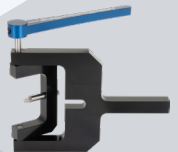
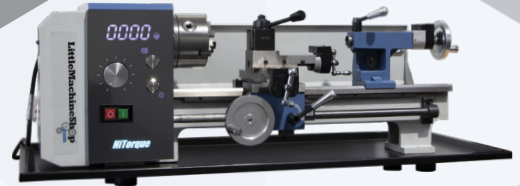


LittleMachineShop[®].com

The premier source of tooling, parts,
and accessories for bench top machinists.

(800) 981 9663 info@littlemachineshop.com

CATALOG 37 2024



PRICING NOTE

Prices in this catalog are correct at the time of printing.
Please check our website or call us to confirm current prices.

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New Arrivals for 2024

Visit Our
Website
for Current
Pricing

New for 2024, LittleMachineShop.com is equipping our deluxe bench mills with new control panels. These panels have an easy to read LED speed display and illuminated buttons for spindle engagement and direction. In addition, the large bench mill has illuminated power head lift controls.

All **HiTorque™** bench mills have the following standard features:

- Tapping mode integrated with the drill press style handles
- Forward and Reverse modes on the power panel
- Digital position readout on the quill reads in inches and mm
- Japanese quality bearings (NSK or equivalent)
- R8 spindle for wide tool availability
- Solid column with dovetails for rigidity and consistent head alignment
- Fine feed on Z-axis for precise control
- 0.001" Graduated dials, 0.100" per turn

HiTorque™ Deluxe Large Bench Mill Model 6770

The **HiTorque™** Deluxe Large Bench Mill 6770 is our largest mill. (See specifications table page five.) It has our standard bench mill features plus:

- Easy to read LED spindle speed display
- Power head lift system
- 1000 watt (1.34 hp) brushless DC motor, no gears in spindle drive
- 29.1" x 7.1" table (X, Y, Z travel: 20.2", 8.5", 9.8")
- Factory-installed 3-axis hard-wired DRO with tablet display
- Electrically interlocked spindle
- Built in light to illuminate work
- Machined aluminium handwheels
- Includes 5/8" drill chuck and 6JT to R8 arbor



Model 6770

HiTorque™ Deluxe Bench Mill, Long Table Model 6570

The **HiTorque™** Deluxe Bench Mill 6570 fits in the middle of our mill lineup. (See specifications table page five.) It has our standard bench mill features plus:

- Easy to read LED spindle speed display
- 750 Watt (1 hp) brushless DC motor, no gears in spindle drive
- 27.6" x 6.3" table (X, Y, Z travel: 19.7", 5.5", 11.6")
- Factory-installed 3-axis hard-wired DRO with tablet display
- Electrically interlocked spindle
- Built in light to illuminate work
- Machined aluminium handwheels
- Includes 1/2" drill chuck and 3JT to R8 arbor



Model 6570

See page 4 for bench mills without DRO.

Mini Mills

All **HiTorque™** mini mills have the following standard features:

- 500 Watt spindle motor, no gears in spindle drive
- Large 18.1" x 4.7" table (X, Y, Z travel: 11.8", 5.1", 10.6")
- R8 Spindle for wide tool availability
- Japanese quality bearings (NSK or equivalent)
- Solid column with dovetails for rigidity and consistent head alignment
- Gas strut provides even support through the Z-axis range
- Three radial handles for drilling
- Fine feed on Z-axis for precise control
- E-stop safety power switch
- Neoprene bellows protect horizontal ways
- Adjustable gibs on all dovetail ways
- Adjustable Z-axis stop for repetitive drilling
- R8 drill chuck arbor and 1/2" drill chuck



HiTorque™ Mini Mill, 3990

- All the Standard features listed above



HiTorque™ Deluxe Mini Mill, 4190

All the standard mini mill features plus:

- Factory installed 3-Axis DRO with 7" Android tablet readout
- Electrically interlocked spindle lock
- Anodized handwheels

HiTorque™ Deluxe Bench Mill, LED Display, 6450

Our newest mini mill with easy to read display! Also includes:

- LED display with illuminated controls and integrated spindle speed readout
- Factory installed 3-Axis DRO with 7" Android tablet readout
- Electrically interlocked spindle lock
- Anodized handwheels

Bench Mills

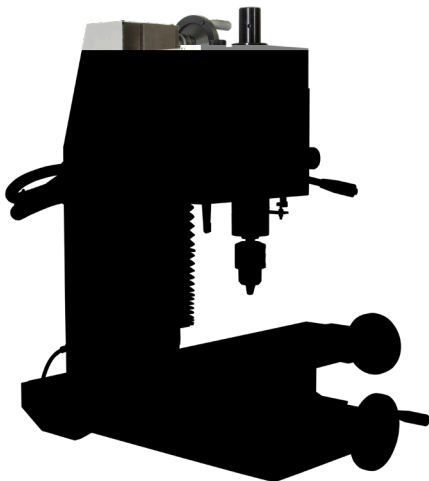
Standard features listed on page 3

HiTorque™ Large Bench Mill, 6700

- 1000 Watt (1.34 hp) brushless DC motor, no gears in spindle drive
- Large 29.1" x 7.1" table (X, Y, Z travel: 19.7", 7.9", 13.8")
- Anodized handwheels
- Magnetic "tool zone" on column for storing drawbar wrench

HiTorque™ Bench Mill, 6500

- 750 Watt (1 hp) brushless DC motor, no gears in spindle drive
- Large 23.4" x 5.5" table (X, Y, Z travel: 15.7", 6.3", 12.4")



Model 6700



Model 6500

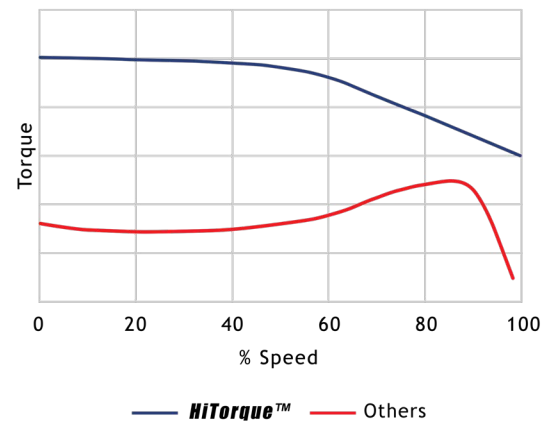
What makes **HiTorque™** Machines better?

HiTorque™ machines from LittleMachineShop.com are the best in their class. Each one is powered by a brushless DC spindle drive motor that provides tremendous low-end torque and more power than similarly sized machines. Enhanced speed control provides constant speed under varying loads. Spindle speed is continuously variable, meaning no gears to shift. No gears in the spindle drive also means quieter operation and removes a common point of failure.

In addition to greater power, each **HiTorque™** machine has more capacity than its competition: a larger table in the mills, a longer bed and larger chuck in the lathes. And each has features that you won't find on other machines, such as cam-lock tailstock or a solid column.

LittleMachineShop.com backs these machines with renowned customer service and in-stock replacement parts.

HiTorque™ vs. Others



HiTorque™ Mill Specifications

	6700/ 6770	6500/ 6570	3990/ 4190/ 6450
End Milling Capacity	0.8" (20 mm)	0.6" (16 mm)	0.6" (16 mm)
Face Milling Capacity	3.0" (75 mm)	2.0" (50 mm)	1.2" (30 mm)
Drilling Capacity	1.2" (30 mm)	0.8" (20 mm)	0.5" (13 mm)
Table Size	29.1" x 7.1" (740 x 180 mm)	650Q: 23.4" x 5.5" (595 x 140 mm) 657Q: 27.6" x 6.3" (700 x 160 mm)	18.1" x 4.7" (460 x 120 mm)
X-Axis Travel	670Q: 19.7" (500 mm) 677Q: 20.2" (513 mm)	650Q: 15.7" (400 mm) 657Q: 19.7" (500 mm)	11.8" (300 mm)
Y-Axis Travel	670Q: 7.9" (200 mm) 677Q: 8.5" (215 mm)	650Q: 6.3" (160 mm) 657Q: 5.7" (145 mm)	5.1" (130 mm)
Z-Axis Travel	670Q: 13.8" (350 mm) 677Q: 9.8" (250 mm)	650Q: 12.4" (315 mm) 657Q: 11.6" (295 mm)	10.6" (270 mm)
Throat	9.1" (230 mm)	7.5" (190 mm)	6.5" (165 mm)
X- and Y-Axis Feed Screws	0.100" (2.54 mm) per rotation	0.100" (2.54 mm) per rotation	0.062" (1.59 mm) per rotation
Quill Travel	3.1" (78 mm)	2.8" (71 mm)	N/A
Maximum Spindle to Table	13.4" (340 mm)	12.2" (310 mm)	11.5" (292 mm)
Positioning Accuracy	0.0004" (0.010 mm)	0.0004" (0.010 mm)	0.0004" (0.010 mm)
Spindle Taper	R8	R8	R8
Spindle Motor	1.34 hp (1000 Watts)	1.01 hp (750 Watts)	0.67 hp (500 Watts)
Spindle Speed	Low: 80 - 1500 RPM High: 280 - 5000 RPM	100 - 2000 RPM	100 - 2500 RPM
Power Requirements	120 V 60 Hz 14 Amps	120 V 60 Hz 10 Amps	120 V 60 Hz 8 Amps
Weight	670Q: 343 lbs (156 kg) 677Q: 352 lbs (160 kg)	650Q: 207 lbs (94 kg) 657Q: 245 lbs (111 kg)	399Q: 124 lbs (56 kg) 419Q: 124 lbs (56 kg) 645Q: 187 lbs (85 kg)
Dimensions (W x D x H)	37.0" x 30.5" x 36.5" (940 x 775 x 927 mm)	650Q: 28.9" x 25.0" x 28.5" (735 x 635 x 725 mm) 657Q: 34.6" x 25.0" x 28.5" (880 x 635 x 725 mm)	23.2" x 19.7" x 36.3" (590 x 500 x 922 mm)
Crated Weight	670Q: 403 lbs (183 kg) 677Q: 412 lbs (187 kg)	650Q: 262 lbs (119 kg) 657Q: 292 lbs (133 kg)	399Q: 161 lbs (73 kg) 419Q: 177 lbs (80 kg) 645Q: 205 lbs (93 kg)
Crate Dimensions (W x D x H)	670Q: 37.5" x 32.7" x 42.0" (952 x 831 x 1067 mm) 677Q: 37.5" x 32.7" x 42.0" (952 x 831 x 1067 mm)	650Q: 32.0" x 28.0" x 35.5" (813 x 711 x 902 mm) 657Q: 36.0" x 28.0" x 35.5" (914 x 711 x 902 mm)	399Q/419Q: 23.6" x 25.0" x 29.9" (600 x 635 x 760 mm) 645Q: 26.0" x 24.8" x 35.0" (660 x 630 x 890 mm)

HiTorque™ Mini Lathes

All **HiTorque™** mini lathes have the following standard features:

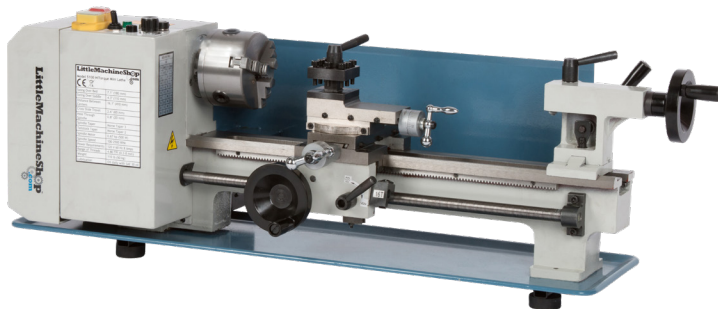
- 500 Watt brushless spindle motor, no gears in spindle drive
- Japanese quality bearings (NSK or equivalent)
- Cam lock tailstock
- Zero-settable hand wheels graduated in 0.001" on cross slide and compound rest
- Extended threading capability - inch and metric threads
- Rear apron shield to keep swarf out of the mechanism
- Reversible lead screw for right and left hand threads
- Integrated Threading dial
- #3 Morse taper spindle, #2 Morse taper tailstock
- 4" 3-jaw Sandoz lathe chuck
- Reversible lead screw for right and left hand threads
- Heavy duty chip tray with wide stance rubber feet for added stability

HiTorque™ 7 × 16 Deluxe Mini Lathe, Mirror Display, 7450



The Newest **HiTorque™** mini lathe offers an easy to read control panel and integrated DRO with 7" tablet display for cross slide and carriage, putting it in a class by itself. Additional features include:

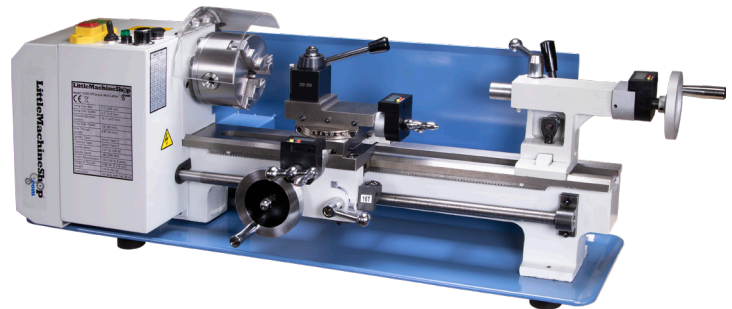
- LED display with illuminated controls and integrated, easy to read spindle speed readout
- Factory installed 2-axis DRO with 7" Android tablet readout on carriage and cross feed
- Digital readouts on the compound rest and tailstock quill
- Aluminum hand wheels and chrome levers
- DRO added to cam lock tailstock
- OXA wedge-type Quick change tool post set with five tool holders



HiTorque™ 7 × 16 Mini Lathe, 5100

Standard features of **HiTorque™** mini lathes plus:

- Four-way tool post



HiTorque™ 7 × 16 Deluxe Mini Lathe, 7350

Standard features of **HiTorque™** mini lathes plus:

- Digital readouts on the compound rest, cross slide, and tailstock handwheel
- Metal hand wheels and chrome levers
- OXA wedge-type Quick change tool post set with five tool holders

HiTorque™ Bench Lathes

All **HiTorque™** bench lathes have the following standard features:

- 1000 Watt (1.34 HP) brushless DC drive with spindle speed readout
- Genuine NSK ball bearings
- Metal gears
- Induction hardened ways
- Power longitudinal feed and power cross feed
- E-stop safety power switch
- Spindle on-of button
- Forward/reverse button for spindle and lead screw direction
- Reversible lead screw allows for right- and left-hand threading
- Extended threading capability - inch and metric threads
- Zero-resettable dials graduated at 0.001" and advancing 0.050" per turn
- Cam-lock tailstock
- 4" (100 mm) 3-jaw Sanou lathe chuck



HiTorque™ 8½ × 20 Bench Lathe, 7500

Standard features of **HiTorque™** bench lathes plus:

- Four-way tool post



HiTorque™ 8½ × 20 Deluxe Bench Lathe, 7550

Standard features of **HiTorque™** bench lathes plus:

- DRO on compound, cross feed, carriage, and tailstock
- All DROs read equally accurately in inches and mm
- AXA quick change tool post set
- Anodized aluminum hand wheels, chrome knobs and levers

HiTorque™ Lathe Specifications

	7500/7550	5100/7350/7450
Swing Over Bed	8.5" (215 mm)	7.1" (180 mm)
Swing Over Saddle	4.6" (118 mm)	4.3" (110 mm)
Between Centers	20" (510 mm)	16" (410 mm)
Cross Slide Travel	3.9" (100 mm)	2.6" (65 mm)
Spindle Through Hole	0.8" (20 mm)	0.8" (20 mm)
Spindle Motor Output	1.34 hp (1000 Watts)	0.67 hp (500 Watts)
Range of Threads	6-80 TPI (0.25-4.0 mm)	4-80 TPI (0.35-8.0 mm)
Spindle Taper	#3 Morse taper	#3 Morse taper
Tailstock Taper	#2 Morse taper	#2 Morse taper
Spindle Speed	100 - 2000 RPM	5100/7350: 60 - 2500 RPM 7450: 100 - 2500 RPM
Power Requirements	120 V 60 Hz 12 Amps	120 V 60 Hz 8 Amps
Weight	220 lbs (100 kg)	5100/7350: 90 lbs (41 kg) 7450: 108 lbs (49 kg)
Dimensions (W × D × H)	40" × 22" × 16" (1010 mm × 550 mm × 400 mm)	31" × 10" × 12" (790 mm × 260 mm × 300 mm)
Crated Weight	281 lbs (128 kg)	5100/7350: 114 lbs (52 kg) 7450: 143 lbs (65 kg)
Crated Dimensions (W × D × H)	44" × 28" × 22" (1110 mm × 700 mm × 550 mm)	35" × 16" × 15" (900 mm × 410 mm × 380 mm)

Tooling Packages

LittleMachineShop.com offers much more than machines. For each of our mills and lathes, we offer tooling packages that include everything you need to get started. These packages are designed to fit specific machine groups so you have the comfort of knowing each tool included will fit. Typically, three to five tooling packages are offered for each machine, covering a wide range of cost and tool complexity.

Tooling packages offer tremendous savings over buying individual items.

Mill Tooling Packages



Mill tooling packages typically include:

- Vise and mounting kit
- Parallels set
- 1-2-3 blocks
- Clamping kit
- Collet set
- End mill set
- Center drills
- Edge and center finder
- T-slot cleaner

Lathe Tooling Packages



Lathe tooling packages typically include:

- Quick change tool post set (for lathes with a traditional 4-way tool post)
- Boring bars
- Turning tools (Indexable in top end packages)
- Cut-off blade
- Center drills
- Drill chuck and arbor

Accessories

Like tooling packages, we have created accessory packages for each machine sold on LittleMachineShop.com. These packages provide the most common tooling for advanced mill and lathe use and like our standard tooling packages, accessory packages offer savings when bought as a group.



Collets and Accessories: 3C Collets and Collet Closers



Chris' Tips

1 Stop for Collets for Mini and Bench Lathes

For holding a work piece in a lathe, collets provide better concentricity than a 3-jaw chuck without the bother of centering a 4-jaw independent chuck. We have lots of options for using collets with small lathes. For more information on collets for mini and bench lathes visit our website www.LittleMachineShop.com/ColletsLathes



1991 Collet Set, 3C, Set of 7 \$43.95

- Set of seven 3C round collets range in size from 1/8" to 1/2" by 16ths
- Includes 1/8", 3/16", 1/4", 5/16", 3/8", 7/16" and 1/2"
- Made of high grade tool steel
- Hardened and ground to close tolerance
- Externally threaded

The thru bore of the collets is 0.467". The 1/2" collet is bored to 1/2" by 0.66" deep. All the other collets will pass the full material size through the length of the collet.

4678 Collet, 3C, 1/8"	\$12.95
4679 Collet, 3C, 3/16"	\$9.95
4680 Collet, 3C, 1/4"	\$9.95
4681 Collet, 3C, 5/16"	\$9.95
4682 Collet, 3C, 3/8"	\$9.95
4683 Collet, 3C, 7/16"	\$9.95
4684 Collet, 3C, 1/2"	\$9.95

Collets and Accessories: 5C Collets, Collet Chucks, and Accessories



3190 Collet Block Set, 5C Hex and Square \$79.95

- Holds standard 5C collets
 - Economical indexing for 2, 3, 4, and 6 divisions
 - Easy cross drilling at 60°, 90° and 120°
 - Made of hardened tool steel
 - Ground square and parallel within 0.0005" all over
- This set includes five pieces, the square block, the hexagonal block, two quick acting rings and the lever operated collet closer. 5C collets have a range of 1/16" to 1-1/8".



3047 Collet Chuck, 5C Collets \$249.95

- Plain back collet chuck mounts like a lathe chuck
 - 5" (130 mm) diameter
 - 1/16" to 1 1/8" capacity with appropriate collets
 - Through hole is 1.231"
 - Front mounted
- This 5C collet chuck mounts with three holes for M8 cap screws. They are through drilled and counterbored for bolting on from the front. The registration inset is 95 mm in diameter. This collet chuck mounts to an adapter plate. See Chris' Tips tab for links to common adapter solutions. In addition to pre-drilled adapters, you can mount this collet chuck to a 5" backplate that is designed for a 4" flange (see P/N 4771). This backplate needs to be machined and the mounting holes tapped and drilled for M8 mounting hardware. The registration boss on P/N 4771 is approx. 1mm larger than the collet chuck so it would need to be machined down to fit.

3901 Tap & Tap Drill Bit, M8x1.25 Metric Thread \$14.95



4662 Collet Set, 5C, Set of 69 \$469.95

- Set of 69 5C round collets range in size from 1/16" to 1-1/8" by 64ths
- Made of high grade tool steel
- Hardened and ground to close tolerance
- Internally threaded for a work stop

3842 Collet Set, 5C, Set of 17	\$109.95
4661 Collet Set, 5C, Set of 33	\$224.95
1708 Collet Set, 5C, Set of 6	\$39.99



Collets, 5C Individual Sizes

- Precision ground hardened steel
 - Internally and externally threaded
 - For any machine or accessory that takes 5C collets
- 5C collets range in size from 1/16" to 1-1/8". The end is internally threaded with 5C standard size (1.041-24 thread). It is also externally threaded with 5C standard size (1.238-20 thread). The overall length is 3.281 inches.

4593 Collet, 5C, 1/16"	\$8.95
4594 Collet, 5C, 1/8"	\$8.95
3670 Collet, 5C, 3/16"	\$8.95
3476 Collet, 5C, 1/4"	\$8.95
4595 Collet, 5C, 5/16"	\$8.95
3477 Collet, 5C, 3/8"	\$8.95
4596 Collet, 5C, 7/16"	\$8.95
3478 Collet, 5C, 1/2"	\$8.95
4597 Collet, 5C, 9/16"	\$8.95
3479 Collet, 5C, 5/8"	\$8.95
4598 Collet, 5C, 11/16"	\$8.95
3480 Collet, 5C, 3/4"	\$8.95
4599 Collet, 5C, 13/16"	\$8.95
3481 Collet, 5C, 7/8"	\$8.95
4600 Collet, 5C, 15/16"	\$8.95
3482 Collet, 5C, 1"	\$10.95



5479 Mount, 5C for 3-Jaw Lathe Chucks, 4" \$39.95

- 4" adapter
 - 5C adapter body
 - 3 hole chuck mounting pattern is pre-drilled
 - Hardened and ground
 - 84mm Lathe chuck bolt circle diameter
- 5C adapter with standard internal and external threads.
- 5478 Mount, 5C for 3-Jaw Lathe Chucks, 3" \$39.95

Collets and Accessories: Brown & Sharpe Collets



2999 Collet Set, 7BS, Set of 7 \$99.95

- Set of seven Brown & Sharpe 7 round collets
- Hardened and precision ground
- 3/8"-16 drawbar thread
- 0.0008" (0.02 mm) maximum runout
- Overall length is 3.15"

Set of seven Brown & Sharpe round collets to fit spindles with a Brown & Sharpe taper. This set ranges from 1/8" to 1/2" by 16ths (1/8", 3/16", 1/4", 5/16", 3/8", 7/16", and 1/2").

These collets are made from high-grade tool steel and are precision ground and hardened. Maximum runout is 0.0008" (0.02 mm).

Drawbar thread is 3/8"-16, the width at the top is 0.725" and the width at the bottom is 0.600". Overall length is 3.15".

2992 Collet, 7BS, 1/8"	\$18.95
2993 Collet, 7BS, 3/16"	\$18.95
2994 Collet, 7BS, 1/4"	\$18.95
2995 Collet, 7BS, 5/16"	\$18.95
2996 Collet, 7BS, 3/8"	\$18.95
2997 Collet, 7BS, 7/16"	\$19.95
2998 Collet, 7BS, 1/2"	\$19.95

Collets and Accessories: Brown & Sharpe Collets



3011 Collet Set, 9BS, Set of 11	\$179.95
<ul style="list-style-type: none"> • Set of eleven Brown & Sharpe #9 round collets • Hardened and precision ground • 1/2"-13 drawbar thread • 0.0008" (0.02 mm) maximum runout • Overall length is 4.00" <p>Set of 11 Brown & Sharpe #9 round collets to fit spindles with a Brown & Sharpe taper. This set ranges from 1/8" to 3/4" (1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", and 3/4").</p> <p>These collets are made from high-grade tool steel and are precision ground and hardened. Maximum runout is 0.0008" (0.02 mm).</p> <p>Drawbar thread is 1/2"-13, the width at the top is 1.067" and the width at the bottom is 0.900". Overall length is 4.0".</p>	
3000 Collet, 9BS, 1/8"	\$21.95
3001 Collet, 9BS, 3/16"	\$21.95
3002 Collet, 9BS, 1/4"	\$21.95
3003 Collet, 9BS, 5/16"	\$21.95
3004 Collet, 9BS, 3/8"	\$21.95
3005 Collet, 9BS, 7/16"	\$21.95
3006 Collet, 9BS, 1/2"	\$21.95
3007 Collet, 9BS, 9/16"	\$21.95
3008 Collet, 9BS, 5/8"	\$21.95
3009 Collet, 9BS, 11/16"	\$21.95
3010 Collet, 9BS, 3/4"	\$21.95

Collets and Accessories: Collet Holders and Collet Racks



6324 Collet Holder, R8, Free Standing	\$29.95
<ul style="list-style-type: none"> • Free standing R8 collet rack • Twenty four spaces • Clear size markings - offset to allow visibility with collets installed • Holds sizes 1/16" to 3/4" by 32nds plus one blank • Common end mill sizes highlighted <p>Free standing R8 collet rack suitable for bench top or for inside a drawer. Twenty four spaces for collets with sizes engraved for easy visibility. Holds all sizes from 1/16" to 3/4" by 32nds and with one pocket blank. Engraved sizes are offset to make reading easy when collets are installed. Most common end mill sizes are highlighted for quick retrieval. Dimensions: 12 3/4" wide, 5 1/2" deep. Height is 4 5/8" with collets installed. Made from PVC with sealed MDF legs.</p>	



2289 Collet Holder, ER-32 Rotating, Aluminum	\$69.95
<ul style="list-style-type: none"> • Holds 18 ER-32 collets • Can be mounted anywhere • Made from anodized aluminum, red finish • Easy rotation for quick accessibility • Durable material for heavy use <p>Rotating rack allows for quick and easy access to 18 ER-32 collets. This carousel, made from red anodized aluminum, can be mounted anywhere. Ease of rotation makes collet size selection quick and easy.</p>	



5001 Collet Holder, R8 Rotating	\$26.95
<ul style="list-style-type: none"> • Holds 11 R8 collets • Can be mounted anywhere • Made from durable ABS plastic • Easy rotation for quick accessibility • Low Price - Great for small shops <p>Rotating R8 collet rack allows for quick and easy access to 11 R8 collets. This carousel, made from durable ABS plastic, can be mounted anywhere. At the low price, buy multiple racks for large R8 collet sets.</p>	

Collets and Accessories: ER Collets, Collet Chucks, and Accessories



2229 Collet & Chuck Set, ER-25, 2MT	\$139.95
<ul style="list-style-type: none"> • Includes nine ER-25 Collets • 2 Morse taper shank • 3/8"-16 drawbar thread • Includes spanner wrench and fitted case • Includes 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", and 5/8" <p>Collet and Chuck set for lathes with a 2 Morse taper spindle taper. Includes nine ER-25 collets, 3/8"-16 drawbar thread, spanner wrench and case.</p>	
2230 Collet Chuck, ER-25, 2MT	\$69.95



2228 Collet & Chuck Set, ER-32, 3MT	\$189.95
<ul style="list-style-type: none"> • Includes eleven ER-32 collets • 3 Morse taper shank • 3/8"-16 drawbar thread • Includes spanner wrench and fitted case • Includes 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", and 3/4" <p>Collet and Chuck set for lathes with a 3 Morse taper spindle taper. Includes eleven ER-32 collets, 3/8"-16 drawbar thread, spanner wrench and case.</p>	



2231 Collet Chuck, ER-32, 3MT	\$45.95
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2888 Collet & Chuck Set, ER-32, R8	\$189.95
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<ul style="list-style-type: none"> • Set includes eleven ER-32 collets • R8 taper shank • 7/16"-20 drawbar thread • Spanner wrench • Includes 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", and 3/4" <p>Collet and Chuck set for mills with a R8 spindle taper. Includes eleven ER-32 collets, 7/16"-20 drawbar thread, spanner wrench.</p>	
3615 Collet Chuck, ER-32, R8	\$39.95



Collet Blocks, ER, Square and Hexagonal

<ul style="list-style-type: none"> • Uses standard ER collets • Through hole permits long parts to be machined • Hardened Tool Steel, Ground to .0005" on all 6 Sides • Accurately ground back face so the blocks may be used standing upright • Includes ER collet nut <p>These collet blocks provide easy indexing for 2 and for, or 3 and 6 divisions.</p>	
5911 Collet Block, ER-25 Hexagonal	\$36.95
5912 Collet Block, ER-25 Square	\$36.95
4105 Collet Block, ER-32 Hexagonal	\$39.95
4106 Collet Block, ER-32 Square	\$39.95
5913 Collet Block, ER-40 Hexagonal	\$39.95
5914 Collet Block, ER-40 Square	\$39.95



5189 Collet Chuck, ER-16, Straight Shank, Professional Grade	\$62.95
<ul style="list-style-type: none"> • 3/4" x 2 1/2" shank ER-16 collet chuck • Made of 20CrMnTi alloy steel • Max runout is 0.0003" • Balanced to 18,000 RPM • Electrolysis nickel coating <p>Collet Chuck, ER-16, Straight Shank, Professional Grade This ER-16 straight shank collet chuck is a great tool for holding small end mills and engravers. It is made of 20CrMnTi alloy steel and is balanced to 18,000 RPM. The maximum runout is 0.0003" (0.0076 mm). ER-16 collets have a range of 1/32" to 3/8" (0.5 to 10.0 mm). The overall length is 4.087" (104 mm) and the width at the nut is 1.102" (28 mm). *Collet must be assembled into a collet chuck nut before inserting into the collet chuck.</p>	
5188 Collet Chuck, ER-11, Straight Shank, Professional Grade	\$62.95

**2532 Collet Chuck, ER-32, 3" Diameter \$89.95**

- ER-32 3" collet chuck
- Mounts on 3" spindle flange or adapter
- Shorter than standard 3-jaw chuck
- Allows 25/32" stock through the headstock of the mini lathe
- Concentricity 0.0016"

This 3" diameter ER-32 collet chuck mounts on the lathe spindle in place of the lathe chuck or can be used as a fixture on a milling table.

ER collet chucks range in size from 3/32" up to 13/16" so you can run 25/32" (the through hole on the lathe spindle is 0.800") stock through the headstock of your mini lathe.

The outside diameter of the lathe collet chuck is 80 mm. It has a 55 mm registration diameter and mounts with three M6 bolts on a 66 mm bolt circle. The concentricity of this chuck is 0.0008" (0.02 mm).

*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

4231 Collet Chuck, ER-32, 4" Diameter \$89.95**5452 Collet Chuck, ER-40, 4" Diameter \$89.95****5453 Collet Chuck, ER-32, 5C \$49.95**

- 5C collet shank, holds all ER-32 collets
- Hardened and precision Ground
- 5C shank is externally threaded
- 0.0005" (0.0127 mm) maximum runout (DIN6499B standard)

5C to ER-32 collet chuck, milling chuck holder.

This collet chuck is hardened and precision ground and has a maximum runout of 0.0005" (0.0127 mm). The chuck will hold all ER-32 collets and a spanner wrench is included.

ER-32 collets have a range of 1/16" to 13/16" (1.0 mm to 21.0 mm).

*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

**5449 Collet Chuck, ER-32, R8, Professional Grade \$89.95**

- R8 to ER-32 collet chuck
- Made of 20CrMnTi alloy steel
- R8 Drawbar thread is 7/16"-20
- Max. RPM: 8,000, max runout 0.0003"

R8 to ER-32 professional grade collet chuck. Premium 20CrMnTi alloy steel hardened and all ground body for extended tool life. Has a superior finish (electrolysis nickel coating).

The maximum RPM is 8,000 and the maximum runout is 0.0003" (0.0076 mm). The R8 drawbar thread is 7/16"-20.

ER-32 collets have a range of 1/16" to 13/16" (1.0 mm to 21.0 mm).

*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

5448 Collet Chuck, ER-20, R8, Professional Grade \$89.95**5883 Collet Chuck, ER-40, R8, Professional Grade \$92.95****1112 Collet Chuck, Rotary Table, ER-32, 80 mm Diameter \$39.95**

- Collet Chuck for Rotary Tables
- Fits tables with 8 mm T-Slot
- 80 mm Outside Diameter

This 80 mm diameter ER-32 collet chuck clamps directly to a rotary table with an 8 mm T-Slot. T-Slot nuts, bolts and top brackets are included. The collet chuck holds standard ER-32 collets. View our related products for links to rotary tables, ER Collets and Collet Nut Wrenches.

1111 Collet Chuck, Rotary Table, ER-25, 80 mm Diameter \$39.95**Collet Chucks Jacobs Taper**

- ER Collet chuck that mounts on Jacobs taper
- Compatible with standard Jacobs taper arbors
- Maximum RPM is 8,000
- T.I.R. is <= 0.0002"
- Ground & hardened for accuracy and precision

These collet chucks are hardened and precision ground and have a TIR <= 0.0002" (0.005 mm). These chucks will hold all ER collets. Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

5992 Collet Chuck, ER-16, JT2 \$19.95**5993 Collet Chuck, ER-20, JT2 \$19.95****5994 Collet Chuck, ER-25, JT33 \$27.95****5995 Collet Chuck, ER-32, JT33 \$29.95****6122 Collet Chuck, ER16, JT33 \$23.95****6125 Collet Chuck, ER20, JT33 \$23.95****6119 Collet Chuck, ER25, JT2 \$19.95****5844 Collet Nut, ER-16 \$11.47**

- Holds ER16 collets
- Internal thread M22*1.5
- Outside diameter 1.1" (28 mm)
- Tightening diameter 0.98" (25 mm)
- Black oxide finish

Collet nut for ER-16 collets and micro mills with an ER-16 Spindle like the HiTorque Micro Mill. Holds ER-16 collets and has and internal thread of M22*1.5. The outside diameter is 1.1" (28 mm) with a tightening diameter of 0.98" (25 mm) across the flats. The collet nut has a black oxide finish.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

**4702 Collet Set, ER-16, Set of 6 \$79.95**




- Set of 6 ER-16 collets, sizes 1/16" to 3/8" by sixteenths
- Made of high grade tool steel
- Major diameter 0.67" (17.0 mm)
- Length 1.08" (27.5 mm)
- Set Range 0.04" - 0.393" (1.0 mm - 10 mm)

Set of six ER-16 collets sizes 1/16", 1/8", 3/16", 1/4", 5/16", and 3/8". This set of ER-16 collets provides the basics you need for the Tormach Tooling System ER-16 collet holder. They'll also work great in a Taig mill equipped with the ER-16 spindle. ER-16 collets have a major diameter of 0.67" (17.0 mm) and a length of 1.08" (27.5 mm). The collets in this set have a clamping range of 0.04" - 0.393" (1.0 mm - 10 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

**2442 Collet Set, ER-20, Set of 3 \$29.95**

- Includes 1/8", 1/4" and 3/8" collets
- Made of high grade tool steel
- Major diameter 0.83" (21 mm)
- Length 1.24" (31.5 mm)
- Set Range 0.12" - 0.393" (3.0 mm - 10 mm)

Set of three ER-20 collets sizes 1/8", 3/16" and 1/4". This set of ER-20 collets provides the basics you need for the Tormach Tooling System ER-20 collet holder. ER-20 collets have a major diameter of 0.83" (21 mm) and a length of 1.24" (31.5 mm). The collets in this set have a clamping range of 0.12" - 0.393" (3.0 mm - 10 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

	2662 Collet Set, ER-25, Set of 15	\$109.95
	<ul style="list-style-type: none"> • Set of 15 ER-25 round collets • Made of high grade tool steel • Major diameter 1.02" (26 mm) • Length 1.34" (34 mm) • Range 0.04" - 0.629" (1.0 mm - 16.0 mm) <p>Set of 15 ER-25 collets. Sizes include: 1/16", 3/32", 1/8", 3/16", 7/32", 1/4", 5/16", 11/32", 3/8", 13/32", 7/16", 1/2", 17/32", 9/16", and 5/8". ER-25 collets have a major diameter of 1.02" (26 mm) and a length of 1.34" (34 mm). The collets in this set have a clamping range of 0.04" - 0.629" (1.0 mm - 16 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.</p>	
	4332 Collet Set, ER-25, Set of 10 Metric	\$59.95
	2559 Collet Set, ER-32, Set of 18	\$179.95
	<ul style="list-style-type: none"> • Set of 18 ER-32 collets sizes 3/32" to 3/4" • Made of high grade tool steel • Major diameter 1.30" (33 mm) • Length 1.57" (40 mm) • Range 0.08" - 0.787" (2.0 mm - 20.0 mm) <p>Set of 18 ER-32 collets. Sizes include: 3/32", 1/8", 3/16", 7/32", 1/4", 5/16", 11/32", 3/8", 13/32", 7/16", 1/2", 17/32", 9/16", 5/8", 21/32", 11/16", 23/32", and 3/4". ER-32 collets have a major diameter of 1.30" (33 mm) and a length of 1.57" (40 mm). The collets in this set have a clamping range of 0.08" - 0.787" (2.0 mm - 20 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.</p>	
	2558 Collet Set, ER-32, Set of 11	\$59.95
	4333 Collet Set, ER-32, Set of 12 Metric	\$79.95
	2557 Collet Set, ER-32, Set of 6	\$44.95
	5666 Collet Set, ER-40, Set of 24	\$199.95
	<ul style="list-style-type: none"> • Set of 24 ER-40 round collets 1/8" to 1" • Made of high grade tool steel • Major Diameter 1.62" (41.15 mm) • Length 1.81" (46 mm) • Range 0.04" - 0.629" (1.0 mm - 16.0 mm) <p>Set of 24 ER-40 collets. Sizes include: 1/8", 3/16", 7/32", 1/4", 5/16", 11/32", 3/8", 13/32", 7/16", 1/2", 17/32", 9/16", 5/8", 21/32", 11/16", 23/32", 3/4", 25/32", 13/16", 27/32", 7/8", 15/16", 31/32" and 1". ER-40 collets are 1.62" (41.15 mm) maximum diameter and 1.81" (46 mm) long. The collets in this set have a clamping range of 0.118–1.024" (3–26 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.</p>	

Collets, ER-11 Individual Sizes

- Hardened and ground to close tolerance
 - Made of high grade tool steel
 - Major diameter 0.45" (11.5 mm)
 - Length 0.71" (18.0 mm)
 - Range of ER-11 collets 1/32" to 1/4" (0.5 mm to 7.0 mm)
- ER-11 collets have a major diameter of 0.45" (11.5 mm) and a length of 0.71" (18 mm). They have a clamping range of 1/32" to 1/4" (0.5 mm to 7.0 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

4797 Collet, ER-11, 1/32"	\$12.49
4601 Collet, ER-11, 1/16"	\$12.49
4398 Collet, ER-11, 3/32"	\$12.49
4454 Collet, ER-11, 1/8"	\$12.49
4455 Collet, ER-11, 3/16"	\$12.49
4399 Collet, ER-11, 7/32"	\$12.49
4456 Collet, ER-11, 1/4"	\$12.49

Collets, ER-16 Individual Sizes

- Hardened and ground to close tolerance
 - Made of high grade tool steel
 - Major diameter 0.67" (17.0 mm)
 - Length 1.08" (27.5 mm)
 - Range of ER-16 Collets 1/32" to 3/8" (0.5 mm to 10 mm)
- ER-16 collets have a major diameter of 0.67" (17.0 mm) and a length of 1.08" (27.5 mm). They have a clamping range of 1/32" to 3/8" (0.5 mm to 10.0 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

4437 Collet Set, ER-16, Set of 3	\$39.95
4613 Collet, ER-16, 1/32"	\$12.49
4614 Collet, ER-16, 1/16"	\$12.49
4615 Collet, ER-16, 3/32"	\$12.49
4434 Collet, ER-16, 1/8"	\$12.49
4435 Collet, ER-16, 3/16"	\$12.49
4616 Collet, ER-16, 7/32"	\$12.49
4436 Collet, ER-16, 1/4"	\$12.49
4617 Collet, ER-16, 5/16"	\$12.49
4619 Collet, ER-16, 11/32"	\$12.49
4618 Collet, ER-16, 3/8"	\$12.49

Collets, ER-20 Individual Sizes

- Hardened and ground to close tolerance
 - Made of high grade tool steel
 - Major diameter 0.83" (21 mm)
 - Length 1.24" (31.5 mm)
 - Range of ER-20 collets 1/16" to 1/2" (1.0 mm to 13.0 mm)
- ER-20 collets have a major diameter of 0.83" (21 mm) and a length of 1.24" (31.5 mm). They have a clamping range of 1/16" to 1/2" (1.0 mm to 13.0 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece.*Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

4620 Collet, ER-20, 1/16"	\$12.49
4621 Collet, ER-20, 3/32"	\$12.49
2443 Collet, ER-20, 1/8"	\$13.49
4622 Collet, ER-20, 3/16"	\$12.49
4623 Collet, ER-20, 7/32"	\$12.49
2444 Collet, ER-20, 1/4"	\$12.49
4624 Collet, ER-20, 5/16"	\$12.49
4625 Collet, ER-20, 11/32"	\$12.49
2445 Collet, ER-20, 3/8"	\$12.49
4626 Collet, ER-20, 13/32"	\$12.49
4627 Collet, ER-20, 7/16"	\$12.49
4628 Collet, ER-20, 1/2"	\$12.49

**Collets, ER-25 Individual Sizes**

- Hardened and ground to close tolerance
 - Made of high grade tool steel
 - Major diameter 1.02" (26 mm)
 - Length 1.34" (34 mm)
 - Range of ER-25 collets 1/16" to 5/8" (1.0 mm to 16.0 mm)
- ER-25 collets have a major diameter of 1.02" (26 mm) and a length of 1.34" (34 mm). They have a clamping range of 1/16" to 5/8" (1.0 mm to 16.0 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece. *Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

5053 Collet, ER-25, 1/16"	\$12.95
5054 Collet, ER-25, 3/32"	\$12.95
5055 Collet, ER-25, 1/8"	\$12.95
5056 Collet, ER-25, 3/16"	\$12.95
5057 Collet, ER-25, 7/32"	\$12.95
5058 Collet, ER-25, 1/4"	\$12.95
5059 Collet, ER-25, 5/16"	\$12.95
5060 Collet, ER-25, 11/32"	\$12.95
5061 Collet, ER-25, 3/8"	\$12.95
5062 Collet, ER-25, 13/32"	\$12.95
5063 Collet, ER-25, 7/16"	\$12.95
5064 Collet, ER-25, 1/2"	\$12.95
5065 Collet, ER-25, 17/32"	\$12.95
5066 Collet, ER-25, 9/16"	\$12.95
5067 Collet, ER-25, 5/8"	\$12.95

**Collets, ER-32 Individual Sizes**

- Precision ground hardened steel
 - Made of high grade tool steel
 - Major diameter 1.30" (33 mm)
 - Length 1.57" (40 mm)
 - Range of ER-32 collets 1/16" to 13/16" (1.0 mm to 21.0 mm)
- ER-32 collets are 1.30" (33 mm) maximum diameter and 1.57" (40 mm) long. They have a clamping range of 1/16" to 13/16" (1.0 mm to 21.0 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece. *Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

4558 Collet, ER-32, 1/16"	\$13.95
4559 Collet, ER-32, 3/32"	\$13.95
4560 Collet, ER-32, 1/8"	\$13.95
4561 Collet, ER-32, 3/16"	\$13.95
4562 Collet, ER-32, 7/32"	\$13.95
4563 Collet, ER-32, 1/4"	\$13.95
4564 Collet, ER-32, 5/16"	\$13.95
4565 Collet, ER-32, 11/32"	\$13.95
4566 Collet, ER-32, 3/8"	\$13.95
4567 Collet, ER-32, 13/32"	\$13.95
4568 Collet, ER-32, 7/16"	\$13.95
4569 Collet, ER-32, 1/2"	\$13.95
4570 Collet, ER-32, 17/32"	\$13.95
4571 Collet, ER-32, 9/16"	\$13.95
4572 Collet, ER-32, 5/8"	\$13.95
4573 Collet, ER-32, 21/32"	\$13.95
4574 Collet, ER-32, 11/16"	\$13.95
4575 Collet, ER-32, 23/32"	\$13.95
4576 Collet, ER-32, 3/4"	\$13.95
4578 Collet, ER-32, 13/16"	\$13.95

**Collets, ER-40 Individual Sizes**

- Precision ground hardened steel
 - Made of high grade tool steel
 - Major Diameter 1.62" (41.15 mm)
 - Length 1.81" (46 mm)
 - Range of ER-40 collets 1/8" to 1" (3.0 mm to 26.0 mm)
- ER-40 collets are 1.62" (41.15 mm) maximum diameter and 1.81" (46 mm) long. They have a clamping range of 1/8" to 1" (3.0 mm to 26.0 mm). ER collets are made from high grade tool steel, hardened and ground to close tolerance. Kerf cuts allow the collet to expand and contract as needed within the specific clamping range to securely hold the tool or workpiece. *Collet must be assembled into a collet chuck nut before inserting into the collet chuck.

5885 Collet, ER-40, 1/8"	\$14.95
5886 Collet, ER-40, 3/16"	\$14.95
5887 Collet, ER-40, 7/32"	\$14.95
5888 Collet, ER-40, 1/4"	\$14.95
5889 Collet, ER-40, 5/16"	\$14.95
5890 Collet, ER-40, 11/32"	\$14.95
5891 Collet, ER-40, 3/8"	\$14.95
5892 Collet, ER-40, 13/32"	\$14.95
5893 Collet, ER-40, 7/16"	\$14.95
5894 Collet, ER-40, 1/2"	\$14.95
5895 Collet, ER-40, 17/32"	\$14.95
5896 Collet, ER-40, 9/16"	\$14.95
5897 Collet, ER-40, 5/8"	\$14.95
5898 Collet, ER-40, 21/32"	\$14.95
5899 Collet, ER-40, 11/16"	\$14.95
5900 Collet, ER-40, 23/32"	\$14.95
5901 Collet, ER-40, 3/4"	\$14.95
5903 Collet, ER-40, 13/16"	\$14.95
5904 Collet, ER-40, 27/32"	\$14.95
5905 Collet, ER-40, 7/8"	\$14.95
5906 Collet, ER-40, 15/16"	\$14.95
5907 Collet, ER-40, 31/32"	\$14.95
5908 Collet, ER-40, 1"	\$14.95

Collets and Accessories: Morse Taper Collets**1752 Collet Set, 2MT, Set of 7 \$69.95**

- Set of seven 2 Morse taper round collets
- 3/8"-16 internal drawbar thread
- Made of high grade tool steel
- Hardened and ground to close tolerance
- Overall length is 2.67" (68 mm)

Set of seven #2 Morse taper round collets in sizes 1/8 - 1/2" by 16ths. Made of high grade tool steel these collets have been hardened and ground to close tolerance. Set includes sizes: 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", and 1/2". Collets are made from high-grade tool steel and are precision ground and hardened. The drawbar thread is 3/8"-16 and the overall length is 2.67" (68 mm).

1745 Collet, 2MT, 1/8"	\$13.95
1746 Collet, 2MT, 3/16"	\$13.95
1747 Collet, 2MT, 1/4"	\$12.95
1748 Collet, 2MT, 5/16"	\$13.95
1749 Collet, 2MT, 3/8"	\$13.95
1750 Collet, 2MT, 7/16"	\$13.95
1751 Collet, 2MT, 1/2"	\$13.95

Collets and Accessories: Morse Taper Collets



1948 Collet Set, 3MT, Set of 11	\$104.95
<ul style="list-style-type: none">• Set of eleven #3 Morse taper round collets sizes 1/8" to 3/4" by 16ths• 3/8"-16 internal drawbar thread• Made of high grade tool steel• Hardened and ground to close tolerance• Overall length is 3.39" (86 mm) <p>Set of eleven #3 Morse taper round collets. Made of high grade tool steel these collets have been hardened and ground to close tolerance. Sizes 1/8" to 3/4" by 16ths Includes sizes: 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", and 3/4". 3 Morse taper collets fit spindles with a Morse taper. The drawbar thread is 3/8"-16 and the overall length is 3.39" (86 mm).</p>	
2023 Collet Set, 3MT, Set of 4	\$49.95
1615 Collet Set, 3MT, Set of 7	\$59.95
1605 Collet, 3MT, 1/8"	\$13.95
1606 Collet, 3MT, 3/16"	\$13.95
1607 Collet, 3MT, 1/4"	\$13.95
1858 Collet, 3MT, 5/16"	\$13.95
1608 Collet, 3MT, 3/8"	\$13.95
1859 Collet, 3MT, 7/16"	\$19.95
1609 Collet, 3MT, 1/2"	\$13.95
1860 Collet, 3MT, 9/16"	\$19.95
1610 Collet, 3MT, 5/8"	\$13.95
1861 Collet, 3MT, 11/16"	\$19.95
1611 Collet, 3MT, 3/4"	\$13.95

Collets and Accessories: R8 Collets



5915 Collet Set, R8 Metric, Set of 10	\$64.95
<ul style="list-style-type: none">• Set of ten R8 round collets in metric sizes• Hardened and ground to close tolerance• Made of high grade tool steel• 7/16" -20 drawbar thread• 0.0007" (0.018 mm) maximum runout <p>Set of ten R8 round collets to fit spindles with a R8 taper. Metric sizes included: 3, 4, 5, 6, 8, 10, 12, 14, 18, and 20 mm. Collets are made from high-grade tool steel and are precision ground and hardened. Maximum runout is 0.0007" (0.018 mm). Drawbar thread is 7/16"-20.</p>	



4860 Collet Set, R8, Set of 13, Professional Grade	\$119.95
<ul style="list-style-type: none">• Set of thirteen R8 round collets• Hardened and ground to close tolerance• Made of high grade tool steel• 7/16" -20 drawbar thread• 0.0005" (0.013 mm) maximum runout <p>Set of 13 professional grade R8 round collets to fit spindles with a R8 taper. Set includes sizes 1/8" to 7/8" by 16ths (1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", and 7/8"). These are high precision professional grade collets with a maximum runout of 0.0005" (0.013 mm). Collets are made from high-grade tool steel and are precision ground and hardened.</p>	



2872 Collet Set, R8, Set of 23	\$109.95
<ul style="list-style-type: none">• Set of 23 R8 round collets• Hardened and ground to close tolerance• Made of high grade tool steel• 7/16" -20 drawbar thread• 0.0007" (0.018 mm) maximum runout <p>Set of 23 R8 round collet to fit spindles with a R8 taper. Set includes sizes from 1/16" to 3/4" by 32nds providing maximum flexibility in tool fitting. Collets are made from high-grade tool steel and are precision ground and hardened. Maximum runout is 0.0007" (0.018 mm). Drawbar thread is 7/16"-20.</p>	
2030 Collet Set, R8, Set of 11	\$54.95
4515 Collet Set, R8, Set of 5	\$34.95
1604 Collet Set, R8, Set of 6	\$39.95
2605 Collet Set, R8, Set of 7	\$49.95



Collets, R8, Individual Sizes	
<ul style="list-style-type: none">• Hardened and ground to close tolerance• Made of high grade tool steel	
4543 Collet, R8, 1/8"	\$7.95
4310 Collet, R8, 3/16"	\$7.95
4486 Collet, R8, 1/4"	\$7.95
4554 Collet, R8, 5/16"	\$7.95
4487 Collet, R8, 3/8"	\$7.95
4555 Collet, R8, 7/16"	\$7.95
4488 Collet, R8, 1/2"	\$7.95
4556 Collet, R8, 9/16"	\$7.95
4489 Collet, R8, 5/8"	\$7.95
4557 Collet, R8, 11/16"	\$7.95
4490 Collet, R8, 3/4"	\$7.95

Collets and Accessories: Taig Collets and Collet Chucks



1915 Collet Chuck, Taig Collet, 3MT, Sherline and Taig Tooling	\$29.95
<ul style="list-style-type: none">• 3/4-16 Threaded end fits Sherline and Taig chucks and tooling• 3MT drawbar shank with 3/8"-16 drawbar thread• Fits Taig collets and collet nut <p>Note: For Sherline tooling a 1/8" thick flat washer must be used between the tool and arbor.</p>	
2663 Collet Chuck, Taig Collet, 2MT, Sherline and Taig Tooling	\$29.95



2317 Collet Set, Taig	\$49.95
<ul style="list-style-type: none">• Material can be loaded quickly• Collets are very accurate• Maximum spindle speeds can be used• Includes collet closing nut• Includes collets 1/8", 5/32", 3/16", 7/32", 1/4", 9/32", 5/16" plus one blank collet <p>This collet set is made for Taig Micro Lathes and Micro Mills. This collet set works with our 1915 arbor to make an economical small collet chuck for the mini lathe or mini mill. Collets are used to hold small diameter workpieces and small diameter end mills. This set includes the collet closing nut and 8 collets. The collets are 1/8", 5/32", 3/16", 7/32", 1/4", 9/32", 5/16" plus one blank collet. These collets normally accept material that is 0.001" inches over the collet size and 0.004" inches under the collet size. Bar stock is usually within this range.</p>	

Coolant Systems: Coolant and Lubrication Systems



3660 Coolant Hose Assembly, Dual with Magnetic Base	\$72.95
<ul style="list-style-type: none">• Great for flood coolant applications• Two 1/4" ID flexible coolant hoses with individual shut offs• On/off switchable magnetic base• 110 lbs. of magnetic pull <p>This dual hose coolant applicator assembly has two 14" hoses, each with a built in shut off valve. The unit has a magnetic base with 110 lbs. of pull and a built in on/off switch. The unit connects to pump units with a 1/4" ID hose connector. Ideal for any application where you need a reasonably priced coolant applicator to expand or replace the application unit of your existing flood system. The concave base allows the unit to be magnetically attached to non-flat surfaces as well as flat surfaces.</p>	
3952 Coolant Hose Assembly, Single with Magnetic Base	\$21.95

Coolant Systems: Coolant and Lubrication Systems

	<p>4657 Coolant Pump and Tank, Economy \$249.95</p> <ul style="list-style-type: none"> • 3 gallons (12 liters) per minute flow rate • 7 gallons (26.5 liters) capacity • Tank is 21.5" x 11.8" x 9.3" tall • Includes magnetic base and 18" modular hose • Sturdy side handles allow for ease in moving <p>This flood coolant tank and pump is good for small mills, lathes, and band saws. Power: 120V 60Hz This unit has a strong 7" drain hose and a 6' fill hose connected to the magnetic base of the coolant hose. The 18" modular coolant hose has a lever controlled on/off valve. Side handles make the system easy to move and they fold down to the sides when not in use. On/Off switch is conveniently located on the top of the unit.</p>	
	<p>3520 Coolant Pump, 1 Gallon, LittleGIANT VMC-1 \$374.95</p> <ul style="list-style-type: none"> • Includes tank, pump, nozzle, and 20 ft. tubing • Delivers 108 gph @ 1ft • Flow can be regulated without harming pump • Screen and chip collector easily removed for cleaning • 1 gallon polyethylene tank is oil-resistant <p>This LittleGIANT VMC-1 coolant pump and tank unit is great for bench top milling machines and lathes, tool grinders and drill presses. It is compact (the tank holds 1 gallon) and easy to use and clean. The flow can be regulated to any desired amount and even shut off without harmful effects on the coolant pump.</p>	
	<p>3521 Coolant Pump, 1 Gallon, LittleGIANT VMC-1 Plus 1 Gallon Coolant \$436.95</p>	
	<p>6444 Coolubricator JR Oil Mist Lubricator \$699.95</p> <ul style="list-style-type: none"> • Portable and compact • Continuous precision output • Separate air/fluid control • Economical minimum quantity lubrication (MQL) solution • Reliable pump <p>The Coolubricator JR™ is a portable minimum quantity lubrication (MQL) system that is easy to move between machines and is ideal for drill presses, lathes, saws, and open milling machines where manual control and a single nozzle are adequate. The unit can be hand carried between machines in your shop and easily installed with minimal downtime. The heavy duty magnet on the rear of the unit allows for both quick install and flexibility in locating the lubricator. This system produces a continuous output of precisely metered lubricants. Air-driven, positive-displacement pumps precisely meter each drop of lubricant at 0.03 cc/stroke. The 100-million cycle pulse generator allows for automatic, infinite repeat cycling of the metering pump. This ensures that a continuous, external film of lubricant is applied to the tool-work interface. Lets operator easily control atomization of the spray by adjusting air, pulse per minute and liquid metering. Adjusts output from 4-200 injection cycles per minute with 0.1 to 3.0 drops of lubricant per cycle. A durable, vented 16 oz. reservoir on the CNC mister holds more than 14,400 drops of lubricant. Dispenses any highly refined lubricant including Unist's high-efficiency Coolube from the oil mist lubrication system's durable, 16 oz. (0.5 L) vented reservoir. The Coolubricator JR™ combines lubricant and air in a co-axial nozzle tip. The oil mist lubrication system keeps atomization and distribution of the liquid consistent regardless of the hose length. Plastic 12 in. nozzle is coupled with 5 ft. Co-Axial hose. A heavy-duty magnetic base at the hose/nozzle connection of the oil mist lubrication system makes it easier to relocate and position the nozzle at the friction points.</p>	
		<p>4718 Fog Buster Sprayer Coolant System with Tank, 1 Outlet \$443.95</p> <ul style="list-style-type: none"> • FogBuster model 10100 with one spray outlet • 1/2 gallon clear coolant tank • Stainless steel handle, nozzle with magnetic stand, and pressure regulator • Reduces airborne pollutants in shop <p>Half-gallon models are the ideal size for many coolant and lubricant applications. Coolant level can be easily viewed through the clear reservoir. The provided stainless steel handle makes mounting or carrying this spray mist coolant system quick and easy. The hose from tank to nozzle is 5 feet long. Unlike other mist coolant systems, the Fog Buster does not atomize coolant at the nozzle tip. Coolant is carried accurately with the air stream after leaving the nozzle and will produce a small spray pattern from several inches from its target. Greater cooling and lubrication is achieved along with a reduction in coolant waste because virtually all of the coolant is being utilized on the part and tool. Fog Buster offers a wide range of coolant and air flows, will spray virtually any type of coolant or lubricant, and its unique high volume low pressure design operates on only 10 to 20 PSI. Coolant flow is easily adjusted by a precision needle valve at the sprayer head, and can be set from very small amounts to a heavy spray to suit your job application. Air flow is adjusted at the air pressure regulator, and once flows are set sprayer operation is instant with the flip of an air toggle switch conveniently located on your machine or when called for in a program. Just hook up your air compressor.</p>
		<p>4719 Lathe Mount for Fog Buster Mist Unit \$46.95</p> <p>2965 Mist Coolant System with Tank, 1 Outlet \$306.00</p> <ul style="list-style-type: none"> • Kool Mist model 100NF12 with one spray outlet • 12" Lock-Line® spray positioner • Heavy duty magnetic base • 1 gallon stainless steel coolant tank • Adjustable coolant nozzle and 4ft coolant hose <p>This spray mist unit has a 1/8" NPT thread for your compressed air supply. (You furnish the air compressor.)</p>
		<p>4278 Mist Coolant System with Tank, 1 Outlet plus Kool Mist 77 \$315.00</p>
		<p>3458 Mist Coolant System with Tank, 2 Outlets \$460.00</p>
		<p>6326 Mist Coolant Unit (just add air & coolant) \$34.95</p> <ul style="list-style-type: none"> • Long 31CM flexible nozzle hose to reach any angle • Easy to connect line via push-in connections • Durable copper knobs for flow control, knurled surfaces for easy grip • Line filter and backflow preventor • Mounting holes for a wide range of applications <p>Economy coolant spray unit for a variety of applications using water or coolants. Ideal for turning, drilling, milling, sawing or grinding. Three 5mm mounting holes in the base provide flexibility in locating the unit whose overall width is 46mm and height 40mm. The 31cm (12.2") spray hose is easily shaped to locate your spray at the precise location needed. Brass nozzle and knobs prevent rust and surfaces are knurled for easy control. Air and coolant intakes use a push-type attachment. The air intake is 8mm and the liquid intake is 4mm. The fluid hose included has a 2.5mm internal diameter, a backflow preventer and a filter. Use with standard air compressor (not included) with pressure range of 30 - 150 PSI. The system is suitable for use with any type of soluble coolant or oil (non-corrosive). Use with fluids having a viscosity at 68 cSt or less.</p>
		<p>6328 Air Line, 8mm OD, Polyurethane \$0.95</p>
		<p>6329 Connector, 8 mm OD Line, Push-to-Connect Style \$1.95</p>
		<p>2966 PORTaMIST Spray Mist Unit 12" \$155.00</p> <ul style="list-style-type: none"> • Kool Mist PORTaMIST model 60M12 • 12" Lock-Line® spray positioner • Heavy duty magnetic base • Adjustable coolant nozzle • 4ft coolant and air hoses <p>This spray mist coolant unit has a male 1/8" NPT thread for your compressed air supply. (You furnish the air compressor.) Includes a sample of Kool Mist 77.</p>
		<p>4984 PORTaMIST Spray Mist Unit 18" \$185.00</p>

Coolant Systems: Cutting Compounds

**3088 Cutting Fluid, Re-Li-On, 4 Oz. \$4.95**

- Engineered formula for cutting and tapping
- Extends tool life and controls chip welding
- Improves finishes and tolerances
- Safe and odorless
- Spray top for easy application

Re-Li-On cutting and tapping fluid is a non-ozone depleting product that is safe on aluminum and exotic alloys such as stainless steel, hastelloy, inconel and titanium. The engineered formula clings to the cutting tool and provides strong lubrication.

3120 Cutting Fluid, Re-Li-On, 16 Oz. \$10.95**6362 Cutting Oil, Viper's Venom, 12 oz. \$10.99**

- 12 oz. bottle - Vipers Venom Cutting Oil
- Superior high-sulfur cutting oil
- For cutting all ferrous metals
- Ideal for tapping, threading, reaming and lathe work
- Will not cause sticking or gumming

This high sulfur content cutting oil was recommended to us by the guys at the Arthur R. Warner Co. They know high speed steel and they use this stuff in their shop. It's great for threading, tapping, turning and milling. Viper's Venom is a superior high-sulfur cutting oil that is specifically formulated for cutting all ferrous metals. Ideal for tapping, threading, reaming, and lathe work. Works extremely well when threading or reaming stainless steel rifle barrels due to its extreme lubricity and cooling properties. Viper's Venom is a stable product. It contains saponifiables to promote adhesion to the work and tools, and to provide oiliness. It is fortified with sulfur and chlorine to reduce metal pick-up, galling, and welding. It has good cooling ability. It will cause only slight staining of ferrous metals. It will not cause sticking or gumming. It has good resistance to rancidity.

5848 Cutting Oil, Viper's Venom, 32 oz. \$24.99

Coolant Systems: Lubricants

**2236 Coolant, Kool Mist 77, Pint \$9.95**

- Safe for people
- Safe for materials
- Safe for the environment
- Safe for machines

Kool Mist 77 coolant is highly recommended for mist cooling any metal or alloy where tougher machine conditions require greater lubricity. It is particularly useful where the material is very abrasive. Improves metal cutting, milling, turning, drilling, grinding, and sawing. You can also use Kool Mist 77 as a flood coolant. Kool Mist 77 is 100% synthetic and biodegradable, and meets the requirements of OSHA & EPA. This coolant will not cause rancidity or buildup and creates no rust or corrosion when diluted with clean water. Workpieces and machine parts remain clean and unstained. Mix this Kool Mist coolant concentrate with 32 parts water before use. Makes over 4 gallons of coolant.

2235 Coolant, Kool Mist 77, Gallon \$69.00**6445 Coolube 2210 Lubricant, 1 Gallon \$89.95**

- Improves performance and increases life of cutting tools, taps, and saw blades
- Increased chip value & production speed
- Eliminates coolant treatment & disposal
- No fluid oxidation (stickiness)
- USDA certified biobased - 100% natural

Coolube® 2210 is a natural lubricant that improves performance & increases life of cutting tools, taps, & saw blades. This advanced metal cutting lubricant is formulated as a metal cutting oil as well and as a lubricant for metals, wood, rubber, and most plastics. It is especially effective on aluminum and other non-ferrous metals. The lubricant is 100% natural, non-toxic, non-staining, and will not oxidize (become sticky or leave a residue). Coolube® 2210 cutting fluid does not contain any ingredients currently recognized as hazardous by OSHA, IARC or NTP. Coolube® 2210 machining oil will never cause dermatitis and is formulated from cosmetic grade raw materials, which makes it entirely worker safe as well as safe for the environment. See Chris' Tips for the Safety Data Sheet to learn more about the products properties and use.

**6476 LPS 1 Greaseless Lubricant \$21.95**

- Creates a dry lubricating film
- Resists dust, dirt build-up, and oil
- Removes carbon build-up and displaces moisture
- Loosens rusted or frozen parts and fasteners
- Safe on paint and most plastics

Thin, greaseless lubricating film that repels dirt and dust. LPS 1 provides short term protection from corrosion and external elements and can be used to restore water damaged electrical equipment. LPS 1® has numerous applications in electronics and around the shop or home as a lubricant or to loosen rusted or stuck fixtures and parts.

**2908 LPS 2 Industrial-Strength Lubricant \$21.95**

- Strong multi-purpose lubricant and penetrant
- Creates light oily protective film that is non-drying
- Loosens rust and frozen components and is an excellent protection for metal parts
- Does not contain silicone
- Safe on paints, plastics, and rubbers

The strong, multi-purpose lubricant and penetrant with corrosion protection. Leaves an oily film that is non-drying and light. Reduces wear from friction.

**6477 LPS 3 Premier Rust Inhibitor \$28.95**

- Prevents rust and corrosion
- Safe on all metals, rubber, plastics, and paint
- Provides up to two years of protection indoors
- Penetrates to displace moisture
- Inhibits corrosion of aluminum

LPS 3® premier rust inhibitor is a long-term rust inhibitor that protects even in harsh conditions. It lays down a waxy film that prevents rust and corrosion and can protect items for up to two years in indoor conditions. This product is safe on all metals but can also be used on rubber, plastics, and paints.

**3984 Lubriplate 630-AA Lithium Grease \$17.95**

- Lithium-based grease for general purpose lubrication
- High anti-wear for extra lubricity
- Water resistant
- Wide operating temperature range
- 630-AA is an NLGI No. 1 lubricant

This is the grease we recommend for small machine tools. It is great for many other applications as well.

**3195 M1 Lubricant, 12 oz. Aerosol Can, Starrett \$13.49**

- Starrett M1 all-purpose lubricant in 12 oz. Aerosol can
- Must be shipped by ground; not available outside the continental US

M1® is the "modern one" - the superior alternative. This all-purpose lubricant dries quickly and will not attract dirt or other contaminants as other leading lubricants do. Starrett lubricant simultaneously dries as it protects, avoiding dirt and grime. Dries to leave a film that protects and lubricates. Lubricates without silicone. Penetrates to quickly to free frozen nuts, bolts and metal parts. Prevents rust and corrosion damage by providing a molecular shield that locks to the metal. Non-soluble in water so it displaces moisture to lift it away from the surface to be protected. Nonconductive, preventing short circuits. Applications for industry are nearly endless. Protect working surfaces of machinery; use in dip tanks to protect production parts in process, or apply on tools when stored. Starrett M1 lubricant is also ideal in highly corrosive situations that destroy metal equipment used in marine environments.

3179 M1 Lubricant, Case of 12 Aerosol Cans, Starrett \$159.95**1825 Tool and Instrument Oil, Starrett \$14.95**

- Starrett catalog number 1620

This oil is the same extra-fine lubricant made to Starrett specifications and used in the Starrett factory to lubricate and protect their precision measuring tools and instruments. It is also perfect for all mechanics, homeowners, hobbyists, and sportsmen who require the finest all-purpose oil. Special high-refining makes Starrett Tool and Instrument Oil colorless, ensures thorough lubrication of close-fitting parts at high temperatures and below zero, and provides a strong lasting film over all areas requiring protection against rust. This oil has not been adulterated by additives for color and odor.



6385 Way Oil, Mobil Vactra Oil No. 2, Pint \$12.95

- ISO viscosity 68
- One Pint
- Recommended for horizontal slideways on small to medium size machine tools
- Rust Protection, ASTM D 665B Pass

When you need oil for your machine, many types of oil will work - even motor oil. However, the best oil to use is oil designed specifically for lubricating machine ways. This type of oil has an additive that helps the oil stick to the surface. We suggest and use 4120 Mobil Vactra Oil No. 2 Way Oil with ISO viscosity 68. Mobil Vactra Oil Numbered Series products are recommended for the lubrication of machine tool slideway systems. They are designed for use with combinations of cast iron, steel and non-metallic way materials. Mobil machine oil may be applied by hand, forced-feed lubricator or in flood application by circulation system. Mobil Vactra Oil No. 2 is recommended for horizontal slideways on small to medium size machine tools. It is also suitable for circulating application in large machines and as a moderate duty hydraulic fluid. Mobil machine oil can be used for lubrication of ball screws, linear guides, headstocks, translating screws.

Cutting Tools: Boring Bars



1700 Boring Bar Holder, 1/2" \$11.16

1/2" Boring bar holder. This simple mini lathe boring bar holder fits in the standard 4-way tool post. It holds boring bars with 1/2" shanks.



