



ARMSTRONG PLANER AND SHAPER TOOLS

Patented

Convenient, Efficient and Economical



One of these tools is effectively worth a dozen forged tools. Fig. 1 shows the Armstrong Planer Tool cutting a keyway with the cutter reversed and the tool turned around, thus throwing the cutting point behind center of tool and working as a "goose neck" tool.

Fig. 2 shows the Armstrong Planer Tool at work in close corners, giving a good general idea of clearance obtained. It shows also a few of the angles at which the cutter can be set. A job similar to one shown could be finished with the Armstrong Planer Tool without shifting position of the work on bed.

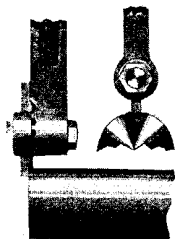


Fig. 1

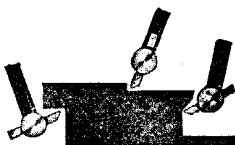


Fig. 2

Each Tool is boxed separately and price includes Wrench and one High Speed Cutter.

No.	Size of Holder	Size Cutter	Approx. Weight Each, lbs.	Extra Cutter Bits High Speed Each	Price Each Complete	No.
39*	3/8x 7/8x 5 1/2	1/4x 1/4	1	\$0.20	\$ 4.00	39
40*	1/2x1 x 6	1/4x 5/8	1 3/4	.35	4.65	40*
401*	5/8x1 1/4x 8 1/2	5/16x 1/16	3 3/4	.55	6.00	401*
41*	3/4x1 1/2x10	3/8x 1/2	5	.80	7.85	41*
42	1 1/8x1 3/4x13	1/2x 3/4	11	1.95	12.40	42
43	1 5/8x2 x16	5/8x 3/8	19 1/2	3.35	21.75	43
44	1 7/8x2 1/4x19	3/4x1	35	5.00	39.00	44
45	2 1/8x2 3/4x22	7/8x1 1/8	51	8.20	57.00	45

*Shaper sizes.

NOTE—Armstrong Carbide Tool Holders listed on pages 20 to 22 are also well adapted to planer and shaper work.



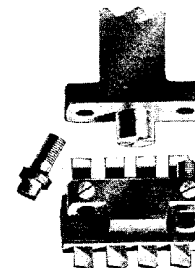
ARMSTRONG GANG PLANER TOOL

Patented

For Planing Large Surfaces

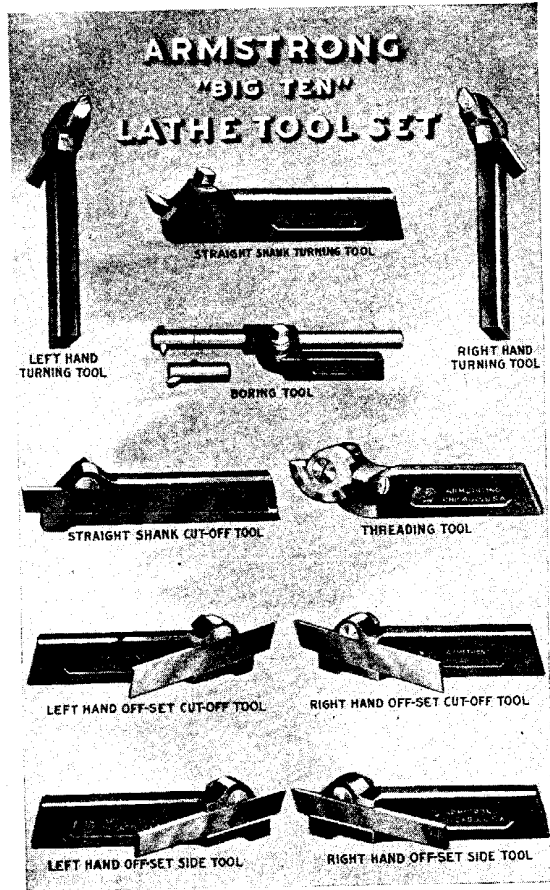


This Tool is especially adapted for surfacing large castings, and on this class of work it will effect a saving of 50 to 75 per cent in the time required to do the same job with a single point tool. The head is solidly secured to the shank, upon which it swivels to a limited degree, by means of a deep and closely fitted tongue and socket, and when set its position is fixed by two steel collar screws, while two stop screws render slipping of head impossible. The head is graduated, thus enabling the tool to be quickly and accurately set to any desired feed. This makes it possible to always have the tool cutting at the greatest speed practicable on metals of varying degrees of hardness.



