

PAN AMERICAN TOOL CORPORATION

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



2022



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: ØPFP1



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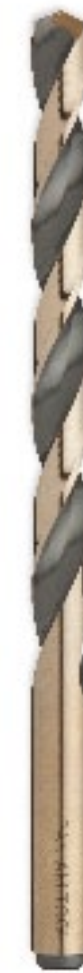
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COBALT JOBBER DRILLS

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

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.

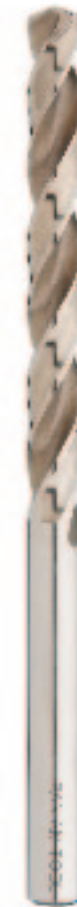
With all these features incorporated in this double margin drill, it is excellent for hand drilling.

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

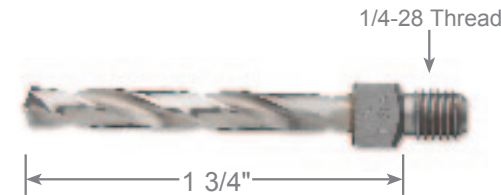
PART NUMBER	DECIMAL EQUIVALENT INCHES	PILOT DIAMETER	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PILOT LENGTH INCHES	PIECES PER PACKAGE
13-400	.2000	.1870	2-7/16	3-5/8	1/4	6
13-410	.2158	.2000	2-5/8	3-3/4	1/4	6
13-420	.2314	.2158	2-3/4	4	1/4	6
13-430	.2470	.2314	2-3/4	4	5/16	6
13-440	.2621	.2470	2-7/8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

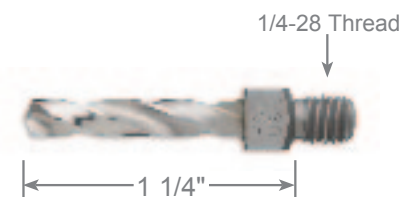
COBALT THREADED SHANK DOUBLE MARGIN DRILLS

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

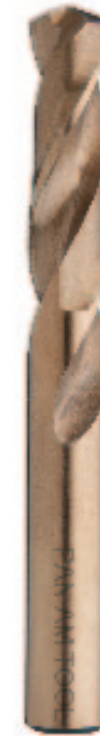


DRILL SIZE MM	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES	PIECES PER PACKAGE
5.60	08-560	.2205	2-5/8	3-7/8	10
5.70	08-570	.2244	2-5/8	3-7/8	10
5.80	08-580	.2283	2-5/8	3-7/8	10
5.90	08-590	.2323	2-5/8	3-7/8	10
6.00	08-600	.2362	2-3/4	4	10
6.10	08-610	.2402	2-3/4	4	10
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
#47	34-047	.0785	1	2	12
3/32"	30-353	.0938	1-1/4	2-1/4	12
#40	34-040	.0980	1-3/8	2-3/8	12
#35	34-035	.1100	1-1/2	2-5/8	12
1/8"	30-386	.1250	1-5/8	2-3/4	12
#30	34-030	.1285	1-5/8	2-3/4	12
#27	34-027	.1440	1-7/8	3	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 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 REAMERS

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

THREADED SHANK ADAPTER CARBIDE DRILLS - SHORT

- For strand free, accurate holes in laminate composite and graphite material

SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	OVERALL LENGTH INCHES
40	52-876	.0980	1
30	52-877	.1285	1-1/4
27	52-878	.1440	1-1/4
21	52-879	.1590	1-1/4
19	52-880	.1660	1-1/4
3/16"	52-884	.1875	1-1/4
11	52-881	.1910	1-1/4
10	52-882	.1935	1-1/4
1/4"	52-885	.2500	1-1/4
G	54-379	.2610	1-1/4
5/16"	54-378	.3125	1-1/4



OTHER LENGTHS AND THREAD SIZES AVAILABLE PRICE ON REQUEST

THREADED SHANK ADAPTER CARBIDE DRILLS - LONG

- For strand free, accurate holes in laminate composite and graphite material

SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	OVERALL LENGTH INCHES
40	55-000	.0980	2-1/8
30	55-001	.1285	2-1/8
21	54-562	.1590	2-1/8
20	55-002	.1610	2-1/8
10	55-003	.1935	2-1/8



OTHER LENGTHS AND THREAD SIZES AVAILABLE PRICE ON REQUEST

CARBIDE EXTENSION DRILLS - 6" OVERALL LENGTH

- Precision Ground Carbide Drills Are Designed for High Feed Rates With Good Chip Disposal
- Recommended For Use On Cast Iron, Aluminum, Plastic, Composites, Nonferrous Alloys And Other Easily Machined Materials.
- 118° Point Angle
- Individually Packaged Carbide Drills



DRILL SIZE	PART NUMBER	DECIMAL EQUIVALENT INCHES	FLUTE LENGTH INCHES	OVERALL LENGTH INCHES
10	40-046	.1935	1-5/8	6
21	50-075	.1590	1-3/8	6
30	49-420	.1285	1-1/4	6
40	43-536	.0980	1	6

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

KNURLED CLECO 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 ROUTERS

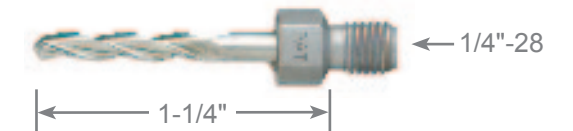
High Speed R.H. Helix, R.H. Cut Taper 1/4 Per Foot: Two-flute Taper routers are used for cutting, trimming and routing around cowling, door sills and plexi-glass, trimming on wing terminals in bulkheads and ribs on fuselage. The advantages over taper pin reamers and drills are the ability to cut without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

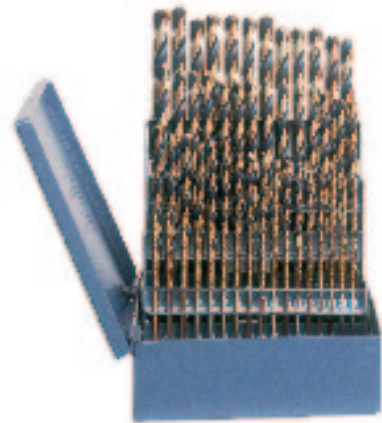
Titanium Nitride Coated: Titanium Nitride Coated bits last up to 6 times longer than non-coated high speed steel bits. They penetrate 75% faster and require 25% less effort to use.



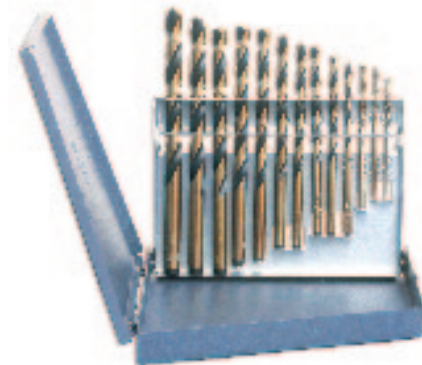
SIZE	PART NUMBER	NO. OF HOLE SIZES	HOLE SIZES	SHANK SIZE	STEP DEPTH
1	38-301TiN	13	1/8 to 1/2	1/4	1/8
2	38-302TiN	6	3/16 to 1/2	1/4	3/8
3	38-303TiN	9	1/4 to 3/4	3/8	1/8
4	38-304TiN	12	3/16 to 7/8	3/8	1/8
1, 2, 3, 4	38-310TiN	Complete Set - One of all 4 sizes in a case.			

COBALT DRILL SETS

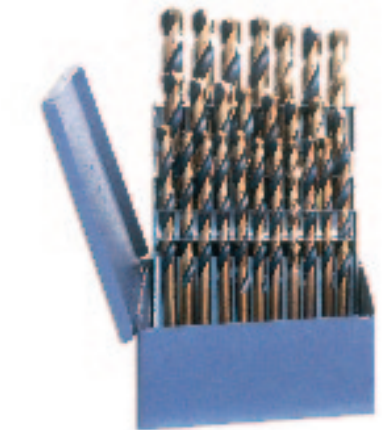
Cobalt High Speed Steel Jobber Length Drills are used for drilling in tough high tensile strength materials like stainless steel, titanium and inconel. Heavy duty flute construction and 135° split points.



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



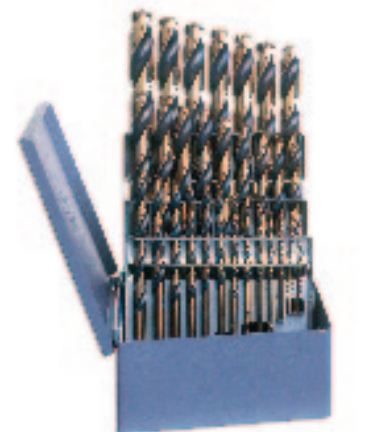
**13 Piece
Fractional Set**
1/16"- 1/4" by 64ths
Part #16-410



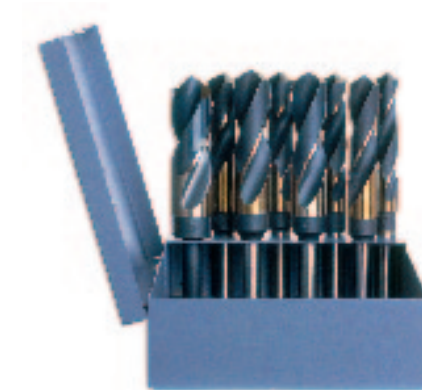
**26 Piece
Letter Set**
A thru Z
Part #16-403



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



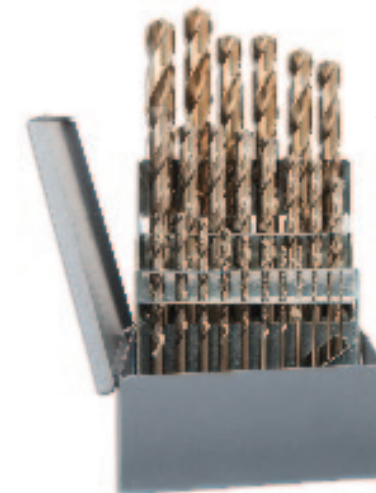
**29 Piece
Fractional Set**
1/16"- 1/2" by 64ths
Part #16-402



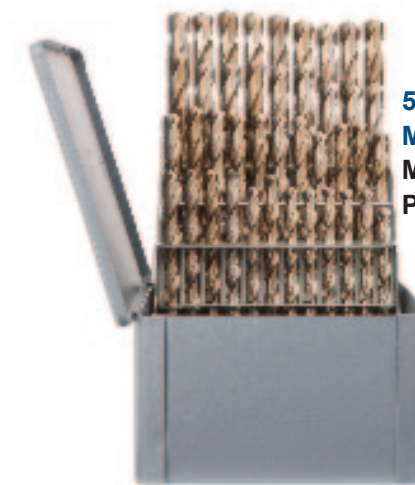
**8 Piece
Silver & Deming Set**
9/16"- 1" by 16ths
Part #16-404

COBALT DRILL SETS

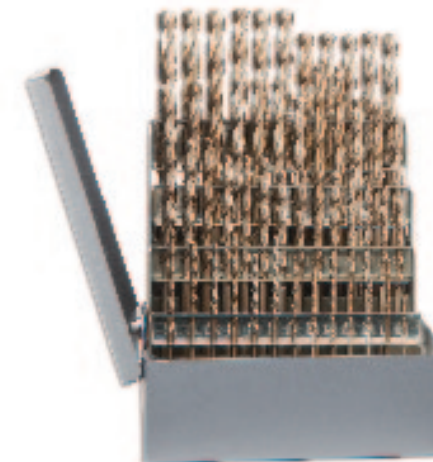
Cobalt High Speed Steel Jobber Length Drills are used for drilling in tough high tensile strength materials like stainless steel, titanium and inconel. Heavy duty flute construction and 135° split points.



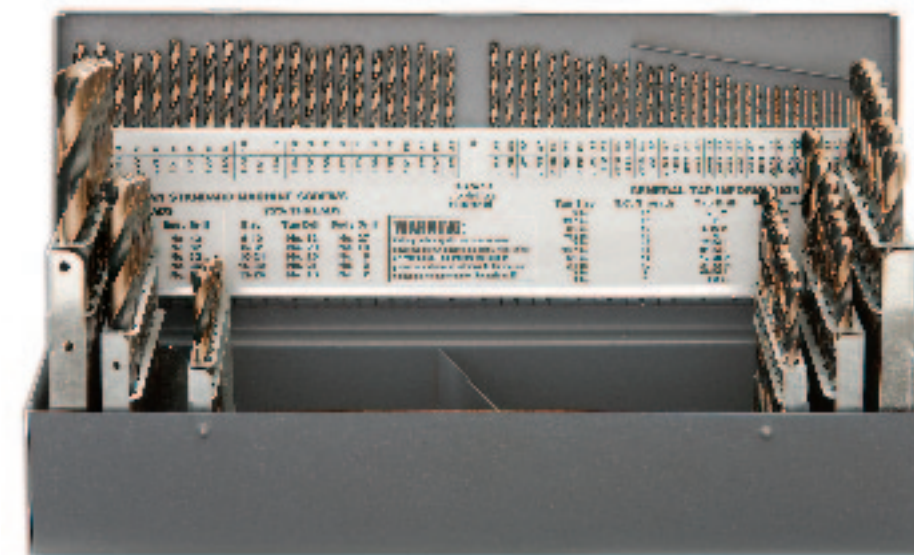
**25 Piece
Metric Drill Set**
M1.00 - M13.00 by .5mm
Part #16-420



**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

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

END MILLS - STANDARD - 2 FLUTE REGULAR LENGTH - SINGLE END

- Uncoated and TiALN Coated 2 Flute Standard End Mills
- 2 Flute geometry allows for maximum chip removal and roughing capabilities
- Single End
- Standard flute lengths for general all purpose milling
- Solid C-2 grade premium sub-micron grain carbide with 10% cobalt
- Center Cutting
- Right Hand Cut / Right Hand Spiral
- Diameter Tolerance +0.000/-0.002"
- Shank Tolerance +0.0000/-0.0005"
- Applications - Slotting, pocketing and plunging
- Materials- Cast iron, non-ferrous metals, plastics and abrasive materials



Uncoated TiALN Coated

UNCOATED

DIAMETER INCHES	PART NUMBER	LENGTH OF CUT INCHES	SHANK SIZE INCHES	OVERALL LENGTH INCHES
1/8	53-000	1/2	1/8	1-1/2
3/16	53-001	5/8	3/16	2
1/4	53-002	3/4	1/4	2-1/2
5/16	53-003	13/16	5/16	2-1/2
3/8	53-004	1	3/8	2-1/2
7/16	53-005	1	7/16	2-3/4
1/2	53-006	1	1/2	3

TiALN COATED

DIAMETER INCHES	PART NUMBER	LENGTH OF CUT INCHES	SHANK SIZE INCHES	OVERALL LENGTH INCHES
1/8	53-000C	1/2	1/8	1-1/2
3/16	53-001C	5/8	3/16	2
1/4	53-002C	3/4	1/4	2-1/2
5/16	53-003C	13/16	5/16	2-1/2
3/8	53-004C	1	3/8	2-1/2
7/16	53-005C	1	7/16	2-3/4
1/2	53-006C	1	1/2	3

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

END MILLS - STANDARD - 4 FLUTE REGULAR LENGTH - SINGLE END

- Uncoated and TiALN Coated 4 Flute Standard End Mills
- 4 Flute geometry allows for maximum chip removal and roughing capabilities
- Single End
- Standard flute lengths for general all purpose milling
- Solid C-2 grade premium sub-micron grain carbide with 10% cobalt
- Center Cutting
- Right Hand Cut / Right Hand Spiral
- Diameter Tolerance +0.000/-0.002"
- Shank Tolerance +0.0000/-0.0005"
- Applications - Slotting, pocketing and plunging
- Materials- Cast iron, non-ferrous metals, plastics and abrasive materials



Uncoated TiALN Coated

UNCOATED

DIAMETER INCHES	PART NUMBER	LENGTH OF CUT INCHES	SHANK SIZE INCHES	OVERALL LENGTH INCHES
1/8	53-100	1/2	1/8	1-1/2
3/16	53-101	5/8	3/16	2
1/4	53-102	3/4	1/4	2-1/2
5/16	53-103	13/16	5/16	2-1/2
3/8	53-104	1	3/8	2-1/2
7/16	53-105	1	7/16	2-3/4
1/2	53-106	1	1/2	3

TiALN COATED

DIAMETER INCHES	PART NUMBER	LENGTH OF CUT INCHES	SHANK SIZE INCHES	OVERALL LENGTH INCHES
1/8	53-100C	1/2	1/8	1-1/2
3/16	53-101C	5/8	3/16	2
1/4	53-102C	3/4	1/4	2-1/2
5/16	53-103C	13/16	5/16	2-1/2
3/8	53-104C	1	3/8	2-1/2
7/16	53-105C	1	7/16	2-3/4
1/2	53-106C	1	1/2	3

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



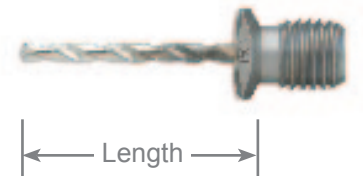
Very Stubby Series Extra Long Series

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

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 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

SIZE	DECIMAL EQUIVALENT INCHES	MILLIMETER EQUIVALENT	Stubby Series		Short Series		Long Series	
			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

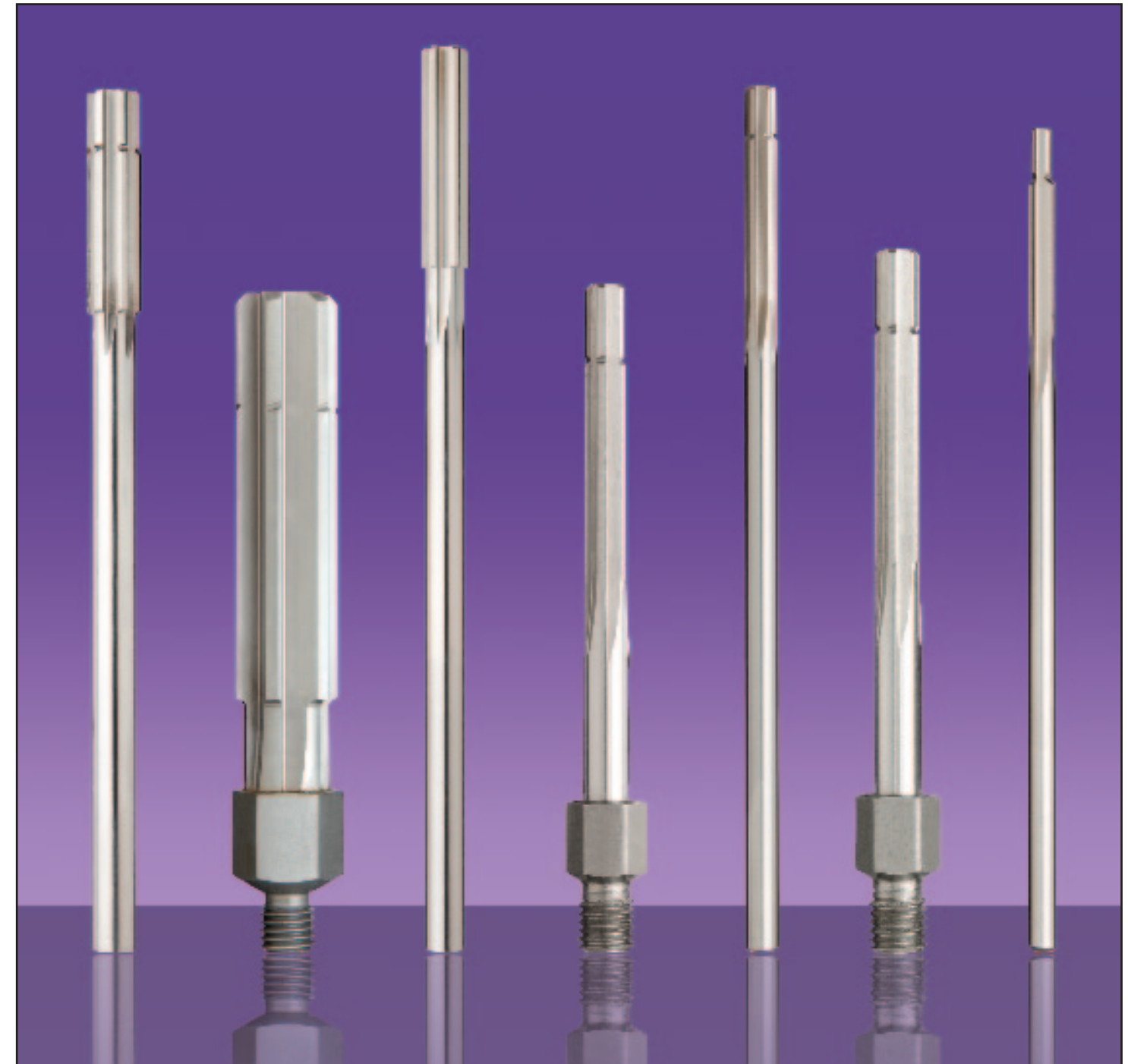
LETTER SIZES

SIZE	DECIMAL EQUIVALENT INCHES	MILLIMETER EQUIVALENT	Stubby Series		Short Series		Long Series	
			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	6.76	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