1246 Boring Bar Set, 3/8" Shank, Carbide \$15.95

- Set of nine boring bars - 3 lengths for each min. bore size
- Shank diameter 3/8"
- Hardened and ground to +0" - .0005"
- Shanks are made of special heat treated alloy steel
- Designed so the same bar can bore flat

This carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 3/8", and 7/16". The bore depth ranges from 3/4" to 2-1/4". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. The holder may vary from that shown in the photo.

1247 Boring Bar Set, 1/2" Shank, Carbide \$16.95

3768 Boring Bar Set, 1/2" Shank, Carbide with Holder for Mini Lathe \$23.95

2682 Boring Bar Set, 1/2" Shank, HSS \$99.95

2683 Boring Bar Set, 3/8" Shank, HSS \$79.95



1779 Boring Bar, 3/8" Indexable \$29.95

- Profiling bars for semi-finishing and finishing operations
- Designed for CCMT 80° inserts (one insert included)
- 7° Relief angle
- Negative 5° Lead angle for boring
- 3° Side & end cutting edge angle

This 3/8" diameter indexable boring bar uses CCMT inserts.

Minimum bore diameter is 0.50"

Use CCMT 21.51 or CCMT 21.52 inserts with this boring bar set.

1780 Boring Bar, 1/2" Indexable \$32.95

3719 Boring Bar, 5/16" Indexable \$29.95

5436 Boring Bar, 5/16" Indexable, S05-SCLCR06, Reduced Neck \$31.95



4788 Boring Bar, 3/8" Indexable, 80 Deg HSS Diamond Inserts, A R Warner Kit #13 \$125.00

- 3/8" diameter, 5" long boring bar
- 3 CEMW-21.5.5 high speed steel inserts
- 1 extra Torx screw
- 1 wrench

This Arthur R. Warner Co. precision boring bar uses high speed steel inserts. Combine the advantages of high speed steel cutting tools with the convenience of indexable tooling. The minimum boring diameter is 0.330". The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.



1720 Boring Bar, 3/8" Indexable, HSS Triangle Inserts, A R Warner Kit #12 \$125.00

- 3/8" diameter, 5" long boring bar with TPMW-1.81.5.5 insert
- 2 extra TPMW-1.81.5.5 high speed steel inserts
- 1 extra Torx screw
- 1 wrench

This Arthur R. Warner Co. precision boring bar uses high speed steel inserts. Combine the advantages of high speed steel cutting tools with the convenience of indexable tooling. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.

1721 Boring Bar, 1/2" Indexable, HSS Triangle Inserts, A R Warner Kit #14 \$133.00



5605 Boring Bar, 3/8" Indexable, S06H-SCLCR-2, Tormach \$44.95

- Designation: S06H-SCLCR-2
- Steel shank 3/8" x 4"
- Designed for CCMT and CCGT inserts
- Approach 95°, 7° relief angle
- Insert Shape: 80° Rhombus (C)

Right hand Boring Bar. Includes wrenches and (1) insert.

5608 Boring Bar, 1/2" Indexable, S08M-SCLCL-2, Tormach \$49.95

5607 Boring Bar, 1/2" Indexable, S08M-SCLCR-2, Tormach \$49.95

5606 Boring Bar, 3/8" Indexable, S06H-SCLCL-2, Tormach \$44.95



5435 Boring Bars, Indexable, 80 Deg Diamond Inserts, 3 Piece \$114.95

- 3 piece set, 5/16", 3/8" and 1/2" diameter
- Uses CCMT 80 degree diamond inserts
- 7 degree relief angle, negative 5 degree lead angle for boring
- 3 degree side and end cutting edge angle
- Torx wrench and CCMT inserts included

Boring bars for semi-finishing and finishing operations. The 5/16" diameter bar is 4" long, designation S05H-SCLCR2. The 3/8" diameter bar is 6" long, designation S06M-SCLCR2. The 1/2" diameter bar is 7.75" long, designation S08R-SCLCR2.



3662 Boring Head Set, R8 \$89.95

- Includes boring head, R8 shank, and 9-piece boring bar set
- 2" diameter boring head holds 1/2" shank boring bars
- The boring head offsets up to 5/8", dial is graduated in 0.001"
- Minimum bore diameter is 5/16"
- Maximum bore depth is 3"

The carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 7/16", and 9/16". The bore depth ranges from 3/4" to 3". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter.

3830 Boring Head Set, 3MT \$99.95

Cutting Tools: Boring Bars



5403 Boring Head Set, R8 Professional Grade \$224.95

- Offset: 5/8", Cross hole: 1/2"
- Shank thread: 7/16"-20 UNC
- Min/Max boring diameter: 0.394" / 5.906"
- Max boring depth: 1.970"

Rugged design allows excellent rigidity for chatter-free boring. Head features a threaded back for multiple shanks exchangeable. Set complet with boring head, boring shank, carbide tipped boring bars & L-shape Hex Wrenches. Dial on head with 0.001" graduation for accurate hole sizing. Fitted durable carrying case included.

5404 Boring Head Set, 2MT Professional Grade \$209.95



6114 Boring Head Set, R8, Indexable with 4 Boring Bars \$219.95

- Includes boring head, R8 shank, and 4-piece indexable boring bar set
- The boring head offsets up to 5/8", dial is graduated in 0.001"
- Minimum bore diameter is 7/16"; Maximum boring diameter is 5.906"
- Maximum boring depth is 2.5"

The included indexable boring bars come with TCMT 21.5 C6 carbide inserts for steel and alloy. The indexable boring bar set includes 4 different length boring bars each with two requiring a 7/16" minimum bore and two requiring a 1/2" minimum bore. The bore depth ranges from 1-1/4" to 2.5". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. The included indexable boring bars come with TCMT 21.5 C6 carbide inserts for steel and alloy. 1 DIV = 0.001 which means when turning the dial by 1 division/graduation, the boring head's travel is 0.001" in radius movement and 0.002" in diameter movement. The set also comes with torx & l-shape hex wrenches and a fitted carrying case.

Cutting Tools: Broaches



5400 Keyway Broach Set, 9 Piece \$149.95

- 3 Broaches: 1/16" - A, 3/32" - A & 1/8" - A
- 5 Collared Bushings; 1 Shim
- Heavy duty HSS
- 15 Keyway combinations
- Provides great versatility

The easiest way to cut a keyway is with a broach. This keyway broach set kit includes 9 pieces for 15 combinations. The broach cutting tools are made of heavy duty high speed steel. Broach style: A Keyway Size: 1/16" - Collared bushing 1/4", 5/16" Keyway Size: 3/32" - Collared bushing 3/8", 7/16" Keyway Size: 1/8" - Collared bushing 1/2" The broaches are just over 5" (130 mm) long.

Cutting Tools: Counterbores



5193 Counterbore Set, 3 Flute HSS, Set of 7 \$74.95

- Sizes #6, #8, #10, 1/4", 5/16", 3/8", and 1/2"
- Continuous pilot counterbores
- Pilot extends the full length of the flute
- Made of High Speed Steel

Continuous pilot counterbores cut rapidly, smoothly, and accurately, producing long spiraling chips rather than small metal particles. The pilot extends the full length of the flute portion of the tool. As cutter flutes are ground back due to wear, a new section of pilot becomes exposed. The pilot head may be cut off to any desired length when repeated sharpening makes it too long for practical use. Continuous pilot counterbores have a life many times that of the conventional type counterbore.



5389 Counterbore Set, Interchangeable Pilot, HSS, 21 Piece \$99.95

- 6 counterbores
- 14 pilots
- Straight shanks
- 1 holder: 3/8" shank
- High speed steel

21 Piece interchangeable pilot counterbore set used in spot facing and counterboring operations. Kit includes: 1 holder with 3/8" shank 6 counterbores, sizes: 5/16, 3/8, 7/16, 1/2, 9/16, 5/8" 14 Pilots: 5/32" Shank: 0.187, 0.204, 0.213, 0.229, 1/4, 17/64, 9/32, 5/16, 21/64, 11/32, 3/8, 25/64, 13/32 & 7/16"

Cutting Tools: Countersinks



4540 Countersink Set, Single Flute 82 Degree, Set of 4 \$32.95

- Single flute countersinks
 - High speed steel
 - For steel, brass, and aluminum
 - 82 degree point angle
 - 1/4", 3/8", 1/2", and 3/4" diameter countersinks
- Use 82 degree countersinks for deburring and for flat head screws.

4539 Countersink Set, Single Flute 82 Degree, Set of 3 \$18.95

4535 Countersink, 82 Degree, 1/4" Single Flute \$3.95

4536 Countersink, 82 Degree, 3/8" Single Flute \$6.95

4537 Countersink, 82 Degree, 1/2" Single Flute \$9.95

4538 Countersink, 82 Degree, 3/4" Single Flute \$14.95



4542 Countersink Set, Zero-Flute 82 Degree, Set of 5 \$62.95

- High speed steel pilotless countersinks and deburring tools
 - Cam relieved for chatter free cutting
 - For mild steel, brass, aluminum, and plastics
 - 82 degree point angle
 - Includes sizes 0 through 4
- Use 82 degree countersinks for deburring and for flat head screws. These countersinks can be resharpened with a small mounted grinding wheel in the hole. Sizes 0, 1, and 2 have a 1/4" diameter shank. Sizes 3 and 4 have a 1/2" diameter shank.

Cutting Tools: Cut-Off Tools





5108 Cut-Off Blade, 1/32" x 7/32" x 3", M2 HSS \$20.95

- M2 High Speed Steel
 - Width: 1/32" (0.032"), Height: 7/32" (0.218"), Length: 3.0"
 - Used on 5106, 5107, and 5130 grooving & cut-off tools
- 1/32" (0.032") x 7/32" (0.218") x 3" M2 HSS cut-off blade. This is a premium American-made M2 high speed steel cut-off blade made in the USA by Arthur R. Warner Co. This is a replacement blade for LittleMachineShop.com grooving & cut-off tools parts 5106, 5107, and 5130. Our Lathe Cut-Off Blade is made with M2 high speed steel, ensuring a long-lasting and reliable performance. It measures 1/32" x 7/32" x 3" and is perfect for all your lathe cutting needs. The M2 high speed steel provides excellent wear resistance. Whether you're a professional machinist or a DIY enthusiast, you can trust in the quality of our Lathe Cut-Off Blade for all your machining tasks. M2 high speed steel is a popular choice for cutting tools due to its ability to maintain a sharp edge at high temperatures and its resistance to wear and deformation. It is made by adding molybdenum and tungsten to a basic high carbon steel alloy, resulting in a tool material that is tough and durable. Our Lathe Cut-Off Blade is made with this top-quality material, ensuring that it can handle even the most demanding machining tasks. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.


5109 Cut-Off Blade, 1/16" x 7/32" x 3", M2 HSS \$20.95


Cutting Tools: Cut-Off Tools


	<p>3415 Cut-Off Blade, P1 Carbide Tipped \$96.95</p> <ul style="list-style-type: none"> This blade is size P1 Two micro grain carbide tips brazed on M2 High speed steel Width: 1/16", Height: 1/2", Length: 4-1/2" <p>Our Lathe Cut-Off Blade is made with M2 high speed steel, with two micro-grain carbide tips brazed on, ensuring a long-lasting and reliable performance. It measures 1/16" x 1/2" x 4-1/2" and is perfect for all your lathe cutting needs. Its size P1 makes it ideal for precise cuts. These blades are considered T-Shaped and provide great side clearance while the M2 high speed steel provides excellent wear resistance. Whether you're a professional machinist or a DIY enthusiast, you can trust in the quality of our Lathe Cut-Off Blade for all your machining tasks. M2 high speed steel is a popular choice for cutting tools due to its ability to maintain a sharp edge at high temperatures and its resistance to wear and deformation. It is made by adding molybdenum and tungsten to a basic high carbon steel alloy, resulting in a tool material that is tough and durable. Our Lathe Cut-Off Blade is made with this top-quality material, ensuring that it can handle even the most demanding machining tasks.</p>
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	<p>4993 Cut-Off Blade, P2 Indexable \$49.95</p> <ul style="list-style-type: none"> This blade is size P2 Fits OXA and AXA cut-off holders Uses GTN-2, GTL-2 or GTR-2 inserts Includes one GTN-2 insert <p>0.072" x 1/2" x 4-11/32" M2 HSS cut-off blade. GTN-2, GTL-2 or GTR-2 inserts have a 2mm (0.078") cutting width.</p>
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Cut-Off Blades, High Speed Steel

	<ul style="list-style-type: none"> 1/2" x 4-1/2" M2 HSS cut-off blades These T-shape parting blades provide great side clearance P1N blades are 0.040" wide P1 Blades are 1/16" (0.063") wide P1X blades are 5/64" (0.078") wide <p>We carry both imported M2 blades and premium American-made M2 high speed steel cut-off blades from the Arthur R. Warner Co.</p> <p>1929 Cut-Off Blade, P1 \$8.95</p> <p>1728 Cut-Off Blade, P1, M2 HSS \$28.95</p> <p>1930 Cut-Off Blade, P1N \$8.95</p> <p>1729 Cut-Off Blade, P1N, M2 HSS \$28.95</p> <p>1552 Cut-Off Blade, P1X \$8.95</p>
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	<p>5916 Cut-Off Tool Holder, 3/8" Indexable with GTN-2 Inserts \$119.95</p> <ul style="list-style-type: none"> 3/8" Indexable GTN-2 Cut-Off Tool Holder Includes: tool holder, cut-off blade, 10 inserts, 2 allen wrenches Tool holder is a SLTBN0375-2 Uses GTN-2 Inserts Cut-off blade NCIH 19-2 <p>3/8" Indexable GTN-2 Cut-Off Tool Holder includes a SLTBN0375-2 tool holder, NCIH 19-2 cut-off blade, 10 GTN-2 inserts and 2 allen wrenches. Tool holder dimensions (see photo) A1 is 0.472" A is 0.984" H2 is 1.161" H4 is 0.435" M is 0.118" C is 2.2"</p>
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	<p>5431 Cut-Off Tool Holder, 3/8" Shank, Holds GTN-2, GTL-2 and GTR-2 Inserts \$32.95</p> <ul style="list-style-type: none"> Holder style 9.5-2 Uses GTN-2, GTL-2 or GTR-2 inserts 3/8" x 3/8" shank size 0.087" and 0.094" insert width 1.10" maximum work diameter <p>SGTHR9.5-2 cut-off tool holder style 9.5-2 has a 3/8" x 3/8" shank and holds inserts that are 0.087" and 0.094" in width. Self-gripping T-Cut style offers rigidity, stability and high reliability for superior straightness of cut. Maximum work diameter 1.10"</p>
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	<p>3572 Grooving & Cut-Off Tool, 3/8" Indexable HSS Inserts, A R Warner Kit #21 \$151.00</p> <ul style="list-style-type: none"> For external grooving and cut-off operations Includes two 1/16" (.062") groover T-15 high speed steel inserts Includes two 1/32" (.031") groover T-15 high speed steel inserts Includes one 1/64" (.016") groover T-15 high speed steel insert This lathe grooving tool includes two IS 3007 screws and one T-9 wrench <p>This Arthur R. Warner Co. indexable cut-off and grooving tool has a 0.375" shank and is 4.5" long. The maximum cutting depth of the groover inserts is approximately 0.25". The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p> <p>4819 Grooving & Cut-Off Tool, 1/2" Indexable HSS Inserts, A R Warner Kit #24 \$213.50</p> <p>3579 Screw, Insert Retaining, IS 3007 \$5.95</p>
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	<p>5107 Grooving & Cut-Off Tool, 3/8" Shank, HSS Blade, A R Warner Kit #28 \$111.00</p> <ul style="list-style-type: none"> For external grooving and cut-off operations Includes one 3/8" shank holder 3" overall length Includes one 0.062" cut-off blade T-15 high speed steel Blade is 7/32" (0.218") tall and 3" long Includes one 7/64" Allen wrench <p>3/8" shank high speed steel grooving and cut-off tool for external grooving and cut-off operations. Includes one 3/8" shank holder which is 3 inches in length. Also includes one 1/16" thick cut-off blade made of T-15 high speed steel. The blade is 7/16" (0.218") tall and 3" long. Made in the US by the Arthur R. Warner Co. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p> <p>5130 Grooving & Cut-Off Tool, 1/2" Shank, HSS Blade, A R Warner Kit #29 \$126.50</p> <p>5106 Grooving & Cut-Off Tool, 5/16" Shank, HSS Blade, A R Warner Kit #27 \$107.50</p>
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Cutting Tools: Drill Sets

	<p>3418 Drill Set, 115 Piece Jobber Length Cobalt Steel \$599.95</p> <ul style="list-style-type: none"> Made in USA Bronze color finish 135° split point <p>115 Piece cobalt steel drill set. Set includes 1/16" - 1/2" by 64ths, A - Z, and No. 1 - 60. Cobalt drills display higher red hardness and are especially effective in drilling hard or abrasive materials. These are jobbers length drills with straight shanks. Jobbers length drills are normal length drills. Includes a metal index for storing the drills.</p>
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	<p>2826 Drill Set, 115 Piece Jobber Length HSS \$209.95</p> <ul style="list-style-type: none"> 118° Point Surface Treated Black Finish Jobber Length Straight Shank High Speed Steel <p>115 Piece high speed steel drill set. Set includes 1/16" - 1/2" by 64ths, A - Z, and No. 1 - 60. These are jobber length drills with straight shanks. Jobber length drills are normal length drills. Includes a metal index for storing the drills.</p> <p>3043 Drill Set, #1-60 Jobber Length HSS \$49.95</p> <p>3977 Drill Set, #61-80 Jobber Length HSS \$17.95</p> <p>2828 Drill Set, 29 Piece Jobber Length HSS \$46.95</p> <p>3044 Drill Set, A-Z Jobber Length HSS \$54.95</p>
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Cutting Tools: Drill Sets



2827 Drill Set, 115 Piece Screw Machine Length HSS \$389.95

- Made in USA
- High speed steel
- Heavy duty 135° split point
- Machine length

115 Piece high speed steel machine screw set. Screw Machine Drill Bit Set includes 1/16" - 1/2" by 64ths, A - Z, and No. 1 - 60. These are screw machine length drills with straight shanks. Screw machine length drills are 5/8 as long as normal jobber-length drills. These shorter drill bits are useful on mini lathes and mini mills where there isn't much distance for tools. Includes a Huot metal index for storing the drills.

4150 Drill Set, #1-60 Screw Machine Length HSS \$109.95

2829 Drill Set, 29 Piece Jobber Length HSS \$129.95

2830 Drill Set, 29 Piece Screw Machine Length HSS \$119.95



1109 Drill Set, 19 Piece Metric Jobber Length Cobalt Steel \$41.95

- 19 Piece cobalt metric drills
- Sizes 1 mm to 10 mm
- Ground from solid blanks
- 135 Degree split point
- Set packaged in steel case

19 Piece metric drill set in sizes from 1mm to 10mm. Set includes one each of: 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5, & 10 mm. Drills are cobalt and are useful for drilling tough high tensile strength materials including stainless and titanium. 135 degree split point provides self-centering properties and secure positioning on work surface and increases abrasion resistance.



2831 Drill Set, 19 Piece Metric Jobber Length HSS \$84.95

- Made in USA
- Bright finish
- 118° point
- Jobber length
- High speed steel

19 Piece metric high speed steel drill set. Set includes 1.0 mm - 10.0 mm by 0.5 mm. These are jobbers length drills with straight shanks. Jobbers length drills are normal length drills. Includes a Huot metal index for storing the drills.



4130 Tap & Drill Combo Set, 18 Piece HSS \$64.95

- High speed steel taps and drill bits
- Drill bits are matched with taps for quick use
- Includes 6-32, 8-32, 10-24, 10-32, 1/4"-20, 5/16"-18, 3/8"-16, 7/16"-14, and 1/2"-13 HSS taps
- Includes #36, #29, #25, #21, #7, F, 5/16", U, and 27/64" HSS drill bits

This set makes tapping common thread sizes a breeze. No need to get out your reading glasses to check those pesky drill charts any more. With this kit you'll be able to grab the correct drill bit and tap and go to work immediately.

5837 Tap & Drill Combo Set, 18 Pieces HSS, Metric \$54.95

Cutting Tools: Drills



4859 Center Drills, Cobalt, Set of 5 (Numbers 1-5) \$16.95

- Combined drill and countersink
- Sizes 1, 2, 3, 4 & 5
- M42 (8% cobalt) high speed steel
- 60° included angle
- Right hand cutting direction

This set includes five different sizes of combined drills and countersinks, commonly called center drills. They are used to produce a center hole on a workpiece for turning between centers. Center drills are also used to start drilled holes. Because they are very stiff they don't have a tendency to wander. The set is high speed steel and includes sizes 1, 2, 3, 4, and 5. These are 60 degree center drills with a right hand cutting direction. Each center drill is made of ground high speed M42 cobalt steel for good wear resistance.

4864 Center Drill, Number 1, Cobalt \$3.95

4865 Center Drill, Number 2, Cobalt \$3.95

4866 Center Drill, Number 3, Cobalt \$4.95

4867 Center Drill, Number 4, Cobalt \$5.95

4868 Center Drill, Number 5, Cobalt \$9.95



1230 Center Drills, HSS, Set of 5 (Numbers 1-5) \$8.95

- Combined drill and countersink
- Sizes 1, 2, 3, 4 & 5
- High speed steel
- 60° included angle
- Right hand cutting direction

This set includes five different sizes of combined drills and countersinks, commonly called center drills. They are used to produce a center hole on a workpiece for turning between centers. Center drills are also used to start drilled holes. Because they are very stiff they don't have a tendency to wander. The set is high speed steel and includes sizes 1, 2, 3, 4, and 5. These are 60 degree center drills with a right hand cutting direction. Each center drill countersink is made of ground high speed steel for good wear resistance with a hardness rating of Rc 58 - 60.

2990 Center Drills, HSS, Set of 4 (Numbers 1-4) \$5.95

2985 Center Drill, Number 1, HSS \$1.25

2986 Center Drill, Number 2, HSS \$1.25

2987 Center Drill, Number 3, HSS \$1.95

2988 Center Drill, Number 4, HSS \$1.95

2989 Center Drill, Number 5, HSS \$3.95



Drills, Reduced Shank (S&D), HSS, Individual Sizes

- Reduced shank (Silver & Deming) drills
- High Speed Steel, black oxide finish
- 6" overall length
- 1/2" straight shank
- 118 degree drill point

Reduced shank drills, also called Silver & Deming drills, have a reduced straight shank that is smaller than the diameter of the cutting bit. The smaller shank allows for the use of a 1/2" drill chuck while cutting larger holes. These drills are 6" in length and have a 1/2" shank and are made of high speed steel (HSS). The cutting tip is 118 degrees and the drill has a black oxide coating.

3201 Drill, 17/32", Reduced Shank (S&D), HSS \$6.95

3202 Drill, 9/16", Reduced Shank (S&D), HSS \$7.49

3203 Drill, 5/8", Reduced Shank (S&D), HSS \$6.95

3204 Drill, 11/16", Reduced Shank (S&D), HSS \$8.95

3205 Drill, 3/4", Reduced Shank (S&D), HSS \$9.95

3206 Drill, 13/16", Reduced Shank (S&D), HSS \$11.95

3207 Drill, 7/8", Reduced Shank (S&D), HSS \$15.95

3208 Drill, 15/16", Reduced Shank (S&D), HSS \$18.95

3209 Drill, 1", Reduced Shank (S&D), HSS \$18.95

Cutting Tools: End Mills

Corner Rounding End Mills, HSS, Individual Sizes



- Formed Radius Cutters with right hand cut
- Resharpen without changing form
- Straight flutes
- Weldon Shank

Intended for use in rounding off sharp corners. Form-relieved type corner rounding end mills may be sharpened many times without changing the form of the radius. Non-center, right hand cutting with straight flutes and a weldon shank.

5137 Corner Rounding End Mill, 1/16", HSS	\$11.95
5138 Corner Rounding End Mill, 1/8", HSS	\$15.95
5139 Corner Rounding End Mill, 1/4", HSS	\$20.95

Drill-Mills, 90 Degree, 2-Flute, Cobalt, Individual Sizes



- 90 Degree angle
- Cobalt steel
- For spotting, chamfering, grooving
- For aluminum

Drill-mills work best on aluminum.

They can be used for spotting holes instead of using a center drill; and are great for chamfering edges.

Use a drill-mill to make a 90 degree angle groove.

5359 Drill-Mill, 90 Degree, 1/4" 2 Flute, Cobalt	\$54.95
5360 Drill-Mill, 90 Degree, 3/8" 2 Flute, Cobalt	\$25.95
5361 Drill-Mill, 90 Degree, 1/2" 2 Flute, Cobalt	\$36.95

1245 End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS	\$59.95
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- 10 piece TiN coated HSS end mill set
 - Includes both 2 flute and 4 flute end mills
 - Center cutting end mills
 - Includes 1/4", 3/8", 1/2", 5/8", and 3/4" end mills
- This 10 piece TiN coated HSS end mill set includes both 2 flute and 4 flute end mills. The 1/4" and 3/8" end mills have a 3/8" shank. The 1/2" end mills have a 1/2" shank. The 5/8" end mills have a 5/8" shank. The 3/4" end mills have a 3/4" shank. The set comes in a fitted case.

1244 End Mill Set, 20 pieces 2 & 4 Flute, TiN coated HSS	\$94.95
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- 20 piece TiN coated HSS end mill set
 - Includes both 2 flute and 4 flute end mills
 - Center cutting end mills
 - 3/16" to 3/4" by 16ths
- The LittleMachineShop 1244 20 piece TiN coated HSS end mill set includes both 2 & 4 flute end mills. The 3/16" through 7/16" end mills have a 3/8" shank. The 1/2" and 9/16" end mills have a 1/2" shank. The 5/8" and 11/16" end mills have a 5/8" shank. The 3/4" end mill has a 3/4" shank. The HSS end mill set comes in a fitted case.

4888 End Mill Set, 6 Piece 2 Flute, Cobalt	\$59.95
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- 6 piece M42 8% cobalt end mill set
 - 2 flute end mills
 - Center cutting end mills
 - Includes 1/8", 3/16", 1/4", 5/16", 3/8", 1/2" end mills
- The smaller end mills have 3/8" shanks, the 1/2" end mill has a 1/2" shank. The set comes in a wood stand.

4887 End Mill Set, 6 Piece 4 Flute, Cobalt	\$74.95
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1242 End Mill Set, 6 Piece 2 Flute, HSS	\$26.95
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- 6 piece HSS end mill set
 - 2 flute end mills
 - Center cutting end mills
 - Includes 1/8", 3/16", 1/4", 5/16", 3/8", 1/2" end mills
 - All end mills have 3/8" shank.
- 6 Piece 2 flute high speed steel end mill set (3/8" shank, center cut, high speed steel and single ended.) The set comes with a wooden stand. Sizes: 1/8", 3/16", 1/4", 5/16", 3/8", and 1/2".

2902 End Mill Set, 6 Piece 2 Flute Ball, HSS	\$64.95
2903 End Mill Set, 6 Piece 4 Flute Ball, HSS	\$71.95
1243 End Mill Set, 6 Piece 4 Flute, HSS	\$27.95
6488 End Mill Set, 6 Piece 4 Flute, HSS, Metric	\$69.95



6487 End Mill Set, 6 Piece 2 Flute, HSS, Metric	\$69.95
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- 6 piece HSS end mill set
 - 2 flute end mills
 - Center cutting end mills
 - Includes 3mm, 5mm, 6mm, 8mm, 10mm, 12mm end mills
 - All end mills have 3/8" shank.
- 6 Piece 2 flute high speed steel end mill set (3/8" shank, center cut, high speed steel and single ended.) The set comes with a wooden stand. Sizes: 3mm, 5mm, 6mm, 8mm, 10mm, 12mm



2548 End Mill Set, Miniature, 10 pieces 2 & 4 Flute, HSS	\$79.95
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- 10 piece HSS miniature end mill set
 - Includes both 2 flute end mills and 4 flute end mills
 - Double ended, center cutting end mills
 - Includes 1/16", 3/32", 1/8", 5/32", and 3/16" end mills
 - All end mills have 3/16" shank
- The set comes in a wood stand.



End Mills, 2 Flute Ball, M42 Cobalt, Individual Sizes

- Single ball end, 2 flute
- M42 (8%) cobalt

5415 End Mill, 1/8" 2 Flute Ball End, M42 Cobalt	\$19.95
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5416 End Mill, 3/16" 2 Flute Ball End, M42 Cobalt	\$19.95
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5417 End Mill, 1/4" 2 Flute Ball End, M42 Cobalt	\$19.95
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5418 End Mill, 3/8" 2 Flute Ball End, M42 Cobalt	\$19.95
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5419 End Mill, 1/2" 2 Flute Ball End, M42 Cobalt	\$28.95
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End Mills, 2 Flute, HSS, Individual Sizes



- HSS 2 flute end mills
- Center cutting
- Single End
- Weldon Shank

Single end 2 flute center cut end mill ground from solid high speed steel. Used for removing material from a workpiece and leaving a smooth finish.

5140 End Mill, 1/8" 2 Flute, HSS, 3/8" Shank	\$4.95
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5141 End Mill, 3/16" 2 Flute, HSS, 3/8" Shank	\$5.95
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5142 End Mill, 1/4" 2 Flute, HSS, 3/8" Shank	\$4.95
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5143 End Mill, 5/16" 2 Flute, HSS, 3/8" Shank	\$4.95
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5144 End Mill, 3/8" 2 Flute, HSS, 3/8" Shank	\$4.95
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5145 End Mill, 7/16" 2 Flute, HSS, 3/8" Shank	\$6.95
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5146 End Mill, 1/2" 2 Flute, HSS, 3/8" Shank	\$8.95
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5147 End Mill, 1/2" 2 Flute, HSS, 1/2" Shank	\$6.95
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5148 End Mill, 9/16" 2 Flute, HSS, 1/2" Shank	\$9.95
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5149 End Mill, 5/8" 2 Flute, HSS, 1/2" Shank	\$12.95
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5150 End Mill, 5/8" 2 Flute, HSS, 5/8" Shank	\$10.95
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5151 End Mill, 3/4" 2 Flute, HSS, 1/2" Shank	\$16.95
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5152 End Mill, 3/4" 2 Flute, HSS, 3/4" Shank	\$14.95
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5153 End Mill, 1" 2 Flute, HSS, 1/2" Shank	\$20.95
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End Mills, 2 Flute, M42 Cobalt, Coated, Individual Sizes



- M42 8% cobalt 2 flute end mills
- Center cutting, regular length
- 3/8" shank
- Made in the USA

These are high quality, American made, cobalt end mills for general milling operations including slots, grooves and other similar features.

They are ground from solid M42 8% cobalt steel. The cutting areas are TiCN coated.

These CNC qualified end mills feature a spiral flute design for a faster and smoother cutting action.

4889 End Mill, 1/8" 2 Flute, M42 Cobalt TiCN Coated	\$29.95
4890 End Mill, 3/16" 2 Flute, M42 Cobalt TiCN Coated	\$31.95
4891 End Mill, 1/4" 2 Flute, M42 Cobalt TiN Coated	\$31.95
4892 End Mill, 5/16" 2 Flute, M42 Cobalt TiN Coated	\$31.95
4893 End Mill, 3/8" 2 Flute, M42 Cobalt TiN Coated	\$31.95
4894 End Mill, 7/16" 2 Flute, M42 Cobalt TiN Coated	\$39.95
4895 End Mill, 1/2" 2 Flute, M42 Cobalt TiN Coated	\$42.95

End Mills, 2 Flute, M42 Cobalt, Individual Sizes



- Single ended, 2 flute
- Weldon shank
- M42 (8%) cobalt

Single end 2 flute center cut end mill ground from M42 (8%) cobalt. Used for removing material from a workpiece and leaving a smooth finish. The 2 flute design allows for greater swarf removal but at a lower speed. If higher speed is required or less material is to be removed, consider our 4 flute end mills.

5420 End Mill, 1/8" 2 Flute, M42 Cobalt	\$13.95
5421 End Mill, 3/16" 2 Flute, M42 Cobalt	\$11.95
5422 End Mill, 1/4" 2 Flute, M42 Cobalt	\$11.95
5423 End Mill, 5/16" 2 Flute, M42 Cobalt	\$13.95
5424 End Mill, 3/8" 2 Flute, M42 Cobalt	\$12.95
5425 End Mill, 7/16" 2 Flute, M42 Cobalt	\$14.95
5426 End Mill, 1/2" 2 Flute, M42 Cobalt	\$16.95

End Mills, 4 Flute, Carbide, Individual Sizes



- Single ended, 4 flute, center cut geometry
- Designed for increased chip removal rate
- Used for finishing operation
- Ideal for milling, slotting, profiling and trace milling
- Manufactured from premium submicron grain carbide

Single end 4 flute center cut end mill made from premium submicron grain carbide. Used for finishing operations. The 4 flute design allows for a high feed rate as less material is removed per flute. Ideal for milling, slotting, profiling and trace milling. If greater swarf removal is desired, consider one of our 2 flute end mills. Tolerances of these carbide end mills: Cutting Diameter: +.000/- .002 Shank Diameter: -.0001/- .0004 Radius: +.001/- .001 Run-Out Tolerance: .0005 maximum shank to cutting diameter

6332 End Mill, 1/8" 4 Flute, Carbide	\$12.95
6333 End Mill, 3/16" 4 Flute, Carbide	\$13.95
6334 End Mill, 1/4" 4 Flute, Carbide	\$15.95
6335 End Mill, 5/16" 4 Flute, Carbide	\$19.95
6336 End Mill, 3/8" 4 Flute, Carbide	\$23.95
6337 End Mill, 1/2" 4 Flute, Carbide	\$36.95
6338 End Mill, 5/8" 4 Flute, Carbide	\$74.95

End Mills, 4 Flute, HSS, Individual Sizes



- HSS 4 flute end mills
- Center cutting
- Single End
- Weldon Shank

Single end 4 flute center cut end mill ground from solid high speed steel. Used for removing material from a workpiece and leaving a smooth finish.

5154 End Mill, 1/8" 4 Flute, HSS, 3/8" Shank	\$5.95
5155 End Mill, 3/16" 4 Flute, HSS, 3/8" Shank	\$5.95
5156 End Mill, 1/4" 4 Flute, HSS, 3/8" Shank	\$5.95
5157 End Mill, 5/16" 4 Flute, HSS, 3/8" Shank	\$5.95
5158 End Mill, 3/8" 4 Flute, HSS, 3/8" Shank	\$6.95
5159 End Mill, 7/16" 4 Flute, HSS, 3/8" Shank	\$7.95
5160 End Mill, 1/2" 4 Flute, HSS, 3/8" Shank	\$10.95
5161 End Mill, 1/2" 4 Flute, HSS, 1/2" Shank	\$10.95
5162 End Mill, 9/16" 4 Flute, HSS, 1/2" Shank	\$13.95
5163 End Mill, 5/8" 4 Flute, HSS, 1/2" Shank	\$14.95
5164 End Mill, 5/8" 4 Flute, HSS, 5/8" Shank	\$14.95
5165 End Mill, 3/4" 4 Flute, HSS, 1/2" Shank	\$17.95
5166 End Mill, 3/4" 4 Flute, HSS, 3/4" Shank	\$19.95
5167 End Mill, 1" 4 Flute, HSS, 1/2" Shank	\$34.95

End Mills, 4 Flute, M42 Cobalt, Coated, Individual Sizes



- M42 8% cobalt 4 flute end mills
- Center cutting
- 3/8" shank
- Made in the USA

These are high quality, American made, cobalt end mills for general milling operations including slots, grooves and other similar features.

They are ground from solid M42 8% cobalt steel. The cutting areas are either Titanium Nitride (TiN) or Titanium CarboNitride (TiCN) coated.

These CNC qualified end mills feature a spiral flute design for a faster and smoother cutting action.

4896 End Mill, 1/8" 4 Flute, M42 Cobalt TiCN Coated	\$49.95
4897 End Mill, 3/16" 4 Flute, M42 Cobalt TiCN Coated	\$41.95
4898 End Mill, 1/4" 4 Flute, M42 Cobalt TiN Coated	\$53.95
4899 End Mill, 5/16" 4 Flute, M42 Cobalt TiCN Coated	\$31.95
4900 End Mill, 3/8" 4 Flute, M42 Cobalt TiN Coated	\$32.95
4901 End Mill, 7/16" 4 Flute, M42 Cobalt TiN Coated	\$39.95
4902 End Mill, 1/2" 4 Flute, M42 Cobalt TiN Coated	\$49.95

End Mills, 4 Flute, M42 Cobalt, Individual Sizes



- Single ended, 4 flute
- Weldon shank
- M42 (8%) cobalt

Single end 4 flute center cut end mill ground from M42 (8%) cobalt. Used for removing material from a workpiece and leaving a smooth finish. The 4 flute design allows for a high feed rate as less material is removed per flute. If greater swarf removal is desired, consider one of our 2 flute end mills.

5557 End Mill, 1/8" 4 Flute, M42 Cobalt	\$13.95
5558 End Mill, 3/16" 4 Flute, M42 Cobalt	\$13.95
5559 End Mill, 1/4" 4 Flute, M42 Cobalt	\$13.95
5560 End Mill, 5/16" 4 Flute, M42 Cobalt	\$14.95
5561 End Mill, 3/8" 4 Flute, M42 Cobalt	\$16.95
5562 End Mill, 7/16" 4 Flute, M42 Cobalt	\$15.95
5563 End Mill, 1/2" 4 Flute, M42 Cobalt	\$20.95

Cutting Tools: End Mills



End Mills, Miniature, 2 Flute, Double Ended HSS, Individual Sizes

- Double ended, 2 flute miniature end mills
- High Speed Steel
- 2-1/4" overall length
- 3/16" Shank diameter

Popular for small slotting, engraving, pocketing and similar applications. The medium-high helix angle produces an ideal shearing cut for outstanding performance.

5405 End Mill, Miniature, 1/16" 2 Flute, Double Ended, HSS	\$6.95
5406 End Mill, Miniature, 3/32" 2 Flute, Double Ended, HSS	\$7.95
5407 End Mill, Miniature, 1/8" 2 Flute, Double Ended, HSS	\$6.95
5408 End Mill, Miniature, 5/32" 2 Flute, Double Ended, HSS	\$6.95
5409 End Mill, Miniature, 3/16" 2 Flute, Double Ended, HSS	\$7.95



End Mills, Miniature, 4 Flute, Double Ended HSS, Individual Sizes

- Double ended, 4 Flute miniature end mills
- High Speed Steel
- 2-1/4" overall length
- 3/16" Shank diameter

Popular for small slotting, engraving, pocketing and similar applications. The medium-high helix angle produces an ideal shearing cut for outstanding performance.

5410 End Mill, Miniature, 1/16" 4 Flute, Double Ended, HSS	\$6.95
5411 End Mill, Miniature, 3/32" 4 Flute, Double Ended, HSS	\$6.95
5412 End Mill, Miniature, 1/8" 4 Flute, Double Ended, HSS	\$6.95
5413 End Mill, Miniature, 5/32" 4 Flute, Double Ended, HSS	\$6.95
5414 End Mill, Miniature, 3/16" 4 Flute, Double Ended, HSS	\$6.95



End Mills, Roughing, Cobalt, Individual Sizes

- 3 and 4 flute roughing end mills
- M42 8% cobalt
- Center cutting, single end
- Weldon Shank

Roughing end mill ground from solid M42 8% cobalt; center cutting and uncoated.

5168 End Mill, 1/4" 3 Flute Roughing, M42 Cobalt	\$13.95
5169 End Mill, 3/8" 4 Flute Roughing, M42 Cobalt	\$13.95
5170 End Mill, 1/2" 4 Flute Roughing, M42 Cobalt	\$19.95
5171 End Mill, 5/8" 4 Flute Roughing, M42 Cobalt	\$27.95
5172 End Mill, 3/4" 4 Flute Roughing, M42 Cobalt	\$37.95

Cutting Tools: Indexable End Mills



5929 Indexable End Mill Set, 1/2" Shank Square Shoulder \$79.95

- 90° square shoulder milling
- Cutting Diameters: 3/8", 1/2", and 5/8"
- Overall length 3"
- Two single flute and one two flute tools
- Includes: standard APKT-1003 Inserts

Square shoulder milling cutters allow for a true 90° cut, combining peripheral milling with face milling. It is ideal for slotting.

This 3 Piece set of square shoulder end mill have 1/2" shanks and overall length of 3" each. The cutting diameters are 3/8", 1/2" and 5/8". The 3/8"s and 1/2" end mills are single flute and require one APKT-1003 insert each. The 5/8" end mill has 2 flutes and requires two inserts.

This set comes with APKT-1003 carbide coated inserts, which are an excellent alternative to HSS for heavy material removal.

5429 Indexable End Mill, Square Shoulder, 1/2" Cut Diameter \$34.95

5428 Indexable End Mill, Square Shoulder, 3/8" Cut Diameter \$29.95

5430 Indexable End Mill, Square Shoulder, 5/8" Cut Diameter \$39.95



1952 Indexable End Mill, R8, 1.25" Cut Diameter \$49.95

- R8 shank
 - 1.25" cutting diameter
 - 1.25" length of cut
 - One set of 2 TPG322 end mill carbide inserts included
- For use in heavy duty milling application. Higher metal removal rates. Great surfacing.

1889 Indexable End Mill, 2MT, 16 mm Cut Diameter \$65.95

1146 Indexable End Mill, 3MT, 30 mm Cut Diameter \$89.95

5427 Indexable End Mill, R8, 2" Cut Diameter \$84.95

2697 Screw, Insert Retaining, Indexable End Mill \$6.95

1798 Screws, Insert Retaining \$6.76

Cutting Tools: Indexable Inserts



Chris' Tips

A Tip for Indexable Inserts

You can compare ALL the inserts that are available for the various tools we sell. In some cases, you have a choice of high-speed steel or carbide inserts. Check out a table of inserts (HSS and Carbide) and insert screws, with links to compatible tools. We also have tables showing the ANSI and ISO insert designations for indexable inserts, turning tools, and boring bars. www.LittleMachineShop.com/Inserts

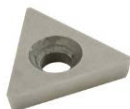
Cutting Tools: Indexable Inserts



Inserts, Carbide

Carbide inserts.
These inserts fit our indexable tools.

5441 Insert, 11ERA60 External Thread, TiN Coated	\$9.95
5442 Insert, 11IRA60 Internal Thread, TiN Coated	\$9.95
5582 Insert, APKT1003 Square Shoulder	\$10.95
1781 Insert, CCMT-21.51 Carbide	\$4.95
5643 Insert, CCMT-32.51 Carbide	\$14.95
1795 Insert, CCMT-32.52 Carbide	\$4.95
4994 Insert, GTN-2	\$7.95
5930 Insert, MGMN-200-G	\$4.95
2033 Insert, TCMT-1.81.51 Carbide	\$5.95
3416 Insert, TCMT-21.50 Carbide	\$3.95
1670 Insert, TCMT-21.51 Carbide	\$3.95
3417 Insert, TCMT-21.52 Carbide	\$4.95
5931 Insert, TDEX-21.5 Carbide	\$4.95
1216 Insert, TPC-322 Carbide	\$12.95
1910 Insert, TPG-221 Carbide	\$3.95
2277 Insert, TPG-322 Carbide	\$4.95
2381 Insert, TPGH-32.51 Carbide	\$6.95
5644 Insert, TPGH-322 Carbide	\$5.95
5651 Insert, TPMB-321 Carbide	\$11.95
5649 Insert, TPMT-222 Carbide	\$7.95
5648 Insert, VCMT-221 Carbide	\$15.95
3471 Insert, VCMT-222 Carbide	\$5.95



Inserts, High Speed Steel

High speed steel inserts.
These inserts are made from T-15 high speed steel by the A. R. Warner Co.
Combine the advantages of high speed steel cutting tools with the convenience of indexable tooling.

3578 Insert, 1/16" Groover HSS	\$16.95
3577 Insert, 1/32" Groover HSS	\$16.95
3576 Insert, 1/64" Groover HSS	\$16.95
4603 Insert, 60 Degree Threader	\$17.95
3696 Insert, CCMW-21.51 HSS	\$10.95
3574 Insert, CCMW-32.51 HSS	\$10.95
3575 Insert, CCMW-32.52 HSS	\$10.95
4975 Insert, CEMW-21.5.5 HSS	\$10.95
1724 Insert, TCMW-21.51 HSS	\$9.95
1725 Insert, TCMW-21.52 HSS	\$9.95
3698 Insert, TCMW-321 HSS	\$10.95
3468 Insert, Threading, TNMC-32-NV HSS	\$19.95
3469 Insert, Threading, TPMC-32-NV HSS	\$21.95
1623 Insert, TPMB-321 HSS	\$9.95
1622 Insert, TPMB-322 HSS	\$10.95
1722 Insert, TPMW-1.81.5.5 HSS	\$11.95
1723 Insert, TPMW-1.81.51 HSS	\$11.95
1624 Insert, TPMW-221 HSS	\$10.95
1621 Insert, TPMW-222 HSS	\$10.95
5110 Insert, VCMW-221 HSS	\$14.95
3470 Insert, VCMW-222 HSS	\$13.95

Cutting Tools: Reamers



5948 Reamer Set, Adjustable, 4 Piece #8 - #5 \$69.95

- Reamers in this set are adjustable from 0.250" to 0.375"
 - Black Oxide Finish
 - Handle Multiple Hole Sizes with One Tool
 - 4 Piece Set Sizes #8 - #5
 - Wooden Storage Box Included
- Adjustable blade lets you handle multiple hole sizes with a single tool. Multiple tools in each set let you handle more hole sizes, making these sets virtually indispensable. Reamers are hardened, precision-ground high speed steel with a black oxide finish. Wooden storage box is included.



3066 Reamers, 14 Piece Over-Under Chucking, HSS \$174.95

- Includes 0.0010" over and 0.0010" under for 1/8" to 1/2" by 16ths
 - Straight shank and straight flute high speed steel reamers
 - Imported
 - Includes plastic pouch
- This set of high speed steel chucking reamers includes 0.1240", 0.1260", 0.1865", 0.1885", 0.2490", 0.2510", 0.3115", 0.3135", 0.3740", 0.3760", 0.4365", 0.4385", 0.4990", 0.5010" reamers.



3067 Reamers, 29 Piece Chucking, HSS \$264.95

- Includes 1/16" - 1/2" by 64ths
 - Straight shank
 - straight flute
 - high speed steel
- 29 Piece 1/16-1/2" X 64ths High Speed Steel Chucking Reamer Set



Reamers, Adjustable Blade, Individual Sizes

- High Speed Steel
 - Handle Multiple Hole Sizes with One Tool
 - 5 Blades
- Adjustable blades give the operator the ability to handle multiple hole sizes with a single tool, making them a good choice for users with low volume reaming needs. Blades are adjusted by loosening one nut and tightening the other. Each reamer expands to the next size. Square end allows the user to turn the reamer by hand with an adjustable wrench or straight handle tap wrench. Straight flute reamers should be used in thru-hole applications only.
- | | |
|---|---------|
| 5941 Reamer, Adjustable 1/4" - 9/32" #8 | \$19.95 |
| 5942 Reamer, Adjustable 9/32" - 5/16" #7 | \$16.95 |
| 5943 Reamer, Adjustable 5/16" - 11/32" #6 | \$19.95 |
| 5944 Reamer, Adjustable 11/32" - 3/8" #5 | \$18.95 |
| 5945 Reamer, Adjustable 3/8" - 13/32" #4 | \$24.95 |
| 5946 Reamer, Adjustable 13/32" - 7/16" #3 | \$24.95 |
| 5947 Reamer, Adjustable 7/16" - 15/32" #2 | \$23.95 |

Cutting Tools: Reamers



Reamers, Chucking, HSS Individual Sizes

- High Speed Steel
- Straight Flute
- 45 Degree Chamfer
- ANSI standard

High speed steel reamers suitable for production reaming of most materials. Straight flute with 45 degree chamfer for gradual starting load.

5950 Reamer, Chucking 1/16" HSS	\$8.95
5951 Reamer, Chucking 1/8" HSS	\$6.95
5952 Reamer, Chucking 9/64" HSS	\$7.95
5953 Reamer, Chucking 5/32" HSS	\$4.49
5954 Reamer, Chucking 3/16" HSS	\$5.50
5955 Reamer, Chucking 7/32" HSS	\$5.95
5956 Reamer, Chucking 15/64" HSS	\$7.49
5957 Reamer, Chucking 1/4" HSS	\$7.95
5958 Reamer, Chucking 5/16" HSS	\$8.95
5959 Reamer, Chucking 23/64" HSS	\$11.95
5960 Reamer, Chucking 3/8" HSS	\$12.95
5961 Reamer, Chucking 27/64" HSS	\$13.95
5962 Reamer, Chucking 7/16" HSS	\$14.95
5963 Reamer, Chucking 31/64" HSS	\$16.95
5964 Reamer, Chucking 1/2" HSS	\$16.95

Cutting Tools: Saw Blades



Band Saw Blades, 44-7/8", Porta-Band Bi-Metal, Individual Sizes, Starrett

- 44-7/8" (1140 mm) x 1/2" (13 mm) x 0.020" (0.5 mm)
 - Triple tempered M-42 cobalt high speed steel teeth with a fatigue resistant alloy steel backer
 - Patented "Twin Tooth" design of the Split-Chip advantage "bi-metal unique"
 - Faster cutting and longer life than ordinary blades
 - Starrett Univerz bandsaw blades available in a variety of tooth pitches
- These 44-7/8" bandsaw blades utilize Starrett's exclusive bi-metal unique saw technology for faster cutting and longer blade life.

Besides fitting LittleMachineShop.com portable band saws, these Starrett bandsaw blades fit Black & Decker, DeWalt, Greenlee, Makita, Unitec, Porter-Cable, Ridgid, Rockwell, Skil, Milwaukee portable band saws.

4932 Band Saw Blade, 44-7/8", Univerz Bi-Metal 10/S, Starrett	\$11.95
4933 Band Saw Blade, 44-7/8", Univerz Bi-Metal 14/S, Starrett	\$11.95
4934 Band Saw Blade, 44-7/8", Univerz Bi-Metal 18/W, Starrett	\$12.95
4935 Band Saw Blade, 44-7/8", Univerz Bi-Metal 24/W, Starrett	\$12.95
4937 Band Saw Blade, 44-7/8", Univerz Bi-Metal 14-18/W, Starrett	\$12.95
4936 Band Saw Blade, 44-7/8", Univerz Bi-Metal 10-14/S, Starrett	\$11.95

Band Saw Blades, 64-1/2", Duratec SFB, Individual Sizes, Starrett



Starrett Duratec SFB band saw blade 64 1/2" x 1/2" x 0.025". Made from carbon steel with a flexible back, Duratec SFB is ideal for economical cutting on easy-to-machine ferrous or nonferrous metal and wood. It is for general purpose contour and straight cutting on a variety of machines.

4460 Band Saw Blade, 64-1/2", Duratec SFB 6/S, Starrett	\$13.95
4461 Band Saw Blade, 64-1/2", Duratec SFB 10/S, Starrett	\$13.95
4462 Band Saw Blade, 64-1/2", Duratec SFB 14/S, Starrett	\$13.95
4463 Band Saw Blade, 64-1/2", Duratec SFB 24/W, Starrett	\$13.95

Band Saw Blades, 64-1/2", Intenss PRO-DIE, Individual Sizes, Starrett



Starrett Intenss PRO-DIE band saw blade 64-1/2" x 1/2" x 0.025".

Intenss PRO-DIE band saw blades have bi-metal unique saw technology, triple tempered M-42 cobalt HSS teeth combined with alloy steel backing strip for heat, abrasion and shock resistance, longevity and chip clearing. Ideal for tool, die and mold steels, stainless and nickel based and non-ferrous alloys.

1854 Band Saw Blade, 64-1/2", Intenss PRO-DIE 6/P-HP, Starrett	\$34.95
1855 Band Saw Blade, 64-1/2", Intenss PRO-DIE 8-12S, Starrett	\$34.95
1876 Band Saw Blade, 64-1/2", Intenss PRO-DIE 10-14S, Starrett	\$34.95

Hacksaw Blades, 12", Bi-Metal, Individual Sizes, Starrett

- Starrett bi-metal unique HSS Safe-Flex hacksaw blades
- These blades are 12" long, 1/2" wide and are 0.025" thick. Bi-metal unique High Speed Steel Safe-Flex hacksaw blades are made with a patented solid-state diffusion process with 170% more HSS weld area and ground teeth for reduced blade fracture, faster cutting and longer life.

1850 Hacksaw Blade, Bi-Metal, 18 TPI, Starrett	\$2.26
1851 Hacksaw Blade, Bi-Metal, 24 TPI, Starrett	\$2.26
3561 Hacksaw Blade, Bi-Metal, 32 TPI, Starrett	\$2.26

Cutting Tools: Slitting Saws



Slitting Saw Blades, HSS, Individual Sizes

- 3" Saw Diameter
- 1" Hole Size
- 30 Teeth
- High Speed Steel

4725 Slitting Saw Blade, 1/32", HSS	\$14.95
4726 Slitting Saw Blade, 3/64", HSS	\$14.95
4727 Slitting Saw Blade, 1/16", HSS	\$14.95
4728 Slitting Saw Blade, 3/32", HSS	\$14.95
4729 Slitting Saw Blade, 1/8", HSS	\$14.95

Cutting Tools: T-Slot and Dovetail Cutters

1450 Chamfer Cutter, 45 Degree 1/2" Dia., HSS \$21.95



- High Speed Steel Cutter
 - 1/2" Cutting Diameter
 - 45° Chamfer Angle
 - 3/8" Shank Diameter
 - Use for Chamfering and Angle Milling
- High speed steel, right hand cutting chamfer cutter. 45 degree chamfer angle with a 1/2" cutting diameter and 3/8" shank. Use for chamfering and angle milling.

1451 Chamfer Cutter, 45 Degree 3/4" Dia., HSS \$31.95



5921 Dovetail Cutter, Indexable 60 Degree 1/2" Dia., 1 Flute \$32.95

- 3/8" Shank 1 Flute Indexable Dovetail Cutter
 - Right Hand Cut
 - 60° Dovetail Angle 15° Clearance
 - 1/2" Cutting Diameter
 - Requires 1 TDEX 21.5 Insert (Not Included)
- 1/2" X 3/8" shank, single flute indexable 60 degree dovetail cutter. For milling roughing & finishing at high speeds & feeds.

Use with TDEX 21.5 carbide inserts which are not included.

Overall length is 2.36" and cutting depth is 0.32". Cutting diameter is 1/2" and the shank is 3/8". Comes with one M2.5x6.5 insert screw.

5922 Dovetail Cutter, Indexable 60 Degree 3/4" Dia., 2 Flute \$36.95

Cutting Tools: T-Slot and Dovetail Cutters

Dovetail Cutters



- High speed steel cutters
- 60° dovetail angle
- 3/8" shank diameter

2904 Dovetail Cutter, 60 Degree 3/8" Dia., HSS	\$13.95
2905 Dovetail Cutter, 60 Degree 1/2" Dia., HSS	\$14.95
2906 Dovetail Cutter, 60 Degree 3/4" Dia., HSS	\$15.95
5090 Dovetail Cutter, 60 Degree 1-3/8" Dia., HSS	\$34.95

T-Slot Cutters, HSS, Individual Sizes



- High speed steel T-slot cutters
 - Eight teeth
 - Positive radial rake, right and left hand spiral.
- These T-slot cutters have a positive radial rake, right and left hand spiral with alternate side cutting teeth for maximum chip clearance.
- The listed dimension is the width of the T-slot measured at the top of the T-slot.

5195 T-Slot Cutter, 3/8" T-slot, HSS	\$22.95
5196 T-Slot Cutter, 7/16" (12 mm) T-slot, HSS	\$28.95
5194 T-Slot Cutter, 8 mm T-slot, HSS	\$19.95

Cutting Tools: Turning Tools

5612 Chamfer Tool, 3/8" Indexable, SCSCR-06-2J, Tormach	\$43.95
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- Designation: SCSCR-06-2J
 - Steel shank 3/8" x 3-1/2"
 - Designed for CCMT and CCGT 21.51 inserts
 - Approach 45°, 7° relief angle
 - Insert Shape: 80° (C)
- 45° Right hand Chamfer Tool. Includes wrench and (1) insert.

5618 Chamfer Tool, 1/2" Indexable, SCSCR-08-3A, Tormach	\$43.95
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5611 Facing Tool, 3/8" Indexable, SCKCR-06-2J, Tormach	\$43.95
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- Designation: SCKCR-06-2J
 - Steel shank 3/8" x 3-1/2"
 - Designed for CCMT and CCGT 21.51 inserts
 - Approach 75°, 7° relief angle
 - Insert Shape: 80° (C)
- Right hand Facing Tool. Includes wrenches and (1) insert.

5617 Facing Tool, 1/2" Indexable, SCKCR-08-3A, Tormach	\$43.95
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5926 Grooving Tool Holder, 3/8" Shank, External MGEHR06-2	\$39.95
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- Right hand external grooving tool holder
 - Designation MEGHR06-2
 - Shank size 3/8"
 - Overall length is 3"
 - Uses MGMN-200 Inserts
- MEGHR06-2 external right hand grooving tool holder has a 3/8" x 3/8" shank. Tool holder design provides precision clamping & insert indexing accuracy. Ideal for external grooving, turning, part-off, relieving & profile machining. Maximum cutting depth is 1/2". Overall length is 3".

5613 Profiling Tool, 3/8" Indexable, SCMCN-06-2J, Tormach	\$43.95
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- Designation: SCMCN-06-2J
 - Steel shank 3/8" x 3-1/2"
 - Designed for CCMT and CCGT 21.51 inserts
 - Approach 50°, 7° relief angle
 - Insert Shape: 80° (C)
- Neutral hand Profile Tool. Includes wrenches and (1) insert.

5619 Profiling Tool, 1/2" Indexable, SCMCN-08-3A, Tormach	\$43.95
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2431 Profiling Tool, 3/8" Indexable, 35 Deg Diamond Inserts, A R Warner Kit #15	\$142.50
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- 3/8" square, 6" long profiling tool
- Includes 2 HSS (VCMW-221) inserts
- Includes 1 carbide (VCMT-221) insert
- 2 MS-1153 screws
- 1 T-7 torx wrench

This Arthur R. Warner Co. precision profiling tool uses high speed steel or carbide inserts. Combine the advantages of high speed steel cutting tools with the convenience of indexable tooling. This profiling tool is great for CNC applications, and can be used for most of your turning needs. Contents: 1 Right Hand bar 3/8 inch shank 6.0 inches overall length, side angle: 3 degree 2 Inserts T-15 High Speed Steel VCMW-221 Relief : 7 degree, IC: 0.250 inch, Thickness: 0.125 inch, Hole: 0.110 inch, Top opening: 0.146 inch, Radius: 0.015 inch 1 Insert Carbide VCMT-221 Relief : 7 degree, IC: 0.250 inch, Thickness: 0.125 inch, Hole: 0.110 inch Top opening: 0.146 inch, Radius: 0.015 inch Screws: (2) MS-1153 Wrench: T-7 The Arthur R.

Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.

4820 Profiling Tools, 3/8" Indexable R / L, 35 Deg Diamond Inserts, A R Warner Kit #16	\$169.00
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- 3/8" Square shank Right Hand profiling tool, 6" overall length
- 3/8" Square shank Left Hand profiling tool, 6" overall length
- Includes 3 HSS (VCMW-221) inserts
- Includes 1 carbide (VCMT-221) insert
- 1 extra MS-1153 Torx screw, 1 T-7 wrench

This Arthur R. Warner Co. precision profiling tool uses high speed steel or carbide inserts. Combine the advantages of high speed steel cutting tools with the convenience of indexable tooling. This profiling tool is great for CNC applications, and can be used for most of your turning needs. Contents: 1 Right Hand bar 3/8 inch shank, 6 inch overall length, Side angle: 3 degrees 1 Left Hand bar 3/8 inch shank, 6 inch overall length, Side angle: 3 degrees 3 Inserts T-15 High Speed Steel VCMW221, Relief : 7 degrees, IC: 0.250 inch, Thickness: 0.125 inch, Hole: 0.110 inch, Top opening: 0.146 inch, Radius: 0.015 inch 1 Insert Carbide VCMT221, Relief : 7 degree, IC: 0.250 inch, Thickness: 0.125 inch, Hole: 0.110 inch, Top opening: 0.146 inch, Radius: 0.015 inch Screws: (3) MS-1153 Wrench: T-7 The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.

4516 Tool Bit Sharpening Training Set	\$48.95
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- Six presharpener 1/4" high speed steel tool bits
 - Five unsharpened 1/4" tool bits
 - Sharpening instructions
- Learn how to grind tool bits with this set. The presharpener tool bits show you how the finished product should look. The unsharpened tool bits give you plenty of practice. The presharpener tool bits are ground in the same manner as hand-ground tool bits so they provide an example of how to properly grind tool bits. All the tool bits are M2 high speed steel. M2 is a high speed steel in the tungsten-molybdenum series. The carbides in it are small and evenly distributed. It has high wear resistance. It is used to manufacture a variety of tools, such as drill bits, taps and reamers.

3192 Tool Bit, 5/16" Right Hand, Brazed Carbide	\$2.95
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- AR-5 Style turning tool
 - C6 Carbide tipped single point brazed tip
 - Overall length 2 1/4"
 - Right hand tool; cuts from right to left
 - Use for steel and steel alloys
- These tool bit are C6 grade carbide. C6 carbide is designed for steel and steel alloys, but in hobby use works fine on aluminum and non-ferrous metals too.


3193 Tool Bit, 5/16" Left Hand, Brazed Carbide	\$2.95
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Cutting Tools: Turning Tools


	2250 Tool Bits, 1/4" Presharpened, Set of 6	\$42.95
	<ul style="list-style-type: none"> • Six pre-sharpened 1/4" high speed steel tool bits • Includes Right hand, Left hand, 45 degree chamfer, Round nose, Boring bar, Cut off <p>High speed steel presharpened cutting tool set is a durable and reliable choice for a wide range of metal lathe tasks. Made from high speed steel, these cutting tools are capable of withstanding high temperatures and stress during use, ensuring a long lifespan. This set includes six presharpened cutting tools in a variety of shapes and sizes, including right hand, left hand, 45 degree chamfer, round nose, boring bar, and cut off. This makes it an ideal choice for busy machine shops and prototyping facilities where time is of the essence. Whether you're working with aluminum, steel, or other metals, these cutting tools are up to the task. Their sharp edges and fine tips allow for precise and accurate cuts, resulting in a clean and professional finish. These tool bits are ground in the same manner as hand-ground tool bits so they provide an example of how to properly grind tool bits. Overall, this set of six presharpened cutting tools is a versatile and essential component for any metal lathe operator looking to achieve high-quality results. Add it to your tool collection today and experience the convenience and efficiency it brings to your projects.</p>	
	1964 Tool Bit, 1/4" Left Hand, Presharpened	\$7.95
	1965 Tool Bit, 1/4" Right Hand, Presharpened	\$7.95
	1966 Tool Bit, 1/4" 45 Degree Chamfer, Presharpened	\$7.95
	1967 Tool Bit, 1/4" Round Nose, Presharpened	\$7.95
	1968 Tool Bit, 1/4" Boring Bar, Presharpened	\$7.95
	1969 Tool Bit, 1/4" Cut-Off, Presharpened	\$7.95


	6288 Tool Bits, 3/8" Presharpened, Set of 8 HSS	\$44.95
	<ul style="list-style-type: none"> • 3/8 X 4" 8 Piece High Speed Steel Lathe Turning Tool Set • M-2 high speed steel. • Includes case <p>Set includes No.1 Left-Hand Turning Tool (80°), No.2 Right-Hand Turning Tool (80°), No.3 Straight Finishing Tool, No.4 Corner (45°) Tool, No.5 Parting Tool, No.6 Boring Tool, No.7 Threading (60°) Tool, No.8 Corner (60°) Tool.</p>	
	6286 Tool Bits, 1/4" Presharpened, Set of 8 HSS	\$29.95
	6287 Tool Bits, 5/16" Presharpened, Set of 8 HSS	\$39.95


	2412 Tool Bits, 5/16" Brazed Carbide, Set of 5	\$28.32
	<ul style="list-style-type: none"> • 5 piece cutting tool set • 5/16" (8mm) shanks • Carbide cutting tips • Variety of tips for roughing, straight and facing cuts and parting-off • Ideal for mini lathes <p>This set includes five different brazed carbide turning tools. The shanks are 5/16" (8mm) which is the right size for the mini lathe. This set includes one each of the following tool bits: DIN 4971R (ISO1) Straight cutter for rough turning DIN 4975 (ISO10) Pointed tip for straight turning DIN 4980R (ISO6) Right angle cutter - offset side cutter for facing DIN 4980L (ISO6) Left angle cutter - offset side cutter for facing DIN 4981R (ISO7) Parting-off cutter</p>	


	Tool Bits, M2 High Speed Steel, Individual Sizes	
	<ul style="list-style-type: none"> • 2-1/2" long M2 HSS tool bits <p>M2 is a high speed steel in the tungsten-molybdenum series. The carbides in it are small and evenly distributed. It has high wear resistance. It is used for a variety of tools, such as drill bits, taps and reamers.</p>	
	1154 Tool Bit, 1/8" x 2-1/2", M2 HSS	\$1.49
	1153 Tool Bit, 3/16" x 2-1/2", M2 HSS	\$1.95
	1155 Tool Bit, 1/4" x 2-1/2", M2 HSS	\$1.95
	1152 Tool Bit, 5/16" x 2-1/2", M2 HSS	\$1.95
	1156 Tool Bit, 3/8" x 2-1/2", M2 HSS	\$2.95

Tool Bits, T-15 High Speed Steel, Individual Sizes		
	<ul style="list-style-type: none"> • 2-1/2" long T-15 HSS tool bits <p>T-15 is a tungsten type super high speed steel containing high vanadium for excellent abrasion resistance and cobalt for good red hardness. AISI T-15 is ideal for cutting difficult to machine materials where high frictional heat is present.</p>	
	1726 Tool Bit, 1/8" x 2-1/2" T-15 HSS, A R Warner	\$12.95
	1716 Tool Bit, 3/16" x 2-1/2", T-15 HSS, A R Warner	\$13.95
	1717 Tool Bit, 1/4" x 2-1/2", T-15 HSS, A R Warner	\$13.95
	1715 Tool Bit, 5/16" x 2-1/2", T-15 HSS, A R Warner	\$18.95
	1718 Tool Bit, 3/8" x 3", T-15 HSS, A R Warner	\$23.95

	3694 Turning & Boring Tools, 3/8" Indexable, HSS Inserts, A R Warner Kit #8	\$217.00
	<ul style="list-style-type: none"> • Right and left hand turning tools with 0.375" shank 3.5" long • Boring bar with 0.375" shank 5.0" overall length • Includes three T-15 HSS (CCMW21.51) inserts for turning • Includes two T-15 HSS (CCMW21.51) inserts for boring • Includes two MS-1152S screws, three MS-1153 screws and one T-7 wrench <p>This Arthur R. Warner Co. kit includes a 3/8" right-hand turning tool, a 3/8" left-hand turning tool, and a 3/8" boring bar. The right hand turning bar has a 0.375" shank, and is 3.50" in overall length. The left hand turning bar has a 0.375" shank, and is 3.50" in overall length. The left hand turning bar has a second insert pocket in opposite end that provides a 50° side cutting edge angle. This provides a way to use the two insert points that are not used in the other tool holders. The boring bar has a 0.375" shank, and is 5.0" in overall length. It has 0.188" flat along length for location, and requires a 0.365" minimum bore. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p>	

	5433 Turning & Boring Tools, 3/8" Indexable, Triangle Inserts	\$86.95
	<ul style="list-style-type: none"> • 4 turning tools • 1 - 6" boring tool • Inserts and torx wrenches • 3/8" shank • Uses TCMT-21.51 inserts <p>Set comes in a fitted aluminum case.</p>	

	5432 Turning & Boring Tools, 5/16" Indexable, Triangle Inserts	\$84.95
	<ul style="list-style-type: none"> • 4 turning tools • 1 boring tool • Inserts and torx wrenches • 5/16" shank • Uses TCMT-1.81.51 Inserts <p>Set comes in a fitted aluminum case.</p>	

	1435 Turning & Boring Tools, 8 mm Indexable, Diamond Inserts	\$59.95
	<ul style="list-style-type: none"> • 7 piece indexable turning and boring set • 8 mm tool shank • CCMT21.51 inserts included • Six turning tools, one boring bar • Carrying case and T8 wrench included <p>Turning and boring set with seven pieces. Each tool has an 8 mm tool shank and uses a CCMT21.51 ANSI (CCMT060204 ISO) indexable insert. Additional inserts are available with our part number 1781. CCMT diamond inserts have four cutting edges. The turning tools have square shanks while the boring bar has a hexagon shank. (See specifications tab for dimensions.) See contents tab for what is included in this set. Set comes in a carrying case and a T8 wrench.</p>	

Cutting Tools: Turning Tools

	<p>5434 Turning & Cut-Off Tools, 3/8" Indexable, 7 Piece Set \$164.95</p> <ul style="list-style-type: none"> • 6 turning tools • 1 cut-off blade • Inserts and torx wrenches • 3/8" shank • Extra inserts and screws available <p>Seven 3/8" indexable tool set, six turning tools and 1 cut-off blade, torx wrenches and inserts. Set comes in a fitted aluminum case. Turning tools included are: SDNCN 6-2 holder using a DCMT insert (P/N 5640), and an M2.5 x 6 retaining screw (P/N 2696). SDJCR 6-2 holder using a DCMT insert (P/N 5640), and an M2.5 x 6 retaining screw (P/N 2696). SCLCL 6-2 holder using a CCMT insert (P/N 1781), and an M2.5 x 6 retaining screw (P/N 2696). SCLCR 6-2 holder using a CCMT insert (P/N 1781), and an M2.5 x 6 retaining screw (P/N 2696). SWGCR 6-5 holder using a WCMX050308R-53 Carbide insert (P/N 5641), and an M3 x 8 retaining screw (P/N 5645). SER 6-11 holder - using an 11ERA60 insert (P/N 5441), and an M2.5 x 6 retaining screw (P/N 2696). Cut-Off Blade: MGEHR06-02 - using a MGMN-200 insert (P/N 5642), and an M4 x 12 retaining screw (P/N 2687).</p> <p>5640 Insert, DCMT-21.51 Carbide \$5.95</p> <p>5642 Insert, MRMN-200-M \$5.95</p> <p>5641 Insert, WCMX050308R-53 Carbide \$8.95</p>	<p>3569 Turning Tools, 1/2" Indexable, 80 Deg Diamond HSS Inserts, A R Warner Kit #11 \$166.00</p> <ul style="list-style-type: none"> • Right hand tool holder • Left hand tool holder, double ended • Includes five T-15 HSS (CCMW32.52) inserts • Includes four MS-1155 screws and one T-15 wrench <p>Right hand bar has 0.5" shank and is 4" long. Left hand bar has 0.5" shank and is 4" long. It includes a second insert pocket that provides a 50° side cutting edge. Uses CCMW32.51 and CCMW32.52 inserts. The second insert pocket on the left hand tool provides a way to use the second and fourth corners on the diamond insert. Made by A R Warner. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p> <p>3580 Screw, Insert Retaining, MS-1155 \$5.95</p>
	<p>3693 Turning 1/4" & Boring 3/8" Indexable Tools, HSS Inserts, A R Warner Kit #4 \$213.50</p> <ul style="list-style-type: none"> • Right and left hand turning tools with 0.250" shank 3.5" long • Boring bar with 0.375" shank 5.0" overall length • Includes three T-15 HSS (CCMW21.51) inserts for turning • Includes two T-15 HSS (CEMW21.51) inserts for boring • Includes two MS-1152S screws, four MS-1153 screws and one T-7 wrench <p>This Arthur R. Warner Co. kit includes a 1/4" right-hand turning tool, a 1/4" left-hand turning tool, and a 3/8" boring bar. The right hand turning bar has a 0.250" shank, and is 3.50" in overall length. The left hand turning bar has a 0.250" shank, and is 3.50" in overall length. The left hand turning bar has a second insert pocket in opposite end that provides a 50° side cutting edge angle. This provides a way to use the two insert points that are not used in the other tool holders. The boring bar has a 0.375" shank, and is 5.0" in overall length. It has 0.188" flat along length for location, and requires a 0.365" minimum bore. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p>	<p>4132 Turning Tools, 3/8" Indexable, Carbide, Triangle Inserts, A R Warner \$84.95</p> <ul style="list-style-type: none"> • 3 piece turning tool set • 3/8" square shank • 3 TCMT21.52 inserts • 1 TCMT21.51 insert • Torx wrench and 4 screws <p>This Arthur R. Warner Co. precision tool holder kits use carbide or high speed steel inserts. These are production quality tool holders that are made in the USA. The kit contains the following: AR and AL tool holders with TCMT21.52 inserts E threading tool holder with TCMT21.51 insert 1 extra TCMT21.52 carbide insert 1 extra Torx screw 1 Torx wrench Note that TCMW21.51 and TCMW21.52 high speed steel inserts also fit these tool holders. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel (and tool steel). Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p>
	<p>5609 Turning and Facing Tool, 3/8" Indexable, SCLCR-06-2J, Tormach \$43.95</p> <ul style="list-style-type: none"> • Designation: SCLCR-06-2J • Steel shank 3/8" x 3-1/2" • Designed for CCMT and CCGT 21.51 inserts • Approach 95°, 7° relief angle • Insert Shape: 80° (C) <p>Right hand Turning/Facing Tool. Includes wrenches and (1) insert.</p> <p>5616 Turning and Facing Tool, 1/2" Indexable, SCLCL-08-3A, Tormach \$43.95</p> <p>5615 Turning and Facing Tool, 1/2" Indexable, SCLCR-08-3A, Tormach \$44.95</p> <p>5614 Turning and Facing Tool, 3/8" Indexable, SCBCR-06-2J, Tormach \$43.95</p> <p>5610 Turning and Facing Tool, 3/8" Indexable, SCLCL-06-2J, Tormach \$43.95</p>	<p>1619 Turning Tools, 3/8" Indexable, HSS Triangle Inserts, A R Warner Kit #5, Set of 5 \$199.95</p> <ul style="list-style-type: none"> • 5 piece turning tool set • 3/8" square shank 3.5" overall length • 6 screws (MS-1153) (5 installed on the bits, 1 extra) • T-7 wrench • 6 TPMW-222 HSS inserts (5 installed on the bits, 1 extra) <p>This Arthur R. Warner Co. precision tool holder kits use high speed steel inserts. Combine the advantages of high speed steel cutting tools with the convenience of indexable tooling. The kit contains the following: - 5 Turning bars 3/8 inch shank 3.50 inches overall length - 6 Inserts (Turning) T-15 High Speed Steel TPMW-222 Relief : 11 degree, IC: 0.250 inch, Thickness: 0.125 inch, Hole: 0.110 inch Top opening: 0.146 inch at 60 degrees, Radius: 0.031 inch Screws: (6) MS-1153 Wrench: T-7 The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel (and tool steel). Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p>
	<p>5620 Turning Tool, 1/2" Indexable, SCBCR-08-3A, Tormach \$43.95</p> <ul style="list-style-type: none"> • Designation: SCBCR-08-3A • Steel shank 1/2" x 4" • Designed for CCMT and CCGT 32.51 inserts • Approach 75°, 7° relief angle • Insert Shape: 80° (C) <p>Right hand Turning Tool. Includes wrenches and (1) insert.</p>	<p>1620 Turning Tools, 1/2" Indexable, HSS Triangle Inserts, A R Warner Kit #9 \$213.50</p> <p>1719 Turning Tools, 1/4" Indexable, HSS Triangle Inserts, A R Warner Kit #1 \$191.50</p> <p>1669 Turning Tools, 3/8" Indexable, Triangle Inserts \$34.95</p> <ul style="list-style-type: none"> • 5 piece set of lathe turning tools • 3/8" square shank • Extra screws included • Two wrenches • TCMT21.51 carbide inserts <p>This set of indexable turning tools includes 5 indexable tools (AR, AL, BR, BL, E), inserts, a wrench, and extra screws. It comes in a wooden case. Style AR right hand tool Style BR right hand tool with a 15° lead angle Style E Neutral threading tool with 60° included angle Style BL left hand tool with a 15° lead angle Style AL left hand tool The carbide inserts are TCMT-21.51.</p>

DROs: DRO Packages

6387 2-Axis DRO Kit, Bench Lathe with Rotating Arm \$499.95



- Hard wired 2-axis DRO package with mounting arm
- Designed for LittleMachineShop.com HiTorque bench lathes
- Complete package, no additional components needed
- Advanced display functions
- Rotating arm included

Hard wired DRO kit for the HiTorque bench lathe. This kit comes with everything you need for a lathe 2-axis DRO installation. The wiring setup eliminates the need for a wireless environment and ensures regular steady connectivity to your lathe. The display has a protective cover which can be used or removed based on your preferences. The read head cable is approximately 58" between read head and an 9-Pin connector. The scales are pre-cut to length for the HiTorque bench lathe. See the Compatibility tab for products that work with this product.