As each chip is comparatively light, a planer will, with this tool, carry with ease a feed and depth of cut much greater than is possible when using an ordinary tool, and there is much less tendency to "break out" at the end of cut. Each Tool is boxed separately and price includes one set (four) High Speed Cutters, Wrench and Grinding Gauge.

No.	Size Shank	Length Over All	Size Cutter	Feed Adjustment	Approx. Weight Each Pounds	Extra Cutter Bits High Speed Each	Price Each Complete	No.
61	1 1/4x1 3/4x 7 1/2	10	3/8x 1/2	0 to 1/4	10	\$0.80	\$26.00	61
62	1 5/8x2 1/4x 9	12	1/2x 3/4	0 to 3/8	20	1.95	44.00	62
63	2 x2 1/2x11	14	5/8x 1/2	0 to 1/2	35	3.35	60.00	63

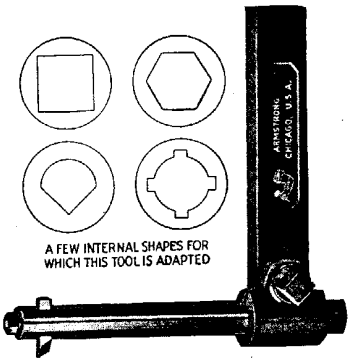


For details of this Set, see page 47.

ARMSTRONG EXTENSION SHAPER TOOL

Patented

This is an extremely rigid and convenient tool, well adapted for die work, cutting internal key ways, or for any kind of work on the Shaper in which extra clearance is needed.



A FEW INTERNAL SHAPES FOR WHICH THIS TOOL IS ADAPTED

Each Tool is boxed separately and price includes Holder and one Bar, one High Speed Cutter and Wrench.

No.	Size Shank	Size Bar	Size Cutter Square	Approx. Weight Each Pounds	Extra Cutter Bits High Speed Each	Price Each Complete	No.
*46	3/8 x 7/8	1/2 x 7 1/2	3/16	1 1/8	\$0.10	\$4.00	46
47	1/2 x 1 1/8	3/4 x 10	5/16	3 3/4	.24	4.50	47
48	5/8 x 1 5/8	15/16 x 12	3/8	6	.40	5.65	48
49	3/4 x 1 5/8	1 1/8 x 14	7/16	9 3/4	.55	8.00	49

Extra Bars and Bushings

Price includes Bar, one Bushing, one High Speed Cutter and Wrench.

Dimensions of Bar		Size of Cutter Square	With Bushing to Fit Shank Number	Extra Cutter Bits High Speed Each	Price Each Complete
Diameter	Length				
1/2	7 1/2	3/16	47, 48 or 49	\$0.10	\$2.85
5/8	8 1/2	1/4	47, 48 or 49	.12	3.00
3/4	10	5/16	48 or 49	.24	3.30
15/16	12	3/8	49	.40	3.75
1 1/8	14	7/16	Without Bushing	.55	3.75

NOTE—In ordering be careful to give size of shank (or number of tool) in which bar is to be used. When this information is not given no bushing will be included.

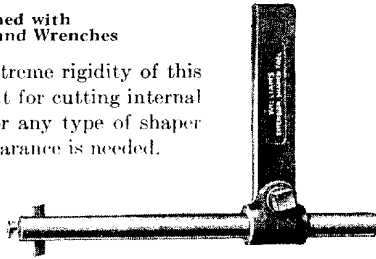
*No. 46 shank employs two hollow set screws to hold the bar instead of split collar illustrated.

INDUSTRIAL AND AUTOMOTIVE WILLIAMS WRENCHES • TOOLS • DROP-FORGINGS

WILLIAMS' EXTENSION SHAPER TOOLS

Furnished with Bar, Cutter and Wrenches

The design and extreme rigidity of this Shaper Tool adapts it for cutting internal keyways, die work or any type of shaper work where extra clearance is needed.



MILITARY DESCRIPTION: MIL-H-912, TYPE IX

No.	Holder, Size	Size Bar	Size Cutter, Square	Standard Package
*46	3/8 x 7/8	1/2 x 7 1/2	3/16	1
47	1/2 x 1 1/8	3/4 x 10	5/16	1
48	5/8 x 1 3/8	15/16 x 12	3/8	1

* Instead of split collar, as illustrated, bar is held by two hollow set screws.

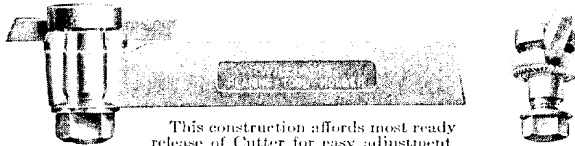
EXTRA BARS AND BUSHINGS

Each Bar furnished with one Bushing. High Speed Cutter and Wrench.

