

INSPECTION & GAGING TOOLS · SHOP TOOLS & SUPPLIES

CUTTING TOOLS · LINEAR MOTION COMPONENTS · MOLD & DIE SUPPLIES

PRECISION GROUND HIGH SPEED **STEEL BLANKS**



WILLIAM T. HUTCHINSON CO.

Please Order From:
Clark & Osborne, LLP
6617 Ferguson Avenue
Indianapolis, IN 46220

317-255-5668 Phone
317-253-4486 FAX
sales@clarkandosborne.com

CATALOG No. 2606

WIRE SIZE HUTCHINSON HSS BLANKS

Wire Size	Decimal Equivalent	Length Overall Inches	M2 Net Price Each	M42 Net Price Each
1	.2280	3 7/8	2.48	3.74
2	.2210	3 7/8	2.48	3.74
3	.2130	3 3/4	2.48	3.74
4	.2090	3 3/4	2.48	3.74
5	.2055	3 3/4	2.48	3.74
6	.2040	3 3/4	2.21	3.34
7	.2010	3 5/8	2.21	3.34
8	.1990	3 5/8	2.21	3.34
9	.1960	3 5/8	2.21	3.34
10	.1935	3 5/8	2.21	3.34
11	.1910	3 1/2	1.94	2.93
12	.1890	3 1/2	1.94	2.93
13	.1850	3 1/2	1.86	2.86
14	.1820	3 1/2	1.86	2.86
15	.1800	3 1/2	1.86	2.86
16	.1770	3 3/8	1.68	2.58
17	.1730	3 3/8	1.68	2.58
18	.1695	3 1/4	1.68	2.58
19	.1660	3 1/4	1.65	2.47
20	.1610	3 1/4	1.65	2.47
21	.1590	3 1/4	1.65	2.47
22	.1570	3 1/4	1.65	2.47
23	.1540	3	1.65	2.47
24	.1520	3	1.65	2.47
25	.1495	3	1.65	2.47
26	.1470	3	1.46	2.20
27	.1440	3	1.46	2.20
28	.1405	3	1.46	2.20
29	.1360	3	1.46	2.20
30	.1285	2 3/4	1.46	2.20

Wire Size	Decimal Equivalent	Length Overall Inches	M2 Net Price Each	M42 Net Price Each
31	.1200	2 3/4	1.38	2.14
32	.1160	2 3/4	1.37	2.10
33	.1130	2 3/4	1.37	2.10
34	.1110	2 3/4	1.37	2.10
35	.1100	2 3/4	1.37	2.10
36	.1065	2 1/2	1.37	2.08
37	.1040	2 1/2	1.37	2.08
38	.1015	2 1/2	1.37	2.08
39	.0995	2 1/2	1.37	2.08
40	.0980	2 1/2	1.37	2.08
41	.0960	2 1/2	1.33	2.00
42	.0935	2 1/4	1.33	2.00
43	.0890	2 1/4	1.33	2.00
44	.0860	2 1/4	1.33	2.00
45	.0820	2 1/4	1.33	2.00
46	.0810	2 1/4	1.33	2.00
47	.0785	2	1.30	1.99
48	.0760	2	1.30	1.99
49	.0730	2	1.30	1.99
50	.0700	2	1.30	1.99
51	.0670	2	1.30	1.99
52	.0635	1 7/8	1.25	1.84
53	.0595	1 7/8	1.25	1.84
54	.0550	1 7/8	1.25	1.84
55	.0520	1 7/8	1.25	1.84
56	.0465	1 3/4	1.31	1.94
57	.0430	1 3/4	1.31	1.94
58	.0420	1 5/8	1.31	1.94
59	.0410	1 5/8	1.31	1.94
60	.0400	1 5/8	1.31	1.94

CHOICE OF TOLERANCE + .0002 OR + .0000
 - .0000

Typical Analysis of M2 and M42 High Speed Steel							
	C	Cr	Mo	W	V	Co	Hardness
M2	.83	4.0	5.0	6.0	2.0	—	R/C 62-64
M42	1.10	3.75	9.50	1.50	1.15	8.25	R/C 66-68

CUT COSTS – USE HUTCHINSON HSS BLANKS FOR PUNCHES, EJECTOR PINS AND DOWELS.

QUICK DELIVERY
DIRECT FROM OUR PLANT
NO ORDER TOO SMALL

WIRE SIZE HUTCHINSON HSS BLANKS

HUTCHINSON HSS BLANKS ARE
 AVAILABLE IN ANY DIAMETER .005" - 1.500"
 GROUND TO .0002 TOLERANCE
 LENGTHS UP TO 36" TO SUIT YOUR REQUIREMENTS

All standard size High Speed Steel blanks available for quick delivery from our plant

M2 HSS - R/C 62-64

M42 HSS - R/C 66-68

Wire Size	Decimal Equivalent	Length Overall Inches	M2 Net Price Each	M42 Net Price Each
61	.0390	1 1/2	1.50	2.03
62	.0380	1 1/2	1.50	2.03
63	.0370	1 1/2	1.50	2.03
64	.0360	1 1/2	1.50	2.03
65	.0350	1 1/2	1.69	2.32
66	.0330	1 1/2	1.69	2.32
67	.0320	1 1/2	1.69	2.32
1/32	.03125	1 1/2	1.69	2.32
68	.0310	1 1/2	1.69	2.32
69	.0292	1 1/2	1.83	2.39
70	.0280	1 1/2	1.83	2.39
71	.0260	1 1/2	1.83	2.39
72	.0250	1 1/2	2.14	2.99
73	.0240	1 1/2	2.14	2.99
74	.0225	1 1/2	2.14	2.99
75	.0210	1 1/2	2.14	2.99
76	.0200	1 1/2	2.64	3.68
77	.0180	1 1/2	2.64	3.68
78	.0160	1 1/2	2.64	3.68
1/64	.015625	1 1/2	2.64	3.68
79	.0145	1 1/2	2.64	3.68
80	.0135	1 1/2	2.64	3.68

Wire Size	Decimal Equivalent	Length Overall Inches	M2 Net Price Each	M42 Net Price Each
61	.0390	2	1.84	2.53
62	.0380	2	1.84	2.53
63	.0370	2	1.84	2.53
64	.0360	2	1.84	2.53
65	.0350	2	1.99	2.74
66	.0330	2	1.99	2.74
67	.0320	2	1.99	2.74
1/32	.03125	2	1.99	2.74
68	.0310	2	1.99	2.74
69	.0292	2	2.36	3.28
70	.0280	2	2.36	3.28
71	.0260	2	2.36	3.28
72	.0250	2	2.69	3.75
73	.0240	2	2.69	3.75
74	.0225	2	2.69	3.75
75	.0210	2	2.69	3.75
76	.0200	2	3.55	5.00
77	.0180	2	3.55	5.00
78	.0160	2	3.55	5.00
1/64	.015625	2	3.55	5.00
79	.0145	2	3.55	5.00
80	.0135	2	3.55	5.00

CHOICE OF TOLERANCE

+ .0002
- .0000

OR

+ .0000
- .0002

ONE END SOFT
 BLANKS
 AND
 BLANKS OF SPECIAL
 HARDNESS AVAILABLE

QUANTITY DISCOUNTS	
The following discounts apply to orders for blanks of standard length and standard diameter only:	
100 pieces of one size	5%
250 pieces of one size	7 1/2%
500 pieces of one size	10%
1000 pieces of one size	15%

WHEN ORDERING,
 SPECIFY:
 DIAMETER
 LENGTH
 TOLERANCES

LIMITED SIZES OF M7 AVAILABLE

PRICES & AVAILABILITY UPON REQUEST

FRACTIONAL & LETTER SIZE HUTCHINSON HSS BLANKS

Size	Decimal Equivalent	Length Overall Inches	M2 Net Price Each	M42 Net Price Each
1/64	.015625	1 1/2	2.48	3.53
1/32	.03125	1 1/2	1.53	2.16
3/64	.046875	1 3/4	1.31	1.90
1/16	.0625	1 7/8	1.25	1.84
5/64	.078125	2	1.30	1.90
3/32	.09375	2 1/4	1.33	2.00
7/64	.109375	2 3/4	1.37	2.08
1/8	.1250	2 3/4	1.39	2.14
9/64	.140625	3	1.46	2.20
5/32	.15625	3 1/4	1.66	2.49
11/64	.171875	3 1/4	1.70	2.54
3/16	.1875	3 1/2	1.86	2.86
13/64	.203125	3 5/8	2.22	3.38
7/32	.21875	3 3/4	2.49	3.75
15/64	.234375	3 7/8	2.69	4.10
1/4	.2500	4	2.89	4.45
17/64	.265625	4 1/8	3.23	5.04
9/32	.28125	4 1/4	3.49	5.44
19/64	.296875	4 3/8	3.78	5.97
5/16	.3125	4 1/2	4.15	6.48
21/64	.328125	4 5/8	4.49	6.99
11/32	.34375	4 3/4	4.95	7.69
23/64	.359375	4 7/8	5.31	8.38
3/8	.3750	5	5.89	9.43
25/64	.390625	5 1/8	6.48	10.10
13/32	.40625	5 1/4	7.11	11.11
27/64	.421875	5 3/8	7.90	12.29
7/16	.4375	5 1/2	8.43	13.14
29/64	.453125	5 5/8	9.00	13.91
15/32	.46875	5 3/4	9.50	14.56
31/64	.484375	5 7/8	10.25	15.70
1/2	.5000	6	10.75	16.80

Letter Size Diameter	Decimal Equivalent	Length Overall Inches	M2 Net Price Each	M42 Net Price Each
A	.234	3 7/8	2.72	4.12
B	.238	4	2.72	4.12
C	.242	4	2.72	4.12
D	.246	4	2.89	4.45
E	.250	4	2.89	4.45
F	.257	4 1/8	3.23	5.04
G	.261	4 1/8	3.23	5.04
H	.266	4 1/8	3.23	5.04
I	.272	4 1/8	3.43	5.35
J	.277	4 1/4	3.48	5.45
K	.281	4 1/4	3.48	5.45
L	.290	4 1/4	3.55	5.55
M	.295	4 3/8	3.78	5.97
N	.302	4 3/8	3.78	5.97
O	.316	4 1/2	4.17	6.46
P	.323	4 5/8	4.49	6.99
Q	.332	4 3/4	4.51	6.99
R	.339	4 3/4	4.93	7.67
S	.348	4 7/8	5.31	8.38
T	.358	4 7/8	5.31	8.38
U	.368	5	5.89	9.46
V	.377	5	5.89	9.46
W	.386	5 1/8	6.30	9.92
X	.397	5 1/8	6.30	9.92
Y	.404	5 1/4	6.90	10.92
Z	.413	5 1/4	7.00	10.92

CHOICE OF TOLERANCE + .0002 OR + .0000
 - .0000 - .0002

A NOTE TO REMEMBER: We have large stocks of semi-finished material ready to be ground to meet your requirements.

CUT COSTS – HUTCHINSON HSS BLANKS FOR MANDRELS AND SPECIAL END MILLS.

METRIC HUTCHINSON HSS BLANKS

METRIC BLANKS - .35mm - 4.70mm DIAMETER

M2 HIGH SPEED STEEL - ROCKWELL "C" 62-64

M42 HIGH SPEED STEEL - ROCKWELL "C" 66-68

Diameter mm	Length Overall mm	M2 Net Price Each	M42 Net Price Each	Diameter mm	Length Overall mm	M2 Net Price Each	M42 Net Price Each
.35	38	3.31	4.71	2.10	57	1.53	2.37
.40	38	3.31	4.71	2.15	57	1.53	2.37
.45	38	3.31	4.71	2.20	57	1.53	2.37
.50	38	3.31	4.71	2.25	57	1.53	2.37
.55	38	2.71	3.81	2.30	57	1.53	2.37
.60	38	2.71	3.81	2.35	57	1.53	2.37
.65	38	2.71	3.81	2.40	57	1.58	2.47
.70	38	2.31	3.27	2.45	64	1.58	2.47
.75	38	2.31	3.27	2.50	64	1.58	2.47
.80	38	2.07	2.90	2.60	64	1.58	2.47
.85	38	2.07	2.90	2.70	64	1.58	2.47
.90	38	2.07	2.90	2.75	70	1.58	2.52
.95	38	1.91	2.63	2.80	70	1.58	2.52
1.00	38	1.91	2.63	2.90	70	1.58	2.52
1.05	41	1.75	2.50	3.00	70	1.63	2.56
1.10	44	1.75	2.50	3.10	70	1.63	2.56
1.15	44	1.75	2.50	3.20	70	1.66	2.61
1.20	48	1.75	2.50	3.25	70	1.66	2.61
1.25	48	1.75	2.50	3.30	76	1.66	2.61
1.30	48	1.67	2.39	3.40	76	1.66	2.61
1.35	48	1.67	2.42	3.50	76	1.66	2.62
1.40	48	1.67	2.42	3.60	76	1.66	2.62
1.45	48	1.67	2.42	3.70	76	1.66	2.62
1.50	48	1.67	2.42	3.75	76	1.75	2.81
1.55	48	1.67	2.42	3.80	76	1.75	2.81
1.60	48	1.67	2.42	3.90	76	1.75	2.81
1.65	51	1.67	2.42	4.00	83	1.75	2.81
1.70	51	1.67	2.42	4.10	83	1.75	2.81
1.75	51	1.52	2.28	4.20	83	1.75	2.82
1.80	51	1.52	2.28	4.25	83	1.79	2.90
1.85	51	1.52	2.28	4.30	83	1.79	2.90
1.90	51	1.52	2.28	4.40	86	1.79	2.91
1.95	51	1.52	2.28	4.50	86	1.79	2.91
2.00	51	1.52	2.36	4.60	89	2.05	3.39
2.05	57	1.53	2.37	4.70	89	2.05	3.39

CHOICE OF TOLERANCE + .0051 mm OR + .0000
 - .0000 - .0051 mm

**METRIC BLANKS AVAILABLE .25mm - 35.0mm DIAMETER
 LENGTHS UP TO 900mm TO SUIT YOUR REQUIREMENTS**

METRIC HUTCHINSON HSS BLANKS

DRILL & REAMER BLANKS

METRIC BLANKS - 4.75mm - 13.0mm DIAMETER

M2 HIGH SPEED STEEL - ROCKWELL "C" 62-64
M42 HIGH SPEED STEEL - ROCKWELL "C" 66-68

Diameter mm	Length Overall mm	M2 Net Price Each	M42 Net Price Each
4.75	89	2.05	3.39
4.80	89	2.12	3.47
4.90	92	2.43	3.95
5.00	92	2.43	3.95
5.10	92	2.43	3.95
5.20	95	2.43	3.96
5.25	95	2.68	4.35
5.30	95	2.68	4.35
5.40	95	2.68	4.35
5.50	95	2.68	4.35
5.60	98	2.68	4.35
5.70	98	2.68	4.35
5.75	98	2.68	4.35
5.80	98	2.96	4.79
5.90	98	2.96	4.79
6.00	102	2.96	4.79
6.10	102	2.96	4.79
6.20	102	3.12	5.12
6.25	102	3.12	5.12
6.30	102	3.12	5.12
6.40	105	3.52	5.89
6.50	105	3.52	5.89
6.60	105	3.52	5.89
6.70	105	3.52	5.89
6.75	105	3.52	5.89
6.80	105	3.80	6.33
6.90	105	3.80	6.33
7.00	108	3.80	6.33
7.10	108	3.80	6.33
7.20	108	3.80	6.37
7.25	108	3.80	6.37
7.30	108	3.80	6.37
7.40	111	4.06	6.80
7.50	111	4.06	6.80
7.60	111	4.06	6.80

Diameter mm	Length Overall mm	M2 Net Price Each	M42 Net Price Each
7.70	114	4.45	7.57
7.75	114	4.45	7.57
7.80	114	4.45	7.57
7.90	114	4.45	7.57
8.00	114	4.45	7.57
8.10	117	4.91	8.18
8.20	117	4.91	8.18
8.25	117	4.91	8.18
8.30	117	4.91	8.18
8.40	121	4.91	8.18
8.50	121	5.40	9.02
8.60	121	5.40	9.02
8.70	121	5.82	9.71
8.75	124	5.82	9.81
8.80	124	5.82	9.81
8.90	124	5.82	9.81
9.00	124	5.82	9.81
9.10	124	5.82	9.81
9.20	127	6.27	10.75
9.25	127	6.27	10.75
9.30	127	6.27	10.75
9.40	127	6.28	10.76
9.50	127	6.28	10.76
9.60	130	6.82	11.72
9.70	130	6.82	11.72
9.75	130	6.84	11.74
9.80	130	6.84	11.74
9.90	130	6.84	11.74
10.00	130	6.84	11.74
10.50	133	7.52	12.92
11.00	140	8.69	14.86
11.50	142	9.57	15.90
12.00	149	10.08	16.78
12.50	152	12.15	18.61
13.00	152	14.01	23.51

CHOICE OF TOLERANCE + .0051 mm OR + .0000
 - .0000 - .0051 mm

SPECIALLY EQUIPPED FOR SMALL LOT, HIGH PRECISION CENTERLESS GRINDING

HIGH SPEED STEEL DRILL BLANKS

36 INCH HSS LENGTHS TOLERANCE ± .001

FRACTIONAL SIZE DRILL RODS	DECIMAL EQUIVALENT	ANNEALED M2 HIGH SPEED BLANKS-36"	HARDENED GROUND HIGH SPEED BLANKS-36"
1/16	.0625	7.17	19.18
5/64	.0781	7.68	20.71
3/32	.0938	8.19	20.80
7/64	.1094	8.64	22.86
1/8	.1250	9.48	23.97
9/64	.1406	10.50	24.11
5/32	.1562	11.64	24.26
11/64	.1719	12.81	25.44
3/16	.1875	13.77	25.62
13/64	.2031	15.06	26.69
7/32	.2188	16.41	26.91
15/64	.2344	17.55	28.03
1/4	.2500	19.11	29.28
17/64	.2656	20.85	32.42
9/32	.2812	22.56	32.70
19/64	.2969	24.48	34.28
5/16	.3125	26.52	34.60
21/64	.3281	28.50	39.26
11/32	.3438	30.72	41.61
23/64	.3594	32.64	43.82
3/8	.3750	34.89	44.19
25/64	.3906	37.35	50.94
13/32	.4062	39.78	51.15
27/64	.4219	42.45	54.09
7/16	.4375	45.24	56.13
29/64	.4531	47.94	57.13
15/32	.4688	50.01	59.60
31/64	.4844	53.97	61.26
1/2	.5000	56.97	63.76
17/32	.5312	63.36	161.78
9/16	.5625	70.41	171.18
5/8	.6250	82.77	185.44
11/16	.6875	98.79	209.02
23/32	.7188	107.22	215.38
3/4	.7500	116.04	220.38
7/8	.8750	155.22	245.74
1	1.0000	200.34	275.46
1 1/8	1.1250	265.60	370.02

HARDENED, GROUND HSS DRILL BLANKS HAVE
A HARDNESS OF R/C 62-64

ALL BLANKS CAN BE CUT TO MEET YOUR REQUIREMENTS.

PRECISION GRINDING AVAILABLE TO A .0002 TOLERANCE

36 INCH HARDENED & GROUND HSS LENGTHS

WIRE SIZE

TOLERANCE ± .0003

Wire Size	Decimal Equiv.	Price Each
61	.0390	20.90
62	.0380	20.90
63	.0370	20.90
64	.0360	20.90
65	.0350	21.18
66	.0330	21.18
67	.0320	21.18
68	.0310	21.38
69	.0292	21.38
70	.0280	21.38
71	.0260	21.96
72	.0250	21.96
73	.0240	21.96
74	.0225	22.53
75	.0210	22.53
76	.0200	22.53
77	.0180	22.96
78	.0160	22.96
79	.0145	23.47
80	.0135	23.47

METRIC SIZE

TOLERANCE +.0000
-.0005

Metric Size	Decimal Equiv.	Price Each
.50mm	.0199	22.53
.60	.0236	21.96
.70	.0276	21.38
.80	.0315	21.38
.90	.0354	21.18
1.00	.0394	20.90
1.10	.0433	20.90
1.20	.0472	20.04
1.30	.0512	20.04
1.40	.0551	20.04
1.50	.0591	19.18
1.60	.0630	19.18
1.70	.0669	19.18
1.80	.0709	20.71
1.90	.0748	20.71
2.00	.0787	20.71
2.10	.0827	20.80
2.20	.0866	20.80
2.30	.0906	20.80
2.40	.0945	22.86
2.50	.0984	22.86

24 INCH HARDENED & GROUND HSS LENGTHS

TOLERANCE ± .001

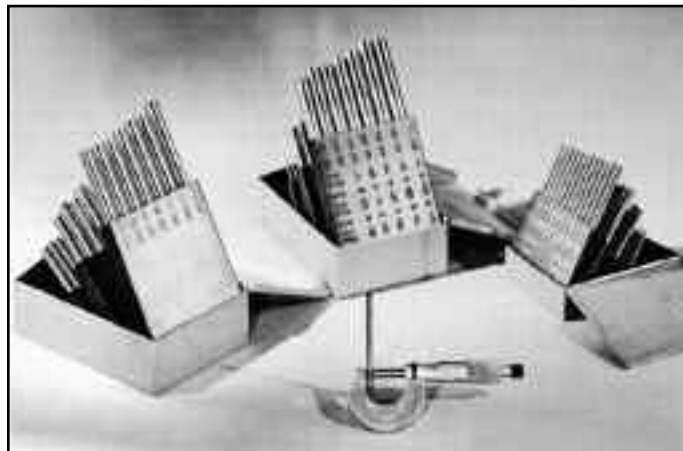
Diameter Inches	Decimal Equivalent	Price Each
17/32	.5312	97.00
9/16	.5625	111.75
5/8	.6250	116.50
11/16	.6875	140.75
23/32	.7188	148.50
3/4	.7500	156.50
13/16	.8125	177.00
7/8	.8750	182.00
1	1.0000	208.00

HSS DRILL BLANK & DRILL SETS

Conveniently packaged in all steel indexes, sets of general purpose jobber length drills and precision ground drill or reamer blanks are available for shipment from our plant.

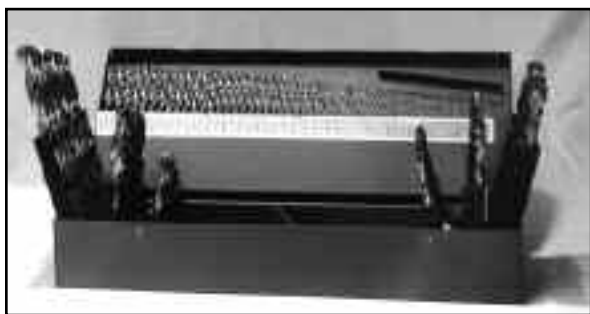
Please specify when ordering: Drill set / Drill blank ($^{+.0000}_{-.0002}$) set / Reamer Blank ($^{+.0002}_{-.0000}$) set

	DRILL SET	M2 HSS BLANK SET	INDEX ONLY
LETTER SET "A" - "Z" 26 PIECES	95.35	121.59	9.45
WIRE SET #1 - #60 60 PIECES	81.90	103.89	7.45
WIRE SET #61 - #80 20 PIECES	29.00	49.34	4.95
FRACTIONAL SET 1/16" - 1/2" x 1/64ths 29 PIECES	110.30	136.98	8.65
FRACTIONAL SET 1/16" - 1/2" x 1/32nds 15 PIECES	59.60	74.25	7.10



METRIC BLANKS AVAILABLE AS
DRILL BLANKS ($^{+.0000}_{-.0051}$ MM)OR
REAMER BLANKS ($^{+.0051}_{-.0000}$ MM)

OTHER SETS AVAILABLE TO SUIT
YOUR NEEDS - CALL FOR PRICING
AND DELIVERY



METRIC SETS	DRILL SET	M2 HSS BLANK SET	INDEX ONLY
1 mm. - 6mm. x 1/2 mm. 11 PIECES	19.75	27.73	6.15
1 mm. - 13mm. x 1/2 mm. 25 PIECES	99.30	132.43	8.65
1 mm. - 5.9 mm. x .1 mm. 50 PIECES	75.45	104.63	9.65
6 mm. - 10 mm. x .1 mm. 41 PIECES	178.40	220.79	22.95

115 PIECES - COMPLETE IN ONE BOX			
INCLUDES: WIRE SET #1 - #60, LETTER SET "A" - "Z", 1/16" - 1/2" x 1/64ths	DRILL SET	M2 HSS BLANK SET	INDEX ONLY
	297.15	371.56	34.65

36" LONG AIR HARDENING DRILL RODS

AISI TYPE A2

Size	Decimal	Price
1/16	.0625	2.21
5/64	.0781	3.80
3/32	.0937	3.56
7/64	.1094	4.26
1/8	.1250	3.91
9/64	.1406	5.49
5/32	.1562	5.56
11/64	.1719	6.71
3/16	.1875	5.94
13/64	.2031	7.68
7/32	.2187	8.27
15/64	.2344	9.50
1/4	.2500	8.13
17/64	.2656	9.06
9/32	.2812	10.17
19/64	.2969	11.37
5/16	.3125	10.49
21/64	.3281	12.79
11/32	.3437	14.00
23/64	.3594	15.31
3/8	.3750	14.93
25/64	.3906	17.87
13/32	.4062	19.34
27/64	.4219	20.87
7/16	.4375	20.32
29/64	.4531	24.04
15/32	.4687	25.77
31/64	.4844	27.51
1/2	.5000	25.45
17/32	.5312	32.25
9/16	.5625	32.19
19/32	.5937	39.59
5/8	.6250	39.28
21/32	.6562	47.86
11/16	.6875	47.55
23/32	.7187	57.45
3/4	.7500	56.14
13/16	.8125	65.88
7/8	.8750	76.41
1	1.0000	99.19
1-1/16	1.0625	111.99
1-1/8	1.1250	125.54
1-1/4	1.2500	145.09
1-3/8	1.3750	175.61
1-1/2	1.5000	207.21
1-3/4	1.7500	281.99
2	2.0000	365.51

AISI TYPE D2

Size	Decimal	Price
2mm	.0787	5.95
3mm	.1181	8.82
4mm	.1575	10.52
5mm	.1969	11.37
6mm	.2362	15.17
7mm	.2756	15.33
8mm	.3150	18.89
9mm	.3543	22.96
10mm	.3937	28.19
11mm	.4331	35.04
12mm	.4724	40.48
13mm	.5118	46.88
14mm	.5512	54.36
15mm	.5906	61.88
16mm	.6299	68.49
17mm	.6693	78.14
18mm	.7087	88.01
19mm	.7480	95.72
20mm	.7874	111.78
21mm	.8268	118.33
22mm	.8661	129.88
23mm	.9055	139.26
24mm	.9449	153.83
25mm	.9843	166.88

AISI TYPE S7

Size	Decimal	Price
1/8	.1250	21.17
3/16	.1875	17.30
1/4	.2500	24.30
5/16	.3125	33.47
3/8	.3750	46.52
7/16	.4375	63.44
1/2	.5000	79.43
5/8	.6250	120.20
3/4	.7500	173.10
7/8	.8750	235.39
1	1.0000	295.81
1 1/8	1.1250	372.84
1 1/4	1.2500	509.50
1 1/2	1.5000	732.40
1 3/4	1.7500	713.47
2	2.0000	904.88

Size	Decimal	Price
1/16	.0625	4.47
3/32	.0937	6.51
1/8	.1250	7.97
5/32	.1562	10.35
3/16	.1875	12.28
7/32	.2187	14.22
1/4	.2500	15.96
5/16	.3125	18.82
3/8	.3750	25.74
7/16	.4375	35.01
1/2	.5000	37.08
5/8	.6250	56.31
3/4	.7500	81.12
7/8	.8750	110.42
1	1.0000	140.53
1 1/4	1.2500	219.58
1 3/8	1.3750	265.67
1 1/2	1.5000	316.16
1 3/4	1.7500	430.36
2	2.0000	562.64

DRILL ROD IS NOT HEAT TREATED

DRILL ROD TOLERANCES	
Diameter	Tolerance
Below .124	± .0003
.125-1.500	± .0005
1.500-2.000	± .001

TYPICAL ANALYSIS OF DRILL ROD MATERIALS							
	C	Si	Mn	W	Cr	V	Mo
S7	.50	.25	.75		3.25		1.40
D2	1.50	.30	.30		12.00	.90	.75
A2	1.00	.30	.75		5.00	.25	1.00
O1	.94	.30	1.20	.50	.50		

**ALL DRILL ROD CAN
BE CUT AND HEAT TREATED
TO MEET YOUR
REQUIREMENTS.**

**PRECISION GRINDING
OF DRILL ROD
AVAILABLE TO A
.0002 TOLERANCE.**

**ALSO AVAILABLE
IN LIMITED SIZES:
AISI TYPE W1**

**CALL FOR PRICING
AND DELIVERY.**

36" LONG AISI 0-1 OIL HARDENING DRILL RODS

NUMBER & LETTER SIZES

Size	Decimal	Price	Size	Decimal	Price	Size	Decimal	Price	Size	Decimal	Price
60	.039	8.63	37	.103	2.15	14	.180	4.00	K	.281	4.94
59	.040	8.63	36	.106	2.30	13	.182	4.05	L	.290	5.24
58	.041	8.63	35	.108	2.38	12	.185	4.21	M	.295	5.44
57	.042	8.63	34	.110	2.45	11	.188	3.48	N	.302	5.71
56	.045	8.63	33	.112	2.52	10	.191	3.57	O	.316	5.59
55	.050	8.63	32	.115	2.69	9	.194	3.73	P	.323	5.78
54	.055	8.63	31	.120	2.92	8	.197	3.84	Q	.332	6.13
53	.058	8.63	30	.127	2.43	7	.199	3.87	R	.339	6.41
52	.063	1.59	29	.134	2.69	6	.201	3.96	S	.348	6.71
51	.066	1.73	28	.139	2.92	5	.204	4.12	T	.358	7.11
50	.069	1.87	27	.143	3.09	4	.207	4.19	U	.368	7.53
49	.072	2.06	26	.146	3.23	3	.212	4.43	V	.377	7.72
48	.075	2.23	25	.148	3.78	2	.219	4.16	W	.386	8.10
47	.077	2.38	24	.151	3.43	1	.227	4.46	X	.397	8.58
46	.079	2.48	23	.153	3.56	A	.234	4.73	Y	.404	8.87
45	.081	2.61	22	.155	3.58	B	.238	4.93	Z	.413	9.26
44	.085	2.81	21	.157	3.03	C	.242	5.06			
43	.088	3.07	20	.161	3.21	D	.246	5.21			
42	.092	3.38	19	.164	3.31	F	.257	4.12			
41	.095	1.83	18	.168	3.48	G	.261	4.25			
40	.097	1.89	17	.172	3.64	H	.266	4.43			
39	.099	2.00	16	.175	3.75	I	.272	4.63			
38	.101	2.13	15	.178	3.90	J	.277	4.80			

MILLIMETER SIZES

Size	Decimal	Price
2mm	.0787	2.98
3mm	.1181	3.45
4mm	.1575	3.77
5mm	.1969	4.73
6mm	.2362	6.50
7mm	.2756	5.84
8mm	.3150	7.02
9mm	.3543	8.45
10mm	.3937	10.34
11mm	.4331	12.73
12mm	.4724	14.63
13mm	.5118	16.66
14mm	.5512	19.30
15mm	.5906	22.08
16mm	.6299	24.28
17mm	.6693	27.81
18mm	.7087	31.26
19mm	.7480	33.89
20mm	.7874	37.53
21mm	.8268	41.50
22mm	.8661	45.51
23mm	.9055	48.34
24mm	.9449	54.01
25mm	.9843	58.64

FRACTIONAL SIZES

Size	Decimal	Price	Size	Decimal	Price	Size	Decimal	Price
1/16	.0625	\$1.45	29/64	.4531	11.14	27/32	.8438	34.26
5/64	.0781	2.43	15/32	.4688	11.11	55/64	.8594	36.43
3/32	.0937	1.74	31/64	.4844	12.73	7/8	.8750	35.13
7/64	.1094	2.43	1/2	.5000	10.78	57/64	.8906	39.15
1/8	.1250	2.22	33/64	.5156	13.58	29/32	.9063	39.51
9/64	.1406	2.98	17/32	.5313	14.03	59/64	.9219	41.93
5/32	.1563	2.79	35/64	.5469	15.27	15/16	.9375	42.26
11/64	.1719	3.63	9/16	.5625	15.06	61/64	.9531	44.82
3/16	.1875	3.21	37/64	.5781	17.08	31/32	.9688	45.14
13/64	.2031	4.05	19/32	.5938	17.57	63/64	.9844	47.79
7/32	.2188	3.84	39/64	.6094	18.74	1	1.0000	39.67
15/64	.2344	4.76	5/8	.6250	16.66	1-1/16	1.0625	51.63
1/4	.2500	3.65	41/64	.6406	20.69	1-3/32	1.0938	54.44
17/64	.2656	4.43	21/32	.6563	21.16	1-1/8	1.1250	55.28
9/32	.2813	4.59	43/64	.6719	22.76	1-3/16	1.1875	64.52
19/64	.2969	5.49	11/16	.6875	22.21	1-1/4	1.2500	64.77
5/16	.3125	4.59	45/64	.7031	24.93	1-5/16	1.3125	74.79
21/64	.3281	6.00	23/32	.7188	25.38	1-3/8	1.3750	78.36
11/32	.3438	6.08	47/64	.7344	27.18	1-7/16	1.4375	89.76
23/64	.3594	7.19	3/4	.7500	23.44	1-1/2	1.5000	92.34
3/8	.3750	6.47	49/64	.7656	28.93	1-9/16	1.5625	99.56
25/64	.3906	8.28	25/32	.7813	29.36	1-5/8	1.6250	113.50
13/32	.4062	8.40	51/64	.7969	31.31	1-3/4	1.7500	125.69
27/64	.4219	9.64	13/16	.8125	30.31	1-7/8	1.8750	151.14
7/16	.4375	8.77	53/64	.8281	33.86	2	2.0000	162.83

DRILL ROD TOLERANCES	
Diameter	Tolerance
Below .124	± .0003
.125-1.500	± .0005
1.500-2.000	± .001

DRILL ROD IS NOT HEAT TREATED

**ALL DRILL ROD CAN
BE CUT AND HEAT TREATED
TO MEET YOUR
REQUIREMENTS.**

**PRECISION GRINDING
OF DRILL ROD
AVAILABLE TO A
.0002 TOLERANCE.**

**ALSO AVAILABLE
IN LIMITED SIZES:
AISI TYPE W1**

**CALL FOR PRICING
AND DELIVERY.**

HUTCHINSON SUPER HIGH ALLOY BLANKS

- ASP30 (8.5% COBALT)**
- T15PM (12% TUNGSTEN)**
- ASP60 (10.5% COBALT)**
- M4PM (5.75 TUNGSTEN)**
- ASP23 (AISI M3:2)**
- CPM10V (AISI A11)(9.75% VANADIUM)**

ASP30 is an 8.5% cobalt content high-alloy high-speed steel manufactured powder-metallurgically. This high performance material exhibits good grindability, toughness, hot hardness and wear resistance.

