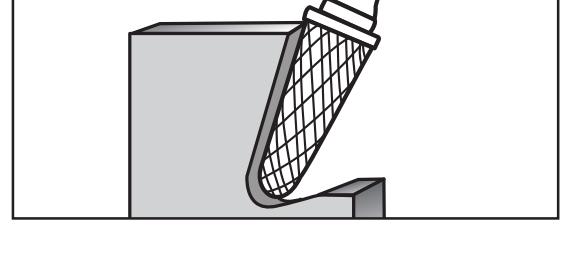
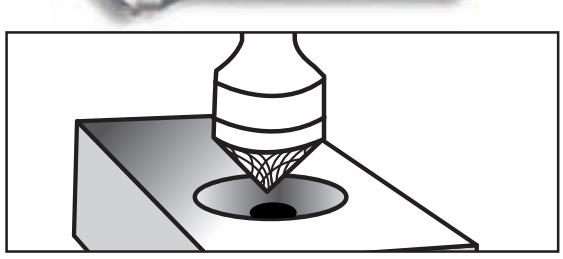
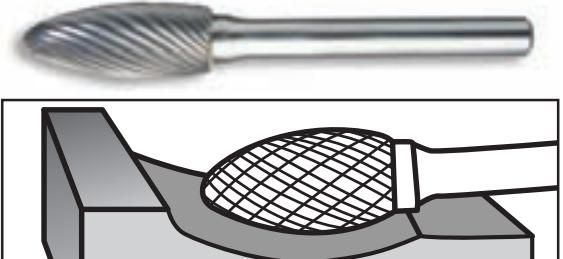
SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-942	30-942D	SL-1	1/4	5/8
30-320	30-320D	SL-2	5/16	7/8
34-670	34-670D	SL-3	3/8	1 1/16
30-943	30-943D	SL-4	1/2	1 1/8
34-671	34-671D	SL-6	5/8	1 5/16
30-066	30-066D	SL-7	3/4	1 1/2

CONE POINTED END 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-477	30-477D	SM-1	1/4	1/2
59-063	59-063D	SM-2	1/4	3/4
34-672	34-672D	SM-3	1/4	1
34-673	34-673D	SM-4	3/8	5/8
30-815	30-815D	SM-5	1/2	7/8
30-003	30-003D	SM-6	5/8	1

INVERTED TAPER 1/4" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-903	30-903D	SN-1	1/4	5/16
34-674	34-674D	SN-2	3/8	3/8
34-675	34-675D	SN-4	1/2	1/2
34-676	34-676D	SN-6	5/8	3/4
34-677	34-677D	SN-7	3/4	5/8



CYLINDRICAL 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-052	30-052D	SA-41	1/16	1/4
34-544	34-544D	SA-42	3/32	7/16
30-307	30-307D	SA-43	1/8	9/16
30-450	30-450D	SA-52	5/32	1/2
30-453	30-453D	SA-53	3/16	1/2
30-451	30-451D	SA-51	1/4	1/2

CYLINDRICAL END CUT 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-344	30-344D	SB-41	1/16	1/4
30-015	30-015D	SB-42	3/32	7/16
30-944	30-944D	SB-43	1/8	9/16
30-016	30-016D	SB-51	1/4	3/16

CYLINDRICAL RADIUS END 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-051	30-051D	SC-41	3/32	7/16
30-475	30-475D	SC-42	1/8	9/16
30-017	30-017D	SC-52	5/32	1/2
30-019	30-019D	SC-53	3/16	1/2
30-020	30-020D	SC-51	1/4	1/2

BALL 1/8" SHANK SIZE

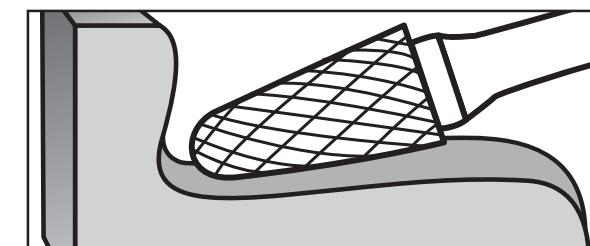
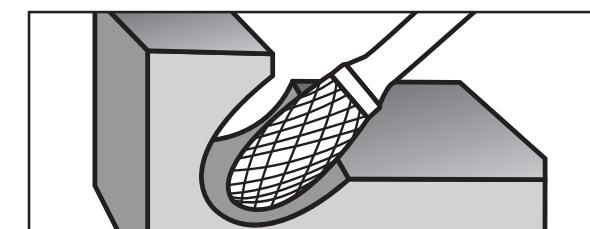
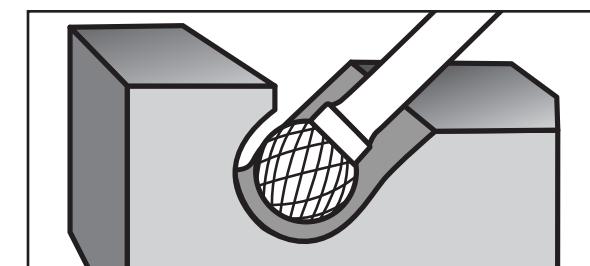
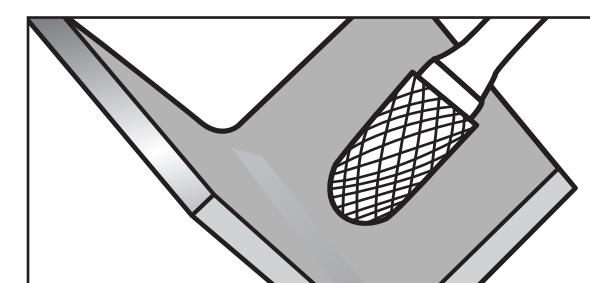
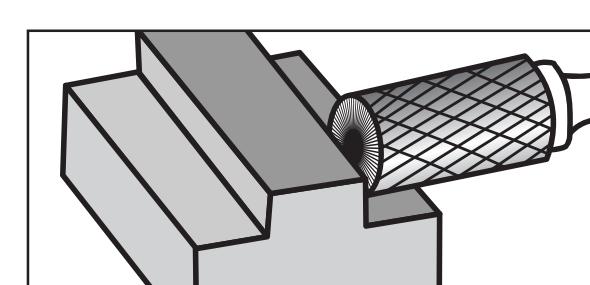
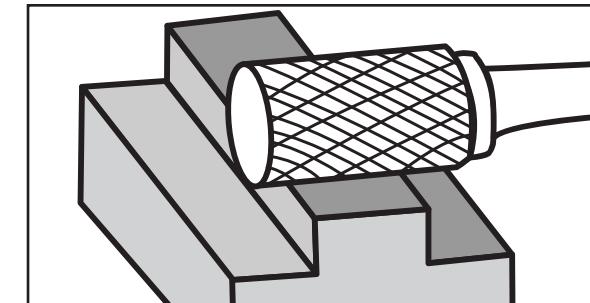
SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-119	30-119D	SD-41	3/32	3/32
30-343	30-343D	SD-42	1/8	1/8
30-152	30-152D	SD-52	5/32	5/32
30-153	30-153D	SD-53	3/16	5/32
30-012	30-012D	SD-51	1/4	7/32

OVAL 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-059	30-059D	SE-41	1/8	7/32
30-031	30-031D	SE-53	3/16	9/32
30-032	30-032D	SE-51	1/4	3/8

TREE RADIUS END 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-080	30-080D	SF-41	1/8	1/4
30-125	30-125D	SF-42	1/8	1/2
30-033	30-033D	SF-53	3/16	1/2
30-034	30-034D	SF-51	1/4	1/2



TREE 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-082	30-082D	SG-41	1/8	1/4
30-049	30-049D	SG-43	1/8	3/8
30-036	30-036D	SG-53	3/16	1/2
30-037	30-037D	SG-51	1/4	1/2

FLAME 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-758	30-758D	SH-41	1/8	1/4
30-576	30-576D	SH-53	3/16	3/8

CONE 60° 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-081	30-081D	SJ-42	1/8	3/32

CONE 90° 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-345	30-345D	SK-42	1/8	1/16

14° TAPER RADIUS END 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-048	30-048D	SL-42	1/8	1/2
30-347	30-347D	SL-53	3/16	1/2

CONE POINTED END 1/8" SHANK SIZE

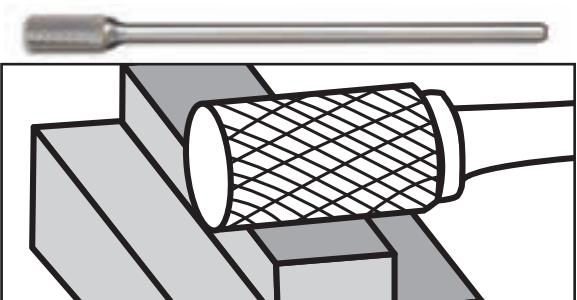
SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-079	30-079D	SM-41	1/8	3/8
30-540	30-540D	SM-42	1/8	7/16
30-860	30-860D	SM-43	1/8	5/8
30-541	30-541D	SM-53	3/16	1/2
30-542	30-542D	SM-51	1/4	1/2

INVERTED TAPER 1/8" SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
30-045	30-045D	SN-41	3/32	1/8
30-047	30-047D	SN-42	1/8	3/16
30-044	30-044D	SN-53	3/16	1/4

CYLINDRICAL 1/4" X 6" LONG SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
59-070	59-070D	SA-1L6	1/4	1/2
59-071	59-071D	SA-5L6	1/2	1

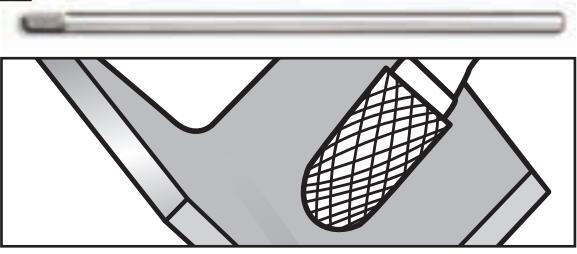


CARBIDE BUR SETS



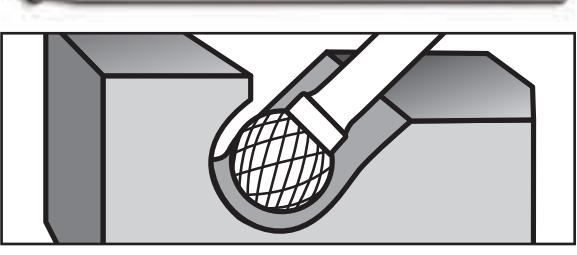
CYLINDER RADIUS END 1/4" X 6" LONG SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
59-072	59-072D	SC-1L6	1/4	1/2
59-073	59-073D	SC-5L6	1/2	1



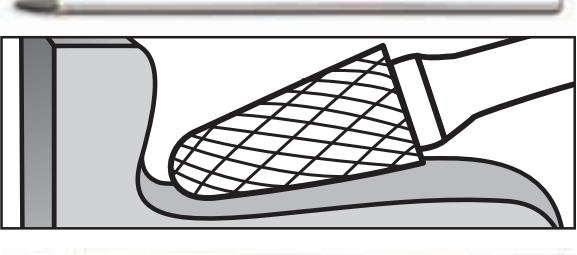
BALL 1/4" X 6" LONG SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
59-074	59-074D	SD-1L6	1/4	7/32



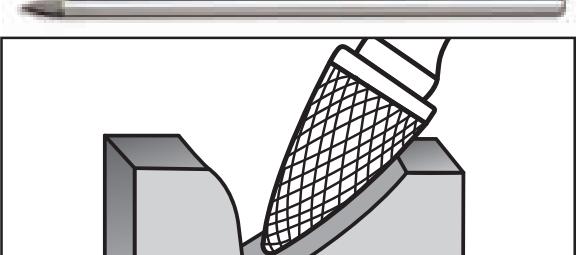
TREE RADIUS END 1/4" X 6" LONG SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
59-075	59-075D	SF-1L6	1/4	1/2



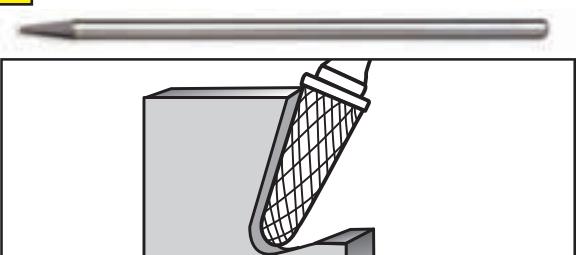
TREE 1/4" X 6" LONG SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
59-076	59-076D	SG-1L6	1/4	1/2