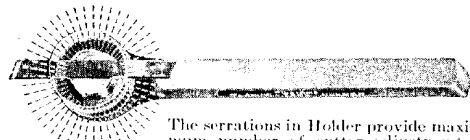
When ordering, please furnish number of Tool or Holder size in which Bar is to be used, otherwise bushing will not be included.

No.	Size Bar	Size Cutter, Square	With Bushing to Fit Holder Number	Without Bushing to Fit Holder Number	Std. Pkg.
0530	1/2 x 7 1/2	3/16	47 and 48	46	1
0532	5/8 x 8 1/2	1/4	47 and 48	47	1
0597	3/4 x 10	5/16	48	47	1
0598	15/16 x 12	3/8	.....	48	1

WILLIAMS' PLANING-TOOL HOLDERS



This construction affords most ready release of Cutter for easy adjustment.



The serrations in Holder provide maximum number of cutter adjustments.

Furnished with Cutter and Wrench

A rugged, substantial and efficient tool on either Lathe or Planer. Because of its numerous angles of adjustment it also makes an excellent Offset Turning Tool.

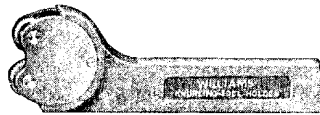
The construction assures perfect seat and holding qualities for the Cutters; the convex face of Clamp Nut provides uniform locking pressure for Cutters of either square or rectangular form; the numerous serrations in Holder provide for quick, fine and maximum number of Cutter adjustments unequalled in other designs.

The serrated washer, or Adjustment Ring, which sustains the fastening and working strains, is hardened and tempered. Should it wear in prolonged service, a new Ring *only* is required—not a complete Holder.

MILITARY DESCRIPTION: MIL-H-912, TYPE VIII

New No.	Old No.	Holder, Size	Cutter Size	Standard Package
40	91	1/2 x 1 x 7	1/4 x 3/8	1
401	92	5/8 x 1 1/4 x 8 1/2	5/16 x 7/16	1
41	93	3/4 x 1 1/2 x 10 1/4	3/8 x 1/2	1
42	94	1 x 1 3/4 x 13 1/4	1/2 x 3/4	1
43	95	1 3/8 x 2 x 16 1/2	5/8 x 7/8	1
44	96	1 3/4 x 2 3/8 x 19	3/4 x 1	1
45	97	2 1/8 x 2 3/4 x 22	7/8 x 1 1/8	1

WILLIAMS' KNURLING-TOOL HOLDERS



Nos. 00-K to 2-K with Self-centering Head and One Pair of Knurls.

Nos. 3-K-0 to 3-K-2 with Revolving Head and Three Pairs of Knurls.



Nos. 00-K to 2-K, with sturdy, self-centering heads, are each fitted with ONE pair of Knurls for fine, medium, or coarse work. Unless otherwise specified, "Diamond" Pattern, Medium Knurls will be supplied.

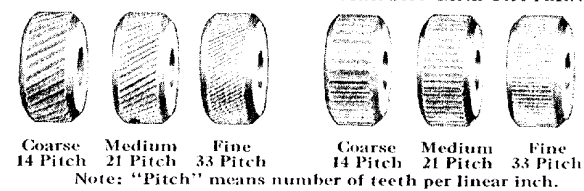
Nos. 3-K-0 to 3-K-2 carry THREE pairs of Knurls for fine, medium and coarse work. These are fitted in a revolving head and can be used as desired. The Pins are of Tool Steel, carefully tempered.

MILITARY DESCRIPTION: MIL-H-912, TYPE VI, CLASS 1, 2

No.	Holder, Size	Knurls, Size			For Lathes of Approx. Swing, In	Std. Pkg.
		Diam.	Face	Hole		
SELF-CENTERING HEAD—ONE PAIR OF KNURLS						
00-K	5/16 x 3/4 x 5	5/8	3/16	7/32	7 to 10	1
0-K	3/8 x 7/8 x 5 1/2	5/8	3/16	7/32	10 to 12	1
1-K	1/2 x 1 1/8 x 6 5/8	3/4	1/4	1/4	14 to 16	1
2-K	5/8 x 1 3/8 x 7 1/2	3/4	1/4	1/4	16 to 18	1
REVOLVING HEAD—THREE PAIRS OF KNURLS						
3-K-0	3/8 x 7/8 x 5 1/2	5/8	3/16	7/32	10 to 12	1
13-K-1	1/2 x 1 1/8 x 6 5/8	3/4	1/4	1/4	14 to 16	1
13-K-2	5/8 x 1 3/8 x 6 5/8	3/4	1/4	1/4	16 to 18	1

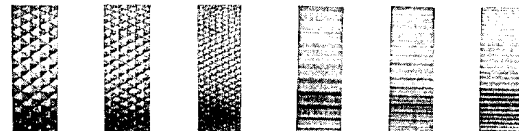
† Formerly numbered 11-K and 12-K respectively.