6388 3-Axis DRO Kit, Bench Mill \$499.95



- Hard wired 3-axis DRO package with mounting arm
- Designed for LittleMachineShop.com HiTorque bench mills
- Complete package, no additional components needed
- Advanced display functions
- Mounting arm included

Hard wired DRO kit for the HiTorque bench mills. This kit comes with everything you need for a 3-axis bench mill DRO installation. The wiring setup eliminates the need for a wireless environment and ensures regular steady connectivity to your mill. The display has a protective cover which can be used or removed based on your preferences. The read head cable is approximately 58" between read head and an 9-Pin connector. The scales are pre-cut to length for the HiTorque bench mills. See the Compatibility tab for products that work with this product.

6389 3-Axis DRO Kit, Large Bench Mill \$499.95



- Hard wired 3-axis DRO package with mounting arm
- Designed for LittleMachineShop.com HiTorque large bench mills
- Complete package, no additional components needed
- Advanced display functions
- Mounting arm included

Hard wired DRO kit for the HiTorque large bench mills. This kit comes with everything you need for a 3-axis large bench mill DRO installation. The wiring setup eliminates the need for a wireless environment and ensures regular steady connectivity to your mill. The display has a protective cover which can be used or removed based on your preferences. The read head cable is approximately 58" between read head and an 9-Pin connector. The scales are pre-cut to length for the HiTorque large bench mills. See the Compatibility tab for products that work with this product.

5515 3-Axis Universal DRO Kit for Mini Mills, Bluetooth \$499.95



- Fits milling machines with less than 32" total X-, Y-, and Z-axis travel
- Displays on any Android tablet with Bluetooth capability
- Resolution of 0.0002" (0.005 mm)
- 120-240 VAC Power supply
- Coolant and dust resistant (IP50)

This magnetic technology digital readout package fits virtually any milling machine with less than 31.8" total X-, Y-, and Z-axis travel. This kit includes 1 meter (39.4") of magnetic scale that you cut to the lengths required for your machine. The instructions tell you how to measure and cut the magnetic scale. This package includes what you need to put a DRO on most any milling (or 3-in-one) machine. It includes a section of scale, three read heads, and a Bluetooth transceiver. Typical mounting bracket designs are included in the instructions. However, due to the wide range of possible applications, appropriate brackets cannot be supplied. You must also get an Android tablet for the display on this DRO. We recommend a 7" screen size, and the tablet must have Bluetooth capability.

5497 Digital Position Readout, 2-Axis Bluetooth for HiTorque Bench Lathe \$479.95

5495 Digital Position Readout, 2-Axis Bluetooth for Mini Lathe \$399.95

5514 Digital Position Readout, 3-Axis Bluetooth for HiTorque Mini Mill \$499.95

5492 Digital Position Readout, 3-Axis Bluetooth for Mini Mill \$499.95

5498 Scale, DRO Magnetic 1 Meter \$49.95

5820 Tap & Drill Kit, DRO Installation \$24.95

5675 Digital Position Readout, 2-Axis Mini Lathe \$195.95



- This DRO kit is specifically made for the 7x10, 7x12, and 7x14 mini lathe
- Mounts right on the cross slide and compound rest to give you accurate depth-of-cut readings

- Resolution: 0.0001", accuracy: 0.001"
- Buttons for on/off, zero, and inch/mm

- Fits SIEG C2/SC2 and HiTorque mini lathes

This digital position readout works with most 7x10, 7x12, or 7x14 lathes made by SIEG (C2 and SC2), which includes almost all the mini lathes sold in the US and most of the mini lathes sold worldwide. It also works with HiTorque mini lathes. This kit does not work on 20 TPI mini lathes as sold by Micro Mark. See the Compatibility tab for machines that work with this product.

5567 Digital Position Readout, 2-Axis 20 TPI Mini Lathe \$219.95

5880 Digital Position Readout, Bench Lathe Tailstock \$119.95



- This DRO kit is specifically made for the C4/SC4 bench lathe tailstocks
- Mounts right to the back of the tailstock to give you accurate quill depth readings

- Resolution: 0.0001", accuracy: 0.001"
- Buttons for on/off, zero, and inch/mm

- Handwheel: 80 mm OD, 8 mm bore, 2 mm key

This digital position readout for the tailstock works with C4 lathes made by SIEG.

Designed for the C4 and SC4 class of bench lathes including HiTorque bench lathes.

Kit includes a digital readout, handwheel, bracket, feed screw thrust bearing and fasteners.

Handle of handwheel is not provided in kit however the handwheel bolt and handle from your machine should fit. The new handwheel, like the original, has a 6mm thread. For new handle parts, see related products link.

See the Compatibility tab for machines that work with this product.


4197 Digital Position Readout, Drill Press, iGaging **\$49.95**

- Drill press digital readout (DRO)
- Easy to read LCD display
- Hardened stainless steel beam
- Range: 0 - 5" / 125 mm, Accuracy: 0.001"
- Resolution: 0.0005" / 0.01 mm / 1/64"

The iGaging EZ-Depth Drill Press DRO improves the accuracy and precision of your hole drilling. It is attached directly to the collar on the quill and the side frame of the drill press. Zero the display with the drill in contact with the workpiece, then use the digital display to measure the drilled depth. Display includes fractional inch, decimal inch, and millimeters. Buttons include On/Off/0 button, INC button for toggling between absolute and incremental mode, and a Mode button to change measurement display. Instructions include four mounting methods to suit different drill press designs. IP54 protective rating for moisture and dust resistance. Includes double rail mounting brackets, installation parts and tools as well as a 3V CRF2032 battery.


5879 Digital Position Readout, Mini Lathe Tailstock **\$109.95**

- This DRO kit is specifically made for the 7x10, 7x12, 7x14 and 7x16 mini lathe tailstocks
- Mounts right to the back of the tailstock to give you accurate quill depth readings
- Resolution: 0.0001", accuracy: 0.001"
- Buttons for on/off, zero, and inch/mm

This digital position readout for the tailstock works with almost all 7x10, 7x12, or 7x14 lathes made by SIEG, which includes most of the mini lathes sold in the US and most of the mini lathes sold world-wide.

NOTE We've found that the bore in the gray DRO retainer from these kits generally fits most tailstock retainers, but there is some variance in tailstock retainer size. The gray DRO retainer in this kit may require some additional boring (typically less than 1/8") in order to mount it on to your existing tailstock retainer.


6282 Digital Position Readout, X-Axis Compound Slide, Mini Lathe **\$81.13**

- This DRO kit for the 7x10, 7x12, and 7x14 mini lathe
- Compound slide components only
- Mounts right on the compound rest to give you accurate depth-of-cut readings
- Resolution: 0.0001", accuracy: 0.001"
- Buttons for on/off, zero, and inch/mm

This is one half of the DRO kit P/N 5675 for the X-Axis compound slide. Buy this kit if you only need a new compound slide readout and associated parts. This kit replaces the older style gray digital readouts.


6283 Digital Position Readout, Y-Axis Cross Slide, Mini Lathe **\$95.88**

- This DRO kit for the 7x10, 7x12, and 7x14 mini lathe
- Cross slide components only
- Mounts right on the cross slide to give you accurate depth-of-cut readings
- Resolution: 0.0001", accuracy: 0.001"
- Buttons for on/off, zero, and inch/mm

This is one half of the DRO kit P/N 5675 for the X-Axis cross slide. Buy this kit if you only need a new cross slide readout and associated parts. This kit replaces the older style gray digital readouts.


5012 DRO Scale, 12" (300 mm) with Display **\$99.95**

- 12" travel stainless steel scale
 - Absolute origin zero memorized when unit is powered on
 - Large LCD displays in inch/metric/fractions
 - Articulating arm allows stacking of multiple displays
 - IP54 Protective rating: Moisture and dust resistance
- Twelve inch (300 mm) DRO scale with display and mounting bracket.

This iGaging DRO unit is significantly more robust than other inexpensive scales that are available. There are no batteries in the scale units, and the scale units are permanently wired. No square rubber plugs to cause issues. The unit has a moisture and dust resistance rating of IP54.

The plug into the display unit is a micro USB plug (though not wired as USB), so it's pretty robust. And each display has a strain relief to prevent stress on the plug. Scale is made of hardened stainless steel for high accuracy and repeatability.

Functions include display in inch/metric/fractions, hold button, origin button, absolute/incremental setting and a preset function.

Displays are equipped with magnets to allow easy attachment to steel surfaces. The articulating arm allows stacking of multiple displays (see Chris' Tips). Kit includes 2 different types of mounting brackets for flexibility of installation.

Each display unit contains two CR2032 lithium batteries for long life. For an AC power supply, see P/N 1177 in related products.

Range (travel): 0-12" (300 mm)
Accuracy: 0.0015" (0.03 mm)
Resolution: 0.0005" (0.01 mm)
Total beam length: 16.5"
Distance between mounting brackets: 17.25"
Remote cable length: 76"

5596 DRO Scale, 24" (600 mm) With Display **\$139.95**

5011 DRO Scale, 6" (150 mm) With Display **\$64.95**

1177 Power Supply for DRO Scales With Display **\$14.95**

Kits: Lathe Conversion Kits

5000 Bed Extension Kit 16" **\$199.95**






- Precision ways are approximately 28-3/8" long
- Rack is approximately 17-3/4" long
- Lead screw is approximately 29-5/16" long
- PLEASE CHECK COMPATABILITY BEFORE ORDERING

This lathe bed extension kit turns your 7x10, 7x12, or 7x14 lathe into a 7x16 lathe. This lathe conversion kit includes a bed casting, a lead screw, a rack, a motor mount, a chip pan, 2 chip pan braces, several fasteners, and complete instructions. The 7x16 bed is actually 8" longer than the 7x10 bed. It is 4" longer than the 7x12 bed. This is NOT a bolt-together kit. You must drill and tap 9 holes in the new bed casting to match your lathe. You need three metric taps: M3x0.5, M6x1, and M8x1.25. If you don't have metric drills, you can use letter and number drills for tap drills. (The sizes are given in the instructions.)

4270 Bed Extension Kit 16", HiTorque Mini Lathes **\$149.95**

1617 Tap & Tap Drill Kit **\$39.95**

Kits: Lathe Conversion Kits

	4450 Extended Cross Slide Travel Kit \$95.95 <ul style="list-style-type: none"> • Extends cross slide travel on 7x10 and 7x12 lathe by 1 inch • Made for SIEG models C2 and C3 lathes • If your lathe is not listed in compatibility, call our tech dept. This kit adds one inch to the travel of the lathe cross slide on 7x10 and 7x12 mini lathes. These are designed for SIEG C2 and C3 lathes. The increased travel is away from the centerline of the lathe so you can work on larger diameter work pieces. This lathe conversion travel kit replaces the saddle and the cross slide feed screw, and it includes a spacer for the longer screw. See the Compatibility tab for machines and other products that work with this product. 	 1690 Metric Threading Kit 12" \$66.95 <ul style="list-style-type: none"> • Metric threading kit for 7x12 mini lathes • Fits HiTorque, SIEG, and other 7x12 mini lathes <p>Metric threading kit for 7x12 mini lathes. This kit replaces the lead screw and half nuts so you can more easily cut metric threads. You cannot use a threading dial with this kit installed. There is no metric threading dial. See the Compatibility tab for machines known to work with this product.</p>
	5366 Extended Cross Slide Travel Kit 20 TPI \$95.95 5847 Extended Cross Slide Travel Kit DRO (Black Scales) \$95.95 5367 Extended Cross Slide Travel Kit DRO (Gray Scales) \$95.95	1691 Metric Threading Kit 10" \$59.95 2026 Metric Threading Kit 14" \$69.95 4877 Metric Threading Kit 16" \$66.95
	2383 Feed Screw Parts, 20 TPI, Mini Lathe \$65.99 <p>These parts change Grizzly, Harbor Freight, Homier, and Cummins mini lathes to 20 thread per inch feed screws on the cross slide and compound rest. Each rotation of the hand wheel will advance 0.050".</p>	 4293 Mini Lathe Deluxe DRO Kit \$385.95 <ul style="list-style-type: none"> • Digital Readouts for cross slide and compound rest • Metal hand wheels and chrome levers • All metal change gears <p>This digital readout kit will equip your mini lathe with digital readouts on the cross slide and compound rest. The attractive hand wheels are all metal, and the levers are chrome. All the good-looking change gears are metal. This DRO kit works on any 7x10, 7x12, 7x14, or 7x16 lathe made by SIEG, which includes virtually all the mini lathes sold in the US and most of the mini lathes sold world-wide. The DRO mounts right on the cross slide and compound rest to give you accurate depth-of-cut readings. The resolution is 0.0001", the accuracy is 0.001". There are buttons for On/Off, Zero, and Inch/MM.</p>
	4047 Feed Screw Parts, Metric, Bench Lathe \$87.99 <ul style="list-style-type: none"> • Fits HiTorque Bench Lathe • Fits SIEG C4 and SC4 lathes <p>These parts change the cross slide and compound feed screws, and the carriage dial to metric.</p>	 2018 Tailstock Cam Lock Kit \$29.95 <p>This kit converts a standard mini lathe tailstock to lock by lever action. This camlock action locks the tailstock to the ways by moving a lever about 45 degrees. You must drill one 1/2" hole in the back of the tailstock casting. This lathe cam lock kit is made from heat treated 4140 steel for long life.</p>
	3446 Metal Gear Kit, Mini Lathe Complete \$259.95 <ul style="list-style-type: none"> • Changes every plastic gear on the mini lathe to metal • Metal change gear set • Metal 2-speed transmission gears • Metal lead screw drive gears • Metal 80-tooth gears <p>This mini lathe gear kit changes every plastic gear on a mini lathe to steel. You will never break a plastic gear again.</p>	 5202 Telescoping Lead Screw Cover, 7x14, 7x16 \$84.95 <ul style="list-style-type: none"> • All metal construction • Works with threading dial <p>These are telescoping metal covers for the lead screw of your mini lathe. Mounting requires that you drill and tap several holes in your lathe. The installation tools hold the mounting brackets in place as you mark the hole locations.</p>
	<p>*NOTE* This set is designed for the older SIEG C2 lathes (see compatibility tab). If you own a HiTorque mini lathe, see product 3938 for metal gears.</p> 3454 Pinion, 25 Teeth, Metal \$14.95 3493 Gear, 45 Teeth, Mini Lathe, Metal \$29.95 3450 Gear, 80 Teeth, Mini Lathe, Metal \$45.95 3455 Pinion, 20 Teeth, Metal \$14.95	5201 Telescoping Lead Screw Cover, 7x10, 7x12 \$82.95 5203 Tools, Telescoping Lead Screw Cover Installation \$9.95
	3448 Metal Transmission Gear Kit, Mini Lathe & 3MT Mini Mill \$67.95 <ul style="list-style-type: none"> • Replaces both plastic transmission gears with metal • Fits mini lathes and 3MT mini mills • Small Gear: 12 Teeth / 20 Teeth, 12 mm Bore, 4 mm Keyway • Large Gear: 21 Teeth / 29 Teeth, 30 mm Bore, 5 mm Keyway <p>Once this steel gear set is installed on your mini lathe or mini mill, you will no longer have to worry about breaking the hard-to-replace gears inside the headstock. On the mini lathe, the belt drive ensures that expensive parts don't break from overloads. On the mini mill, the easy-to-replace intermediate gear on top of the headstock is still plastic. This helps to ensure that you don't break expensive and hard to replace parts. The smaller in this set is smaller of the two transmission gears. It has 12 Teeth on one end and 20 teeth on the other. The larger of the two is the larger of the two transmission gears. It has 21 Teeth on one end and 29 teeth on the other.</p> 3451 Gear, 2-Speed Intermediate Shaft, Metal \$49.95 3453 Gear, 2-Speed Spindle, Metal \$49.95 3452 Gear, Intermediate 30 Teeth, Mini Mill, Metal \$28.95 3456 Gear, R8 Spindle No. 2, Mini Mill, Metal \$29.95 4967 Gear, Saddle Drive, Bench Lathe \$22.53 3449 Transmission Gear Kit, R8 Mini Mill, Metal \$69.95	 2634 Tweaks & Enhancements Kit, Mini Lathe \$33.95 <ul style="list-style-type: none"> • Several small items to make your lathe work better and last longer • Easier gib and saddle retainer adjustment • Fewer busted knuckles • Quicker gear cover removal • Fewer tailstock clamp jams <p>The Mini Lathe Tweaks & Enhancements Kit™ can make a big difference in the operation of your mini lathe. The kit includes the following: -Hardened lathe chuck mounting nuts for long life. -Self locking set screws for the cross slide and compound rest gibs. -Self locking cap screws for the carriage retainers. -Button-head cap screws for the cross slide and compound rest crank handles. -Thumbscrews for the change gear cover. -A spring for the tailstock clamp. -A rubber boot to protect the F/O/R switch on 7x10 and 7x12 mini lathes. -A rubber guard to prevent chips from getting into the motor speed control enclosure. -Complete instructions</p> 3940 Tweaks & Enhancements Kit, HiTorque Mini Lathe \$38.95

Kits: Mill Conversion Kits

**2258 Air Spring Conversion Kit \$52.95**

- Converts torsion spring mini mills to air spring
- Allows travel to the top of the column
- Provides better support for the mill head

Convert torsion spring mini mills to air spring. Most mini mills use a torsion spring mounted on the side of the column to support the head. This air spring conversion kit provides all the parts required to change to a vertical air spring that mounts inside and above the column. With the air spring installed, you can move the mill head up until the top of the casting is almost flush with the top of the column. You can move it down until it almost contacts the adjustable Z-axis stop set in its lowest position. Besides all the parts required to mount the air spring, this kit also includes a longer Z-axis rack so you can take advantage of the longer head motion. This air spring has about 35 pounds of force. This is not enough to totally support the head, but it is a heck of a lot more support than the torsion arm provides.

4005 Air Spring Conversion Kit, HiTorque Mini Mills \$79.95**2560 Belt Drive Conversion Kit, Mini Mill \$159.95**

- No more broken drive gears
- Much quieter operation
- Spindle speed up to 4300 RPM
- Ideal for manual and CNC mini mills
- PLEASE CHECK COMPATABILITY BEFORE ORDERING

This mini mill belt drive conversion kit provides an easy-to-install alternative to the noisy and fragile factory-installed gears that drive the spindle on the mini mill. This kit is CNC-machined from the highest quality materials. Designed to run full-time, it is built to last. The belt drive conversion kit includes one belt. Change speeds without any tools. Simply remove the guard, loosen the lever locks and move the belt from one pair of pulleys to the other. Low speed range is 0-1700 RPM. High speed range is 0-4300 RPM. The installation is bolt-on and takes about 20 minutes. This belt drive kit fits the mills shown on the Compatibility tab. Don't expect it to fit other machines. The small pulley has a 9 mm bore with a 3 mm keyway. The large pulley has a 30 mm bore with a 5 mm keyway. If your shafts don't match these values, then this belt drive will not fit your mill.

4795 Belt Drive Shield, Mini Mill, Plastic \$8.95**2657 V-Belt, 2L130 for Mini Mill Belt Drive Kit \$14.95****3954 Feed Screw Parts, 20 TPI, HiTorque Mini Mill \$49.95**

These parts change HiTorque mini mills to 20 thread per inch feed screws on the X- and Y-axis. Each rotation of the hand wheel will advance the table 0.050". The kit includes two feed screws, two nuts, two 50 division dials, plus the springs and keys that you are going to lose during disassembly.

1764 Feed Screw Parts, 20 TPI, Mini Mill \$61.20**4249 Feed Screw Parts, Metric, HiTorque Mini Mill \$124.95****1989 Feed Screw Parts, Metric, Mini Mill \$71.28****1201 Feed Screw Parts, Metric, HiTorque Bench Mill \$149.95**

- For models 5500, 6500

This kit changes the HiTorque bench mill to metric feed screws on the X-, Y- and Z-axis. The kit includes three feed screws, three nuts, three dials, and one scale.

1178 Feed Screw Parts, Metric, HiTorque Bench Mill Deluxe \$149.95**4151 High Speed Spindle Kit, HiTorque Mini Mill \$69.95**

- Fits HiTorque mini mills
- 5000 rpm top speed
- Includes two pulleys and a belt
- Belt is 350-5M-15, 70 teeth

These pulleys change the spindle speed range to 5000 rpm max.

It's important to have high speed bearings, as the standard bearings are not rated to 5000 rpm. Most LittleMachineShop.com HiTorque Mini Mills have high speed bearings--see the Chris' Tips tab. The increased speed is great for small cutters such as those used for engraving. Just remember that doubling the speed will cut the torque in half. This high speed spindle kit uses the same belt as the standard drive pulleys. We do not have installation instructions completed yet, so you are on your own for installation. The pulleys are easy, but if you have to change the bearings you have to press the spindle out and back in. A hydraulic press makes it an easy task. Switching pulleys to the original set shouldn't take more than 20 minutes.

**5177 Large Table Solid Column Conversion Kit, Mini Mill \$599.95**

- Converts a tilting column mini mill to the large table solid column version
- 30% more travel in both directions
- 50% more table area
- Solid column is significantly more rigid

This kit converts a tilting column mini mill to a large table with a solid column. The kit includes the X-Y table and column from the HiTorque Solid Column Mini Mill (part number 3990), the fasteners needed to connect them. This kit contains a complete X-Y table assembly for a mini mill. The table is 120 mm (4.73") by 460 mm (18.11"). It has three 12 mm T-slots. The X-axis travel is 300 mm (11.8") and the Y-axis travel is 130 mm (5.1"). The dials are graduated in 0.001" and one turn of the hand wheels moves the table 0.050". The X-Y table is made of cast iron and steel. There are adjustable gibs on both axes.

**5855 Long Table Kit, Bench Mill \$329.95**

- Extra long table for Bench Mill, X2.7 and SX2.7 mills

This extra long mill table fits the LittleMachineShop.com 5500 & 6500 Bench Mill, the SIEG X2.7 and SIEG Super SX2.7 mills. The kit comprises a table and feed screw plus a larger saddle. It includes all the small parts required to install it. The table is 27.5" x 6.25" (699 mm x 159 mm). The kit requires drilling a few holes. This kit also requires you to order replacement gibs, and cut them to size.

**2642 Long Table Kit, Micro Mill \$99.95**

- Table is 400 mm x 145 mm
- X-Axis travel is 330 mm
- Provides 150 mm more X-axis travel

This kit adds a larger table, and increases the X-axis travel to 330 mm on the Harbor Freight 47158 micro mill. The conversion kit includes a new table and 20 TPI X-axis screw.

3492 Long Table Kit, Micro Mill, Metric \$99.95**4483 Solid Column Conversion Kit, Mini Mill \$259.95**

- Converts a tilting column mini mill to the solid column version
- Adds rigidity and stability to the mini mill
- Compatible with the HiTorque 3900 mini mill
- Can be used on SIEG X2 and SX2 Mini Mills
- See compatibility Tab for mills that work with this product

This mini mill conversion kit converts a tilting column mini mill to solid column. Designed for SIEG family of mini mills in the X2 and SX2 family as well as the early HiTorque tilting column mill model 3900.

The kit includes the mini mill base and column, the fasteners needed to connect them, and complete instructions.

**1625 Spindle Conversion Kit, R8 \$84.38**

- This kit converts a Grizzly or Micro-Mark mini mill to an R8 spindle

The kit includes:-R8 spindle-Two spindle gears-Two spacing rings-Two keys-One bearing-One drawbar-Complete instructions

2823 Spindle Conversion Kit, 3MT \$59.95

Kits: Mill Conversion Kits



4762 Spindle Lock, Interlocked, HiTorque Mini Mill \$156.00

- Makes tool changes easier, faster, and safer
 - When engaged, the plunger automatically drops into the locking hole as the spindle is rotated
 - An electro-magnetic interlock disables power to the motor when the spring plunger is engaged
 - Frees both hands for changing tools
 - Loosen and tighten keyless chucks with one hand
- The spindle brake provides a semi-automatic method of locking the spindle freeing both hands to complete a tool change. A safety switch disables power to the motor when the spring plunger is engaged.

Fits SIEG SX2 mills



2635 Tweaks & Enhancements Kit, Mini Mill \$49.95

- Several small items to make your mini mill work better and last longer
 - Easier gib adjustment
 - Fewer stripped locking levers
 - Easier backlash adjustment
 - Cleaner T-slots
- The Mini Mill Tweaks & Enhancements Kit™ can make a big difference in the operation of your mini mill. The kit includes the following: Improved (German-made) locking levers for the X-, Y-, and Z-axes. Self locking set screws for the X-, Y-, and Z-axis gibs. Self locking adjustment nuts for the X-, and Y-axes. A T-slot cleaner. Complete instructions



5069 Upgrade Kit, Mini Mill \$199.95

- Includes 2258 Air Spring Kit and 2560 Mini Mill Belt Drive Kit
 - Much quieter operation
 - Spindle speed up to 4300 RPM
 - Allows travel to the top of the column while providing better support for the mill head
 - No more broken drive gears
- Do not buy this milling machine upgrade kit if you have a HiTorque Mini Mill. Most or all of these features are already included on the HiTorque mills. This mini mill kit provides an easy-to-install alternative to the noisy and fragile factory-installed gears that drive the spindle on the machine. The kit includes one belt. Change speeds without any tools. Simply remove the guard, loosen the lever locks and move the belt from one pair of pulleys to the other. Low speed range is 0-1700 RPM. High speed range is 0-4300 RPM. The small pulley has a 9 mm bore with a 3 mm keyway. The large pulley has a 30 mm bore with a 5 mm keyway. If your shafts don't match these values, then this belt drive will not fit your mill. Convert torsion spring mini mills to air spring. This mini mill kit provides all the parts required to change to a vertical air spring that mounts inside and above the column. With the air spring installed, you can move the mill head up until the top of the casting is almost flush with the top of the column. You can move it down until it almost contacts the adjustable Z-axis stop set in its lowest position. This air spring has about 35 pounds of force. This is not enough to totally support the head, but it is a heck of a lot more support than the torsion arm provides.

Kits: Spare Parts Kits



2249 Spare Parts Kit, Micro Mill \$19.95

- 5 GMA-2 fuses
 - 6 different gears
- This kit contains the parts that fail most often on the micro mill with a 2 Morse taper spindle.



1223 Spare Parts Kit, Mini Lathe \$30.95

This spare parts package contains the parts that fail most often on the mini lathe.

This mini lathe spare parts kit contains:

- 5 GMA-5 fuses
- 1 Gear, 2-Speed Intermediate Shaft
- 1 Gear, 2-Speed Spindle
- 1 Belt, Timing
- 1 Pulley, Timing Belt Motor (8 mm shaft)
- 1 Pulley, Timing Belt Intermediate Shaft
- 1 Gear, 80 Tooth

2262 Spare Parts Kit, 7x14 Mini Lathe \$25.51



1703 Spare Parts Kit, R8, Mini Mill \$35.85

- R8 Mini Mill Spindle Gears
- 5 GMA-5 Fuses
- 1 Motor Gear
- 2 Spindle Gears
- 2 Intermediate Shaft Gears

This kit contains the parts that fail most often on the mini mill with the R8 spindle. The kit contains: 5 GMA-5 fuses 1 14-Tooth Motor Gear, Metal 1 30-Tooth Intermediate Shaft Gear 1 29-Tooth Spindle Gear, No. 11 21-Tooth Spindle Gear, No. 21 2-Speed Intermediate Shaft Gear, 12 Teeth / 20 Teeth

1224 Spare Parts Kit, 3MT, Mini Mill \$25.65

Lathe: 7x10/12/14 Mini Lathe (C2/C3) Accessories



4607 Accessory Package, 3" Spindle Flange Mini Lathe \$369.27

- Complete set of mini lathe accessories
 - Fully equip your mini lathe
 - Steadies, centers, chucks, locks and dogs
- This package includes all the accessories you could want to fully equip your mini lathe. This accessory package is for lathes that come from the factory with a 3" lathe chuck.



5371 Accessory Package, 4" Spindle Flange, Mini Lathe \$369.27

- Complete set of mini lathe accessories
 - Fully equip your mini lathe
 - Steadies, centers, chucks, locks and dogs
- This package includes all the accessories you could want to fully equip your mini lathe. This package is for mini lathes that come from the factory with a 4" lathe chuck.



2977 Carriage Lock, Mini Lathe \$19.95

- Locks carriage down to ways
 - Will NOT rock the carriage when locking
 - Mounts to existing follower rest mounting holes
 - No tools required to lock the carriage
- This mini lathe carriage lock mounts to the two tapped holes for mounting the follower rest. The carriage lock can be left in place for most operations.



2705 Carriage Stop, Mini Lathe, Adjustable \$9.95

- Mini lathe carriage stop
 - Easy to attach and adjust
 - Includes fine adjustment
 - Useful for multiple cutting passes
 - Helps when making multiple parts
- This carriage stop clamps to the ways of your mini lathe to provide a repeatable stop position. This is useful when making multiple cutting passes or when making multiple parts. This stop incorporates a fine adjustment. It is locked with a lever so you need no tools to use it. See the Compatibility tab for machines that work with this product.

4159 Carriage Stop, Bench Lathe, Adjustable \$19.95

Lathe: 7x10/12/14 Mini Lathe (C2/C3) Accessories

	3938 Change Gear Set, Mini Lathe, Metal \$129.95 <ul style="list-style-type: none"> • Attractive all metal change gears • Module 1 Metric gears • Bore 12 mm • Keyway 3 mm • Width 8 mm <p>Complete all metal steel change gears for the mini lathe. Each gear has a brushed steel side with and easily to read gear number impression.</p>	 5123 Faceplate, Mini Lathe, 100 mm Flange \$39.95 <ul style="list-style-type: none"> • 160 mm Diameter • 8 Slots to Mount Work • 72 mm Registration Recess • Requires 3 M8 x 25 Studs • Compatible with Lathes with 100 mm Flange Chuck Mount <p>The faceplate is 6.29" (160 mm) in diameter and has 8 slots for mounting work. The faceplate is made of cast iron. This faceplate has a 72 mm registration recess. It requires 3 M8 x 25 studs. It mounts in place of a 100 mm (4") 3-jaw lathe chuck.</p>
	1677 Compound Rest Bottom, Mini Lathe, Drilled \$36.27 <ul style="list-style-type: none"> • Pre-drilled compound rest bottom, mini lathe • Extra holes to eliminate chatter • For lathes with a 1 mm thread pitch, 0.0394" per revolution • Use with dial having 40 divisions • Fits numerous SIEG C2 and C3 and HiTorque mini lathes <p>This is the bottom half of the compound rest on the mini lathe. This part has a second set of holes that moves the center of rotation of the compound rest to help eliminate chatter. Use the holes nearest the end of the part. The thread pitch is 1 mm so the compound advances 0.040" (actually 0.0394") per revolution. Use with a dial that has 40 divisions.</p>	 1199 Faceplate, Mini Lathe, 80 mm Flange \$37.99 <ul style="list-style-type: none"> • 160 mm diameter • 8 slots to mount work • 55 mm registration recess • Requires 3 M6 x 30 studs • Compatible with lathes with 80 mm flange chuck mount <p>The faceplate is 6.29" (160 mm) in diameter and has 8 slots for mounting work. The lathe face plate is made of cast iron. This mini lathe faceplate has a 55 mm registration recess. It requires 3 M6 x 30 studs.</p>
	1880 Compound Rest Bottom, Mini Lathe, Drilled, 20 TPI \$36.27	2644 Clamping Kit, Mini Lathe Faceplate \$19.44 3400 Faceplate, Bench Lathe \$44.60
	1777 Compound Rest Bottom, Mini Lathe, Drilled & Milled \$45.20 <ul style="list-style-type: none"> • Pre-drilled & milled compound rest bottom, mini lathe • Extra holes to eliminate chatter • 1/4" thinner than standard part allows AXA tool posts • For lathes with a 1 mm thread pitch, 0.0394" per revolution • Fits numerous SIEG C2 and C3 and HiTorque mini lathes <p>This is the bottom half of the compound rest on the mini lathe. This part has a second set of holes that moves the center of rotation of the compound rest to help eliminate chatter.</p>	 1198 Follower Rest, Mini Lathe \$49.95 <p>This follower rest mounts on the lathe saddle and moves with the carriage. The follower rest can support work up to 1" in diameter</p>
	<p>This part is also about 1/4" thinner than the standard part. This makes it possible to mount AXA or Series 100 tool posts on the mini lathe. Use the holes nearest the end of the part. Do not expect to use this without a quick change tool post of some sort. It will place the standard tool post about 1/4" too low. The thread pitch is 1 mm so the compound advances 0.040" (actually 0.0394") per revolution. Use with a dial that has 40 divisions.</p>	 2419 Follower Rest, Mini Lathe, Ball Bearing \$69.95 1137 Gear Set, Fine Feed, Mini Lathe \$42.95 <ul style="list-style-type: none"> • 80/15 and 90 teeth • Module 1 Metric gears • Bore 12 mm • Keyway 3 mm • Width 8 mm <p>This gear set reduces the feed rate for turning from 0.0039" per spindle revolution to 0.0026" per revolution. Slowing the feed rate can help improve the surface finish.</p>
	1881 Compound Rest Bottom, Mini Lathe, Drilled & Milled, 20 TPI \$45.20	<p>They replace the two 80 tooth gears and the lower 20 tooth gear.</p> <p>They are 3D printed from PTEG.</p>
	4836 Compound Rest Top, T-slot \$29.95 <ul style="list-style-type: none"> • Two 8 mm T-slots 25 mm center to center • Mounts QCTP or standard 4-way tool holder <p>This compound rest top fits any mini lathe. It gives you two 8 mm T-slots with which you can mount anything you want.</p>	 2459 Gear, 21 Teeth, Mini Lathe \$10.85 <ul style="list-style-type: none"> • 21 Teeth • Bore 12 mm • Keyway 3 mm • Width 8 mm <p>A 21 tooth change gear allows you to cut more accurate metric threads with a mini lathe. These gears are made from metal for durability. This gear fits most current production mini lathes. Measure the width of the keyway in your change gears to be sure.</p>
	1551 Cut-Off Tool Holder \$9.95 <ul style="list-style-type: none"> • Fits Standard 4-way Tool Posts • Holds 1/2" Tall Cut-Off Blades • Steel Construction <p>This cut-off, or parting, tool holder fits in the standard 4-way tool post (and most other tool posts) and holds 1/2" tall cut-off blades. The mini lathe parting tool holder is made of steel and has a 3/8 shank. Use 3mm hex wrench for screws.</p>	3937 Knob and Handwheel Kit, Mini Lathe \$84.95 <ul style="list-style-type: none"> • Anodized handwheels for apron and tailstock • Chrome levers for half-nuts, tool post and tailstock • Handwheels: 90 mm OD, 8 mm bore • Levers: M8 threading • Acron Nuts: M8 threading <p>The attractive handwheels are all metal, and the levers are chrome. Designed for SIEG C2, SC2 and C3 class of mini lathes as well as HiTorque mini lathes. Kit contains two handwheels with handles and posts; three levers, acron nuts and a 24 tooth drive gear. The saddle drive gear in this kit is an upgraded version with a threaded end. This allows the handwheel to hold to the gear shaft using one of the chrome acron nuts. In the factory version of the lathe, the hand wheel was held to the gear using a cone point set screw. The tailstock handwheel also has an acron nut for attachment to the tailstock screw. In this application, the chrome acron nut simply replaces a standard M8 nut. See the Compatibility tab for machines that work with this product.</p>
	3864 Cut-Off Tool Holder and HSS Blade \$24.95 1873 Drawbar, 3MT x 3/8"-16, Mini Lathe \$4.95 <ul style="list-style-type: none"> • Mini lathe drawbar • 3MT x 3/8"-16 x 5" • Hardened • Fit SIEG C2 and SC2 class of mini lathes <p>This is the 3/8"-16 drawbar for the 7x10 and 7x12 mini lathe with the 3 Morse Taper spindle. This drawbar is a 3/8"-16 x 5" cap screw and a flat washer. They are both hardened for long life. See the Compatibility tab for machines that work with this product.</p>	2224 Drawbar, 3MT x 3/8"-16, 7x14 Mini Lathe \$5.95 1872 Drawbar, 3MT x M12, Mini Lathe \$4.49

Lathe: 7x10/12/14 Mini Lathe (C2/C3) Accessories

	3967 Lathe Cover, Mini Lathe \$24.95 <ul style="list-style-type: none"> Fits 7x10, 7x12, 7x14 and 7x16 lathes <p>This denim lathe cover provides protection for your lathe when you are not using it. The denim cloth breathes preventing moisture build-up under the cover.</p>	 1136 Spider, Mini Lathe Spindle \$76.95 <ul style="list-style-type: none"> Spider for back of mini lathe spindle Use to support long stock through spindle Replaces 2nd spindle nut (M27x1.5 thread) 3/4" (20 mm) diameter capacity Uses M6x20 cap screws <p>Use this spider to support long stock extending out the back of the spindle. The spider has a 3/4" (20 mm) diameter capacity with four adjustment screws sized M6x20. We recommend keeping the change gear cover removed during operation.</p>
	4464 Lathe Dog Set, 0-40mm \$35.95 <ul style="list-style-type: none"> Set of 5 lathe dogs for material up to 1.5" (40 mm) M6 and M8 drivers <p>This lathe dog set will handle material sizes from very small up to 1.5" diameter.</p> <p>It includes driver pins for lathes with an 80 mm spindle flange (including mini lathes), and lathes with a 100 mm spindle flange.</p>	3897 Spindle Hand Crank \$34.95  <p>Great for threading, this allows you to turn your spindle by hand as slowly as you like. Tighten the bolt to engage the crank. Loosen to remove it.</p>
	4476 Driver, Lathe Dog, M6 \$2.95 4477 Driver, Lathe Dog, M8 \$2.95 6341 Lathe Dog Set, 0-30mm \$27.95 4471 Lathe Dog, 10 mm \$4.95 4472 Lathe Dog, 15 mm \$5.95 4473 Lathe Dog, 20 mm \$6.95 4474 Lathe Dog, 30 mm \$7.95 4475 Lathe Dog, 40 mm \$8.95	1197 Steady Rest, 0-1" Mini Lathe \$59.95  <p>This lathe steady rest can support work up to 1" in diameter. If this product is out of stock, you may want to try our part number 2418 Steady Rest, Ball Bearing as a substitute! It is the same Steady Rest just with the added ball bearing feature. This steady rest comes with the fasteners to lock it to the lathe bed.</p>
	3766 Milling Attachment Package, Mini Lathe \$284.95 <ul style="list-style-type: none"> Milling attachment that bolts on to the mini lathe Set of 6 two-flute end mills, 1/8" to 1/2" diameter 3/8" End mill holder and drawbar <p>The milling attachment replaces the compound rest on the mini lathe. The vise opening is 1.9". The width of the vise is 2.6" and the depth is 1.4". The travel is 3.6". The dial is graduated in 0.025 mm (approximately 0.001") and there are 60 divisions, so the advance is 1.5 mm (0.059") per revolution. This package includes drawbars for all mini lathes. For other lathes you will probably need to make a drawbar from 3/8-16 threaded rod.</p>	4675 Steady Rest Package, 0-2" Mini Lathe \$109.95 2418 Steady Rest, 0-1", Mini Lathe, Ball Bearing \$89.95 4673 Steady Rest, 1-2" Mini Lathe \$69.95 4674 Steady Rest, 1-2", Mini Lathe, Ball Bearing \$89.95 3818 Tachometer, Spindle, HiTorque Mills & Lathes \$159.95  <ul style="list-style-type: none"> Plugs into control panel Mounts magnetically Displays to nearest 20 RPM of spindle Works for HiTorque mini mills and mini lathes <p>This spindle tachometer mounts on the top of the mini lathe headstock or the control box of a mini mill. The device displays the speed, to the nearest 20 RPM, of the spindle. The spindle speed readout plugs into the jack on the control panel. See the Compatibility tab for machines and other products that work with this product.</p>
	1566 Milling Attachment, Taig \$84.95 <ul style="list-style-type: none"> Small milling attachment for mini lathe Fits most small SIEG class mini lathes Mounting block not included See Chris Tips for mounting block plans <p>The Taig milling attachment makes a good small milling attachment for the mini lathe. You must make a mounting block that is about 1" tall to mount this mini lathe milling attachment on the cross slide. The total vertical travel is 1.5" and the dial provides 0.001" increments. The vise width is 2". The table is 2" x 3-3/4". Overall the milling attachment is 2.25" wide, 3.38" deep, and 5.75" tall. See the Compatibility tab for machines and other products that work with this product. See Chris' Tips for mounting block plans.</p>	2658 Tachulator Tachometer & SFM Meter \$109.95  <ul style="list-style-type: none"> Digital tachometer for lathes and mills Displays rpm and surface feet per minute Range to 9999 rpm, 9999 SFM Accuracy and resolution to 1 rpm Cutter or work diameter to 99.99" <p>This kit includes the Tachulator module in an aluminum enclosure, plus the sensor and power supply. Features include: Period counting for fast updates even at slow rpm inputs Calculates SFM from rpm and entered diameter Cutter or work diameter from 0.01" to 99.99" Low power consumption- 50mA typically at 9-12VDC Bright attractive 4 digit 0.56" high display with decimal points Sensor contains light source - will work in complete darkness Crystal time base for high accuracy and stability Professional quality conservative design and manufacturing Screw terminal block for sensor connection Usable with multiple sensor heads using a DPDT or 2-pole multiple-position switch</p>
	4968 Revolving Tailstock Chuck Adapter, 3" Chuck, 2MT \$189.95 <ul style="list-style-type: none"> CHUCK NOT INCLUDED: Mounts a 3" 3-jaw chuck in the tailstock Three ball bearings provide support for heavy duty load and high speed. Max Load: 1100 lbs. Maximum Rated RPM: 4000 2MT standard shank <p>Use this in conjunction with a 3" 3-jaw chuck in place of a live center. No more center drilling. This works great for long, large diameter work pieces where a live center or steady rest just won't cut it. Three ball bearings for heavy duty loads and relatively high speed. *NOTE* Chuck is not included, but it works great with our 1187 lathe chuck.</p>	3844 Tooling Plate, Milling Attachment \$81.43  <p>This mill tooling plate works with the lathe milling attachment. It is 120 mm (4.72") square and includes four clamps. The holes are threaded M6 and are 20 mm on centers</p>
	5965 Revolving Tailstock Chuck Adapter, 4" Chuck, 3MT \$249.95	

Lathe: 7x10/12/14 Mini Lathe (C2/C3) Accessories**1685 Wood Turning Tool Rest and Center, Mini & Bench Lathe \$65.95**

- Turn wood on a metal lathe
- Includes woodturning tool rest and spur center
- Fits several SIEG mini lathes classes from C2 to SC4
- Fit LittleMachineShop.com HiTorque mini lathes and bench lathes

The wood turning tool rest clamps into a standard tool post so you can turn wood on your mini lathe or bench lathe. The tool rest height can be adjusted and it can rotate 360 degrees. The spur center fits in the lathe spindle with a #3 Morse taper. Mount the tool in a standard tool post by securing the shelf with the three set screws on the tool post. The spur center secures directly in the spindle with the chuck removed.

Lathe: 7x10/12/14 Mini Lathe (C2/C3) Assemblies**1769 Compound Rest Assembly, Mini Lathe \$79.95**

- Mini Lathe Compound Rest
- Includes Tool Post

This is a complete compound rest for the mini lathe. This mini lathe compound rest includes the tool post and locking handle.

**1884 Tailstock Assembly, Mini Lathe \$69.95**

- Complete Tailstock Assembly for Mini Lathe
- Center Height Approx. 90 mm
- 2MT Quill

This is a kit of all the parts required to make a complete tailstock for the mini lathe. The center height of this tailstock is approximately 90 mm. The quill is 2 Morse taper.

**2502 Tailstock Assembly, Mini Lathe, Cam Lock \$89.95**

This is the tailstock from the HiTorque mini lathe. It has a factory-installed cam lock mechanism. It holds 2 Morse taper tooling.

**1526 Threading Dial Assembly (Inch) \$22.40**

This kit includes all the parts needed to add a thread dial indicator for cutting inch threads to a mini lathe. This dial assembly DOES NOT help you to cut inch threads on a metric lathe with a metric lead screw.

2545 Threading Dial Assembly (Inch), G0516 \$29.95**Lathe: 8.5x20 Lathe (C4) Accessories****4665 Accessory Package, Bench Lathe \$398.95**

- Complete set of bench lathe accessories
- Fully equip your SIEG C4, SC4 or HiTorque bench lathe
- Steadies, centers, chucks, faceplate and dogs

This package includes all the accessories you could want to fully equip your SIEG C4, SC4 or LittleMachineShop.com HiTorque bench lathe. See compatibility tab for reference to machines that are compatible with this product.

**3400 Faceplate, Bench Lathe \$44.60**

- 180 mm diameter
 - 8 Slots for mounting work
 - Compatible with lathes with 100 mm flange chuck mount
 - Fits SIEG C4, SC4 and HiTorque bench lathes
- Bench lathe faceplate that fits SIEG C4, SC4 and LittleMachineShop.com HiTorque bench lathes. The faceplate is 7.1" (180 mm) in diameter and has 8 slots for mounting work. This faceplate will not fit with a plastic chuck guard in place.

3401 Clamping Kit, Bench Lathe Faceplate \$28.95**3399 Follower Rest, Bench Lathe \$69.95**

- Follower rest, bench lathes
 - Supports work up to 2.2" in diameter
 - Fits SIEG C4, SC4, and HiTorque bench lathes
- This follower rest fits SIEG C4, SC4, and LittleMachineShop.com HiTorque bench lathes. The follower rest can support work up to 2.2" in diameter. See compatibility tab for reference to machines that are compatible with this part.

**3398 Steady Rest, Bench Lathe \$69.95**

- Bench lathe steady rest
 - Fits SIEG C4, SC4, and HiTorque bench lathes
 - Supports work up to 2.2" (55.88 mm) in diameter
- Bench lathe steady rest fits SIEG C4, SC4, and LittleMachineShop.com HiTorque bench lathes. The steady rest can support work up to 2.2" (55.88 mm) in diameter. See compatibility tab for reference to machines that are compatible with this part. Includes clamping foot, washer, and nut for mounting.

Lathe: Tool Post Grinders**2001 Tool Post Grinder, Mini Lathe \$184.95**

This light-duty mini lathe tool post grinder is specifically designed for the SIEG mini lathe and perfect for the hobbyist. To install it, simply replace the compound rest. The bottom of the mounting foot is approximately 50 mm (2") below the center line of the grinding wheel. With a powerful 150 watts, 120V, 60 Hz. motor, this grinder can handle even the toughest tasks with ease. This tool post grinder operates at a speed 6,000 rpm, ensuring efficient and accurate grinding every time. This handy grinder comes with two grinding wheels - a 60 grit and 80 grit - as well as tools needed to change them. The compact design measures only 8" tall, 9" long, and 3.5" thick, making it easy to store and transport.

2195 Arbor, Grinding Wheel \$9.91**1117 Grinding Wheel Dresser \$12.95****2584 Grinding Wheel, 120 Grit \$12.63****2585 Grinding Wheel, 180 Grit \$12.63****2586 Grinding Wheel, 240 Grit \$12.63****2184 Grinding Wheel, 60 Grit \$12.95****1767 Grinding Wheel, 80 Grit \$12.57****2194 Poly-V Belt, Tool Post Grinder \$3.95****4670 Tool Post Grinder, Bench Lathe \$195.01**

Lathe: Tooling

**2568 Ball and Radius Turning Tool, Large \$139.95**

- Turn round shapes or curves on metal mini lathe
- For brass, aluminum, steel, plastic
- Cut convex curves up to 1 3/4" in diameter
- 1/2" Shank

The Large Radius Ball Tool, like its smaller counterpart, is designed to cut round shapes or curves in brass, aluminum, steel, wood or plastic on your own lathe. Balls in the ends of rods, shafts, or handles are easily turned with the tool. You can also make ball joints, governor weights, railing knobs, round contact points for tools, nose cones, and many other useful and decorative objects.

The lathe radius turning tool is sized for lathes of 5" or greater swing, and the 1/2" shank size will fit most standard tool holders. The tool will cut convex curves up to 1 3/4" in diameter. This lathe ball turning attachment is designed so that the center height is 3/8" from the bottom of the shank. The tool comes with a pre-ground HSS tool bit which may be easily sharpened or modified.

This tool is manufactured from the highest quality materials. Frames and handle are machined from high strength aluminum alloy. The pivot pins are hardened and ground and rotate in custom bronze bearings. The tool is completely machined from solid metal stock, there are no stamped, cast or pressed parts. A pre-ground High Speed steel tool bit is included. Each lathe radius turning tool is manufactured in the USA for LittleMachineShop.com by Belfanti Toolworks and is carefully assembled and inspected before shipment in our warehouse.

2569 Ball and Radius Turning Tool, Small \$119.95

2963 Tool Bit, Large Ball and Radius Turning Tool \$22.95

2964 Tool Bit, Small Ball and Radius Turning Tool \$19.95

**1970 Ball Turning Attachment \$68.95**

- Turn balls on metal mini lathe
- Cut convex curves up to 2" in diameter
- Includes one presharpener 5/16" tool bit
- Fits most SIEG and LittleMachineShop.com HiTorque mini lathes
- Mounting block not included

This attachment allows you to turn balls on the mini lathe. This radius turning tool will cut convex curves up to 2" in diameter. Includes one presharpener 5/16" tool bit. You must make a mounting block for the ball turning attachment. See Chris' tips for plans for the mounting block. See the Compatibility tab for machines and other products that work with this product.

Dead Centers

Morse taper solid dead centers These dead centers have a 60 degree included point angle. Half-notched dead centers have about half the point cut away so you can work closer to the end of the work piece.

5187 Dead Center, 1MT \$5.95

5475 Dead Center, 1MT, Carbide Tip \$10.95

5471 Dead Center, 1MT, Carbide Tip, Half-Notched \$16.95

5473 Dead Center, 2MT \$7.95

1890 Dead Center, 2MT \$6.80

5476 Dead Center, 2MT, Carbide Tip \$10.95

5186 Dead Center, 2MT, Carbide Tip, Half-Notched \$14.95

1188 Dead Center, 3MT \$8.22

5477 Dead Center, 3MT, Carbide Tip \$17.95

5472 Dead Center, 3MT, Carbide Tip, Half-Notched \$16.95

**1911 Knurler, Large Capacity \$71.95**

- 0 to 2" (50 mm) diameter capacity
- Fits standard 4-way and quick change tool posts
- Includes three sets of knurls

This scissors knurling tool is made to our design, specifically for the mini lathe. This knurler fits in the standard tool post of the mini lathe without any modification. This knurling tool also works with any of the quick change tool posts we sell. The mounting bar is 3/8" (9.5 mm) tall so it replaces a 3/8" tool bit. It comes with fine (33 lines per inch, 0.8 mm pitch), medium (21 lines per inch, 1.2 mm pitch), and coarse (14 lines per inch, 1.8 mm pitch) diamond knurls.

3770 Knurler, Large Capacity with 6 sets of Knurls \$84.95

1733 Knurls, Coarse Diamond \$5.95

2974 Knurls, Coarse Straight \$5.95

1731 Knurls, Fine Diamond \$5.95

2972 Knurls, Fine Straight \$5.95

1732 Knurls, Medium Diamond \$5.95

2973 Knurls, Medium Straight \$5.95

Lathe Mandrels, Individual Sizes

- Standard taper: .0005" per 1"
 - Smaller end is .0005" undersized
 - Made of tool steel hardened and ground
- Lathe and OD grinder mandrels. Designed for setting-up accurately bored or reamed blanks and castings.

5459 Lathe Mandrel, 1/8" x 2-1/2" \$9.95

5460 Lathe Mandrel, 3/16" x 3" \$9.95

5461 Lathe Mandrel, 1/4" x 3-3/4" \$9.95

5462 Lathe Mandrel, 5/16" x 4" \$9.95

5463 Lathe Mandrel, 3/8" x 4-1/4" \$9.95

5465 Lathe Mandrel, 1/2" x 5" \$9.95

1189 Live Center, 2MT Short \$23.95



- Point is a 60 degree included angle
- Short 2 Morse taper for the mini lathe
- Fits Jet 1014 mini wood lathe
- 1.495" diameter body

This mini lathe live center fits the tailstock of the mini lathe. The point is a 60 degree included angle and is 0.71" in diameter.

3154 Live Center, 2MT Standard Bull Nose \$99.95



- For tubing and other hollow work
 - Point is a 70° included angle
 - Standard bull nose 2 Morse taper
 - 5.31" total length
- This bull nose live center is made from hardened steel and ground for accuracy. It has precision high quality bearings. The nose is a 70° included angle. The diameter of the nose is 2.45". The diameter of the flat on the front of the nose is 0.46".

1592 Live Center, 2MT Standard Heavy Duty \$32.95



- Point is a 60° included angle
 - Standard 2 Morse taper for the mini lathe
 - 1.77" diameter body
- This center is made from hardened steel and ground for accuracy. It has precision high quality bearings. The point is a 60° included angle. The maximum diameter of the point is 0.98". The OD of the body is 1.77". The distance from the tip to the front of the body is 1.66". The rated radial load is 90 lbs. The maximum speed is 5000 RPM.

2714 Live Center, 0MT \$29.95

1704 Live Center, 1MT Heavy Duty \$26.95

3702 Live Center, 3MT \$32.95

4544 Live Center, 2MT Standard Multi Point \$118.95



- 7 different live center points
- Precision needle and thrust bearings
- Bull nose and conical tips
- In a fitted case

This live center set gives you lots of options to support large and small parts. The body is 1.7" (45 mm) in diameter. The "bullnose" is 0.98" (25 mm) in diameter.

Lathe: Tooling



2504 Rotating Tailstock Chuck \$79.95

This is a "live" drill chuck for the tailstock. Use it to support small diameter work where a live center is not practical. The shank is 2 Morse taper. The drill chuck is 1/2" capacity.



1877 Tailstock Turret Tool Holder, 2MT \$129.95

This tailstock turret tool holder has positions for 6 tools. The tool positions are 5/8" diameter holes with a set screw to retain the tool holder. The shank is a 2 Morse taper.

Lathe Chucks: Accessories



6367 Chuck Stop, 3-Jaw \$9.95

- Magnetic 3-Jaw Chuck Stop
 - Fits 3" or 4" 3-Jaw lathe chucks
 - 1/4" Thick and stackable
 - Magnetic mounting on chuck face
 - Made from black acrylic and 6mm neodymium magnets
- The chuck stops mount magnetically to the face of any 3" or 4" 3-jaw lathe chuck. If you need a thicker spacer these can be stacked. The design allows short and small parts to project a consistent distance past the chuck jaws without falling inside the bore.



1382 Chuck Stop, 3-Jaw, 3 Piece Set \$124.95

- Set of three 3-Jaw Chuck Stops
 - Fits 3" to 5" 3-Jaw lathe chucks
 - Thicknesses include 8.5 mm, 11.5 mm, and 14.5 mm
 - Magnetic mounting on chuck face
 - Made from blue anodized aluminum
- The chuck stops mount magnetically to the face of any 3" to 5" 3-jaw lathe chuck. The front and back surfaces are parallel within $\pm .002"$ (± 0.05 mm). The design allows short and small parts to project a consistent distance past the chuck jaws without falling inside the bore.



1688 Jaws, Inside for 3-Jaw 3" Chuck \$39.95

Inside jaws for 3" 3-jaw chuck. These are replacement jaws for the 3" 3-jaw chuck that comes on the mini lathe. Look carefully at the jaws before you decide to purchase inside or outside jaws.

1973 Jaws, Inside for 3-Jaw 4" Chuck	\$41.95
5027 Jaws, Inside for 3-Jaw 5" Chuck	\$54.95
5793 Jaws, Inside for 3-Jaw 6" Chuck	\$49.95
1689 Jaws, Outside for 3-Jaw 3" Chuck	\$39.95
1974 Jaws, Outside for 3-Jaw 4" Chuck	\$41.95
5028 Jaws, Outside for 3-Jaw 5" Chuck	\$54.95
5932 Jaws, Outside for 3-Jaw 6" Chuck	\$38.95
5029 Jaws, Reversible for 4-Jaw 3" Chuck	\$54.95
3408 Jaws, Reversible for 4-Jaw 4" Chuck	\$59.95
5030 Jaws, Reversible for 4-Jaw 5" Chuck	\$65.95



1768 Key, Lathe Chuck, 8 mm Square \$10.26

- 8mm (5/16") Square Head
 - Fits 3" 3-Jaw Lathe Chuck
 - Fits 4" 3-Jaw Lathe Chuck
- This chuck key fits 3" 3-Jaw lathe chucks, as well as 4" 3-jaw lathe chucks. This key will also fit any other chuck that requires a 8mm (5/16") key.

5483 Key, Lathe Chuck, 11 mm Square	\$10.95
5484 Key, Lathe Chuck, 12.5 mm Square	\$10.95
3409 Key, Lathe Chuck, 6 mm Square	\$10.34
5480 Key, Lathe Chuck, 6.5 mm Square	\$8.95
5481 Key, Lathe Chuck, 8 mm Square, Long Handle	\$8.95
5482 Key, Lathe Chuck, 9.5 mm Square	\$10.95

Lathe Chucks: Adapters



Chris' Tips

A Tip About Lathe Chuck Adapters

LittleMachineShop.com has a full range of lathe chuck adapters for mounting a lathe chuck on a lathe.

- "Bolt-On" Lath Chuck Adapters are flat adapters that bolt-on to lathes and no machining is required. See the product compatibility tab for machines that will support any given adapter. See the product compatibility tab for machines that will support any given adapter.

- Backplate Lathe Chuck Adapters are flat adapters that are machined on the lathe side. The chuck side needs machining and chuck mounting holes. Backplates are unthreaded.

- Threaded Lathe Chuck Adapter are threaded adapters (or designed to be threaded). The chuck side needs machining. The first rule of buying a threaded adapter is to measure the threads on your spindle. Two helpful resources for buying a threaded adapter.

Visit our website to see the full selection of lathe chuck adapters.

www.LittleMachineShop.com/Adapters

Dimensions of threaded lathe chuck adapters.

www.LittleMachineShop.com/ChuckAdapters

Find backplate adapters for multiple brands of lathes based on spindle size.

www.LittleMachineShop.com/AdaptersSpindle



1692 Adapter, 4" Lathe Chuck \$19.95

- Compatible with 4" 3- or 4-Jaw Lathe Chucks on Mini Lathes
- Use with Chucks with a 72 mm Registration Recess Diameter
- Cast Iron
- Net Thickness of 0.66"

This adapter lets you mount 4" 3- or 4-jaw lathe chucks on your mini lathe. Use this adapter with chucks that have a 72 mm registration recess diameter. The adapter mounts to the 3-hole pattern on the spindle so it works on spindles with only three holes. This adapter is cast iron and has a net thickness of 0.66". The net thickness is the distance from the rim of the lathe spindle to the back of the chuck.

2426 Adapter, 4" Lathe Chuck \$29.95



2358 Adapter, 5" Lathe Chuck \$29.95

- Compatible with 5" 3-Jaw Lathe Chucks
- Can Use on Mini Lathe with 5" Chuck in Place of 3" Chuck
- 92 mm Diameter Registration Boss
- 3 Chuck Mounting Holes

This adapter lets you mount 5" 3-jaw lathe chucks on your mini lathe in place of a 3" (80 mm) chuck. The adapter mounts to the 3-hole pattern on the spindle so it works on spindles with only three holes. This adapter has a 92 mm diameter registration boss, and has 3 chuck mounting holes.

2347 Adapter, 5" Lathe Chuck \$29.95



2961 Adapter, 5" Lathe Chuck \$29.95

- Compatible with 5" 3- or 4-Jaw Lathe Chuck with 95 mm Registration Recess
 - Can Use on a Flange for 4" Chuck with 72 mm Registration Boss
 - Works on 8x12 and 8x14 Lathes
- This adapter mounts a 5" 3- or 4-jaw lathe chuck with a 95 mm registration recess on a flange for a 4" chuck with a 72 mm registration boss. It works on 8x12 and 8x14 lathes as well as the Harbor Freight 5980 multipurpose machine. It also fits the SIEG C4 lathe.

Lathe Chucks: Adapters



4912 Adapter, 6" Lathe Chuck **\$29.95**

- Fits 6" 3-Jaw Lathe Chucks with 130 mm Registration Recess
- Can Use with 6" Chuck on a Flange for 4" Chuck with 72 mm Registration Boss

- Works on 8x12 and 8x14 Lathes

This adapter mounts a 6" 3-jaw lathe chuck with a 130 mm registration recess on a flange for a 4" chuck with a 72 mm registration boss. It works on 8x12 and 8x14 lathes as well as the Harbor Freight 5980 multipurpose machine. It also fits the SIEG C4 and SC4 lathes.*NOTE* If using with 2038 4-jaw chuck, additional mounting holes will need to be drilled.



Backplate Lathe Chuck Adapters, Semi Machined

- Lathe side is fully machined
- Chuck side must be machined to suit
- Use for European style chucks

These are a semi-machined adapter plate. The side that attaches to the lathe flange is fully machined. The side on which the lathe chuck mounts is not finished.

Mount the backplate adapter on your lathe and complete machining of the chuck-mounting side. This ensures two things; that it will fit your chuck, and that it is concentric on your lathe.

4768 Backplate Lathe Chuck Adapter, 3" to 3" **\$29.95**

4769 Backplate Lathe Chuck Adapter, 4" to 3" **\$29.95**

4770 Backplate Lathe Chuck Adapter, 5" to 3" **\$29.95**

4771 Backplate Lathe Chuck Adapter, 5" to 4" **\$29.95**

4772 Backplate Lathe Chuck Adapter, 6" to 4" **\$39.95**



Lathe Chuck Adapters

We stock a wide range of cast iron threaded lathe chuck adapters. These adapters are used to mount flat back lathe chucks on lathes with threaded spindles.