14° TAPER RADIUS END 1/4" X 6" LONG SHANK SIZE

SINGLE CUT PART NUMBER	DOUBLE CUT PART NUMBER	SCTI NUMBER	CUTTER DIAMETER INCHES	FLUTE LENGTH INCHES
59-077	59-077D	SL-1L6	1/4	5/8



12 Piece Assortment
1/8" Shank In Wooden Box

SA-42 SC-42 SF-42 SL-42
SA-43 SD-42 SG-43 SM-42
SC-41 SE-41 SH-41 SN-42

Single Cut Bur Set
Part #31-001

Double Cut Bur Set
Part #31-001D

Wooden Box For 1/4" Burs
Part #71-007



12 Piece Assortment
1/4" Shank In Wooden Box

SA-5 SD-5 SG-5 SL-4
SB-5 SE-5 SH-5 SM-5
SC-5 SF-5 SK-5 SN-4

Single Cut Bur Set
Part #31-000

Double Cut Bur Set
Part #31-000D



SURFACE CONDITIONING

Nova Orbital Sander.....	93
Hook and Loop Disc Holders.....	93
Aluminum Oxide Hook and Loop Sanding Discs	93
Surface Conditioning Discs Hook and Loop	93
Nova® Surface Conditioning Discs	94
Nova® Extra Tough Surface Conditioning Discs	94
Nova® Rubber Backed Quick Change Disc Holders	94
Surface Conditioning Discs - Comparative Chart	95
Nova® Pencil Grinder.....	95
Phenolic Scraper.....	95
Super Grade Premium Cut Off Wheels.....	96
Resinoid Reinforced Cut Off Wheels	96
Mounting Mandrel Set	96



NOVA® ORBITAL SANDER



SHOWN WITH 3" DISC HOLDER
COMPACT DESIGN AND 90° ANGLE
HEAD FOR TIGHT WORK AREAS

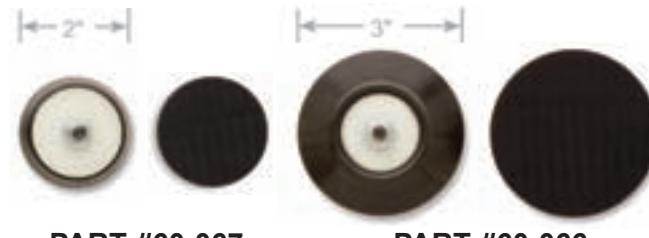
- Standard Equipment Includes: 2" and 3" Holder
- Maximum Air Pressure: 90 PSI
- 12,000 RPM
- Air Inlet 1/4-18 NPT
- Rear Exhaust
- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Orbital Action produces a swirl free surface
- Smooth quiet operation

Part #60-065

Weight: 1.6 Lbs.

HOOK AND LOOP DISC HOLDERS

PART NUMBER	DESCRIPTION
60-067	2" Hook & Loop Disc Holder 5/16-24 Threaded Shank
60-066	3" Hook & Loop Disc Holder 5/16-24 Threaded Shank



PART #60-067

PART #60-066

ALUMINUM OXIDE HOOK & LOOP SANDING DISCS

PART NUMBER	DESCRIPTION
51-200	2" 60 Grit A/O
51-201	2" 80 Grit A/O
51-202	2" 120 Grit A/O
51-203	2" 180 Grit A/O
51-204	2" 240 Grit A/O
51-205	2" 320 Grit A/O
51-206	3" 60 Grit A/O
51-207	3" 80 Grit A/O
51-208	3" 120 Grit A/O
51-209	3" 180 Grit A/O
51-210	3" 240 Grit A/O
51-211	3" 320 Grit A/O

SURFACE CONDITIONING DISCS HOOK & LOOP

PART NUMBER	DESCRIPTION	COLOR
51-212	2" Coarse	Brown
51-213	2" Medium	Maroon
51-214	2" Very Fine	Blue
51-215	2" Super Fine	Gray
51-216	3" Coarse	Brown
51-217	3" Medium	Maroon
51-218	3" Very Fine	Blue
51-219	3" Super Fine	Gray

SOLD IN PACKAGES OF 50 PIECES



NOVA® SURFACE CONDITIONING DISCS

Surface conditioning discs have a tough reinforced non-woven nylon web backing. It provides a longer cutting life and unequaled resistance to shedding and loading. Designed for light rust and oxidation removal, blending machine tool marks and will yield a burr-free decorative finish.

SIZE	GRIT	PIECES PER PACKAGE	PART NUMBER TYPE R	PART NUMBER TYPE S	COLOR
1-1/2"	Coarse	100	51-005	51-001	Brown
1-1/2"	Medium	100	51-006	51-002	Maroon
1-1/2"	Very Fine	100	51-007	51-003	Blue
1-1/2"	Super Fine	100	51-008	51-004	Gray
2"	Coarse	50	51-013	51-009	Brown
2"	Medium	50	51-014	51-010	Maroon
2"	Very Fine	50	51-015	51-011	Blue
2"	Super Fine	50	51-016	51-012	Gray
3"	Coarse	25	51-021	51-017	Brown
3"	Medium	25	51-022	51-018	Maroon
3"	Very Fine	25	51-023	51-019	Blue
3"	Super Fine	25	51-024	51-020	Gray



NOVA® EXTRA TOUGH SURFACE CONDITIONING DISCS

Designed for use with High Tensile and Heat Resistant Alloy Steels.

Added Ceramic Grain is coarser and more aggressive than our regular discs.

SIZE	GRIT	PIECES PER PACKAGE	PART NUMBER TYPE R	PART NUMBER TYPE S	COLOR
1-1/2"	Coarse	100	51-031	51-029	Brown/Blue
1-1/2"	Medium	100	51-032	51-030	Maroon/Blue
2"	Coarse	50	51-035	51-033	Brown/Blue
2"	Medium	50	51-036	51-034	Maroon/Blue
3"	Coarse	25	51-039	51-037	Brown/Blue
3"	Medium	25	51-040	51-038	Maroon/Blue



NOVA® RUBBER BACKED QUICK CHANGE DISC HOLDERS

Designed for use with High Tensile and Heat Resistant Alloy Steels

SIZE	DENSITY	PART NUMBER TYPE R	PART NUMBER TYPE S
1-1/2"	Medium	51-060	51-052
2"	Medium	51-061	51-054
3"	Medium	51-062	51-057



SURFACE CONDITIONING DISCS - COMPARATIVE CHART

Pan Am Tool vs. 3M Scotch-Brite Roloc®
Scotch-Brite Roloc® is a registered trade mark of the 3M Corporation. This chart is for part number comparison only.

SIZE	GRIT	PAT PART NUMBER		3M PART NUMBER	
		TYPE R	TYPE S	TR (Male)	TSM (Female)
1-1/2"	Coarse	51-005	51-001	048011-08764	048011-25775
1-1/2"	Medium	51-006	51-002	048011-08765	048011-25774
1-1/2"	Very Fine	51-007	51-003	048011-08766	048011-25773
1-1/2"	Super Fine	51-008	51-004	048011-08767	N/A
2"	Coarse	51-013	51-009	048011-05528	048011-25765
2"	Medium	51-014	51-010	048011-05527	048011-25764
2"	Very Fine	51-015	51-011	048011-05523	048011-25770
2"	Super Fine	51-016	51-012	048011-05522	048011-25771
3"	Coarse	51-021	51-017	048011-05532	048011-25767
3"	Medium	51-022	51-018	048011-05531	048011-25766
3"	Very Fine	51-023	51-019	048011-05530	048011-25780
3"	Super Fine	51-024	51-020	048011-05529	048011-25781

EXTRA TOUGH		PAT PART NUMBER		3M PART NUMBER	
SIZE	GRIT	TYPE R	TYPE S	TR SE (Male)	TSM SE (Female)
1-1/2"	Coarse	51-031	51-029	048011-18240	N/A
1-1/2"	Medium	51-032	51-030	048011-93383	N/A
2"	Coarse	51-035	51-033	048011-18081	048011-25768
2"	Medium	51-036	51-034	048011-18471	048011-25769
3"	Coarse	51-039	51-037	048011-18082	048011-25778
3"	Medium	51-040	51-038	048011-18472	048011-25779

NOVA® PENCIL GRINDER

- Smooth Quiet Operation
- 1/8" Collet
- 60,000 RPM
- Hardened Alloy Steel Cylinder
- Rear Exhaust With Over Hose Muffler
- Motor housing milled from solid Aluminum bar for precision motor alignment
- Maximum Air Pressure 90 PSI
- Includes Two Wrenches, Hose, and Air Fitting
- Weight: 7.5 Ozs.

Part #60-405



PHENOLIC SCRAPER

- 2" Wide Blade x 3/8" thick. 6-1/2" Overall Length
- Can be used with a rivet gun - .401 shank, or as a hand held scraper
- Non-sparking, non-conductive, can be used where flammable mixtures of gases may be present.
- Useful for removing sealants, labels, stickers, adhesives, ice, and more from glass without causing scratches.
- Can be resharpened for extended use
- Chemically resistant

Part #50-429



SUPER GRADE PREMIUM CUT-OFF WHEELS

These new premium cutting tools have a blend of zirconia-alumina and other durable, coated abrasive grains, combined with an advanced, proprietary bonding system, and have been engineered to provide wheel life and cutting rates.

Z36 - Exceptional wheel life and superior cutting rates. Outstanding productivity on stainless steel, heat-sensitive alloys, titanium and other metals.

Z60 - Combines free cutting action and high quality cuts, with outstanding productivity on stainless steel, heat-sensitive alloys, titanium and other metals.



- 2 to 3 times the life of ceramic-alumina blended cut-off wheels!
- Up to 6 times the life of regular aluminum oxide cut-off wheels!

PART NUMBER	DIAMETER	THICKNESS	ARBOR HOLE	MAXIMUM RPM	STANDARD GRADES
21-360	3	.040	1/4	25,000	Z60
21-361	3	.040	3/8	25,000	Z60
21-362	3	1/16	1/4	25,000	Z36
21-363	3	1/16	3/8	25,000	Z36
21-364	4	.040	1/4	20,000	Z60
21-365	4	.040	3/8	20,000	Z60

SOLD IN PACKAGES OF 50 PIECES

RESINOID REINFORCED CUT-OFF WHEELS

For use on die grinders, small wheel grinders, and some end grinders with straight flexible shaft. These reinforced aluminum oxide wheels are used for a variety of metal cutting, grinding, blending and smoothing operations. All aluminum oxide wheels are cloth checkerboard reinforced and bonded with resinoid for on the job safety.

PART NUMBER	DIAMETER	THICKNESS	ARBOR HOLE	MAXIMUM RPM	STANDARD GRADES
21-380	3	.035	1/4	25,000	A60T
21-376	3	.035	3/8	25,000	A60T
21-381	3	1/16	1/4	25,000	A46T
21-377	3	1/16	3/8	25,000	A46T
21-384	4	.035	1/4	20,000	A60T
21-383	4	.035	3/8	20,000	A60T
21-382	4	1/16	3/8	20,000	A46T

SOLD IN PACKAGES OF 50 PIECES

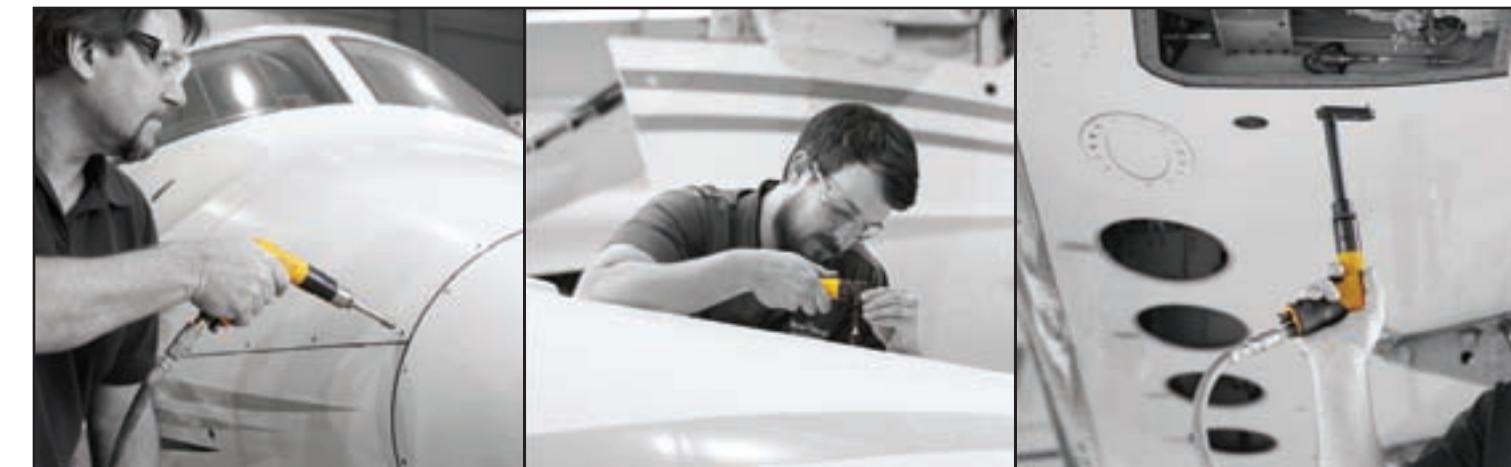
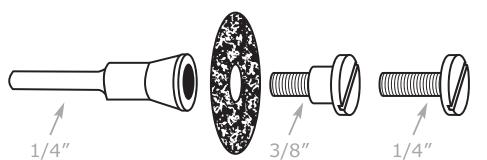
MOUNTING MANDREL SET

For 4" diameter wheels or smaller. Used for all wheels .035 thru 1/4" thick with either 1/4" or 3/8" hole.