KNURLS FOR WILLIAMS' KNURLING-TOOL HOLDERS



Coarse 14 Pitch Medium 21 Pitch Fine 33 Pitch Coarse 14 Pitch Medium 21 Pitch Fine 33 Pitch

Note: "Pitch" means number of teeth per linear inch.



Illustrations above show actual size of Knurling

Williams Knurls are made to close limits in all respects and, being accurately cut, they assure sharp and perfect teeth in the knurled product. All Knurls are made from high grade tool steel and are specially hardened and tempered.

Furnished in pairs to fit standard makes of Knurling Tools and supplied in two Patterns—"Diamond" and "Straight-Line." Three different pitches in each Pattern—Coarse, 14 pitch; Medium, 21 pitch; Fine, 33 pitch; all as illustrated above. Specify Pattern and pitch desired by catalog number.

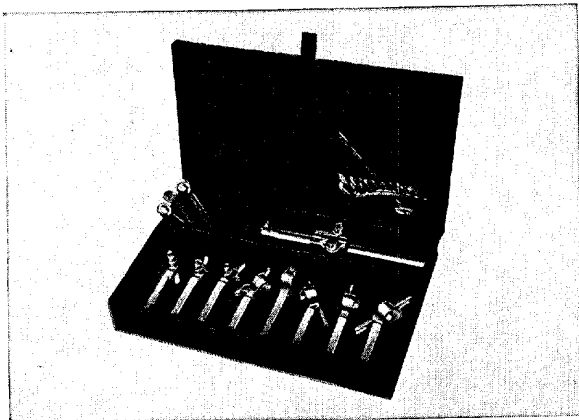
MILITARY DESCRIPTION: MIL-H-912, TYPE VI

Knurl No.	For Knurling Tool No.	Pitch	Knurls, Size			Std. Pkg.	
			Dia.	Thick-ness	Hole		
DIAMOND PATTERN							
8227	00-K, 0-K, 3-K-0	Fine	5/8	5/16	3/16	7/32	3 Pr.
8224	00-K, 0-K, 3-K-0	Medium	5/8	5/16	3/16	7/32	3 Pr.
8221	00-K, 0-K, 3-K-0	Coarse	5/8	5/16	3/16	7/32	3 Pr.
8228	1-K, 2-K, 3-K-1, 3-K-2	Fine	3/4	3/8	1/4	1/4	3 Pr.
8225	1-K, 2-K, 3-K-1, 3-K-2	Medium	3/4	3/8	1/4	1/4	3 Pr.
8222	1-K, 2-K, 3-K-1, 3-K-2	Coarse	3/4	3/8	1/4	1/4	3 Pr.
STRAIGHT-LINE PATTERN							
8267	00-K, 0-K, 3-K-0	Fine	5/8	5/16	3/16	7/32	3 Pr.
8264	00-K, 0-K, 3-K-0	Medium	5/8	5/16	3/16	7/32	3 Pr.
8261	00-K, 0-K, 3-K-0	Coarse	5/8	5/16	3/16	7/32	3 Pr.
8268	1-K, 2-K, 3-K-1, 3-K-2	Fine	3/4	3/8	1/4	1/4	3 Pr.
8265	1-K, 2-K, 3-K-1, 3-K-2	Medium	3/4	3/8	1/4	1/4	3 Pr.
8262	1-K, 2-K, 3-K-1, 3-K-2	Coarse	3/4	3/8	1/4	1/4	3 Pr.

THE BROADEST LINE OF ITS KIND

WILLIAMS' LATHE TOOL SETS

The Six "always ready" Sets illustrated below, provide for complete Lathe service—Turning, Boring, Knurling, Threading, Cutting-Off and Side work—in a minimum number of tools, unequalled elsewhere—High Speed Cutters and Wrenches are provided throughout. Strong steel case has convenient compartments for Holders, Cutters and Wrenches.



Williams Knurling-Tools Nos. 00-K to 2-K have self-centering heads, with ONE pair of Knurls for fine, medium, or coarse work. Unless otherwise specified, "Diamond" Pattern, Medium Knurls will be supplied.