T15PM is a tungsten type high speed steel containing high carbon and vanadium for very high hardness and maximum wear resistance, and cobalt for good red hardness. Manufactured powder—metallurgically for improved quality and grindability.

M4PM is designed for high wear resistance. Its high vanadium and carbon content provide high resistance to wear in cold work and cutting applications. It exhibits improved performance working with abrasive materials. Manufactured powder-metallurgically for improved grindability and toughness.

ASP23 An all around steel suitable for cutting tools such as reamers, taps, milling cutters, broaches, etc. . .

Used where cutting conditions demand high wear resistance and superior toughness but where demands for hot hardness are not paramount. ASP23 is also suitable for cold work applications where tools for punching show an admirable combination of wear resistance and toughness.

ASP60 is an extremely high alloy high speed steel. The steel is atomized, compacted and processed to required dimensions. The result is an extremely homogeneous steel. ASP 60's homogeneous structure enhances such properties as dimensional stability and shape during heat treatment, as well as improving grindability and toughness. ASP-60's method of manufacture and composition mean that it can provide high hot hardness and good wear resistance.

CPM10V(AISI A11) is a unique tool steel made by a particle metallurgy process. Its high carbon and high vanadium content provides a combination of exceptionally good wear resistance, toughness and strength for both cold and warm work applications.

Diameter Inches	Decimal Equivalent	Length Overall Inches	ASP30 Net Price Each	T15PM Net Price Each	M4PM Net Price Each	ASP60 Net Price Each	ASP23 Net Price Each	CPM10V Net Price Each
1/16	.0625	2 1/2	4.99	—	4.30	—	4.21	—
3/32	.09375	2 1/2	4.67	—	4.15	—	4.07	—
1/8	.1250	2 1/2	3.46	—	3.06	—	3.01	4.69
		4	4.72	—	4.17	—	4.09	7.46
		6	6.80	—	6.01	—	5.89	11.20
3/16	.1875	2 1/2	3.81	—	3.55	11.87	3.75	4.99
		4	5.83	—	5.10	18.91	4.96	7.04
		6	9.21	—	8.03	28.97	7.87	11.41
1/4	.2500	2 1/2	5.02	7.33	4.34	11.51	4.25	6.25
		4	7.47	10.92	6.48	17.08	6.33	10.00
		6	11.50	16.79	9.97	26.33	9.76	15.05
5/16	.3125	4	9.66	14.06	8.33	21.86	8.13	13.37
		6	13.57	19.78	11.71	30.67	11.45	20.05
3/8	.3750	4	11.83	16.89	10.04	26.33	9.81	16.28
		6	17.74	25.35	15.05	39.50	14.71	24.40
7/16	.4375	6	22.92	32.77	19.58	—	19.74	—
1/2	.5000	4	18.55	26.60	15.66	40.88	15.31	24.18
		6	25.89	37.28	21.90	57.01	21.38	36.03
5/8	.6250	4	31.57	43.49	26.59	69.69	25.98	39.23
		6	42.49	60.40	35.86	93.73	35.04	58.84
3/4	.7500	4	41.89	59.44	35.33	92.41	34.54	53.41
		6	57.58	82.00	48.70	126.98	47.56	79.85
7/8	.8750	6	74.67	106.30	63.17	—	—	104.77
1	1.0000	6	92.64	132.46	78.62	207.83	—	134.58

CHOICE OF TOLERANCE $\pm .0002$ **OR** $\pm .0000$
 $-.0000$ $-.0002$

AVAILABLE IN ANY DIAMETER .0300 - 1.000
ADDITIONAL LENGTHS AVAILABLE
TO SUIT YOUR REQUIREMENTS

TYPICAL ANALYSIS OF SUPER HIGH ALLOY MATERIALS:

	C	Cr	Mo	W	V	Co	Hardness
ASP30	1.28	4.2	5.0	6.4	3.1	8.5	R/C 65-67
T15PM	1.55	4.0	—	12.0	5.0	5.0	R/C 64-66
M4PM	1.35	4.0	4.5	5.75	4.0	—	R/C 63-65
ASP60	2.30	4.0	7.0	6.5	6.5	10.5	R/C 67-69
ASP23	1.28	4.2	5.0	6.4	3.1	—	R/C 63-65
CPM10V	2.45	5.25	1.3	—	9.75	—	R/C 62-64

WKE 45 SUPER COBALT HSS BLANKS

**WKE 45 WITH 11% COBALT CONTENT, FINE GRAIN
STRUCTURE AND UNIQUE CHEMICAL
COMPOSITION, MEETS REQUIREMENTS FOR
MAXIMUM PERFORMANCE IN MOST CUTTING
TOOL APPLICATIONS**

METRIC		
Dia. mm	Length Overall mm	Net Price Each
3	100	13.22
4	80	10.82
4	100	13.83
5	100	14.85
5	160*	18.76
6	63*	8.47
6	80*	10.76
6	100	16.23
6	160	21.66
8	100	19.08
8	160	26.66
8	200	32.11
10	100	24.18
10	160	35.53
10	200*	85.68
12	100	29.27
12	160	51.82
12	200*	59.75
14	160	59.68
15	100*	44.72
16	100*	45.37
16	160*	71.36
16	200*	87.40
18	100*	55.78
18	200*	106.53
20	200	117.45

FRACTIONAL		
Dia. Inches	Length Overall Inches	Net Price Each
1/8	4	9.36
3/16	2 1/2	8.08
3/16	4	11.59
1/4	2 1/2*	9.55
1/4	4	14.63
1/4	6	22.45
5/16	4	19.74
5/16	6 9/32	28.25
5/16	8*	32.72
3/8	4	24.53
3/8	6	30.96
3/8	8*	41.21
1/2	4	35.44
1/2	6	48.15
1/2	8	64.67
5/8	4*	46.75
5/8	6	74.22
3/4	6	94.45
3/4	8*	159.32

HARDNESS:
R/C 67-69

STANDARD DIAMETER
TOLERANCE

+ .0
- .002"

SPECIAL DIAMETERS
AND TOLERANCES
AVAILABLE—PRICES
UPON REQUEST

WKE45 SQUARE
& RECTANGULAR
TOOLBITS AVAILABLE
SEE PAGE 41

WKE45 TYPICAL ANALYSIS					
C	Cr	Mo	W	V	Co
1.40	4.2	3.5	9.0	3.5	11.0

*** AVAILABLE UNTIL
STOCK IS EXHAUSTED**

ENGRAVING BLANKS

SPLIT HALF-ROUND Solid Tungsten Carbide



SINGLE END

DOUBLE END

Solid Tungsten Carbide Blanks with a close sub-micron grain structure, hardness of RA91.8 and high transverse rupture strength offer superior results when machining both ferrous and non ferrous metals as well as plastics, fiberglass and mylar.

DIAMETER	O.A.L.	LENGTH OF SPLIT/FLAT	SINGLE END PRICE EA.	DOUBLE END PRICE EACH
1/8	1-1/2	3/8	5.47	8.83
1/8	2	3/8	6.67	9.44
1/8	3	3/8	8.35	10.85
1/8	4	3/8	11.64	17.84
1/8	6	3/8	19.08	23.62
3/16	2	1/2	8.55	12.34
3/16	2-1/2	1/2	9.43	13.22
3/16	3	1/2	12.38	15.58
3/16	4	1/2	17.27	20.49
3/16	6	1/2	24.44	29.54
1/4	2	1/2	11.25	15.79
1/4	2-1/2	1/2	11.96	17.40
1/4	3	1/2	16.23	19.77
1/4	4	1/2	22.74	26.27
1/4	6	1/2	33.26	38.40
5/16	2-1/2	1/2	17.67	22.49
5/16	3	1/2	26.97	31.98
5/16	4	1/2	34.78	37.27
5/16	6	1/2	48.68	54.22
3/8	2-1/2	1/2	23.13	29.16
3/8	3	1/2	30.84	36.80
3/8	4	1/2	41.45	46.76
3/8	6	1/2	60.89	67.40
7/16	2-1/2	5/8	24.41	31.79
7/16	3	5/8	30.84	36.80
7/16	4	5/8	41.45	46.76
7/16	6	5/8	60.89	67.40
1/2	3	5/8	44.91	52.13
1/2	4	5/8	59.04	66.26
1/2	6	5/8	98.24	107.16

Tolerances: Diameter $\begin{matrix} +.0 \\ -.0005 \end{matrix}$ Split/Flats $\begin{matrix} +.001 \\ -.0 \end{matrix}$ above centerline
 END SHAPES AVAILABLE ON REQUEST - 6PC. MINIMUM PER ITEM



INFORMATION AND PRICING AVAILABLE ON REQUEST
 ALSO AVAILABLE IN BOXED SETS

CARBIDE DRILL BLANKS

CENTERLESS GROUND - CUT TO LENGTH

Dia.	Decimal	LENGTH								
		1½	2	2½	3	3½	4	5	6	12
1/16	.0625	3.48	—	—	3.23	—	—	—	8.77	16.07
3/32	.09375	2.34	3.00	3.19	2.39	—	—	—	10.20	16.39
1/8	.1250	1.16	1.93	2.15	3.49	—	4.65	—	10.68	18.12
5/32	.15625	5.21	2.99	3.75	—	—	—	—	13.57	22.37
3/16	.1875	2.82	3.44	4.32	5.17	—	6.99	—	19.33	30.81
1/4	.2500	5.90	6.87	8.51	10.53	13.36	12.41	—	23.24	47.79
5/16	.3125	—	9.27	11.19	12.26	17.26	19.29	—	34.90	74.67
3/8	.3750	7.49	12.17	13.61	16.14	20.09	23.63	—	38.13	99.27
7/16	.4375	—	—	17.03	21.51	27.10	28.04	—	42.19	127.00
1/2	.5000	—	16.40	21.32	25.55	29.81	35.74	40.55	55.45	158.83
9/16	.5625	—	—	—	—	44.14	—	—	73.69	201.02
5/8	.6250	—	—	—	40.11	46.78	57.27	73.52	88.23	248.16
3/4	.7500	—	—	—	71.37	77.75	76.45	96.21	116.65	285.89
7/8	.8750	—	—	89.67	—	—	109.75	—	178.96	389.11
1	1.0000	—	—	—	—	—	126.69	165.95	201.74	361.91
1 1/4	1.2500	—	—	—	—	—	256.21	—	—	—

METRIC SIZES		
Dia.	Length	Price
3mm	39mm	1.47
4	51	4.30
5	51	4.61
6	51	5.53
6	64	7.81
8	64	11.81
10	70	18.06
10	100	28.06
12	76	25.76
14	84	38.49
16	89	53.47
18	100	87.47
20	100	100.57
25	100	132.09

C2 Micrograin Carbide
 10% Cobalt Content
 Hardness R/A 91.8
 TRS (nominal) 410 KPSI
 Density 14.50 Gm/CC

Diameter Tolerance

**+0
-0.0005**

STYLE STB 1000 & 2000 BLANKS AVAILABLE -
 SEE PAGES 44 & 45

Additional grades and tolerances available on application
Available in any diameter 1/64"-3" - lengths up to 30"

HARDENED & GROUND TOOL STEEL BLANKS

SIX INCH LENGTHS

HEAT TREATED & GROUND TO A DIAMETER
TOLERANCE OF +.0000 -.0003

SEE PAGE 10 FOR TYPICAL CHEMICAL ANALYSIS OF THESE MATERIALS		MATERIAL			
		AISI O1 R/C 60-62 Net Price Each	AISI A2 R/C 58-60 Net Price Each	AISI S7 R/C 58-60 Net Price Each	AISI D2 R/C 60-62 Net Price Each
DIAMETER	DECIMAL EQUIV.				
1/16	.0625	\$5.71	\$5.49	\$5.83	\$10.05
5/64	.078125	5.57	5.44	5.59	9.03
3/32	.09375	5.71	5.58	5.88	8.52
7/64	.109375	5.23	5.07	5.14	7.80
1/8	.1250	5.38	5.38	5.69	10.08
5/32	.15625	5.51	5.63	6.02	8.04
3/16	.1875	5.18	5.40	6.76	11.09
7/32	.21875	5.74	6.19	7.07	9.05
1/4	.2500	6.01	6.43	9.71	13.00
9/32	.28125	6.72	7.39	8.42	11.35
5/16	.3125	6.82	7.68	10.95	15.83
11/32	.34375	7.89	9.02	10.64	14.80
3/8	.3750	8.07	9.17	13.01	18.48
7/16	.4375	10.89	12.97	16.77	25.92
1/2	.5000	12.18	14.80	16.18	24.65
9/16	.5625	15.83	19.79	—	—
5/8	.6250	18.89	22.92	25.16	37.94
3/4	.7500	24.78	30.44	34.22	52.62
7/8	.8750	33.30	42.81	46.38	71.37
1"	1.0000	41.34	50.90	57.79	88.84

AVAILABLE IN SPECIAL LENGTHS, DIAMETERS,
HARDNESS & TOLERANCES TO MEET YOUR REQUIREMENTS

CALL FOR PRICING & DELIVERY

HARDENED & GROUND TOOL STEEL BLANKS

TWELVE INCH LENGTHS

HEAT TREATED & GROUND TO A DIAMETER
TOLERANCE OF +.0000 -.0003

SEE PAGE 10 FOR
TYPICAL CHEMICAL
ANALYSIS OF THESE
MATERIALS

DIAMETER	DECIMAL EQUIV.	MATERIAL			
		AISI O1 R/C 60-62 Net Price Each	AISI A2 R/C 58-60 Net Price Each	AISI S7 R/C 58-60 Net Price Each	AISI D2 R/C 60-62 Net Price Each
1/16	.0625	\$14.51	\$14.19	\$15.55	\$24.79
5/64	.078125	14.16	14.07	15.55	22.88
3/32	.09375	9.45	9.37	12.55	19.38
7/64	.109375	10.21	10.05	12.08	18.69
1/8	.1250	10.59	10.84	13.62	23.57
5/32	.15625	10.91	11.46	14.59	19.48
3/16	.1875	10.33	11.94	15.21	24.30
7/32	.21875	10.62	11.99	15.27	20.22
1/4	.2500	10.96	12.27	21.18	29.06
9/32	.28125	12.24	14.17	17.90	25.23
5/16	.3125	13.35	15.75	25.32	36.32
11/32	.34375	15.20	16.56	23.47	33.86
3/8	.3750	14.84	18.26	30.40	42.32
7/16	.4375	21.45	26.90	37.13	57.71
1/2	.5000	23.86	30.49	36.58	56.27
9/16	.5625	29.96	40.22	—	—
5/8	.6250	37.07	45.43	55.94	85.32
3/4	.7500	46.59	59.32	73.44	116.51
7/8	.8750	61.05	83.05	99.57	158.08
1"	1.0000	76.97	92.25	130.47	197.34

AVAILABLE IN SPECIAL LENGTHS, DIAMETERS,
HARDNESS & TOLERANCES TO MEET YOUR REQUIREMENTS

CALL FOR PRICING & DELIVERY

HARDENED & GROUND 440C STAINLESS STEEL BLANKS

SIX & TWELVE INCH LENGTHS

HEAT TREATED TO R/C 58-60 & GROUND
TO A DIAMETER TOLERANCE OF +.0000 -.0003

DIAMETER	DECIMAL EQUIV.	6" LONG	12" LONG
		Net Price Each	Net Price Each
1/16	.0625	\$16.42	\$35.38
5/64	.078125	14.42	31.38
3/32	.09375	12.42	27.38
7/64	.109375	10.42	23.38
1/8	.1250	13.21	29.11
5/32	.15625	14.44	30.94
3/16	.1875	15.03	30.09
7/32	.21875	11.03	22.09
1/4	.2500	19.82	41.22
9/32	.28125	15.82	33.22
5/16	.3125	17.96	36.16
11/32	.34375	13.96	28.16
3/8	.3750	19.87	41.67
7/16	.4375	22.18	46.68
1/2	.5000	25.43	50.10
9/16	.5625	34.17	71.24
5/8	.6250	37.00	76.51
3/4	.7500	43.92	87.50
7/8	.8750	56.37	111.72
1"	1.0000	63.36	125.71

HEAT TREATED 440C IS ONE OF THE HARDEST STAINLESS STEELS.
IT IS MAGNETIC AND HAS GOOD WEAR RESISTANCE DUE TO HIGH CARBON CONTENT

AVAILABLE IN SPECIAL LENGTHS, DIAMETERS,
HARDNESS & TOLERANCES TO MEET YOUR REQUIREMENTS

CALL FOR PRICING & DELIVERY

FRACTIONAL HSS DRILLS

Fractional Size	Decimal Equivalent	General Purpose 118° Point	Heavy Duty 135° Split Point	Cobalt 135° Split Point	Fast Spiral 118° Point	Slow Spiral 118° Point	Half Round 118° Point
1/64	.015625	2.16	—	*3.77	2.17	3.26	5.89
1/32	.03125	1.32	—	*3.09	2.39	2.72	4.46
3/64	.046875	1.32	—	*2.22	1.87	2.58	8.42
1/16	.0625	1.29	1.38	2.03	1.85	2.46	8.68
5/64	.078125	1.29	1.38	2.03	1.87	2.46	8.68
3/32	.09375	1.18	1.38	2.03	1.87	2.46	8.68
7/64	.109375	1.24	1.46	2.14	1.88	2.46	9.06
1/8	.1250	1.21	1.46	2.59	1.81	2.38	9.18
9/64	.140625	1.33	1.60	2.62	1.88	2.38	9.91
5/32	.15625	1.36	1.62	2.93	1.96	2.85	10.08
11/64	.171875	1.48	1.75	3.09	2.36	3.20	10.56
3/16	.1875	1.65	1.97	3.44	2.63	3.35	11.43
13/64	.203125	1.82	2.15	4.15	3.01	3.78	12.64
7/32	.21875	2.01	2.39	4.55	3.29	4.43	13.56
15/64	.234375	2.18	2.62	4.84	3.72	4.85	14.53
1/4	.2500	2.30	2.75	5.11	3.54	4.85	19.92
17/64	.265625	2.79	3.31	5.84	4.79	5.84	22.47
9/32	.28125	2.88	3.40	6.13	4.78	6.46	25.07
19/64	.296875	3.34	3.95	7.49	5.54	7.17	27.63
5/16	.3125	3.69	4.35	7.98	5.67	7.90	30.28
21/64	.328125	4.11	4.86	8.79	6.60	8.34	33.17
11/32	.34375	4.55	5.39	9.64	7.00	9.36	36.15
23/64	.359375	5.14	6.11	11.16	8.74	11.17	39.16
3/8	.3750	5.23	6.22	10.99	8.44	11.17	42.13
25/64	.390625	6.01	7.14	12.62	10.15	12.33	45.58
13/32	.40625	6.15	7.33	13.14	9.85	12.83	49.02
27/64	.421875	6.84	8.14	14.55	11.78	14.48	52.46
7/16	.4375	7.14	8.47	14.85	11.56	14.88	55.89
29/64	.453125	8.01	9.47	17.91	12.68	16.91	59.61
15/32	.46875	8.46	10.04	18.24	13.06	18.25	63.33
31/64	.484375	8.93	10.53	18.81	14.28	19.06	67.05
1/2	.5000	8.86	10.56	18.51	13.79	19.06	70.75

* NOT SPLIT POINT

- ALSO AVAILABLE :**
- LETTER SIZES
 - PARABOLIC FLUTE
 - STRAIGHT FLUTE
 - CARBIDE TIPPED
 - TAPER SHANKS
 - SUPERFLUTE
 - TYPE A
 - TYPE C
 - DECIMAL SIZES
 - METRIC SIZES
 - TAPER LENGTHS
 - TYPE M
 - AUTOMOTIVE
 - BRITE OR BLACK FINISH
 - TYPE B

CALL FOR PRICING AND DELIVERY

NO MINIMUM ORDER

NO PACKAGE QUANTITY

WIRE SIZE HSS DRILLS



General Purpose



Slow Spiral



Fast Spiral



Half Round

Wire Size	Decimal Equivalent	General Purpose 118° Point	Heavy Duty 135° Split Point	Cobalt 135° Split Point	Fast Spiral 118° Point	Slow Spiral 118° Point	Half Round 118° Point
1	.2280	2.45	3.14	5.54	3.68	4.99	13.56
2	.2210	2.47	3.19	5.54	3.77	4.99	13.56
3	.2130	2.23	2.86	5.17	3.54	4.80	12.64
4	.2090	2.24	2.89	5.20	3.54	4.80	12.64
5	.2055	2.24	2.89	5.20	3.54	4.80	12.64
6	.2040	2.24	2.89	5.20	3.54	4.80	12.64
7	.2010	1.94	2.53	4.03	2.90	4.14	11.43
8	.1990	1.99	2.55	4.03	2.98	4.14	11.43
9	.1960	1.98	2.55	4.03	2.90	4.14	11.43
10	.1935	1.95	2.53	4.03	2.90	4.14	11.43
11	.1910	1.82	2.35	4.03	2.75	3.87	11.43
12	.1890	1.84	2.37	4.03	2.91	3.87	11.43
13	.1850	1.80	2.30	3.87	2.74	3.63	10.56
14	.1820	1.80	2.30	3.88	2.74	3.63	10.56
15	.1800	1.80	2.30	3.88	2.65	3.63	10.56
16	.1770	1.80	2.30	3.60	2.65	3.63	10.56
17	.1730	1.80	2.30	3.54	2.74	3.63	10.56
18	.1695	1.49	1.91	3.22	2.36	3.20	10.08
19	.1660	1.48	1.89	3.13	2.30	3.20	10.08
20	.1610	1.47	1.89	3.13	2.30	3.20	10.08
21	.1590	1.36	1.74	3.11	2.10	3.09	10.08
22	.1570	1.38	1.75	3.13	2.18	3.09	10.08
23	.1540	1.38	1.73	3.13	2.03	3.09	9.91
24	.1520	1.38	1.73	3.11	1.92	3.09	9.91
25	.1495	1.30	1.67	2.83	1.92	2.98	9.91
26	.1470	1.32	1.69	2.82	1.92	2.98	9.91
27	.1440	1.31	1.67	2.81	1.92	2.98	9.91
28	.1405	1.24	1.54	2.63	1.88	2.98	9.18
29	.1360	1.24	1.53	2.56	1.78	2.46	9.18
30	.1285	1.24	1.53	2.38	1.79	2.46	9.18
31	.1200	1.24	1.51	2.37	1.83	2.46	9.06
32	.1160	1.24	1.51	2.32	1.83	2.46	9.06
33	.1130	1.24	1.51	2.23	1.88	2.46	9.06
34	.1110	1.24	1.51	2.24	1.88	2.46	9.06
35	.1100	1.36	1.51	2.23	1.83	2.46	9.06
36	.1065	1.36	1.50	2.20	1.88	2.46	8.68
37	.1040	1.36	1.51	2.20	1.83	2.46	8.68
38	.1015	1.36	1.51	2.06	1.83	2.46	8.68
39	.0995	1.36	1.51	2.06	1.83	2.46	8.68
40	.0980	1.36	1.51	2.06	1.79	2.46	8.68

WIRE SIZE HSS DRILLS

Typical Uses:

General Purpose:	Cast Iron, Steel, Steel Forgings, Short Runs
Heavy Duty:	Stainless Steel, Tough Alloy Steel
Cobalt:	Titanium, Asbestos, Graphite, High Temperature Alloys, Glass Filled Epoxies, Clay
Fast Spiral:	Aluminum, Magnesium, Copper, Bronze, Soft Steel, Slate, Wood, Die Casting
Slow Spiral:	Brass, Soft Materials
Half Round:	Brass, Copper, Hard Rubber, Soft Woods, Molded Plastics

Wire Size	Decimal Equivalent	General Purpose 118° Point	Heavy Duty 135° Split Point	Cobalt 135° Split Point *	Fast Spiral 118° Point	Slow Spiral 118° Point	Half Round 118° Point
41	.0960	1.36	1.50	2.03	1.91	2.46	8.68
42	.0935	1.36	1.51	2.00	1.91	2.46	8.68
43	.0890	1.36	1.50	2.00	1.81	2.46	8.68
44	.0860	1.36	1.50	2.00	1.87	2.46	8.68
45	.0820	1.36	1.51	2.00	1.87	2.46	8.68
46	.0810	1.36	1.51	2.00	1.87	2.47	8.68
47	.0785	1.36	1.51	2.00	1.91	2.47	8.68
48	.0760	1.36	1.51	2.00	1.87	2.47	8.68
49	.0730	1.36	1.51	2.00	1.91	2.47	8.68
50	.0700	1.36	1.51	2.00	1.87	2.47	8.68
51	.0670	1.36	1.51	2.00	1.87	2.47	8.68
52	.0635	1.36	1.51	2.00	1.87	2.71	8.68
53	.0595	1.36		2.23	1.87	2.74	8.42
54	.0550	1.36		2.23	1.87	3.57	8.42
55	.0520	1.36		2.23	1.81	3.57	8.42
56	.0465	1.36		2.54	1.87	3.57	8.42
57	.0430	1.36		2.54	1.91	3.57	8.42
58	.0420	1.36		2.55	1.91	3.57	4.06
59	.0410	1.36		2.54	1.91	3.57	3.71
60	.0400	1.36		2.54	1.91	3.57	3.71
61	.0390	1.36		2.93	2.20	3.57	3.80
62	.0380	1.36		2.93	2.20	4.26	3.80
63	.0370	1.36		2.92	2.20	4.26	3.80
64	.0360	1.36		2.93	2.20	2.46	3.80
65	.0350	1.36		2.92	2.08	2.46	3.80
66	.0330	1.36		3.11	2.20	2.46	3.80
67	.0320	1.36		3.09	2.08	2.46	3.80
68	.0310	1.36		3.09	2.08	2.46	3.80
69	.0292	1.53		3.50	2.33	2.51	5.01
70	.0280	1.53		3.50	2.33	2.53	5.01
71	.0260	1.86		3.51	3.05	3.31	5.01
72	.0250	1.86		3.51	2.87	3.31	5.01
73	.0240	1.86		3.51	2.86	3.31	5.01
74	.0225	1.86		3.51	2.87	3.31	5.01
75	.0210	1.86		3.88	2.87	3.31	5.01
76	.0200	1.86		3.86	2.86	3.31	5.01
77	.0180	1.86		3.88	2.87	3.31	5.01
78	.0160	1.86		3.86	2.87	3.31	5.01
79	.0145	2.26		3.88	3.37	3.94	5.01
80	.0135	2.26		3.90	3.37	3.94	5.01

* #53 - #80 NOT SPLIT POINT

Also available:

- Extension Drills - Page 22
- Combination Drill & Countersinks - Page 24

EXTENSION DRILLS & LONGBOYS



Size	Decimal Equivalent	6" Aircraft Extension 135° Split Point	12" Aircraft Extension 135° Split Point	12" Extended 135° Split Point	8" Longboy 118° Point	12" Longboy 118° Point	18" Longboy 118° Point
1/16	.0625	4.08	12.79	2.72	—	20.47	—
5/64	.078125	4.08	12.79	2.72	—	17.86	—
3/32	.09375	3.66	12.79	2.34	12.88	23.89	—
7/64	.109375	3.66	10.05	2.53	10.87	15.61	—
1/8	.1250	3.66	10.05	2.35	10.13	18.25	40.41
9/64	.140625	3.66	10.05	2.45	9.91	19.82	25.92
5/32	.15625	3.66	10.05	2.63	11.16	19.82	40.41
11/64	.171875	4.02	11.13	2.72	11.40	20.65	25.92
3/16	.1875	4.02	11.13	2.92	11.47	20.65	41.99
13/64	.203125	4.88	12.79	3.10	12.46	24.14	31.74
7/32	.21875	4.88	12.79	3.29	12.48	24.14	31.74
15/64	.234375	5.31	13.75	3.48	12.38	24.14	31.74
1/4	.2500	5.31	13.75	3.78	12.80	24.14	42.06
17/64	.265625	11.84	16.35	4.23	11.87	24.14	35.15
9/32	.28125	12.29	17.28	4.42	13.44	24.14	35.15
19/64	.296875	14.44	19.59	4.80	13.54	24.85	35.15
5/16	.3125	15.67	22.02	5.36	13.78	24.85	44.39
21/64	.328125	17.01	23.05	5.55	17.79	25.90	37.25
11/32	.34375	16.83	23.75	6.03	14.55	25.90	37.25
23/64	.359375	18.90	25.58	6.12	16.43	26.57	37.25
3/8	.3750	19.25	27.05	6.40	14.80	26.57	47.60
25/64	.390625	21.48	28.53	6.79	18.67	29.85	40.53
13/32	.40625	20.72	28.53	7.16	16.79	29.85	40.53
27/64	.421875	23.05	30.65	7.55	23.58	31.60	43.74
7/16	.4375	23.32	32.08	8.10	17.76	31.60	55.60
29/64	.453125	25.56	33.98	8.49	20.33	34.74	49.97
15/32	.46875	26.51	36.49	8.95	19.87	34.74	49.97
31/64	.484375	27.49	36.49	9.32	27.25	35.43	52.07
1/2	.5000	27.97	38.53	9.62	19.94	35.43	66.29

- Aircraft extension drills are one-piece extra-long shafts with the same flute length as jobber length drills.
- 12" extended drills are an economical alternative to aircraft extensions with HSS shafts welded to jobber length drills.
- Longboy drills are fluted over a much longer length for certain deep hole drilling applications.
- Additional lengths up to 24" available - Call for price and delivery