Set consists of:

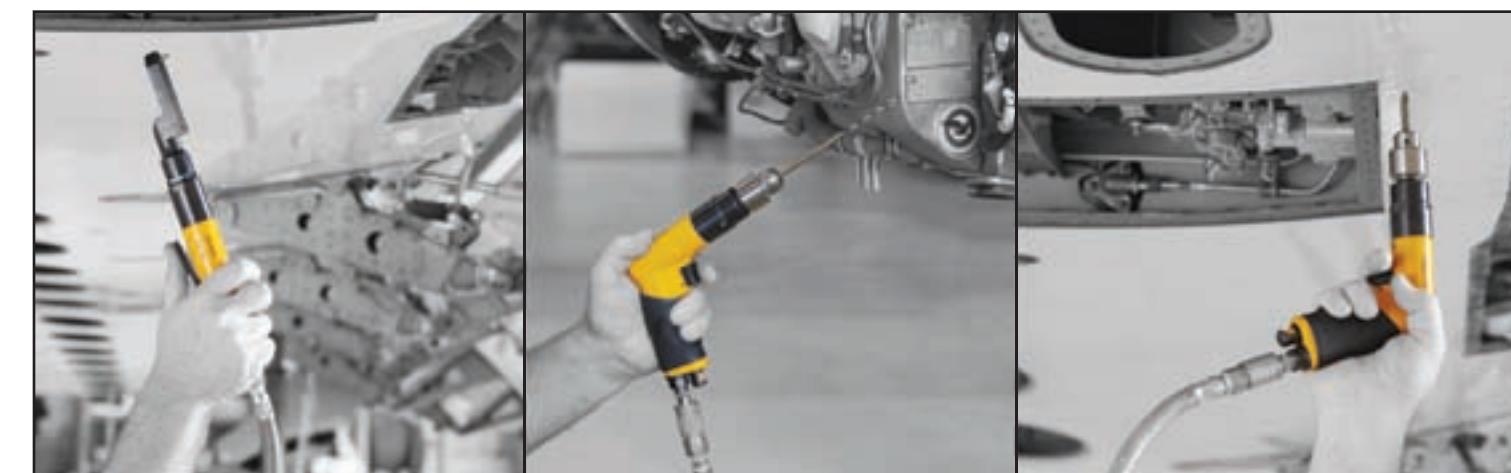
- 1-1/4" Shank Adapter
- 1-1/4" Screw
- 1-1/4" Shank with 3/8" Shoulder

Part #16-413

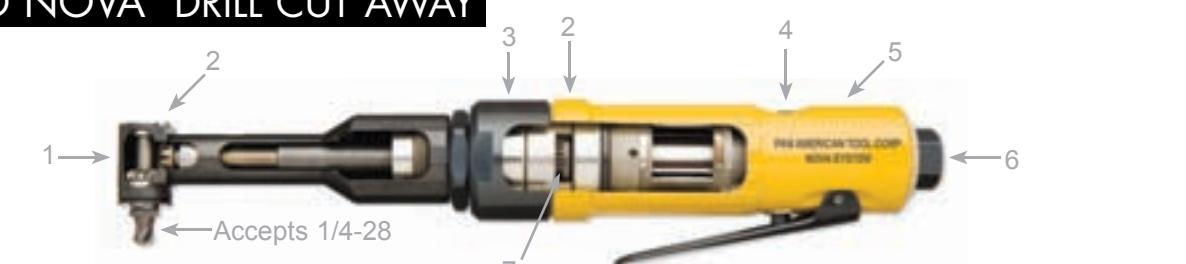


NOVA® PNEUMATIC TOOLS

Standard Nova® Tools	98 - 110
Flat Offset Dogleg Heads	111
Standard Nova® Tool Kits	112
Compact Nova® Tools	113 - 119
Compact Nova® Tool Kits	120
Nova® Pistol Grip Drills	121 - 128
Nova® Flat Offset Angle Attachments	129
Nova® Optional Accessories	130
Nova® Cleco Installation Tools	131 - 132
Nova® Pencil Grinder, Engraving Pen, and Stylus	133
Nova® Grinders	134 - 135
Decimal Equivalent Chart	136



STANDARD NOVA® DRILL CUT AWAY



1. One Piece Hardened Spindle Gear
2. Grease Fittings in Motor Housing and Head
3. Closed Case Bearings Top and Bottom
4. In Line Air Regulator
5. Housing is Milled from One Piece of Solid Stock for Precision Operation
6. Rear Exhaust with Bronze Muffler
7. Hardened Alloy Steel Planetary Gears, Motor Cylinder and Rotor



STANDARD NOVA® HEADS ON MOTOR HOUSINGS

NOVA® 90° ANGLE



See Page 99

NOVA® LONG REACH 90°ANGLE **NOVA® 45° ANGLE**



See Page 100



See Page 101

NOVA® LONG REACH 45° ANGLE



See Page 102

NOVA® 360° ANGLE



See Page 103

**NOVA® COMPACT REVERSIBLE
MOTOR HOUSING**



See Page 104

REVERSIBLE

NOVA® 90° SHORT FLAT OFFSET



See Page 105

REVERSIBLE

NOVA® 90° MEDIUM FLAT OFFSET



See Page 106

REVERSIBLE

NOVA® 90° LONG FLAT OFFSET



See Page 107

REVERSIBLE

NOVA® FLAT OFFSET



See Page 108

REVERSIBLE

NOVA® LONG REACH FLAT OFFSET



See Page 109

REVERSIBLE

NOVA® 90° HEAD W/ 1/4" CHUCK



See Page 110

NOVA® 90° ANGLE HEAD



Part #90-025
Weight .4 Lbs.



- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
90° Angle Head With .3 Horsepower Motor	60-025	2800	25	1.6 Lbs.
90° Angle Head With .3 Horsepower Motor	60-025A	5000	22	1.6 Lbs.
90° Angle Head With .5 Horsepower Motor	61-025	3200	35	1.9 Lbs.
90° Angle Head With .3 Horsepower Motor	60-043	900	52	1.8 Lbs.



NOVA® LONG REACH 90° ANGLE HEAD



PART #90-026
Weight .6 Lbs.



- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

NOVA® 45° ANGLE HEAD



PART #90-027
Weight .5 Lbs.



- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
Long Reach 90° Angle Head With .3 Horsepower Motor	60-027	2800	25	1.8 Lbs.
Long Reach 90° Angle Head With .3 Horsepower Motor	60-027A	5000	22	1.8 Lbs.
Long Reach 90° Angle Head With .5 Horsepower Motor	61-027	3200	35	2.1 Lbs.
Long Reach 90° Angle Head With .3 Horsepower Motor	62-027	900	52	2.0 Lbs.

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
45° Angle Head With .3 Horsepower Motor	60-026	2800	25	1.7 Lbs.
45° Angle Head With .3 Horsepower Motor	60-026A	5000	22	1.7 Lbs.
45° Angle Head With .5 Horsepower Motor	61-026	3200	35	2.0 Lbs.
45° Angle Head With .3 Horsepower Motor	62-026	900	52	1.9 Lbs.



NOVA® LONG REACH 45° ANGLE HEAD



PART #90-028
Weight .7 Lbs.



2800 RPM - .3HP
Weight 1.2 Lbs.
Part #90-002

5000 RPM - .3HP
Weight 1.2 Lbs.
Part #90-003

3200 RPM - .5HP
Weight 1.5 Lbs.
Part #90-006

900 RPM - .3HP
Weight 1.4 Lbs.
Part #90-035

- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

NOVA® 360° ANGLE HEAD



PART #90-030
Weight .7 Lbs.



2800 RPM - .3HP
Weight 1.2 Lbs.
Part #90-002

5000 RPM - .3HP
Weight 1.2 Lbs.
Part #90-003

3200 RPM - .5HP
Weight 1.5 Lbs.
Part #90-006

900 RPM - .3HP
Weight 1.4 Lbs.
Part #90-035

- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
Long Reach 45° Angle Head With .3 Horsepower Motor	60-028	2800	25	1.9 Lbs.
Long Reach 45° Angle Head With .3 Horsepower Motor	60-028A	5000	22	1.9 Lbs.
Long Reach 45° Angle Head With .5 Horsepower Motor	61-028	3200	35	2.2 Lbs.
Long Reach 45° Angle Head With .3 Horsepower Motor	62-028	900	52	2.1 Lbs.

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
360° Angle Head With .3 Horsepower Motor	60-030	2800	25	1.9 Lbs.
360° Angle Head With .3 Horsepower Motor	60-030A	5000	22	1.9 Lbs.
360° Angle Head With .5 Horsepower Motor	61-030	3200	35	2.2 Lbs.
360° Angle Head With .3 Horsepower Motor	62-030	900	52	2.1 Lbs.



NOVA® REVERSING MOTOR HOUSING 2000 OR 3100 RPM



*Compatible With
All Standard
Nova® Heads*

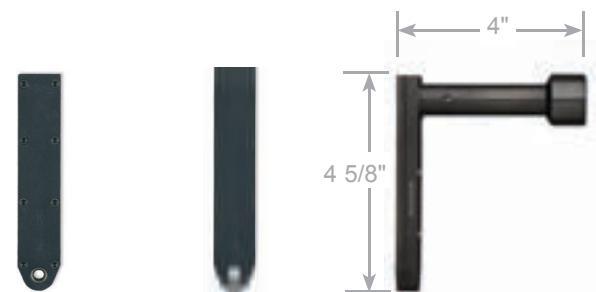
2000 RPM - .4 HP
Weight 1.6 Lbs.
Part #60-015

3100 RPM. - .4 HP
Weight 1.6 Lbs.
Part #60-016

- Reversing Housing With Spline Drive For Use With Standard Nova® Heads
- Feathering Trigger Allows Operator Complete Control of Drilling Speed
- 360° Rotatable Exhaust

- Air Inlet 1/4-18 NPT
- Rubber Grip for Operator Comfort
- Smooth Quiet Operation
- One Year Warranty

**These Recommended Nova® Heads Will Utilize The Reversing Option
Heads Available with Threaded or 1/4" Hex Drive.
Locking Insert Bits Are Available**



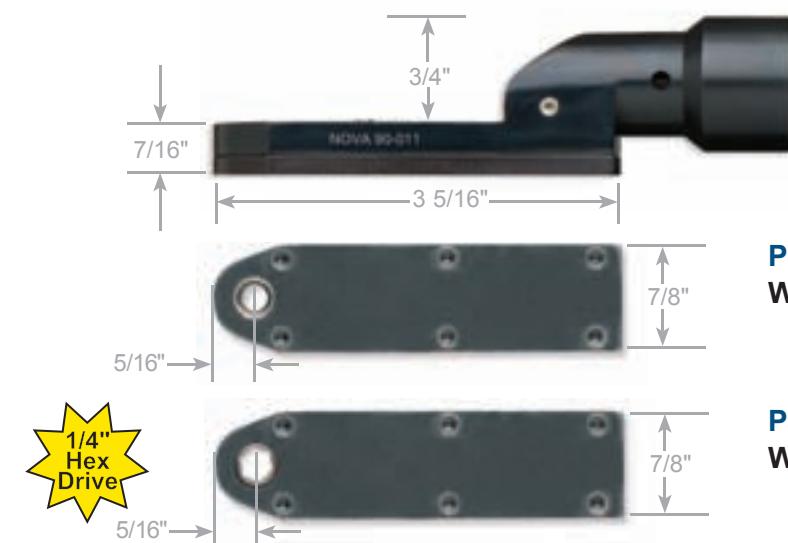
Threaded Gear
Part #90-044

Hex Gear
Part #90-044H

Threaded Gear
Part #90-043

Hex Gear
Part #90-043H

NOVA® 90° SHORT FLAT OFFSET ANGLE HEAD THREADED SPINDLE OR 1/4" HEX DRIVE



Part #90-011
Weight .6 Lbs.