1791 Chuck Adapter, 1"-10 Thread 4" Diameter **\$34.95**

1917 Chuck Adapter, 1"-10 Thread 4" Diameter, 3 Holes **\$34.95**

2333 Chuck Adapter, 1"-10 Thread 5" Diameter **\$59.95**

2334 Chuck Adapter, 1"-10 Thread 6" Diameter **\$79.95**

1790 Chuck Adapter, 1"-8 Thread 4" Diameter **\$34.95**

1916 Chuck Adapter, 1"-8 Thread 4" Diameter, 3 Holes **\$34.95**

2331 Chuck Adapter, 1"-8 Thread 5" Diameter **\$59.95**

2332 Chuck Adapter, 1"-8 Thread 6" Diameter **\$59.95**

1792 Chuck Adapter, 1-1/2"-8 Thread 4" Diameter **\$34.95**

1918 Chuck Adapter, 1-1/2"-8 Thread 4" Diameter, 3 Holes **\$34.95**

1919 Chuck Adapter, 1-1/2"-8 Thread 6" Diameter **\$79.95**

5126 Chuck Adapter, 1-3/4"-8 Thread 6" Diameter **\$59.95**

2022 Chuck Adapter, 1/2"-20 Thread 3" Diameter, 3 Holes **\$34.95**

1923 Chuck Adapter, 2-1/4"-8 Thread 6" Diameter **\$79.95**

1920 Chuck Adapter, 3/4"-16 Thread 3" Diameter, 6 Holes **\$34.95**

1921 Chuck Adapter, M39 x 4 Thread 4" Diameter **\$34.95**

1922 Chuck Adapter, M39 x 4 Thread 6" Diameter **\$79.95**

2335 Chuck Adapter, Unthreaded 4" Diameter **\$31.95**

2336 Chuck Adapter, Unthreaded 6" Diameter **\$79.95**

Lathe Chucks: Chucks



Chris' Tips

A Bit About Lathe Chucks

We have lots of options for lathe chucks for your 7x10, 7x12, 7x14, or 7x16 mini lathe. Mini lathes commonly use 3", 4" and 5" lathe chucks. There's one specification that you need to know to begin, the diameter of the flange on your lathe's spindle. If the lathe chuck that came on your lathe is about 3" in diameter, your spindle has an 80 mm flange. If the lathe chuck that came on your lathe is about 4" in diameter, your spindle has a 100 mm flange. The overwhelming majority of mini lathes have been shipped with a 3" lathe chuck. Visit our website for information on lathe chucks for mini lathes. www.LittleMachineShop.com/ChucksMiniLathesHere is a chart that provides lathe chuck capacities and mounting dimensions. www.LittleMachineShop.com/Chuck



1187 Lathe Chuck, 3-Jaw 3" **\$99.95**

- Self-centering 3-Jaw lathe chuck
- 3" (80 mm) diameter
- Includes chuck key, inside and outside jaws
- Plain back mounting
- High quality steel, hardened and ground

This 3 inch 3-Jaw self-centering lathe chuck is the one that comes on the mini lathe. It includes a chuck key and inside and outside jaws. This three jaw chuck has a 0.63" (16 mm) through hole. It holds work up to 2.48" (63 mm) in diameter. The radial runout of a test bar held in this chuck, when the chuck is mounted true, is 0.003" maximum.

2916 Lathe Chuck, 3-Jaw 2", Self-Centering **\$75.95**

1698 Lathe Chuck, 3-Jaw 4" **\$119.95**

2337 Lathe Chuck, 3-Jaw 5" **\$123.95**

2028 Lathe Chuck, 3-Jaw 6" **\$179.95**



5933 Lathe Chuck, 3-Jaw 3" Front Mount **\$149.95**

- 3-jaw Front Mount Lathe Chuck
- 3" (80 mm) diameter
- Includes chuck key, inside and outside jaws
- Plain back mounting with bolts thru from the front
- High quality steel, hardened and ground

This 3 inch 3-Jaw front mount lathe chuck includes a chuck key, inside and outside jaws, and three M6 mounting bolts. The chuck has an inside diameter gripping range (outside jaws) of 24-64 mm, and an outside diameter gripping range (inside jaws) of 2-70 mm. Front mount chucks are designed to be used with rotary tables and other devices where back mounting chucks cannot be used. Easily mount on table, dividing head, fixture, or indexer. This is a plain back chuck and requires a backplate adapter to mount it on a lathe.



1941 Lathe Chuck, 3-Jaw 4", with Adapter **\$129.95**

- 3-jaw self-centering lathe chuck
 - 4" (100 mm) diameter
 - Includes chuck key, inside and outside jaws and mounting bolts
 - Includes an adapter to mount on a 3" (80 mm) flange
 - High quality steel, hardened and ground
- 4" 3-Jaw self-centering lathe chuck with adapter for the mini lathe. Includes chuck key, inside and outside jaws, and mounting bolts. The chuck can hold work up to 3.15" (80 mm) in diameter and comes with an adapter for the mini lathe so that you can bolt it on in place of a 3" (80 mm) chuck. This 4" 3-jaw lathe chuck has a 0.87" (22 mm) through hole. The radial runout of a test bar held in this chuck, when the chuck is mounted true, is 0.003" maximum.

2345 Lathe Chuck, 3-Jaw 5", with Adapter **\$149.95**

Lathe Chucks: Chucks



1175 Lathe Chuck, 4-Jaw 3", Independent \$99.95

- 4-jaw lathe chuck
- 3" (80 mm) diameter
- Each jaw is independently adjustable and reversible
- Plain back mounting
- High quality steel, hardened and ground

This 4-jaw 3" lathe chuck comes with a chuck key and reversible jaws.

This chuck has a 0.87" (22 mm) through hole. It holds work up to 3.15" (80 mm) in diameter.

2917 Lathe Chuck, 4-Jaw 2", Self-Centering \$54.95

1588 Lathe Chuck, 4-Jaw 4", Independent \$99.95

2338 Lathe Chuck, 4-Jaw 5", Independent \$129.95

2038 Lathe Chuck, 4-Jaw 6", Independent \$169.95



1697 Lathe Chuck, 4-Jaw 4", Independent with Adapter \$114.95

- 4-jaw lathe chuck
- 4" (100 mm) diameter
- Each jaw is independently adjustable and reversible
- Includes an adapter to mount on a 3" (80 mm) spindle flange
- High quality steel, hardened and ground

This 4" 4-Jaw independent chuck includes an adapter to fit the mini lathe spindle. It includes a chuck key and reversible jaws. The adapter mounts to the spindle with three studs so additional holes in the spindle are not required. This chuck has a 0.98" (25 mm) through hole. The chuck can hold work up to 3.94" (100 mm) in diameter.

2346 Lathe Chuck, 4-Jaw 5", Independent with Adapter \$149.95



2361 Lathe Chuck, 4-Jaw 4", Self-Centering \$155.95

- 4-jaw self-centering lathe chuck
- 4" (100 mm) diameter
- Plain back mounting
- Includes chuck key, inside and outside jaws
- High grade tool steel

4 inch, 4-Jaw self-centering lathe chuck for square or octagonal work. The through bore of this chuck is 20 mm (0.79"). This lathe chuck can hold work up to 80 mm (3.15") in diameter. The radial runout of a test bar held in this chuck, when the chuck is mounted true, is 0.004" maximum.

3424 Lathe Chuck, 4-Jaw 3", Self-Centering \$110.95



2276 Lathe Chuck, 6-Jaw 4", Self-Centering \$249.95

- 6-jaw self centering lathe chuck
- 4" (100 mm) diameter
- Includes chuck key and mounting bolts
- Plain back mounting
- Excellent for holding thin walled workpieces

The jaws on this 4" 6-Jaw self-centering lathe chuck are hardened and ground. Includes chuck key and mounting bolts. Because the chuck is designed to hold tubing, outside jaws are not included. This chuck has a 1.02" (26 mm) through hole. The chuck can hold work up to 3.15" (80 mm) in diameter. The radial runout of a test bar held in this chuck, when the chuck is mounted true, is 0.003" maximum.



Lathe Chucks Harlingen Premium

- High quality components for enhanced wear-resistance
 - Includes chuck key, inside and outside or reversible jaws
- The Harlingen chucks have similar specifications to our other lathe chucks in terms of clamping range however they have a better runout and the material construction of the chuck is better. The runout of Harlingen 3-Jaw chucks are rated at $\leq 0.002"$ vs $\leq 0.003"$ for other chucks in this class. The chuck body is made of wear-resistant cast iron with a higher hardness than similarly made lathe chucks. The cover plate, scroll plate and pinions are all constructed of higher quality steels for added strength and resistance to wear. The jaws are made of 1045 hardened carbon steel and manufactured for precise fit and clamping performance. Each chuck has an individual serial number and inspection report.

4940 Lathe Chuck, 3-Jaw 3" Premium, Harlingen \$139.95

4941 Lathe Chuck, 3-Jaw 4" Premium, Harlingen \$139.95

4942 Lathe Chuck, 3-Jaw 5" Premium, Harlingen \$179.95

6084 Lathe Chuck, 4-Jaw 3" Independent, Premium, Harlingen \$189.95

6085 Lathe Chuck, 4-Jaw 4", Independent, Premium, Harlingen \$189.95

6086 Lathe Chuck, 4-Jaw 5", Independent, Premium, Harlingen \$209.95

Lathe Quick Change Tool Posts: QCTP Sets



Chris' Tips

A Tip About Quick Change Tool Posts

We only sell one style of quick-change tool post, a design made popular by Aloris Tools. These tool posts are all-steel and use wedges to secure the tool holder. They are considerably more rigid than aluminum tool posts and are more repeatable than piston-style tool posts. We carry this style of tool post in three sizes (OXA, AXA, BXA), with sets configured for several different lathes. In general, tool posts and tool holders are interchangeable in each size range. For example, pretty much any AXA tool holder will fit any AXA tool post. Visit our website for a table of sizes and specifications. www.LittleMachineShop.com/QCTPWe also have a tool that will help you choose the correct quick change tool post set for your lathe. www.LittleMachineShop.com/QCTPFInd



3048 Quick Change Tool Post Set, OXA, Mini Lathe, 4-Degree Cut-Off \$154.95

- Quick change tool post set for lathes with up to 9" swing
- 60% of AXA, or series 100 size wedge type QCTP
- This lathe quick change pool post set includes a 4-Degree Cut-off tool holder
- Includes five tool holders
- All steel construction

This is a true wedge type quick change tool post set that is an exact 6/10 scale copy of the AXA, or series 100 wedge type quick change tool post. This quick change tool post set is designed for lathes with up to 9" swing. It requires 3/4" from the top of the compound rest to the center of the lathe. It will hold turning tools with shanks from 1/4" to 1/2". The boring bar holder will hold 3/8" and 1/2" boring bars. It will hold 1/2" tall cut-off blades. All working parts are hardened and ground. It is completely sealed for maintenance-free operation. This set includes the tool post and the following tool holders: 2 - #1 Turning & Facing 1 - #2 Boring, Turning & Facing 1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars 1 - #7 Universal Parting Blade (for 1/2 inch cut-off blade - 4-degree) This tool post mounts with an M10 stud that is included. It also includes a piece of steel from which you can make a T-slot nut to fit your lathe.

4117 Quick Change Tool Post Mount, OXA for Lathes \$9.95

4083 Quick Change Tool Post Set, OXA for 8x12, 8x14 Lathe \$164.95

4046 Quick Change Tool Post Set, OXA for 9x20 Lathe \$164.95

4058 Quick Change Tool Post Set, OXA for Atlas/Craftsman 6" \$159.95

4157 Quick Change Tool Post Set, OXA for G0768 \$164.95



3112 Quick Change Tool Post Set, OXA, Mini Lathe, Horizontal Cut-Off \$154.95

- Quick change tool post set for lathes with up to 8" swing
- OXA, or series 000 size (60% of AXA size)
- Includes five steel tool holders
- Horizontal Cut-off tool holder
- Fits all 7x10 to 7x16 mini lathes

Wedge type OXA quick change tool post set. This quick change tool post set is designed for lathes with up to 8" swing. It is the perfect size for mini lathes. The tool holders have been designed specifically to work on the mini lathes and other lathes that have limited distance from the top of the compound to the center of the lathe. This tool post mounts with an M10 stud, which is included. This quick change tool post requires 5/8" from the top of the compound rest to the center of the lathe. All working parts are hardened and ground steel. It is completely sealed for maintenance-free operation. This tool post mounts with an M10 stud. This set includes the tool post and the following tool holders: (Tools hold up to 1/2" square shanks.) 2 - #1 Turning & Facing 1 - #2 Boring, Turning & Facing 1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars 1 - #7 Universal Parting Blade (for 1/2" cut-off blade - horizontal)

3119 Quick Change 2MT Tool Holder, OXA	\$28.95
3116 Quick Change Boring Tool Holder, OXA	\$18.95
3117 Quick Change Cut-Off Tool Holder, OXA	\$21.95
3774 Quick Change Cut-Off Tool Holder, OXA, 4-Degree Cut-Off	\$21.95
3118 Quick Change Knurling & Turning Tool Holder, OXA	\$24.95
4101 Quick Change Tool Post Set, OXA for HiTorque Bench Lathe	\$164.95
4039 Quick Change Tool Post Set, OXA for Sherline and Taig	\$164.95
3113 Quick Change Tool Post, OXA	\$59.95
3115 Quick Change Turning & Boring Tool Holder, OXA	\$15.95
3114 Quick Change Turning & Facing Tool Holder, OXA	\$15.95
4153 Set Screw, M6x16, Socket Dog Point, Set of 10	\$6.05



2280 Quick Change Tool Post Set, AXA \$194.95

- Quick change tool post set for lathes with up to 12" swing
- AXA, or series 100 size
- Tool holders interchange with Aloris, Dorian, and Phase II
- All steel construction
- Includes five tool holders

AXA, or series 100, wedge type quick change tool post set. This AXA quick change tool post set is designed for lathes with up to 12" swing. It is a good fit on 9x20 lathes, but requires some modification or our mounting sleeve. Many people feel that these tool posts are too large for mini lathes, but others like the mass and rigidity they provide. All working parts are hardened and ground. This lathe tool post set is completely sealed for maintenance-free operation. The tool holders interchange with Aloris, Dorian, and Phase II. This lathe tool post set includes the tool post and the following tool holders: No. 1 - Turning & Facing Tool Holder No. 2 - Boring, Turning & Facing Tool Holder No. 4 - Heavy Duty Boring Tool Holder, will hold 5/8" or 3/4" round shanks. No. 7 - Universal Parting Blade Holder

No. 10 - Knurling, Facing & Turning. This set includes a 9/16"-18 threaded stud and a piece of steel from which you can make a T-slot nut to fit your lathe.

4914 Compound Rest Top, Bench Lathe for AXA QCTP	\$29.95
3787 Compound Rest Top, for AXA QCTP on C6 Lathe CLOSEOUT	\$39.95
4426 Quick Change 2MT Tool Holder, AXA	\$24.95
2283 Quick Change Boring Tool Holder, AXA	\$22.95
2284 Quick Change Cut-Off Tool Holder, AXA	\$22.95
2285 Quick Change Knurling & Turning Tool Holder, AXA	\$25.95
4701 Quick Change Tool Post, AXA	\$154.95
6291 Quick Change Turning & Boring Tool Holder, AXA 1/4" - 5/8"	\$19.95
2282 Quick Change Turning & Boring Tool Holder, AXA 3/16" - 1/2"	\$16.95
6290 Quick Change Turning & Facing Tool Holder, AXA 1/4" - 5/8"	\$19.99
2281 Quick Change Turning & Facing Tool Holder, AXA 3/16"-1/2"	\$15.95
3970 Set Screw, M8x20, Socket Dog Point, Set of 10	\$8.50
3712 Stud, Quick Change Tool Post Mount, AXA for 9x20 Lathes	\$9.95
3674 Tap & Tap Drill Bit, 9/16"-18 Thread	\$16.95



3658 Quick Change Tool Post Set, BXA \$319.95

- Quick change tool post set for lathes with 10-15" swing
- BXA, or series 200 size
- Tool holders interchange with Aloris, Dorian, and Phase II
- All steel construction
- Includes five tool holders

BXA, or series 200, wedge type quick change tool post set. This quick change tool post set is designed for lathes with up to 10-15" swing. All working parts are hardened and ground. It is completely sealed for maintenance-free operation. The tool holders interchange with Aloris, Dorian, and Phase II. This set includes the tool post and the following tool holders: No. 1 - Turning & Facing, No. 2 - Boring, Turning & Facing, No. 4 - Heavy Duty Boring, No. 7 - Universal Parting Blade, No. 10 - Knurling, Facing & Turning. This set also includes a piece of steel from which you can make a T-slot nut to fit your lathe. The BXA turning tool holders hold tools up to 5/8". The cut-off tool holds 11/16" blades.

4443 Quick Change Boring Tool Holder, BXA	\$36.95
4444 Quick Change Cut-Off Tool Holder, BXA	\$32.95
4445 Quick Change Knurling & Turning Tool Holder, BXA	\$53.95
6293 Quick Change Turning & Boring Tool Holder, BXA 1/4" - 3/4"	\$19.95
4442 Quick Change Turning & Boring Tool Holder, BXA 1/4" - 5/8"	\$23.95
6292 Quick Change Turning & Facing Tool Holder, BXA 1/2" - 3/4"	\$19.95
4441 Quick Change Turning & Facing Tool Holder, BXA 1/4" - 5/8"	\$21.95

Lathe Quick Change Tool Posts: Tool Holders



6384 Quick Change Tool Holder - Lathe Bit Rapid Retractor, OXA **\$214.95**

- Works with OXA tool post
- Makes threading easier and safer
- Made in the USA

The Rapid Retractor is a product conceived by our own Home Machinist Community (by Ronald J. Steele) and built right here in America. Made to fit the OXA quick change tool post and allows for the rapid retraction of a tool bit during thread cutting operations on a manual lathe. Insert and secure a threading tool bit in the rapid retractor holder, put the rapid retractor in your OXA tool post, and tighten in place. Move the rapid retractor toggle handle into the down position and use your lathe positioning to locate your bit to its starting place for cutting a thread. Cut your thread as you would normally, but at the end of your thread cut rather than having to quickly crank back your cross feed you simply flip up the toggle lever to rapidly retract the bit. It snaps your bit back approximately 0.200". You may now easily move your tool back to its starting location for cutting your next pass of the thread you are cutting. Move the toggle lever down to reset your tool bit back to cutting position and take your next pass.

Machines: Stands/Cabinets



5626 Stand Cabinet, 7x16 Mini Lathe **\$299.95**

- Metal stand and chip tray for mini lathe
- Single column two door design
- 34.7" x 13.9" x 35.3" (882 mm x 352 mm x 896 mm)
- Cabinet for storage with locking door
- Fits SIEG SC2 and HiTorque 7x16 mini lathes

This single column two door design black stand comes with a built in cabinet and is suitable for all SIEG SC3 7x16 and HiTorque 7x16 mini lathes. The cabinet has one shelf. The tray dimensions are 34.7" x 13.9" x 0.63" (882 mm x 352 mm x 16 mm). Predrilled holes in tray are sized for securing compatible 7x16 mini lathes. This chip tray has been upgraded to be more robust than the trays that ship with most mini lathes. The stand has bolting slots for securing the stand to a floor for additional stability and safety. See the Compatibility tab for machines that work with this product.

5503 Chip Tray, 7x10 Mini Lathe	\$29.95
5504 Chip Tray, 7x12 Mini Lathe	\$29.95
5505 Chip Tray, 7x14 Mini Lathe	\$29.95
5506 Chip Tray, 7x16 Mini Lathe	\$29.95
5623 Stand Cabinet, 7x10 Mini Lathe	\$299.95
5624 Stand Cabinet, 7x12 Mini Lathe	\$299.95
5625 Stand Cabinet, 7x14 Mini Lathe	\$299.95



3973 Stand Cabinet, 8.5x20 Bench Lathe **\$399.95**

- Metal stand and chip tray for bench lathe
- Shipped disassembled, requires assembly
- Fits SIEG C4 & SC4 and HiTorque 8.5x20 bench lathes
- Holes align for securing compatible bench lathe
- Also available as a single tray

This double column two door design black stand comes with two built in cabinets and a chip tray, and is suitable for all SIEG C4 & SC4 and HiTorque 8.5x20 bench lathes. The cabinet has one shelf. The tray dimensions are 39.8" x 19.9" x 0.98" (1010 mm x 505 mm x 25 mm) and the overall height is 30.7" (780 mm). Positioning blocks are predrilled for securing a compatible bench lathe. This chip tray has been upgraded to be more robust than the trays that ship with most lathes. The stand has bolting slots for securing the stand to a floor for additional stability and safety. See the Compatibility tab for machines that work with this product.

3538 Chip Tray, 8.5x20 Bench Lathe	\$99.95
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5634 Stand Cabinet, HiTorque Bench Mill **\$299.95**

- Metal stand and chip tray for bench mill
- Single column design
- 20.79" x 23.94" x 33.66" (528 mm x 608 mm x 855 mm)
- Cabinet for storage with locking door
- Fits the HiTorque and SIEG SX2.7 bench mills

This single column black stand comes with a built in metal storage cabinet and is sized for bench mills. The cabinet has one shelf.

The tray dimensions are 20.78" x 23.94" x 1.38" (527 mm x 608 mm x 35 mm) and the unit stands 33.66" (855 mm) high. The chip tray has been upgraded to provide years of service. The tray has predrilled holes for securing HiTorque and SIEG SX2.7 bench mills.

The cabinet base has bolting slots for securing the stand to a floor for additional stability and safety. See the Compatibility tab for machines that work with this product.

5581 Chip Tray, HiTorque Bench Mill	\$39.95
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5989 Stand Cabinet, HiTorque Large Bench Mill **\$499.95**

- Metal stand and chip tray for large bench mill
- Single column design
- Cabinet and drawer for storage
- Fits the HiTorque 6700/6750 and SIEG SX3.5 large bench mills
- Tray and mill mounting hardware included

This single column black stand comes with a built in metal storage cabinet and drawer is sized for our largest mill. The cabinet base has bolting slots for securing the stand to a floor for additional stability and safety. Includes stand cabinet, tray, 4 M8x16 tray mounting bolts, 4 M8x40 machine mounting bolts, 8 M8 washers, and 8 M8 locking washers.

5990 Chip Tray, HiTorque Large Bench Mill	\$69.95
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5629 Stand Cabinet, HiTorque Mini Mill **\$249.95**

- Metal stand and chip tray for mini mill
- Single column design
- 16.1" x 19.3" x 35.3" (410 mm x 490 mm x 896 mm)
- Cabinet for storage with locking door
- Fits the HiTorque and SIEG X2L/SX2L mini mills

This single column black stand comes with a built in metal storage cabinet and is sized for mini mills. The cabinet has one shelf. The tray dimensions are 16.1" x 19.3" x 0.95" (882 mm x 352 mm x 24 mm) and the unit stands 35" (889 mm) high. The chip tray has been upgraded to provide years of service. The tray has predrilled holes for securing HiTorque and SIEG X2L/SX2L mini mills. The cabinet base has bolting slots for securing the stand to a floor for additional stability and safety. See the Compatibility tab for machines that work with this product.

5510 Chip Tray, HiTorque Mini Mill	\$35.95
5509 Chip Tray, Mini Mill	\$35.95
5628 Stand Cabinet, Mini Mill	\$249.95



5627 Stand Cabinet, Micro Mill **\$249.95**

- Metal stand and chip tray for micro mill
- Single column design
- 14.8" x 18.0" x 35.3" (376 mm x 456 mm x 896 mm)
- Cabinet for storage with locking door
- Fits HiTorque and SIEG X1/SX1 micro mills

This single column black stand comes with a built in cabinet and is suitable for all micro mills. The cabinet has one shelf.

The tray dimensions are 14.8" x 18.0" x 0.4" (882 mm x 352 mm x 10mm) and the unit stands 35" (896 mm) high. The chip tray has been upgraded to provide years of service. The tray has predrilled holes for securing HiTorque and SIEG X1/SX1 micro mills.

The cabinet base has bolting slots for securing the stand to a floor for additional stability and safety. See the Compatibility tab for machines that work with this product.

5508 Chip Tray, Micro Mill	\$35.95
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Machines: Stands/Cabinets



- 6255 Stand, Bench Grinder and Belt Sander \$199.95**
- Bench grinder and belt sander stand
 - Top size 10-5/8 X10-5/8"
 - Stand height 33", Steel column is 3-1/2" diameter, Pedestal leg length is 9.5"
 - Made of heavy duty cast iron
 - Mounting slots 1/2"
- Heavy duty stand for our bench grinder (P/N 6242) and belt sander (P/N 6242).
- Height is 33" with a top table size of 10 5/8" x 10 5/8". The steel column is 3 1/2" in diameter. Base and top made of heavy-duty cast iron. Pedestal legs are 9 1/2" in length.
- The table design allows for mounting with 4 bolts. Mounting slots are 1/2" width and mounting holds are 1/2" in diameter. Adjustable height water pot for quenching work pieces.
- Designed to accommodate 6", 7", 8", and 10" bench grinders and buffers as well as 1", 2", and 4" belt grinders.

Mill: HiTorque Bench Mill (SX2.7) Accessories



- 5846 Deluxe Productivity Upgrade Package, HiTorque Bench Mill \$584.95**
- Includes the 5655 Spindle Lock, the 5633 Quill Stop, and the 5657 power lift in one easy kit
 - Makes tool changes easier, faster, and more convenient.
 - Electro-magnetic interlock disables power to the motor with the fork of the Spindle Brake engaged.
 - Quick and accurate way to set quill depth of cut on 5500 Bench Top Mill.
 - Power lift Switch is mounted to the system plate and has three momentary positions: up, off, and down
- The Spindle Brake provides a convenient method of locking the spindle freeing both hands to complete a tool change. A safety switch ensures that power to the motor is disabled when the Spindle Brake is engaged. This Spindle Brake features an integral flip-style locking fork which locks the mill's spindle when engaged and does not require a separate locking device to be mounted and removed from the mill. The Quill Stop provides a quick and accurate way to set the quill depth of cut. It is great for drilling multiple holes to the same depth. The Quill Stop is also very handy in performing single or repeated chamfering of parts. The Power Lift system for the Little Machine Shop 5500 mill functionally replaces the Z-Axis manual hand wheel that is used to raise and lower the mill head. Using the Power Lift system is really easy, just press the switch up or down and release, and you are done. It is much faster than using the hand wheel, and much easier on your shoulder.
- 5657 Power Lift System, HiTorque Bench Mill \$379.00**
- 5842 Productivity Upgrade Package, HiTorque Bench Mill \$244.95**
- 5526 Quill Stop, Deluxe HiTorque Bench Mill \$129.95**
- 5655 Spindle Lock, HiTorque Bench Mill, Flip Style \$129.00**



- 4327 Drawbar, Bench Mill, Quick Release \$29.95**
- For SIEG SX2.7 class of bench mills
 - 7/16"-20 thread
 - For R8 spindle
 - 12.4375" (316 mm) when measured like a bolt
 - Eliminates need for spindle wrench
- Quick release drawbar designed to easy tightening and release for R8 spindle bench mills without a spindle lock. This drawbar is compatible with SIEG SX2.7 class bench mills including the HiTorque Bench Mills. To use, hold drawbar securely with one wrench and tighten/loosen secondary nut. The use of two wrenches at the top of the drawbar eliminates the need to use a spindle wrench to hold the spindle stationary with one hand while working with the drawbar. This drawbar is not necessary for bench mills that have a spindle lock. The overall length of the drawbar is 12 7/16" in length (316 mm) when measured like a bolt. The bushing that centers the drawbar in the spindle has three steps with the diameter of each being 13 mm (0.512) 20 mm (0.788") 25 mm (0.984"). This drawbar can be used in place of the standard drawbar provided with any HiTorque Bench Mill (SX2.7), #50 in the SIEG SX2.7 drawings.



- 5113 Power Feed, 6500 Bench Mill CLOSEOUT \$446.95**
- Fits 5500 & 6500 HiTorque Bench Mills and SIEG SX2.7 Mills
 - Clutch disengages power feed when not in use
 - Adjustable limit switches restrict travel
 - 120-240V 50-60Hz
- Power table feed for the SX2.7 mill.
- This power feed mounts on the left end of the mill's table and drives the X-axis feed screw. It is variable speed (0 to 20 inches per minute).
- The kit takes about 20 minutes to install. It is a bolt-on accessory for the bench mill and requires no modifications to the machine. The power feed adds 8 1/4" inches to the left end of the table.
- The power feed works on 120-240V 50-60Hz power. It has a computer-style (IEC 60320 C3/C4) power cord that unplugs from the power supply unit. This makes it easy to adapt for other countries. The furnished power cord has a North American (NEMA 5-15P) wall plug.
- 5850 Power Feed, 6550 Deluxe Bench Mill \$424.95**
- 4699 Power Feed, HiTorque Large Bench Mill \$489.95**
- 5114 Power Feed, X3 & SX3 Mills CLOSEOUT \$429.95**

Mill: Mini Mill (X2) Accessories



- 1637 Drawbar, 3MT x 3/8"-16, Mini Mill \$9.95**
- For SIEG X2 class of 3 Morse Taper Mills
 - 3/8"-16 thread
 - For 3MT spindle
 - 4" long when measured like a bolt
- This drawbar fits the Grizzly G8689 and the Micro-Mark 82573 mini mills with the 3 Morse taper spindle, and is for use with collets and end mill holders with 3/8-16 NC thread. These mini mill drawbars are custom made for LittleMachineShop.com.
- *NOTE* This is not the original drawbar for these machines. If you are looking to replace the original see Part #1414 with the M12 thread.
- 1414 Drawbar, 3MT x M12, Mini Mill \$9.95**
- 1638 Drawbar, R8 1-Piece, Mini Mill \$9.95**





- 4789 Handwheel, Mini Mill, Cast Iron/Chrome \$44.95**
- Cast iron handwheel with chrome plated finish
 - Fits SIEG X2, SX2 and HiTorque Mini Mills
 - 100 mm outside diameter
 - Mounts on 10 mm shaft with a 4 mm keyway
 - Bore is 23 mm, handle is included
- This attractive handwheel is cast iron with a polished, chrome plated rim and handle. Designed to fit SIEG X2 class of mini mills (X2, SX2, SX2LF) including the HiTorque mini mills. The hand wheel is 100 mm outside diameter. It mounts on a 10 mm shaft and has a 4 mm keyway. The length through the bore is 23 mm. A chrome handle is included. Get two to equip your mini mill on the X- and Y-axes. See the Compatibility tab for machines that work with this product.





- 1138 Handwheel, Z-Axis Fine Feed, Mini Mill \$19.95**
- 80 mm diameter
 - Easier turning
 - Better control
 - Made of steel with a satin chrome finish
- This attractive handwheel is knurled to provide a secure grip. It is made from steel with a satin chrome finish. Replacement for the small knob on the Z-axis fine feed on all mini mills. This handwheel is 3" (78 mm) in diameter and has an 8 mm bore with a set screw.


Mill: Mini Mill (X2) Accessories

	<p>5112 Power Feed, HiTorque and SIEG X2D/X2L Mini Mills \$424.95</p> <ul style="list-style-type: none"> • Fits large-table mini mills • Clutch disengages power feed when not in use • Adjustable limit switches restrict travel • 120-240V 50-60Hz <p>Power table feed for the LMS HiTorque mills and other large-table mini mills such as the LMS SIEG X2D mill (#4962). This power table feed mounts on the left end of the mini mill's table and drives the X-axis feed screw. It is variable speed (0 to 20 inches per minute). The power feed takes about 20 minutes to install. It is a bolt-on accessory for the HiTorque Mini Mill and requires no modifications to the machine. The power feed adds 8 1/4" inches to the left end of the table. This mini mill power feed works on 120-240V 50-60Hz power. It has a computer-style (IEC 60320 C3/C4) power cord that unplugs from the power supply unit. This makes it easy to adapt for other countries. The furnished power cord has a North American (NEMA 5-15P) wall plug. This mini mill power feed also fits the Grizzly G0727 horizontal/vertical mill. SIEG U1</p> <p>See the Compatibility tab for machines and other products that work with this product.</p>
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	<p>5111 Power Feed, Mini Mill \$399.95</p> <ul style="list-style-type: none"> • Fits standard mini mills • Clutch disengages power feed when not in use • Adjustable limit switches restrict travel • 120-240V 50-60Hz <p>Power table feed for the the SIEG X2 class of mini mills (small table) including Harbor Freight 44991 and Grizzly G8689. This power feed mounts on the left end of the mini mill's table and drives the X-axis feed screw. It is variable speed (0 to 20 inches per minute). The mini mill power feed kit takes about two hours to install. The power feed unit bolts to existing bolt holes in the left end of the table. The limit switch mechanism is mounted to the back of the mill table. The power feed adds 8 1/4" inches to the left end of the table. This mini mill power feed kit fits any mini mill with an extended X-axis feed screw. Look under the left side of the table to see if the X-axis feed screw has a 2 1/2" long unthreaded extension with a slot in the end. If so, you can use this power feed kit. The x-axis power feed works on 120-240V 50-60Hz power. It has a computer-style (IEC 60320 C3/C4) power cord that unplugs from the power supply unit. This makes it easy to adapt for other countries. The furnished power cord has a North American (NEMA 5-15P) wall plug.</p> <p>See the Compatibility tab for machines and other products that work with this product.</p>
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	<p>5127 Riser, 2" Solid Column \$49.07</p> <ul style="list-style-type: none"> • Adds 2" (50 mm) to the head space • For solid column mini mills and micro mills • Includes proper mounting hardware <p>This riser block mounts between the base and the column, adding 50 mm (2") to the head room on the mini mill. The riser block has 4 holes for 8 mm fasteners on 50 mm x 135 mm centers.</p>
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	<p>4785 Spindle Lock, X2 Mini Mill \$129.00</p> <ul style="list-style-type: none"> • Makes tool changes easier, faster, and more convenient • When engaged, the plunger automatically drops into the locking hole as the spindle is rotated • An electro-magnetic interlock disables power to the motor when the spring plunger is engaged • Frees both hands for changing tools • Loosen and tighten keyless chucks with one hand <p>The spindle brake provides a fixed position for inserting the locking pin and frees both hands for changing tools. Fits SIEG X2 mills. Does not work with the Mini Mill Belt Drive Kit.</p>
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	<p>3711 Work Stop, Small Universal \$9.95</p> <ul style="list-style-type: none"> • Rigid stop for small milling machines • Made of hardened steel • Column is 0.47" diameter and 3.94" tall • Base is 1.57" wide, 2.76" long and 0.47" thick • Rod is 0.375" diameter and 6" long <p>Use this work stop with vises, angle plates, jigs, and so on. It is the perfect size for 3" and 4" vises.</p> <p>6368 Parallel Holders, Milling Vise \$7.95</p> <p>3679 Work Stop, Universal \$12.95</p>
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Mill: Mini Mill (X2) Assemblies


	<p>5013 Mini Mill Large Table Assembly, Solid Column Base \$469.95</p> <ul style="list-style-type: none"> • 30% more travel in both directions • 50% more table area • Bolt pattern for solid column attachment (P/N 4307) <p>This is a complete X-Y table assembly for a mini mill. The table is 120 mm (4.73") by 460 mm (18.11"). It has three 12 mm T-slots. The X-axis travel is 300 mm (11.8") and the Y-axis travel is 130 mm (5.1"). The dials are graduated in 0.001" and one turn of the hand wheels moves the table 0.050". The X-Y table is made of cast iron and steel. There are adjustable gibs on both axes. The column mounting bolt pattern consists of 4 M8 threaded holes spaced 135 mm x 50 mm.</p>
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	<p>2008 X-Y Table Assembly \$189.95</p> <p>This small precision X-Y table can be used on a drill press or other machine to precisely locate your workpiece. The table is 90 mm (3.54") by 200 mm (7.87"). It has three 8 mm T-slots. The complete X-Y Table assembly is 10.5" wide, 9" deep and 2.9" high. The X-axis travel is 135 mm (5.31") and the Y-axis travel is 70 mm (2.76"). The height of the table is 60 mm (2.36"). The base is 100 mm (3.94") by 175 mm (6.89"). The dials are graduated in 0.001" and one turn of the hand wheels moves the table 0.050". The X-Y table is made of cast iron and steel. There are adjustable gibs on both axes.</p>
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Mill: Small Mill (X3/SX3) Accessories

	<p>3845 Long Table Kit, Super X3L - CLOSEOUT \$239.95</p> <ul style="list-style-type: none"> • Extra long table for X3 SX3 mills <p>This extra long mill table fits both SIEG X3 and SIEG Super X3 mills and comes complete with an extra long feed screw and rule which may be fitted to the front of the table with the rivets supplied. The table is 700 mm x 160 mm.</p>
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Mill: Tooling

	<p>1626 Boring Head Shank, R8 \$24.95</p> <ul style="list-style-type: none"> • R8 Boring Head Shank • 7/8"-20 Mounting Thread • Tapped for 7/16"-20 Drawbar • Made of high grade tool steel • Hardened and ground <p>This boring head shank has an R8 taper on one end and a 7/8"-20 thread on the other. The mill boring head shank adapts our boring head to mills with an R8 spindle.</p> <p>4824 Boring Head Shank, 1/2" Straight \$21.95</p> <p>1630 Boring Head Shank, 2MT \$24.95</p> <p>1265 Boring Head Shank, 3MT \$24.95</p> <p>5402 Boring Head Shank, 3MT Professional Grade \$36.95</p> <p>5401 Boring Head Shank, R8 Professional Grade \$31.95</p>
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Mill: Tooling

	1266 Boring Head, 2"	\$52.95		1231 Fly Cutter Set, 1/2" Shank	\$19.95
	<ul style="list-style-type: none">• 2" boring head holds 1/2" shank boring bars• The mill boring head offsets up to 5/8"• Mounts on a shank with a 7/8"-20 thread• Dial is graduated in 0.001"• Bar holder moves freely and smoothly <p>Two inch round boring head designed with superior rigidity for chatter-free boring and precise hole size accuracy. Ground and hardened adjusting screw is designed for long lasting, trouble free use.</p>			<ul style="list-style-type: none">• 1/2" shank fly cutter set of 3• Utilize standard tool bits• Counter balanced• Makes wider cuts than end mills• Cuts flat and smooth surface with a single cut <p>This is a set of three 1/2" shank fly cutters. The 3/4" body fly cutter uses a 3/16" tool bit. The 1-1/8" body fly cutter uses a 1/4" tool bit. The 1-3/8" body fly cutter uses a 5/16" tool bit. Fly cutter sets allow you to make fine finishes on large areas.</p>	
	4764 Boring Head, 2" Professional	\$109.95		3094 Fly Cutter Set with Tool Bits	\$23.95
	<ul style="list-style-type: none">• 2" diameter boring head holds 1/2" shank boring bars• The boring head offsets up to 5/8"• Mounts on a shank with a 7/8"-20 thread• Dial is graduated in 0.001"• Boring bar holder moves freely and smoothly <p>The design of this boring head assures superior rigidity for chatter free boring and precise hole accuracy. The adjusting screw is hardened and ground for long lasting trouble free use.</p>			5925 Fly Cutter, 2-1/2" Head R8 Shank \$27.95 <ul style="list-style-type: none">• R8 Shank Fly Cutter with 2-1/2" Head• Utilizes standard 3/8" tool bits.• Counter Balanced• Made of Durable Hardened Steel• Cuts flat and smooth surface with a single cut <p>R8 shank fly cutter with a 2-1/2" head. The cutter utilizes a standard 3/8" tool bit and is counter balanced. Made of durable hardened steel, cuts a flat and smooth surface with a single cut. Like every R8 tool, the R8 drawbar thread is 7/16"-20.</p>	
	1978 End Mill Holder Set, 2MT 4 Piece	\$81.68		4882 Fly Cutter, Adjustable 1.25 - 2.5", 3/8" Shank \$25.95	
	<ul style="list-style-type: none">• Set of four 2 Morse taper end mill holders• 2 Morse Taper Shanks• Drawbar thread is 3/8-16• Compatible with Mills with 3 Morse Taper Spindle• For end mills with shanks 3/16", 3/8", 1/2", and 5/8" <p>The 4-Piece end mill holder set includes adapters for end mills with shank diameters of 3/16, 3/8, 1/2, and 5/8 inches. This end mill holder set works with the Harbor Freight micro mill and other mills with a 2 Morse taper spindle. The drawbar thread is 3/8-16 NC.</p>			<ul style="list-style-type: none">• Adjustable from 1-1/4" to 2-1/2" inch cutting diameter• 1-1/8" Height• 3/8" Shank• Includes presharpener 1/4" Left Hand tool bit <p>This adjustable fly cutter has a 3/8" diameter and short profile making it ideal for ER-16 or 2MT spindles, but will also work wonderfully well on larger mills with R8 or 3MT spindles.</p>	
	1706 End Mill Holder, 2MT, 1/2"	\$18.95		1664 Mill Table, 3-in-1 Multipurpose Lathe/Mill/Drill \$34.06	
	1976 End Mill Holder, 2MT, 3/16" \$18.95 1705 End Mill Holder, 2MT, 3/8" \$21.90 1977 End Mill Holder, 2MT, 5/8" \$24.10	\$122.11 <ul style="list-style-type: none">• Table for 3-in-1 machine• Length: 9.45" (240.0 mm)• Width: 4.33" (110.0 mm)• Thickness: 1.02" (26.0 mm)• 12mm T-slots, use with 12mm or 7/16" T-slot nuts <p>This is the mill table from a 3-in-1 machine. It is approximately 9.5" long, 4.25" wide and 1" thick. The mill table has 12 mm T-slots so it uses 7/16" T-slot nuts or 12 mm T-slot nuts.</p>			
	1636 End Mill Holder Set, 3MT, 5-Piece	\$122.11		1709 Spin Jig, 5C Precision Indexing \$64.95	
	<ul style="list-style-type: none">• Set of 5 3 Morse taper end mill holders• 3 Morse Taper Shanks• Drawbar thread is 3/8-16• Compatible with Mills with 3 Morse Taper Spindle• For end mills with shanks 3/16", 3/8", 1/2", 5/8", and 3/4" <p>The 5-Piece end mill holder set includes adapters for end mills with shank diameters of 3/16, 3/8, 1/2, 5/8, and 3/4 inches.</p>			<p>This indexing spin jig is used on milling machines, grinders, and inspection equipment. The spindle is hardened and ground. The spindle accuracy is 0.0004 TIR. The indexing plate is precision ground. The 5C spin indexer directly indexes in 10 degree steps. The vernier provides 1 degree increments. The centerline of the milling machine indexer spin jig is about 2.75 above the base.</p>	
	1633 End Mill Holder, 3MT, 1/2"	\$24.95		3878 Tilting Table, 7" x 5" \$229.95	
	1631 End Mill Holder, 3MT, 3/16" \$24.95 1635 End Mill Holder, 3MT, 3/4" \$31.04 1632 End Mill Holder, 3MT, 3/8" \$24.95 1634 End Mill Holder, 3MT, 5/8" \$24.95	<ul style="list-style-type: none">• Tilts 40-0-40 degrees with worm drive• Graduated in degrees for quick setting• Heavy duty casting with three 1/2" T-slots• Overall height 3.75"• Locks in any position			
	1258 End Mill Holder Set, R8, 5 Piece	\$109.95		4084 Tooling Plate, 6 x 12" \$139.95	
	<ul style="list-style-type: none">• Set of five R8 end mill holders from 3/16" to 3/4"• R8 Shanks• Drawbar End Thread is 7/16"-20• Compatible with Mills with R8 Spindle• For end mills with shanks 3/16", 3/8", 1/2", 5/8", and 3/4" <p>The 5-piece end mill holder set includes adapters for end mills with shank diameters of 3/16, 3/8, 1/2, 5/8, and 3/4 inches.</p>			<ul style="list-style-type: none">• Made from aluminum plate 3/4" thick• Plate is 6" x 12"• 220 Holes tapped 1/4"-20, 72 holes for locating pins• Includes clamping kit• Designed for small work pieces <p>Solid 6" x 12" aluminum tooling plate with 1/4"-20 tapped holes, clamping kit, and locating pins. There are 220 1/4"-20 tapped holes. There are 55 diamond patterns of 4 holes that are 3/8" C to C. The diamond patterns are on a 1" x 1" grid. There are 72 1/4" holes for locating pins on a 1" x 1" grid. At each end there is a counterbored hole for a 3/8" socket head cap screw.</p>	
	1255 End Mill Holder, R8, 1/2"	\$19.95			
	1253 End Mill Holder, R8, 3/16"	\$19.95			
1257 End Mill Holder, R8, 3/4"	\$19.95				
1254 End Mill Holder, R8, 3/8" \$19.95 1256 End Mill Holder, R8, 5/8" \$19.95					

Mill: Tooling



4991 T-Slot Cleaner, 7/16" T-Slot	\$1.95
<ul style="list-style-type: none">• T-slot cleaner• Fits 7/16" t-slot• Made for LittleMachineShop.com• Fits common mini mills and bench mills <p>Use this T-slot cleaner to clear the swarf from the T-slots on your mini mill and bench mill. Made for LittleMachineShop.com specifically to fit the Mini Mill and Bench Mill. This t-slot cleaner will be useful on any mini mill or bench mill with a 7/16" t-slot. See compatibility tab for a list of common mills having this size t-slot. A 7/16" t-slot will measure approximately 0.468" at the top of the slot, the narrowest part of the channel.</p>	
1263 T-Slot Cleaner, 5/8" T-Slot	\$1.49

Mill: Tormach Quick Change Tooling



Chris' Tips

A Tip About the Tormach Tooling System (TTS)

Tool switching with the Tormach Tooling System (TTS) is extremely easy: Simply loosen the drawbar, slide out the current tool holder, then slip in the next and retighten. The unique geometry of the TTS tool holder ensures that, as the drawbar is tightened, the tool holder moves into an exact Z height while increasing rigidity. Each TTS holder has a shoulder that is undercut so it contacts the spindle itself, not the end of the collet. As the drawbar is tightened the collet will simultaneously squeeze the shank and be pulled upward into the spindle taper. This simultaneous action, grasping while moving up, pulls the tool holder tightly against the spindle face. The high-pressure contact between the shoulder of the tool holder and the spindle is the equivalent of a zero tolerance fit; the vertical location (Z-height) of the tool is exact. The initial placement, created by simply sliding the tool holder up until it stops, is normally within a few thousandths of an inch. The final location, after tightening the collet, is exact, highly repeatable, and not affected by the variable tension of the drawbar or wear on the collet.

About the Tormach Tooling System



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4910 Tool Conversion Kit, Tormach TTS	\$25.95
2436 Arbor, Drill Chuck, Tormach TTS to 33JT	\$13.99
<ul style="list-style-type: none">• Quick change arbor for 1/2" drill chucks• Minimal clearance height for tool change• Repeatable tool positioning• Hardened and precision ground <p>Part of the Tormach Tooling System (TTS) this 33JT arbor is used for mounting standard keyed and keyless drill chucks.</p>	
3586 Arbor, Drill Chuck, Tormach TTS to 1JT	\$24.95
2453 Arbor, Drill Chuck, Tormach TTS to 2JT	\$24.95
4749 Arbor, Drill Chuck, Tormach TTS to 6JT	\$13.99

2456 Boring Head Arbor, Tormach TTS	\$48.95
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- Quick change boring head shank with 7/8-20 thread
- Minimal clearance height for tool change
- Repeatable tool positioning
- Hardened and precision ground

Part of the Tormach Tooling System (TTS) this boring head arbor fits to 7/8-20 UN F mounted heads or other tooling with the 7/8-20 thread.



2435 Collet Holder, Tormach TTS, ER-20	\$49.95
<ul style="list-style-type: none">• Quick change adapter for ER-20 collets• Minimal clearance height for tool change• Repeatable tool positioning• Hardened and precision ground <p>Part of the Tormach Tooling System (TTS) this ER collet holder is designed to hold industry standard (DIN 6499) self-extracting collets, size ER-20. ER20 collet holders can hold tools up to 1/2" in diameter. Ideal for any small milling or drilling operations.</p>	
4127 Collet Holder, Tormach TTS, ER-16	\$49.95
4998 Collet Holder, Tormach TTS, ER-32	\$59.95



5116 Collet Tool Changing Fixture, Tormach TTS Tooling	\$8.95
<ul style="list-style-type: none">• Change tools conveniently by inserting the holder, loosen, change tools, and tighten.• The Priest Tools fixture holds the tool holder in an upright vertical position• Dimensions: 5.75" x 2" x .25"• Made of 1018 carbon steel and nickel plated• Made in the USA <p>The collet tool changing fixture for Tormach TTS tooling provides a quick and convenient way of changing tools in Tormach TTS ER-16 and ER-20 tool holders. To operate simply place the fixture in a vise with the desired end of the wrench, ER-16 or ER-20, extending from the vice, slide the TTS tool holder into the slot and then loosen or tighten the tool in the tool holder with a separate wrench. This item works with any Tormach TTS ER-16 or ER-20 collet tool holder.</p>	



2454 Collet, Tormach TTS, R8, 3/4"	\$55.95
<ul style="list-style-type: none">• Special shortened R8 collet for TTS system• Precision ground• 7/16" - 20 thread <p>This precision ground R8 collet is shorter than a normal R8 collet to ensure that the TTS tool holder contacts the spindle.</p>	
2455 Collet, Tormach TTS, 3MT, 3/4"	\$31.95



3588 Drill Chuck, Tormach TTS, 1/4"	\$50.95
<ul style="list-style-type: none">• 0-1/4" Capacity drill chuck• Mounted on Tormach Tooling System Arbor• Minimal clearance height for tool change• Repeatable tool positioning• Hardened and precision ground <p>0-1/4" Capacity drill chuck and Tormach Tooling System Arbor.</p>	

All working parts are hardened. Chuck key is included. Number 1 Jacobs taper mount.



2434 End Mill Holder, Tormach TTS, 3/8"	\$30.95
<ul style="list-style-type: none">• Quick change adapter for 3/8" shank end mills• Minimal clearance height for tool change• Repeatable tool positioning• Hardened and precision ground <p>Quick change Tormach 3/8" suitable for general milling operations and are intended to be used with end mills that have a Weldon shank (flat surface on shank). They can also be used with certain Silver & Deming style drill bits. The tool holder has a set screw on one side and a balancing dimple on the other side. The balancing dimple reduces vibrations at speeds above 8000 RPM. See Chris' Tips regarding centering of end mills when using a set screw holder.</p>	
2698 Blank Tool Holder, Tormach TTS	\$29.95
2438 End Mill Holder, Tormach TTS, 1/2"	\$30.95
3026 End Mill Holder, Tormach TTS, 1/4"	\$29.95
4125 End Mill Holder, Tormach TTS, 10 mm	\$30.95
4126 End Mill Holder, Tormach TTS, 12 mm	\$30.95
3025 End Mill Holder, Tormach TTS, 5/16"	\$24.95
4124 End Mill Holder, Tormach TTS, 6 mm	\$30.95



2440 Starter Set, CNC, Tormach TTS \$1,195.95

- Complete set for CNC operations includes 13 tool holders
 - Minimal clearance height for tool change
 - Repeatable tool positioning
 - All tool holders are hardened and precision ground
 - Tool height presetting set included
- CNC operations work best with one holder for each tool in order to make use of the tool length compensation table in the CNC controller. This function also requires a system for measuring the mounted tools. The CNC set includes a total of 13 tool holders plus a tool measuring set. The Tormach Tool Assistant Set includes 8" digital height gauge (measurement accuracy +/- 0.0005"), USB interface cable with touch trigger, manual, and Tool Assistant software. This is an outstanding value and a great way to get started with a CNC that has been retrofitted from a manual machine. If your CNC machine supports a tool offset table but you're not using it, then you're not realizing the full benefit of CNC machining.



2441 Starter Set, Manual, Tormach TTS (Inch) \$259.95

- Complete set for manual operations includes 4 tool holders
 - Minimal clearance height for tool change
 - Repeatable tool positioning
 - All tool holders are hardened and precision ground
- You don't need a CNC to take advantage of the Tormach Tooling System. Manual operations benefit from quick change, reduced clearance, and increased rigidity. This is a basic set that will introduce users to all of those features. The manual mill operators set will improve productivity in manual milling.



4663 SuperFly Cutter, Tormach TTS \$164.95

- Adjustable to 3" (75mm) Cutting Diameter
 - Includes tool bar for SEHT Insert
 - 1.8" (46mm) Height
 - TTS Fly Cutter Body with ATC Geometry
- The Tormach SuperFly cutter kit has modern insert geometries and is specially designed for maximum performance on spindles with less than 3hp. Kit includes the fly cutter body, tool bar, two general purpose carbide inserts, two polished carbide inserts for aluminum machining, insert screw, wrench and anti-seize. Like all Tormach TTS tools, the SuperFly Cutter has a 3/4" straight shank. Use it with the TTS system, or use it in any 3/4" collet. Tormach part number 38258.

4688 Insert, SEHT43AFFN-X83, Tormach \$12.95

4689 Insert, SEHT43AFSN-X45, Tormach \$11.95

4799 Screw, Insert Retaining, SEHT Inserts \$9.95



4905 Tool Tightening Fixture, Tormach TTS \$45.95

- Single handed operation
 - One-way bearing design: insert tool on left side to loosen and right side to tighten
 - Black anodized aluminum body
 - Hardened and precision ground
 - Do not use with TTS-ER Tension/Compression Tapping Heads
- The Compact tool tightening fixture for the Tormach Tooling System uses a one-way bearing for easy one-handed tightening and loosening of TTS-ER tools or TTS Modular Insert tools. It is also quite handy for loosening and tightening Tormach setscrew holders and other TTS tools.



5037 Wrench, ER-16 & ER-20, Deluxe Tormach Set \$34.95

- Includes (1) Box End wrench for retention nuts and (1) open-end wrench for TTS arbors.
 - Anodized Aluminum Alloy
 - Slim Profile
 - High Visibility Blue Color
 - Laser Size Marking
- This set works for both ER-16 and ER-20 TTS holders as well as other ER-16 and ER-20 collet nuts and chucks.

5041 Wrench, ER-32, Deluxe Tormach Set \$34.95

Models and Projects: Flywheels



Flywheels from Martin Model

- Cast iron and bronze flywheels
 - Highest quality made by Martin Model & Pattern
 - Cast iron flywheels are fully annealed
 - Castings are oversize to allow turning to the specified diameter
- All Martin Model & Pattern iron castings are fully annealed for easier machining. When molten iron is poured into a sand mold, it cools very quickly where it contacts the cold sand. Quick cooling being the formula for hardening iron, this results in a very hard surface, or skin, on the casting. It's commonly known that you must address this hard skin when you start machining a casting. But Martin Model castings go through another heat treat process. After the castings have cooled, they are once again heated to a high temperature, but this time they are cooled slowly. This ensures that the castings are evenly soft throughout, and that there is no hard skin on the surface.

2763 Flywheel, 2" Diameter, 5 Heavyweight Curved Spoke, Bronze \$23.95

2761 Flywheel, 2" Diameter, 5 Heavyweight Curved Spokes \$18.95

4879 Flywheel, 2" Diameter, 5 Straight Spokes \$21.95

4878 Flywheel, 2" Diameter, 5 Straight Spokes, Bronze \$26.95

4880 Flywheel, 2-1/2" Diameter, 6 Straight Spokes \$23.95

4881 Flywheel, 2-1/2" Diameter, 6 Straight Spokes, Bronze \$36.95

2756 Flywheel, 3" Diameter, 6 Heavyweight Straight Spokes \$23.95

2782 Flywheel, 3" Diameter, 6 Heavyweight Straight Spokes, Bronze \$43.95

2755 Flywheel, 3" Diameter, 6 Straight Spokes \$23.95

2781 Flywheel, 3" Diameter, 6 Straight Spokes, Bronze \$43.95

2757 Flywheel, 4" Diameter, 5 Straight Spokes, Bronze \$43.95

2760 Flywheel, 4-1/2" Diameter, 6 Tapered Spokes \$31.95

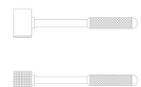
Models and Projects: Material Kits and Accessories



2594 Oscillating Steam Engine Material Kit \$38.95

- Includes all the materials you need
 - Plus all the hardware to assemble the engine
 - Complete plans are included
 - Great first project for beginners
- This kit includes all the materials and hardware required to make the oscillating steam engine. This engine can be built with a small lathe (Sherline or larger) and a drill press. A small mill (Sherline or larger) makes it easier. You will need a source of compressed air, such as an air compressor, to run this engine.

1133 Cutting Tools for Oscillating Engine Kit \$59.95



5370 Tenderizing Hammer Material Kit \$10.95

- Includes the material you need
 - Complete plans are included
 - Great for getting started on the lathe and the mill
 - Wonderful school project
- A great kit for learning essentials of mill and lathe work. This kit is popular with beginning machinists as well as schools. The kit contains both the plans and the materials to make one tenderizing hammer. The handle is all done on the lathe. It requires turning, tapering, threading, knurling and ball turning (optional). The head is all done on the mill. It requires surfacing, drilling and tapping, corner rounding, and V-grooving. Kit includes two aluminum stock pieces. One aluminum rod, 3/4" x 8 3/8" (0.75" x 8.375") and one aluminum block 1 1/4" x 1 1/4" x 2" (1.25" x 1.25" x 2").

Models and Projects: Model Plans and Videos

**2515 Buffalo Pup Steam Tug Boat Plans \$29.95**

- Radio controlled 36" model tug boat runs on live steam
- Build the 2 cylinder steam engine from bar stock
- Build the copper boiler
- Build the boat, including propeller and rudder
- Install the radio control

Complete plans to build a steam driven, radio controlled model of a tug boat. These plans were created by Bill Reichart. There are 30 pages of plans that cover building the boat including, building the boiler out of copper, and building the steam engine out of bar stock, and building the deck and cabin out of wood. The hull is fiberglass. Sources are provided for all purchased parts including propane, the ceramic burner, and the fiberglass hull.

**2342 Elbow Engine Plans \$12.95**

Complete plans to build a unique 5-cylinder steam engine. These plans were created by Bill Reichart. This steam engine has 10 pistons and no crankshaft. The plans include six pages of detailed drawings and construction notes. The engine is made from bar stock. No castings are required.

**2340 Epicyclic Steam Engine Plans \$24.95**

Complete plans to build an epicyclic steam engine. These plans were created by Bill Reichart. This engine uses a unique set of epicyclic gears where one gear revolves around another gear. There are 33 pages of plans that detail every part and describe methods of production. The engine is made from bar stock. No castings are required. You get the gears from Boston Gear.

**2341 Panther Pup Engine Plans \$25.95**

Complete plans to build a 4-cylinder, 4-cycle gasoline engine. These plans were created by Bill Reichart. The Panther Pup is an air-cooled internal combustion engine. There are 54 pages of plans, bound in a saddle-stitched booklet. The plans include detailed drawings of each part along with complete construction notes. Two castings are required. Plans are included to make your own patterns, or castings can be purchased from LittleMachineShop.com.

2355 Panther Pup Engine Castings, Aluminum \$179.95**2343 Pip-Squeak Engine Plans \$10.95**

Complete plans to build a simple steam engine. These steam engine project plans were created by Bill Reichart. The Pip-Squeak was designed to be a very first, easy to build engine. It is built from bar stock. No castings are required. It can be made on a small hobby lathe and a small drill press. A small milling machine helps, but isn't necessary.

**6342 Plans, P&H 1015 Crane Model - 1/12th Scale \$150.00**

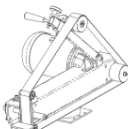
- Complete plans to build a model P&H Model 1015 crawler crane
- Crane can be configured with boom length over 9 feet
- USB Flash Drive containing 7 GB including complete plans and annotated construction photos

This Crane Model is a 1/12th scale, fully functioning 8-channel Radio Controlled replica of the 1960s vintage P&H Model 1015 (110-ton capacity) Lattice Boom Crawler Mounted Crane. Power for the model is provided by a 12 Volt, 22 Amp Hour LiFePO4 battery that is mounted at the right rear of the cab. The model's left and right crawler treads are powered independently with 12 Volt gearmotors and propel the model at a scale speed of 60 inches per minute. The single Boom Hoist Drum, two Cable Hoist Drums and the Cab Swing are each powered by modified 12 V windshield wiper (worm gear) motors from late model VWs. The lattice boom is a hybrid design that utilizes select straight 5/16" diameter oak x 36" long corner rods with 1/8" diameter poplar lattice members, however the boom areas of stress concentration including the Boom Tip section, Boom End sections and the Boom Base section are 50/50 soldered brass tubing fabrications.

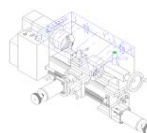
**2295 Stirling-Steele Engine Plans \$29.95**

- Complete plans to build a Stirling engine
 - Engine is 10" tall when completed
 - 26 Pages of plans
- Complete plans to build a four-cylinder Stirling cycle engine from bar stock and commercial components. These plans were created by Ronald J. Steele. The package contains 26 pages of highly detailed drawings and instructions providing all the necessary information to produce this modern compact version of a Stirling engine. The Stirling-Steele engine can be machined on a 6" lathe and small milling machine from readily available material. A full bill of materials is included as are assembly instructions. This is not a kit but a full set of dimensioned drawings.

Models and Projects: Project Plans and Videos

**2717 Belt Grinder Plans \$59.95**

- 17 pages of DIY belt grinder plans
 - 18 pages of instructions
 - 2" x 72" belt stays sharp longer and cuts cooler than shorter belts
 - Use for roughing, shaping, contouring of flat or angular stock
- Plans for a commercial-grade square wheel belt grinder. Machines like this sell for over \$1000. This project consists of 17 pages of drawings and 18 pages of well written instructions. The drawings are printed on 11 x 17 paper, making them easy to read. Every aspect of this project has been explained and detailed, including 3 dimensional assembly drawings to show you where everything goes. Although this machine would feel right at home in a professional metal worker's shop, the average home shop machinist will also find endless uses for this grinder. Use it for deburring, sharpening drill bits, dressing mushroomed punches, and grinding HSS lathe tool bits. Although this 2" x 72" belt grinder plan is not for a beginner, it was designed with the home shop machinist in mind. Anyone with modest equipment can complete this high performance machine. The prototype was built primarily with a 7" lathe, a drill press, and a MIG welder.

**2395 Mini Lathe CNC Conversion Plans \$54.95**

Plans to add CNC to a mini lathe. These CNC conversion plans were created by Ronald J. Steele. This is a complete set of plans to add CNC to a mini lathe. They include a materials list with sources, plans for all the parts, and instructions for making the parts and installing them on the mini lathe. Changes to the original machine are minimal. Three drilled and tapped holes are put into the tail end of the lathe bed to hold the Z axis lead screw thrust washer seat/motor mount plate. The remaining motion control parts are either attached via existing holes or clamped onto the machine. Project completion time is 30 to 40 hours. Cost for mechanical hardware and materials is between \$180 and \$220. The plans provide several sources for the electrical parts and software.

**2353 Mini Mill CNC Conversion Plans \$54.95**

Plans to add CNC to a mini mill. These Mini Mill CNC Conversion plans were created by Ronald J. Steele. This is a complete set of plans to add CNC to a mini mill. These CNC mill conversion plans include a materials list with sources, plans for all the parts, and instructions for making the parts and installing them on the mini mill. The only permanent change made to the mini mill is to drill and tap two holes. Ron Steele says the cost of the hardware and materials, assuming you need to purchase everything, is about \$160. The plans provide sources for all these items. The plans also provide several sources for the electrical parts and software. One kit includes software, 145 oz/in stepper motors, and a pre-wired boxed controller and sells for \$645. It takes between 20 and 30 hours to machine the parts and bolt it all together.

**2304 Rike-Vise Plans****\$8.95**

The Rike-Vise was invented by Bill Reichart. This simple tool is especially designed for the home machine shop. For many jobs it will replace a standard vise. The Rike-Vise is described as two 90° angle plates joined at the corner, and providing a foot so it can be easily clamped to a machine table or a lathe faceplate. The square donut piece provides an accurate clamp to secure a work piece in the base. It is made of mild steel. The plans include tips on accurately building the vise, plus details on using it. The plans comprise six 8-1/2" x 11" pages. The plans include information on building and using the Rike-Vise. Features of the Rike-Vise: At the lathe you can turn square stock round or drill square stock perfectly concentric. You can also do the same to rectangular stock, and drill or turn it in the exact center or to one side, as you desire. The vise holds work perpendicular for drilling at your drill press. At the milling machine, you can mill an end perfectly square, or notch or groove perfectly parallel to the sides. It holds stock perpendicular for use at the surface grinder.

Precision: Calipers**3704 Dial Caliper, 6" Industrial Quality****\$34.95**

- Style and quality similar to Swiss-made calipers
- Clear graduations every 0.001"
- Hardened stainless steel bar, rack, gears, depth rod and measuring faces
- Knife-edge contacts for both inside and outside measurements
- Fine adjustment roller for one hand use

This 6" Dial Caliper is made of hardened stainless steel for long life. It has a thumb wheel and a locking screw. The measuring faces are hardened, ground and lapped. The bezel can be rotated 360°. You can make inside, outside, depth and step measurements. The dial caliper is furnished with a fitted case.

1235 Dial Caliper, 6", inch/fractional**\$28.95**

- Dual 0-6" Dial Shows Fractions and Decimal Readings
- Made of Hardened Steel
- Thumb wheel and locking screw
- Resolution: 1/64" / 0.01" Accuracy: 0.005"
- Shock Proof

This 6" Dial Caliper is made of hardened stainless steel for long life. It has a thumb wheel and a locking screw. The measuring faces are hardened, ground and lapped. The bezel can be rotated 360°. You can make inside, outside, depth and step measurements. The dual dial makes it great for the hybrid woodworker/machinists. The decimal dial will make for quick easy measurements while the fractional dial is there when you need to measure to the nearest 64th of an inch. The dial caliper is furnished with a fitted case.

1830 Dial Caliper, 6", Starrett**\$285.00**

- Starrett 6" white dial caliper and fitted case
- Direct reading, reliable and accurate.
- American Made

This is one of the handiest measuring tools available, used by mechanics and toolmakers everywhere. It is direct reading, reliable, and accurate. The Starrett 120 Series dial calipers are the only American made dial calipers on the market. Starrett catalog number 120A-6.

1758 Electronic Digital Caliper 6", 4 Buttons**\$24.95**

- 6" (150 mm) range
- 0.0005" (0.01 mm) resolution
- 0.001" (0.02 mm) accuracy
- Reads inches or mm
- Four button model has display lock

This 6" electronic digital caliper has manual power on and off. It won't go off and lose your measurement. There are four buttons (one more than most digital calipers). OFF/ON: Turns the power on and off. ZERO: Sets the readout to zero at any position. MM/INCH: Switches between inch and metric display. HOLD: Locks the display. Use this button when you take a measurement where you cannot easily see the display. Press HOLD again to unlock the display. You can make absolute or relative inside, outside, depth, and step measurements.

Furnished with a fitted case.

5758 Electronic Digital Caliper, 6" Fractions IP54, iGaging**\$34.95**

- Range: 0-6" (0-150 mm)
- Accuracy: 0.001"/6"
- Resolution: 0.0005" / 0.01mm / 1/128"
- Easy to Read Super Large Display LCD
- IP54: Splash water, oil and dust resistance

This 6" electronic digital caliper has a large display and easily switches from inches (decimal) to fractions to metric measurements. The caliper has an easy to read large display LCD. The hardened stainless steel construction allow for smooth movement and a high measure speed. The three buttons perform the following: OFF/ON: Turns the power on and off. ZERO: Sets the readout to zero at any position. mm/in/F: Switches between fractional inch, decimal inch and metric display. Furnished with a fitted case.

5864 Electronic Digital Caliper, 6" Fractions IP67**\$64.95**

- Range: 0-6" (0-150 mm)
- Accuracy: 0.001"/6"
- Resolution: 0.0005" / 0.01mm / 64th
- IP67: Dust tight, temporarily immersible
- Operating Environment: 0-40°c

This 6" electronic digital caliper has a large display and easily switches from inches (decimal) to fractions to metric measurements. The caliper has an easy to read large display LCD. The hardened stainless steel construction allow for smooth movement and a high measure speed. The international Protection Rating of this caliper is IP67 (protected from immersion between 15 centimetres and 1 metre in depth, limited ingress protection). The caliper has an auto shut-off and comes with a fitted case.

5865 Electronic Digital Caliper, 8" Fractions IP67**\$79.95****4251 Electronic Digital Caliper, 6" Professional Grade****\$64.95**

- Z-Limit brand guarantees professional quality
- Large, easy-to-read LCD display can be zeroed at any position
- Automatic shut-off after 5 minutes of non-use, last measuring position retained when shut off
- Hardened stainless steel body for long life, with fine adjustment thumb wheel
- Resolution is 0.0005" (0.01mm) and linear accuracy meets DIN 862 standard

This 6" electronic digital caliper is made and inspected in the same factory as some of America's best-known brands. The 6" digital Vernier caliper measures four ways; outside, inside, depth, and step. The three keys are on/off, inch/mm, and zero.



Jaw Depths: 1 1/2" outside, 5/8" inside. The CR-2032 battery is included. Includes a durable plastic case.




