Welcome to LittleMachineShop.com...

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

We focus on best-in-class machines and we offer tools, accessories, and replacement parts for:

- Bench top lathes
- Bench top milling machines
- Small band saws

Products we support are sold by LittleMachineShop.com, Grizzly Industrial, Harbor Freight Tools, Micro-Mark, Busy Bee Tools, and others. Besides the products shown in this catalog, we have virtually every replacement part for the mini lathes, mini mills, and micro mills sold by these companies.

Visit our Web site at www.littlemachineshop.com to see large, full-color pictures along with more products and more information than we can fit in this catalog.

Check our Web site at www.littlemachineshop.com for current prices. Prices are subject to change without notice.
## Contents

### CNC Machines
- Accessories 13
- CNC Lathes 13
- CNC Milling Machines 13

### Collets and Chucks
- 3C Collets 14
- 5C Collets 14
- Brown & Sharpe Collets 14
- ER Collets 15
- Morse Taper Collets 16
- R8 Collets 17
- Taig Collets 17
- Watchmakers Collets 17

### Coolant Systems
- Cutting Compounds 17
- Flood Systems 18
- Lubricants 18
- Mist Systems 18

### Cutting Tools
- Boring Bars 19
- Broaches 20
- Counterbores 20
- Countersinks 20
- Cut-Off Tools 20
- Drill Sets 21
- Drills 22
- End Mills 22
- Engraving Tools 24
- Indexable End Mills 24
- Indexable Inserts 25
- Reamers 25
- Saw Blades 25
- Slitting Saws 26
- T-Slot and Dovetail Cutters 26
- Turning Tools 26

### DROs
- DRO Packages 29
- Scales 30

### Kits
- Lathe Conversion Kits 30
- Lathe Starter Kits 31
- Mill Conversion Kits 33
- Mill Starter Kits 35
- Spare Parts Kits 38

### Lathe
- 10x21 Lathe (C6) Accessories 38
- 4x5 Micro Lathe (C0)/Unimat Accessories 38
- 7x10/12/14 Mini Lathe (C2/C3) Accessories 39
- 7x10/12/14 Mini Lathe (C2/C3) Assemblies 41

### Lathe Chucks
- Accessories 43
- Adapters 43
- Chucks 44

### Machines
- Band Saws 45
- Lathes 45
- Mills 46
- Stands/Cabinets 47
- HiTorque Bench Mill (SX2.7) Accessories 48
- HiTorque Mini Mill (SX2) Accessories 48
- Micro Mill (X1) Accessories 48
- Micro Mill (X1) Assemblies 49
- Mini Mill (X2) Accessories 49
- Mini Mill (X2) Assemblies 49
- Quick Change Tooling 50
- Small Mill (X3/SX3) Accessories 51
- Tooling 52
- Flywheels 53
- Fully Assembled and Kits 53
- Plans 53
- Calipers 53
- Edge and Center Finders 55
- Indicators 56
- Layout 58
- Measuring 60
- Sets 66
- Setup 66
- CNC Conversions 68
- Engines 68
- Tools 69

### Precision

### QC Tool Posts
- QCTP Sets 69

### Rotary Tables
- Rotary Tables 70

### Threading Tools
- Die Holders 72
- Hand Tappers 72
- Lathe Threading 72
- Tap and Die Sets 72
- Tap Holders and Guides 73
- Taps and Dies 74

### Tooling
- Arbor and Sleeves 75
- Clamping Kits 75
- Drill Chucks 76

### Tools & Things
- Abrasives 77
- Adhesives 77
- Air Tools 78
- Batteries 78
- Gift Certificates 78
- Lights 78
- Lubrication 78
- Shims 78
- Things 78
- Tools 79
- Workwear 82
- X-Y Tables 82

### Videos and Books
- CNC Books 82
- Machinist Books 82
- Other Books 82
- Reference Books 82
- Users Guides 83
- Videos 83

### Vises
- Accessories 84
- Milling Vises 84
- Other Vises 85
- Screwless Vises 85

### Thread Repair Tools 74
HiTorque Bench Mill, Models 5500/5550

The LittleMachineShop.com HiTorque Bench Mill is a step up in size, rigidity, and power compared to a mini mill. It provides a larger table, more travel, and more horsepower.

The 23.4" x 5.5" (595 mm x 140 mm) table on the 5500 bench mill provides a large work area. And the extra-long 27.6" x 6.3" (700 mm x 160 mm) table on the 5550 deluxe bench mill is huge! A 750 watt (1 hp) brushless DC motor provides abundant spindle power and tremendous low-end torque.

The HiTorque Bench Mill incorporates a true quill and drill press-style handles for easy drilling. A button on the end of each handle reverses the spindle to make tapping easy.

- R8 spindle for wide tool availability
- 0.001" graduated dials, 0.100" per turn
- Tapping mode for reversing taps out
- Solid rectangular column for rigidity
- Dovetail column to maintain head alignment at any height
- E-stop safety power switch
- Spindle speed display
- Spindle fine feed and position lock
- Fine feed on Z-axis for precise control
- Adjustable gibs on all dovetail ways
- Includes ½" capacity drill chuck and arbor

New for Fall 2017! 5550 HiTorque Deluxe Bench Mill

All the features of the 5500 bench mill plus:

- Extra-long table 27.6" x 6.3" (700 mm x 160 mm)
- 3-axis digital readout (DRO) with Bluetooth and 7" tablet display
- Electrically interlocked spindle lock
- Machined aluminum handwheels

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>5500</th>
<th>5550</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Milling Capacity</td>
<td>0.6&quot; (16 mm)</td>
<td></td>
</tr>
<tr>
<td>Face Milling Capacity</td>
<td>2.0&quot; (50 mm)</td>
<td></td>
</tr>
<tr>
<td>Drilling Capacity</td>
<td>0.8&quot; (20 mm)</td>
<td></td>
</tr>
<tr>
<td>Table Size</td>
<td>5500: 23.4&quot; x 5.5&quot; (595 mm x 140 mm)</td>
<td>5550: 27.6&quot; x 6.3&quot; (700 mm x 160 mm)</td>
</tr>
<tr>
<td>T-slots</td>
<td>3 slots 0.47&quot; (12.0 mm) wide</td>
<td></td>
</tr>
<tr>
<td>X-Axis Travel</td>
<td>5500: 15.6&quot; (395 mm); 5550: 19.7&quot; (500 mm)</td>
<td></td>
</tr>
<tr>
<td>Y-Axis Travel</td>
<td>7.0&quot; (178 mm)</td>
<td></td>
</tr>
<tr>
<td>Z-Axis Travel</td>
<td>11.6&quot; (295 mm)</td>
<td></td>
</tr>
<tr>
<td>Throat</td>
<td>7.5&quot; (190 mm)</td>
<td></td>
</tr>
<tr>
<td>X- and Y-Axis Feed Screws</td>
<td>0.100&quot; (2.54 mm) per rotation</td>
<td></td>
</tr>
<tr>
<td>Positioning Accuracy</td>
<td>0.0004&quot; (0.010 mm)</td>
<td></td>
</tr>
<tr>
<td>Spindle Taper</td>
<td>R8</td>
<td></td>
</tr>
<tr>
<td>Spindle Motor</td>
<td>1.0 hp (750 Watts)</td>
<td></td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>100 - 2000 RPM</td>
<td></td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 10 Amps</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>207 lbs (94 kg)</td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x D x H)</td>
<td>28.9&quot; x 25.0&quot; x 28.5&quot; (735 mm x 635 mm x 725 mm)</td>
<td></td>
</tr>
<tr>
<td>Crated Weight</td>
<td>262 lbs (119 kg)</td>
<td></td>
</tr>
<tr>
<td>Crate Dimensions (W x D x H)</td>
<td>32.0&quot; x 28.0&quot; x 35.5&quot; (813 mm x 711 mm x 902 mm)</td>
<td></td>
</tr>
</tbody>
</table>

Tooling Packages and Accessories

Each tooling package includes:

- 4" precision milling vise and mounting kit
- Thin parallels set
- 1-2-3 blocks
- 58-piece clamping kit
- R8 collet set
- End mill set, 2- and 4-flute
- Center drills
- Edge and center finder
- T-slot cleaner

3526 Tooling Package $316.95
5489 Premium Tooling Package $530.95
5634 Stand Cabinet $229.95
HiTorque Mini Mill, Models 3990/4190

The LittleMachineShop.com HiTorque Mini Mill offers best-in-class features: more power, more torque, and a larger table than competitors’ mills. It has our exclusive solid column for extra rigidity. And it includes one of the most popular upgrades for our earlier mills: an air spring to support the mill head, which provides greater support for the head and increased travel on the Z-axis.

The 500 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 100 RPM to 2500 RPM continuously. There are no gears to shift. With no gears, the HiTorque Mini Mill is the quietest in its class.

The large mill table provides 50% more table area than other mini mills. It also has 30% more travel in each direction. The resettable feed dials allow you to zero them at any point.

The HiTorque Mini Mill has drill press handles for drilling and fast motion of the mill head. It also has Z-axis fine feed with 0.001" resolution for milling operations.

- R8 Spindle for wide tool availability
- Dovetail column maintains head alignment at any height
- E-stop safety power switch
- Adjustable Z-axis stop for repetitive drilling
- Neoprene bellows protect horizontal ways
- Adjustable gibbs on all dovetail ways
- Includes ½” capacity drill chuck and arbor

New for 2017! 4190 HiTorque Deluxe Mini Mill

All the features of the 3990 mini mill plus:

- 3-axis digital readout (DRO) with Bluetooth and 7” tablet display
- Electrically interlocked spindle lock
- Machined aluminum handwheels

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Milling Capacity</td>
<td>0.6” (16 mm)</td>
</tr>
<tr>
<td>Face Milling Capacity</td>
<td>1.2” (30 mm)</td>
</tr>
<tr>
<td>Drilling Capacity</td>
<td>0.5” (13 mm)</td>
</tr>
<tr>
<td>Table Size</td>
<td>18.1” x 4.7” (460 mm x 120 mm)</td>
</tr>
<tr>
<td>T-slots</td>
<td>3 slots 0.47” (12.0 mm) wide</td>
</tr>
<tr>
<td>X-Axis Travel</td>
<td>11.8” (300 mm)</td>
</tr>
<tr>
<td>Y-Axis Travel</td>
<td>5.1” (130 mm)</td>
</tr>
<tr>
<td>Z-Axis Travel</td>
<td>10.6” (270 mm)</td>
</tr>
<tr>
<td>Throat</td>
<td>6.5” (165 mm)</td>
</tr>
<tr>
<td>X- and Y-Axis Feed Screws</td>
<td>0.062” (1.59 mm) per rotation</td>
</tr>
<tr>
<td>Positioning Accuracy</td>
<td>0.0004” (0.010 mm)</td>
</tr>
<tr>
<td>Spindle Taper</td>
<td>R8</td>
</tr>
<tr>
<td>Spindle Motor</td>
<td>0.67 hp (500 Watts)</td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>100 - 2500 RPM</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 8 Amps</td>
</tr>
<tr>
<td>Weight</td>
<td>124 lbs (56 kg)</td>
</tr>
<tr>
<td>Dimensions (W × D × H)</td>
<td>23.2” × 19.7” × 36.3” (590 mm × 500 mm × 922 mm)</td>
</tr>
<tr>
<td>Crated Weight</td>
<td>161 lbs (73 kg)</td>
</tr>
<tr>
<td>Crate Dimensions</td>
<td>23.6” x 25.0” x 29.9” (600 mm x 635 mm x 760 mm)</td>
</tr>
</tbody>
</table>

Tooling Packages and Accessories

We design our tooling packages to include everything you need to get started with a new machine. Tooling packages offer tremendous savings over buying individual items, and you know that every part of the tooling package will work with your new machine. Each tooling package includes:

- 3” precision milling vise and mounting kit
- Thin parallels set
- 1-2-3 blocks (except 4491)
- 58-piece clamping kit
- R8 collet set
- End mill set, 2- and 4-flute
- Center drills
- Edge and center finder
- T-slot cleaner

We offer three packages; the higher priced packages include more pieces (e.g., more end mill sizes) and higher quality components.

<table>
<thead>
<tr>
<th>Package Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4491 Mini Mill Essentials Tooling Package</td>
<td>$229.95</td>
</tr>
<tr>
<td>3489 Tooling Package</td>
<td>$303.95</td>
</tr>
<tr>
<td>4723 Precision Tooling Package</td>
<td>$289.95</td>
</tr>
<tr>
<td>4858 Premium Tooling Package</td>
<td>$547.95</td>
</tr>
<tr>
<td>5629 Stand Cabinet</td>
<td>$139.95</td>
</tr>
</tbody>
</table>
HiTorque Micro Mill, Models 4700/4660

Like its big brother, the best-in-class LittleMachineShop.com HiTorque Micro Mill has more power, more torque, and a larger table than competitors’ mills.

The 250 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 100 RPM to 5000 RPM continuously. There are no gears or belts to shift. And, with no gears, the HiTorque Micro Mill is the quietest in its class.

The large mill table provides 50% more width than other micro mills. The resettable feed dials allow you to zero them at any point.

The HiTorque Micro Mill has a drill press handle for drilling. It also has Z-axis fine feed with 0.001” resolution for milling operations.

• Available with #2 Morse Taper (model 4700) or ER-16 (model 4660) spindle
• 250 Watt output spindle motor
• Large X-Y table
• Solid, non-tilting column provides great rigidity
• Dovetail column maintains head alignment at any height
• Fine feed on Z-axis for precise control
• Radial handle for drilling
• E-stop safety power switch
• Adjustable Z-axis stop for repetitive drilling
• Adjustable gibbs on all dovetail ways
• Includes 3/8” capacity drill chuck and arbor

4700 2MT Spindle HiTorque Micro Mill $659.95
4660 ER-16 Spindle HiTorque Micro Mill $699.95

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>4700 2MT Micro Mill</th>
<th>4660 ER-16 Micro Mill</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Milling Capacity</td>
<td>0.4” (10 mm)</td>
<td>0.4” (10 mm)</td>
</tr>
<tr>
<td>Face Milling Capacity</td>
<td>0.6” (16 mm)</td>
<td>0.6” (16 mm)</td>
</tr>
<tr>
<td>Drilling Capacity</td>
<td>0.4” (10 mm)</td>
<td>0.4” (10 mm)</td>
</tr>
<tr>
<td>Table Size</td>
<td>15.7” × 5.7” (400 mm × 145 mm)</td>
<td>15.7” × 5.7” (400 mm × 145 mm)</td>
</tr>
<tr>
<td>T-slots</td>
<td>3 slots 0.31” (8.0 mm) wide</td>
<td>3 slots 0.31” (8.0 mm) wide</td>
</tr>
<tr>
<td>X-Axis Travel</td>
<td>11.8” (300 mm)</td>
<td>11.8” (300 mm)</td>
</tr>
<tr>
<td>Y-Axis Travel</td>
<td>5.9” (150 mm)</td>
<td>5.9” (150 mm)</td>
</tr>
<tr>
<td>Z-Axis Travel</td>
<td>8.7” (220 mm)</td>
<td>8.7” (220 mm)</td>
</tr>
<tr>
<td>Throat</td>
<td>5.5” (140 mm)</td>
<td>5.5” (140 mm)</td>
</tr>
<tr>
<td>X- and Y-Axis Feed Screws</td>
<td>0.050” (1.27 mm) per rotation</td>
<td>0.050” (1.27 mm) per rotation</td>
</tr>
<tr>
<td>Positioning Accuracy</td>
<td>0.0004” (0.010 mm)</td>
<td>0.0004” (0.010 mm)</td>
</tr>
<tr>
<td>Spindle Taper</td>
<td>2 Morse Taper (4700)</td>
<td>ER-16 (4660)</td>
</tr>
<tr>
<td>Spindle Motor</td>
<td>0.34 hp (250 Watts)</td>
<td>0.34 hp (250 Watts)</td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>100 - 5000 RPM</td>
<td>100 - 5000 RPM</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 5 Amps</td>
<td>120 V 60 Hz 5 Amps</td>
</tr>
<tr>
<td>Weight</td>
<td>106 lbs (48 kg)</td>
<td>106 lbs (48 kg)</td>
</tr>
<tr>
<td>Dimensions (W × D × H)</td>
<td>20.5” × 19.3” × 28.7” (520 mm × 490 mm × 730 mm)</td>
<td>20.5” × 19.3” × 28.7” (520 mm × 490 mm × 730 mm)</td>
</tr>
</tbody>
</table>

Tooling Packages and Accessories

We design our tooling packages to include everything you need to get started with a new machine. Tooling packages offer tremendous savings over buying individual items, and you know that every part of the tooling package will work with your new machine. Each tooling package includes:

• 3” screwless vise and mounting kit
• Thin parallels set
• 1-2-3 blocks
• 36-piece clamping kit
• Collet set
• End mill set, 2- and 4-flute
• Center drills
• Edge and center finder

3491 2MT Micro Mill Tooling Package $299.95
4759 ER-16 Micro Mill Tooling Package $289.95
5627 Stand Cabinet $139.95
SIEG X2D Mini Mill

The SIEG X2D Mini Mill has all the features you want at an incredibly low price.

This mill has a solid column. It does not tilt from side to side. This construction 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. The resettable feed dials allow you to zero them at any point.

The X2D Mini Mill has drill press handles for drilling and fast motion of the mill’s head. It also has Z-axis fine feed with 0.001” resolution for milling operations.

• 350 Watt variable speed DC drive
• Large X-Y table
• R8 Spindle for wide tool availability
• Air spring provides greater support for the mill head and increased travel on the Z-axis
• Solid column mount for greater rigidity
• Fine feed on Z-axis for precise control
• Three radial handles for drilling
• Dovetail column maintains head alignment at any height
• E-stop safety power switch
• Adjustable Z-axis stop for repetitive drilling
• Neoprene bellows protect horizontal ways
• Adjustable gibbs on all dovetail ways
• Includes ½” capacity drill chuck and arbor

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Milling Capacity</td>
<td>0.6” (16 mm)</td>
</tr>
<tr>
<td>Face Milling Capacity</td>
<td>1.2” (30 mm)</td>
</tr>
<tr>
<td>Drilling Capacity</td>
<td>0.5” (13 mm)</td>
</tr>
<tr>
<td>Table Size</td>
<td>18.1” × 4.7” (460 mm × 120 mm)</td>
</tr>
<tr>
<td>T-slots</td>
<td>3 slots 0.47” (12.0 mm) wide</td>
</tr>
<tr>
<td>X-Axis Travel</td>
<td>11.8” (300 mm)</td>
</tr>
<tr>
<td>Y-Axis Travel</td>
<td>5.1” (130 mm)</td>
</tr>
<tr>
<td>Z-Axis Travel</td>
<td>10.6” (270 mm)</td>
</tr>
<tr>
<td>Throat</td>
<td>6.5” (165 mm)</td>
</tr>
<tr>
<td>X- and Y-Axis Feed Screws</td>
<td>0.062” (1.59 mm) per rotation</td>
</tr>
<tr>
<td>Positioning Accuracy</td>
<td>0.0004” (0.010 mm)</td>
</tr>
<tr>
<td>Spindle Taper</td>
<td>R8</td>
</tr>
<tr>
<td>Spindle Motor</td>
<td>0.47 hp (350 Watts)</td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>100 - 2500 RPM</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 6 Amps</td>
</tr>
<tr>
<td>Weight</td>
<td>126 lbs (57 kg)</td>
</tr>
<tr>
<td>Dimensions (W × D × H)</td>
<td>23.2” × 19.7” × 36.3”</td>
</tr>
<tr>
<td>Crated Weight</td>
<td>161 lbs (73 kg)</td>
</tr>
<tr>
<td>Crate Dimensions (W × D × H)</td>
<td>23.6” × 25.0” × 29.9”</td>
</tr>
</tbody>
</table>

Mill Comparison

How do you choose among the seven manual milling machines we offer? Here’s a quick rundown of the differences:

• The 4962 SIEG X2D Mini Mill has nearly all the features we’ve become famous for at an affordable price: largest mini mill table, rigid solid column, R8 spindle, and pre-installed air spring head support.

• The 3990 HiTorque Mini Mill adds the powerful HiTorque drive system, which uses a brushless DC motor to offer more power, greater torque at low speeds, full speed range without shifting gears, and quiet operation. The 4190 HiTorque Deluxe Mini Mill adds a factory-installed DRO, a spindle lock, and nicer looking handles.

• The 5500 HiTorque Bench Mill is a step up in size, rigidity, and power. It provides a larger table, more travel, and more horsepower than the mini mills. The 5550 HiTorque Deluxe Bench Mill has an even larger table, plus a factory-installed DRO, a spindle lock, and fancy handles.

• The 4660 or 4700 HiTorque Micro Mill offers the power (great torque at low speeds) and convenience (no gears or belts to shift) of the brushless DC drive system in a more compact configuration, ideal for smaller projects. Its higher spindle speed is ideal for small cutters.
HiTorque 8½” x 20” Bench Lathe, Models 3540/3595

The LittleMachineShop.com 8½”x20” HiTorque Bench Lathe is the best in its class. No other lathe in this size offers power cross feed.

The 1000 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 100 RPM to 2000 RPM continuously in both directions. There are no gears to shift.

The cross feed and compound rest dials are graduated in 0.001” and advance 0.050” per turn. The lathe is equipped with a 4-way indexing tool post set for 3/8” (10 mm) tools.

A reversible 2 mm pitch lead screw provides extended threading capability. You can create every American Standard Unified class 2A inch screw thread from 4 to 80 threads per inch, and you can create every American Standard Metric class 6h thread from 0.2 to 8 mm pitch with the change gears that are included. All the gears on this lathe are metal.

- Power longitudinal feed and power cross feed
- Genuine NSK ball bearings
- New for 2017! Induction hardened bed ways
- E-stop safety power switch
- Cam lock tailstock
- Four-way tool post
- Zero-resettable dials graduated in inches and mm
- Reversible lead screw for right- and left-hand threads

**New for 2017! 3595 HiTorque Deluxe Bench Lathe**

All the features of the 3540 bench lathe plus:

- AXA quick change tool post (QCTP) set with five tool holders
- Digital readout (DRO) displays on compound rest and cross slide
- Anodized aluminum hand wheels, knobs, and levers
- Improved splash guard
- Modified compound rest to better accommodate QCTP

3540 HiTorque 8½”x20” Bench Lathe $1799.95
3595 HiTorque 8½”x20” Deluxe Bench Lathe $2349.95

**Tooling Packages and Accessories**

We design our tooling packages to include everything you need to get started with a new machine. Tooling packages offer tremendous savings over buying individual items, and you know that every part of the tooling package will work with your new machine. Each tooling package includes:

- Quick change tool post set (3540 packages only)
- Indexable turning tools
- Boring bar
- Center drills
- Cut-off blade
- Drill chuck and arbor

For 3540  4217 Tooling Package $214.95
4857 Premium Tooling Package $284.95

For 3595  3164 Tooling Package $81.95
3389 Premium Tooling Package $155.95
3973 Stand $199.95

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swing Over Bed</td>
<td>8.5” (215 mm)</td>
</tr>
<tr>
<td>Swing Over Saddle</td>
<td>4.6” (118 mm)</td>
</tr>
<tr>
<td>Between Centers</td>
<td>20” (510 mm)</td>
</tr>
<tr>
<td>Spindle Through Hole</td>
<td>0.8” (20 mm)</td>
</tr>
<tr>
<td>Spindle Motor Output</td>
<td>1.34 hp (1000 Watts)</td>
</tr>
<tr>
<td>Range of Threads</td>
<td>8-80 TPI (0.2-8.0 mm)</td>
</tr>
<tr>
<td>Spindle Taper</td>
<td>#3 Morse taper</td>
</tr>
<tr>
<td>Tailstock Taper</td>
<td>#2 Morse taper</td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>100 - 2000 RPM</td>
</tr>
<tr>
<td>Cross Slide Travel</td>
<td>3.9” (100 mm)</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 12 Amps</td>
</tr>
<tr>
<td>Weight</td>
<td>220 lbs (100 kg)</td>
</tr>
<tr>
<td>Dimensions (W × D × H)</td>
<td>40” x 22” x 16” (1010 mm x 550 mm x 400 mm)</td>
</tr>
<tr>
<td>Crated Weight</td>
<td>281 lbs (128 kg)</td>
</tr>
<tr>
<td>Crate Dimensions</td>
<td>44” x 28” x 22” (1110 mm x 700 mm x 550 mm)</td>
</tr>
</tbody>
</table>
HiTorque 7”x16” Mini Lathe, Models 5100/5200

The LittleMachineShop.com HiTorque Mini Lathe is the best in its class. It has the most power, most torque, and more features than competitors’ lathes.

The 500 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 50 RPM to 2500 RPM continuously in both directions. There are no gears to shift.

The cross feed and compound rest dials are graduated in 0.001” and 0.025 mm. A 4” 3-jaw lathe chuck is included, and the lathe is equipped with a 4-way indexing tool post set for 5/16” (8 mm) tools.

Real top and bottom half-nuts and a reversible 16 TPI lead screw provide extended threading capability. You can create every American Standard Unified class 2A inch screw thread from 4 to 80 threads per inch, and you can create every American Standard Metric class 6h thread from 0.3 to 8 mm pitch with the extra 21 tooth change gear that is included.

The lathe includes a chip tray, a backsplash guard, and spreaders to give the feet a broader stance.

The deluxe model 5200 (shown at left) adds an all-steel wedge-style quick change tool post set with five tool holders, digital readout (DRO) displays on the compound rest and cross slide, and metal hand wheels with chrome levers.

• Includes Mini Lathe Users Guide written by Chris Wood
• 500 Watt output spindle motor
• No gears in spindle drive
• 4” 3-jaw chuck
• E-stop safety power switch
• Zero-resettable dials graduated in inches and mm
• Extended threading capability - inch and metric threads
• Rear apron shield to keep swarf out of the mechanism
• Cam lock tailstock
• Four-way tool post on 5100; quick change tool post set on 5200
• Reversible lead screw for right and left hand threads

5100 HiTorque 7”x16” Mini Lathe $899.95
5200 HiTorque 7”x16” Deluxe Mini Lathe $1249.95

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swing Over Bed</td>
<td>7” (180 mm)</td>
</tr>
<tr>
<td>Swing Over Saddle</td>
<td>4.3” (110 mm)</td>
</tr>
<tr>
<td>Between Centers</td>
<td>16.1” (410 mm)</td>
</tr>
<tr>
<td>Spindle Through Hole</td>
<td>0.8” (20 mm)</td>
</tr>
<tr>
<td>Spindle Motor Output</td>
<td>0.7 hp (500 Watts)</td>
</tr>
<tr>
<td>Range of Threads</td>
<td>4-80 TPI (0.3-8 mm)</td>
</tr>
<tr>
<td>Spindle Taper</td>
<td>#3 Morse taper</td>
</tr>
<tr>
<td>Tailstock Taper</td>
<td>#2 Morse taper</td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>50 - 2500 RPM</td>
</tr>
<tr>
<td>Cross Slide Travel</td>
<td>2.6” (65 mm)</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 8 Amps</td>
</tr>
<tr>
<td>Weight</td>
<td>82 lbs (37 kg)</td>
</tr>
<tr>
<td>Dimensions (W × D × H)</td>
<td>27” × 10” × 12” (685 mm × 260 mm × 300 mm)</td>
</tr>
<tr>
<td>Crate Dimensions (W × D × H)</td>
<td>35” × 16” × 15” (900 mm × 410 mm × 380 mm)</td>
</tr>
</tbody>
</table>

Tooling Packages and Accessories

Our tooling packages include everything you need to get started with a new machine. Each tooling package includes:

• Quick change tool post set (5100 packages only)
• Indexable turning tools
• Boring bar
• Center drills
• Cut-off blade
• Drill chuck and arbor

For 5100    5207 Tooling Package $198.95
4116 Premium Tooling Package $274.95
For 5200    5124 Tooling Package $78.95
5125 Premium Tooling Package $154.95
5626 Stand Cabinet $168.95
SIEG C3 7”x14” Mini Lathe

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. You can create every American Standard Unified class 2A inch screw thread from 4 to 80 threads per inch, and you can create every American Standard Metric class 6h thread from 0.3 to 8 mm pitch.

The cross feed and compound rest dials are graduated in 0.001” and 0.025 mm. The lathe is equipped with a 4-way indexing tool post set for 5/16” (8 mm) tools.

The lathe includes a chip tray, a backsplash guard, and a threading dial.

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swing Over Bed</td>
<td>7” (180 mm)</td>
</tr>
<tr>
<td>Swing Over Saddle</td>
<td>4.3” (110 mm)</td>
</tr>
<tr>
<td>Between Centers</td>
<td>14.0” (355 mm)</td>
</tr>
<tr>
<td>Spindle Through Hole</td>
<td>0.8” (20 mm)</td>
</tr>
<tr>
<td>Spindle Motor Output</td>
<td>0.5 hp (350 Watts)</td>
</tr>
<tr>
<td>Range of Threads</td>
<td>4-80 TPI (0.3-8 mm)</td>
</tr>
<tr>
<td>Spindle Taper</td>
<td>#3 Morse taper</td>
</tr>
<tr>
<td>Tailstock Taper</td>
<td>#2 Morse taper</td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>100 - 3000 RPM</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 6 Amps</td>
</tr>
<tr>
<td>Weight</td>
<td>88 lbs (40 kg)</td>
</tr>
<tr>
<td>Dimensions (W x D x H)</td>
<td>29” x 10” x 12” (740 mm x 260 mm x 300 mm)</td>
</tr>
</tbody>
</table>

- Includes 3” 3-jaw chuck, 2 sets of jaws, and chuck key
- Variable speed 350 Watt spindle motor with two speed ranges for low speed torque
- Digital spindle speed readout
- Cam-lock tailstock
- E-stop safety power switch
- 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
- Cam lock tailstock
- Four-way turret tool post
- Reversible lead screw for right and left hand threads

4959 SIEG C3 7”x14” Mini Lathe $599.95
4607 Accessory Package $334.95
5207 Tooling Package $198.95
4116 Premium Tooling Package $274.95
5625 Stand Cabinet $168.95

Lathe Comparison

How do you choose among the five lathes shown on this and the preceding pages? Here’s a quick rundown of the differences:

- The 4959 SIEG C3 7”x14” Mini Lathe is a full featured lathe at an affordable price. It features a 14” bed and spindle speed readout in addition to the cam-lock tailstock that is included on all our lathes.
- The 5100 HiTorque Mini Lathe adds the powerful HiTorque drive system, which uses a brushless DC motor to offer more power, greater torque at low speeds, full speed range without shifting gears, and quiet operation. It comes with a 4” 3-jaw chuck. The distance between centers is 16”.
- The 5200 HiTorque Deluxe Mini Lathe adds three features to the 5100: an all-steel wedge-style quick change tool post set, digital readout (DRO) displays on the compound rest and cross slide, and metal hand wheels with chrome levers.
- The 3540 HiTorque Bench Lathe is a big step up in size (8½” x 20”) and power. It has all the features of our smaller lathes, plus power cross feed.
- The 3595 HiTorque Deluxe Bench Lathe adds several features to the 3540: most notably, an AXA quick change tool post set, digital readout displays on the compound rest and cross slide, and anodized aluminum hand wheels, knobs, and levers.
Speed Lathe, Model 4160

The speed lathe is ideal for polishing and deburring. With its small footprint, you can place it near your CNC machine for quick and easy finishing, gaging, and other operations with hand-held tools.

It incorporates a lever-operated SC collet closer for fast part changes.

You control operation with the front panel switch or with the included foot switch.

### Specifications

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Swing</td>
<td>12” (305 mm)</td>
</tr>
<tr>
<td>Spindle Motor Output</td>
<td>1.1 hp (800 Watts)</td>
</tr>
<tr>
<td>Spindle Taper</td>
<td>5C Collet</td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>0 - 3200 RPM</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 10 Amps</td>
</tr>
<tr>
<td>Crated Weight</td>
<td>125 lbs (57 kg)</td>
</tr>
<tr>
<td>Machine Weight</td>
<td>105 lbs (48 kg)</td>
</tr>
<tr>
<td>Overall Dimensions (W x D x H)</td>
<td>14” x 18” x 15” (343 mm x 470 mm x 381 mm)</td>
</tr>
</tbody>
</table>

4160 Speed Lathe $1595.95

Bench-Top Band Saw

The LittleMachineShop.com Bench-Top Band Saw is perfect for the small shop. It’s got the capacity of larger floor-standing saws but takes a fraction of the space.

The two-speed motor makes it great for ferrous (e.g., steel) and non-ferrous (e.g., aluminum) metals. Use low speed for steel and other harder materials. Use high speed for aluminum and other non-ferrous metals. High speed works well for wood and plastic, too.

It’s quieter and more accurate than chop saws. And by removing a few bolts and installing a handle (included), it becomes a handy portable saw.

- Uses widely available 44-7/8” blades
- Two blade speeds
- 3” (80 mm) x 4” (100 mm) capacity
- Comes with a 14 TPI bi-metal blade
- Includes stand with quick-adjusting cast iron vise

### Specifications

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Cutting Speed</td>
<td>105 FPM (58 m/Min)</td>
</tr>
<tr>
<td>High Cutting Speed</td>
<td>280 FPM (85 m/Min)</td>
</tr>
<tr>
<td>Round tube capacity</td>
<td>3” (80 mm)</td>
</tr>
<tr>
<td>Blade size</td>
<td>44.88” x 0.5” x 0.02” (1140 mm x 13 mm x 0.6 mm)</td>
</tr>
<tr>
<td>Round bar capacity</td>
<td>4” (100 mm)</td>
</tr>
<tr>
<td>Rectangle capacity</td>
<td>3” x 4” (80 mm x 100 mm)</td>
</tr>
<tr>
<td>Cutting Angle</td>
<td>0 to 45 Degrees</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>120 V 60 Hz 8 Amps</td>
</tr>
<tr>
<td>Base Dimensions (W x D)</td>
<td>18.5” x 10.6” (470 mm x 270 mm)</td>
</tr>
</tbody>
</table>

4829 Bench-Top Band Saw $249.95
**Tormach CNC Milling Machines**

Whether you’re in R&D, education, manufacturing, or simply have a great idea for a product, you need an affordable precision machine to make things happen. The Tormach PCNC milling machines offer the serious machining capability, backed by industrial quality, which is so necessary to bring your ideas to life. With unprecedented affordability and value, the open architecture design combines cast iron construction with personal computer technology to address a wide variety of needs.

Three models are available:

- **PCNC 440**  The newest addition to the lineup fits all-around capability in a compact and affordable package. The PCNC 440 is perfect for anybody who wants to do real cutting, but doesn’t have a lot of space.

  The PCNC 440 offers high-performance bipolar stepper motors with Leadshine micro stepping drivers. It also incorporates rolled C7 ball screws with anti-backlash double ball nuts.

  It has a cast iron frame and table with hand-scraped hydrodynamic ways and tapered adjustment gibs. The way surfaces are low friction PTFE-filled Acetyl bonded sliding surfaces similar to Rulon and Turcite.

  We offer the PCNC 440 as a package that includes the PathPilot™ machine controller system, a 4" CNC vise, a Tormach Tooling System™ basic tooling set, and other accessories.

- **PCNC 770 Series 3**  With a 10000 RPM spindle and 130 IPM maximum feed rates, the PCNC 770 is a top performer when it comes to aluminum, light metals, and plastic – and still up to the task when you need to cut tough metals like stainless steel or titanium.

  Combined with a space-saving footprint, basic household 115 VAC power requirement, and innovative moving features, the versatile PCNC 770 is a perfect fit, no matter the size of your shop.

- **PCNC 1100 Series 3**  At over 1100 lbs and with a 5000 RPM spindle, the PCNC 1100 is fully capable of cutting iron, steel, titanium, and even chromium alloys like 300 or 400 series stainless.

  The machine’s design is focused on the needs of prototyping, R&D, and small shop operations. The open design is better suited to combined manual and automatic operations than an enclosed VMC (vertical machining center), yet when combined with the Tormach machine stand you still have good chip and coolant containment and a clean shop. By limiting rapid motion to less than 100 IPM the machine is not only lower in cost, but also safer to operate. By replacing a conventional ATC (automatic tool changer) with the quick change Tormach Tooling System, the machine is both easier to afford and easier to maintain. Tooling cost is significantly lower, yet the tool change time is still less than 30 seconds. The machine is built to industrial standards and perfectly suited to work cells in a lean manufacturing environment or dedicated secondary operations.

  The PCNC 1100 is PC controlled, allowing your CAD and CAM software to coexist with the CNC control program. A single workstation takes your idea from concept to completion. Again, this reduces your machine cost and improves overall turnaround time. The control system uses standard industrial components and interfaces. This approach minimizes the initial cost, reduces maintenance cost, and virtually eliminates any risk of obsolescence. The combined effect gives you a highly reliable product with a low cost of ownership.

  We sell machines, stands, options, and accessories on an a la carte basis so you buy only what you need. Machines include CNC control software with all functions, including 4th axis support. The straightforward machine design is supported with extensive technical documentation, telephone support, and warranty service on replacement parts.

  Visit our showroom in Pasadena for a demo.

