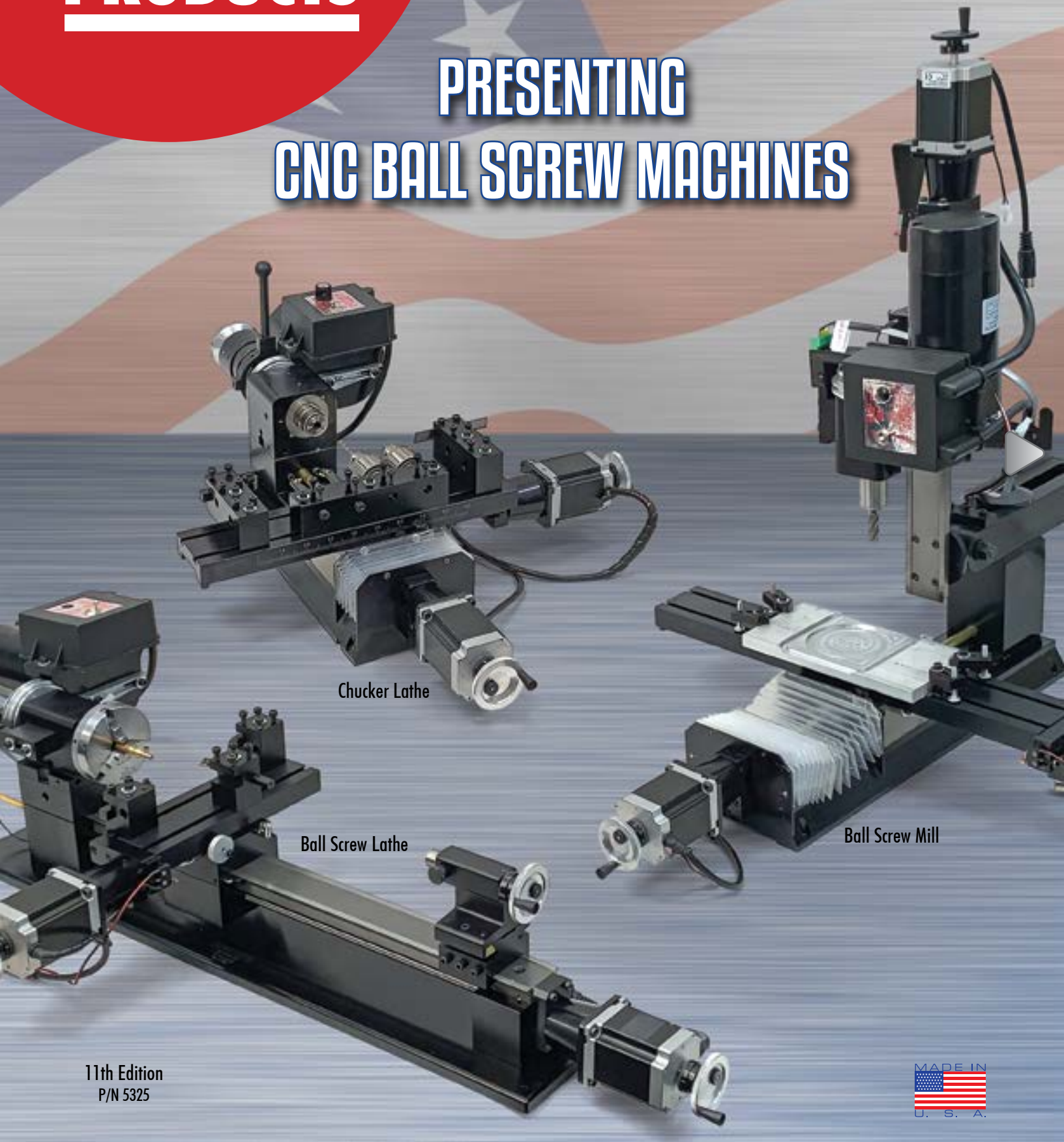
SHERLINE PRODUCTS

Miniature Machine Tools & Accessories Catalog

PRESENTING CNC BALL SCREW MACHINES



11th Edition
P/N 5325

MADE IN U. S. A.

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Don't be intimidated by the large number of accessories we offer. We suggest you buy only what you need, when you have a job where it is needed. It's good to know that no matter what machining job you may decide to tackle in the future, the proper Sherline accessory will be available to make that job easier and more fun.

Lathes

Lathe Accessories

Chucks

Tool Posts

Cutting Tools

Adjustable Tailstock Tools

Collets

Headstocks & Motors

Vertical Milling Machines

Mill Accessories

Other Products

Machine Packages, CNC, & Ball Screw Machines

Sherline's Industrial Products Division
Visit **www.sherlineipd.com** to learn about industrial versions of Sherline's slides and spindles. Think of them as an engineer's "erector set" for building small tooling.

Why Sherline Tools Are Right for You

At Sherline, our goal has been to produce a high quality line of miniature machine tools at a price that offers the customer a great value. Accuracy and versatility have been prime requirements in the design process. As a result, we have been gratified to find that almost half our sales have been to technicians and industrial customers who adapt our machines to light production line use to make a tremendous variety of small parts. This attests to the accuracy, adaptability and dependability of Sherline tools.

In 1972, the first Sherline lathe, along with several new accessories, were completely produced and marketed in the United States. In 1975, the first Sherline vertical milling machine was totally designed and manufactured at our San Marcos facility. Since then, Sherline has devoted itself to providing versatile, quality products by using the latest manufacturing and engineering techniques. State-of-the-art computer-controlled equipment allows us to produce tools that are of higher quality and more accurate, while at the same time allowing us to keep production costs down, making Sherline tools an even better buy. A laser engraving machine precisely engraves scales, providing greater utility and a higher quality look. It is also an example of one more job done "in-house" to both maximize quality and reduce costs. In fact, over forty major machine tools—an investment of well over a million dollars—are used to produce all Sherline's machined parts.

In our fifth decade of production, we take pride in certain benchmarks of progress. What began as an import from Australia is now made entirely in the U.S.A. In addition, Sherline tools are exported throughout the world. This is the 11th printing of our color catalog, which has continued to grow as new products are introduced to the line. Attesting to the good basic design of the machine is the fact that new accessories work just as well on Sherline tools made over thirty years ago or today. Sherline has the most complete line of small precision machine tools and accessories available. We continue to expand that line with the introduction of new accessories each year.

One feature that sets Sherline apart is our complete, well-written, illustrated instructions. We are able to pass on this valuable knowledge to our customers because the people who design and build Sherline tools use them themselves and understand your needs. Sherline's engineering staff has an extensive background not only as machinists, but also as modelers.

With the sophistication of manufacturing techniques plus the sound design principles of the equipment manufactured by Sherline, the need to constantly redesign the products has been eliminated. In a world of planned obsolescence and disposable everything, it's a pleasure to work with a tool built with quality in mind. If, as a craftsman, jeweler, technician, or machinist you want or need to produce your own accurate, small, machined parts, Sherline tools are right for you!