2752 Electronic Digital Caliper, 6", Starrett 799**\$189.00**

- Large, easy-to-read LCD display can be zeroed at any position
- Automatic shut-off after 5 minutes of nonuse, last measuring position retained when shut off
- Hardened stainless steel body for long life
- Fine adjustment thumb wheel
- Resolution is .0005" (0.01mm) and linear accuracy meets DIN 862 standard





Starrett 6" electronic digital caliper Starrett catalog number 799A-6/150 Starrett's 799 series electronic calipers are light, comfortable, easy to use, and constructed with features that have made Starrett slide calipers the machinist's first choice for many years. They have a slim, streamlined profile, function buttons for zero and inch/mm, a large, clear, easy-to-read LCD display, and long battery life. The 799 Calipers are furnished in a fitted, protective case. Jaw Depths: 1 1/2" outside, 5/8" inside.

Precision: Edge and Center Finders


	2747 Center Finder, Drill Press \$17.95
	<ul style="list-style-type: none"> • Accurately and quickly locates center on cylindrical workpieces • Satin chrome finish • Place tool in drill chuck or collet and line up pointer with line scribed on shaft • 3/8" diameter shank <p>The drill press center finder is a quick way to find the approximate center of cylindrical objects. Line the pointer up with the mark and the drill chuck is centered over the work.</p>
	2060 Coaxial Centering Indicator \$89.95
	<ul style="list-style-type: none"> • Use this indicator to quickly center work pieces or fixtures on your mill • This coaxial centering indicator remains stationary while the spindle rotates • Can be used to center internal and external diameters • The locating accuracy is 0.0005" of center • Furnished in a fitted case <p>Use this indicator to quickly center work pieces or fixtures on your mill. The measuring range is 0.25". The shank is 0.375" diameter and 0.75" long. The indicator is 5.5" long from the top of the shank to the bottom of the tip holder (the black part). Can measure internal diameters from 0.12" to 4.25" and external diameters from zero to 4.25". This set includes: Indicator body, restraining rod (prevents rotation), spring-loaded center point feeler, three straight feelers (for IDs), three curved feelers (for ODs).</p>
	2652 Collet Adapter for Edge Finders, Starrett \$37.00
	<ul style="list-style-type: none"> • Starrett Catalog Number PT28314 • Compatible with Any Attachment with a 3/8" Post • Eliminates Need to Change Collet to Use Edge Finder <p>This is a time saving accessory for edge finders with a 3/8" shank. The collet adapter allows quick installation and removal of the edge finder, eliminating the need for collet changes on Bridgeports and similar machines. It can be used with any attachment with a 3/8" shank. The progressive steps are 1/4", 5/16", 3/8", 1/2", 5/8", 3/4" and 1". Step depths vary from .100" to .200".</p>
	5446 Edge and Center Finder Set, 4 Piece \$32.95
	<ul style="list-style-type: none"> • 4 piece Edge and Center Finder Set • Accurately locates the starting point for all types of machine work and jig boring • Hardened and ground all over • Accuracy .0002" <p>The edge finder end has a 0.200" diameter cylinder to quickly find the edge of a work piece. The center finder end tapers to a point to locate holes. Set includes: 1 double ended edge finder: Shank: 1/2", Tip diameter: .20/.50" 1 single ended edge finder: Shank: 3/8", Tip diameter: .200" 1 single ended edge finder: Shank: 1/2", Tip diameter: .500" 1 double ended edge and center finder: Shank: 1/2", Tip diameter: .200"</p>
	1822 Edge and Center Finder, 1/2" Shank, Starrett \$43.50
	6297 Edge and Center Finder, 10 mm Shank \$4.95
	3793 Edge and Center Finder, 10 mm Shank, Starrett \$47.00
	1240 Edge and Center Finder, 3/8" Shank \$8.95
	1960 Edge and Center Finder, 3/8" Shank Audible, Fisher \$18.00
	1959 Edge and Center Finder, 3/8" Shank, Fisher \$20.50
	1961 Edge Finder, 1/4" Shank Audible, Fisher \$21.00
	1823 Edge Finder, 3/8" Shank, Starrett \$38.00









	2604 Edge and Center Finder, 3/8" Shank Laser \$124.50
	<ul style="list-style-type: none"> • 3/8" shank fits collets and end mill holders • 3.375" overall length • Uses common SR44 batteries (included) • Accuracy to 0.001" • Includes polarizing attachment to adjust dot size <p>The model 2604 3/8" shank Laser Edge and Center Finder is a new tool for your mill that saves setup time. It eliminates the frustrations and doubts of using the century-old indirect method with a conventional edge finder or wiggler. The Laser Center/Edge Finder projects a fine laser beam that directly indicates the edge of the workpiece. Move the beam to the edge of the work and set your dial to zero. It is that easy. No more calculating half the diameter of the edge finder. You can also use this laser edge finder to locate scribed or center-punched locations. Simply move the laser beam to the location on the workpiece and the spindle is aligned. Our laser edge finder is easy to align so you can be sure it is always accurate. The batteries for the model 2604 3/8" shank Laser Edge and Center Finder last for over 3 hours of continuous operation. That's 6 months to a year of normal use.</p>
	2886 Polarizing Attachment for Laser Edge Finder \$31.95
	2606 Edge and Center Finder, 1/2" Shank Laser \$124.50
	2543 Edge and Center Finder, 1/4" Shank Laser \$124.50
	2624 Edge and Center Finder, 10 mm Shank Laser \$124.50
	2887 Magnetic Holder for Laser Edge Finder \$12.95
	3966 Edge and Center Finder, 3/8" Shank Laser Concentric Circles \$164.50
	<ul style="list-style-type: none"> • 3/8" shank fits collets and end mill holders • 3.375" overall length • Uses common SR44 batteries (included) • Accuracy to 0.001" • Includes polarizing attachment to adjust line width <p>The Laser Center/Edge Finder™ is a tool for your mill that saves setup time. It eliminates the frustrations and doubts of using the century-old indirect method with a conventional edge finder or wiggler. This Laser Center/Edge Finder projects a series of concentric rings, making it easy to center over an existing hole. See the pattern on the Chris' Tips tab. The Laser Center/Edge Finder projects a fine laser beam that directly indicates the edge of the workpiece. Move the beam to the edge of the work and set your dial to zero. It is that easy. No more calculating half the diameter of the edge finder. You can also use the Laser Center/Edge Finder to locate scribed or center-punched locations. Simply move the laser beam to the location on the workpiece and the spindle is aligned. The Laser Center/Edge Finder is easy to align so you can be sure it is always accurate. The batteries last for over 3 hours of continuous operation. That's 6 months to a year of normal use.</p>
	4629 Edge and Center Finder, 3/8" Shank Laser Crosshair \$164.50
	<ul style="list-style-type: none"> • 3/8" shank fits collets and end mill holders • 3.375" overall length • Uses common SR44 batteries (included) • Accuracy to 0.001" • Includes polarizing attachment to adjust to normal dot <p>The Laser Center/Edge Finder™ is a tool for your mill that saves setup time. It eliminates the frustrations and doubts of using the century-old indirect method with a conventional edge finder or wiggler. This Laser Center/Edge Finder projects a crosshair, making it easy to align a workpiece on the table. The Laser Center/Edge Finder projects a fine laser beam that directly indicates the edge of the workpiece. Move the beam to the edge of the work and set your dial to zero. It is that easy. No more calculating half the diameter of the edge finder. You can also use the Laser Center/Edge Finder to locate scribed or center-punched locations. Simply move the laser beam to the location on the workpiece and the spindle is aligned. The Laser Center/Edge Finder is easy to align so you can be sure it is always accurate. The batteries last for over 3 hours of continuous operation. That's 6 months to a year of normal use.</p>

Precision: Edge and Center Finders

	1318 Edge Finder, 1/2" Shank Electronic	\$44.95
	<ul style="list-style-type: none">• Lights up when it contacts the edge of the work• Repeatable to 0.0002"• Works on any conductive metal• Includes LED light and battery• Made in USA <p>This electronic edge finder has a 1/2" shank. It is 4" long overall. This device uses an A23 battery that may also be called 1811A, 23A, 8F10R, 8LR32, 8LR932, A21, A23, BAT012, E23A, EL12, GP23A, K23A, L1028, LRV08, MN21, MN23, MS21, N21, N21, PX32A, PX32AB, PX32B, RV08, RVO8, S21, V23GA, VR22, 23AE, or L1028F.</p>	
	2294 Wiggler Center Finder Set, PEC	\$29.95
	<ul style="list-style-type: none">• Collet chuck and 4 probes• Includes needle point, 0.250" ball, 0.100" disk, and 0.250"-shank indicator holder• Made in USA <p>This wiggler center finder set comes with a collet chuck and 4 probes for finding centers, edges, and indicating. Each probe snaps into the body without removing the collet nut. The wiggler shank is 0.375" diameter.</p>	
	1603 Wiggler Center Finder Set	\$14.95
	2278 Wiggler Center Finder Set, Starrett \$58.00	
	<ul style="list-style-type: none">• Three attachments: Ball Contact, Disc Contact and Wiggler Shank• Ball diameter 0.250" or 6.3 mm• Disc contact: small disc at the end (0.100"/2.5 mm) diameter• Wiggler shank is 0.375" (3/8") diameter <p>Starrett Wiggler Center Finder. Starrett catalog number S828. The wiggler center finder and three different attachments adapt to countless applications and are readily interchangeable. The attachments are snapped in the chuck without removing the collet nut and are clamped by a ball swivel-joint, which permits adjustment to an angular position or true concentricity. With the pointed shank, working centers can be quickly and accurately located. Spring tension on the ball of the point permits guiding the point to true concentricity so that the work can be brought into perfect alignment with the machine spindle. The ball contact is useful in locating work by first bringing the contact (ball diameter 0.250" or 6.3 mm) against the work, a slot, hole, shoulder, or end, and indexing the work to the desired position relative to the spindle. The disc contact, which has a small disc at the end (0.100"/2.5 mm) diameter, permits use in more confined areas such as slots or shallow holes. The wiggler shank is 0.375" diameter.</p>	
	2279 Wiggler Center Finder, Starrett	\$35.00
	<ul style="list-style-type: none">• Quickly and accurately locate working centers• Attachment snapped in chuck without removing collet nut• Spring tension on ball permits guiding point to true concentricity• Wiggler shank is 0.375" (3/8") diameter <p>Starrett Wiggler Center Finder. Starrett catalog number 828A. The wiggler center finder and pointed shank quickly and accurately locates working centers. Spring tension on the ball of the point permits guiding the point to true concentricity so that the work can be brought into perfect alignment with the machine spindle. The attachment is snapped in the chuck without removing the collet nut and is clamped by a ball swivel-joint, which permits adjustment to an angular position or true concentricity.</p>	

Precision: Indicators

	3716 Dial Indicator, 0.25" x 0.001", Small Face	\$21.95
	<ul style="list-style-type: none">• 0.25" dial indicator with 0.001" resolution• AGD Group I for tight locations• 1.5" Diameter face, 0.375" shank, #4-48 tip thread• Rack & contact point made of hardened stainless steel• Jeweled movement <p>This 1/4" stroke dial small face dial indicator features large, easy to read numbers and crisp graduations. Each revolution is 0.100", indicated by the revolution counter. The resolution is 0.001". There is a mounting lug on the back of the case.</p>	

	6230 Dial Indicator, 0-1", Magnetic Back, Dasqua	\$39.95
	<ul style="list-style-type: none">• 0-1" dial indicator with 0.001" resolution• 0.375" Shank, #4-48 Tip Thread of Hardened Stainless• AGD Group 2, 2" Diameter Face• Magnetic Back is 2 1/4" in Diameter and Coated, Screws On/Off• High Quality Dasqua Brand <p>This 1" stroke dial indicator features large, easy to read numbers and crisp graduations. Each revolution is 0.100", indicated by the revolution counter. The resolution is 0.001". There is a screw on/off magnetic back which has a protective coating. The Indicator shank is 3/8" (0.375") in diameter, made of hardened stainless steel and has a #4-48 tip thread.</p>	
	1236 Dial Indicator, 1" x 0.001"	\$14.95
	<ul style="list-style-type: none">• 0-1" dial indicator with 0.001" resolution• AGD Group 2• 2.25" Diameter face, 0.375" shank, #4-48 tip thread• Lug back mounting screws: #2-56 thread <p>This 1" stroke dial indicator features large, easy to read numbers and crisp graduations. Each revolution is 0.100", indicated by the revolution counter. The resolution is 0.001". There is a mounting lug on the back of the case.</p>	
	2873 Dial Indicator, 1" x 0.0005"	\$18.95
	2726 Dial Indicator, 2" x 0.001"	\$26.95
	4467 Indicator Back, Dial Indicator, with Lug	\$4.95
	2531 Magnetic Back for Dial Indicator	\$5.95
	1783 Point Set, Dial Indicator	\$4.95
	5918 Dial Indicator, 1" x 0.001" with Lifting Lever	\$21.95
	<ul style="list-style-type: none">• 0-1" Dial Indicator with 0.001" Resolution• ADG Group 2 - 2" Diameter Dial Face• Lifting Lever, 0.375" Shank, #4-48 Tip Thread• Lug Back• Jeweled Movement <p>This 1" stroke dial indicator features large, easy to read numbers and crisp graduations. Each revolution is 0.100", indicated by the revolution counter. The resolution is 0.001". There is a mounting lug on the back of the case. The indicator comes with an equipped lifting lever attached to the top end of the spindle. This improves inspection efficiency and accuracy when using the indicator on a mounted stand. With a lifting lever, the spindle can easily be raised in small increments as material is moved under the spindle.</p>	
	4281 Dial Indicator, 1" x 0.001", Professional Grade, Shock Resistant	\$49.95
	<ul style="list-style-type: none">• Z-Limit brand guarantees professional quality• 0-1" dial indicator with 0.001" resolution• 6 jewel shock resistant movement• 2.25" dial diameter AGD Group 2 with 0.375" shank and flat back• Calibration certificate included <p>This 1" stroke dial indicator features large, easy to read numbers and crisp graduations. Each revolution is 0.100", indicated by the revolution counter. The resolution is 0.001". The thread for the tip is #4-48. Includes a durable plastic case. This indicator is made and inspected in the same factory as some of Europe's best-known brands.</p>	
	4285 Dial Indicator, 0.25" x 0.001", Professional Grade, Shock Resistant	\$39.95
	4112 Dial Indicator, 1" x 0.001", Professional Grade	\$32.95
	4283 Dial Indicator, 10 mm x 0.01 mm, Professional Grade, Shock Resistant	\$49.95
	4284 Dial Indicator, 5 mm x 0.01 mm, Professional Grade, Shock Resistant	\$42.95

Precision: Indicators




	<p>1835 Dial Indicator, 1", Starrett \$213.00</p> <ul style="list-style-type: none"> • Range: 1.000" • Face diameter: 2-1/4" • Graduations: 0.001" • Shockless, hardened steel gear train and jewel bearings • Lug on center of the back <p>Starrett catalog number 25-441J. These indicators have a shockless, hardened steel gear train and jewel bearings. They are furnished with a lug on the center of the back. This is an AGD Group 2 indicator with a 2.25" Diameter face, 0.375" shank, and #4-48 tip thread.</p>	 <p>3548 Dial Test Indicator, 0-5-0 x 0.0001", Dovetail Mount, Starrett \$389.00</p> <ul style="list-style-type: none"> • Starrett dial test indicator with dovetail mount • Starrett catalog number 708AZ • Dial test indicator with 0.0001" graduations • Range is 0.010" <p>These precision test indicators were designed to be positioned for easy and accurate readability. The versatility of the angled head, combined with the three dovetail mounts eliminates the need for having both vertical and horizontal style test indicators. These are the features that make this series of test indicators superior to ordinary types. Angled head for better reading position. Large 1 3/8" (35mm) dial diameter. Precision gear-driven design with smooth, jeweled movement. Meet or exceed ISO accuracy specification. For extreme accuracy we recommend positioning the lever contact so that it is approximately 15° from being horizontal with the workpiece. Three dovetail positioning mounts work with existing test indicator accessories. Inch reading indicators are available with easy-to-read, shaded white, solid red, or solid black dials - millimeter reading indicators with solid yellow dials. Contact point reverses automatically, always maintaining clockwise hand rotation. Narrow body for in reach ability. Satin chrome finish for durability. Long carbide contacts 13/16" (20mm) are furnished as standard. Contacts are frictionally adjustable and replaceable.</p>
	<p>1819 Dial Indicator, Starrett Last Word \$273.00</p> <ul style="list-style-type: none"> • Starrett dial indicator with universal friction holder with shank • Graduation: 0.0005" • Range: 0.030" • Dial Reading: 0-15-0 <p>Starrett catalog number 711LPSZ. Steel Contact Point Length: 5/32" (4 mm) Steel Contact Point Ball Diameter: 0.120" (3 mm)</p> <p>These handy test indicators are among the most versatile available. Their small size and variety of attachments handle all jobs with ease and accuracy. A very useful feature is the shaded dial - when used with a mirror, such as in a jig bore application, the operator always knows where he is.</p>	
	<p>5379 Dial Test Indicator Set, 0.3" x 0.0005" \$59.95</p> <ul style="list-style-type: none"> • 0-0.03" Dial Test Indicator Set with .0005" Graduation • Three dovetail positioning mounts work with most existing test indicator accessories • Precision gear-driven design with smooth jeweled movement • Frictionally adjustable contacts • High contrast easy to read dials with a white background <p>Includes 2 contact points, 2 dovetail clamps, 1 swivel post holder, 1 tool post holder and 1 contact wrench in a fitted case. Manufactured and inspected at world class factory that produces highest quality European brands. Contact point reverses automatically to maintain clockwise hand rotation. Meets or exceeds ANSI/ASME accuracy specifications. Narrow body for in reach ability, and a satin chrome finish for durability. Interchangeable with 3808AC.</p>	 <p>3168 Dial Test Indicator, 0-5-0 x 0.0001", Starrett \$535.00</p> <ul style="list-style-type: none"> • Starrett dial test indicator with attachments • Starrett catalog number 708ACZ • Range is 0.005" in either direction • Precision gear-driven design with smooth, jeweled movement • Dial test indicator comes in a fitted case <p>These precision test indicators were designed to be positioned for easy and accurate readability. The versatility of the angled head, combined with the three dovetail mounts eliminates the need for having both vertical and horizontal style test indicators. Includes a dovetail body clamp, tool post holder, swivel post snug with dovetail indicator clamp, and a snug and rod unit. For extreme accuracy we recommend positioning the lever contact so that it is approximately 15° from being horizontal with the workpiece.</p>
	<p>1249 Dial Test Indicator, 0-15-0 x 0.0005" \$32.95</p> <ul style="list-style-type: none"> • Dial test indicator with 0.0005" graduations • Range is 0 - 0.030" in either direction • Reading 0-15-0 • Includes 5/32" and 3/8" diameter posts, dovetails on the back and end, and a 0.080" diameter point • 7 Jewel movement, Comes in a fitted case <p>Test dial indicator has 0.0005" graduations, a range of 0-0.030" in either direction, and reading 0-15-0. It includes 5/32" and 3/8" diameter posts, dovetails on the back and end, and a 0.080" diameter point. It comes in a fitted case.</p> <p>3522 Dial Test Indicator, 0-15-0 x 0.0005" and Universal Magnetic Base \$81.95</p> <p>2875 Dial Test Indicator, 0-4-0 x 0.0001" \$49.95</p> <p>4633 Replacement Point, Dial Test Indicator \$3.95</p>	 <p>2876 Electronic Digital Indicator, 0.5" \$44.95</p> <ul style="list-style-type: none"> • Measurement range is 0-0.5" • Resolution is 0.0005", accuracy is 0.0012" • Measures in inches or mm • Set to zero at any position <p>There are three buttons; OFF for power, ZERO/ON to zero the display, and IN/MM to switch between inches and millimeters. The digital display indicator turns on automatically when the plunger moves. Pressing ZERO/ON zeros the electronic digital indicator at any position so you can make comparative readings between two parts.</p>
	<p>5377 Electronic Digital Indicator, 0.5", Dasqua \$76.95</p> <ul style="list-style-type: none"> • 0.5" digital electronic AGD Group 2 indicator • Range .500" (12.7mm) • Resolution .0005" (.01mm) • Reverse travel (± control indicates direction) • True inch/mm conversion <p>This electronic digital indicator features a large, easy to read LCD display. You can set zero at any position and change the direction that shows positive dimensions. The indicator has a 3/8" shank and the tip thread is #4-48. The case has a mounting lug on the back. Front battery cover allows easy access to change battery. Extra large LCD display. Absolute zero reset button. Zero at any point. On/Off button. Flat Back with Lug Back included. Battery included: SR44, 1.55V. Supplied with fitted case.</p>	


Precision: Indicators

	2521 Electronic Digital Indicator, 1" ● Measurement range is 0-1" ● Resolution is 0.0005", accuracy is 0.0012" ● Measures in inches or mm ● Set to zero at any position ● Relative and absolute measurement This is an AGD Group 2 indicator with a 0.375" diameter shank and a #4-48 thread for tips. There are three buttons; ON/OFF for power, RESET to zero the display, and R/A to switch between absolute and relative measurement. Pressing R/A zeros the indicator at any position so you can make comparative readings between two parts. The absolute measurement is not lost, and is displayed by pressing R/A again.	\$49.95
	5376 Indicator Back, Dial Indicator, Flat ● Fits 2.25" dial diameter (AGD Group 2) indicators ● Four hole pattern Flat back for 4 hole pattern indicators that have a 2 1/4" diameter (AGD Group 2).	\$0.95
	5375 Point Set With Ring, 22 Piece Set ● 22 Points ● 4-48 Screw Threads ● Fit AGD Indicators ● Premium quality ● Aluminum Ring for easy storage and easy selection Ring includes 22 points with 4-48 screw threads that fit AGD indicators. All points are mounted on a convenient aluminum ring for safe keeping and ready selection.	\$15.95
	2452 Universal Back-Plunger Dial Indicator, Starrett ● Starrett Back-Plunger Dial Indicator ● Starrett catalog number 196A1Z ● 0-100 with 3 contact points, adapter, 4 attachments in case ● Accurate and reliable ● Rugged, with few moving parts The Starrett No. 196 Indicator is one of the most versatile indicators available, and it is the "granddaddy" of them all. Over the years this tool has been improved by methods and materials but the basic design is unchanged. The design is older than most of you and has withstood the test of time and beaten all challengers because it is: Accurate and reliable Simple to operate Rugged, with few moving parts Smooth in operation Inexpensive - the best indicator value you can buy This indicator with graduations to .001" will handle by far the majority of jobs. Shank diameter is 1/4" (6.3 mm). For full use, first choose the proper contact from the three hardened contact points that are included. Then the contact is brought against the work with enough pressure to give the hand one full turn. Set the hand at zero by rotating the dial with the knurled bezel. This provides one full rotation of the hand both to the right and left of zero, showing a rise or drop in the work and the amount of that variation. The bar is 0.750" tall, 0.375" wide and 6" long.	\$318.00

Precision: Layout

	5681 Automatic Center Punch, iGaging ● Double spring loaded barrel ● Special hardened alloy steel tip for instant marking ● Knurled body This punch has a lightweight, knurled handle for a positive grip and easy handling. No hammer is required! Just hold the punch in an upright position, press the handle down, and a built-in mechanism strikes a perfect center mark every time. All working parts are made of tool steel, properly hardened. Works on metal, plastics, wood and other machinable materials.	\$7.95
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	<ul style="list-style-type: none">● Starrett Automatic Center Punch with adjustable stroke● Starrett catalog number 18A● Length: 5"● Punch Diameter: 9/16"● Knurled steel handle <p>Rugged automatic punches have all-steel handles and parts. This Starrett center punch has a mechanism that automatically strikes a blow when downward pressure is applied. No hammer is required, making one hand always free to steady the work. The adjustable knurled cap of the Starrett 18A regulates the force of the blow. Should a heavy mark be required, the cap is screwed down. Progressively lighter marks are obtained by turning the cap upward. The tension of the spring, which regulates the blow is constant, so marks made by the point are uniform in depth and size for each setting. The point can be easily removed for regrinding and/or replacement. All sizes are identical in style, differing only in the striking power.</p>	\$58.00
	<p>4086 Center Punch, Starrett</p> <ul style="list-style-type: none">● Length: 4"● Punch Diameter: 1/8"● Properly Hardened Tool Steel <p>Starrett Center Punch. Starrett catalog number 117C. The Starrett 117C Center Punch is made of specially selected steel, hardened and properly tempered. It is well proportioned, nicely finished and has a knurled finger grip. The points are ground at the proper angle to give maximum service, and the tips are accurately centered. The center punch is 4" (100mm) long with a 1/8" (3mm) Dia. Point.</p>	\$10.00
	<p>1820 Center Punches, Starrett</p> <ul style="list-style-type: none">● Sizes 1/16", 5/64", 3/32", 1/8", and 5/32" diameter● Hardened and tempered steel● Knurled finger grip● Points ground at proper angle for maximum service● Tips are accurately centered <p>Starrett Center Punches with round shanks. Set of 5, Nos. 117AA, A, B, C, D in Plastic Case. Starrett catalog number S117PC. This center punch set includes the following sizes, measured at the top of the tapered point: 1/16", 5/64", 3/32", 1/8", and 5/32" diameter. Starrett No. 117 Center Punches are made of specially selected steel, hardened and properly tempered. They are well proportioned, nicely finished and have a knurled finger grip. The points are ground at the proper angle to give maximum service, and the tips are accurately centered. These punches are universally used, but most often by machinists. They are well-proportioned for ease of use. The specially selected tool steel is hardened and tempered to the proper hardness. All of them feature nicely knurled finger grips for ease of handling. A special tempering process makes the head less likely to fracture from a hard, off-center blow.</p>	\$51.50
<p>ALWAYS WEAR SAFETY GLASSES WHEN USING STRIKING AND STRUCK TOOLS.</p>		

	1250 Combination Square Set, 12" 4R ● 12" stainless steel blade ● Includes square head, center head, and protractor head ● 4R Graduation - 8ths, 16ths, 32nds, 64ths This 4-Piece combination square set features a stainless steel blade, and includes a square head, a center head, and a protractor.	\$72.95
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 <p>5868 Combination Square Set, 12" 4R Precision \$68.99</p> <ul style="list-style-type: none"> Fully hardened steel with satin chrome finish blade 4R Graduation - 8ths, 16ths, 32nds, 64ths Protractor scale graduated from 0-180° in both directions Square/Miter head feature level vial and hardened scribe tool High precision engineering standard <p>This premium square features a 12 Inch blade, a cast iron center finding head, a cast iron 180 degree protractor head and a cast iron square/miter head with 45 degree and 90 degree precision ground faces. The adjustable heads may be locked securely in any position along the precision ground satin chrome finished steel blade. The protractor head can be moved in both directions. The blade features etched, machine divided graduations in 1/8 Inch and 1/16 Inch on one side and 1/32 Inch and 1/64 Inch on the other. The square/miter head incorporates a spirit level and hardened scribe. The square comes packaged in a padded plastic storage case.</p> <p>6491 Combination Square Set, 6" 4R \$39.95</p>	<p>3559 Double Square, 4" 4R, Starrett \$96.00</p>  <ul style="list-style-type: none"> Starrett 4" double square with graduated blade 4R Graduation - 8ths, 16ths, 32nds, 64ths Popular with machinists, toolmakers, and patternmakers <p>The sliding blade is adjustable making it more practical for a wide variety of uses than a common square with fixed blade. The faces of the head are ground square. Starrett catalog number 13A.</p> <p>2025 Double Square, 6" 4R, Starrett \$111.00</p> <p>2741 Double Square, 6" 4R, PEC \$59.95</p>  <ul style="list-style-type: none"> Double square with 6" blade Easy to read satin chrome finish blade is fully hardened and tempered 4R graduations, 8ths & 16ths, 32nds & 64ths Head has hammertone powder-coat finish <p>Double square made in the US by Products Engineering Corporation (PEC).</p>
 <p>2738 Combination Square Set, 12" 4R, PEC \$189.95</p> <ul style="list-style-type: none"> 12" Combination square Hardened and tempered 4R graduations, 8ths & 16ths, 32nds & 64ths Protractor graduated 0-180 degrees in both directions Includes level vial and hardened scribe tool <p>Combination square with 12" machinist's blade, square/miter head, protractor head, and center head. Easy to read satin chrome finish blade is fully hardened and tempered. 4R graduations, 8ths & 16ths, 32nds & 64ths. Protractor graduated 0-180 degrees in both directions. Heads have hammertone powder-coat finish. Square/miter head includes level vial and hardened scribe tool. Combination square made in the US by Products Engineering Corporation (PEC).</p>	<p>4742 DYKEM Hi-Spot Blue \$11.95</p>  <ul style="list-style-type: none"> Non-drying Non-hardening Transfers from surface to surface Saves time in surface scraping work 0.55 Oz. <p>Hi-Spot is an intensely blue, soft, smooth uniform paste that can be spread to an extremely thin layer easily and evenly. It is typically used to show high spots on bearings and when making close fitting parts. The film remains pliable and transferable for months.</p>
 <p>3589 Combination Square Set, 12" 4R, Starrett \$330.00</p> <ul style="list-style-type: none"> Starrett 12" combination square set Includes square head, center head and reversible protractor head Starrett catalog number C435-12-4R Graduation No. 4R- 8ths, 16ths, Quick Reading 32nds, 64ths <p>The combination square set has reversible lock bolts, scribe, spirit level in both square head and protractor head, direct reading double 180° protractor scale, hardened steel, photoengraved blade. Cast iron heads with black wrinkle finish. The blade is 1" wide and 3/32" thick and has a satin chrome finish.</p>	<p>4741 DYKEM Steel Blue Layout Fluid \$14.95</p>  <ul style="list-style-type: none"> 4 Oz. container Brush in cap Provides a thin blue film without cracking or chipping Toluene free Must be shipped by ground; not available outside the continental US <p>Machinists depend on Dykem Steel Blue Layout Fluids to scribe sharp, clear, precise lines. When applied, the layout fluid provides a uniform deep blue color that prevents glare and dries in minutes. Dykem Layout Fluid creates an extremely thin film which adds practically no thickness to the work piece and remains flexible without cracking and chipping.</p>
 <p>1839 Combination Square, 12" 4R, Starrett \$105.00</p> <ul style="list-style-type: none"> Starrett 12" combination square with square head Starrett catalog number 11H-12-4R Graduation No. 4R- 8ths, 16ths, Quick Reading 32nds, 64ths Machine divided blade <p>The square has a reversible lock bolt, scribe, spirit level, and hardened steel, photoengraved blade with regular finish. Cast iron head with black wrinkle finish. The blade is 1" wide and 3/32" thick.</p> <p>2451 Combination Square, 4" 4R, Starrett \$107.00</p>	<p>3810 Layout & Marking Kit \$23.95</p>  <ul style="list-style-type: none"> Scriber with 2-3/8" Point, Starrett Sharpie King Size Permanent Marker, Black Sharpie Metallic Fine Point Permanent Marker <p>The big, fat Sharpie King Size in this kit is a great substitute for layout dye. It marks on virtually any surface, provides an opaque covering to scribe, and doesn't dry out in the can. Not to mention that it avoids all the hassle and limitations of shipping and using hazardous layout dyes. The Starrett scriber has been the industry standard for many years. The Sharpie Metallic marker can be used on dark materials where contrast is needed. It is also great for identifying materials in your steel rack.</p>
 <p>5869 Double Square Set, 4" and 6" 4R \$27.95</p> <ul style="list-style-type: none"> 4" 4R blade with 2.5" base 6" 4R blade with 4" base 4R Graduation - 8ths, 16ths, 32nds, 64ths Scale accuracy: 0.001" Squareness: 0.0015" <p>Pair of heavy duty hardened, precision ground double squares, 4" and 6". Blades are graduated in 8ths, 16th, 32nds, and 64ths. Blades are satin chrome finished to reduce glare and rust, and are easy to read. Made to US standards for accuracy and squareness with scale accuracy of 0.001" and squareness of 0.0015". The 6" square has a bubble level and the squares may be locked at any position along the blade. Squares come in a storage case with foam insert.</p>	<p>5988 Layout Package \$192.95</p>  <ul style="list-style-type: none"> Layout die, straight edge, and scriber Hermaphrodite caliper, protractor, and machinists squares Digital height gage Prick punch and center punch <p>This kit includes the layout tools you need for machine shop use. Layout is the process of transferring measurements from a drawing to a workpiece. Layout is an important part of machining especially when working with castings, forgings and weldments. It is important that you lay out carefully to make sure you have enough material to "clean up" all important surfaces.</p>

**2549 Machinist Square Set \$29.95**

- Machinist square set includes 2", 3", 4" and 6" squares
- Made from fully seasoned and hardened tool steel
- Accurate right angles both inside and outside
- Beams are ground and lapped
- Class H accuracy: 0.0008" + 0.0001" per inch

Set of four machinist squares made of hardened tool steel in sizes 2", 3", 4", and 6". Length of blade is measured from inner edge of beam to end of blade. The small notch at the inside corner prevents small particles from accumulating at the juncture and impacting the squares reading. Typical use involves aligning the beam along one edge of an object with the blade across the body of the work. Using a strong light source behind the square will reveal any gaps showing the squareness of the work.

**2064 Master Precision Level, 6", Dasqua \$89.95**

- 6" Master Precision Level
- Cast iron with precision ground measuring surface
- Bubble has 0.005" graduation
- Overall accuracy is 0.0005" per 10"
- V-grooved base for round stock

Ensure a level setup with this 6" master precision level. Made in strict accordance with DIN877 standard, this level is used to measure the straightness and flatness of machine guide rails. Made of cast iron with a precision ground measuring surface. A V-grooved base allows for use on round stock, shafts and cylindrical surfaces. Includes a main vial and a cross test vial. High-sensitivity bubble with 0.005" graduations and an accuracy of 0.0005" per 10".

**5874 Machinist Square Set, 2" 4" and 6", iGaging \$39.95**

- Grade 1 DIN Standard 875
- Accurate on inside and outside angles
- All surfaces and edges ground
- Perfect set-up tool for machining, table saws, and more
- Comes in heavy-duty case

Set of three engineer's squares, sizes 2", 4", and 6". This set is ideal for set-up work with machine tools, table saw blades, and many other shop tools. The surfaces and edges are ground for high tolerances of straightness and squareness. Squares are accurate on both inside and outside angles and meet German DIN standard 875, Grade 1. Length of blade is measured from inner edge of beam to end of blade. The small notch at the inside corner prevents small particles from accumulating at the juncture and impacting the squares reading. Typical use involves aligning the beam along one edge of an object with the blade across the body of the work. Using a strong light source behind the square will reveal any gaps showing the squareness of the work.

**3186 Optical Center Punch, 6 Piece \$64.95**

- Accuracy to 0.002"
 - A bullseye lens and a cross hair lens target the punch location
 - Acrylic lens magnifier power is 9x
 - Includes sturdy storage case
 - Includes a 150 degree tempered steel center punch and a 60 degree tempered steel center punch
- Even less experienced machinists can punch layout points to within 0.002" using this high power piloted center punch system.

The optical center punch is located over a scribed workpiece and adjusted until centered using the optics. The optical pilot is then removed and replaced by the punch. A tap marks the spot.

**2742 Machinist Square Set, PEC \$85.50**

- Includes 2", 3", 4" and 6" squares
- Made from high quality tool steel
- True right angles inside and outside
- Beams and blades are precision ground
- Hardened Blade

Set of four machinist squares made of high quality tool steel in sizes 2", 3", 4", and 6". These squares are made in the US by Products Engineering Corporation (PEC). These squares are square within 0.0006" over the length of the blade. The two sides of the blades and beams are parallel within 0.0005" over their length. Length of blade is measured from inner edge of beam to end of blade. The small notch at the inside corner prevents small particles from accumulating at the juncture and impacting the squares reading. Typical use involves aligning the beam along one edge of an object with the blade across the body of the work. Using a strong light source behind the square will reveal any gaps showing the squareness of the work.

**2423 Precision Machinists Level, 12", Starrett \$291.00**

- Starrett machinist improved level
 - Starrett catalog number 98-12
 - Ground and graduated main vials
 - Cross test vial and plumb vial
 - 0.005" per foot (0.42 mm per meter) accuracy
- These Starrett Machinist Levels have ground and graduated main vials, and a cross test vial. The 12" level also has a plumb vial. These vials are adjustable to a positive setting and are housed in a satin chrome brass tube with a friction-fit closing cover to prevent breakage. The base of the precision machinists level features an involute groove running the length of the base, which provides a reliable seat for round work such as pipes or shafting. With the cross test vial, it is possible to simultaneously level in both directions. This prevents inaccuracies in the main vial reading caused by canting the level sideways on round work. The main level vials have graduations that are approximately 80-90 seconds or .005" per foot (0.42 mm per meter). There are five, six, or seven lines on each side of the bubble, depending on the base length. Starrett Machinist Levels are the finest levels available, used for precision work that is typically required in industry. They all have these features: All level bases are made from the finest quality seasoned cast iron and are precision-machined on the reference surface. Nonmachined surfaces have an attractive, black wrinkle finish. An involute longitudinal groove between the bearing flats for accurate seating on round work. This groove has a special involute design, permitting better centering and greater capacity to handle larger rounds. Groove and bearing flats are machined together for maximum accuracy.

2654 Case, Precision Machinists Level, 12", Starrett \$62.00

2320 Precision Machinists Level, 4", Starrett \$135.00

1846 Precision Machinists Level, 6", Starrett \$186.00

3174 Precision Machinists Level, 8", Starrett \$218.00

**1125 Machinists Center Square, 1-1/2" \$12.95**

- Rapidly locate exact center
- Range up to 1-1/2" diameter
- Features 90 degree V angle
- Made from precision ground tool steel
- Hardened and tempered blade

To find the center, insert work piece into the 'V' of the square and mark a line. For round stock, rotate the piece 90 degrees and mark again. The intersection of the lines is true center.

**1126 Machinists Square, 4" \$8.88**


- 4" X 3" Machinist square
 - Made from hardened tool steel
 - Accurate right angles both inside & outside
 - Beam is ground and lapped
 - Perfect set-up tool for machining, table saws, and more
- 4" X 3" Machinist square made of hardened tool steel. Length of blade is measured from inner edge of beam to end of blade. The small notch at the inside corner prevents small particles from accumulating at the juncture and impacting the squares reading. Typical use involves aligning the beam along one edge of an object with the blade across the body of the work. Using a strong light source behind the square will reveal any gaps showing the squareness of the work.


1127 Machinists Square, 6" \$13.58


**1824 Scriber with 2-3/8" Point, Starrett \$18.50**


- 1/4" diameter handle
 - Nickel plated steel
 - Knurled handle
 - Hardened tip is finely tapered
 - Tip can be reversed and telescoped into handle
- Starrett hand scriber. Starrett catalog number 70A. The 1/4" diameter handle is of steel, knurled, and nickel plated. The scriber point is steel, properly hardened and finely tapered so that the location of the point is not obscured. The scriber is held firmly in the handle by a knurled chuck and when not in use can be reversed, telescoped into the handle, and locked by the chuck. The hexagon head prevents rolling. The scriber point is shipped reversed in the handle so the point is protected.


2655 Scriber with 2-7/8" Point, Starrett \$21.00

	3885 Scriber with Two Tips, Starrett	\$43.00
<ul style="list-style-type: none"> ● Tempered well-finished steel ● Points are finely tapered ● Nickel plated knurled handle <p>Scribers are steel, properly tempered and well finished. The points are finely tapered so that the scriber point can be easily seen on the work. The handle, as well as the points, has a knurled grip. The length of the scriber is 9" (225mm). Points screw into the handle and fit either end. The knurled handle is nickel-plated.</p>		


	4205 Setup Blocks, Eight Block Set, iGaging	\$27.95
<ul style="list-style-type: none"> ● 8 piece setup blocks ● Block size: 4" long x 3/4" wide ● Solid aluminum with blue anodized finish ● Block thickness accuracy: 0.001"/0.025 mm ● Easy-to-read laser etched labels on each block, fitted case included <p>Set of eight setup blocks from iGaging make setting heights and depths quick and accurate. Use to set blade heights, drill press stop depths, router bit heights, fence distances, and more. The easy to read numerals, white on anodized blue, help with quick identification. Use blocks individually or in combinations to achieve different measurements. Blocks are machined to a thickness accuracy of 0.001"/0.025 mm and each block is 4" long and 0.75" wide. Thicknesses in this set are: 1/16", 3/32", 1/8", 3/16", 1/4", 3/8", 1/2", 7/8".</p>		


	3069 Surface Gage	\$34.95
<ul style="list-style-type: none"> ● For scribing lines, use on a surface plate ● Includes 4" and 7" spindles ● Bottom V-groove ground for cylindrical work ● Retractable pins in base for working on flat surfaces ● Fine adjustment <p>Most often used in layout work, a surface gage is used to scribe layout lines at a chosen distance parallel to a reference surface. Typically this tool is used with a measuring tool to transfer the dimension to or from a work piece. The spindle can be adjusted at any position relative to the base (typically a surface plate) and is tightened with a spindle nut. A fine feed screw is used for finer adjustments. The tool comes with a straight scribe and a curved end scribe. Between the two shapes, a wide array of angles can be achieved for marking work and the curved end makes marking near or even below the surface plate an easy task. Retractable pins may be extended and used to aid in moving the gage horizontally along the edge of the surface plate for scribing a horizontal line. The scribe can be removed and a test indicator mounted in the larger holes for checking parallelism. In addition, the tool comes with two steel post of different lengths. The bottom is grooved to accommodate round stock. This allows one to align two shafts with a test indicator. If you mount a piece of round stock in a v-block, you can use a surface gage to mark true center by scribing 4 lines. Scribe the first line across the end of the stock, then rotate the piece 90 degrees and scribe a second line. Do this two more times until four lines are scribed. A box will be scribed where the lines intersect. By marking an X in the middle of this box, you will find true center of the stock. See Chris' Tips for more information on surface gage use.</p>		


	3068 Surface Plate, Granite, 12" x 9" x 3"	\$44.95
<ul style="list-style-type: none"> ● Granite for long term stability ● Grade B: ±0.0001 accuracy ● Meets federal specification GGG-P-463C ● Dimensions 12" x 9" x 3" <p>Granite surface plate used as a horizontal reference plane for tooling setup, precision inspection and layout. These surface plates are checked with an auto-collimator for overall accuracy. All points on the surface are between two parallel planes 0.0002" apart. The dimensions of this plate are 9" (w) x 12" (L) x 3" (D)</p>		
	1430 Surface Plate, Granite, 12" x 9" x 2"	\$36.95
	1429 Surface Plate, Granite, 6" x 8" x 2"	\$34.95


	3173 Toolmakers Square, 6", Starrett	\$216.00
<ul style="list-style-type: none"> ● Starrett toolmaker grade stainless steel square ● Starrett catalog number 3020-6 ● Blade length 5 29/32" ● Beam length 3 29/32" ● Squareness accuracy to .0002" (0.005mm) for every 6" (150mm) <p>These high quality toolmaker squares feature hardened, ground, and lapped stainless steel construction on both the blade and the beam. The beam is machined at the inner corner for clearance.</p>		

	3172 Toolmakers Square, 3", Starrett	\$109.00
	3564 Toolmakers Square, 4", Starrett	\$142.00

	2031 Transfer Punch Set 3/32" to 1/2"	\$14.95
<ul style="list-style-type: none"> ● 28 piece transfer punch set ● Sizes from 3/32" to 1/2" by 1/64" plus a 17/32" punch ● Heat treated and tempered tool steel for long life ● Transfer punches are 0.0025" undersize <p>These transfer punches are 4-7/8" long and have a black oxide finish. The precision punch set includes an indexed stand. The punches are 3/32" to 1/2" diameter in increments of 1/64", plus a 17/32" punch.</p>		
	4884 Transfer Punch Set, Metric 1.0 mm to 13.0 mm	\$19.95
	6035 Transfer Punch Set, Sizes #1-60, 60 Piece	\$26.95
	6025 Transfer Punch Set, Sizes A-Z, 24 Piece	\$22.95

	5970 Transfer Screw Set, 1/4" - 7/16"	\$29.95
<ul style="list-style-type: none"> ● 4 sizes / 6 screws each plus wrench/holder ● Sizes: 1/4-20, 5/16-18, 3/8-16, 7/16-14 ● Transfer exact location of threaded holes ● Works with blind holes <p>Transfer the exact location of a threaded hole to your work piece. Transfer screws are more accurate than transfer punches and may be used with blind holes. The use of transfer screws is the most precise method of transferring threaded holes to mating parts and are great for tool & die work, and in layouts. This set includes 4 sizes of transfer screws (6 screws each) and the wrench/holders. Sizes: 1/4-20, 5/16-18, 3/8-16, 7/16-14</p>		
	5969 Transfer Screw Set, #4 - #10	\$34.95
	5987 Transfer Screw Set, M3 - M6	\$32.95
	5968 Transfer Screw Set, M6 - M12	\$30.95

	Transfer Screw Sets, Single Size	
<ul style="list-style-type: none"> ● Includes 6 transfer screws in a wrench/holder ● Transfer exact location of threaded holes ● Works with blind holes 		
	3079 Transfer Screw Set, 1/4"-20 Thread	\$12.95
	3080 Transfer Screw Set, 5/16"-18 Thread	\$12.95
	3081 Transfer Screw Set, 3/8"-16 Thread	\$12.95
	3082 Transfer Screw Set, 1/2"-13 Thread	\$12.95
	3083 Transfer Screw Set, M4 Thread	\$12.95
	3084 Transfer Screw Set, M5 Thread	\$12.95
	3085 Transfer Screw Set, M6 Thread	\$12.95
	3086 Transfer Screw Set, M8 Thread	\$13.95
	3087 Transfer Screw Set, M10 Thread	\$12.95

	3028 Universal Bevel, PEC	\$42.95
<ul style="list-style-type: none"> ● Six inch long blade ● Set to any angle ● Stainless steel ● Made in USA <p>This high-accuracy T-bevel features both straight slots and offset slots in the blade and straight slots in the stock. This combination allows for the widest possible variety of adjustments. Align the T-bevel with the angle you want to duplicate, then tighten the knurled locking nut.</p>		

Precision: Layout

2227 Universal Bevel, Starrett \$156.00

- Starrett Universal Bevel
- Starrett catalog number 47
- Wide variety of adjustment and angle settings
- Blade is 6" (150 mm) long

This improved Universal Bevel has both offset and straight slots in the blade, in combination with straight slots in the stock that allow for a wide variety of adjustment and angle settings that are impossible to obtain with many ordinary bevels. Length of the blade is 6" (150 mm), and the stock, 3-1/2" (90 mm). The stock lies flat on the work or paper since the head of the clamping bolt is recessed. This tool can be set to duplicate an angle from a master, or it may be easily converted into a Bevel Protractor by using this tool with the No. 193 Protractor (PN 1833).



3708 Bore Gage Set, 2-6" Dial \$94.95

- Measure ID of holes from 2" to 6" in diameter
 - Close tolerance measurement of ID, taper and roundness
 - Furnished with AGD Group II dial indicator
 - Accuracy: 0.0005"
 - Includes fitted case and interchangeable anvils
- This dial bore gage is easy to calibrate with a ring gage or micrometer.



3617 Caliper, 6" Outside Spring \$12.95

- Max. measurement 6" (150 mm)
 - Flat leg type
 - Quick adjustment nut
 - Easy adjustment over entire range
 - Polished natural steel finish
- 6" outside spring caliper used to measure the external size of an object. Outside calipers are useful for transferring measurements from a workpiece to a rule. They are a flexible solution when the work has complex shapes or when measuring round stock. These calipers have a flat leg design and open to a maximum of 6" (150 mm). The polished steel legs are easily adjusted over the entire range and adjustments can be easily fixed with a quick nut.

3688 Caliper, 6" Hermaphrodite, PEC \$21.95

3618 Caliper, 6" Inside Spring \$14.95

3687 Divider, 6" Spring \$13.95

Precision: Measuring

3103 Angle Gage Set \$29.95

- Set of 18 metal angle gages
 - 5° to 90° by 5° increments
 - Satin chrome finish
 - Eight gaging surfaces on each gage
 - Check primary angle, 1/2 primary and complementary angles
- The angle gage set is furnished in a vinyl case for storage.



5490 AngleCube, Digital Angle Gage, iGaging \$36.95

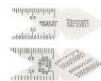
- Tilt range: 0 - 90° x 4
 - Auto Off conserves battery life
 - Resolution: 0.05° Accuracy: ±0.2 Degrees
 - Compact and Lightweight design with ±0.1 Degree Repeatability
 - Mounting magnets on 3 sides to ensure accurate measurements
- The iGAGING AngleCube is a precision instrument used for measuring angles in which any of its outer surfaces may be utilized. Zero can be set at any angle so that the relative angle between two surfaces can be measured. The AngleCube can also measure absolute level, you can also utilize it as a portable pocket level. This small device is great for setup or checking angles. It is accurate and reliable, and the magnetic base makes for easy angle checking on a work piece, angle vise or sine vise, and whatever else you can dream up. The cubes accuracy is ±0.2 degrees with a resolution of 0.05 degrees at a range of 0-90 degrees. Size is 2.13" x 2.13" x 0.19" and an overall weight of 2.7oz. The cube comes with a convenient storage pouch. Use this cube for all types of setup work by placing it on tables, guards, even cutting blades.



2743 Center Gage, 60 Degree \$13.95

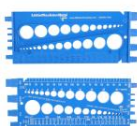
- Made of high quality steel
 - Satin chrome finish
 - Use for grinding and setting thread cutting tools
 - Gaging surfaces are precision ground
- Used for grinding and setting screw cutting tools. Scales with 14ths and 20ths graduations provided on one side, 24ths and 32nds on reverse side. Scales are used to determine number of threads per inch. Gage also features a table of double depths of thread for selecting size of tap drills. Made of hardened spring tempered steel, with a protective satin chrome finish. All gaging surfaces are precision ground.

4254 Center Gage, Acme, PEC \$32.95



1829 Center Gage, 60 Degree, Starrett \$35.50

- Starrett 60 degree center gage
 - Starrett catalog number C391
 - Extremely handy for use in grinding and setting thread cutting tools
 - Spring tempered steel
- These gages meet the following standards: American National or U.S. 60°, Whitworth or English 55°, and Metric 60°. They also have a very useful scale for finding the number of threads per inch through graduations in 14ths, 20ths, 24ths and 32nds of an inch. The gage also has a table of double depths of threads for determining size of tap drills.



3459 BoltSize-It - Bolt and Nut Checker \$6.95

- Sizes bolts, nuts, and screws
- Sorts coarse threads, fine threads, and metric threads
- Measures inches and millimeters
- Length: 8-5/8", Width: 4-1/4"

Size bolt diameter by pushing bolt through sizing holes Gauges hex nuts and washers (USS, SAE) Gauges metric hex nuts and washers by holding under metric holes Measure US and metric thread pitch Special notch gauges flat headed metal and wood screws Ruler marked with inches and millimeters Sturdy and lightweight plastic resists water, alcohol, oil, and grease Fits in shirt pocket (8-5/8" x 3-1/4" or 217 mm x 82 mm)



2882 Comparator Stand W/ Indicator \$52.95

- Fine vertical adjustment with lock
 - 6" x 6" granite base flat within 0.0005"
 - 1" Diameter column, 8" tall
 - Includes a 0-1" x 0.001" dial indicator
- This granite dial gage comparator stand will accept any AGD 1, 2, 3, or 4 dial indicator.



3460 BoltSize-It - Drill Gage \$5.95

- 1/16" to 1/2" fractional size drill gage
 - Quickly check drill sizes
 - 32 holes marked with drill sizes
 - Measurement marked in inches and decimal equivalents
- Sturdy and lightweight plastic resists water, alcohol, oil, and grease. Fits in shirt pocket (3-3/8" x 7-9/16" or 86 mm x 193 mm)



5185 Depth Base for 6" Caliper \$14.95

- Slot Width: .64"
 - 1.5 x 4 x 1.5 Inches
 - Professional Quality
 - 3" Base
- This depth base attaches to the blade of a 6" caliper for depth measurement. It has a locking nut to secure along the blade. This precise measurement instrument is used to determine the depth of any shape with a step, slot, or groove.



3461 BoltSize-It - Screw Checker \$5.95

- #0 to 3/4" coarse & fine threads
 - 1.6 mm to 16mm metric threads
 - Tap drill sizes on back
- Sturdy and lightweight plastic resists water, alcohol, oil, and grease. Fits in shirt pocket (3-3/8" x 6-5/8" or 86 mm x 168 mm)


5983 Depth Gage Digital Electronic Indicator 0-22" **\$72.95**

- Digital depth gage with six extension rods
 - 3 Reading functions: inch, metric, & fractional
 - Resolution: .0005" / .01mm / 1/128 inch
 - Accuracy: +/- 0.001"
 - Power saving auto off feature with extra large LCD display
- This depth gage will allow for deep measuring in tight spots up to 22 inches with six different extension tools. Allows for measuring depth of any shape that has a step, groove or slot up to the 22 inch limit. The six extension rods are in lengths of 1" - 6" in inch increments. Gage has an extra large LCD display and a power saving auto-off feature. Indicator conforms to AGD standard and federal accuracy specifications. Set includes the digital gage, six extension rods and four feeler points, all packaged in a protective case.


5599 Depth Gage, 6" Steel Rule, PEC **\$37.95**

- 6" Rule made of Hardened and Tempered Steel
 - Protractor Graduations Include 30°, 45°, and 60° Angles
 - Base Surface Measures 2-12" x 1/8" Thick
 - Rule Measures 7/32" Wide and 0.041" Thick with Deeply Etched Markings
 - 32nds one side, 0.5mm on reverse
- These very handy depth gages can be used to quickly obtain measurements in 32nd of an inch by simply adjusting the rule to the required depth. The gage consists of a nicely finished, hardened steel head and an accurate, machine divided, tempered steel rule.


3547 Depth Gage, 6" Steel Rule, Starrett CLOSEOUT **\$73.00**

- Starrett steel rule depth gage, 0-6" range, 32nds/64ths
 - Starrett catalog number 237
 - Head length is 2-5/8"x1/8"
 - Hardened steel head, tempered steel rule
- These very handy depth gages can be used to quickly obtain measurements in 64th of an inch by simply adjusting the rule to the required depth. The gage consists of a nicely finished, hardened steel head and an accurate, machine divided, tempered steel rule. The rule is Starrett No. 610N. The gage can be smoothly adjusted to the required measurement and then locked into position by a knurled nut. The base is cut out on one side, adjacent to the rule, permitting easier readings and more accurate measurements.


1434 Drill Gage, #61-80 **\$6.95**

- Drill Gage
 - Made of steel with etched markings
 - Sizes #61 - #80
 - Use for twist drill sizing
- Drill gage for measuring twist drill sizes. Made of steel with etched graduation markings. Gage sizes from #61 - #80.


3557 Drill Point Gage, Starrett **\$90.00**

- Starrett Drill Point Gage, 59° bevel, 32nds graduations
 - Starrett catalog number 22C
 - The head is beveled to 59° (the correct drill point angle)
 - Graduated in 32nds along the 59° face for measuring the drill lips
- This gage was designed specifically for use in drill grinding. It provides a quick, accurate way for determining the correct drill point angle of 59° and the correct length of drill lips necessary for clean-cut drilling at maximum feeds and speeds. The sliding head may be adjusted to any position along the rule and locked by a thumb nut. The head is beveled to 59° (the correct drill point angle), and is also graduated in 32nds along the 59° face for measuring the drill lips which should be of equal lengths. The hook rule has accurate, machine-divided graduations in 8ths, 16ths, quick-reading 32nds and 64ths. Hook is adjustable and can be shortened or extended on either side of the rule, and may also be removed if desired. Tool can also be used as a plain rule, hook rule, depth gage, and slide caliper. The No. 22D Head-only will fit all steel rules 3/4" wide by 3/64" thick.


3092 Height Gage, 12", Dial **\$129.95**

- Stainless steel with satin chrome finish
- Carbide tipped scriber for longer life
- Fine feed adjustment
- Positive lock screw
- 0.001" Graduations

5794 Scriber, Height Gage **\$22.95**

5870 Height Gage, 6", Digital, iGaging **\$49.99**

- Resolution: 0.0005"
 - Accuracy +/-0.001"
 - Repeatability: 0.0005"
 - Solid aluminum base, stainless steel beam
 - Large LCD Display, Inch, Metric and Fractions
- iGaging's MiniMag 6" Height Gauge makes vertical and horizontal measuring easy. The large LCD display gives measurements in inches, millimeters and fractions and unit has ABS and hold functions. Mounted on a solid aluminum base with magnets, the gage has a stainless steel beam for smooth travel with no play. IP54 rated for splash water, oil & dust resistance, the resolution is 0.0005" (0.01mm) with an accuracy of +/-0.001" (+/-0.03mm). Controls are Zero reset, On/Off, inch/mm/fraction conversion, Hold, Absolute.


6375 Height Gage, 6", Digital, iGaging IP54 **\$96.95**

- Resolution: 0.0005"
 - Accuracy +/-0.001"
 - Repeatability: 0.0005"
 - Solid aluminum base, stainless steel beam
 - Large LCD Display, Inch, Metric and Fractions
- iGaging's MiniMag 6" Height Gauge makes vertical and horizontal measuring easy. The large LCD display gives measurements in inches, millimeters and fractions and unit has ABS and hold functions. Mounted on a solid aluminum base with magnets, the gage has a stainless steel beam for smooth travel with no play. IP54 rated for splash water, oil & dust resistance, the resolution is 0.0005" (0.01mm) with an accuracy of +/-0.001" (+/-0.03mm). Controls are Zero reset, On/Off, inch/mm/fraction conversion, Hold, Absolute.


3181 Height Gage, 6", Digital, Starrett **\$385.50**

- Starrett 0-6" (0-150 mm) range digital height gage
 - Starrett catalog number 3751AZ-6/150
 - Easy-to-read LCD with .32" high characters
 - Linear Accuracy: 0.001" (0.02mm)
 - Resolution: .0005" (0.01mm)
- Rounded nose scriber cuts clean, sharp lines. Easy-to-read LCD with .32" high characters. This digital height gage features inch-millimeter conversion and zero at any position. It has a manual ON/OFF button but will also turn off automatically after 5 minutes of inactivity. The stainless steel bar is hardened for long life. The scriber can reference zero from the base bottom.

It also has a slide lock and fine adjustment thumb roll, plus it features a hardened, ground, and lapped base.


4521 Indicator Arm, Universal, 11" **\$31.95**

- Steel universal arm with central locking mechanism
 - 8 mm indicator stem hole
 - 11" arm length
 - Fine adjustment knob
 - 8 mm x 40 mm rod
- 11" universal arm for holding test indicators. Arm is constructed of steel and has a central locking mechanism. The 8 mm indicator stem hole and dovetail grooves holds most dial indicators and test indicators. Indicator stem has a fine adjustment knob. The arm has a 8 mm (0.315") x 40 mm (1.57") unthreaded stem for placing the arm in collets.

4653 Indicator Arm, Universal, 6" **\$21.95**
4948 Indicator Holder, 1/4" Round Shank **\$15.95**


- 1/4" Straight
 - 3" overall length
 - For use with test indicators and probes with dovetails
 - Locks in 90° increments
- Great for aligning a vise or setting up a work piece.

	2880 Magnetic Base Indicator Holder \$56.95 <ul style="list-style-type: none"> • Magnetic base indicator holder with one-knob lock • Permanent magnet has an 80 kg (176 lb) holding force • On/off switch makes it easy to position • V-groove base allows you to mount it on cylindrical surfaces <p>This magnetic indicator holder locks all its joints when the knob is tightened. The on/off switch makes it easy to position. The V-groove base allows you to mount it on cylindrical surfaces. The permanent magnet has an 80 kg (176 lb) holding force. The lower arm is 110 mm long, the upper arm is 100 mm long.</p>	3170 Magnetic Base Indicator Holder, Starrett \$174.00 <ul style="list-style-type: none"> • Magnetic base with triple-jointed arm and fine adjustment • Starrett catalog number 660 • Positive On/Off switch • Very sensitive fine-adjustment thumb screw <p>The compact and versatile No. 660 Magnetic Base Indicator Holder has three adjustable pivots controlled by a single knob for fast, easy indicator positioning. Small but powerful magnetic base, with 70 lbs. (320 N) holding force. Base Dimensions: 1 3/16 x 1 9/16 x 1 3/8" (30 x 40 x 35mm) Horizontal and vertical mounting positions Will hold any indicator with a 3/8" (9.5mm) stem or standard dovetail mount Articulating arm with powerful central locking knob provides full 360° horizontal positioning and over 180° vertical positioning Maximum horizontal reach: 4.750" (120mm) Maximum vertical reach: 7.500" (190mm)</p>
	1237 Magnetic Base Indicator Holder \$18.95 <ul style="list-style-type: none"> • Magnetic base indicator holder with fine adjustment • Permanent magnet has an 60 kg (130 lb) holding force • On/off switch makes it easy to position • V-groove base allows you to mount it on cylindrical surfaces • Works with most AGD dial and test indicators <p>This magnetic base indicator holder has a fine adjustment feature. The on/off switch makes it easy to position. The V-groove base allows you to mount it on cylindrical surfaces. The permanent magnet has an 60 kg (130 lb) holding force.</p>	3072 Magnetic Test Indicator Holder, Fisher \$88.00 <ul style="list-style-type: none"> • Overall height 3.75" • Powerful permanent magnet • Clamps on dovetail, 5/32", or 1/4" diameter stems • Includes stem adapter and mill adapter • Made in USA by Fisher Machine Shop <p>Indicator Holder with two accessories (Stem adapter and Mill adapter) Clamp Indicator with either dovetail or 5/32" or 1/4" diameter stem Powerful permanent magnet Overall Height of 3.75" Universal Swivel Joint with Friction Movement</p>
	2062 Magnetic Base Indicator Holder, Dasqua \$84.95 <ul style="list-style-type: none"> • Magnetic base indicator holder • 110 lbs pull with 220mm (8.66") arm length • Tight locking force • Dovetail groove for test indicators • Three clamping holes, 6mm, 8mm and 3/8" <p>Magnetic base indicator holder with a strong 110 lb. pull. The indicator arm is 220mm (8.66"). Unit has three clamping holes (6mm, 8mm and 3/8") for use with metric and inch dial indicators. There is a dovetail groove for test indicators. The tightening knob is designed for comfortable grip. Constructed from high grade hardened steel and made on CNC machines for an accurate fit.</p>	5867 Micrometer Set, 0-3", Mitutoyo Style, iGaging \$79.95 <ul style="list-style-type: none"> • Measuring range 0 to 3" • Accuracy: +/- 0.0001" per inch • Graduation interval 0.0001" • Thimble style: friction or ratchet • Hardened and ground carbide anvil <p>Three micrometer set manufactured in the style of Mitutoyo micrometers have a measuring range of 0-1", 1-2", and 2-3". The Vernier scale has 0.0001" graduations and an accuracy of +/- 0.0001" per inch. Hardened and ground measuring faces are wear resistance and the hardened, ground, and lapped spindle thread provides smooth movement and accuracy. Micrometer have friction thimbles with ratchet stops. Baked enamel frame, thimble and sleeve have a satin chrome finish. Set includes three micrometers range of 0-1", 1-2", and 2-3", 1" standard, 2" standard and a fitted case.</p>
	5374 Magnetic Base Indicator Holder, Fine Adjustment \$79.95 <ul style="list-style-type: none"> • Unique top fine adjustment mechanism • 3-D rigid aluminum arm movement • Dovetail groove for test indicator • Maximum reach is 10.7" • On/Off switch <p>Magnetic base indicator holder with fine adjustment mechanism on the top of the base. Magnet has 176 lbs of pull. Base is 60 x 50 x 55mm.</p>	3663 Micrometer Set, 0-6" \$269.95 <ul style="list-style-type: none"> • Solid metal C-shape frame for all sizes • Graduation: 0.0001" • Hardened and precision ground anvil spindle thread with microlap finish on ends <p>This 0-6" micrometer set features carbide faces and clear 0.0001" graduations on a satin-chrome finish. The frames are forged steel. 1" through 5" standards are included, as well as adjusting wrenches. The micrometers have a ratchet stop for exact repetitive readings and a lock lever to lock the barrel. The micrometers come in a fitted case.</p>
	5373 Magnetic Base Indicator Holder, Fine Adjustment, Mini \$67.95	5866 Micrometer, 0-1" Digital IP65 \$69.99 <ul style="list-style-type: none"> • Measurement range: 0-1" • Resolution: 0.00005"/0.001mm • Accuracy: 0.00015"/0.003mm • IP65 Water, Oil & Dust Resistance • Large LCD display <p>Easy to read digital electronic micrometer with a large LCD digital display + Vernier scale reading in the spindle. The digital display has two measuring modes Metric/Standard as well with absolute and incremental modes for each. The spindle has carbide measuring faces and the resolution of 0.00005"/0.001mm. Measurement range is 0-1" and the unit is rated as IP65 (water, oil and dust resistance). There are three buttons; ON/OFF Zero, ABS in/mm to switch between inches and mm with absolute and incremental measurement options for each. The micrometer has an auto shut-off. Comes with an adjustment wrench and a 3V CR 2032 lithium battery and a ball adapter.</p>
	3714 Magnetic Base Indicator Holder, Professional Grade \$28.95 <ul style="list-style-type: none"> • Z-Limit brand guarantees professional quality • Magnetic base indicator holder with fine adjustment • Permanent magnet has an 65 kg (145 lb) holding force • On/off switch makes it easy to position • V-groove base allows you to mount it on cylindrical surfaces <p>This magnetic base indicator holder has a fine adjustment feature. The on/off switch makes it easy to position. The V-groove base allows you to mount it on cylindrical surfaces. The permanent magnet has an 66 kg (145 lb) holding force.</p>	
	3549 Magnetic Base Indicator Holder, Starrett \$271.00 <ul style="list-style-type: none"> • Starrett Magnetic Base with Attachments • Starrett catalog number 657AA • Powerfull magnetic base holds firmly to steel and iron surfaces • Push button turns magnet on or off for quick, one-hand set-up <p>For use with all Starrett Test, Back-Plunger, AGD, Dial and Miniature-Dial Indicators. Also accommodates similar indicators of other manufacturers.</p>	

	<p>1845 Micrometer, 0-1" Digital, Starrett \$211.00</p> <ul style="list-style-type: none"> • ON/OFF button with auto off after 30 minutes of nonuse. • Ability to zero tool at any position. • Inch or millimeter graduations. • Balanced frame design. • One-piece spindle, micro-lapped carbide measuring faces. <p>Starrett 0-1" Electronic Digital Micrometer Starrett Digital Micrometer Action Features: ON/OFF button - also automatic OFF after 30 minutes of nonuse. Instant inch/millimeter conversion. Measurement HOLD button. Ability to zero tool at any position. Readability Features: Large, right-sized, high-contrast LCD digital readout is easy to read and reduces errors. Conventional inch or millimeter graduations standard. Attractive no-glare black wrinkle finish on the frame. Starrett no-glare satin chrome finish on thimble and sleeve. Ease-of-Handling Features: Balanced frame design for comfortable and accurate measuring. Ring-type knurled lock nut for quick and sure locking. Smooth friction thimble for uniform pressure. Gracefully designed tapered frame for use in narrow slots and tight places. Accuracy and Long-Life Features: Extremely hard and stable one-piece spindle (the heart of our accuracy). Micro-lapped carbide measuring faces. Starrett designed electronic microprocessor. One battery furnished for dependable power and over one year's normal usage. Automatic OFF after 30 minutes of nonuse. Starrett workmanship. Starrett catalog number 3732XFL-1</p>	<p>3556 Protractor, Rectangular Head, Starrett \$109.00</p>  <ul style="list-style-type: none"> • Starrett steel protractor (0-180°), 6" blade, rectangular head • Starrett catalog number C183 • Double graduations from 0-180° in two directions • The blade can be locked firmly at any angle by the lock nut • Satin chrome finish for ease of reading and resistance to rust <p>This is a highly useful and accurate tool for setting bevels, transferring angles, small squaring tasks, checking cutter clearances within certain limits, and many other applications. Double graduations from 0-180° in opposite directions permit the direct reading of angles and supplementary angles. The back of the tool is flat for ease of use.</p>
	<p>3180 Micrometer, 0-1", Starrett \$319.00</p> <ul style="list-style-type: none"> • Starrett 0-1" micrometer • Starrett catalog number T230XRL • Accurate to 0.0001" • Thousandths are numbered on inch tools for quick and easy reading • Adjustments are easy and quick <p>The Starrett 0-1" micrometer is the jewel of precision tools used by skilled workmen worldwide. The spindle and anvil are sized at .235" (6mm) to reach places most micrometers cannot reach. The balanced frame and thimble design ensure easy handling and better readability. A ring-type knurled lock nut provides quick and sure locking. The combination ratchet and speeder provides uniform pressure and quicker adjustment. A gracefully designed tapered frame allows use in narrow slots and tight places. The Starrett T230XRL micrometer has a rigid one-piece frame of drop forged steel and an extremely hard and stable one-piece spindle (the heart of the accuracy). It features micro-lapped measuring faces, quick and easy adjustment, plus Starrett workmanship.</p>	<p>2749 Protractor, Semi-Circle Head, PEC \$33.95</p>  <ul style="list-style-type: none"> • Measures angles from 0 to 180° • Semi-circular head is 3.3" x 2" • 6" arm can be locked in any position with knurled lock nut • Made of tempered steel with satin chrome finish <p>Protractor made in the US by Products Engineering Corporation (PEC). Protractors are used for drawing radial lines, transferring angles, setting bevels, and setting tapers.</p> <p>2748 Protractor, Rectangular Head, PEC \$33.95</p> <p>2751 Protractor, Semi-Circle Head, Stainless, PEC \$19.95</p> <p>2878 Radius Gage Set \$24.95</p>  <ul style="list-style-type: none"> • Set of 25 radius gages and holder • 1/64" to 17/64" radius by 64ths • 9/32" to 1/2" by 32nds • Satin chrome finish • Five gaging surfaces on each gage for both concave and convex radii <p>The radius gage set is furnished in a vinyl case for storage.</p>
	<p>1962 Pee Dee Thread Measuring Wires, Fisher \$48.00</p> <ul style="list-style-type: none"> • Made in USA by Fisher Machine Shop <p>This set of thread measuring wires includes 48 wires of 16 different diameters for the three wire thread measuring procedure. You can measure threads from 3 to 48 threads per inch, and metric threads from 0.5 mm to 6 mm pitch. You can also measure Acme threads from 3 to 16 threads per inch. The thread measuring wires come with thread charts and are furnished with a quality vinyl case. This is a quality American-made product from Fisher Machine Shop. These are the original Pee Dee thread measuring wires.</p>	<p>1842 Radius Gage Set, Starrett \$240.50</p>  <ul style="list-style-type: none"> • Starrett 25 piece radius gage set • Starrett catalog number S167CHZ • Radii Range: 1/64-17/64" 9/32-1/2" • Increments: 64ths, 32nds • Rust and stain resistant satin finish stainless steel <p>Radii or fillets can be checked or laid out easier, faster, and more accurately with Starrett radius gages. Each radius gage set is furnished in an attractive case which provides complete protection and easy, instant selection of the right gage size for the job. Starrett Radius Gage Features: Made of satin finish stainless steel - rust and stain resistant. Each gage is clearly marked with its radius. Each gage has five different gaging surfaces for both convex and concave radii. All gages have precision finished radii with extra smooth, accurate edges. Gage Holder Features: Any gage can be used with the Starrett No. 110 holder which is especially useful for checking radii in confined or hard-to-reach locations. Two slots are provided in the holder permitting gages to be held at 30° or 45°, either square in the slot or tipped to one side. The holder is 4" (100 mm) long, providing good reach and balance.</p>
	<p>3720 Pin Gage Set, 0.061" to 0.250" Minus \$59.95</p> <ul style="list-style-type: none"> • 190 2" long pin gages • Each pin is up to 0.0002" under the marked size • Hardened to 60-62 Rc • Finished to 10 microinches • Furnished in a sturdy plastic case with sizes marked <p>One hundred ninety 2" long pin gages in sturdy storage case. These pin gages provide one of the best ways of measuring hole diameters. They can also be used to measure the distance between holes and for go/no go gaging. This set includes 190 pin gages, one for each 0.001" from 0.061" to 0.250". Each of the pin gages are individually marked with their respective sizes and each set comes with a reference sheet showing the sizes of each pin. The pin size tolerances are with -0.0002" to +0.0000" of their marked size and finished to 10 micro-inches. Pins are hardened to 60-62 Rc.</p> <p>3879 Pin Gage Set, 0.011" to 0.060" Minus \$34.95</p>	<p>3029 Screw Checker, Inch, PEC \$26.50</p>  <ul style="list-style-type: none"> • #1 to 5/16" thread sizes • Quickly identify unified and American threads • NC, NF, and NS threads • Made in USA <p>Screw checkers provide a quick way to measure standard threads. They provide all the information you need for screws; diameter, length, threads per inch, hole size and even tap drill sizes.</p> <p>3031 Screw Checker, Large Metric, PEC \$28.95</p> <p>3030 Screw Checker, Small Metric, PEC \$26.50</p>



5192 Screw Pitch Gage, Inch 51 Leaves \$10.95

- Screw pitch gage with 51 leaves
- Measures 60° threads from 4 - 84 TPI
- Each blade clearly marked with thread size
- Blades are protected in sturdy steel case
- Locking device for each set of leaves

Correct pitch is determined by matching blade teeth with threads. Each blade clearly marked with proper thread size. Blades are protected in sturdy steel case. Includes the following TPI: Leave Sizes: 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 11.5, 12, 13, 14, 15, 16, 18, 20, 22, 24, 25, 27, 28, 30, 32, 34 threads per inch (TPI) Leave Sizes: 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84 threads per inch (TPI)

5190 Screw Pitch Gage, Acme Inch 16 Leaves \$28.95

5191 Screw Pitch Gage, Metric 28 Leaves \$7.95



2744 Screw Pitch Gage, Inch 51 Leaves, PEC \$56.95

- Screw pitch gage with 51 leaves
- Measures 60° threads from 4 - 84 TPI
- Each blade clearly marked with thread size
- Blades are protected in sturdy steel case
- Locking device for each set of leaves

Screw pitch gage made in the US by Products Engineering Corporation (PEC). The correct pitch is determined by engaging the blade teeth with the threads you are measuring. Each gage measures 60 degree threads from 4-84 TPI. Each blade is clearly marked with the thread size and each node of the gage has a locking wheel to secure the blade when measuring. The correct pitch is determined by engaging the blade teeth with the threads you are measuring. This screw pitch gage measures the following screw pitches: Leave Sizes: 4, 4-1/2, 5, 5-1/2, 6, 7, 8, 9, 10, 11, 11-1/2, 12, 13, 14, 15, 16, 18 threads per inch (TPI) Leave Sizes: 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50 threads per inch (TPI) Leave Sizes: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84 threads per inch (TPI) The gage comes in a sturdy protective case.