  **Machine prices start at $6850.00**
### Specifications

<table>
<thead>
<tr>
<th></th>
<th>PCNC 440</th>
<th>PCNC 770</th>
<th>PCNC 1100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table Size</strong></td>
<td>18.0” x 6.3” (457 mm x 160 mm)</td>
<td>26” x 8” (660 mm x 203 mm)</td>
<td>34.0” x 9.5” (864 mm x 241 mm)</td>
</tr>
<tr>
<td><strong>T-slots</strong></td>
<td>3 slots 0.39” (10.0 mm) wide</td>
<td>3 slots 0.62” (15.9 mm) wide</td>
<td>3 slots 0.62” (15.9 mm) wide</td>
</tr>
<tr>
<td><strong>X-Axis Travel</strong></td>
<td>10.0” (254 mm)</td>
<td>14.0” (356 mm)</td>
<td>18.0” (457 mm)</td>
</tr>
<tr>
<td><strong>Y-Axis Travel</strong></td>
<td>6.25” (158.8 mm)</td>
<td>7.5” (190 mm)</td>
<td>9.5” (241 mm)</td>
</tr>
<tr>
<td><strong>Z-Axis Travel</strong></td>
<td>10.0” (254 mm)</td>
<td>13.25” (337 mm)</td>
<td>16.25” (413 mm)</td>
</tr>
<tr>
<td><strong>Spindle Taper</strong></td>
<td>R8</td>
<td>R8</td>
<td>R8</td>
</tr>
<tr>
<td><strong>Spindle Motor</strong></td>
<td>2/3 hp brushless DC motor</td>
<td>1 hp sensorless vector motor</td>
<td>1.5 hp sensorless vector motor</td>
</tr>
<tr>
<td><strong>Spindle Speed</strong></td>
<td>300 - 10000 RPM</td>
<td>175 - 10000 RPM</td>
<td>100 - 5140 RPM</td>
</tr>
<tr>
<td><strong>Rapid Travel Maximum</strong></td>
<td>135 in/min (3429 mm/min)</td>
<td>135 in/min (3429 mm/min)</td>
<td>110 in/min (2794 mm/min)</td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td>120 V 60 Hz 15 Amps</td>
<td>120 V 60 Hz</td>
<td>240 V 60 Hz 20 Amps</td>
</tr>
<tr>
<td><strong>Machine Weight</strong></td>
<td>600 lbs (205 kg)</td>
<td>908 lbs (301 kg)</td>
<td>1580 lbs (514 kg)</td>
</tr>
<tr>
<td><strong>Dimensions (W x D x H)</strong></td>
<td>80” x 45” x 82” (203 cm x 114 cm x 208 cm)</td>
<td>61.5” x 45” x 73” (156 cm x 114 cm x 185 cm)</td>
<td>42” x 36” x 72” (106 cm x 91 cm x 183 cm)</td>
</tr>
</tbody>
</table>

### Tormach CNC Lathe

The **Tormach 15L Slant-PRO™** is a compact CNC slant-bed lathe designed for prototyping and light production work. With highly customizable workholding, rigid tapping support, and a host of configurable options and upgrades, the Tormach 15L Slant-Pro is a multipurpose CNC lathe for the small shop. Features include:

- Cast iron frame
- 15” swing over bed diameter
- Onboard Conversational Programming Interface
- Native 5C spindle; removable taper insert provides up to 1.4” spindle bore
- D1-4 spindle nose; accepts D1-4 cam-lock lathe chucks
- Extra long 24.5” carriage; supports QC tool post, gang, and turret tooling
- Rigid tapping support
- 3 hp spindle with speeds up to 3500 RPM
- 12 month factory warranty

The 15L Slant-PRO™ can be accessorized with a wide array of tool changing and work holding options, including gang, quick change, or fully automatic tool changing, collet closers, etc.. The available spindle speed range and horsepower make it well suited to cutting most metals, as well as plastics and non-abrasive composites. Conversational programming screens make this lathe a versatile prototyping tool and easy to program CNC tool. Many part geometries can be programmed on the control without resorting to CAD/CAM.

### Specifications

<table>
<thead>
<tr>
<th></th>
<th>15” (381 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Swing Over Bed</strong></td>
<td>15” (381 mm)</td>
</tr>
<tr>
<td><strong>Swing Over Saddle</strong></td>
<td>6.2” (157 mm)</td>
</tr>
<tr>
<td><strong>Spindle Through Hole</strong></td>
<td>1.4” (36 mm)</td>
</tr>
<tr>
<td><strong>Spindle Motor Output</strong></td>
<td>3 hp (2237 Watts)</td>
</tr>
<tr>
<td><strong>Spindle Taper</strong></td>
<td>5C</td>
</tr>
<tr>
<td><strong>Spindle Nose</strong></td>
<td>D1-4</td>
</tr>
<tr>
<td><strong>Spindle Speed</strong></td>
<td>50 - 3500 RPM</td>
</tr>
<tr>
<td><strong>Carriage Travel (X, Z)</strong></td>
<td>10” x 12” (254 mm x 305 mm)</td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td>240 V 60 Hz</td>
</tr>
<tr>
<td><strong>Power (Secondary)</strong></td>
<td>120 V 60 Hz</td>
</tr>
<tr>
<td><strong>Crated Weight</strong></td>
<td>1580 lbs (718 kg)</td>
</tr>
<tr>
<td><strong>Overall Dimensions (W x D x H)</strong></td>
<td>58” x 29” x 66” (1473 mm x 737 mm x 1676 mm)</td>
</tr>
<tr>
<td><strong>Crate Dimensions (W x D x H)</strong></td>
<td>65” x 37” x 65” (1651 mm x 940 mm x 1651 mm)</td>
</tr>
</tbody>
</table>

$11,540.00
CNC Machines: Accessories

4244 Computer, Machine Controller
- Dual Core Atom processor
- 60 GB solid state drive
- 2 GB Memory
- 19" flat screen monitor
- Keyboard & Mouse
- Complete jog pendant
- Setup software included

$639.95

3414 Jog Dial for CNC Machines
- The ideal Mach3 accessory
- Fully configurable
- USB Interface
- Setup software included
- Complete jog pendant
- The Z-Bot Jog Dial II replaces the hand cranks on CNC mills. The Z-Bot Jog Dial II is a USB jog pendant controller developed to work in conjunction with the popular Mach3 CNC control software. It is supplied with an installation disc that contains a Mach3 custom plug-in. The Jog Dial II is highly flexible, easy to use, requires minimal configuration, and does not use any parallel port pins. The Jog Dial II USB controller has an inner and outer dial. Used for rapid coarse positioning, the outer dial will jog progressively faster, up to the full jog speed configured in Mach3, as the dial is turned further to the right or left of the center detent. The outer dial springs back to center position when released. Used for fine positioning, the inner dial jogs the machine one step increment, as configured in Mach3 for each “click.” Four buttons are used to select the axis to jog. The fifth button is easily configured for a variety of Mach3 functions using the plug-in supplied.

$89.95

4088 PathPilot Machine Controller, Tormach
- Includes computer, monitor, mini keyboard, keyboard cover, and mouse
- Tormach Performance Machine Controller (34119)
- Standard LCD Monitor (30615)
- Mini Keyboard (31371)
- Keyboard Cover (31384)

$907.23

CNC Machines: CNC Milling Machines

4263 Milling Machine CNC, Tormach PCNC 1100
- Personal CNC milling machine
- Vector technology spindle drive 1100W continuous, 2800W peak
- Table size: 34" x 9.5" x 16.25" (X, Y, Z)
- High performance stepper motors with microstepping drivers

$8,480.00

5349 Milling Machine CNC, Tormach PCNC 440
- PCNC 440 milling machine
- PathPilot™ Control System
- 4" CNC Vise
- Basic TTS Tooling Set
- Other accessories

$6,995.00

4245 Lathe CNC, Tormach 15L Slant Pro
- 15" Diameter swing over bed
- 3 HP Spindle (up to 3500 RPM)
- D1-4 Nose with removable SC taper Insert
- 25" Carriage
- Conversational programming

$11,540.00

Tormach 15L Slant-Pro™ is a compact CNC slant-bed lathe designed for prototyping and light production work. With highly customizable workholding, rigid tapping support, and a host of configurable options and upgrades, the Tormach 15L Slant-Pro™ is a multipurpose CNC lathe for the small shop. The 15L Slant-Pro™ can be accessorized with a wide array of tool changing and work holding options, including gang, quick change, or fully automatic tool changing, collet closers, etc., The available spindle speed range and horsepower make it well suited to cutting most metals, as well as plastics and non-abrasive composites. Conversational programming screens make this lathe a versatile prototyping tool and easy to program CNC tool. Many part geometries can be programmed on the control without resorting to CAD/CAM.
### Collets and Chucks: 3C Collets

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet Closer, 7x10, 7x12</td>
<td>$99.95</td>
</tr>
<tr>
<td>Collet Set, 3C, Set of 7</td>
<td>$109.95</td>
</tr>
</tbody>
</table>

### Collets and Chucks: 5C Collets

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet Block Set, Hex and Square</td>
<td>$64.95</td>
</tr>
<tr>
<td>Collet Chuck for 5C Collets</td>
<td>$299.95</td>
</tr>
</tbody>
</table>

### Collet Chuck for 5C Collets
- 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”

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.

### 3901 Tap & Tap Drill Bit, M8x1.25 Metric Thread
- $9.95

### 4662 Collet Set, 5C, Set of 69
- $379.95

- 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
- $92.95

### 1708 Collet Set, 5C, Set of 6
- $32.95

### Collet Chuck for 5C Collets

- $299.95

### Collets and Chucks: 3C Collets

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, 3C, 1/8&quot;</td>
<td>$15.95</td>
</tr>
<tr>
<td>Collet, 3C, 3/16&quot;</td>
<td>$15.95</td>
</tr>
<tr>
<td>Collet, 3C, 1/4&quot;</td>
<td>$15.95</td>
</tr>
<tr>
<td>Collet, 3C, 5/16&quot;</td>
<td>$15.95</td>
</tr>
<tr>
<td>Collet, 3C, 3/8&quot;</td>
<td>$15.95</td>
</tr>
<tr>
<td>Collet, 3C, 5/8&quot;</td>
<td>$15.95</td>
</tr>
<tr>
<td>Collet, 3C, 7/16&quot;</td>
<td>$15.95</td>
</tr>
<tr>
<td>Collet, 3C, 1/2&quot;</td>
<td>$15.95</td>
</tr>
</tbody>
</table>

### Collet Set, 5C, Set of 17
- $92.95

### Collet Chuck for 5C Collets

- $299.95

### Collets and Chucks: Brown & Sharpe Collets

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown &amp; Sharpe Collet Block Set, Hex and Square</td>
<td>$64.95</td>
</tr>
</tbody>
</table>

- 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.
Collets and Chucks: Brown & Sharpe Collets

- Set of eleven Brown & Sharpe 9 round collets
- 1/2"-13 drawbar thread
- Made of high grade tool steel
- Hardened and ground to close tolerance

Set of eleven Browne & Sharpe round collets to fit spindles with a Browne & Sharpe taper. This set ranges from 1/8" to 3/4" by 16ths.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3010</td>
<td>Collet, 9BS, 3/4&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3009</td>
<td>Collet, 9BS, 11/16&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3008</td>
<td>Collet, 9BS, 5/8&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3007</td>
<td>Collet, 9BS, 9/16&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3006</td>
<td>Collet, 9BS, 1/2&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3005</td>
<td>Collet, 9BS, 7/16&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3004</td>
<td>Collet, 9BS, 3/8&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3003</td>
<td>Collet, 9BS, 5/16&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3002</td>
<td>Collet, 9BS, 1/4&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3001</td>
<td>Collet, 9BS, 3/16&quot;</td>
<td>$14.95</td>
</tr>
<tr>
<td>3000</td>
<td>Collet, 9BS, 1/8&quot;</td>
<td>$14.95</td>
</tr>
</tbody>
</table>

Collets and Chucks: ER Collets

- Electroless nickle coating
- Made of 20CrMnTi alloy steel
- Balanced to 18,000 RPM
- Tolerance is 0.0003" maximum
- 3/4" x 2 1/2" shank
- Spanner wrench
- Hardened and ground to close tolerance

This ER-16 straight shank collet chuck is a great tool for holding small end mills and engravers. ER-16 collets have a range of 1/32" to 3/8" (0.5 to 10.0 mm).

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5187</td>
<td>Collet Chuck, ER-16, 3&quot; Diameter</td>
<td>$99.95</td>
</tr>
<tr>
<td>5186</td>
<td>Collet Chuck, ER-16, 4&quot; Diameter</td>
<td>$99.95</td>
</tr>
</tbody>
</table>

Collet & Chuck Set, ER-32, 3MT

- Includes nine ER-25 Collets
- 2 Morse taper shank
- 3/8"-16 drawbar thread
- Includes spanner wrench and fitted case

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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2557</td>
<td>Collet Chuck, ER-32, 3&quot; Diameter</td>
<td>$64.95</td>
</tr>
<tr>
<td>2556</td>
<td>Collet Chuck, ER-32, 4&quot; Diameter</td>
<td>$72.95</td>
</tr>
</tbody>
</table>

Collet & Chuck Set, ER-32, R8

- Includes eleven ER-32 collets
- R8 taper shank
- 7/16"-20 drawbar thread
- Includes spanner wrench and fitted case

Collet and Chuck set for mills with an R8 spindle tap. Includes eleven ER-32 collets, 7/16"-20 drawbar thread, spanner wrench but no case.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2888</td>
<td>Collet &amp; Chuck Set, ER-32, R8</td>
<td>$179.95</td>
</tr>
<tr>
<td>2549</td>
<td>Collet Set, ER-32, Set of 18</td>
<td>$176.95</td>
</tr>
<tr>
<td>2550</td>
<td>Collet Set, ER-32, Set of 11</td>
<td>$118.95</td>
</tr>
<tr>
<td>2548</td>
<td>Collet Set, ER-32, Set of 6</td>
<td>$64.95</td>
</tr>
<tr>
<td>2547</td>
<td>Collet Set, ER-32, Set of 24</td>
<td>$249.95</td>
</tr>
</tbody>
</table>
### Collets and Chucks: ER Collets

#### Collets, ER-11 Individual Sizes
- Hardened and precision ground
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet, ER-11, 1/32&quot;</th>
<th>$10.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-11, 1/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-11, 3/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-11, 1/4&quot; ER-11</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-11 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet Set, ER-16, Set of 3</th>
<th>$29.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-16, 1/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 1/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 3/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 1/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 3/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 7/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 1/4&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 5/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 11/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 3/8&quot;</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-16 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet, ER-16, 1/16&quot;</th>
<th>$10.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-16, 3/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 1/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 3/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 1/4&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 5/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 7/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-16, 1/2&quot;</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-20 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet Set, ER-20, Set of 3</th>
<th>$24.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-20, 1/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 3/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 1/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 3/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 7/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 1/4&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 5/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 11/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 3/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 7/16&quot;</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-20 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet, ER-20, 1/16&quot;</th>
<th>$10.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-20, 1/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 3/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 1/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 3/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 7/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-20, 1/4&quot;</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-25 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet Set, ER-25, Set of 3</th>
<th>$11.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-25, 1/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 3/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 1/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 3/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 7/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 1/4&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 5/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 11/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 3/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 7/16&quot;</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-25 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet, ER-25, 1/16&quot;</th>
<th>$10.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-25, 1/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 3/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 1/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 3/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 7/32&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, ER-25, 1/4&quot;</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-32 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet, ER-32, 1/16&quot;</th>
<th>$11.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-32, 3/32&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 1/8&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 3/16&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 7/32&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 1/4&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 5/16&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 11/32&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 3/8&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 13/32&quot;</td>
<td>$11.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-32 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Collet, ER-32, 1/16&quot;</th>
<th>$11.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, ER-32, 3/32&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 1/8&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 3/16&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 7/32&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>Collet, ER-32, 1/4&quot;</td>
<td>$11.95</td>
</tr>
</tbody>
</table>

#### Collets, ER-32 Individual Sizes
- Precision ground hardened steel
- Made of high grade tool steel

<table>
<thead>
<tr>
<th>Rack, Collet, ER-32</th>
<th>$59.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack, Collet, ER-11</td>
<td>$24.95</td>
</tr>
<tr>
<td>Rack, Collet, ER-16</td>
<td>$24.95</td>
</tr>
<tr>
<td>Rack, Collet, ER-20</td>
<td>$32.95</td>
</tr>
<tr>
<td>Rack, Collet, ER-25</td>
<td>$59.95</td>
</tr>
</tbody>
</table>

### Collets and Chucks: Morse Taper Collets

#### Collet Set, 2MT, Set of 7
- Set of seven 2 Morse taper round collets
- 1/8 - 1/2" x 16ths
- Drawbar thread: 3/8" - 16TPI
- Made of high grade tool steel
- Hardened and ground to close tolerance

<table>
<thead>
<tr>
<th>Collet, 2MT, 1/8&quot;</th>
<th>$10.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, 2MT, 3/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 1/4&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 5/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 3/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 7/16&quot;</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

#### Collet Set, 2MT, Set of 7
- Set of seven 2 Morse taper round collets
- 1/8 - 1/2" x 16ths
- Drawbar thread: 3/8" - 16TPI
- Made of high grade tool steel
- Hardened and ground to close tolerance


<table>
<thead>
<tr>
<th>Collet, 2MT, 1/8&quot;</th>
<th>$10.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collet, 2MT, 3/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 1/4&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 5/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 3/8&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 7/16&quot;</td>
<td>$10.95</td>
</tr>
<tr>
<td>Collet, 2MT, 1/2&quot;</td>
<td>$10.95</td>
</tr>
</tbody>
</table>
Collets and Chucks: Morse Taper Collets

- Set of eleven 3 Morse taper round collets
- Drawbar thread: 3/8"-16
- Made of high grade tool steel
- Hardened and ground to close tolerance

Set of eleven 3MT round collets that work with a wide variety of lathes. Made of high grade tool steel, hardened and ground to close tolerance.

2023 Collet Set, 3MT, Set of 4 $46.95
1615 Collet Set, 3MT, Set of 7 $75.95
1605 Collet, 3MT, 1/8" $13.95
1606 Collet, 3MT, 3/16" $13.95
1607 Collet, 3MT, 1/4" $13.95
1658 Collet, 3MT, 5/16" $13.95
1608 Collet, 3MT, 3/8" $13.95
1699 Collet, 3MT, 7/16" $13.95
1609 Collet, 3MT, 1/2" $13.95
1860 Collet, 3MT, 9/16" $13.95
1610 Collet, 3MT, 5/8" $13.95
1861 Collet, 3MT, 11/16" $13.95
1611 Collet, 3MT, 3/4" $13.95

Collets and Chucks: R8 Collets

- Set of thirteen R8 round collets
- TIR less than 0.0005"
- Sizes from 1/8" to 7/8" by 16ths
- Made of high grade tool steel
- Hardened and ground to close tolerance

These are high precision professional grade collets with 0.0005" runout or less.

2872 Collet Set, R8, Set of 23 $118.95
2605 Collet Set, R8, Set of 7 $34.95
2030 Collet Set, R8, Set of 11 $53.95
4515 Collet Set, R8, Set of 5 $25.95
1604 Collet Set, R8, Set of 6 $29.95

Collets, R8, Individual Sizes

- Hardened and ground to close tolerance
- Made of high grade tool steel

4543 Collet, R8, 1/8" $6.95
4310 Collet, R8, 3/16" $6.95
4486 Collet, R8, 1/4" $6.95
4554 Collet, R8, 5/16" $6.95
4487 Collet, R8, 3/8" $6.95
4555 Collet, R8, 7/16" $6.95
4488 Collet, R8, 1/2" $6.95
4556 Collet, R8, 9/16" $6.95
4489 Collet, R8, 5/8" $6.95
4557 Collet, R8, 11/16" $6.95
4490 Collet, R8, 3/4" $6.95

5001 Rotating Collet Rack, R8 $24.95
- Holds 11 R8 collets
- Can be mounted anywhere for quick accessibility
- Made out of durable ABS plastic
- Great for small shops

Coolant Systems: Cutting Compounds

- 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 concentrate with 32 parts water before use. Makes over 4 gallons of coolant.

2235 Coolant, Kool Mist 77, Gallon $38.95
2236 Coolant, Kool Mist 77, Pint $6.95
3089 Cutting Compound, Niks Stiks $5.95
- Wax-based metal-cutting compound in 6" tube
- Extends tool life

Niks Stiks is a non-hazardous solid metal-cutting compound that eases your task and extends the life of all metal cutting and threading tools. Cutting oils are combined with wax in a tube approximately 1" in diameter and 6" long. Rub a little compound on the tool cutting edges. The compound heats up when cutting starts. The heated compound migrates to the tool cutting edge. The cutting compound helps prevent steel and aluminum from gallling on the tool cutting edges. The compound works equally well on wood working tools by preventing wood pitch build-up and is a great lubricant for driving screws and lag-bolts. Craftsmen, electricians, plumbers, maintenance engineers and machinists welcome the product because it’s convenient to use without fear of spillage.

3088 Cutting Fluid, Re-Li-On, 4 Oz. $3.95
- 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. $9.95

(800) 981 9663 LittleMachineShop.com Page 17
Coolant Systems: Cutting Compounds

4243 Cutting Oil, Viper’s Venom $7.50
- 8 oz. bottle with applicator top
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.

3896 SpillMaster Container $5.95
- Avoid workbench spills
- Holds cutting fluids and lubricants
- Won’t spill, even when upside down
- Durable polyethylene for long life
- Includes applicator brush

Coolant Systems: Flood Systems

3952 Coolant Hose on Magnetic Base $19.95
- Great for flood coolant applications
- 1/4” ID flexible coolant hoses with shut off
- On/off switchable magnetic base

3660 Coolant Hose on Magnetic Base $39.95
- Great for flood coolant applications
- Two 1/4” ID flexible coolant hoses with individual shut offs
- On/off switchable magnetic base

4551 Coolant Hose Set, Modular, 1/4” ID $7.95
- 12” length of 1/4” ID modular coolant hose
- 1/16”, 1/8”, 1/4” nozzles
- 1/8” NPT and 1/4” NPT connectors
This is a starter set for modular coolant hose.

4553 Coolant Hose Plier, Modular 1/4” ID $16.95
4552 Coolant Hose Valve, Modular 1/4” ID $3.95
4716 Coolant Hose Valve, Modular 1/4” ID $3.95
4550 Coolant Hose, Modular 1/4” ID, 12” Long $3.95

4763 Coolant Hose, Steel with Magnetic Base $54.95
- 5/8” diameter x 13” long steel nozzled hose
- Flow control valve
- On/off switchable magnetic base
- Magnetic base dimensions: 2.36” x 1.97” x 2.17”

4657 Coolant Tank and Pump $249.95
- 3 gallons (12 liters) per minute
- Tank is 19.7” x 11.8” x 9.3” tall
- Includes magnetic base and 18” modular hose
This flood coolant tank and pump is good for small mills, lathes, and band saws.
- Power: 120V 60Hz

3520 Flood Coolant Unit $199.95
- Includes tank, pump, hose, and nozzle
- Delivers up to 100 GPH
- Flow can be regulated without harming pump
- Screen and chip collector easily removed for cleaning
- Tank is oil resistant polyethylene
This coolant pump and tank unit is great for bench top milling machines. It is compact (the tank holds 1 gallon) and easy to use and clean.
- Power: 120V 60Hz 80 watts

521 Flood Coolant Unit & Coolant $229.95

Coolant Systems: Mist Systems

4718 FogBuster Sprayer Coolant System with Tank, 1 Outlet $349.95
- 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
- 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 quick and easy. The hose from tank to nozzle is 5 feet long.
- Unlike other mist coolant systems, the FogBuster 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.
FogBuster 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 spray 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 spray 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.

1825 Tool and Instrument Oil, Starrett $8.90
- 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 sportmen 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.

3179 M1 Lubricant, Case of 12 Aerosol Cans, Starrett $99.95
- 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. It dries and will not attract dirt or other contaminants as other leading lubricants do.
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. M1 is also ideal in highly corrosive situations that destroy metal equipment used in marine environments.

3195 M1 Lubricant, 12 oz. Aerosol Can, Starrett $9.95
- 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. It dries and will not attract dirt or other contaminants as other leading lubricants do.

4719 Lathe Mount for FogBuster Mist Unit $32.95

3195 M1 Lubricant, 12 oz. Aerosol Can, Starrett $9.95
- 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. It dries and will not attract dirt or other contaminants as other leading lubricants do.
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. M1 is also ideal in highly corrosive situations that destroy metal equipment used in marine environments.

4718 FogBuster Sprayer Coolant System with Tank, 1 Outlet $349.95
- 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
- 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 quick and easy. The hose from tank to nozzle is 5 feet long.
- Unlike other mist coolant systems, the FogBuster 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.
FogBuster 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 spray 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 spray 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.

4719 Lathe Mount for FogBuster Mist Unit $32.95

(800) 981 9663 LittleMachineShop.com Page 18
Coolant Systems: Mist Systems

2965 Mist Coolant System with Tank, 1 Outlet $213.00
- 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 4’ coolant hose
This spray mist unit has a 1/8” NPT thread for your compressed air supply. (You furnish the air compressor.)
3458 Mist Coolant System with Tank, 2 Outlets $345.00
4278 Mist Coolant System with Tank, 1 Outlet plus Kool Mist 77 $219.95

2966 PORTaMIST Spray Mist Unit 12” $117.00
- Kool Mist model 60M12
- 12’ Lock-Line® spray positioner
- Heavy duty magnetic base
- Adjustable coolant nozzle
- 4’ coolant and air hoses
This spray mist 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.
4984 PORTaMIST Spray Mist Unit 18” $139.00

2226 Spra-Kool Midget Coolant Spray Unit $35.95
- For turning, drilling, milling, sawing, and grinding
- Designed to be moved from machine to machine
- Adjustable nozzle for precise aim
- Adjustable spray volume
- Removable strainer prevents clogs
The Spra-Kool Midget unit has successfully been used for over 30 years as a versatile, economical method of applying a coolant spray for machining. The Spra-Kool unit works on 30 to 150 PSI air pressure. (You furnish the air compressor.) Only solid brass fittings are used. There is nothing to rust or corrode. The system is suitable for use with any type of soluble coolant or oil.
3804 Spra-Kool Midget Coolant Spray Unit & Coolant $39.95

Cutting Tools: Boring Bars

1246 Boring Bar Set, 3/8” Shank, Carbide $19.95
- 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 $21.95
1248 Boring Bar Set, 1/2” Shank, Carbide with Holder for Mini Lathe $28.95
2682 Boring Bar Set, 1/2” Shank, HSS $89.95
3832 Boring Bar Set, 3/4” Shank, Carbide $49.95
2683 Boring Bar Set, 3/8” Shank, HSS $59.95

4788 Boring Bar, 3/8” Indexable, 80 Deg HSS Diamond Inserts, A R Warner $79.00
- 3/8” diameter, 5” long boring bar
- 3 CEMW-21.5 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 $79.00
- 3/8” diameter, 5” long boring bar with TPMW-1.81.5 insert
- 2 extra TPMW-1.81.5 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.

5605 Boring Bar, 3/8” Indexable, S06H-SCLCR-2, Tormach $28.95
- 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)
This right hand boring bar includes wrenches and (1) insert.
5608 Boring Bar, 1/2” Indexable, S08M-SCLCL-2, Tormach $33.78
5607 Boring Bar, 1/2” Indexable, S08M-SCLCR-2, Tormach $33.78
5606 Boring Bar, 3/8”, Indexable, S06H-SCLCL-2, Tormach $28.95

1779 Boring Bar, 3/8” Indexable, S-SCLCR6-2 $34.95
- Profiling bars for semi-finishig and finishing operations
- Designed for CCMT 80° inserts
- 7° Relief angle
- Negative 5° Lead angle for boring
- 3° Side & end cutting edge angle
This 3/8” diameter indexable boring bar for sale 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, S-SCLCRB-3 $35.95
3719 Boring Bar, 5/16” Indexable, S-SCLCR4-2 $38.95
5436 Boring Bar, 5/16” Indexable, S05S $29.95
5436B, Reduced Neck

5435 Boring Bars, Indexable, 80 Deg Diamond Inserts, 3 Piece $86.95
- 3 piece set, 5/16”, 3/8” and 1/2” diameter
- Uses CCMT 80 degree diamond inserts
- 2 degree relief angle and 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, The 3/8” diameter bar is 6” long, The 1/2” diameter bar is 7.75” long.

3662 Boring Head Set, R8 $99.95
- 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

Coolant Systems: Mist Systems

1721 Boring Bar, 1/2” Indexable, HSS Triangle Inserts, A R Warner $84.00

5605 Boring Bar, 3/8” Indexable, S06H-SCLCR-2, Tormach $28.95

2683 Boring Bar, 3/8” Indexable, HSS Triangle Inserts, A R Warner $84.00

5606 Boring Bar, 3/8”, Indexable, S06H-SCLCL-2, Tormach $28.95

1779 Boring Bar, 3/8” Indexable, S-SCLCR6-2 $34.95

5435 Boring Bars, Indexable, 80 Deg Diamond Inserts, 3 Piece $86.95
Cutting Tools: Boring Bars

5403 Boring Head Set, R8 Professional Grade $174.95
- Offset: 5/8", Crosshole: 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 rigity 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.

5404 Boring Head Set, 2MT Professional Grade $169.95

Cutting Tools: Broaches

5400 Keyway Broach Set, 9 Piece $139.95
- 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 set includes 9 pieces for 15 keyway combinations. Made of heavy duty high speed steel.Broach style: 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"

5622 Rotary Broach Tool Holder $262.00
- Creates square and hexagonal, blind or through holes
- Broach depth to 1.5 times broach width
- Mounts to 33 Jacobs taper arbor
- Adjustment free style meaning the setup time is as fast and easy as possible
The rotary broach creates square and hexagonal, blind or through holes. It can be used in a milling machine or a lathe. The broaching depth can be up to 1.5 times the dimension across the flats of the shape you want to broach. For example, you can broach a 1/4" square hole up to 0.375" deep. The material to be broached should not be harder than 200 Brinell. This means you can broach aluminum, brass, bronze, soft cast iron, and mild steel. In general, you are safe with any steel where the last two digits of the AISI number are less than 30. The rotary broach tool holder is a lot like a live center. There is a bearing between the tool and the shank. But as the shank rotates, it "wobbles" the cutting tool. This 1-degree wobble advances each of the facet cutting edges in turn as the broach advances into the hole. The material that is removed cuts into the bottom of the hole.

Rotary Broaches, Individual Sizes
- Creates hex or square blind or through holes
- Broach depth to 1.5 times broach width
- Use with rotary broach tool holder

3921 Rotary Broach, 3/16" Hex $34.95

Cutting Tools: Counterbores

5193 Counterbore Set, 3 Flute HSS, Set of 7 $66.95
- 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 Interchangeable Pilot Counterbore Set, HSS, 21 Piece $89.95
- 6 counterbores
- 14 pilots
- 3 straight shanks
- 2 holders: 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 $25.95
- High speed steel single flute countersinks
- 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 $16.95

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

4536 Countersink, 82 Degree, 3/8" Single Flute $5.95

4537 Countersink, 82 Degree, 1/2" Single Flute $7.95

4538 Countersink, 82 Degree, 3/4" Single Flute $10.95

4542 Countersink Set, Zero-Flute 82 Degree, Set of 5 $36.95
- High speed steel pilotless countersinks and deburring tools
- Can relieved for chatter free cutting
- For mild steel, brass, 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 resharpended 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" $12.95
- T-15 High Speed Steel
- Width: .032", Height: .218", Length: 3.0"
- Used on 5106, 5107, and 5130 grooving & cut-off tools
- 0.032" x 0.218" x 3" M2 HSS cut-off blade.
- This is a premium American-made M2 high speed steel cut-off blade from the Arthur R. Warner Co.This is a replacement blade for 5106, 5107, and 5130 grooving & cut-off tools.
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" $12.95

3415 Cut-Off Blade, P1 Carbide Tipped $59.95
- This blade is size P1
- Two micro grain carbide tips brazed on 1/16" x 1/2" x 4-1/2" M2 HSS cut-off blade. These T-shape parting blades provide great side clearance.

4993 Cut-Off Blade, P2 Indexable $49.95
- This blade is size P2
- Fits DIA and AXA cut-off holders
- Uses GTN-2, G2L-2 or GTR-2 inserts
- Includes one GTN-2 insert
0.072" x 1/2" x 4-11/32" M2 HSS cut-off blade. GTN-2 inserts have a 2mm (0.078") cutting width.
### Cutting Tools: Cut-Off Tools

**Cut-Off Blades, High Speed Steel**
- 1/2’’ x 4-1/2’’ M2 HSS cut-off blades
- These T-shape parting blades provide great side clearance
- P1N blades are 0.04” wide
- P1 blades are 1/16’’ (0.063)’’ wide
- P1X blades are 5/64’’ (0.019)’’ wide

We carry both imported M2 blades and premium American-made M2 high speed steel cut-off blades from the Arthur R. Warner Co.

<table>
<thead>
<tr>
<th>1929 Cut-Off Blade, P1</th>
<th>$7.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>1728 Cut-Off Blade, P1, M2 HSS</td>
<td>$19.95</td>
</tr>
<tr>
<td>1930 Cut-Off Blade, P1N</td>
<td>$7.95</td>
</tr>
<tr>
<td>1729 Cut-Off Blade, P1N, M2 HSS</td>
<td>$19.95</td>
</tr>
<tr>
<td>1552 Cut-Off Blade, P1X</td>
<td>$7.95</td>
</tr>
</tbody>
</table>

**5431 Cut-Off Tool Holder, SGTHR9.5-2** $29.95
- Holder style 9.5-2
- Uses GTN-2, GTL-2 or GTR-2 inserts
- 3/8’’ x 3/8’’ Shank size
- .087’’ & .094’’ Insert width
- 1.10’’ maximum work diameter

**4819 Grooving & Cut-Off Tool, 1/2” Indexable HSS Inserts, A R Warner** $135.00
- 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 two 1/64’’ (.016’’) groover T-15 high speed steel inserts
- Includes two 1/64’’ (.016’’) groovers and one T-9 wrench

This Arthur R. Warner Co. grooving and cut-off tool has a 0.500’’ Shank and is 4.375’’ long. The maximum cutting depth of the groover inserts is approximately 0.25’. This tool can be used for both right hand and left hand operations as it will accommodate an insert on either side of the tool. Each pair of inserts includes one left hand insert and one right hand insert. 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.

**3572 Grooving & Cut-Off Tool, 3/8” Indexable HSS Inserts, A R Warner** $95.00

**5107 Grooving & Cut-Off Tool, 3/8” Shank, HSS Blade** $70.00
- For external grooving and cutoff operations
- Includes one 3/8” shank holder 3” overall length
- Includes one 0.062” cut-off blade T-15 high speed steel
- Includes one 7/64” Allen wrench
- The blade is 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.

**5106 Grooving & Cut-Off Tool, 5/16” Shank, HSS Blade** $68.00

**5130 Grooving & Cut-Off Tool, 1/2” Shank, HSS Blades** $80.00

### Cutting Tools: Drill Sets

**3418 Drill Set, 115 Piece Jobber Length Cobalt Steel** $499.95
- Made in USA
- Bronze color finish
- 135° split point
- 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.

**2826 Drill Set, 115 Piece Jobber Length HSS** $124.95
- 118° point
- Surface treated black finish
- Jobber Length
- Straight Shank

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.

**3043 Drill Set, #1-60 Jobber Length HSS** $34.95

**2828 Drill Set, 29 Piece Jobber Length HSS** $44.95

**3044 Drill Set, A-Z Jobber Length HSS** $69.95

**3977 Drill Set, #61-80 Jobber Length HSS** $16.95

**3027 Drill Set, 115 Piece Screw Machine Length HSS** $294.95
- Made In USA
- Surface treated black finish

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** $69.95

**2829 Drill Set, 29 Piece Jobber Length HSS** $85.95

**2830 Drill Set, 29 Piece Screw Machine Length HSS** $74.95

**2831 Drill Set, 19 Piece Metric Jobber Length HSS** $69.95
- Made In USA
- Bright finish

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.

**3591 Drill Set, 29 Piece Turbomax Tip HSS** $139.95
- 1/16’’ through 1/2’’ by 1/64’’
- Revolutionary tip design stays sharper longer and drills up to 28 percent faster
- Three-flatted shank design provides better chuck grip and reduces slippage
- M-2 high speed steel for the best combination of strength, heat resistance, and wear resistance
- Gold oxide finish. Made in US

High speed steel drill bit set with Turbo Point tip. 29 piece set in metal index case includes drill bit sizes 1/16’’ through 1/2’’ in 1/64’’ increments. These are jobbers length drills with three-flatted shanks on larger sizes. Jobbers length drills are normal length drills. Three-flatted shank design is ideal for use in keyless chucks.