ORDERING

Ordering Lathe, Mill, and Accessory Packages

All lathes and mills can be ordered plain or packaged with selections of accessories. We ship orders within 24-48 hours of receipt. Ordering a machine and accessory package saves you money compared to purchasing the same items separately, and the packages include the items most people buy first. See page 50 for a description of the "A," "B" and "C" package options. Full machine shop packages with lathe, mill and an array of accessories are also available.

Order Any Machine with Digital Readouts or CNC

In addition to accessory packages, any lathe or mill can be ordered with factory installed digital readouts (DRO). To purchase a machine with digital readouts simply add the letters "–DRO" to the part number. See pages 26 and 43 for more on digital readouts.

Any machine can also be ordered with motor mounts ready for the installation of your own CNC stepper motors and computer controls. We call this "CNC-ready." To purchase a CNC-ready machine, simply add the letters "—CNC" after the part number. Buy a driver box and stepper motors to complete the package using your own computer.

Complete, ready-to-run CNC systems with stepper motors, driver box, cables, controller or computer, and software are also available. See page 52 for details.

Examples: 4000A: An inch short-bed lathe with the "A" accessory package. 4410C–DRO: A metric long-bed lathe with "C" accessory package and factory installed digital readouts.

Retrofitting DRO or CNC Later

Any Sherline machine can be retrofitted with digital readouts or CNC later if not ordered that way initially.

SHERLINE

The Small Solution to Big Challenges

Machine Demo Videos

See videos of Sherline machines cutting materials from Delrin to stainless steel and titanium at **www.sherline.com/sherline-videos/test-cuts/**

Sherline tools are used throughout the world in industry, schools, labs and craftsmen...wherever there is a need for small, precision-machined parts. They are operated by engineers, scientists, technicians, machinists, and model engineers to produce prototype parts in metal, plastic and wood. Craftsmen should have no problem operating Sherline miniature machine tools, for they are designed to be operated by people with a "common sense" knowledge of mechanics. The skills of an experienced machinist are not required to get started.

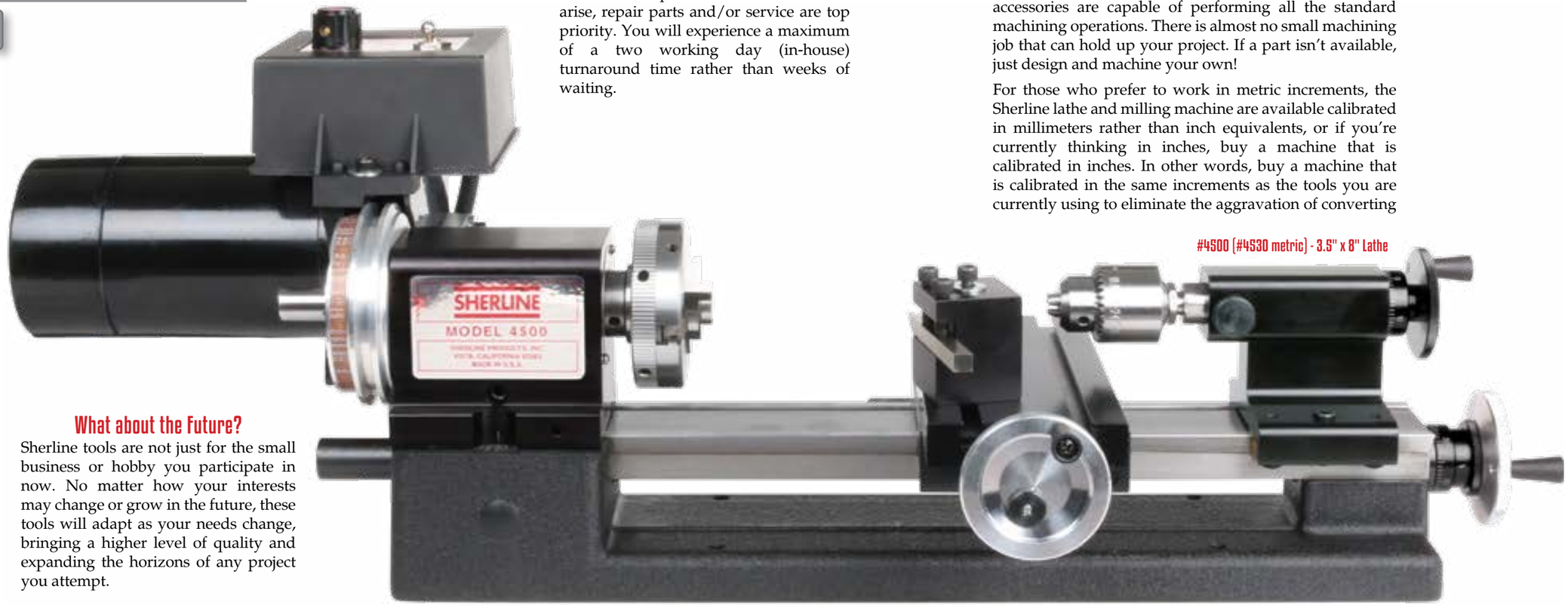
The Craftsman's Alternatives

Eventually every technician, machinist, and craftsman will find the need for a part that cannot be purchased or built with ordinary hand or power tools. The choice has been either struggling with a hand drill and file or spending thousands of dollars on standard machine shop equipment. Projects have been abandoned, and many craftsmen have never had the satisfaction of taking a completely original idea and transforming it into a working prototype simply because they lacked the proper tools.

Sherline tools fill the gap between makeshift hand tools and expensive professional equipment. They are capable of producing a great variety of machined parts. Accessories are available that allow them to perform virtually any machining operation, the size of the part being the only limitation. Sherline's commitment to quality extends to our service department. Should the need arise, repair parts and/or service are top priority. You will experience a maximum of a two working day (in-house) turnaround time rather than weeks of waiting.

What about the Future?

Sherline tools are not just for the small business or hobby you participate in now. No matter how your interests may change or grow in the future, these tools will adapt as your needs change, bringing a higher level of quality and expanding the horizons of any project you attempt.



QUALITY...designed by a machinist and built from top quality material

Sherline equipment and accessories incorporate many features found only in the best production machines. For example, the lathe spindle and the milling machine spindle both utilize lifetime lubricated bearings with adjustable preload for minimum end play. With the exception of the electronic speed control's plastic housing and protective belt guards, all parts are metal, precision machined with instrument quality finishes on all working parts.

Both the lathe and milling machine feature fully dovetailed machine slides with adjustable gibs to give precise adjustment and maximum rigidity. Machining accuracy of one thousandth of an inch or better can be easily obtained. In fact, the handwheels are precisely laser engraved in graduations of .001 inch or .01 mm on metric machines. The bases of both the lathe and the milling machine are made with mounting holes so that they can be permanently attached to a board or workbench for even more rigidity and vibration-free operation.

VERSATILITY... a small solution to big challenges

Sherline machines have a tremendous capacity to turn out parts for all kinds of uses. Aluminum, steel, brass, plastic, or wood parts can be easily machined on the lathe, yet the entire lathe can be stored on a closet shelf. Together, the lathe and milling machine with their many available accessories are capable of performing all the standard machining operations. There is almost no small machining job that can hold up your project. If a part isn't available, just design and machine your own!