ONE Williams Holder takes BOTH cutting-off and side blades. A tool that performs both classes of work by the mere substitution of suitable cutters, tells its own story of economy. Both Cutting-off and Side Blades are furnished.

Each Williams Boring-Tool takes SIX or more sizes of Bars WITHOUT using bushings. ONE tool holds MANY Bars. Two styles of Bars—"Sleeve" as illustrated and "Plain" at lower price.

Williams Turning-Tools have Large Alloy Steel Screw—heat-treated, unbreakable. Their accurately broached hole provides rigid seat for cutter—no chatter, no breakage.

Williams Threading-Tools Nos. 00-T to 52 with Formed Cutter assure threads that fit perfectly. In resharpening the Cutter, grind its top edge only. The point will always retain the proper form and angle.

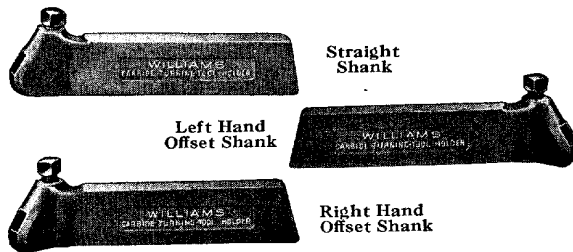
Williams Sleeve Boring-Bar fastening provides for the rapid adjustment of either straight or angular cutters without use of extra parts. It is stronger than others of same general design.

Be careful to measure the opening in tool-post before ordering Sets. Due to a considerable variation in the proportions of lathes as furnished by different manufacturers, it is impossible to state definitely the "swing" of lathe best adapted to a given size Tool Holder.

Set No.	For Lathes of Approx. Swing Inches	WILLIAMS' TOOL HOLDERS IN SETS												Qty. of Tools in Set	Std. Pkg.
		Turning Tools						Cutting-off and Side Tools							
		Strgt. Shank No.	Offset Shank R.H. No.	Offset Shank L.H. No.	Strgt. Shank No.	Offset Shank R.H. No.	Offset Shank L.H. No.	Thrd-ing Tool No.	Bor-ing Tool No.	Knur-ling Tool No.					
00A	7 to 10	00-S	00-R	00-L	19	29-R	29-L	00-T	00-B	00-K	9	1			
0A	10 to 12	0-S	0-R	0-L	20	30-R	30-L	50	8	0-K	9	1			
1A	14 to 16	1-S	1-R	1-L	21	31-R	31-L	51	9	1-K	9	1			
2A	16 to 18	2-S	2-R	2-L	22	32-R	32-L	52	10	2-K	9	1			
*3	18 to 20	3-S	3-R	3-L	23	33-R	33-L	...	11	...	7	1			
*4	24 to 36	4-S	4-R	4-L	24	34-R	34-L	...	...	...	6	1

* Metal case is not supplied with Sets 3 and 4.

WILLIAMS' CARBIDE TURNING-TOOL HOLDERS With Straight and Offset Shanks



Furnished with Wrench but without Cutter
In these Tools, the Cutter is held parallel to the shank. Consequently, Cutters can be so ground as to provide maximum support for the cutting edge. This feature, plus the extremely rigid Holder, is the recognized basis for the best performance of cemented Carbide Cutters.

Holders are broached for square Carbide Cutters, but are supplied WITHOUT CUTTERS.

Williams Carbide Tipped Cutters, for use with the above holders, are available in two grades and four standard shapes of tips. See full description below.

MILITARY DESCRIPTION: MIL-H-912, TYPE 1, CLASS 1, 2, 3

Straight Shank	Number		Holder, Size	Cutter Size, Square	For Lathes of Approx. Swing, Inches	Std. Pkg.
	Right Hand	Left Hand				
T-0-S	T-0-R	T-0-L	3/8 x 15/16 x 6	1/4	9 to 10	1
T-1-S	T-1-R	T-1-L	1/2 x 1 1/4 x 7	5/16	11 to 14	1
T-2-S	T-2-R	T-2-L	5/8 x 1 1/2 x 8	3/8	14 to 16	1
T-3-S	T-3-R	T-3-L	3/4 x 1 3/4 x 9	7/16	16	1
T-4-S	T-4-R	T-4-L	7/8 x 1 7/8 x 10	1/2	18	1
T-5-S	T-5-R	T-5-L	1 x 2 1/8 x 12	5/8	20 to 24	1

WILLIAMS' CARBIDE TIPPED TURNING CUTTER BITS With Square Shanks



80° Round Nose Left Hand Right Hand Square Nose

Williams CARBIDE TIPPED Turning Cutter Bits are available in four standard cutter shapes and two grades to fit square shank holders. Grade 883 with shanks lacquered Gray are designed for machining cast iron, brass, bronze, aluminum and non-metallics. Grade 78B with shanks lacquered Orange are designed for machining steel. These grades will be found satisfactory for general shop use; Gray for all non-ferrous metals, etc. and Orange for all steels.