**3590 Drill Set, 21 Piece Turbomax Tip HSS** $64.95

**4130 Tap & Drill Combo Set, 18 Pieces HSS** $49.95
- 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 high speed steel 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.
**Cutting Tools: Drill Sets**

- **5837 Tap & Drill Combo Set, 18 Pieces HSS, Metric**
  - High speed steel taps and drill bits
  - Drill bits are matched with taps for quick use
  - Includes M2.5x0.45, M3x0.5, M3.5x0.6, M4x0.7, M5x0.8, M6x1.0, M8x1.25, M10x1.5, and M12x1.75 taps.
  - Includes 2.05mm, 2.5mm, 2.9mm, 3.3mm, 4.2mm, 5.0mm, 6.7mm, 8.5mm, and 10.2mm 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.
  - **$49.95**

- **4859 Center Drills, Cobalt, Set of 5 (Numbers 1-5)**
  - 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.
  - **$18.95**

- **1230 Center Drills, HSS, Set of 5 (Numbers 1-5)**
  - 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 is made of ground high speed M42 cobalt steel for good wear resistance.
  - **$7.95**

**Cutting Tools: Drills**

- **4864 Center Drill, Number 1, Cobalt**
  - **$2.95**

- **4865 Center Drill, Number 2, Cobalt**
  - **$3.95**

- **4866 Center Drill, Number 3, Cobalt**
  - **$3.95**

- **4867 Center Drill, Number 4, Cobalt**
  - **$4.95**

- **4868 Center Drill, Number 5, Cobalt**
  - **$7.95**

**Cutting Tools: End Mills**

- **5137 Corner Rounding End Mill, 1/16", HSS**
  - 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.
  - **$10.95**

- **5138 Corner Rounding End Mill, 1/8", HSS**
  - **$10.95**

- **5139 Corner Rounding End Mill, 1/4", HSS**
  - **$19.95**

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

- **1009 Drill-Mill, 90 Degree, 1/4" 2 Flute, Cobalt**
  - **$23.95**

- **1030 Drill-Mill, 90 Degree, 3/8" 2 Flute, Cobalt**
  - **$25.95**

- **1031 Drill-Mill, 90 Degree, 1/2" 2 Flute, Cobalt**
  - **$35.95**

**Corner Rounding End Mills, HSS, Individual Sizes**

- **4265 End Mill Set, 5 pieces 2 & 4 Flute, TiN coated HSS**
  - **$42.95**

**Center Drills, HSS, Set of 5 (Numbers 1-5)**

- **4888 End Mill Set, 6 Piece 2 Flute, Cobalt**
  - **$54.95**

- **4889 End Mill Set, 6 Piece 4 Flute, HSS**
  - **$49.95**

**End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**

- **1244 End Mill Set, 20 pieces 2 & 4 Flute, TiN coated HSS**
  - **$82.95**

**End Mill Set, Miniature, 10 pieces 2 & 4 Flute, HSS**

- **5258 End Mill Set, Miniature, 10 pieces 2 & 4 Flute, HSS**
  - **$54.95**

**End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**

- **1245 End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**
  - **$42.95**

**End Mill Set, 6 Piece 2 Flute, HSS**

- **1242 End Mill Set, 6 Piece 2 Flute, HSS**
  - **$21.95**

**End Mill Set, 6 Piece 2 Flute, Cobalt**

- **1243 End Mill Set, 6 Piece 2 Flute, Cobalt**
  - **$22.95**

**End Mill Set, 6 Piece 2 Flute Ball, HSS**

- **1244 End Mill Set, 6 Piece 2 Flute Ball, HSS**
  - **$45.95**

**End Mill Set, 6 Piece 2 Flute, Cobalt**

- **1245 End Mill Set, 6 Piece 2 Flute, Cobalt**
  - **$59.95**

**End Mill Set, 6 Piece 2 Flute, HSS**

- **1246 End Mill Set, 6 Piece 2 Flute, HSS**
  - **$21.95**

**End Mill Set, 20 pieces 2 & 4 Flute, Cobalt**

- **5359 Drill-Mill, 90 Degree, 1/4" 2 Flute, Cobalt**
  - **$23.95**

**End Mill Set, 20 pieces 2 & 4 Flute, TiN coated HSS**

- **1246 End Mill Set, 20 pieces 2 & 4 Flute, TiN coated HSS**
  - **$82.95**

**End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**

- **1245 End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**
  - **$42.95**

**End Mill Set, 5 pieces 2 & 4 Flute, TiN coated HSS**

- **1246 End Mill Set, 5 pieces 2 & 4 Flute, TiN coated HSS**
  - **$82.95**

**End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**

- **1245 End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**
  - **$42.95**

**End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**

- **1246 End Mill Set, 10 pieces 2 & 4 Flute, TiN coated HSS**
  - **$82.95**

**Center Drills, Cobalt, Set of 5 (Numbers 1-5)**

- **5137 Corner Rounding End Mill, 1/16", HSS**
  - **$10.95**

- **5138 Corner Rounding End Mill, 1/8", HSS**
  - **$10.95**

- **5139 Corner Rounding End Mill, 1/4", HSS**
  - **$19.95**

**Center Drills, Cobalt, Set of 5 (Numbers 1-5)**

- **5137 Corner Rounding End Mill, 1/16", HSS**
  - **$10.95**

- **5138 Corner Rounding End Mill, 1/8", HSS**
  - **$10.95**

- **5139 Corner Rounding End Mill, 1/4", HSS**
  - **$19.95**
End Mills, 2 Flute, Cobalt, Individual Sizes

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

5415 End Mill, 1/8" 2 Flute Ball, M42 Cobalt $14.95
5416 End Mill, 3/16" 2 Flute Ball, M42 Cobalt $14.95
5417 End Mill, 1/4" 2 Flute Ball, M42 Cobalt $15.95
5418 End Mill, 3/8" 2 Flute Ball, M42 Cobalt $15.95
5419 End Mill, 1/2" 2 Flute Ball, M42 Cobalt $24.95

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 $4.50
5141 End Mill, 3/16" 2 Flute, HSS $4.50
5142 End Mill, 1/4" 2 Flute, HSS $4.50
5143 End Mill, 5/32" 2 Flute, HSS $4.50
5144 End Mill, 3/32" 2 Flute, HSS $4.50
5145 End Mill, 7/64" 2 Flute, HSS $5.95
5146 End Mill, 1/32" 2 Flute, HSS, 3/32" shank $6.95
5147 End Mill, 1/4" 2 Flute, HSS $6.95
5148 End Mill, 3/32" 2 Flute, HSS $8.95
5149 End Mill, 7/64" 2 Flute, HSS, 1/4" shank $9.90
5150 End Mill, 1/8" 2 Flute, HSS $9.90
5151 End Mill, 3/32" 2 Flute, HSS, 1/8" shank $11.95
5152 End Mill, 3/32" 2 Flute, HSS $11.95
5153 End Mill, 1/8" 2 Flute, HSS, 1/8" shank $19.95

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 gound 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 $23.95
4890 End Mill, 3/16" 2 Flute, M42 Cobalt TiCN Coated $23.95
4891 End Mill, 1/4" 2 Flute, M42 Cobalt TiCN Coated $23.95
4892 End Mill, 5/32" 2 Flute, M42 Cobalt TiCN Coated $25.95
4893 End Mill, 3/32" 2 Flute, M42 Cobalt TiCN Coated $25.95
4894 End Mill, 7/64" 2 Flute, M42 Cobalt TiCN Coated $37.95
4895 End Mill, 1/8" 2 Flute, M42 Cobalt TiCN 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 $10.95
5421 End Mill, 3/32" 2 Flute, M42 Cobalt $10.95
5422 End Mill, 1/4" 2 Flute, M42 Cobalt $10.95
5423 End Mill, 5/32" 2 Flute, M42 Cobalt $10.95
5424 End Mill, 3/16" 2 Flute, M42 Cobalt $10.95
5425 End Mill, 7/64" 2 Flute, M42 Cobalt $11.95
5426 End Mill, 1/8" 2 Flute, M42 Cobalt $12.95

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 $4.95
5155 End Mill, 3/32" 4 Flute, HSS $4.95
5156 End Mill, 1/4" 4 Flute, HSS $4.95
5157 End Mill, 5/32" 4 Flute, HSS $4.95
5158 End Mill, 3/32" 4 Flute, HSS $4.95
5159 End Mill, 7/64" 4 Flute, HSS $5.95
5160 End Mill, 1/8" 4 Flute, HSS, 3/8" shank $6.95
5161 End Mill, 1/8" 4 Flute, HSS $8.50
5162 End Mill, 9/64" 4 Flute, HSS $10.30
5163 End Mill, 5/32" 4 Flute, HSS, 1/8" shank $10.50
5164 End Mill, 5/32" 4 Flute, HSS $11.95
5165 End Mill, 3/32" 4 Flute, HSS, 1/8" shank $13.95
5166 End Mill, 3/32" 4 Flute, HSS $14.95
5167 End Mill, 1/16" 4 Flute, HSS, 1/16" shank $27.95

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 gound from solid M42 8% cobalt steel. The cutting areas are either Titanium Nitride (TiN) or Titanium Carbide Nitride (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 $24.95
4897 End Mill, 3/32" 4 Flute, M42 Cobalt $27.95
4898 End Mill, 1/4" 4 Flute, M42 Cobalt TiCN Coated $23.95
4899 End Mill, 5/32" 4 Flute, M42 Cobalt TiCN Coated $25.95
4900 End Mill, 3/32" 4 Flute, M42 Cobalt TiCN Coated $27.95
4901 End Mill, 1/8" 4 Flute, M42 Cobalt TiCN Coated $37.95
4902 End Mill, 1/2" 4 Flute, M42 Cobalt TiCN Coated $46.95
Cutting Tools: End Mills

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.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5557 End Mill, 1/8&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5558 End Mill, 3/16&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5559 End Mill, 1/4&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5560 End Mill, 5/16&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5561 End Mill, 3/8&quot; 4 Flute, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5562 End Mill, 7/16&quot; 4 Flute, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5563 End Mill, 1/2&quot; 4 Flute, M42 Cobalt</td>
<td>$15.95</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5405 End Mill, Miniature, 1/16&quot; 2 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
<tr>
<td>5406 End Mill, Miniature, 3/32&quot; 2 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
<tr>
<td>5407 End Mill, Miniature, 1/8&quot; 2 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
<tr>
<td>5408 End Mill, Miniature, 5/32&quot; 2 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
<tr>
<td>5409 End Mill, Miniature, 3/16&quot; 2 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
</tbody>
</table>

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

Popular for small slotting, engraving, pocketing and similar applications.

The medium-high helix angle produces an ideal shearing cut for outstanding performance.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5410 End Mill, Miniature, 1/16&quot; 4 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
<tr>
<td>5411 End Mill, Miniature, 3/32&quot; 4 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
<tr>
<td>5412 End Mill, Miniature, 1/8&quot; 4 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
<tr>
<td>5413 End Mill, Miniature, 5/32&quot; 4 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
<tr>
<td>5414 End Mill, Miniature, 3/16&quot; 4 Flute, Double Ended, HSS</td>
<td>$5.95</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5168 End Mill, 1/4&quot; 3 Flute Roughing, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5169 End Mill, 3/8&quot; 4 Flute Roughing, M42 Cobalt</td>
<td>$13.95</td>
</tr>
<tr>
<td>5170 End Mill, 1/2&quot; 4 Flute Roughing, M42 Cobalt</td>
<td>$18.95</td>
</tr>
<tr>
<td>5171 End Mill, 5/8&quot; 4 Flute Roughing, M42 Cobalt</td>
<td>$24.95</td>
</tr>
<tr>
<td>5172 End Mill, 3/4&quot; 4 Flute Roughing, M42 Cobalt</td>
<td>$29.95</td>
</tr>
</tbody>
</table>

Cutting Tools: Indexable End Mills

End Mill, 1/2" 4 Flute, M42 Cobalt

- 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.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5557 End Mill, 1/8&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5558 End Mill, 3/16&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5559 End Mill, 1/4&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5560 End Mill, 5/16&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5561 End Mill, 3/8&quot; 4 Flute, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5562 End Mill, 7/16&quot; 4 Flute, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5563 End Mill, 1/2&quot; 4 Flute, M42 Cobalt</td>
<td>$15.95</td>
</tr>
</tbody>
</table>

Cutting Tools: End Mills

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.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5168 End Mill, 1/4&quot; 3 Flute Roughing, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5169 End Mill, 3/8&quot; 4 Flute Roughing, M42 Cobalt</td>
<td>$13.95</td>
</tr>
<tr>
<td>5170 End Mill, 1/2&quot; 4 Flute Roughing, M42 Cobalt</td>
<td>$18.95</td>
</tr>
<tr>
<td>5171 End Mill, 5/8&quot; 4 Flute Roughing, M42 Cobalt</td>
<td>$24.95</td>
</tr>
<tr>
<td>5172 End Mill, 3/4&quot; 4 Flute Roughing, M42 Cobalt</td>
<td>$29.95</td>
</tr>
</tbody>
</table>

Cutting Tools: Indexable End Mills

Indexable End Mill, 3MT, 30 mm

- Double ended, 4 flute
- M42 (8%) cobalt
- Center cutting, single end
- Weldon Shank

Roughing end mill ground from solid 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.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5557 End Mill, 1/8&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5558 End Mill, 3/16&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5559 End Mill, 1/4&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5560 End Mill, 5/16&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5561 End Mill, 3/8&quot; 4 Flute, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5562 End Mill, 7/16&quot; 4 Flute, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5563 End Mill, 1/2&quot; 4 Flute, M42 Cobalt</td>
<td>$15.95</td>
</tr>
</tbody>
</table>

Indexable End Mill, 3MT, 30 mm

- Double ended, 4 flute
- M42 (8%) cobalt
- Center cutting, single end
- Weldon Shank

Roughing end mill ground from solid 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.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5557 End Mill, 1/8&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5558 End Mill, 3/16&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5559 End Mill, 1/4&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5560 End Mill, 5/16&quot; 4 Flute, M42 Cobalt</td>
<td>$10.95</td>
</tr>
<tr>
<td>5561 End Mill, 3/8&quot; 4 Flute, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5562 End Mill, 7/16&quot; 4 Flute, M42 Cobalt</td>
<td>$12.95</td>
</tr>
<tr>
<td>5563 End Mill, 1/2&quot; 4 Flute, M42 Cobalt</td>
<td>$15.95</td>
</tr>
</tbody>
</table>

Cutting Tools: Indexable End Mills

| Part Number | Item Description | Price  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4121</td>
<td>Indexable Face Mill, 4 Flute, 38 mm, Tormach</td>
<td>$178.75</td>
</tr>
</tbody>
</table>

- 1.5" (38 mm)
- 4 Flute Indexable
- Face/Shell mill for profiling, facing and material removal
- Face mills are used for surfacing. The increased number of flutes and large cutter diameter allow fast, efficient metal removal in a wide variety of materials. Replaceable carbide inserts can be repositioned as needed to use new cutting edges for economic material removal. Requires a 1/2" shell mill arbor.

4122 Insert, APGT1135PDFR-G2 Carbide, Tormach | $9.58 |
4123 Insert, AMPT1135PDER-M Carbide, Tormach | $12.88 |

5040  Indexable Toroidal Cutter, 2 Flute, 16 mm, Tormach | $100.10 |

- 2 flute indexable mill with precision machined insert pockets
- 16 mm (0.63") cutting diameter
- 23 mm (0.91") height
- M8 screw stud, hardened tool steel body
- Inserts sold separately. See 5039 and 4664

5039 Insert, Toroidal Cutter HF7, Tormach | $21.46 |

Cutting Tools: Indexable Inserts

Inserts, Application Chart
For information about which insert to use with each of our tools, see the insert application chart at www.littlemachineshop.com/inserts.

Inserts, Carbide
Carbide inserts. These inserts fit our indexable tools.

| Part Number | Insert Description | Price  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3471</td>
<td>Insert, VCMT-222 HSS</td>
<td>$4.95</td>
</tr>
<tr>
<td>3417</td>
<td>Insert, TCMT-21.52 HSS</td>
<td>$4.95</td>
</tr>
<tr>
<td>2277</td>
<td>Insert, TPG-322</td>
<td>$3.75</td>
</tr>
<tr>
<td>5644</td>
<td>Insert, TPGH-322 Carbide</td>
<td>$4.95</td>
</tr>
<tr>
<td>5651</td>
<td>Insert, TPMB-321 Carbide</td>
<td>$9.95</td>
</tr>
<tr>
<td>5649</td>
<td>Insert, TPMT-222 Carbide</td>
<td>$5.95</td>
</tr>
<tr>
<td>5648</td>
<td>Insert, VCMT-221 Carbide</td>
<td>$9.95</td>
</tr>
</tbody>
</table>

Cutting Tools: Reamers

| Part Number | Reamers Description | Price  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4122</td>
<td>Insert, APGT1135PDFR-G2 Carbide, Tormach</td>
<td>$9.58</td>
</tr>
<tr>
<td>4123</td>
<td>Insert, AMPT1135PDER-M Carbide, Tormach</td>
<td>$12.88</td>
</tr>
</tbody>
</table>

5039 Insert, Toroidal Cutter HF7, Tormach | $21.46 |

Cutting Tools: Saw Blades

Starrett Duratec FB band saw blade 64 1/2" x 1/2" x 0.025". Made from carbon steel with a flexible back, Duratec FB 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.

| Part Number | Blade Description | Price  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4460</td>
<td>Band Saw Blade, 64-1/2&quot;, Duratec FB 6/5, Starrett</td>
<td>$13.95</td>
</tr>
<tr>
<td>4461</td>
<td>Band Saw Blade, 64-1/2&quot;, Duratec FB 10/5, Starrett</td>
<td>$13.95</td>
</tr>
<tr>
<td>4462</td>
<td>Band Saw Blade, 64-1/2&quot;, Duratec FB 14/5, Starrett</td>
<td>$13.95</td>
</tr>
<tr>
<td>4463</td>
<td>Band Saw Blade, 64-1/2&quot;, Duratec FB 24/W, Starrett</td>
<td>$13.95</td>
</tr>
</tbody>
</table>
Band Saw Blades, Intenss PRO-DIE, 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 $26.95
6/8-HP, Starrett
1855 Band Saw Blade, 64-1/2", Intenss PRO-DIE $26.95
8-125, Starrett
1876 Band Saw Blade, 64-1/2", Intenss PRO-DIE $26.95
10-145, Starrett

Band Saw Blades, Porta-Band Bi-Metal, 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
- Available in a variety of tooth pitches

These 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 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 $9.95
10/S, Starrett
4933 Band Saw Blade, 44-7/8", Univerz Bi-Metal $9.95
14/S, Starrett
4934 Band Saw Blade, 44-7/8", Univerz Bi-Metal $9.95
18/W, Starrett
4935 Band Saw Blade, 44-7/8", Univerz Bi-Metal $9.95
24/W, Starrett
4937 Band Saw Blade, 44-7/8", Univerz Bi-Metal $9.95
14-18/W, Starrett
4936 Band Saw Blade, 44-7/8", Univerz Bi-Metal $9.95
10-14/S, Starrett

Hack saw Blades, 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 Hack saw Blade, Bi-Metal, 18 TPI, Starrett $2.01
1851 Hack saw Blade, Bi-Metal, 24 TPI, Starrett $2.01
3561 Hack saw Blade, Bi-Metal, 32 TPI, Starrett $2.01

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 $9.95
4726 Slitting Saw Blade, 3/64", HSS $9.95
4727 Slitting Saw Blade, 1/16", HSS $9.95
4728 Slitting Saw Blade, 3/32", HSS $9.95
4729 Slitting Saw Blade, 1/8", HSS $10.95

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

Cutting Tools: Saw Blades

Dovetail Cutters

- 60° dovetail angle
- High speed steel 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 bolt size.

5194 T-Slot Cutter, 1/4", HSS $17.95
5196 T-Slot Cutter, 3/8", HSS $26.95
5195 T-Slot Cutter, 5/16", HSS $21.95

Cutting Tools: Turning Tools

5612 Chamfer Tool, 3/8" Indexable, SCSCR-06-2J, Tormach

- 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)
- Right hand Chamfer Tool. Includes wrenches and (1) insert.

5618 Chamfer Tool, 1/2" Indexable, SCSCR-08-3A, Tormach

5611 Facing Tool, 3/8" Indexable, SCKCR-06-2J, Tormach

- 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.

5613 Profiling Tool, 3/8" Indexable, SCMSCN-06-2J, Tormach

- Designation: SCMSCN-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, SCMSCN-08-3A, Tormach

2431 Profiling Tool, 3/8" Indexable, 35 Deg Diamond Inserts, A R Warner

- 3/8" square, 6" long profiling tool
- 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 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 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

3A, Tormach

Profiling Tool, 1/2" Indexable, 35 Deg Diamond Inserts, A R Warner

- 3/8" square, 6" long profiling tool
- 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 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 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

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 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 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
Cutting Tools: Turning Tools

4820 Profiles Tools, 3/8” Indexable R / L, 35 Deg Diamond Inserts, A R Warner
- 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 (VCMT221) inserts
- Includes 1 carbide (VCMT211) 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 overall length, Side angle: 3 degrees; 1 Left Hand bar 3/8” inch Shank, 6” overall length, Side angle: 3 degrees; 1 Inserts T-15 High Speed Steel VCMT221, 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 $39.95
- Six presharpened 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 presharpened tool bits show you how the finished product should look. The unsharpened tool bits give you plenty of practice. The presharpened 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 $1.95
- AR-5 brazed carbide turning tool
- Right hand tool; cuts from right to left

These tool bits 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 $1.95

2250 Tool Bits, 1/4” Presharpened, Set of 6 $34.95
- Six presharpened 1/4” high speed steel tool bits
- Includes Right hand, Left hand, 45 degree chamfer, Round nose, Boring bar, Cut off

These tool bits are made from high speed steel. 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.

1964 Tool Bit, 1/4” Left Hand, Presharpened $6.75
1965 Tool Bit, 1/4” Right Hand, Presharpened $6.75
1966 Tool Bit, 1/4” 45 Degree Chamfer, Presharpened $6.75
1967 Tool Bit, 1/4” Round Nose, Presharpened $6.75
1968 Tool Bit, 1/4” Boring Bar, Presharpened $6.75
1969 Tool Bit, 1/4” Cut-Off, Presharpened $6.75

2412 Tool Bits, 5/16” Brazed Carbide, Set of 5 $26.95
- 5 piece cutting tool set
- Ideal for mini lathes
- 5/16” (8mm x 8mm)
- Carbide cutting tips

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
- DIN 4975 (ISO10) Tip cutter
- DIN 4980R (ISO6) Right angle cutter
- DIN 4980L (ISO6) Left angle cutter
- DIN 4981R (ISO7) Cutter

5432 Turning & Boring Tools, 5/16” Indexable, Triangle Inserts $76.95
- 4 turning tools
- 1 boring tool
- Inserts and torx wrenches
- 5/16” Shank
- Uses TCM-1.81.51 Inserts

Set comes in a fitted aluminum case

5434 Turning & Cut-Off Tools, 3/8” Indexable $149.95
- 6 turning tools
- 1 cut-off blade
- Inserts and torx wrenches
- 3/8” Shank

Set comes in a fitted aluminum case

5640 Insert, DCMT-21.51 Carbide $5.95
5642 Insert, MRMN-200-M $4.95
5641 Insert, WCX050308R-53 Carbide $8.95
Cutting Tools: Turning Tools

3693 Turning 1/4" & Boring 3/8" Indexable Tools, HSS Inserts, A R Warner

- 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

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 boring 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 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.

5609 Turning and Facing Tool, 3/8" Indexable, SCLCR-06-2J, Tormach

- 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)

Right hand Turning/Facing Tool. Includes wrenches and (1) insert.

5616 Turning and Facing Tool, 1/2" Indexable, SCLCL-08-3A, Tormach

- Designation: SCLCL-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)

Right hand Turning Tool. Includes wrenches and (1) insert.

5620 Turning Tool, 1/2" Indexable, SCBCR-08-3A, Tormach

- 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)

Right hand Turning Tool. Includes wrenches and (1) insert.

3569 Turning Tools, 1/2" Indexable, 80 Deg Diamond HSS Inserts, A R Warner

- Right hand tool holder
- Left hand tool holder, double ended
- Includes five T-15 HSS (CCMW22.52) inserts
- Includes four MS-1155 screws and one T-15 wrench

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 CCMW22.51 and CCMW23.52 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.

1619 Turning Tools, 3/8" Indexable, HSS Triangle Inserts, 5 Piece, A R Warner

- 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)

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: .250 inch, Thickness: .125 inch, Hole: .110 inch Top opening: .146 inch @ 60 degrees, Radius: .031 inch
- Screws: (6) MS-1153
- Wrench: T-7

The Arthur R. Warner Co. is a family-owned American manufacturer of high speed steels 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.

5614 Turning and Facing Tool, 3/8" Indexable, SCBCR-06-2J, Tormach

- Designation: SCBCR-06-2J
- Steel shank 3/8" x 3-1/2"
- Designed for CCMT and CCCT 21.51 inserts
- Approach 95°, 7° relief angle
- Insert Shape: 80° (C)

Right hand Turning Tool. Includes wrenches and (1) insert.

4132 Turning Tools, 3/8" Indexable, Triangle Inserts, 3 Piece, A R Warner

- 3 piece turning tool set
- 3/8" square shank
- 3 TCMT21.52 inserts
- 1 TCMT21.51 insert
- Torx wrench and 4 screws

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 TCCT21.52 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.
DROs: DRO Packages

5675 Digital Position Readout, 2-Axis Mini Lathe $139.95
- 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

This works with most 7x10, 7x12, or 7x14 lathes made by SIEG, which includes almost all the mini lathes sold in the US and most of the mini lathes sold worldwide. This kit does not work on 20 TPI mini lathes as sold by Micro Mark.

5567 Digital Position Readout, 2-Axis Lathe $199.95
20 TPI

DRO Pros Scale Upgrade to 1 Micron Resolution $50.00
- 5 micron (0.0002”) resolution. 1 micron (0.00005”) resolution scales for an additional $50.00 per scale.
- Operates on 120V or 240V AC.

4239 Digital Position Readout, 3-Axis Magnetic Scale, DRO Pros Mill $1,215.00
- Magnetic scales can be cut to exact length you need
- Easy to use. More buttons, most intuitive layout--just walk up and operate
- 5 micron (0.0002”) resolution
- Clearly-written full-color manual and video training DVD, 3-year warranty
- Includes scale sizes in special instructions on your order
- Easiest to use DRO on the market. More buttons, most intuitive layout--just walk up and operate
- 5 micron (0.0002”) resolution
- Includes scale sizes in special instructions on your order

5515 Digital Position Readout, 3-Axis Bluetooth Universal $495.95
- Fits milling machines with less than 32" total X-, Y-, and Z-axis travel
- Displays on any Android tablet with Bluetooth capability
- Resolution of 0.00002” (0.005 mm)
- 120-240 VAC Power supply
- Coolant and dust resistant

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. 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.

5514 Digital Position Readout, 3-Axis Bluetooth for Mini Mill $495.95

5549 Digital Position Readout, 3-Axis Bluetooth for HiTorque 3900 Mini Mill $495.95

5497 Digital Position Readout, 3-Axis Bluetooth for HiTorque Bench Lathe $429.95

5494 Digital Position Readout, 3-Axis Bluetooth for HiTorque Bench Mill $529.95

5513 Android Tablet, Bluetooth DRO Readout $68.95

5495 Digital Position Readout, 2-Axis Bluetooth for Mini Lathe $395.95

5493 Digital Position Readout, 3-Axis Bluetooth for HiTorque 3900 Mini Mill $495.95

5497 Digital Position Readout, 3-Axis Bluetooth for HiTorque Bench Lathe $429.95

5494 Digital Position Readout, 3-Axis Bluetooth for HiTorque Bench Mill $529.95

5514 Digital Position Readout, 3-Axis Bluetooth for Mini Mill $495.95

5492 Digital Position Readout, 3-Axis Bluetooth for Mini Mill $495.95

5499 Read Head, Bluetooth DRO Magnetic $119.95

5498 Scale, Bluetooth DRO Magnetic 1 Meter $39.95

5501 Transceiver, Bluetooth DRO $99.95

5385 Digital Position Readout, 3-Axis DRO Pros Mill $799.00
- Easiest to use DRO on the market. More buttons, most intuitive layout--just walk up and operate
- 5 micron (0.0002”) resolution. 1 micron (0.00005”) resolution with inexpensive scale upgrade
- Clearly-written full-color manual and video training DVD, 3-year warranty
- SlimLine 20 mm x 28.5 mm (0.79” x 1.12”) scales; you choose the length. up to 1000 mm (39.3”)
- Includes scale sizes in special instructions on your order
- The DRO PROS 3M three-axis mill package includes everything you need: the display head; 3 glass scales up to 1000 mm (39.3”) travel; detailed installation instructions; a detailed full-color operator’s manual; 3-year warranty; display mounting arm; power cord; mounting hardware; and universal mounting brackets.

The package includes your choice of 19 different size scales ranging in travel from 100 mm (3.9”) up to 1000 mm (39.3”) in 50 mm increments. Optionally, you can choose 1 micron (0.00005”) resolution scales for an additional $50.00 per scale. Operates on 120V or 240V AC.

3929 Digital Position Readout, 2-Axis DRO Pros Mill $599.00

3976 Digital Position Readout, 2-Axis DRO Pros Mill $599.00

3997 DRO Pros Scale Upgrade to 1 Micron Resolution $50.00

4240 Digital Position Readout, 2-Axis Magnetic Scale, DRO Pros Lathe $855.00

4241 Digital Position Readout, 2-Axis Magnetic Scale, DRO Pros Lathe $855.00
DROs: DRO Packages

2665 Digital Position Readout, 3-Axis Shooting Star
- Shooting Star BT-3 3-axis digital position readout
- Includes the digital display unit, 3 scales, and mounting hardware
- Resolution: 0.0005", accuracy: 0.001"
- The keypad is a splash-proof membrane with tactile keys in a sturdy metal enclosure
- Guaranteed to fit any mill, lathe, or 3-in-1 machine
- Includes a black DRO Scale, 20" (500 mm)
- Digital scale unit has a range of 0-12" (0-300mm)
- Data output jack works with many digital display units
- One SR 44 1.5V battery is included

2664 Digital Position Readout, 2-Axis Shooting Star
- Includes the digital display unit, 2 scales, and mounting hardware
- Resolution: 0.0005", accuracy: 0.001"
- The keypad is a splash-proof membrane with tactile keys in a sturdy metal enclosure
- Guaranteed to fit any mill, lathe, or 3-in-1 machine
- Includes a black DRO Scale, 20" (500 mm)
- Digital scale unit has a range of 0-12" (0-300mm)
- Data output jack works with many digital display units
- One SR 44 1.5V battery is included

2658 Digital Position Readout, 3-Axis Shooting Star for X3 Mill
- Includes the digital display unit, 3 scales, and mounting hardware
- Sturdy metal enclosure
- Resolution: 0.0005", accuracy: 0.001"
- The keypad is a splash-proof membrane with tactile keys in a sturdy metal enclosure
- Guaranteed to fit any mill, lathe, or 3-in-1 machine
- Includes a black DRO Scale, 20" (500 mm)
- Digital scale unit has a range of 0-12" (0-300mm)
- Data output jack works with many digital display units
- One SR 44 1.5V battery is included

5012 DRO Scale, 12" (300 mm) with Display
- 12" travel stainless steel scale
- Stackable display unit
- Mounting arm
- Displays in inches or mm
- Resolution: 0.01mm/0.0005" Accuracy: 0.04mm/0.002"

5011 DRO Scale, 6" (150 mm) with Display
- 6" travel stainless steel scale
- Stackable display unit
- Mounting arm
- Displays in inches or mm
- Resolution: 0.01mm/0.0005" Accuracy: 0.04mm/0.002"

Kits: Lathe Conversion Kits

5000 Bed Extension Kit 16"
- Precision ways are approximately 28-3/8" long
- Rack is approximately 17-3/4" long
- Lead screw is approximately 29-5/16" long

This kit turns your 7x10 or 7x12 lathe into a 7x16 lathe. It 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.)

5001 Bed Extension Kit 18"
- Precision ways are approximately 31-9/16" long
- Rack is approximately 20-5/8" long
- Lead screw is approximately 33-5/16" long

This kit turns your 7x10 or 7x12 lathe into a 7x18 lathe. It includes a bed casting, a lead screw, a rack, a chip pan, and complete instructions. This is NOT a bolt-together kit. You must drill and tap 10 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.)

5010 Bed Extension Kit 20"
- Precision ways are approximately 34-1/16" long
- Rack is approximately 24-5/16" long
- Lead screw is approximately 37-5/16" long

This kit turns your 7x10 or 7x12 lathe into a 7x20 lathe. It includes a bed casting, a lead screw, a rack, a chip pan, and complete instructions. This is NOT a bolt-together kit. You must drill and tap 11 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.)

5015 Bed Extension Kit 24"
- Precision ways are approximately 38-3/8" long
- Rack is approximately 28-7/8" long
- Lead screw is approximately 41-7/16" long

This kit turns your 7x10 or 7x12 lathe into a 7x24 lathe. It includes a bed casting, a lead screw, a rack, a chip pan, and complete instructions. This is NOT a bolt-together kit. You must drill and tap 12 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.)

DROs: Scales

2014 DRO Scale, 12" (300 mm)
- Digital scale unit has a range of 0-12" (0-300mm)
- Includes two mounting brackets
- Resolution is 0.0005" (0.01mm) and the accuracy is 0.001" (0.03 mm)
- Data output jack works with many digital display units
- One SR 44 1.5V battery is included

3091 DRO Scale, 20" (500 mm)
- Digital scale unit has a range of 0-20" (0-500mm)
- Includes two mounting brackets
- Resolution is 0.0005" (0.01mm) and the accuracy is 0.001" (0.03 mm)
- Data output jack works with many digital display units
- One SR 44 1.5V battery is included

3446 Metal Gear Kit, Mini Lathe Complete
- 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

This kit changes every plastic gear on a mini lathe to steel. You will never break a plastic gear again."NOTE" Although our HiTorque lathe is listed in the compatibility tab, only the change gears are compatible.

4593 Gear, 45 Teeth, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

3450 Gear, 80 Teeth, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

3455 Pinion, 20 Teeth, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

3454 Pinion, 25 Teeth, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

3447 Change Gear Set, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

4450 Extended Cross Slide Travel Kit
- This kit adds one inch to the travel of the cross slide on 7x10 and 7x12 mini lathes. These are 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 kit replaces the saddle and the cross slide feed screw, and it includes a spacer for the longer screw.

5366 Extended Cross Slide Travel Kit 20 TPI
- Add 20 TPI to the cross slide.

5847 Extended Cross Slide Travel Kit DRO (Black Scales)
- Add DRO to the cross slide.

5367 Extended Cross Slide Travel Kit DRO (Gray Scales)
- Add DRO to the cross slide.

4270 Bed Extension Kit 16", HiTorque Mini Lathes
- ONLY FITS LittleMachineShop.com HiTorque 7x12 Mini Lathes
- Extend your HiTorque Mini Lathe to 16" between centers
- Precision ground ways are approximately 27-7/8" long
- Rack is approximately 18" long
- Lead screw is approximately 29" long

This kit turns your Littlemachineshop.com 7x12 HiTorque Mini Lathe into a 7x16 lathe. It includes a bed casting, a lead screw, a rack, a chip pan, and complete instructions. 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, M6x1.0, 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.)

2383 Feed Screw Parts, 20 TPI, Mini Lathe
- 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".

4047 Feed Screw Parts, Metric, Bench Lathe
- Fits HiTorque Bench Lathe
- Fits SIEG C4 and SC4 lathes
- These parts change the cross slide and compound feed screws, and the carriage dial to metric.

3447 Gear, 45 Teeth, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

3450 Gear, 80 Teeth, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

3455 Pinion, 20 Teeth, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

3454 Pinion, 25 Teeth, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

3447 Change Gear Set, Metal
- For 7x10 or 7x12 lathe
- Changes every plastic gear on the mini lathe to metal

5000 Bed Extension Kit 16" $169.95
5001 Bed Extension Kit 18" $179.95
5002 Bed Extension Kit 20" $189.95
5003 Bed Extension Kit 24" $199.95

12270 Bed Extension Kit 16", HiTorque Mini Lathes $139.95
- Complete instructions
- Speed control enclosure.
- A rubber guard to prevent chips from getting into the motor
- A rubber boot to protect the F/O/R switch on 7x10, 7x12 and 7x14 mini lathes.
- A spring for the tailstock clamp.
- Self locking cap screws for the carriage retainers.
- Self locking set screws for the cross slide and compound rest.
- Hardened lathe chuck mounting nuts for long life.

The kit includes the following:

- Fewer tailstock clamp jams
- Quicker gear cover removal
- Easier to use as a lathe
- Heavy duty Cherry brand switch
- Rated at 16A at 120/250 VAC
- Five times the rated life of the standard switch
- Multi-stack quick disconnect. You have to un-solder the old switch.

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.

- 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. 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 provided. 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" professional grade drill chuck, 2MT standard to 33JT drill chuck
- 1/2" indexable boring bar - CCMT inserts
- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

You must drill one 1/2" hole in the back of the tailstock casting. The cam lock kit is made from heat treated 4140 steel for long life.

- 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, and 4 with 60 degree counter sinks.

Once this kit of steel gears 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.

- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

You cannot use a threading dial with this kit installed. There is no metric threading dial.

- 1/2" professional grade drill chuck, 2MT standard to 33JT drill chuck
- 1/2" indexable boring bar - CCMT inserts
- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

You must drill one 1/2" hole in the back of the tailstock casting. The cam lock kit is made from heat treated 4140 steel for long life.

- 1/2" professional grade drill chuck, 2MT standard to 33JT drill chuck
- 1/2" indexable boring bar - CCMT inserts
- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

You cannot use a threading dial with this kit installed. There is no metric threading dial.

- 1/2" professional grade drill chuck, 2MT standard to 33JT drill chuck
- 1/2" indexable boring bar - CCMT inserts
- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

You cannot use a threading dial with this kit installed. There is no metric threading dial.