For those who prefer to work in metric increments, the Sherline lathe and milling machine are available calibrated in millimeters rather than inch equivalents, or if you're currently thinking in inches, buy a machine that is calibrated in inches. In other words, buy a machine that is calibrated in the same increments as the tools you are currently using to eliminate the aggravation of converting dimensions. Later, should you decide to convert an inch machine to a metric machine, all the parts are available. There's no need to buy a new machine. Additionally, the DC motor and speed control supplied with the machines will run domestically or outside of the United States without any change in motor or controller, and no transformer is required.

ECONOMY...it doesn't cost much to produce valuable custom made parts

The value of any tool is the relationship between its cost and the results it produces. For most of the small machining jobs encountered by the average user, Sherline machines will produce results equal to machines costing many times more. Unless money is no object, why pay more?

A good tool never becomes obsolete. The operations done on a lathe or mill have remained the same since the dawn of the machine age. A good 50-year old lathe still produces good parts. Sherline machines are designed and built to last for generations.

Economy, versatility and quality—Sherline machines embody all three in an unbeatable combination.

That's VALUE!

#4500 (#4530 metric) - 3.5" x 8" Lathe

Electronic Line Filter makes Sherline tools CE Compliant

Electronic filter cuts electronic emissions to meet CE standards.

As countries around the world have tightened up their import regulations, Sherline has taken the extra step to make available an in-line electronic filter between the DC motor speed control and the incoming AC current in order to meet CE standards. Users outside the USA will only need to supply a wall plug adapter to go from the American style 3-prong plug to the type of plug used in their country. An extra charge applies for machines ordered with this filter installed, but the shipping box will state that the machine complies with CE standards. We highly recommend that customers in countries requiring CE certification order this part in order to avoid possible problems with customs.

CE Filter added to any machine: Part number plus letters -CE,
Retrofit filter/cord only: #45500

UNRIVALED QUALITY

No other miniature machine tools offer all these features.

Headstock and motor assembly are easily relocated when switching to vertical milling column attachment. It takes less than one minute!

Speed is electronically controlled with the turn of a knob, offering a range of 70 to 2800 RPM with no gear or belt changes needed. Automatically adjusts to any current used throughout the world.

Motor is located out of the way on lathe and mill. Stays clear of chips and cutting oil.

Two-speed, cogged "V" belt drive increases electronic speed control power range by offering lower ratio for more torque at lower speeds when turning larger parts.

- No need to worry about your investment becoming outdated. The soundness of the basic tool design means accessories made twenty years ago still fit today's tools. New accessories every year add to value.

#4000 (#4100 metric)
3.5" x 8" Lathe

Extra long slide travel and large 6" x 2-3/4" table

Saddle and crosslide are precision machined with tough anodized finish.

Ground steel bed features dovetailed machine slides with tapered gibs that handle stress well in both lathe and mill configurations. This is the way most large, high-quality machine tools are built.

- Optional thread-cutting attachment cuts over 50 different pitches, metric or inch, left or right hand threads.
- Sherline offers not only a vertical milling attachment for the lathe, but also makes several complete vertical milling machines. (See pages 30-32)
- Huge list of available accessories makes Sherline the most versatile tool line in the world. Virtually any conceivable machining operation is possible in miniature.

Brass gib on tailstock is adjustable for wear. Also makes it easy to remove tailstock without removing handwheels when adding riser block.

Black anodized finish on aluminum parts gives a professional appearance, plus it is tough and easy to care for.

Laser-engraved aluminum handwheels with inch or metric lead screws and graduations.

- Optional resettable "zero" handwheels are available that can be unlocked and reset to "zero" (or any number) at any time. This makes dialing in a precalculated amount of feed much easier (See page 28).

Handwheels are anodized aluminum to increase the readability of the laser-engraved scales. (Black anodized handwheels are available upon request.)

Tailstock spindle has a standard #0 Morse inside taper.

Holes are predrilled into cast metal base for secure mounting to board or benchtop.

Hard stop holes

Taper turning is accomplished simply by removing the alignment key and rotating the headstock to the proper angle.

Spindle nose has a standard #1 Morse inside taper, 3/4"-16 external threads.

.405" (10mm) hole through spindle allows machining of long stock. Other headstocks with 9/16" bore, ER-16, or 3C available as an upgrade (see page 29).

Dust cover protects sealed bearings

20mm lifetime lubricated bearings

Adjustable preload nut

CUTAWAY VIEW OF HEADSTOCK

Tapered adjustable gibs

Saddle is connected to leadscrew with a brass part that is easily replaceable. An inexpensive way to correct backlash wear.

Crosslide Anti-backlash Adjustment

BOTTOM VIEW OF BED AND CROSSLIDE

Leadscrew is underneath bed, protected from grit and flying chips.

LATHES

When the Sherline lathe first came on the market over nearly 50 years ago, its use of rigid, extruded components meant miniature machine tools were no longer just toys for producing simple hobby projects. They could now be considered serious machine tools built specially to produce accurate, small parts. Since then, we have not only added a vertical milling machine and extensive accessory line, we have also found ways to improve the accuracy and utility of the tools themselves. The introduction of CNC machines into our production facility has greatly improved the accuracy of Sherline tools. In 1999, we improved the lathe by changing the way the tailstock is tightened on the bed with the addition of a brass gib. The mill column lock was also replaced with a locking lever that tightens against the saddle nut for easier operation and a more secure lock. Since then even more improvements have been added. These improvements are typical of Sherline's commitment to continually upgrade the quality and functionality of our products. The Sherline tools in this catalog offer the best dollar-for-dollar value of any we have ever made.

#4400 (#4410 metric) - 3.5" x 17" Lathe

4000 Series Lathe (3.5" x 8") see image on previous page

#4000 (#4100 metric)

When used with its various accessories, Sherline lathes will perform a host of tasks. They will turn, face, bore, drill, ream, polish, cut tapers, and cut both inch and metric threads. When used with its vertical milling column attachment it can be used for milling, fly cutting, drilling, and boring operations.

Sherline now offers several lathes to fit every budget and need, and they are available with either inch or millimeter calibrations. A high-torque DC motor with variable speed control is standard on each machine. This speed control is internally equipped with a converter that automatically adjusts to incoming AC current from 100 to 240 volts, 50 or 60 cycles/sec without loss of torque.

4400 Series Lathe (3.5" x 17") see image above

#4400 (#4410 metric)

If you are interested in a lathe with more distance between centers, the model 4400-series lathe is available. Standard equipment is the same as on the model 4000; however, the 4400-series lathes have a 24" (610 mm) bed that has 17" (431 mm) between centers, a 2.5" (63 mm) resettable "zero" handwheel on the leadscrew, two 2" (51 mm) resettable "zero" handwheels on the crosslide and feed screw and a rocker tool post substituted for the standard tool post. This is Sherline's best selling lathe.

4500 Series Deluxe Lathe (3.5" x 8") see image on page 3 with Adjustable Zero Handwheels

#4500 (#4530 metric)

The 4500-series lathes offer the same equipment as the 4000-series lathes, but with the addition of two 2" (51 mm) resettable "zero" handwheels on the leadscrew and crosslide feed. (For additional information on the adjustable handwheels (#3420), see page 28.)