Part #90-011H
Weight .6 Lbs.



2800 RPM - .3 HP
Weight 1.2 Lbs.
Part #90-002

5000 RPM - .3 HP
Weight 1.2 Lbs.
Part #90-003

3200 RPM - .5 HP
Weight 1.5 Lbs.
Part #90-006

900 RPM - .3 HP
Weight 1.4 Lbs.
Part #90-035

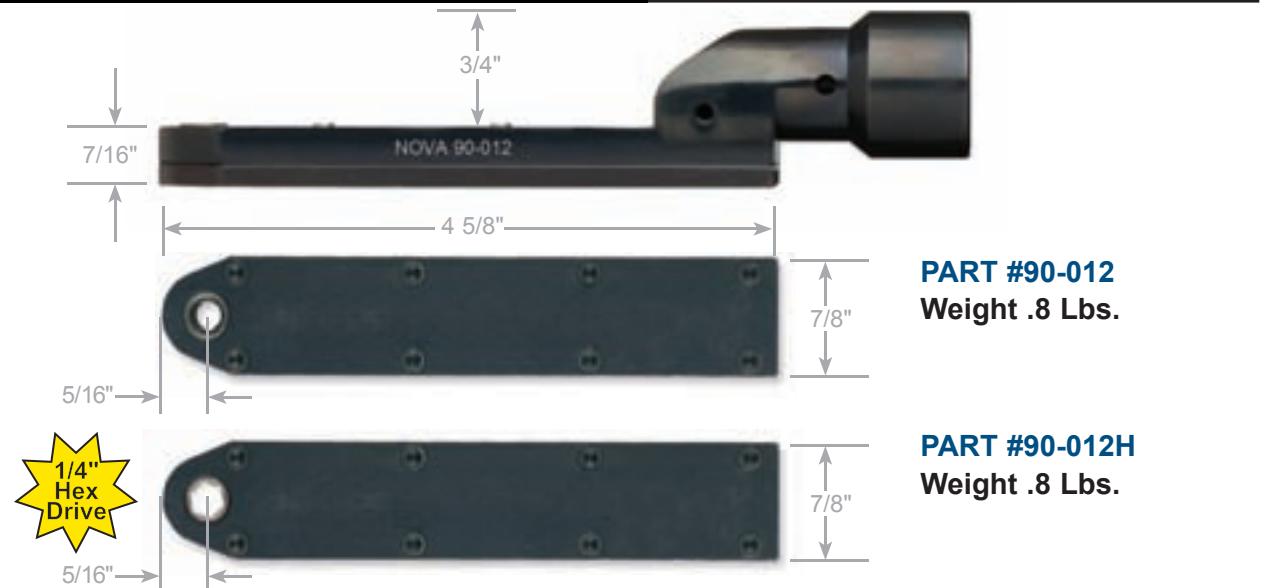
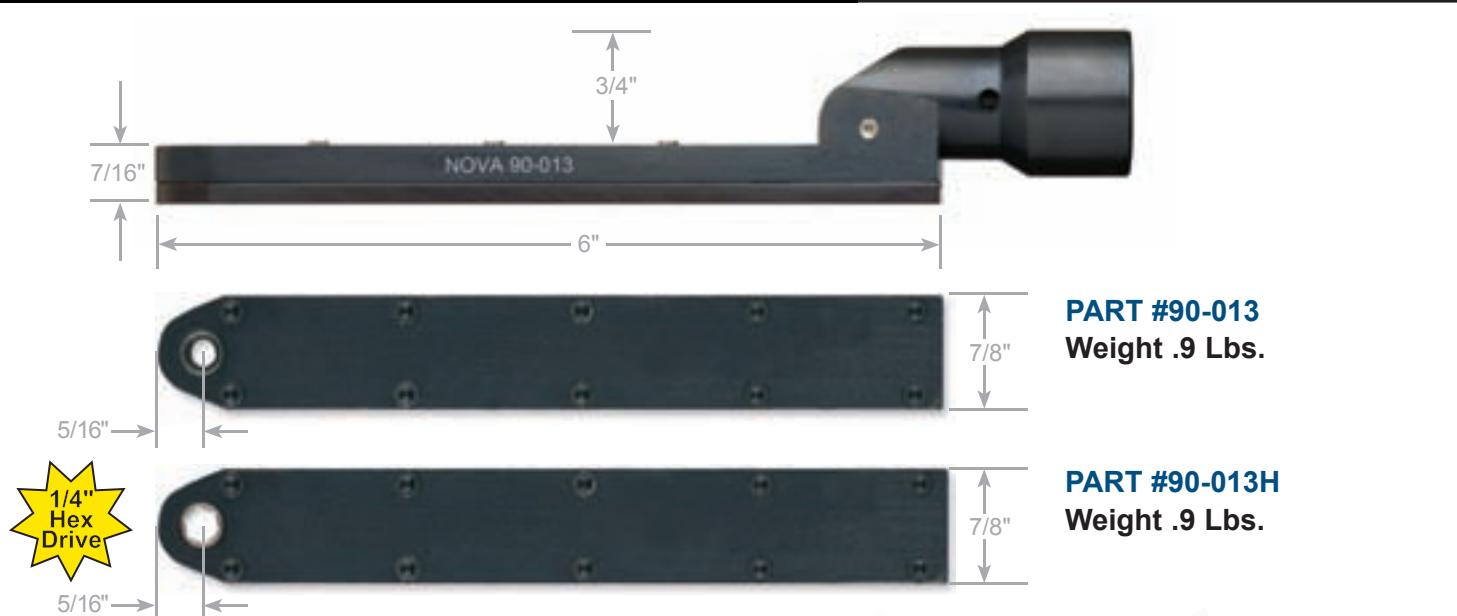
3100 RPM - .2 HP
Weight 1.5 Lbs.
Part #90-045

- Accepts 1/4-28 Threaded Angle Bits or 1/4" Insert Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER THREADED	PART NUMBER HEX	RPM	IN.-LBS. TORQUE	WEIGHT
90° Short Flat Offset Angle Head With .3 Horsepower Motor	60-033	60-033H	2800	25	1.8 Lbs.
90° Short Flat Offset Angle Head With .3 Horsepower Motor	60-033A	60-033AH	5000	22	1.8 Lbs.
90° Short Flat Offset Angle Head With .5 Horsepower Motor	61-033	61-033H	3200	35	2.1 Lbs.
90° Short Flat Offset Angle Head With .3 Horsepower Motor	62-033	62-033H	900	52	2.0 Lbs.
90° Short Flat Offset Angle Head With .2 Horsepower Reversing Motor	63-033	63-033H	3100	22	2.1 Lbs.



NOVA® 90° MEDIUM FLAT OFFSET ANGLE HEAD **THREADED SPINDLE OR 1/4" HEX DRIVE**

NOVA® 90° LONG FLAT OFFSET ANGLE HEAD **THREADED SPINDLE OR 1/4" HEX DRIVE**


- Accepts 1/4-28 Threaded Angle Bits or 1/4" Insert Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

- Accepts 1/4-28 Threaded Angle Bits or 1/4" Insert Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER THREADED	PART NUMBER HEX	RPM	IN.-LBS. TORQUE	WEIGHT
90° Medium Flat Offset Angle Head With .3 Horsepower Motor	60-031	60-031H	2800	25	2 Lbs.
90° Medium Flat Offset Angle Head With .3 Horsepower Motor	60-031A	60-031AH	5000	22	2 Lbs.
90° Medium Flat Offset Angle Head With .5 Horsepower Motor	61-031	61-031H	3200	35	2.3 Lbs.
90° Medium Flat Offset Angle Head With .3 Horsepower Motor	62-031	62-031H	900	52	2.2 Lbs.
90° Medium Flat Offset Angle Head With .2 Horsepower Reversing Motor	63-031	63-031H	3100	22	2.3 Lbs.

COMPLETE NOVA® TOOL	PART NUMBER THREADED	PART NUMBER HEX	RPM	IN.-LBS. TORQUE	WEIGHT
90° Long Flat Offset Angle Head With .3 Horsepower Motor	60-013	60-013H	2800	25	2.1 Lbs.
90° Long Flat Offset Angle Head With .3 Horsepower Motor	60-013A	60-013AH	5000	22	2.1 Lbs.
90° Long Flat Offset Angle Head With .5 Horsepower Motor	61-013	61-013H	3200	35	2.4 Lbs.
90° Long Flat Offset Angle Head With .3 Horsepower Motor	62-013	62-013H	900	52	2.3 Lbs.
90° Long Flat Offset Angle Head With .2 Horsepower Reversing Motor	63-013	63-013H	3100	22	2.4 Lbs.



NOVA® FLAT OFFSET ANGLE HEAD **THREADED SPINDLE OR 1/4" HEX DRIVE**

NOVA® LONG REACH FLAT OFFSET HEAD **THREADED SPINDLE OR 1/4" HEX DRIVE**


- Accepts 1/4-28 Threaded Angle Bits or 1/4" Insert Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

- Accepts 1/4-28 Threaded Angle Bits or 1/4" Insert Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER THREADED	PART NUMBER HEX	RPM	IN.-LBS. TORQUE	WEIGHT
Flat Offset Angle Head With .3 Horsepower Motor	60-032	60-032H	2800	25	1.7 Lbs.
Flat Offset Angle Head With .3 Horsepower Motor	60-032A	60-032AH	5000	22	1.7 Lbs.
Flat Offset Angle Head With .5 Horsepower Motor	61-032	61-032H	3200	35	2.0 Lbs.
Flat Offset Angle Head With .3 Horsepower Motor	62-032	62-032H	900	52	1.9 Lbs.
Flat Offset Angle Head With .2 Horsepower Reversing Motor	63-032	63-032H	3100	22	2.0 Lbs.

COMPLETE NOVA® TOOL	PART NUMBER THREADED	PART NUMBER HEX	RPM	IN.-LBS. TORQUE	WEIGHT
Long Reach Offset Head With .3 Horsepower Motor	60-038	60-038H	2800	25	1.8 Lbs.
Long Reach Offset Head With .3 Horsepower Motor	60-038A	60-038AH	5000	22	1.8 Lbs.
Long Reach Offset Head With .5 Horsepower Motor	61-038	61-038H	3200	35	2.1 Lbs.
Long Reach Offset Head With .3 Horsepower Motor	62-038	62-038H	900	52	2.0 Lbs.
Long Reach Offset Head With .2 Horsepower Reversing Motor	63-038	63-038H	3100	22	2.1 Lbs.