These firmly cemented carbide tips are finely ground ready for use and are individually covered with a protective ethyl cellulose sheath.

Please specify Grade desired when ordering: Gray for Cast Iron, etc., Orange for Steel.

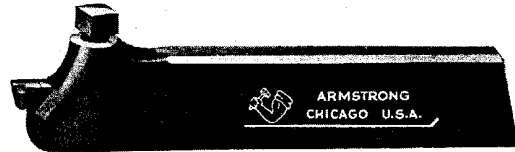
Right Hand		Left Hand		SQUARE SHANK TURNING CUTTERS		
New No.	Old No.	New No.	Old No.	Shank Size	Tip Size	Standard Package
AR-4	M-41	AL-4	M-71				1/4 x 1/4 x 2 1/4	3/32x3/16x5/16	6
AR-5	M-42	AL-5	M-72	5/16x5/16x2 1/4	3/32x1/4 x 1/2	6
AR-6	M-43	AL-6	M-73	3/8 x 3/8 x 2 1/2	3/32x1/4 x 1/2	6
AR-7	M-44	AL-7	M-74	7/16x7/16x3	3/32x1/4 x 1/2	4
AR-8	M-45	AL-8	M-75	1/2 x 1/2 x 3 1/2	1/8 x 5/16x5/8	4
AR-10	M-47	AL-10	M-77	5/8 x 5/8 x 4	5/32x3/8 x 3/4	4
Square Nose		80° Rd. Nose		Shank Size	Tip Size	Standard Package
New No.	Old No.	New No.	Old No.			
C-4	M-11	D-4	M-121	1/4 x 1/4 x 2 1/4	1/16x1/4 x 5/16	6
C-5	M-12	D-5	M-122	5/16x5/16x2 1/4	3/32x5/16x3/8	6
C-6	M-13	...	...	3/8 x 3/8 x 2 1/2	3/32x3/8 x 3/8	6
...	...	D-6	M-123	3/8 x 3/8 x 2 1/2	3/32x3/8 x 1/2	6
C-7	M-14	D-7	M-124	7/16x7/16x3	3/32x7/16x1/2	4
C-8	M-15	...	...	1/2 x 1/2 x 3 1/2	1/8 x 1/2 x 1/2	4
...	...	D-8	M-125	1/2 x 1/2 x 3 1/2	1/8 x 1/2 x 9/16	4
C-10	M-17	D-10	M-127	5/8 x 5/8 x 4	5/32x5/8 x 5/8	4



ARMSTRONG CARBIDE TOOL HOLDERS

Straight Shank

In this Tool Holder, the cutter is held parallel to the shank of the holder which permits grinding the cutter so as to give maximum support to the cutting edge. This feature, together with the great rigidity of Armstrong Tool Holders, is recognized by Carbide Engineers as a prerequisite to the successful application of Carbide Cutters.



In addition to its primary use with Carbide Cutters, this Tool Holder is also widely used as a planer and shaper tool.

Furnished with hole broached for either square or flat cutters. Each Tool is boxed separately and is furnished WITHOUT CUTTER. Wrench is included. For Cutters, see page 67.

Special Armstrong Carbide Tool Holders for Carbide Cutters larger than sizes listed may be obtained upon specification.

FOR SQUARE CUTTERS

No.	Size of Holder	Size Cutter	Approx. Weight Each Lbs.	Price Each	No.
T-0-S	$\frac{3}{8}$ x $\frac{15}{16}$ x 6	$\frac{1}{4}$ sq.	1 $\frac{1}{4}$	\$ 3.20	T-0-S
T-1-S	$\frac{1}{2}$ x $1\frac{1}{4}$ x 7	$\frac{5}{16}$ sq.	2	3.60	T-1-S
T-2-S	$\frac{5}{8}$ x $1\frac{1}{2}$ x 8	$\frac{3}{8}$ sq.	3 $\frac{1}{4}$	4.50	T-2-S
T-3-S	$\frac{3}{4}$ x $1\frac{3}{4}$ x 9	$\frac{1}{2}$ sq.	5	6.00	T-3-S
T-4-S	$\frac{7}{8}$ x $1\frac{7}{8}$ x 10	$\frac{1}{2}$ sq.	7	7.60	T-4-S
T-5-S	1 x $2\frac{1}{8}$ x 12	$\frac{5}{8}$ sq.	10 $\frac{1}{2}$	10.80	T-5-S