DOUBLE END END MILLS



3/16 Shank, Double End Cobalt

Diameter of Cutter	Length of Cut	Stub (2" Long)			Length of Cut	Standard (2-1/4" Long)		
		2 Flute	2 Flute Ball	4 Flute		2 Flute	2 Flute Ball	4 Flute
1/32	3/64	16.60	24.50	17.60	3/32	18.70	25.60	18.60
3/64	1/16	16.60	24.50	17.60	9/64	18.70	25.60	18.60
1/16	3/32	15.60	22.10	16.00	3/16	16.50	23.40	16.90
5/64	1/8	15.60	22.10	16.00	15/64	16.50	23.40	20.19
3/32	9/64	15.60	22.10	16.00	9/32	16.50	23.40	16.90
7/64	5/32	15.60	22.10	16.00	21/64	16.50	23.40	20.19
1/8	3/16	15.60	22.10	16.00	3/8	16.50	23.40	16.90
9/64	7/32	17.50	24.80	17.10	13/32	17.60	24.50	20.70
5/32	15/64	17.50	24.80	17.10	7/16	17.60	24.50	17.90
11/64	1/4	17.50	24.80	17.10	1/2	17.60	24.50	21.56
3/16	9/32	17.50	24.80	17.10	1/2	17.60	24.50	17.90

Double End Carbide End Mills, Stub Length

Diameter of Cut	Shank Diameter	Length of Cut	Length Overall	2-FLUTE	4-FLUTE
1/32	1/8	1/16	1-1/2	17.01	17.89
3/64	1/8	1/16	1-1/2	17.01	17.89
1/16	1/8	1/8	1-1/2	16.20	17.02
5/64	1/8	1/8	1-1/2	16.20	17.02
3/32	1/8	3/16	1-1/2	16.20	17.02
7/64	1/8	1/4	1-1/2	16.20	17.02
1/8	1/8	1/4	1-1/2	16.20	17.02
9/64	3/16	5/16	2	21.99	23.06
5/32	3/16	5/16	2	21.99	22.50
11/64	3/16	3/8	2	21.99	22.50
3/16	3/16	3/8	2	21.99	22.50
7/32	1/4	1/2	2-1/2	27.27	28.60
1/4	1/4	1/2	2-1/2	27.27	28.60
5/16	5/16	1/2	2-1/2	37.67	39.57
3/8	5/16	1/2	2-1/2	40.28	42.28

ALSO AVAILABLE:

- 4 Flute Ball
- 3 Flute
- 2 Flute Single End
- 4 Flute Single End
- Decimal Sizes .006 - .187
- Metric Sizes
- Single End Carbide
- Ball End Carbide

COMBINATION DRILL & COUNTERSINKS



PLAIN TYPE COUNTERSINKS

Countersink Size Number	Diameter of Body	Diameter of Drill	Length of Drill	Length Overall Inches	60° R.H. Price Each	82° Angle R.H. Price Each	90° Angle R.H. Price Each
00000	1/8	.010	.010	1¼	8.80	—	33.98
0000	1/8	.015	.015	1¼	8.08	—	33.98
000	1/8	.020	.020	1¼	7.66	—	21.70
00	1/8	.025	.025	1¼	7.66	21.70	21.70
0	1/8	1/32	1/32	1¼	7.66	21.70	21.70
1	1/8	3/64	3/64	1¼	5.18	9.73	9.73
2	3/16	5/64	5/64	1½	5.42	9.96	9.96
3	1/4	7/64	7/64	2	5.64	10.31	10.31
4	5/16	1/8	1/8	2½	5.83	10.70	10.70
4½	3/8	9/64	9/64	2½	8.97	14.67	14.67
5	7/16	3/16	3/16	2¾	9.19	16.32	16.32
6	1/2	7/32	7/32	3	13.87	24.72	24.72
7	5/8	1/4	1/4	3¼	20.02	34.96	34.96
8	3/4	5/16	5/16	3½	27.85	49.04	49.04
9	7/8	11/32	11/32	3¾	52.30	—	—
10	1"	3/8	3/8	3¾	68.66	—	—

BELL TYPE COUNTERSINKS



Countersink Size Number	Diameter of Body	Diameter of Drill	Length of Drill	Diameter of Bell Inches	Length Overall Inches	HSS RH Price Each	M42 RH Price Each	T15 RH Price Each
11	1/8	3/64	3/64	.100	1¼	6.16	16.06	21.52
12	3/16	1/16	1/16	.150	1½	6.45	16.47	22.03
13	1/4	3/32	3/32	.200	2	6.54	16.92	22.63
14	5/16	7/64	7/64	.250	2½	6.75	17.48	23.11
15	7/16	5/32	5/32	.350	2¾	10.28	27.88	36.53
16	1/2	3/16	3/16	.400	3	15.81	43.10	55.63
17	5/8	7/32	7/32	.500	3¼	23.49	64.14	83.51
18	3/4	1/4	1/4	.600	3½	31.47	89.50	119.00

LONGBOY COUNTERSINKS (HSS 60° Angle) FOR LONG REACH APPLICATIONS - 3, 4, 5 & 6" OVERALL

Countersink Size Number	Diameter of Body	Diameter of Drill	Length of Drill	3" Price Each	4" Price Each	5" Price Each	6" Price Each
1	1/8	3/64	3/64	13.59	14.18	19.72	25.79
2	3/16	5/64	5/64	—	15.54	19.89	25.90
3	1/4	7/64	7/64	—	16.35	21.54	26.14
4	5/16	1/8	1/8	—	18.14	23.16	26.77
4 1/2	3/8	9/64	9/64	—	20.39	24.10	29.04
5	7/16	3/16	3/16	—	23.82	27.59	30.98
6	1/2	7/32	7/32	—	—	29.64	35.82
7	5/8	1/4	1/4	—	—	—	66.06
8	3/4	5/16	5/16	—	—	—	71.42

SINGLE & SIX FLUTE COUNTERSINKS

SINGLE FLUTE COUNTERSINKS



Tool No.	C/L Angles Available	Body Dia.	Shank Dia.	Shank Length	O/A Length	HSS Price
1/8-SF	30° 41° 45° 50° AND 60°	1/8	1/8	-	1½	6.86
3/16-SF		3/16	3/16	-	1½	7.33
1/4-SF		1/4	1/4	-	2	7.63
5/16-SF		5/16	1/4	7/8	1¾	8.96
3/8-SF		3/8	1/4	7/8	1¾	10.37
1/2-SF		1/2	1/4	1½	2½	13.33
5/8-SF		5/8	3/8	1½	2¾	18.94
3/4-SF		3/4	1/2	1½	2½	25.37
1-SF		1	1/2	1½	2¾	38.91
1½-SF		1½	3/4	1½	3	62.44
1½-SF	1½	3/4	1½	3½	85.76	
1½-SF	1½	1	2½	4¾	116.10	
2-SF	2	1	2½	4¾	147.00	
2½-SF	2½	1	2½	4¾	248.87	
3-SF	3	1	2½	5	373.92	

SIX FLUTE COUNTERSINKS

DESIGN - Hutchinson Countersinks are designed to take heavy cuts and produce exceptionally smooth seats.

SHEAR-CUT TEETH - Cutting teeth are arranged to give a shearing cut, eliminating "chatter" possibility.

TRUNCATED END-DIMENSIONS- Diameter at small end of 30° countersinks is approximately one third of the body diameter; of 41° and 45° countersinks it is about one-fifth, and of 60° countersinks it is about one-sixth.

HIGH SPEED STEEL

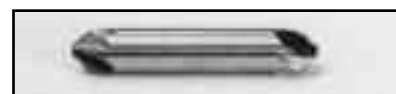
Tool No.	C/L Angles Available	Body Dia.	Shank Dia.	Shank Length	O/A Length	Price Each
CK-1/8	30° 41° 45° 50° AND 60°	1/8	1/8	-	1½	7.54
CK-3/16		3/16	3/16	-	1½	8.10
CK-1/4		1/4	3/16	3/4	1½	8.14
CK-5/16		5/16	1/4	7/8	1¾	9.99
CK-3/8		3/8	1/4	7/8	1¾	11.14
CK-1/2		1/2	3/8	1½	2¾	14.10
CK-5/8		5/8	3/8	1½	2¾	20.19
CK-3/4		3/4	1/2	1½	2¾	26.96
CK-7/8		7/8	1/2	1½	2¾	35.36
CK-1		1	1/2	1½	2¾	41.49



CARBIDE

Tool No.	C/L Angles Available	Body Dia.	Shank Dia.	Shank Length	O/A Length	Price Each
CK-1/8-W	30° 41° 45° 50° AND 60°	1/8	1/8	-	1½	9.81
CK-3/16-W		3/16	3/16	-	2	12.34
CK-1/4-W		1/4	1/4	-	2	15.77
CK-5/16-W		5/16	1/4	2	2¾	23.61
CK-3/8-W		3/8	1/4	2	2¾	30.51
CK-1/2-W		1/2	3/8	2	2¾	42.47
CK-5/8-W		5/8	3/8	2	2¾	58.37
CK-3/4-W		3/4	1/2	2	2¾	71.44
CK-7/8-W		7/8	1/2	2	2¾	105.00
CK-1-W		1	1/2	2	3	120.99

DOUBLE END Six Flute Countersinks



HIGH SPEED STEEL

Tool No.	C/L Angles Available	Diameter	O/A Length	Price Each
CK-1/8-DE	30° 41° 45° 50° 60°	1/8	1½	12.86
CK-3/16-DE		3/16	2	14.01
CK-1/4-DE		1/4	2	14.36
CK-3/8-DE		3/8	2½	24.26
CK-1/2-DE		1/2	3	35.19
CK-5/8-DE		5/8	3¾	52.76

CARBIDE

Tool No.	C/L Angles Available	Diameter	O/A Length	Price Each
CK-1/8-W-DE	30° 41° 45° 50° 60°	1/8	1½	17.61
CK-3/16-W-DE		3/16	2	25.37
CK-1/4-W-DE		1/4	2	34.59
CK-3/8-W-DE		3/8	2½	77.53
CK-1/2-W-DE		1/2	3	107.44
CK-5/8-W-DE		5/8	3¾	89.20

ROTARY FILE SETS – COUNTERSINK SETS



SET #4E 52.24
1/8" Solid Carbide
1/8" Shank



SET #16E 194.24
1/2" Carbide Head
1/4" Shank



SET #14E 196.97
3/8" Carbide 6 flutes
1/2" Carbide 8 flutes



SET #8E 100.50
1/4" Solid Carbide
1/4" Shank

All rotary file sets furnished in convenient cases.
Individual rotary files also available.

SIX FLUTE CHATTERLESS COUNTERSINK SETS

Set #27 - Chatterless Countersink Set containing 1/4, 3/8, 1/2 and 3/4 inch diameter cutters. Specify Center Line Angle desired.

High Speed Steel

\$60.34

Set #27W - Chatterless Countersink Set containing a 1/4, 3/8, 1/2, and 3/4 inch Carbide Countersink. Specify Center Line Angle desired.

Carbide

\$160.20

Set #29 - Chatterless Countersink Set containing 1/4, 3/8, 1/2, 5/8, 3/4 and 1 inch diameter cutters. Specify Center Line Angle desired.

High Speed Steel

\$122.01



C/L ANGLES AVAILABLE:
30°, 41°, 45°, 50° and 60°



SINGLE FLUTE COUNTERSINK SETS

Set #35 - Contains a 1/4, 1/2, 3/4, 1 and 1 1/4 inch diameter HSS Single Flute Countersink. Specify Center Line Angle desired.

High Speed Steel

\$158.06

Set #36W - Contains a 1/4, 3/8, 1/2, 5/8 and 3/4 inch diameter Carbide Single Flute Countersink. Specify Center Line Angle desired.

Carbide

\$373.93

Set #37 - Contains a 1/4, 3/8, 1/2, 5/8, 3/4, 1, 1 1/4, 1 1/2, 1 3/4 and 2 inch HSS Single Flute Countersink. Specify Center Line Angle desired

High Speed Steel

\$525.86

FOR INDIVIDUAL COUNTERSINKS, SEE PAGE 25

HSS CHUCKING REAMERS

SERIES 700 - Straight Flute
SERIES 700C - Straight Flute Cobalt



SERIES 740 - Right Hand Spiral Flute



High Speed Steel - Straight Shank - Right Hand Cut
Fractional - Wire Gage - Letter - Over & Under - Dowel Pin - Metric

Size	Decimal	Price			Size	Decimal	Price		
		700	740	700C			700	740	700C
1/32	.0312	13.32	13.32	15.35	39	.0995	11.48	13.18	12.27
67	.0320	14.10	—	15.35	38	.1015	11.48	13.18	12.27
66	.0330	14.10	—	15.35	37	.1040	11.48	13.18	12.27
65	.0350	14.10	—	15.35	36	.1065	11.48	13.18	12.27
64	.0360	14.10	—	15.35	7/64	.1094	11.84	13.56	12.64
63	.0370	14.10	—	15.35	35	.1100	11.84	13.56	12.64
62	.0380	14.10	—	15.35	34	.1110	11.84	13.56	12.64
61	.0390	14.10	—	15.35	33	.1130	11.84	13.56	12.64
1mm	.0394	14.10	16.23	—	32	.1160	11.84	13.56	12.64
60	.0400	14.10	16.23	15.11	3mm	.1181	11.84	13.56	—
59	.0410	14.10	16.23	15.11	31	.1200	11.84	13.56	12.64
58	.0420	14.10	16.23	15.11	.1240	.1240	11.84	13.56	12.64
57	.0430	14.10	16.23	15.11	1/8	.1250	9.44	12.24	10.11
56	.0465	14.10	16.23	15.11	.1260	.1260	11.84	13.56	12.64
3/64	.0469	14.10	16.23	15.11	30	.1285	11.84	13.56	12.64
55	.0520	14.10	16.23	15.11	29	.1360	14.10	16.23	15.11
54	.0550	14.10	16.23	15.11	3.5mm	.1378	14.10	16.23	—
1.5mm	.0591	14.10	16.23	—	28	.1405	14.10	16.23	15.11
53	.0595	14.10	16.23	15.11	9/64	.1406	14.10	16.23	15.11
1/16	.0625	14.10	16.23	15.11	27	.1440	14.10	16.23	15.11
52	.0635	14.10	16.23	15.11	26	.1470	14.10	16.23	15.11
51	.0670	11.35	13.08	12.17	25	.1495	14.10	16.23	15.11
50	.0700	11.35	13.08	12.17	24	.1520	14.10	16.23	15.11
49	.0730	11.35	13.08	12.17	23	.1540	14.10	16.23	15.11
48	.0760	11.35	13.08	12.17	5/32	.1562	14.10	16.23	15.11
5/64	.0781	11.35	13.08	12.17	22	.1570	14.10	16.23	15.11
47	.0785	11.35	13.08	12.17	4mm	.1575	14.10	16.23	—
2mm	.0787	11.35	13.08	—	21	.1590	15.09	17.32	16.12
46	.0810	11.35	13.08	12.17	20	.1610	15.09	17.32	16.12
45	.0820	11.35	13.08	12.17	19	.1660	15.09	17.32	16.12
44	.0860	11.35	13.08	12.17	18	.1695	15.09	17.32	16.12
43	.0890	11.35	13.08	12.17	11/64	.1719	15.09	17.32	16.12
42	.0935	11.35	13.08	12.17	17	.1730	15.09	17.32	16.12
3/32	.0937	10.25	12.96	12.17	16	.1770	15.09	17.32	16.12
41	.0960	11.48	13.18	12.27	4.5mm	.1772	15.09	17.32	16.12
40	.0980	11.48	13.18	12.27	15	.1800	15.09	17.32	16.12
2.5mm	.0984	11.48	13.18	—	14	.1820	15.09	17.32	16.12

HSS CHUCKING REAMERS

SERIES 700 - Straight Flute
SERIES 700C - Straight Flute Cobalt



SERIES 740 - Right Hand Spiral Flute



High Speed Steel - Straight Shank - Right Hand Cut
Fractional - Wire Gage - Letter - Over & Under - Dowel Pin - Metric

Size	Decimal	Price			Size	Decimal	Price		
		700	740	700C			700	740	700C
13	.1850	15.09	17.32	16.12	K	.2810	20.37	22.43	27.33
.1865	.1865	15.09	17.32	16.12	9/32	.2812	19.36	21.02	25.96
3/16	.1875	13.56	16.46	14.54	L	.2900	20.37	22.43	27.33
.1885	.1885	15.09	17.32	16.14	M	.2950	20.37	22.43	27.33
12	.1890	15.09	17.32	16.14	7.5mm	.2953	20.37	22.43	27.33
11	.1910	16.89	19.43	19.50	19/64	.2969	20.37	22.43	27.33
10	.1935	16.89	19.43	19.50	N	.3020	20.37	22.43	27.33
9	.1960	16.89	19.43	19.50	.3115	.3115	19.36	21.29	25.96
5mm	.1968	16.89	19.43	19.50	5/16	.3125	18.36	20.19	24.58
8	.1990	16.89	19.43	19.50	.3135	.3135	19.36	21.29	25.96
7	.2010	16.89	19.43	19.50	8mm	.3150	20.37	22.43	—
13/64	.2031	16.89	19.43	19.50	O	.3160	20.37	22.43	27.33
6	.2040	16.89	19.43	19.50	P	.3230	21.81	23.99	29.44
5	.2055	16.89	19.43	19.50	21/64	.3281	21.81	23.99	29.44
4	.2090	16.89	19.43	19.50	Q	.3320	21.81	23.99	29.44
3	.2130	16.89	19.43	19.50	8.5mm	.3346	21.81	23.99	—
5.5mm	.2165	16.89	19.43	—	R	.3390	21.81	23.99	29.44
7/32	.2187	16.89	19.43	19.50	11/32	.3437	21.81	23.99	29.44
2	.2210	16.89	19.43	19.50	S	.3480	22.00	24.20	29.95
1	.2280	17.34	19.95	19.50	9mm	.3543	22.00	24.20	—
A	.2340	17.34	19.95	19.50	T	.3580	22.00	24.20	29.95
15/64	.2344	17.34	19.95	19.50	23/64	.3594	22.00	24.20	29.95
6mm	.2362	18.28	20.10	20.16	U	.3680	22.00	24.20	29.95
B	.2380	18.28	20.10	20.16	.3740	.3740	20.89	22.97	28.41
C	.2420	18.28	20.10	20.16	9.5mm	.3740	20.89	22.97	—
D	.2460	18.28	20.10	18.32	3/8	.3750	19.80	21.78	26.92
.2490	.2490	16.46	21.45	18.13	.3760	.3760	20.89	22.97	28.41
1/4	.2500	15.54	17.11	16.36	V	.3770	23.91	26.34	36.47
.2510	.2510	16.46	21.45	18.32	W	.3860	23.91	26.34	36.47
6.5mm	.2559	18.28	20.10	—	25/64	.3906	23.91	26.34	36.47
F	.2570	18.28	20.10	20.16	10mm	.3937	23.91	26.34	—
G	.2610	18.28	20.10	20.16	X	.3970	23.91	26.34	36.47
17/64	.2656	20.37	22.43	27.33	Y	.4040	24.83	27.32	36.47
H	.2660	20.37	22.43	27.33	13/32	.4062	24.83	27.32	36.47
I	.2720	20.37	22.43	27.33	Z	.4130	24.83	27.32	36.47
7mm	.2756	20.37	22.43	—	10.5mm	.4134	24.83	27.32	—
J	.2770	20.37	22.43	27.33	27/64	.4219	24.83	27.32	36.47

HSS CHUCKING REAMERS

SERIES 700 - Straight Flute
SERIES 700C - Straight Flute Cobalt



SERIES 740 - Right Hand Spiral Flute



High Speed Steel - Straight Shank - Right Hand Cut
Fractional - Wire Gage - Letter - Over & Under - Dowel Pin - Metric

Size	Decimal	Price			Size	Decimal	Price		
		700	740	700C			700	740	700C
11mm	.4331	24.83	27.32	—	18.5mm	.7283	47.55	—	—
.4365	.4365	23.59	27.32	36.47	19mm	.7480	52.67	—	—
7/16	.4375	23.59	25.93	34.68	3/4	.7500	45.58	49.83	66.99
.4385	.4385	23.59	27.32	36.47	19.5mm	.7677	53.96	—	—
11.5mm	.4528	27.04	29.74	—	25/32	.7812	49.17	54.04	72.25
29/64	.4531	27.04	29.74	41.81	20mm	.7874	54.29	—	—
15/32	.4687	27.04	29.74	41.81	20.5mm	.8071	54.29	—	—
12mm	.4724	27.04	29.74	—	13/16	.8125	49.17	54.04	72.25
31/64	.4844	27.04	29.74	41.81	21mm	.8268	54.29	—	—
12.5mm	.4921	27.04	29.74	—	27/32	.8437	58.14	63.97	85.47
.4990	.4990	25.67	29.74	41.81	21.5mm	.8465	63.30	—	—
1/2	.5000	25.67	28.23	39.71	22mm	.8661	63.30	—	—
.5010	.5010	25.67	29.74	41.81	7/8	.8750	63.30	65.42	87.47
13mm	.5118	33.49	—	—	22.5mm	.8858	64.63	—	—
17/32	.5312	31.90	35.10	46.92	23mm	.9055	64.63	—	—
13.5mm	.5315	33.49	—	—	29/32	.9062	64.11	70.53	94.25
14mm	.5512	32.30	—	—	23.5mm	.9252	69.24	—	—
9/16	.5625	30.78	33.85	45.24	15/16	.9375	64.11	70.53	94.25
14.5mm	.5709	32.30	—	—	24mm	.9449	69.24	—	—
15mm	.5906	32.30	—	—	24.5mm	.9646	69.24	—	—
19/32	.5937	30.78	33.85	45.24	31/32	.9687	71.82	78.98	105.55
15.5mm	.6102	37.70	—	—	25mm	.9843	73.50	—	—
5/8	.6250	36.04	42.72	52.78	1	1.0000	72.48	78.98	106.53
16mm	.6299	37.70	—	—	1-1/16	1.0625	80.35	88.39	118.09
16.5mm	.6496	37.70	—	—	1-1/8	1.1250	85.38	93.95	125.51
21/32	.6562	40.16	41.55	59.66	1-3/16	1.1875	100.02	110.01	147.03
17mm	.6693	42.60	—	—	1-1/4	1.2500	105.99	116.60	155.80
11/16	.6875	40.61	44.65	59.66	1-5/16	1.3125	123.63	135.98	181.72
17.5mm	.6890	45.75	—	—	1-3/8	1.3750	129.91	142.93	190.99
18mm	.7087	45.75	—	—	1-7/16	1.4375	139.33	153.26	204.81
23/32	.7187	45.30	49.83	66.60	1-1/2	1.5000	150.01	164.99	220.54

CAP SCREW COUNTERBORES



HIGH SPEED STEEL - STRAIGHT SHANK

Size	Description	Style No.	Pilot Dia.	Pilot Length	Flute Dia.	Flute Length	Shank Dia.	Overall Length	Price Each
4	Std.	500	.1120	1/8	.1830	9/16	.1562	3 $\frac{3}{8}$	21.82
	1/64 O/S	400	.1270	1/8	.1990	9/16	.1562	3 $\frac{3}{8}$	21.82
	1/32 O/S	300	.1430	1/8	.2150	9/16	.1562	3 $\frac{3}{8}$	21.82
5	Std.	500	.1250	5/32	.2050	5/8	.1875	4 $\frac{1}{8}$	21.82
	1/64 O/S	400	.1400	5/32	.2210	5/8	.1875	4 $\frac{1}{8}$	21.82
	1/32 O/S	300	.1560	5/32	.2370	5/8	.1875	4 $\frac{1}{8}$	21.82
6	Std.	500	.1380	3/16	.2270	3/4	.2188	4 $\frac{5}{8}$	23.11
	1/64 O/S	400	.1530	3/16	.2430	3/4	.2188	4 $\frac{5}{8}$	23.11
	1/32 O/S	300	.1690	3/16	.2590	3/4	.2188	4 $\frac{5}{8}$	23.11
8	Std.	500	.1640	7/32	.2700	3/4	.2500	5	24.76
	1/64 O/S	400	.1790	7/32	.2860	3/4	.2500	5	24.76
	1/32 O/S	300	.1950	7/32	.3020	3/4	.2500	5	24.76
10	Std.	500	.1900	1/4	.3120	7/8	.2812	5 $\frac{1}{4}$	25.29
	1/64 O/S	400	.2050	1/4	.3280	7/8	.2812	5 $\frac{1}{4}$	25.29
	1/32 O/S	300	.2210	1/4	.3440	7/8	.2812	5 $\frac{1}{4}$	25.29
1/4	Std.	500	.2500	9/32	.3800	1	.3125	5 $\frac{5}{8}$	26.57
	1/64 O/S	400	.2650	9/32	.3960	1	.3125	5 $\frac{5}{8}$	26.57
	1/32 O/S	300	.2810	9/32	.4120	1	.3125	5 $\frac{5}{8}$	26.57
5/16	Std.	500	.3125	5/16	.4740	1	.3750	6 $\frac{1}{8}$	33.20
	1/64 O/S	400	.3280	5/16	.4890	1	.3750	6 $\frac{1}{8}$	33.20
	1/32 O/S	300	.3430	5/16	.5040	1	.3750	6 $\frac{1}{8}$	33.20
3/8	Std.	500	.3750	3/8	.5690	1 $\frac{1}{4}$	.5000	6 $\frac{1}{2}$	35.66
	1/64 O/S	400	.3900	3/8	.5850	1 $\frac{1}{4}$	.5000	6 $\frac{1}{2}$	35.66
	1/32 O/S	300	.4060	3/8	.6010	1 $\frac{1}{4}$	.5000	6 $\frac{1}{2}$	35.66
7/16	Std.	500	.4370	7/16	.6610	1 $\frac{1}{4}$	.5000	7	42.85
	1/64 O/S	400	.4520	7/16	.6760	1 $\frac{1}{4}$	.5000	7	42.85
	1/32 O/S	300	.4680	7/16	.6910	1 $\frac{1}{4}$	.5000	7	42.85
1/2	Std.	500	.5000	1/2	.7550	1 $\frac{1}{2}$	.5000	7 $\frac{1}{2}$	49.07
	1/64 O/S	400	.5150	1/2	.7710	1 $\frac{1}{2}$	.5000	7 $\frac{1}{2}$	49.07
	1/32 O/S	300	.5310	1/2	.7870	1 $\frac{1}{2}$	.5000	7 $\frac{1}{2}$	49.07
5/8	Std.	500	.6250	5/8	.9690	1 $\frac{1}{2}$	.6250	7 $\frac{5}{8}$	80.04
	1/64 O/S	400	.6400	5/8	.9840	1 $\frac{1}{2}$	.6250	7 $\frac{5}{8}$	80.04
	1/32 O/S	300	.6560	5/8	1.0000	1 $\frac{1}{2}$	.6250	7 $\frac{5}{8}$	80.04
3/4	Std.	500	.7500	3/4	1.1560	1 $\frac{5}{8}$	.7500	7 $\frac{3}{4}$	93.13
	1/64 O/S	400	.7650	3/4	1.1720	1 $\frac{5}{8}$	.7500	7 $\frac{3}{4}$	93.13
	1/32 O/S	300	.7810	3/4	1.1880	1 $\frac{5}{8}$	.7500	7 $\frac{3}{4}$	93.13
7/8	Std.	500	.8750	7/8	1.3440	1 $\frac{7}{8}$	.8750	8	113.41
	1/64 O/S	400	.8910	7/8	1.3590	1 $\frac{7}{8}$	.8750	8	113.41
	1/32 O/S	300	.9060	7/8	1.3750	1 $\frac{7}{8}$	.8750	8	113.41
1	Std.	500	1.0000	1	1.5310	2	1	8 $\frac{1}{2}$	143.87
	1/64 O/S	400	1.0150	1	1.5470	2	1	8 $\frac{1}{2}$	143.87
	1/32 O/S	300	1.0310	1	1.5630	2	1	8 $\frac{1}{2}$	143.87

O/S = Oversize

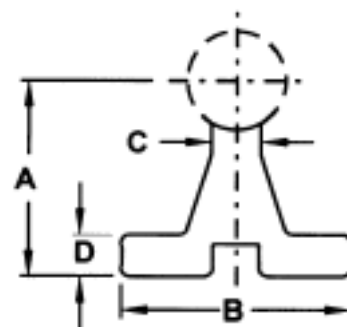
Sets Available On Request

SHAFT SUPPORT RAILS & TWIN PILLOW BLOCKS

For effective, low cost continuous or intermittent support, extruded aluminum support rail is available in a full range of sizes (see specification chart below). These rails can be supplied with or without mounting holes and can be used vertically or horizontally to provide optimum rigidity. Available in standard lengths of 24" + 0", -1/8" ... which can be easily cut to meet shorter length requirements.

EXTRUDED ALUMINUM SUPPORT RAILS

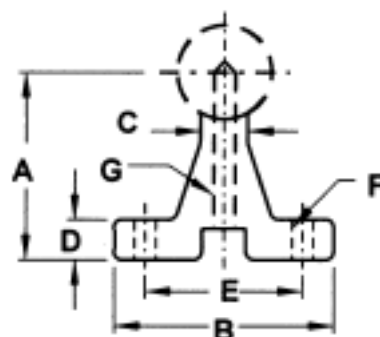
Part No.	Nom. Shaft Size	Price Each	*A ±.002"	B	C	D	*E	*F	*G	Wt. per 24" (ths.)
SR-8	1/2	30.44	1.125	1 1/2	1/4	3/16	1	#8	#6 or #8	1.2
SR-10	5/8	33.67	1.125	1 5/8	5/16	1/4	1 1/8	#8	#6 or #8	1.6
SR-12	3/4	37.65	1.500	1 3/4	3/8	1/4	1 1/4	#10	#8 or #10	2.0
SR-16	1	45.10	1.750	2 1/2	1/2	1/4	1 1/2	1/4	#10 or 1/4	2.8
SR-20	1 1/4	60.48	2.125	2 3/4	9/16	5/16	1 3/4	5/16	1/4 or 5/16	4.2
SR-24	1 1/2	76.12	2.500	3	11/16	3/8	2 1/4	5/16	5/16 or 3/8	5.2
SR-32	2"	100.68	3.250	3 3/4	7/8	1/2	2 3/4	3/8	3/8 or 1/2	8.4



- *A - Dimension will vary with the shaft diameter.
- E - Suggested location for mounting hole.
- F - Maximum mounting bolt size to clear pillow blocks.
- G - Recommended thread for screws to attach shaft.
NC or NF Class 2 threads may be used.

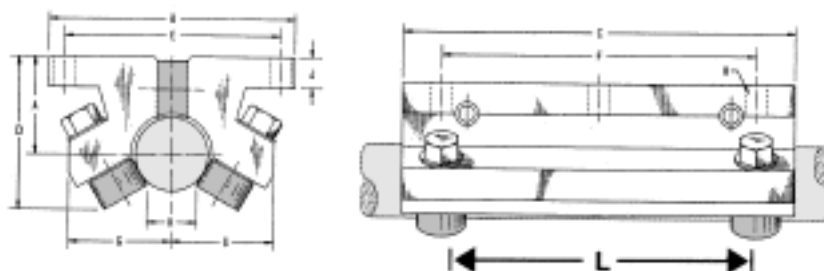
EXTRUDED ALUMINUM support rails with pre-drilled holes to mate with pre-drilled shafts

Part No.	Shaft Diameter	Net Price	*A ±.002"	B	C	D	E	F		*G		Approx. Wt. In Lbs Per 24"
								Bolt	Hole	Screw	Hole	
SR-8-PD	1/2	57.52	1.125	1 1/2	1/4	3/16	1	6	.169	6-32x7/8	.169	1.2
SR-10-PD	5/8	64.78	1.125	1 5/8	5/16	1/4	1 1/8	8	.193	8-32x7/8	.193	1.6
SR-12-PD	3/4	69.01	1.500	1 3/4	3/8	1/4	1 1/4	10	.221	10-32x1 1/4	.221	2.0
SR-16-PD	1	79.94	1.750	2 1/2	1/2	1/4	1 1/2	1/4	.281	1/4-20x1 1/2	.281	2.8
SR-20-PD	1 1/4	97.42	2.125	2 3/4	9/16	5/16	1 3/4	5/16	.343	5/16-18x1 1/4	.343	4.2
SR-24-PD	1 1/2	113.53	2.500	3	11/16	3/8	2 1/4	5/16	.343	3/8-16x2	.406	5.2
SR-32-PD	2	144.07	3.250	3 3/4	7/8	1/2	2 3/4	3/8	.406	1/2-13x2 1/2	.531	8.4



Pre-drilled support rails are stocked for immediate delivery in standard 24" lengths, but can be easily cut to size. When longer shafts are to be supported, the rails can be continuously mounted end-to-end or intermittently mounted to any desired length.