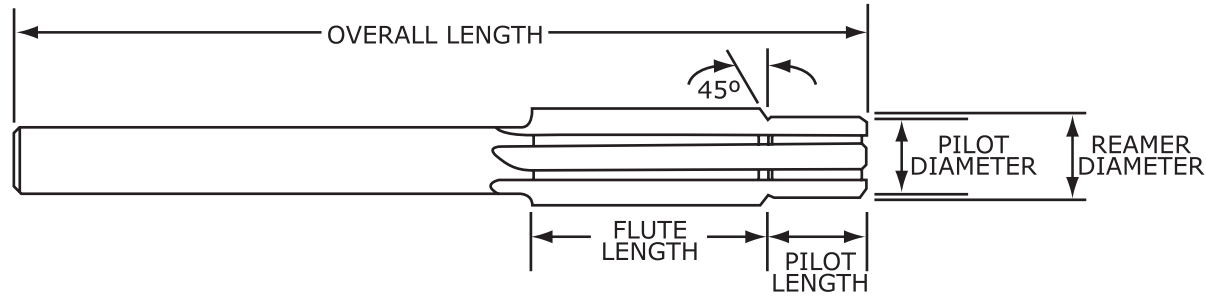
REAMERS

High Speed Steel Piloted Chucking Reamers	46 - 49
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High Speed Steel Chucking Reamer Sets	54



HIGH SPEED STEEL PILOTED CHUCKING REAMERS

Straight Shank, Straight Flute

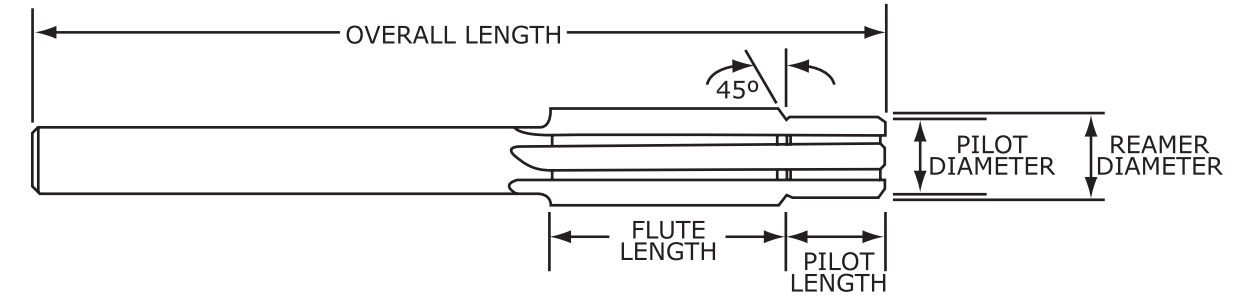


PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	FLUTES		PILOT LENGTH INCHES	OVERALL LENGTH INCHES
			NO.	LENGTH		
31-219	.1610	.1250	6	13/16"	5/16	4-1/2
33-737	.1850	.1600	6	13/16"	5/16	4-1/2
31-602	.1860	.1540	6	13/16"	5/16	4-1/2
33-090	.1870	.1600	6	13/16"	5/16	4-1/2
44-100	.1870	.1740	6	13/16"	5/16	4-1/2
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

HIGH SPEED STEEL PILOTED CHUCKING REAMERS

Straight Shank, Straight Flute

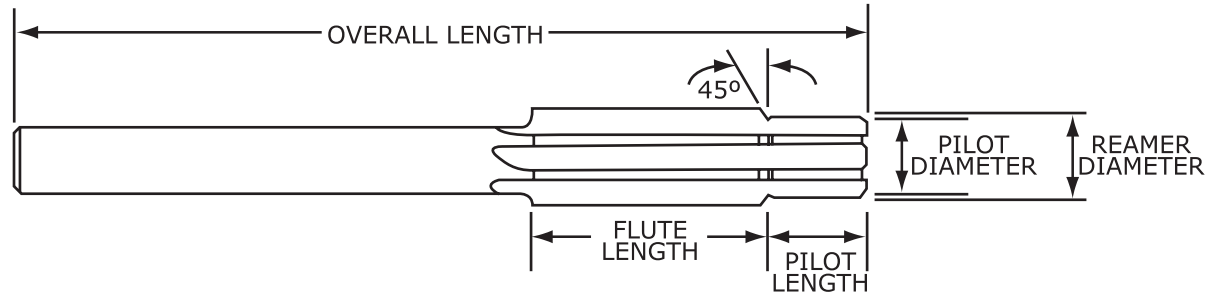


PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	FLUTES		PILOT LENGTH INCHES	OVERALL LENGTH INCHES
			NO.	LENGTH		
30-378	.2780	.2620	6	1-1/8"	3/8	6
44-400	.2782	.2621	6	1-1/8"	3/8	6
30-368	.2810	.2670	6	1-1/8"	3/8	6
44-320	.2812	.2656	6	1-1/8"	3/8	6
99-701	.2910	.2755	6	1-1/8"	3/8	6
31-601	.2920	.2770	6	1-1/8"	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

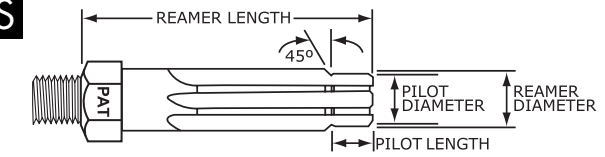


PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	FLUTES		PILOT LENGTH INCHES	OVERALL LENGTH INCHES
			NO.	LENGTH		
99-709	.4160	.4005	6	1-1/4"	1/2	7
44-660	.4219	.4062	6	1-1/4"	1/2	7
99-710	.4325	.4160	6	1-1/4"	1/2	7
99-719	.4375	.4219	6	1-1/4"	1/2	7
99-711	.4485	.4325	6	1-1/4"	1/2	7
99-720	.4531	.4375	6	1-1/4"	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

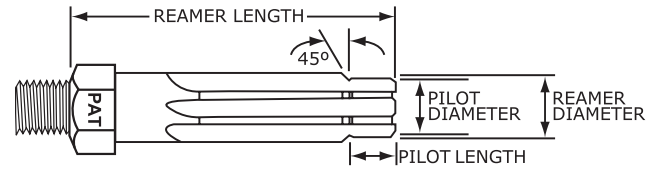


PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	PILOT LENGTH INCHES	OVERALL LENGTH INCHES	SHANK THREAD
45-219	.1610	.1250	5/16	2-1/2	1/4-28
45-080	.1850	.1600	5/16	2-1/2	1/4-28
45-602	.1860	.1540	5/16	2-1/2	1/4-28
45-090	.1870	.1600	5/16	2-1/2	1/4-28
45-100	.1870	.1740	5/16	2-1/2	1/4-28
45-410A	.1875	.1600	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

HIGH SPEED STEEL PILOTED THREADED REAMERS

1/4-28 Threaded Shank, Straight Flute

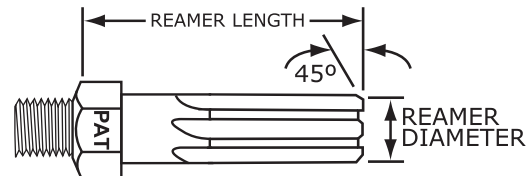


PART NUMBER	REAMER DIAMETER	PILOT DIAMETER	PILOT LENGTH INCHES	OVERALL LENGTH INCHES	SHANK THREAD
45-409	.3710	.3550	1/2	2-1/2	1/4-28
45-630	.3750	.3594	1/2	2-1/2	1/4-28
45-680	.3750	.3494	1/2	2-1/2	1/4-28
45-640	.3906	.3750	1/2	2-1/2	1/4-28
45-708	.4005	.3850	1/2	2-1/2	1/4-28
45-603	.4010	.3860	1/2	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

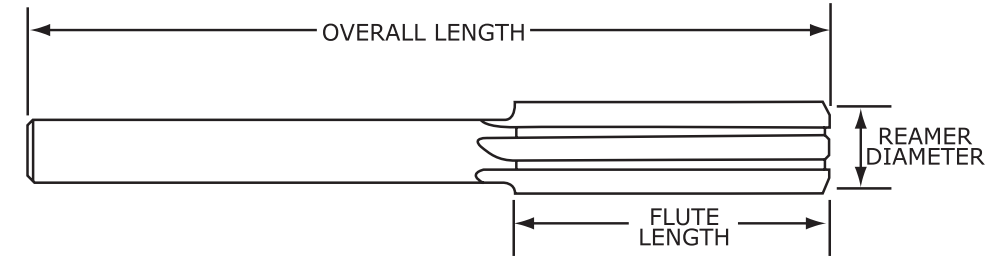


PART NUMBER	REAMER DIAMETER	REAMER LENGTH INCHES	SHANK THREAD
31-166	.1935 (#10)	5/8	1/4-28
36-163	.1910 (#11)	5/8	1/4-28
36-161	.1850 (#13)	5/8	1/4-28
31-167	.1590 (#21)	5/8	1/4-28
31-090	.1285 (#30)	5/8	1/4-28
31-208	.2500 (1/4")	5/8	1/4-28
31-170	.1935 (#10)	1	1/4-28
36-164	.1910 (#11)	1	1/4-28
36-162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

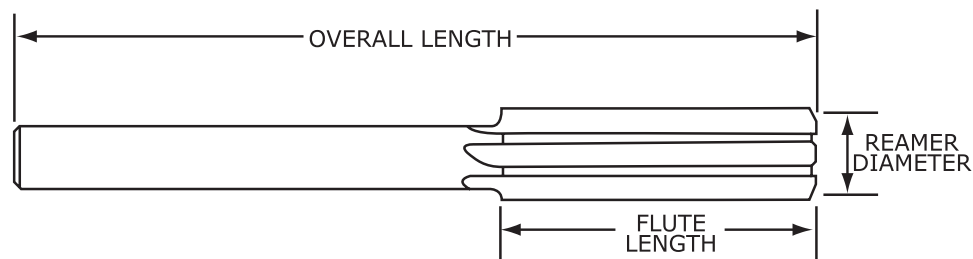


PART NUMBER	REAMER DIAMETER	DECIMAL EQUIVALENT	FLUTES		OVERALL LENGTH INCHES
			NO.	LENGTH	
47-060	#60	.0400	4	1/2"	2-1/2
47-059	#59	.0410	4	1/2"	2-1/2
47-058	#58	.0420	4	1/2"	2-1/2
47-057	#57	.0430	4	1/2"	2-1/2
47-056	#56	.0465	4	1/2"	2-1/2
47-055	#55	.0520	4	1/2"	2-1/2
47-054	#54	.0550	4	1/2"	2-1/2
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

HIGH SPEED STEEL STANDARD CHUCKING REAMERS

Straight Shank, Straight Flute - No Pilot

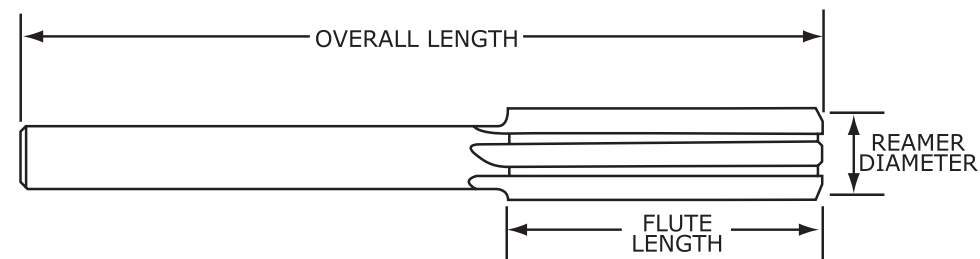


PART NUMBER	REAMER DIAMETER	DECIMAL EQUIVALENT	FLUTES		OVERALL LENGTH INCHES
			NO.	LENGTH	
47-035	#35	.1100	4	7/8"	3-1/2
47-034	#34	.1110	4	7/8"	3-1/2
47-033	#33	.1130	4	7/8"	3-1/2
47-032	#32	.1160	4	7/8"	3-1/2
47-031	#31	.1200	4	7/8"	3-1/2
47-065	1/8"	.1250	4	7/8"	3-1/2
47-030	#30	.1285	4	7/8"	3-1/2
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

HIGH SPEED STEEL STANDARD CHUCKING REAMERS

Straight Shank, Straight Flute - No Pilot

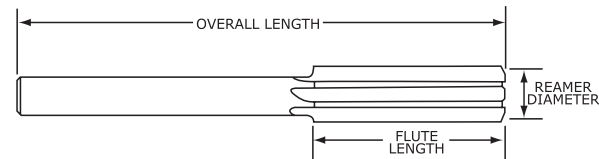


PART NUMBER	REAMER DIAMETER	DECIMAL EQUIVALENT	FLUTES		OVERALL LENGTH INCHES
			NO.	LENGTH	
47-007	#7	.2010	6	1-1/4"	5
47-070	13/64"	.2031	6	1-1/4"	5
47-006	#6	.2040	6	1-1/4"	5
47-005	#5	.2055	6	1-1/4"	5
47-004	#4	.2090	6	1-1/4"	5
47-003	#3	.2130	6	1-1/4"	5
47-071	7/32"	.2188	6	1-1/4"	5
47-002	#2	.2210	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

HIGH SPEED STEEL STANDARD CHUCKING REAMERS

Straight Shank, Straight Flute - No Pilot



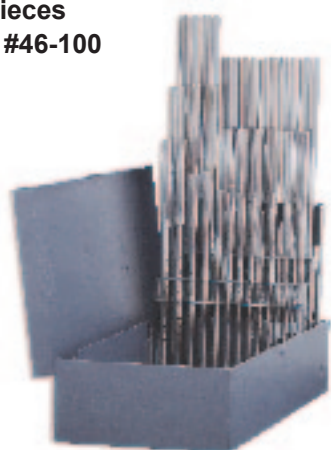
PART NUMBER	REAMER DIAMETER	DECIMAL EQUIVALENT	FLUTES		OVERALL LENGTH INCHES
			NO.	LENGTH	
47-110	"U"	.3680	6	1-3/4"	7
47-081	3/8"	.3750	6	1-3/4"	7
47-111	"V"	.3770	6	1-3/4"	7
47-112	"W"	.3860	6	1-3/4"	7
47-082	25/64"	.3906	6	1-3/4"	7
47-113	"X"	.3970	6	1-3/4"	7
47-114	"Y"	.4040	6	1-3/4"	7
47-083	13/32"	.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

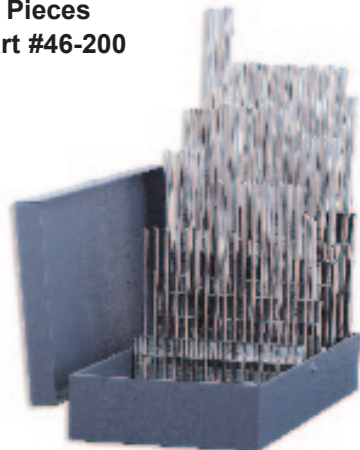
FRACTIONAL REAMERS

- 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



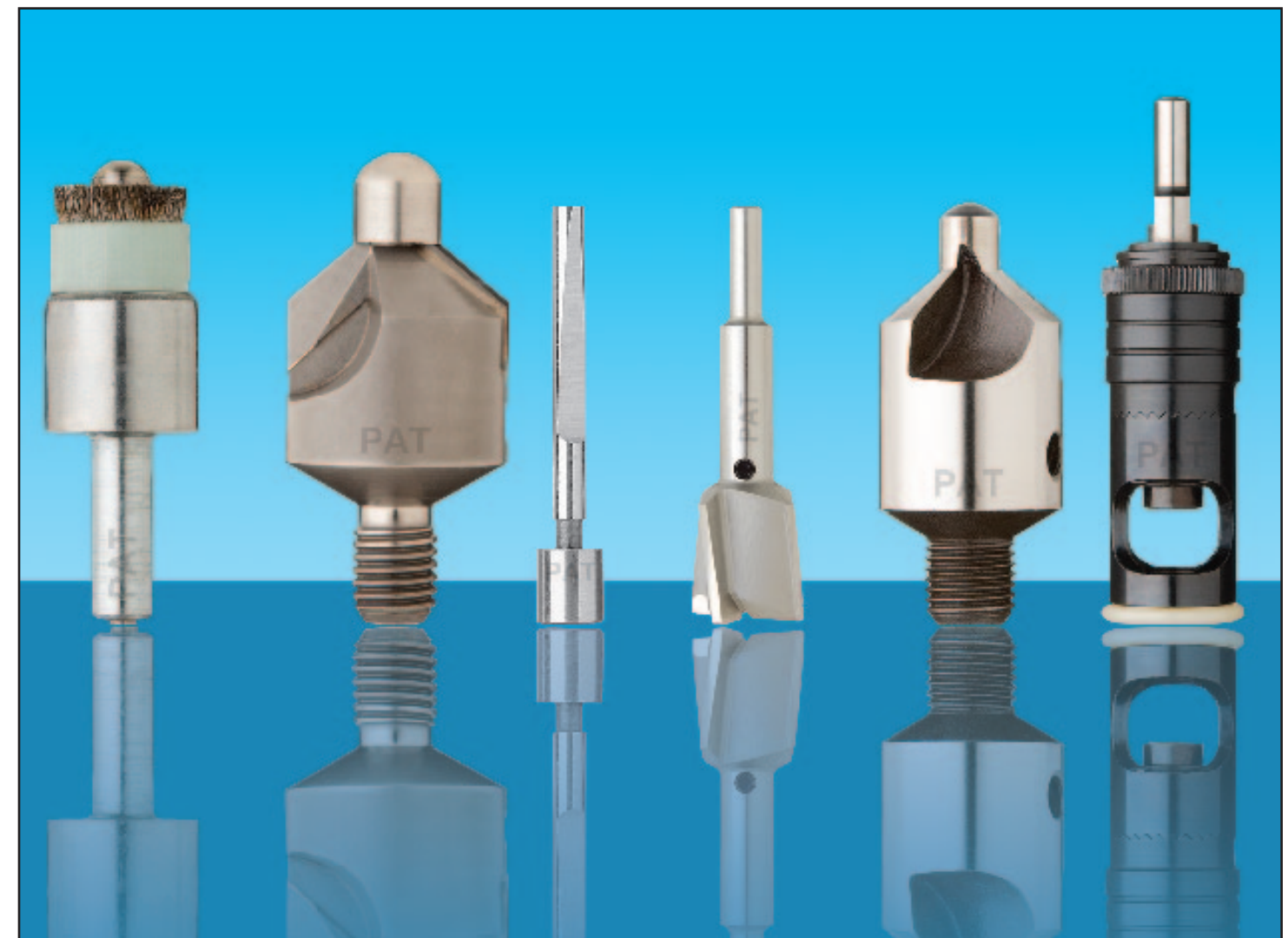
PART #46-400 • BUY ALL 3 SETS

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COUNTERSINKS

High Speed Steel Stop Countersinks.....	56 - 58
High Speed Steel Stop Countersinks 82° and 120°.....	59
Pilot Bonding Brushes.....	59
Carbide Tipped Stop Countersinks with Integral or Replaceable Pilot.....	60 - 61
Solid Carbide Stop Countersinks 100°.....	62
Threaded Shank Chatterless Countersinks.....	63
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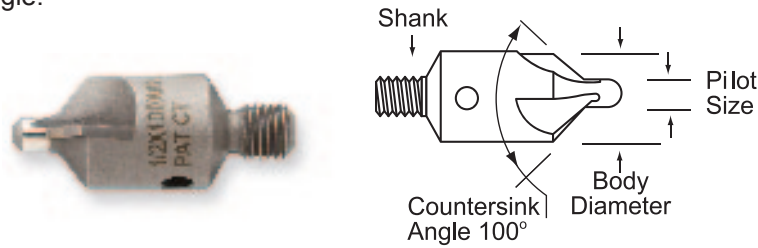
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HIGH SPEED STEEL STOP COUNTERSINKS