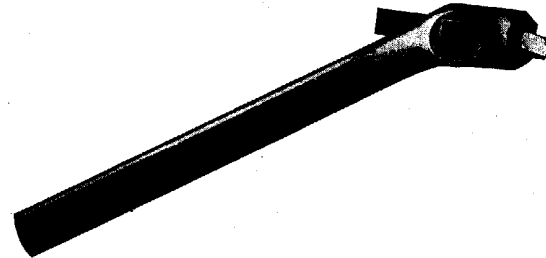
FOR FLAT CUTTERS

FT-0-S	$\frac{3}{8}$ x $\frac{15}{16}$ x 6	$\frac{1}{4}$ x $\frac{3}{8}$	1 $\frac{1}{4}$	\$ 3.80	FT-0-S
FT-1-S	$\frac{1}{2}$ x $1\frac{1}{4}$ x 7	$\frac{5}{16}$ x $\frac{7}{16}$	2	4.40	FT-1-S
FT-2-S	$\frac{5}{8}$ x $1\frac{1}{2}$ x 8	$\frac{3}{8}$ x $\frac{1}{2}$	3 $\frac{1}{4}$	5.40	FT-2-S
FT-3-S	$\frac{3}{4}$ x $1\frac{3}{4}$ x 9	$\frac{1}{2}$ x $\frac{9}{16}$	5	7.20	FT-3-S
FT-4-S	$\frac{7}{8}$ x $1\frac{7}{8}$ x 10	$\frac{1}{2}$ x $\frac{3}{4}$	7	9.20	FT-4-S
FT-5-S	1 x $2\frac{1}{8}$ x 12	$\frac{5}{8}$ x $\frac{7}{8}$	10 $\frac{1}{2}$	12.90	FT-5-S



ARMSTRONG CARBIDE TOOL HOLDERS

Left Hand Off Set



Furnished with hole broached for either square or flat cutters.

Each Tool is boxed separately and is furnished WITHOUT CUTTER. Wrench is included. For Cutters, see page 67.

Special Armstrong Carbide Tool Holders for Carbide Cutters larger than sizes listed may be obtained upon specification.

FOR SQUARE CUTTERS

No.	Size of Holder	Size Cutter	Approx. Weight Each Lbs.	Price Each	No.
T-0-L	$\frac{3}{8}$ x $\frac{15}{16}$ x 6	$\frac{1}{4}$ sq.	1 $\frac{1}{4}$	\$ 3.20	T-0-L
T-1-L	$\frac{1}{2}$ x $1\frac{1}{4}$ x 7	$\frac{5}{16}$ sq.	2	3.60	T-1-L
T-2-L	$\frac{5}{8}$ x $1\frac{1}{2}$ x 8	$\frac{3}{8}$ sq.	3 $\frac{1}{4}$	4.50	T-2-L
T-3-L	$\frac{3}{4}$ x $1\frac{3}{4}$ x 9	$\frac{1}{2}$ sq.	5	6.00	T-3-L
T-4-L	$\frac{7}{8}$ x $1\frac{7}{8}$ x 10	$\frac{1}{2}$ sq.	7	7.60	T-4-L
T-5-L	1 x $2\frac{1}{8}$ x 12	$\frac{5}{8}$ sq.	10 $\frac{1}{2}$	10.80	T-5-L

FOR FLAT CUTTERS

FT-0-L	$\frac{3}{8}$ x $\frac{15}{16}$ x 6	$\frac{1}{4}$ x $\frac{3}{8}$	1 $\frac{1}{4}$	\$ 3.80	FT-0-L
FT-1-L	$\frac{1}{2}$ x $1\frac{1}{4}$ x 7	$\frac{5}{16}$ x $\frac{7}{16}$	2	4.40	FT-1-L
FT-2-L	$\frac{5}{8}$ x $1\frac{1}{2}$ x 8	$\frac{3}{8}$ x $\frac{1}{2}$	3 $\frac{1}{4}$	5.40	FT-2-L
FT-3-L	$\frac{3}{4}$ x $1\frac{3}{4}$ x 9	$\frac{1}{2}$ x $\frac{9}{16}$	5	7.20	FT-3-L
FT-4-L	$\frac{7}{8}$ x $1\frac{7}{8}$ x 10	$\frac{1}{2}$ x $\frac{3}{4}$	7	9.20	FT-4-L
FT-5-L	1 x $2\frac{1}{8}$ x 12	$\frac{5}{8}$ x $\frac{7}{8}$	10 $\frac{1}{2}$	12.90	FT-5-L

Right Hand Offset shown page 22.