Standard Equipment Included with Every Lathe

Every Sherline lathe comes with a DC motor and speed control, a 2.75" (70 mm) x 6.0" (152 mm) crosslide with two T-slots, two position pulleys, a Kevlar reinforced drive belt and adjustable anti-backlash.

The 4000-series lathes come with standard 1-5/8" (41 mm) laser-engraved aluminum handwheels, while the 4400 and 4500-series lathes come with 2" deluxe adjustable zero handwheels. The 4400-series lathes also include a rocker tool post in place of the standard tool post.

Also Included:

- faceplate
- lathe dog
- two dead centers
- hex adjustment keys
- tool post
- sharpened high-speed steel R/H cutting tool
- tommy bar
- Assembly and Instruction Guide
- gib removal tool

TECHNICAL SPECIFICATIONS–LATHES

Lathes	4000 (4100)	4400 (4410)
Swing over bed	3.50" (90 mm)	3.50" (90 mm)
Swing over carriage	1.75" (44.5 mm)	1.75" (44.5 mm)
Distance between centers	8.00" (200 mm)	17.00" (430 mm)
Hole through spindle	.405" (10 mm)	.405" (10 mm)
Spindle nose thread	3/4-16 T.P.I.	3/4-16 T.P.I.
Spindle nose taper	#1 Morse	#1 Morse
Spindle runout of Morse taper	.0005" or less	.0005" or less
Travel of crosslide	4.25" (110 mm)	4.25" (110 mm)
Tailstock spindle taper	#0 Morse	#0 Morse
Tailstock spindle travel	1.75" (44.5 mm)	1.75" (44.5 mm)
Protractor graduations	0° to 45° by 5°	0° to 45° by 5°
Handwheel graduations	.001" (.01 mm)	.001" (.01 mm)
Electronically controlled spindle speed range	70 to 2800 RPM	70 to 2800 RPM
Length overall*	23" (584 mm)	32.5" (826 mm)
Width overall*	10.25" (260 mm)	10.55" (267 mm)
Height overall*	8" (203 mm)	8.5" (216 mm)
Shipping weight	24 lb. (10.9 kg)	30 lb. (13.6 kg)

Motor Specs	
Input voltage	100 to 240 VAC, 50 or 60 Hz
Output to motor	90 VDC
Current draw	.5 to 15 amps depending on load
No-load output shaft speed	6000 RPM (no pulley)

NOTE: DC motors and headstock/motor units are available separately. Part numbers are as follows:

#33050—DC Motor and Speed Control only
#3306—Standard Headstock/Motor/Speed Control Unit
#3307—10,000 RPM Headstock/Motor/SC unit
#3308—ER16 Spindle Nose Headstock/Motor/SC unit
#3310—3C Collet Headstock/Motor/SC unit

Spindle Specs	
End play (factory adjustment of preload)	.0002" (.005 mm) or less, normal pulleys .0003" (.008 mm) or less, 10,000 RPM pulleys
Runout at nose	.0005" (0.013 mm) or less
Bearings	Two 20 mm lifetime lubricated ball bearings with adjustable preload

4000-series standard lathe, 8" between centers

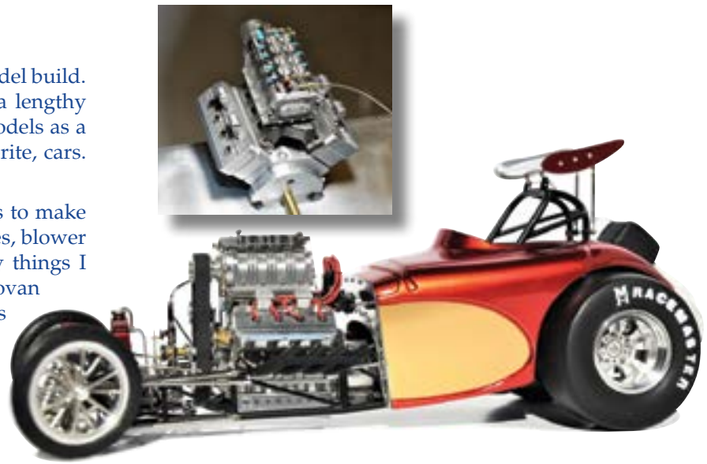
4400-series standard lathe, 17" between centers

Bantam Fuel Altered Model
by Tim Hoagland

Tim sent pictures of his Bantam Fuel Altered Model build. Tim says he returned to model building after a lengthy hiatus of more than 40 years, "I built a lot of models as a kid including, ships, tanks, planes and my favorite, cars. Especially drag cars & hot rods."

Tim said, "It took me 2000+ hours, over 3 years to make it. The overall length is six inches. The body, tires, blower manifold, and Lenco transmission are the only things I didn't scratch-build. The entire engine, a Donovan 417, is machined out of aluminum and brass (see inset photo)." He added, "My Sherline equipment has proven to be quite up to the task in making the things I want to do."

Check out the Sherline Workshop web page to learn more about Tim's awesome build.



LATHE ACCESSORIES

The model 4000 lathe is shown set up with a vertical milling column attachment. Convert from a lathe to a mill or back to a lathe in less than one minute!

Lathe Vertical Milling Column #3050 (#3053 Metric)
Lathe Deluxe Vertical Milling Column #3480 (#3485 Metric)

With this attachment the Sherline lathe can be quickly and easily converted into a small milling machine. The attachment consists of a steel dovetailed vertical column with a solid aluminum base that attaches to the bed of the lathe in place of the headstock. The headstock then mounts to a dovetailed saddle on the vertical column. The saddle is raised and lowered to control the depth of cut by turning a handwheel. Calibrations on the handwheel enable depth control to .001" (.01 mm). Parts to be machined are mounted on the crosslide. On the deluxe version, a 2-1/2" adjustable "zero" handwheel replaces the standard handwheel.

This is the most economical way to get into milling. Most standard vertical milling operations can be performed with this attachment, with part size being the basic limitation. Conversion from the lathe to milling takes less than one minute. Most Sherline milling accessories can be used with this setup, although larger accessories like the tilting angle table and rotary table may require a longer table. At a later date, should you wish to upgrade to a complete vertical milling machine, this column will fit the Sherline XY 10" and 12" bases (see page 45). This offers a cost savings compared to purchasing a complete vertical milling machine, because you save the cost of a second headstock, motor and speed control.

New Feature! Vertical milling columns now include an oil reservoir on the saddle nut to keep the leadscrew lubricated.

Lathe Multi-Direction Vertical Milling Column
#3580 (#3585 Metric)

The multi-direction vertical milling column provides all the movements of the model 2000-series 8-direction mill (see page 31). The entire Z-axis column can be swung, rotated, tilted or moved in and out for machining or drilling from just about any angle. At any time, you can purchase the new #5600/#5610 deluxe XY base that has been designed to accept this special column. In doing so you have duplicated a 2000-series mill while enjoying the cost savings of not purchasing a second headstock and motor unit. This incremental approach allows you to start machining now and add to your shop as your projects become more demanding or your budget allows.