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

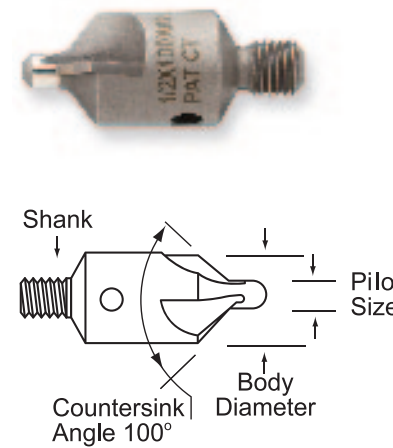
OTHER SIZES AVAILABLE, PRICE UPON REQUEST

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.

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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

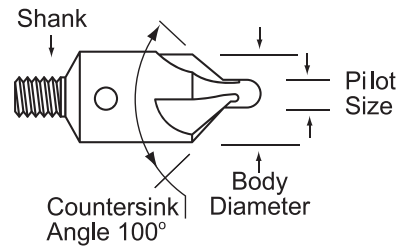
Three Flute, Integral Pilot, 1/4-28 Threaded Shank, 100°

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.



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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



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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

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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°

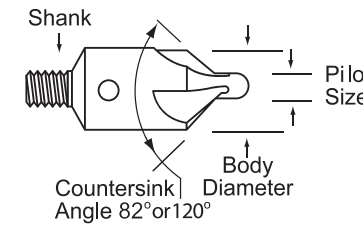
Three Flute, Integral Pilot, 1/4-28 Threaded Shank, 82° and 120°

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

130°
1/2

PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
33-053	#21	.1590	1/2	1/4-28
43-332	#10	.1935	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

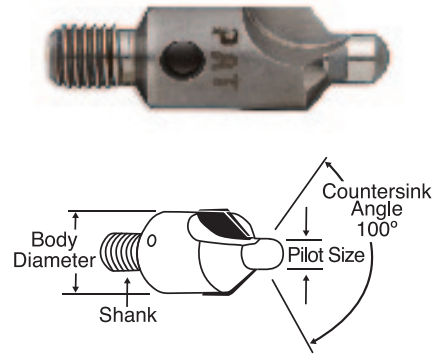
OTHER SIZES AVAILABLE, PRICE UPON REQUEST

CARBIDE TIPPED STOP COUNTERSINKS WITH INTEGRAL PILOT

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

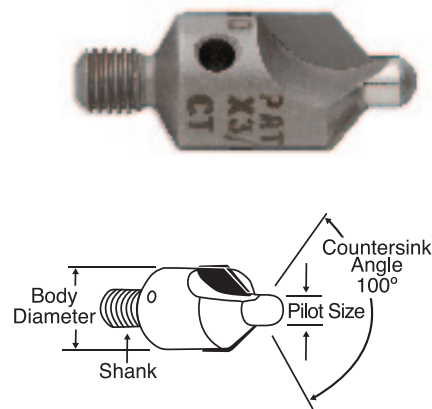
Carbide tipped countersinks are designed for cutting highly abrasive materials such as composites and difficult to machine materials where longer tool life is desired. The tool body is made of high-speed steel.

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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

1/2



PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	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

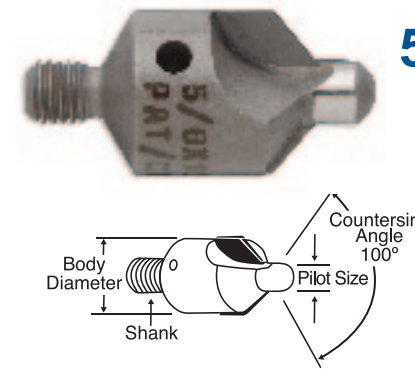
OTHER SIZES AVAILABLE, PRICE UPON REQUEST

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.

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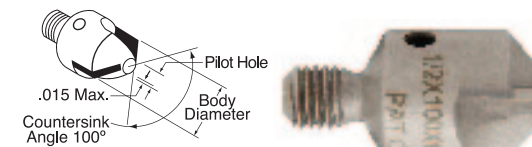


PART NUMBER	PILOT SIZE	DECIMAL EQUIVALENT INCHES	BODY DIAMETER INCHES	SHANK SIZE
36-563	#40	.0980	5/8	1/4-28
36-564	#30	.1280	5/8	1/4-28
36-565	#21	.1590	5/8	1/4-28
36-567	"D"	.2460	5/8	1/4-28
36-568	1/4	.2500	5/8	1/4-28
36-569	"G"	.2610	5/8	1/4-28
36-570	5/16	.3125	5/8	1/4-28
36-566	#10	.1930	5/8	1/4-28

CARBIDE TIPPED STOP COUNTERSINKS WITH REPLACEABLE PILOTS

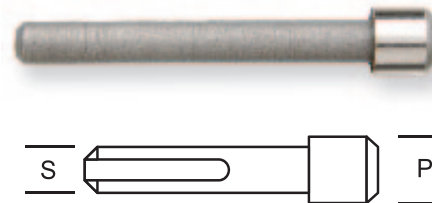
100° Countersink Angle, Replaceable Pilot, 1/4-28 Threaded Shank

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.



PART NUMBER	BODY DIAMETER	PILOT HOLE	NUMBER OF FLUTES	SHANK SIZE
15-000	3/8	3/32	2	1/4-28
15-001	1/2	3/32	2	1/4-28
15-002	5/8	1/8	2	1/4-28

PILOTS FOR CARBIDE TIPPED STOP COUNTERSINKS



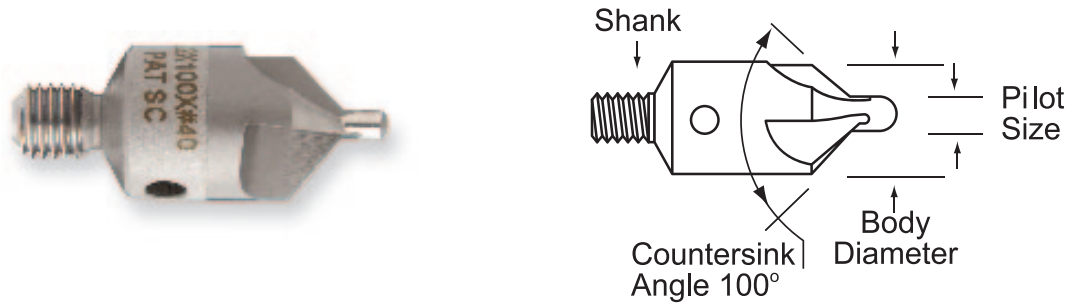
PART NUMBER	SHANK DIAMETER	PILOT SIZE
15-102	3/32	#30
15-103	3/32	#21
15-104	3/32	#10
15-105	3/32	#12
15-106	3/32	1/4
15-112	3/32	#13
15-123	3/32	"D"
15-126	3/32	"G"
15-127	3/32	#8
15-107	1/8	#30
15-108	1/8	#21
15-109	1/8	#12
15-110	1/8	#10
15-111	1/8	1/4

OTHER SIZES AVAILABLE, PRICE UPON REQUEST

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.



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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

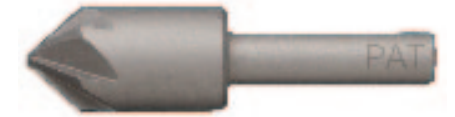
THREADED SHANK CHATTERLESS COUNTERSINKS

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



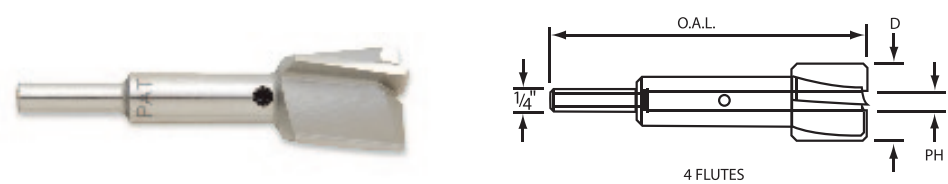
RIVET SHAVERS

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

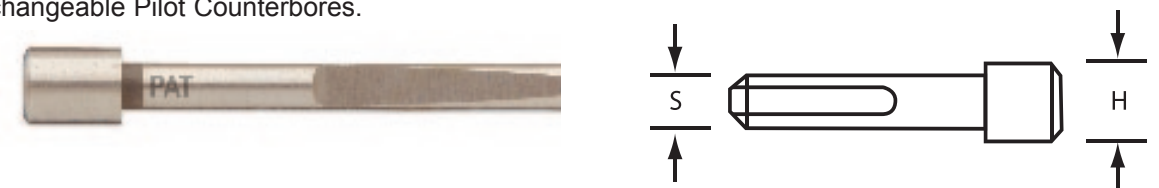
HIGH SPEED STEEL COUNTERBORES - NO RADIUS

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.

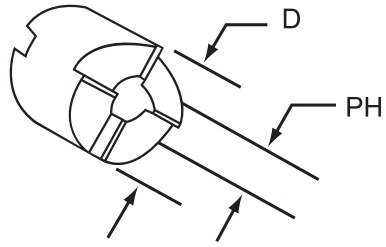


PART NUMBER	PILOT DIAMETER "H"	DECIMAL EQUIVALENT INCHES	SHANK DIAMETER INCHES "S"
18-419	#40	.0980	3/32
18-701	1/8	.1250	3/32
18-708	1/8	.1250	1/8
18-418	#30	.1285	3/32
18-420	#30	.1285	1/8
18-404	5/32	.1562	3/32
18-403	5/32	.1562	1/8
18-714	5/32	.1562	5/32
18-740	#21	.1590	1/8
18-407	#21	.1590	3/32
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

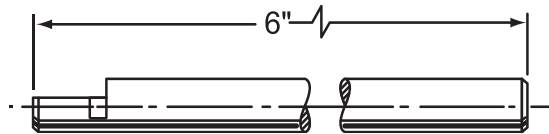
Reverse spotfacers are designed for use in restricted areas where conventional spotfacers cannot be used. All cutters furnished standard with 1/32" corner radius.



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

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 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

Part #90-018A Replacement Nylon Foot Piece

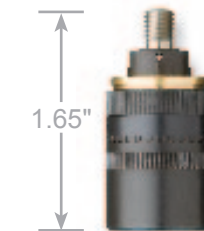


5/8 Capacity Countersink Cage With Nylon Footpiece

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

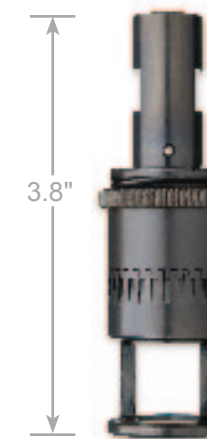
Part #90-018 Replacement Nylon Foot Piece



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



Micro-Stop Countersink Cage

Part #19-364 - Polished Foot Piece

Part #19-371- Nylon 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



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

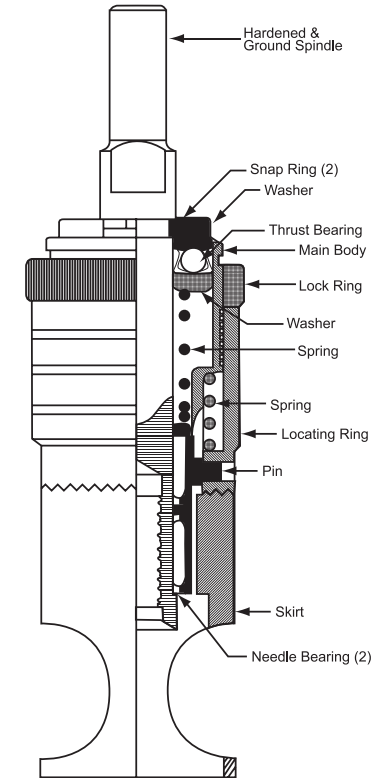
- Part #19-361**
- 1/4" Diameter Chucking Shank
 - 9/32" Shaft Travel
 - 1/2" Cutter Capacity
 - 1/4-28 Threaded Shaft with Polished Foot
 - Rated at 3,000 RPM

MICRO-STOP COUNTERSINK CAGES NEEDLE BEARING



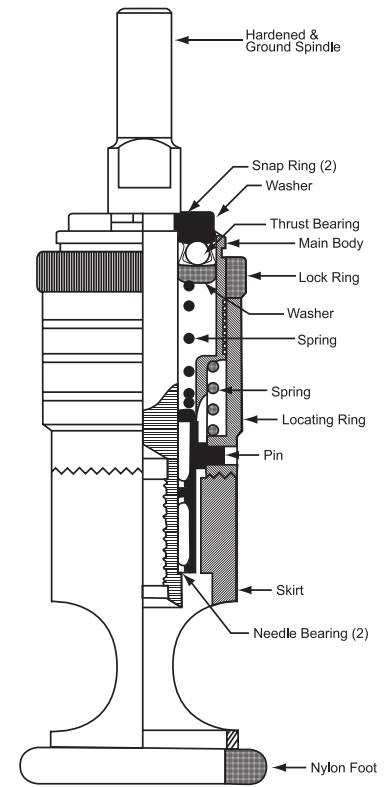
Needle Bearing Micro-Stop Countersink Cage

- 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



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



Part #90-018 Replacement Nylon Foot Piece

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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	255

X-SERIES WILL BE SUPPLIED UNLESS NON X-SERIES IS SPECIFIED, ACR BITS AVAILABLE PAGE 76

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 76

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

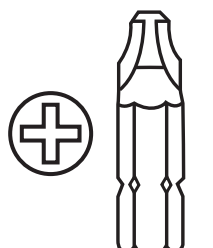
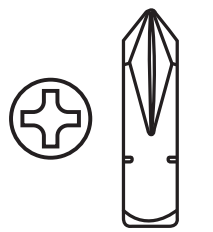
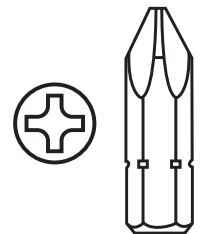
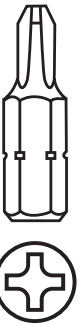
PHILLIPS INSERT BITS 5/16 SQUARE

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	1/4 HEX	4MM	25
BNAE #5	30-305	1-1/8		5MM	25
BNAE #6	30-306	1-1/8		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

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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"		6F-8R	1	.040	25
445-3X	29-703X	1/4"	1/4	8F-10R	1	.042	25
445-4X	29-704X	9/32"	HEX	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 76

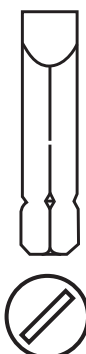
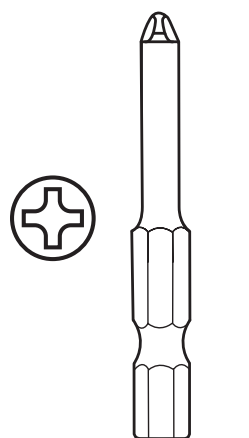
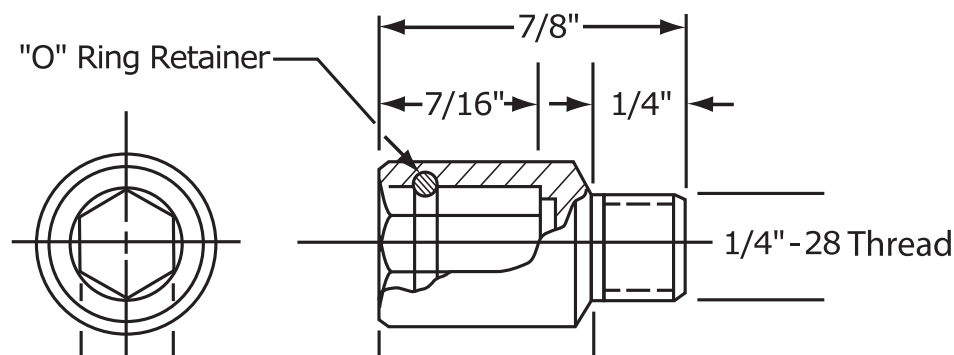
POWER SLOTTED BITS

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

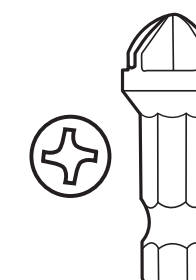
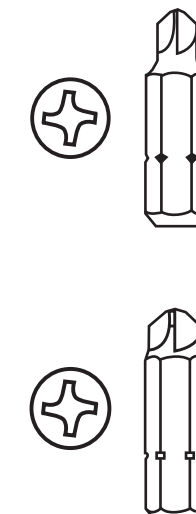
INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
212-0	28-700	1		0	25
212-1	28-701	1		1	25
212-2	28-702	1		2	25
212-3	28-703	1		3	25
212-4	28-704	1	1/4	4	25
212-5	28-705	1	HEX	5	25
212-6	28-706	1		6	25
212-8	28-708	1		8	25
212-10	28-710	1		10	25
212-1/4	28-711	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 77