DIMENSIONS & LOAD RATINGS FOR TWIN PILLOW BLOCKS



Twin Pillow Block Model Number	Shaft Diameter		Price Each	Dynamic Load Rating (Pounds)	Wt. (Lbs)	A ±.003	B	C	D	E ±.005	F ±.005	G	H		J ±.005	K	L ±.005
	Nom.	Max.											Bolt	Hole			
TWN-8-OPN	1/2"	.4995	224.86	800	.5	.687	2	3 1/2	1 1/2	1.688	2.500	1 1/8	#6	3/16	.240	3/16	1.500
TWN-10-OPN	5/8"	.6245	188.59	1000	.9	.875	2 1/2	4	1 3/4	2.125	3.000	1 1/8	#8	3/16	.270	3/16	2.125
TWN-12-OPN	3/4"	.7495	190.59	1200	1.2	.937	2 3/4	4 1/2	1 3/4	2.375	3.500	1 1/8	#8	3/16	.300	3/16	2.500
TWN-16-OPN	1"	.9995	215.63	1910	2.3	1.187	3 1/4	6	2	2.875	4.500	1 1/8	#10	7/32	.360	1 1/8	3.750
TWN-20-OPN	1 1/4"	1.2495	291.83	2800	3.8	1.500	4	7 1/2	2 1/4	3.500	5.500	1 1/8	#10	7/32	.424	1 1/8	4.625
TWN-24-OPN	1 1/2"	1.4994	339.69	3320	6.5	1.750	4 3/4	9	2 1/2	4.125	6.500	1 1/8	1/4	3/32	.474	1 1/8	5.500
TWN-32-OPN	2"	1.9994	538.54	4800	12.8	2.125	6	12	3 1/4	5.250	10.500	2 1/8	3/8	1/16	.600	1 1/8	8.250

FRACTIONAL CASE HARDENED AND GROUND SHAFTING

SOLID AISI C-1060 CASE HARDENED STEEL SHAFTS (ROCKWELL 60 to 65 C)

Nominal Diameter	Tolerance Code					Price Per Inch of Length		Weight Per Inch (Lb.)	Min. Depth of Hardness	Max. Length (feet)
	A	B	R	M	g6	Codes A, B & g6	Code R & M			
	1/4	.2485/.2490	.2490/.2495	.2498/.2500	—	.2494/.2498	.42				.49	.014	.040	8
3/8	.3735/.3740	.3740/.3745	.3748/.3750	—	.3744/.3748	.45	.55	.031	.040	14
1/2	.4985/.4990	.4990/.4995	.4998/.5000	—	.4993/.4998	.48	.69	.055	.060	15
5/8	.6235/.6240	.6240/.6245	.6248/.6250	—	.6243/.6248	.63	.81	.086	.060	15
3/4	.7485/.7490	.7490/.7495	.7498/.7500	—	.7492/.7497	.80	.88	.125	.060	15
7/8	—	.8740/.8745	.8748/.8750	—	—	1.14	1.25	.170	.060	12
1	.9985/.9990	.9990/.9995	.9998/1.0000	1.0000/1.0003	.9992/.9997	1.23	1.37	.222	.080	15
1 1/8	—	1.1240/1.1245	1.1248/1.1250	—	—	1.25	1.48	.281	.080	12
1 1/4	1.2485/1.2490	1.2490/1.2495	1.2498/1.2500	1.2500/1.2503	1.2490/1.2497	1.89	2.16	.348	.080	15
1 3/8	—	1.3740/1.3745	1.3747/1.3750	—	—	1.92	2.28	.420	.080	11
1 1/2	1.4984/1.4989	1.4989/1.4994	1.4997/1.5000	1.5000/1.5003	1.4990/1.4997	2.40	2.69	.500	.080	15
1 3/4	—	1.7490/1.7495	1.7497/1.7500	—	—	3.88	4.02	.681	.100	15
2	1.9980/1.9987	1.9987/1.9994	1.9997/2.0000	2.0000/2.0003	1.9989/1.9996	4.16	4.47	.890	.100	15
2 1/2	2.4977/2.4985	2.4985/2.4993	2.4996/2.5000	—	—	6.12	7.47	1.391	.100	15

SOLID AISI 440C CASE HARDENED STAINLESS STEEL SHAFTS (ROCKWELL 50 to 55 C)

Nominal Diameter	Tolerance Code			Price per Inch of Length	Weight Per Inch	Minimum Depth of Hardness	Maximum Length (feet)
	A	B	g6				
1/4	.2485/.2490	.2490/.2495	.2494/.2498	1.44	.014	.040	12
3/8	.3735/.3740	.3740/.3745	.3744/.3748	1.34	.031	.040	14
1/2	.4985/.4990	.4990/.4995	.4993/.4998	1.35	.055	.060	15
5/8	.6235/.6240	.6240/.6245	.6243/.6248	1.74	.086	.060	12
3/4	.7485/.7490	.7490/.7495	.7492/.7497	1.97	.125	.060	12
1	.9985/.9990	.9990/.9995	.9992/.9997	2.87	.222	.080	12
1 1/4	1.2485/1.2490	1.2490/1.2495	1.2490/1.2497	4.70	.348	.080	12
1 1/2	1.4984/1.4989	1.4989/1.4994	1.4990/1.4997	6.37	.500	.080	12
2	1.9980/1.9987	1.9987/1.9994	1.9989/1.9996	10.82	.890	.100	12

TUBULAR AISI C-1060 HARDENED STEEL SHAFTS (ROCKWELL 60 TO 65 C)

Nominal O.D.	Nominal I.D. ± 5%	Tolerance Code		Price Per Inch of Length	Weight Per Inch (lb.)	Minimum Depth of Hardness	Maximum Length (feet)
		A	B				
1 1/2	.890	1.4984/1.4989	1.4989/1.4994	5.87	.320	.080	15
2	1.250	1.9980/1.9987	1.9987/1.9994	6.57	.542	.100	15

STANDARD SHAFT SPECIFICATIONS

Solid AISI C-1060 Steel Shafts are case hardened to Rockwell 60 to 65 C, and AISI 440C Stainless to Rockwell 50 to 55 C. Tubular 52100 shafts are case hardened to Rockwell 56 to 63 C.

Shafts up to 1 1/4" diameter are cut to required lengths within ± 1/32" and to within ± 1/16" for 1 3/8" to 2" diameter, and to within ± 1/8" for 2 1/2" & 3".

Except for 1/4" and 3/8" diameters, straightness is held to within .001" to .002" per foot cumulative and surface finish is maintained between 10 and 16 micro inches RMS.

PRICING INFORMATION

To determine the price of a shaft, use the price per inch and when a shaft length ends in a fraction, price to the next full inch. However, there is a minimum charge of \$3.00 per shaft.

There is a \$15.00 set-up charge per diameter per shipment to cover cutoff, handling and boxing.

METRIC CASE HARDENED AND GROUND SHAFTING

METRIC DIAMETER SOLID AISI C-1060 CASE HARDENED STEEL SHAFTS (ROCKWELL 60 to 65 C)

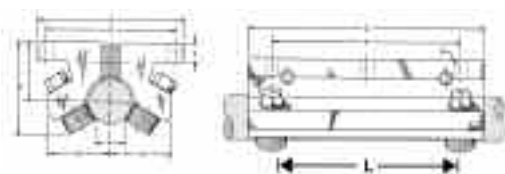
Nominal Diameter (mm)	Metric Tolerance (inch)	Price per Inch of Length	Weight Per Inch	Minimum Depth of Hardness	Maximum Length (feet)
6	.2362/.2358	.56	.012	.040	8
8	.3146/.3150	.86	.022	.040	11
10	.3932/.3937	.48	.034	.040	15
12	.4720/.4724	.72	.050	.060	15
15	.5906/.5901	.93	.055	.060	15
16	.6295/.6299	.69	.088	.060	15
20	.7869/.7874	.96	.138	.060	15
25	.9838/.9843	1.02	.216	.080	15
30	1.1806/1.1811	1.34	.311	.080	15
40	1.5743/1.5748	2.56	.553	.080	15
50	1.9679/1.9685	4.35	.864	.100	15

METRIC DIAMETER SOLID AISI 440C CASE HARDENED STAINLESS STEEL SHAFTS (ROCKWELL 50 to 55 C)

Nominal Diameter (mm)	Metric Tolerance (inch)	Price per Inch of Length	Weight Per Inch	Minimum Depth of Hardness	Maximum Length (feet)
8	.3146/.3150	1.52	.022	.040	14
10	.3932/.3937	1.54	.034	.040	14
12	.4720/.4724	1.55	.050	.060	15
16	.6295/.6299	2.01	.088	.060	12
20	.7869/.7874	2.28	.138	.060	12
25	.9838/.9843	3.16	.216	.080	12
30	1.1806/1.1811	4.88	.311	.080	12
40	1.5743/1.5748	5.71	.553	.080	12
50	1.9679/1.9685	12.53	.864	.100	12

METRIC DIAMETER SOLID AISI C-1060 CASE HARDENED STEEL SHAFTS (ROCKWELL 60 to 65 C)

WITH PRE-DRILLED AND TAPPED MOUNTING HOLES



Nominal Diameter (mm)	Metric Tolerance (inch)	Price per Inch of Length	"X" Hole spacing ± .015 Non-cumulativeU	Tap Size	Maximum Length (feet)
12 PD	.4720/.4724	2.95	75 mm	M4 x .7	15
16 PD	.6295/.6299	2.37	100 mm	M5 x .8	15
20 PD	.7869/.7874	2.85	100 mm	M6 x 1	15
25 PD	.9838/.9843	3.32	120 mm	M8 x 1.25	15
30 PD	1.1806/1.1811	3.79	150 mm	M10 x 1.50	15
40 PD	1.5743/1.5748	4.38	200 mm	M10 x 1.50	15
50 PD	1.9679/1.9685	6.07	200 mm	M12 x 1.75	15

PRICING INFORMATION

To determine the price of a shaft, use the price per inch and when a shaft length ends in a fraction, price to the next full inch. However, there is a minimum charge of \$3.00 per shaft.

There is a \$15.00 set-up charge per diameter per shipment to cover cutoff, handling and boxing.

STANDARD SHAFT SPECIFICATIONS

Solid AISI C-1060 Steel Shafts are case hardened to Rockwell 60 to 65 C, and AISI 440C Stainless to Rockwell 50 to 55 C. Tubular 52100 shafts are case hardened to Rockwell 56 to 63 C.

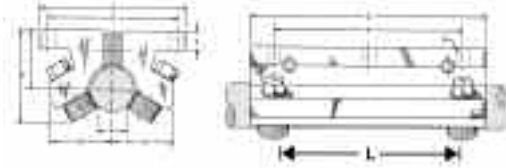
Shafts up to 1 1/4" diameter are cut to required lengths within ± 1/32" and to within ± 1/16" for 1 3/8" to 2" diameter, and to within ± 1/8" for 2 1/2" & 3".

Except for 1/4" and 3/8" diameters, straightness is held to within .001" to .002" per foot cumulative and surface finish is maintained between 10 and 16 micro inches RMS.

PRE-DRILLED SHAFTS & SUPPORT RAILS

PRE-DRILLED SHAFTS

Solid AISI C-1060 AND 440 C Stainless Steel Case Hardened Shafts with pre-drilled and tapped mounting holes



Nom. Diameter	Diameter Tolerance	Price per inch		Max Length (FEET)	"X" Hole Spacing±.015 (non-cumulative)	Tap Size (to center of shaft)
		C-1060	440 C			
1/2" PD	.4990/.4995"	2.26	3.30	15	4"	6-32
5/8" PD	.6240/.6245"	2.34	3.60	12	4"	8-32
3/4" PD	.7490/.7495	2.41	3.62	12	6"	10-32
1" PD	.9990/.9995"	2.70	4.34	12	6"	1/4-20
1 1/4" PD	1.2490/1.2495"	3.17	6.49	12	6"	5/16-18
1 1/2" PD	1.4989/1.4994"	3.60	6.97	12	8"	3/8-16
2" PD	1.9987/1.9994"	5.71	12.68	12	8"	1/2-13
3" PD	2.9983/2.9992"	16.59	—	11	8"	3/4-10

STANDARD SHAFT SPECIFICATIONS

Solid AISI C-1060 Steel Shafts are case hardened to Rockwell 60 to 65 C, and AISI 440C Stainless to Rockwell 50 to 55 C.

Shafts up to 1 1/4" diameter are cut to required lengths within ± 1/32" and to within ± 1/16" for 1 3/8" to 2" diameter, and to within ± 1/8" for 2 1/2" & 3".

Straightness is held to within .001" to .002" per foot cumulative and surface finish is maintained between 10 and 16 micro inches RMS.

PRICING INFORMATION

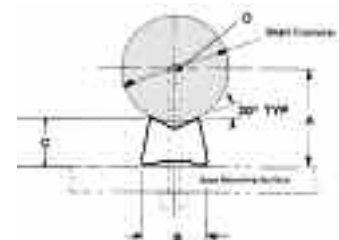
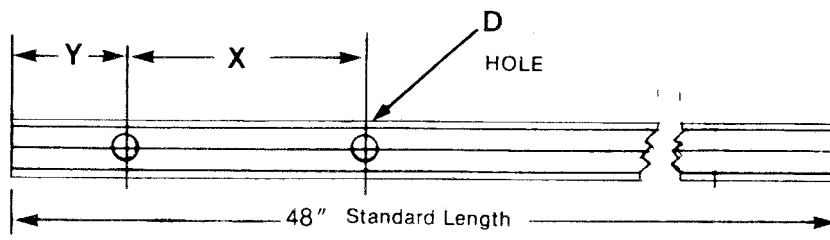
To determine the price of a shaft, use the price per inch and when a shaft length ends in a fraction, price to the next full inch. However, there is a minimum charge of \$3.00 per shaft.

There is a \$15.00 set-up charge per diameter per shipment to cover cutoff, handling and boxing.

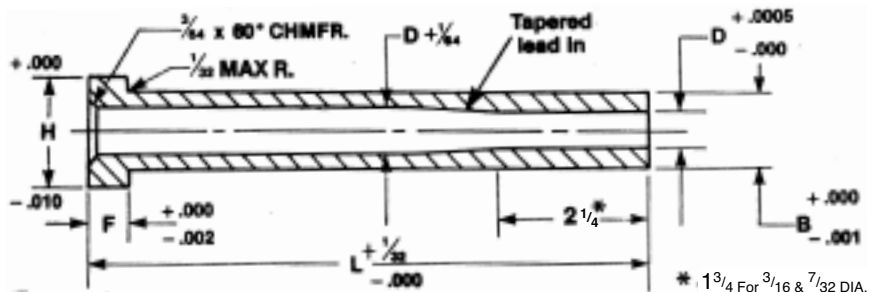
LOW SHAFT SUPPORT RAILS

Part No.	Shaft Diameter	Net Price Each	A ±.002"	B ±.005	C (Ref.)	D		Hole spacing		Approx. Wt. In Lbs Per 48"
						Screw	Hole	X	Y	
LSR-8	.500	19.84	.562	.370	.341	6-32	.169	4	2	1.32
LSR-8-PD		48.98								
LSR-10	.625	32.75	.687	.450	.412	8-32	.193	4	2	1.46
LSR-10-PD		59.44								
LSR-12	.750	32.86	.750	.510	.420	10-32	.221	6	3	2.25
LSR-12-PD		51.59								
LSR-16	1.000	37.85	1.000	.690	.560	1/4-20	.281	6	3	4.25
LSR-16-PD		63.43								
LSR-20	1.250	63.17	1.187	.780	.626	5/16-18	.343	6	3	5.08
LSR-20-PD		86.76								
LSR-24	1.500	63.88	1.375	.930	.703	3/8-16	.406	8	4	6.72
LSR-24-PD		93.12								
LSR-32	2.000	78.71	1.750	1.180	.845	1/2-13	17/32	8	4	11.00
LSR-32-PD		119.31								

Low shaft support rails permit the design of compact linear motion systems with more than a 40% lower profile. The low shaft support rails are made of AISI C-1010 steel. Continuous or intermittent support is permissible when using linear roller bearing pillow blocks or the open-type linear ball bearing pillow blocks as made by Thomson Industries. LSR-PD rails have pre-drilled mounting holes to match the holes in the pre-drilled and tapped holes in the PD Series shafts described above. Standard length for all low shaft rails is 48".



NITRIDED EJECTOR SLEEVES



Nitrided Ejector Sleeves are made of the finest grade of hot work die steel. The heads are hot-forged for strength. The outside surface is nitrided to a hardness of 64-74 Rockwell "C" and GROUND AFTER NITRIDING FOR STRAIGHTNESS AND FINISH. The bearing diameter is 300 Brinell and is finished, reamed and honed concentric with the O.D. of the sleeve.

B O.D.	D I.D.	H Head Dia.	F Head Thick.	List Price Each								
				L-4"	L-5"	L-6"	L-7"	L-8"	L-9"	L-10"	L-11"	L-12"
3/16	3/32	3/8	3/16	28.65	31.45	33.95	37.00	—	—	—	—	—
7/32	1/8	13.32	3/16	27.90	30.90	33.45	36.50	—	—	—	—	—
1/4	5/32	7/16	3/16	21.30	22.30	24.10	26.35	28.90	31.95	36.00	—	—
5/16	3/16	1/2	1/4	21.80	23.05	25.10	27.65	30.40	33.45	37.50	41.50	46.50
11/32	7/32	9/16	1/4	22.05	23.60	25.60	28.40	31.45	35.50	39.05	—	—
3/8	1/4	5/8	1/4	22.55	24.10	26.35	28.90	31.95	36.00	40.05	44.50	49.50
7/16	5/16	11/16	1/4	23.05	25.60	28.15	30.90	34.45	38.50	42.55	47.50	52.50
1/2	3/8	3/4	1/4	23.60	27.90	30.40	33.45	37.00	44.05	45.60	50.50	56.00
5/8	7/16	7/8	1/4	25.35	30.40	35.50	38.50	42.55	46.60	51.20	56.50	62.00
11/16	1/2	15/16	1/4	26.80	31.45	37.00	40.55	44.60	49.15	54.20	59.50	65.00
3/4	9/16	1	1/4	33.00	36.50	40.00	44.00	48.00	53.00	57.50	63.00	68.50
7/8	5/8	1 1/8	1/4	37.50	41.00	45.00	49.00	53.50	58.50	63.50	69.50	75.00
1"	3/4	1 1/4	1/4	41.50	45.50	49.50	54.00	58.50	64.00	69.50	75.00	81.50

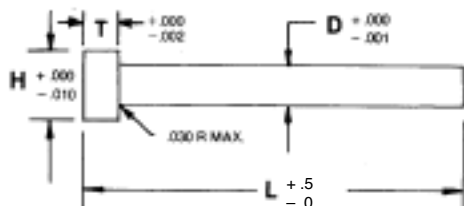
OVERSIZE O.D. EJECTOR SLEEVES AVAILABLE

(+.005 over standard "B" dimension)

CALL FOR PRICING AND DELIVERY

EJECTOR PINS

NITRIDED EJECTOR PINS



- H13 Hot Work Die Steel
- Surface Hardness R/C 64-74
- Core Hardness R/C 35-40
- Forged and Annealed Heads
- Body Nitrided
- Honed Finish

STANDARD EJECTOR PINS

D Pin Dia.	H Head Dia.	T Head Thick.	Length			
			L-6"	L-10"	L-14"	L-18"
3/64	1/4	1/8	6.17	7.76	12.66	—
1/16	1/4	1/8	5.75	7.42	10.41	—
5/64	1/4	1/8	5.75	6.94	10.29	—
3/32	1/4	1/8	5.19	5.83	9.45	—
7/64	1/4	1/8	5.19	5.83	8.36	—
1/8	1/4	1/8	2.84	3.16	3.96	9.14
9/64	1/4	1/8	3.28	3.38	4.61	8.71
5/32	9/32	5/32	2.95	3.30	4.24	5.91
11/64	11/32	3/16	3.52	3.59	4.76	—
3/16	3/8	3/16	3.07	3.53	4.69	6.15
13/64	3/8	3/16	—	3.93	5.05	5.79
7/32	13/32	3/16	3.30	3.92	5.21	5.67
15/64	13/32	3/16	—	4.30	5.56	—
1/4	7/16	3/16	3.53	4.38	5.54	7.09
17/64	7/16	1/4	—	5.05	6.05	—
9/32	7/16	1/4	4.13	5.25	6.22	8.32
19/64	1/2	1/4	—	5.54	6.95	—
5/16	1/2	1/4	4.54	5.83	6.95	9.14
21/64	9/16	1/4	—	6.22	8.11	—
11/32	9/16	1/4	5.10	6.52	8.23	—
23/64	5/8	1/4	—	6.95	8.80	—
3/8	5/8	1/4	5.38	7.25	8.87	11.98
13/32	11/16	1/4	5.94	8.08	10.45	13.77
7/16	11/16	1/4	6.52	8.87	11.31	15.36
15/32	3/4	1/4	8.38	9.74	16.19	16.96
1/2	3/4	1/4	7.80	10.58	13.91	18.36
9/16	13/16	1/4	9.64	13.16	16.75	21.88
5/8	7/8	1/4	11.17	15.44	19.44	25.25
11/16	13/16	1/4	14.72	18.20	25.68	29.78
3/4	1"	1/4	15.58	20.91	26.63	34.07
7/8	1-1/8	1/4	34.09	40.10	68.12	96.21
1"	1-1/4	1/4	35.71	40.10	78.94	102.14

.005 OVERSIZE EJECTOR PINS

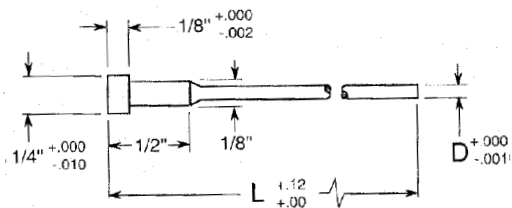
D .005 Over Std. Dia.	H Head Dia.	T Head Thick.	Length	
			L-10"	L-14"
3/64	1/4	1/8	8.65	—
1/16	1/4	1/8	8.65	—
5/64	1/4	1/8	8.65	—
3/32	1/4	1/8	7.59	—
7/64	1/4	1/8	7.59	4.22
1/8	1/4	1/8	6.14	4.22
9/64	1/4	1/8	3.83	—
5/32	9/32	5/32	6.19	4.69
11/64	11/32	3/16	4.07	—
3/16	3/8	3/16	6.62	5.01
13/64	3/8	3/16	4.39	—
7/32	13/32	3/16	6.42	—
15/64	13/32	3/16	4.78	—
1/4	7/16	3/16	6.47	6.14
17/64	7/16	1/4	5.38	—
9/32	7/16	1/4	6.86	—
19/64	1/2	1/4	5.94	—
5/16	1/2	1/4	6.90	7.74
21/64	9/16	1/4	6.73	—
11/32	9/16	1/4	7.03	—
23/64	5/8	1/4	7.52	—
3/8	5/8	1/4	8.46	9.72
13/32	11/16	1/4	9.22	—
7/16	11/16	1/4	10.06	12.00
15/32	3/4	1/4	11.07	—
1/2	3/4	1/4	11.07	14.33

ALSO AVAILABLE IN METRIC SIZES

EJECTOR PINS

NITRIDED EJECTOR PINS — SHOULDER TYPE

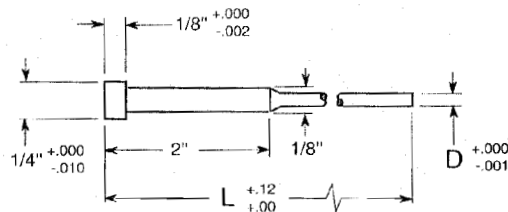
Ejector pins are made from the best air hardening hot work die steel and heat treated for a tough core. The head is solid forged and annealed to prevent breakage. The body of the pin is nitrided to give a surface hardness of 64-74 Rockwell “C” then honed for a smooth friction free surface.



1/2" SHOULDER PINS

D Pin Dia.	LENGTH		
	6"	10"	14"
3/64	5.91	7.37	9.59
3/64 O.S.*	—	8.25	—
1/16	5.61	7.00	9.01
1/16 O.S.*	—	7.80	—
5/64	5.61	7.00	9.14
5/64 O.S.*	—	7.80	—
3/32	5.03	6.37	8.66
3/32 O.S.*	—	7.16	—
7/64	5.03	6.37	8.66
7/64 O.S.*	—	7.16	—

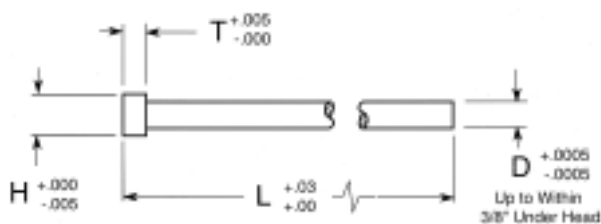
O.S.*
Pin Diameter is .005
over standard
diameter



2" SHOULDER PINS

D Pin Dia.	LENGTH		
	6"	10"	14"
3/64	5.76	6.63	9.28
3/64 O.S.*	—	7.95	—
1/16	5.55	6.68	8.27
1/16 O.S.*	—	7.48	—
5/64	5.55	6.68	8.69
5/64 O.S.*	—	7.48	—
3/32	4.80	6.02	8.33
3/32 O.S.*	—	6.83	—
7/64	4.80	6.02	8.15
7/64 O.S.*	—	7.03	—

ECONOMY EJECTOR PINS



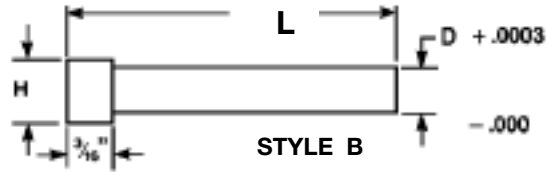
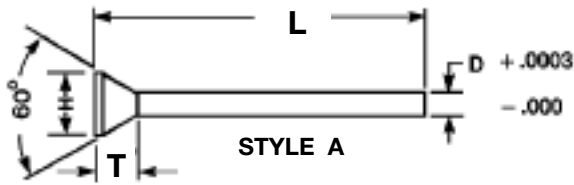
- Oil Hardening Tool Steel
- Hardness R/C 58/60
- Heads Annealed R/C 42/45
- Ground O.D. ± .0005

BODY DIA (D)	HEAD DIA (H)	HEAD THICK (T)	PRICE EACH		
			4"	6"	10"
1/16	7/64	3/64	3.27	4.12	—
5/64	9/64	3/64	3.03	3.82	—
3/32	5/32	5/64	2.94	3.70	—
7/64	3/16	5/64	3.03	3.78	—
1/8	7/32	3/32	2.67	3.32	4.42
9/64	1/4	7/64	2.67	3.32	4.42
5/32	17/64	1/8	2.67	3.32	4.42
11/64	5/16	1/8	2.77	3.47	4.52
3/16	5/16	9/64	2.77	3.47	4.52
13/64	11/32	5/32	3.02	3.54	4.66

BODY DIA (D)	HEAD DIA (H)	HEAD THICK (T)	PRICE EACH		
			4"	6"	10"
7/32	3/8	5/32	3.25	3.82	4.89
15/64	13/32	11/64	3.32	4.03	5.02
1/4	7/16	3/16	3.32	4.03	5.02
17/64	7/16	1/4	3.89	4.22	5.14
9/32	7/16	1/4	3.89	4.22	5.14
19/64	1/2	1/4	4.12	4.37	5.37
5/16	1/2	1/4	4.12	4.37	5.37
21/64	9/16	1/4	4.23	4.57	6.01
11/32	9/16	1/4	4.23	4.57	6.01
23/64	5/8	1/4	4.37	4.80	6.49
3/8	5/8	1/4	4.37	4.80	6.49

HIGH SPEED STEEL PUNCHES

Hutchinson High Speed Steel Punches are manufactured from the finest quality AISI type M-2 high speed steel, heat treated and tempered to Rockwell C 60-62, then precision ground to uniform close tolerances.