- 1/2" professional grade drill chuck, 2MT standard to 33JT drill chuck
- 1/2" indexable boring bar - CCMT inserts
- 3/8" indexable TCMT carbide inserts
- Premium P1 cut-off blade, 5 center drills

You cannot use a threading dial with this kit installed. There is no metric threading dial.
### Kits: Lathe Starter Kits

<table>
<thead>
<tr>
<th>Tooling Package</th>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5124 Tooling Package, 5200 Mini Lathe</strong></td>
<td></td>
<td>3/8&quot; indexable TCMT inserts</td>
<td>$78.95</td>
</tr>
<tr>
<td>9-piece carbide boring bar set</td>
<td>3/8&quot; shank</td>
<td>1/2&quot; drill chuck, 2MT short to 33JT drill chuck arbor</td>
<td></td>
</tr>
<tr>
<td>4 center drills (sizes 1-4)</td>
<td></td>
<td>P1N cut-off blade</td>
<td></td>
</tr>
<tr>
<td><em>This package contains all the tooling you need to be productive with your HiTorque model 5200 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 5200 lathe. The 1/2&quot; 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&quot;) to 13 mm (0.512&quot;). 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&quot;, 3/8&quot;, and 7/16&quot;. The bore depth ranges from 3/4&quot; to 2-1/4&quot;. The heat treated, alloy steel shanks are held to 0.000 to -0.0005&quot; from the nominal diameter. The P1 parting blade is 1/16&quot; x 1/2&quot; x 4-1/2&quot; 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.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **5125 Tooling Package, 5200 Mini Lathe** | | 1/2" professional grade drill chuck | $154.95 |
| 2MT standard to 33JT drill chuck arbor | 3/8"- 6" long indexable boring bar - CCMT inserts | 3/8" indexable TCMT carbine inserts | |
| *Premium P1 cut-off blade, 5 center drills This package contains our best version of all the tooling you need to be productive with your 7x10, 7x12, 7x14, or 7x16 mini lathe. The package does not include a quick change tool post because there is one on the model 5200 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 Indexes: 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° 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.* | |

| **4857 Tooling Package, HiTorque Bench Lathe** | | 3/8" indexable TCMT carbine inserts | $284.95 |
| *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 Jacobs 34-33 heavy duty drill chuck, 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** | | 3/8" indexable TCMT inserts, P1N cut-off blade | $198.95 |
| 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 package contains all the tooling you need to be productive with your 7x14 lathe on the first day you own it. The Tormach OKA quick change tool post set (QCTP). This set includes the tool post and the following tool holders: 2 - #1 Turning & Facing1 - #2 Boring, Turning & Facing1 - #4 Heavy Duty Boring will hold both 3/8" and 1/2" boring bars1 - #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. Indexable turning tools are made by AR Warner Co in the USA. These T-shape parting blades provide great side clearance. The 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.* | |

---

(800) 981 9663 LittleMachineShop.com Page 32
Kits: Lathe Starter Kits

4116 Tooling Package, Mini Lathe Premium $274.95
- Tormach OXA (Series 000) QCTP set
- 1/2” professional grade drill chuck, 2MT standard to 33JT drill chuck arbor
- 3/8” to 6” long Indexable boring bar - CCMT inserts
- 3/8” indexable TCMT carbine 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:
- #1 Turning & Facing1 - #2 Boring, Turning & Facing1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars1 - #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° 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 1/16” x 1 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, Tormach OXA QCTP $198.95
- QCTP Set easily mounts to 7x10, 7x12, 7x14, 7x16 lathes
- 3/8” indexable TCMT inserts, P11 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 Tormach OXA quick change tool post set (QCTP). This set includes the tool post and the following tool holders:
- #1 Turning & Facing1 - #2 Boring, Turning & Facing1 - #4 Heavy Duty Boring will hold both 3/8 and 1/2 boring bars1 - #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 0.0005” from the nominal diameter. The P1 parting blade is 1 1/16” x 1 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.

Kits: Mill Conversion Kits

3786 Tooling Package, 9x20 Lathe $249.95
- Tormach AXA (Series 100) QCTP set
- 1/2” Indexable TCMTM inserts, P15 Cut-Off Blade
- 1/2” Drill Chuck, 2MT Standard to 33JT Drill Chuck Arbor
- 9-piece carbide Boring Bar Set - 3/8” 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 & facing tool holder, a boring, turning & facing tool holder, a heavy duty boring bar holder, a universal parting blade holder, and a knurling, facing & 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 holder accepts 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 TCMT-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 0.0005” from the nominal diameter.

The P1 parting blade is 1 1/6” x 1 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.

2258 Air Spring Conversion Kit $39.95
- Converts torsion spring mini mills to air spring
- Allows travel to the top of the column
- Provides better support for the mill head

Most mini mills use a torsion spring mounted on the side of the column to support the head. This 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 $49.95
## Kits: Mill Conversion Kits

<table>
<thead>
<tr>
<th>Code</th>
<th>Kit Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2560</td>
<td>Belt Drive Conversion Kit, Mini Mill</td>
<td>$154.95</td>
</tr>
<tr>
<td></td>
<td>- No more broken drive gears</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Much quieter operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Spindle speed up to 4300 RPM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Ideal for manual and CNC mini mills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This mini mill belt drive conversion kit provides an easy-to-install</td>
<td></td>
</tr>
<tr>
<td></td>
<td>alternative to the noisy and fragile factory-installed gears that drive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the spindle on the mini mill.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This kit is CNC-machined from the highest quality materials.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Designed to run full-time, it is built to last.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The CNC belt drive conversion kit includes one belt.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change speeds without any tools. Simply remove the guard, loosen the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lever locks and move the belt from one pair of pulleys to the other.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low speed range is 0-1700 RPM, High speed range is 0-4300 RPM.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The installation is bolt-on and takes about 20 minutes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This CNC belt drive kit fits the following mills:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grizzly G0516 Lathe Mill Combo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grizzly G8689 Mini Milling Machine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harbor Freight 44991 Central Machinery Mini Mill/Drill</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hare &amp; Forbes HM-10 Mini Mill Drill</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Homier O3947 Speedway Mini Mill</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Micro-Mark 82573 MicroLux Milling Machine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The small pulley has a 9 mm bore with a 3 mm keyway. The large pulley</td>
<td></td>
</tr>
<tr>
<td></td>
<td>has a 30 mm bore with a 5 mm keyway. If your shafts don’t match these</td>
<td></td>
</tr>
<tr>
<td></td>
<td>values, then this belt drive will not fit your mill.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4795 Belt Drive Shield, Mini Mill, Plastic</td>
<td>$4.95</td>
</tr>
<tr>
<td></td>
<td>2657 Y-Belt for Mini Mill Belt Drive</td>
<td>$4.95</td>
</tr>
<tr>
<td>4213</td>
<td>CNC Spindle Control Upgrade Kit for SX2, SC2</td>
<td>$99.95</td>
</tr>
<tr>
<td></td>
<td>- Converts brushless DC drive to CNC control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Provides speed, on/off, and direction control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- For 500 watt Brushless DC drive used on SX2, SC2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 120V 60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This conversion kit consists of a small circuit board that replaces the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>circuit board with the speed control potentiometer, plus a replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chip for the motor controller card.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This kit works on SX2 mini mill and SC2 mini lathes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4950 CNC Spindle Control Upgrade Kit for SX2, SC2 230V</td>
<td>$99.95</td>
</tr>
<tr>
<td></td>
<td>4645 CNC Spindle Control Upgrade Kit for SX2, SC3</td>
<td>$99.95</td>
</tr>
<tr>
<td></td>
<td>4951 CNC Spindle Control Upgrade Kit for SX2, SC4 230V</td>
<td>$99.95</td>
</tr>
<tr>
<td>1764</td>
<td>Feed Screw Parts, 20 TPI, Mini Mill</td>
<td>$59.95</td>
</tr>
<tr>
<td></td>
<td>These parts change Grizzly, Homier, Cummins, and Harbor Freight mini mills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to 20 thread per inch feed screws on the X- and Y-axis.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Each rotation of the hand wheel will advance the table 0.050’. The mini</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mill tool kit includes two feed screws, two nuts, two 50 division</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dials, plus the springs and keys that you are going to lose during</td>
<td></td>
</tr>
<tr>
<td></td>
<td>disassembly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This mini mill conversion kit includes the extended screw for the mini</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mill power feed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1989 Metric Kit, Mini Mill</td>
<td>$69.95</td>
</tr>
<tr>
<td>5177</td>
<td>Large Table Solid Column Conversion Kit, Mini Mill</td>
<td>$395.95</td>
</tr>
<tr>
<td></td>
<td>- Converts a tilting column mini mill to the large table solid column</td>
<td></td>
</tr>
<tr>
<td></td>
<td>version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 30% more travel in both directions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 50% more table area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Solid column is significantly more rigid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This kit converts a tilting column mini mill to a large table with a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>solid column. The kit includes the X-Y table and column from the HiTorque</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid Column Mini Mill (part number 3990), the fasteners needed to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>connect them. This kit contains a complete X-Y table assembly for a mini</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mill. The table is 120 mm (4.73”) by 460 mm (18.11”). It has three 12 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T-slots. The X-axis travel is 300 mm (11.8”) and the Y-axis travel is</td>
<td></td>
</tr>
<tr>
<td></td>
<td>130 mm (5.1”). The dials are graduated in 0.001” and one turn of the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hand wheels moves the table 0.050”. The X-Y table is made of cast iron</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and steel. There are adjustable gibs on both axes.</td>
<td></td>
</tr>
<tr>
<td>2642</td>
<td>Long Table Kit, Micro Mill</td>
<td>$89.95</td>
</tr>
<tr>
<td></td>
<td>- Table is 400 mm x 145 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- X-Axis travel is 330 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Provides 150 mm more X-axis travel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This kit adds a larger table, and increases the X-axis travel to 330 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>on the Harbor Freight 47158 micro mill.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The conversion kit includes a new table and 20 TPI X-axis screw.</td>
<td></td>
</tr>
<tr>
<td>3492</td>
<td>Long Table Kit, Micro Mill, Metric</td>
<td>$99.95</td>
</tr>
<tr>
<td></td>
<td>- Extra long table for X3 SX3 mills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This extra long mill table fits both SIEG X3 and SIEG Super X3 mills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and comes complete with an extra long feed screw and rule which may be</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fitted to the front of the table with the rivets supplied.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The table is 700 mm x 160 mm.</td>
<td></td>
</tr>
<tr>
<td>3845</td>
<td>Long Table Kit, Super X3L</td>
<td>$195.95</td>
</tr>
<tr>
<td></td>
<td>- Extra long table for X3 SX3 mills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This extra long mill table fits both SIEG X3 and SIEG Super X3 mills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and comes complete with an extra long feed screw and rule which may be</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fitted to the front of the table with the rivets supplied.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The table is 700 mm x 160 mm.</td>
<td></td>
</tr>
<tr>
<td>1625</td>
<td>Spindle Conversion Kit, R8</td>
<td>$74.95</td>
</tr>
<tr>
<td></td>
<td>- This kit converts a Grizzly or Micro-Mark mini mill to an R8 spindle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The kit includes:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- R8 spindle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Two spindle gears</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Two spacing rings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Two keys</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- One bearing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- One drawbar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Complete instructions</td>
<td></td>
</tr>
<tr>
<td>2635</td>
<td>Tweaks &amp; Enhancements Kit, Mini Mill</td>
<td>$34.95</td>
</tr>
<tr>
<td></td>
<td>- Several small items to make your mini mill work better and last</td>
<td></td>
</tr>
<tr>
<td></td>
<td>longer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Easier gib adjustment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Fewer stripped locking levers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Easier backlash adjustment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Cleaner T-slots</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Mini Mill Tweaks &amp; Enhancements Kit™ can make a big difference in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the operation of your mini mill.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The kit includes the following:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improved (German-made) locking levers for the X-, Y-, and Z-axes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self locking set screws for the X-, Y-, and Z-axis gibs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self locking adjustment nuts for the X-, and Y-axes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A T-slot cleaner</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete instructions</td>
<td></td>
</tr>
<tr>
<td>2823</td>
<td>Spindle Conversion Kit, 3MT</td>
<td>$64.95</td>
</tr>
<tr>
<td>4795</td>
<td>Belt Drive Shield, Mini Mill, Plastic</td>
<td>$4.95</td>
</tr>
<tr>
<td>4645</td>
<td>CNC Spindle Control Upgrade Kit for SX2, SC3</td>
<td>$99.95</td>
</tr>
<tr>
<td>4951</td>
<td>CNC Spindle Control Upgrade Kit for SX2, SC4</td>
<td>$99.95</td>
</tr>
</tbody>
</table>
The edge and center finder is hardened and ground all over. 0.200" diameter cylinder to quickly find the edge of a work piece helps you locate work on your mill. The edge finder end has a square within 0.0002". Each set includes two matched blocks. They are parallel within 0.0002", flat within 0.0002" and square within 0.0004".

The precision 1-2-3 blocks are ground and case hardened on all sides 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.

---

### Kits: Mill Conversion Kits

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5069</td>
<td>Upgrade Kit, Mini Mill</td>
<td>$194.95</td>
</tr>
<tr>
<td>1262</td>
<td>Starter Kit, Mini Mill</td>
<td>$90.95</td>
</tr>
</tbody>
</table>

- 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

---

### Kits: Mill Starter Kits

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2653</td>
<td>Starter Kit, Micro Mill</td>
<td>$84.95</td>
</tr>
<tr>
<td>3491</td>
<td>Tooling Package, 2MT Micro Mill</td>
<td>$299.95</td>
</tr>
</tbody>
</table>

- 3" toolmakers screwless vise and 10 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 & 4 flute and 5 center drills
- Seven piece 2MT collet set
- Combination edge and center finder

---

### Tooling Package, 2MT Micro Mill

- 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.


- Made of high grade alloy steel hardened to 52 to 58 Rc. Parallel within 0.0002" on the top and bottom. The blocks are matched in height within 0.0004".

- Set comes in a durable plastic fitted case.

---

### Tools and Accessories

- **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 vee's 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 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"").


- **2MT Collets:** Set of seven high-grade tool hardened steel round collets, sizes 1/8", 3/16", 1/4", 5/32", 3/32", 7/32", and 1/2". The drawbar thread is 3/8"-16 NC. This set includes all the sizes required for common end mills.

- **Five sizes combined drills and countersinks made of high speed steel. Sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.**
Kits: Mill Starter Kits

3869 Tooling Package, 3501 CNC Mill $295.95
- 3" Toolmakers Screwless Vise and 10 Pairs of 3" long thin parallels
- Precision 1-2-3 Blocks and 36-piece Clamping Kit - 8mm T-Slot
- Two 6-piece end mill sets, 2 & 4 flute and 5 Center Drills
- Four 2MT End Mill Holders
- Combination Edge and Center Finder

Tooling package with all the essentials for a 3501 CNC 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. 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%).

Clamping Kit: 36-piece kit fits 8mm 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 Mill Holders: Set of four 2 Morse taper, high-grade tool hardened steel end mill holders. Sizes 3/16", 3/8", 1/2", and 5/8". 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.

This tooling package is perfect for KX1 CNC Mills.

4759 Tooling Package, ER-16 Micro Mill $289.95
- 3" toolmakers screwless vise and 10 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 & 4 flute and 5 center drills
- Five piece ER-16 collet set
- Combination edge and center finder

Tooling package with all the essentials for an ER-16 Micro 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. 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 0.0002%).

Clamping Kit: 36-piece kit fits 8mm 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 Mill Holders: Set of four 2 Morse taper, high-grade tool hardened steel end mill holders. Sizes 3/16", 3/8", 1/2", and 5/8". 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.

This tooling package is perfect for ER-16 Micro Mills.

5489 Tooling Package, RB Bench Mill Premium $530.95
- 4" Precision milling, professional and 10 pairs of 4" long thin parallels
- Thirteen piece R8 collets, Two-six piece M42 8% cobalt end mill set - 2 & 4 flute
- 58 - piece clamping kit - 3/8"-16, 7/16" T-slots
- Premium precision 1-2-3 blocks, five center drills - 60 parallel
- Combination edge and center finder and a T-slot cleaner
- Premium tooling package with all the best products for your R8 mini mill.

Millling Vise: 4" Kurt-style professional 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 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 pairs, 1/8" thick x 4" long. 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: Two six-piece M42 8% cobalt, center cutting End Mills sets, 2 & 4 flute. Sizes: 1/8", 3/16", 1/4", 5/16", 3/8", and 1/2". The smaller end mills have 3/8" shanks and the 1/2" end mill has a 1/2" shank.

RB Collets: 13 RB 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 50-60 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.

Five piece M42 8% cobalt combined drills and countersinks sizes 1, 2, 3, 4, and 5 with 60 degree counter sinks.

5671 Tooling Package, Grizzly G0758 Mill $319.95
- 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 & 4 flute (10 each)
- 58 - piece clamping kit - 5/16"-18, 3/8" T-slots
- Seven piece R8 collet set, five center drills - 60° countersinks
- Combination edge and center finder and a T-slot cleaner
- Tooling package with all the essentials for an R8 mini mill.
Kits: Mill Starter Kits

4212 Tooling Package, R8 CNC Mini Mill $352.95
- 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 & 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.

Center Drills: Five sizes combined drills and countersinks made of high speed steel. Sizes 1/16", 3/32", 1/8", 5/32", 3/16". 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.

4491 Tooling Package, R8 Mini Mill Essentials $229.95
- 3" precision milling vise, 4 pairs of 3" parallels
- 58 - piece clamping kit - 3/8"-16, 7/16" T-slots
- Five piece R8 collet set, four center drills - 60° 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.

Thin Parallels: Set of four pairs of thin parallels come in a fitted case. They are 0.5/32" thick and 3" long. The heights are 1/2", 5/8", 3/4", and 7/8". The parallels are made of high grade alloy steel hardened to 52 to 58 Rc. 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.

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, 4, and with 60 degree counter sinks.

4723 Tooling Package, R8 Mini Mill Precision $289.95
- 3" Toolmakers screwless vise and 10 pairs of 3" long thin parallels
- Precision 1-2-3 blocks and 20 piece end mill set - 2 & 4 flute (10 each)
- 58-piece clamping kit - 3/8"-16, 7/16" T-slots
- Seven piece R8 collet set, five center drills - 60° 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.

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.

Collets: Set of seven high-grade tool hardened steel, sizes 1/8", 3/32", 1/16", 1/8", 1-1/8", 1-1/4", 1-3/16", 1-1/2", and 1-5/8" (pairs matched within 0.0004%).

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.

3489 Tooling Package, R8 Mini Mill $303.95
- 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 & 4 flute (10 each)
- 58-piece piece clamping kit - 3/8"-16, 7/16" T-slots
- Seven piece R8 collet set, five center drills - 60° 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 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.

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.

4390 Tooling Package, 3MT Mini Mill $349.95
3526 Tooling Package, R8 Bench Mill $316.95
### Kits: Mill Starter Kits

**4858 Tooling Package, R8 Mini Mill Premium** $547.95
- 3" Precision milling, professional and 10 pairs of 3" long, high grade, thin parallels
- Thirteen piece R8 collets. Two six-piece M42 8% cobalt end mill set - 2 6-flute
- 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 mini mill.

**Milling Vise:** 3" Kurt-style professional 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 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 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:** Two piece six-piece M42 8% cobalt, center cutting End Mills sets, 2 & 4 flute. Sizes: 1/8", 3/16", 1/4", 5/16", 3/8" and 1/2". The smaller end mills have 3/8" shanks and the 1/2" end mill has a 1/2" shank.

**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, five center drills - 60° countersinks
- 58 - piece clamping kit - 3/8"-16, 7/16" T-slots
- Premium precision 1-2-3 blocks, five center drills - 60° countersinks

- **5 GMA-5 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** $29.95

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

The 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
- 1 Pulley, Timing Belt Intermediate Shaft
- 1 Gear, 80 Tooth

**2262 Spare Parts Kit, 7x14 Mini Lathe** $24.95

**1703 Spare Parts Kit, R8, Mini Mill** $33.95

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 Gear, Motor
- 1 Gear, Intermediate
- 1 Gear, Spindle (1)
- 1 Gear, Spindle (2)
- 1 Gear, 2-Speed Intermediate Shaft

**1224 Spare Parts Kit, 3MT, Mini Mill** $24.95

---

### 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.

**1223 Spare Parts Kit, Mini Lathe** $29.95

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

The 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
- 1 Pulley, Timing Belt Intermediate Shaft
- 1 Gear, 80 Tooth

**2262 Spare Parts Kit, 7x14 Mini Lathe** $24.95

**1703 Spare Parts Kit, R8, Mini Mill** $33.95

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 Gear, Motor
- 1 Gear, Intermediate
- 1 Gear, Spindle (1)
- 1 Gear, Spindle (2)
- 1 Gear, 2-Speed Intermediate Shaft

**1224 Spare Parts Kit, 3MT, Mini Mill** $24.95

---

### Lathe: 10x21 Lathe (C6) Accessories

**2499 Faceplate, G0516 Combo Lathe Mill** $43.95

Faceplate for Grizzly G0516 and SIEG C6 lathe. The faceplate is 8.66" (220 mm) in diameter and has 8 slots for mounting work.

**2497 Follower Rest, C6 Lathes** $57.95

This follower rest fits the Grizzly G0516 and SIEG C6 lathes. The follower rest can support work up to 1.5" in diameter.

**5042 Follower Rest, C8 Lathe** $58.95

This follower rest fits the SIEG C8 and SC8 lathes.

**2894 Milling Attachment, C6 Lathe** $219.95

Milling attachment for the SIEG C6 lathe. This milling attachment includes the mounting bracket required to mount it on a SIEG C6 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.

**2496 Steady Rest, C6 Lathes** $69.95

This steady rest fits the Grizzly G0516 and SIEG C6 lathes. The steady rest can support work up to 2.5" in diameter.

**5036 Steady Rest, C8 Lathes** $89.95

This steady rest fits the SIEG C8 and SC8 lathes.

---

### Wood Turning Tool Rest and Center, C6

**2498 Wood Turning Tool Rest and Center, C6** $58.95

Wood turning tool rest and center for Grizzly G0516 and SIEG C6 lathe. The tool rest clamps in the standard tool post so you can turn wood on your mini lathe. The driving center fits in the lathe spindle.

**2496 Auto Longitudinal Feed, SIEG C0 Lathes** $41.95

- Powers the lead screw
- Clutch disengages when not in use
- Includes drive belt and mounting bolt
- Fits SIEG C0 lathes

**2946 Auto Longitudinal Feed, C6 Lathe** $41.95

**2497 Compound Rest Assembly SIEG C0 Lathes** $42.95

- Top slide for turning tapers
- 40 mm of travel
- Holds tools up to 1/4" shank
- Fits SIEG C0 lathes

---

**2496 Auto Longitudinal Feed, SIEG C0 Lathes** $41.95

- Powers the lead screw
- Clutch disengages when not in use
- Includes drive belt and mounting bolt
- Fits SIEG C0 lathes

**2497 Compound Rest Assembly SIEG C0 Lathes** $42.95

- Top slide for turning tapers
- 40 mm of travel
- Holds tools up to 1/4" shank
- Fits SIEG C0 lathes
Lathe: 4x5 Micro Lathe (C0)/Unimat Accessories

2950 Faceplate, Nano Lathe, Unimat 3 & 4 and SIEG C0 Lathes
- 70 mm diameter
- Three slots to mount work
- M14x1.0 mounting thread
- Fits Nano Lathe
- Fits SIEG C0 lathes and Unimat 3 & 4

$14.95

2948 Live Center, SIEG C0 Lathes
- 10 mm straight shank
- Point is a 60° included angle
- Fits SIEG C0 lathes

$21.95

2945 Steady Rest, SIEG C0 Lathes
- Supports work up to 40 mm (1.5") in diameter
- Fits SIEG C0 lathes

$25.95

2952 Tool Post, Unimat 3 & 4 and SIEG C0 Lathes
- Two sided tool post
- Holds tools up to 1/4" shank
- Fits Unimat 3 & 4 lathes
- Fits SIEG C0 lathes
- Mounts with an M6 bolt included

$18.95

2949 Wood Turning Tool Rest and Center, Unimat 3 & 4 and SIEG C0 Lathes
- Wood turning tool rest and spur center
- 150 mm long tool rest
- Includes spur center with 10 mm shank
- Fits Unimat 3 & 4 lathes
- Fits SIEG C0 lathes

$36.95

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

4607 Accessory Package, 3" Spindle Flange Mini Lathe
- 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.

$334.95

5371 Accessory Package, 4" Spindle Flange, Mini Lathe
- 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.

$329.95

1700 Boring Bar Holder, 1/2"
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.

$9.95

5135 Bullseye Lathe Tool Height Setter
- 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 tool height gage will allow you to quickly and accurately check and adjust lathe tool height. No guess work, no fumbling around.

$9.95

2977 Carriage Lock, Mini Lathe
- Locks carriage down to ways
- Won't rock the carriage when locking
- Mounts to existing follower rest mounting holes
- No tools required to lock the carriage
This carriage lock mounts to the two tapped holes for mounting the follower rest. The carriage lock can be left in place for most operations.

$35.95

2705 Carriage Stop, Mini Lathe, Adjustable
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.

$24.95

4159 Carriage Stop, Bench Lathe, Adjustable

$29.95

3938 Change Gears Set, Metal
- Attractive all metal change gears
Complete set of good-looking steel change gears for the mini lathe. Includes the following: 1 30 Tooth gear 1 35 Tooth gear 2 40 Tooth gear 2 45 Tooth gear 1 50 Tooth gear 1 55 Tooth gear 1 57 Tooth gear 1 60 Tooth gear 1 65 Tooth gear 2 80 Tooth gear

$114.95

1677 Compound Rest Bottom, Drilled
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.

$28.95

1777 Compound Rest Bottom, Drilled and Milled
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.

$35.95

1880 Compound Rest Bottom, Drilled, 20 TPI

$28.95

1881 Compound Rest Bottom, Drilled and Milled, 20 TPI

$35.95

4836 Compound Rest Top, T-slot
- Two 8 mm T-slots 25 mm center to center
- Mounts QCTP or standard 4-way tool holder
This compound rest top fits any mini lathe. It gives you two 8 mm T-slots with which you can mount anything you want.

$29.95

1551 Cut-Off Tool Holder
- No tools required to lock the carriage
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.

$19.95

3864 Cut-Off Tool Holder and HSS Blade
- The tool holder is made of steel and has a 3/8" shank.

$27.50

1873 Drawbar, 3MT x 3/8"-16, Mini Lathe
- This is the 3/8-16 drawbar for the 7x10 and 7x12 mini lathe with the 3 Morse Taper spindle.

$3.49

2224 Drawbar, 3MT x 3/8"-16, 7x14 Mini Lathe

$4.29

1872 Drawbar, 3MT x M12, Mini Lathe

$4.49
### Milling Attachment, Mini Lathe (C2/C3) Accessories

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5123</td>
<td>Faceplate, Mini Lathe, 100 mm Flange</td>
<td>$32.95</td>
</tr>
<tr>
<td>1199</td>
<td>Faceplate, Mini Lathe, 80 mm Flange</td>
<td>$28.95</td>
</tr>
<tr>
<td>4646</td>
<td>Lathe Dog Set</td>
<td>$35.95</td>
</tr>
<tr>
<td>3937</td>
<td>Knob and Hand Wheel Kit</td>
<td>$64.95</td>
</tr>
<tr>
<td>4674</td>
<td>Milling Attachment, Taig</td>
<td>$66.95</td>
</tr>
<tr>
<td>4968</td>
<td>Revolving Tailstock Chuck Adapter, 2MT</td>
<td>$134.95</td>
</tr>
<tr>
<td>1956</td>
<td>Milling Attachment, C6 Lathe</td>
<td>$219.95</td>
</tr>
<tr>
<td>4675</td>
<td>Steady Rest Package, 0-2&quot; Mini Lathe</td>
<td>$110.95</td>
</tr>
<tr>
<td>3897</td>
<td>Spindle Hand Crank</td>
<td>$29.95</td>
</tr>
<tr>
<td>1945</td>
<td>Sensor and Cable</td>
<td>$15.95</td>
</tr>
<tr>
<td>1946</td>
<td>Interrupter Wheel, 56 mm Diameter</td>
<td>$5.95</td>
</tr>
<tr>
<td>2051</td>
<td>Interrupter Wheel, 66 mm Diameter</td>
<td>$5.95</td>
</tr>
<tr>
<td>3818</td>
<td>Tachometer, Spindle</td>
<td>$99.95</td>
</tr>
<tr>
<td>3896</td>
<td>Follower Rest, Mini Lathe</td>
<td>$41.95</td>
</tr>
<tr>
<td>1197</td>
<td>Steady Rest, 0-1&quot; Mini Lathe</td>
<td>$46.95</td>
</tr>
<tr>
<td>4673</td>
<td>Steady Rest, 1-2&quot; Mini Lathe</td>
<td>$75.95</td>
</tr>
<tr>
<td>4672</td>
<td>Steady Rest, 1-2&quot;, Mini Lathe, Ball Bearing</td>
<td>$56.95</td>
</tr>
<tr>
<td>4674</td>
<td>Steady Rest, 1-2&quot;, Mini Lathe, Ball Bearing</td>
<td>$75.95</td>
</tr>
<tr>
<td>1198</td>
<td>Follower Rest, Mini Lathe</td>
<td>$54.95</td>
</tr>
<tr>
<td>2419</td>
<td>Gear, 21 Teeth</td>
<td>$9.95</td>
</tr>
<tr>
<td>4471</td>
<td>Lathe Dog, 10 mm</td>
<td>$4.95</td>
</tr>
<tr>
<td>4472</td>
<td>Lathe Dog, 15 mm</td>
<td>$5.95</td>
</tr>
<tr>
<td>4473</td>
<td>Lathe Dog, 15 mm</td>
<td>$5.95</td>
</tr>
<tr>
<td>4474</td>
<td>Lathe Dog, 30 mm</td>
<td>$7.95</td>
</tr>
<tr>
<td>4475</td>
<td>Lathe Dog, 40 mm</td>
<td>$8.95</td>
</tr>
<tr>
<td>3766</td>
<td>Milling Attachment Package, Mini Lathe</td>
<td>$237.95</td>
</tr>
</tbody>
</table>

### Notes
- **NOTE** Chuck is not included, but it works great with our 1187 lathe chuck.
- 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 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. This milling attachment is 2.25" wide, 3.38" deep, and 5.75" tall.
- This 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 spindle tachometer mounts on the top of the mini lathe headstock and displays the speed, to the nearest 20 RPM, of the spindle. The spindle tachometer includes the interrupter wheel and the sensor and cable.
- This spindle tachometer mounts on the top of the mini lathe headstock and displays the speed, to the nearest 20 RPM, of the spindle. The spindle speed readout plugs into the jack on the control panel.
Lathe: 7x10/12/14 Mini Lathe (C2/C3) Accessories

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2658</td>
<td>Tachulator Tachometer &amp; SFM Meter</td>
<td>$109.95</td>
</tr>
<tr>
<td></td>
<td>- Digital tachometer for lathes and mills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Displays rpm and surface feet per minute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Range to 9999 rpm, 9999 SFM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Accuracy and resolution to 1 rpm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Cutter or work diameter to 99.9&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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&quot; to 99.99&quot; Low power consumption- 50mA typically at 9-12VDC Bright attractive 4 digit 0.56&quot; 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</td>
<td></td>
</tr>
<tr>
<td>1204</td>
<td>Tool Post</td>
<td>$14.95</td>
</tr>
<tr>
<td></td>
<td>- Four-position tool post for the mini lathe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This is the tool holder that comes on the mini lathe. On most mini lathes it is the correct size for 3/16” tools. On “early” Homier and Cummins lathes it is the correct size for 1/8” tools. The tool holder is 2” square and 1.5” tall. The tool slot is 0.64” tall and is 0.32” from the bottom.</td>
<td></td>
</tr>
<tr>
<td>1589</td>
<td>Tool Holder Screws, Set of 8</td>
<td>$1.95</td>
</tr>
<tr>
<td></td>
<td>This tooling plate works with the lathe milling attachment. It is 120 mm (4.72”) square and includes four clamps. The holes are threaded M6</td>
<td></td>
</tr>
<tr>
<td>3844</td>
<td>Tooling Plate, Milling Attachment</td>
<td>$64.95</td>
</tr>
<tr>
<td></td>
<td>- This tooling plate works with the lathe milling attachment. It is 120 mm (4.72”) square and includes four clamps. The holes are threaded M6</td>
<td></td>
</tr>
<tr>
<td>1685</td>
<td>Wood Turning Tool Rest and Center, Mini Lathe</td>
<td>$54.95</td>
</tr>
<tr>
<td></td>
<td>- Woodturning tool rest and spur center</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The mini lathe tool rest clamps in the standard tool post so you can turn wood on your mini lathe. The driving center fits in the lathe spindle.</td>
<td></td>
</tr>
<tr>
<td>2498</td>
<td>Wood Turning Tool Rest and Center, C6</td>
<td>$58.95</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1769</td>
<td>Compound Rest Assembly</td>
<td>$72.95</td>
</tr>
<tr>
<td></td>
<td>- This is a complete compound rest for the mini lathe. It includes the tool post and locking handle not shown in the photo.</td>
<td></td>
</tr>
<tr>
<td>2299</td>
<td>Mini Lathe Headstock Assembly</td>
<td>$119.95</td>
</tr>
<tr>
<td></td>
<td>- This is the headstock assembly for a 7x10 or 7x12 mini lathe. It includes the spindle and all the pieces in the headstock casting, the High/Low shifter, all parts on the spindle, and all parts on the intermediate shaft, except the pulley.</td>
<td></td>
</tr>
<tr>
<td>1884</td>
<td>Tailstock Assembly</td>
<td>$71.95</td>
</tr>
<tr>
<td></td>
<td>- 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 chuck is 2 Morse taper.</td>
<td></td>
</tr>
<tr>
<td>2502</td>
<td>Tailstock Assembly, Cam Lock</td>
<td>$79.95</td>
</tr>
<tr>
<td></td>
<td>- This is the tailstock from the HiTorque mini lathe. It has a factory-installed cam lock mechanism. It holds 2 Morse taper tooling.</td>
<td></td>
</tr>
<tr>
<td>1526</td>
<td>Threading Dial Assembly (inch)</td>
<td>$19.95</td>
</tr>
<tr>
<td></td>
<td>- This kit includes all the parts needed to add a threading dial for cutting inch threads to a mini lathe. This assembly DOES NOT help you to cut inch threads on a metric lathe with a metric lead screw.</td>
<td></td>
</tr>
<tr>
<td>2545</td>
<td>Threading Dial Assembly (inch), G0516</td>
<td>$28.95</td>
</tr>
</tbody>
</table>

Lathe: 8.5x16 Lathe (C4) Accessories

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4665</td>
<td>Accessory Package, C4 Lathe</td>
<td>$329.95</td>
</tr>
<tr>
<td></td>
<td>- Complete set of C4 lathe accessories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Fully equip your C4 lathe</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Steadies, centers, chucks, faceplate and dogs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This package includes all the accessories you could want to fully equip your C4 lathe.</td>
<td></td>
</tr>
<tr>
<td>3538</td>
<td>Chip Tray, SC4, C4 Lathe</td>
<td>$54.95</td>
</tr>
<tr>
<td></td>
<td>Chip tray for the SC4 and C4 Lathes</td>
<td></td>
</tr>
<tr>
<td>3400</td>
<td>Faceplate, C4 Lathe</td>
<td>$35.95</td>
</tr>
<tr>
<td></td>
<td>Faceplate SIEG C4 lathe. The faceplate is 7.1” (180 mm) in diameter and has 8 slots for mounting work. This faceplate will not fit with the plastic chuck guard in place.</td>
<td></td>
</tr>
<tr>
<td>3041</td>
<td>Clamping Kit for C4 Faceplate</td>
<td>$22.95</td>
</tr>
<tr>
<td>5043</td>
<td>Faceplate, C8 Lathe</td>
<td>$44.95</td>
</tr>
<tr>
<td></td>
<td>Faceplate SIEG C8 lathe. The faceplate is 10” (254 mm) in diameter and has 8 slots for mounting work. This faceplate will not fit with the plastic chuck guard in place.</td>
<td></td>
</tr>
<tr>
<td>5035</td>
<td>Clamping Kit for C8 Faceplate</td>
<td>$24.95</td>
</tr>
<tr>
<td>3399</td>
<td>Follower Rest, C4 Lathe</td>
<td>$48.95</td>
</tr>
<tr>
<td></td>
<td>This follower rest fits the SIEG C4 lathes The follower rest can support work up to 2.2” in diameter.</td>
<td></td>
</tr>
<tr>
<td>3398</td>
<td>Steady Rest, C4 Lathe</td>
<td>$59.95</td>
</tr>
<tr>
<td></td>
<td>This steady rest fits the SIEG C4 lathes The steady rest can support work up to 2.2” in diameter.</td>
<td></td>
</tr>
</tbody>
</table>

Lathe: 8x12/14 Lathe Accessories

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2544</td>
<td>Faceplate, 8x12 Lathe</td>
<td>$37.95</td>
</tr>
<tr>
<td></td>
<td>Faceplate 8x12 lathe. The faceplate is 7.87” (200 mm) in diameter and has 8 slots for mounting work. This faceplate mounts on the same flange as a 4” 3-jaw chuck mounts.</td>
<td></td>
</tr>
<tr>
<td>2859</td>
<td>Follower Rest, 8x12, 8x14 Lathes</td>
<td>$52.95</td>
</tr>
<tr>
<td></td>
<td>This follower rest fits 8x12 and 8x14 lathes. The follower rest can support work up to 2.5” in diameter.</td>
<td></td>
</tr>
<tr>
<td>2858</td>
<td>Steady Rest, 8x12, 8x14 Lathes</td>
<td>$61.95</td>
</tr>
<tr>
<td></td>
<td>This steady rest fits 8x12 and 8x14 lathes. The steady rest can support work up to 2.5” in diameter.</td>
<td></td>
</tr>
</tbody>
</table>
You must make a mounting block for the ball turning attachment. Includes one presharpened tool bit. The tool will cut convex curves up to 2” in diameter. This attachment allows you to turn balls on the mini lathe.

1970 Ball Turning Attachment $47.95

This attachment allows you to turn balls on the mini lathe. The tool will cut convex curves up to 2” in diameter. Includes one presharpened tool bit. You must make a mounting block for the ball turning attachment.