TORQ-SET® POWER BITS

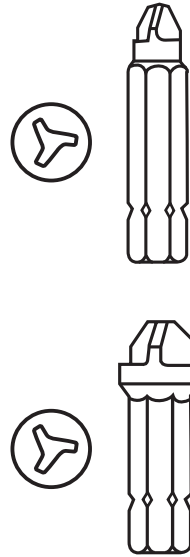
INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
170-0	28-750	1-1/4		0	25
170-1	28-751	1-1/4		1	25
170-2	28-752	1-1/4		2	25
170-3	28-753	1-1/4		3	25
170-4	28-754	1-1/4	1/4	4	25
170-5	28-755	1-1/4	HEX	5	25
170-6	28-756	1-1/4		6	25
170-8	28-758	1-1/4		8	25
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 77

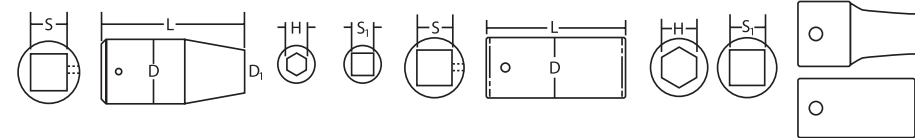


TRI-WING® INSERT BITS

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



INSERT BIT HOLDERS

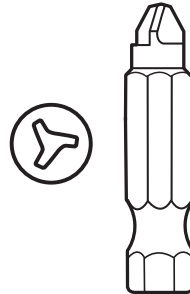


INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	DRIVE SIZE	HEX SIZE	PIECES PER PACKAGE
825	29-400	1	1/4 SQUARE	1/4	1
838	29-401	1-1/4	3/8 SQUARE	1/4	1
835	29-402	1-1/4	3/8 SQUARE	5/16	1
858	29-404	1-1/2	1/2 SQUARE	1/4	1
855	29-405	1-3/4	1/2 SQUARE	5/16	1
490	30-619	2-1/8	1/4 HEX	1/4 HEX	1
490-MAG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



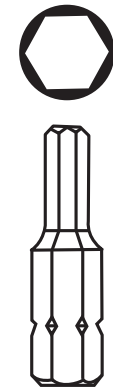
TRI-WING® POWER BITS

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

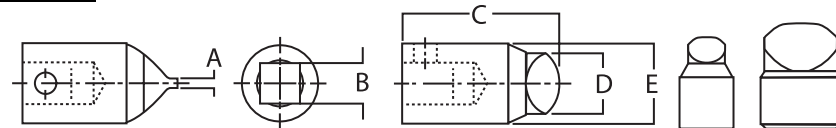


HEX SOCKET HEAD INSERT BITS

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



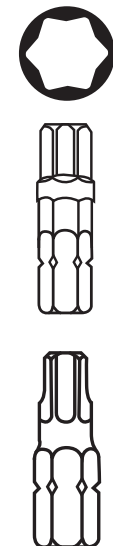
HI-TORQUE® DRIVERS



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

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



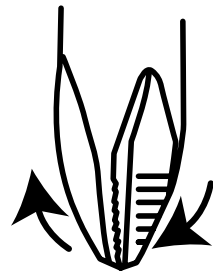
ANTI-CAMOUT RIBS



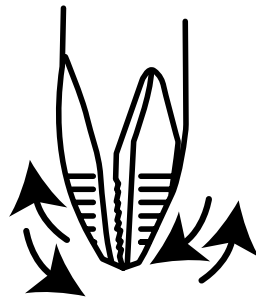
For Removal



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	1/4 HEX	2	25
	212-3ACR	28-703ACR	1		3	25
	212-4ACR	28-704ACR	1		4	25
	212-5ACR	28-705ACR	1		5	25
	212-6ACR	28-706ACR	1		6	25
	212-8ACR	28-708ACR	1		8	25
	212-10ACR	28-710ACR	1		10	25
	212-1/4ACR	28-711ACR	1		1/4	25
5/16 HEX INSERT	212-1/4A-ACR	28-714ACR	1-1/4	5/16 HEX	1/4	25

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST

TORQ-SET® POWER BITS - ACR

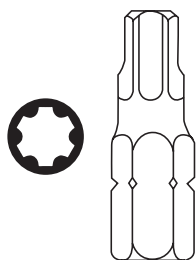
DESCRIPTION	INDUSTRY NUMBER	PAT PART NUMBER	OVERALL LENGTH INCHES	SHANK SIZE	POINT SIZE	PIECES PER PACKAGE
1/4 HEX INSERT	170-4ACR	28-754ACR	1-1/4	1/4 HEX	4	25
	170-6ACR	28-756ACR	1-1/4		6	25
	170-8ACR	28-758ACR	1-1/4		8	25
	170-10ACR	28-760ACR	1-1/4		10	25
	170-1/4BACR	28-761ACR	1-1/4		1/4	25

OTHER SIZES AND LENGTHS AVAILABLE, PRICE UPON REQUEST

TORXPLUS® INSERT BITS - 1/4" HEX

- Elliptical configuration
- Large Cross-Section at lobes
- Wide Contact Surface to get the Maximum Torque Transfer
- Reduce Bit Wear and Tear
- Widely Used in the Latest Industrial Applications
- High Performance

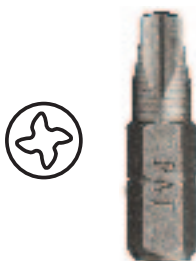
PART NUMBER	INDUSTRY NUMBER	DRIVE SIZE	OVERALL LENGTH INCHES	PIECES PER PACKAGE
49-997	440-10IPX	10	1	25
49-998	440-15IPX	15	1	25
49-999	440-20IPX	20	1	25
50-004	440-25IPX	25	1	25
50-005	440-27IPX	27	1	25
50-006	440-30IPX	30	1	25
50-007	440-40IPX	40	1	25



MORTORQ® INSERT BITS - 1/4" HEX

- Thicker drive wings, stronger drive tool
- Cutting edge machining process results in tighter tolerances and superior product consistency
- Shallow recess depth
- Better and more consistent fit to fasteners leads to better torque transfer

PART NUMBER	INDUSTRY NUMBER	OVERALL LENGTH INCHES	SHANK SIZE INCHES	POINT SIZE	PIECES PER PACKAGE
29-502	440-MT-0	1	1/4 Hex	0	25
29-504	440-MT-1	1	1/4 Hex	1	25
29-505	440-MT-2	1	1/4 Hex	2	25



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.

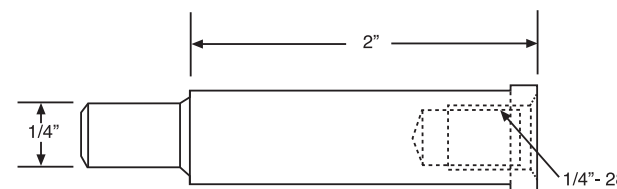
PART NUMBER	DESCRIPTION	"A"	SHANK SIZE
36-511	#4 Paint Cutter	.254	1/4-28
36-512	#6 Paint Cutter	.280	1/4-2
36-513	#8 Paint Cutter	.302	1/4-28
36-514	#10 Paint Cutter	.360	1/4-28
36-517	1/4" Paint Cutter	.462	1/4-28



WITHOUT PAINT CUTTER WITH PAINT CUTTER

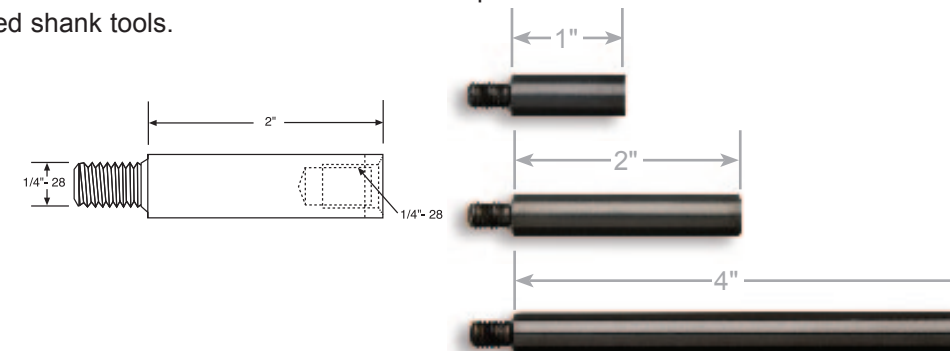
PAINT CUTTER ARBOR AND EXTENSIONS

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

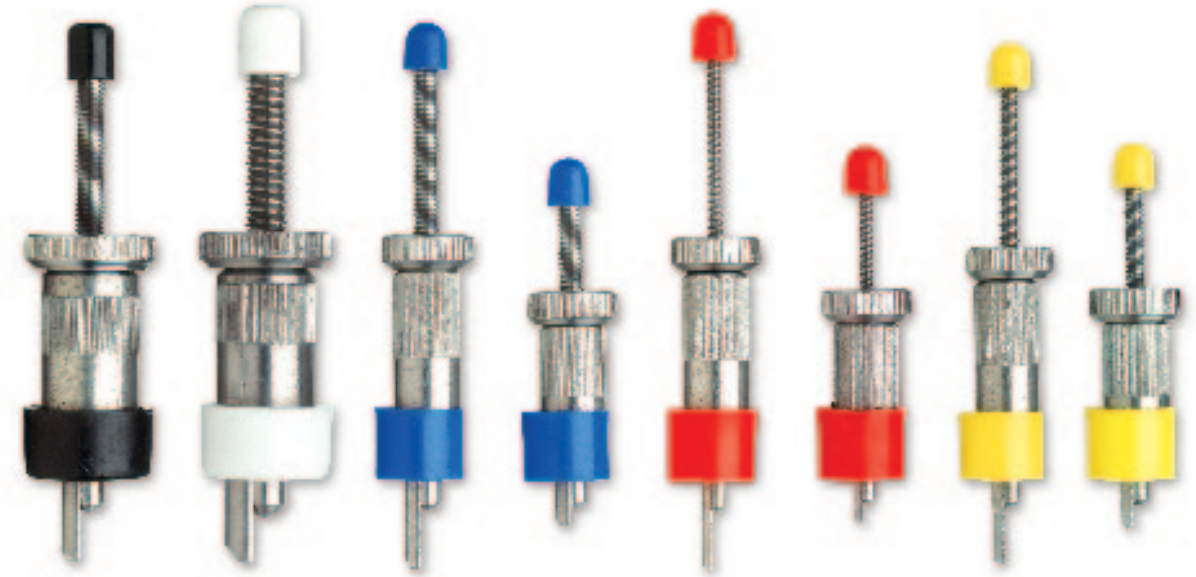
CLECO FASTENERS

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KNURLED CLECO 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"



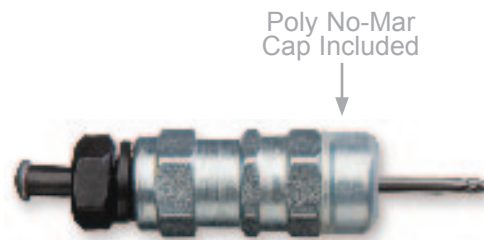
PMIN SERIES - Miniature Series - Stubby

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"

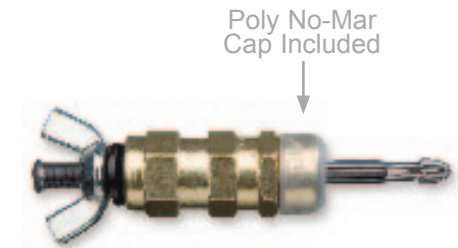


CLECO FASTENERS

Temporary Fasteners For Precise Holding Of Materials

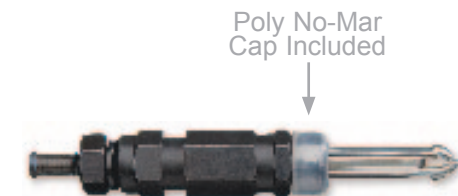
PWN SERIES - Wing Nut Series for high clamping force applications

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



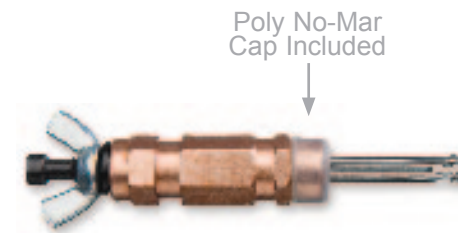
PLHN SERIES - Long Hex Nut Series for high production applications

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



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



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

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



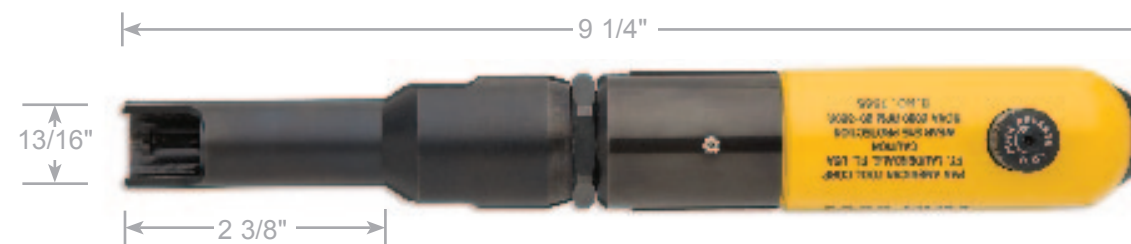
CLECO PLIERS WITH SOFT HANDLE

- 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

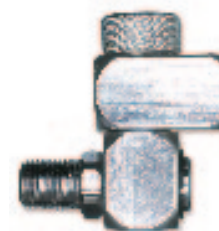


- 2000 RPM
- Reversing Button Located for Superior Control
- Feathering Trigger Allows Operator Complete Control of Speed
- Air Inlet 1/4-18 NPT
- Maximum Air Pressure: 90 PSI
- Rubber Grip for Operator Comfort
- Quiet Smooth Operation
- One Year Warranty

Weight 2.1 Lbs.

Part #20-115

Swivel Air Regulator Included*



Part #60-123

* Also Sold Separately On Page 134

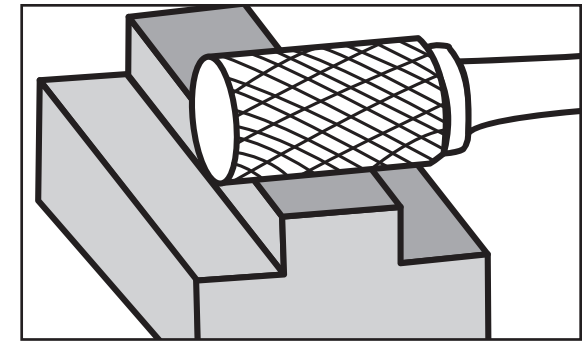
CARBIDE BURS

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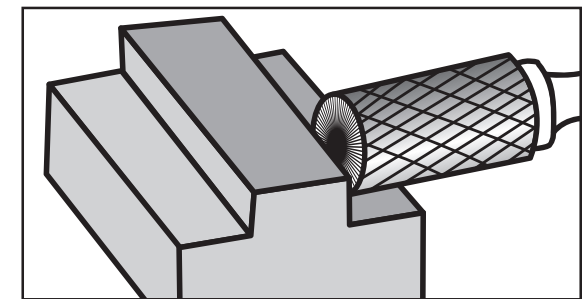
CYLINDRICAL 1/4" SHANK SIZE