Set-Up Charges (Shaded area only)

2 1/2" - 4" = 35.00

6" - 8" = 45.00

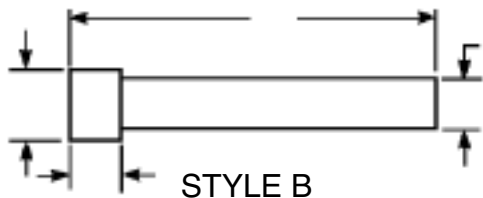
Dia. "D" Increment of .001	H	T	2 1/2"	3 1/2"	4"	6"	8"	10"	12"
.010 - .014	1/32	1/16	2" 4.85 | 5.83	7.76	10.44	—	—	—	—
.015 - .019	1/32	1/16	2" 4.00 | 4.85	6.68	9.68	—	—	—	—
.020 - .029	3/64	1/16	2" 3.23 | 3.91	5.83	8.83	—	—	—	—
.030 - .036	1/16	1/16	2.68	5.37	7.97	—	—	—	—
.037 - .046	5/64	1/16	2.68	5.37	7.37	13.49	22.17	—	—
.047 - .055	3/32	5/64	2.68	4.46	6.92	13.21	20.73	—	—
.056 - .064	7/64	5/64	3.58	4.58	7.04	12.87	22.45	—	—
.065 - .078	1/8	5/64	3.58	4.5.8	7.04	12.87	22.45	—	—
.079 - .087	9/64	3/32	3.58	4.58	7.04	12.87	20.72	—	—
.088 - .099	5/32	3/32	3.98	45.98	6.55	12.24	18.79	—	—
.100 - .120	11/64	3/32	3.98	4.98	6.55	12.24	18.79	—	—
.121 - .131	3/16	3/32	3.98	4.98	6.55	12.24	18.79	26.17	33.81
.132 - .147	13-64	3/32	4.25	5.25	6.79	11.48	17.50	24.46	31.45
.148 - .163	7/32	3/32	4.25	5.25	6.79	11.48	17.50	24.46	31.45
.164 - .179	15/64	3/32	4.25	5.25	6.79	11.48	17.50	24.46	31.45
.180 - .194	1/4	3/32	4.85	5.95	7.42	13.24	19.85	27.78	35.74
.195 - .210	17/64	3/32	4.85	5.95	7.42	13.24	19.85	27.78	35.74
.211 - .225	9/32	3/32	4.85	5.95	7.42	13.24	19.85	27.78	35.74
.226 - .241	19/64	3/32	5.73	6.76	8.22	14.22	21.15	29.62	38.13
.242 - .257	5/16	3/32	5.73	6.76	8.22	14.22	21.15	29.62	38.13
.258 - .272	21/64	3/16	5.73	6.76	8.22	14.22	21.15	29.62	38.13
.273 - .288	11/32	3/16	5.73	6.76	8.22	14.22	21.15	29.62	38.13
.289 - .304	23/64	3/16	6.64	8.37	9.27	16.85	23.75	33.27	42.68
.305 - .320	3/8	3/16	6.64	8.37	9.27	16.85	23.75	33.27	42.68
.321 - .336	25/64	3/16	6.64	8.37	9.27	16.85	23.75	33.27	42.68
.337 - .352	13/32	3/16	8.15	9.47	10.99	18.98	27.47	38.47	49.47
.353 - .368	27/64	3/16	8.15	9.47	10.99	18.98	27.47	38.47	49.47
.369 - .375	7/16	3/16	8.15	9.47	10.99	18.98	27.47	38.47	49.47
.376 - .436	D +.06 +.09	3/16	9.87	11.69	13.44	21.44	30.07	42.12	54.10
.437 - .484		3/16	11.21	13.86	15.73	23.91	32.64	45.68	58.74
.485 - .562		3/16	12.58	16.16	17.56	25.10	33.93	47.50	61.10
.563 - .625		3/16	14.29	18.96	20.59	28.20	37.02	51.95	66.65
.626 - 1.000	QUOTED ON REQUEST								

WHEN ORDERING, SPECIFY STYLE, DIA. AND LENGTH
SEE PAGE 39 FOR CONVENIENT QUOTATION REQUEST FORM
FOR SPECIAL STYLE A AND STYLE B PUNCHES

STEEL PUNCHES

QUOTATION REQUEST FORM

For special Style A and Style B punches, copy and fax to: (908) 688-8296



MATERIAL

HARDNESS
R/C

QUANTITY

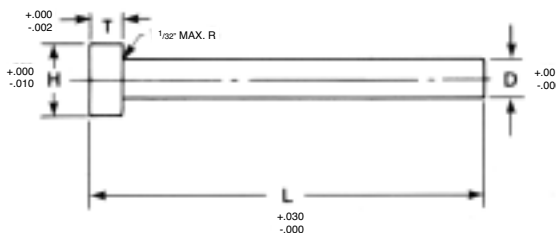
PLEASE INCLUDE ALL TOLERANCES AND CONCENTRICITY REQUIREMENTS

FROM: _____ PHONE: _____

COMPANY: _____ FAX: _____

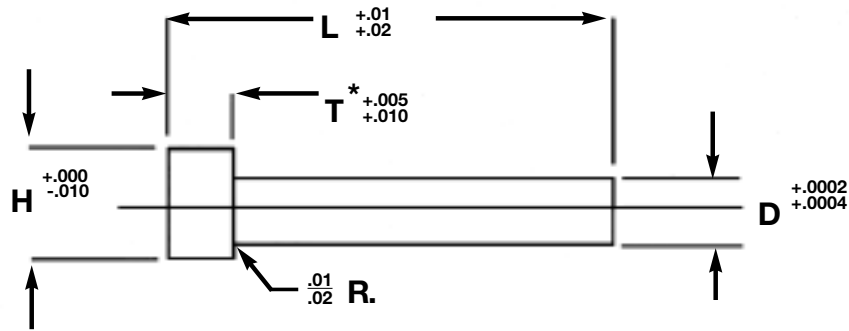
CORE PINS

D PIN DIA	H HEAD DIA	T HEAD THICK.	STANDARD HARDNESS PRICE EACH			HIGH HARDNESS PRICE EACH		
			3"	6"	10"	3"	6"	10"
3/32	1/4	1/8	6.20	6.40	7.42	6.55	6.85	8.06
7/64	1/4	1/8	6.40	6.62	7.85	6.78	6.97	8.42
1/8	1/4	1/8	3.89	3.95	5.25	4.09	4.32	5.54
9/64	1/4	1/8	3.89	4.03	5.25	4.09	4.46	5.54
5/32	9/32	5/32	3.95	4.09	5.32	4.32	4.46	5.54
11/64	11/32	3/16	3.95	4.09	5.54	4.39	4.54	5.92
3/16	3/8	3/16	4.03	4.18	5.63	4.39	4.68	5.92
13/64	3/8	3/16	4.09	4.32	5.69	4.46	4.75	6.11
7/32	13/32	3/16	4.18	4.46	5.92	4.54	4.83	6.11
1/4	7/16	3/16	4.54	4.75	6.34	4.89	5.18	6.62
9/32	7/16	1/4	4.96	5.18	6.91	5.40	5.69	7.42
5/16	1/2	1/4	5.54	5.69	7.64	5.98	6.20	8.21
11/32	9/16	1/4	5.98	6.20	8.21	6.49	6.85	9.08
3/8	5/8	1/4	6.62	6.91	9.08	7.12	7.48	9.94
13/32	11/16	1/4	7.12	7.42	9.86	7.64	8.14	10.80
7/16	11/16	1/4	7.92	8.14	10.80	8.51	8.94	11.86
15/32	3/4	1/4	8.51	8.94	11.80	9.18	9.71	13.03
1/2	3/4	1/4	9.28	9.65	12.66	9.94	10.51	14.03
9/16	13/16	1/4	—	11.29	15.05	—	12.31	16.42
5/8	7/8	1/4	—	13.46	17.63	—	14.40	19.45
3/4	1"	1/4	—	18.35	24.19	—	19.86	26.63



- Standard Hardness R/C 30 - 35
- High Hardness R/C 50 - 54
- Air Hardening Hot Work Die Steel
- Precision Ground After Heat Treating
- Heads Forged and Annealed

PUNCH BLANKS



*OPTIONAL T, A-2 AND M-2 ONLY

Body Diameter D	Diameter H	T*	L Length 1/4" Increments	Price				
				A-2	M-2	D-2	PM M-4	PM 10V
1/8	1/4	1/8 (3/16)	1 1/4 - 3	9.14	10.05	11.56	14.47	16.85
3/16	5/16	1/8 (3/16)	1 1/4 - 3 1/2	9.25	10.81	12.18	15.94	18.52
1/4	3/8	3/16 (1/8)	1 1/4 - 3 1/2	9.51	11.26	12.54	16.72	20.34
5/16	7/16	3/16 (1/8)	1 1/4 - 4	11.04	13.11	13.49	17.70	21.71
3/8	1/2	3/16 (1/8)	1 1/4 - 4	14.39	16.54	16.81	20.46	23.59
7/16	9/16	3/16	1 1/4 - 4	16.44	18.41	18.96	24.66	28.81
1/2	5/8	3/16	1 1/4 - 4	17.63	20.87	21.51	26.02	32.21
5/8	3/4	3/16 (1/4)	1 1/4 - 4	18.81	21.44	22.69	32.46	39.84
3/4	7/8	3/16 (1/4)	1 1/4 - 4	24.42	28.89	30.37	44.82	55.72
1	1 1/8	3/16 (1/4)	1 1/4 - 4	35.38	46.35	48.60	67.48	88.00

EXTRA LONG 6" AND 8"

Body Diameter D	Diameter H	Head Thickness T	Price			
			6"		8"	
			A-2	M-2	A-2	M-2
1/8	1/4	1/8	16.39	19.80	21.47	24.56
3/16	5/16	1/8	17.67	20.63	21.69	25.82
1/4	3/8	3/16	18.82	21.71	22.63	27.06
5/16	7/16	3/16	22.83	26.32	27.74	33.40
3/8	1/2	3/16	24.53	31.53	32.56	38.62
7/16	9/16	3/16	27.19	33.80	35.74	43.12
1/2	5/8	3/16	28.43	34.93	36.52	46.78
5/8	3/4	3/16	30.13	40.91	46.74	59.08
3/4	7/8	3/16	39.53	50.70	55.48	67.91
1"	1 1/8	3/16	61.89	81.08	84.46	107.85

M-2 R/C 60-62 D-2 R/C 61-63
 A-2 R/C 60-62 PM-M4 R/C 61-63
 PM-10V R/C 61-63

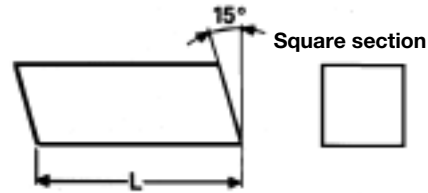
WKE45 SUPER COBALT HSS TOOL BITS

RECTANGULAR		
B A Size	L Overall Length	Net Price Each
1/8x5/8"	6"	34.19
3/16x5/16	4	22.96
1/4x3/8	2½	17.97
1/4x3/8	4	20.35
1/4x1/2	3	19.40
1/4x1/2	4	21.12
1/4x1/2	6	34.46
1/4x3/4	5	37.74
1/4x3/4	6	40.59
1/4x1	6	68.99
5/16x7/16	4	32.77
5/16x1/2	3	24.36
5/16x1/2	6	48.78
5/16x3/4	5	86.11
5/16x1	6	86.60
3/8x1/2	3	29.49
3/8x1/2	4	38.00
3/8x1/2	6	44.05
3/8x5/8	4	38.50
3/8x5/8	5	44.25
3/8x3/4	4	42.10
3/8x3/4	5	49.44
3/8x3/4	6	52.33
1/2x3/4	4	47.31
1/2x3/4	5	52.20
1/2x3/4	6	64.62
1/2x1	7	98.02
1/2x1½	7	173.46
1/2x1½	7	206.00
5/8x3/4	5	94.28
5/8x7/8	6	171.09
5/8x1	7	167.54
5/8x1¼	7	207.93
3/4x1	6	169.27
3/4x1¼	6	204.49

METRIC RECTANGULAR		
B A Size	L Overall Length	Net Price Each
3x12mm	90mm	17.84
3x12	200	36.87
4x10	100	21.89
4x10	120	25.68
4x16	160	41.13
4x16	200*	47.16
4x20	200*	49.34
5x12	90	21.79
5x20	200*	62.82
6x8	70	17.93
6x10	200	47.58
6x12	200	51.32
6x14	140	39.26
6x14	200	59.75
6x20	200	77.13
8x12	160	48.58
8x12	200	58.88
8x16	140	51.51
8x16	160*	55.91
8x16	200	71.28
8x20	200*	103.59
10x12	200	68.12
10x14	80	33.81
10x14	200*	72.88
10x16	160	66.01
10x16	200	83.37
10x20	160	79.48
10x20	200	91.37
10x40	200	191.75
12x16	200	90.15
12x25	200*	108.12
12x30	200*	140.82
14x20	200*	118.54
16x20	200	131.85
20x25	200	218.21

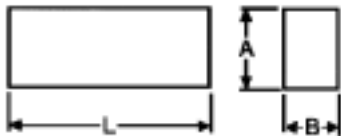
SQUARE		
Size Square	L Overall Length	Net Price Each
3/16"	2½"	8.46
3/16	4	14.09
1/4	2½	9.42
1/4	4	15.11
1/4	6*	23.83
1/4	8*	30.16
5/16	2½	11.03
5/16	3	13.32
5/16	4	17.79
5/16	6	26.65
5/16	8	44.69
3/8	3	14.96
3/8	4	19.79
3/8	6	29.65
3/8	8	52.66
7/16	3½	30.60
1/2	4	27.39
1/2	6	40.97
1/2	8	75.67
5/8	4½	47.88
5/8	6	88.49
3/4	5	68.35
3/4	6	82.05
1	5½	180.37
1	8	257.04

METRIC SQUARE		
Size Square	L Overall Length	Net Price Each
4mm	63mm	8.64
4	100	14.96
5	63	8.32
5	160	23.03
6	63	10.78
6	100	17.84
6	160	25.68
6	200	30.60
7	200	32.95
8	63	14.91
8	100	23.69
8	160	24.90
8	200	37.05
10	125	33.62
10	160	35.45
10	200	44.35
12	100	37.25
12	160	40.24
12	200	50.13
14	100	50.82
14	160	75.92
14	200	78.79
16	100*	65.96
16	160	95.18
16	200*	111.45
18	200*	152.28
20	160*	154.08
20	200	177.28
25	200*	264.68



* AVAILABLE UNTIL STOCK IS EXHAUSTED

All Toolbits can be custom ground to meet your requirements



WKE45 TYPICAL ANALYSIS					
C	Cr	Mo	W	V	Co
1.40	4.2	3.5	9.0	3.5	11.0

SEE PAGE 13 FOR WKE45 ROUND BLANKS

SQUARE & FLAT FORM TOOL BITS

**Square - Ground
High Speed Tool Bits**
Tolerance on Width and
Thickness ±.002
Ends Beveled 10°



SIZE	M2	M3 *	M42	T15 *	M34	T15PM	PM M-48
	R/C 64.5-66	R/C 65-66.5	R/C 67-69	R/C 65-67	R/C 65-67	R/C 65-67	R/C ??-??
1/8 sq. x 2 1/2"	9.40	9.93	9.70	6.54	9.62	12.93	8.14
3/16 sq. x 2 1/2"	5.11	5.32	5.54	6.80	5.40	7.28	7.86
1/4 sq. x 2 1/2"	6.51	5.80	6.94	7.83	6.08	8.04	9.13
5/16 sq. x 2 1/2"	7.86	6.49	8.50	9.77	7.02	9.45	14.59
3/8 sq. x 3"	8.84	8.65	10.04	12.53	9.70	12.97	18.47
7/16 sq. x 3 1/2"	11.44	11.02	12.99	17.81	12.83	17.07	24.43
1/2 sq. x 4"	15.36	15.28	18.19	23.49	17.94	24.05	35.16
5/8 sq. x 4 1/2"	23.00	23.27	28.08	36.85	27.63	37.54	53.80
3/4 sq. x 5"	32.77	36.69	44.76	58.22	44.07	59.41	82.53
7/8 sq. x 6" *	54.04	58.65	71.25	94.76	70.13	94.76	—
1 sq. x 7"	76.13	85.56	112.56	112.00	103.95	140.71	—

SIZE	M2	M3*	M42	T15	M34*	T15PM
	R/C 64.5-66	R/C 65-66.5	R/C 67-69	R/C 65-67	R/C 65-67	R/C 65-67
1/4" x 3/8" x 2-1/2"	7.36	—	—	—	—	—
x 3/8" x 3"	8.87	—	11.01	12.28	—	12.27
x 1/2" x 3"	9.48	—	—	—	—	—
x 1/2" x 4"	11.73	—	14.37	17.21	—	17.19
x 1/2" x 6"	17.52	—	—	—	—	—
x 3/4" x 5"	17.04	17.90	21.67	26.20	—	26.20
x 1" x 6"	26.98	28.40	34.46	41.76	—	41.75
5/16" x 7/16" x 3"	10.11	—	—	—	—	—
x 7/16" x 3-1/2"	11.78	—	14.25	16.96	—	16.94
x 1/2" x 3"	11.52	—	—	—	13.74	—
x 5/8" x 4"	15.51	—	19.41	23.32	—	23.30
3/8" x 1/2" x 3"	11.18	—	—	—	—	—
x 1/2" x 4"	14.97	15.62	18.72	22.65	—	22.63
x 1/2" x 6"	22.35	—	—	—	27.66	—
x 5/8" x 4"	16.28	—	—	—	—	—
x 5/8" x 4-1/2"	18.31	—	23.49	28.59	—	28.60
x 5/8" x 5"	—	—	—	—	—	—
x 5/8" x 6"	24.44	—	—	—	—	—
x 3/4" x 4"	18.39	—	—	—	—	—
x 3/4" x 5"	23.00	—	29.68	36.24	—	36.24
x 3/4" x 6"	27.57	—	—	—	—	—
x 1" x 6"	34.09	—	45.12	55.16	—	55.15
1/2" x 5/8" x 4-1/2"	20.36	—	27.35	33.47	—	33.46
x 3/4" x 4"	22.93	—	—	—	—	—
x 3/4" x 5"	25.64	—	33.96	42.70	—	42.70
x 3/4" x 6"	30.77	—	—	—	—	—
x 1" x 7"	52.23	—	67.74	84.51	—	84.50
x 1" x 8"	59.63	—	—	—	—	—
5/8" x 3/4" x 5"	34.38	—	45.82	55.91	—	55.91
x 7/8" x 6"	47.83	—	64.11	78.10	—	78.10
x 1" x 7"	63.73	—	84.54	103.37	—	103.36
x 1-1/4" x 7"	79.60	84.46	105.57	128.94	—	128.93
x 1-1/2" x 7"	93.06	—	123.78	151.72	—	151.73

*** AVAILABLE UNTIL
STOCK IS EXHAUSTED**

**Flat Form - Ground
High Speed Tool Bits**
Tolerance on Width and
Thickness ±.002
Square Ends

**Additional Sizes and Materials
Available — Call for Price
and Delivery**

**All Toolbits can be custom
ground to meet your
requirements**

SQUARE & FLAT FORM TOOL BITS

SIZE	M2	M3*	M42	T15
	R/C 64.5-66	R/C 65-66.5	R/C 67-69	R/C 65-67
3/4" x 1" x 6" x 1" x 7" x 1-1/4" x 7" x 1-1/2" x 7"	63.46	—	—	—
	74.07	79.10	99.19	121.58
	93.06	—	123.69	151.78
	103.63	—	140.20	172.56
7/8" x 1-1/8" x 7" x 1-1/4" x 7"	98.01	—	—	—
	108.92	—	146.41	177.12
1" x 1-1/4" x 6"	98.73	—	133.83	165.03

**Flat Form - Ground
High Speed Tool Bits**
Tolerance on Width and
Thickness $\pm .002$
Square Ends

*** AVAILABLE UNTIL
STOCK IS EXHAUSTED**

**Thin Flat Form - Ground
High Speed Tool Bits**
Tolerance on Width and
Thickness $+.002$
 $-.000$
Square Ends

**T15 & T15PM
Long High Speed Tool Bits**
R/C 65-67

SIZE	T15 *	T15PM
3/16 x sq. x 6"	16.29	17.45
1/4 x sq. x 6"	—	19.30
1/4 x sq. x 8"	—	25.73
5/16 x sq. x 6"	21.52	22.67
3/8 x sq. x 6"	—	25.91
3/8 x sq. x 8"	—	34.55
7/16 x sq. x 6"	—	29.27
1/2 x sq. x 6"	—	36.07
1/2 x sq. x 8"	—	48.09
5/8 x sq. x 6"	—	50.04
5/8 x sq. x 8"	—	66.74

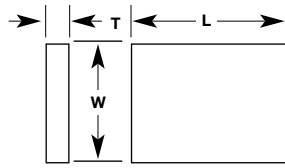
**Tolerance on Width
and Thickness $\pm .002$**
Ends Beveled 10°

SIZE	M2	M42	T15PM
	R/C 62-64	R/C 66-68	R/C 65-67
1/16" x 1/2" x 6" x 5/8" x 6" x 3/4" x 6" x 7/8" x 6" x 1" x 6"	10.13	14.61	12.09
	10.87	12.41	13.41
	12.37	16.36	15.20
	13.26	15.37	16.53
	13.99	18.39	17.69
3/32" x 1/2" x 6" x 5/8" x 6" x 3/4" x 6" x 7/8" x 6" x 1" x 6"	11.14	13.97	18.50
	12.03	14.01	15.19
	13.36	15.79	21.64
	14.43	17.20	18.71
	15.70	18.84	25.43
1/8" x 1/2" x 6" x 5/8" x 6" x 3/4" x 6" x 7/8" x 6" x 1" x 6"	13.44	20.50	18.64
	13.04	15.43	16.73
	14.94	23.43	22.43
	15.67	18.91	20.71
	17.68	28.17	26.36
5/32" x 1/2" x 6" x 5/8" x 6" x 3/4" x 6" x 7/8" x 6" x 1" x 6"	15.43	19.57	20.64
	14.86	17.96	19.66
	17.50	22.50	24.43
	17.94	22.16	24.49
	20.79	28.03	29.71
3/16" x 1/2" x 6" x 5/8" x 6" x 3/4" x 6" x 7/8" x 6" x 1" x 6"	14.54	18.00	20.29
	15.94	19.44	21.39
	17.77	21.91	24.07
	19.34	24.11	26.76
	21.14	26.56	29.54
1/4" x 1/2" x 6" x 5/8" x 6" x 3/4" x 6" x 7/8" x 6" x 1" x 6"	18.87	20.27	23.21
	18.44	22.73	25.10
	22.13	25.63	29.86
	22.41	28.24	31.47
	26.29	31.10	36.86

**Typical Analysis of High Speed Steel
Tool Bit Materials**

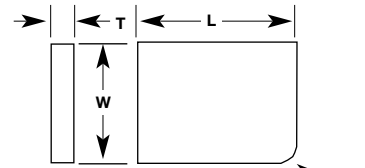
	C	Cr	Mo	W	V	Co
M2	.85	4.15	5.00	6.30	1.85	—
M3	1.20	4.10	5.00	6.00	3.00	—
M42	1.10	3.75	9.50	1.50	1.15	8.25
T15 & T15PM	1.57	4.00	—	12.25	5.00	5.00
M34	.90	3.75	8.00	1.50	2.05	8.25

CARBIDE BLANKS STYLE 1000 & 2000



Style 1000

C-2 GRADE
PREMIUM MEDIUM
GRAIN CARBIDE
WITH 6-8% COBALT



Style 2000

Dimensions				Blank Number	Price	Blank Number	Price
T	W	L	R	STYLE 1000	1 - 249 pcs.	STYLE 2000	1 - 249 pcs.
1/16	1/8	5/8	1/8	1010	.68	2010	.68
1/16	3/16	1/4	1/8	1020	.67	2020	.67
1/16	1/4	5/16	1/8	1030	.68	2030	.68
3/32	3/16	5/16	1/8	1040	.70	2040	.70
3/32	3/16	1/2	1/8	1050	.96	2050	.96
3/32	1/4	3/8	1/8	1060	.89	2060	.89
3/32	1/4	1/2	1/8	1070	1.04	2070	1.04
3/32	5/16	3/8	3/16	1080	.98	2080	.92
3/32	3/8	3/8	3/16	1090	1.09	2090	.98
3/32	3/8	1/2	3/16	1100	1.20	2100	1.25
3/32	7/16	1/2	1/4	1105	1.43	2105	1.43
1/8	3/16	3/4	1/8	1110	1.25	2110	1.20
1/8	1/4	1/2	1/8	1120	.97	2120	1.06
1/8	1/4	5/8	1/8	1130	1.22	2130	1.34
1/8	1/4	3/4	1/8	1140	1.62	2140	1.62
1/8	5/16	7/16	3/16	1150	1.16	2150	1.22
1/8	5/16	1/2	3/16	1160	1.22	2160	1.24
1/8	5/16	5/8	3/16	1170	1.51	2170	1.51
1/8	3/8	1/2	3/16	1180	1.47	2180	1.47
1/8	3/8	3/4	3/16	1190	2.18	2190	2.14
1/8	1/2	1/2	1/4	1200	1.93	2200	1.93
1/8	1/2	3/4	1/4	1210	2.90	2210	2.90
1/8	3/4	3/4	1/4	1215	4.33	2215	4.29
5/32	3/8	9/16	3/16	1220	2.11	2220	2.11
5/32	3/8	3/4	3/16	1230	2.69	2230	2.69
5/32	5/8	5/8	1/4	1240	3.74	2240	3.70
3/16	5/16	7/16	3/16	1250	1.55	2250	1.55
3/16	5/16	5/8	3/16	1260	2.23	2260	2.23
3/16	3/8	1/2	3/16	1270	2.14	2270	2.14
3/16	3/8	5/8	3/16	1280	2.69	2280	2.65
3/16	3/8	3/4	3/16	1290	3.19	2290	3.19
3/16	7/16	5/8	1/4	1300	3.11	2300	3.07
3/16	7/16	13/16	1/4	1310	3.99	2310	4.03
3/16	1/2	1/2	1/4	1320	2.86	2320	2.86
3/16	1/2	3/4	1/4	1330	4.24	2330	4.24
3/16	3/4	3/4	1/4	1340	6.11	2340	6.30

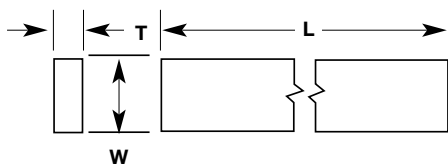
ALL STYLE 1000, 2000, STB & STBL SERIES
BLANKS LISTED ARE UNGROUND

GROUND BLANKS TO YOUR
SPECIFICATIONS
ARE AVAILABLE • PRICES UPON REQUEST

THICKNESS: MINIMUM GRIND STOCK
1/16" TO 5/16" +0.04" - +0.015" ON ALL DIMENSIONS
3/8" TO 1" +0.06" - +0.020" ON ALL DIMENSIONS

C-5 GRADE PREMIUM MEDIUM GRAIN
CARBIDE WITH 10% COBALT ALSO AVAILABLE

CARBIDE BLANKS STYLE STB - STBL



Style STB-STBL

Dimensions			Blank Number	Price ea.
T	W	L		
1/32	1/16	1	STB-12	.89
1/32	1/16	1-1/2	STB-12A	1.18
3/64	3/32	13/16	STB-13A	1.10
3/64	3/32	1	STB-13	1.22
1/16	1/16	6	STB-22L	6.09
1/16	1/8	1	STB-24A	1.17
1/16	1/8	1-1/4	STB-24C	1.44
1/16	1/8	1-1/2	STB-24D	1.51
1/16	1/8	3	STB-24B	2.65
1/16	1/8	6	STB-24L	6.53
1/16	3/16	1	STB-26A	1.32
1/16	3/16	3	STB-26C	3.87
1/16	3/16	6	STB-26L	9.47
1/16	1/4	1	STB-28A	1.75
1/16	1/4	1-1/4	STB-28B	2.17
1/16	1/4	3	STB-28D	5.03
1/16	1/4	6	STB-28L	9.22
1/16	5/16	6	STB-210L	17.87
1/16	3/8	6	STB-212L	20.26
1/16	1/2	6	STB-216L	23.69
1/16	5/8	6	STB-220L	33.61
1/16	3/4	6	STB-224L	37.81
1/16	1	6	STB-232L	43.34
5/64	1/8	1-1/8	STB-14	1.46
3/32	1/8	5	STB-34	6.99
3/32	1/8	8	STB-34L	9.06
3/32	3/16	1-1/8	STB-36	1.91
3/32	3/16	1-1/4	STB-36A	2.12
3/32	3/16	8	STB-36L	10.76
3/32	1/4	1	STB-38A	2.22
3/32	1/4	1-1/2	STB-38B	3.28
3/32	1/4	5	STB-38D	10.49
3/32	1/4	8	STB-38L	12.21
3/32	5/16	2	STB-310A	5.35
3/32	5/16	3	STB-310B	5.69
3/32	5/16	5	STB-310C	9.38
3/32	5/16	8	STB-310L	15.26
3/32	3/8	5	STB-312	12.93
3/32	3/8	8	STB-312L	17.90
3/32	1/2	8	STB-316L	23.59
3/32	5/8	8	STB-320L	29.32
1/8	1/8	12	STB-44L	12.48

Dimensions			Blank Number	Price ea.
T	W	L		
1/8	3/16	6	STB-46	10.15
1/8	3/16	12	STB-46L	22.78
1/8	1/4	1	STB-48A	2.86
1/8	1/4	1-1/4	STB-48B	3.55
1/8	1/4	1-1/2	STB-48F	4.24
1/8	1/4	2-1/4	STB-48C	6.30
1/8	1/4	3	STB-48D	5.92
1/8	1/4	6	STB-48E	11.76
1/8	1/4	12	STB-48L	23.56
1/8	5/16	1-1/2	STB-410A	5.24
1/8	5/16	3	STB-410B	7.31
1/8	5/16	6	STB-410	14.55
1/8	3/8	1	STB-412D	4.24
1/8	3/8	2	STB-412A	5.84
1/8	3/8	3	STB-412B	8.71
1/8	3/8	6	STB-412C	17.30
1/8	3/8	12	STB-412L	34.64
1/8	1/2	1	STB-416A	5.56
1/8	1/2	1-1/2	STB-416B	5.84
1/8	1/2	3	STB-416C	11.49
1/8	1/2	6	STB-416	22.84
1/8	1/2	12	STB-416L	45.68
1/8	5/8	6	STB-420	28.38
1/8	5/8	12	STB-420L	56.76
1/8	3/4	6	STB-424	33.92
1/8	3/4	12	STB-424L	67.84
1/8	1	6	STB-432	45.34
1/8	1	12	STB-432L	90.68
3/16	3/16	12	STB-66L	24.57
3/16	1/4	3	STB-68A	8.59
3/16	1/4	6	STB-68	17.07
3/16	1/4	12	STB-68L	34.15
3/16	5/16	3	STB-610A	12.28
3/16	5/16	6	STB-610	21.07
3/16	5/16	12	STB-610L	42.17
3/16	3/8	3	STB-612A	12.63
3/16	3/8	6	STB-612	25.10
3/16	3/8	12	STB-612L	50.20
3/16	1/2	3	STB-616A	16.66
3/16	1/2	6	STB-616	33.13
3/16	1/2	12	STB-616L	66.22
3/16	5/8	3	STB-620A	20.69

C2 MEDIUM
GRAIN CARBIDE
6-8% COBALT

OTHER GRADES
AVAILABLE UPON
REQUEST

MINIMUM GRIND
STOCK TOLERANCES

THICKNESS +0.008"
WIDTH +0.012"
LENGTH +0.008"

PARALLEL AND FLAT
WITHIN 0.020"

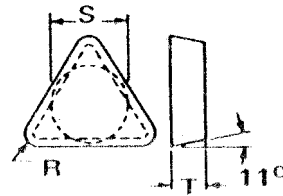
ADDITIONAL
QUANTITY
DISCOUNTS
AVAILABLE

SEE PAGE 15
FOR
CARBIDE
DRILL BLANKS

INDEXABLE INSERTS & DOVETAIL TOOL BLANKS

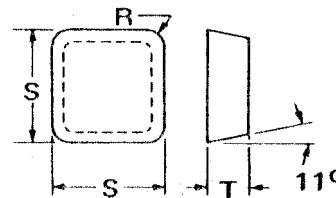
Triangular High Speed Steel T15 Inserts

Style Number	ANSI Standard	DIMENSIONS			PRICE PER PIECE
		S	T	R	
30074	TPG-322	.375	.125	.031	11.30
30085	TPG-433	.500	.188	.047	13.74
30096	TPG-544	.625	.250	.062	21.13



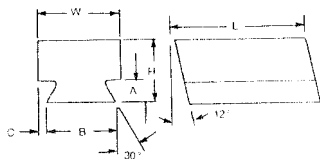
Square High Speed Steel T15 Inserts

Style Number	ANSI Standard	DIMENSIONS			PRICE PER PIECE
		S	T	R	
30110	SPG-322	.375	.125	.031	10.02
30121	SPG-422	.500	.125	.031	11.84
30132	SPG-633	.750	.188	.047	17.75



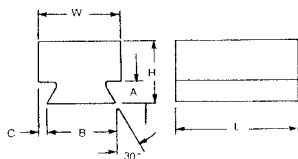
All sizes fit standard positive rake holders same as used for carbide inserts. Other radii available on application. Standard package quantity 10 pieces.

Dovetail Form Tool Blanks (M42)



Dovetail Form Tool Holder	H	W	L	A	B	C	Style	Price Per Piece	Style Number
	+0.015 -0.000	+0.015 -0.000	±0.030	+0.015 -0.000	±0.003	±0.005			
3/8	3/4	1	1-1/2	19/64	.700	1/4	3/8-DF-1	41.57	35588
5/8	1	1	2-1/4	19/64	.951	1/16	5/8-DF-1	63.84	35599
5/8	1	1-1/2	2-1/4	19/64	.951	9/16	5/8-DF-2	83.93	35602
5/8	1	2	2-1/4	19/64	.951	17/32	5/8-DF-3	104.39	35613
1	1-1/2	2	3	35/64	1.614	3/16	1-DF-1	176.22	35624
1	1-1/2	2-1/2	3	35/64	1.614	7/16	1-DF-2	211.66	35635
1	1-1/2	3	3	35/64	1.614	11/16	1-DF-3	248.34	35646
1-1/4	1-1/2	2	3	35/64	1.882	1/8	1-1/4-DF-1	180.34	35657
1-1/4	1-1/2	2-1/2	3	35/64	1.882	9/16	1-1/4-DF-2	215.76	35668
1-1/4	1-1/2	3	3	35/64	1.882	9/16	1-1/4-DF-3	250.60	35679
1-5/8	1-1/2	3	3	35/64	2.238	3/8	1-5/8DF-1	255.56	35690
2-1/8	1-1/2	3	3	43/64	2.883	1/8	2-1/8DF-1	259.00	35704

Dovetail Shave Tool Blanks (M42)



Dovetail Shave Tool Holder	H	W	L	A	B	C	Style	Price Per Piece	Style Number
	+0.015 -0.000	+0.015 -0.000	±0.030	+0.015 -0.000	±0.003	±0.005			
1/2	5/8	1-1/4	1-1/8	13/64	.714	3/8	1/2-DS-1	34.68	35715
5/8	3/4	1	1-1/2	17/64	.912	3/32	5/8-DS-1	40.52	35726
5/8	3/4	1-1/2	1-1/2	17/64	.912	19/64	5/8-DS-2	52.89	35737
5/8	3/4	2	1-1/2	17/64	.912	35/64	5/8-DS-3	64.76	35748
1	1	1-1/2	1-3/4	17/64	1.287	7/32	1-DS-1	67.94	35759
1	1	2	1-3/4	17/64	1.287	23/64	1-DS-2	83.99	35770
1-1/4	1	2	1-3/4	17/64	1.554	11/32	1-1/4-DS-1	88.11	35781
1-1/2	1	2	1-7/8	17/64	1.787	7/32	1-1/2-DS-1	92.81	35792
1-5/8	1-1/2	2-1/2	2-9/16	25/64	2.057	11/32	1-5/8DS-1	180.49	35806

CUTOFF WHEELS & SAFETY FLANGES

DIAMETER	WIDTH	BORE	PRICE
7"	1/32 1/16	1-1/4	CALL FOR PRICING
8"	1/32 1/16	1-1/4	

Hutchinson tool room cut off wheels are designed by toolmakers for toolmakers. These wheels are formulated for tool room applications where precise cutting is required.