NOVA® 90° ANGLE HEAD WITH 1/4" CHUCK

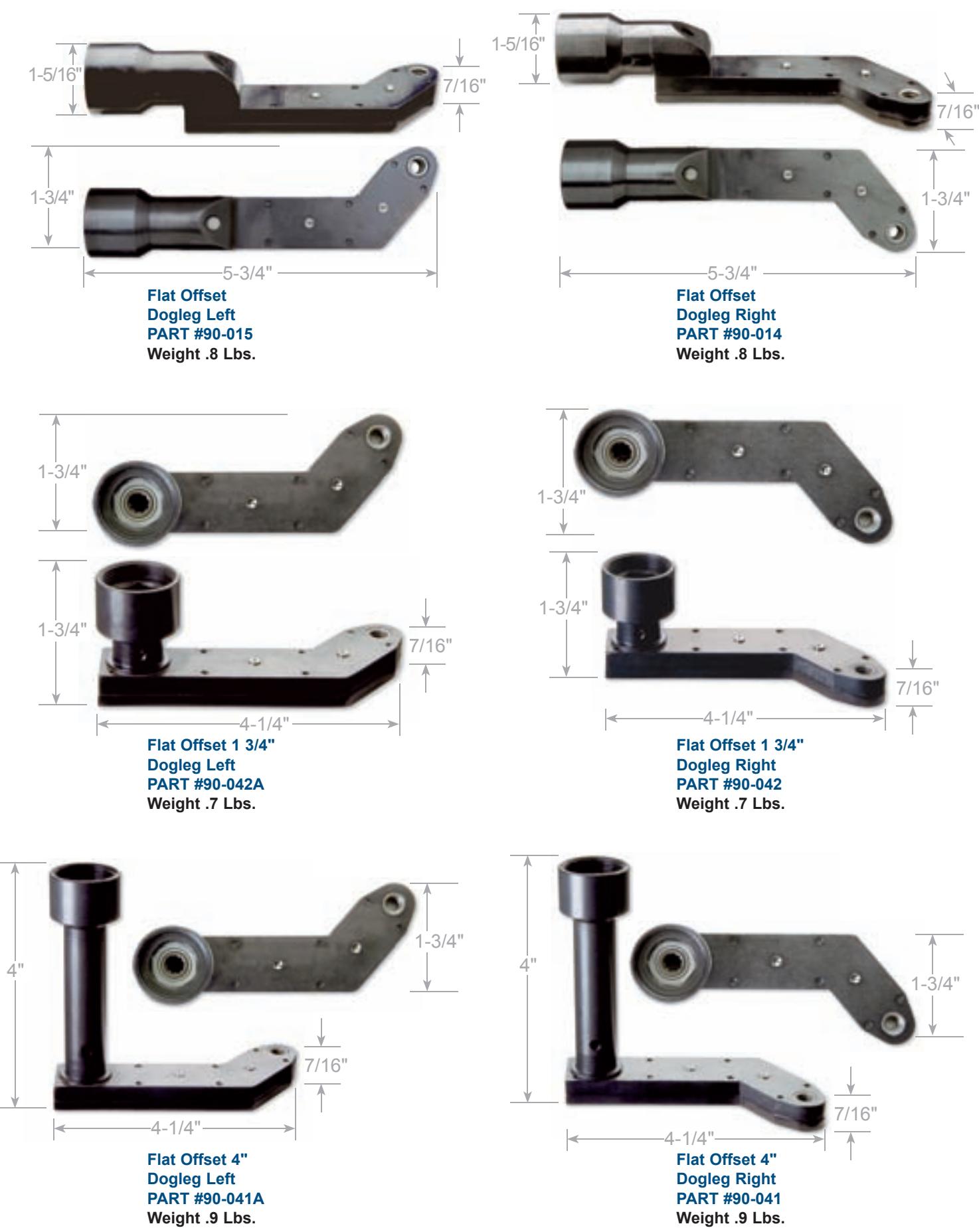


- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
90° Angle Head With 1/4" Chuck With .3 Horsepower Motor	60-046C	2800	25	2.0 Lbs.
90° Angle Head With 1/4" Chuck With .3 Horsepower Motor	60-046AC	5000	22	2.0 Lbs.
90° Angle Head With 1/4" Chuck With .5 Horsepower Motor	61-046C	3200	35	2.3 Lbs.
90° Angle Head With 1/4" Chuck With .3 Horsepower High Torque	62-046C	900	52	2.2 Lbs.

FLAT OFFSET ANGLE HEADS FOR STANDARD NOVA® MOTOR HOUSING



STANDARD NOVA® SYSTEM KIT 2800, 5000 OR 3200 RPM

Pan American Tool's standard NOVA® tool system let's you design just the right tool kit you want and need. Flexibility enables you to add different heads in the future. All NOVA® kits come with a one year warranty.



**CUSTOMIZE
YOUR OWN
NOVA® TOOL KIT**
Select One Motor
Housing and a
Minimum of 3,
Maximum of
10 Heads



2800 RPM - .3 HP
Weight 1.2 Lbs.
Part #90-002



5000 RPM - .3 HP
Weight 1.2 Lbs.
Part #90-003



3200 RPM - .5 HP
Weight 1.5 Lbs.
Part #90-006

NOVA® STANDARD HEAD ATTACHMENTS

- Nova® 90° Angle Head - Part #90-025 - p.99
- Nova® Long Reach 90° Angle Head - Part #90-026 - p.100
- Nova® 45° Angle Head - Part #90-027 - p.101
- Nova® Long Reach 45° Angle Head - Part #90-028 - p.102
- Nova® 360° Angle Head - Part #90-030 - p.103
- Nova® 90° Short Flat Offset Angle Head - Part #90-011, #90-011H - p.105
- Nova® 90° Medium Flat Offset Angle Head - Part #90-012, #90-012H - p.106
- Nova® 90° Long Flat Offset Angle Head - Part #90-013, #90-013H - p.107
- Nova® 90° Flat Offset Angle Head - Part #60-039, #60-039H - p.108
- Nova® Long Reach Flat Offset Head - Part #90-040, #90-040H - p.109

COMPACT NOVA® HEADS ON COMPACT HOUSINGS



See Page 114



See Page 115



See Page 116



See Page 117

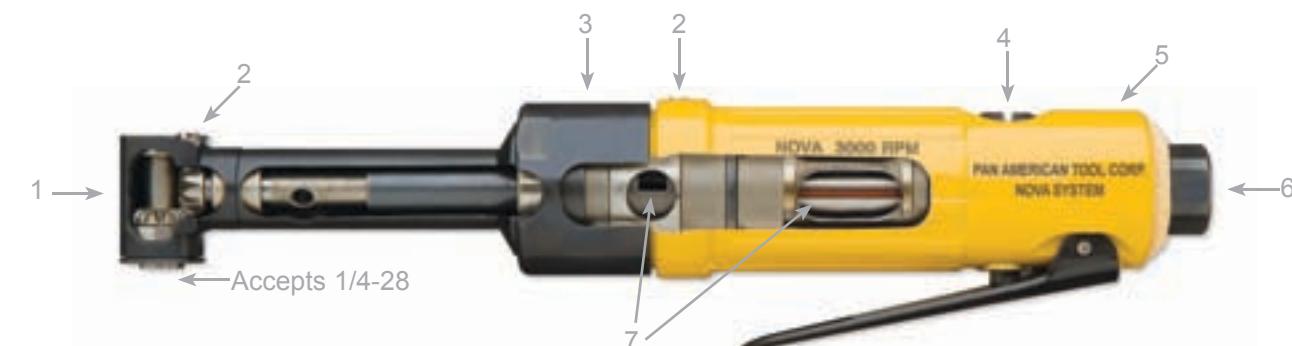


See Page 118



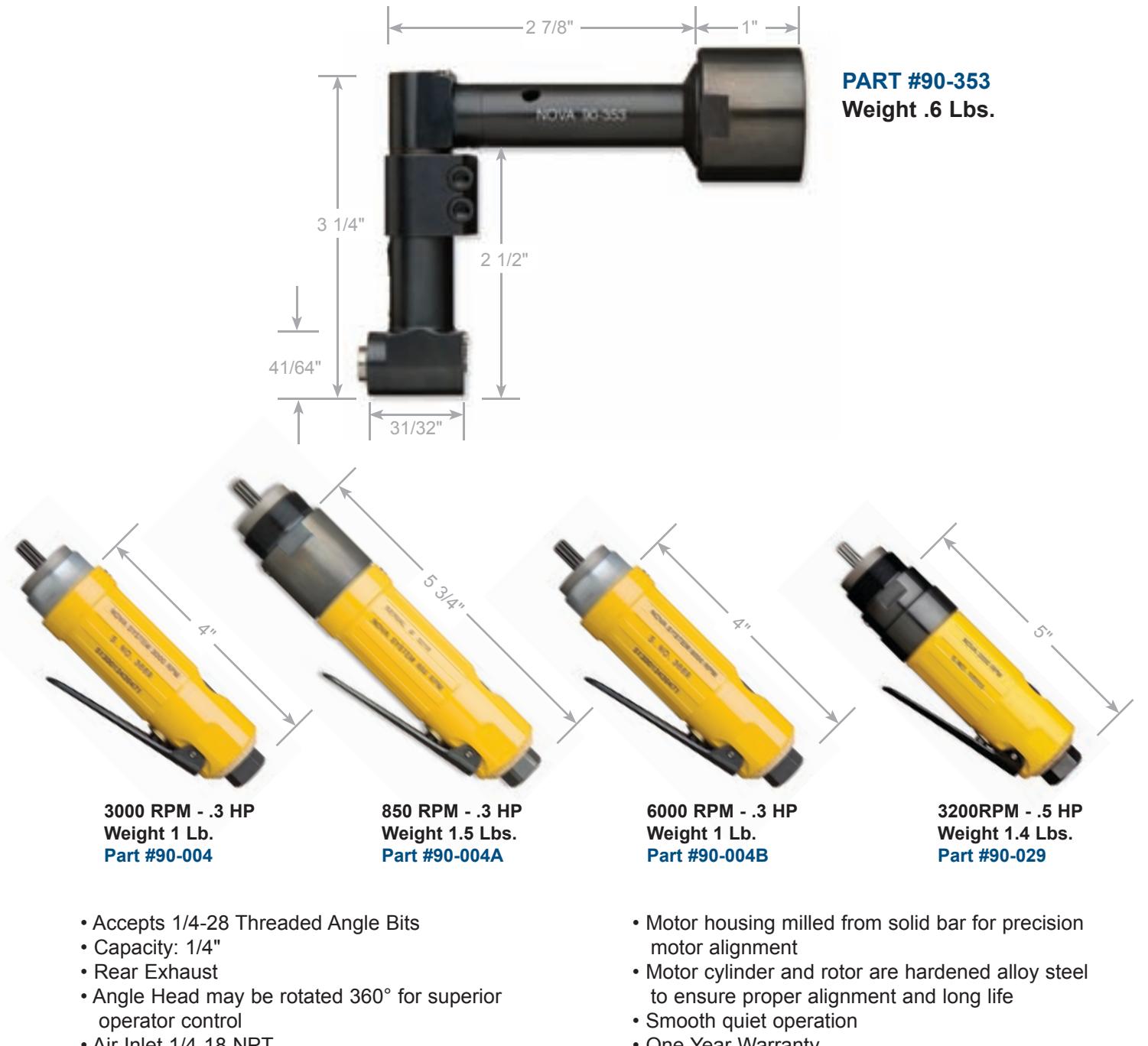
See Page 119

COMPACT NOVA® DRILL CUT AWAY



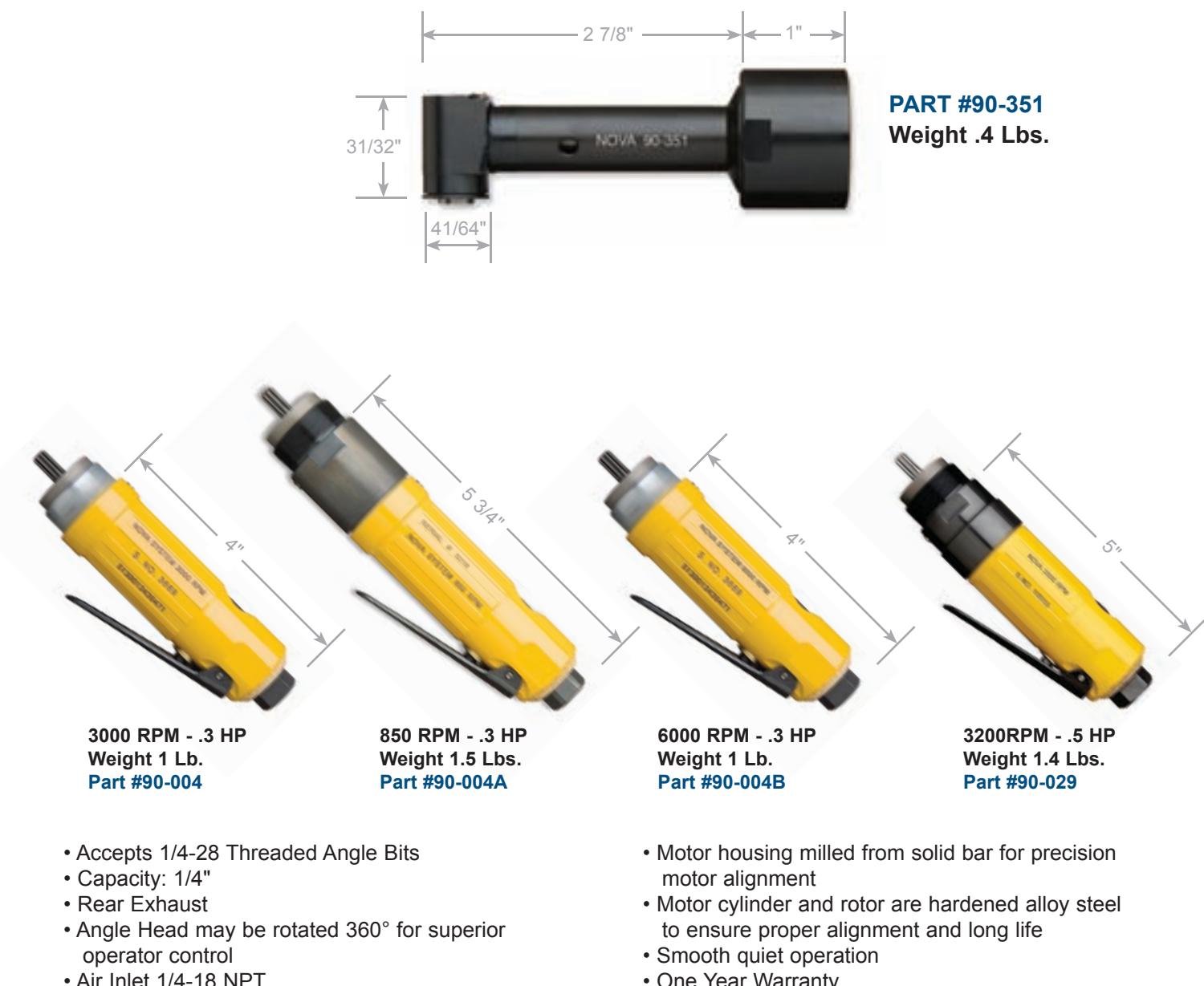
1. One Piece Hardened Spindle Gear
2. Grease Fittings in Motor Housing and Head
3. Closed Case Bearings Top and Bottom
4. In Line Air Regulator
5. Housing is Milled from One Piece of Solid Stock for Precision Operation
6. Rear Exhaust with Bronze Muffler
7. Hardened Alloy Steel Planetary Gears, Motor Cylinder and Rotor

NOVA® 360° COMPACT ANGLE HEAD



COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
360° Compact Angle Head with Compact 3000 RPM Motor	60-053	3000	24	1.6 Lbs.
360° Compact Angle Head with Compact High Torque 850 RPM Motor	60-053A	850	60	2.1 Lbs.
360° Compact Angle Head with Compact 6000 RPM Motor	60-053B	6000	22	1.6 Lbs.
360° Compact Angle Head with Compact 3200 RPM Motor	60-053C	3200	32	2 Lbs.