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



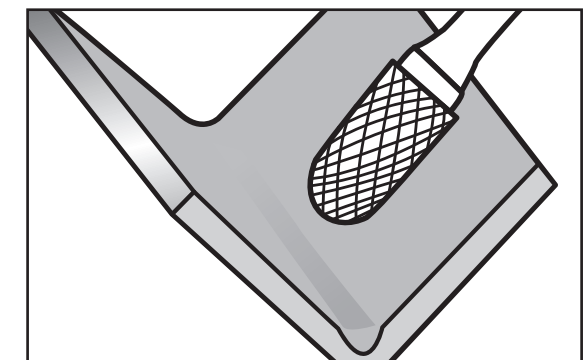
CYLINDRICAL END CUT 1/4" SHANK SIZE

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



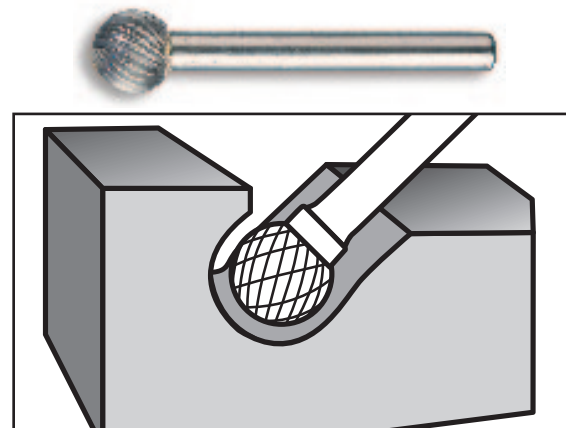
CYLINDER RADIUS END 1/4" SHANK SIZE

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



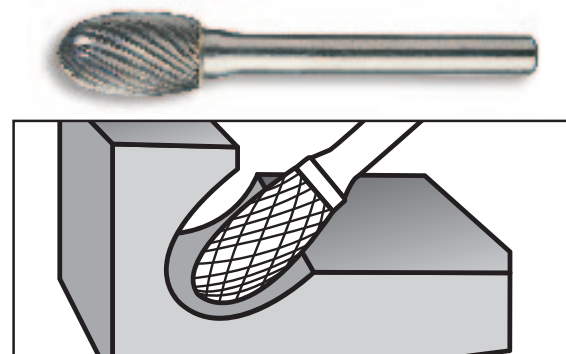
BALL 1/4" SHANK SIZE

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



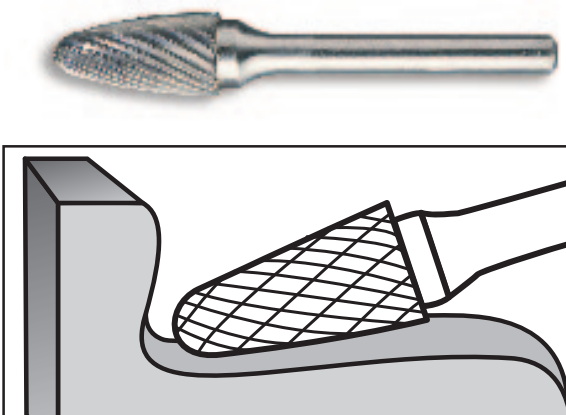
OVAL 1/4" SHANK SIZE

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



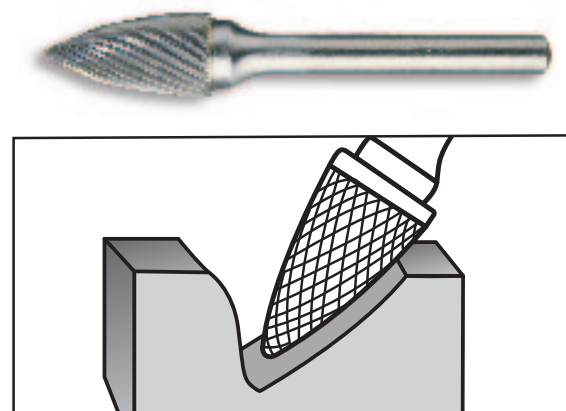
TREE RADIUS END 1/4" SHANK SIZE

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



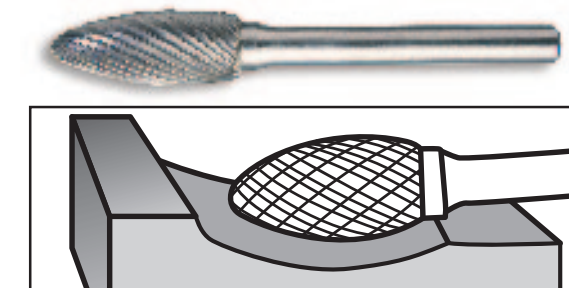
TREE 1/4" SHANK SIZE

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



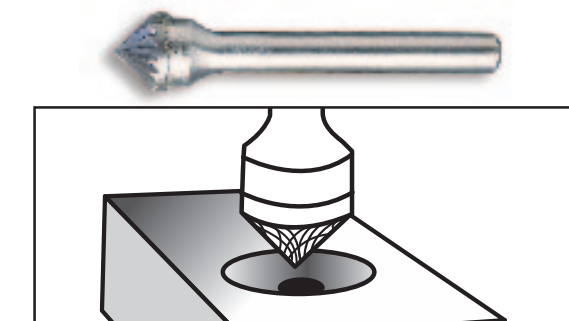
FLAME 1/4" SHANK SIZE

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



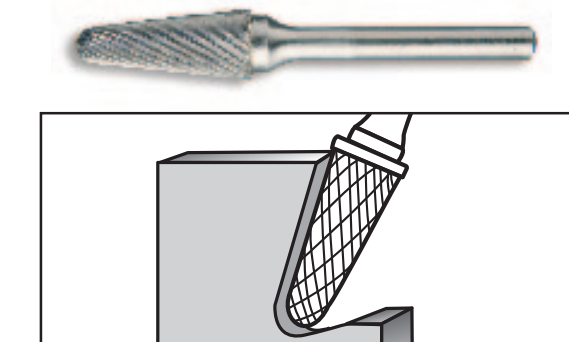
CONE 90° 1/4" SHANK SIZE

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



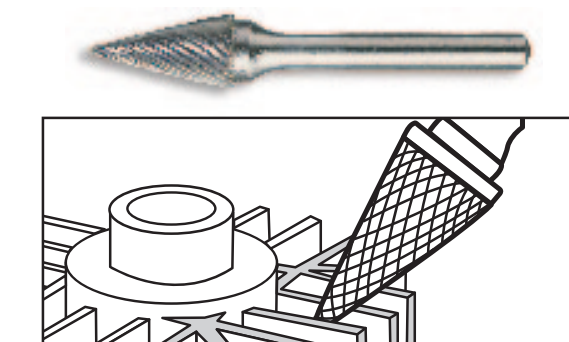
14° TAPER RADIUS END 1/4" SHANK SIZE

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



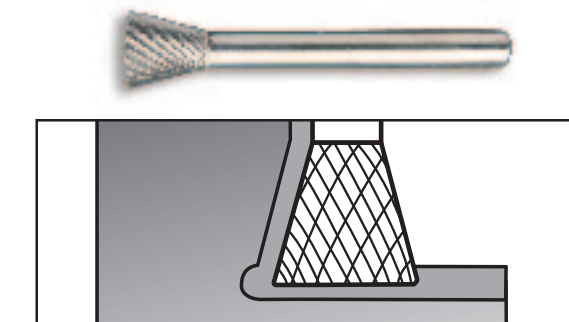
CONE POINTED END 1/4" SHANK SIZE

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



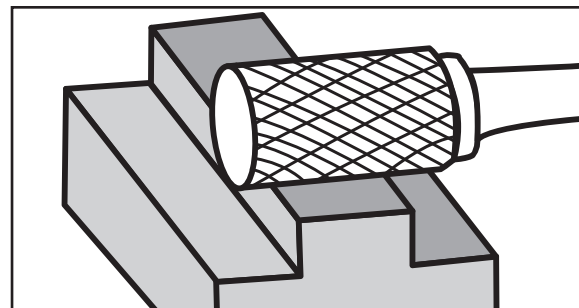
INVERTED TAPER 1/4" SHANK SIZE

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



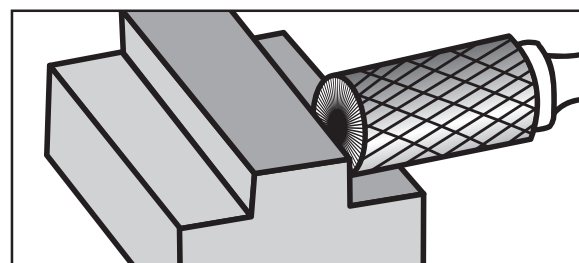
CYLINDRICAL 1/8" SHANK SIZE

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



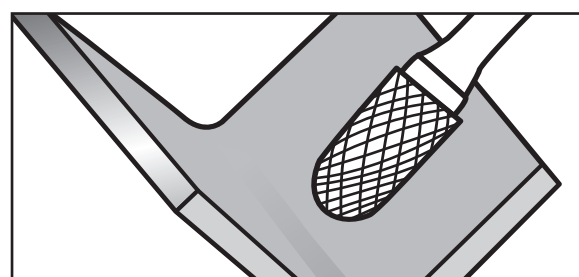
CYLINDRICAL END CUT 1/8" SHANK SIZE

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



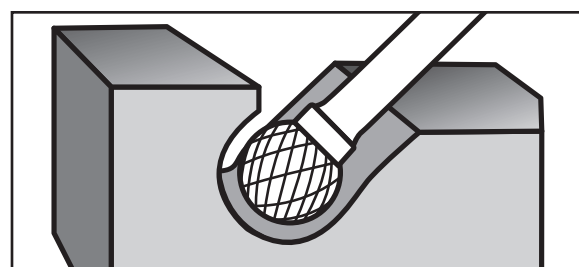
CYLINDRICAL RADIUS END 1/8" SHANK SIZE

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



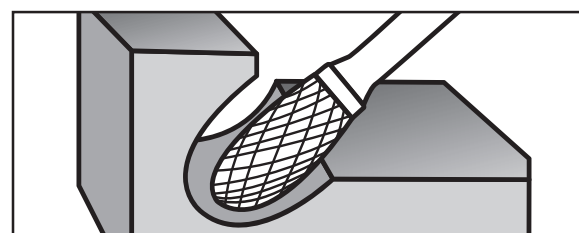
BALL 1/8" SHANK SIZE

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



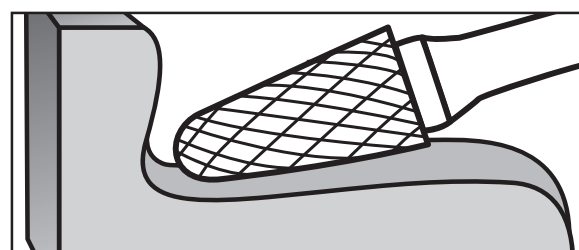
OVAL 1/8" SHANK SIZE

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



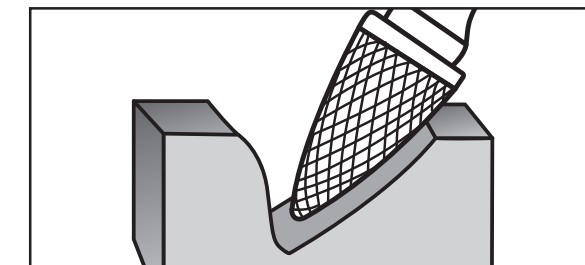
TREE RADIUS END 1/8" SHANK SIZE

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



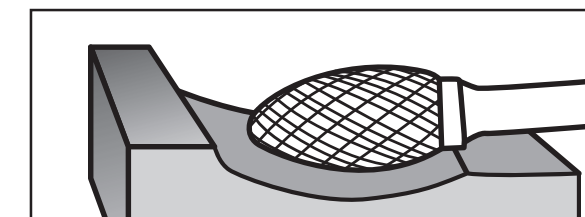
TREE 1/8" SHANK SIZE

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



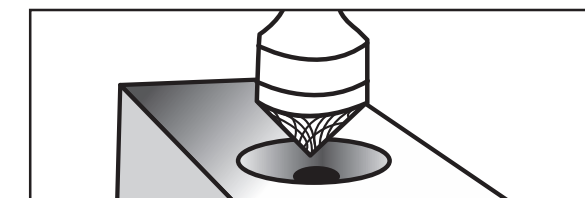
FLAME 1/8" SHANK SIZE

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



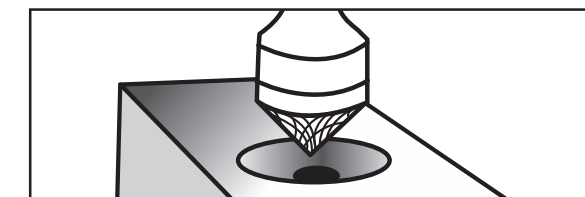
CONE 60° 1/8" SHANK SIZE

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



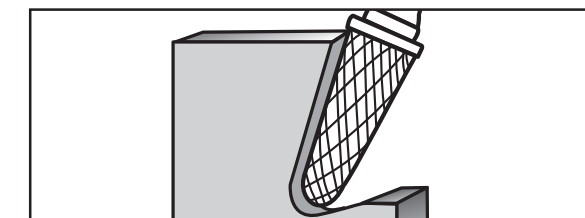
CONE 90° 1/8" SHANK SIZE

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



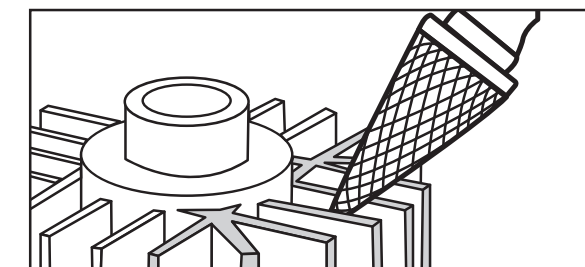
14° TAPER RADIUS END 1/8" SHANK SIZE

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



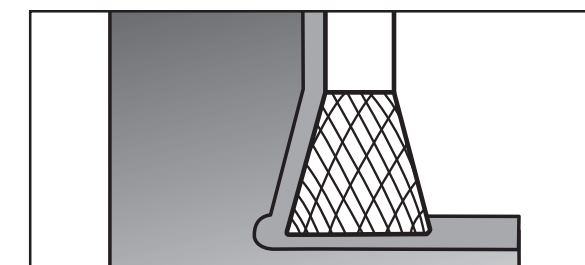
CONE POINTED END 1/8" SHANK SIZE

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



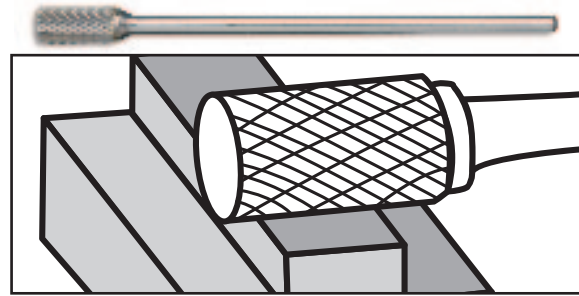
INVERTED TAPER 1/8" SHANK SIZE

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
30-043	30-043D	SN-51	1/4	5/16



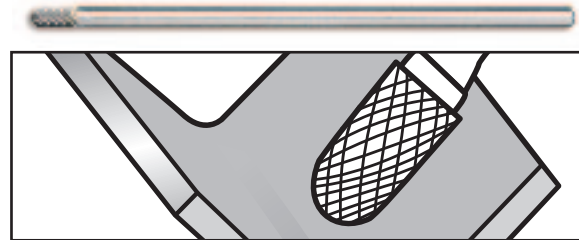
CYLINDRICAL 1/4" X 6" LONG SHANK SIZE

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



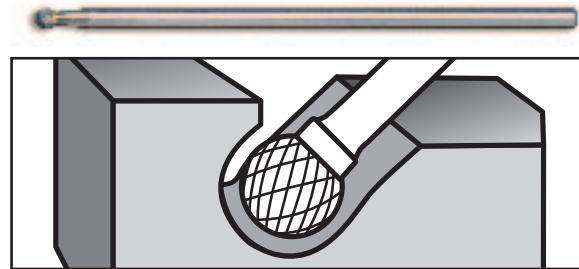
CYLINDER RADIUS END 1/4" X 6" LONG SHANK SIZE

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



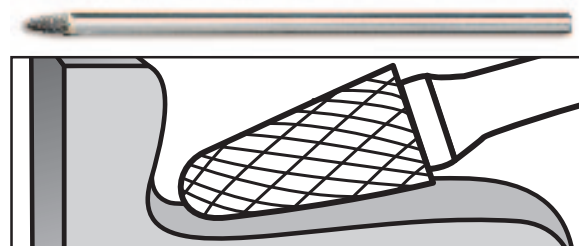
BALL 1/4" X 6" LONG SHANK SIZE

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



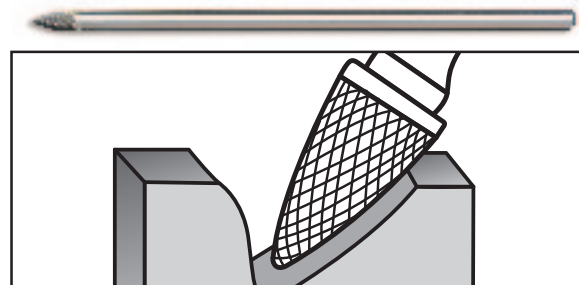
TREE RADIUS END 1/4" X 6" LONG SHANK SIZE

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



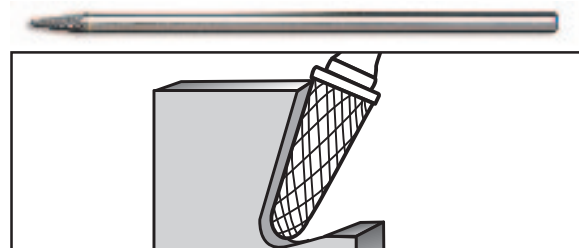
TREE 1/4" X 6" LONG SHANK SIZE

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



NON - FERROUS CARBIDE BURS

Designed for use on aluminum, non-ferrous metals, soft steel, reinforced plastics, and other soft materials. The burs are designed with a high flute finish for easy chip flow and fast stock removal and excellent work piece finishes.

- Aluma Cut



PART NUMBER	STYLE	CUTTER EQUIVALENT INCHES	FLUTE LENGTH INCHES	SHANK LENGTH INCHES
30-372NF	SA-1 Non-Ferrous	1/4	5/8	1/4
30-471NF	SA-3 Non-Ferrous	3/8	3/4	1/4
30-858NF	SA-5 Non-Ferrous	1/2	1	1/4
30-162NF	SA-6 Non-Ferrous	5/8	1	1/4
30-065NF	SA-7 Non-Ferrous	3/4	1	1/4
30-046NF	SB-1 Non-Ferrous	1/4	5/8	1/4
34-651NF	SB-3 Non-Ferrous	3/8	3/4	1/4
30-448NF	SB-5 Non-Ferrous	1/2	1	1/4
30-787NF	SC-1 Non-Ferrous	1/4	5/8	1/4
34-636NF	SC-3 Non-Ferrous	3/8	3/4	1/4
30-476NF	SC-5 Non-Ferrous	1/2	1	1/4
30-538NF	SD-1 Non-Ferrous	1/4	7/32	1/4
34-641NF	SD-3 Non-Ferrous	3/8	5/16	1/4
30-011NF	SD-5 Non-Ferrous	1/2	7/16	1/4
34-657NF	SE-3 Non-Ferrous	3/8	5/8	1/4
30-575NF	SE-5 Non-Ferrous	1/2	7/8	1/4
30-788NF	SF-1 Non-Ferrous	1/4	5/8	1/4
34-661NF	SF-3 Non-Ferrous	3/8	3/4	1/4
30-449NF	SF-5 Non-Ferrous	1/2	1	1/4
34-664NF	SF-6 Non-Ferrous	5/8	1	1/4

CARBIDE BUR SETS



- 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	96
Hook and Loop Disc Holders	96
Aluminum Oxide Hook and Loop Sanding Discs	96
Surface Conditioning Discs Hook and Loop	96
Nova® Surface Conditioning Discs	97
Nova® Extra Tough Surface Conditioning Discs	97
Nova® Rubber Backed Quick Change Disc Holders	97
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Nova® Pencil Grinder.....	98
Engraving Pen.....	98
Stylus.....	98
Sealant Cutters.....	99
Phenolic Scraper.....	99
Super Grade Premium Cut Off Wheels.....	100
Resinoid Reinforced Cut Off Wheels	100
Mounting Mandrel Set.....	100



NOVA® ORBITAL SANDER



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

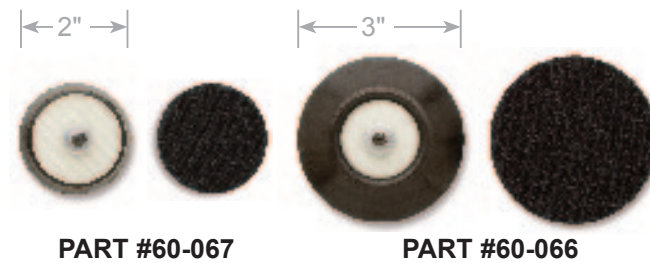
- Standard Equipment Includes: 2" and 3" Holder
- Maximum Air Pressure: 90 PSI
- 12,000 RPM
- Air Inlet 1/4-18 NPT
- Rear Exhaust
- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Orbital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

Weight: 1.6 Lbs.

Part #60-065

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



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



Type "R"

Type "S"

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

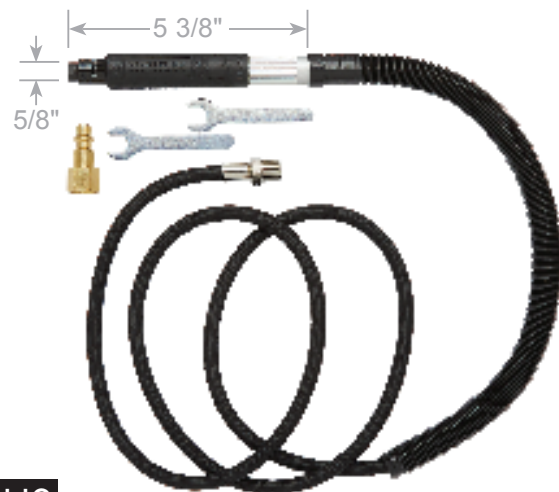
EXTRA TOUGH

SIZE	GRIT	PAT PART NUMBER		3M PART NUMBER	
		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



ENGRAVING PEN

Part #36-515



STYLUS

Part #36-518



SEALANT CUTTERS

Avoiding harsh chemicals or hand scraping and achieve smoother results with this sealant remover tool. It can remove thick applications of seam sealant quickly and safely for aircraft maintenance and repair, saving time and effort. This sealer remover tool is designed for use with aircraft rivets and can cleanly remove sealant around fasteners such as rivets, bolts and Hi-Loks. It is an alternative to a hand-held sealant cutter. It fits a 90° drill for tight spaces or a threaded adapter. The cutters attach to your rotary tool.