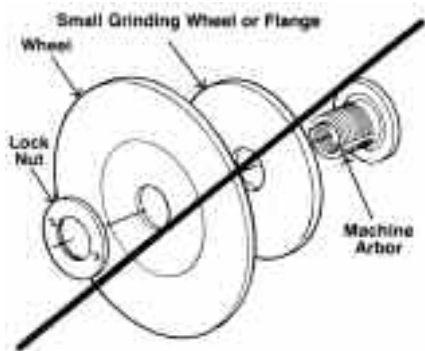
REINFORCED CUTOFF WHEELS

DIAMETER	WIDTH	BORE	PRICE
10"	1/16	5/8	CALL FOR PRICING
12"	1/32	1-1/4 1" (w/bushing)	

Free cutting, long lasting, designed for applications where the workpiece is hand clamped or side pressure is evident. Center reinforced for reduced drag.

— TRU-GRIP — TOOLMAKERS SAFETY FLANGES

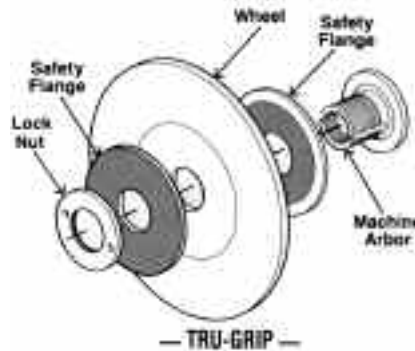
CONFORMS TO ANSI SAFETY CODE 5-1-1



INCORRECT TO ANSI SAFETY CODE 5-1-1

USES

- Mounting of thin Cut Off Wheels
- Mounting of thin Diamond Wheels
- Mounting of thin Grinding Wheels
- Mounting of thin Borazon Wheels
- Uniform Location
- For use with 6", 7", 8", 10" Diameter Wheels



— TRU-GRIP —

CORRECT TO ANSI SAFETY CODE 5-1-1

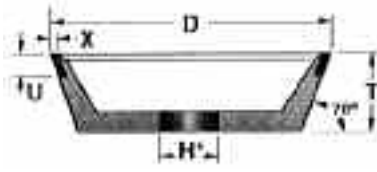
FEATURES

- Protective Balance
- Positive Clamping
- Reduces Wheel Distortion
- Recessed to Safety Code
- Reinforced Composite Material for Strength and Safety
- Standard 1 1/4" Arbor Hole

Only \$17.50 / pair

DIAMOND WHEELS AND TOOLS

TYPE 11V9 FLARING CUP DIAMOND WHEELS



100% CONCENTRATION

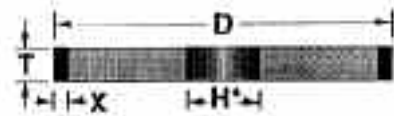
D IN.	T IN.	U IN.	X IN.	PRICE EACH
3 3/4	1 1/2	3/8	1/16	99.00
			1/8	115.00
5	1 1/4	7/16	1/16	130.00
			1/8	150.00

AVAILABLE IN GRIT SIZES
 320-(FINE)
 150-(MEDIUM)
 100-(COARSE)
 Specify (H) hole size

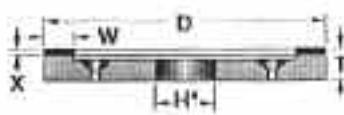
TYPE 1A1 STRAIGHT STYLE 6" DIAMOND WHEELS

T IN.	X IN.	PRICE EACH
1/8	1/8	114.00
1/4	1/16	128.00
1/4	1/8	138.00
3/8	1/8	169.00
1/2	1/8	190.00

AVAILABLE IN GRIT SIZES
 320-(FINE)
 150-(MEDIUM)
 100-(COARSE)
 100% CONCENTRATION
 Specify (H) hole size



TYPE 6A2C CUP STYLE DIAMOND WHEELS WITH COUNTERSUNK BOLT HOLES



D IN.	T IN.	W IN.	X IN.	PRICE EACH
6	3/4	3/4	1/16	149.00
			1/8	199.00

75% CONCENTRATION
 AVAILABLE IN GRIT SIZES
 320-(FINE)
 150-(MEDIUM)
 100-(COARSE)
 Specify (H) hole size

6" DIAMOND CUT-OFF WHEEL

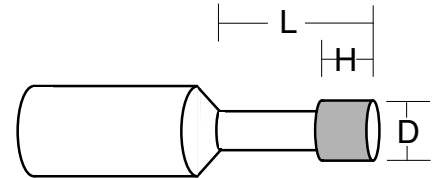
.035 Thickness
 1 1/4" Hole
 1/4" Diamond Depth
 100% Concentration
 GRIT D100
85.00 Each

DIAMOND CLEANING STICK

Aluminum Oxide
 150 Grit
 1 x 1 x 6
6.79 Each

JIG GRINDING MANDRELS

(D) Diameter	(H) Length	(L) Neck	Price Each	(D) Diameter	(H) Length	Price Each
.156	.250	.500	21.75	.390	.375	36.00
.187	.250	.500	22.40	.406	.375	36.65
.203	.250	.500	22.40	.437	.375	39.35
.218	.250	.500	23.10	.500	.375	46.15
.236	.250	.500	23.75	.562	.375	48.20
.250	.250	.500	24.45	.625	.375	50.20
.281	.250	—	25.80	.750	.375	61.75
.312	.375	—	28.50	.875	.375	71.25
.375	.375	—	32.60	1.000	.375	88.90



+ .0
 - .001
 1/4" Shank
 100 Grit
 3" Overall Length

Also Available:
 1/8" or 3/8" Shank
 Diameters to .016

DIAMOND TOOLS



Diamond Plated Needle Nose Files

3" Diamond length
5½" Overall length
1/8" shank

Available in grit sizes:

200 FINE
150 MEDIUM
100 COARSE

\$14.90 each

Tool No.	Style	Cross Section	Size (inches)
NN-1	Oval		.150 x .105
NN-2	Half-round		.218 x .072
NN-3	Equaling		.205 x .508
NN-4	Square		.096 x .096
NN-5	Three Square		.138 x .138
NN-6	Round		.118
NN-7	Crossing		.197 x .088
NN-8	Barretts		.205 x .067

Diamond Plated Bore Laps

Diameter	Length of Diamond	Price Each
3/16	1/2	34.39
7/32	1/2	35.70
1/4	1/2	39.11
9/32	1/2	41.21
5/16	1/2	44.89
11/32	1/2	48.30
3/8	3/4	51.71
13/32	3/4	56.18
7/16	3/4	59.59
15/32	3/4	69.83
1/2	1	77.96
9/16	1	84.79
5/8	1	96.34
11/16	1	105.53
3/4	1	114.45
7/8	1	123.64
1	1	132.83



STANDARD GRIT 220
OTHER GRITS AVAILABLE

SCREW ADJUSTMENT EXPANDS
DIAMETER

CBN PLATED ALSO AVAILABLE

SPECIFY BARREL OR BLIND HOLE
LAP WHEN ORDERING

NEEDLE EYE LAPS AVAILABLE TO
.030 DIA - CALL FOR PRICING

SINGLE END DIAMOND HAND HONE



L IN.	W IN.	T IN.	L1 IN.	X IN.	PRICE EACH
4	1/4	1/4	1/4	1/8	37.50
6	3/8	3/8	1/4	1/8	46.25

DOUBLE END DIAMOND HAND HONE

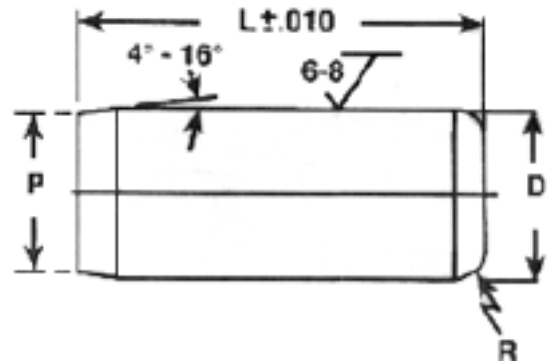


L IN.	W IN.	T IN.	L1 IN.	X IN.	PRICE EACH
4	1/4	1/4	1/4	1/8	60.00
6	3/8	3/8	1/4	1/8	73.75

AVAILABLE IN
GRIT SIZES
600-(FINE)
320-(MEDIUM)
150-(COURSE)

DOWEL PINS

Length	Diameter					
	1/16	3/32	1/8	3/16	1/4	5/16
3/16	*	*	*	—	—	—
1/4	*	*	*	*	*	—
5/16	*	*	*	*	*	—
3/8	*	*	*	*	*	*
7/16	*	*	*	*	*	—
1/2	*	*	*	*	*	*
5/8	*	*	*	*	*	*
3/4	*	*	*	*	*	*
7/8	*	*	*	*	*	*
1	*	*	*	*	*	*
1 1/8	—	—	*	*	*	*
1 1/4	*	*	*	*	*	*
1 3/8	—	—	*	*	*	*
1 1/2	—	*	*	*	*	*
1 5/8	—	—	*	—	*	—
1 3/4	—	*	*	*	*	*
2	—	—	*	*	*	*
2 1/4	—	—	*	*	*	*
2 1/2	—	—	*	*	*	*
2 3/4	—	—	*	*	*	*
3	—	—	*	*	*	*
3 1/4	—	—	—	—	*	*
3 1/2	—	—	—	—	*	*
3 3/4	—	—	—	—	*	*
4	—	—	—	—	*	*



Nom Size	D				P		R	
	STANDARD		.001 Oversized		Point Diameter		Crown height or Radius	
	.0002 Max.	Oversized Min.	Max.	Min.	Max.	Min.	Max.	Min.
1/16	.0628	.0626	.0636	.0634	0.058	0.048	0.020	0.008
3/32	.0941	.0939	.0949	.0947	0.089	0.079	0.031	0.012
1/8	.1253	.1251	.1261	.1259	0.120	0.110	0.041	0.016
3/16	.1878	.1876	.1886	.1884	0.180	0.179	0.062	0.023
1/4	.2503	.2501	.2511	.2509	0.240	0.230	0.083	0.031
5/16	.3128	.3126	.3136	.3134	0.302	0.290	0.104	0.039
3/8	.3753	.3751	.3761	.3759	0.365	0.350	0.125	0.047
7/16	.4378	.4376	.4386	.4384	0.424	0.409	0.146	0.055
1/2	.5003	.5001	.5011	.5009	0.486	0.471	0.167	0.063
5/8	.6253	.6251	.6261	.6259	0.611	0.595	0.208	0.078
3/4	.7503	.7501	.7511	.7509	0.735	0.715	0.250	0.094
7/8	.8753	.8751	.8761	.8759	0.860	0.840	0.293	0.109
1	1.0003	1.0001	1.0011	1.0009	0.980	0.960	0.333	0.125

Length	Diameter							
	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1"
1/2	*	*	*	—	—	—	—	—
5/8	*	—	*	—	—	—	—	—
3/4	*	*	*	—	*	*	—	—
7/8	*	*	*	—	—	—	—	—
1	*	*	*	*	*	*	*	*
1 1/8	*	—	*	—	—	—	—	*
1 1/4	*	*	*	*	*	*	—	*
1 3/8	*	—	—	—	—	*	—	*
1 1/2	*	*	*	*	*	*	*	*
1 5/8	—	*	*	—	—	*	—	—
1 3/4	*	*	*	*	*	*	*	*
2	*	*	*	*	*	*	*	*
2 1/4	*	*	*	*	*	*	*	*
2 1/2	*	*	*	*	*	*	*	*
2 3/4	*	*	*	*	*	*	*	*
3	*	*	*	*	*	*	*	*
3 1/4	*	*	*	—	*	*	*	*
3 1/2	*	*	*	*	*	*	*	*
3 3/4	*	—	*	—	*	—	—	—
4	*	*	*	*	*	*	*	*
4 1/2	—	—	*	*	*	*	*	*
5	—	—	*	*	*	*	*	*
5 1/2	—	—	*	—	—	—	—	—
6	—	—	*	—	*	*	*	*

- All pins are heat treated to Rockwell 60-64C
- .001 oversized ± .0001 Prices on application
- Made in USA
- Dowel pins can be custom ground to special diameters to meet your requirements

NO MINIMUM ORDER

***Call for current pricing**

DOWEL PINS

303 STAINLESS DOWEL PINS

Length	1/8	3/16	1/4	5/16	3/8	1/2	5/8
1/2	*	*	*	*	*	—	—
5/8	*	*	*	*	*	*	—
3/4	*	*	*	*	*	*	—
7/8	*	*	*	*	*	—	—
1	*	*	*	*	*	*	*
1 1/4	*	*	*	*	*	*	*
1 1/2	*	*	*	*	*	*	*
1 3/4	*	*	*	*	*	*	*
2	*	*	*	*	*	*	*
2 1/2	*	*	*	*	*	*	*
3	*	*	*	*	*	*	*
3 1/2	*	—	*	*	*	*	*
4	*	—	*	*	*	*	*

METRIC DOWEL PINS

Length in MM	4	5	6	8	10	12	16	20	Length in MM
12	*	*	*	*	—	—	—	—	12
14	*	*	—	—	—	—	—	—	14
16	*	*	*	*	*	—	—	—	16
18	*	*	—	—	*	—	—	—	18
20	*	*	*	*	*	*	*	—	20
25	*	*	*	*	*	*	*	*	25
30	*	*	*	*	*	*	*	*	30
35	*	*	*	*	*	*	*	—	35
40	*	*	*	*	*	*	*	*	40
45	—	—	*	*	*	*	*	—	45
50	*	*	*	*	*	*	*	*	50
55	*	*	*	*	*	*	—	—	55
60	*	*	*	*	*	*	*	*	60
65	—	*	*	*	*	*	—	—	65
70	*	*	—	*	*	*	*	*	70
80	—	—	*	*	*	*	—	*	80
90	—	—	*	*	*	*	*	—	90
100	—	—	*	—	*	*	—	*	100

METRIC PULL DOWEL PINS

Length in MM	6	8	10	12	16	20	Length in MM
20	*	*	*	*	—	—	20
25	*	*	*	*	*	—	25
30	*	*	*	*	*	*	30
35	*	*	*	*	*	*	35
40	*	*	*	*	*	*	40
45	*	*	*	*	*	*	45
50	*	*	*	*	*	*	50
55	*	*	*	*	*	*	55
60	*	*	*	*	*	*	60
70	*	*	*	*	*	*	70
75	—	—	*	*	*	*	75
80	*	*	*	*	*	*	80
100	—	—	*	*	*	*	100

NO MINIMUM ORDER

***CALL FOR CURRENT PRICING**

SOCKET HEAD CAP & SET SCREWS

BUTTON HEAD SOCKET CAP SCREWS

Length	4/40	6/32	8/32	10/24	10/32	1/4-20	5/16-18	3/8-16
1/4	*	*	*	*	*	—	—	—
3/8	*	*	*	*	*	*	—	—
1/2	*	*	*	*	*	*	*	*
5/8	—	*	*	*	*	*	*	*
3/4	—	—	*	*	*	*	*	*
1	—	—	—	*	*	*	*	*
1 1/4	—	—	—	—	—	—	—	*

METRIC SOCKET HEAD CAP SCREWS

Length	M8	M10
16	*	—
20	*	*
25	*	*
30	*	*
35	*	*
40	*	*
45	*	*
50	*	*
55	*	*
60	*	*
65	*	*
70	*	*
75	*	*

*Call for current pricing

FLAT HEAD SOCKET CAP SCREWS

Length	4/40	5/40	6/32	8/32	10/24	10/32	1/4-20	5/16-18	3/8-16	1/2-13	5/8-11	3/4-10
1/4	*	*	*	—	—	—	—	—	—	—	—	—
3/8	*	*	*	*	*	*	*	—	—	—	—	—
1/2	*	*	*	*	*	*	*	*	*	—	—	—
5/8	*	*	*	*	*	*	*	*	—	—	—	—
3/4	*	*	*	*	*	*	*	*	*	*	—	—
1	—	—	—	*	*	*	*	*	*	*	—	—
1 1/4	—	—	—	—	*	*	*	*	*	*	*	—
1 1/2	—	—	—	—	*	*	*	*	*	*	*	*
1 3/4	—	—	—	—	—	—	*	*	*	*	*	*
2	—	—	—	—	—	—	*	*	*	*	*	*
2 1/4	—	—	—	—	—	—	—	—	—	*	*	*
2 1/2	—	—	—	—	—	—	—	—	—	*	*	*
3	—	—	—	—	—	—	—	—	—	*	*	*

SOCKET SET SCREWS – CUP POINT (OTHER POINTS AND DIAMETERS AVAILABLE PRICES ON APPLICATION)

Length	0/80	1/72	2/56	3/48	4/40	5/40	6/32	8/32	10/24	10/32
1/16	—	*	*	—	—	—	—	—	—	—
3/32	*	*	*	*	—	—	—	—	—	—
1/8	*	*	*	*	*	*	*	*	—	—
3/16	*	*	*	*	*	*	*	*	*	*
1/4	*	*	*	*	*	*	*	*	*	*
5/16	—	—	—	—	*	*	*	*	*	*
3/8	—	—	—	—	*	*	*	*	*	*
1/2	—	—	—	—	*	*	*	*	*	*
5/8	—	—	—	—	—	—	—	—	*	*
3/4	—	—	—	—	—	—	—	—	*	*
1	—	—	—	—	—	—	—	—	—	*
1 1/4	—	—	—	—	—	—	—	—	—	*

Length	1/4-20	1/4-28	5/16-18	5/16-24	3/8-16	3/8-24	1/2-13
3/16	*	*	—	—	—	—	—
1/4	*	*	*	*	*	*	—
5/16	*	*	*	*	*	*	—
3/8	*	*	*	*	*	*	—
1/2	*	*	*	*	*	*	*
5/8	*	—	*	*	*	*	*
3/4	*	—	*	*	*	*	*
1	*	—	*	*	*	*	*
1 1/4	*	—	*	—	*	*	*
1 1/2	*	—	*	—	*	*	*

SOCKET HEAD CAP SCREWS

Length	0/80	1/72	2/56	3/48	4/40	5/40	6/32	6/40	8/32	8/36	10/24	10/32	1/4-20	1/4-28
1/8	*	*	—	—	—	—	—	—	—	—	—	—	—	—
3/16	*	*	*	*	—	—	—	—	—	—	—	—	—	—
1/4	*	*	*	*	*	*	*	—	*	—	—	—	—	—
3/8	*	*	*	*	*	*	*	*	*	*	*	*	*	*
1/2	—	—	*	*	*	*	*	*	*	*	*	*	*	*
5/8	—	—	—	—	*	*	*	*	*	—	*	*	*	*
3/4	—	—	—	—	*	*	*	*	*	*	*	*	*	*
7/8	—	—	—	—	—	—	*	—	*	—	*	*	*	—
1	—	—	—	—	—	—	*	—	*	—	*	*	*	*
1 1/4	—	—	—	—	—	—	—	—	*	—	*	*	*	*
1 1/2	—	—	—	—	—	—	—	—	*	—	*	*	*	*
1 3/4	—	—	—	—	—	—	—	—	—	—	*	*	*	*
2	—	—	—	—	—	—	—	—	—	—	*	*	*	*
2 1/4	—	—	—	—	—	—	—	—	—	—	—	—	*	—
2 1/2	—	—	—	—	—	—	—	—	—	—	—	—	*	—
2 3/4	—	—	—	—	—	—	—	—	—	—	—	—	*	—
3	—	—	—	—	—	—	—	—	—	—	—	—	*	—

Length	5/16-18	5/16-24	3/8-16	3/8-24	7/16-14	1/2-13	1/2-20	5/8-11	3/4-10	1-8
1/2	*	—	*	—	—	*	—	—	—	—
5/8	*	*	*	—	—	—	—	—	—	—
3/4	*	*	*	*	*	*	—	—	—	—
7/8	*	*	*	—	*	*	—	—	—	—
1	*	*	*	*	*	*	*	*	—	—
1 1/4	*	*	*	*	*	*	*	*	*	—
1 1/2	*	*	*	*	*	*	*	*	*	—
1 3/4	*	*	*	*	*	*	*	*	*	—
2	*	*	*	*	*	*	*	*	*	*
2 1/4	*	—	*	—	*	*	*	*	*	*
2 1/2	*	—	*	—	*	*	*	*	*	*
2 3/4	*	—	*	—	*	*	—	*	*	*
3	*	—	*	—	*	*	*	*	*	*
3 1/4	*	—	*	—	—	*	—	*	*	*
3 1/2	*	—	*	—	—	*	—	*	*	*
4	—	—	*	—	—	*	—	*	*	*
4 1/2	—	—	*	—	—	*	—	*	*	*
5	—	—	*	—	—	*	—	*	*	*
5 1/2	—	—	—	—	—	*	—	*	*	*
6	—	—	—	—	—	*	—	*	*	*
6 1/2	—	—	—	—	—	*	—	*	*	*
7	—	—	—	—	—	*	—	*	*	*
8	—	—	—	—	—	*	—	*	*	*

***Call for current pricing**

Also Available:

**COMPLETE LINE OF
HOLO-KROME FASTENERS**

**CALL 1-800-544-7934 TO REQUEST
LATEST HOLO-KROME CATALOG**



LIXIE HAMMERS AND MALLETS

SOFT FACE DEAD BLOW

Hammers, Mallets and Sledges with Replaceable Faces

All Lixie Dead Blow striking tool head castings feature an unobstructed cavity, partially filled with iron shot. As the hammer is struck on a surface, the urethane face absorbs a portion of the blow's energy. The shot moves forward immediately behind the blow, dampening the rebound and insuring that the force of the blow is transmitted solidly to the struck surface. Lixie Dead Blow Hand Hammers and Mallets are available in 6 sizes, with a selection of two weights in each size. The rugged head casting is of either malleable iron (Heavy Dead Blow) or hi-tensile, non-sparking Aluminum (Light Dead Blow).

Lixie Dead Blow Sledges have the same features as the Hammers and Mallets. They are used where a heavy blow is desired, yet still retain the highly protective quality of Lixie urethane. They are available in 3 sizes with 2 weights in each size furnished with smooth hickory grip handles.

SEE PAGE 55 FOR AVAILABLE FACES



**LIXIE
Dead
Blow
Sledge**

**LIXIE
Dead
Blow
Mallet**

	MODEL	HEAD DIAM.	HEAD LENGTH	OVERALL LENGTH	WEIGHT (OUNCES)	PRICE EACH
HAMMERS & MALLETS	*100L-MH	1"	4-1/4"	11"	10	36.21
	100H-MH	1"	4-1/4"	11"	14	36.66
	*125L-MH	1-1/4"	4-7/8"	12"	14	40.07
	125H-MH	1-1/4"	4-7/8"	12"	22	39.74
	*150L-MH	1-1/2"	5-1/4"	13"	22	47.38
	150H-MH	1-1/2"	5-1/4"	13"	30	47.40
	*200L-MH	2"	6-1/4"	15"	38	66.02
	200H-MH	2"	6-1/4"	15"	56	65.05
	*250L-MH	2-1/2"	7"	17"	66	116.42
	250H-MH	2-1/2"	7"	17"	100	100.63
SLEDGES	*300L-MH	3"	8-1/2"	19"	116	157.24
	300H-MH	3"	8-1/2"	19"	168	149.16
	*250L-MH-32	2-1/2"	7-1/8"	32"	80	162.52
	250H-MH-32	2-1/2"	7-1/8"	32"	114	159.44
	*300L-MH-35	3"	8-1/2"	35"	120	206.61
	300H-MH-35	3"	8-1/2"	35"	180	220.64

HAMMERS FURNISHED COMPLETE WITH 2 FACES

Grade of face may be interchanged without increase in cost. Where not specified standard face makeup of Medium and Hard (MH) will be furnished.

*All L-Light Dead Blow models are sparkproof.

LIXIE HAMMERS AND MALLETS

MULTI HAMMER

with Replaceable Urethane Face

ONE HAMMER DOES THE JOB OF TWO! With a flip of the wrist you can switch from a sparkproof bronze to a soft, protective urethane face without fumbling for another hammer. Lixie's exclusive all-purpose model has a machinist's head cast in our special bronze alloy, with the opposite face incorporating replaceable screw-in faces in your choice of 4 grades, soft to hard. The handle is Grade A hickory with an exclusive non-slip grooved handle and special epoxy wedge construction. The All-Purpose hammer comes in a choice of 3 sizes with face diameters of 1", 1-1/4" or 1-1/2".



MODEL	HEAD DIAM.	HEAD LENGTH	OVERALL LENGTH	WEIGHT (OUNCES)	PRICE EACH
AB 100-T	1"	3-7/8"	12-1/2"	16	43.10
AB 125-T	1-1/4"	4-3/8"	13"	26	53.88
AB 150-T	1-1/2"	5"	13"	36	73.80

HAMMERS FURNISHED COMPLETE WITH 1 URETHANE FACE

Grade of face may be interchanged without increase in cost. Where not specified standard Tough grade (T) will be furnished. All are sparkproof.

REPLACEABLE URETHANE SCREW-IN FACES

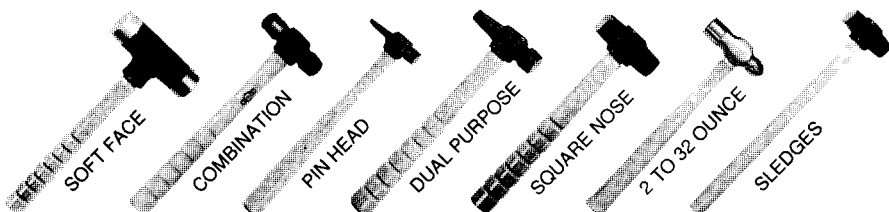
Lixie screw-type replaceable polyurethane faces are included on all Lixie Dead Blow and Multi Hammers. They are available in six sizes, with a range of four hardnesses in each size. This permits custom fitting a Lixie hammer to your individual requirements. Impervious to oils and most solvents, these solid polyurethane faces have high impact absorption, yet will not mar,peen or deform the struck surface.



COLOR DENOTES HARDNESS

COLOR	DIAMETER					
	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
BROWN (Soft)	6.93	7.69	9.38	12.67	23.14	31.40
GREEN (Medium)	6.93	7.69	9.38	12.67	23.14	31.40
RED (Tough)	6.93	7.69	9.38	12.67	23.14	31.40
BLACK (Hard)	9.22	10.33	12.67	18.53	33.89	46.87

NOTE: Order face diameter to coincide with hammer diameter. Faces packaged one each per container.



To request full line brochure of Lixie Hammers - Call 1-800-544-7934

STEEL SHIM STOCK

Steel Shim Stock is low carbon mild steel cold rolled to a #1 hard temper. It is stiff and springy. The material can be punched or sheared with minimum burring and distortion.

1008/1010 Full Hard, AISI1010, QQS 698

6" x 100" Rolls

THICKNESS	PRICE EACH
.001	\$ 13.08
.0015	15.54
.002	8.95
.0025	8.73
.003	11.33
.004	10.94
.005	10.00
.006	9.56
.007	9.96
.008	9.89
.009	10.36
.010	10.54
.012	10.33
.015	10.73
.018	12.19
.020	12.60
.025	13.46
.031	14.16

6" x 180" Rolls

THICKNESS	PRICE EACH
.001	\$ 27.07
.0015	32.19
.002	18.53
.0025	19.50
.003	23.64
.004	22.64
.005	20.67
.006	19.79
.007	20.63
.008	20.48
.009	21.43
.010	21.83
.012	21.39
.015	22.20
.018	25.27
.020	26.09
.025	27.86
.031	29.34

Assortments

12 Pak – 1 Pc. each 6"x12"		
\$ 39.33		
.001	.0015	.002
.003	.004	.005
.006	.007	.008
.010	.012	.015
15 Pak – 1 Pc. each 6"x12"		
\$ 45.82		
.001	.0015	.002
.003	.004	.005
.006	.007	.008
.010	.012	.015
.020	.025	.031
4 Pak – 1 Pc. each 6"x50"		
\$ 41.61		
.001		
.002		
.003		
.005		

BRASS SHIM STOCK

Use Brass Shim Stock where some stiffness is required and where corrosion problems exist. 70% copper and 30% zinc it has been cold rolled to a 1/2 hard temper, Rockwell hardness of 30T 56/68.