The multi-direction vertical milling column opens up many new machining possibilities on the lathe by turning it into an 8-direction mill. Now included is an oil reservoir on the saddle nut to keep the Z-axis leadscrew lubricated.

Crosslide Accessory Plate #3017

The table on the mill is thicker than the table on the lathe because of the greater forces transferred to the table in milling and the requirement for stiffer setups. When using the vertical milling column on the lathe, the table can be "beefed up" with the addition of this plate, which adds 1/2" of thickness to the table. It also serves as a tooling plate that protects the surface of your lathe table from damage. The plate attaches to the table by means of four recessed cap screws and T-nuts. It must be removed for lathe turning to maximize the diameter of part that can be turned and so that the standard tool post can be used.

CHUCKS

3-Jaw Self-Centering Chuck
#1040 (3.125") and #1041 (2.5")

Three-jaw chucks are designed so that all three jaws move together and automatically center round or hexagonal parts or stock to within a few thousandths of an inch. These chucks provide the quickest and easiest way of holding work in the lathe. For this reason, they are the most popular of the Sherline accessories. The Sherline 3-jaw chucks are designed so that they can be used to clamp externally on bar stock or internally on tube stock. The jaws are reversible to accommodate larger stock.

#1041 (2.5")

Jaw Capacity: 3/32" (2mm) - 1-3/16" (30 mm) with jaws in normal position. 3/32" (2mm) - 2-1/4" (56 mm) with jaws in reverse position

Through Hole: .687" (17 mm) dia., 3/4-16 thread (also available with 1/2-20, 12 mm x 1 mm and 14 mm x 1 mm spindle threads

- Included with 4000-series lathe "A" package

#1040 (3.125")

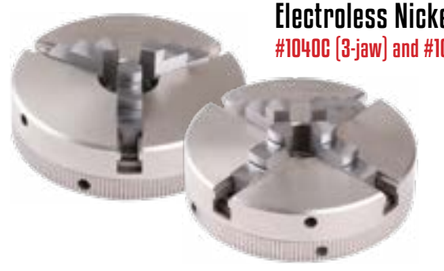
Jaw Capacity: 3/32" (2 mm) - 1-1/2" (38 mm) with jaws in normal position. 3/32" (2mm) - 2.75" (70 mm) with jaws in reverse position

Through Hole: .687" (17 mm) dia., 3/4-16 thread

- Included with 4400-series lathe "A" package

4-Jaw Self-Centering Chuck
#1075 (2.5") and #1076 (3.125")

These chucks combine the ease-of-use advantages of the 3-jaw chuck with some of the advantages of a 4-jaw (independent) chuck. They will automatically center square or round stock. (The stock must be accurately shaped for all four jaws to grip.) They will also grip thin wall tubing in four places rather than three, spreading out the load to allow more grip without crushing the tubing. The physical specifications for these chucks are the same as for the 3-Jaw chucks listed above. The jaws are reversible to accommodate larger stock.



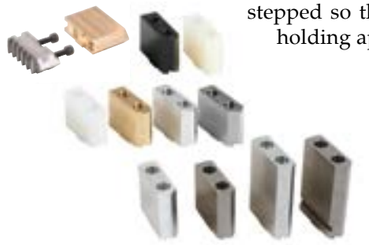
Electroless Nickel-Teflon Coated Chucks
#1040C (3-jaw) and #1076C (4-jaw)

Sherline's 3.1" 3-jaw and 4-jaw self-centering chucks are now available with a nickel-Teflon coating to prevent rust, designed for lab or clean room use. These chucks are identical to #1040 and #1076 respectively, except for an electroless Nickel-Teflon coating that has been applied to help prevent wear and corrosion. This special coating has been applied to all external and internal surfaces of the chuck (except for chuck jaws), significantly improving the life of the chuck. These chucks also open and close more smoothly due to the lubrication properties of Nickel-Teflon.

Interchangeable Top Jaws for Sherline Scrolling Chucks

Certain delicate parts require gripping with softer jaw materials. Other operations require chuck jaws that do not transmit particles of rust to the part being held. To accommodate these special circumstances, Sherline now offers 2-piece chuck jaws with interchangeable top jaws made from special materials. In place of the standard hardened or optional unhardened ("soft") steel 1-piece jaws, these new top jaws come in soft materials like Delrin, Teflon, and Nylon, plus harder but non-rusting materials like brass and aluminum. The replaceable top jaws are fastened to the hardened steel bottom jaws with two countersunk socket head screws. They are not stepped so they can be machined by the customer for custom holding applications. Other materials available by request.

P/N 1040 3.1" 3-Jaw Self-Centering Chuck Shown with P/N 1147 brass top jaws (chuck sold separately).



Master steel jaws (far left) accept top jaws made of (top, left to right) Delrin®, nylon, (middle row) Teflon®, brass, aluminum, and unhardened steel, (bottom row) tall jaws: 1" and 1-1/2" tall jaws are available in aluminum or 1018 steel.

4-Jaw (Independent) Chuck

#1030 (3.125") and #1044 (2.5")

These chucks have four advantages over 3-jaw chucks. 1) They can be used to hold irregularly shaped parts. 2) They can be used to center parts with a great deal of accuracy. 3) 4-jaw chucks can be used to deliberately hold a part off-center. 4) They can clamp stock tighter. This is a valuable asset when machining cams, crankshafts and similar parts. The main disadvantage of the 4-jaw independent chuck is that the jaws must be set individually, adding considerable setup time. The jaws are reversible to accommodate larger stock.

Like the Sherline 3-jaw chucks, the 4-jaw chucks can be used to clamp either externally or internally. Although we recommend the 3-jaw chuck for standard lathe projects, the 4-jaw chuck is considered the accessory that could add the most versatility to your machine. If you feel the 4-jaw chuck would be more useful, and you have no need for the 3-jaw chuck, any lathe "A" package can be ordered with the 4-jaw chuck substituted for the 3-jaw upon request. A clamping groove allows the chuck to hold parts for milling.

#1044 (2.5")

Jaw Capacity: 3/32" (2mm) - 1-3/16" (30 mm) with jaws in normal position. 3/32" (2mm) - 2-1/4" (56 mm) with jaws in reverse position

Through Hole: .687" (17 mm) dia., 3/4-16 thread (also available with 1/2-20, 12 mm x 1 mm and 14 mm x 1 mm spindle threads)

- 4-jaw chuck can be substituted for 3-jaw chuck included with any 4000-series lathe "A" package (small additional charge may apply)

#1030 (3.125")

Jaw Capacity: 3/32" (2 mm) - 1-1/2" (38 mm) with jaws in normal position. 3/32" (2mm) - 2.75" (70 mm) with jaws in reverse position

Through Hole: .687" (17 mm) dia., 3/4-16 thread

- 4-jaw chuck can be substituted for 3-jaw chuck included with any 4000-series lathe "A" package (small additional charge may apply)

3.1" 4-jaw Coated Chuck with "Pie" jaws

#1076C PIE

Sherline's electroless Nickel-Teflon coated 4-jaw chuck is fitted with unhardened 12L14 "pie" jaws that can be machined to hold specific size blanks for turning. It was specially designed for clock makers to hold gear blanks but useful in other special tasks as well. Pie-shaped jaws offer two main advantages; boring the unhardened jaws to hold a particular diameter part means that instead of gripping the part at only three or four tiny contact points, they grip the part all the way around its diameter. This increased gripping area allows for much less clamping pressure and less chance of deforming a gear or other delicate part held in the chuck.