- Commonly used at 900 RPM, recommended for use with Nova #60-043
- Reliable and easy to use
- Get in between rivets and small hard to reach areas
- Removes sealant cleanly without solvents, lessening the chance of damaging underlying material
- 5 Pieces per package



PART NUMBER	DESCRIPTION	INDUSTRY NUMBER	DIAMETER	SHANK SIZE
48-182	Sealant Cutter .400	SR-3	.400 (3/8")	1/4 - 28
48-181	Sealant Cutter .830	SR-8	.830 (3/4")	1/4 - 28

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	19,000	A60T
21-383	4	.035	3/8	19,000	A60T
21-382	4	1/16	3/8	19,000	A46T

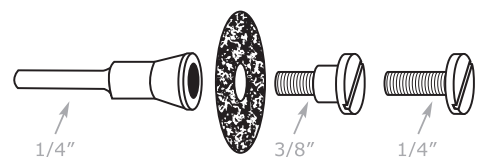
SOLD IN PACKAGES OF 50 PIECES

Excellent Performance on All Profiles. Long Life on Stainless Steels



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

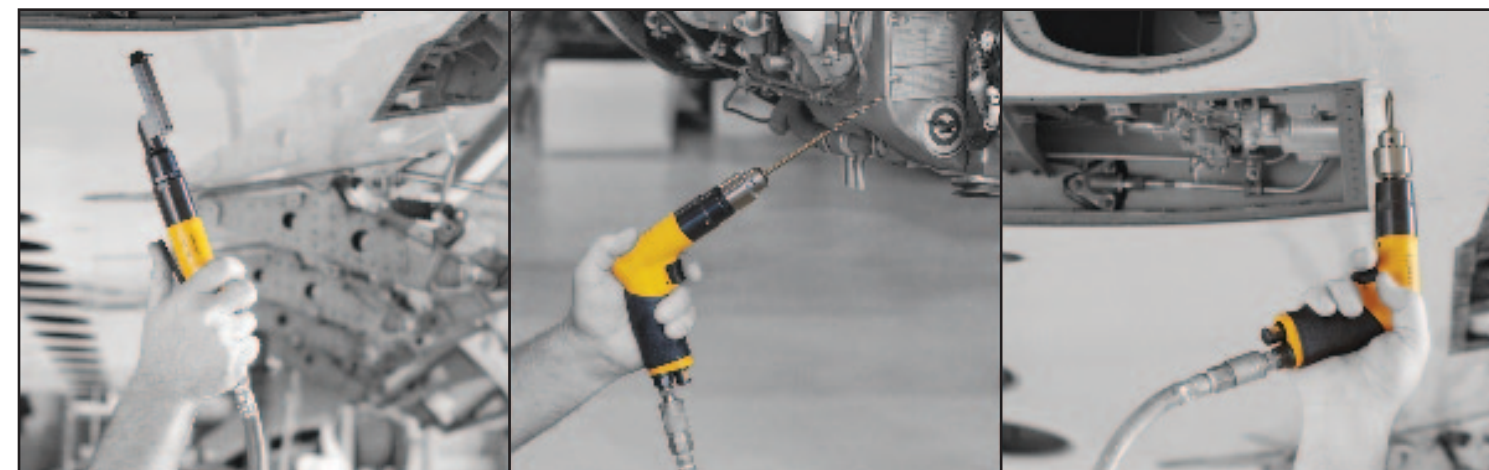
www.PANAMERICANTOOL.com

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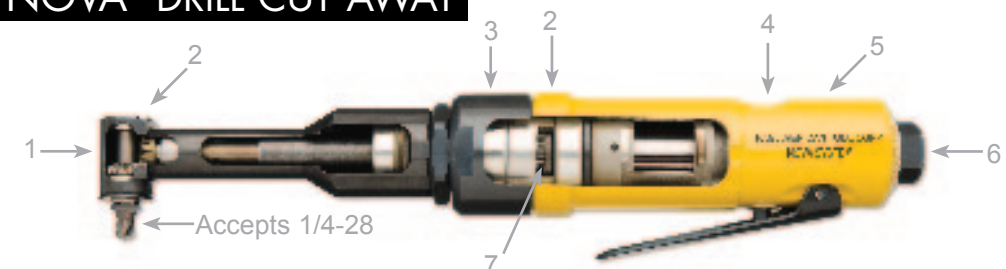


NOVA® PNEUMATIC TOOLS

Standard Nova® Tools	102-114
Flat Offset Dogleg Heads	115
Standard Nova® Tool Kits	116
Compact Nova® Tools.....	117-123
Compact Nova® Tool Kits	124
Nova® Pistol Grip Drills.....	125-132
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Nova® Cleco Installation Tools.....	135-136
Nova® Pencil Grinder, Engraving Pen, and Stylus.....	137
Nova® Grinders.....	138-140



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

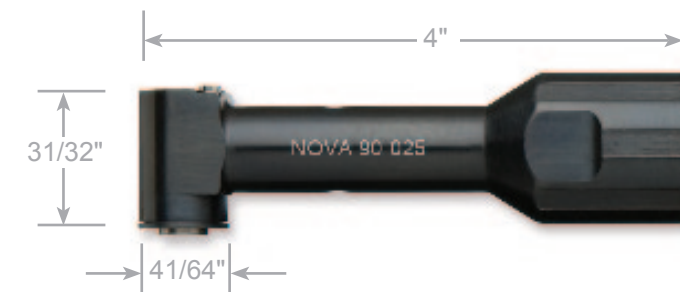
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STANDARD NOVA® HEADS ON MOTOR HOUSINGS

<p>NOVA® 90° ANGLE</p>  <p>See Page 103</p>	<p>NOVA® LONG REACH 90° ANGLE</p>  <p>See Page 104</p>	<p>NOVA® 45° ANGLE</p>  <p>See Page 105</p>
<p>NOVA® LONG REACH 45° ANGLE</p>  <p>See Page 106</p>	<p>NOVA® 360° ANGLE</p>  <p>See Page 107</p>	<p>NOVA® COMPACT REVERSIBLE MOTOR HOUSING</p>  <p>See Page 108</p>
<p>NOVA® 90° SHORT FLAT OFFSET</p>  <p>See Page 109</p>	<p>NOVA® 90° MEDIUM FLAT OFFSET</p>  <p>See Page 110</p>	<p>NOVA® 90° LONG FLAT OFFSET</p>  <p>See Page 111</p>
<p>NOVA® FLAT OFFSET</p>  <p>See Page 112</p>	<p>NOVA® LONG REACH FLAT OFFSET</p>  <p>See Page 113</p>	<p>NOVA® 90° HEAD W/ 1/4" CHUCK</p>  <p>See Page 114</p>

NOVA® 90° ANGLE HEAD



Part #90-025
Weight .4 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

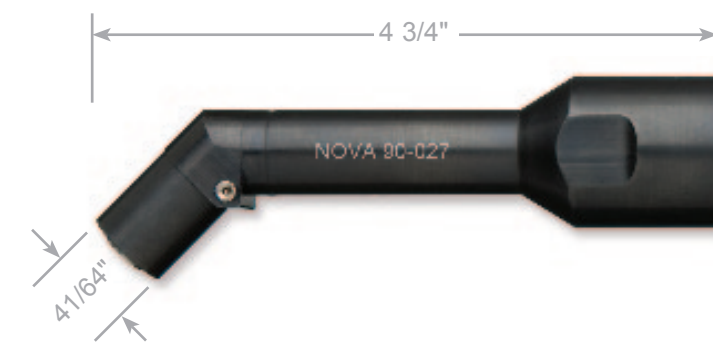
COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
90° Angle Head With .3 Horsepower Motor	60-025	2800	25	1.6 Lbs.
90° Angle Head With .3 Horsepower Motor	60-025A	5000	22	1.6 Lbs.
90° Angle Head With .5 Horsepower Motor	61-025	3200	35	1.9 Lbs.
90° Angle Head With .3 Horsepower Motor	60-043	900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

NOVA® LONG REACH 90° ANGLE HEAD



PART #90-026
Weight .6 Lbs.

NOVA® 45° ANGLE HEAD



PART #90-027
Weight .5 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



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

- 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



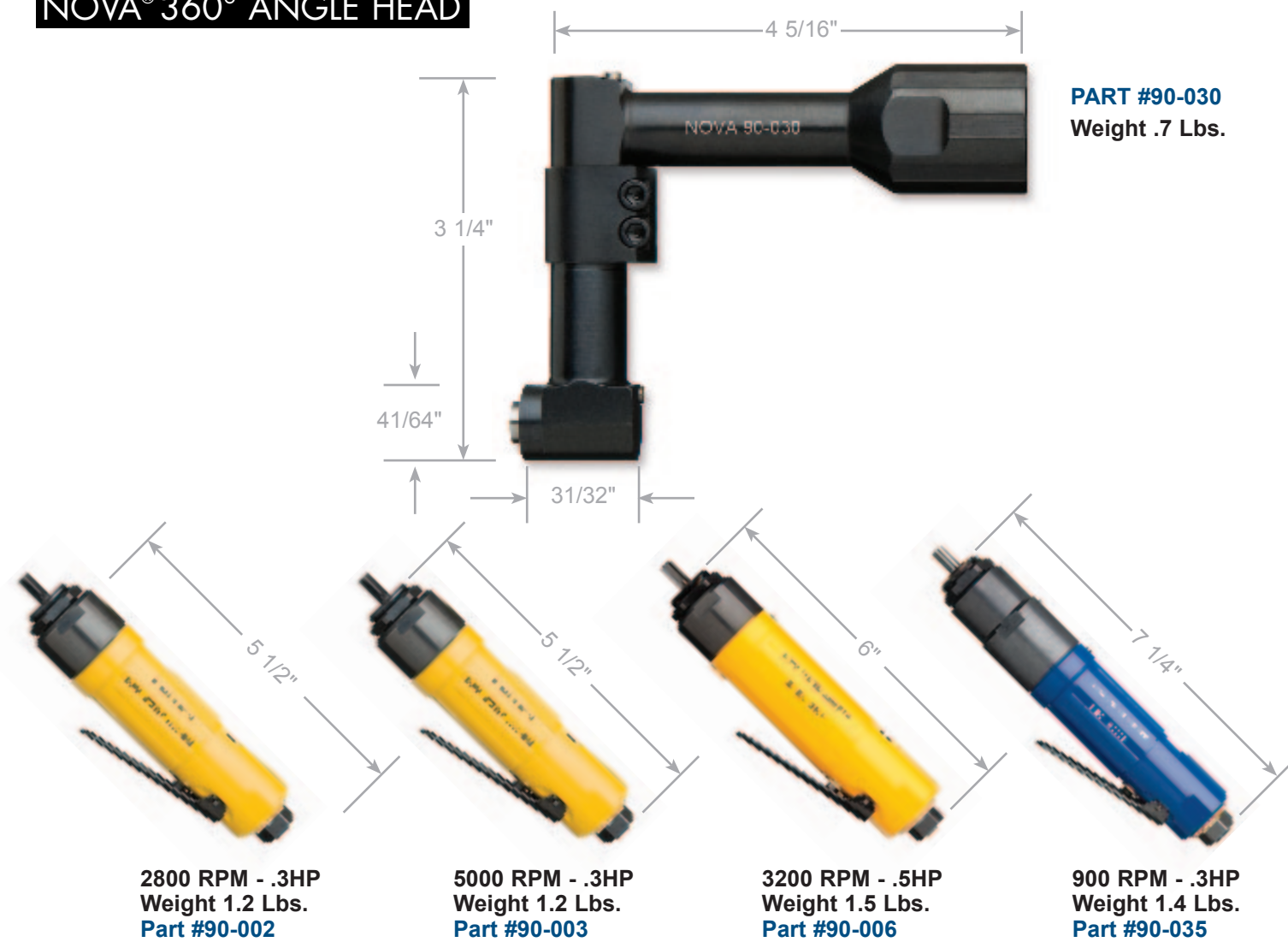
PART #90-028
Weight .7 Lbs.

- 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.

NOVA® 360° ANGLE HEAD



PART #90-030
Weight .7 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
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.



*Compatible With
All Standard
Nova® Heads*

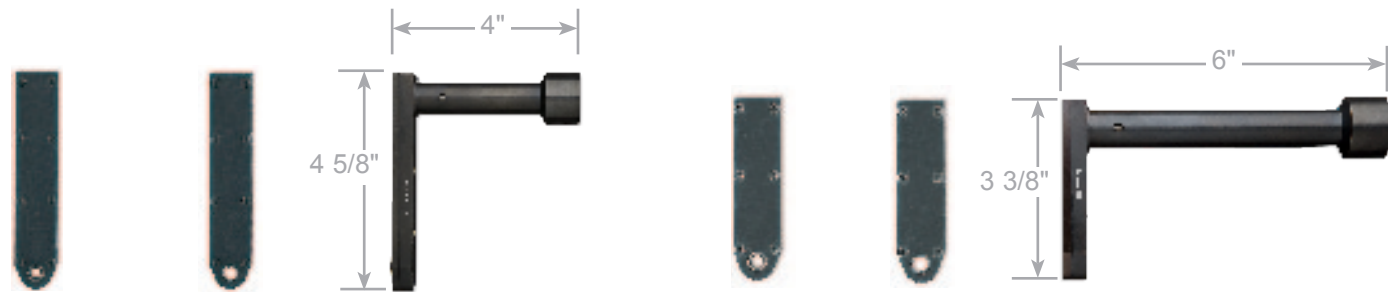
**2000 RPM - .4 HP
Weight 1.6 Lbs.
Part #60-015**

**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**

Threaded Gear Part #90-011

Hex Gear Part #90-011H
Page 109

Threaded Gear Part #90-012

Hex Gear Part #90-012H
Page 110

Threaded Gear Part #90-013

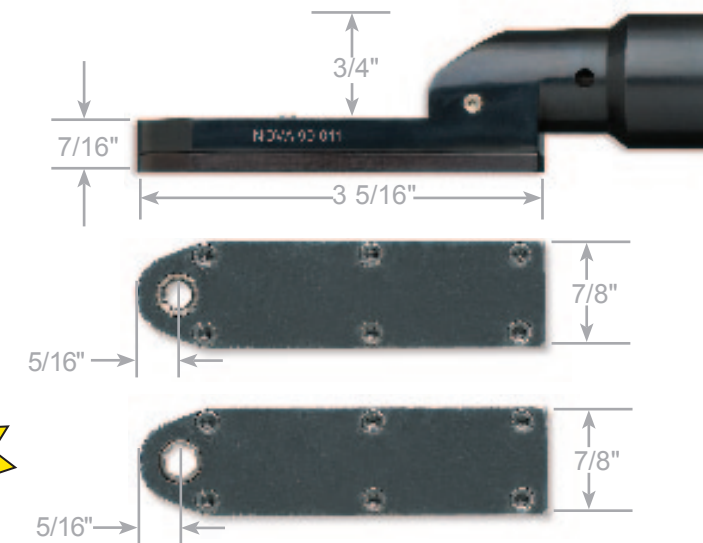
Hex Gear Part #90-013H
Page 111

Threaded Gear Part #60-039

Hex Gear Part #60-039H
Page 112

Threaded Gear Part #90-040

Hex Gear Part #90-040H
Page 113



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**



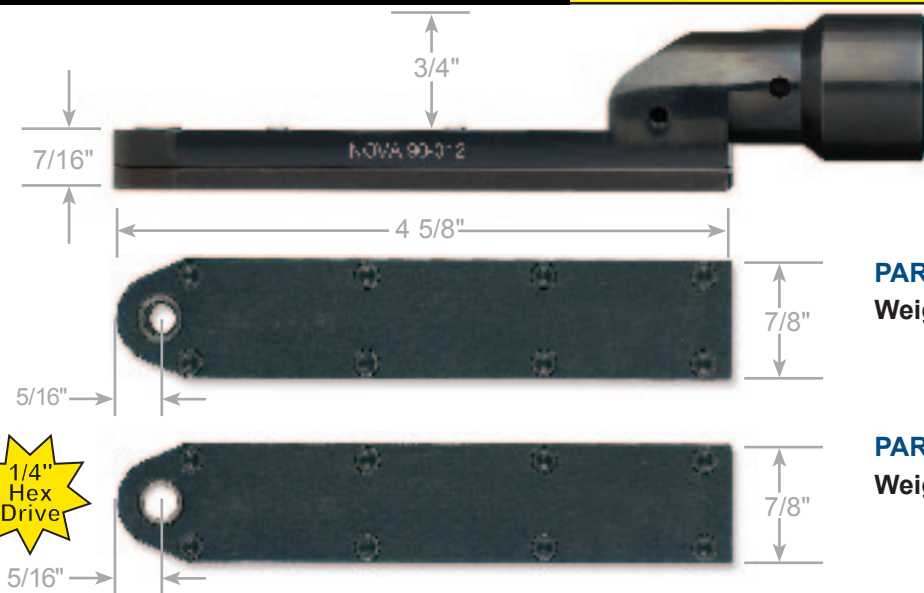
Reversing Button

- 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.

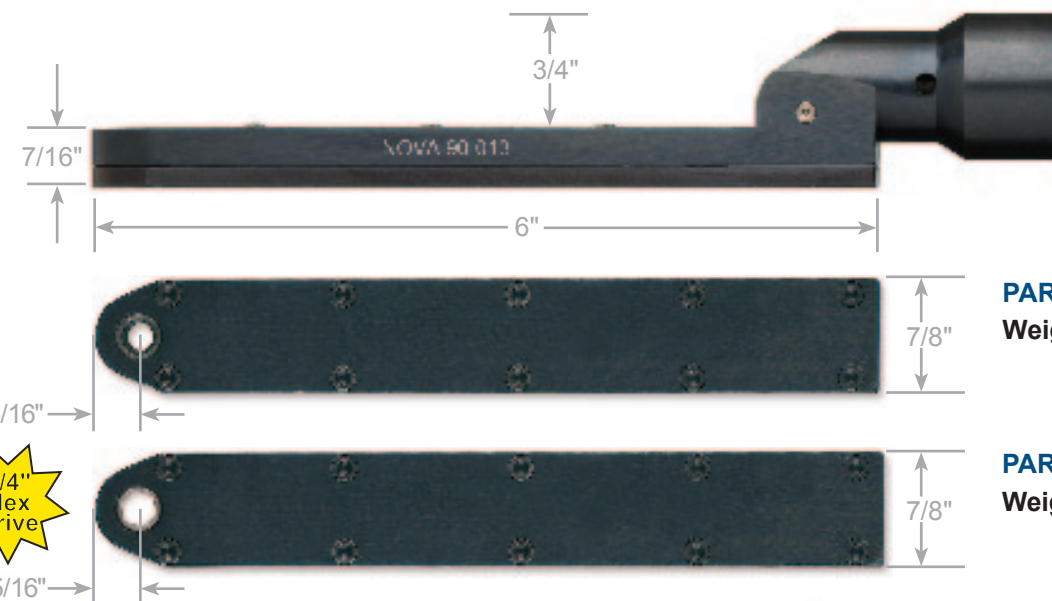
NOVA® 90° MEDIUM FLAT OFFSET ANGLE HEAD **THREADED SPINDLE OR 1/4" HEX DRIVE**



PART #90-012
Weight .8 Lbs.

PART #90-012H
Weight .8 Lbs.

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



PART #90-013
Weight .9 Lbs.

PART #90-013H
Weight .9 Lbs.



- 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.