Lathe: Tool Post Grinders

2001 Tool Post Grinder, Mini Lathe $159.95

- 6,000 RPM
This tool post grinder is designed specifically for the mini lathe. To install it, you simply replace the compound rest. The bottom of the mounting foot is approximately 50 mm (2”) below the centerline of the grinding wheel. The grinder comes with 2 different grit grinding wheels (60 and 80 grit), and the tools needed to change them. Motor 150 watts, 120V, 60 Hz. The tool post grinder is approximately 8” tall, 9” long and 3.5” thick.

2195 Arbor, Grinding Wheel $8.50
2194 Belt, Multi-V $4.69
2584 Grinding Wheel, 120 Grit $11.95
2585 Grinding Wheel, 180 Grit $11.95
2586 Grinding Wheel, 240 Grit $11.95
2184 Grinding Wheel, 60 Grit $11.95
1767 Grinding Wheel, 80 Grit $11.95
4670 Tool Post Grinder, Bench Lathe $169.95
4671 Tool Post Grinder, C6 Lathe $169.95

Lathe: Tooling

2568 Ball and Radius Turning Tool, Large, OMW $139.95

The OMW 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 OMW Radius tool is sized for lathes of 5” or greater swing, and the ½” shank size will fit most standard tool holders. The tool will cut convex curves up to 1⅛” in diameter.

The tool is manufactured from the highest quality materials. Frames are machined from high strength aluminum alloy. The handle is tool steel, 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 tool is manufactured in the USA by OMW Corporation and is carefully inspected and checked before shipment.

The tool 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 resharpened or modified.

2569 Ball and Radius Turning Tool, Small, OMW $89.95
2963 Tool Bit, Large Ball and Radius Turning Tool $21.95
2964 Tool Bit, Small Ball and Radius Turning Tool $18.95

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 $8.95
5471 Dead Center, 1MT, Carbide Tip, Half-Notched $11.95
5473 Dead Center, 2MT $7.95
1890 Dead Center, 2MT $5.95
5476 Dead Center, 2MT, Carbide Tip $9.95
5186 Dead Center, 2MT, Carbide Tip, Half-Notched $12.95
5474 Dead Center, 3MT $8.95
1188 Dead Center, 3MT $6.95
5477 Dead Center, 3MT, Carbide Tip $13.95
5472 Dead Center, 3MT, Carbide Tip, Half-Notched $15.95

1911 Knurler, Large Capacity $49.95

This scissors knurler 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. It 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 $63.95
1733 Knurler, Coarse Straight $5.95
2974 Knurler, Coarse Straight $5.95
1731 Knurler, Fine Diamond $5.95
2972 Knurler, Fine Straight $5.95
1732 Knurler, Medium Diamond $5.95
2973 Knurler, 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
5464 Lathe Mandrel, 7/16” x 4-1/4” $9.95
5465 Lathe Mandrel, 1/2” x 5” $9.95

1189 Live Center, 2MT Short $19.95

- Point is a 60° included angle
- Short 2 Morse taper for the mini lathe
- Fits Jet 1014 mini wood lathe
- 1.495” diameter barrel

This mini lathe live center fits the tailstock of the mini lathe. The point is a 60° included angle.

3154 Live Center, 2MT Standard Bull Nose $84.95

- For tubing and other hollow work

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 2.49”. The diameter of the flat on the front of the nose is 0.46”.
<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1592</td>
<td>Live Center, 2MT Standard Heavy Duty</td>
<td>$23.95</td>
</tr>
<tr>
<td>2714</td>
<td>Live Center, 0MT</td>
<td>$29.95</td>
</tr>
<tr>
<td>1704</td>
<td>Live Center, 1MT Heavy Duty</td>
<td>$22.95</td>
</tr>
<tr>
<td>3702</td>
<td>Live Center, 3MT</td>
<td>$29.95</td>
</tr>
<tr>
<td>4544</td>
<td>Live Center, 2MT Standard Multi Point</td>
<td>$112.95</td>
</tr>
<tr>
<td>4692</td>
<td>Live Center, 2MT Standard Multi Point</td>
<td>$59.95</td>
</tr>
<tr>
<td>2504</td>
<td>Rotating Tailstock Chuck</td>
<td>$59.95</td>
</tr>
<tr>
<td>1877</td>
<td>Tailstock Turret Tool Holder, 2MT</td>
<td>$99.95</td>
</tr>
<tr>
<td>3053</td>
<td>Tailstock Turret Tool Holder, 3MT</td>
<td>$109.95</td>
</tr>
<tr>
<td>1688</td>
<td>Jaws, Inside for 3&quot; 3-Jaw Chuck</td>
<td>$32.95</td>
</tr>
<tr>
<td>3408</td>
<td>Jaws, 4&quot; 4-Jaw Chuck</td>
<td>$42.95</td>
</tr>
<tr>
<td>1973</td>
<td>Jaws, Inside for 4&quot; 3-Jaw Chuck</td>
<td>$44.95</td>
</tr>
<tr>
<td>1689</td>
<td>Jaws, Outside for 3&quot; 3-Jaw Chuck</td>
<td>$32.95</td>
</tr>
<tr>
<td>1974</td>
<td>Jaws, Outside for 4&quot; 3-Jaw Chuck</td>
<td>$44.95</td>
</tr>
<tr>
<td>5029</td>
<td>Jaws, 3&quot; 4-Jaw Chuck</td>
<td>$37.95</td>
</tr>
<tr>
<td>5030</td>
<td>Jaws, 5&quot; 4-Jaw Chuck</td>
<td>$46.95</td>
</tr>
<tr>
<td>5027</td>
<td>Jaws, Inside for 5&quot; 3-Jaw Chuck</td>
<td>$49.95</td>
</tr>
<tr>
<td>5793</td>
<td>Jaws, Inside for 6&quot; 3-Jaw Chuck</td>
<td>$49.95</td>
</tr>
<tr>
<td>5028</td>
<td>Jaws, Outside for 5&quot; 3-JawChuck</td>
<td>$49.95</td>
</tr>
<tr>
<td>1768</td>
<td>Key, 3-Jaw 5/16&quot; Square</td>
<td>$8.95</td>
</tr>
<tr>
<td>5484</td>
<td>Key, 1/2&quot; Square</td>
<td>$10.95</td>
</tr>
<tr>
<td>5480</td>
<td>Key, 1/4&quot; Square</td>
<td>$7.95</td>
</tr>
<tr>
<td>5482</td>
<td>Key, 3/8&quot; Square</td>
<td>$10.95</td>
</tr>
<tr>
<td>5481</td>
<td>Key, 5/16&quot; Square</td>
<td>$8.95</td>
</tr>
<tr>
<td>5483</td>
<td>Key, 7/16&quot; Square</td>
<td>$10.95</td>
</tr>
<tr>
<td>3409</td>
<td>Key, 7/32&quot; Square</td>
<td>$9.95</td>
</tr>
<tr>
<td>1692</td>
<td>Adapter, 4&quot; Lathe Chuck</td>
<td>$19.95</td>
</tr>
<tr>
<td>3782</td>
<td>Adapter, 4&quot; Lathe Chuck on 4&quot; Rotary Table</td>
<td>$83.95</td>
</tr>
<tr>
<td>2358</td>
<td>Adapter, 5&quot; Lathe Chuck</td>
<td>$28.95</td>
</tr>
<tr>
<td>2961</td>
<td>Adapter, 5&quot; Lathe Chuck</td>
<td>$28.95</td>
</tr>
<tr>
<td>5050</td>
<td>Adapter, 5&quot; Lathe Chuck to C8 Spindle</td>
<td>$34.95</td>
</tr>
<tr>
<td>4912</td>
<td>Adapter, 6&quot; Lathe Chuck</td>
<td>$34.95</td>
</tr>
<tr>
<td>4913</td>
<td>Adapter, 6&quot; Lathe Chuck</td>
<td>$34.95</td>
</tr>
</tbody>
</table>

**Lathe Chucks: Accessories**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>Live Center, Inside for 3&quot; 3-Jaw Chuck</td>
<td>$32.95</td>
</tr>
<tr>
<td>3408</td>
<td>Jaws, 4&quot; 4-Jaw Chuck</td>
<td>$42.95</td>
</tr>
<tr>
<td>1973</td>
<td>Jaws, Inside for 4&quot; 3-Jaw Chuck</td>
<td>$44.95</td>
</tr>
<tr>
<td>1689</td>
<td>Jaws, Outside for 3&quot; 3-Jaw Chuck</td>
<td>$32.95</td>
</tr>
<tr>
<td>1974</td>
<td>Jaws, Outside for 4&quot; 3-Jaw Chuck</td>
<td>$44.95</td>
</tr>
<tr>
<td>5029</td>
<td>Jaws, 3&quot; 4-Jaw Chuck</td>
<td>$37.95</td>
</tr>
<tr>
<td>5030</td>
<td>Jaws, 5&quot; 4-Jaw Chuck</td>
<td>$46.95</td>
</tr>
<tr>
<td>5027</td>
<td>Jaws, Inside for 5&quot; 3-Jaw Chuck</td>
<td>$49.95</td>
</tr>
<tr>
<td>5793</td>
<td>Jaws, Inside for 6&quot; 3-Jaw Chuck</td>
<td>$49.95</td>
</tr>
<tr>
<td>5028</td>
<td>Jaws, Outside for 5&quot; 3-Jaw Chuck</td>
<td>$49.95</td>
</tr>
<tr>
<td>1768</td>
<td>Key, 3-Jaw 5/16&quot; Square</td>
<td>$8.95</td>
</tr>
<tr>
<td>5484</td>
<td>Key, 1/2&quot; Square</td>
<td>$10.95</td>
</tr>
<tr>
<td>5480</td>
<td>Key, 1/4&quot; Square</td>
<td>$7.95</td>
</tr>
<tr>
<td>5482</td>
<td>Key, 3/8&quot; Square</td>
<td>$10.95</td>
</tr>
<tr>
<td>5481</td>
<td>Key, 5/16&quot; Square</td>
<td>$8.95</td>
</tr>
<tr>
<td>5483</td>
<td>Key, 7/16&quot; Square</td>
<td>$10.95</td>
</tr>
<tr>
<td>3409</td>
<td>Key, 7/32&quot; Square</td>
<td>$9.95</td>
</tr>
</tbody>
</table>
Lathe Chucks: Adapters

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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4768</td>
<td>Backplate Lathe Chuck Adapter 3&quot; to 3&quot;</td>
<td>$19.95</td>
</tr>
<tr>
<td>4769</td>
<td>Backplate Lathe Chuck Adapter, 4&quot; to 3&quot;</td>
<td>$24.95</td>
</tr>
<tr>
<td>4770</td>
<td>Backplate Lathe Chuck Adapter, 5&quot; to 3&quot;</td>
<td>$29.95</td>
</tr>
<tr>
<td>4771</td>
<td>Backplate Lathe Chuck Adapter, 5&quot; to 4&quot;</td>
<td>$32.95</td>
</tr>
<tr>
<td>4772</td>
<td>Backplate Lathe Chuck Adapter, 6&quot; to 4&quot;</td>
<td>$39.95</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1919</td>
<td>Chuck Adapter, 1-1/2&quot;-8 Thread 6&quot; Diameter</td>
<td>$39.95</td>
</tr>
<tr>
<td>1791</td>
<td>Chuck Adapter, 1&quot;-10 Thread 4&quot; Diameter, 3 Holes</td>
<td>$23.95</td>
</tr>
<tr>
<td>1917</td>
<td>Chuck Adapter, 1&quot;-10 Thread 4&quot; Diameter, 3 Holes</td>
<td>$23.95</td>
</tr>
<tr>
<td>2333</td>
<td>Chuck Adapter, 1&quot;-10 Thread 5&quot; Diameter</td>
<td>$32.95</td>
</tr>
<tr>
<td>2344</td>
<td>Chuck Adapter, 1&quot;-10 Thread 6&quot; Diameter</td>
<td>$39.95</td>
</tr>
<tr>
<td>1790</td>
<td>Chuck Adapter, 1&quot;-8 Thread 4&quot; Diameter, 3 Holes</td>
<td>$23.95</td>
</tr>
<tr>
<td>1916</td>
<td>Chuck Adapter, 1&quot;-8 Thread 4&quot; Diameter, 3 Holes</td>
<td>$23.95</td>
</tr>
<tr>
<td>2331</td>
<td>Chuck Adapter, 1&quot;-8 Thread 5&quot; Diameter</td>
<td>$32.95</td>
</tr>
<tr>
<td>2332</td>
<td>Chuck Adapter, 1&quot;-8 Thread 6&quot; Diameter</td>
<td>$39.95</td>
</tr>
<tr>
<td>1792</td>
<td>Chuck Adapter, 1-1/2&quot;-8 Thread 4&quot; Diameter, 3 Holes</td>
<td>$23.95</td>
</tr>
<tr>
<td>1918</td>
<td>Chuck Adapter, 1-1/2&quot;-8 Thread 4&quot; Diameter, 3 Holes</td>
<td>$23.95</td>
</tr>
<tr>
<td>5126</td>
<td>Chuck Adapter, 1-3/4&quot;-8 Thread 6&quot; Diameter</td>
<td>$39.95</td>
</tr>
<tr>
<td>2022</td>
<td>Chuck Adapter, 1/2&quot;-20 Thread 3&quot; Diameter, 3 Holes</td>
<td>$21.95</td>
</tr>
<tr>
<td>1923</td>
<td>Chuck Adapter, 2-1/4&quot;-8 Thread 6&quot; Diameter</td>
<td>$39.95</td>
</tr>
<tr>
<td>1920</td>
<td>Chuck Adapter, 3/4&quot;-16 Thread 3&quot; Diameter, 6 Holes</td>
<td>$23.95</td>
</tr>
<tr>
<td>1921</td>
<td>Chuck Adapter, M39 x 4 Thread 4&quot; Diameter</td>
<td>$23.95</td>
</tr>
<tr>
<td>1922</td>
<td>Chuck Adapter, M39 x 4 Thread 6&quot; Diameter</td>
<td>$39.95</td>
</tr>
<tr>
<td>2335</td>
<td>Chuck Adapter, Unthreaded 4&quot; Diameter</td>
<td>$23.95</td>
</tr>
<tr>
<td>2336</td>
<td>Chuck Adapter, Unthreaded 6&quot; Diameter</td>
<td>$39.95</td>
</tr>
</tbody>
</table>

Lathe Chucks: Chucks

Lathe Chuck Capacities
See the lathe chuck capacity chart at www.littlemachineshop.com/chuck.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1187</td>
<td>Lathe Chuck, 3-Jaw 3&quot;</td>
<td>$84.95</td>
</tr>
<tr>
<td>1188</td>
<td>Lathe Chuck, 4-Jaw 6&quot; for C8</td>
<td>$199.95</td>
</tr>
<tr>
<td>1175</td>
<td>Lathe Chuck, 4-Jaw 3&quot;</td>
<td>$84.95</td>
</tr>
<tr>
<td>2316</td>
<td>Lathe Chuck, 4-Jaw 4&quot; Self-Centering</td>
<td>$134.95</td>
</tr>
<tr>
<td>3424</td>
<td>Lathe Chuck, 4-Jaw 3&quot; Self-Centering</td>
<td>$122.95</td>
</tr>
</tbody>
</table>
### Lathe Chucks: Chucks

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1697</td>
<td>Lathe Chuck, 4-Jaw 4&quot; with Adapter</td>
<td>$106.95</td>
</tr>
<tr>
<td>2346</td>
<td>Lathe Chuck, 4-Jaw 5&quot; with Adapter</td>
<td>$119.95</td>
</tr>
<tr>
<td>5047</td>
<td>Lathe Chuck, 4-Jaw 5&quot; for C8</td>
<td>$139.95</td>
</tr>
<tr>
<td>5048</td>
<td>Lathe Chuck, 4-Jaw 6&quot; for C8</td>
<td>$224.95</td>
</tr>
<tr>
<td>2276</td>
<td>Lathe Chuck, 6-Jaw 4&quot;</td>
<td>$174.95</td>
</tr>
<tr>
<td>5047</td>
<td>Lathe Chuck, 6-Jaw 5&quot; for C8</td>
<td></td>
</tr>
<tr>
<td>5048</td>
<td>Lathe Chuck, 6-Jaw 6&quot; for C8</td>
<td></td>
</tr>
<tr>
<td>2276</td>
<td>Lathe Chuck, 6-Jaw 4&quot;</td>
<td></td>
</tr>
</tbody>
</table>

### Machines: Lathes

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5200</td>
<td>HiTorque 7x16 Deluxe Mini Lathe</td>
<td>$1,249.95</td>
</tr>
<tr>
<td>5100</td>
<td>HiTorque 7x16 Mini Lathe</td>
<td>$899.95</td>
</tr>
</tbody>
</table>

### Machines: Band Saws

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4829</td>
<td>Band Saw, Bench Top</td>
<td>$249.95</td>
</tr>
</tbody>
</table>

---

**Notes:**
- Lathe Chucks: Chucks include various models with different specifications.
- Machines: Lathes feature different lathe models with specific features.
- Machines: Band Saws offer band saws with unique blade designs.

---

*NOTE* We ship machines only to the US and Canada.
**Machines: Lathes**

3540 HiTorque 8.5x20 Bench Lathe $1,799.95
- Inch dials, inch and metric threading
- 120VAC 60 Hz
- 1000 Watt (1.34 HP) brushless DC drive
- Power longitudinal feed and cross feed
- 4" (100 mm) 3-jaw self centering lathe chuck

The LittleMachineShop.com model 3540 HiTorque 8.5x20 Bench Lathe is the best in its class. No other metal lathes in this size offer power cross feed. The 1000 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 100 rpm to 2000 rpm continuously in both directions. There are no gears to shift. The cross feed and compound rest dials are graduated in 0.001" and advance 0.050" per turn. The metal lathe is equipped with a 4-way indexing tool post set for 10 mm tools. A reversible 2 mm pitch lead screw provide extended threading capability. You can create every American Standard Unified class 2A inch screw thread from 4 to 80 threads per inch, and you can create every American Standard Metric class 6H thread from 0.2 to 8 mm pitch with the change gears that are included. All the gears on this lathe are metal. The LittleMachineShop.com model 3540 HiTorque 8.5x20 Bench Lathe is a version of the SIEG SC4 bench lathe.

**NOTE** We ship machines only to the US and Canada.

4959 SIEG C3 7x14 Mini Lathe $699.95
- Full featured miniature lathe at an incredible price
- Includes 3" 3-jaw chuck, 2 sets of jaws, and chuck key
- Variable speed with two speed ranges for low speed torque
- Digital spindle speed readout
- High-precision tailstock

The SIEG C3 7x14 Mini Lathe includes a chip tray, a backsplash guard, and a threading dial. Full 14" bed length with a cam-lock tailstock for your longer work pieces.

Real top and bottom half-nuts and a reversible 16 TPI lead screw provide extended threading capability. You can create every American Standard Unified class 2A inch screw thread from 4 to 80 threads per inch, and you can create every American Standard Metric class 6H thread from 0.3 to 8 mm pitch.

The cross feed and compound rest dials are graduated in 0.001" and 0.025 mm. The miniature lathe is equipped with a 4-way indexing tool post set for 5/16" (8 mm) tools.

The SIEG C3 7x14 Mini Lathe includes a chip tray, a backsplash guard, and a threading dial.

**Machines: Mills**

4700 HiTorque Micro Mill, 2MT Spindle $659.95
- Most powerful mill in its class & most low-speed torque in its class
- No gears in spindle drive
- R8 Horse taper spindle
- Digital spindle speed readout

The LittleMachineShop.com HiTorque Micro Mill is the best in its class. It has the most power, most torque, and a larger table than other mills in its class. The 250 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 100 rpm to 5000 rpm continuously. There are no gears or belts to shift. And, with no gears, the HiTorque Micro Mill is the quietest in its class. The large mill table provides 50% more width than other micro mills. The selectable feed dials allow you to zero them at any point. The HiTorque Micro Mill has a drill press handle for drilling. It also has Z-axis fine feed with 0.001" resolution for milling operations. This is a version of the SIEG SX1P Micro Mill.

4660 HiTorque Micro Mill, ER-16 Spindle $699.95
- Most powerful mill in its class & most low-speed torque in its class
- No gears in spindle drive
- Digital spindle speed readout
- ER-16 spindle, perfect for small cutting tools

The LittleMachineShop.com HiTorque Micro Mill is the best in its class. It has the most power, most torque, and a larger table than other mills in its class. The 250 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 100 rpm to 5000 rpm continuously. There are no gears or belts to shift. And, with no gears, the HiTorque Micro Mill is the quietest in its class. The large mill table provides 50% more width than other micro mills. The selectable feed dials allow you to zero them at any point. The HiTorque Micro Mill has a drill press handle for drilling. It also has Z-axis fine feed with 0.001" resolution for milling operations. This is a version of the SIEG SX1P Micro Mill.

3990 HiTorque Mini Mill $895.95
- Most powerful mini mill machine in its class
- Most low-speed torque in its class
- No gears in spindle drive
- #2 Morse taper spindle
- R8 spindle and drill chuck

The LittleMachineShop.com HiTorque Mini Mill is the best in its class. It has the most power, most torque, and a larger table than other mills in its class. This mill has a solid column. It does not tilt from side to side. This construction is significantly stiffer than the tilting column on other mini mills. This model also includes the air spring head support for even support through the Z-axis range of travel. The 500 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 50 rpm to 2500 rpm continuously. There are no gears to shift. And, with no gears, the HiTorque Mini Mill machine is the quietest in its class. The large mill table provides 50% more table area than other mini mills. It also has 30% more travel in each direction. The selectable feed dials allow you to zero them at any point. The HiTorque Mini Mill has drill press handles for drilling and fast motion of the mill’s head. It also has Z-axis fine feed with 0.001" resolution for milling operations. *NOTE* We ship machines only to the US and Canada.

5500 HiTorque Bench Mill $1,499.95
- Larger than mini mills
- 750 watt (1 hp) brushless DC variable speed drive
- No gears in spindle drive
- R8 spindle and drill chuck
- Tapping mode for reversing taps out

The LittleMachineShop.com HiTorque Bench Mill 5500 is a step up in size, rigidity, and power compared to a mini mill. This benchtop mill for sale provides a larger table, more travel, and more horsepower. A 750 watt (1 hp) brushless DC motor provides abundant spindle power and tremendous low-end torque. The 23.4" x 5.5" (595 mm x 140 mm) table provides a large work area. The HiTorque Bench Mill incorporates a true quill and drill press-style handles for easy drilling. A button on the end of each handle reverses the spindle to make tapping easy. The control panel includes a digital spindle speed display.
## Machines: Mills

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Product Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4190</td>
<td>HiTorque Mini Mill, Deluxe</td>
<td>$1,499.95</td>
</tr>
<tr>
<td>3990</td>
<td>SIEG X2D Mini Mill</td>
<td>$699.95</td>
</tr>
<tr>
<td>5626</td>
<td>Stand Cabinet, HiTorque 7x16 Mini Lathe SC3</td>
<td>$168.95</td>
</tr>
<tr>
<td>5627</td>
<td>Stand Cabinet, HiTorque Micro Mill X1/SX1</td>
<td>$139.95</td>
</tr>
<tr>
<td>5634</td>
<td>Stand Cabinet, HiTorque Bench Mill SX2.7</td>
<td>$229.95</td>
</tr>
</tbody>
</table>

### HiTorque Mini Mill, Deluxe
- Includes 3-axis DRO and interlocked spindle lock
- Most powerful mill in its class with the most low speed torque
- No gears in spindle drive
- Largest table and X-Y travel in its class
- R8 spindle and drill chuck

The Model 4190 Deluxe HiTorque Mini Mill has all the features of our popular Model 3990 HiTorque Mini Mill, plus: *3-axis digital readout (DRO) with Bluetooth and 7” tablet display* Electrically interlocked spindle lock Machine aluminum handwheels and color keyed drill handles

The LittleMachineShop.com HiTorque Mini Mill is the best in its class. It has the most power, most torque, and a larger table than other mills in its class. This mill has a solid column. It does not tilt from side to side. This construction is significantly stiffer than the tilting column on other mini mills. This model also includes the air spring head support for even support throughout the Z-axis range of travel. The 500 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 50 rpm to 2500 rpm continuously. There are no gears to shift. And, with no gears, the HiTorque Mini Mill is the quietest in its class. The large mill table provides 50% more table area than other mini mills. It also has 30% more travel in each direction. The resettable feed dials allow you to zero them at any point. The HiTorque Mini Mill has drill press handles for drilling and fast motion of the mill's head. It also has Z-axis fine feed with 0.001” resolution for milling operations. *NOTE* We ship machines only to the US and Canada.

### HiTorque X2/SX Mini Mill
- Full featured mini mill at an incredible price
- 350 Watt variable speed DC drive
- Largest table and X-Y travel in its class
- R8 Spindle taper
- Dovetail solid column and air spring head support

The SIEG X2D Mini Mill has all the features you want at an incredibly low price. This mill has a solid column. It does not tilt from side to side. This construction is significantly stiffer than the tilting column on other mini mills. The large mill table provides 50% more table area than other mini mills. It also has 30% more travel in each direction. The resettable feed dials allow you to zero them at any point. The X2D Mini Mill has drill press handles for drilling and fast motion of the mill's head. It also has Z-axis fine feed with 0.001” resolution for milling operations. *NOTE* We ship machines only to the US and Canada.

### HiTorque Micro Mill X1/SX1
- Metal stand and chip tray for mini mill
- Single column design
- 16.1” x 19.3” x 35.0” (410 mm x 489 mm x 889 mm)
- Cabinet for storage with locking door
- Fits the HiTorque mini mill and X2L/SX2L mini mills

This single column black stand comes with a built-in cabinet and is suitable for the HiTorque mini mill and all X2L/SX2L mini mills. The cabinet has one shelf. The chip tray has been upgraded to provide years of service. Has bolting slots for securing the stand to a floor for additional stability and safety.

### HiTorque 7x16 Mini Lathe SC3
- Metal stand and chip tray for mini lathe
- Single column two door design
- 34.9” x 13.9” x 34.9” (886 mm x 354 mm x 886 mm)
- Cabinet for storage with locking door
- Fits 7x16 SC3 mini lathes

This single column two door design black stand comes with a built-in cabinet and is suitable for all 7x16 SC3 mini lathes. The cabinet has one shelf. The chip tray has been upgraded to be more robust than the trays that ship with most mini lathes. Has bolting slots for securing the stand to a floor for additional stability and safety.

### HiTorque Bench Mill SX2.7
- 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 bench mill and SX2.7 bench mills

This single column black stand comes with a built-in cabinet and is suitable the HiTorque bench mill and all SX2.7 bench mills. The cabinet has one shelf. The chip tray has been upgraded to provide years of service. Has bolting slots for securing the stand to a floor for additional stability and safety.

### HiTorque Micro Mill X1/SX1
- Metal stand and chip tray for mini mill
- Single column design
- 16.1” x 19.3” x 35.0” (410 mm x 489 mm x 889 mm)
- Cabinet for storage with locking door
- Fits the HiTorque mini mill and X2L/SX2L mini mills

This single column black stand comes with a built-in cabinet and is suitable for the HiTorque mini mill and all X2L/SX2L mini mills. The cabinet has one shelf. The chip tray has been upgraded to provide years of service. Has bolting slots for securing the stand to a floor for additional stability and safety.

### HiTorque Micro Mill X1/SX1
- Metal stand and chip tray for mini mill
- Single column design
- 16.1” x 19.3” x 35.0” (410 mm x 489 mm x 889 mm)
- Cabinet for storage with locking door
- Fits the HiTorque mini mill and X2L/SX2L mini mills

This single column black stand comes with a built-in cabinet and is suitable for the HiTorque mini mill and all X2L/SX2L mini mills. The cabinet has one shelf. The chip tray has been upgraded to provide years of service. Has bolting slots for securing the stand to a floor for additional stability and safety.
Mill: HiTorque Bench Mill (SX2.7) Accessories

5846 Deluxe Productivity Upgrade Package, HiTorque Bench Mill $415.00
- 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.

To operate, flip the Spindle Brake fork down over the spindle while the spindle is at rest. Then rotate the spindle by hand until the set screws in the Spindle Brake fork mesh with a spindle spline. Once the tool change is complete, lift the Spindle Brake fork up into the retracted position and you are ready to go.

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. To set up the chamfer the first time on a part, turn the mill off and simply lower the cutter to the desired depth. The Quill Stop works equally well performing inside chamfers using typical chamfering mills, and outside chamfers using, for example, a hollow mill.

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.

5835 Power Drawbar, Bench Mill $995.00
5657 Power Lift System, HiTorque Bench Mill $219.00
5842 Productivity Upgrade Package, HiTorque Bench Mill $199.95
5633 Quill Stop, HiTorque Bench Mill $109.95
5621 Spindle Lock, HiTorque Bench Mill $47.50
5655 Spindle Lock, HiTorque Bench Mill, Flip Style $119.00

5586 Tramming Set, Bench Mill $59.95
- 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.

Mill: HiTorque Mini Mill (SX2) Accessories

4249 Feed Screw Parts, Metric, HiTorque Mini Mill $69.95
This kit changes the HiTorque mini mill to metric feed screws on the X- and Y-axis. It also changes the Z-axis to read in mm. The kit includes two feed screws, two nuts, two dials, two scales, the Z-axis feed knob, plus the springs, pins and keys that you are going to lose during disassembly.

4151 High Speed Spindle Kit, HiTorque Mini Mill $89.95
- Fits HiTorque mini mills
- 5000 rpm top speed
- Includes two pulleys and two spindle bearings

These pulleys change the spindle speed range to 5000 rpm max. It’s important to change the bearings, as the standard bearings are not rated to 5000 rpm. 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 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 you have to press the spindle out and back in. A hydraulic press makes it an easy task.

The initial installation takes a couple hours, but after the new bearings are installed, switching pulleys to the original set shouldn’t take more than 20 minutes.

4483 Solid Column Conversion Kit, HiTorque Mini Mill $174.95
- Converts a HiTorque Tilting Column Mini Mill to the solid column version.

This kit converts a HiTorque Tilting Column Mini Mill (part number 3900) to solid column. The kit includes the base and column from the HiTorque Solid Column Mini Mill (part number 3960), the fasteners needed to connect them, and complete instructions.

4761 Spindle Lock, HiTorque Mini Mill $46.00
- Makes tool changes easier, faster, and more convenient
- Loosen and tighten keyless chucks with one hand

The spindle brake provides a fixed position for inserting the locking pin and frees both hands for changing tools. Fits SIEG SX2 mills.

4762 Spindle Lock, Interlocked, HiTorque Mini Mill $119.00
- 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.

5585 Tramming Set, Mini Mill $56.95
- 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.

Mill: Micro Mill (X1) Accessories

2034 Drawbar, 2MT x 3/8"-16, Micro Mill $11.95
- 5-5/8" long when measured like a bolt
- 3/8"-16 thread

This drawbar is for the micro mill. It has a 3/8"-16 drawbar thread.
### Mill: Micro Mill (X1) Assemblies

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3860</td>
<td>Micro Mill X-Y Table Assembly</td>
<td>$249.95</td>
</tr>
<tr>
<td>3930</td>
<td>Mill: Micro Mill (X1) Assemblies</td>
<td></td>
</tr>
</tbody>
</table>

- Complete X-Y table assembly for a micro mill
- Includes long table and extended X-axis travel

This is the complete X-Y table assembly for a Super X1 Micro Mill. The table is 145 mm (5.7") by 400 mm (15.7"). It has three 8 mm T-slots. The X-axis travel is approximately 330 mm (13") and the Y-axis travel is approximately 130 mm (5.1"). The table is 124 mm (4.9") tall (the hand wheel is higher). The table base is 353 mm (13.9") deep and 216 mm (8.5") wide. The dials are graduated in 0.001" and one turn of the hand wheels moves the table 0.0625". The X-Y table is made of cast iron and steel. There are adjustable gibs on both axes.

### Mill: Mini Mill (X2) Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1637</td>
<td>Drawbar, 3MT x 3/8&quot;-16, Mini Mill</td>
<td>$9.95</td>
</tr>
<tr>
<td>4789</td>
<td>Hand Wheel, Mini Mill, Cast Iron</td>
<td>$34.95</td>
</tr>
<tr>
<td>5112</td>
<td>Power Feed, HiTorque Mini Mill</td>
<td>$299.95</td>
</tr>
<tr>
<td>5127</td>
<td>Riser, 2&quot; Solid Column</td>
<td>$39.95</td>
</tr>
</tbody>
</table>

- Fits large-table mini mills
- Clutch disengages power feed when not in use
- Adjustable limit switches restrict travel
- 120-240V 50-60Hz

Power table feed for the HiTorque and other large-table mini mills. 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 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 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.

### Mill: Mini Mill (X2) Assemblies

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1766</td>
<td>Mini Mill Column Assembly</td>
<td>$119.95</td>
</tr>
</tbody>
</table>

- Complete column assembly for the mini mill.

### Mill: Mini Mill Head Assembly, 3MT Spindle

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1912</td>
<td>Mini Mill Head Assembly, 3MT Spindle</td>
<td>$349.95</td>
</tr>
</tbody>
</table>

- Fits SIEG X2 mills

### Mill: Mini Mill Head Assembly, R8 Spindle

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1663</td>
<td>Mini Mill Head Assembly, R8 Spindle</td>
<td>$349.95</td>
</tr>
</tbody>
</table>

- This is the complete head assembly for the mini mill. It includes the motor, motor controls, spindle housing and spindle. In short, it includes everything that travels up and down the column. This mini mill head assembly has an R8 spindle.

### Mill: Mini Mill Head Assembly, R8 Spindle, HiTorque

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4134</td>
<td>Mini Mill Head Assembly, R8 Spindle, HiTorque</td>
<td>$599.95</td>
</tr>
</tbody>
</table>

- R8 spindle
- No gears in spindle drive
- Most low-speed torque in its class
- Most powerful mill in its class

This is the complete head assembly for the HiTorque mini mill. It includes the motor, motor controls, spindle housing and spindle. In short, it includes everything that travels up and down the column. This mini mill head assembly has an R8 spindle. The 500 Watt brushless spindle drive motor provides tremendous low-end torque. And you can vary the speed from 50 rpm to 2500 rpm continuously. There are no gears to shift. And, with no gears, the HiTorque Mini Mill is the quietest in its class. Drilling capacity: 1/2". End milling capacity: 5/8". Power: 120V, 60 Hz.
Mill: Mini Mill (X2) Assemblies

3677 Mini Mill Large Table Assembly $315.95
- 30% more travel in both directions
- 50% more table area
- Unbolt the column from your existing X-Y table and bolt it to this one
- Great for the Grizzly G0516
This is a complete X-Y table assembly for a mini mill. The table is 120 mm (4.72") 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. This is all you need to make a mini mill using the milling column from a Grizzly G0516 Combo Lathe with Milling Attachment.

5013 Mini Mill Large Table Assembly, Solid Column Base $329.95
- 30% more travel in both directions
- 50% more table area
- Bolt pattern for solid column attachment (P/N 4307)
This is a complete X-Y table assembly for a mini mill. The table is 120 mm (4.72") 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.

1944 Mini Mill Spindle Box Assembly, R8 $119.95
This is the spindle box casting for the mini mill, along with all the internal parts. Included are:
- An R8 spindle with all the gears, bearings, spacers, and top nut that ride on it.
- The intermediate shaft with all the gears, bearings and such that ride on it. This includes the intermediate gear on the top of the shaft.
- The high/low speed shifting mechanism.

1765 Mini Mill Table Assembly $199.95
This is the complete XY milling table assembly for a mini mill. The table is 90 mm (3.54") by 335 mm (13.19"). It has three 12 mm T-slots. The X-axis travel is approximately 8" and the Y-axis travel is approximately 4". The table is 136 mm (5.3") tall (the hand wheel and rear mount are higher). The table is 390 mm (15.4") deep and 460 mm (18.1") wide. The dials are graduated in 0.001" and one turn of the hand wheels moves the table 0.0625". The XY table assembly is made of cast iron and steel. There are adjustable gibs on both axes. This is all you need to make a mini mill using the milling column from a Grizzly G0516 Combo Lathe with Milling Attachment.

3062 Variable Speed Drive Package $199.95
- Complete 250 W (1/3 HP) variable speed drive
- 120 V 60 Hz power
- 0-5000 RPM
- Forward and Reverse
This is a complete variable speed motor and controller. Hook up the motor leads, plug it in and you have a 1/3 HP variable speed drive system. The motor is 83 mm in diameter. The body of the motor is 145 mm long. The motor shaft is 8 mm diameter with a 3 mm keyway and extends out 21.5 mm. There is a retaining ring groove near the end of the shaft. There are two M6 threaded holes in the side of the motor for mounting, our it can be end mounted with a motor mounting flange.

Mill: Quick Change Tooling

About the Tormach Tooling System
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.

4295 Tool Height Setting Package, Tormach $239.80
- Quick change arbor for 1/2' drill chucks
- Minimal clearance height for tool change
- Repeatable tool positioning
- Hardened and precision ground
Part of the Tormach Tooling System (TTS) this 33JT arbor is used for mounting standard keyed and keyless drill chucks.

4910 Tool Conversion Kit, Tormach TTS $17.50
- 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 UNF mounted ears or other tooling with the 7/8-20 thread.

2435 Collet Holder, Tormach TTS, ER-20 $34.75
- Quick change adapter for ER-20 collets
- Minimal clearance height for tool change
- Repeatable tool positioning
- Hardened and precision ground
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.

4127 Collet Holder, Tormach TTS, ER-16 $43.75
4998 Collet Holder, Tormach TTS, ER-32 $43.75

2454 Collet, Tormach TTS, R8, 3/4" $29.75
- Special shortened R8 collet for TTS system
- Precision ground
This precision ground R8 collet is shorter than a normal R8 collet to ensure that the TTS tool holder contacts the spindle.