260 Half Hard

6" x 100" Rolls

THICKNESS	PRICE EACH
.001	\$ 22.64
.0015	22.74
.002	23.46
.003	24.23
.004	25.53
.005	26.41
.006	27.18
.007	28.52
.008	30.08
.009	32.32
.010	35.17
.012	38.09
.015	43.99
.020	51.58
.025	61.61
.031	72.89

6" x 180" Rolls

THICKNESS	PRICE EACH
.001	\$ 41.67
.0015	41.67
.002	41.67
.003	41.67
.004	43.74
.005	50.34
.006	54.78
.007	61.13
.008	61.13
.009	65.10
.010	65.10
.012	80.98
.015	89.53
.020	107.99
.025	129.42
.031	142.92

Assortments

12 Pak – 1 Pc. each 6"x12"		
\$ 45.65		
.001	.0015	.002
.003	.004	.005
.006	.007	.008
.010	.012	.015
15 Pak – 1 Pc. each 6"x12"		
\$ 62.25		
.001	.0015	.002
.003	.004	.005
.006	.007	.008
.010	.012	.015
.020	.025	.031
4 Pak – 1 Pc. each 6"x50"		
\$ 50.82		
.001		
.002		
.003		
.005		

STAINLESS STEEL SHIM STOCK

Stainless Steel Shim Stock can be used in any applications where corrosion is a concern, Available as follows:

- 300 Series Full Hard, R/C 40-45
- 302 Half Hard, R/C 30-35
- 302 Annealed
- Stainless Steel Metric

300 Series Full Hard, R/C 40-45

6" x 50" Rolls

THICKNESS	PRICE EACH
.0005	\$ 69.18
.001	33.36
.0015	30.56
.002	21.11
.003	20.30
.004	19.80
.005	22.78
.006	22.75
.007	23.45
.008	23.84
.009	26.83
.010	24.74
.012	25.84
.015	27.96
.020	33.21
.025	38.89
.031	44.32

6" x 60" Rolls

THICKNESS	PRICE EACH
.001	\$ 48.04
.002	30.42
.003	29.21
.004	28.50
.005	32.79
.006	32.74
.007	33.77
.008	34.31
.009	38.74
.010	35.59
.012	37.21
.015	40.24
.020	46.40
.025	55.55
.031	63.83

12' x 50" Rolls

THICKNESS	PRICE EACH
.001	\$ 66.14
.002	41.91
.003	41.64
.004	42.47
.005	46.15
.006	52.37
.007	54.12
.008	55.08
.010	56.25
.012	58.73
.015	58.84
.020	64.03
.025	77.01
.031	101.31

1/2 Hard Stainless Shim R/C 30-35 AISI 302

12" x 50" Rolls

THICKNESS	PRICE EACH
.003	\$ 87.94
.004	94.41
.005	95.42
.006	116.47
.008	122.43
.010	134.61
.012	130.63
.015	124.31
.020	135.27
.025	171.27

Annealed Stainless Shim AISI 302

12" x 50" Rolls

THICKNESS	PRICE EACH
.003	\$ 87.94
.004	94.41
.005	95.42
.006	116.47
.008	122.43
.010	134.61
.012	130.63
.015	124.31
.020	135.27
.025	171.27

Metric Stainless

300 Series Full Hard, R/C 40-45

150mm x 1.25m

THICKNESS	PRICE EACH
.05 mm	\$ 22.25
.10	22.63
.15	23.86
.20	25.02
.25	25.94
.30	27.09
.40	29.36
.50	34.85
.65	40.82
.80	46.51

AISI TYPE 0-1 OIL HARDENING GROUND FLAT STOCK

Overall Length: 18"

Thickness	Width	Price Each	Thickness	Width	Price Each	Thickness	Width	Price Each	Thickness	Width	Price Each	
1/64	1/2	93.01	5/64	1/2	13.64	1/8	3	42.66	3/16	3-1/2	60.87	
	3/4	96.71		3/4	16.89		3-1/2	48.58		4	68.02	
	1	142.61		1	20.19		4	54.49		5	82.53	
	1-1/4	106.46		1-1/4	23.40		5	66.31		6	97.00	
	1-1/2	117.25		1-1/2	26.69		6	78.14		8	144.24	
	2	145.66		2	33.26		7	103.20		10	177.41	
	2-1/2	167.00		2-1/2	39.53		8	116.96		12	210.85	
	3	200.08		3	46.12		10	144.19		7/32	7/32	24.71
	4	269.40		4	59.37		12	171.56			1/2	21.18
		6	85.91	14	198.14	3/4	25.51					
1/32	1/2	16.87	3/32	1/4	44.11	9/64	1/2	16.36	1	29.86		
	3/4	22.79		3/8	24.21		3/4	18.64	1-1/4	33.91		
	1	26.56		1/2	13.64		1	22.08	1-1/2	38.24		
	1-1/4	31.48		3/4	16.89		1-1/4	26.56	2	46.89		
	1-1/2	36.39		1	20.19		1-1/2	28.67	2-1/2	55.94		
	2	46.01		1-1/4	23.40		2	35.50	3	64.16		
	2-1/2	55.74		1-1/2	26.69		3	49.05	4	81.39		
	3	65.72		1-3/4	29.97		4	62.60	6	115.91		
	4	85.11		2	33.26		5/32	5/32	26.74	1/4	1/4	23.04
6	150.30	2-1/2	39.86	1/4	40.00	5/16		35.26				
3/64	1/2	14.81	3	46.46	3/8	23.22		3/8	18.03			
	3/4	19.08	4	59.58	1/2	16.21		1/2	19.65			
	1	23.26	5	72.73	3/4	19.87		5/8	21.60			
	1-1/4	27.30	6	85.86	1	23.49		3/4	23.45			
	1-1/2	31.50	8	128.41	1-1/4	26.90		1	27.33			
	2	39.91	10	230.17	1-1/2	30.44		1-1/4	30.84			
	2-1/2	48.14	7/64	1/2	16.22	1-3/4		34.06	1-1/2		34.74	
	3	56.50		3/4	20.15	2	37.72	1-3/4	38.27			
	3-1/2	64.86		1	23.96	2-1/2	44.84	2	42.39			
4	88.54	1-1/4		27.69	3	52.09	2-1/2	50.04				
6	106.31	1-1/2		31.60	3-1/2	59.30	3	57.70				
1/16	1/4	35.02		2	39.37	4	66.50	3-1/2	65.38			
	3/8	17.50		2-1/2	49.27	5	80.94	4	73.06			
	1/2	10.44		3	54.85	6	95.30	4-1/2	80.70			
	5/8	11.99		4	70.33	8	142.11	5	88.35			
	3/4	13.19	6	110.99	3/16	3/16	25.72	5-1/2	96.06			
	1	15.90	1/8	1/8		28.81	1/4	14.20	6	107.88		
	1-1/4	18.56		1/4		10.36	5/16	15.39	7	136.45		
	1-1/2	21.32		5/16		11.30	3/8	16.07	8	154.37		
	1-3/4	24.01		3/8		11.94	1/2	17.69	10	189.63		
2	26.74	1/2		13.17		5/8	19.87	12	225.07			
2-1/2	32.13	5/8		14.66		3/4	21.20	14	259.44			
3	37.52	3/4		16.19		1	24.85	9/32	9/32	23.96		
3-1/2	43.06	1		19.14		1-1/4	28.24		1/2	22.70		
4	48.35	1-1/4		21.94	1-1/2	31.87	3/4		27.01			
5	59.23	1-1/2	24.88	1-3/4	35.46	1	31.41					
6	70.07	1-3/4	27.87	2	39.12	1-1/4	35.37					
8	105.05	2	30.82	2-1/2	46.32	1-1/2	39.78					
10	129.86	2-1/2	36.71	3	53.60							

Tolerance: Thickness ± .001
 Width + .005
 - .0

Also Available:
 36" Lengths • Oversize • Low Carbon • A-2, D-2, S-7

AISI TYPE 0-1 OIL HARDENING GROUND FLAT STOCK

Overall Length: 18"

Thickness	Width	Price Each	Thickness	Width	Price Each	Thickness	Width	Price Each	Thickness	Width	Price Each		
9/32	2	48.46	7/16	1-1/4	52.67	3/4	2	103.02	1-1/2	2	185.34		
	3	65.85		1-1/2	59.01		2-1/2	120.59		3	215.11		
	4	83.19		2	71.64		3	138.26		4	257.20		
	6	117.84		2-1/2	84.31		3-1/2	155.83		5	310.28		
5/16	5/16	24.91		3	96.96		4	173.43		6	429.72	6	594.79
	3/8	21.69		4	119.21		4-1/2	191.04		8	515.50	2	2	237.44
	1/2	23.52	6	172.91	5		209.64	2		312.29			
	5/8	25.81	1/2	1/2	35.26		6	244.83		3	387.22		
	3/4	28.04		5/8	38.55		8	358.19	4	515.50			
	1	32.59		3/4	41.84		10	432.00	2-1/2	2-1/2	408.19		
	1-1/4	36.69		1	48.39		12	505.86					
	1-1/2	41.25		1-1/4	54.74		7/8	7/8		74.48			
	1-3/4	45.73		1-1/2	61.27	1		79.51					
	2	50.27		1-3/4	68.06	1-1/4		88.93					
	2-1/2	59.30		2	74.45	1-1/2		98.91					
	3	68.29		2-1/2	87.60	2		118.87					
3-1/2	77.31	3		100.76	3	158.94							
4	86.36	3-1/2		113.90	4	198.94							
5	104.21	4		127.08	6	279.95							
6	126.94	4-1/2	140.24	1	1	85.50							
7	160.64	5	154.29		1-1/4	95.31							
8	181.49	6	196.31		1-1/2	105.84							
10	222.79	7	239.16		1-3/4	116.31							
12	264.36	8	270.09		2	126.81							
3/8	3/8	31.34	10		325.11	2-1/2	147.83						
	1/2	28.67	12		379.58	3	168.76						
	5/8	31.44	9/16		9/16	42.31	3-1/2	189.76					
	3/4	34.19			3/4	47.72	4	210.74					
	1	39.60			1	55.01	5	253.69					
	1-1/4	44.60			1-1/4	62.16	6	295.71					
	1-1/2	50.06			1-1/2	69.42	8	431.21					
	1-3/4	57.14		2	84.06	10	520.46						
	2	60.99		5/8	5/8	46.19	12	609.64					
	2-1/2	71.83			3/4	50.00	1-1/8	1-1/8	109.02				
	3	82.75			1	57.53		1-1/2	126.96				
	3-1/2	93.67			1-1/4	64.84		2	150.99				
4	104.54	1-1/2			72.39	3		199.00					
4-1/2	115.41	2			87.50	4		247.07					
5	126.26	2-1/2	102.59		6	344.21							
5-1/2	137.24	3	117.71		1-1/4	1-1/4		120.38					
6	148.09	3-1/2	132.85			1-1/2		133.34					
7	194.19	4	147.95			2		159.38					
8	219.42	5	179.15			2-1/2		185.31					
10	269.34	6	209.37			3		211.19					
12	319.53	3/4	3/4	59.44		4		263.08					
7/16	7/16		37.81	1		68.29	5	316.01					
	1/2		34.19	1-1/4		76.62	6	367.91					
	3/4		40.51	1-1/2		85.41	1-1/2	1-1/2	155.59				
	1		46.83	1-3/4		94.22							

Tolerance:

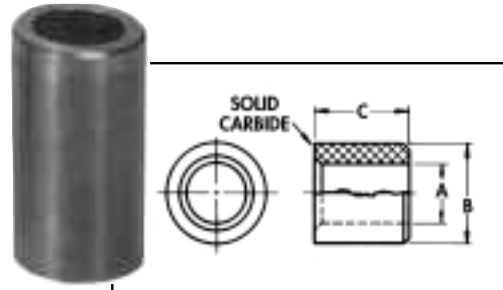
Thickness ± .001
Width + .005
- .0

Also Available:

- 36" Lengths
- Oversize
- Low Carbon
- A-2, D-2, S-7

SOLID CARBIDE PLAIN PRESS FIT BUSHINGS

Std. Drill Size A	Actual O.D. B	Length C	Symbol for O.D. Finish Ground
.0135 to .0625	.1578 .1575	1/4	PC-10-4
		5/16	PC-10-5
		3/8	PC-10-6
		1/2	PC-10-8
.0625 to .0995	.2046 .2043	1/4	PC-13-4
		5/16	PC-13-5
		3/8	PC-13-6
		1/2	PC-13-8
.0980 to .1406	.2516 .2513	1/4	PC-16-4
		5/16	PC-16-5
		3/8	PC-16-6
		1/2	PC-16-8
.1250 to .1935	.3141 .3138	3/4	PC-16-12
		1	PC-20-4
		1	PC-20-5
		1	PC-20-6
.1875 to .2570	.4078 .4075	1/2	PC-20-8
		3/4	PC-20-12
		1	PC-20-16
		1-3/8	PC-20-16
.1875 to .3160	.5017 .5014	1	PC-26-4
		1-3/8	PC-26-5
		1-3/4	PC-26-6
		1-3/4	PC-26-6
.3125 to .4375	.6267 .6264	1	PC-26-8
		1-3/8	PC-26-12
		1-3/4	PC-26-16
		2-1/8	PC-26-16
.3750 to .5312	.7518 .7515	1-3/4	PC-26-22
		2-1/8	PC-26-22
		2-1/8	PC-32-6
		2-1/8	PC-32-8
.5000 to .6250	.8768 .8765	1	PC-32-8
		1-3/8	PC-32-12
		1-3/4	PC-32-12
		2-1/8	PC-32-16
.6250 to .7500	1.0018 1.0015	1-3/4	PC-32-16
		2-1/8	PC-32-22
		2-1/8	PC-32-22
		2-1/8	PC-32-28
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-32-28
		2-1/8	PC-32-28
		2-1/8	PC-40-6
		2-1/8	PC-40-8
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-40-8
		2-1/8	PC-40-12
		2-1/8	PC-40-12
		2-1/8	PC-40-16
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-40-16
		2-1/8	PC-40-22
		2-1/8	PC-40-22
		2-1/8	PC-40-28
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-40-28
		2-1/8	PC-40-34
		2-1/8	PC-40-34
		2-1/8	PC-40-34
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-48-8
		2-1/8	PC-48-12
		2-1/8	PC-48-12
		2-1/8	PC-48-16
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-48-16
		2-1/8	PC-48-22
		2-1/8	PC-48-22
		2-1/8	PC-48-28
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-48-28
		2-1/8	PC-48-34
		2-1/8	PC-48-34
		2-1/8	PC-48-34
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-56-8
		2-1/8	PC-56-12
		2-1/8	PC-56-12
		2-1/8	PC-56-16
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-56-16
		2-1/8	PC-56-22
		2-1/8	PC-56-22
		2-1/8	PC-56-28
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-56-28
		2-1/8	PC-56-34
		2-1/8	PC-56-34
		2-1/8	PC-56-34
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-64-8
		2-1/8	PC-64-12
		2-1/8	PC-64-12
		2-1/8	PC-64-16
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-64-16
		2-1/8	PC-64-22
		2-1/8	PC-64-22
		2-1/8	PC-64-28
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-64-28
		2-1/8	PC-64-34
		2-1/8	PC-64-34
		2-1/8	PC-64-40
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-64-40
		2-1/8	PC-88-12
		2-1/8	PC-88-12
		2-1/8	PC-88-16
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-88-16
		2-1/8	PC-88-22
		2-1/8	PC-88-22
		2-1/8	PC-88-28
.7500 to 1.0000	1.3772 1.3768	2-1/8	PC-88-28
		2-1/8	PC-88-34
		2-1/8	PC-88-34
		2-1/8	PC-88-40



SOLID CARBIDE SLIP & FIXED RENEWABLE BUSHINGS

ALSO AVAILABLE
PRICES UPON REQUEST

STANDARD I.D. TOLERANCES

Up to 1/4	Nominal +.0001/+.0004
Over 1/4 to 3/4	Nominal +.0001/+.0005
Over 3/4 to 1-1/2	Nominal +.0002/+.0006
Over 1-1/2 to 1-3/4	Nominal +.0003/+.0007

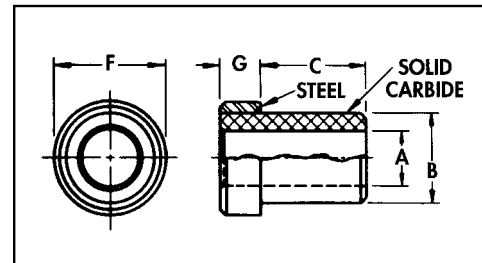
Counterbore

Unless otherwise specified, all Carbide Bushings are supplied without counterbore. (Carbide Bushings with counterbore are priced as specials.)

AVAILABLE IN DRILL SIZES
UP TO 1.750
PRICES ON REQUEST

CARBIDE HEAD PRESS FIT BUSHINGS

Std. Drill Size A	Actual O.D. B	Length C	Symbol for O.D. Finish Ground	HEAD DIMENSIONS	
				F	G
.0135 to .0625	.1578 .1575	1/4 5/16 3/8 1/2	HC-10-4 HC-10-5 HC-10-6 HC-10-8	1/4	3/32
.0625 to .0995	.2046 .2043	1/4 5/16 3/8 1/2	HC-13-4 HC-13-5 HC-13-6 HC-13-8	19/64	3/32
.0980 to .1406	.2516 .2513	1/4 5/16 3/8 1/2 3/4	HC-16-4 HC-16-5 HC-16-6 HC-16-8 HC-16-12	23/64	3/32
.1250 to .1935	.3141 .3138	1/4 5/16 3/8 1/2 3/4 1	HC-20-4 HC-20-5 HC-20-6 HC-20-8 HC-20-12 HC-20-16	27/64	1/8
.1875 to .2570	.4078 .4075	1/4 5/16 3/8 1/2 3/4 1 1-3/8	HC-26-4 HC-26-5 HC-26-6 HC-26-8 HC-26-12 HC-26-16 HC-26-22	1/2	5/32
.1875 to .3160	.5017 .5014	3/8 1/2 3/4 1 1-3/8 1-3/4	HC-32-6 HC-32-8 HC-32-12 HC-32-16 HC-32-22 HC-32-28	39/64	7/32
.3125 to .4375	.6267 .6264	3/8 1/2 3/4 1 1-3/8 1-3/4 2-1/8	HC-40-6 HC-40-8 HC-40-12 HC-40-16 HC-40-22 HC-40-28 HC-40-34	51/64	7/32
.3750 to .5312	.7518 .7515	1/2 3/4 1 1-3/8 1-3/4 2-1/8	HC-48-8 HC-48-12 HC-48-16 HC-48-22 HC-48-28 HC-48-34	59/64	7/32
.5000 to .6250	.8768 .8765	1/2 3/4 1 1-3/8 1-3/4 2-1/8	HC-56-8 HC-56-12 HC-56-16 HC-56-22 HC-56-28 HC-56-34	1-7/64	1/4
.6250 to .7500	1.0018 1.0015	1/2 3/4 1 1-3/8 1-3/4 2-1/8 2-1/2	HC-64-8 HC-64-12 HC-64-16 HC-64-22 HC-64-28 HC-64-34 HC-64-40	1-15/64	5/16
.7500 to 1.0000	1.3772 1.3768	3/4 1 1-3/8 1-3/4 2-1/8 2-1/2	HC-88-12 HC-88-16 HC-88-22 HC-88-28 HC-88-34 HC-88-40	1-39/64	3/8



SOLID CARBIDE SLIP & FIXED RENEWABLE BUSHINGS

ALSO AVAILABLE
PRICES UPON REQUEST

STANDARD I.D. TOLERANCES

Up to 1/4	Nominal +.0001/+.0004
Over 1/4 to 3/4	Nominal +.0001/+.0005
Over 3/4 to 1-1/2	Nominal +.0002/+.0006
Over 1-1/2 to 1-3/4	Nominal +.0003/+.0007

AVAILABLE IN DRILL SIZES
UP TO 1.750
PRICES ON REQUEST

STEEL FEELER GAGE STOCK

Thickness	Strips 1/2 x 12"	Coils 1/2 x 25'	Thickness	Strips 1/2 x 12"	Coils 1/2 x 25'
.001	\$4.67	\$93.43	.039	2.16	43.20
.0015	2.50	49.92	.040	2.16	43.20
.002	2.50	49.92	.041-.045	8.57	AVAILABLE IN .001 INCREMENTS — NOT AVAILABLE IN COIL
.0025	2.56	51.21	.046-.055	9.29	
.003	2.50	49.92	.056-.065	10.00	
.004	2.03	40.64	.066-.075	10.36	
.005	2.03	36.57	.076-.090	10.72	
.006	2.03	36.57	.091-.125	11.43	
.007	1.79	32.26			
.008	1.79	32.26			
.009	1.79	32.26			
.010	1.79	32.26			
.011	1.79	32.26			
.012	1.79	32.26			
.013	1.79	32.26			
.014	1.79	32.26			
.015	1.79	32.26			
.016	1.79	32.26			
.017	1.79	32.26			
.018	1.79	32.26			
.019	1.79	32.26			
.020	1.79	32.26			
.021	1.79	32.26			
.022	1.79	32.26			
.023	1.79	32.26			
.024	1.79	32.26			
.025	1.79	32.26			
.026	1.79	35.84			
.027	1.79	35.84			
.028	1.79	35.84			
.029	1.79	35.84			
.030	1.79	35.84			
.031	1.92	38.40			
.032	1.92	38.40			
.033	1.92	38.40			
.034	1.92	38.40			
.035	1.92	38.40			
.036	2.16	43.20			
.037	2.16	43.20			
.038	2.16	43.20			



TOLERANCE FOR
.020 & LARGER = \pm .0005
FOR .019 & SMALLER
SEE PAGE 63

Steel gage stock is made from fine quality 1095 tempered spring steel and etched every six inches for positive identification.

Available in 1/2" wide (12.7 MM) twelve inch (300 MM) lengths or 25' (7.62 M) rolls

Additional sizes and materials available. Call for pricing and delivery.

Metric - Steel		
Thickness	Strips 12.7mm x 300 mm	Coils 12.7mm x 7.62m
.04mm	\$ 4.64	\$ 99.99
.05	4.29	92.86
.06	3.93	85.71
.07	3.57	78.57
.08	3.57	78.57
.09	3.35	71.43
.10	3.35	71.43
.15	3.22	67.86
.20	3.22	67.86
.25	3.22	67.86
.30	3.22	67.86
.35	3.22	67.86
.40	3.22	67.86
.45	3.22	67.86
.50	3.22	67.86
.55	3.29	69.29
.60	3.29	69.29
.65	3.29	69.29
.70	3.28	69.29
.75	3.29	69.29
.80	3.36	71.43
.85	3.36	71.43
.90	3.36	71.43
.95	3.36	71.43
1.00	3.36	71.43
1.50	10.72	—
2.00	11.43	—
2.50	12.14	—
3.00	12.14	—

STAINLESS STEEL FEELER GAGE STOCK

STAINLESS STEEL GAGE STOCK IS TYPE 301 EXTRA FULL HARD OR HIGH YIELD, WITH A #1 ROUND EDGE. LIKE THE STEEL STOCK IT IS ETCHED EVERY SIX INCHES FOR POSITIVE IDENTIFICATION.

AVAILABLE IN 1/2" AND 1" WIDTHS, TWELVE INCH LENGTHS OR 25' ROLLS.

SPECIAL LENGTHS, WIDTHS AND THICKNESS ON REQUEST.

Thickness	STRIPS 1/2 x 12"	COILS 1/2 x 25'	STRIPS 1 x 12"	COILS 1 x 25'	TOLERANCE +/-
.0005	\$7.73	\$154.63	\$15.46	\$321.43	.00005
.001	6.08	121.32	12.13	242.63	.00012
.0015	4.21	110.75	8.43	168.57	.00012
.002	3.64	72.86	7.28	145.72	.00016
.0025	4.64	92.71	9.27	185.43	.00016
.003	3.64	72.86	7.28	145.72	.00020
.004	2.78	55.32	5.53	110.63	.00020
.005	2.78	49.79	5.53	99.57	.00024
.006	2.78	49.79	5.53	99.57	.00028
.007	2.78	49.79	5.53	99.57	.00028
.008	2.78	49.79	5.53	99.57	.00031
.009	2.78	49.79	5.53	99.57	.00031
.010	2.78	49.79	5.53	99.57	.00035
.011	3.01	54.26	6.03	108.52	.00035
.012	3.01	54.26	6.03	108.52	.00035
.013	3.01	54.26	6.03	108.52	.00043
.014	3.01	54.26	6.03	108.52	.00043
.015	3.01	54.26	6.03	108.52	.00043
.016	3.31	61.72	Not Available in Coils		.00047
.017	3.31	61.72			.00047
.018	3.31	61.72			.00047
.019	3.31	61.72			.00047
.020	3.31	61.72			.00050
.021	3.87	69.59			.00050
.022	3.87	69.59			.00050
.023	3.87	69.59			.00050
.024	3.87	69.59			.00050
.025	3.87	69.59			.00050
.031	3.87	69.59			.00050

INSPECTION BALL KITS

GRADE 25 CHROME STEEL (R/C 60 MIN.)



Inspection ball kits are available from stock in the 14 most popular English sizes from 3/32" to 1.00", individually or all in a kit. The kit for each individual size contains 7 balls. A nominal fractional ball as well as one each of a +0.002", +001", +0005", +0002", and -0.001", -002". Kit BK-14 consists of all 14 individual size kits. The inspection ball kits are also excellent for ball sizing parts. Ball sizing is basically pushing a ball through a hole or tube which produces a certain finish or size.

Part #	Nominal Size		Price
BK-14	14 Sizes From 3/32" - 1" Kit	—	\$493.07
093-BK	3/32"	2.381 mm	42.81
125-BK	1/8"	3.175 mm	42.81
156-BK	5/32"	3.969 mm	42.81
187-BK	3/16"	4.763 mm	42.81
218-BK	7/32"	5.556 mm	42.81
250-BK	1/4"	6.35 mm	42.81
312-BK	5/16"	7.938 mm	44.50
375-BK	3/8"	9.525 mm	44.50
437-BK	7/16"	11.113 mm	44.50
500-BK	1/2"	12.7 mm	41.21
625-BK	5/8"	15.875 mm	41.21
750-BK	3/4"	19.05 mm	51.04
875-BK	7/8"	22.225 mm	61.10
100-BK	1"	25.4 mm	61.10

Grade 25

BASIC DIAMETER

TOLERANCE = $\pm .0001$

DEVIATION FROM
SPHERICAL FORM
.000025

DECIMAL DIAMETER BALLS, OTHER MATERIALS AND
TOLERANCES AVAILABLE

CALL FOR PRICING & DELIVERY

CLASS X MEYER GAGE MG-25 SERIES



MG-25 PIN GAGE SETS

IN .0001" INCREMENTS OR .01mm INCREMENTS

Used as masters to calibrate measuring equipment and check linearity of comparators, micrometers, and calipers. These "Tenth Step" gage sets have unlimited applications, such as quality control inspection, prototype work and production layout. Inspectors select from the range of pins to find the size of a hole or slot. These round masters simulate a cylindrical part which unlike flat blocks can detect uneven wear on the tips of micrometers and calipers. The thin "line" of contact detects uneven face wear better than flat gage blocks with large contact area.

**SEE PAGE 67 FOR
MORE CLASS X GAGE SETS**

FEATURES:

- Each set contains 25 pieces of Class X tolerance (.00004") gage pins. Traceable to NIST.
- Choice of two tolerances Plus (+.00004") or Minus (-.00004").
- Sets consist of a center nominal size, and 12 gages larger in .0001" steps and 12 gages smaller in .0001" steps.
- Each gage is inspected and has a 2 micro-finish or better.
- Heat treated and through hardened to 60-62 Rockwell C.
- All pin gages over .060" or 1.51mm are laser marked with size direction of tolerance and serial number for traceability.

GAGE SET NO.	NOMINAL SIZE RANGE		SET PRICE
	<i>English</i>	<i>or Metric</i>	
MG1-25	.0110 to .0609	.28mm to 1.54mm	\$340.09
MG2-25	.0610 to .2509	1.55mm to 6.37mm	\$169.19
MG3-25	.2510 to .5009	6.38mm to 12.72mm	\$195.05
MG4-25	.5010 to .7499	12.73mm to 19.04mm	\$269.17
MG5-25	.7500 to .8129	19.05mm to 20.64mm	\$376.86

To order simply select your nominal size from any .0001" English or .01mm Metric increment and direction of tolerance. Then refer to the above chart to find the set price.

PRECISION PLUG GAGE SETS


METRIC GAGE SETS

Gage Set Number	Gage Size	No. of Members	Price	Separate Member Price	Gage Set Number	Gage Size	No. of Members	Price	Separate Member Price
WTH-0	.011 - .060	50	81.82	3.76	WTH-0 mm	.22mm - 1.50mm	65	106.37	4.61
WTH-0-5	.0115 - .0605	50	81.82	3.76	WTH-01 mm	.23mm - 1.51mm	65	106.37	4.61
WTH-1	.061 - .250	190	184.09	3.36	WTH-1 mm	1.52mm - 7.70mm	310	374.99	4.19
WTH-1-5	.0615 - .2505	190	184.09	3.36	WTH-11 mm	1.53mm - 7.71mm	310	374.99	4.19
WTH-10	.011 - .250	240	252.27	—	WTH-2 mm	7.72mm - 12.70mm	250	403.63	4.19
WTH-105	.0115 - .2505	240	252.27	—	WTH-21 mm	7.73mm - 12.71mm	250	403.63	4.19
WTH-2	.251 - .500	250	272.72	3.36	WTH-3 mm	12.72mm - 15.30mm	130	447.27	5.28
WTH-2-5	.2515 - .5005	250	272.72	3.36	WTH-31 mm	12.73mm - 15.31mm	130	447.27	5.28
WTH-3	.501 - .625	125	320.46	4.61	WTH-4 mm	15.32mm - 17.80mm	125	474.54	8.28
WTH-3-5	.5015 - .6255	125	320.26	4.61	WTH-41 mm	15.33mm - 17.81mm	125	474.54	8.28
WTH-4	.626 - .750	125	354.54	6.70	WTH-5 mm	17.82mm - 20.36mm	128	563.35	9.95
WTH-4-5	.6265 - .7505	125	354.54	6.70	WTH-51 mm	17.83mm - 20.37mm	128	563.35	9.95
WTH-5	.751 - .832	82	602.16	10.05	WTH-6 mm	20.38mm - 22.04mm	84	674.41	11.65
WTH-5-5	.7515 - .8325	82	602.16	10.05	WTH-61 mm	20.39mm - 22.05mm	84	674.41	11.65
WTH-6	.833 - .916	84	702.50	11.49	WTH-7 mm	22.06mm - 23.72mm	84	778.79	13.05
WTH-6-5	.8335 - .9165	84	702.50	11.49	WTH-71 mm	22.07mm - 22.73mm	84	778.79	13.05
WTH-7	.917 - 1.000	84	735.96	11.88	WTH-8 mm	23.74mm - 25.40mm	84	800.19	14.68
WTH-7-5	.9175 - 1.0005	84	735.96	11.88	WTH-81 mm	23.75mm - 25.41mm	84	800.19	14.68

IN .02mm INCREMENTS

IN .001 INCREMENTS

IMPORTANT: SPECIFY PLUS OR MINUS TOLERANCE WHEN ORDERING GAGES
PLASTIC CASES

EACH HOLE SIZE MARKED ON INSERT.

Plastic insert for WTH-0 set	\$16.53 each
Plastic insert for WTH-1 thru WTH-8 sets	33.06 each
Plastic case for WTH-0 set	16.53 each
Plastic case for WTH-1 thru WTH-7 sets	33.06 each
Plastic case with insert for WTH-0 set	33.06 each
Plastic case with insert for WTH-1 thru WTH-7 sets	66.13 each

USES

- Checking locations.
- Measuring hole sizes and depths
- Go and No-Go gaging.
- Setting micrometers.
- Checking distances between holes.

FEATURES

- All Gages 2" long
- No sharp edges
- Boxes and Gages both marked (WTH-0 pins not etched)
- 8 Micro finish or better
- All english gages are inspected within .0001 tolerance limits
- All metric gages are inspected within .0025mm tolerance limits
- Heat treated to a hardness of Rockwell C 60-62
- Each set packaged in its own plastic case

PRECISION PLUG GAGE SETS



CLASS X GAGE SETS .001 INCREMENTS

Gage Set	Range	Number of Members	Price	Separate Member Price
WTH-OX	.011" - .060"	50	445.40	16.64
WTH-O5X	.0115 - .0605	50	445.40	16.64
WTH-1X	.061 - .250	190	1170.43	16.64
WTH-15X	.0615 - .2505	190	1170.43	16.64
WTH-2X	.251 - .500	250	1548.18	13.45
WTH-25X	.2515 - .5005	250	1548.18	13.45
WTH-3X	.501 - .625	125	1314.76	19.31
WTH-35	.5015 - .6255	125	1314.76	19.31
WTH-4X	.626 - .750	125	1393.36	19.31
WTH-45	.6265 - .7505	125	1393.36	19.31
WTH-5X\	.751 - .832	82	1170.66	23.70
WTH-55X	.7515 - .8325	82	1170.66	23.70
WTH-6X	.833 - .916	84	1232.59	23.70
WTH-65X	.8335 - .9165	84	1232.59	23.70
WTH-7X	.917 - 1.000	84	1413.61	23.70
WTH-75X	.9175 - 1.0005	84	1413.61	23.70

.000040 tolerance • Each set packaged in Plastic Case and Insert.

GAGE SET LIBRARIES: Conveniently store all your gages in one location
IMPORTANT! Specify plus or minus tolerance when ordering gages

.0001 (CLASS Z) LIBRARY SERIES

Model Number	Wt./lbs.	Range	Number of members	Price
L-S	87	.011" - .625"	(615 gages)	1,021.78
L-C	120	.011" - .750"	(740 gages)	1,479.96
L-1	120	.061" - .750"	(690 gages)	1,413.05
L-2	95	.061" - .5005"	(880 gages in .0005" increments)	1,198.95
L-2C	96	.011" - .5005"	(980 gages in .0005" increments)	1,332.76
L-3*	240	.061" - 1.000"	(940 gages)	3,602.19
L-4*	240	.011" - 1.000"	(990 gages)	3,669.10
L-5	140	.751" - 1.000"	(250 gages)	2,356.41

.00004 (CLASS X) LIBRARY SERIES

Model Number	Wt./lbs.	Range	Number of members	Price
L-CX	120	.011" - .750"	(740 gages)	5,804.50
L-1X	122	.061" - .750"	(690 gages)	5,382.91
L-2X	98	.061" - .5005"	(880 gages in .0005 increments)	6,049.82
L-2CX	100	.011" - .5005"	(980 gages in .0005" increments)	5,291.21
L-3X*	260	.061" - 1.000"	(940 gages)	9,093.79
L-4X*	250	.011" - 1.000"	(990 gages)	9,453.44

* Consists of one seven drawer cabinet.

METRIC LIBRARY SERIES (.0025mm)

Model Number	Wt./lbs.	Range	Number of members	Price
L-10 mm	124	1.52mm - 17.80mm	(815 gages)	1,877.18
L-11 mm	124	1.53mm - 17.81mm	(815 gages)	1,877.18
L-20 mm	183	17.82mm - 25.40mm	(380 gages)	2,970.61
L-21 mm	183	17.83mm - 25.41mm	(380 gages)	2,970.61
L-30 mm**	305	1.52mm - 25.40mm	(1195 gages)	4,847.77
L-31 mm**	305	1.53mm - 25.41mm	(1195 gages)	4,847.77

**Consists of 2 four drawer cabinets

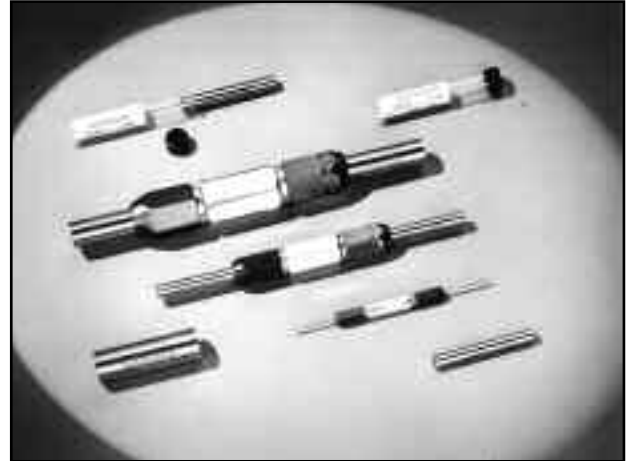
Upgrade Existing Sets

Model Number	Wt./lbs.	Description	Price
L-E 4	38	four drawer cabinet empty	354.60
L-IN 4	46	four drawer cabinet with four inserts of your choice	434.88

REVERSIBLE PLUG GAGES

Hutchinson HSS gages are an ideal low cost solution to a variety of dimensioning problems.