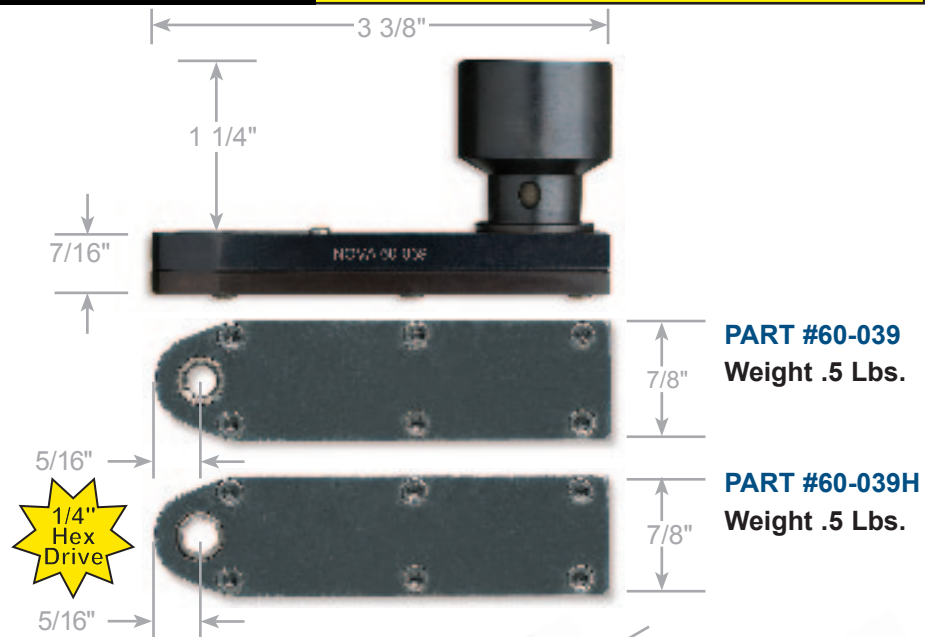


- Accepts 1/4-28 Threaded Angle Bits or 1/4" Insert Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- 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° 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**

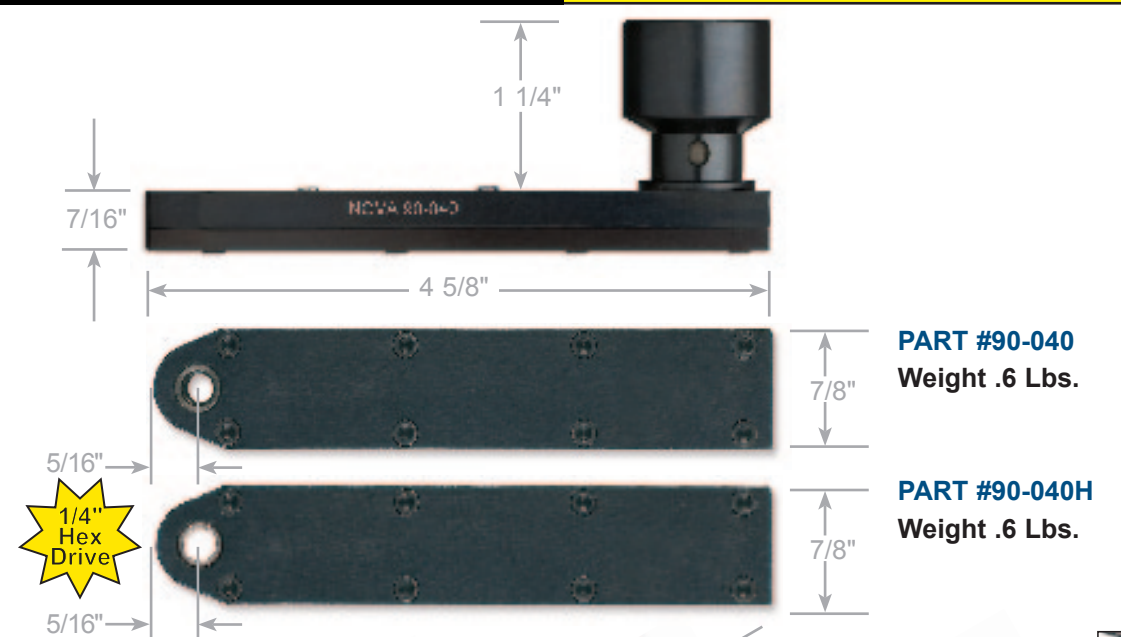


- Accepts 1/4-28 Threaded Angle Bits or 1/4" Insert Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- 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.

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

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



PART #90-039
Weight .8 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

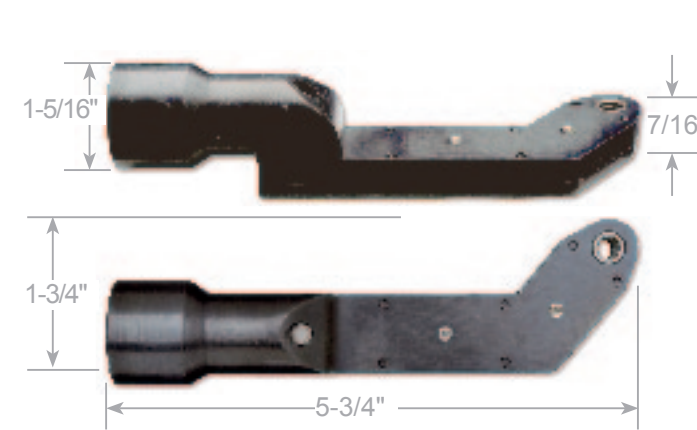
900 RPM - .3 HP
Weight 1.4 Lbs.
Part #90-035

- 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

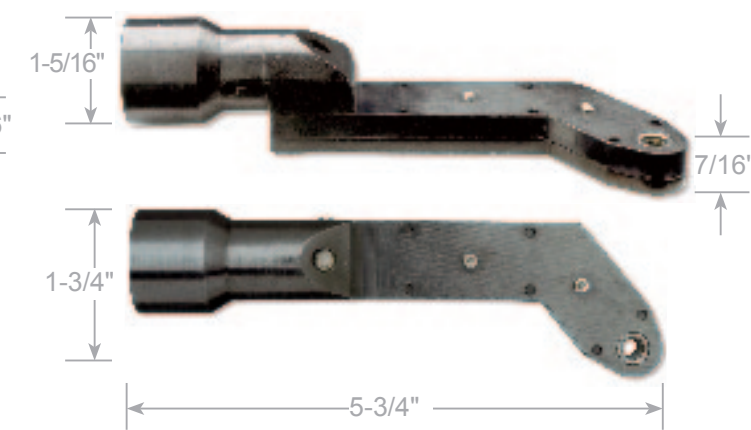
- Motor housing milled from solid bar for precision motor alignment
- Motor cylinder and rotor are hardened alloy steel to ensure proper alignment and long life
- Smooth quiet operation
- One Year Warranty

COMPLETE NOVA® TOOL	PART NUMBER	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.

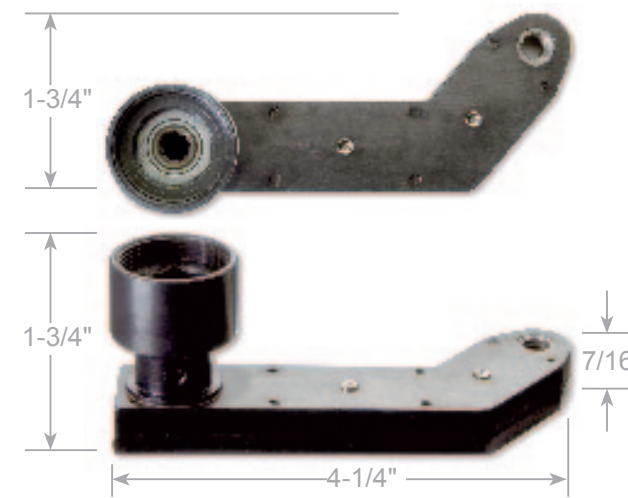
FLAT OFFSET ANGLE HEADS FOR STANDARD NOVA® MOTOR HOUSING



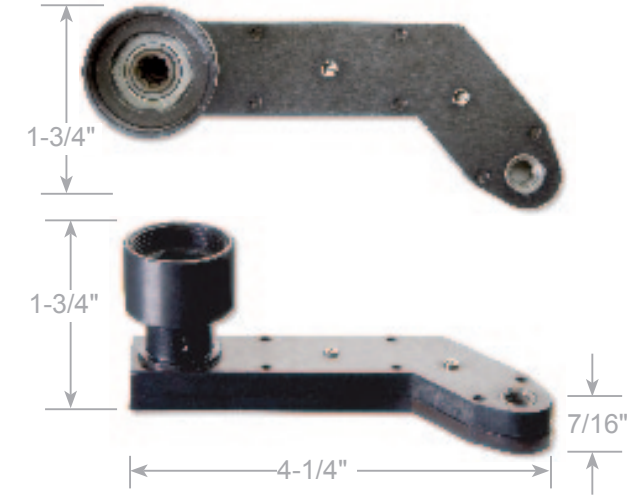
Weight .8 Lbs.
Flat Offset Dogleg Left
PART #90-015



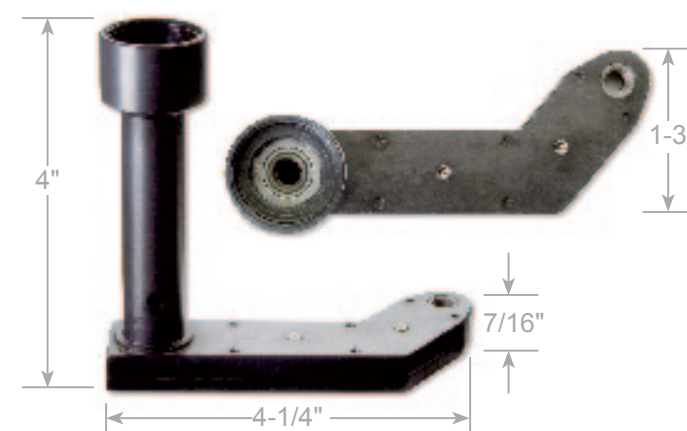
Weight .8 Lbs.
Flat Offset Dogleg Right
PART #90-014



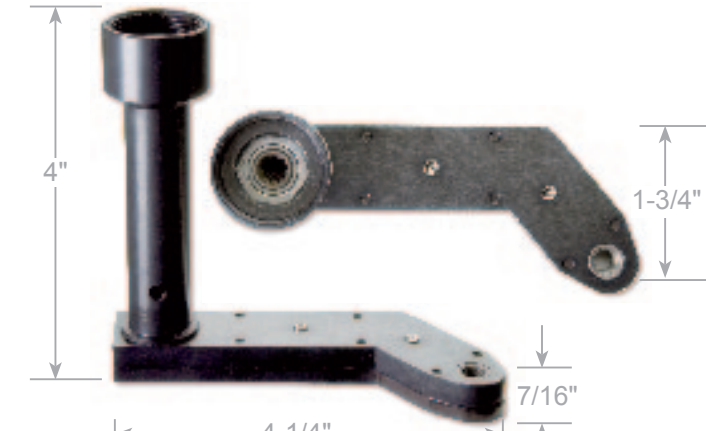
Weight .7 Lbs.
Flat Offset 1 3/4" Dogleg Left
PART #90-042A



Weight .7 Lbs.
Flat Offset 1 3/4" Dogleg Right
PART #90-042



Weight .9 Lbs.
Flat Offset 4" Dogleg Left
PART #90-041A



Weight .9 Lbs.
Flat Offset 4" Dogleg Right
PART #90-041

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

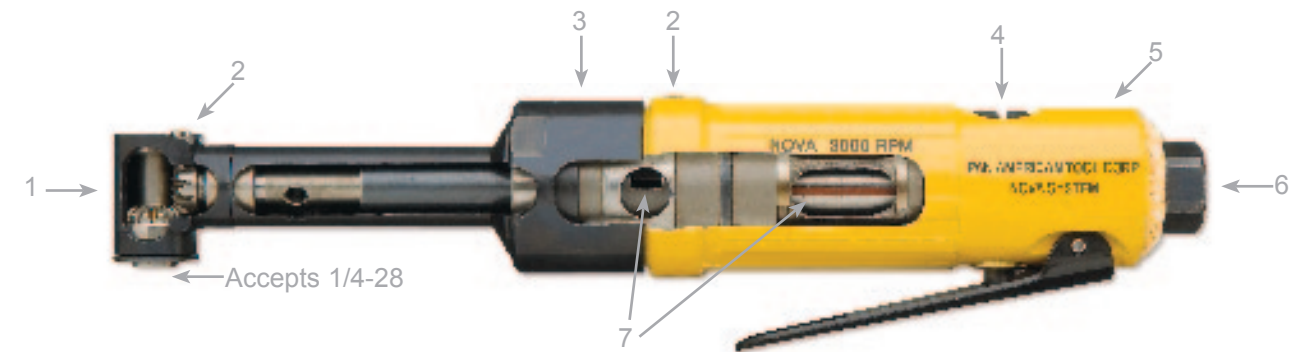
NOVA® STANDARD HEAD ATTACHMENTS

- Nova® 90° Angle Head - Part #90-025 - p.103
- Nova® Long Reach 90° Angle Head - Part #90-026 - p.104
- Nova® 45° Angle Head - Part #90-027 - p.105
- Nova® Long Reach 45° Angle Head - Part #90-028 - p.106
- Nova® 360° Angle Head - Part #90-030 - p.107
- Nova® 90° Short Flat Offset Angle Head - Part #90-011, #90-011H - p.109
- Nova® 90° Medium Flat Offset Angle Head - Part #90-012, #90-012H - p.110
- Nova® 90° Long Flat Offset Angle Head - Part #90-013, #90-013H - p.111
- Nova® 90° Flat Offset Angle Head - Part #60-039, #60-039H - p.112
- Nova® Long Reach Flat Offset Head - Part #90-040, #90-040H - p.113

COMPACT NOVA® HEADS ON COMPACT HOUSINGS

<p>NOVA® 360° COMPACT ANGLE</p> <p>See Page 118</p>	<p>NOVA® 90° COMPACT ANGLE</p> <p>See Page 119</p>	<p>NOVA® LONG REACH 90° COMPACT ANGLE</p> <p>See Page 120</p>
<p>NOVA® 45° COMPACT ANGLE</p> <p>See Page 121</p>	<p>NOVA® LONG REACH 45° COMPACT ANGLE</p> <p>See Page 122</p>	<p>NOVA® 90° COMPACT FLAT OFFSET ANGLE</p> <p>See Page 123</p>

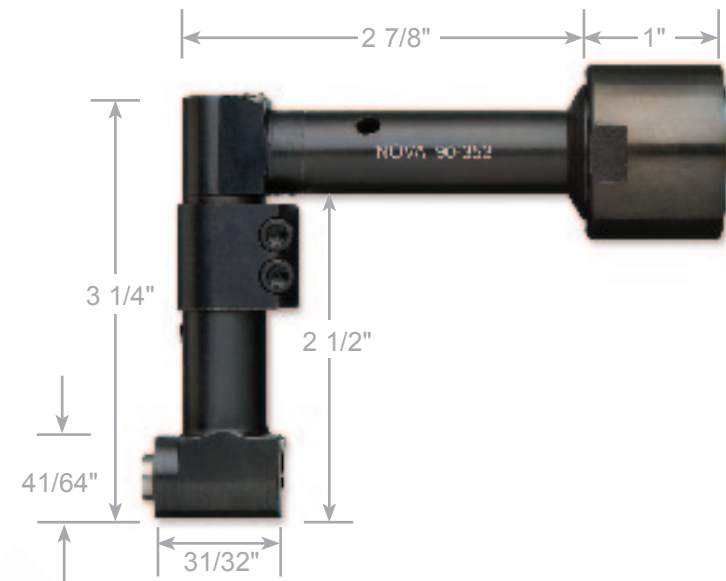
COMPACT NOVA® DRILL CUT AWAY



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

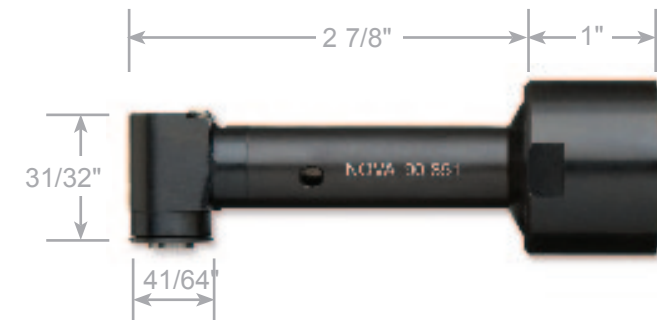
5. Housing is Milled from One Piece of Solid Stock for Precision Operation
6. Rear Exhaust with Bronze Muffler
7. Hardened Alloy Steel Planetary Gears, Motor Cylinder and Rotor

NOVA® 360° COMPACT ANGLE HEAD



PART #90-353
Weight .6 Lbs.

NOVA® 90° COMPACT ANGLE HEAD



PART #90-351
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



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

- 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
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.

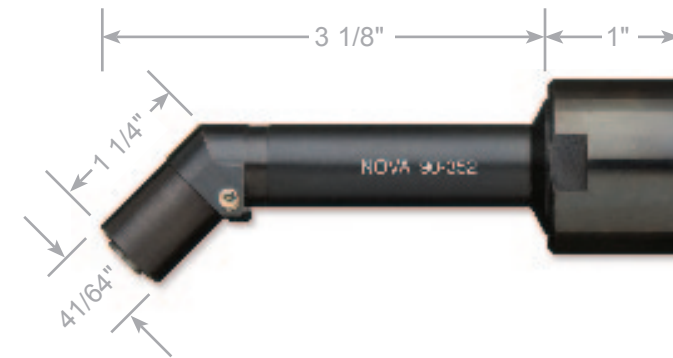
COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
90° Compact Angle Head with Compact 3000 RPM Motor	60-051	3000	24	1.4 Lbs.
90° Compact Angle Head with Compact High Torque 850 RPM Motor	60-051A	850	60	1.9 Lbs.
90° Compact Angle Head with Compact 6000 RPM Motor	60-051B	6000	22	1.4 Lbs.
90° Compact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

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



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

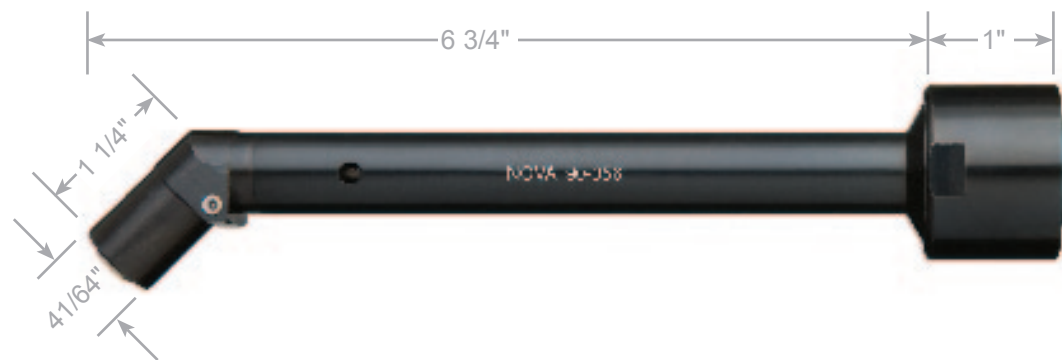
- Accepts 1/4-28 Threaded Angle Bits
- Capacity: 1/4"
- Rear Exhaust
- Angle Head may be rotated 360° for superior operator control
- Air Inlet 1/4-18 NPT

- 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.