2455 Collet, Tormach TTS, R8, 1/2" $29.75
- 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
0-1/4" Capacity drill chuck and Tormach Tooling System Arbor. All working parts are hardened. Chuck key is included. Number 1 Jacobs taper mount.
that will introduce users to all of those features. The manual reduced clearance, and increased rigidity. This is a basic set You don’t need a CNC to take advantage of the Tormach Repeatable tool positioning Minimal clearance height for tool change Complete set for manual operations includes 4 tool holders. 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 15 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, you’re not realizing the full benefit of CNC machining. The Quill Stop is also very handy in performing single or repeated chamfering of parts. To set up the chamfer the first depth. The Quill Stop is also very handy in performing single or repeated chamfering of parts. To set up the chamfer the first 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. To set up the chamfer the first 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. To set up the chamfer the first 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. To set up the chamfer the first depth of cut. It is great for drilling multiple holes to the same depth.

The Quill Stop works very well performing inside chamfers using typical chamfering mills, and outside chamfers using, for example, a hollow mill. Requires a slight modification to the mill (drill & tap 2, 1/4-20 holes in the side of the machine head).

The Spindle Brake replaces the pin spanner wrench and makes tool changes faster, more convenient, and safer. Replaces the pin spanner wrench. Tighten collet chucks with one hand. Works with Tormach TTS quick change tooling system

The block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options).

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.

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. This fly cutter kit has modern insert geometries and is specially designed for maximum performance on spindles with less than 3hp. Kit includes fly cutter body, tool bar, insert retaining screw and wrench (inserts sold separately). 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.

This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options).

The passive probe is an affordable option for occasional and hobby use. This probe uses a normally closed sensing logic and is suitable for edge finding, digitizing, and other basic probing procedures. Stylus is ground steel ball. It interfaces with the PCNC mill using a 5 pin DIN connector. Includes 10mm TTS low-profile mount.

This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options). This block diagram includes the Scoop Tool Holder (TTS Tool Holders are designed to accept a variety of Tormach tooling options).
Mill: Small Mill (X3/SX3) Accessories

4803 Spindle Spline Wrench $21.95
- Manufactured from a single formed piece of steel
- Black oxide finish
- Fits X3 mills
- 25mm and 28mm splines

This wrench perfectly engages the spindle spline enabling full control of spindle rotation during drawbar loosening or tightening operations. The spindle spline wrench solves the no spindle lock problem for many mills. The wrench has a black oxide finish and is 8.5 inches (216 mm) long. The Spindle Spline Wrench is a must-have tool for anyone who owns or operates an X3 milling machine or other large round column or square column mill.

Mill: Tooling

1626 Boring Head Shank, R8 $29.95
- R8 Shank
- 7/8"-20 Mounting Thread
- Tapped for 7/16"-20 Drawbar
- Made of high grade tool steel
- Hardened and ground

This boring head shank has an R8 taper on one end and a 7/8"-20 thread on the other. The boring head shank adapts our boring head to mills with an R8 spindle.

4764 Boring Head, 2" Professional $109.95
- 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"
- Bar holder moves freely and smoothly

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.

1978 End Mill Holder Set, 2MT, 4-Piece $70.95

The 4-Piece end mill holder set includes adapters for end mills with shank diameters of 3/16, 3/8, 1/2, and 3/4 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.

4882 Fly Cutter, 3/8" Shank $21.95
- Adjustable from 1-1/4" to 2-1/2" inch cutting diameter
- Allen key for set screws
- 1-1/8" Height
- 3/8" Shank
- Includes 1/4" Left Hand tool bit

This 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.

1709 Indexing Spin Jig, 5C $64.95

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 spin index directly indexes in 10 degree steps. The vernier provides 1 degree increments. The centerline of the spin jig is about 2.75 above the base.

1664 Mill Table $27.95

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.

3878 Tilting Table, 7" x 5" $129.95
- 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

4991 T-Slot Cleaner, 7/16" T-Slot $1.95

Use this T-slot cleaner to clear the swarf from the T-slots on your mill. The T-Slot Cleaner specifically cleans the T-slots on mini mill and bench mill. Made for LittleMachineShop.com exclusively to fit the Mill and Bench Mill.

1258 End Mill Holder Set, R8, 5-Piece $89.95

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 end mill holder works with the mini mill with R8 spindle and other mills that have an R8 spindle.

1255 End Mill Holder, R8, 1/2" $15.95
1253 End Mill Holder, R8, 3/16" $15.95
1257 End Mill Holder, R8, 3/4" $17.95
1254 End Mill Holder, R8, 3/8" $15.95
1256 End Mill Holder, R8, 5/8" $17.95

End Mill Holders Set, 3MT, 5-Piece $104.95

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. This end mill holder works with the mini mill with a 3 Morse taper spindle and other mills with a 3 Morse taper spindle. The drawbar thread is 3/8-16 NC.
Because of the difficulties and dangers of using steam, these engines are most often powered by compressed air. 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.

3485 Oscillating Steam Engine Material Kit and Instructional DVD
$49.95

Models: Plans

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.

Precision: Calipers

1235 Dial Caliper, 6”
$22.95

This 6” dial caliper has clear graduations every 0.001”. It 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.

3704 Dial Caliper, 6” Industrial Quality
$29.95

- 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.

(800) 981 9663
LittleMachineShop.com
Page 53
Precision: Calipers

4272 Dial Caliper, 6" Professional Grade
$49.95
- Z-Limit brand guarantees professional quality
- Clear graduations every 0.001", 0.100" per revolution
- Hardened stainless steel bar, rack, gears, depth rod and measuring faces
- Fine adjustment roller for both inside and outside measurements
- Knife-edge contacts for both inside and outside measurements
This 6" dial digital caliper is made and inspected in the same factory as some of America's best-known brands. The caliper is made of hardened stainless steel for long life. It is very smooth operating and shock resistant. It has a thumb wheel and a locking screw. The rack is screwed on. 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 durable fitted case.

1830 Dial Caliper, 6", Starrett
$195.00
- Starrett 6" white dial caliper and fitted case
- Starrett catalog number 120A-6
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.

4274 Electronic Digital Caliper, 6" Fractions
$29.95
- 6", 150 mm range
- 1/64", 0.0005", 0.01 mm resolution
- 1/64", 0.001", 0.02 mm accuracy
- Reads fractions, inches or mm. Great for woodworkers
- MM/INCH/FRAC: Switches between fractional inch, decimal inch and metric display. Some fractional calipers read to 1/128".
That's too fine a measure for use with wood, which expands and contracts more than that. These calipers read to 1/64", which is precise enough, without the bother of figuring out if 97/128" is larger or smaller than 3/4". Furnished with a fitted case.

1758 Electronic Digital Caliper, 6"
$29.95
- 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.

3166 Dial Caliper, 6", Starrett
$101.00
- Starrett 6" white dial caliper and fitted case
- Starrett catalog number 3202-6
- Sharp, clear dial graduations of .001" with .100" per revolution
- Sharp, black graduations on the satin finished bar, every .100"
This is one of the handiest measuring tools available, used by mechanics and toolmakers everywhere. It is direct reading, reliable, and accurate. With the ability to provide quick, accurate measurement of O.D., I.D. and depth, the dial caliper is the most versatile precision hand tool on the market. Imported.

5372 Electronic Digital Caliper, 6", Splash Proof
$59.95
- 0-6" (0-150 mm) range
- 0.0005" (0.01 mm) resolution
- Coolant splash-proof, dust-proof and chip-proof
- Max. measuring speed: 3.0m/s
- Body and measuring is hardened stainless steel
Hardened stainless steel electronic caliper is coolant splash-proof, dust-proof and chip-proof. Switch power on/off key. Switchable inch/mm Floating zero. Comes in a fitted case. Meets DIN 862 battery included.
Precision: Calipers

4458 Electronic Digital Caliper, 6", Starrett 798 $211.00
- Large, easy-to-read LCD display
- IP67 level of protection against coolant, water, dirt and dust
- Hardened stainless steel measuring surface for long life
- Fine adjustment for precision measurements
- Resolution is .0005" (0.01 mm)
Starrett 6" electronic digital caliper resists coolant, water, dirt and dust.
Starrett catalog number 798A-6/150.
The Starrett 798 electronic caliper provides an IP67 level of protection against foreign matter in hostile shop environments. In addition to being coolant and water resistant, the 798 also offers excellent protection against chips, dirt, dust, and other contaminants. The extra large LCD (character height .310") makes the 798 exceptionally easy to read. All 798 models also include an output port for RS232 equipped devices. While there are other IP67 electronic calipers available, only the 798 is a Starrett - for a century and a quarter, the tool of choice for the most experienced toolmakers and machinists when the measurements are most critical.

According to IEC529, in IP67 the first number "6" identifies protection against ingress of dust and the second number "7" identifies submersion in water under standardized conditions of pressure for 30 minutes. With this caliper you can set zero at any position, read inches or millimeters, and lock the slide in position.
There is a manual on/off button, plus the caliper turns itself off after thirty minutes of inactivity.

2752 Electronic Digital Caliper, 6", Starrett 799 $156.00
- 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" (0.01 mm) 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, PEC $14.95
- 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
Drill press center finder made in the US by Products Engineering Corporation (PEC). The direct 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.

2060 Coaxial Centering Indicator $79.95
- Use this indicator to quickly center work pieces or fixtures on your mill
- The 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
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).

2652 Collet Adapter for Edge Finders, Starrett $24.00
- Starrett catalog number PT28314
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".

5446 Edge and Center Finder Set, 4 Piece $26.95
- 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 .0001"
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"

3793 Edge and Center Finder, Metric, Starrett $29.50
1822 Edge and Center Finder, Starrett $29.50
1823 Edge Finder, Starrett $25.00
1240 Edge and Center Finder $7.50
1959 Edge and Center Finder, Fisher $14.95
1961 Edge Finder 1/4" Audible, Fisher $14.95
1960 Edge Finder 3/8" Audible, Fisher $13.50

2604 Edge and Center Finder, Laser 3/8" Shank $124.50
- 3/8" shank fits collets and end mill holders
- 3.375" overall length
- Uses common SRA4 batteries (included)
- Includes polarizing attachment to adjust dot size
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.

2606 Edge and Center Finder, Laser 1/2" Shank $124.50
2543 Edge and Center Finder, Laser 1/4" Shank $124.50
2624 Edge and Center Finder, Laser 10 mm Shank $124.50
2623 Edge and Center Finder, Laser 6 mm Shank $124.50
2679 Edge and Center Finder, Wet Cabinet Laser 1/2" $134.50
2886 Polarizing Attachment for Laser Edge Finder $27.95
2887 Magnetic Holder for Laser Edge Finder $11.50
Precision: Edge and Center Finders

3965 Edge and Center Finder, Laser 3/8" Shank $152.50
AC Powered
- 3/8" shank fits collets and end mill holders
- 3.375" overall length
- AC Powered 110 to 240 VAC
- Accuracy to 0.001"
- Includes polarizing attachment to adjust dot size

The Laser Center/Edge 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 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.

4792 Edge and Center Finder, Laser 1/4" Shank $359.50
Concentric Circles
- 1/4" 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

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.

Precision: Indicators

3716 Dial Indicator, 0.25" x 0.001", Small Face $14.95
- 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

This 1/4" 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.

1236 Dial Indicator, 1" x 0.001" $12.95
- 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

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.

2873 Dial Indicator, 1" x 0.0005" $16.95
2726 Dial Indicator, 2" x 0.001" $25.95
1783 Point Set, Dial Indicator $4.95
2531 Magnetic Back for Dial Indicator $4.95
Precision: Indicators

4281 Dial Indicator, 1” x 0.001”, Professional Grade, Shock Resistant
- 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
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.
4285 Dial Indicator, 0.25” x 0.001”, Professional Grade, Shock Resistant $39.95
4282 Dial Indicator, 0.5” x 0.0005”, Professional Grade, Shock Resistant $49.95
4112 Dial Indicator, 1” x 0.001”, Professional Grade $29.95
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

1835 Dial Indicator, 1”, Starrett $148.00
- 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
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 44-48 tip thread.

1819 Dial Indicator, Starrett Last Word $177.00
- Starrett dial indicator with universal friction holder with shank
- Graduation: 0.0005"
- Range: 0.030"
- Dial Reading: 0-15-0
Starrett catalog number 711LPS2. Steel Contact Point Length: 5/32” (4 mm)
Steel Contact Point Ball Diameter: 0.120” (3 mm)
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.

5379 Dial Test Indicator Set, 0.3” x 0.0005” $59.95
- 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
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.

1249 Dial Test Indicator, 0-15-0 x 0.0005” $29.95
- 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 an 0.080” diameter point
- 7 Jewel movement, Comes in a fitted case
Test Dial Indicator for sale with 0.0005” graduations and reading from 0 - 15. Comes in a fitted case.
3522 Dial Test Indicator, 0-15-0 x 0.0005” and Universal Magnetic Base $66.95
2875 Dial Test Indicator, 0-4-0 x 0.0001” $49.95
4633 Replacement Point, Dial Test Indicator $3.95

3709 Dial Test Indicator, 0-15-0 x 0.0005”, Interapid Style $84.95
- Dial test indicator with 0.0005” graduations
- 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
- Dial test indicator comes in a fitted case
- Jeweled movement
This Swiss-type horizontal dial indicator has a large 1.5” dial.

3548 Dial Test Indicator, 0-5-0 x 0.0001”, Dovetail Mount, Starrett $274.00
- Starrett dial test indicator with dovetail mount
- Starrett catalog number 708AZ
- Dial test indicator with 0.0001” graduations
- Range is 0.010”
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
Meets 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

3168 Dial Test Indicator, 0-5-0 x 0.0001”, Starrett $355.00
- Starrett dial test indicator with attachments
- Starrett catalog number 708AZC
- Range is 0.005” in either direction
- Precision gear-driven design with smooth, jeweled movement
- Dial test indicator comes in a fitted case
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.
### Precision: Indicators

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2876</td>
<td>Electronic Digital Indicator, 0.5&quot;</td>
<td>$46.95</td>
</tr>
<tr>
<td>3167</td>
<td>Electronic Digital Indicator, 0.5&quot;, Starrett</td>
<td>$173.00</td>
</tr>
<tr>
<td>5377</td>
<td>Electronic Digital Indicator, 0.5&quot;, Starrett Style</td>
<td>$72.95</td>
</tr>
<tr>
<td>2521</td>
<td>Electronic Digital Indicator, 1&quot;</td>
<td>$59.95</td>
</tr>
<tr>
<td>5378</td>
<td>Electronic Digital Indicator, 1&quot;, Quick Action</td>
<td>$59.95</td>
</tr>
<tr>
<td>5376</td>
<td>Indicator Back, Dial Indicator, Flat</td>
<td>$0.95</td>
</tr>
<tr>
<td>4715</td>
<td>Indicator Mount</td>
<td>$7.95</td>
</tr>
<tr>
<td>5375</td>
<td>Point Set With Ring, 22 Piece Set</td>
<td>$14.95</td>
</tr>
<tr>
<td>2452</td>
<td>Universal Back-Plunger Dial Indicator, Starrett</td>
<td>$249.00</td>
</tr>
<tr>
<td>1250</td>
<td>Combination Square Set, 12&quot;</td>
<td>$49.95</td>
</tr>
<tr>
<td>2738</td>
<td>Combination Square Set, 12&quot;, PEC</td>
<td>$142.95</td>
</tr>
<tr>
<td>3589</td>
<td>Combination Square Set, 12&quot;, Starrett</td>
<td>$247.00</td>
</tr>
</tbody>
</table>

### Precision: Layout

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1250</td>
<td>Combination Square Set, 12&quot;</td>
<td>$49.95</td>
</tr>
<tr>
<td>2738</td>
<td>Combination Square Set, 12&quot;, PEC</td>
<td>$142.95</td>
</tr>
<tr>
<td>3589</td>
<td>Combination Square Set, 12&quot;, Starrett</td>
<td>$247.00</td>
</tr>
</tbody>
</table>

---

**2876 Electronic Digital Indicator, 0.5"**
- 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
- There are three buttons: OFF for power, ZERO/ON to zero the display, and IN/MM to switch between inches and millimeters. The indicator turns on automatically when the plunger moves. Pressing ZERO/ON zeros the indicator at any position so you can make comparative readings between two parts.

**3167 Electronic Digital Indicator, 0.5", Starrett**
- Starrett 0.5" digital electronic AGD Group 2 indicator
- Starrett catalog number 3600-5
- Range .500" (12.7mm)
- Resolution .0005" (.01mm)
- Reverse travel (+ control indicates direction)
- 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.

**5377 Electronic Digital Indicator, 0.5", Starrett Style**
- 0.5" digital electronic AGD Group 2 indicator
- Range .500" (12.7mm)
- Resolution .0005" (.01mm)
- Reverse travel (+ control indicates direction)
- True inch/mm conversion
- 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.

**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.

**5378 Electronic Digital Indicator, 1", Quick Action**
- 1" digital electronic AGD Group 2 indicator
- Range 0-1" (0-25mm)
- Resolution .0005" (.01mm)
- Excellent repeatability with quick movement of measurements
- True inch/mm conversion
- Absolute zero reset button
- Lug Back and on/off button
- Comes with a fitted case.

**5376 Indicator Back, Dial Indicator, Flat**
- Fits 2.25" dial diameter AGD Group 2 indicators
- Four hole pattern

---

(800) 981 9663  LittleMachineShop.com  Page 58
Precision: Layout

1839 Combination Square, 12”, Starrett $77.00
- Starrett 12” combination square with square head
- Starrett catalog number 11H-12-4R
- Graduation No. 4R-8ths, 16ths, Quick Reading 32nds, 64ths
The square has a reversible lock bolt, scriber, 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.
2451 Combination Square, 4”, Starrett $68.00

3559 Double Square, 4", Starrett $65.00
- Starrett 4” double square with graduated blade
- Starrett catalog number 13A
- Popular with machinists, toolmakers, and patternmakers
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.
2025 Double Square, 6”, Starrett $80.00

2741 Double Square, 6”, PEC $44.95
- 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
Double square made in the US by Products Engineering Corporation (PEC).

4742 DYKEM Hi-Spot Blue $8.95
- Non-drying
- Non-hardening
- Transfers from surface to surface
- Saves time in surface scraping work
- 0.55 Oz.
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.

4741 DYKEM Steel Blue Layout Fluid $9.95
- 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
Machinists depend on Dykem Steel Blue Layout Fluids to scribe sharp, clear, precise lines. When applied, the layout fluid provide 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.

3810 Layout & Marking Kit $14.95
- Scribe with 2-3/8” Point, Starrett
- Sharpie Magnum Permanent Marker, Black
- Sharpie Metallic Fine Point Permanent Marker
The big, fat Sharpie Magnum 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 scribe 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.

2549 Machinist Square Set $49.95
- 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

2742 Machinist Square Set, PEC $63.95
- 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
- Blade is hardened
Machinist squares made in the US by Products Engineering Corporation (PEC).Length of blade is measured from inner edge of beam to end of blade. 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.

3186 Optical Center Punch $99.95
- Accuracy to 0.002”
- A center dot and circle target the punch location
- Magnifies without distortion or parallax
- Includes sturdy storage case
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.

2423 Precision Machinists Level, 12”, Starrett $211.00
- Starrett machinist’s 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 sidewise 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 $36.30

2427 Precision Machinists Level, 18” and Case, Starrett $435.00

2425 Precision Machinists Level, 18”, Starrett $341.00

2320 Precision Machinists Levels, 4”, Starrett $104.00

1846 Precision Machinists Level, 6”, Starrett $122.00

3174 Precision Machinists Level, 8”, Starrett $150.00

1824 Scribe with 2-3/8” Point, Starrett $11.00
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 Scribe with 2-7/8” Point, Starrett $13.50
3885  
Scriber with Two Tips, Starrett  
28.50

- Tempered well-finished steel
- Points are finely tapered
- Nickel plated knurled handle

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.

3605  
Sharpie Fine Point Permanent Marker, Black  
0.99

- The original pen style permanent marker
- Permanent on most surfaces
- Quick-drying ink
- Fade and water resistant
- Marks on plastic, metal, cardboard, vinyl, leather and glass

This is the original Sharpie marker. It has many uses around the shop, including using it as layout fluid.

3606  
Sharpie Metallic Fine Point Permanent Marker  
1.95

3607  
Sharpie King Size Permanent Marker, Black  
1.95


3028  
Universal Bevel, PEC  
25.50

- Six inch long blade
- Set to any angle
- Stainless steel
- Made in USA

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.

2227  
Universal Bevel, Starrett  
106.00

- 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).

3103  
Angle Gage Set  
29.95

- Set of 18 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  
Angle Gage, Digital  
29.95

- +/-180 Degree Range
- Auto Off conserves battery life
- 0.1 Degree Resolution
- Compact and Lightweight design with ±0.1 Degree Repeatability
- Magnetic Disk Base

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.

3459  
BoltSize-it Bolt and Nut Checker  
4.95

- Sizes bolts, nuts, and screws
- Sorts coarse threads, fine threads, and metric threads

Size bolt diameter by pushing bolt through sizing holes

Gauges hex nuts and washers (US, 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)
3708  Bore Gage Set, 2-6" Dial $89.95
- 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 $9.95
- Easy Adjustment Over Entire Range
- Centrally Located Adjustment Screw
- Balanced Legs, Uniform Tension
- Polished Natural Steel Finish

3618 Caliper, 6" Inside Spring $9.95
3688 Caliper, 6" Hermaphrodite $14.95
3687 Divider, 6" Spring $9.95

2743  Center Gage, 60 Degree, PEC $9.95
- Made of high quality steel
- Satin chrome finish
- Use for grinding and setting thread cutting tools
- Gaging surfaces are precision ground
Center gage made in the US by Products Engineering Corporation (PEC), 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 $24.95

1829  Center Gage, 60 Degree, Starrett $24.00
- Starrett 60 degree center gage
- Starrett catalog number C391
- Extremely handy for use in grinding and setting thread cutting tools
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.

2882  Comparator Stand & Indicator $44.95
- 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.

5185  Depth Base for 6" Caliper $15.95
- Slot Width: .64"
- 1.5 x 4 x 1.5 inches
- 2-Limit brand guarantees professional quality

3546  Depth Gage, 6" Combination, Starrett $68.00
- Starrett 6" combination gage, 32nds/64ths
- Starrett catalog number 236
- Combination depth gage and protractor
This depth gage has an added feature permitting its use as a protractor for measuring angles. It is a simple, handy tool that is a welcome addition to any machinist's tool box. The head is graduated both left and right to 30, 45, and 60 degrees. The rule can be set to any of these angles by swinging the rule until the line on the turret coincides with the desired angle. Head is made of hardened steel, ground, and nicely polished - 2 5/8" (66mm) long and 1 1/8" (33mm) wide.
One side of the base is cut out to permit easier and more accurate readings. The center of the head is recessed so that the tool will lay flat to permit more accurate measurements. A tempered rule that has been accurately machined divided, is smoothly fitted to the head and can be locked in position by a knurled nut.

3547  Depth Gage, 6" Steel Rule, Starrett $50.00
- Starrett steel rule depth gage, 0-6" range, 32nds/64ths
- Starrett catalog number 237
These very handy depth gages can be used to quickly obtain measurements in 64ths 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.

3460  Drill Gage $4.95
- 1/16" to 1/2" fractional size drill gage
- Quickly check drill sizes
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)

3552  Drill Gage, A-Z Drill Sizes, Starrett $72.00
- Starrett Standard Letter Size Drill Gage, A-Z range
- Starrett catalog number 198
Letter size drills can be quickly and conveniently checked with this gage. Twenty-six holes are provided, giving corresponding drill sizes from "A" through "Z" with decimal equivalents from .234" diameter through .413" diameter.
The gage is approximately 5/4" thick by 2 5/16" wide and 6 1/4" long, is hardened and has a satin finish. Thoroughly tested after hardening.

3551  Drill Gage, Jobbers, 1/16-1/2", Starrett $67.00
- Starrett Jobbers’ Drill Gage, 1/16-1/2" range
- Starrett catalog number 187
Using this gage, the size of any twist drill from 1/16-1/2" by 64ths can be quickly determined. The gage has a total of 29 holes, each marked with the drill size in inches and the decimal equivalent. Gage is rigidly tested after hardening and has a black matte finish. Gage information is steel stamped on one side and white marked on the reverse side for quick, clear reading. Approximately 5/4" thick by 2 5/16" by 6 1/4" long.
<table>
<thead>
<tr>
<th>Code</th>
<th>Item Description</th>
<th>Price</th>
<th>Features</th>
</tr>
</thead>
</table>
| 3557   | Drill Point Gage, Starrett                          | $60.00| - 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 tips
- 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                               | $89.95| - Stainless steel with satin chrome finish
- Carbide tipped scriber for longer life
- Fine feed adjustment
- Positive lock screw
- 0.001" Graduations |
| 3181   | Height Gage, 6", Digital, Starrett                   | $242.00| - Starrett 0-6" (0-150 mm) range digital height gage
- Starrett catalog number 3751A2-6/150
- 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 & 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 & fine adjustment thumb roll, plus it features a hardened, ground, and lapped base. |
| 4642   | Height Gage, 8", Tormach                             | $156.75| - 8" Digital Height Gauge
- 0.001" graduations
- Easy to read LCD screen
- This is a stainless steel dial height gauge with 0.001" graduations. |
| 4948   | Indicator Holder, 1/4" Round Shank                   | $12.95| - 1/4" Straight
- 3" overall length
- For use with test indicators and probes with dovetails
- Locks in .01" increments
- Great for aligning a vise or setting up a work piece. |
| 5351   | Machinists Measurement Kit                          | $54.95| - Includes a dial caliper, micrometer, square, and a steel rule
- 0-1" carbide-tipped micrometer with 0.001" graduations
- 4" bevel square is ground and lapped for accurate straightness and parallelism
- 6" 4R stainless steel rule |
| 2880   | Magnetic Base Indicator Holder                       | $34.95| - 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. 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. |
| 1237   | Magnetic Base Indicator Holder                       | $13.95| - 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. 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. |
| 5374   | Magnetic Base Indicator Holder, Fine Adjustment      | $69.95| - Unique top fine adjustment mechanism
- 3-D rigid aluminum arm movement
- Dovetail groove for test indicator
- Maximum reach is 10.7"
- On/Off switch
- 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. |
| 3714   | Magnetic Base Indicator Holder, Professional Grade   | $24.95| - 2-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. 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. |
| 3549   | Magnetic Base Indicator Holder, Starrett             | $181.00| - 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
- For use with all Starrett Test, Back-Plunger, AGD, Dial and Miniature-Dial Indicators. Also accommodates similar indicators of other manufacturers. |
| 3170   | Magnetic Base Indicator Holder, Starrett             | $121.00| - Magnetic base with triple-jointed arm and fine adjustment
- Starrett catalog number 660
- Positive On/Off switch
- Very sensitive fine-adjustment thumb screw
- 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 9 1/16 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) |
| 3072   | Magnetic Test Indicator Holder, Fisher               | $67.00| - Overall height 3.75”
- Powerful permanent magnet
- Clamps on dovetail, 5/32”, or 1/4” diameter stems
- Includes stem adapter and mill adapter |
Precision: Measuring

1248 Micrometer Set, 0-3” $59.95
This 0-3” micrometer set features carbide faces and clear 0.0001” graduations on a satin-chrome finish. The frames are forged steel. 1” and 2” 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.

4266 Micrometer Set, 0-75 mm Metric $69.95
2877 Micrometer, 0-1” $18.95

3663 Micrometer Set, 0-6” $149.95
- Solid metal C-shape frame for all sizes
- Graduation: 0.0001”
- Hardened and precision ground anvil spindle thread with microlap finish on ends
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.

1845 Micrometer, 0-1” Digital, Starrett $140.00
- Starrett 0-1” Electronic Digital Micrometer
- Starrett catalog number 3732XFL-1
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.

3180 Micrometer, 0-1”, Starrett $222.00
- Starrett 0-1” micrometer
- Starrett catalog number T230XR
- Accurate to 0.0001”
This is the jewel of precision micrometers 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 insure 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 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.

2520 Micrometer, Digital $129.95
- Measurement range is 0-1”
- Resolution is 0.00005”
- Protected from dust and water to IP54 per IEC529 standard
- Large LCD display
- Rugged plastic case
This digital electronic micrometer with carbide faces has a resolution of 0.00005”. There are three buttons; ON/OFF, SET to zero the display, and ABS/INC to switch between absolute and incremental measurement. The micrometer turns itself off after about 5 minutes of inactivity.
Pressing ABS/INC zeros the micrometer at any position so you can make comparative readings between two parts. The absolute measurement is not lost, and is displayed by pressing ABS/INC again.
The IP54 code says that dust shall not penetrate in a quantity to interfere with satisfactory operation of the device or to impair safety, and water splashed against the device from any direction shall have no harmful effects.

1962 Pee Dee Thread Measuring Wires, Fisher $30.95
- Made in USA by Fisher Machine Shop
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 brand thread measuring wires.

3720 Pin Gage Set, 0.061” to 0.250” Minus $59.95
- 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
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 is individually marked with their respective sizes.

3556 Protractor, Rectangular Head, Starrett $79.00
- Starrett steel protractor (0-180°), 6” blade, rectangular head
- Starrett catalog number C183
- Double graduations from 0-180° in opposite directions permit transferring angles, small squaring tasks, checking cutter clearances within certain limits, and many other applications.
- 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
- Satin chrome finish for easy of reading and resistance to rust
- The blade can be locked firmly at any angle by the lock nut
- Starrett catalog number C183
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.

2749 Protractor, Round Head, PEC $26.50
- 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
- Protractor made in the US by Products Engineering Corporation (PEC).
- Protractors are used for drawing radial lines, transferring angles, setting bevels, and setting tapers.

2748 Protractor, Rectangular Head, PEC $26.50
2751 Protractor, Round Head $14.95

2878 Radius Gage Set $21.95
- Set of 25 radius gages and holder
- 1/16” to 1/16” 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
- The radius gage set is furnished in a vinyl case for storage.

The radius gage set is furnished in a vinyl case for storage.
<table>
<thead>
<tr>
<th><strong>Part Number</strong></th>
<th><strong>Description</strong></th>
<th><strong>Price</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1842</td>
<td>Radius Gage Set, Starrett</td>
<td>$182.00</td>
</tr>
<tr>
<td>3029</td>
<td>Screw Checker, Inch, PEC</td>
<td>$19.95</td>
</tr>
<tr>
<td>3031</td>
<td>Screw Checker, Large Metric, PEC</td>
<td>$21.95</td>
</tr>
<tr>
<td>3030</td>
<td>Screw Checker, Small Metric, PEC</td>
<td>$19.95</td>
</tr>
<tr>
<td>3176</td>
<td>Screw Pitch Gage, Inch 51 Leaves, Starrett</td>
<td>$80.00</td>
</tr>
<tr>
<td>5192</td>
<td>Screw Pitch Gage, Inch, 51 Leaves</td>
<td>$10.95</td>
</tr>
<tr>
<td>2744</td>
<td>Screw Pitch Gage, Inch, PEC</td>
<td>$42.95</td>
</tr>
<tr>
<td>3093</td>
<td>Small Hole Gage Set, 4-Piece</td>
<td>$12.95</td>
</tr>
<tr>
<td>4492</td>
<td>Small Hole Gage Set, 4-Piece, PEC</td>
<td>$56.95</td>
</tr>
<tr>
<td>3545</td>
<td>Small Hole Gage Set, Starrett</td>
<td>$163.00</td>
</tr>
<tr>
<td>1234</td>
<td>Steel Rule, 6&quot;</td>
<td>$5.95</td>
</tr>
</tbody>
</table>

**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:**
- 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 gauges 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.

**Screw Pitch Gage Features:**
- 51 leaves. Measures 60° threads from 4 threads per inch to 84 threads per inch
- Narrow blades permit use for internal and external screw threads.
- Each blade clearly marked with thread size.
- Blades are protected in sturdy steel case.
- Locking device secures all blades for storage or positions an individual blade for use.

**Steel Rule Features:**
- 6" long, flexible, and strong.
- 4R graduations, 8ths & 16ths, 32nds & 64ths.
- Hardened stainless steel.

**Small Hole Gage Set Features:**
- Extra long for gaging deep holes and slots.
- Furnished in fitted vinyl case.
- Size adjustment by knurled knob.

**Screw Pitch Gage Range:**
- 3176: 4 threads per inch to 84 threads per inch
- 2744: 4 threads per inch to 84 threads per inch

**Radius and Fillet Gage Range:**
- 5192: 1/64-17/64" 9/32-1/2"
- 3093: 1/64-17/64" 9/32-1/2"

**Steel Rule Size:**
- 6" long

**Screw Checker Range:**
- #0 to 3/4" coarse & fine threads
- NC, NF, and NS threads

**Screw Pitch Gage Range:**
- Starrett catalog number 516CHZ
- 1/64-7/64" 9/32-1/2"
Precision: Measuring

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

4610 Steel Hook Rule, 12" 32nds/ 0.5mm, PEC $28.95
2730 Steel Rule, 12" 4R Flexible, PEC $21.95
2735 Steel Rule, 12" 4R Rigid, PEC $22.95
2732 Steel Rule, 12" 5R Flexible, PEC $21.95
2733 Steel Rule, 150 mm / 6" Flexible, PEC $10.95
2736 Steel Rule, 150 mm / 6" Rigid, PEC $11.95
5092 Steel Rule, 300 mm Metric Flexible, PEC $21.95
4796 Steel Rule, 300 mm Metric Rigid, PEC $22.95
4227 Steel Rule, 6' 4R Black Flexible, PEC $8.50
2729 Steel Rule, 6' 4R Flexible, PEC $10.95
2734 Steel Rule, 6' 4R Rigid, PEC $11.95
2731 Steel Rule, 6' 5R Flexible, PEC $11.50

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.

3175 Steel Rule, 12" 5R Flexible, Starrett $47.50
1828 Steel Rule, 150 mm 31 Flexible, Starrett $24.00
1826 Steel Rule, 6' 4R Flexible, Starrett $21.50
1827 Steel Rule, 6' 5R Flexible, Starrett $23.50
2233 Steel Rule, 6' 4R Rigid, Starrett $24.00

3550 Tap and Drill Gage, Starrett “Time Saver” $71.00
- Starrett hardened tap and drill gage
- Starrett catalog number 185
- Drill sizes number 1-60 (0.228-0.040”)
This highly useful gage shows at a glance the correct size tap drill for any common size machine screw tap in “NF” National Fine or “NC” National Coarse Thread Series, that will leave the right amount of stock for approximately 65% full thread. The gage also shows the correct size drill to be used. In addition, there are 60 holes marked with the number size and decimal equivalent of the drill that fits each hole. Example: a size 2-56 tap (No. 2 tap with 56 pitch) calls for a No. 50 tap drill and a No. 44 body drill.

The gage has a black matte finish with information steel stamped on one side and white marked on the reverse side for quick, clear reading. The gage is thoroughly tested for accuracy after hardening. Approximate size, 5/64" thick by 2 5/16" wide by 6 1/4" long.

3185 Telescoping Gage Set, 4-Piece, PEC $69.95
- 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. The photo shows the 6-piece set. This set has the smaller 4 gages.

3184 Telescoping Gage Set, 6-Piece, PEC $99.95

1840 Telescoping Gage Set, 4-Piece, Starrett $148.00
- Starrett telescoping gage set
- Starrett catalog number 5579GZ
- Range: Four gages, 5/16" to 2 1/8" 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.

2879 Telescoping Gage Set, 6-Piece $14.95
- 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

3771 Test Indicator Holder, Professional Grade $19.95
- 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 $29.95
- 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" 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.

4906 Thickness Gage Assortment, Starrett $70.00
- 12" long by 1/2" Wide
- 0.001" through 0.030" thick
- Finest tempered steel with rounded edges for ease of use
- Marked every 6" with thickness with 3/16" hole for hanging
- Starrett catalog number 5667A
Starrett thickness gage or feeler stock assortment This set consists of one each of 32 different pieces, 1/2" wide x 12" long from 0.001" through 0.030" thick.
The gages have rounded ends and rounded edges to make the gages easier to work with. They are marked every 6" with the thickness and have a convenient 3/16" (5mm) hole punched in the end for hanging. These gages are widely used in automotive, aviation, diesel and farm equipment manufacture and service and also in jig, fixture, gage and experimental work.
Precision: Measuring

1843 Thickness Gage Set, Starrett
Starrett thickness gage set (feeler gage)
Starrett catalog number 66T.
26 Tapered Leaves, 1/2 - 1/4 x 3/1-32"
Range .0025 - .05"
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
These gages 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 easily removed or replaced
Rugged, substantial steel case protects leaves

4521 Universal Arm for Indicators

- Rigid universal steel arm with central locking mechanism
- 8 mm indicator stem hole and dovetail grooves holds most dial
  indicators and test indicators
- 11" arm length
- fine adjustment knob

4653 Universal Arm for Indicators, Mini

- 22 piece indicator point set

Precision: Sets

1782 Dial Indicator, Magnetic Base & Point Set

- 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

- 24.95

2424 Plastic Case for Magnetic Base and Dial Indicator

- 7.95

2925 Dial Indicator, Test Indicator, Magnetic Base & Point Set

- 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 a 0.0005" graduation 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

- 1" Dial indicator, magnetic base and point set
- 0-30-0 Dial test indicator
- 0-1" micrometer
- 0-6" 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".

1260 Measurement Starter Kit with Digital Caliper

- 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. The caliper body is hardened stainless steel and will take inside, outside, and depth & step measurements.

2552 Adjustable Parallel Set

- 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 parallel set.