All gage members are made of M2 high speed steel hardness "C" 62-64.



YOUR CHOICE OF THREE TOLERANCES

+ .0002	+ .0000	+ .0001
- .0000	- .0002	- .0001

2" LONG HSS GAGE MEMBER PRICES

<table style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">.0030-.0049 14.50</td></tr> <tr><td style="padding: 2px;">.076 MM - .126 MM</td></tr> <tr><td style="padding: 2px;">.0050-.0069 13.50</td></tr> <tr><td style="padding: 2px;">.127 MM - .176 MM</td></tr> <tr><td style="padding: 2px;">.0070-.0099 11.50</td></tr> <tr><td style="padding: 2px;">.177 MM - .253 MM</td></tr> <tr><td style="padding: 2px;">.0100-.0200 4.06</td></tr> <tr><td style="padding: 2px;">.254 MM - .508 MM</td></tr> <tr><td style="padding: 2px;">.0201-.0312 3.86</td></tr> <tr><td style="padding: 2px;">.511 MM - .793 MM</td></tr> <tr><td style="padding: 2px;">.0313-.0938 3.35</td></tr> <tr><td style="padding: 2px;">.795 MM - 2.383 MM</td></tr> <tr><td style="padding: 2px;">.0939 - .1250 3.54</td></tr> <tr><td style="padding: 2px;">2.385MM - 3.175 MM</td></tr> <tr><td style="padding: 2px;">.1251 - .1875 4.57</td></tr> <tr><td style="padding: 2px;">3.178 MM - 4.763 MM</td></tr> <tr><td style="padding: 2px;">.1876 - .2500 4.98</td></tr> <tr><td style="padding: 2px;">4.765 MM - 6.350 MM</td></tr> </table>	.0030-.0049 14.50	.076 MM - .126 MM	.0050-.0069 13.50	.127 MM - .176 MM	.0070-.0099 11.50	.177 MM - .253 MM	.0100-.0200 4.06	.254 MM - .508 MM	.0201-.0312 3.86	.511 MM - .793 MM	.0313-.0938 3.35	.795 MM - 2.383 MM	.0939 - .1250 3.54	2.385MM - 3.175 MM	.1251 - .1875 4.57	3.178 MM - 4.763 MM	.1876 - .2500 4.98	4.765 MM - 6.350 MM	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">.2501-.3125 5.43</td></tr> <tr><td style="padding: 2px;">6.353 MM - 7.938 MM</td></tr> <tr><td style="padding: 2px;">.3126 - .37505.73</td></tr> <tr><td style="padding: 2px;">7.940 MM - 9.525 MM</td></tr> <tr><td style="padding: 2px;">.3751-.5000 6.45</td></tr> <tr><td style="padding: 2px;">9.528. MM - 12.700 MM</td></tr> <tr><td style="padding: 2px;">.5001 - .5625 7.69</td></tr> <tr><td style="padding: 2px;">12.703 - 14.288 MM</td></tr> <tr><td style="padding: 2px;">.5626 - .6250 8.31</td></tr> <tr><td style="padding: 2px;">14.290 MM - 15.875 MM</td></tr> <tr><td style="padding: 2px;">.6251 - .6875 9.32</td></tr> <tr><td style="padding: 2px;">15.878 MM - 17.463 MM</td></tr> <tr><td style="padding: 2px;">.6876 - .7500 10.11</td></tr> <tr><td style="padding: 2px;">17.465 MM - 19.050 MM</td></tr> <tr><td style="padding: 2px;">.7501 - .8125 11.33</td></tr> <tr><td style="padding: 2px;">19.053 MM - 20.638 MM</td></tr> <tr><td style="padding: 2px;">.8126 - .8750 12.34</td></tr> <tr><td style="padding: 2px;">20.640 MM - 22.225 MM</td></tr> </table>	.2501-.3125 5.43	6.353 MM - 7.938 MM	.3126 - .37505.73	7.940 MM - 9.525 MM	.3751-.5000 6.45	9.528. MM - 12.700 MM	.5001 - .5625 7.69	12.703 - 14.288 MM	.5626 - .6250 8.31	14.290 MM - 15.875 MM	.6251 - .6875 9.32	15.878 MM - 17.463 MM	.6876 - .7500 10.11	17.465 MM - 19.050 MM	.7501 - .8125 11.33	19.053 MM - 20.638 MM	.8126 - .8750 12.34	20.640 MM - 22.225 MM	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">.8751 - .9375 14.49</td></tr> <tr><td style="padding: 2px;">22.228 MM - 23.813 MM</td></tr> <tr><td style="padding: 2px;">.9376-1.0000 15.82</td></tr> <tr><td style="padding: 2px;">23.815 MM - 25.400 MM</td></tr> <tr><td style="padding: 2px;">1.0001-1.0625 19.54</td></tr> <tr><td style="padding: 2px;">25.403 MM - 26.988 MM</td></tr> <tr><td style="padding: 2px;">1.0626-1.1250. 21.77</td></tr> <tr><td style="padding: 2px;">26.990 MM - 30.163 MM</td></tr> <tr><td style="padding: 2px;">1.1251 - 1.2500 25.89</td></tr> <tr><td style="padding: 2px;">30.165 MM - 31.750 MM</td></tr> <tr><td style="padding: 2px;">1.2501 - 1.3125 27.61</td></tr> <tr><td style="padding: 2px;">31.753 MM - 33.338 MM</td></tr> <tr><td style="padding: 2px;">1.3126 - 1.3750 30.20</td></tr> <tr><td style="padding: 2px;">33.340 MM - 34.925 MM</td></tr> <tr><td style="padding: 2px;">1.3751 - 1.4375 33.71</td></tr> <tr><td style="padding: 2px;">34.928 MM - 36.513 MM</td></tr> <tr><td style="padding: 2px;">1.4376 - 1.5000 37.08</td></tr> <tr><td style="padding: 2px;">36.515 MM - 38.100 MM</td></tr> </table>	.8751 - .9375 14.49	22.228 MM - 23.813 MM	.9376-1.0000 15.82	23.815 MM - 25.400 MM	1.0001-1.0625 19.54	25.403 MM - 26.988 MM	1.0626-1.1250. 21.77	26.990 MM - 30.163 MM	1.1251 - 1.2500 25.89	30.165 MM - 31.750 MM	1.2501 - 1.3125 27.61	31.753 MM - 33.338 MM	1.3126 - 1.3750 30.20	33.340 MM - 34.925 MM	1.3751 - 1.4375 33.71	34.928 MM - 36.513 MM	1.4376 - 1.5000 37.08	36.515 MM - 38.100 MM
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Standard Plug Gage Classes For Product Tolerances

Normal practice for product gage tolerance is to allow 10% of the product to be equally divided between "go" and "no-go". In the case of plug gages, "go" is normally a plus tolerance and "no-go" is normally a minus tolerance.

Standard Gagemakers' Tolerance Chart

Size Range	CLASS XXXX	CLASS XXX	CLASS XX	CLASS X	CLASS Y	CLASS Z
.0009 - .010	.000005	.00001	.00002	.00004	.00007	.00010
.010 - .029	.000005	.00001	.00002	.00004	.00007	.00010
.029 - .825	.000005	.00001	.00002	.00004	.00007	.00010
.825 - 1.510	.000008	.000015	.00003	.00006	.00009	.00012
1.510 - 2.510	.00001	.00002	.00004	.00008	.00012	.00016
2.510 - 4.510	.000013	.000025	.00005	.00010	.00015	.00020
4.510 - 6.510	.000017	.000033	.000065	.00013	.00019	.00025
6.510 - 9.010	.00002	.00004	.00008	.00016	.00024	.00032
9.010 - 12.260	.000025	.00005	.00010	.00020	.00030	.00040

Single or Double End Handles for above gages

Handle Number	Size Range	Price Each
1W	.000 - .075	7.85
2W	.075 - .180	8.10
3W	.180 - .281	9.30
4W	.281 - .406	11.50
5W	.406 - .510	13.80
6W	.510 - .635	17.20
7W	.635 - .760	19.85
8W	.760 - 1.010	29.60

All handles supplied complete with bushings.

PLEASE USE THIS CHART FOR GAGES
ON THE FOLLOWING PAGES

TRILOCKS - STEEL AND CHROME

SIZE RANGE Above - Through	CLASS	STD GO MEMBER ONLY			STD NO GO MEMBER ONLY			HANDLE	
		Length	Steel	Chrome	Length	Steel	Chrome	No.	Price
.760 IN - .947 IN 19.30 MM - 24.05 MM	XX		83.51	167.02	3/4 in.	75.57	151.14	2 1/2	10.07
	X	1 1/4 IN	70.71	141.42	19.1MM	65.02	130.04		
	Y	31.8 MM	60.67	121.34		55.82	111.64		
	Z		50.46	100.92		47.45	94.90		
.947 IN - 1.135 IN 24.05 MM - 28.83 MM	XX		84.77	169.54	3/4in.	76.40	152.80	3 1/2	11.28
	X	1 3/8 IN	72.63	145.26	19.1 MM	66.44	132.88		
	Y	34.9 MM	62.35	124.70		57.07	114.14		
	Z		53.81	107.62		50.46	100.92		
1.135 IN - 1.510 IN 28.83 MM - 38.35 MM	XX		91.04	182.08	3/4 IN.	81.67	163.34	4 1/2	13.28
	X	1 1/2 IN.	79.42	158.84	19.1 MM	72.46	144.92		
	Y	38.1 MM	65.86	131.72		60.08	120.16		
	Z		55.82	111.64		51.80	103.60		
1.510 IN - 2.010 IN 38.35 MM - 51.05 MM	XX		134.64	269.28		122.00	244.00	5 1/2	15.71
	X	1 7/8 IN	113.80	227.60	7/8 IN	99.24	198.48		
	Y	47.8 MM	102.25	204.50	22.2 MM	89.17	178.34		
	Z		83.34	166.68		77.99	155.98		
2.010 IN - 2.510 IN 51.05 MM - 63.75 MM	XX		161.66	323.32		147.10	194.20	6	16.43
	X	2 IN	134.64	269.28	7/8 IN	122.00	244.00		
	Y	50.8 MM	119.15	238.30	22.2 MM	104.18	208.36		
	Z		100.17	200.34		88.70	177.40		
2.510 IN - 3.010 IN 63.75 MM - 76.45 MM	XX		183.45	366.90		161.25	322.50	7	22.07
	X	2 IN	156.40	312.80	1 IN	130.79	261.58		
	Y	50.8 MM	134.64	269.28	25.4MM	117.24	234.48		
	Z		111.55	223.10		101.00	202.00		
3.010 IN - 3.510 IN 76.45 MM - 89.15 MM	XX		224.01	448.02		193.12	386.24	7	22.07
	X	2 IN	171.29	342.58	1 IN	159.41	318.82		
	Y	50.8 MM	159.91	319.82	25.4 MM	139.57	279.14		
	Z		137.06	274.12		120.16	240.32		
3.510 IN - 4.010 IN 89.15 MM - 101.85 MM	XX				1 IN			7	22.07
	X	2 1/8 IN			25.4 MM				
	Y	54.0 MM							
	Z								
4.010 IN - 4.510 IN 101.85 MM - 114.55 MM	XX				1 IN			7	22.07
	X	2 1/8 IN			25.4 MM				
	Y	50.8 MM							
	Z								
4.510 IN - 5.010 IN 114.55MM - 127.25 MM	XX				1 IN			7	22.07
	X	2 1/8 IN			25.4 MM				
	Y	54.0 MM							
	Z								
5.010 IN - 5.510 IN 127.25 MM - 139.95 MM	XX				1 IN			7	22.07
	X	2 1/8 IN			25.4 MM				
	Y	54.0 MM							
	Z								
5.510 IN - 6.010 IN 139.95 MM - 152.65 MM	XX				1 IN			7	22.07
	X	2 1/8 IN			25.4 MM				
	Y	54.0 MM							
	Z								
6.010 IN - 6.510 IN 152.65 MM - 165.35 MM	XX				1 IN			7	22.07
	X	2 1/8 IN			25.4 MM				
	Y	54.0 MM							
	Z								
6.510 IN - 7.010 IN 165.35MM - 178.05MM	XX				1 IN			7	22.07
	X	2 1/8 IN			25.4 MM				
	Y	54.0 MM							
	Z								

Prices
on
Application

Prices
on
Application

Additional sizes available through 8.010 in.

See page 74 for Progressive Trilocks

Trilocks are also available in Carbide.
Call for pricing and delivery



REVERSIBLE PLUG GAGES

Size / Range		Class	Tolerance in inches	Member Length	Reversible Go or No Go		AGD Handle single or double end	
Above	To and Including				Steel	Carbide	No.	Price
.011 IN - .020 IN .279 MM - .508 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	47.00 39.00 33.00 32.00	— — — —	1 W	7.85
.020 IN - .030 IN .508 MM - .762 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	44.00 36.00 33.00 29.00	— — — —	1 W	7.85
.030 IN - .040 IN .762 MM - 1.02 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	34.00 19.00 17.00 14.00	— — — —	1 W	7.85
.040 IN - .075 IN 1.02 MM - 1.91 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	34.00 19.00 17.00 14.00	85.00 80.15 75.30 70.40	1 W	7.85
.075 IN - .116 IN 1.91 MM - 2.92 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	27.00 22.00 21.00 17.00	85.00 80.15 75.30 70.40	2 W	8.10
.116 IN - .130 IN 2.92 MM - 3.30 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	27.00 22.00 21.00 17.00	54.65 51.00 47.35 44.95	2 W	8.10
.130 IN - .180 IN 3.30 MM - 4.57 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	27.00 22.00 21.00 17.00	57.05 53.40 49.80 47.35	2 W	8.10
.180 IN - .230 IN 4.57 MM - 5.84 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	28.00 22.00 21.00 18.00	60.70 57.05 53.40 49.80	3 W	9.30
.230 IN - .281 IN 5.84 MM - 7.14 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	28.00 22.00 21.00 18.00	69.20 65.55 61.90 58.25	3 W	9.30
.281 IN - .344 IN 7.14 MM - 8.74 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	32.00 26.00 23.00 18.00	71.65 66.75 63.15 59.50	4 W	11.50
.344 IN - .406 IN 8.74 MM - 10.31 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	32.00 26.00 23.00 18.00	78.90 75.25 72.85 70.40	4 W	11.50
.406 IN - .460 IN 10.31 MM - 11.68 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	32.00 27.00 24.00 20.00	85.00 81.35 77.70 74.05	5 W	13.80
.460 IN - .510 IN 11.68 MM - 12.95 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	39.00 27.00 24.00 20.00	88.65 85.00 81.35 77.70	5 W	13.80

REVERSIBLE PLUG GAGES

Size / Range		Class	Tolerance in inches	Member Length	Reversible Go or No Go		AGD Handle single or double end	
Above	To and Including				Steel	Carbide	No.	Price
.510 IN - .560 IN 12.95 MM - 14.22 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	39.00 29.00 26.00 22.00	127.50 122.60 117.75 112.90	6 W	17.20
.560 IN - .635 IN 14.22 MM - 16.13 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	39.00 29.00 26.00 22.00	139.60 133.55 128.70 123.85	6 W	17.20
.635 IN - .700 IN 16.13 MM - 17.78 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	39.00 32.00 28.00 22.00	150.55 144.45 138.40 132.35	7 W	19.85
.700 IN - .760 IN 17.78 MM - 19.30 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	48.00 32.00 28.00 24.00	186.95 179.70 172.40 165.10	7 W	19.85
.760 IN - .825 IN 19.30 MM - 20.95 MM		XX X Y Z	.00002 .00004 .00007 .00010	2 IN 50.8 MM	48.00 32.00 28.00 24.00	— — — —	8 W	29.60
.825 IN - 1.000 IN 20.95 MM - 25.40 MM		XX X Y Z	.00003 .00006 .00009 .00012	2 IN 50.8 MM	56.00 47.00 42.00 38.00	— — — —	8 W	29.60

- Go gages supplied with plus tolerance
- No go gages supplied with minus tolerance
- Bi-lateral (Split) tolerances also available at above listed prices
- Extra long gages in steel and chrome are available up to 6 in (152.4mm) for diameters above .075
- Quantity discounts available - Call for quotation
- Certification of calibration available for additional charge
- All handles supplied complete with bushings
- For larger gauges - see trilocks on page 69.
- For class "X" gauges up to 6" long - see page 74.



RING GAGES

Size / Range Above To and Including	Class	Tolerance in inches	Standard A.G.D Blank size		Price Each		
			Length	O.D.	Steel	Chrome	Carbide
.015 IN - .040 IN 0.381 MM - 1.02 MM	XX	.00002	BLANK #000		PRICES ON APPLICATION	—	—
	X	.00004	$\frac{3}{32}$ IN	$\frac{15}{16}$ IN		—	—
	Y	.00007	2.37 MM	23.8 MM		—	—
	Z	.00010				—	—
.040 IN - .100 IN 1.02 MM - 2.54 MM	XX	.00002	BLANK #00		211.07	—	337.24
	X	.00004	$\frac{3}{16}$ IN	$\frac{15}{16}$ IN	189.97	—	303.53
	Y	.00007	4.8 MM	23.8 MM	168.86	—	269.81
	Z	.00010			168.86	—	269.81
.100 IN - .150 IN 2.54 MM - 3.81 MM	XX	.00002	BLANK #00		183.55	—	306.59
	X	.00004	$\frac{3}{16}$ IN	$\frac{15}{16}$ IN	165.19	—	275.93
	Y	.00007	4.8 MM	23.8 MM	146.84	—	245.27
	Z	.00010			146.84	—	245.27
.150 IN - .185 IN 3.81 MM - 4.70 MM	XX	.00002	BLANK #00		159.61	223.45	278.72
	X	.00004	$\frac{3}{16}$ IN	$\frac{15}{16}$ IN	143.65	201.11	250.85
	Y	.00007	4.8 MM	23.8 MM	127.69	178.76	222.97
	Z	.00010			127.69	178.76	222.97
.185 IN - .230 IN 4.70 MM - 5.84 MM	XX	.00002	BLANK #0		152.01	212.81	270.60
	X	.00004	$\frac{3}{8}$ IN	$\frac{15}{16}$ IN	136.81	191.53	238.13
	Y	.00007	9.5 MM	23.8 MM	121.60	170.25	243.54
	Z	.00010			121.60	170.25	243.54
.230 IN - .365 IN 5.84 MM - 9.27 MM	XX	.00002	BLANK #1		144.76	202.68	262.72
	X	.00004	$\frac{5}{16}$ IN	$1\frac{1}{8}$ IN	130.30	182.41	236.44
	Y	.00007	14.3 MM	28.6 MM	115.81	162.14	208.08
	Z	.00010			115.81	162.14	208.08
.365 IN - .510 IN 9.27 MM - 12.95 MM	XX	.00002	BLANK #2		137.87	193.02	255.06
	X	.00004	$\frac{3}{4}$ IN	$1\frac{3}{8}$ IN	124.09	173.73	229.57
	Y	.00007	19.1 MM	34.9 MM	110.30	154.42	204.05
	Z	.00010			110.30	154.42	204.05
.510 IN - .825 IN 12.95 MM - 20.95 MM	XX	.00002	BLANK # 3		144.76	202.68	331.59
	X	.00004	$\frac{15}{16}$ IN	$1\frac{1}{4}$ IN	130.30	182.41	298.43
	Y	.00007	23.8 MM	44.4MM	115.81	162.14	265.28
	Z	.00010			115.81	162.14	265.28
.825 IN - 1.135 IN 20.95 MM - 28.83 MM	XX	.00003	BLANK # 4		152.01	212.81	431.06
	X	.00006	$1\frac{1}{8}$ IN	$2\frac{1}{8}$ IN	136.81	191.53	387.96
	Y	.00009	28.6 MM	54.0 MM	121.60	170.25	344.85
	Z	.00012			121.60	170.25	344.85

- Choice of three tolerances: Go - Unilateral minus
No Go - Unilateral plus
Master - Bilateral (split)
- Carbide rings have tungsten carbide inserts and steel jackets
- All ring gages are lapped to size and polished
- Roundness and taper of all gages will not exceed 50% of the applicable gagemakers size tolerance and are non-accumulative.

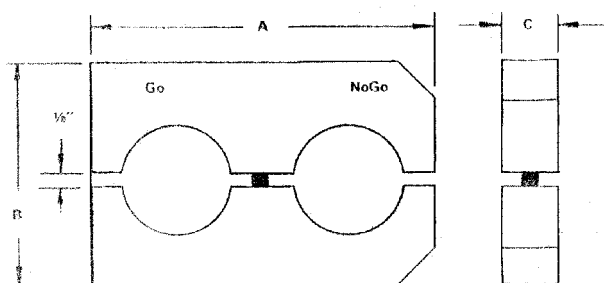
Also Available: Aluminum Ring Gage Holders —SEE PAGE 73



RING GAGES

Size / Range Above To and Including	Class	Tolerance in inches	Standard A.G.D Blank size		Price Each		
			Length	O.D.	Steel	Chrome	Carbide
1.135 IN - 1.510 IN 28.83 MM - 38.35 MM	XX	.00004	BLANK # 5		190.01	244.74	581.94
	X	.00006	1 1/16 IN	2 1/2 IN	171.00	220.26	523.74
	Y	.00009	33.3MM	63.5 MM	152.01	193.83	465.56
	Z	.00012			152.01	193.83	465.56
1.510 IN - 2.010 IN 38.35 MM - 51.05 MM	XX	.00004	BLANK #6		218.51	281.45	785.62
	X	.00008	1 1/2 IN	4 IN	196.66	253.30	707.06
	Y	.00012	38.1 MM	101.6MM	174.81	225.15	628.49
	Z	.00016			174.81	225.15	628.49
2.010 IN - 2.510 IN 51.05 MM - 63.75 MM	XX	.00004	BLANK #7		257.84	351.80	1021.30
	X	.00008	1 1/2 IN	4 1/2 IN	232.06	316.62	919.17
	Y	.00012	38.1 MM	101.6 MM	206.27	281.45	817.03
	Z	.00016			206.27	281.45	817.03
2.510 IN - 3.010 IN 63.75 MM - 76.45 MM	XX	.00005	BLANK #8		304.26	439.75	1276.62
	X	.00010	1 1/2 IN	5 IN	273.83	395.78	1148.96
	Y	.00015	38.1 MM	127.0 MM	243.40	351.80	1021.30
	Z	.00020			243.40	351.80	1021.30
3.010 IN - 3.510 IN 76.45 MM - 89.15 MM	XX	.00005	#9		359.02	505.72	1595.78
	X	.00010	1 1/2 IN	5 1/2 IN	323.11	455.15	1436.20
	Y	.00015	38.1 MM	139.7 MM	287.22	404.57	1276.62
	Z	.00020			287.22	404.57	1276.62
3.510 IN - 4.010 IN 89.15 MM - 101.85 MM	XX	.00005	#10		423.64	581.56	1994.72
	X	.00010	1 1/2 IN	6 3/8 IN	381.27	523.42	1795.26
	Y	.00015	38.1 MM	161.9 MM	338.92	465.26	1595.78
	Z	.00020			338.92	465.26	1595.78

Ring Gage Holders



Black Anodized Aluminum

FOR RING BLANK NO.	A	B	C	PRICE EACH
000	2-7/8	1-3/4	3/16	53.85
00	2-7/8	1-3/4	3/16	53.85
0	2-7/8	1-3/4	3/8	53.85
1	3-1/2	2-1/4	9/16	53.85
2	4-1/4	2-1/2	3/4	53.85
3	5	2-7/8	15/16	69.42
4	5-3/4	3-1/4	1-1/8	69.42
5	6-1/2	3-5/8	1-15/16	69.42

Chrome ring gages available in sizes up to 12.260 in (311.40 mm)

Steel ring gages available in sizes up to 16.010 in (406.65 mm)

Call for pricing and delivery

Quantity discounts available on all ring gages

EXTRA LENGTH CLASS "X" GAGES

Reversible pin gages in English and Metric up to 6" lengths. Ideal for deep and hard to reach holes or slots.

- Centerless lapped to a 5 microfinish
- Up to 6" long
- NIST Traceable
- Stabilized and heat treated to 60-62 RC
- Plus, Minus or Bilateral tolerance

Inch Size	Millimeter Size	3" Price	4" Price	5" Price	6" Price
.0100 IN - .0299 IN	.254 MM - .759 MM	163.43	223.44	407.06	526.73
.0300 IN - .0599 IN	.762 MM - 1.52 MM	87.90	119.77	218.31	293.34
.0600 IN - .2009 IN	1.52 MM - 5.10 MM	59.89	82.13	113.02	129.35
.2010 IN - .3749 IN	5.11 MM - 9.52 MM	62.97	83.66	115.92	131.29
.3750 IN - .6349 IN	9.53 MM - 16.13 MM	67.14	88.68	121.72	133.31
.6350 IN - .7500 IN	16.13 MM - 19.05 MM	67.14	91.27	131.37	144.89
.7501 IN - .8750 IN	19.05 MM - 22.23 MM	117.86	157.63	209.23	260.23
.8751 IN - 1.000 IN	22.23 MM - 25.40 MM	132.14	173.31	240.53	332.48

No guarantee of straightness, due to Centerless Grinding process on these products

PROGRESSIVE TRILOCK GAGES

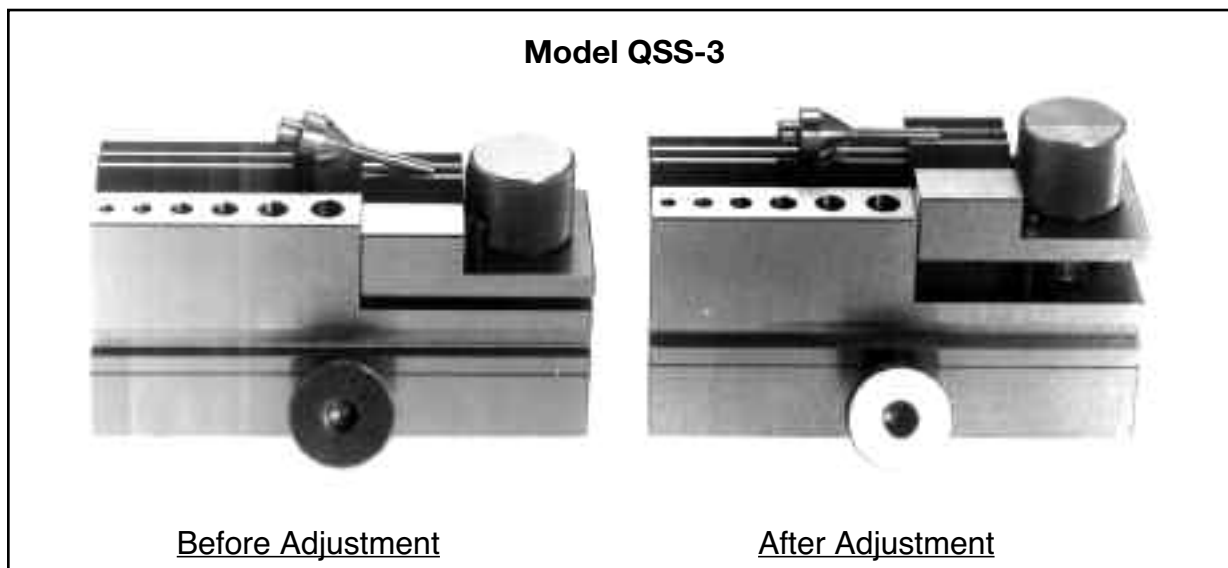
When you need to check parts quickly, Progressive plug gages are the best choice. Both the GO and NOGO diameters are stepped on a single gage member. All members are securely attached to a Trilock handle. All handles are marked with sizes and direction of tolerance.

- Class XX, X, Y, Z
- NIST traceable
- GO, NOGO tolerances
- Tool Steel 60/62 Rockwell C

Size / Range	Class	Tolerance Inches	Member Length	GO Portion	NOGO Portion	Steel	Chrome	Handle	
								#	Price
1.5101 IN - 2.010 IN 38.35 MM - 51.05 MM	XX	.00004	2 7/8 IN 73.0 MM	1 7/8 IN 47.6 MM	7/8 IN 22.2 MM	270.29 216.62 189.79 153.35	540.58 433.24 379.58 306.70	5 1/2	18.80
	X	.00008							
	Y	.00012							
	Z	.00016							
2.0101 IN - 2.510 IN 51.05 MM - 63.75 MM	XX	.00004	3 IN 76.2 MM	2 IN 50.8 MM	7/8 IN 22.2 MM	339.30 274.12 231.95 191.69	678.60 548.24 463.90 383.38	6	19.50
	X	.00008							
	Y	.00012							
	Z	.00016							
2.5101 IN - 3.010 IN 63.75 MM - 76.45 MM	XX	.00005	3 IN 76.2 MM	2 IN 50.8 MM	7/8 IN 22.2 MM	368.78 316.30 272.21 224.28	737.56 632.60 544.42 448.56	7	21.00
	X	.00010							
	Y	.00015							
	Z	.00020							
3.0101 IN - 3.510 IN 76.45 MM - 89.15 MM	XX	.00005	3 IN 76.2 MM	2 IN 50.8 MM	7/8 IN 22.2 MM	458.14 352.71 314.38 262.62	916.28 705.42 628.76 525.24	7	21.00
	X	.00010							
	Y	.00015							
	Z	.00020							
3.5101 IN - 4.010 IN 89.15 MM - 101.85 MM	XX	.00005	3 1/8 IN 79.4 MM	2 1/8 IN 54.0 MM	7/8 IN 22.2 MM	555.12 449.28 385.39 323.49	1110.24 898.56 770.78 646.98	7	21.00
	X	.00010							
	Y	.00015							
	Z	.00020							
4.0101 IN - 4.510 IN 101.85 MM - 114.55 MM	XX	.00005	3 1/8 IN 79.4 MM	2 1/8 IN 54.0 MM	7/8 IN 22.2 MM	628.99 505.19 439.30 361.42	1257.98 1010.38 878.60 722.84	7	21.00
	X	.00010							
	Y	.00015							
	Z	.00020							

QUICK ADJUST

ADJUSTABLE V-BLOCK FOR COMPARATOR USE



SPECIFICATIONS:

Height:	2-1/2"
Height/ Float Capacity:	9/32
Width:	1-1/2"
Length:	4-1/4"
Weight:	2 lbs.
Material:	Carbon Steel
Finish:	Natural

Groove Dimensions:

1. .172 Wide X .078 Deep
2. .123 Wide X .054 Deep
3. Center Groove .430 Wide X .212 Deep

QSS-3

\$293.25

2-1/2" High

T-base and base lock to fit most comparator tables.

Six Holes:

1/8, 5/32, 3/16, 7/32, 1/4, 9/32

Depth of Hole: 13/16

OPTIONAL CLAMP

\$9.25

U.S. Patent #5,220,730
Granted June 22, 1993.

- QUICK ADJUST allows machinists and inspectors to quickly line up components.
 - QUICK ADJUST eliminates shimming time, and maximizes inspection time.
 - QUICK ADJUST speeds up the inspection of parts that are unbalanced or top heavy.
 - QUICK ADJUST actually encourages operators to measure because of the easy set up of components.
- RESULT:* More inspection, improved quality
- Fine and smooth adjustment with large adjusting screw.
 - 2-pins in floating V assures smooth adjustment and accuracy.
 - Can be customized to your specifications.

STANDARD PRODUCTS AVAILABLE IN THE FOLLOWING MATERIALS —

Hardened Round Blanks

M2	R/C 62-64
M42	R/C 66-68
ASP30	R/C 65-67
T15PM	R/C 64-66
M4PM	R/C 63-65
ASP60	R/C 67-69
ASP23	R/C 63-65
CPM10V	R/C 62-64
WKE45	R/C 67-69
O1	R/C 60-62
A2	R/C 58-60

Hardened Round Blanks cont.

S7	R/C 58-60
D2	R/C 60-62
AISI 440C	R/C 58-60

Case Hardened Rounds

AISI C-1060	R/C 60-65
AISI 440C	R/C 50-55
AISI 52100	R/C 58-63

Annealed Rounds

M2	A2
----	----

Annealed Rounds cont.

S7	O1
D2	

Hardened Squares & Flats

M2	R/C 64.5-66
M3	R/C 65-66.5
M42	R/C 67-69
T15	R/C 65-67
T15 PM	R/C 65-67
M34	R/C 65-67
WKE45	R/C 67-69

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