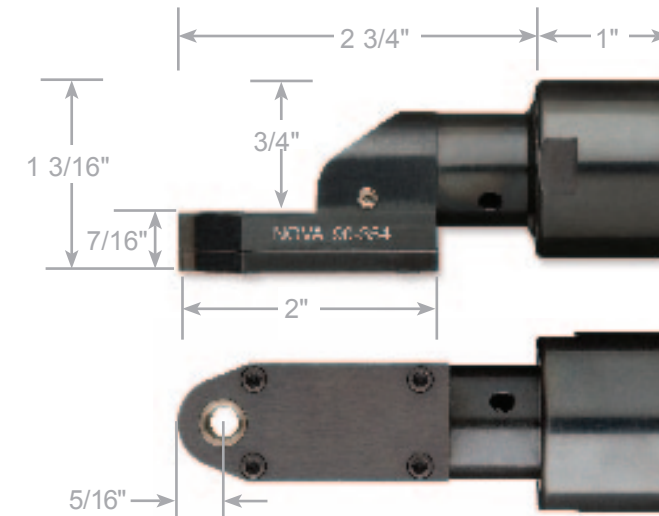
COMPLETE NOVA® TOOL	PART NUMBER	RPM	IN.-LBS. TORQUE	WEIGHT
45° Compact Angle Head with Compact 3000 RPM Motor	60-052	3000	24	1.4 Lbs.
45° Compact Angle Head with Compact High Torque 850 RPM Motor	60-052A	850	60	1.9 Lbs.
45° Compact Angle Head with Compact 6000 RPM Motor	60-052B	6000	22	1.4 Lbs.
45° Compact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

NOVA® LONG REACH 45° COMPACT ANGLE HEAD

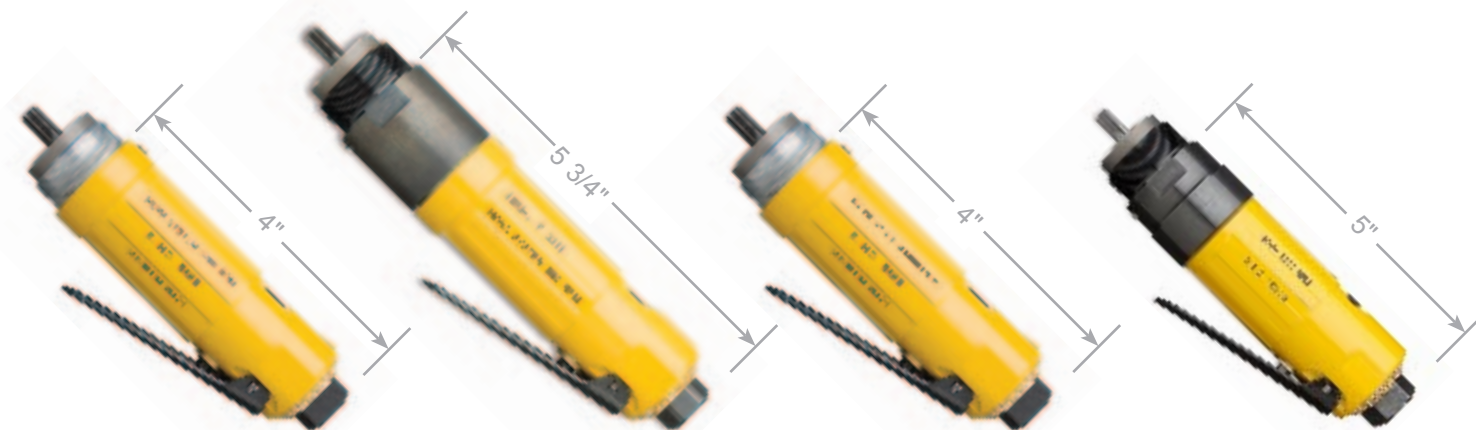


PART #90-356
Weight .7 Lbs.

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

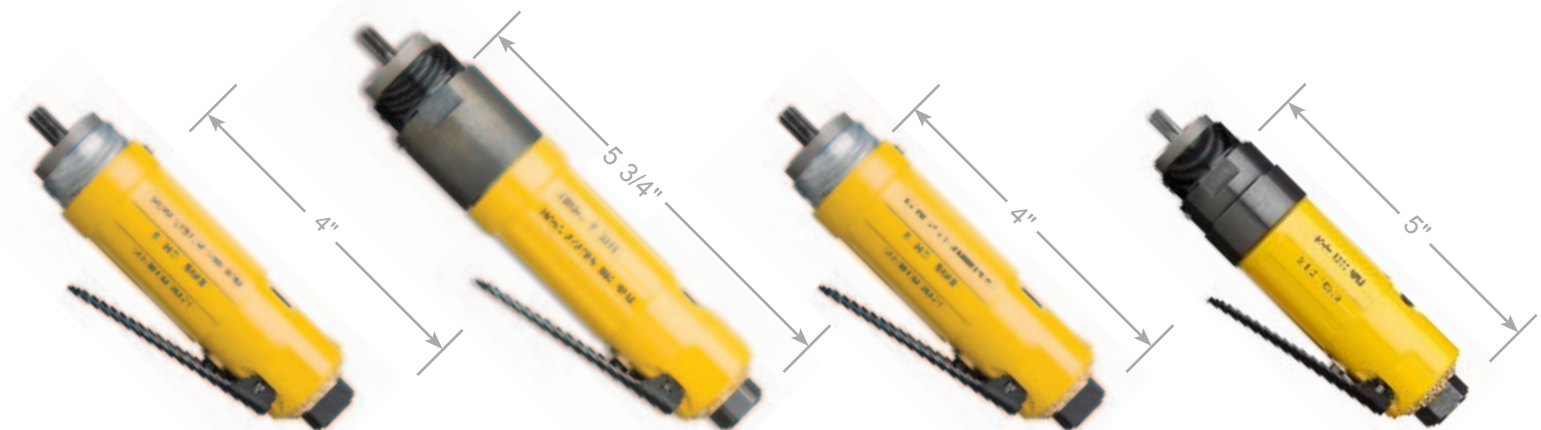
6000 RPM - .3 HP
Weight 1 Lb.
Part #90-004B

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
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.



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



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

NOVA® COMPACT HEAD ATTACHMENTS

- Nova® 360° Compact Angle Head - Part #90-353 - p.118
- Nova® 90° Compact Angle Head - Part #90-351 - p.119
- Nova® Long Reach 90° Compact Angle Head - Part #90-355 - p.120
- Nova® 45° Compact Angle Head - Part #90-352 - p.121
- Nova® Long Reach 45° Compact Angle Head - Part #90-356 - p.122
- Nova® 90° Compact Flat Offset Angle Head - Part #90-354 - p.123

NOVA® PISTOL GRIP DRILLS

NOVA® COMPACT PISTOL GRIP DRILL



2600, 3200, or 4000 RPM

See Page 126

NOVA® .5 HORSEPOWER PISTOL GRIP DRILL



2400 RPM

See Page 127

NOVA® COMPACT HIGH TORQUE PISTOL GRIP DRILL



1300 or 650 RPM

See Page 128

NOVA® HIGH TORQUE PISTOL GRIP DRILL



900 RPM

See Page 129

NOVA® HEAVY DUTY REVERSIBLE 3/8 PISTOL GRIP DRILL



2000 RPM

See Page 130

NOVA® COMPACT REVERSIBLE DRILL



2000 or 3100 RPM

See Page 131

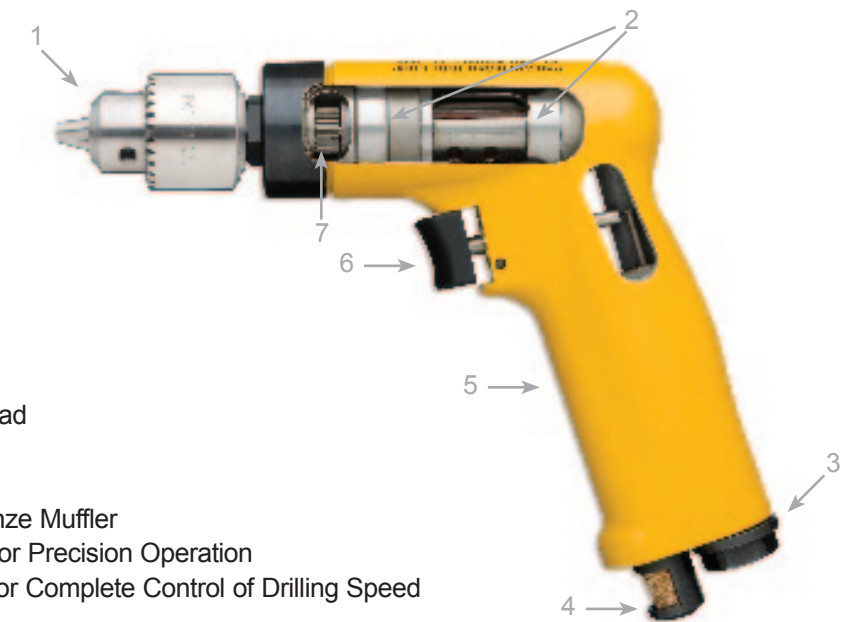
NOVA® COMPLETE MOTOR MOUNTED MICRO-STOP CAGE



2600, 3200 or 4000 RPM

See Page 132

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



NOVA® 2400 RPM .5 HORSEPOWER PISTOL GRIP DRILL



- 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

- .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

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

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

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

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

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

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

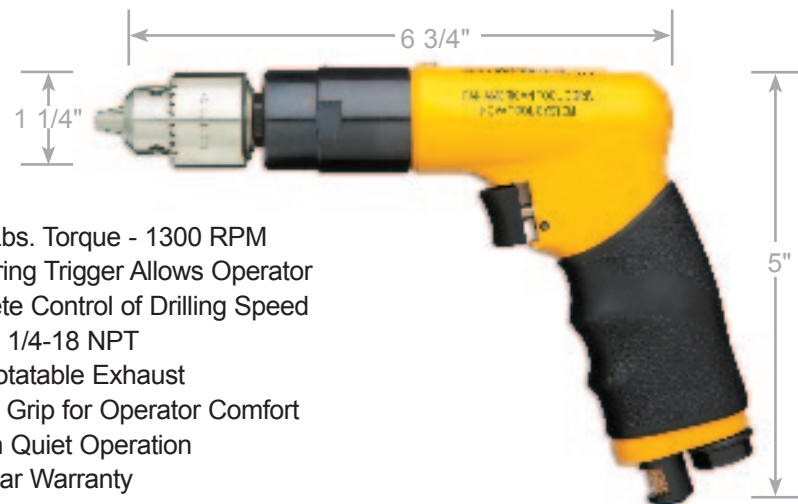
2400 RPM with 1/4" Chuck and Key
Weight 1.6 Lbs.
Part #60-600

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

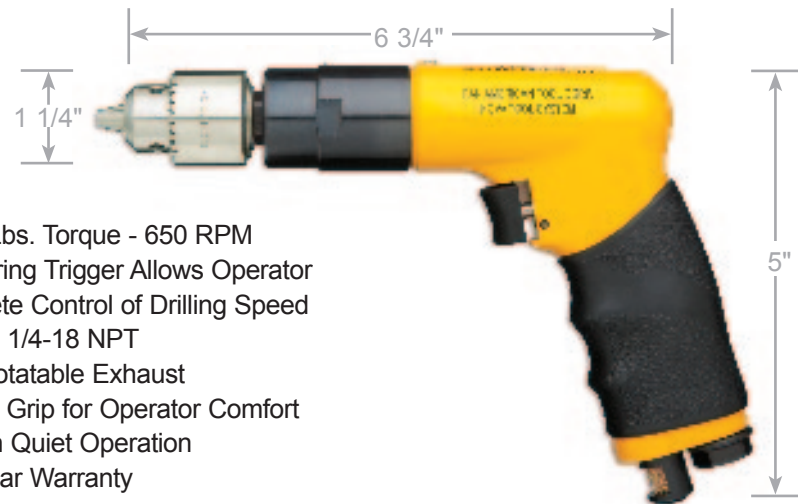
1300 RPM with 1/4" Chuck and Key
Weight 1.9 Lbs.
Part #60-313

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

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

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

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

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

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

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® 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



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

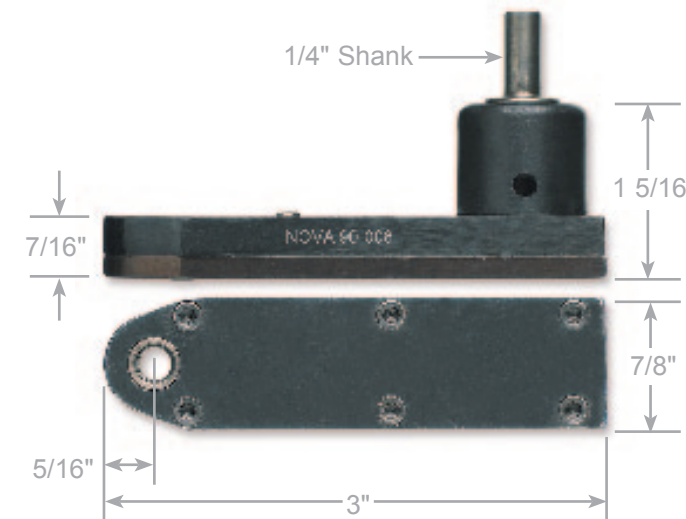
2600 RPM Pistol Grip Drill
Weight 1.6 Lbs.
Part #19-369N - with Nylon Foot Piece

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

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

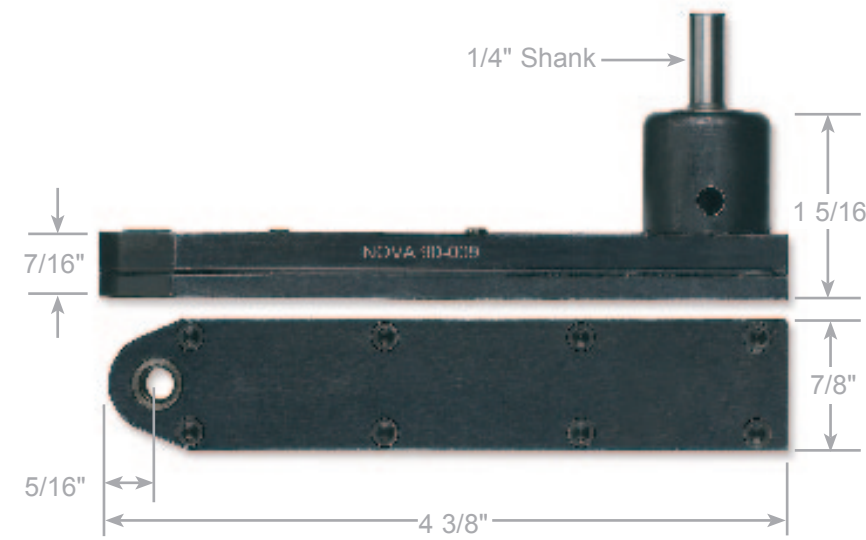
4000 RPM Pistol Grip Drill
Weight 1.6 Lbs.
Part #19-369B

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



- 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
Weight .4 Lbs.
Part #90-008



- 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
Weight .6 Lbs.
Part #90-009



- 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
Weight .7 Lbs.
Part #90-010

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

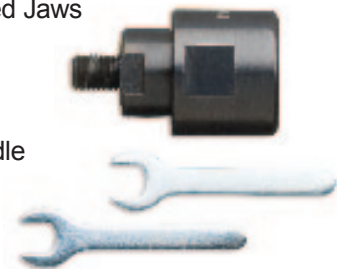
Part #20-365



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



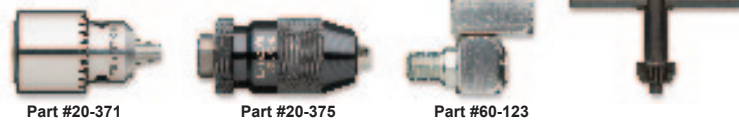
1/4-28 Threaded Chuck Adapter

Part #20-364



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

Part #20-366



3/8" Chuck with Key

- 3/8-24 Thread
- Weight .6 Lbs

Part #20-371



1/4" Keyless Chuck with Wrench

- 3/8-24 Thread
- Weight .7 Lbs

Part #20-375



3/8" Keyless Chuck with Wrench

- Weight 1.1 Lbs

Part #20-380



Swivel Air Regulator

- For Control of Speed and Torque

Part #60-123



1/4" Straight Taper Adapter Pin

Part #20-377



9/32 - 40 Threaded Collets

Other Size Available Upon Request



#40 Aircraft Collet
Part #30-181

#30 Aircraft Collet
Part #30-182

#21 Aircraft Collet
Part #30-183

#10 Aircraft Collet
Part #30-192

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 134

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



- 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® 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

NOVA® 3 1/2" EXTENDED LONG REACH GRINDER

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

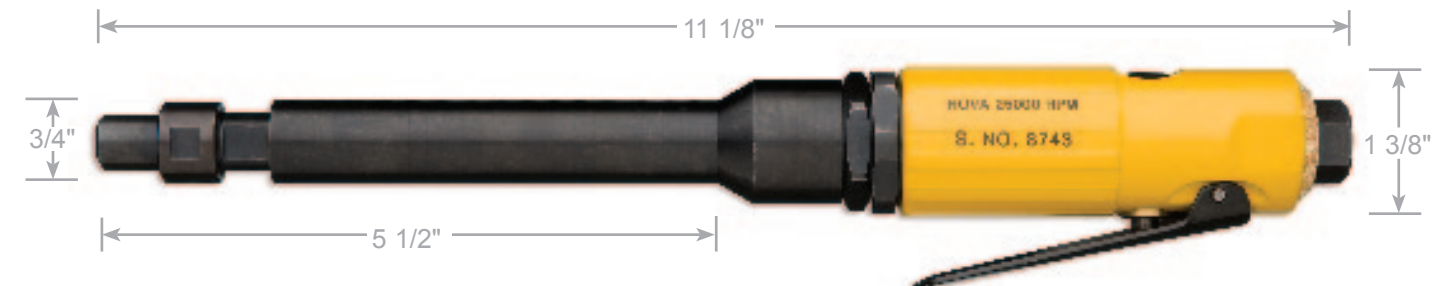


- Maximum Air Pressure: 90 PSI
- Standard Equipment Includes:
 1/4" Erikson Collet
 Two Collet Wrenches
- Capacity:
 1/2" Diameter Carbide Burr
 1" Mounted Wheel
 3" Cut off Wheel

- 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® 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

NOVA® STRAIGHT GRINDER FRONT EXHAUST - 18,000 RPM



Front Exhaust Detail

18,000 RPM
Part #60-035F

- Maximum Air Pressure: 90 PSI
- Standard Equipment Includes:
1/4" Collet
Two Collet Wrenches
- Capacity:
1/8", 1/4" Shank Carbide Burs
1" Mounted Wheel
4" Cut off Wheel

- 18,000 RPM
- Features:
• .9 HP
• Air Inlet: 1/4-18 NPT
• Front 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® STRAIGHT GRINDER FRONT EXHAUST - 22,000 RPM



Front Exhaust Detail

22,000 RPM
Part #60-035E

- Maximum Air Pressure: 90 PSI
- Standard Equipment Includes:
1/4" Collet
Two Collet Wrenches
- Capacity:
1/8", 1/4" Shank Carbide Burs
1" Mounted Wheel
4" Cut off Wheel

- 22,000 RPM
- Features:
• .6 HP
• Air Inlet: 1/4-18 NPT
• Front 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

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Pan American Tool's standard and 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.

COMPACT NOVA SYSTEM KIT (pg. 124)

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. 116)

Specify Motor Housings:

- .3HP 2800 RPM
- .3HP 5000 RPM
- .5HP 3200 RPM

With your choice of 10 attachments

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