2553 Angle Block Set

- 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.

3431 Angle Plate, 3" Slotted & Webbed

- 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

3432 Angle Plate, 4-1/2" Slotted & Webbed

- 4-1/2" long, 3.75" 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

Precision: Setup
**Precision: Setup**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5385</td>
<td>Angle Plate, 3&quot; Webbed End</td>
<td>$17.95</td>
</tr>
<tr>
<td>5384</td>
<td>Angle Plate, 2&quot; Webbed End</td>
<td>$11.95</td>
</tr>
<tr>
<td>5386</td>
<td>Angle Plate, 4&quot; Webbed End</td>
<td>$26.95</td>
</tr>
</tbody>
</table>

Each set includes two matched blocks.

- The blocks have 23 holes through them, 5 are threaded 3/8"-16 NC.
- 3666 Blocks, 2-4-6, $99.95

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1233</td>
<td>Blocks, 1-2-3</td>
<td>$12.95</td>
</tr>
</tbody>
</table>

- Threaded holes are 3/8"-16 thread
- Through holes are 5/16".

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. Five are threaded 3/8-16 NC, and the other through holes are 5/16" diameter.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2881</td>
<td>Blocks, 1-2-3, Ultra Precision</td>
<td>$29.95</td>
</tr>
</tbody>
</table>

- Threaded holes are 3/8"-16 thread
- Through holes are 5/16".

These 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" over size 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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2186</td>
<td>Center It V-Block</td>
<td>$18.95</td>
</tr>
</tbody>
</table>

- CENTER IT makes it easy to drill round stock and tubing
- Bolts to the drill press table and enables the drilling of round pieces parallel and centered
- Grooves on the outer sides eliminate slippage while holding by hand for sawing
- Place CENTER IT on the drill press table, run the stationary bit down to center the fixture

CENTER IT is a tool for drilling pipe and other round objects. CENTER IT is made specifically for use in a drill press. No clamping of the tube is necessary since the angled flats of the Jig hold it centered. Holes will automatically be centered on the tube with no center-punching required. If tubing is too large to drill in a single operation it can simply be turned over. Especially for the metalworking enthusiast, the woodworking hobbyist, and even the professional automotive mechanic, CENTER IT makes speedy and precise work of drilling tasks. Its "hand vise" grip ridges allow no-clamp holding of round stock for sawing and cutting.

CENTER IT is made of heavy aluminum extrusion. CENTER IT is 5" Long, 4" Wide, and 1-3/4" High. The groove at the base of the V is 0.43" wide, so use a drill bit smaller than this to center the CENTER IT.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5380</td>
<td>Gage Block Set, Rectangular, 81 Pieces</td>
<td>$139.95</td>
</tr>
</tbody>
</table>

- No. of Blocks - 81pc
- Made of the highest quality tool steel
- Surface hardness: HRC 64
- Grade AS-2 (B) (+/- .005 millimoth)
- With fitted wooden case with sizes labeled

Each set includes two matched blocks.

- Gage blocks are 98.0000" long, 3.0000" wide, and 1.0000" thick.
- Gage blocks are made of high grade alloy steel hardened to 52 to 58 Rc.
- Parallels 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".

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3525</td>
<td>Sine Bar, 5&quot;</td>
<td>$39.95</td>
</tr>
</tbody>
</table>

- 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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3535</td>
<td>Sine Bar, 2.5&quot;, Fisher</td>
<td>$43.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3945</td>
<td>Thin Parallel Shims, 3&quot; Long, 3 Pairs</td>
<td>$12.95</td>
</tr>
</tbody>
</table>

- 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".
- These shims multiply the options for your 3" long thin parallels.
- You can now space your work by 1/64".

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1893</td>
<td>Thin Parallels, 3&quot; Long, 10 Pairs</td>
<td>$29.95</td>
</tr>
</tbody>
</table>

- Set of ten pairs of thin parallels in a fitted case
- Parallels are 1/8" thick and 3" long
- Made of high grade alloy steel hardened to 52 to 58 Rc
- Parallel within 0.0002".
- These 3" long thin parallels are great for the small vises used on the mini mill.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3947</td>
<td>Thin Parallels, 1.5&quot; Long, 9 Pairs</td>
<td>$34.95</td>
</tr>
<tr>
<td>3946</td>
<td>Thin Parallels, 3&quot; Long, 11 Pairs</td>
<td>$39.95</td>
</tr>
<tr>
<td>2924</td>
<td>Thin Parallels, 3&quot; Long, 4 Pairs</td>
<td>$14.95</td>
</tr>
<tr>
<td>5381</td>
<td>Thin Parallels, 4&quot; Long, 10 Pairs</td>
<td>$39.95</td>
</tr>
<tr>
<td>5382</td>
<td>Thin Parallels, 5&quot; Long, 10 Pairs</td>
<td>$39.95</td>
</tr>
<tr>
<td>1232</td>
<td>Thin Parallels, 6&quot; Long, 10 Pairs</td>
<td>$29.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4855</td>
<td>Indicator Holder, 3/8&quot; Square Shank</td>
<td>$13.95</td>
</tr>
</tbody>
</table>

- 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 hick in a 4-jaw chuck by using this indicator holder in your tool post or standard turning tool holder holder for a quick change tool post with almost any indicator.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4989</td>
<td>Machinists Jack</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

- 1.57" to 2.17" Height Range
- Acme threads
- Durable Steel Construction
- 1.5" body diameter

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 clamping kit.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2907</td>
<td>Machinists Jack Set</td>
<td>$15.95</td>
</tr>
</tbody>
</table>

- 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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3525</td>
<td>Sine Bar, 5&quot;</td>
<td>$39.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3535</td>
<td>Sine Bar, 2.5&quot;, Fisher</td>
<td>$43.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3945</td>
<td>Thin Parallel Shims, 3&quot; Long, 3 Pairs</td>
<td>$12.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1893</td>
<td>Thin Parallels, 3&quot; Long, 10 Pairs</td>
<td>$29.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3947</td>
<td>Thin Parallels, 1.5&quot; Long, 9 Pairs</td>
<td>$34.95</td>
</tr>
<tr>
<td>3946</td>
<td>Thin Parallels, 3&quot; Long, 11 Pairs</td>
<td>$39.95</td>
</tr>
<tr>
<td>2924</td>
<td>Thin Parallels, 3&quot; Long, 4 Pairs</td>
<td>$14.95</td>
</tr>
<tr>
<td>5381</td>
<td>Thin Parallels, 4&quot; Long, 10 Pairs</td>
<td>$39.95</td>
</tr>
<tr>
<td>5382</td>
<td>Thin Parallels, 5&quot; Long, 10 Pairs</td>
<td>$39.95</td>
</tr>
<tr>
<td>1232</td>
<td>Thin Parallels, 6&quot; Long, 10 Pairs</td>
<td>$29.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4855</td>
<td>Indicator Holder, 3/8&quot; Square Shank</td>
<td>$13.95</td>
</tr>
</tbody>
</table>

- 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 hick in a 4-jaw chuck by using this indicator holder in your tool post or standard turning tool holder holder for a quick change tool post with almost any indicator.
2220 Thin Parallels, 3" Long, 10 Pairs, Ultra-Precision
- Set of ten pairs of thin parallels in a fitted case
- Parallels are 1/8" thick and 3" long
- Made of A2 tool steel hardened to 59 to 61 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 (tool steel). Their quality is excellent and LittleMachineShop.com is proud to carry their products.

2295 Mini Lathe CNC Conversion Plans
- 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 2 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. Costs for mechanical hardware and materials is between $180 and $220. The plans provide several sources for the electrical parts and software.

2340 Epicyclic Steam Engine Plans
- 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.

2353 Mini Mill CNC Conversion Plans
- Plans to add CNC to a mini mill. These CNC conversion plans were created by Ronald J. Steele. This is a complete set of plans to add CNC to a mini mill. They 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 $49. It takes between 20 and 30 hours to machine the parts and bolt it all together.

**Project Plans: Engines**

2342 Elbow Engine Plans
- 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.

2343 Pip-Squeak Engine Plans
- Complete plans to build a simple steam engine. These 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.

2354 Panther Pup Engine Castings, Brass
- 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
- $149.95

2356 Panther Pup Engine Castings, Steel
- $289.95

2341 Panther Pup Engine Plans
- 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.

**Project Plans: CNC Conversions**

2395 Mini Lathe CNC Conversion Plans
- 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 2 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.

2295 Stirling-Steele Engine 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.

**V-Blocks, 1-5/8" x 1-3/4" x 2-3/4"**
- $72.95

**V-Blocks, 1-1/4" x 1-1/4" x 1-5/8"**
- $46.95

**V-Blocks, Miniature 0.03" to 0.28" Capacity**
- $99.95

**Z-Axis Tool Height Setter, Professional Grade**
- $129.95

**Epicyclic Steam Engine Plans**
- $24.95

**Panther Pup Engine Plans**
- $25.95

**Elbow Engine Plans**
- $12.95

**Panther Pup Engine Castings, Aluminum**
- $149.95

**Panther Pup Engine Castings, Brass**
- $289.95

**Panther Pup Engine Plans**
- $24.95

**Elbow Engine Plans**
- $12.95

**Panther Pup Engine Castings, Aluminum**
- $149.95

**Panther Pup Engine Castings, Brass**
- $289.95

**Panther Pup Engine Plans**
- $25.95

**Panther Pup Engine Castings, Aluminum**
- $149.95

**Panther Pup Engine Castings, Brass**
- $289.95

**Panther Pup Engine Plans**
- $25.95
2717 Belt Grinder Plans $59.95

- 17 pages of 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 project 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.

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 stock perpendicular for use at the surface grinder.
- It holds stock perpendicular for use at the milling machine.
- 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.
- It holds stock perpendicular for use at the surface grinder.

3048 Quick Change Tool Post Set, 0XA, 4 $134.95

- Quick change tool post set for lathes with up to 9" swing
- 60% of AXA, or series 000 size (60% of AXA size)
- Includes five tool holders
- All steel construction
- Fits all 7x10 to 7x16 mini lathes
- Wedge type 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 3/8" 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: 2 - #1 Turning & Facing - #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)

4117 QC Tool Post Mount, OXA for SC4 Lathes $9.95

4083 Quick Change Tool Post Set, OXA for 8x12, 8x14 Lathe $139.95

4046 Quick Change Tool Post Set, OXA for 9x20 Lathe $139.95

4058 Quick Change Tool Post Set, OXA for Atlas/Craftsman 6" $139.95

4157 Quick Change Tool Post Set, OXA for G0768 $139.95
QC Tool Posts: QCTP Sets

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2280</td>
<td>Quick Change Tool Post Set, AXA</td>
<td>$174.95</td>
</tr>
<tr>
<td>3658</td>
<td>Quick Change Tool Post Set, BXA</td>
<td>$259.95</td>
</tr>
</tbody>
</table>

- Quick change tool post set for lathes with up to 12” swing
- 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.

This 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. 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 9/16”-18 threaded stud and 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.

Rotary Tables: Rotary Tables

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3519</td>
<td>4th Axis Rotary Table for CNC</td>
<td>$914.95</td>
</tr>
<tr>
<td>1927</td>
<td>Rotary Table, 4” H/V</td>
<td>$329.95</td>
</tr>
</tbody>
</table>

- Includes stepper motor
- Includes tailstock
- Includes adapter to mount a 3” lathe chuck
- Includes hold down clamps to mount the rotary table on the mill table

This 4” (100 mm) 4th axis rotary table is great for small CNC milling machines.

Rotary Table Comparison

See the rotary table comparison chart at www.littlemachineshop.com/rotary
Rotary Tables: Rotary Tables

5603 Rotary Table, 4" H/V
- Horizontal or vertical use
- 4" diameter table rotates 360°
- 1:36 ratio or 10° per handwheel revolution
- Scale reads to 15 minutes
- Low profile - only 2-1/8" 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 2.167" in the horizontal position. The small size of the table is good for small milling machines. The table has a low profile of 2-1/8" in the horizontal position. This precision ground 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
- $99.95

5630 Tailstock for 3" & 4" Rotary Tables
- $74.95

1810 Rotary Table, 4" Precision
- 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 precision 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. This rotary table comes with an adapter to mount a 3" lathe chuck. It works with both 3- and 4-Jaw chucks.

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). 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 gear and center hole are hardened and ground.

1888 Adapter, 3" Lathe Chuck
- $29.95

3146 Adapter, 3" Lathe Chuck
- $28.95

1811 Dividing Plate Set for 4" Rotary Table
- $79.95

2183 Rotary Table, 4" with Tailstock & Dividing Plate
- $369.95

3131 Rotary Table, 4" with Tailstock, Dividing Plate, & 3-Jaw Lathe Chuck
- $434.95

3132 Rotary Table, 4" with Tailstock, Dividing Plate, & 4-Jaw Lathe Chuck
- $434.95

1813 T-Slot Nuts, 8 mm and Clamping Bars
- $14.95

3442 T-Slot Nuts, 8 mm and Clamping Bars
- $24.95

1812 Tailstock for 4" Rotary Table
- $79.95

2420 Rotary Table, 4" Precision, DRO
- 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

This horizontal / vertical 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. 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: 0.0017°. Squareness of clamping surface to center slot: 0.0012°. Squareness of clamping surface to angle face: 0.0017°. Squareness of clamping surface to center slot: 0.0012°. Concentricity of center bore: 0.0008" TIR.

1727 Rotary Table, 4", Phase II
- $350.00

1787 Rotary Table, 6", Phase II
- $404.95

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 gear and center hole are hardened and ground.

3942 Adapter, 5" Lathe Chuck
- $89.00

1801 Dividing Plate Set for 6" Rotary Table
- $100.00

1802 Tailstock for 6" Rotary Table, Phase II
- $131.00

3566 Rotary Table, 6" with Tailstock & Dividing Plate, Phase II
- $635.00
Threading Tools: Die Holders

2314 Die Holder $32.95
- 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
This 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 tool does not work with hexagonal dies. Hexagonal dies are not made for creating new threads, they are for maintenance work.

4666 Die Stock, No. 2, 13/16” $4.95
- For adjustable round split dies
- Holds 13/16” dies
- 6-1/2” overall length

Threading Tools: Hand Tappers

2539 Hand Tapper $149.95
- 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
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”.
Includes an offset handle and a rack for the tap adapters.

2898 Hand Tapper, Mini $66.95
- Assures straight tapped holes
- Helps prevent broken taps
- 7 tap adapters included
This rigid hand tapper helps prevent broken taps while tapping straight holes.
Precision ground work table and spindle ensure accuracy. Tap adapters for #6 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”.

2900 Tap Adapters, Set of 7 $11.95

Threading Tools: Lathe Threading

3695 Threading Tool, External, 3/8” Indexable, HSS Triangle Inserts, A R Warner $79.00
- For external threading, 8 through 36 TPI
- 3/8” 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 wrench
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.

3467 Threading Tool, Int / Ext, 1/2” Indexable, HSS Triangle Inserts, A R Warner $90.00
- 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 wrench
- For 8 through 36 pitch 60 degree threading
This A R Warner precision 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 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.

3581 Screw, Insert Retaining, 6-32 FH $0.95

3570 Threading Tool, Internal, 3/8” Indexable, HSS Triangle Inserts, A R Warner $85.00
- For internal threading
- Includes three T-15 high speed steel TPMW-1.8-1.5-.5 inserts
- Includes two MS-1152 screws and one T-7 wrench
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.

3571 Threading Tool, Internal, 1/2” Indexable, HSS Triangle Inserts, A R Warner $85.00

2221 Tool Bit, 5/16” HSS Threading $9.95
This threading tool bit is sharpened on both ends to a 60° angle for threading. It is made from high speed steel. Both ends are offset, one so you can thread near a left shoulder, and the other so you can thread near a right shoulder.

4115 Threading Tool Bit and Center Gage $16.95
1895 Tool Bit, 1/4” HSS Internal Threading $12.95

Threading Tools: Tap and Die Sets

2851 Die Set, 0-80 to 5-40 Threads $92.95
- Miniature tap 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 $15.95
2843 Die, 1-64 Thread $15.95
2844 Die, 2-56 Thread $15.95
2845 Die, 3-48 Thread $15.95
2846 Die, 4-40 Thread $15.95
2847 Die, 5-40 Thread $15.95
2848 Die, 6-32 Thread $15.95
2849 Die, 8-32 Thread $15.95
3675 Die, 10-32 Thread $15.95

HSS Triangle Inserts, A R Warner

2841 Die, 6-32 Thread $15.95
2840 Die, 0-80 Thread $15.95
2843 Die, 1-64 Thread $15.95
2844 Die, 2-56 Thread $15.95
2845 Die, 3-48 Thread $15.95
2846 Die, 4-40 Thread $15.95
2847 Die, 5-40 Thread $15.95
2848 Die, 6-32 Thread $15.95
2849 Die, 8-32 Thread $15.95
3675 Die, 10-32 Thread $15.95
Threading Tools: Tap and Die Sets

3601 Tap & Die Set, 39-Piece Solid Round Dies $154.95
- 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 Hansen 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 adjustable lead screw, 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, 12 - 24 NCFractional 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 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, Empty Plastic Case

3597 Tap & Die Set, 41-Piece $149.95
- 41-piece machine screw & fractional hexagonal tap and die set for threading operations
- Machine screw and fractional sizes of plug style taps plus 5/8” and 1” hexagon 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 Hansen brand 41 PC set can be used to restore or start new threads. The taps and dies are made from high carbon steel. The Hanson 41-Piece Machine Screw / Fractional Tap and Hex Die Set includes machine screw taps, fractional plug style taps, plus 5/8-inch and 1-inch hexagon dies in 17 different sizes. A DS-26 adjustable guide diestock and DS-57 plain diestock for cutting external threads on metal cylinders is included, as well as a TR-88 adjustable handle tap wrench to create internal screw threads, a TR-73 two-in-one tap wrench, and a TR-50 two-in-one tap wrench. There’s also an 18-leaf standard thread pitch gauge, a screwdriver, and a handy plastic case to keep everything organized. 41-pc set in plastic case includes the following items: Machine Screw Plug Tap and 5/8” Hexagon Dies in sizes: 4 - 40 NC, 6 - 32 NC, 8 - 32 NC, 10 - 24 NC, 12 - 24 NC Fractional Plug Tap and 1” Hexagon 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 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, Empty Plastic Case

2841 Tap Set, 0-80 to 5-40 Thread $34.95
- Miniature tap set includes 0-80, 1-64, 2-56, 3-48, 4-40, and 5-40 taps
- High speed steel with ground thread
- Plug tap has a 3.5 thread taper
- Made in USA

Hand taps are the most commonly used general purpose tap. They are recommended for taping free machining steels, stainless steels, aluminum, zinc, and ductile materials. Hand taps are utilized in either through or blind hole tapping.

2842 Tap, 0-80 Thread $7.95
2833 Tap, 1-64 Thread $7.49
2834 Tap, 2-56 Thread $6.49
2835 Tap, 3-48 Thread $4.95
2836 Tap, 4-40 Thread $4.49
2837 Tap, 5-40 Thread $4.49
2838 Tap, 6-32 Thread $3.49
2839 Tap, 8-32 Thread $3.49
3676 Tap, 10-32 Thread $3.49
2840 Tap, 10-24 Thread $3.49

Threading Tools: Tap Holders and Guides

3602 Tap Adapters, 3/8” Socket Drive $28.95
- 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

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.

1963 Tap Guide, Fisher $13.95
- Made in USA

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.

3104 Tap Guide, 2MT Short, Fisher $16.95

3603 Tap Handle, Adjustable $7.95
- Offset handle adjustable tap & reamer wrench
- Straight handle design provides greater leverage, especially when using larger diameter taps
- For Taps No. 0 To 1/2

Straight handle design provides greater leverage, especially when using larger diameter taps.

2621 Tap Wrench 3-5/8”, Starrett $30.00
- Body length: 3-5/8” (90mm)
- Capacity tap size: No. 0-14
- Square shank: 1/4” (6.35mm)
- Starrett catalog number 174

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.

3177 Tap Wrench 6”, Starrett $48.00
5122 Tap Wrench 9”, Starrett $70.00

5390 Tap Wrench 5”, Adjustable $3.95
- Body length: 5” (127 mm)
- Capacity tap size: 0-5/16
- Hurniled steel handles
- Jaws surface hardened
- Zinc die casting

5391 Tap Wrench 8”, Adjustable $4.95

(800) 981 9663 LittleMachineShop.com Page 73
3654 Tap Wrenches, Miniature $12.95
- For #0 to #6 taps
- For M1.6 to M3.5 taps
- Fits 0.110" driving square
- Light weight tool maximizes "feel" while tapping
- Set of two tap wrenches

These miniature tap wrenches are perfect for very small taps. They let you actually feel the threads being cut, and you can easily feel the tap tighten up when it is time to reverse and break the chips. The longer tap wrench is 2.5" long. The shorter one is 1.5" long. They are brightly anodized so you won’t lose them.

2571 Tapping Block, OMW $39.95
- Starts taps straight - reduces breakage
- Fits taps from 0-80 to 3/8-16
- Elegant design

Over 90% of broken taps are the result of the tap not starting straight in the hole, yet most people tapping by hand simply “eyeball” their tap into a hole and then are amazed when the tap snaps in a valuable part! The OMW Tapping Block was inspired by a block used nearly every day by a master tool and die maker I had the pleasure of working with in my shop. He used his block whenever tapping a hole, and I never saw him break a tap! Simply hold the tapping block flat against your work, above the hole you’ve tap drilled. Place your tap through the appropriately sized guide hole and you are assured of perfect tap alignment when starting your thread. The OMW Tapping Block is manufactured of the highest quality 4140 steel. It is beautifully designed, expertly knurled and chamfered for easy grip, with counterbored holes to allow for material chip clearance when tapping. Fits all common taps from 0-80 thread to 3/8-16 (the seven holes fit tap shanks of #0-#6, #8, #10, 1/4, 5/16, 3/8, 7/16, 1/2", and 5/8”). This Tapping Block should be in the tool chest of every machinist, from beginner to expert.

2854 Tapping Block, OMW Metric $39.95

3434 T-Handle Tap Wrench for #0 to #10 Taps, Starrett $33.50
- 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”

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.

3555 T-Handle Tap Wrench for 1/4" to 1/2" Taps, Starrett $47.50
3554 T-Handle Tap Wrench for 7/32" to 7/16" Taps, Starrett $35.50

2852 T-Handle Tap Wrench for #0 to #8 Taps $9.95
- For hand tapping and driving screw extractors
- Fits machine screw taps from #0 to #8
- Fits fractional thread taps from 1/16" to 5/32”

For holding taps, reamers, and other small tools to be turned by hand.

2853 T-Handle Tap Wrench for #8 to 1/4" Taps $10.95

3427 V-TapGuide Hand Tap Guide for Inch Threads $25.50
- 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

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”.

3428 V-TapGuide Hand Tap Guide for Metric Threads $25.50
- 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

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.

3866 V-TapGuide Hand Tap Guide Set, Inch and Metric $49.95
- High speed steel taps
- Plug style

2939 Tap, M3x0.5 Metric Hand Plug $7.00
4916 Tap, M4x0.7 Metric Hand Plug $7.00
4837 Tap, M5x0.8 Metric Hand Plug $7.00
2940 Tap, M6x1.0 Metric Hand Plug $5.95
2941 Tap, M8x1.25 Metric Hand Plug $7.95
4838 Tap, M10x1.5 Metric Hand Plug $11.00

3429 V-TapGuide Hand Tap Guide for Metric Threads $25.50

3555 T-Handle Tap Guide for Inch Threads $47.50
3554 T-Handle Tap Guide for Metric Threads $35.50

3427 V-TapGuide Hand Tap Guide for Inch Threads $25.50

3428 V-TapGuide Hand Tap Guide for Metric Threads $25.50

Threading Tools: Taps and Dies

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 in place. The kit comes with inserts, the appropriate size HSS twist drill, installation tool, tang removal tool and L hex wrench. Each kit includes: 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 $14.13
5830 Thread Repair Kit, 5/16"-18 $15.22
5831 Thread Repair Kit, 3/8"-16 $19.37
5832 Thread Repair Kit, M5x0.8 $11.77
5834 Thread Repair Kit, M8x1.25 $16.15
## Tooling: Arbors and Sleeves

### 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.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2393</td>
<td>Arbor, Blank 3MT Drawbar</td>
<td>$12.95</td>
</tr>
<tr>
<td>2394</td>
<td>Arbor, Blank 2MT Drawbar</td>
<td>$12.95</td>
</tr>
<tr>
<td>3544</td>
<td>Arbor, Drill Chuck 0MT Standard to 2JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>3543</td>
<td>Arbor, Drill Chuck 0MT Standard to 33JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>1778</td>
<td>Arbor, Drill Chuck 1MT Tang to 2JT</td>
<td>$6.95</td>
</tr>
<tr>
<td>1894</td>
<td>Arbor, Drill Chuck 1MT Tang to 33JT</td>
<td>$6.95</td>
</tr>
<tr>
<td>4631</td>
<td>Arbor, Drill Chuck 2MT Drawbar to 0JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>1882</td>
<td>Arbor, Drill Chuck 2MT Drawbar to 2JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>1883</td>
<td>Arbor, Drill Chuck 2MT Drawbar to 33JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>1803</td>
<td>Arbor, Drill Chuck 2MT Short to 2JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>1807</td>
<td>Arbor, Drill Chuck 2MT Short to 3/8&quot;-24 Thread</td>
<td>$8.95</td>
</tr>
<tr>
<td>1804</td>
<td>Arbor, Drill Chuck 2MT Short to 33JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>2955</td>
<td>Arbor, Drill Chuck 2MT Standard to 33JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>1167</td>
<td>Arbor, Drill Chuck 2MT Tang to 2JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>1613</td>
<td>Arbor, Drill Chuck 2MT Tang to 3/8&quot;-24 Thread</td>
<td>$8.95</td>
</tr>
<tr>
<td>1190</td>
<td>Arbor, Drill Chuck 2MT Tang to 33JT</td>
<td>$8.95</td>
</tr>
<tr>
<td>1805</td>
<td>Arbor, Drill Chuck 3MT Drawbar to 2JT</td>
<td>$10.95</td>
</tr>
<tr>
<td>1808</td>
<td>Arbor, Drill Chuck 3MT Drawbar to 3/8&quot;-24 Thread</td>
<td>$11.95</td>
</tr>
<tr>
<td>1806</td>
<td>Arbor, Drill Chuck 3MT Drawbar to 33JT</td>
<td>$10.95</td>
</tr>
<tr>
<td>1191</td>
<td>Arbor, Drill Chuck 3MT Tang to 2JT</td>
<td>$10.95</td>
</tr>
<tr>
<td>1614</td>
<td>Arbor, Drill Chuck 3MT Tang to 3/8&quot;-24 Thread</td>
<td>$10.95</td>
</tr>
<tr>
<td>1192</td>
<td>Arbor, Drill Chuck 3MT Tang to 33JT</td>
<td>$10.95</td>
</tr>
</tbody>
</table>

### Arbors, Drill Chuck, R8 Shank

The long taper goes in the drill chuck. The short taper goes in the collet or other tool holder. The 1/2" and 3/8" dia arbors fit the 1/2" and 3/8"-24 thread T-slots.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3999</td>
<td>Arbor, Drill Chuck R8 to 2JT</td>
<td>$11.95</td>
</tr>
<tr>
<td>5445</td>
<td>Arbor, Drill Chuck R8 to 2JT, Professional Grade</td>
<td>$14.95</td>
</tr>
<tr>
<td>1676</td>
<td>Arbor, Drill Chuck R8 to 33JT</td>
<td>$11.95</td>
</tr>
<tr>
<td>5444</td>
<td>Arbor, Drill Chuck R8 to 33JT, Professional Grade</td>
<td>$14.95</td>
</tr>
</tbody>
</table>

### Arbors, Drill Chuck, Straight Shank

The straight end goes in a collet or other tool holder. The short taper goes in the drill chuck.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4632</td>
<td>Arbor, Drill Chuck 3/8&quot; Straight to OJT</td>
<td>$8.95</td>
</tr>
<tr>
<td>2298</td>
<td>Arbor, Drill Chuck 3/8&quot; Straight to 2JT</td>
<td>$11.95</td>
</tr>
</tbody>
</table>

### Morse Taper Sleeve 3MT-2MT

Morse taper sleeve adapts 2 Morse taper tools to 3 Morse taper machines. Hardened and precision ground.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1195</td>
<td>Morse Taper Sleeve 3MT-2MT</td>
<td>$6.95</td>
</tr>
<tr>
<td>1193</td>
<td>Morse Taper Sleeve 2MT-1MT</td>
<td>$5.95</td>
</tr>
<tr>
<td>1194</td>
<td>Morse Taper Sleeve 3MT-1MT</td>
<td>$6.95</td>
</tr>
</tbody>
</table>

### Arbors, Drill Chuck, R8 to 2MT Sleeve

This sleeve adapts 3 Morse taper tools to R8 spindles. It is hardened and precision ground.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3671</td>
<td>R8 to 3MT Sleeve</td>
<td>$11.95</td>
</tr>
<tr>
<td>2190</td>
<td>R8 to 2MT Sleeve</td>
<td>$9.95</td>
</tr>
</tbody>
</table>

### Slitting Saw Arbor, R8 Shank

This arbor has an R8 shank and fits slitting saw blades up to 3/16" thick. It’s compatible with blades that have a center hole of 1/2", 5/8", 3/4", 7/8", or 1".

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4647</td>
<td>Slitting Saw Arbor, R8 Shank</td>
<td>$19.95</td>
</tr>
<tr>
<td>4720</td>
<td>Slitting Saw Arbor, 1/2&quot; Shank</td>
<td>$14.95</td>
</tr>
</tbody>
</table>

### Slitting Saw Arbor, 3/4" Straight Shank

- 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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3620</td>
<td>Stub Milling Machine Arbor, 3/4&quot; Straight Shank</td>
<td>$59.95</td>
</tr>
</tbody>
</table>

### Tooling: Clamping Kits

- 58-piece clamping kit 5/16"-18, 3/8" T-Slot
- 36-piece clamping kit 1/2" T-Slot
- 25-piece clamping kit 3/8" T-Slot
- 12-piece clamping kit 1/4" T-Slot

### Clamping Kit, 5/8" T-Slot

- 2551 Clamp, Adjustable | $11.95 |
- 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
- 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.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5491</td>
<td>Clamping Kit, 3/8&quot; T-Slot</td>
<td>$54.95</td>
</tr>
</tbody>
</table>

### Clamping Kit, 3/8" T-Slot

- 2718 Clamping Kit, 6 mm T-Slot, 36-Piece | $49.95 |
- 36-piece clamping kit
- This clamping kit fits the 6 mm T-slots on the Taig mill, and the 1/4" T-slots on the Sherline mill.
- The clamping kit includes 10 M5 studs, 4 step block pairs, 6 T-slot nuts, 6 flange nuts, and 6 coupling nuts.
- Comes in a wall mount rack.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1144</td>
<td>Clamping Kit, 7/16&quot; T-Slot</td>
<td>$48.95</td>
</tr>
</tbody>
</table>

- 1144 Clamping Kit, 7/16" T-Slot | $48.95 |
- Stud Size: 3/8"-16
- T-Slot: 7/16"
- 58 Pieces
- Made of powdered casting steel, heat treated
- Storage rack included
- 58-piece clamping kit 3/8"-16, 7/16 T-Slot

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1268</td>
<td>Clamping Kit, 1/2&quot; T-Slot</td>
<td>$48.95</td>
</tr>
<tr>
<td>3667</td>
<td>Clamping Kit, 5/8&quot; T-Slot</td>
<td>$49.95</td>
</tr>
</tbody>
</table>

- 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 end hold downs.
- Comes in a wall mount rack.
Tooling: Clamping Kits

2039 Clamping kit, 8 mm T-Slot, 36-Piece $44.95
- 36-piece clamping kit
- This clamping kit fits the 8 mm T-slots on the micro mill. The clamping kit includes 10 M6 studs, 4 step block pairs, 6 T-slot nuts, 6 flange nuts, and 6 step clamps.

1972 Clamping Kit, 8 mm T-Slot, 20-Piece $34.95
- Mount: 33 Jacobs taper with R8 Shank
- Capacity: 1/32" - 1/2"
- Key included
- Hardened for high degree of accuracy
- Package designed for mini lathe tailstock
- Mounted on a standard 2MT arbor
- Chuck runout is 0.008" (0.20 mm) or less.

T-Slot and Flange Nuts

3097 T-Slot Nut, 1/4" $1.95
- Four T-slot nuts for 6 mm T-slots
- Four studs of two different lengths
- Two flange nuts
- Two step clamps
- Two step blocks
- This set of T-slot nuts and clamping bars fits our 4" H/V rotary table (PN 1927) and the Phase II 4" rotary table (PN 1727). This kit also fits Taig mills.

3098 T-Slot Nut, 1/2" $3.55
- Two T-slot nuts for 8 mm T-slots
- Two studs
- Two flange nuts
- Two step clamps
- Four T-slot nuts for 6 mm T-slots
- Two step blocks
- This set of T-slot nuts and clamping bars fits our 4" precision rotary table (PN 1810). It also fits the Harbor Freight micro mill.

3099 T-Slot Nut, 3/8" $1.95
- Two T-slot nuts for 8 mm T-slots
- Two studs
- Two flange nuts
- Two step clamps
- Two step blocks
- This set of T-slot nuts and clamping bars fits our 4" precision rotary table (PN 1810). It also fits the Harbor Freight micro mill.

1813 Clamping Kit, 8 mm T-Slot, 36-Piece $14.95
- Mount: 33 Jacobs taper with R8 Shank
- Capacity: 1/32" - 1/2"
- Key included
- Hardened for high degree of accuracy
- Package designed for mini lathe tailstock
- Mounted on a standard 2MT arbor
- Chuck runout is 0.008" (0.20 mm) or less.

2021 T-Slot Nut, 1/2" $1.49
- Four T-slot nuts for 6 mm T-slots
- Four studs of two different lengths
- Two flange nuts
- Two step clamps
- Two step blocks
- This set of T-slot nuts and clamping bars fits our 4" precision rotary table (PN 1927) and the Phase II 4" rotary table (PN 1727). This kit also fits Taig mills.

3442 Clamping Kit, 8 mm T-Slot, 36-Piece $24.95
- Mount: 33 Jacobs taper with R8 Shank
- Capacity: 1/32" - 1/2"
- Key included
- Hardened for high degree of accuracy
- Package designed for mini lathe tailstock
- Mounted on a standard 2MT arbor
- Chuck runout is 0.008" (0.20 mm) or less.

Tooling: Drill Chucks

1212 Drill Chuck, 1/2" $10.95
- High degree of accuracy
- All working parts hardened
- Key included
- Capacity: 1/32" - 1/2"
- Mounts to 33 Jacobs taper arbor
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 chuck is 0.008" (0.20 mm) or less.

1213 Drill Chuck, 3/8" $8.50
- 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 roundout is 0.008" (0.20 mm) or less.

1660 Drill Chuck, 1/2" Keyless $34.95
- Self-tightening design
- No chuck key required
- Hardened tool steel
- Capacity: 1/32" - 1/2"
- Mounts to 33 Jacobs taper arbor
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.

1659 Drill Chuck, 3/8" Keyless $28.95
- Precision made with the highest TIR
- Designed for heavy duty jobs
- Key included
- Capacity: 1/32" - 1/2"
- Mounts to 33 Jacobs taper arbor
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.

4862 Drill Chuck, 3/8" Professional Grade $26.95
- High degree of accuracy
- All working parts hardened
- Key included
- Capacity: 1/32" - 1/2"
- Mounts to 33 Jacobs taper arbor
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.

1148 Drill Chuck, 1/2" with 2MT Short Arbor $21.95
- Package designed for mini lathe tailstock
- Capacity: 1/32" - 1/2"
- Hardened for high degree of accuracy
- Key included
- Mounted on a long 2 MT shank for the mini lathe
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.
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.
Also fits Jet 1014 mini wood lathe.

2870 Drill Chuck, 1/2" with 2MT Standard Arbor $21.95
- Combo Chuck and Arbor package for small lathe tailstock
- Capacity: 1/32" - 1/2"
- 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.

1396 Drill Chuck, 1/2" with R8 Shank $23.95
- 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 roundout is 0.008" (0.20 mm) or less.
Fits mini mills with an R8 spindle.
Tools & Things: Drill Chucks

5469 Drill Chuck, 1/2", Ball Bearing
- 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-thrust ball bearing to increase the grip power with high speed drilling.
5468 Drill Chuck, 3/8", Ball Bearing
- Capacity: 1/32" - 1/2"
- Taper Mount: 0JT
- +/- .006" (.1524 mm) TIR
- Made of anti-rust stainless steel, acid resistant
- Chuck key Included
Recommended for EDM machines and the food & marine industries.

5470 Drill Chuck, 5/32"
- Capacity: 1/64" - 5/32"
- Taper Mount: 0JT
- +/- .006" (.1524 mm) TIR
- Made of anti-rust stainless steel, acid resistant
- Chuck key Included

Drill chuck for Emco Unimat 3, Unimat 4 and SIEG C0 4x5 lathes. Also works with Harbor Freight 95012 Central Machinery 4x5 Micro Lathe.

2951 Drill Chuck, 6 mm for Unimat 3 & 4 and SIEG C0 Lathes
- 0.6 to 6 mm (.024" to 0.24") capacity
- M14 x 1.0 mounting thread
- Fits Unimat 3 & 4 lathes
- Fits SIEG C0 lathes
- Includes chuck key
Drill chuck for Emco Unimat 3, Unimat 4 and SIEG C0 4x5 lathes. Also works with Harbor Freight 95012 Central Machinery 4x5 Micro Lathe.