1143-4P

11454-4P

Replacement "Pie" jaws

#1143-4P (12L14 Steel)
#11454-4P (Aluminum)

The steel pie-jaws replacement set, #1143-4P, can be installed on your existing 1076C nickel/Teflon coated chuck body and master jaws. They are not intended for use on the standard 1076 chuck body.

The aluminum pie-jaws replacement set, P/N 11454-4P, was designed to give our customers the option of pie jaws that are made from a softer material than our P/N 1143-4P steel replacement pie-jaws. Because they are aluminum, they can be used with our 1076 chuck, however, we still recommend using them with our 1076C because of the hardness of the nickel and the lubricating properties of the Teflon.

The primary advantage of the aluminum jaws is that the aluminum is easier to machine, and it offers a material that will not scratch or dent softer parts held in the chuck.

3-jaw Chuck Pin Jaws #1140

Pin Jaws are specifically designed for laser engraving rings and similar parts that require only finger tight closing pressure to hold the part. Included are 1/8" steel pins in three lengths from 3/4" to 1-1/4". Available with a new chuck or fitted to your 3.1" Sherline 3-jaw chuck. The jaws are reversible for a larger clamping range. We recently improved the design of the pin jaws. The hole that holds the pin now goes all the way through each jaw so you can easily knock out any broken pins.

P/N 1140 3-Jaw Chuck "Pin Jaws" are for laser marking use only (chuck sold separately).

Drill Chuck

#1069 (3/8" capacity) and #1072 (1/4" capacity)

A drill chuck will enable you to accurately centerline drill, ream or tap any part mounted on the lathe. The part to be machined is mounted in the headstock using a chuck or collet. The tool is mounted in the tailstock chuck and fed into the part using the tailstock ram feed. Parts that are going to be mounted between centers can be center drilled this way. These drill chucks can also be mounted in the headstock of the lathe or used on the mill with the Morse #1 arbor.

#1069 (3/8" capacity)

Chuck Capacity: 1/32" (.8 mm) - 3/8" (9.5 mm)

Includes: key, drawbolt, and two arbors (#0 Morse for tailstock & #1 Morse for headstock)

- Included with 4400-series lathe "A" package

#1072 (1/4" capacity)

Chuck Capacity: 1/32" (.8 mm) - 1/4" (6.4 mm)

Includes: key, drawbolt, and two arbors (#0 Morse arbor fits the tailstock and a #1 Morse arbor fits the headstock)

- Included with 4000-series lathe "A" package
- Included with 5400, 2000, 5800 mills, and 5000A package

OJT 5/32" Drill Chuck

#1010 (#1 Morse Arbor for Headstock)
#1015 (#0 Morse Arbor for Tailstock)

These chucks are designated "0JT", which stands for "Zero Jacobs Taper," because they come with a #0 Jacobs tapered hole in the back. Into that we have pressed a special arbor that provides either a #1 Morse taper to fit into the Sherline headstock or a #0 Morse taper to fit the tailstock. A drawbolt and washer are included with #1010 to secure the chuck in position. These chucks are useful for holding very small drills and their shorter length provides an increase of about 1/2" in working space between centers compared to the 1/4" drill chuck.

#1010

Chuck Capacity: #80 (.0135" or .34 mm) - 5/32" (4 mm)
Arbor: #1 Morse for Headstock
Includes: Draw Bolt and Washer

#1015

Chuck Capacity: #80 (.0135" or .34 mm) - 5/32" (4 mm)
Arbor: #0 Morse for Tailstock

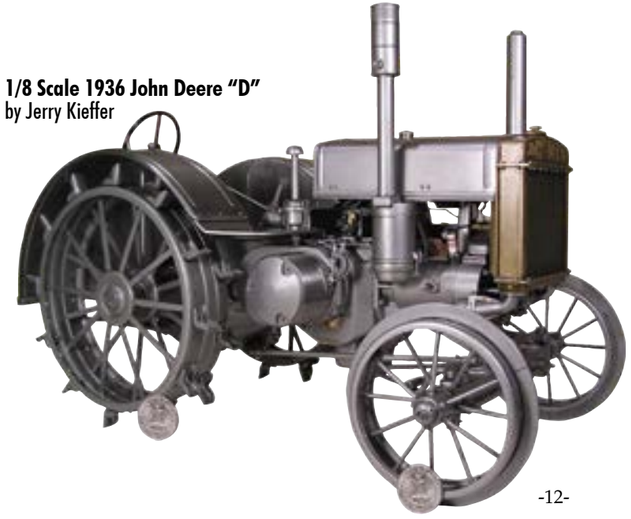
Chuck Adapter (#0 Morse to 3/4-16) #1230

This adapter fits into the #0 Morse taper of the tailstock to allow Sherline chucks with a 3/4-16 spindle thread to be mounted to the tailstock for holding tools or work. This is a simple and inexpensive way to increase the versatility of your lathe.

Rubber "Gripper" Spindle/Tommy Bar Covers #4058
Tommy Bars + Covers #4059

"Tommy" bars can be hard on your fingers when tightening or loosening a chuck or removing a tool from the spindle. These molded rubber end caps give a more comfortable and secure grip. They also prevent spindle bars from rolling off your bench.

1/8 Scale 1936 John Deere "D"
by Jerry Kieffer



"I initially bought my Sherline tools to do rough work…to rough in a piece and then put it in a jeweler's lathe to finish it up, but since I bought the Sherline, I hardly ever touch the jeweler's lathes. Now I can do what I did on the jeweler's lathe just as accurately, faster, and the Sherline is easier to clean up."

Jerry Kieffer, Retired Utility Co. Field Rep
Wisconsin

TOOL POSTS

Rocker Tool Post #3057 (1/4")

The cutting edge of a lathe tool should be set right on or just slightly below the centerline of the part being machined. With new lathe tools this is not a problem, because Sherline tool posts are made to hold them at the correct height. Older tools that have been sharpened numerous times may require shimming to bring them up to the correct height. The Sherline rocker tool post is designed to eliminate the need for shimming. The height of the cutting edge can be changed by simply adjusting the two clamping screws. This inexpensive accessory reduces setup time and also extends the life and the usefulness of your old lathe tools.

- Comes standard with 4400-series lathes.

Two-Position Tool Post #3003 (1/4"-1/4") and #3008 (5/16"-3/8")

It is not unusual to have to stop and change lathe tools several times while turning a part on the lathe. The change may be to switch from a left-hand tool to a right-hand tool, from a sharp-nosed tool to a radiused tool, or from a roughing tool to a finishing tool. Whatever the reason, each change requires a little setup time. This time can be reduced by using a two-position tool post. Each Sherline two-position tool post mounts two lathe tools. By having one or more of these tool posts with your favorite lathe tools mounted in them, you can simplify your work and reduce the time required to change tools.