2746 Screw Pitch Gage, Inch/Metric 28 Leaves, PEC \$29.95

2745 Screw Pitch Gage, Metric 28 Leaves, PEC \$29.95



3176 Screw Pitch Gage, Inch 51 Leaves, Starrett \$105.00

- Screw pitch gage with 51 leaves
- Measures 60° threads from 4 - 84 TPI
- Each blade clearly marked with thread size
- Blades are protected in sturdy steel case
- Locking device for each set of leaves

Starrett screw pitch gages are among the most useful tools in any mechanic's toolbox. They quickly determine the pitch of various threads. These gages consist of a substantial steel case with a number of folding leaves at both ends, each leaf having teeth corresponding to a definite pitch, marked on each leaf. The screw pitch gage features a locking device at both ends of the case, so leaves can be securely locked in position for use. Leaves have a special narrow design, permitting checking internal threads in nuts, etc., as well as external threads. Measures 60° threads from 4 threads per inch to 84 threads per inch. Leave Sizes: 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 11.5, 12, 13, 14, 15, 16, 18 threads per inch (TPI) Leave Sizes: 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50 threads per inch (TPI) Leave Sizes: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84 threads per inch (TPI) Starrett catalog number 472

1834 Screw Pitch Gage, Inch 30 Leaves, Starrett \$58.00

2617 Screw Pitch Gage, Metric 28 Leaves, Starrett \$66.00



3093 Small Hole Gage Set, 4-Piece \$13.95

- 4 small hole gages with 0.125" to 0.500" range
- Full spherical ball for very accurate measurements
- Hardened, satin-chrome plated measuring faces
- Furnished in plastic pouch

Accurately and quickly gages small holes, grooves and slots. Insert the appropriate gage (smaller but closest to bore diameter) into the hole. Rotate the knurled base to expand the end until a slight pressure is felt when the gage is moved in the bore. Remove the gage and measure with a caliper or micrometer.



4492 Small Hole Gage Set, 4-Piece, PEC \$79.95

- 4 small hole gages with 0.125" to 0.500" range
- Extra long for gaging deep holes and slots
- Hardened, satin-chrome finish
- Furnished in fitted vinyl case
- Size adjustment by knurled knob



3545 Small Hole Gage Set, 4-Piece, Starrett \$217.00

- Starrett 4- piece small hole gage set
- Starrett catalog number S829EZ
- Range of 0.125-0.500" (3.2-12.7 mm)
- Hardened-ball measuring surface with two-point contact
- Smooth, sensitive adjustment for better feel, giving more accurate measurements

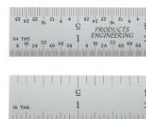
These small hole gages are well balanced tools that are ideal for accurately measuring small holes, slots, grooves, and recesses in all kinds of work. The radius on each gage is less than the minimum diameter to be measured, which provides the two-point contact necessary for maximum accuracy. They have smooth, sensitive adjustment for better feel, giving more accurate measurements. The adjustment of the gage beyond their range is restricted by a safety stop that prevents breakage. Accurate measurements are obtained by slightly "rocking" these gages in the hole to be measured. This will guarantee contact at the true diameter. The final size is then obtained by measuring over the ball contacts with a micrometer. Furnished in a vinyl pouch.



1234 Steel Rule, 6" Flex \$7.95

- 6" rigid steel rule
- 32nds & 64ths graduations
- Hardened stainless steel
- Rule is 1/2" wide and 0.020" thick
- Convenient pocket clip

This precision, 6" long steel rule is flexible to fit into tight spots. The etched black graduations are easy to read against the non-glare finish. The rule has 32nds & 64ths graduations. It is made of hardened stainless steel, is 1/2" wide and 0.020" thick. The reverse side has decimal equivalents for 8ths, 16ths, 32nds, and 64ths.



Steel Rules, PEC

- Made from the finest quality steel available
 - Fully hardened and tempered with stain chrome finish
 - Precisely etched, then black filled for readability
 - Flexible rules are 1/2" wide and 0.015" thick
 - Rigid rules are 3/4" wide and 0.040" thick
- Steel Rules made by Product Engineering Corporation (PEC) are a high quality rule made in the US. Each rule is fully hardened and tempered and etched with precision. Flexible rules are 1/2" wide and 0.015" thick. Rigid rules are 3/4" wide and 0.040" thick. See Chris' Tips "How to Use a Steel Rule" for more information on graduations.

2729 Steel Rule, 6" 4R Flexible, PEC \$14.95

4227 Steel Rule, 6" 4R Black Flexible, PEC \$11.95

2734 Steel Rule, 6" 4R Rigid, PEC \$14.95

2731 Steel Rule, 6" 5R Flexible, PEC \$14.50

2733 Steel Rule, 6" 31 (in/mm) Flexible, PEC \$14.25

2736 Steel Rule, 6" 31 (in/mm) Rigid, PEC \$14.95

2730 Steel Rule, 12" 4R Flexible, PEC \$27.95

2735 Steel Rule, 12" 4R Rigid, PEC \$29.95

2732 Steel Rule, 12" 5R Flexible, PEC \$27.50

5092 Steel Rule, 300 mm 30 (1.0 mm/.05 mm) Flexible, PEC \$28.50

4796 Steel Rule, 300 mm 30 (1.0 mm/.05 mm) Rigid, PEC \$29.95

4610 Steel Rule, Hook 12" (32nds/ 0.5 mm), PEC \$37.95

Steel Rules, Starrett



Starrett precision steel rules are machine-divided, not photoengraved. They are inspected to Starrett Master Standards, which are traceable to the National Institute of Standards and Technology. Graduation No. 4R are 8ths, 16ths, quick-reading 32nds and 64ths. Graduation No. 16R are Quick-reading 32nds and 64ths, aircraft quick-reading 50ths and 100ths. Graduation No. 5R are quick-reading 10ths, aircraft quick-reading 100ths, 32nds and 64ths. Graduations No. 31 are 32nds and 64ths on one side; mm and 1/2 mm on reverse. Flexible rules are 1/2" wide and 1/64" thick. Rigid rules are 3/4" wide and 3/64" thick.

1826 Steel Rule, 6" 4R Flexible, Starrett	\$34.00
2233 Steel Rule, 6" 4R Rigid, Starrett	\$35.00
1827 Steel Rule, 6" 5R Flexible, Starrett	\$33.50
1828 Steel Rule, 150 mm 31 (in/mm) Flexible, Starrett	\$36.75

3185 Telescoping Gage Set, 4-Piece 5/16 - 2-1/8", PEC



- For measuring holes, slots and recesses
- Measures holes from 5/16" to 2 1/8" diameter
- Double action is self-centering
- Satin chrome finish
- Contact ends are hardened and ground

Use telescoping gages to measure ID, deep holes, recesses, slots, grooves, and other hard to reach places. Measure the actual size or lock the self-centering plungers to a known size for a go-no go gage.

3184 Telescoping Gage Set, 6-Piece 5/16 - 6", PEC	\$134.95
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1840 Telescoping Gage Set, 4-Piece 5/16 - 2-1/8", Starrett



- Starrett telescoping gage set
- Starrett catalog number S579GZ
- Range: Four gages, 5/16" to 2-1/8"
- Handles are approximately 2-3/8" long
- Contains two telescoping contacts

Starrett telescoping gages are used for determining the true size of holes, slots, and recesses up to 2-1/8" (54 mm). The ends of both contacts are hardened and ground to a radius to allow proper clearance on the smallest hole the gage will enter. These tools must be slightly "rocked" in the hole being measured to ensure that the tool is on the proper diameter before it is locked and withdrawn. The final hole size is obtained by measuring over the gage contacts with a micrometer. The No. 579 Series telescoping gages have handles that are rigidly attached to the contact plungers and are automatically self-centering. Also, the No. 579 gages have two telescoping contacts. The handles are approximately 2-3/8" (60 mm) long. Constant spring tension gives uniform contact pressure and both plungers are easily locked at any desired setting.

2959 Telescoping Gage Set, 6-Piece 5/16 - 6", Starrett	\$353.50
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2879 Telescoping Gage Set, 6-Piece 5/16 - 6" \$19.95



- For measuring holes, slots and recesses
- Measures holes from 5/16" to 6" diameter
- Double action is self-centering
- Satin chrome finish
- Contact ends are hardened and ground to the radius of the smallest diameter

Use telescoping gages to measure ID, deep holes, recesses, slots, grooves, and other hard to reach places. Measure the actual size or lock the self-centering plungers to a known size for a go-no go gage.

5967 Telescoping Gage Set, 6-Piece 5/16 - 6", Professional Grade \$39.95



- For measuring holes, slots and recesses
- Measures holes from 5/16" to 6" diameter
- Double action is self-centering
- Satin chrome finish
- Contact ends are hardened and ground

Use telescoping gages to measure ID, deep holes, recesses, slots, grooves, and other hard to reach places. Measure the actual size or lock the self-centering plungers to a known size for a go-no go gage.

3771 Test Indicator Holder, Professional Grade \$21.95



- Z-Limit brand guarantees professional quality
 - Clamping diameter range of 1-3/8" to 2"
 - Length from the center of the clamp to the indicator can be up to 6-1/2"
 - Clamps to the outside of an end mill holder and does not disturb the working tool
- This test indicator holder has a clamping diameter of 1-3/8". The length from the center of the clamp to the indicator can be up to 6-1/2". The test indicator clamps to the outside of an end mill holder and does not disturb the working tool.

4832 Test Indicator Holder, Universal \$38.95



- Designed to hold dovetailed test indicators or 1/4" straight shanks
- 3 different clamping dimensions: 1/4", 3/8" & 1/2" for various collet sizes
- reaches anywhere within a 8" diameter and fine-adjusts approximately 3/8"
- Test indicator NOT INCLUDED

Setting up a workpiece before machining, aligning the center of a round workpiece in relation to the cutting head, or aligning vise jaws to the spindle takes virtually no time this test indicator holder.

6482 Thickness Gage Set, 32 Leaves, 0.0015" - 0.035", iGaging \$9.95



- 32 Leaves, 3-7/8" length
- Range 0.0015-0.035" (0.04 - 0.88mm)
- Each blade is marked with thickness
- Manganese steel w/satin chrome finish
- Locking device

32 Leaves, 3-7/8" length Range 0.0015 - 0.035" Leaf Thickness: 0.0015" (0.04mm), 0.002" (0.05mm), 0.0025" (0.06mm), 0.003" (0.08mm), 0.004" (0.10mm), 0.005" (0.13mm), 0.006" (0.15mm), 0.007" (0.18mm), 0.008" (0.20mm), 0.009" (0.23mm), 0.010" (0.25mm), 0.011" (0.28mm), 0.012" (0.30mm), 0.013" (0.33mm), 0.014" (0.35mm), 0.015" (0.38mm), 0.016" (0.40mm), 0.017" (0.43mm), 0.018" (0.45mm), 0.019" (0.48mm), 0.020" (0.50mm), 0.021" (0.53mm), 0.022" (0.55mm), 0.023" (0.58mm), 0.024" (0.60mm), 0.025" (0.63mm), 0.026" (0.65mm), 0.027" (0.68mm), 0.028" (0.70mm), 0.030" (0.75mm), 0.032" (0.80mm), 0.035" (0.88mm). The gages of this feeler gage set are used in automotive, aviation, diesel, and farm equipment manufacture and service, and also in jig, fixture, gage, and experimental work. Especially useful in adjusting tappets, spark plugs, distributor points, checking bearing clearances and gear play, fitting pistons, rings and pins, and gaging narrow slots.

Leaves made of manganese steel with satin chrome finish, carefully finished to correct thickness, individually tested and marked with thickness.

1843 Thickness Gage Set, Starrett \$101.00



- 26 Tapered Leaves, 1/2 - 1/4 x 3-1/32"
- Range .0025-.025"
- Leaf Thickness (Inches): .0015 to .025
- Tempered-steel.
- Locking device. Leaves easily removed or replaced.

Starrett thickness gage set (feeler gage) Starrett catalog number 66T. 26 Tapered Leaves, 1/2 - 1/4 x 3-1/32" Range .0025-.025" Leaf Thickness (Inches): .0015, .002, .0025, .003, .004, .005, .006, .007, .008, .009, .010, .012, .013, .014, .015, .016, .017, .018, .019, .020, .021, .022, .023, .024, .025. The gages of this Starrett feeler gage set are used in automotive, aviation, diesel, and farm equipment manufacture and service, and also in jig, fixture, gage, and experimental work. Especially useful in adjusting tappets, spark plugs, distributor points, checking bearing clearances and gear play, fitting pistons, rings and pins, and gaging narrow slots. Leaves made of finest tempered-steel, carefully finished to correct thickness, individually tested and marked with thickness. Locking device on most gages - permits securely locking one or more leaves in position. Leaves are easily removed or replaced. Gage has a rugged, substantial steel case protects leaves.

Precision: Measuring



6269 Thread Detective Thread Identifier, Inch & Metric \$29.95

- More robust than plastic checkers
 - Each size has a nut and bolt checker on the same gauge with the sizes etched on each gauge
 - The individual gauges rotate freely on the wire cable for fast thread verification
 - All on a convenient wire cable with a loop for hanging
- This thread detective set provides a quick and easy way to measure standard threads. They provide all the information you need for screws; diameter, length, threads per inch, hole size and even tap drill sizes. Each piece has a male and female end to help you identify screws, nuts, or other threaded items. The metal construction removes the issue of damaging the checker when testing threading which is sometimes an issue with plastic checkers. Inch Sizes Included: #6-32, #8-32, #10-24, #10-32, 1/4-20, 1/4-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, 1/2-13, 1/2-20 Metric Sizes Included: M4 x 0.7, M5 x 0.8, M6 x 1.0, M7 x 1.0, M8 x 1.0, M8 x 1.25, M10 x 1.0, M10 x 1.25, M10 x 1.5, M12 x 1.25, M12 x 1.5, M12 x 1.75 Note: Spacer beads may vary in color and style.



6296 Thread Measuring Wire, 48 Piece Pro Set \$22.95

- 48 piece pro-series thread wire measuring set in 16 sizes
 - Measure all 60 degree threads, threads from 3-48 TPI and 0.5 mm - 6 mm
 - Kit includes 4 wire holders
 - Chart included for US 60 degree threads and 60 degree metric
 - Comes in a sturdy packing box.
- Used to measure pitch diameter on threads, this Pro-Series set has 48 pieces in 16 different sizes. Use to measure all 60 degree threads and all threads from 3 - 48 TPI and all metric from 0.5 mm to 6 mm pitch. The kit has four wire holders with 2-pair of holes each and each pair of holes is for different sizes of wire. Use the 3 wire method for measuring external threads (see Chris' tips).

Precision: Sets



1782 Dial Indicator, Magnetic Base & Point Set \$35.95

- 0-1" dial indicator with 0.001" resolution
 - Magnetic base indicator holder with fine adjustment
 - 22 piece indicator point set
 - All in a plastic case
- This 1" stroke dial indicator features large, easy to read numbers and crisp graduations. Each revolution is 0.100", indicated by the revolution counter. The resolution is 0.001". There is a mounting lug on the back of the case. This is an AGD Group 2 indicator with a 2.25" Diameter face, 0.375" shank, and #4-48 tip thread. The magnetic base indicator holder has a fine adjustment feature. The on/off switch makes it easy to position. The v-groove base allows you to mount it on cylindrical surfaces. Includes a 22 piece indicator point set and a plastic case.

1593 Dial Indicator and Magnetic Base \$26.95

2424 Plastic Case for Magnetic Base and Dial Indicator \$14.95



2925 Dial Indicator, Test Indicator, Magnetic Base & Point Set \$59.95

- 0-1" dial indicator with 0.001" resolution
 - 0-15-0 dial test indicator with 0.0005" resolution
 - Magnetic base indicator holder with fine adjustment
 - 22 piece indicator point set
 - All in a plastic case
- The 1" stroke dial indicator features large, easy to read numbers and crisp graduations. Each revolution is 0.100", indicated by the revolution counter. The resolution is 0.001". There is a mounting lug on the back of the case. This is an AGD Group 2 indicator with a 2.25" Diameter face, 0.375" shank, and #4-48 tip thread. The dial test indicator has 0.0005" graduations and a 7 jewel movement. Its range is 0.030" in either direction. Includes 5/32" and 3/8" diameter posts, dovetails on the back and end, and an 0.080" diameter point. The magnetic base indicator holder has a fine adjustment feature. The on/off switch makes it easy to position. The v-groove base allows you to mount it on cylindrical surfaces. Includes a 22 piece indicator point set and a plastic case.



2518 Inspection Kit, 6-Piece \$114.95

- 1" Dial indicator, magnetic base and point set
- 0-30-0 Dial test indicator
- 0-1" micrometer
- 6" Dial caliper
- Plastic case

This set includes all the basic precision measuring tools. The micrometer has a range of 0-1" and a resolution of 0.0001". An adjustment wrench is included. The dial caliper has a range of 0-6" and a resolution of 0.001". The dial test indicator has a range of 0.030" in either direction and a resolution of 0.0005". It includes 5/32" and 3/8" diameter posts, dovetails on the back and end, and a 0.080" diameter point. The dial indicator has a range of 0-1" and a resolution of 0.001". Each revolution is 0.100", indicated by the revolution counter. There is a mounting lug on the back of the case. The magnetic base has an on-off switch for the magnet and incorporates a fine adjustment feature. The point set includes 22 of the most popular points. All have #4-48 threads for use in AGD 1, 2, 3, and 4 indicators.



1260 Measurement Starter Kit with Digital Caliper \$64.95

- 6" electronic digital caliper
- 6" steel rule
- 1" x 0.001" stroke dial indicator
- Magnetic base indicator holder
- Starrett Tools & Rules for Precision Measuring booklet

This kit includes the basic measurement tools you need for the mini mill, mini lathe or other small machines. The magnetic base includes a fine adjustment.

1259 Measurement Starter Kit with Dial Caliper \$64.95



5586 Tramming Set, Bench Mill \$89.95

- Everything you need to tram a bench mill
- Dial test indicator
- Universal arm locks with one knob
- Shim assortment

This package includes everything you need to tram your bench mill and square your vise. Mount the indicator on the universal arm, put the shank of the universal arm in a drill chuck, and check the four corners of your mill table. Adjust the tram by shimming under the base of the column.



5585 Tramming Set, Mini Mill \$79.95

- Everything you need to tram a mini mill
- Dial test indicator
- Universal arm locks with one knob
- Shim assortment

This package includes everything you need to tram your mini mill and square your vise. Mount the indicator on the universal arm, put the shank of the universal arm in a drill chuck, and check the four corners of your mill table. Adjust the tram by shimming under the base of the column. Kit includes LittleMachineShop.com #4304 Shim Stock Assortment, #1249 Dial Test Indicator, and #4653 6" Universal Indicator Arm. Shim Stock Assortment includes seven sheets of 5"x5" polyester shim stock. Color coded shim stock sheets are made from a high quality plastic material. Easy to cut and resists oil. Non-magnetic and non-conductive to electricity. Corrosion resistant. Here are the colors and thicknesses of the items. - Shim Stock, 0.0005" Silver (mirror like coating) - Shim Stock, 0.001" Amber - Shim Stock, 0.0015" Purple - Shim Stock, 0.002" Red - Shim Stock, 0.003" Green - Shim Stock, 0.004" Tan - Shim Stock, 0.005" Blue Test dial indicator has 0.0005" graduations, a range of 0-0.030" in either direction, and reading 0-15-0. It includes 5/32" and 3/8" diameter posts, dovetails on the back and end, and a 0.080" diameter point. It comes in a fitted case. 6" universal arm for holding test indicators. Arm is constructed of steel and has a central locking mechanism and fine adjustment knob. The 3/8" indicator stem hole and dovetail grooves holds most dial indicators and test indicators. The arm has a 8 mm (0.315") x 40 mm (1.57") unthreaded stem for placing the arm in collets.

Precision: Setup

2552 Adjustable Parallel Set \$52.95

- Made of precision ground tool steel
 - Easily expanded to size in openings for quick reference measurements
 - Lock desired size by set screws provided
 - Exact size can be set with micrometer
 - Furnished in fitted plastic case with size range markings
- Six piece adjustable precision parallel set.

Parallels are adjustable to the following sizes: 3/8" - 1/2", 1/2" - 11/16", 11/16" - 15/16", 15/16" - 1-5/16", 1-5/16" - 1-3/4", 1-3/4" - 2-1/4".

The parallels are 5" long and 1/4" thick.

2553 Angle Block Set \$27.95

- Simple, quick angle set ups
 - Manufactured of hardened, stabilized and ground steel
 - Accurate to ±0.0001" per inch
 - Fitted case
 - Angle blocks are 3" long and 0.25" thick
- Ten piece angle block set. The angles included are 1°, 2°, 3°, 4°, 5°, 10°, 15°, 20°, 25°, 30°. You can combine them to make any integral angle.

6371 Angle Blocks, Acrylic, Set of Three \$8.00

- Laser-Cut from 1/4" thick cast acrylic plastic
 - 30°, 45°, & 60° guides
- Set of three angle blocks in 30, 45 and 60 degrees. great for quick setup. Laser-Cut from 1/4" thick cast acrylic plastic. The base is 3" long, so they will work with any vise. Set of three. Note: while most of these guides come to us in clear acrylic, the color may vary.

3431 Angle Plate, 3" Slotted & Webbed \$17.95

- 3" long, 2.5" tall, and 2" wide
 - Accurately machined and ground square and parallel on outside and ends
 - Slots provide many options for mounting
 - widely used for machining, layout and inspection
 - High tensile cast iron is properly seasoned to prevent distortion
- Widely used for machining, layout and inspection, a good angle plate is a staple of any shop. Guaranteed 90 degrees, easy to secure, built to last, and helpful in a variety of situations. Sometimes the simplest tools are the best!

3" slotted and webbed end angle plate for squaring surfaces and job layout. The angle measures: 3" long, 2.5" tall, and 2" wide. The angle plate is precision ground and square and parallel to 0.0005" (0.013 mm) per 6" on two working surfaces.

High tensile cast iron is properly seasoned to prevent distortion. Slots provide many options for mounting.

3432 Angle Plate, 4-1/2" Slotted & Webbed \$24.95**5385 Angle Plate, 3" Webbed End \$18.95**

- 3" x 3" x 3" angle plate
 - Precision ground finishing
 - Square and parallel to .0005" per 6"
 - Webbed end
 - Made from high tensile cast iron
- 3" webbed end angle plate for squaring surfaces and job layout. The angle plate is precision ground and square and parallel to 0.0005" (0.013 mm) per 6" on two working surfaces. Made from high tensile cast iron, normalized and stress relieved. Angle plate is 3" long, 3" tall and 3" wide.

5384 Angle Plate, 2" Webbed End \$12.95**5386 Angle Plate, 4" Webbed End \$27.95****6483 Angle Plates, Set of Two \$21.95**

- Accuracy: ± 20 seconds
 - Thickness: 1/4"
 - 1 pc: 4" x 3 12/32" x 2" with 30°, 60° & 90° angles
 - 1 pc: 3" x 3" x 4 3/8" with 45°, 45° & 90° angles
 - Four 11/32" holes for easy mounting
- Set of two angle blocks: 4" x 3 12/32" x 2" with 30°, 60° & 90° angles, and 3" x 3" x 4 3/8" with 45°, 45° & 90° angles. Hardened and precision ground. Supplied in a protective case.

1233 Blocks, 1-2-3 \$19.95

- Threaded holes are 3/8"-16 thread
 - Through holes are 5/16"
 - Hardened and precision ground steel
 - Pairs are matched within 0.0002"
- These precision 1-2-3 blocks are ground and case hardened on all sides to 50-60 Rc. The blocks are 1" by 2" by 3". They are parallel within 0.0002", flat within 0.0002" and square within 0.0002". Each set includes two matched blocks. The blocks have 23 holes through them, 5 are threaded 3/8"-16 NC, and the other through holes are 5/16" diameter.

3666 Blocks, 2-4-6 \$119.95**2881 Blocks, 1-2-3, Ultra Precision \$29.95**

- Threaded holes are 3/8"-16 thread
 - Through holes are 5/16"
 - Pair of 1-2-3 blocks
 - Five 3/8"-16 x 1-1/2" Socket Head Cap Screws
 - One Hex Wrench
- These ultra precision 1-2-3 blocks are ground and case hardened on all sides to 55-60 Rc. They are parallel within 0.0001", flat within 0.0001" and square within 0.0001". They are up to 0.0003" oversize for lapping. Each set includes two matched blocks. The blocks have 23 holes through them. Five are threaded 3/8"-16 NC, and the other through holes are 5/16" diameter. The set includes a matched pair of 1-2-3 blocks, five 3/8"-16 x 1.5" socket head cap screws and a hex wrench. Furnished in a fitted case.

6323 Blocks, 1-2-3, Universal 11 Hole Set \$67.95

- Five threaded holes - 5/16"-18
 - Six through holes for clamping
 - Hardened and precision ground steel
 - Pairs are matched within 0.0002"
 - Dimensions: 2" width x 1" height x 3" length
- These 1-2-3 blocks are ground and case hardened on all sides to 55-62 Rc. The blocks are 1" x 2" x 3". They are parallel within 0.0002" and have a .0001" to .0003" over allowance for nominal lapping. Each set includes two matched blocks. These blocks can be bolted together using 5/16"-18 socket head cap screws (not included). The blocks have 11 holes, six drilled through with deep recesses for clamping, and five tapped holes which are threaded 5/16"-18 NC.

5135 Bullseye Lathe Tool Height Setter \$9.95

- Quickly and easily check lathe tool bit height
 - Accepts any diameter work piece from 1/8" to 2 1/2"
 - Rubber band provides hands-free operation
- This lathe tool height gauge will allow you to quickly and accurately check and adjust lathe tool height. With the help of this lathe tool height setter there is no guess work and no fumbling around.

5380 Gage Block Set, Rectangular, 81 Pieces \$169.95

- No. of Blocks - 81pc
 - Made of the highest quality tool steel
 - Surface hardness: HRC 64
 - Grade AS-2 (B) (+/- 50 millionths)
 - With fitted wooden case with sizes labeled
- Blocks Included: 9 Blocks: .1001" thru .1009" step of .0001", 49 Blocks: .101" thru .149" step of .001", 19 Blocks: .050" thru .950" step of .050", 4 Blocks: 1.000" thru 4.000" step of 1.000". Meets or exceeds Federal GGG-G-15C. All calibration conforms to: MIL-STD 45662A, GGG-G-15C, ISO/IEC 17025 Accredited, ISO 9000, 10012-1, ANSI-NCSS Z540-1, ISO GUIDE 25 Certified. Complete with manufacturer's calibration or certificate.

Precision: Setup

- 4855 Indicator Holder, 3/8" Square Shank \$15.95**
- Holds dovetail indicators
 - 3/8" & 7/32" mounting holes for holding the stem of almost all dial indicators
 - 4" long 3/8" square shank makes this great for use in a lathe
- Easily center work in a 4-jaw chuck by using this indicator holder in your tool post or standard turning tool holder for a quick change tool post with almost any indicator.



- 2907 Machinists Jack Set \$21.95**
- Machinists jack
 - Two extension bases
 - Auxiliary pointed screw
 - Inner and outer V bases
 - 1" diameter, 1.5" to 2.3" tall
- Machinists jacks are used to support odd sized or odd shaped objects. Use them to support the ends of long workpieces that extend beyond your vise jaws. Use them to support the edges of items that you are clamping with your clamping kit. The machinist's jack includes lots of parts that you can mix and match to meet your needs.



- Machinists Jacks, Individual Sizes**
- High Quality Tool Steel
 - Ideal for Setup Work
- These little screw jacks are ideal for work piece setup in which fine adjustment may be required to level a work piece. They also make a suitable replacement for a step block when using a clamp kit.
- 5936 Machinists Jack, 23-30 mm \$4.95**
- 5937 Machinists Jack, 40-60 mm \$5.95**



- 3525 Sine Bar, 5" \$64.95**
- Working face accurate to 0.00003" per inch of length
 - 5.00" center distance of rolls accurate to 0.0002"
- Use a sine bar and space blocks to set or measure extremely accurate angles.



- 3535 Sine Bar, 2.5", Fisher \$51.00**



- 6479 Spindle Square With Dial Indicators \$69.95**
- Pre-Calibrated for perfect flatness and squareness
 - 3/8" dia. shank
 - 4" distance between contact points
 - Range: 0 - 0.25, Graduation: 0.0005"
 - Graduation: 0.0005"
- Zeroing the Spindle to square is the key to excellent milling. With this product you can square the spindle on any mill or CNC router that will hold a 3/8" shank.



- 3945 Thin Parallel Shims, 3" Long, 3 Pairs \$13.95**
- Shims are 9/64", 5/32" and 3/16" square and 3" long
 - Made of high grade alloy steel hardened to 52 to 58 Rc
 - Parallel within 0.0002". The pairs are matched in height within 0.0002"
- These shims multiply the options for your 3" long thin parallels. You can now space your work by 1/64".



- 1893 Thin Parallels, 3" Long, 10 Pairs \$34.95**
- Set of ten pairs of 3" thin parallels in a fitted case
 - Parallels are 1/8" thick and 3" long
 - Heights are 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8"
 - Made of high grade alloy steel hardened to 52 to 58 Rc
 - Parallel within 0.0002" on the top and bottom. The pairs are matched in height within 0.0004"
- These 3" long thin parallels are great for the small vises used on the mini mill.
- 3947 Thin Parallels, 1.5" Long, 9 Pairs \$41.95**
- 3946 Thin Parallels, 3" Long, 11 Pairs \$59.95**
- 2924 Thin Parallels, 3" Long, 4 Pairs \$14.95**
- 5381 Thin Parallels, 4" Long, 10 Pairs \$49.95**
- 5382 Thin Parallels, 5" Long, 10 Pairs \$47.95**
- 1232 Thin Parallels, 6" Long, 10 Pairs \$34.95**



- 2220 Thin Parallels, 3" Long, 10 Pairs, Ultra-Precision \$149.95**
- Set of ten pairs of thin parallels in a fitted case
 - Parallels are 1/8" thick and 3" long
 - Heights are 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1", 1-1/16"
 - Made of A2 tool steel hardened to 57 to 59 Rc
 - Parallel within ±0.0001" on the top and bottom. The pairs are matched in height within ±0.0001"
- These 3" long thin parallels are great for the small vises used on the mini mill. These thin parallels were made in the USA by the Arthur R. Warner Co. exclusively for LittleMachineShop.com. This set of 1/8" thin parallels contains 10 pairs of parallels that step in 1/16" increments. This gives you more sizes you can use in our small vises. These parallels do not have holes in them. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel (and tool steel). Their quality is excellent and LittleMachineShop.com is proud to carry their products.



- 2923 Ultra Thin Parallels, 6" Long \$36.95**
- Set of 20 pairs of ultra thin parallels in a fitted case
 - Machinist parallels are 1/32" thick and 6" long
 - Heights are 1/2" to 1-11/16" in 1/16" steps
 - Made of high grade alloy steel hardened to 50 Rc
 - Parallel within 0.0001" on the top and bottom. The pairs are matched in height within 0.0001"
- The heights of the parallels are 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1", 1-1/16", 1-1/8", 1-3/16", 1-1/4", 1-5/16", 1-3/8", 1-7/16", 1-1/2", 1-9/16", 1-5/8", and 1-11/16".



- 1794 V-Blocks, 1-1/4" x 1-1/4" x 1-5/8" \$49.95**
- Vee Capacity Is 1"
 - Includes Clamps
 - 90° V Groove is accurate within 0.0001" for central, parallel and square with all surfaces
 - Height: 1-1/4", Width: 1-1/4", Length: 1-5/8"
- These precision V-blocks are made of hardened steel. They are ground square, parallel and concentric within 0.0003". The V-blocks are supplied in matched pairs. V-block clamp set includes clamps for inspection work.



- 5383 V-Blocks, 1-5/8" x 1-3/4" x 2-3/4" \$72.95**
- 6373 V-Blocks, 1-1/4" x 1-1/4" x 1-5/8", Fisher \$178.00**
- Large Vee Capacity Is 1", Small Vee Capacity Is 1/2"
 - Includes Clamps
 - 90° V Groove is accurate within 0.0001" for central, parallel and square with all surfaces
 - Height: 1-1/4", Width: 1-1/4", Length: 1-5/8"
 - Made in USA by Fisher Machine Shop
- These precision V-blocks are made of hardened and matched ground steel. They are ground square, parallel and concentric within 0.0002". The V-blocks are supplied in matched pairs. V-block clamp set includes clamps for inspection work.



- 3718 V-Blocks, Miniature 0.03" to 0.28" Capacity \$139.95**
- Hold miniature round parts in these small V-blocks
 - Bridges straddle long workpieces allowing use of hold-down screw of containing V-block
 - Hardened and precision ground
 - Square and parallel to 0.0002"
 - Includes fitted case
- These mini V-blocks, held in larger V-blocks, provide a unique and universal way to hold small and intricate parts. V-block set includes two V-blocks, one with a 0.030" to 0.15" capacity and one with a 0.05" to 0.28" capacity. Also are two bridges and five upper prisms providing 1/8", 5/32", & 3/16" capacity.

Precision: Setup



6481 V-Blocks, Set of Four, iGaging \$69.95

- Set of four V-blocks with clamps in two size pairs
- Square and parallel within 0.0005"
- V capacity per pair 1.5" and 1"
- V-groove angle 90 degrees
- Supplied in protective case

Set of four precision V-blocks are made of hardened steel ground and polished parallel to 0.0005". Supplied in matched pairs: - Two each: 1-1/2" x 1-1/2" x 1-1/4" (L x W x H) - Two each: 2" x 1-1/2" x 1-1/2" (L x W x H) The V capacity per pair is 1.5" on the large pair and 1" on the small pair. Each V-block has a 90 degree V-groove angle. Set includes clamps for inspection work and is supplied in a protective fitted case.



6289 V-Blocks, Triple, 50 mm x 14 mm x 20 mm \$19.95

- All sides hardened, precision ground, parallel and square
- Suitable for stock 5-33 mm diameter.
- Supplied in matched pairs that are aligned to one another
- Angles are 90 degrees
- 50 mm (L) x 14 mm (W) x 20 mm (H)

Triple V-block to hold round stock of different diameters from 5 mm to 33 mm. V grooves are ground, central, parallel and square. 50 mm (L) x 14 mm (W) x 20 mm (H). Suitable for stock 5-33 mm diameter. The width of the three V's at the top are approximately 12 mm, 15 mm and 20 mm.



5447 Z-Axis Tool Height Setter, Digital \$89.95

- Easy to set "0" point with Large LCD display in inch/mm
 - Positioning accuracy is 0.0001" / 0.003 mm
 - Resolution: 0.00005" / 0.001 mm
 - IP66 Protective Rating
 - Steel contact surface with 0.002" flatness
- Accurately and easily establish tool length offsets for CNC milling with this digital Z-Axis height setter. The large LCD display is easy to read (mm or inch) and the large contact face makes contact with multiple points of the cutter. The 4 magnets on the base keeps the device from shifting. CR2032 battery included. Resolution: 0.00005" / 0.001 mm. IP66 Protective Rating. Steel contact surface with 0.002" flatness.

Default setting height 2". Range: 0.12". Accuracy: 0.0001" / Repeatability: ±0.0001"



1927 Rotary Table, 4" H/V \$619.95

- 4" (100 mm) diameter
- Use in horizontal or vertical position
- Worm ratio is 72 to 1
- 10 second rotational accuracy
- 2 Morse taper center hole

This horizontal / vertical rotary table is for indexing, circular cutting, angle setting, boring, and spot facing operations. The meehanite cast iron table is precision machined and has a 2 Morse taper center hole. The table is graduated with a 360° scale. A micro collar graduated to one minute with a ten second accuracy vernier scale is provided. The rotary table has lock down clamps and the crank can be disengaged. The worm gear and center hole are hardened and ground. The table is 2.76" high when horizontal, and the centerline is 2.76" above the table when in the vertical position. The worm ratio is 72 to 1. Flatness of clamping surface: 0.0006" TIR. Parallelism of clamping surface to base: 0.0008" TIR. Squareness of clamping surface to angle face: 0.0004" TIR. Squareness of clamping surface to center slot: 0.0008" TIR. Concentricity of center bore: 0.0008" TIR. Maximum spacing error: 1 minute, 20 seconds.

1943 Clamping Kit, 6 mm T-Slot, 16-Piece \$23.95

1799 Dividing Plate Set for 4" Rotary Table \$176.95

1931 Rotary Table, 4" with Tailstock & Dividing Plate \$879.95

3791 Rotary Table, 4" with Tailstock, Dividing Plate, & 3-Jaw Lathe Chuck \$989.95

3792 Rotary Table, 4" with Tailstock, Dividing Plate, & 4-Jaw Lathe Chuck \$989.95

1800 Tailstock for 4" Rotary Table \$144.95



5603 Rotary Table, 4" H/V, Economy \$99.95

- Horizontal or vertical use
- 4" diameter table rotates 360°
- 1:36 ratio or 10° per handwheel revolution
- Scale reads to 15 minutes
- Low profile - 55mm (2.17") tall

Affordably priced rotary table suitable for bolt patterns, arched slots, cutting out flywheels and other medium precision jobs. The small size of the table is good for small milling machines. The table has a low profile of 55mm (2.17") in the horizontal position. This precision ground graded cast iron table is graduated for a full 360°. The handwheel utilizes a 1:36 ratio resulting in 10° per handwheel revolution. Table comes with two clamping studs, two 45mm clamping bars and two t-nuts.

5601 Rotary Table, 3" H/V, Economy \$114.95

5630 Tailstock for 3" & 4" Rotary Tables \$92.83

Rotary Tables: Accessories



6295 Vise, 4" Rotary Table \$39.95

- 4" Rotary Table Vise
- Made from tool steel, hardened and ground
- Low profile
- Four mounting holes
- V-groove for holding round stock

Low profile 4" rotary table vise made of tool steel, hardened and ground. Vise has four mounting holes to easily attach to rotary table. Includes four mounting t-nuts and cap screws (M5x12). V-groove on vise jaw to hold round stock. See specs for more information.

Rotary Tables: Rotary Tables







Chris' Tips

A Tip for Rotary Tables

Visit our website to see a rotary table comparison chart. www.LittleMachineShop.com/Rotary

Rotary Tables: Rotary Tables

	1810 Rotary Table, 4" Precision	\$389.95
	<ul style="list-style-type: none"> • 4" (100 mm) diameter • Use in horizontal or vertical position • Worm ratio is 72 to 1 • 10 second rotational accuracy • 2 Morse taper center hole <p>This 4" horizontal/vertical rotary table is perfect for indexing, circular cutting, angle setting, boring, and spot facing operations on a milling machine. This rotary table is made of precision machined cast iron and has a 2 Morse taper center hole. The table is graduated with a 360 degree scale. The rotary table is furnished with lock down clamps.</p> <p>This rotary table comes with an adapter to mount a 3" lathe chuck. It works with both 3- and 4-jaw chucks.</p> <p>The model 1810 4" Precision Rotary Table is 2.87" high when horizontal, and the centerline is 2.68" above the table when in the vertical position. The body of the table is 5" (crank handle to back) by 5.5" (mounting slot to mounting slot).</p> <p>The worm ratio is 72 to 1.</p> <p>Flatness of clamping surface: 0.0008".</p> <p>Parallelism of clamping surface to base: 0.0008".</p> <p>Squareness of clamping surface to angle face: 0.0012".</p> <p>Squareness of clamping surface to center slot: 0.0012".</p> <p>Concentricity of center bore: 0.0008" TIP.</p>	
	1888 Adapter, 3" Lathe Chuck, Rotary Table	\$34.95
	3146 Adapter, 3" Lathe Chuck, Rotary Table	\$29.95
	1813 Clamping Kit, 8 mm T-Slot, 12-Piece	\$25.95
	1811 Dividing Plate Set for 4" Rotary Table	\$89.95
	1440 Rotary Table DRO Conversion Kit	\$99.95
	2183 Rotary Table, 4" with Tailstock & Dividing Plate	\$542.95
	3131 Rotary Table, 4" with Tailstock, Dividing Plate, & 3-Jaw Lathe Chuck	\$642.95
	3132 Rotary Table, 4" with Tailstock, Dividing Plate, & 4-Jaw Lathe Chuck	\$642.95
	1812 Tailstock for 4" Rotary Table	\$98.58
	2420 Rotary Table, 4" Precision, Digital Readout	\$399.95
	<ul style="list-style-type: none"> • 4" (100 mm) diameter • Use in horizontal or vertical position • Worm ratio is 72 to 1 • Digital angular readout with 1 minute (0.017 degree) resolution digital angular readout • 2 Morse taper center hole <p>This horizontal / vertical rotary table is made of precision machined cast iron and has a 2 Morse taper center hole. The rotary table is furnished with lock down clamps. The digital readout displays degrees and minutes or decimal degrees. This rotary table comes with an adapter to mount a 3" lathe chuck. It works with both 3- and 4-jaw chucks. The table is 2.87" high when horizontal, and the centerline is 2.68" above the table when in the vertical position. The body of the table is 5" (crank handle to back) by 5.5" (mounting slot to mounting slot). The worm ratio is 72 to 1. Flatness of clamping surface: 0.0008". Parallelism of clamping surface to base: 0.0008". Squareness of clamping surface to angle face: 0.0012". Squareness of clamping surface to center slot: 0.0012". Concentricity of center bore: 0.0008" TIP.</p>	
	5852 Rotary Table, 4" Digital Readout with Tailstock & Dividing Plate	\$584.95
	5853 Rotary Table, 4" Digital Readout with Tailstock, Dividing Plate, & 3-Jaw Lathe Chuck	\$668.95
	5854 Rotary Table, 4" Digital Readout with Tailstock, Dividing Plate, & 4-Jaw Lathe Chuck	\$668.95

	5604 Rotary Table, 4" Tilting	\$139.95
	<ul style="list-style-type: none"> • Tilting table 0° to 90° • 4" diameter table rotates 360° • 1:36 ratio or 10° per handwheel revolution • Scale reads to 15 minutes • Low profile - 66mm (2.60") tall <p>Affordably priced rotary table suitable for bolt patterns, arched slots, cutting out flywheels and other medium precision jobs. The small size of the table is good for small milling machines. The table has a low profile of 66mm (2.60") in the horizontal position. This precision ground graded cast iron table is graduated for a full 360°. The handwheel utilizes a 1:36 ratio resulting in 10° per handwheel revolution. Table tilts from 0° to 90° and locks into place. Table comes with two clamping studs, two 45mm clamping bars and two t-nuts.</p>	
	5602 Rotary Table, 3" Economy Tilting	\$114.95
	1787 Rotary Table, 6"	\$499.95
	<ul style="list-style-type: none"> • 6 inch horizontal / vertical rotary table • #2 Morse Taper center hole • 3 T-slots with 0.43" channels • Height 3.1", vertical height 7.8" • Gear ratio 90:1, 10 second vernier reading <p>This 6" horizontal / vertical rotary table is for indexing, circular cutting, angle setting, boring, and spot facing operations. The cast iron table is precision machined in Taiwan and has a #2 Morse taper center hole. This 6" rotary table is graduated with a 360° scale. A micro collar graduated to one minute with a ten second accuracy vernier scale is provided. This horizontal/vertical rotary table has lock down clamps and the crank can be disengaged. The worm gear and center hole are hardened and ground. The 6" rotary table is 3.1" high when horizontal, and 7.8" when vertical. The centerline is 3.9" above the table when in the vertical position. The worm ratio is 90 to 1 and one rotation of the handle equals 4 degrees on the collar. There are three T-slots and each slot is 0.43" in width. Flatness of clamping surface: 0.0006" Parallelism of clamping surface to base: 0.0008" Squareness of clamping surface to angle face: 0.0004" Squareness of clamping surface to center slot: 0.0008" Concentricity of center bore: 0.0008" Dividing plates and a tailstock are available for this rotary table.</p>	
	1801 Dividing Plate Set for 6" Rotary Table	\$149.95
	3566 Rotary Table, 6" with Tailstock & Dividing Plates	\$824.95
	1802 Tailstock for 6" Rotary Table	\$199.95

Threading Tools: Die Holders

	2314 Die Holder	\$19.95
	<ul style="list-style-type: none"> • Holds 13/16" and 1" round dies • Holds dies in alignment when threading on the lathe • 2 Morse taper shank fits the mini lathe tailstock • Tommy bar provides torque for larger thread sizes <p>This 2314 industrial die holder goes in the tailstock of the mini lathe, or any other lathe with a 2 Morse taper tailstock. It has a short Morse taper for the mini lathe so you may need to put a ball bearing or such like behind it so it will eject from lathes that expect a standard length taper. The arbor is made of steel. The body is aluminum for low mass, so it spins easily when you release it. This prevents small parts from twisting off. This lathe die holder tool does not work with hexagonal dies. Hexagonal dies are not made for creating new threads, they are for maintenance work.</p>	
	6155 Die Holder Set, MT2 Tailstock	\$44.95
	<ul style="list-style-type: none"> • The set includes tapered shank, pin punch, and 13/16", 1", 1-5/16" & 1-1/2" die holders • 2MT Tang shank • Easy to swap out using the provided pin punch. • Comes in a fitted case <p>This industrial die holder goes in the tailstock of the mini lathe, or any other lathe with a 2 Morse taper tailstock. The set includes tapered shank, pin punch, and 13/16", 1", 1-5/16" & 1-1/2" die holders. This lathe die holder tool does not work with hexagonal dies. Hexagonal dies are not made for creating new threads, they are for maintenance work.</p>	

Threading Tools: Die Holders



4666 Die Stock, No. 2, 13/16"	\$4.95
<ul style="list-style-type: none"> • For adjustable round split dies • Holds 13/16" dies • 6-1/2" overall length 	
4667 Die Stock, No. 3, 1"	\$5.95
4668 Die Stock, No. 5, 1-1/2"	\$7.95

Threading Tools: Hand Tappers



2539 Hand Tapper	\$199.95
<ul style="list-style-type: none"> • Assures straight tapped holes • Helps prevent broken taps • 9 tap adapters included • Spindle is balanced for sensitive feel • Sliding vise jaws keep work from slipping <p>This rigid hand tapper helps prevent broken taps while tapping straight holes. Precision ground work table and spindle ensure accuracy. Tap adapters for #6, #8, #10, 1/4", 5/16", 3/8", 7/16" 1/2" and 5/8" taps. (Not recommended for taps smaller than #6.) The work area is 6.5" x 10". The clearance height is 7" and the throat depth is 7.5". The overall height is 13". This hand tapping machine includes an offset handle and a rack for the tap adapters.</p>	



2898 Hand Tapper, Mini	\$94.95
<ul style="list-style-type: none"> • Assures straight tapped holes • Helps prevent broken taps • 7 tap adapters included <p>This rigid hand tapper helps prevent broken taps while tapping straight holes. Precision ground work table and spindle ensure accuracy. Tap adapters for #0 through 5/16" taps. The table is 8.5" x 6". The clearance height is 3.75" and the throat depth is 4.5". The overall height is 9".</p>	



2900 Tap Adapters, Set of 7	\$18.95
1116 Tap & Reamer Holder, 0-#8, Self Aligning	\$19.95
<ul style="list-style-type: none"> • Self Aligning Tap & Reamer Holder • Capacity 0 - #8 • Guide Base has Two 120° Vees for Round Items <p>Self-aligning tap and reamer holder utilizes 4 jaw collet design to provides firm grip and 90° alignment that eliminates tap breakage while producing perfectly aligned threads. The collets 4-jaw design help ensure the tap is mounted straight and provide a tight grip on the tap's shank. The collet included will fit #0 to #8. The base of the guide has two 120° vees that accept round stock.</p>	
5966 Tap & Reamer Holder, 0-1/2", Self Aligning	\$26.95

Threading Tools: Lathe Threading



3695 Threading Tool, External, 3/8" Indexable, HSS Triangle Inserts, A R Warner Kit #17	\$125.00
<ul style="list-style-type: none"> • For external threading, 8 through 36 TPI • 3/8" shank, 3/8" IC Inserts, 5" long • 2 HSS inserts included: TNMC-32-NV and TPMC-32-NV • 1 extra 4-40 flat head cap screw • 1 - 1/16" Allen wrench <p>This Arthur R. Warner Co. precision threading tool will turn external threads. The tool can turn from 8 through 36 pitch, 60 degree threads. The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p>	



5437 Threading Tool, External, 3/8" Indexable, SER0375E11	\$179.95
<ul style="list-style-type: none"> • Right hand external threads cut • 3/8" shank • Includes: 1 tool holder, 10 TiN coated A60 carbide inserts, 1 Torx wrench • A60 inserts range 0.5-1.5mm/16-48 TPI <p>Complete with aluminum case.</p>	
5438 Threading Tool, External, 1/2" Indexable, SER0500H11	\$144.95



3467 Threading Tool, Int / Ext, 1/2" Indexable HSS Triangle Inserts, A R Warner Kit #18	\$142.50
<ul style="list-style-type: none"> • For internal and external threading • 1/2" shank, 3/8" IC Inserts, 5" long • 2 inserts included: TNMC-32-NV and TPMC-32-NV • 1 extra 4-40 flat head cap screw, 1 - 1/16" Allen wrench • For 8 through 36 pitch 60 degree threading <p>This A.R. Warner precision HSS threading tool will turn both internal and external threads. You can mount inserts on both ends. One end mounts the insert at the end of the tool for external threading. The mount on the other end is offset. Mount the insert one way for internal threading. Turn the insert around and you can use the tool for external threading too. The minimum bore diameter for internal threading is 1.375". The maximum thread depth of this internal and external threading tool is 0.100". The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel (and tool steel). Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p>	
3581 Cap Screw, 6-32 x 3/8", Retaining	\$0.95



3570 Threading Tool, Internal, 3/8" Indexable, HSS Triangle Inserts, A R Warner Kit #19	\$148.00
<ul style="list-style-type: none"> • For internal threading • Includes three T-15 high speed steel TPMW-1.8-1.5-.5 inserts • Includes two MS-1152S screws and one T-7 wrench <p>This Arthur R. Warner Co. boring bar for single-point cutting internal threads has 0.375" shank and is 5" long. This tool requires a 0.5" minimum hole size. Uses TPMW-1.8-1.5-.5 and TPMW-1.8-1.5-1 inserts. The maximum thread depth is 0.100". The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steel products with specialization in cutting, shaping, pre-grinding, heat treating, and finish grinding of premium grades of flat high speed steel. Their quality is excellent and LittleMachineShop.com is proud to carry their products.</p>	

3571 Threading Tool, Internal, 1/2" Indexable HSS Triangle Inserts, A R Warner Kit #20	\$134.50
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5439 Threading Tool, Internal, 3/8" Indexable, SIR0375H11	\$174.95
<ul style="list-style-type: none"> • For right hand internal threads • 3/8" x 4" shank • 10 TiN coated 11RA60 carbide inserts • Includes: 1 tool holder, 1 Torx wrench • A60 inserts cut 0.5-1.5mm/16-48 TPI threads <p>Complete with aluminum case. Minimum bore 0.47" (11.9 mm).</p>	
5440 Threading Tool, Internal, 1/2" Indexable, SIR0500K11	\$174.95

Threading Tools: Lathe Threading



2221 Tool Bit, 5/16" HSS Threading \$6.95

The 5/16" High Speed Steel Tool Bit Blank is a versatile and essential tool for any metal lathe operator. Made from high speed steel, this tool bit is capable of withstanding high temperatures and stress during use, ensuring a long lifespan. The tool bit has been end ground to a precise 0.01" wide parting blade and sharpened on both ends to a 60° angle, making it ideal for creating precise and accurate threads in a variety of materials. Both ends are offset, with one end designed for threading near a left shoulder and the other for threading near a right shoulder. This makes it an ideal choice for a wide range of threading applications. Whether you're working with aluminum, steel, or other metals, this tool bit is up to the task. Its sharp edge and fine tip allow for clean and professional results every time. Overall, the 5/16" High Speed Steel Tool Bit Blank is a versatile and essential tool for any metal lathe operator looking to achieve high-quality results. Add it to your tool collection today and experience the convenience and efficiency it brings to your projects.

4115 Threading Tool Bit and Center Gage \$19.95

1895 Tool Bit, 1/4" HSS Internal Threading \$9.95

Threading Tools: Tap and Die Sets



2851 Die Set, 0-80 to 5-40 Threads \$69.95

- Miniature die set includes 0-80, 1-64, 2-56, 3-48, 4-40, and 5-40 dies
- Round adjustable split dies
- 13/16" diameter
- High Speed Steel
- Imported

For cutting external screw threads either by hand or with a die stock or by machine with a die holder. They can be utilized to cut smaller or larger tolerance by turning the adjustment screw.

2842 Die, 0-80 Thread \$12.95

2843 Die, 1-64 Thread \$14.95

2844 Die, 2-56 Thread \$12.95

2845 Die, 3-48 Thread \$12.95

2846 Die, 4-40 Thread \$12.95

2847 Die, 5-40 Thread \$15.95

2848 Die, 6-32 Thread \$12.95

2849 Die, 8-32 Thread \$12.95

2850 Die, 10-24 Thread \$16.95

3675 Die, 10-32 Thread \$12.95

6221 Die, 1/4"-20 Thread \$5.95

1171 Die, 1/4"-28 Thread \$5.95



5920 Die Set, M6 - M20 Rethreading, Hexagonal \$28.95

- 7 Piece Hexagon Rethreading Die Set
- Common sizes from M6 - M20
- Right Hand
- Carbon Steel
- Supplied with Fitted Case

For rethreading rusty or worn threads. Right handed. Size include: M6 X 1.00, M8 X 1.25, M10 X 1.50, M12 X 1.75, M14 X 2.00, M16 X 2.00 & M20 X 2.50.



3601 Tap & Die Set, 39-Piece Solid Round Dies \$269.95

- 39-piece machine screw & fractional tap and solid round die set
- Machine screw and fractional sizes of plug style taps plus 1" solid round dies
- Includes three tap handles and two die stocks
- 18-leaf standard thread pitch gauge and screwdriver
- Plastic case with lift-out tray

This USA-made IRWIN brand 39 PC set can be used to create new threads. The taps and dies are made from high carbon steel. The Hanson 39-Piece Machine Screw / Fractional Tap and Solid Round Die Set includes machine screw taps, fractional plug style taps, plus 1-inch solid round dies. A adjustable guide diestock for cutting external threads on metal cylinders is included, as well as a adjustable handle tap wrench to create internal screw threads, and a T-handle tap wrench. There's also an 18-leaf standard thread pitch gauge, a screwdriver, and a handy plastic case to keep everything organized. 39-pc set in plastic case includes the following items: Machine Screw Plug Tap and 1" Solid Round Dies in sizes: 4 - 40 NC, 6 - 32 NC, 8 - 32 NC, 10 - 24 NC, 10 - 32 NF, 12 - 24 NC, Fractional Plug Tap and 1" Solid Round Dies in sizes: 1/4" - 20 NC, 1/4" - 28 NF, 5/16" - 18 NC, 5/16" - 24 NF, 3/8" - 16 NC, 3/8" - 24 NF, 7/16" - 14 NC, 7/16" - 20 NF, 1/2" - 13 NC, 1/2" - 20 NF, Pipe Thread Plug Tap and 1" Solid Round Dies in sizes: 1/8" - 27 NPT. Threading Tools: Adjustable Die Stock - 1" Dies, T-Handle Wrench - Taps No. 0 to 1/4", Adj. Handle Tap Wrench - Taps No. 0 to 1/2", 18 Leaf Standard Thread Pitch Gauge, Plastic Case



2540 Tap & Die Set, 41-Piece \$79.95

- Tungsten Steel
- Hex dies are ideal for working in tight places
- Furnished in a fitted case with lift-out tray
- Imported

This 41-piece tap and die set includes all the common sizes from #4 to 1/2".

The set includes a screw pitch gage, a die stock and a T-handle tap wrench.

The threads covered include:

NC: 4-40, 6-32, 8-32, 10-24, 12-24, 1/4"-20, 5/16"-18, 3/8"-16, 7/16"-14, 1/2"-13
NF: 10-32, 1/4"-28, 5/16"-24, 3/8"-24, 7/16"-20, 1/2"-20
NPT: 1/8"-27

2541 Tap & Die Set, 41-Piece Metric \$74.95



2841 Tap Set, 0-80 to 5-40 Thread, Set of 6 \$54.95

- Hand tap set includes #0-80, #1-64, #2-56, #3-48, #4-40, and #5-40
- Plug style (3-5 chamfered threads)
- High speed steel (HSS)
- Utilize in through or blind hole tapping
- Made in USA

Set of 6 plug style hand taps made of high quality High Speed Steel in sizes #0-80, #1-64, #2-56, #3-48, #4-40, and #5-40. Hand taps are the most commonly used general purpose tap. They are recommended for tapping free machining steels, stainless steels, aluminum, zinc, and ductile materials. Plug taps have 3-5 chamfered threads and are utilized in either through or blind hole tapping. The High Speed Steel (HSS) construction gives good wear-resistance. Taps Included: #0-80 - 2 Flute, Plug Chamfer, Right Hand - Fine #1-64 - 2 Flute, Plug Chamfer, Right Hand - Coarse #2-56 - 3 Flute, Plug Chamfer, Right Hand - Coarse #3-48 - 3 Flute, Plug Chamfer, Right Hand - Coarse #4-40 - 3 Flute, Plug Chamfer, Right Hand - Coarse #5-40 - 3 Flute, Plug Chamfer, Right Hand - Coarse

1446 Tap Set, Metric M3 to M8 Thread \$47.95

2832 Tap, 0-80 Thread, Plug Style \$10.95

2833 Tap, 1-64 Thread, Plug Style \$11.95

2834 Tap, 2-56 Thread, Plug Style \$11.95

2835 Tap, 3-48 Thread, Plug Style \$7.95

2836 Tap, 4-40 Thread, Plug Style \$7.95

2837 Tap, 5-40 Thread, Plug Style \$7.95

2838 Tap, 6-32 Thread, Plug Style \$5.95

2839 Tap, 8-32 Thread, Plug Style \$5.95

2840 Tap, 10-24 Thread, Plug Style \$6.49

3676 Tap, 10-32 Thread, Plug Style \$6.95

Threading Tools: Tap Holders and Guides

	3602 Tap Adapters, 3/8" Socket Drive \$54.95
	<ul style="list-style-type: none"> • Jaws adjust to tightly secure taps • Fits all 3/8" square drive wrenches • Small adapter fits taps for #0 to 1/4" thread • Large adapter fits taps for 1/4" to 1/2" thread <p>For use in tight workspaces or for putting some muscle on those hard-to-turn large taps. Designed for use with taps, reamers, screw extractors and other tools with a square shank. Not recommended for cutting new threads.</p>
	6294 Tap Guide \$6.95
	<ul style="list-style-type: none"> • Spring loaded • 3/16" diameter pin • 1/2" knurled shank • Adjustable spring <p>This tap guide helps you start threaded holes straight. The point is spring loaded to maintain pressure on the tap. The end is pointed to support most taps. Tension spring is adjustable. Tap has a 3/16" diameter hardened tension pin. The 0.50" diameter hardened shank is knurled for easy handling.</p>
	1963 Tap Guide, Fisher \$19.00
	<ul style="list-style-type: none"> • Made in USA by Fisher Machine Shop • Reversible • 0.500" diameter body • Ground and knurled for easy handling <p>This tap guide helps you start threaded holes straight. The reversible point is spring loaded to maintain pressure on the tap. One end of the point has a center hole for small taps, while the other end is pointed for larger taps. The 0.500" diameter body is ground and knurled for easy handling. Remove the setscrew in the back end to reverse the point. This is a quality American-made product from Fisher Machine Shop.</p>
	3104 Tap Guide, 2MT Short, Fisher \$24.95
	3603 Tap Handle, Adjustable \$10.95
	<ul style="list-style-type: none"> • Offset handle adjustable tap & reamer wrench • Straight handle design provides greater leverage, especially when using larger diameter tapes • For Taps No. 0 To 1/2" <p>Straight handle design provides greater leverage, especially when using larger diameter tapes.</p>
	2621 Tap Wrench 3-5/8", Starrett \$48.00
	<ul style="list-style-type: none"> • Body length: 3-5/8" (90mm) • Capacity tap size: No. 0-14 • Square shank: 1/4" (6.35mm) • Starrett catalog number 174 <p>This is a well-designed tap wrench, ideal for holding smaller diameter taps, drills, reamers, and other tools up to 1/4" (6.35 mm) in diameter. It works with 0-14 tap sizes. It will firmly grip round or square shanks, is lightweight and well proportioned. The gripping surface is properly heat treated to withstand any ordinary use.</p>
	3177 Tap Wrench 6", Starrett \$72.50
	5122 Tap Wrench 9", Starrett \$103.00
	5390 Tap Wrench 5", Adjustable \$3.95
	<ul style="list-style-type: none"> • #0 adjustable tap wrench • Capacity tap size: 0-1/4", OAL 5" (127 mm) • Knurled steel handles • Jaws surface hardened • Zinc die casting <p>#0 Adjustable tap wrench for hand taps 0 - 1/4". Overall length is 5". Knurled steel handles. Jaw surfaces are hardened. Zinc die casting.</p>
	5391 Tap Wrench 8", Adjustable \$4.95

	5591 Tapping Chuck, 33JT \$69.95
	<ul style="list-style-type: none"> • Tap #10 to 1/2" (M3 - M12) threads • Quick loading and unloading • Adjustable clamping range • Good stability, high precision <p>Turn your bench mill, or lathe into a tapping machine. Tap #10 to 1/2" (M3 - M12) threads. This is not a reversible tapping head. You must reverse the spindle to extract the tap. Mounts to 33 Jacobs taper arbor. Length 2.87" (73mm) Diameter: 1.89" (48mm)</p>
	3434 T-Handle Tap Wrench for #0 to #10 Taps, Starrett \$51.00
	<ul style="list-style-type: none"> • Starrett T-handle tap wrench • Starrett catalog number 93A • For holding taps, drills, reamers, and other small tools to be turned by hand • Fits machine screw taps from #0 to #10 • Fits fractional thread taps from 1/16" to 3/16" <p>The body of this T-handle tap wrench is centered, enabling the worker to use it on lathe centers or on an upright drilling machine to start the tap straight. The jaws conform to the tool being held, making it rigid and less apt to loosen. They are properly heat treated to withstand ordinary shop use. The wrench has a sliding handle that is frictionally held. This feature permits the handle to be removed entirely or positioned so that leverage can be applied when working in close quarters. These tools are designed to hold square shanks. Round shanks can be gripped, but care must be used. Excessive tightening may break the binding nut.</p>
	3555 T-Handle Tap Wrench for 1/4" to 1/2" Taps, Starrett \$70.50
	3554 T-Handle Tap Wrench for 7/32" to 7/16" Taps, Starrett \$51.00
	2852 T-Handle Tap Wrench for #0 to #8 Taps \$13.95
	<ul style="list-style-type: none"> • For hand tapping and driving screw extractors • Fits machine screw taps from #0 to #8 • Fits fractional thread taps from 1/16" to 5/53" <p>For holding taps, reamers, and other small tools to be turned by hand.</p>
	2853 T-Handle Tap Wrench for #8 to 1/4" Taps \$14.95
	3427 V-TapGuide Hand Tap Guide for Inch Threads \$30.75
	<ul style="list-style-type: none"> • Eliminate tap breakage due to improper alignment • Automatically squares up the tap with the surface • 90 degree V-groove along the bottom allows perpendicular alignment on round parts or corners • Portable, pocket size • Protective plastic storage tube is included <p>V-TapGuide™ by Big Gator Tools™ is made of a special alloyed steel that is ground and heat treated for durability. The guide holes are smooth, unlike drilled or reamed holes. Guide holes are sized for ANSI standard ground taps. The V-TapGuide handles taps for UTS screw sizes of #0, #1, #2, #3, #4, #5, #6, #8, #10, 1/4", 5/16", 3/8", 7/16", 1/2", and 5/8".</p>
	3428 V-TapGuide Hand Tap Guide for Metric Threads \$30.75
	3866 V-TapGuide Hand Tap Guide Set, Inch and Metric \$59.95
	<ul style="list-style-type: none"> • Both inch and metric taps • Eliminate tap breakage due to improper alignment • Automatically squares up the tap with the surface • 90 degree V-groove along the bottom allows perpendicular alignment on round parts or corners • Portable, pocket size. Protective plastic storage tube is included <p>V-TapGuide™ by Big Gator Tools™ is made of a special alloyed steel that is ground and heat treated for durability. The guide holes are smooth, unlike drilled or reamed holes. Guide holes are sized for ANSI standard ground taps. The inch V-TapGuide handles taps for UTS screw sizes of #0, #1, #2, #3, #4, #5, #6, #8, #10, 1/4", 5/16", 3/8", 7/16", 1/2", and 5/8". The metric V-TapGuide handles taps for metric screw sizes of 1.6 mm, 2 mm, 2.5 mm, 3 mm, 3.5 mm, 4 mm, 5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, and 16 mm.</p>

Threading Tools: Taps and Dies



6221 Die, 1/4"-20 Thread \$5.95

- Round adjustable split die
- 13/16" diameter
- Thread Size 1/4"-20
- High Speed Steel

For cutting external right hand screw threads either by hand or with a die stock or by machine with a die holder. This thread cutting die can be utilized to cut smaller or larger tolerance by turning the adjustment screw.