NOVA® 90° COMPACT ANGLE HEAD



COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
90° Compact Angle Head with Compact 3000 RPM Motor	60-051	3000	24	1.4 Lbs.
90° Compact Angle Head with Compact High Torque 850 RPM Motor	60-051A	850	60	1.9 Lbs.
90° Compact Angle Head with Compact 6000 RPM Motor	60-051B	6000	22	1.4 Lbs.
90° Compact Angle Head with Compact 3200 RPM Motor	60-051C	3200	32	1.8 Lbs.



NOVA® LONG REACH 90° COMPACT ANGLE HEAD



PART #90-355
Weight .6 Lbs.



3000 RPM - .3 HP
Weight 1 Lb.
Part #90-004

850 RPM - .3 HP
Weight 1.5 Lbs.
Part #90-004A

6000 RPM - .3 HP
Weight 1 Lb.
Part #90-004B

3200RPM - .5 HP
Weight 1.4 Lbs.
Part #90-029

- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
Long Reach 90° Compact Angle with Compact 3000 RPM Motor	60-058	3000	24	1.6 Lbs.
Long Reach 90° Compact Angle with Compact High Torque 850 RPM Motor	60-058A	850	60	2.1 Lbs.
Long Reach 90° Compact Angle with Compact 6000 RPM Motor	60-058B	6000	22	1.6 Lbs.
Long Reach 90° Compact Angle with Compact 3200 RPM Motor	60-058C	3200	32	2 Lbs.

NOVA® 45° COMPACT ANGLE HEAD



PART #90-352
Weight .4 Lbs.



3000 RPM - .3 HP
Weight 1 Lb.
Part #90-004

850 RPM - .3 HP
Weight 1.5 Lbs.
Part #90-004A

6000 RPM - .3 HP
Weight 1 Lb.
Part #90-004B

3200RPM - .5 HP
Weight 1.4 Lbs.
Part #90-029

- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

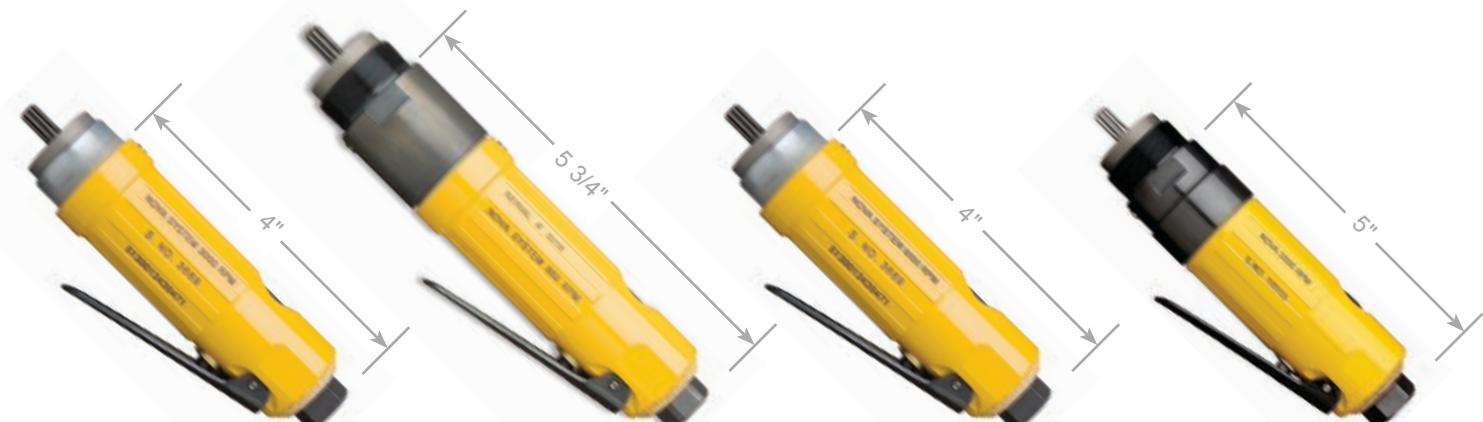
COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
45° Compact Angle Head with Compact 3000 RPM Motor	60-052	3000	24	1.4 Lbs.
45° Compact Angle Head with Compact High Torque 850 RPM Motor	60-052A	850	60	1.9 Lbs.
45° Compact Angle Head with Compact 6000 RPM Motor	60-052B	6000	22	1.4 Lbs.
45° Compact Angle Head with Compact 3200 RPM Motor	60-052C	3200	32	1.8 Lbs.



NOVA® LONG REACH 45° COMPACT ANGLE HEAD



PART #90-356
Weight .7 Lbs.



3000 RPM - .3 HP
Weight 1 Lb.
Part #90-004

850 RPM - .3 HP
Weight 1.5 Lbs.
Part #90-004A

6000 RPM - .3 HP
Weight 1 Lb.
Part #90-004B

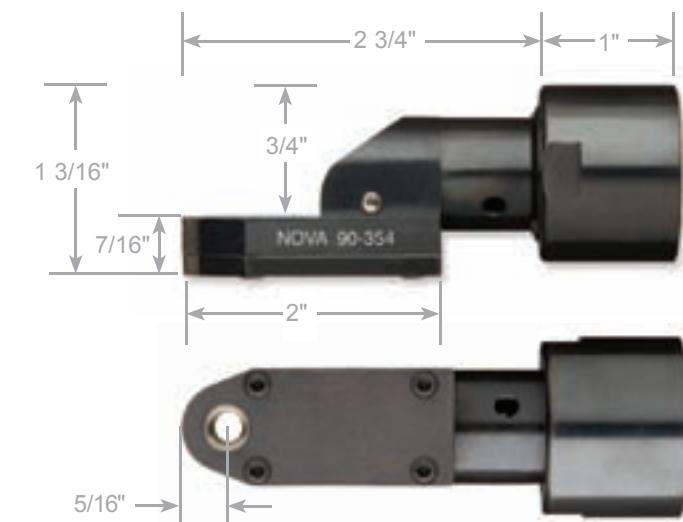
3200RPM - .5 HP
Weight 1.4 Lbs.
Part #90-029

- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
Long Reach 45° Compact Angle with Compact 3000 RPM Motor	60-059	3000	24	1.7 Lbs.
Long Reach 45° Compact Angle with Compact High Torque 850 RPM Motor	60-059A	850	60	2.2 Lbs.
Long Reach 45° Compact Angle with Compact 6000 RPM Motor	60-059B	6000	22	1.7 Lbs.
Long Reach 45° Compact Angle with Compact 3200 RPM Motor	60-059C	3200	32	2.1 Lbs.

NOVA® 90° COMPACT FLAT OFFSET ANGLE HEAD



PART #90-354
Weight .4 Lbs.



3000 RPM - .3 HP
Weight 1 Lb..
Part #90-004

850 RPM - .3 HP
Weight 1.5 Lbs.
Part #90-004A

6000 RPM - .3 HP
Weight 1 Lb.
Part #90-004B

3200RPM - .5 HP
Weight 1.4 Lbs.
Part #90-029

- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
90° Compact Flat Offset Angle with Compact 3000 RPM Motor	60-050	3000	24	1.4 Lbs.
90° Compact Flat Offset Angle with Compact High Torque 850 RPM Motor	60-050A	850	60	1.9 Lbs.
90° Compact Flat Offset Angle with Compact 6000 RPM Motor	60-050B	6000	22	1.4 Lbs.
90° Compact Flat Offset Angle with Compact 3200 RPM Motor	60-050C	3200	32	1.8 Lbs.



COMPACT NOVA® SYSTEM KIT [850, 3000, 3200 OR 6000 RPM]

Pan American Tool's compact NOVA® tool system let's you design just the right tool kit you want and need. Flexibility enables you to add different heads in the future. All NOVA® kits come with a one year warranty.



**CUSTOMIZE
YOUR OWN
NOVA® TOOL KIT**
Select One Motor
Housing and a
Minimum of 3,
Maximum of
6 Heads



NOVA® COMPACT HEAD ATTACHMENTS

- Nova® 360° Compact Angle Head - Part #90-353 - p.114
- Nova® 90° Compact Angle Head - Part #90-351 - p.115
- Nova® Long Reach 90° Compact Angle Head - Part #90-355 - p.116
- Nova® 45° Compact Angle Head - Part #90-352 - p.117
- Nova® Long Reach 45° Compact Angle Head - Part #90-356 - p.118
- Nova® 90° Compact Flat Offset Angle Head - Part #90-354 - p.119

NOVA® PISTOL GRIP DRILLS

NOVA® COMPACT PISTOL GRIP DRILL  2600, 3200, or 4000 RPM See Page 122	NOVA® .5 HORSEPOWER PISTOL GRIP DRILL  2400 RPM See Page 123	NOVA® COMPACT HIGH TORQUE PISTOL GRIP DRILL  1300 or 650 RPM See Page 124
NOVA® HIGH TORQUE PISTOL GRIP DRILL  900 RPM See Page 125	NOVA® HEAVY DUTY REVERSIBLE 3/8 PISTOL GRIP DRILL  2000 RPM See Page 126	NOVA® COMPACT REVERSIBLE DRILL  2000 or 3100 RPM See Page 127
NOVA® COMPLETE MOTOR MOUNTED MICRO-STOP CAGE  2600, 3200 or 4000 RPM See Page 128		NOVA® PISTOL GRIP DRILL CUT AWAY 

1. Precision Chuck with 3/8-24 Thread
2. Close Case Bearings
3. Air Inlet 1/4-18 NPT
4. 360° Rotatable Exhaust with Bronze Muffler
5. Housing Milled from Solid Stock for Precision Operation
6. Feathering Trigger Allows Operator Complete Control of Drilling Speed
7. Hardened Alloy Gears



NOVA® COMPACT PISTOL GRIP DRILL 2600, 3200, OR 4000 RPM



- Feathering Trigger Allows Operator Complete Control of Drilling Speed
- Air Inlet 1/4-18 NPT
- 360° Rotatable Exhaust
- Smooth Quiet Operation
- Rubber Grip for Operator Comfort
- One Year Warranty

2600 RPM with 1/4" Chuck and Key
Weight 1.5 Lbs.
Part #60-300

4000 RPM with 1/4" Chuck and Key
Weight 1.5 Lbs.
Part #60-310

3200 RPM with 1/4" Chuck and Key
Weight 1.5 Lbs.
Part #60-312

2600 RPM with 1/4" Keyless Chuck
Weight 1.9 Lbs.
Part #60-300B

4000 RPM with 1/4" Keyless Chuck
Weight 1.9 Lbs.
Part #60-310B

3200 RPM with 1/4" Keyless Chuck
Weight 1.9 Lbs.
Part #60-312B

NOVA® 2400 RPM .5 HORSEPOWER PISTOL GRIP DRILL



- .5 HP Motor For Extended Torque
- Feathering Trigger Allows Operator Complete Control of Speed
- Air Inlet 1/4-18 NPT
- 360° Rotatable Exhaust
- Rubber Grip for Operator Comfort
- Quiet Smooth Operation
- One Year Warranty