#3003 holds two 1/4" square tool bits. #3008 is similar but is designed to hold a 5/16" (8 mm) square tool bit on one side, and a 3/8" (10 mm) square tool bit on the other side.

Insert Holder Tool Post #7600 (3/8"), #7601 (1/4"), #7602 (1/8")

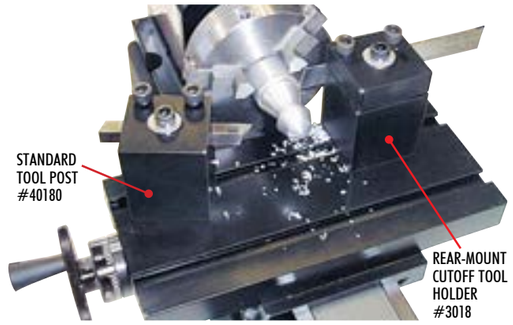
7600 (3/8")

Your present Sherline tool post may be modified to accept these special tool holders, but an easier solution is Sherline's special tool post. It is designed to fit the larger 3/8" square and 3/8" round tool holders commonly used for carbide, ceramic, or diamond inserted tips. It will also hold Sherline's own right- and left-hand 55° insert tip tool holders (#2258). Purchase of this tool post will allow you to keep your standard tool post available for use with 1/4" high-speed steel tools for jobs where they are sufficient and/or a specially ground and shaped tip is required.

NOTE: *Carbide inserts and inserted tip tools are available through Sherline. Call for a complete listing or see our website.*

Rear-Mount Cutoff Tool and Holder #3018

This time-saving cutoff or parting tool holder is designed to hold the cutoff blade upside down for use on the "back" side of the part. This allows the holder to remain mounted to the crosslide where it is out of the way while the regular tool holder stays mounted on the front of the crosslide. A .040" parting tool blade is included.



The rear-mount cutoff tool holder can remain mounted to the lathe table. It is out of the way on the "back" side until needed for a cutoff operation.

Rear-Mount Tool Holder #7604

This tool holder is designed to hold 3/8" square tools on the "back" side of the part. The rear-mount tool holder is slightly taller than our standard #7600 Tool Post, allowing the tool to be mounted upside down and used on the back side of the crosslide. The round hole is for holding boring tools on center (tool not included).

The insert holder tool post, with a threading tool, is on the "front" side of the part, while the rear-mount tool holder, with a 55° RH carbide tool, is shown on the "back" side of the part.

Headstock Riser Block Set #1291

A 3.5" (88.8 mm) diameter part is the largest part that can be accommodated in the basic Sherline lathe. However, occasionally it may be necessary to work on something larger. The Sherline riser block set increases the maximum working diameter of the lathe to 5.5" (140 mm). #1291 includes a 1-1/4" (31.7 mm) riser block to fit under the lathe headstock and a riser rocker tool post that raises the cutting tool by a corresponding amount. This useful accessory greatly expands the capability of the lathe. (If you are using the #2250 quick-change tool post, a riser for that tool post is available separately as #1289.)

Larger parts up to 5.5" (140 mm) in diameter can be turned on the lathe using the riser block kit shown above. Parts over 4.3" (109 mm) in diameter can be turned between centers over the table. A tailstock riser block (see P/N 1292) is available for holding parts between centers with the headstock riser block in place.

Riser Cutoff Tool and Holder #1296

This accessory is not meant to imply that you can part off large stock, but many people leave their riser blocks in place when doing operations on small diameter stock, and this accessory allows you to use the cutoff tool without removing the riser blocks. It is used on the "back" side of the part with the blade upside down to reduce "chatter." The extra wide base adds to stability.

Tailstock Riser Block #1292

For those customers interested in turning larger diameters between centers, the tailstock riser block will raise the tailstock to correspond with the 1291 riser block kit, allowing you an additional 1-1/4" (31.7 mm) of clearance. The tailstock riser block has a two-part dovetailed base to allow for easy installation and secure locking to the bed.

8" Crosslide (table only) #60880, 67036 (CNC)

The 8" crosslide is 7/8" thick, as opposed to the standard 6" crosslide, which is 5/8" thick. This thicker table is offered by request for customers wanting a thicker table for their lathe when converted for milling operations.

Standard Sherline tooling must be modified to be used as a lathe crosslide.

The CNC crosslide differs from the manual crosslide in that it has an additional two holes on either side of the leadscrew hole for attaching a stepper motor mount.

NOTE: *A new 8" leadscrew is required for the installation of the 8" crosslide, #67211, and #67210 (CNC)*

Riser Plate for 8" Crosslide #1294

We designed the headstock riser plate at the request of several of our customers who replaced our 6" crosslide with the thicker 8" crosslide. Most of these customers are using our lathe as a chucker lathe with gang-tooling. By using this riser plate, the headstock is raised to match the additional thickness of the 8" crosslide. This allows you to use all of our standard tool posts, however, it does not allow you to turn between centers.

Miniature Steam Powered Reversing Cylinder
by Pam Weiss

3/8" Gang-Tooling Tool Post #5930

Our new gang-tooling tool post was designed specifically for our customers who want to convert their Sherline lathe into a "Chucker Lathe," or gang-tooling lathe. The gang-tooling tool post offers a convenient and accurate way to hold up to four tools with a known centerline-to-centerline distance of 1.500". This tool post has (4) 3/8" holes to hold boring bars, drill chucks, or tool bushings with two locking screws for each tool (tools not included).

5/8" Gang-Tooling Tool Post #5935

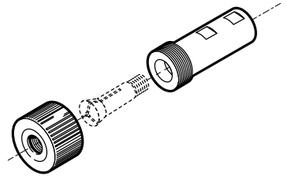
Our new 5/8" gang-tooling tool post is similar to our 3/8" gang-tooling tool post, but it allows customers to use ER16 collet holders with a 5/8" shank. Like the 3/8" holder, it also can also hold up to four tools with a known centerline-to-centerline distance of 1.500" (tools not included).

***NOTE:** While the gang-tooling tool posts will mount on the 6" and 8" crosslides, their size renders them unusable on either of these crosslides. These tool posts are designed to be used with our 13" Mill Table (# 50180 or # 67050) in place of the lathe crosslide.*

WW Collet Adapter for 5/8" Gang Tooling #2081

The collet adapter allows the use of WW collets in any of the 5/8" Gang-Tool Posts (not included). Using collets in a Gang-Tool Post means you can hold extremely small drills accurately on center. Drills of only a few thousandths of an inch can easily break if not perfectly centered.

The WW collet adapter holds Sherline WW collets that have a shank diameter of .312-.313".



The exploded view shows how a collet is held in the WW collet adapter.

3/8" Rear Side Cutoff Multi-Tool Holder #5931

The rear side cutoff, multi-tool holder was designed to compliment our four position, gang-tooling tool posts. It can be used in conjunction with the gang-tooling tool post, or on its own.