1171 Die, 1/4"-28 Thread \$5.95

- Round adjustable split die
- Thread Size 1/4"-28
- 13/16" diameter
- High Speed Steel
- Imported

For cutting external right hand screw threads either by hand or with a die stock or by machine with a die holder. This thread cutting die can be utilized to cut smaller or larger tolerance by turning the adjustment screw.



Dies, Hex, Individual Sizes

- Hex Shape
- Carbon steel
- Hex shape
- Right hand thread

For cutting external screw threads either by hand or with a die stock or by machine with a die holder.

5392 Die, Hex, 1/4"-20 Thread	\$2.95
5393 Die, Hex, 1/4"-28 Thread	\$2.95
5394 Die, Hex, 5/16"-18 Thread	\$2.95
5395 Die, Hex, 5/16"-24 Thread	\$2.95
5396 Die, Hex, 3/8"-16 Thread	\$2.95
5397 Die, Hex, 3/8"-24 Thread	\$2.95
5398 Die, Hex, 1/2"-13 Thread	\$3.95
5399 Die, Hex, 1/2"-20 Thread	\$3.95



Taps, Metric, Spiral Flute, TiN Coated, Individual Sizes

- Metric spiral flute plug style tap
- High speed steel (HSS) / TiN coated
- Sizes M2 - M10
- Ground threads
- Comply with DIN 371 standards

High speed steel (HSS) spiral flute plug style taps with a titanium (TiN) coating. These metric spiral flute taps have 35 degree spiral to assist in evacuating chips out of the tapped hole. Spiral flutes are recommended when bridging a gap inside the hole such as a keyway or cross-hole. These metric taps are available in sizes ranging from M2 to M10 and comply with standard tap dimensions as defined in DIN 371. The thread tap limits (pitch diameter limits) range from D3 to D6. D3 = plus 0.0015 D4 = plus 0.0020 D5 = plus 0.0025 D6 = plus 0.0030

6191 Tap, M2x0.4 Metric, Spiral Flute, TiN Coated	\$8.95
6192 Tap, M3x0.5 Metric, Spiral Flute, TiN Coated	\$5.95
6193 Tap, M4x0.7 Metric, Spiral Flute, TiN Coated	\$6.49
6194 Tap, M5x0.8 Metric, Spiral Flute, TiN Coated	\$6.95
6195 Tap, M6x1.0 Metric, Spiral Flute, TiN Coated	\$6.95
6196 Tap, M8x1.25 Metric, Spiral Flute, TiN Coated	\$8.49
6197 Tap, M10x1.5 Metric, Spiral Flute, TiN Coated	\$10.95

Taps, Metric, Spiral Point, TiN Coated, Individual Sizes

- Metric spiral point plug style taps
- High speed steel (HSS) / TiN coated
- Sizes M2 - M10
- Ground threads
- Comply with DIN 371 standards

High speed steel (HSS) spiral point plug style taps with a titanium (TiN) coating. Spiral point style plug taps have the same general tap dimensions as straight flute taps however they have the first few threads cut at an angle which enhances the removal of chips from the cutting surface. This design makes spiral point taps ideal for production tapping of through holes. The flutes on a spiral point tap are more shallow than those of a conventional tap resulting in more surface area for cutting, making them stronger thereby allowing for higher cutting speeds and less power required for the tap to travel. These metric taps are available in sizes ranging from M2 to M10 and comply with standard tap dimensions as defined in DIN 371. The thread tap limits (pitch diameter limits) range from D3 to D6. D3 = plus 0.0015 D4 = plus 0.0020 D5 = plus 0.0025 D6 = plus 0.0030

6184 Tap, M2x0.4 Metric, Spiral Point, TiN Coated	\$7.95
6185 Tap, M3x0.5 Metric, Spiral Point, TiN Coated	\$5.95
6186 Tap, M4x0.7 Metric, Spiral Point, TiN Coated	\$5.95
6187 Tap, M5x0.8 Metric, Spiral Point, TiN Coated	\$6.49
6188 Tap, M6x1.0 Metric, Spiral Point, TiN Coated	\$6.49
6189 Tap, M8x1.25 Metric, Spiral Point, TiN Coated	\$7.49
6190 Tap, M10x1.50 Metric, Spiral Point, TiN Coated	\$9.95

Taps, Spiral Flute, Individual Sizes

- Spiral fluted bottoming taps - two and three flute
- Ground from solid High Speed Steel (HSS) with ground threads
- Threading from 4-40 to 10-32 (two flute)
- Threading from 1/4"-20 to 1/2"-20 (three flute)
- Course and fine threads (see individual records)

These taps are spiral fluted and we carry two and three flute spiral fluted bottoming taps in sizes from 4-40 - 10-32 (two flute) and 1/4"-20 - 1/2"-20 (three flutes). Having 1-2 lead threads, and little to no taper, a bottoming tap is used to continue threading a blind hole. This allows the tap to cut threads to the bottom or nearly to the bottom of the hole. This design however makes bottoming taps ill designed for starting a hole and another type of tap should be used for that purpose. Use the bottoming tap to continue the partially threaded hole to the bottom. Individual taps have course or fine threading. See individual product records for details. *Bottoming taps are not necessarily flat on the bottom, they sometimes have a 60 degree tapered point from the manufacturing process.

6199 Tap, 4-40, Spiral Flute	\$3.95
6200 Tap, 6-32, Spiral Flute	\$3.95
6201 Tap, 8-32, Spiral Flute	\$3.95
6202 Tap, 10-24, Spiral Flute	\$3.95
6203 Tap, 10-32, Spiral Flute	\$3.95
6204 Tap, 1/4"-20, Spiral Flute	\$4.49
6205 Tap, 1/4"-28, Spiral Flute	\$4.49
6206 Tap, 5/16"-18, Spiral Flute	\$6.95
6207 Tap, 5/16"-24, Spiral Flute	\$6.95
6208 Tap, 3/8"-16, Spiral Flute	\$6.95
6209 Tap, 3/8"-24, Spiral Flute	\$6.95
6210 Tap, 1/2"-13, Spiral Flute	\$12.95
6211 Tap, 1/2"-20, Spiral Flute	\$12.95

Threading Tools: Taps and Dies



Taps, Spiral Point, Individual Sizes

- HSS spiral point plug style taps
- Two and three flute styles
- Threading from 0-80 to 10-32 (two flute)
- Threading from 1/4"-20 to 1/2"-20 (three flute)
- Course and fine threads (see individual records)

High speed steel (HSS) spiral point plug style taps in two and three flute designs. Spiral point style plug taps have the same general tap dimensions as straight flute taps however they have the first few threads cut at an angle which enhances the removal of chips from the cutting surface. This design makes spiral point taps ideal for production tapping of through holes. The flutes on a spiral point tap are more shallow than those of a conventional tap resulting in more surface area for cutting, making them stronger thereby allowing for higher cutting speeds and less power required for the tap to travel. These two flute taps are available in sizes ranging from 0-80 to 10-32 thread. The three flute taps are available in sizes 1/4"-20 through 1/2"-20. Individual taps have course or fine threading. See individual product records for details.

6164 Tap, #0-80, Spiral Point	\$3.95
6165 Tap, #1-64, Spiral Point	\$3.95
6166 Tap, #1-72, Spiral Point	\$3.95
6167 Tap, #2-56, Spiral Point	\$3.95
6168 Tap, #3-48, Spiral Point	\$3.95
6169 Tap, #4-40, Spiral Point	\$3.95
6170 Tap, #5-40, Spiral Point	\$3.95
6171 Tap, #6-32, Spiral Point	\$3.95
6172 Tap, #8-32, Spiral Point	\$3.95
6173 Tap, #8-36, Spiral Point	\$3.95
6174 Tap, #10-24, Spiral Point	\$3.95
6175 Tap, #10-32, Spiral Point	\$3.95
6176 Tap, 1/4"-20, Spiral Point	\$3.95
6177 Tap, 1/4"-28, Spiral Point	\$3.95
6178 Tap, 5/16"-18, Spiral Point	\$5.95
6179 Tap, 5/16"-24, Spiral Point	\$5.95
6180 Tap, 3/8"-16, Spiral Point	\$6.95
6181 Tap, 3/8"-24, Spiral Point	\$6.95
6182 Tap, 1/2"-13, Spiral Point	\$9.95
6183 Tap, 1/2"-20, Spiral Point	\$9.95

Threading Tools: Thread Repair Tools



Thread Repair Kits, Individual Sizes

- For repairing tapped holes in soft metal
- Simple and easy to use
- Stronger than original threads
- 25 Stainless steel coil (helical) inserts

Thirty-one piece thread repair kits. Used for repairing tapped holes that have been stripped or damaged. The stainless steel insert is wound into a coil (helical). Once inserted into the hole the radial pressure of the insert holds it firmly into place. The kit comes with inserts, the appropriate size HSS twist drill, installation tool, tang removal tool and L hex wrench. Each kit contains: 25 stainless steel inserts, 1 Screw thread insert (STI) high speed steel tap, 1 High speed steel twist drill, 1 Coil driver, 1 Tang breaker, 1 L hex wrench, 1 Metal case

5829 Thread Repair Kit, 1/4"-20	\$18.95
5830 Thread Repair Kit, 5/16"-18	\$20.95
5831 Thread Repair Kit, 3/8"-16	\$23.95
5832 Thread Repair Kit, M5x0.80	\$18.95
5834 Thread Repair Kit, M8x1.25	\$20.95

Tooling: Arbors and Sleeves



2393 Arbor, Blank 3MT Drawbar \$12.95

This arbor has a soft end which can be machined to suit your purpose. The arbor has a case hardened 3 Morse taper shank and is threaded for a 3/8"-16 NC drawbar. The machinable end is 1.5" long and 1.5" in diameter.

2394 Arbor, Blank 2MT Drawbar \$13.51

Arbors, Drill Chuck, Morse Taper Shank



The long taper goes in the lathe tailstock or mill spindle. The short taper goes in the drill chuck. The 2MT Stub arbors fit the mini lathe tailstock without cutting.

3544 Arbor, Drill Chuck 0MT Standard to 2JT	\$9.79
3543 Arbor, Drill Chuck 0MT Standard to 33JT	\$9.77
5524 Arbor, Drill Chuck 1/2" Straight to 33JT	\$7.95
1778 Arbor, Drill Chuck 1MT Tang to 2JT	\$7.79
1894 Arbor, Drill Chuck 1MT Tang to 33JT	\$7.79
4631 Arbor, Drill Chuck 2MT Drawbar to 0JT	\$10.14
1882 Arbor, Drill Chuck 2MT Drawbar to 2JT	\$6.95
1883 Arbor, Drill Chuck 2MT Drawbar to 33JT	\$9.85
1803 Arbor, Drill Chuck 2MT Short to 2JT	\$9.85
1807 Arbor, Drill Chuck 2MT Short to 3/8"-24 Thread	\$9.85
1804 Arbor, Drill Chuck 2MT Short to 33JT	\$10.99
2955 Arbor, Drill Chuck 2MT Standard to 33JT	\$10.99
1167 Arbor, Drill Chuck 2MT Tang to 2JT	\$9.85
1613 Arbor, Drill Chuck 2MT Tang to 3/8"-24 Thread	\$9.85
1190 Arbor, Drill Chuck 2MT Tang to 33JT	\$8.95
1805 Arbor, Drill Chuck 3MT Drawbar to 2JT	\$12.07
1808 Arbor, Drill Chuck 3MT Drawbar to 3/8"-24 Thread	\$13.35
1806 Arbor, Drill Chuck 3MT Drawbar to 33JT	\$11.95
1191 Arbor, Drill Chuck 3MT Tang to 2JT	\$8.95
1614 Arbor, Drill Chuck 3MT Tang to 3/8"-24 Thread	\$12.07
1192 Arbor, Drill Chuck 3MT Tang to 33JT	\$10.95

Arbors, Drill Chuck, R8 Shank



The long taper goes in the mill spindle. The short taper goes in the drill chuck.

3999 Arbor, Drill Chuck R8 to 2JT	\$11.95
5445 Arbor, Drill Chuck R8 to 2JT, Professional Grade	\$14.95
1676 Arbor, Drill Chuck R8 to 33JT	\$11.95

Arbors, Drill Chuck, Straight Shank



The straight end goes in a collet or other tool holder. The short taper goes in the drill chuck.

4632 Arbor, Drill Chuck 3/8" Straight to 0JT	\$10.07
2298 Arbor, Drill Chuck 3/8" Straight to 2JT	\$12.85

1195 Morse Taper Sleeve 3MT-2MT \$7.73



- Overall Length Is 4-3/8"
- Hardened and Ground
- Adapts 2 Morse Taper to 3 Morse Taper

Morse taper sleeve adapts 2 Morse taper tools to 3 Morse taper machines.

Hardened and precision ground.

1193 Morse Taper Sleeve 2MT-1MT	\$6.51
1194 Morse Taper Sleeve 3MT-1MT	\$7.73

3671 R8 to 3MT Sleeve \$11.95






- Hardened and Ground
- Drawbar End Thread Is 7/16"-20
- Adapts 3 Morse Taper to R8




This sleeve adapts 3 Morse taper tools to R8 spindles. It is hardened and precision ground.




2190 R8 to 2MT Sleeve \$10.95

Tooling: Arbors and Sleeves

	4720 Slitting Saw Arbor, 1/2" Shank	\$16.95
	<ul style="list-style-type: none">• For saw blades up to 3/16" thick• Fits 1/2", 5/8", 3/4", 7/8", and 1" holed slitting saw blades• 1/2" straight shank• Overall length is 2-9/16" <p>This arbor has a 1/2" shank and fits slitting saw blades up to 3/16" thick. This slitting saw arbor is compatible with blades that have a center hole of 1/2", 5/8", 3/4", 7/8", or 1".</p>	
	4647 Slitting Saw Arbor, R8 Shank	\$24.95
	<ul style="list-style-type: none">• For saw blades up to 3/16" thick• Fits 1/2", 5/8", 3/4", 7/8", and 1" holed slitting saw blades• R8 Shank• Overall length is 5-3/32"• Drawbar end is 7/16"-20 <p>This arbor has an R8 shank and fits slitting saw blades up to 3/16" thick. This slitting saw arbor is compatible with blades that have a center hole of 1/2", 5/8", 3/4", 7/8", or 1".</p>	
	3620 Stub Milling Machine Arbor, 3/4" Straight Shank	\$64.95
	<ul style="list-style-type: none">• 1" diameter arbor with spacer rings and left-hand nut• 3/4" straight shank fits in collets or end mill holders• Fits 1" ID slitting saws and milling cutters	

Tooling: Clamping Kits

	2551 Clamp, Adjustable	\$12.95
	<ul style="list-style-type: none">• One piece assembly allows quick set-up• Instant height adjustment• Attached brass covers protect machine table and workpiece• Fits 7/16" and 12 mm T-slots• Clamps work up to 1.75" (44 mm) thick, clamp is 1.35" (34 mm) wide overall <p>This adjustable clamp fits into the T-slots on the mill table and quickly adjusted to secure your work piece. Clamp fits 7/16" and 12 mm T-slots and the clamp has a brass covering at the point of contact to protect the work piece.</p>	
	2718 Clamping Kit, 6 mm & 1/4" T-Slot, 42-Piece	\$67.95
	<ul style="list-style-type: none">• Six 6 mm T-slot Nuts & Six 1/4" T-Slot Nuts• Ten M5 Studs, Six Flange Nuts, Six Step Clamps• Four Step Block Pairs• 6 mm t-nuts suitable for Taig mills• 1/4" t-nuts suitable for Sherline mills <p>42-piece clamping kit. This clamping kit fits the 6 mm T-slots on Taig mills, and the 1/4" T-slots on Sherline mills. The clamping kit includes 10 M5 studs, 8 step blocks in pairs, 6 T-slot nuts (in each of the two sizes), 6 flange nuts, and 6 step clamps. The stated dimension of the clamping kit is the width at the top of the T-slot. See the Compatibility tab for machines and other products that work with this product.</p>	
	1943 Clamping Kit, 6 mm T-Slot, 16-Piece	\$23.95
	<ul style="list-style-type: none">• Four T-slot nuts for 6 mm T-slots• Four studs of two different lengths• Two flange nuts• Two step clamps• Two pair step blocks <p>This set of T-slot nuts and clamping bars fits our 4" H/V rotary table (PN 1927). This mill clamp set also fits Taig micro mills. (See the Compatibility tab for machines that work with this product.) The clamping kit includes 4 studs of two different lengths, 4 step blocks in pairs, 4 T-slot nuts, 2 flange nuts, and 2 step clamps. The stated dimension of the clamping kit is the width at the top of the T-slot.</p>	

	1144 Clamping Kit, 7/16" T-Slot	\$54.95
	<ul style="list-style-type: none">• Nuts fit 7/16" (12 mm) T-Slots• Stud thread: 3/8"-16• 58 Pieces• All parts are heat treated• Storage rack included <p>58-piece clamping kit 3/8"-16, 7/16" T-Slot. This machinist clamping kit fits the 12 mm T-slots on the mini mill. The T-slot clamp kit includes 24 3/8"-16 studs, 12 step blocks in pairs, 6 T-slot nuts, 6 flange nuts, 4 coupling nuts, and 6 step clamps. Comes in a wall mount rack. The stated dimension of the clamping kit is the width at the top of the T-slot.</p>	
	1268 Clamping Kit, 1/2" T-Slot	\$56.95
	5491 Clamping Kit, 3/8" T-Slot	\$68.95
	3667 Clamping Kit, 5/8" T-Slot	\$58.95
	1426 Clamping Kit, 7/16" T-Slot in Organizer Case	\$69.95
	<ul style="list-style-type: none">• Stud thread: 3/8"-16• T-slot width at top: 7/16" (12 mm)• 58 Pieces• All parts are heat treated• Organizer case included <p>58-piece clamping kit 3/8"-16, 7/16" T-Slot in organizer case. This machinist clamping kit fits the 12 mm T-slots on the mini mill. The t-slot clamp kit includes 24 3/8"-16 studs, 12 step blocks in pairs, 6 T-slot nuts, 6 flange nuts, 4 coupling nuts, and 6 step clamps. Comes in an organizer case. The stated dimension of the clamping kit is the width at the top of the T-slot.</p>	
	5975 Clamping Kit, 7/16" T-Slot, Professional Grade	\$86.95
	<ul style="list-style-type: none">• Nuts fit 7/16" (12 mm) T-Slots• Stud thread: 3/8"-16• 58 Pieces• Made of IC45e steel, hardened to HRC30-40• Storage rack included <p>58-piece clamping kit 3/8"-16, 7/16" T-Slot. This professional grade clamping kit is manufactured at a world class factory that produces high quality US brands. Pieces are made of IC45e steel for improved strength and all parts are case hardened or heat treated to HRC30-40. The T-slot clamp kit includes: 24 Studs (3/8"-16) - 4 each 3" 4" 5" 6" 7", and 8" - 4 Coupling nuts - 6 Flange nuts - 6 Forged steel step clamps - 6 T-slot Nuts - 12 Step blocks in pairs - 1 Wall Rack. This machinist clamping kit fits the 12 mm T-slots on the mini mill. The stated dimension of the clamping kit is the width at the top of the T-slot.</p>	
	4833 Clamping Kit, 5/8" T-Slot, Professional Grade	\$99.95
	5910 Clamping Kit, 7/16" T-Slot, Professional Grade 5-Piece	\$12.95
	<ul style="list-style-type: none">• Nut fits 7/16" (12 mm) T-Slots• Stud thread: 3/8"-16• 5 Pieces• Made of IC45e steel, hardened to HRC30-40• Manufactured at factory for top US brands <p>Add individual clamping sets to expand your capabilities. This professional grade clamping kit is manufactured at a world class factory that produces high quality US brands. Pieces are made of IC45e steel for improved strength and all parts are case hardened or heat treated to HRC30-40. The t-slot clamp kit includes 1 each of: - 7/16" T-slot nut - 3/8"-16 stud - Step clamp - Step block - Flange Nut. This machinist clamping kit fits the 12 mm T-slots on the mini mill. The stated dimension of the clamping kit is the width at the top of the T-slot.</p>	

Tooling: Clamping Kits

	1813 Clamping Kit, 8 mm T-Slot, 12-Piece \$25.95 <ul style="list-style-type: none"> • Two T-slot nuts for 8 mm T-slots • Two studs • Two flange nuts • Two step clamps • Two pair step blocks <p>This set of T-slot nuts and clamping bars fits our 4" precision rotary table (PN 1810). It also fits several micro mill models as a milling machine clamp set. (See the Compatibility tab for machines that work with this product.)The T-slot clamping kit includes 2 studs, 2 T-slot nuts, 2 flange nuts, 2 step clamps, and 4 step blocks in pairs. The stated dimension of the clamping kit is the width at the top of the T-slot.</p>
	2039 Clamping Kit, 8 mm T-Slot, 44-Piece \$64.95 <ul style="list-style-type: none"> • Six T-slot nuts to fit 8 mm T-slots • Ten M6 studs • Six step clamps • Six flange nuts • Sixteen step block pairs <p>44-piece clamping kit. This clamping kit fits the 8 mm T-slots on micro mills. The clamping kit includes 10 M6 studs, 16 step blocks in pairs, 6 T-slot nuts, 6 flange nuts, and 6 step clamps. The stated dimension of the clamping kit is the width at the top of the T-slot. See the Compatibility tab for machines that work with this product.</p>
	1972 Clamping Kit, 8 mm T-Slot, 24-Piece \$39.85
	6258 Clamping Kit, 8 mm, Professional Grade 8-Piece \$39.95 <ul style="list-style-type: none"> • 4 Clamp bars 2-3/8" long • 4 Step blocks 1" tall • Includes mounting hardware • Use on 1/4", 5/16" and 8 mm T-slots with your 1/4", 6 mm or 5 mm studs and T-slot nuts <p>Low profile clamping kit, made in America of US steel. Designed to be additional clamps for our tooling plate P/N 4084. Can be used as clamps for mills with 1/4", 5/16" and 8 mm T-slots using your 1/4", 6mm or 5mm studs and T-slot nuts. The kit includes four CNC machines clamp bars that are 2-3/8" long. There are four steel step blocks that are 1" tall. Works with 5 mm, 6 mm and 1/4" studs or bolts. See contents tab for kit parts.</p>

T-Slot and Flange Nuts

T-slot nuts are used on mill tables and rotary tables. They are heat treated and have a black oxide finish. The size of a T-slot nut is the width of the top of the T-slot.

2253 Flange Nut, 3/8"-16	\$2.69
5668 Flange Nut, 5/16"-18	\$1.29
4978 Flange Nut, M6	\$1.29

T-Slot Nuts Individual Sizes

- Black oxide finish
- Heat treated 1040 steel
- Case hardened

We carry a wide range of T-Slot nuts in both inch and metric measurements. They are heat treated and have a black oxide finish. The stated dimension of the T-slot nut is the width at the top of the T-slot.


3097 T-Slot Nut, 1/4"	\$1.95
5592 T-Slot Nut, 3/8"	\$2.49
1269 T-Slot Nut, 7/16"	\$2.59
2021 T-Slot Nut, 1/2"	\$2.49
5971 T-Slot Nut, 5/8"	\$2.95
2059 T-Slot Nut, 6 mm	\$6.49
2058 T-Slot Nut, 8 mm	\$2.95
2991 T-Slot Nut, 10 mm	\$4.07
1418 T-Slot Nut, 12 mm	\$4.95

Tooling: Drill Chucks


	1212 Drill Chuck, 1/2" \$15.95 <ul style="list-style-type: none"> • High degree of accuracy • All working parts hardened • Drill chuck with key included • Capacity: 1/32" - 1/2" • Mounts to 33 Jacobs taper arbor <p>1/32" - 1/2" Capacity drill chuck designed for bench and floor drill presses, mills, lathes. Hardened ground center jaw improves durability and ensures straight alignment. Runout of this mini drill chuck is 0.008" (0.20 mm) or less.</p>
	1213 Drill Chuck, 3/8" \$13.95
	1660 Drill Chuck, 1/2" Keyless \$38.95 <ul style="list-style-type: none"> • Self-tightening design • No chuck key required • Hardened tool steel • Capacity: 1/32" - 1/2" • Mounts to 33 Jacobs taper arbor <p>1/2" keyless drill chuck. No chuck key is required with this self-tightening design. The Jacobs keyless chuck is made from hardened tool steel to ensure accuracy and extended life. The rated capacity is 1/32" to 1/2". Number 33 Jacobs taper mount. Runout of this chuck is 0.005" (0.13 mm) or less.</p>
	1659 Drill Chuck, 3/8" Keyless \$34.95
	5923 Drill Chuck, 1/2" Keyless with Integrated R8 Arbor \$114.95 <ul style="list-style-type: none"> • 1/64" to 1/2" Keyless Drill Chuck • Integrated R8 Shank with 7/16"-20 drawbar thread • +/- .0025" (0.0635 mm) TIR • More compact than traditional chuck/arbor combinations • No chuck slipping <p>1/64" - 1/2" Precision keyless drill chuck with integral R8 shank. The integrated design maximized rigidity and accuracy. Additionally, the chuck is more compact than a typical combined drill chuck and arbor combination, and there can be no chuck slipping on its arbor. The chucks total indicated runout (TIR) is 0.0025" (0.0635 mm) or less.</p>
	5924 Drill Chuck, 5/8" Keyless with Integrated R8 Arbor \$128.95
	3153 Drill Chuck, 1/2" Professional Grade \$32.95 <ul style="list-style-type: none"> • Precision made for reduced runout • Designed for heavy duty jobs • Key included • Capacity: 1/32" - 1/2" • Mounts to 33 Jacobs taper arbor <p>1/32" - 1/2" Capacity professional grade drill chuck. Designed for heavy jobs; all working parts are hardened and manufactured to the highest standards for durability and straight alignment. This chuck is comparable to a Jacobs 34-33 heavy-duty drill chuck, including the runout specification of 0.004" (0.10 mm) or less. Chuck key is included.</p>
	4862 Drill Chuck, 3/8" Professional Grade \$26.95
	4863 Drill Chuck, 5/8" Professional Grade \$37.95
	1148 Drill Chuck, 1/2" with 2MT Short Arbor \$22.95 <ul style="list-style-type: none"> • Package designed for mini lathe tailstock • Capacity 1/32" - 1/2" chuck • Hardened for high degree of accuracy • Key included • Drill chuck mounted on a short 2 Morse Taper shank for the mini lathe <p>1/32" - 1/2" Capacity drill chuck with hardened ground center jaw for improved durability and straight alignment. Mini lathe drill chuck runout is 0.008" (0.20 mm) or less. 2 Morse taper to 33 Jacobs taper. This arbor has a short Morse taper and does not need to be cut to use in the tailstock of the mini lathe. This model of drill chucks for lathes also fits the Jet 1014 mini wood lathe.</p>

Tooling: Drill Chucks

	2870 Drill Chuck, 1/2" with 2MT Standard Arbor \$22.95 <ul style="list-style-type: none">• Combo Chuck and Arbor package for small lathe tailstock• Capacity 1/32" - 1/2" chuck• Hardened for high degree of accuracy• Key included• Mounted on a standard 2MT arbor Chuck and Arbor combo pack. 1/32" - 1/2" capacity drill chuck with hardened ground center jaw for improved durability and straight alignment. Chuck runout is 0.008" (0.20 mm) or less. This chuck comes with a standard length 2 Morse taper arbor that will eject from most lathes with a 2MT tailstock taper.
	1396 Drill Chuck, 1/2" with R8 Arbor \$25.29 <ul style="list-style-type: none">• High degree of accuracy• All working parts hardened• Chuck Key included• Capacity: 1/32" - 1/2"• Mount: 33 Jacobs taper with R8 Shank 1/32" - 1/2" Capacity drill chuck with a 33 Jacobs taper arbor that has an R8 Shank. Chuck has a hardened ground center jaw that improves durability and ensures straight alignment. The chuck's runout is 0.008" (0.20 mm) or less. Fits mini mills with an R8 spindle.
	5469 Drill Chuck, 1/2", Ball Bearing \$39.95 <ul style="list-style-type: none">• Capacity: 1/32" - 1/2"• Taper Mount: 33JT• +/- .0032" (.0813 mm) TIR• Ultra smooth with ball bearing• Chuck key Included Extra heavy duty, all parts hardened and precision ground. Anti-drilling ball bearing to increase the grip power with high speed drilling.
	5470 Drill Chuck, 5/32" Stainless Steel \$56.95 <ul style="list-style-type: none">• Capacity: 1/64" - 5/32"• Taper Mount: OJT• +/- .006" (.1524 mm) TIR• Made of anti-rust stainless steel, acid resistant• Chuck key Included Recommended for EDM machines and the food & marine industries.
	2951 Drill Chuck, 6 mm for Unimat 3 & 4 and SIEG C0 Lathes \$32.95 <ul style="list-style-type: none">• 0.6 to 6 mm (0.024" to 0.24") capacity• M14 x 1.0 mounting thread• Fits Unimat 3 & 4 lathes• Fits SIEG C0 lathes and Grizzly G0745• Includes chuck key Drill chuck for Emco Unimat 3, Unimat 4 and SIEG C0 4x5 lathes. This threaded drill chuck also works with Harbor Freight 95012 Central Machinery 4x5 Micro Lathe, and the Grizzly G0745 Micro lathe with the M14 x 1.0 threaded tailstock and spindle. M14 x 1.0 mounting thread with a chuck capacity of 0.6 - 6 mm (0.024" - 0.24"). Includes chuck key.
	4977 Key, 1/2" & 5/8" Drill Chucks \$3.95 <ul style="list-style-type: none">• Fits 1/2" and 5/8" drill chucks• 11 teeth with 5mm spacing• Gear diameter 15mm• 8mm Pilot• 102mm handle stem This chuck key fits 1/2" and 5/8" drill chucks. The 11 teeth have a 5mm tooth spacing in a gear that is 15mm wide at its narrowest point. There is an 8mm pilot and the handle is 102mm in length.

	3790 Sensitive Drill Feed and 1/8" (3 mm) Keyless Drill Chuck \$164.95 <ul style="list-style-type: none">• Fingertip control for drilling small holes• Helps prevent drill breakage• OJT taper, 1/2" diameter precision ground straight shank• Spring loaded 3/4" travel fits most drills, mills, lathes or jig borers• Capacity: 0" - 1/8" (0 - 3mm) Keyless drill chuck Sensitive drill feed designed for drilling small holes combined with a 0"-1/8" (3 mm) capacity keyless drill chuck. To use the sensitive drill feed, grasp the knurled ring and pull it down to feed the drill into the workpiece. The internal spring retracts the drill when the ring is released. No chuck key is required with this self-tightening design. The chuck is made from hardened tool steel to ensure accuracy and extended life. The rated capacity of the drill chuck is 0 to 3 mm. Number 0 Jacobs taper mount, 0.002" (0.05 mm) maximum runout.
	3665 Sensitive Drill Feed \$64.95
	3668 Drill Chuck, 1/8" (3 mm) Keyless \$109.95

Tooling Packages: Drill Press Tooling Packages

	6343 Tooling Package, Drill Press \$149.95 <ul style="list-style-type: none">• 3" Drill press quick slide vise• 29-Piece jobber length HSS drill set• 1-1/4" x 1-1/4" x 1-5/8" V-Blocks• Re-Li-On cutting fluid and SpillMaster container• Drill press center finder With this quick-slide vise for your drill press, you slide the jaws against your workpiece and lock it into place with the lever for a secure hold. The 1/2-inch slot allows the vise to be mounted to nearly any machine table using common T-slot bolts. Made of high-grade stress-relieved iron casting. Includes a 29 Piece high speed steel drill set that includes drills from 1/16" to 1/2" by 64ths. These are jobber length drills with straight shanks. Jobber length drills are normal length drills. The drill set comes in a metal index for storing the drills. These precision 1-1/4" x 1-1/4" x 1-5/8" V-blocks come in matched pairs, and are made of hardened steel. They are ground square, parallel, and concentric within 0.0003" and include clamps.
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Re-Li-On cutting and tapping fluid is a non-ozone depleting product that is safe on aluminum and exotic alloys such as stainless steel, hastelloy, inconel and titanium. The engineered formula clings to the cutting tool and provides strong lubrication.

The SpillMaster is a great way to keep cutting fluid handy on your workbench. The included acid brush makes application easy.

NOTE SpillMasters come with Red, Blue, and White tops. We ship the colors randomly based on availability. If you want a particular color, put a note in the Special Instructions box on your order. We'll accommodate your request if we have that color in stock.

Tooling Packages: Lathe Tooling Packages

	1261 Starter Kit, Mini Lathe, 5/16" Tool Bits \$32.95
	<ul style="list-style-type: none"> • 0-1/2" Capacity Drill Chuck and key • Drill chuck arbor 2MT short to 33JT • Five 5/16" M2 high speed steel tool bit blanks • Four center drills, sizes 1, 2, 3, and 4 <p>Mini Lathe starter kit designed for 7x10, 7x12 and 7x14 mini lathes and includes all the basics you need to get started with a new mini lathe. Drill Chuck: 0-1/2" Capacity drill chuck. All working parts are hardened. Chuck key is included. Number 33 Jacobs taper mount. Runout of this chuck is 0.008" (0.20 mm) or less. This mini lathe starter kit is specifically designed for use on the mini lathe tailstock. The rated capacity of the drill chuck is 1 mm (0.039") to 13 mm (0.512"). Tool Bits: 5/16" square by 2-1/2" long HSS mini lathe tool bits made of M2 high speed steel. The tool post on most mini lathes are sized to use 5/16" tool bits. Center Drills: Four sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, and 4 with 60 degree countersinks.</p>
	1796 Starter Kit, Lathe, 3/8" Tool Bits \$38.95

	5124 Tooling Package, Deluxe Mini Lathe \$79.95
	<ul style="list-style-type: none"> • 3/8" indexable TCMT inserts • 9-piece carbide boring bar set - 3/8" shank • 1/2" drill chuck, 2MT short to 33JT drill chuck arbor • 4 center drills (sizes 1-4) • P1N cut-off blade <p>This package contains all the tooling you need to be productive with your HiTorque deluxe mini lathe on the first day you own it. The package does not include a quick change tool post because there is one on the model 4200/5200/7350 lathe. The 1/2" capacity drill chuck includes a 2 Morse taper shank arbor for the mini lathe. This chuck is specifically designed for the mini lathe tailstock. The rated capacity of the drill chuck is 1 mm (0.039") to 13 mm (0.512"). The set of indexable turning tools includes 5 tools (TAR, TAL, TBR, TBL, TE), inserts, a wrench, and extra screws. It comes in a wooden case. The carbide inserts are TCMT21.51. The carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 3/8", and 7/16". The bore depth ranges from 3/4" to 2-1/4". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. The P1 parting blade is 1/16" x 1/2" x 4-1/2" and made from M2 HSS. These T-shape parting blades provide great side clearance. This package includes 4 different sizes of combined drills and countersinks, commonly called center drills. The center drill set is high speed steel and includes sizes 1, 2, 3, and 4. These are 60 degree center drills. These are the sizes that are most used by bench top machinists.</p>

5125 Tooling Package, Deluxe Mini Lathe Premium **\$179.95**

- 1/2" professional grade drill chuck
 - 2MT standard to 33JT drill chuck arbor
 - 3/8"- 6" long indexable boring bar - CCMT inserts
 - 3/8" indexable TCMT carbide inserts
 - Premium P1 cut-off blade, 5 center drills
- This package contains our best versions of all the tooling you need to be productive with your HiTorque deluxe mini lathe. The package does not include a quick change tool post because there is one on the model 4200/5200/7350 deluxe lathe. Drill Chuck: The 1/2" capacity professional grade drill chuck is mounted on a short 2MT shank for the mini lathe. Specifically designed for the mini lathe tailstock, the rated capacity is 1 mm (0.039") to 13 mm (0.512"). All working parts are hardened. Chuck key included. Number 33 Jacobs taper mount. This chuck is comparable to a Jacobs 34-33 heavy duty drill chuck, including the runout specification of 0.004" (0.10 mm) or less. Indexable Inserts: Indexable turning tools are made by AR Warner Co in the USA. These Warner precision tool holder kits use carbide inserts and include three styles of tools, AR right hand, E Neutral (threading tool - 60 degree angle), and AL left hand. Kit includes three tool holders, TCMT inserts, one extra TCMT-21.52 carbide insert, one extra Torx screw, and one wrench. Boring Bar: This 3/8" diameter indexable boring bar uses CCMT inserts and is 6" long. The minimum bore diameter for this is 0.50". The boring bar takes CCMT 21.51 or CCMT 21.52 inserts. Cut-Off Blade: The premium P1 parting blade is 1/16" x 1/2" x 4-1/2" and made from M2 HSS by Arthur R. Warner Co. in the USA. These T-shape parting blades provide great side clearance. Center Drills: Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

5680 Tooling Package, Grizzly G0765 Mini Lathe **\$229.95**

- Specific items for 7x14 from Grizzly, Real Bull, and Big Dog
 - 3/8" indexable TCMT inserts, P1N cut-off blade
 - 9-piece carbide boring bar set - 3/8" shank
 - 1/2" drill chuck, 2MT standard to 33JT drill chuck arbor
 - 4 center drills (sizes 1-4)
- This mini lathe tooling package contains all the tooling you need to be productive with your 7x14 mini lathe on the first day you own it. The Tormach OXA quick change tool post set (QCTP). This mini lathe tooling package includes the tool post and the following tool holders: 2 - #1 Turning and Facing 1 - #2 Boring, Turning and Facing 1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars 1 - #7 Universal Parting Blade (for 1/2 inch cut-off blade - horizontal) The wedge type quick change tool post is made of steel and all working parts are hardened and ground. No tools are required to change tools. Additional tool holders are available. The turning tool holders accept tools with 1/4" to 1/2" shank. The boring tool holder accepts boring bars with 3/8" or 1/2" round shanks. The cut-off tool holder holds 1/2" tall parting blades. The 1/2" capacity drill chuck is mounted on a short 2 Morse taper shank for the mini lathe. This chuck is specifically designed for the mini lathe tailstock. The rated capacity of the drill chuck is 1 mm (0.039") to 13 mm (0.512"). The set of indexable turning tools includes 5 tools (TAR, TAL, TBR, TBL, TE), inserts, a wrench, and extra screws. It comes in a wooden case. The carbide inserts are TCMT21.51. The carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 3/8", and 7/16". The bore depth ranges from 3/4" to 2-1/4". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. The P1 parting blade is 1/16" x 1/2" x 4-1/2" and made from M2 HSS. These T-shape parting blades provide great side clearance. This mini lathe tooling package includes 4 different sizes of combined drills and countersinks, commonly called center drills. The center drill set is high speed steel and includes sizes 1, 2, 3, and 4. These are 60 degree center drills. These are the sizes that are most used by bench top machinists.

**4217 Tooling Package, HiTorque Bench Lathe \$244.95**

- OXA QCTP Set with post mount for SC4 Lathes
- 3/8" Indexable TCMT Inserts, P1 Cut-Off Blade
- 1/2" Drill Chuck, 2MT Standard to 33JT Drill Chuck Arbor
- 9-piece carbide Boring Bar Set - 1/2" shank
- 5 Center Drills (sizes 1-5)

This package contains all the tooling you need to be productive with your lathe on the first day you own it. It works with the LittleMachineShop.com HiTorque 8.5x16 or 8.5x20 bench lathes as well as other C4 and SC4 lathes. Includes a OXA (Series 000) quick change tool post set (QCTP). This set includes the tool post and the following tool holders: 2 - #1 Turning and Facing 1 - #2 Boring, Turning and Facing 1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars 1 - #7 Universal Parting Blade (for 1/2 inch cut-off blade - horizontal) The quick change tool post is made from hardened steel. No tools are required to change tools. Additional tool holders are available. It may require some work in order to make a T-slot nut, to mount this QCTP on your lathe. The turning tool holders accept tools with 3/8" to 1/2" shank. The turning and boring tool holder accepts boring bars with up to 1/2" round shanks. The cut-off tool holder holds 1/2" tall parting blades. The 1/2" capacity drill chuck is mounted on a standard 2 Morse taper shank. The rated capacity of the drill chuck is 1 mm (0.039") to 13 mm (0.512"). The set of 3/8" shank indexable turning tools includes 5 tools (TAR, TAL, TBR, TBL, TE), inserts, a wrench, and extra screws. It comes in a fitted case. The carbide inserts are TCMT21.51. The carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 3/8", and 7/16". The bore depth ranges from 3/4" to 2-1/4". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. The P1 parting blade is 5/64" x 1/2" x 4-1/2" and made from M2 HSS. These T-shape parting blades provide great side clearance. This package includes 5 different sizes of combined drills and countersinks, commonly called center drills. The center drill set is high speed steel and includes sizes 1, 2, 3, 4, and 5. These are 60 degree center drills. These are the sizes that are most used by bench top machinists.

**4857 Tooling Package, HiTorque Bench Lathe Premium \$334.95**

- OXA QCTP set with post mount for SC4 lathes
- 1/2" professional grade drill chuck, 2MT standard to 33JT drill chuck arbor
- 1/2" indexable boring bar - CCMT inserts
- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

This tooling package contains premium quality tooling for a C4, SC4 or LittleMachineShop.com HiTorque 8.5x16 bench lathes. Includes a OXA (Series 000) quick change tool post set (QCTP). This set includes the tool post and the following tool holders: 2 - #1 Turning and Facing 1 - #2 Boring, Turning and Facing 1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars 1 - #7 Universal Parting Blade (for 1/2 inch cut-off blade - horizontal) QCTP features all steel construction and wedge type tool post for better clamping and repeatability. All working parts are hardened, ground and sealed. Designed for lathes with limited distance from the top of the compound to the center of the lathe. This tool post mounts with an M12/M10 stud for C4 and SC4 lathes, which is included. The 1/2" capacity professional grade drill chuck is mounted on a short 2MT shank for the mini lathe. Specifically designed for the mini lathe tailstock, the rated capacity is 1 mm (0.039") to 13 mm (0.512"). All working parts are hardened. Chuck key included. Number 33 Jacobs taper mount. This chuck is comparable to a Jacobs 34-33 heavy duty drill chuck, including the runout specification of 0.004" (0.10 mm) or less. Indexable turning tools are made by Arthur R. Warner Co. in the USA. These precision tool holder kits use carbide inserts and include three styles of tools, AR right hand, E Neutral (threading tool - 60 degree angle), and AL left hand. Kit includes three tool holders, TCMT inserts, one extra TCMT-21.52 carbide insert, one extra Torx screw, and one wrench. 1/2" diameter indexable boring bar uses CCMT inserts and is 7" long. The minimum bore diameter for this is 0.625". The boring bar takes CCMT 32.51 or CCMT 32.52 inserts. The premium P1 parting blade is 1/16" x 1/2" x 4-1/2" and made from M2 HSS by Arthur R. Warner Co. T-shape parting blades provide great side clearance. Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree countersinks.

**6475 Tooling Package, HiTorque Bench Lathe, AXA Post \$298.95**

- AXA QCTP Set with post mount for SC4 Lathes
- 3/8" Indexable TCMT Inserts, P1 Cut-Off Blade
- 1/2" Drill Chuck, 2MT Standard to 33JT Drill Chuck Arbor
- 9-piece carbide Boring Bar Set - 1/2" shank
- 5 Center Drills (sizes 1-5)

****NOTE**** Current C4/SC4 compound rest top must be swapped with the 4914 top that is included with this kit in order to mount the AXA post. This package contains all the tooling you need to be productive with your lathe on the first day you own it. It works with the LittleMachineShop.com HiTorque 8.5x16 or 8.5x20 bench lathes as well as other C4 and SC4 lathes. Includes an AXA (Series 100) quick change tool post set (QCTP). This set includes the tool post and the following tool holders: 2 - #1 Turning and Facing 1 - #2 Boring, Turning and Facing 1 - #4 Heavy Duty Boring will hold both 5/8 and 3/4 boring bars 1 - #7 Universal Parting Blade (for 1/2 inch cut-off blade - horizontal) The quick change tool post is made from hardened steel. No tools are required to change tools. Additional tool holders are available. It may require some work in order to make a T-slot nut, to mount this QCTP on your lathe. The turning tool holders accept tools with 3/8" to 1/2" shank. The turning and boring tool holder accepts boring bars with up to 1/2" round shanks. The cut-off tool holder holds 1/2" tall parting blades. The 1/2" capacity drill chuck is mounted on a standard 2 Morse taper shank. The rated capacity of the drill chuck is 1 mm (0.039") to 13 mm (0.512"). The set of 3/8" shank indexable turning tools includes 5 tools (TAR, TAL, TBR, TBL, TE), inserts, a wrench, and extra screws. It comes in a fitted case. The carbide inserts are TCMT21.51. The carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 3/8", and 7/16". The bore depth ranges from 3/4" to 2-1/4". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. The P1 parting blade is 5/64" x 1/2" x 4-1/2" and made from M2 HSS. These T-shape parting blades provide great side clearance. This package includes 5 different sizes of combined drills and countersinks, commonly called center drills. The center drill set is high speed steel and includes sizes 1, 2, 3, 4, and 5. These are 60 degree center drills. These are the sizes that are most used by bench top machinists.

**3164 Tooling Package, HiTorque Deluxe Bench Lathe \$85.95**

- Tooling package for deluxe bench lathe
- 3/8" Indexable TCMT inserts, P1 cut-off blade
- 1/2" drill chuck, 2MT standard to 33JT drill chuck arbor
- 9-piece carbide boring bar set - 1/2" shank
- 5 center drills (sizes 1-5)

This package contains all the tooling you need to be productive with your lathe on the first day you own it. It works with the LittleMachineShop.com HiTorque 8.5x16 or 8.5x20 bench lathe as well as other C4 and SC4 lathes. The 1/2" capacity drill chuck is mounted on a standard 2 Morse taper shank. The rated capacity of the drill chuck is 1 mm (0.039") to 13 mm (0.512"). The set of 3/8" shank indexable turning tools includes 5 tools (TAR, TAL, TBR, TBL, TE), inserts, a wrench, and extra screws. It comes in a fitted case. The carbide inserts are TCMT21.51. The carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 3/8", and 7/16". The bore depth ranges from 3/4" to 2-1/4". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. The P1 parting blade is 5/64" x 1/2" x 4-1/2" and made from M2 HSS. These T-shape parting blades provide great side clearance. This package includes 5 different sizes of combined drills and countersinks, commonly called center drills. The center drill set is high speed steel and includes sizes 1, 2, 3, 4, and 5. These are 60 degree center drills. These are the sizes that are most used by bench top machinists. This tooling package does not include a quick change tool post because the HiTorque Deluxe Bench Lathe is equipped with a QCTP.



3389 Tooling Package, HiTorque Deluxe Bench Lathe Premium \$181.95

- Premium tooling package for deluxe bench lathe
- 1/2" professional grade drill chuck, 2MT standard to 33JT drill chuck arbor
- 1/2" indexable boring bar - CCMT inserts
- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

This tooling package contains premium quality tooling for a C4, SC4 or LittleMachineShop.com HiTorque bench lathes. The 1/2" capacity professional grade drill chuck is mounted on a short 2MT shank for the mini lathe. Specifically designed for the mini lathe tailstock, the rated capacity is 1 mm (0.039") to 13 mm (0.512"). All working parts are hardened. Chuck key included. Number 33 Jacobs taper mount. This chuck is comparable to a Jacobs 34-33 heavy duty drill chuck, including the runout specification of 0.004" (0.10 mm) or less. Indexable turning tools are made by Arthur R. Warner Co. in the USA. These precision tool holder kits use carbide inserts and include three styles of tools, AR right hand, E Neutral (threading tool - 60 degree angle), and AL left hand. Kit includes three tool holders, TCMT inserts, one extra TCMT-21.52 carbide insert, one extra Torx screw, and one wrench. 1/2" diameter indexable boring bar uses CCMT inserts and is 7" long. The minimum bore diameter for this is 0.625". The boring bar takes CCMT 32.51 or CCMT 32.52 inserts. The premium P1 parting blade is 1/16" x 1/2" x 4-1/2" and made from M2 HSS by Arthur R. Warner Co. T-shape parting blades provide great side clearance. Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks. This tooling package does not include a quick change tool post because the HiTorque Deluxe Bench Lathe is equipped with a QCTP.



4116 Tooling Package, Mini Lathe Premium \$329.95

- Tormach OXA (Series 000) QCTP set
- 1/2" professional grade drill chuck, 2MT standard to 33JT drill chuck arbor
- 3/8"- 6" long Indexable boring bar - CCMT inserts
- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

This package contains our best versions of all the tooling you need to be productive with your 7x10, 7x12, 7x14, or 7x16 mini lathe. QCTP: The OXA (Series 000) quick change tool post features all steel construction and wedge type tool post for better clamping and repeatability. All working parts are hardened and ground. Sealed for maintenance-free operation. Tool holders designed for mini lathes and other lathes with limited distance from the top of the compound to the center of the lathe. This tool post mounts with an M10 stud, which is included. This set includes the tool post and the following tool holders: 2 - #1 Turning and Facing 1 - #2 Boring, Turning and Facing 1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars 1 - #7 Universal Parting Blade (for 1/2 inch cut-off blade - horizontal) Drill Chuck: The 1/2" capacity professional grade drill chuck is mounted on a short 2MT shank for the mini lathe. Specifically designed for the mini lathe tailstock, the rated capacity is 1 mm (0.039") to 13 mm (0.512"). All working parts are hardened. Chuck key included. Number 33 Jacobs taper mount. This chuck is comparable to a Jacobs 34-33 heavy duty drill chuck, including the runout specification of 0.004" (0.10 mm) or less. Indexable Inserts: Indexable turning tools are made by Arthur R. Warner Co. in the USA. These Warner precision tool holder kits use carbide inserts and include three styles of tools, AR right hand, E Neutral (threading tool - 60 degree angle), and AL left hand. Kit includes three tool holders, TCMT inserts, one extra TCMT-21.52 carbide insert, one extra Torx screw, and one wrench. Boring Bar: This 3/8" diameter indexable boring bar uses CCMT inserts and is 6" long. The minimum bore diameter for this is 0.50". The boring bar takes CCMT 21.51 or CCMT 21.52 inserts. Cut-Off Blade: The premium P1 parting blade is 1/16" x 1/2" x 4-1/2" and made from M2 HSS by Arthur R. Warner Co. in the USA. These T-shape parting blades provide great side clearance. Center Drills: Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.



5207 Tooling Package, Mini Lathe, OXA QCTP \$229.95

- QCTP Set easily mounts to 7x10, 7x12, 7x14, 7x16 lathes
- 3/8" indexable TCMT inserts, P1N cut-off blade
- 9-piece carbide boring bar set - 3/8" shank
- 1/2" drill chuck, 2MT short to 33JT drill chuck arbor
- 4 center drills (sizes 1-4)

This package contains all the tooling you need to be productive with your 7x10, 7x12, 7x14 or 7x16 mini lathe on the first day you own it. The OXA quick change tool post set (QCTP). This mini lathe tool set includes the tool post and the following tool holders: 2 - #1 Turning and Facing 1 - #2 Boring, Turning and Facing 1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars 1 - #7 Universal Parting Blade (for 1/2 inch cut-off blade - horizontal) The wedge type quick change tool post is made of steel and all working parts are hardened and ground. No tools are required to change tools. Additional tool holders are available. The turning tool holders accept tools with 1/4" to 1/2" shank. The boring tool holder accepts boring bars with 3/8" or 1/2" round shanks. The cut-off tool holder holds 1/2" tall parting blades. The 1/2" capacity drill chuck includes a 2 Morse taper shank arbor for the mini lathe. This chuck is specifically designed for the mini lathe tailstock. The rated capacity of the drill chuck is 1 mm (0.039") to 13 mm (0.512"). The set of indexable turning tools includes 5 tools (TAR, TAL, TBR, TBL, TE), inserts, a wrench, and extra screws. It comes in a wooden case. The carbide inserts are TCMT21.51. The carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 3/8", and 7/16". The bore depth ranges from 3/4" to 2-1/4". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. The P1 parting blade is 1/16" x 1/2" x 4-1/2" and made from M2 HSS. These T-shape parting blades provide great side clearance. This package includes 4 different sizes of combined drills and countersinks, commonly called center drills. The center drill set is high speed steel and includes sizes 1, 2, 3, and 4. These are 60 degree center drills. These are the sizes that are most used by bench top machinists.

Tooling Packages: Lathe Tooling Packages



3527 Tooling Package, Small Lathe

\$274.95

- AXA (Series 100) Quick Change Tool Post Set
- 1/2" Indexable TCMM Inserts, P1X Cut-Off Blade
- 1/2" Drill Chuck, 2MT Standard to 33JT Drill Chuck Arbor
- 9-piece carbide Boring Bar Set - 1/2" shank
- 5 Center Drills (sizes 1-5)

This package contains all the tooling you need to be productive with your lathe on the first day you own it. The AXA (Series 100) quick change tool post set (QCTP) includes the tool post, mounting hardware, a turning and facing tool holder, a boring, turning and facing tool holder, a heavy duty boring bar holder, a universal parting blade holder, and a knurling, facing and turning tool holder. The quick change tool post is made from hardened steel. No tools are required to change tools. Additional tool holders are available. It requires some level of work, tapping a hole, or making a T-slot nut, to mount this QCTP on your lathe. The turning tool holders accept tools with 3/8" to 1/2" shank. The turning and boring tool holder accepts boring bars with up to 1/2" round shanks. The cut-off tool holder holds 1/2" tall parting blades. The 1/2" capacity drill chuck is mounted on a standard 2 Morse taper shank. The rated capacity of the drill chuck is 1 mm (0.039") to 13 mm (0.512"). The set of 1/2" shank indexable turning tools includes 5 tools (TAR, TAL, TBR, TBL, TE), inserts, a wrench, and extra screws. It comes in a fitted case. The carbide inserts are TCMM-321. The carbide tipped 9-piece boring bar set includes three different length boring bars each for minimum bores of 5/16", 3/8", and 7/16". The bore depth ranges from 3/4" to 2-1/4". The heat treated, alloy steel shanks are held to 0.000 to -0.0005" from the nominal diameter. To mount these boring bars, use the #2 tool holder (the holder with the concave bottom. This tool holder is designed to hold round stock and is the proper holder for smaller boring bars and is therefore called a Turning & Boring Tool Holder. The dedicated boring bar holder that comes in the AXA set holds 5/8" and 3/4" which we feel are too large for a lathe of this size. This holder is too big for the boring bars in this set and will not hold the 1/2" shanks securely (use the #2 holder). The P1 parting blade is 1/16" x 1/2" x 4-1/2" and made from M2 HSS. These T-shape parting blades provide great side clearance. This package includes 5 different sizes of combined drills and countersinks, commonly called center drills. The center drill set is high speed steel and includes sizes 1, 2, 3, 4, and 5. These are 60 degree center drills. These are the sizes that are most used by bench top machinists.

3786 Tooling Package, 9x20 Lathe

\$269.95

Tooling Packages: Mill Tooling Packages



2653 Starter Kit, Micro Mill

\$119.95

- This kit contains the basics you need to start using your new micro mill
- 44-piece clamping kit for 5/16" (8 mm) T-slots
- Thin parallels (3" long)
- 1-2-3 blocks
- Edge and center finder

This kit contains the basics you need to start using your new micro mill.

The clamping kit fits the 8 mm T-slots on the micro mill. The clamping kit includes 10 M6 studs, 8 step block pairs, 6 T-slot nuts, 6 flange nuts, and 6 step clamps.

The thin parallels are a set of 10 matched pairs of high grade steel parallels, precision ground and hardened. The parallels are 1/8" thick and 3" long. The heights are 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8".

They are made of high grade alloy steel hardened to 52 to 58 Rc and are parallel within 0.0002" on the top and bottom. The pairs are matched in height within 0.0004".

The precision 1-2-3 blocks are ground and case hardened on all sides to 50-60 Rc. The blocks are 1" by 2" by 3". They are parallel within 0.0002", flat within 0.0002" and square within 0.0002". Each set includes two matched blocks. The blocks have 23 holes through them, 5 are threaded 3/8"-16 NC.

The 3/8" diameter combination edge and center finder helps you locate work on your mill. The edge finder end has a 0.200" diameter cylinder to quickly find the edge of a work piece. The center finder end tapers to a point to locate holes. The edge and center finder is hardened and ground all over.



1262 Starter Kit, Mill

\$104.95

- Clamping kit for 7/16" (12 mm) T-slots
- Thin parallels (6" long)
- 1-2-3 blocks
- Edge and center finder
- T-slot cleaner

This milling machine kit contains the basics you need to start using your new mini mill. This Mini Mill Starter Kit includes:

T-Slot Clamping Kit 7/16" - 58-piece clamping kit 3/8"-16, 7/16 T-Slot. This clamping kit fits the 12 mm T-slots on the mini mill. The clamping kit includes 24 3/8-16 studs, 12 step blocks in pairs, 6 T-slot nuts, 6 flange nuts, 4 coupling nuts, and 6 end hold downs. Clamping kit comes in a wall mount rack. Thin parallels combo set - 10 matched pairs of high grade steel parallels, precision ground and hardened. Parallels are 1/8" thick and 6" long. Heights are 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8". Made of high grade alloy steel hardened to 52 to 58 Rc. Parallel within 0.0002" on the top and bottom. The pairs are matched in height within 0.0004". Set comes in a durable plastic fitted case. 1-2-3 Blocks - These precision 1-2-3 blocks are ground and case hardened on all sides to 50-60 Rc. The blocks are 1" by 2" by 3". They are parallel within 0.0002", flat within 0.0002" and square within 0.0002". Each set includes two matched blocks. The blocks have 23 holes through them, 5 are threaded 3/8"-16 NC. Edge and Center Finder - This 3/8" diameter combination edge and center finder helps you locate work on your mill. The edge finder end has a 0.200" diameter cylinder to quickly find the edge of a work piece. The center finder end tapers to a point to locate holes. The edge and center finder is hardened and ground all over. T-Slot Cleaner - Use this T-slot cleaner to clear the debris from the T-slots on your mini mill and bench mill. Made for LittleMachineShop.com specifically to fit the Mini Mill and Bench Mill.

3491 Tooling Package, 2MT Micro Mill

\$369.95



- 3" toolmakers screwless vise and 11 pairs of 3" long thin parallels
- Precision 1-2-3 Blocks and 36-piece Clamping Kit - 8 mm T-slot
- Two 6-piece end mill sets, 2 and 4 flute and 5 center drills
- Seven piece 2MT collet set
- Combination edge and center finder

Tooling package with all the essentials for a 2MT micro mill. Toolmakers Vise: 3" toolmakers screwless vice has a one-piece body. The body and jaws are hardened to Rc 58-62. All sides are flat, square and parallel to 0.0002". There are horizontal and vertical vees on the inside face of the movable jaw to hold round objects. The vise jaws are 1.38" deep and open to 3.78" capacity. The vise is 7.28" long, 2.76" tall and 2.785" wide. Thin Parallels: Set of 11 pairs, 1/8" thick x 3" long. Made of high-grade alloy steel hardened to 52-58 Rc, parallel within 0.0002" on top and bottom. Parallel heights: 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1" with two pairs of shims are 9/64" and 5/32" (pairs matched within 0.0004"). Clamping Kit: 36-piece kit fits 8 mm T-slots on a micro mill. Includes 10 M6 studs, 4 step block pairs, 6 T-slot nuts, 6 flange nuts, and 6 step clamps. End Mills: 6-piece 4 flute and 6-piece 2 flute, HSS, center cutting end mill sets. Sizes 1/8", 3/16", 1/4", 5/16", 3/8", and 1/2". All with 3/8" shanks. 2MT Collets: Set of seven high-grade tool hardened steel round collets, sizes 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", and 1/2". The drawbar thread is 3/8"-16. This set includes all the sizes required for common end mills. 1-2-3 Blocks: Ground and hardened on all sides to 50-60 Rc, sizes 1" x 2" x 3". Parallel within 0.0002", flat within 0.0002", and square within 0.00021". Set has two matched blocks, 23 holes of which 5 are threaded 3/8"-16 NC. Center Drills: Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

**5671 Tooling Package, Grizzly G0758 Mill \$399.95**

- 3" precision milling vise (heavy) and 10 pairs of 3" long thin parallels
 - Precision 1-2-3 blocks and 20 piece end mill set - 2 and 4 flute (10 each)
 - 58- piece clamping kit - 5/16"-18, 3/8" T-slots
 - Seven piece R8 collet set, five center drills - 60 degree countersinks
 - Combination edge and center finder and a T-slot cleaner
- Tooling package with all the essentials for an R8 mini mill.

Milling Vise: 3" Kurt-style milling vice. Top, gib, jaws, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 10.85" and the height is 3.05". Jaws are 3.15" wide, 1.04" deep, open 3", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4" without the swivel. **Thin Parallels:** Set of ten pairs, 1/8" thick x 3" long, in fitted case. Made of high-grade alloy steel hardened to 52-58 Rc, parallel within 0.0002" on top and bottom. Parallel heights: 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8" (pairs matched within 0.0004"). **End Mills:** 20 piece set included 2 flute and 4 flute center cutting TiN coated HSS end mills sizes 3/16" - 3/4" by 16ths. **R8 Collets:** Set of seven high-grade tool hardened steel, sizes 1/8", 3/16", 1/4", 3/8", 1/2", 5/8", 3/4". **1-2-3 Blocks:** Ground and hardened on all sides to 50-60 Rc, sizes 1" x 2" x 3". Parallel within 0.0002", flat within 0.0002", and square within 0.00021". Set has two matched blocks, 23 holes of which 5 are threaded 3/8"-16 NC. **Center Drills:** Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

**3526 Tooling Package, R8 Bench Mill \$419.95**

- 4" Precision Milling Vise (Heavy) and 10 Pairs of 4" long thin parallels
 - Precision 1-2-3 Blocks and 20 piece End Mill Set - 2 and 4 Flute (10 each)
 - 58- piece Clamping Kit - 3/8"-16, 7/16" T-Slots
 - Seven piece R8 Collet Set, five Center Drills - 60 degree countersinks
 - Combination Edge and Center Finder and a T-Slot Cleaner
- Tooling package with all the essentials for an R8 bench mill.

Milling Vise: Precision 4" Kurt-style milling vice. Top, gib, jaws, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 13.4" and the height is 3.46". Jaws are 4" wide, 1.27" deep, open 4", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4" without the swivel. **Thin Parallels:** Set of ten pairs, 1/8" thick x 4" long, in fitted case. Made of high-grade alloy steel hardened to 52-58 RC, parallel within 0.0002" on top and bottom. Parallel heights: 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8" (pairs matched within 0.0004").

End Mills: 20 piece set included 2 flute and 4 flute center cutting TiN coated HSS end mills sizes 3/16" - 3/4" by 16ths.

R8 Collets: Set of seven high-grade tool hardened steel, sizes 1/8", 3/16", 1/4", 3/8", 1/2", 5/8", 3/4". **1-2-3 Blocks:** Ground and hardened on all sides to 50-60 RC, sizes 1" x 2" x 3". Parallel within 0.0002", flat within 0.0002", and square within 0.00021". Set has two matched blocks, 23 holes of which 5 are threaded 3/8"-16 NC. **Center Drills:** Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

**5489 Tooling Package, R8 Bench Mill Premium \$739.95**

- 4" Precision milling, professional and 10 pairs of thin parallels
 - Thirteen piece R8 collets, 12 piece End Mill Set - 2 and 4 Flute Cobalt (6 each)
 - 58 - piece clamping kit - 3/8"-16, 7/16" T-slots
 - Premium precision 1-2-3 blocks, five center drills - 60° countersinks
 - Combination edge and center finder and a T-slot cleaner
- Premium tooling package with all the best products for your R8 bench mill. **Milling Vise:** 4" Kurt-style professional milling vice with detachable 360 degree swivel base and easy to read divisions. Top, gib, jaws, swivel base, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 11.6" and the height is 3.1" without base, and 4.3" with base. Jaws are 3.15" wide, 0.9" deep, open 3", and are perpendicular to the ways within 0.0004" in 4". The ways are parallel to the base within 0.0003" in 4" without the swivel. **Thin Parallels:** Set of ten 4" pairs, 1/8" thick. Made of high-grade alloy steel hardened to 52-58 Rc, parallel within 0.0003" on top and bottom. Parallel heights: 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8". **End Mills:** 12 piece End Mill Set - 2 and 4 Flute Cobalt (6 each). **R8 Collets:** 13 R8 round collets sizes 1/8" to 1" by 16ths. Made of high grade tool steel, hardened and ground to a TIR of 0.0005" or less. This set includes all the sizes required for common end mills. **1-2-3 Blocks:** Premium precision 1-2-3 blocks, ground and case hardened on all sides to 55-60 Rc. Blocks are 1" x 2" x 3" parallel, flat, and square within 0.0001". Set includes two matched blocks and 5 cap screws. Blocks have 23 holes, five are threaded 3/8"-16 NC. **Center Drills:** Five piece M42 8% cobalt combined drills and countersinks sizes 1, 2, 3, 4, and 5 with 60 degree countersinks.

**6301 Tooling Package, R8 Bench Mill, Tormach TTS Tooling \$704.95**

- 4" Precision Milling Vise (Heavy) and 10 Pairs of 4" long thin parallels
- Precision 1-2-3 Blocks and 20 piece End Mill Set - 2 and 4 Flute (10 each)
- 58- piece Clamping Kit - 3/8"-16, 7/16" T-Slots
- Combination Edge and Center Finder and a T-Slot Cleaner
- Includes Tormach TTS Manual Starter Set

You don't need a CNC to take advantage of the Tormach Tooling System. Manual operations benefit from quick change, reduced clearance, and increased rigidity. This tooling package includes a basic set that will introduce you to all of those features. The manual mill operators set improves productivity in manual milling. Tooling package with all the essentials for an R8 bench mill. **Milling Vise:** Precision 4" Kurt-style milling vice. Top, gib, jaws, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 13.4" and the height is 3.46". Jaws are 4" wide, 1.27" deep, open 4", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4" without the swivel. **Thin Parallels:** Set of ten pairs, 1/8" thick x 4" long, in fitted case. Made of high-grade alloy steel hardened to 52-58 RC, parallel within 0.0002" on top and bottom. Parallel heights: 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8" (pairs matched within 0.0004"). **End Mills:** 20 piece set included 2 flute and 4 flute center cutting TiN coated HSS end mills sizes 3/16"-3/4" by 16ths. **R8 Collets:** Set of seven high-grade tool hardened steel, sizes 1/8", 3/16", 1/4", 3/8", 1/2", 5/8", 3/4". **1-2-3 Blocks:** Ground and hardened on all sides to 50-60 RC, sizes 1" x 2" x 3". Parallel within 0.0002", flat within 0.0002", and square within 0.00021". Set has two matched blocks, 23 holes of which 5 are threaded 3/8"-16 NC. **Center Drills:** Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks. The Tormach Tooling System Starter Set includes two set screw end mill adapters, one ER-20 collet chuck with three collets, a TTS R8 collet, a 1/4" drill chuck, plus wrenches and installation tools.

**4212 Tooling Package, R8 CNC Mini Mill \$435.95**

- 3" precision milling vise (Heavy) and 10 pairs of 3" long thin parallels
- Five piece R8 end mill holders, 20 piece end mill set - 2 and 4 flute (10 each)
- 58-piece clamping kit - 3/8"-16, 7/16" T-slots
- Precision 1-2-3 blocks, five center drills - 60° countersinks
- Combination Edge and Center Finder and a T-Slot Cleaner

Tooling package with all the essentials for an R8 CNC Mini Mill. Milling Vise: 3" Kurt-style milling vise. Top, gib, jaws, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 10.85" and the height is 3.05". Jaws are 3.15" wide, 1.04" deep, open 3", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4" without the swivel. Thin Parallels: Set of ten pairs, 1/8" thick x 3" long, in fitted case. Made of high-grade alloy steel hardened to 52-58 Rc, parallel within 0.0002" on top and bottom. Parallel heights: 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8" (pairs matched within 0.0004"). End Mills: 20 piece set included 2 flute and 4 flute center cutting TiN coated HSS end mills sizes 3/16"-3/4" by 16ths. The 5-piece end mill holder set includes adapters for end mills with shank diameters of 3/16, 3/8, 1/2, 5/8, and 3/4 inches. The end mill holders have an R8 shank and use the drawbar that comes with the mini mill. This set includes all the sizes required for common end mills. 1-2-3 Blocks: Ground and hardened on all sides to 50-60 Rc, sizes 1" x 2" x 3". Parallel within 0.0002", flat within 0.0002", and square within 0.00021". Set has two matched blocks, 23 holes of which 5 are threaded 3/8"-16 NC. Center Drills: Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

**5534 Tooling Package, R8 Large Bench Mill \$489.95**

- 5" Precision Milling Vise (Heavy) and 10 Pairs of 4" long thin parallels
- Precision 1-2-3 Blocks and 20 piece End Mill Set - 2 and 4 Flute (10 each)
- 58- piece Clamping Kit - 3/8"-16, 7/16" T-Slots
- Seven piece R8 Collet Set, five Center Drills - 60 degree countersinks
- Combination Edge and Center Finder and a T-Slot Cleaner

Tooling package with all the essentials for an R8 large bench mill. Milling Vise: Precision 5" Kurt-style milling vise. The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground. The jaws are hardened and ground. The fixed jaw is bolted from the top for enhanced rigidity. The jaws are 5" wide, 1.58" deep and open 5.71". Without the swivel base, the ways of the precision milling vise are parallel to the base of the vise within 0.0006" in 4". The jaws are perpendicular to the ways within 0.002" in 4". With the swivel base installed, the ways of the vise are parallel to the base of the vise within 0.0008" in 4". Thin Parallels: Set of ten pairs, 1/8" thick x 5" long, in fitted case. Made of high-grade alloy steel hardened to 52-58 RC, parallel within 0.0002" on top and bottom. Parallel heights: 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8" (pairs matched within 0.0004").