4977 Key, 1/2" Drill Chuck
- Fits our 3153 and 1212 1/2" drill chucks

This key chuck fits our 3153 and 1212 1/2" drill chucks

3790 Sensitive Drill Feed and 1/8" (3 mm) Keyless Drill Chuck
- Fingertip control for drilling small holes
- Helps prevent drill breakage
- 0JT 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
- $54.95
3668 Drill Chuck, 1/8" (3 mm) Keyless
- $64.95

Tools & Things: Abrasives

Abrasives, 9" X 11", Individual Grits
- Aluminum oxide 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.

3890 Abrasive Cloth, 1" Wide, 240 Grit
- $0.19
3891 Abrasive Cloth, 1" Wide, 320 Grit
- $0.19
3892 Abrasive Cloth, 1" Wide, 400 Grit
- $0.29

Cratex Bullet Shaped Points
- 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, claps, spiral, flutes, and edges. They are widely used for polishing molds, dies, patterns and light castings.

4944 Cratex Bullet Shaped Point, 9/32" Medium
- $0.99
4943 Cratex Bullet Shaped Point, 9/32" Coarse
- $0.99
4947 Cratex Point Mandrel for Bullet Points,
- 1/8" Shank
4946 Cratex Point Mandrel for Bullet Points,
- 3/32" Shank

Loctite Products
Visit our Web site for full information about these Loctite products.

3986 Loctite 222 Purple Low Strength
- Threadlocker for Small Fasteners
- $16.95
3987 Loctite 242 Medium Strength Blue
- Threadlocker
- $16.95
3988 Loctite 271 High Strength Red
- Threadlocker
- $16.95
3989 Loctite 7649 Primer for Threadlockers
- $11.95
**Tools & Things: Battery**

- Batteries for the products we sell

**Tools & Things: Lights**

- Flashlight, LED with Magnetic Base
  - Flexible shaft with universal movement.
  - Max. reach: 8''
  - Magnetic Base: 1-1/2'' diameter, 25 lbs power pull.
  - LED flash light requires 3AAA battery.
- Machine Light with Magnetic Base
  - Powerful magnetic base with On/Off switch
  - Flexible arm for easy positioning
  - 120 VAC power
  - Use standard 60 W Incandescent medium base bulb (not included)
- Machine Light, Halogen with Magnetic Base
  - 35 watt halogen bulb produces intense light
  - 20'' flexible shaft
  - Powerful magnetic base with ON/OFF switch
  - 2-prong 39'' (1 m) power cord for 120VAC operation
- Halogen Bulb
  - 35 watt halogen bulb

**Tools & Things: Spindle Light, Mini Mill**

- This circular fluorescent light, made for a microscope, fits around the spindle on a mini mill.
- It provides good, even light on your work.
- The hole in the light is 1.85'' in diameter. It fits the mini mill fine, but if you have a different mill you had better check to see if it will fit.

**Tools & Things: Batteries**

- 2975 Battery, LR44 Alkaline, Set of 10
  - $5.95
- 2976 Battery, SR44 Silver Oxide
  - $1.95
- 4420 Battery, AG10 Alkaline
  - $0.95
- 4292 Battery, CR2032 Lithium
  - $1.95
- 1707 Battery, LR44 Alkaline
  - $0.95

**Tools & Things: Gift Certificates**

- Gift Certificate, $100
  - $100.00
- Gift Certificate, $25
  - $25.00
- Gift Certificate, $50
  - $50.00

**Tools & Things: Shims**

- Shim Stock Assortment, 0.0005'' - 0.005'' Plastic
  - 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''
  - 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.
- Shim Stock, 0.0005'' Silver Plastic
  - $4.95
- Shim Stock, 0.001'' Amber Plastic
  - $4.95
- Shim Stock, 0.0015'' Purple Plastic
  - $4.95
- Shim Stock, 0.002'' Red Plastic
  - $4.95
- Shim Stock, 0.003'' Green Plastic
  - $4.95
- Shim Stock, 0.004'' Tan Plastic
  - $4.95
- Shim Stock, 0.005'' Blue Plastic
  - $4.95

**Tools & Things: Things**

- Chip Shield, Magnetic for 3'' - 4'' Vise
  - Uses strong Neodymium magnets to mount to the front or back of a machine vise
  - Conveniently remove without the hassle of fusing with tools or screws
  - Adjustable friction hinges allow setting the side panels at any angle up to 150 degrees
  - Compatible with any 3'-4' vise with a flat surface on either end
  - Approximate dimensions: 11 1/4'' x 3 3/4'' x 1/4''
  - This made-in-USA 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 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.
  - To assemble, select the side of the center panel where the magnets are flush with the surface and lay this side facedown on a flat surface. Use the supplied machine screws to attach the supplied hinges joining the center panel to each side panel. Start all 4 screws in each hinge before tightening, then tighten the screws with the hinge square to the panel, and the panels square to each other. Turn the torque adjustment screw on the hinge to the desired friction when moving the side panels.
- Chip Shield, Magnetic for 4'' - 8'' Vise
  - $64.95

**Tools & Things: Lubrication**

- Pump Oiler, Hard Trigger
  - For ball oilers (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. 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.

**Tools & Things: Grinding Stones**

- Grinding Stones Assortment
  - Z-limit brand guarantees professional quality
  - Air regulator controls speed up to 20,000 RPM
  - Molded cushion grip and safety throttle lever
  - Rear exhaust, silencer gives low 79dB(a) noise level
  - 360 degree swivel air inlet.
  - Molded cushion grip and safety throttle lever
  - Air regulator controls speed up to 20,000 RPM
  - Z-Limit brand guarantees professional quality
  - Rear exhaust, silencer gives low 79dB(a) noise level
  - 360 degree swivel air inlet.
  - Uses a 3/8'' hose. It requires 90 PSI and consumes 4 CFM. The overall length of the grinder is 7-3/8''. This kit includes the air die grinder, five 1/4'' shank mounted grinding stones of various shapes and five 1/8'' shank mounted grinding stones of various shapes all in a fitted case.

**Tools & Things: Chip Shield, Magnetic for 3'' - 4'' Vise**

- Chip Shield, Magnetic for 3'' - 4'' Vise
  - $54.95

- Chip Shield, Magnetic for 4'' - 8'' Vise
  - $64.95

**Tools & Things: Machine Light with Magnetic Base**

- Machine Light, Halogen with Magnetic Base
  - $42.95
  - 35 watt halogen bulb produces intense light
  - 20'' flexible shaft
  - Powerful magnetic base with ON/OFF switch
  - 2-prong 39'' (1 m) power cord for 120VAC operation

**Tools & Things: Machine Light, LED with Magnetic Base**

- Machine Light, LED with Magnetic Base
  - $64.95
  - 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.

**Tools & Things: Die Grinder Kit, 1/4'' Air, Professional Grade**

- Die Grinder Kit, 1/4'' Air, Professional Grade
  - Z-limit brand guarantees professional quality
  - Air regulator controls speed up to 20,000 RPM
  - Molded cushion grip and safety throttle lever
  - Rear exhaust, silencer gives low 79dB(a) noise level
  - This low noise, 1/4'' air die grinder features a molded ergonomic cushion grip. The air grinder has an air inlet of 1/4'' NPT and uses a 3/8'' hose. It requires 90 PSI and consumes 4 CFM. The overall length of the grinder is 7-3/8''. This kit includes the air die grinder, five 1/4'' shank mounted grinding stones of various shapes and five 1/8'' shank mounted grinding stones of various shapes all in a fitted case.

**Tools & Things: 360 degree swivel air inlet.**

- 360 degree swivel air inlet.
Machinist Calc Pro 2 Machinists Calculator $89.95
- The first dedicated handheld machining math and reference tool
- Calculate speeds and feeds, right triangle solutions, bolt patterns and much more

581 Automatic Center Punch $4.95
- 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.

Arbor Press, 1-Ton $69.95
- Heavy duty frame
- Four position anvil
- Steel pinion
- Maximum work height 5.25"
- Maximum work diameter 8"
This arbor press stands 10" tall and has a 4" x 9" base.

Arbor Press, 1/2-Ton $47.95
- Heavy duty frame
- Four position anvil
- Steel pinion
- Maximum work height 4.5"
- Maximum work diameter 6.5"
This arbor press stands 10" tall and has a 4" x 9" base.

Magnifier, 10x, Hastings Triplet $23.95
- 10x Magnification
- Triplet lens system
- 21mm diameter
- Come with case

Magnifier, 8x, Desktop, LED Light $56.95
- 8x Magnification
- Flexible arm for any desired position
- 5" lens diameter
- 300 LUX (2.5 watt) LED light
- 110v/1 phase power supply, 60" cord

Safety Glasses $9.95
- Strong, lightweight clear polycarbonate lens with 11 degree base curve
- Treated with our exclusive Duramass scratch resistant and anti-fog coatings
- Non-slip rubber head grips and temple sleeve designed for breakaway cord
- Twin bridge adjustable nose piece

Safety Glasses, Economy $2.95
- 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 protecting your eyes from 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.

Safety Glasses, 5017 $119.95
- 2.4" color LCD monitor
- IP67 Water-proof camera with 39" flexible line
- Night vision feature
- 9mm camera head (640 x 480 resolution)
This bore scope allows for easy inspections in hard to reach areas. The lightweight handheld design lets you easily find, diagnose and solve problems.Featues:Vivid 2.4" color TFT LCD monitor allows image rotation for detailed images39" flexible gooseneck cable retains configured shapeOptional 78" flexible shaft with 9mm or 17mm camera availableMini waterproof 9mm(IP67) camera head provides-on-the-spot viewingNight Vision Range: 20'Power indicator, low voltage indicatorMirror buttonLED brightness controlLCD contrast controlPower Supply: 4 x AA batteryDimension: (WxDxH) 8x3.3x2.4"Operating Temperature: 14 -122°FWeight: 14 oz.

Bench Block $24.95
- 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
This bench block is 3" in diameter and 1.5" thick.

Automatic Center Punch, Starrett $35.50
Starrett Automatic Center Punch with adjustable stroke. Starrett catalog number 818. This punch has a lightweight, knurled aluminum 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. The force of the blow can be adjusted by turning the knurled cap.
All working parts are made of tool steel, properly hardened. The hardened tool steel point can easily be removed for resharpening or replacement. Works on metal, plastics, wood and other machinable materials.
### Starrett Center Punches, Extra Long, 8 Piece Set

**Starrett Center Punches** with round shanks. Set of 5, Nos. 117AA, A, B, C, D in Plastic Case.

<table>
<thead>
<tr>
<th>Size</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16&quot;, 3/32&quot;, 1/8&quot;, 5/32&quot;</td>
<td>Center Punches</td>
<td>$45.00</td>
</tr>
</tbody>
</table>

*Starrett catalog number 5117PC.*

This set includes the following sizes, measured at the top of the tapered point: 1/16", 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. 

ALWAYS WEAR SAFETY GLASSES WHEN USING STRIKING AND STRUCK TOOLS.

### Starrett Drive Pin Punches, Extra Long, 8 Piece Set

**Starrett 8 piece drive pin punch set.** Set of 8, Nos. 565A/B/C/D/E/F/G/H in a round container.

<table>
<thead>
<tr>
<th>Size</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
</table>

*Starrett catalog number 565WB.*

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.

### Starrett Drive Pin Punches, Starrett

<table>
<thead>
<tr>
<th>Size</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
</table>

*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. S565 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.

### Starrett 3884 $45.00

- **Deburring Tool Set:**
  - Set includes: Flat File, Tapered Round File, Square File
  - Made of T12 hardened tool steel
  - Comfortable and durable PVC handles

### Starrett 4849 $0.75

- **Chip Brushes, 1":**
  - Natural bristles
  - Wood handle

### Starrett 3979 $0.89

- **Chip Brush, 1":**
  - Natural bristles
  - Wood handle

- The brushes are great for clearing chips as well as for small painting jobs were you don't want to take the time to clean a brush.

### Starrett 3849 $0.75

- **Deburring Blade, B10:**

### Starrett 4850 $0.75

- **Deburring Blade, B20:**

### Starrett 4848 $4.95

- **Deburring Tool Set:**
  - 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.

- It deburs holes with a flick of the wrist.

### Starrett 1671 $2.99

- **Hand Deburring Tool:**
  - This hand deburring tool has a built-in E-100 blade.
  - The deburr tool deburs holes with a flick of the wrist.

### Starrett 2891 $154.95

- **Grinder, Proxxon IB/E Professional Rotary Tool:**
  - 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
  - Complete with six triple-slit steel collets covering 1/32” to 1/8” (1.0 - 3.2 mm)
  - Two year limited warranty

- Grinder with 34 industrial quality bits & cutters with shanks Ø 3/32” (1.3 mm). High concentricity (maximum run out 0.01”). 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.

- Packed in durable plastic case, complete with the 34 bits & cutters as shown above.

### Starrett 3634 $20.75

- **Accessory Kit for Rotary Tools, Modelmakers:**
  - $20.75

### Starrett 2969 $11.75

- **Cut-Off Disks, Aluminum Oxide for Rotary Tools, 50 Count:**

### Starrett 3033 $129.95

- **Grinder, Proxxon IB/E Professional Rotary Tool 230V:**

### Starrett 2967 $6.75

- **Grinding Wheels, Aluminum Oxide for Rotary Tools, 10 Count:**

### Starrett 2968 $6.75

- **Grinding Wheels, Silicon Carbide for Rotary Tools, 20 Count:**

### Starrett 2935 $24.95

- **Rotary Tool Kit for Mini Lathe:**

### Starrett 3635 $11.75

- **Wire Brushes, Brass for Rotary Tools, 5 Count:**

### Starrett 3562 $29.95

- **Hacksaw Frame, Heavy Duty, Starrett:**
  - 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.
### Tools & Things: Tools

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Item Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5840</td>
<td>Handee Clamp</td>
<td>$17.95</td>
</tr>
<tr>
<td>4331</td>
<td>Hex Wrench Set, T-Handle Ball End, Inch</td>
<td>$48.95</td>
</tr>
<tr>
<td>5466</td>
<td>Pin Chuck Set, 0 - 3/32&quot;</td>
<td>$8.95</td>
</tr>
<tr>
<td>5467</td>
<td>Pin Vise Set, 0 - 3/16&quot;</td>
<td>$11.95</td>
</tr>
<tr>
<td>3560</td>
<td>Pocket Level, Starrett</td>
<td>$29.50</td>
</tr>
<tr>
<td>5443</td>
<td>Torx Wrench, T-6</td>
<td>$1.95</td>
</tr>
<tr>
<td>5551</td>
<td>Torx Wrench, T-8</td>
<td>$1.95</td>
</tr>
<tr>
<td>5552</td>
<td>Torx Wrench, T-9</td>
<td>$1.95</td>
</tr>
<tr>
<td>5553</td>
<td>Torx Wrench, T-10</td>
<td>$1.95</td>
</tr>
<tr>
<td>5554</td>
<td>Torx Wrench, T-15</td>
<td>$1.95</td>
</tr>
</tbody>
</table>

- **Handee Clamp**: Attaches 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 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.

- **Hex Wrench Set**: Cushion grip T-Handle. Sizes 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16", and 3/8". Includes stand and ball end tips work at up to 25 degree angle. Ball end T-handles feature welded steel handles with cushion grips sized for maximum torque while protecting the ballpoint tip and screw from rounding or stripping. The hex wrench handle is ergonomically shaped eliminating pressure points. The heavy-duty handle generates flywheel effect for fast insertion and extraction of screws. Comes with a molded stand that mounts on the wall or work bench. Only available from Bondhus, Protanium® steel means these are the strongest tools available.

- **Pin Chuck Set**: Holds small drills firmly. Ensures complete collet length. Shank size: 1/4". Includes: 3 collets - capacity: 0 - 1/32", 1/32" - 1/16", 1/16" - 3/32".

- **Pin Vise Set**: Hollow handle for long wire or rods. Includes: Ranges: 0.005" - 0.025", 0.025" - 0.055", 0.055" - 0.125", 0.125" - 0.250", 0.250" - 0.500", 0.500" - 1.000". Sizes 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16", and 3/8". Includes stand.

- **Pocket Level, Starrett**: 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.

- **Torx Wrenches, Flag Style**: 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.

- **Stamp Set, Numbers and Letters, 3/16"**: Numbers (0-9) & Letters (A-Z). Packed in a durable box for easy selection and storage. Made from carbon steel. Character style designed to give sharp clear impressions. Easy assembly and installation. Mounts to the front slot of a mill table, workbench, or vise. Convenient for changing R8 based indexable-insert tooling. The Starrett No. 551 Screwdrivers with soft-touch handle are lightweight and have a very ergonomic design, making them easy to work with. Yet the No. 551 is a rugged product. The blade/contacts are made of chrome-vanadium, molybdenum steel, hardened and chrome-plated, allowing them to hold up well in the toughest applications. Soft-touch handles are tapered and proportioned to blade for rapid rotation and spin-free finger control cap provides precise turning and control. Flat Blade widths are: .060"/.15mm, .080"/.20mm, .100"/.25mm, .120"/.30mm. Three Phillips blades: #0, #0, and #1. The precision-machined tips are top quality for an exact fit.

- **R8 Tool Fixture**: Provides a safe way to change cutting tools in R8 based tool holders. Easy assembly and installation. Mounts to the front slot of a mill table, workbench, or vise. Includes a tool caddy for quick access to frequently used tools. Convenient for changing R8 based indexable-insert tooling. The R8 Tool Fixture provides a platform for setting tools in any R8 compatible tool holder, and includes a tool caddy for convenient access to frequently used tools such as an air gun, wrenches, and brushes. It is handy for setting tools in quick change tool holders like the Tormach TTS System or Royal R8 System, great for setting tools in ER collets, and useful for setting tools in shell mill arbors such as a slitting saw.
Tools & Things: Tools

Torx Wrenches, Flag Style, Wiha
- 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.

<table>
<thead>
<tr>
<th>Torx Wrench</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-5, Wiha</td>
<td>$5.95</td>
</tr>
<tr>
<td>T-6, Wiha</td>
<td>$5.95</td>
</tr>
<tr>
<td>T-7, Wiha</td>
<td>$5.95</td>
</tr>
<tr>
<td>T-8, Wiha</td>
<td>$5.95</td>
</tr>
<tr>
<td>T-9, Wiha</td>
<td>$5.95</td>
</tr>
<tr>
<td>T-10, Wiha</td>
<td>$5.95</td>
</tr>
<tr>
<td>T-15, Wiha</td>
<td>$5.95</td>
</tr>
</tbody>
</table>

4279 V-DrillGuide Hand Drill Guide for Inch Drills $27.50
- 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.

Tools & Things: Workwear

3968 Shop Apron $13.95
- 5 pockets designed for metalworking tools
We had these aprons custom-made to our design out of heavy-duty denim.

Tools & Things: X-Y Tables

2008 X-Y Table Assembly $144.95
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 10.15” wide, 8.5” deep and 2.5” 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 gibbs on both axes.

Videos and Books: CNC Books

CNC Books
CNC Books for the machinist. Visit our Web site for a full description of these titles.

<table>
<thead>
<tr>
<th>Book Title</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3128 Automated Machines and Toolmaking</td>
<td>$32.95</td>
</tr>
<tr>
<td>5034 CNC Trade Secrets</td>
<td>$32.95</td>
</tr>
</tbody>
</table>

Videos and Books: Machinist Books

Machinists Books
How-to guide books for machinists
Visit our Web site for a full description of these titles.

<table>
<thead>
<tr>
<th>Book Title</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3402 Home Machinist’s Handbook</td>
<td>$21.95</td>
</tr>
<tr>
<td>3129 Machine Shop Basics</td>
<td>$32.95</td>
</tr>
<tr>
<td>2465 Machine Shop Essentials: Questions &amp; Answers</td>
<td>$44.95</td>
</tr>
<tr>
<td>3867 Machine Shop Know-How</td>
<td>$49.95</td>
</tr>
<tr>
<td>1738 Machine Shop Practice, Vol. 1</td>
<td>$29.95</td>
</tr>
<tr>
<td>1739 Machine Shop Practice, Vol. 2</td>
<td>$29.95</td>
</tr>
<tr>
<td>3130 Machine Shop Tools and Operations</td>
<td>$32.95</td>
</tr>
<tr>
<td>1737 Machine Shop Training Course, Vol. 2</td>
<td>$24.95</td>
</tr>
<tr>
<td>3565 Metalworking Sink or Swim</td>
<td>$49.95</td>
</tr>
<tr>
<td>4735 Basic Lathework for Home Machinists</td>
<td>$14.99</td>
</tr>
<tr>
<td>2238 Machine Shop Methods</td>
<td>$18.99</td>
</tr>
<tr>
<td>2366 Machine Shop Trade Secrets, Second Edition</td>
<td>$49.95</td>
</tr>
<tr>
<td>5180 Machining for Hobbyists: Getting Started</td>
<td>$34.95</td>
</tr>
<tr>
<td>4736 Metal Lathe for Home Machinists</td>
<td>$12.95</td>
</tr>
<tr>
<td>4983 Metalworking - Doing It Better</td>
<td>$29.95</td>
</tr>
<tr>
<td>4738 Milling for Home Machinists</td>
<td>$12.95</td>
</tr>
<tr>
<td>4734 Mini-Lathe for Home Machinists</td>
<td>$12.95</td>
</tr>
<tr>
<td>1599 South Bend Lathe Booklets</td>
<td>$7.95</td>
</tr>
<tr>
<td>1595 The Care and Operation of a Lathe</td>
<td>$7.50</td>
</tr>
<tr>
<td>4739 The Metalworker’s Workshop For Home Machinists</td>
<td>$14.99</td>
</tr>
<tr>
<td>4737 The Milling Machine for Home Machinists</td>
<td>$14.99</td>
</tr>
<tr>
<td>5839 Tool &amp; Cutter Sharpening for Home Machinists</td>
<td>$12.95</td>
</tr>
<tr>
<td>4591 Turning Precision Tapers on Your Mini Lathe</td>
<td>$29.95</td>
</tr>
<tr>
<td>5102 Useful Machine Shop Tools to Make</td>
<td>$14.99</td>
</tr>
</tbody>
</table>

Videos and Books: Other Books

Other Books
Other types of books for the machinist
Visit our Web site for a full description of these titles.

<table>
<thead>
<tr>
<th>Book Title</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3110 Tools &amp; Rules for Precision Measuring</td>
<td>$1.95</td>
</tr>
<tr>
<td>5101 Backyard Foundry for Home Machinists</td>
<td>$14.99</td>
</tr>
<tr>
<td>5026 The Machinist’s Cookbook</td>
<td>$24.95</td>
</tr>
<tr>
<td>5352 Welding Know-How</td>
<td>$49.95</td>
</tr>
</tbody>
</table>

Videos and Books: Reference Books

Reference Books
Reference books for the machinist
Visit our Web site for a full description of these titles.

<table>
<thead>
<tr>
<th>Book Title</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1735 Basic Machining Reference Handbook</td>
<td>$49.95</td>
</tr>
<tr>
<td>1744 Machinery’s Handbook 30th Edition, Toolbox Size</td>
<td>$104.95</td>
</tr>
<tr>
<td>4996 Engineers Precision Data Pocket Reference</td>
<td>$24.95</td>
</tr>
<tr>
<td>5838 Metalworker’s Data Book for Home Machinists</td>
<td>$14.95</td>
</tr>
<tr>
<td>1953 Shop Reference for Students &amp; Apprentices</td>
<td>$29.95</td>
</tr>
</tbody>
</table>
Videos and Books: User Guides

User Guides

Users guides for the machines we sell as well as some others. These are all available for free download on the Support menu. Visit our Web site for a full description of these titles.

- 2247 Mini Lathe Users Guide $5.95
- 2706 Mini Mill Users Guide $5.95
- 4928 Users Guide, HiTorque Bench Lathe, 3536 & 3540 $5.95
- 4930 Users Guide, HiTorque Micro Mill, 2MT, 4700 $5.95
- 4929 Users Guide, HiTorque Micro Mill, ER-16, 4660 $5.95
- 4924 Users Guide, HiTorque Mini Lathe, 4100 & 4200 $5.95
- 4927 Users Guide, HiTorque Mini Mill, Solid Column with Air Spring, 3990 $5.95
- 4926 Users Guide, HiTorque Mini Mill, Solid Column, 3960 $5.95
- 4925 Users Guide, HiTorque Mini Mill, Tilting Column, 3900 $5.95
- 5098 Users Guide, KX1 Milling Machine, 3501 $39.95
- 5099 Users Guide, KX3 Milling Machine, 3503 $39.95

Visit our Web site for a full description of these titles.

Videos and Books: Videos

3963 DVD: Grinding Tool Bits and 5/16" Tool Bits $45.90
- Lathe Tool Sharpening DVD
- 10 Lathe tool bits, 5/16" Square 2-1/2" Long M2 HSS

This DVD video, by Jose Rodriguez, provides an hour and a half instruction on sharpening lathe cutting tools and other grinding tasks. Learn how to create perfect lathe cutting tools from high speed steel tool blank with a bench-top grinder. Create perfect left or right hand lathe cutting tools for brass, aluminum and steel. Produce a 60 degree threading tool that is as good as any commercially available threading tool bit. Learn how to prepare a parting tool for optimum results. Watch Jose as he revives an old jobber-length drill bit to give it a new lease on life. Put a new edge on worn two flute end mills and get many more hours of work out of them. Re-grind screw driver tips to keep them from slipping off screw heads.

Grinding is an art that can take months or years to fully master but with the right grinder and a bit of patience, you will be able to produce perfect results right in your shop.

3962 DVD: Grinding Tool Bits and 1/4" Tool Bits $42.90
3964 DVD: Grinding Tool Bits and 3/8" Tool Bits $54.90

- By Ron Ginger
- Covers installation and setup for the LittleMachineShop.com 3501 CNC Mill
- Covers troubleshooting and options
- Approximately 68 minutes

Everything you need to know about setting up your LittleMachineShop.com 3501 CNC milling machine. This DVD walks you through selecting a PC, installing Mach3 and configuring it properly, and on up to cutting a part with your new 3501 CNC milling machine.

3441 DVD: Sherline Lathe Basics $49.95
- How to set up and operate the Sherline lathe
- Sherline Lathe Basics gives a great introduction to using the Sherline lathe.
- Topics covered include turning, facing, boring, workholding, eccentrics, tapers, threading, tool bit grinding, backlash, setting tool height, cleaning a chuck, hand wheel dial adjustment, using the follower rest, mounting the lathe aligning the headstock and milling.
- Approximate running time: 213 minutes.

Visit our Web site for a full description of these videos.

- Jose Rodriguez Videos
- Jose Rodriguez publishes in depth videos about bench top machining.

- 2007 DVD: 7x10 Variable Speed Mini Lathe Operations $43.00
- 2566 DVD: Advanced Taig Micro Lathe Operations $43.00
- 2564 DVD: Basic Taig Micro Lathe Operations $33.00
- 2365 DVD: Build a Milling Machine $70.00
- 2193 DVD: Building a Spindle Gauge for the Mini Lathe $33.00
- 2396 DVD: Grinding Tool Bits and Other Things $30.00
- 2055 DVD: Make a Miniature Boring Head $30.00
- 2057 DVD: Making Gears the Easy Way $43.00
- 2267 DVD: Milling on the Drill Press $43.00
- 2056 DVD: The Milling Machine and Its Uses $43.00
- 2054 DVD: Threading on the Lathe $33.00
- 4517 DVD: Basic Indicating Practices for HiTorque Mini Lathes and Mini Mills $28.00
- 5344 DVD: Basic Operations On The HiTorque Mini Mill $18.00
- 4649 DVD: Basic uses for Dividing Instruments for the Mill $25.00
- 4518 DVD: Basic Vise Work Holding Techniques for the Mini Mill $20.00
- 4421 DVD: Cutting Balls & Radiuses on the Lathe $35.00
- 4439 DVD: HiTorque 7x12 Mini Lathe Basic Operations $39.00
- 4514 DVD: Introduction to the HiTorque Mini Mill $20.00
- 4743 DVD: Introduction to the Model 4100 HiTorque Mini Lathe $20.00
- 4635 DVD: Introduction to the Nano Lathe-Drillpress-Mill $15.00
- 4519 DVD: Locating Edges and Coordinates with the Edge Finder and Wiggler $20.00
- 4440 DVD: Mini Lathe Advanced Operations, Vol. 1 $39.00

- Ron Takayama Videos
- Ron Takayama has created some videos that show you how to build some great projects. You get video instructions and complete plans on the DVD.

- 4077 DVD: Building a Horizontal Steam Engine $19.95
- 3820 DVD: Building a Vertical Boiler $19.95
- 4246 DVD: Building an Overcrank Steam Engine $19.95
- 4522 DVD: Building a Crosshead Overcrank Steam Engine $19.95

Approximate running time: 1:52 hours.
SwarfRat Videos
SwarfRat provides the hobby machinist with top-notch instruction that is both easy to understand and enjoyable to watch. They take the subject of metalworking and break it down into easily understood lessons; lessons that are chock-full of on-camera demonstrations, on-screen charts, animations, and 3-D computer simulations, all designed to make sure you can visualize and understand the concepts and techniques. Our lesson format is good for those of you who have some experience too; you can pick just the topics you need a little help with.
Visit our Web site for a full description of these videos.

Vise Comparison
See the vise comparison chart at www.littlemachineshop.com/vise.

Vises: Milling Vises

<table>
<thead>
<tr>
<th>Vise</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2045</td>
<td>Swivel Base, 3&quot; Precision Milling, Heavy</td>
<td>$19.95</td>
</tr>
<tr>
<td>2239</td>
<td>Swivel Base, 4&quot; Precision Milling, Heavy</td>
<td>$26.95</td>
</tr>
<tr>
<td>1647</td>
<td>Vise, 3&quot; Milling</td>
<td>$64.95</td>
</tr>
<tr>
<td>2500</td>
<td>Vise, 3&quot; Precision Milling</td>
<td>$99.95</td>
</tr>
</tbody>
</table>

Vises: Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3484</td>
<td>DVD: Building the Oscillating Cylinder</td>
<td>$26.95</td>
</tr>
<tr>
<td>3111</td>
<td>DVD: Cutting Threads on the Mini Lathe</td>
<td>$39.95</td>
</tr>
<tr>
<td>2245</td>
<td>DVD: Edge Finding and Location</td>
<td>$24.95</td>
</tr>
<tr>
<td>2684</td>
<td>DVD: Lathe Fundamentals &amp; Basic Turning</td>
<td>$21.95</td>
</tr>
<tr>
<td>2637</td>
<td>DVD: Mill &amp; Lathe Spindle and Gearbox Repair</td>
<td>$24.95</td>
</tr>
<tr>
<td>2884</td>
<td>DVD: Milling, Flycutting &amp; Dovetailing</td>
<td>$24.95</td>
</tr>
</tbody>
</table>

Grade Vises

<table>
<thead>
<tr>
<th>Vise</th>
<th>Grade</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3125</td>
<td>Vise Mounting Kit, 7/16&quot; T-Slot</td>
<td>$9.95</td>
<td></td>
</tr>
<tr>
<td>3126</td>
<td>Vise Mounting Kit, 3/8&quot; T-Slot</td>
<td>$14.95</td>
<td></td>
</tr>
<tr>
<td>3127</td>
<td>Vise Mounting Kit, 1/2&quot; T-Slot</td>
<td>$21.95</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vise</th>
<th>Grade</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2324</td>
<td>DVD: Mini Mill Basics, Clamping &amp; Fixtures</td>
<td>$24.95</td>
<td></td>
</tr>
<tr>
<td>2410</td>
<td>DVD: Precision Drilling, Reaming &amp; Tapping</td>
<td>$24.95</td>
<td></td>
</tr>
<tr>
<td>2537</td>
<td>DVD: Teardown, Tuning &amp; Tramming</td>
<td>$24.95</td>
<td></td>
</tr>
<tr>
<td>2447</td>
<td>DVD: The Boring Head: Bores, Arcs, Saddles &amp; More</td>
<td>$24.95</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2472</td>
<td>DVD: Mini Machines 101 Complete Mill Series</td>
<td>$129.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4740</td>
<td>DVD: Mini Mill Basics, Clamping &amp; Fixtures</td>
<td>$24.95</td>
</tr>
<tr>
<td>3951</td>
<td>DVD: Mini Milling, Heavy, With Swivel Base</td>
<td>$229.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1699</td>
<td>DVD: The Vise Squad - Precision Vises</td>
<td>$114.95</td>
</tr>
<tr>
<td>4733</td>
<td>DVD: Teardown, Tuning &amp; Tramming</td>
<td>$114.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2411</td>
<td>DVD: Mini Machines 101 Complete Mill Series</td>
<td>$24.95</td>
</tr>
<tr>
<td>3937</td>
<td>DVD: Mini Milling, Heavy, With Swivel Base</td>
<td>$24.95</td>
</tr>
<tr>
<td>1879</td>
<td>DVD: Mini Milling, Heavy, No Swivel Base</td>
<td>$114.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1789</td>
<td>DVD: Mini Milling, Heavy, With Swivel Base</td>
<td>$114.95</td>
</tr>
<tr>
<td>1755</td>
<td>DVD: Mini Milling, Heavy, With Swivel Base</td>
<td>$134.95</td>
</tr>
<tr>
<td>1504</td>
<td>DVD: Mini Milling, Heavy, With Swivel Base - CLOSEOUT</td>
<td>$134.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4472</td>
<td>DVD: Mini Milling, Heavy, No Swivel Base</td>
<td>$114.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4740</td>
<td>DVD: Swivel Milling Machine Vise</td>
<td>$169.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1879</td>
<td>DVD: Mini Milling, Heavy, No Swivel Base</td>
<td>$114.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4740</td>
<td>DVD: Swivel Milling Machine Vise</td>
<td>$169.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1879</td>
<td>DVD: Swivel Milling Machine Vise</td>
<td>$114.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4740</td>
<td>DVD: Swivel Milling Machine Vise</td>
<td>$169.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DVD</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1879</td>
<td>DVD: Swivel Milling Machine Vise</td>
<td>$114.95</td>
</tr>
</tbody>
</table>
Vises: Milling Vises

3857 Vise, 4” CNC Mill $189.95
- 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”
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”.
- 5590 Vise, 3” CNC Mill $149.95

Vises: Other Vises

4140 Vise, 2.5” Drill Press $19.95
- Cast iron construction
- Vertical and horizontal V-grooves in fixed jaw
- 2.5” jaw opening
- 2.3” jaw width
- 1.5” jaw depth
4139 Vise, 1.5” Drill Press $16.95
- 3” wide jaws
- 1/2” slot for mounting
- Precision ground
- Jaw depth 1”
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 clamps. Made of high grade stress-relieved iron casting.
4141 Vise, 3” Drill Press Quick Slide $29.95
- 3” wide jaws
- 1/2” slot for mounting
- Precision ground
- Jaw depth 1”

Vises: Screwless Vises

1590 Vise, 3” Screwless $65.95
- 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. 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 $24.95
- 3142 Vise, 1” Screwless, Built-in Parallels $35.95
- 3949 Vise, 1” Screwless, Square Jaws $39.95
- 3950 Vise, 1.5” Screwless $44.95
- 1591 Vise, 2” Screwless $44.95
- 3769 Vise, 2” Screwless with 3” Thin Parallels $53.95
- 3763 Vise, 3” Screwless plus Parallels and Mounting Clamps $109.95
- 2356 Vise, 3” Screwless with Clamping Slots $89.95
- 3767 Vise, 3” Screwless with Hold Down Clamps $81.95

3643 Vise, 3.5” Tilting, 0-90 Degree $46.95
- 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
- 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.

Vises: Space Block Set

Vise, 3” Sine Screwless & Space Block Set $189.95
- Sine range: 0-60°
- Hardened and precision ground
- Tolerance of .0004°
- Jaw can be opened or closed without unbolting from work surface
- 3” Precision screwless sine vise. Jaw width is 3.15”, jaw depth is 1.25”, jaw opening is 4”. The base size is 7.638” x 3.15”. The center distance of the cylinders is 4.000”. 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 $69.95
- 4216 Vise, 3” Sine Screwless & Space Block Set $189.95

(800) 981 9663 LittleMachineShop.com Page 85
LittleMachineShop.com Order Form

<table>
<thead>
<tr>
<th>Purchaser</th>
<th>Ship to (if different)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name</td>
</tr>
<tr>
<td>Address</td>
<td>Address</td>
</tr>
<tr>
<td>Phone</td>
<td>Phone</td>
</tr>
<tr>
<td>Email</td>
<td>Fax</td>
</tr>
</tbody>
</table>

☐ I would like to receive occasional announcements of sales and new products by email.

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part number</th>
<th>Description</th>
<th>Unit price</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal

Shipping & handling (see table below)

California residents add 7½% sales tax

Total

Shipping & Handling:

| Less than $25.00 | $7.00 |
| $25.00 to $49.99 | $9.00 |
| $50.00 to $74.99 | $10.00 |
| $75.00 to $99.99 | $11.00 |
| $100.00 to $149.99 | $12.50 |
| $150.00 to $399.99 | 8% of sub-total |
| $400.00 or more | 6% of sub-total |

Ground service to US addresses only. Contact us for rates for other services and destinations.

Web
For next-day shipping and secure credit card payment, place your order on our web site: [www.LittleMachineShop.com](http://www.LittleMachineShop.com)

Mail
Mail your order with your credit card information or a check to:
LittleMachineShop.com
396 W Washington Blvd Ste 500
Pasadena CA 91103-2002

Phone
Call us at [800 981 9663](tel:8009819663) or [626 797 7850](tel:6267977850) to place your order.

Card Number

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

396 W Washington Blvd #500 • Pasadena, CA 91103