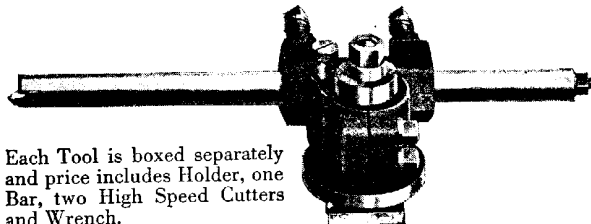


ARMSTRONG BROS. TOOL CO. • CHICAGO

ARMSTRONG ADJUSTABLE BORING TOOL

Patented

This tool combines Convenience, Adjustability and Rigidity to a remarkable degree and is well adapted to a very wide range of work. The Holder is easily adjustable to different heights and will hold bars of various diameters. The Bars are made from high carbon steel seamless tubing of heavy gauge and are extremely stiff. The Cutter can be adjusted and solidly fixed at various angles for Boring, Facing or Turning.



Each Tool is boxed separately and price includes Holder, one Bar, two High Speed Cutters and Wrench.

No.	Capacity of Holder Diameter Bars	Size Bar Furnished	Size Cutter Square	For Lathes Swinging	Weight Each Pounds	Extra Cutter Bits High Speed Each	Price Each Complete	No.
212	1/4 to 1 1/16	1 1/16 x21	3/8	14 to 18 in.	25	\$0.50	\$27.00	212
213	3/8 to 1 1/2	1 1/2 x24	7/16	16 to 20 in.	38	.75	37.50	213
214	1/2 to 1 13/16	1 13/16 x28	1/2	18 to 24 in.	75	1.00	60.00	214
215	5/8 to 2 1/4	2 1/4 x36	5/8	20 to 36 in.	120	1.80	90.00	215

NOTE—Bolt Head is made large enough to allow for fitting to T slots of various sizes.
FITTING—An extra charge of \$1.00 net will be made for fitting Bolt Head to special dimensions.

PRICE LIST—EXTRA BARS

Price includes one Bar of size specified, two High Speed Cutters and Wrench.

Size of Bar		Size Cutter Square	Approx. Weight Each Pounds	Extra Cutter Bits High Speed Each	Price Each
Diameter	Length				
3/4	14	3/16	1 3/4	\$0.10	\$ 4.85
15/16	16	1/4	3 1/4	.18	6.00
1 1/8	18	5/16	5	.30	8.25
1 1/16	21	3/8	7 1/2	.50	11.25
1 1/2	24	7/16	11	.75	15.00
1 13/16	28	1/2	19	1.00	22.50
2 1/4	36	5/8	38	1.80	42.00

ARMSTRONG BROS. TOO

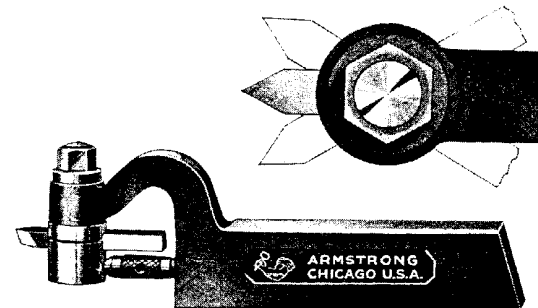
CHICAGO



ARMSTRONG SPRING THREADING TOOL

Patented

The Armstrong Spring Threading Tool is designed to combine strength and convenience of adjustment and operation with the resiliency which is considered by many machinists to be helpful in obtaining a smooth, finishing cut or thread especially on alloy steels of an extremely tough nature. Convenient means is also provided for obtaining complete rigidity when same is desirable as, for instance, in taking a roughing cut or doing an ordinary job of turning. The cutter can be held at different angles as shown.



Each Tool is boxed separately, and price includes one High Speed V Thread Cutter and a Drop Forged Wrench.

No.	Size of Holder	Size of Cutter Square	Approx. Weight Each Pounds	Extra Cutters High Speed Each	Price Each Complete	No.
S-50	3/8 x 7/8 x 5 1/2	3/16	1/2	\$0.35	\$4.15	S-50
S-51	1/2 x 1 1/8 x 6 1/2	1/4	1	.45	5.00	S-51
S-52	5/8 x 1 5/8 x 7 1/2	5/16	2	.55	6.40	S-52
S-53	3/4 x 1 5/8 x 8 1/2	3/8	3 1/4	.70	8.25	S-53