End Mills: 20 piece set included 2 flute and 4 flute center cutting TiN coated HSS end mills sizes 3/16" - 3/4" by 16ths. R8 Collets: Set of seven high-grade tool hardened steel, sizes 1/8", 3/16", 1/4", 3/8", 1/2", 5/8", 3/4". 1-2-3 Blocks: Ground and hardened on all sides to 50-60 RC, sizes 1" x 2" x 3". Parallel within 0.0002", flat within 0.0002", and square within 0.00021". Set has two matched blocks, 23 holes of which 5 are threaded 3/8"-16 NC. Center Drills: Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

**5535 Tooling Package, R8 Large Bench Mill Premium \$749.95**

- 5" Precision milling, professional and 10 pairs of thin parallels
- Thirteen piece R8 collets, 12 piece End Mill Set - 2 and 4 Flute Cobalt (6 each)
- 58 - piece clamping kit - 3/8"-16, 7/16" T-slots
- Premium precision 1-2-3 blocks, five center drills - 60° countersinks
- Combination edge and center finder and a T-slot cleaner

Premium tooling package with all the best products for your R8 large mini mill. Milling Vise: Precision 5" Kurt-style milling vise. The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground. The jaws are hardened and ground. The fixed jaw is bolted from the top for enhanced rigidity. The jaws are 5" wide, 1.58" deep and open 5.71". Without the swivel base, the ways of the precision milling vise are parallel to the base of the vise within 0.0006" in 4". The jaws are perpendicular to the ways within 0.002" in 4". With the swivel base installed, the ways of the vise are parallel to the base of the vise within 0.0008" in 4". Thin Parallels: Set of ten pairs, 1/8" thick. Made of high-grade alloy steel hardened to 52-58 Rc, parallel within 0.0003" on top and bottom. Parallel heights: 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1", 1-1/16" (pairs matched within 0.0003"). End Mills: 12 piece End Mill Set - 2 and 4 Flute Cobalt (6 each). R8 Collets: 13 R8 round collets sizes 1/8" to 1" by 16ths. Made of high grade tool steel, hardened and ground to a TIR of 0.0005" or less. This set includes all the sizes required for common end mills. 1-2-3 Blocks: Premium precision 1-2-3 blocks, ground and case hardened on all sides to 55-60 Rc. Blocks are 1" x 2" x 3"; parallel, flat, and square within 0.0001". Set includes two matched blocks and 5 cap screws. Blocks have 23 holes, five are threaded 3/8"-16 NC. Center Drills: Five piece M42 8% cobalt combined drills and countersinks sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

**3859 Tooling Package, R8 Large Bench Mill, Tormach TTS Tooling \$764.95**

- Everything you need to use your mill with the Tormach Tooling System
- Workholding - 5" precision CNC milling vise, parallels, clamping kit, 1-2-3 blocks
- Cutting tools - end mills and center drills
- More - edge finder, vise mounting kit, T-slot cleaner
- Includes Tormach TTS Manual Starter Set (Inch)

You don't need a CNC to take advantage of the Tormach Tooling System. Manual operations benefit from quick change, reduced clearance, and increased rigidity. This tooling package includes a basic set that will introduce you to all of those features. The manual mill operators set improves productivity in manual milling. The precision 5" lock-down CNC milling machine vise features a compact size that allows multiple vises on CNC mill table. The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground. The hardened and ground replaceable jaws on this vise are 4" wide, 1.46" deep, and open 4.2". The vise is 11.2" long. The vise is 3.94" high. The replaceable jaws can be mounted on either end of the fixed and movable jaw supports providing a wide range of clamping distances. The set of ten pairs of thin parallels come in a fitted case. They are 1/8" thick and 6" long. The heights are 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8". The parallels are made of high grade alloy steel hardened to 52-58 Rc. They are parallel within 0.0002" on the top and bottom. The pairs are matched in height within 0.0004". The 20 piece TiN coated HSS end mill set includes both 2 flute and 4 flute end mills. The center cutting end mills are 3/16" to 3/4" by 16ths. The set comes in a fitted case. The precision 1-2-3 blocks are ground and case hardened on all sides to 50-60 Rc. The blocks are 1" by 2" by 3". They are parallel within 0.0002", flat within 0.0002" and square within 0.00021". The set includes two matched blocks. The blocks have 23 holes through them, 5 are threaded 3/8-16 NC. This package includes 5 different sizes of combined drills and countersinks, commonly called center drills. The center drill set is high speed steel and includes sizes 1, 2, 3, 4, and 5. These are 60 degree center drills. The Tormach Tooling System Starter Set includes two set screw end mill adapters, one ER-20 collet chuck with three collets, a TTS R8 collet, a 1/4" drill chuck, plus wrenches and installation tools.

**3489 Tooling Package, R8 Mini Mill \$399.95**

- 3" precision milling vise (heavy) and 10 pairs of 3" long thin parallels
 - Precision 1-2-3 blocks and 20 piece end mill set - 2 and 4 flute (10 each)
 - 58- piece clamping kit - 3/8"-16, 7/16" T-slots
 - Seven piece R8 collet set, five center drills - 60 degree countersinks
 - Combination edge and center finder and a T-slot cleaner
- This mill tooling package comes with all the essentials for an R8 mini mill. Milling Vise: 3" Kurt-style milling vise. Top, gib, jaws, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 10.85" and the height is 3.05". Jaws are 3.15" wide, 1.04" deep, open 3", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4" without the swivel. Thin Parallels: Set of ten pairs, 1/8" thick x 3" long, in fitted case. Made of high-grade alloy steel hardened to 52-58 Rc, parallel within 0.0002" on top and bottom. Parallel heights: 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", and 1-5/8" (pairs matched within 0.0004"). End Mills: 20 piece set included 2 flute and 4 flute center cutting TiN coated HSS end mills sizes 3/16" - 3/4" by 16ths. R8 Collets: Set of seven high-grade tool hardened steel, sizes 1/8", 3/16", 1/4", 3/8", 1/2", 5/8", 3/4". 1-2-3 Blocks: Ground and hardened on all sides to 50-60 Rc, sizes 1" x 2" x 3". Parallel within 0.0002", flat within 0.0002", and square within 0.00021". Set has two matched blocks, 23 holes of which 5 are threaded 3/8"-16 NC. Center Drills: Five sizes combined drills and countersinks made of high-speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

3490 Tooling Package, 3MT Mini Mill \$441.95**4491 Tooling Package, R8 Mini Mill Essentials \$251.95**

- 3" precision milling vise, 4 pairs of 3" parallels
 - 58 - piece clamping kit - 3/8"-16, 7/16" T-slots
 - Ten piece end mill set - 2 and 4 flute
 - Five piece R8 collet set, four center drills - 60 degree countersinks
 - Combination edge and center finder and a T-slot cleaner
- Tooling package with the basic tooling for an R8 mini mill. Milling Vise: The precision 3" Kurt-style milling machine vise has a detachable swivel base that features easy to read divisions. The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground. The hardened and ground replaceable jaws on this vise are 3.15" wide, 0.93" deep, and open 2.83". The vise is 10.24" long. Without the base, the vise is 2.91" high. With the base, the vise is 3.94" high. The replaceable jaws can be mounted on either end of the fixed and movable jaw supports providing a wide range of clamping distances. The thin parallels are 5/32" thick and 3" long. The heights are 1/2", 5/8", 3/4", and 7/8". They are parallel within 0.0002" on the top and bottom. The pairs are matched in height within 0.0004". End Mills: The 10 piece TiN coated HSS end mill set includes both 2 flute and 4 flute end mills. The center cutting end mills are 1/4" to 3/4" by 8ths. The set comes in a fitted case. R8 Collets: Set of five R8 round collets includes the sizes 3/16", 3/8", 1/2", 5/8", 3/4". They are made of high grade tool steel, hardened and ground to close tolerance. Center Drills: Four sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, and 4 with 60 degree counter sinks.

**4723 Tooling Package, R8 Mini Mill Precision \$372.95**

- 3" Toolmakers screwless vise and 11 pairs of 3" long thin parallels
 - Precision 1-2-3 blocks and 20 piece end mill set - 2 and 4 flute (10 each)
 - 58- piece clamping kit - 3/8"-16, 7/16" T-slots
 - Seven piece R8 collet set, five center drills - 60 degree countersinks
 - Combination edge and center finder and a T-slot cleaner
- Tooling package with all the essentials for an R8 mini mill. Toolmakers Vise: 3" toolmakers screwless vise has a one-piece body. The body and jaws are hardened to Rc 58-62. All sides are flat, square and parallel to 0.0002". There are horizontal and vertical vees on the inside face of the movable jaw to hold round objects. The vise jaws are 1.38" deep and open to 3.78" capacity. The vise is 7.28" long, 2.76" tall and 2.785" wide. The set of 11 pairs of thin parallels are 1/8" thick and 3" long. The heights are 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1" with two pairs of shims are 9/64" and 5/32". They are made of high grade alloy steel hardened to 52 to 58 Rc. The top and bottom surfaces are parallel within 0.0002". The pairs are matched in height within 0.0004". End Mills: 20 piece set included 2 flute and 4 flute center cutting TiN coated HSS end mills sizes 3/16" - 3/4" by 16ths. R8 Collets: Set of seven high-grade tool hardened steel, sizes 1/8", 3/16", 1/4", 3/8", 1/2", 5/8", 3/4". 1-2-3 Blocks: Ground and hardened on all sides to 50-60 Rc, sizes 1" x 2" x 3". Parallel within 0.0002", flat within 0.0002", and square within 0.00021". Set has two matched blocks, 23 holes of which 5 are threaded 3/8"-16 NC. Center Drills: Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

4858 Tooling Package, R8 Mini Mill Premium \$759.95

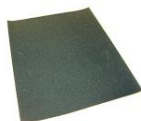
- 3" Milling vise and 10 pairs of 3" long, high grade, thin parallels
 - Thirteen piece R8 collets, 20 piece End Mill Set - 2 and 4 Flute (10 each)
 - 58 - piece clamping kit - 3/8"-16, 7/16" T-slots
 - Premium precision 1-2-3 blocks, five center drills - 60 degree countersinks
 - Combination edge and center finder and a T-slot cleaner
- Premium mini mill R8 tooling package with all the best products for your machine. Precision Milling Machine Vise: 3" Kurt-style milling vise with detachable 360° swivel base and easy to read divisions. Top, gib, jaws, swivel base, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 10.85" and the height is 3.05" without base, and 4.21" with base. Jaws are 3.15" wide, 0.94" deep, open 3", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4" without the swivel. Thin Parallels: Set of ten pairs, 1/8" thick x 3" long. Made of high-grade alloy steel hardened to 52-58 Rc, parallel within 0.0001" on top and bottom. Parallel heights: 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1", 1-1/16" (pairs matched within 0.0002"). End Mills: 20-piece End Mill Set - 2 and 4 Flute (10 each). R8 Collets: 13 R8 round collets sizes 1/8" to 1" by 16ths. Made of high-grade tool steel, hardened and ground to a TIR of 0.0005" or less. This set includes all the sizes required for common end mills. 1-2-3 Blocks: Premium precision 1-2-3 blocks, ground and case hardened on all sides to 55-60 Rc. Blocks are 1" x 2" x 3"; parallel, flat, and square within 0.0001". Mini mill tooling package set includes two matched blocks and 5 cap screws. Blocks have 23 holes, five are threaded 3/8"-16 NC. Center Drills: Five-piece M42 8% cobalt combined drills and countersinks sizes 1, 2, 3, 4, and 5 with 60-degree counter sinks.

Tools and Things: Abrasives

**Abrasive Cloth, 1" Wide, Individual Grits**

- Aluminum oxide abrasive
 - High grade resin-bonded on J-weight cotton cloth backing
 - Flexible for contour work
- The price is for one foot. Order as many feet as you want and we will cut it to that length. Maximum length is 150 feet. Use for cleaning and deburring metal surfaces. Can be used with water or oil.

6247 Abrasive Belt, 1" x 30", 60 Grit	\$4.99
6248 Abrasive Belt, 1" x 30", 80 Grit	\$4.99
3890 Abrasive Cloth, 1" Wide, 240 Grit	\$0.49
3891 Abrasive Cloth, 1" Wide, 320 Grit	\$0.49
3892 Abrasive Cloth, 1" Wide, 400 Grit	\$0.49

**Abrasive Sheets, 9" X 11", Individual Grits**

- Silicon carbide abrasive
 - High grade resin-bonded on J-weight cotton cloth backing
 - Flexible for contour work
- Use for cleaning and deburring metal surfaces. Can be used with water or oil.

4992 Abrasive Pad, Maroon Hand Pad, 3M	\$2.95
3886 Abrasive Sheet, Wet or Dry, 240 Grit	\$0.89
3887 Abrasive Sheet, Wet or Dry, 320 Grit	\$0.89
3888 Abrasive Sheet, Wet or Dry, 400 Grit	\$0.89
3889 Abrasive Sheet, Wet or Dry, 600 Grit	\$0.89

**Cratex Bullet Shaped Points and Mandrels**

- Diameter: 9/32", Length: 1", Arbor hole: 1/16"
- For Proxxon and Dremel rotary tools
- Sold individually
- Mandrels fit 1/16" arbor hole

Cratex bullet shaped points are used for smoothing and polishing hard to reach surfaces such as grooves, ball corners, holes, clasps, spirals, flutes, and edges. They are widely used for polishing molds, dies, patterns and light castings.

4944 Cratex Bullet Shaped Point, 9/32" Medium	\$1.50
4943 Cratex Bullet Shaped Point, 9/32" Coarse	\$0.99
4947 Cratex Point Mandrel for Bullet Points, 1/8" Shank	\$7.95
4946 Cratex Point Mandrel for Bullet Points, 3/32" Shank	\$7.95

**Grinding Wheels, Individual Sizes**

These grinding wheels fit our bench grinder, P/N 6242. They are 8" in diameter, 1" wide and have a 1" center hole. The Green Silicon Carbide wheels are good for sharpening cemented carbide tools and non-ferrous metals. Use for grinding cemented carbides and non-ferrous metals. The Aluminum Oxide wheels are good for sharpening HSS tools and other general purpose use. Fast cutting and cool grinding of all tool steels. For grinding, sharpening and deburring of hand tools, drills, chisels, blades and cutting tools. They include bushings for 3/4", 5/8" and 1/2" arbors.

6246 Grinding Wheel, 8" x 1" 100 Grit Green Silicon Carbide	\$74.95
6245 Grinding Wheel, 8" x 1" 60 Grit Aluminum Oxide	\$34.95
6244 Grinding Wheel, 8" x 1" 80 Grit Aluminum Oxide	\$34.95

Tools and Things: Adhesives

**3978 J-B Weld Cold-Weld \$7.50**

- Cold-Weld compound
 - Can be formed, drilled, ground, tapped, machined, filled, sanded, and painted
 - Super strong and safe to use
- Don't scrap that damaged item that nothing else can fix! J-B Weld is an incredibly versatile product that can repair everything from damaged welds and solders to a precious heirloom. Save money, save time, and save your sanity for drastically less money than other forms of permanent repair. J-B Weld is the world's finest cold-weld compound. It's a remarkably easy, convenient, and inexpensive alternative to welding, soldering, and brazing. J-B Weld is the smart way to repair something ... and for literally pennies per use. When welding or soldering is out of the question due to cost, down time for repairs, or technical/environmental considerations, J-B Weld is the answer. J-B Weld is packaged in two tubes. One contains liquid steel/epoxy resin, and the other contains hardener. When mixed together in equal portions, a chemical reaction occurs that turns the mixture into a compound as hard and tough as steel -- and with similar properties.

**Loctite Products**

Visit our Web site for full information about these Loctite products.

3986 Loctite 222 Purple Low Strength Threadlocker for Small Fasteners	\$22.95
3987 Loctite 242 Medium Strength Blue Threadlocker	\$22.95
3988 Loctite 271 High Strength Red Threadlocker	\$22.95
3989 Loctite 7649 Primer for Threadlockers	\$19.95

Tools and Things: Lights

**4986 Machine Light, LED with Magnetic Base \$94.95**

- 20" flexible shaft
 - Powerful magnetic base
 - 100-240 V 50-60 Hz
 - 330 lumens
- LED machine work light with magnetic base. The 20" flexible shaft combined with the magnetic base gives you the flexibility to target light directly to your work area. The LED is 330 lumens (roughly comparable to a 30 W incandescent bulb) and is rated 100-264 V 50-60 Hz.

**5972 Work Light, LED with Universal Arm, Waterproof \$88.95**


- 7 Watt Waterproof LED Work Light
 - 18" Universal Arm
 - Light Head Diameter 2-3/8"
 - 350 Lumens, Color Temperature 6500 K
 - Bolt-on Mounting Plate
- 7 Watt Waterproof LED work light with bolt-on mounting plate (2 3/8" x 2 3/8") has a 18" swivel arm. The LED is 350 lumens with a color temperature of 6500 K with an estimated 50,000 hour lifetime. The power supply is 110 AC. LED lights are excellent for heat sensitive environments and are a cost effective alternative to Halogen or incandescent lights.

Tools and Things: Lubrication

**4960 Pump Oiler with Flexible Spout \$22.95**

- For oiling machinery (and hundreds of other uses)
 - 16 oz. capacity
 - Flexible 8" spout
 - High pressure pump
- Industrial oiler for tough jobs. Zinc die-cast high pressure pump with precision ground piston, powder coated copper bronze finish with zinc plated top cap. 16 oz, with 8 inch flexible spout.


Tools and Things: Lubrication



4949 Pump Oiler with Hard Trigger **\$18.95**

- For ball oils (and hundreds of other uses)
- 6 oz. capacity
- Straight spout
- Flared bottom to prevent tipping

6 oz. oiler with a case hardened trigger to handle thicker liquids. The trigger and container are powder coated copper bronze color. Straight spout. Flared bottom to prevent tipping. This is an old-timey (but brand new) pump oiler to oil all those little ball oilers. The hardened trigger means it's good for even thick machine oils as well as most types of cutting oils.



3896 SpillMaster Container **\$10.95**

- Avoid workbench spills
- Holds cutting fluids and lubricants
- Will NOT spill, even when upside down
- Durable polyethylene for long life
- Spill proof container includes applicator brush

The SpillMaster is a great way to keep cutting fluid handy on your workbench. The included acid brush makes application easy.*NOTE* SpillMasters come with Red, Blue, and White tops. We ship the colors randomly based on availability. If you want a particular color, put a note in the Special Instructions box on your order. We'll accommodate your request if we have that color in stock.

Tools and Things: Shims




4304 Shim Stock Assortment, 0.0005" - 0.005" Plastic **\$23.95**

- 7 sheets of 5" x 5" sheets of polyester shim stock
- Minimal compression in use
- Thickness tolerances to industry standards
- 0.0005", 0.001", 0.0015", 0.002", 0.003", 0.004", and 0.005"

Seven sheets of 5"x5" polyester shim stock. Color coded shim stock sheets are made from a high quality plastic material. Easy to cut and resists oil. Non-magnetic and non-conductive to electricity. Corrosion resistant. Here are the colors and thicknesses of the items. Shim Stock, 0.0005" Silver (mirror like coating) Shim Stock, 0.001" Amber Shim Stock, 0.0015" Purple Shim Stock, 0.002" Red Shim Stock, 0.003" Green Shim Stock, 0.004" Tan Shim Stock, 0.005" Blue

4296 Shim Stock, 0.0005" Silver Plastic	\$6.95
4297 Shim Stock, 0.001" Amber Plastic	\$6.95
4298 Shim Stock, 0.0015" Purple Plastic	\$6.95
4299 Shim Stock, 0.002" Red Plastic	\$6.95
4301 Shim Stock, 0.003" Green Plastic	\$6.95
4302 Shim Stock, 0.004" Tan Plastic	\$6.95
4303 Shim Stock, 0.005" Blue Plastic	\$6.95

Tools and Things: Things



1196 Armor Wrap 30G Corrosion Inhibiting Paper, 10 Sheets **\$1.95**

- 10 Sheets 6" x 6" Armor Wrap Corrosion Inhibiting Paper
- Protects exposed metal in enclosed spaces
- Proprietary VCI nanotechnology
- For ferrous & non-ferrous metals
- Protect your valuables and tools from rust and corrosion


Put a sheet in each drawer of your tool box to prevent corrosion. The new global standard in corrosion inhibiting paper for ferrous & non-ferrous metals. ARMOR WRAP® VCI papers utilize proprietary VCI nanotechnology, and are essential to keeping your stored items and in-process metals protected and corrosion-free for years. ARMOR WRAP® VCI papers are impregnated on BOTH sides and provide protection for up to three years. This 30# ARMOR WRAP® VCI Paper is environmentally safe, fully recyclable, biodegradable and non-toxic. ARMOR uses only the highest quality virgin neutral pH kraft paper available. The 30G paper is the best all-around solution since it works extremely well protecting ferrous and non-ferrous metals. Protects exposed metal in enclosed spaces without harmful effect on electrical, mechanical or chemical properties. Use in any enclosed space with metals including your toolbox, gun case or safe, tackle box, truck bed box, and safety deposit box.



1457 Chip Removal Tool with Shovel **\$15.95**

- Remove Chips from Hazardous Areas
- 5" Guard and Handle
- Use on Curled and Powdered Chips
- Handle Length 6"
- Shovel 4.75" x 2.75"


Remove chips and empty chip trays from hazardous areas on machines while avoiding accidents. Sturdy design ensures a firm grip and hand safety. This one tool may be used on both curled and powdered chips.



3953 Chip Shield on Magnetic Base **\$31.95**

- 8" x 10" (200mm x 249mm) clear plastic shield
- Magnetic base and locking arm allow easy placement
- Magnetic base dimensions: 2.6" diameter X 0.4" depth


This is a great item for stopping flying chips or coolant/cutting oil spray. The magnetic base allows you to position it on virtually any metal surface and has easy quick lock mechanisms to adjust positioning.



5017 Machinist Calc Pro 2 Machinists Calculator **\$98.95**

- The first dedicated handheld machining math and reference tool
- Calculate speeds and feeds, right triangle solutions, bolt patterns and much more


The Machinist Calc Pro 2 is the upgraded version of the original dedicated handheld machining math and reference tool which provides a complete assortment of machine shop solutions. It has more complete thread data than the Machinery's Handbook, including step-saving thread and drill size chart look-ups, speeds and feeds, right triangle solutions, bolt patterns and much more. Spend more time machining and less time looking up specs and data in books, on charts or in computer programs. New features include the ability to enter WOC (width of Cut), LOC (Length of Cut), and DOC (Depth of Cut). It also includes settings for 20 popular materials, 6 processes and 3 Tools. It also has a new larger 2-line LCD display.



5587 Shear and Brake Combination, 8" **\$249.95**

- Shear sheet metal, plastics, circuit boards
- Bend sheet metal up to 90 degrees
- Maximum material width 7.75" (197 mm)


This small shear and brake combination is great for small sheet metal projects. It cuts metal, plastics, and printed circuit boards. The bending brake will make bends up to 90 degrees. It includes a full length bending die as well as four different length smaller dies. The base of the machine is 9.4" x 5.4".



3968 Shop Apron **\$24.95**

- 5 pockets designed for metalworking tools

We had these aprons custom-made to our design out of heavy-duty denim.



6369 Socket, Emergency **\$20.00**

- Grainger brand 10mm socket.
- Bling for your shop

The perfect gift for a machinists, handyman or mechanic. Stick this on your wall or sneak it into a toolbox. 2.5" wide, 3.5" tall. Cut on my Laser in red cast acrylic. Includes a diamond plate inner panel and a Grainger brand 10mm socket.

Tools and Things: Tools



6256 Acid Brushes, 3/8", 6 Pieces **\$1.50**

- Natural bristles
- Tin handles
- 6" long

These brushes are great for applying cutting fluid to cutting tools and work pieces.

6257 Acid Brush, 3/8", 1 Piece **\$0.25**

Tools and Things: Tools



3681 Arbor Press, 1/2-Ton **\$59.95**

- Heavy duty frame
- Four position anvil
- Steel pinion
- Maximum work height 4.5"
- Maximum work diameter 3"

This arbor press stands 10" tall and has a 4" x 9" base.



5083 Arbor Press, 1-Ton **\$94.95**

- Heavy duty frame
- Four position anvil
- Steel pinion
- Maximum work height 5.25"
- Maximum work diameter 8"

This arbor press stands 13" tall and has a 5" x 11" base.



3189 Bench Block **\$19.95**

- Made from steel; hardened and ground
- Handy tool for holding work, driving pins, drilling and so on
- Knurled edge provides a good grip
- V-groove accommodates round and odd-shaped objects
- Holes from 1/8" to 5/8" diameter

A must have tool in any machine shop, the bench block is ideal for holding work, drilling, driving pins, tapping, reaming and other similar functions. This bench block is 3" in diameter and 1.5" thick. It has holes from 1/8" to 5/8" diameter which provide added alignment when drilling holes. (Note: a bench block can also be used outside of a machinist's context when drilling holes on vertical surfaces, such as with a hand drill.) The V-groove accommodates round and odd-shaped stock and with the help of a clamp can help hold that stock in a stationary position for drilling. The bottom is milled to be parallel with the top surface. The core of the tool is hollow to reduce weight and eliminate additional surface area which could cause a wobble when placing the bench block true on an anvil or table. The knurled edge provides a good grip and covers a significant portion of the side surface.



3979 Chip Brush, 1" **\$1.65**

- Natural bristles
- Wood handle

The brushes are great for clearing chips as well as for small painting jobs where you don't want to take the time to clean a brush.

3981 Chip Brushes, 1", 36 Pieces **\$49.95**
3980 Chip Brushes, 1", 6 Pieces **\$8.95**



5979 Dapping, Doming, Forming Block & Punch Set, 24 Piece **\$69.95**

- Hardened tool steel
- Includes dapping block, 24 punches and wood stand with index
- 3.5" long dapping punches inches 2.3, 3.5, 4.3, 5.1, 5.9, 6.7, 7.5, 8.3, 9.1, 9.9, 10.7, 11.5, 12.3,
- Ideal for forming soft metals with the use of dapping punches or arbor presses

Use this 24 piece dapping, doming, forming block & punch set for making beads and shaping metals. Includes 2" X 2" dapping block with 18 half-sphere depressions from 2.3-25mm.



1671 Deburring Tool **\$3.95**

This hand deburring tool has a built-in E-100 blade. The deburr tool deburs holes with a flick of the wrist.



4848 Deburring Tool Set **\$5.95**

- 4 piece set
- Includes plastic handle, telescoping holder, and B10 & B20 blades
- Use on Plastics, Steel, Brass, Aluminum, Copper, and Cast Iron

This deburring tool set comes with 2 easily swappable blades to conveniently tackle all your deburring needs. The hand deburring tools debur holes with a flick of the wrist.

4849 Deburring Blade, B10 **\$0.75**
4850 Deburring Blade, B20 **\$0.75**



1135 Deburring Tool, Fine Carbide Point **\$32.95**

- Deburring tool for small work pieces
- 3-cornered carbide scraper

Hand made scraper handle and 3-corner carbide scraper. Very ergonomic design made of stainless steel and carbide. These handles are made in the United States in Southeastern Pennsylvania. Great for light deburring on brass, aluminum and steel. Scraper is approximately 5" long, 6" with scraper. The carbide scraper is approximately 1 1/2" long, 1/8" diameter.



6108 Disc Cutter Set, 1/4-5/8", 7 Piece **\$54.95**

- 7 Piece 1/4-5/8" Disc Cutter Set
- Set includes 1/4, 5/16, 3/8, 7/16, 1/2, 9/16 & 5/8" disc sizes
- Punches are made of case-hardened tool steel
- The top and bottom plates are made of durable shock-resistant tool steel through hardened for long-w
- Round disc cutters let you cut perfectly round discs in up to 1mm (18 gauge) thick metal sheets

Slide metal between the plates and, with a mallet or heavy hammer of your choice, hit once for best results. These cutters let you cut perfectly round discs in up to 1mm (18 gauge) thick metal sheets.



3884 Drive Pin Punches, Extra Long, Starrett **\$67.50**

- Set of 5 extra long 8" pin punches
- Includes 1/8", 3/16", 1/4", 5/16", and 3/8" punches
- Well proportioned, hardened, proper tempered with a knurled grip
- Includes vinyl case
- Starrett catalog number S248PC

Starrett No. 248 Drive Pin Punches are extra-long, measuring 8" (200 mm). The bodies are 4-1/2" (115 mm) and the drive pin sections are 3-1/2" (90 mm) long. They are well-proportioned, hardened, properly tempered, and have a knurled grip. They are designed to withstand hard use and provide a most satisfactory punch for machine shop and motor service work. Just the punch to follow long cotter pins and the like into holes without hindrance. The diameters of the punches are slightly under the sizes listed. ALWAYS WEAR SAFETY GLASSES WHEN USING STRIKING AND STRUCK TOOLS.



1821 Drive Pin Punches, Starrett **\$86.00**

- Diameters: 1/16", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4", 5/16"
- Hardened and tempered steel
- Knurled finger grip
- Points ground at proper angle for maximum service
- Tips are accurately centered

Starrett 8 piece drive pin punch set. Set of 8, Nos. 565A/B/C/D/E/F/G/H in a round container. Starrett catalog number S565WB. This set includes the following diameter punches: 1/16", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4", 5/16". Starrett No. 565 Drive Pin Punches are well proportioned, hardened, properly tempered, nicely finished, and have a knurled finger grip. Each punch has the size stamped on the head. These punches are universally used, but most often by machinists. They are well-proportioned for ease of use. The specially selected tool steel is hardened and tempered to the proper hardness. All of them feature nicely knurled finger grips for ease of handling. A special tempering process makes the head less likely to fracture from a hard, off-center blow.

ALWAYS WEAR SAFETY GLASSES WHEN USING STRIKING AND STRUCK TOOLS.



4823 File Set, 12" Steel, 5 Pieces **\$14.95**

- Set Includes: Flat File, Tapered Round File, Square File, Triangular File & Half Round File
- Made of T12 hardened tool steel
- Comfortable and durable PVC handles


2891 Grinder, Proxxon IB/E Professional Rotary Tool \$154.95

- Ball bearing spindle of ground steel, with lock button for rapid cutter changing
 - Streamlined die-cast aluminum head for exact bearing seats and optimal stability
 - Powerful 100 W motor with full-wave electronics for variable speeds between 5,000 and 20,000 RPM
 - Proxxon rotary tool comes complete with six triple-slit steel collets 1/32" to 1/8" (1.0 - 3.2mm)
 - Two year limited warranty
- Grinder with 34 industrial quality bits & cutters with shanks Ø 3/32" (2.3 mm). High concentricity (maximum run out .001"). This high-revving motor is usable for extended periods at a time. 120V AC, 60 Hz. The ground steel spindle runs in a ball bearing assembly, minimizing play. Six high concentricity collets sized 1/32", 1/16", 5/64", 3/32", 7/64" and 1/8" (1.0, 1.5, 2.0, 2.4, 3.0 and 3.2 mm) along with a collet nut are included. Proxxon IBS/E Professional Rotary Tool is packed in a durable plastic case, complete with the 34 bits & cutters as shown above.

3633 Accessory Kit for Rotary Tools \$44.95
3634 Accessory Kit for Rotary Tools, Modelmakers \$24.00
3632 Collet Set, Proxxon Micromot \$15.60
2969 Cut-Off Disks, Aluminum Oxide for Rotary Tools, 50 Count \$15.20
3033 Grinder, Proxxon IB/E Professional Rotary Tool 230V \$129.95
2967 Grinding Wheels, Aluminum Oxide for Rotary Tools, 10 Count \$9.10
2968 Grinding Wheels, Silicon Carbide for Rotary Tools, 10 Count \$9.10
2935 Rotary Tool Mount for Mini Lathe \$29.95
3635 Wire Brushes, Brass for Rotary Tools, 5 Count \$13.80

3562 Hacksaw Frame, Heavy Duty, Starrett \$50.00

- Starrett Closed Grip Heavy Duty High-Tension Hacksaw Frame
 - Starrett catalog number K145
 - 12" (300mm) frame
 - 4-3/8" (110mm) throat depth
- The K145 is a rugged, professional quality high-tension frame constructed of cast aluminum with an extra-thick tubular steel bar for added strength. The steel tube also provides on-hand storage for spare blades. The K145 High-Tension Frame is engineered for use with Starrett bi-metal Bluestripe® and Greenstripe® blades. With just three 360° turns, the easy to use adjusting screw will tension the blade up to 28,000 psi (2,000kg/cm) which prevents the blade from twisting and binding when bearing down on the cut. Each K145 Heavy Duty High-Tension Frame is shipped with a Starrett Bluestripe bi-metal unique ground tooth hacksaw blade.


5928 Hammer, 1-lb. Dead Blow, Professional Grade \$22.95

- 16 Oz. Dead Blow Hammer
- Shot loaded interior produces a powerful driving force
- UPE plastic material strike faces
- Head diameter is 1.2"
- Overall length is 12"

Dead blow hammers are designed for applying striking force while minimizing damage to your surface and in reducing rebound. This 16 oz. dead blow hammer is shot loaded for powerful driving force. The striking faces are made of UPE plastic which is resistant to industrial chemical, is non-marring and non-sparking. Head diameter is 1.2", overall length is 12". The handle is padded.


3613 Hammer, Dead Blow 18 oz. \$17.95

- Shot-loaded head provides powerful driving force
- Non-marring, non-sparking
- Polypropylene is resistant to most industrial chemicals
- Head 100 mm x 38 mm (3.94" x 1.50")
- Overall length is 287 mm (11.30")

Dead blow hammers are designed for applying striking force while minimizing damage to your surface and in reducing rebound. This 18 oz. dead blow hammer is shot loaded for powerful driving force. It is case out of durable polypropylene which is resistant to industrial chemical, is non-marring and non-sparking. Head dimensions are 100 mm x 38 mm (3.94" x 1.50"). Overall length is 287 mm (11.30").


1114 Hammer, Hobby, with Interchangeable Tips \$12.95

- Six interchangeable tips
- Aluminum grip
- Use for riveting, blending, and chisel work
- 7.5" overall length
- 2.5 ounce head

Modelers hammer with 2.5 oz. steel head, steel handle, and an aluminum grip. Comes with six screw-on tips including a flat brass, steel ball, steel dome, steel tapered, steel flat, and high density fiber. Use for driving pins, mini nails, riveting, chiseling, and forming sheet metal. 7.5" overall length.


5840 Handee Clamp \$22.95

- Attach nuts, bolts, or hose clamps in hard-to-reach places
- Simply put desired nut, clamp, or bolt in the Handee Clamp and tighten nut on other end to secure
- Made in USA

The Handee Clamp is a small handheld device that firmly holds nuts, bolts and clamps. Its design allows for the placement of the item in vise like jaws that can be tightened from one end. Once secured, simply put the held item into place with one hand, freeing the other hand for actions such as tightening. The Handee Clamp will securely hold onto whatever you put in its jaws, enabling you to reach into that tight crevice so you can focus on the job at hand and not worry about dropping the hardware you need. There is no telling when the next time you'll need The Handee Clamp to help you with that "Out of Reach Grasp". For a relatively inexpensive product, it can save you hours of frustration that makes it more than worth its value.

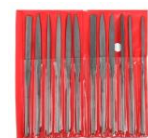

4331 Hex Wrench Set, T-Handle Ball End, Inch \$48.95

- Smooth, non-porous T-handle
- 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16", and 3/8"
- Sizes 5/32" and up have ball end
- Includes stand

Boldus ball end t-handle inch hex wrench set features eight wrenches. Each wrench has a ProGuard Finish handle sized for maximum torque while protecting the ballpoint tip and screw from rounding or stripping. The tools are protected with a ProGuard finish which is 5 times more effective than the next leading brand in preventing rust, which protects your investment over time. The handle grip is smooth, non-porous, and extends along the blade. Handles are ergonomically shaped eliminating pressure points and the handles are welded to the blade. The heavy duty handle generates flywheel effect for fast insertion and extraction of screws. Tools are Made in the USA with Bondhus proprietary Protanium® steel and are up to 20% stronger than competitive tools. Comes with a molded stand that mounts on the wall or work bench. Sizes include: 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16", and 3/8".

4330 Hex Wrench Set, T-Handle Ball End, Metric \$45.95

Tools and Things: Tools



5871 Needle File Set, 12 Pieces \$6.99

- Swiss Pattern File Set of 12
- 6" length, #2 Cut
- Ideal for Die Makers, Gunsmiths, Machinists, Modelers
- Common Swill Pattern Shapes
- Storage Wallet Included

Set of 12 Swiss Pattern needle files, ideal for die makers, jewellers, modellers, craftspeople and hobbyists. Use for removing, smoothing and shaping a wide range of materials. Files are #2 cut and 6". Shapes includes are: half round, hand, knife, round, round straight, square and three square shapes. Set comes in a vinyl storage wallet.



5466 Pin Chuck Set, 0 - 3/32" \$9.95

- Holds small drills firmly
- Ensures complete collet length
- Overall length: 2-1/2"
- Shank size: 1/4"

Includes: 3 collets - capacity: 0 - 1/32", 1/32" - 1/16", 1/16" - 3/32"



1113 Pin Punch, 13 Piece Set \$19.95

- 13 Piece Pin Punch Set
- 5 Long Punches - 8" (200 mm) Long
- 8 Smaller Punches - 4" (200 mm) Long
- Knurled Grips
- Sizes Stamped on Handle

Combination set of popular size pin punches, 13 pieces in all. Use to drive pins into or out of a workpiece. Each pin has the size stamped on the handle. Set includes: - 5 long drive pin punches in sizes 1/8", 3/16", 1/4", 5/16" & 3/8" - 8 pin punches in sizes 1/16", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4", & 5/16" The long drive punches are 8" (200mm) in length and the small punches are 4" (100mm) long. Punches have knurled grips and come in a convenient storage envelope.



1131 Pin Punch, 8 Piece Set, Brass \$24.95

- 8 piece brass pin punch set
- Sizes from 1/6" (1.6 mm) to 5/16" (8.0 mm)

Eight piece brass drive pin punch set. Set includes sizes 1/6" (1.6 mm), 3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm), 3/16" (4.8 mm), 7/32" (5.5 mm), 1/4" (6.4 mm), and 5/16" (8.0 mm).



5467 Pin Vise Set, 0 - 3/16" \$11.95

- Hollow handle for long wire or rods
- Includes: Ranges: 0-.055", .025"-.075", .045"-.125", .110"-.187"

3881 Pin Vise, 0.010 - 0.055", Starrett \$30.50

3882 Pin Vise, 0.025 - 0.075", Starrett \$37.00

3883 Pin Vise, 0.045 - 0.135", Starrett \$41.00

3560 Pocket Level, Starrett \$42.50



- Starrett 3.5" pocket level
- Starrett catalog number 135B
- 3.5" (88 mm) long
- Satin nickel plated finish

This is an extremely useful Starrett level that fits handily in the pocket with no sharp edges. Made from hexagonal stock with convex ends and satin nickel-plated finish.



4085 Prick Punch, Starrett \$13.00

- Length: 4"
- Punch Diameter: 5/64"
- Properly Hardened Tool Steel

Starrett Prick Punch 5/64". Starrett catalog number 816A. This is the punches to use when precise positioning of a point or an intersection of lines is required. The points are carefully ground to the correct taper, which is sharper than the normal center punch. This allows exact placement of the point, providing sharp impressions. The prick punch is 4" (100mm) long with a 5/64" (2mm) Dia. Point.



5198 Stamp Set, Numbers and Letters, 3/16" \$14.95

- Numbers (0-9) & Letters (A-Z)
 - Hardened to RC 59-61 at tip and tempered to RC 41 Rockwell at striking end.
 - Made from carbon steel.
 - Character style designed to give sharp clear impressions.
 - Packed in a durable box for easy selection and storage.
- 3/16" Number & Letter Stamp Set -- 0-9 and A-Z Hardened to RC 59-61 at tip and tempered to RC 40 Rockwell at the striking end. Made from carbon steel. Character style is designed to give sharp clear impressions. Packed in a durable box. Easy selection and storage.



4208 Thread Restoring File, 12-28 TPI \$11.95

- Eliminates damage on threads of bolts and shafts
- Suitable for pitches 12, 13, 14, 16, 18, 20, 24 & 28 threads per inch
- Featuring a crosscut design
- Square profile shape with overall length of 8 1/2"
- Sizes are clearly marked

Restores damaged or rusted external threads on bolts, threaded shafts, pipes and pipe fittings. Use to restore damaged or rusted threads of bolts, threaded shafts, pipes, and pipe fittings. The crosscut design has a depth that is proportional to the thread pitch. Suitable for pitches 12, 13, 14, 16, 18, 20, 24 & 28 threads per inch.

4209 Thread Restoring File, 0.7-3 mm Pitch \$11.95



Torx Wrenches, Flag Style, Individual Sizes

- Molded Flag Style Handle with spinner top
- This is a great replacement torx wrench for many indexable turning tool sets that use torx screws. The flag style Torx wrench is designed to prevent overtightening of insert retaining screws.

5443 Torx Wrench, T-6 \$2.95

5551 Torx Wrench, T-8 \$2.95

5552 Torx Wrench, T-9 \$2.95

5553 Torx Wrench, T-10 \$2.95

5554 Torx Wrench, T-15 \$2.95



Torx Wrenches, Flag Style, Wiha, Individual Sizes

- Molded Flag Style Handle with spinner top
- Made of High Performance CRM 72 Tool Steel
- Hardened Oxide Finish
- Made In Germany

This is a great replacement torx wrench for many indexable turning tool sets that use torx screws. The flag style Torx wrench is designed to prevent overtightening of insert retaining screws.

5511 Torx Wrench, T-5, Wiha \$5.95

5512 Torx Wrench, T-6, Wiha \$5.95

4842 Torx Wrench, T-7, Wiha \$5.95

4843 Torx Wrench, T-8, Wiha \$5.95

4844 Torx Wrench, T-9, Wiha \$5.95

4845 Torx Wrench, T-10, Wiha \$5.95

4846 Torx Wrench, T-15, Wiha \$5.95



4279 V-DrillGuide Hand Drill Guide for Inch Drills \$32.95

- Drill guide is sized for drill bit sizes: 1/8" to 3/8"
 - 17 drill sizes - 1/64" increments
 - Special nickel alloyed steel heat treated for durability
- V-DrillGuide Hand Drill Guide by Big Gator Tools™ is like a portable drill press for precision alignment. The V-groove along the bottom of the guide allows for perpendicular alignment with all drill sizes on round parts or corners. The image shows both the top and bottom of the guide. The bottom surface is precision ground to assure stability and accurate perpendicular alignment on flat surfaces.

4911 V-DrillGuide Hand Drill Guide for Metric Drills \$32.95

Videos and Books: Machinist Books

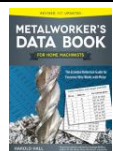


Machinists Books

How-to guide books for machinists
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6019 16 Metalworking Workshop Projects for Home Machinists	\$11.99
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1150 Basic Benchwork for Home Machinists	\$14.99
4735 Basic Lathework for Home Machinists	\$14.99
1165 Gears and Gear Cutting for Home Machinists	\$12.99
3402 Home Machinist's Handbook	\$29.95
1436 Lathework for Beginners	\$29.95
1738 Machine Shop Practice, Vol. 1	\$44.95
1739 Machine Shop Practice, Vol. 2	\$44.95
2366 Machine Shop Trade Secrets, Second Edition	\$69.95
5180 Machining for Hobbyists: Getting Started	\$54.95
1151 Making Metal Clockworks for Home Machinists	\$14.99
6022 Measuring and Marking Metals for Home Machinists	\$11.99
4736 Metal Lathe for Home Machinists	\$12.95
6250 Metalwork and Machining Hints and Tips for Home Machinists	\$10.99
6251 Metalworker's Hints and Tips for Home Machinists	\$10.99
4983 Metalworking - Doing It Better	\$39.95
6252 Metalworking for Home Machinists	\$12.99
3565 Metalworking Sink or Swim	\$64.95
6374 Milling & Lathework for Beginners	\$59.95
1437 Milling for Beginners	\$29.95
4738 Milling for Home Machinists	\$12.95
4734 Mini-Lathe for Home Machinists	\$12.95
6020 Precision Dividing for Small Shop Metalworkers	\$11.99
6253 Screwcutting in the Lathe for Home Machinists	\$12.99
4739 The Metalworker's Workshop for Home Machinists	\$14.99
4737 The Milling Machine for Home Machinists	\$14.99
5839 Tool & Cutter Sharpening for Home Machinists	\$12.99
5102 Useful Machine Shop Tools to Make for Home Shop Machinists	\$14.99

Videos and Books: Reference Books



Reference Books

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1735 Basic Machining Reference Handbook	\$74.95
4996 Engineers Precision Data Pocket Reference	\$44.95
5838 Metalworker's Data Book for Home Machinists	\$14.99
1953 Shop Reference for Students & Apprentices	\$49.95
3110 Tools & Rules for Precision Measuring	\$1.95

Vises: Accessories



5178 Chip Shield, Magnetic for 3" - 4" Vise, Clear \$39.95

- Milling machine chip shield uses strong Neodymium magnets to mount to the front or back of a machine
 - Conveniently remove without the hassle of fussing with tools or screws
 - Adjustable friction hinges allow setting the side panels at any angle up to 150 degrees
 - Compatible with any 3"- 4" milling vise with a flat surface on either end
 - Approximate dimensions: 11 1/4" x 3 3/4" x 1/4"
- This made-in-USA milling vise chip shield is a great add-on to any 3" or 4" milling vise in your shop. This quickly attaches to a vise to provide a reliable and adjustable chip shield. It's great for fly cutting and other "messy" jobs. Use caution when placing the milling machine chip shield near the vise or any other metal object as the Neodymium magnets are very strong and will act to rapidly close the gap if they are unintentionally placed too close to the object. **INSTALL THE BOLTS WITH THE NUTS ON THE OUTSIDE, THE SCREW HEADS SHOULD FIT IN THE HEX SPACE PROVIDED ON THE HINGES.**



3070 Soft Jaws, 3" Vise \$9.95

- Aluminum soft jaws fit 3" vises
 - Magnets hold jaws firmly in place
 - Magnets are removable for easy cleaning
 - V-groove for round objects
 - Includes two aluminum jaws
- 3" Hardened aluminum soft vise jaws designed to protect work from scratching. Mount onto a 3 inch vise with magnets which can be removed for cleaning. The jaws have a V-groove for round objects. Set includes two aluminum jaws.

3443 Soft Jaws, 4" Vise \$12.95



2066 Soft Jaws, 3" Vise, Prism Face \$7.95

- Aluminum soft jaws fit 3" vises
 - Magnets hold jaws firmly in place
 - Magnets are removable for easy cleaning
 - V-groove for round objects
 - Vertical groove for marking out
- 3" Aluminum soft vise jaws designed to protect work from scratching. Mount onto a 3 inch vise with magnets which can be removed for cleaning. The jaws have a 120 degree horizontal V-groove for round objects, and a vertical groove for marking out and center punching. Set includes two hardened aluminum jaws.

2067 Soft Jaws, 4" Vise, Prism Face \$9.95



2068 Soft Jaws, 3" Vise, Rubber Face \$9.00

- Aluminum soft jaws fit 3" vises
 - Synthetic rubber cover
 - Magnets hold jaws firmly in place
 - Magnets are removable for easy cleaning
 - Includes two aluminum jaws
- 3" Aluminum soft vise jaws designed to protect work from scratching. Mount onto a 3 inch vise with magnets which can be removed for cleaning. The jaws have a synthetic rubber cover for extra protection and firm grip. Set includes two hardened aluminum jaws.

Vises: Milling Vises



Chris' Tips

A Tip on Vises

There are several different styles of vise you can choose to use on your mini mill. Check out our Vise Comparison information at LittleMachineShop.com. www.LittleMachineShop.com/Vise













2045 Swivel Base, 3" Precision Milling, Heavy \$29.95

- Detachable swivel base features easy to read divisions
 - Ground top and bottom
- This swivel base fits our 3" Precision Milling Vise, Heavy

2239 Swivel Base, 4" Precision Milling, Heavy \$36.95

Vises: Milling Vises

	1647 Vise, 3" Milling	\$64.95
	<ul style="list-style-type: none"> • Jaw Width 3.15" (80.0 mm) • Jaw Depth 1.18" (30.0 mm) • Swivel Base • Maximum Jaw Opening 2.56" (65.0 mm) <p>This 3" milling vise is good for general mill work.</p>	
	2500 Vise, 3" Precision Milling	\$99.95
	<ul style="list-style-type: none"> • Detachable swivel base • 360 degree rotation • Ground and hardened jaws • Jaw width 3.15" (80 mm) • Jaw depth 0.93" (23.5 mm) <p>Precision 3" Kurt-style milling vise with swivel base. The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground. The jaws of this precision milling vise are hardened and ground. The detachable swivel base allows 360 degree rotation of the vise.</p>	
	3969 Vise, 3" Precision Milling Plus Parallels and Mounting Kit	\$149.95
	<ul style="list-style-type: none"> • Precision 3" Kurt-style milling machine vise • No swivel base • Hardened replaceable jaws • The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground <p>3" Kurt-style milling vise. Top, gib, jaws, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are hardened and ground, and can be mounted on either end of the fixed and movable jaw providing a wide range of clamping distances. Overall length is 10.85" and the height is 3.05". Jaws are 3.15" wide, 1.04" deep, open 3", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4".</p>	
	2024 Vise, 3" Precision Milling, Heavy, No Swivel Base	\$134.95
	<ul style="list-style-type: none"> • Precision 3" Kurt-style milling machine vise • No swivel base • Hardened replaceable jaws • The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground <p>Precision Milling Machine Vise: 3" Kurt-style milling vice with detachable 360° swivel base and easy to read divisions. Top, gib, jaws, swivel base, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 10.85" and the height is 3.05" without base, and 4.21" with base. Jaws are 3.15" wide, 0.94" deep, open 3", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4" without the swivel.</p>	
	1699 Vise, 3" Precision Milling, Heavy, with Swivel Base	\$139.95
	<ul style="list-style-type: none"> • Precision 3" Kurt-style milling machine vise • Detachable swivel base features easy to read divisions • Hardened replaceable jaws • The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground <p>Precision Milling Machine Vise: 3" Kurt-style milling vice with detachable 360° swivel base and easy to read divisions. Top, gib, jaws, swivel base, bottom of vise bed and all plate mounting surfaces are ground. The angle tight positive lock style jaws are interchangeable with industry standard machine vises, are hardened and ground, and can be mounted on either end of the fixed and movable jaw supports for a wide range of clamping distances. Overall length is 10.85" and the height is 3.05" without base, and 4.21" with base. Jaws are 3.15" wide, 0.94" deep, open 3", and are perpendicular to the ways within 0.002" in 4". The ways are parallel to the base within 0.0006" in 4" without the swivel.</p>	
	1789 Jaws, 3" Precision Milling Vise	\$22.95
	3710 Jaws, 4" Precision Milling Vise	\$26.95
	3070 Soft Jaws, 3" Vise	\$9.95
	4972 Vise Mounting Kit, 1/2" T-Slot	\$12.95
	5670 Vise Mounting Kit, 3/8" T-Slot	\$9.95
	3125 Vise Mounting Kit, 7/16" T-Slot	\$10.95
	1879 Vise, 4" Precision Milling, Heavy, No Swivel Base	\$148.95
	1755 Vise, 4" Precision Milling, Heavy, with Swivel Base	\$159.95
	2061 Vise, 5" Precision Milling, Heavy, with Swivel Base	\$234.95

	4740 Vise, 3" Precision Milling, Professional Grade	\$259.95
	<ul style="list-style-type: none"> • Totally enclosed heat treated screw • High repeatability • Detachable swivel base features easy to read divisions • Hardened jaws <p>This is a very well-made precision 3" Kurt-style milling machine vise with a swivel base. The top, bottom of vise bed, gib, jaws, swivel base, and all plate mounting surfaces are ground. The jaws are hardened and ground. The detachable swivel base features easy to read divisions. The replaceable jaws can be mounted on either end of the fixed and movable jaw supports providing a wide range of clamping distances.</p>	
	4733 Vise, 4" Precision Milling, Professional Grade	\$299.95
	3951 Vise, 5" Precision Milling, Professional Grade	\$334.95
	3857 Vise, 4" CNC Mill	\$269.95
	<ul style="list-style-type: none"> • Lock down type • Compact size allows multiple vises on CNC mill table • Flatness of all sides within 0.001" • Mount upright, or on left or right sides • Sides parallel within 0.0005" in 4" <p>This vise is designed for CNC milling machines where a swivel base is never required. The compact size allows you to mount multiple vises on the CNC mill table so you can machine several items in one setup. The vise closes with up to 3000 lbs. of clamping force. The vise is 4.13" wide, 11.25" long, and 4" tall. The jaws are 1.5" deep and open 4".</p>	
	5590 Vise, 3" CNC Mill	\$209.95

Vises: Other Vises

	3524 4" Angle Vise W/ 2-Way Swivel Movement	\$219.95
	<ul style="list-style-type: none"> • 360 degree horizontal swivel movement • 90 degree vertical swivel movement • Enclosed acme thread screw & hardened and ground jaws. • Positive locking to withstand heavy loads • Vise handle included <p>4" 2-Way Swivel Movement Angle Vise with positive locking in order to withstand heavy loads. The base has full 360 degree swivel movement, while the vertical swivel movement has a range of 90 degrees. The base slot width is 0.71". Depth of jaws is 1.69". Opening of jaws is 3.2". Angle height is 5.7". Overall length is 12.2". Maximum width is 7.1".</p>	
	4140 Vise, 2.5" Drill Press	\$26.95
	<ul style="list-style-type: none"> • Cast iron construction • Vertical and horizontal V-grooves in fixed jaw • 2.5" jaw opening • 2.5" jaw width • 1.5" jaw depth <p>2.5" Drill press vise. Cast iron construction with vertical and horizontal V-grooves in fixed jaws. Jaws open 2.5" (63.5 mm) and are 2.5" (63.5 mm) wide. Jaw depth is 1.5" (38.1 mm).</p>	
	4139 Vise, 1.5" Drill Press	\$21.95
	4141 Vise, 3" Drill Press Quick Slide	\$46.95
	3643 Vise, 3.5" Tilting, 0-90 Degree	\$67.95
	<ul style="list-style-type: none"> • Full 90° horizontal to vertical adjustment • Multiple bolt slots in base for easy mounting • Angle dial on one side and locking knob on opposite side • Made from strong cast iron • Has a rail for secure angle adjustments <p>The jaws are 3.5" wide, 1.25" deep, and open to 3.25" capacity. The front and rear slots are 0.5" wide. The corner slots are 0.4" wide.</p>	

Vises: Screwless Vises



1590 Vise, 3" Screwless \$82.95

- Hardened and Precision Ground
- Square and Parallel within 0.0005"
- Ground "V" Way

This high precision toolmakers screwless vise has a one-piece body. The body and jaws are hardened to Rc 58-62. All sides are flat, square and parallel to 0.0005". There are horizontal and vertical vees on the inside face of the movable jaw to hold round objects. The jaws are 1.38" deep and open to 3.78" capacity. The vise is 7.28" long, 2.76" tall and 2.875" wide.

2675 Clamps, Screwless Vise \$28.95

3142 Vise, 1" Screwless, Built-in Parallels \$39.95

3949 Vise, 1" Screwless, Square Jaws \$43.95

3950 Vise, 1.5" Screwless \$64.95

1591 Vise, 2" Screwless \$54.95

3769 Vise, 2" Screwless with 3" Thin Parallels \$74.95

3763 Vise, 3" Screwless plus Parallels and Mounting Clamps \$164.95

2356 Vise, 3" Screwless with Clamping Slots \$129.95

3767 Vise, 3" Screwless with Hold Down Clamps \$104.95



1756 Vise, 3" Screwless Sine \$149.95

- Sine range: 0-60°
- Hardened and precision ground
- Tolerance of .0004" center to center
- Jaw can be opened or closed without unbolting from work surface

3" Precision screwless sine vise. Jaw width is 2.9" (73 mm), jaw depth is 1.4" (35 mm), jaw opening is 4" (100 mm). The base size is 7" x 2.9" (190 mm x 73 mm). The center distance of the cylinders is 100.00 mm. Hardened and precision ground to a tolerance of .0004" for both parallelism and squareness. Sine range: 0 - 60°. Jaw can be opened or closed without unbolting vise from work surface.

1757 Space Block Set \$89.95

4216 Vise, 3" Sine Screwless & Space Block Set \$209.95



4871 Vise, 3" Screwless with Clamping Slots - BLEM \$99.95

- These vises have blemishes--cosmetic defects but function normally

This high precision toolmakers screwless vise has a one-piece body. The body and jaws are hardened to Rc 58-62. All sides are flat, square and parallel to 0.0002". There are horizontal and vertical vees on the inside face of the movable jaw to hold round objects. This screwless vise has slots along the sides so you can clamp it to the mill table with a clamping kit. The jaws are 1.357" deep and open to 3.94" capacity. The vise is 7.72" long, 2.76" tall and 2.875" wide.

3583 Z-Clamp \$6.95

Conversion Kits

Looking to upgrade your mill or lathe? We sell a variety of conversion packages to extend the functionality or improve the performance of your machine. Factory upgrades or exclusive kits will add years and value to your machine while increasing its capabilities.



DRO Packages

Wanting to add DRO to your machine? You will find a wide range of DRO conversion kits for mills and lathes at LittleMachineShop.com. Our DRO packages come in wireless Bluetooth technology or our new line of "traditional" hard-wired solutions. With sophisticated display capabilities, these packages will take your work to a new level of accuracy.



Cabinet Stands and Trays

Even though we sell benchtop machines, sometimes you simply need more room. Our steel stands and cabinets are the solution. Find a cabinet stand designed by the factory to fit specific classes of mills or lathes. Visit our website for compatibility information for your machine.

Need just a drip tray? We sell the top trays individually as well for bench mounting or DIY stands.



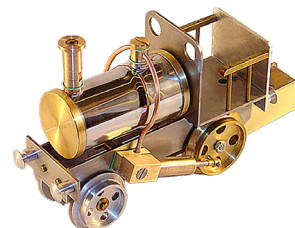
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Looking for something fun to do or needing to enhance your shop? We've got the answer with our model's kits and project plans. Our kits contain everything you need to get started. The plans give you complete instructions to plan and build your scale model or shop enhancing tool. Find kits and plans for boats, engines, cranes, belt grinders and more!



Keep your eyes open for Chris's Tips throughout the catalog with links to helpful information on our website that will aid in making your purchase.

Rikon Grinders and Disc Sanders

RIKON Bench Grinder, 6242 (Shown)

The Rikon 1-HP Low Speed Bench Grinder has a larger size motor and will tackle the tough grinding jobs that are typical in machine shops, as well as the finesse to shape and sharpen hand tools. Low speed grinders reduce the chance that you'll overheat the tool you are grinding.

Tool rests on this machine are extra-large and flat, without a drill bit sharpening groove. The wheel flanges are cast metal. The grinder includes dual dust collection ports on the rear of the wheel guards.



RIKON Bench Grinder, 6241 (Shown)

The Rikon belt sander features a 1" x 30" belt and a 5" disc sander and is great for working on small work pieces. The machine's small motor is very efficient in driving the belt and disc, so stock removal goes quickly. Recommended for light-duty deburring. Dual cast aluminium tables tilt 0-45° and Includes: Meter Gauge, 1-80 Grit Disc and 1-100 Grit Belt



Rikon Band Saw

4x6 Horizontal / Vertical Band Saw, Model 5300 (Shown)

This 4" x 6" capacity horizontal / vertical band saw has automatic shutoff at the end of the cut when in the horizontal position. The saw is floor standing on the included stand. The vertical position allows for freehand cutting of large, thin work pieces.

In the horizontal position the vise can be set from 90° to 45° for angle cuts. There is a work-stop for repetitive cuts at the same dimension. The saw has three speeds and comes with a 14 TPI blade.



Rikon Drill Press



13" Bench Top 16-Speed Drill Press, 5540 (Shown)

This is a versatile drill press for the home shop. With 13" swing and 16 speeds it can handle materials from wood, plastic, and most metals, including stainless steel.

The 16 spindle speeds are 220, 300, 430, 480, 590, 650, 720, 850, 900, 950, 1600, 1900, 2000, 2500, 2900, and 3600 RPM

The large round table (11 13/16" diameter) tilts 45 degrees either way and raises and lowers with a rack and pinion. The base is made from sturdy cast iron with a wide footprint for stability (17 3/4" x 10 1/2").

There is an adjustable depth quill stop with a gage.

Included are the drill chuck with key, a drill chuck arbor, and a drift key for chuck removal from the spindle.

LittleMachineShop.com Drill Press

Mini Bench Top Variable-Speed Drill Press, 6303 (Shown)

This small precision drill press is perfect for small work. Cast iron and steel construction provide the rigidity for accurate work. The cast iron base is 6.5" wide and 10.8" deep. The depth DRO can be zeroed at any point for accurate hole depths.

150 watt motor and PWMvariable speed controller provide plenty of power for small drilling projects and 0 - 3600 and 0 - 5000 RPM continuously variable speed ranges. 1/4" Drill capacity



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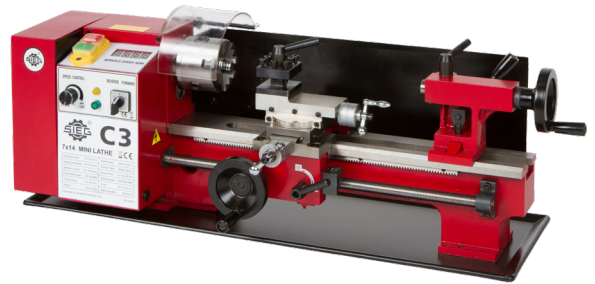


SIEG Machines

SIEG C3 7" x 14" Mini Lathe, 4959

The SIEG C3 7x14 Mini Lathe has all the features you want at an incredibly low price. A full 14" bed length with a cam-lock tailstock accommodates longer work pieces. Real top and bottom half-nuts and a reversible 16 TPI lead screw provide extended threading capability.

- Variable speed 350 Watt spindle motor with two speed ranges for low speed torque
- Digital spindle speed readout
- Cam-lock tailstock
- Zero-settable hand wheels graduated in 0.001" on cross slide and compound rest



SIEG X2D Mini Mill, 4962

The SIEG X2D Mini Mill has all the features you want at an incredibly low price. A solid column that is significantly stiffer than the tilting column on other low-cost mini mills.

The large mill table provides 50% more table area than other mini mills. It also has 30% more travel in each direction.

This model also includes the air spring head support for even support throughout the Z-axis travel.

- 350 Watt variable speed DC drive
- R8 Spindle for wide tool availability
- Includes 1/2" capacity drill chuck and arbor

4959 Specifications		4962 Specifications	
Swing Over Bed	7" (180 mm)	End Milling Capacity	0.6" (16 mm)
Swing Over Saddle	4.3" (110 mm)	Face Milling Capacity	1.2" (30 mm)
Between Centers	14.0" (355 mm)	Drilling Capacity	0.5" (13 mm)
Cross Slide Travel	2.6" (65 mm)	Maximum Spindle to Table	11.5" (292 mm)
Spindle Through Hole	0.8" (20 mm)	Table Size	18.1" x 4.7" (460 mm x 120 mm)
Spindle Motor Output	0.47 hp (350 Watts)	Spindle Motor Output	0.47 hp (350 Watts)
Range of Threads	4-80 TPI (0.3-8 mm)	X, Y, Z-Axis Travel	11.8" (300 mm), 5.1" (130 mm), 10.6" (270 mm)
Spindle Taper	#3 Morse taper	Throat	6.5" (165 mm)
Tailstock Taper	#2 Morse taper	X- and Y-Axis Feed Screws	0.062" (1.59 mm) per rotation
Spindle Speed	60 - 2500 RPM	Spindle Speed / Taper	60 - 2500 RPM / R8
Power Requirements	120 V 60 Hz 6 Amps	Power Requirements	120 V 60 Hz 6 Amps
Weight	88 lbs (40 kg)	Weight	124 lbs (56 kg)
Dimensions (W x D x H)	29" x 10" x 12" (740 mm x 260 mm x 300 mm)	Dimensions (W x D x H)	23.2" x 19.7" x 36.3" (590 mm x 500 mm x 922 mm)
Crated Weight	109 lbs (50 kg)	Crated Weight	176 lbs (80 kg)
Crated Dimensions (W x D x H)	34" x 13" x 15" (860 mm x 335 mm x 380 mm)	Crated Dimensions (W x D x H)	23.6" x 25.0" x 29.9" (600 mm x 635 mm x 760 mm)

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Band Saw, 4x6, Horizontal / Vertical

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In our outlet store we offer items that have been returned, have cosmetic blemishes ("scratch and dent"), have been refurbished, are missing a component, or for some other reason are not good enough to be sold as new—all at a greatly discounted price. Unless noted in the description, none of the items have been used, other than during testing and refurbishment. All items are sold "as-is"; there is no warranty. Aside from that, our normal [return policy](#) applies; if you don't like an item you purchase from us, return it within 30 days for credit.

All that said, machines that are described as refurbished carry the same [limited warranty](#) as the new machines we sell.

	HitTorque Bench Mill, Long Table, Deluxe Returned/refurbished unit. Machine is in good working order but has some scratches, dings, and other imperfections. Original P/N 6550 \$2,600.00 Add to Cart
	HitTorque Micro Mill, 2MT Spindle Showroom floor model - minor dings, scuffs, and scratches. Original P/N 4700 \$730.00 Add to Cart

Outlet Store

Heavily discount fully functional products, including machines!

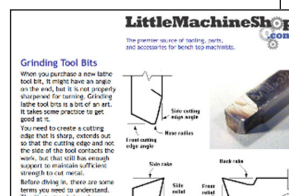
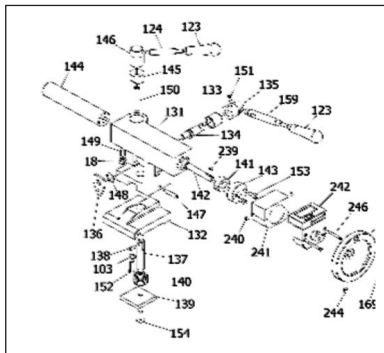
Learning Center

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Operation	Milling	
Material	Aluminum	
Cutter Material	<input checked="" type="radio"/> HSS <input type="radio"/> Carbide	
Cutting Speed	200 fpm (100-300 fpm)	
End Mill Diameter	in	
Spindle Speed	RPM	Machine Max
Cutting Edges	2	
Chip Load	in/flute	
Feed Rate	ipm	Calculate

Support

User guides & manuals, wiring diagrams, spare parts, machine drawings, and Chris' Tips!



Centering Work in a 4-Jaw Chuck
If people will tell you that centering work in a 4-jaw chuck quickly and easily is a mystical skill that can be acquired only after much practice, well, being is a procedure to center work in just two revolutions of the chuck. This procedure, and regardless of your skill level, you can center work by and accurately. relatively good as the "trial and error" method of centering in a 4-jaw chuck. But I cut my time by about two-thirds the very first time I used the wing procedure.

Here are the steps to center work in a 4-jaw chuck:
1. Mount the workpiece in the chuck and center it by eye. 4-jaw chucks have covers in the face of the chuck body to make this easier.
2. Turn the workpiece against the workpiece.



Info Center

Information on projects, clubs & exhibitions, machinist related sites, shopping guides, and our famous Machinists Calculator.



Chris' Tips

These clamps make it simple to mount a screwless vise to your mill table. They are sized for 3" screwless vises with 8 mm (5/16") holes in the side.

The adjustable foot can be rotated to provide more distance from the mill table.

To use these on a mini mill, you need two [T-slot nuts](#) and two 3/8-16 x 1.25" socket head cap screws. Your hardware store has the socket head cap screws.

Here is a vise mounted with the clamps.



Replacement Parts

Find drawings and complete parts lists with product links for nearly every replacement part for our machines and dozens of other brands.

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We're machinists, we're makers, we're hobbyists, and consumers just like you. For over 20 years we have provided resources and information for bench top machinists to better practice their craft in addition to the products we sell. With direct US based customer and technical support from our knowledgeable team and direct relationships with the manufacturers we stand behind all our products. If you have any questions, please feel to reach out to us and we would be happy to help.

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