2400 RPM with 1/4" Chuck and Key
Weight 1.6 Lbs.
Part #60-600

2400 RPM with 1/4" Keyless Chuck
Weight 2 Lbs.
Part #60-600A

2400 RPM with 3/8" Chuck and Key
Weight 1.9 Lbs.
Part #60-600B

2400 RPM with 3/8" Keyless Chuck
Weight 2.4 Lbs.
Part #60-600C

NOVA® 1300 RPM HIGH TORQUE COMPACT PISTOL GRIP DRILL



- 60 In.-Lbs. Torque - 1300 RPM
- Feathering Trigger Allows Operator Complete Control of Drilling Speed
- Air Inlet 1/4-18 NPT
- 360° Rotatable Exhaust
- Rubber Grip for Operator Comfort
- Smooth Quiet Operation
- One Year Warranty

**1300 RPM with 1/4" Chuck and Key
Weight 1.9 Lbs.
Part #60-313**

**1300 RPM with 3/8" Chuck and Key
Weight 2.2 Lbs.
Part #60-313B**

**1300 RPM with 1/4" Keyless Chuck
Weight 2.3 Lbs.
Part #60-313A**

**1300 RPM with 3/8" Keyless Chuck
Weight 2.7 Lbs.
Part #60-313C**

NOVA® 900 RPM HIGH TORQUE PISTOL GRIP DRILL



- 95 In.-Lbs. Torque - 900 RPM
- Feathering Trigger Allows Operator Complete Control of Drilling Speed
- Air Inlet 1/4-18 NPT
- 360° Rotatable Exhaust
- Rubber Grip for Operator Comfort
- Smooth Quiet Operation
- One Year Warranty

**900 RPM with 3/8" Chuck and Key
Weight 2.5 Lbs.
Part #60-008B**

**900 RPM with 1/4" Keyless Chuck
Weight 2.6 Lbs.
Part #60-008H**

**900 RPM with 3/8" Keyless Chuck
Weight 2.9 Lbs.
Part #60-008K**

NOVA® 650 RPM HIGH TORQUE COMPACT PISTOL GRIP DRILL



- 70 In.-Lbs. Torque - 650 RPM
- Feathering Trigger Allows Operator Complete Control of Drilling Speed
- Air Inlet 1/4-18 NPT
- 360° Rotatable Exhaust
- Rubber Grip for Operator Comfort
- Smooth Quiet Operation
- One Year Warranty

**650 RPM with 1/4" Chuck and Key
Weight 1.9 Lbs.
Part #60-450**

**650 RPM with 3/8" Chuck and Key
Weight 2.2 Lbs.
Part #60-450B**

**650 RPM with 1/4" Keyless Chuck
Weight 2.3 Lbs.
Part #60-450A**

**650 RPM with 3/8" Keyless Chuck
Weight 2.7 Lbs.
Part #60-450C**



NOVA® 2000 RPM HEAVY DUTY REVERSIBLE 3/8" PISTOL GRIP DRILL



- Reversing Button Located for Superior Control
- 65 In.-Lbs. Torque - 2000 RPM
- Feathering Trigger Allows Operator Complete Control of Drilling Speed
- Air Inlet 1/4-18 NPT
- Rubber Grip for Operator Comfort
- Smooth Quiet Operation
- One Year Warranty

2000 RPM with 3/8" Chuck and Key

Weight 2.9 Lbs.

Part #70-100

NOVA® COMPACT REVERSING DRILL 2000 OR 3100 RPM



- Reversing Button Located for Superior Control
- Feathering Trigger Allows Operator Complete Control of Drilling Speed
- Air Inlet 1/4-18 NPT
- 360° Rotatable Exhaust
- Rubber Grip for Operator Comfort
- Smooth Quiet Operation
- One Year Warranty

2000 RPM with 1/4" Chuck and Key

Weight 1.75 Lbs.

Part #60-300R

3100 RPM with 1/4" Chuck and Key

Weight 1.75 Lbs.

Part #60-310R

NOVA® COMPLETE MOTOR MOUNTED MICRO-STOP CAGE 2600, 3200 OR 4000 RPM



Also Available With Nylon Foot Piece

- Feathering Trigger Allows Operator Complete Control of Speed
- For Precision Depth Control
- Air Inlet 1/4-18 NPT
- 360° Rotatable Exhaust
- Rubber Grip for Operator Comfort
- Smooth Quiet Operation
- One Year Warranty

2600 RPM Pistol Grip Drill
Weight 1.6 Lbs.
Part #19-369

3200 RPM Pistol Grip Drill
Weight 1.6 Lbs.
Part #19-369A

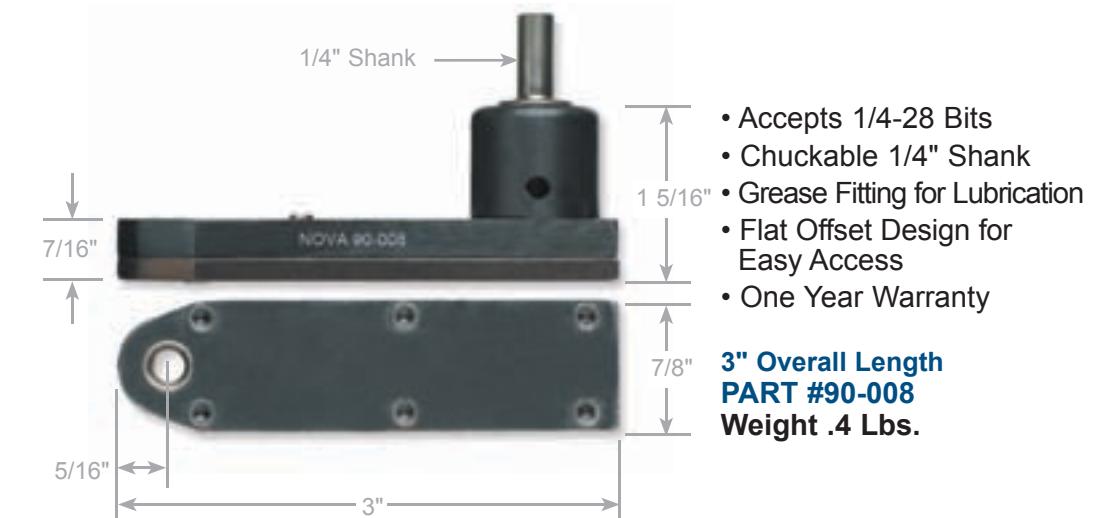
4000 RPM Pistol Grip Drill
Weight 1.6 Lbs.
Part #19-369B

2600 RPM Pistol Grip Drill
Weight 1.6 Lbs.
Part #19-369N - with Nylon Foot Piece

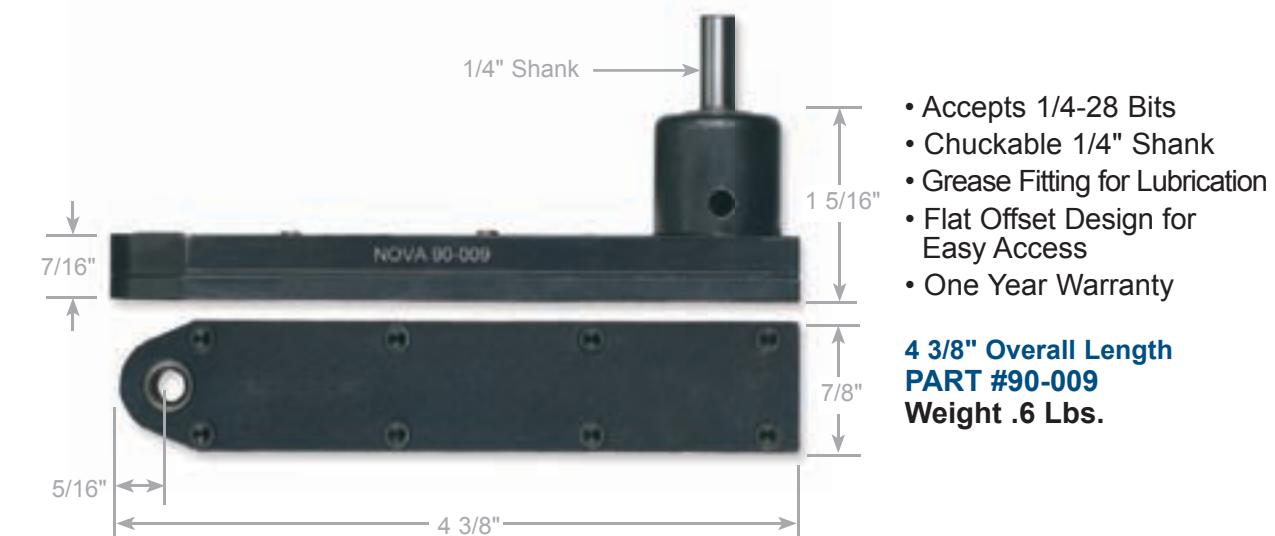
3200 RPM Pistol Grip Drill
Weight 1.6 Lbs.
Part #19-369AN - with Nylon Foot Piece

4000 RPM Pistol Grip Drill
Weight 1.6 Lbs.
Part #19-369BN - with Nylon Foot Piece

NOVA® FLAT OFFSET ANGLE ATTACHMENTS



- Accepts 1/4-28 Bits
 - Chuckable 1/4" Shank
 - Grease Fitting for Lubrication
 - Flat Offset Design for Easy Access
 - One Year Warranty
- 3" Overall Length**
PART #90-008
Weight .4 Lbs.



- Accepts 1/4-28 Bits
 - Chuckable 1/4" Shank
 - Grease Fitting for Lubrication
 - Flat Offset Design for Easy Access
 - One Year Warranty
- 4 3/8" Overall Length**
PART #90-009
Weight .6 Lbs.



- Accepts 1/4-28 Bits
 - Chuckable 1/4" Shank
 - Grease Fitting for Lubrication
 - Flat Offset Design for Easy Access
 - One Year Warranty
- 5 3/4" Overall Length**
PART #90-010
Weight .7 Lbs.



NOVA® OPTIONAL ACCESSORIES



1/4-B Chuck with Key

- 3/8-24 Thread
 - Weight .3 Lbs
- Part #20-370**



"O" Series Chuck with Threaded Adapter and Key

- 5/32" Cutter Capacity

Part #20-365



Precision Miniature 3 Jaw Chuck

- Precision Ground Hardened Jaws
- Weight .8 Lbs
- 1/16" through 1/4" Drill Diameter Capacity
- Fits tools with 1/4-28 Spindle.

Part #20-379



Micro-Stop Cage

- 1/4-28 Threaded Shaft
- 3/32" Shaft Travel
- 1/2" Cutter Capacity
- Rated at 3000 RPM

Part #19-362



1/4-28 Threaded Chuck Adapter

Part #20-364



1/4" Straight x 1/4-28 Adapter Pin

Part #20-366



CLECO INSTALLATION TOOLS

NOVA® CLECO INSTALLATION TOOL

- Ergonomic Handle
- 360° Swivel Mount
- Pistol Grip
- Quiet Operation
- Air Inlet 1/4 NPT

Weight 1.6 Lbs.

Part #20-112



NOVA® CLECO INSTALLATION TOOL EXTRA LONG

- Ergonomic Handle
- 360° Swivel Mount
- Pistol Grip
- Quiet Operation
- Air Inlet 1/4 NPT

Weight 1.9 Lbs.

PART #20-112XL



NOVA® CLECO INSTALLATION TOOL

- Ergonomic Handle
- 360° Swivel Mount
- Straight Handle
- Quiet Operation
- 6' Hose
- Air Inlet 1/4 NPT

Weight .75 Lbs.

Part #20-109



CLECO PLIERS WITH SOFT HANDLE

- Installs Cleco-Lok® C, CC, CL & CHD fasteners
- Installs Monogram® M, MM, ML, MEL & MHD fasteners
- Installs Kwik-Lok® K, KK, KT, KL, KEL & KHD fasteners
- Made from forged steel and nickel plated to resist wear and abuse.
- Pliers are compatible with all spring-loaded types of sheet metal clamps.

Part #20-108



NOVA® HEX NUT CLECO INSTALLATION TOOL



- 2000 RPM
- Reversing Button Located for Superior Control
- Feathering Trigger Allows Operator Complete Control of Speed
- Air Inlet 1/4-18 NPT
- Maximum Air Pressure: 90 PSI
- Rubber Grip for Operator Comfort
- Quiet Smooth Operation
- One Year Warranty

Weight 2.1 Lbs.

Part #20-115

Swivel Air Regulator Included*



Part #60-123

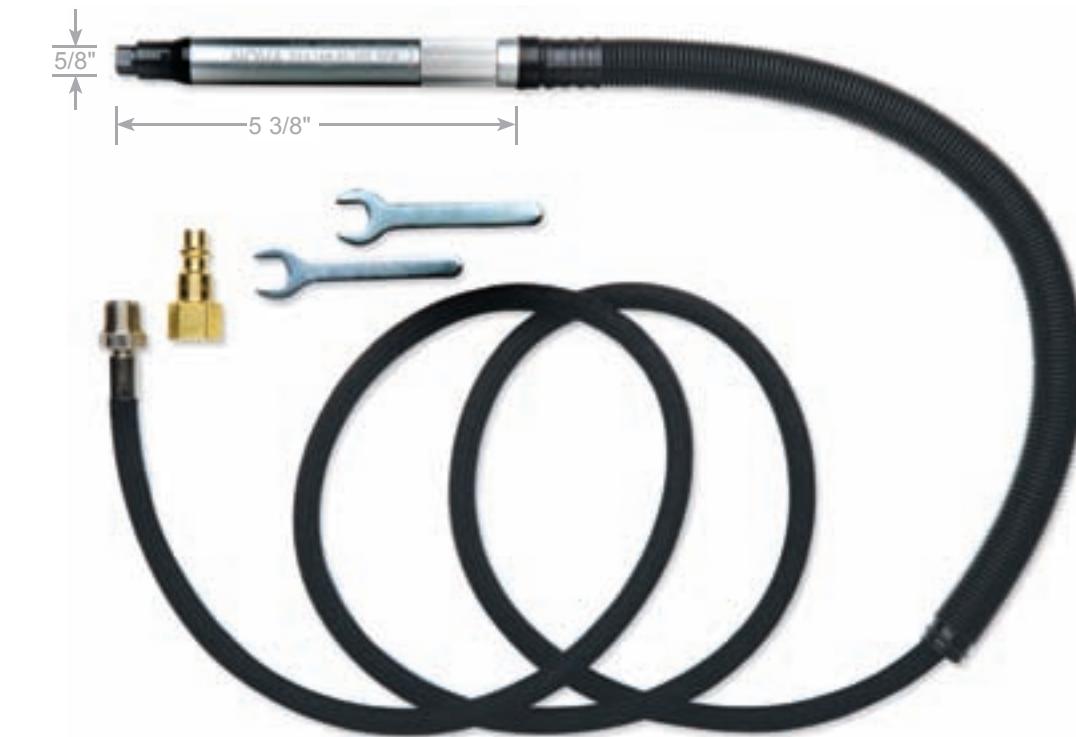
* Also Sold Separately On Page 130

NOVA® PENCIL GRINDER

- 60,000 RPM
- 1/8" Collet
- Hardened Alloy Steel Cylinder
- Rear Exhaust With Over Hose Muffler
- Motor housing milled from solid Aluminum bar for precision motor alignment

- Maximum Air Pressure 90 PSI
- Includes Two Wrenches, Hose, and Air Fitting
- Smooth Quiet Operation

**Weight 7.5 Oz.
Part #60-405**



ENGRAVING PEN

Part #36-515



STYLUS

Part #36-518

NOVA® 90° GRINDER

20,000 RPM
Weight 1.2 Lbs.
Part #60-036



12,000 RPM
Weight 1.2 Lbs.
Part #60-036A

NOVA® STRAIGHT GRINDER



25,000 RPM
Weight .75 Lbs.
Part #60-035

- Maximum Air Pressure: 90 PSI
- Standard Equipment Includes:
 - 1/4" Erikson Collet
 - Two Collet Wrenches
- Capacity:
 - 1/2" Diameter Carbide Burr
 - 1" Mounted Wheel
 - 3" Cut off Wheel

- Features:
 - .3 HP
 - Air Inlet: 1/4-18 NPT
 - Rear Exhaust
 - Motor housing milled from solid bar for precision motor alignment.
 - Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life.
 - Smooth Quiet Operation

- Maximum Air Pressure: 90 PSI
- Standard Equipment Includes:
 - 1/4" Erikson Collet
 - Two Collet Wrenches
- Capacity:
 - 1/2" Diameter Carbide Burr
 - 1" Mounted Wheel
 - 3" Cut off Wheel

- Features:
 - .3 HP
 - Air Inlet: 1/4-18 NPT
 - Rear Exhaust
 - Motor housing milled from solid bar for precision motor alignment.
 - Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life.
 - Smooth Quiet Operation

NOVA® 3 1/2" EXTENDED LONG REACH GRINDER



25,000 RPM
Weight: 1.3 Lbs.
Part #60-035B

NOVA® 5 1/2" EXTENDED LONG REACH GRINDER



25,000 RPM
Weight: 1.5 Lbs.
Part #60-035C

- Maximum Air Pressure: 90 PSI
- Standard Equipment Includes:
 - 1/4" Erikson Collet
 - Two Collet Wrenches
- Capacity:
 - 1/2" Diameter Carbide Burr
 - 1" Mounted Wheel
 - 3" Cut off Wheel

- Features:
 - .3 HP
 - Air Inlet: 1/4-18 NPT
 - Rear Exhaust
 - Motor housing milled from solid bar for precision motor alignment.
 - Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life.
 - Smooth Quiet Operation

- Maximum Air Pressure: 90 PSI
- Standard Equipment Includes:
 - 1/4" Erikson Collet
 - Two Collet Wrenches
- Capacity:
 - 1/2" Diameter Carbide Burr
 - 1" Mounted Wheel
 - 3" Cut off Wheel

- Features:
 - .3 HP
 - Air Inlet: 1/4-18 NPT
 - Rear Exhaust
 - Motor housing milled from solid bar for precision motor alignment.
 - Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life.
 - Smooth Quiet Operation



DECIMAL EQUIVALENT CHART

DRILL SIZE	MM	DECIMAL INCHES	DRILL SIZE	MM	DECIMAL INCHES	DRILL SIZE	MM	DECIMAL INCHES	DRILL SIZE	MM	DECIMAL INCHES
*	0.10	0.0039	45	2.08	0.0820	5	5.22	0.2055	7/16	11.11	0.4375
*	0.20	0.0079	44	2.18	0.0860	4	5.31	0.2090	29/64	11.51	0.4531
*	0.25	0.0098	43	2.26	0.0890	3	5.41	0.2130	15/32	11.91	0.4688
*	0.30	0.0118	42	2.37	0.0935	7/32	5.56	0.2188	*	12.00	0.4724
80	0.34	0.0135	3/32	2.38	0.0938	2	5.61	0.2210	31/64	12.30	0.4844
79	0.37	0.0145	41	2.44	0.0960	1	5.79	0.2280	1/2	12.70	0.5000
1/64	0.40	0.0156	40	2.50	0.0980	A	5.94	0.2340	*	13.00	0.5118
78	0.41	0.0160	39	2.53	0.0995	15/64	5.95	0.2344	33/64	13.10	0.5156
77	0.46	0.0180	38	2.58	0.1015	*	6.00	0.2362	17/32	13.49	0.5312
*	0.50	0.0197	37	2.64	0.1040	B	6.05	0.2380	35/64	13.89	0.5469
76	0.51	0.0200	36	2.71	0.1065	C	6.15	0.2420	*	14.00	0.5512
75	0.53	0.0210	7/64	2.78	0.1094	D	6.25	0.2460	9/16	14.29	0.5625
74	0.57	0.0225	35	2.79	0.1100	1/4	6.35	0.2500	37/64	14.68	0.5781
*	0.60	0.0236	34	2.82	0.1110	E	6.35	0.2500	*	15.00	0.5906
73	0.61	0.0240	33	2.87	0.1130	F	6.53	0.2570	19/32	15.08	0.5938
72	0.64	0.0250	32	2.95	0.1160	G	6.63	0.2610	39/64	15.48	0.6094
71	0.66	0.0260	*	3.00	0.1181	17/64	6.75	0.2656	5/8	15.88	0.6250
*	0.70	0.0276	31	3.05	0.1200	H	6.76	0.2660	*	16.00	0.6299
70	0.71	0.0280	1/8	3.18	0.1250	I	6.91	0.2720	41/64	16.27	0.6406
69	0.74	0.0292	30	3.26	0.1285	*	7.00	0.2756	21/32	16.67	0.6562
*	0.75	0.0295	29	3.45	0.1360	J	7.04	0.2770	*	17.00	0.6693
68	0.79	0.0310	28	3.57	0.1405	K	7.14	0.2810	43/64	17.07	0.6719
1/32	0.79	0.0312	9/64	3.57	0.1406	9/32	7.14	0.2812	11/16	17.46	0.6875
*	0.80	0.0315	27	3.66	0.1440	L	7.37	0.2900	45/64	17.86	0.7031
67	0.81	0.0320	26	3.73	0.1470	M	7.49	0.2950	*	18.00	0.7087
66	0.84	0.0330	25	3.80	0.1495	19/64	7.54	0.2969	23/32	18.26	0.7188
65	0.89	0.0350	24	3.86	0.1520	N	7.67	0.3020	47/64	18.65	0.7344
*	0.90	0.0354	23	3.91	0.1540	5/16	7.94	0.3125	*	19.00	0.7480
64	0.91	0.0360	5/32	3.97	0.1562	*	8.00	0.3150	3/4	19.05	0.7500
63	0.94	0.0370	22	3.99	0.1570	O	8.03	0.3160	49/64	19.45	0.7656
62	0.97	0.0380	*	4.00	0.1575	P	8.20	0.3230	25/32	19.84	0.7812
61	0.99	0.0390	21	4.04	0.1590	21/64	8.33	0.3281	*	20.00	0.7874
*	1.00	0.0394	20	4.09	0.1610	Q	8.43	0.3320	51/64	20.24	0.7969
60	1.02	0.0400	19	4.22	0.1660	R	8.61	0.3390	13/16	20.64	0.8125
59	1.04	0.0410	18	4.31	0.1695	11/32	8.73	0.3438	*	21.00	0.8268
58	1.07	0.0420	11/64	4.37	0.1719	S	8.84	0.3480	53/64	21.03	0.8281
57	1.09	0.0430	17	4.39	0.1730	*	9.00	0.3543	27/32	21.43	0.8438
56	1.18	0.0465	16	4.50	0.1770	T	9.09	0.3580	55/64	21.84	0.8594
3/64	1.19	0.0469	15	4.57	0.1800	23/64	9.13	0.3594	*	22.00	0.8661
55	1.32	0.0520	14	4.62	0.1820	U	9.35	0.3680	7/8	22.23	0.8750
54	1.40	0.0550	13	4.70	0.1850	3/8	9.53	0.3750	57/64	22.62	0.8906
53	1.51	0.0595	3/16	4.76	0.1875	V	9.56	0.3770	*	23.00	0.9055
1/16	1.59	0.0625	12	4.80	0.1890	W	9.80	0.3860	29/32	23.02	0.9062
52	1.61	0.0635	11	4.85	0.1910	25/64	9.92	0.3906	59/64	23.42	0.9219
51	1.70	0.0670	10	4.91	0.1935	*	10.00	0.3937	15/16	23.81	0.9375
50	1.78	0.0700	9	4.98	0.1960	X	10.08	0.3970	*	24.00	0.9449
49	1.85	0.0730	*	5.00	0.1969	Y	10.26	0.4040	61/64	24.21	0.9531
48	1.93	0.0760	8	5.05	0.1990	13/32	10.32	0.4062	31/32	24.61	0.9688
5/64	1.98	0.0781	7	5.11	0.2010	Z	10.49	0.4130	*	25.00	0.9843
47	1.99	0.0785	13/64	5.16	0.2031	27/64	10.72	0.4219	63/64	25.00	0.9844
*	2.00	0.0787	6	5.18	0.2040	*	11.00	0.4331	1"	25.40	1.0000
46	2.06	0.0810				1.0000					

BUILD YOUR OWN TOOL KIT

NOVA® PNEUMATIC TOOLS - QUALITY TOOLS FOR ALL YOUR CUTTING NEEDS



Pan American Tool's standard and compact NOVA® tool system lets you design just the right tool kit you want and need. Flexibility enables you to add different heads in the future. All NOVA® kits come with a one year warranty.

COMPACT NOVA SYSTEM KIT (pg. 120)

Specify Motor Housings:

.3HP 850 RPM

.3HP 3000 RPM

.3HP 6000 RPM

.5HP 3200 RPM

With your choice of 6 attachments

STANDARD NOVA SYSTEM KIT (pg. 112)

Specify Motor Housings:

.3HP 2800 RPM

.3HP 5000 RPM

.5HP 3200 RPM

With your choice of 10 attachments



Cobalt Jobber Drills • Reamers • Nova® Pneumatic Tools
Clecos • Taps • Surface Conditioning Discs • Drill Stops
Carbide Burs • Threaded Shank Drills • Rivet Shavers
Hollow Cutters • Taper Routers • Micro-Stop Cages
Double Margin Drills • 6" and 12" Drills • Countersinks
Screw Driver Bits • Counterbores • Brad Point Drills
Drill Reamers • Dagger Drills • Screw Machine Drills
Paint Cutters • Carbide Drills • Aerospace Taps
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Pan American Tool Corporation

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