The tool holder holds up to two tools with a known centerline-to-centerline distance of 1.500", and it also has a space to hold a cutoff blade upside down for use on the "back" side of the part. This tool post also has (2) 3/8" holes to hold boring bars, drill chucks, or tool bushings with two locking screws for each tool (tools not included).

5/8" Rear Side Cutoff Multi-Tool Holder #5936

The 5/8" rear side cutoff multi-tool holder is similar to our 3/8" rear side cutoff multi-tool holder, but it allows customers to use ER16 collet holders with a 5/8" shank*. Like the 3/8" holder, it also has a slot for a rear-mounted cutoff tool, and can also hold up to two boring tools.

***NOTE:** The #2081 WW Collet Adapter is a perfect accessory for this tool holder.*

3/8" Front Side Multi-Tool Holder #5932

The front side, multi-tool holder was designed to compliment our four position, gang-tooling tool posts. It can be used in conjunction with the gang-tooling tool post, or on its own.

This tool holder has a slot to hold a 3/8" lathe cutting tool, and (2) 3/8" holes to hold boring bars, drill chucks, or tool bushings with two locking screws for each tool (tools not included).

5/8" Front Side Multi-Tool Holder #5937

The 5/8" front side, multi-tool holder is similar to our 3/8" front side, multi-tool holder, but it allows customers to use ER16 collet holders with a 5/8" shank*. It also has a slot for a threading or grooving tool, and can also hold up to two boring tools.

***NOTE:** The #2081 WW Collet Adapter is a perfect accessory for this tool holder.*

Quick-Change Tool Post and Three Holders #2250

This accessory brings to your Sherline lathe the ability to change tools quickly and easily. It uses a dovetail design to locate removable holders in a fashion similar to that used in production machine shops. Included with the case hardened steel tool post are three interchangeable steel holders designed to hold a 1/4" cutting tool, a 3/8" diameter boring tool and a Sherline cutoff tool. (Tools sold separately.) An optional holder for inserted carbide tips is also available as #2295. Each holder has a knurled brass knob that allows you to easily adjust the height of the tool tip. Changing tools is simply a matter of releasing the locking screw, sliding out one tool holder, sliding in another and re-locking. If you find your jobs require a lot of tool changes, this time-saving accessory will make your projects that much more of a pleasure.

*optional holders

*The three holders to the right of the tool post come with the #2250 set. They hold (L to R) a 3/8" round boring bar, a 1/4" HSS cutting tool, and a cut-off blade. A clamp and T-nut are included. To the right of the photo are two *optional holders (#2282 and #2295). #2282 holds 3/8" square shank tools. #2295 comes with a 55° carbide insert. The post and holders have a black oxide finish.*

Quick-Change Tool Post Riser #2251

The Sherline quick-change tool post system can be used with the riser blocks in place when turning larger diameter parts. This 1.25" riser base brings the cutting tool up to the proper height when the headstock riser block is used on the lathe. It is made from solid steel with a black oxide finish to complement the high quality of the quick-change tool holder components.

Live Center #1191

The Sherline lathe comes equipped with two dead centers that fit the headstock and tailstock. These centers are used for holding parts that are mounted "between centers." But since the tailstock center does not turn with the part, it must be checked frequently due to thermal expansion caused by friction generated heat. This is especially important for parts made from thermal plastic materials that have a tendency to soften and even melt as a result of the heat.

The Sherline live center is ball-bearing mounted so that it can rotate with the part. This reduces wear and heat and makes machining much more pleasant. The sealed bearings are permanently lubricated and require no maintenance.

- Included with the lathe "B" package.

Pool Cue Live Center #1182PC

We designed this center at the request of some of our customers who use our machines to make pool cues. The extended nose gives them room for their cutters, which allows them to start cutting from the tip of the pool cue without needing extra material on which to hold.

Reverse Live Center #1192

This live center was designed at the request of our model shipbuilder customers to turn their ship masts. Standard live centers locate on a center hole in the middle of the part. In contrast, the reverse live center holds the outer diameter of the part inside the concave nose. The reverse live center point is offered in either steel or hardened steel. You must request hardened or plain steel when you place your order.

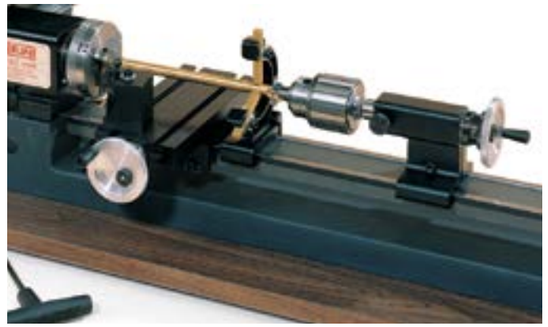
Bullnose Live Center #1182

A live center is the best way to support the end of a long piece held between centers in a lathe, but sometimes the piece may have a hole in the end that is too large in which to index a standard live center. The bullnose live center will support parts or tubing with an open end as large as 1-5/8" diameter. Its solid steel bullnose center turns on two preloaded ball bearings. It is fitted with a #0 Morse taper to fit the tailstock spindle. Rather than turn a sleeve to size down a hole, this special live center can be fitted up in seconds when needed.

Steady Rest #1074

All materials have a tendency to deflect away from the cutting tool when you are turning them in a lathe. This tendency is especially noticeable on long, slender parts and long pieces of bar stock, which makes it quite difficult to hold close tolerances. The best way to support a long part is with a center mounted in the tailstock. However, for one reason or another this is not always possible. As an example, you may want to center drill a piece of stock so you can mount it between centers, or it may be a part where a center drill hole would ruin the looks of the part. Whatever the reason, a steady rest provides a means of supporting the part while it turns. The Sherline steady rest has three adjustable brass blades mounted in a holder that mounts on the bed of the lathe. These blades can be adjusted to the diameter of the part to provide necessary support. Another advantage of the steady rest that is often overlooked is the fact that work held in position by the rest turns concentrically with its outside diameter. This means that concentricity is assured when working near the steady rest, because, at that point, it must be running perfectly true despite imperfections in how it is chucked or centered at either end. The Sherline steady rest will accommodate any size part up to 1.75" (44mm) in diameter.

- Included with the lathe "B" package.



To drill a hole in the end of a long shaft, the lathe is set up with a center drill in the drill chuck, which is mounted in the tailstock. The steady rest keeps the shaft from wobbling and assures that the hole will be concentric with the outside diameter of the stock.

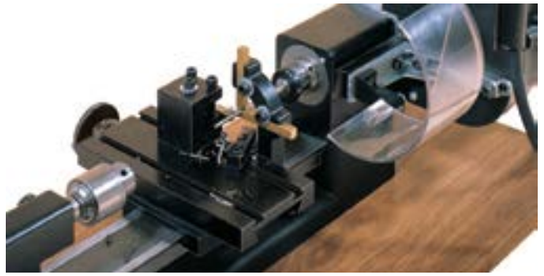
Steady Rest Riser Block #1290

The steady rest can be used with the riser blocks in place by using the steady rest riser block to bring it up to the same height as the headstock and tailstock. An example of where it might be used would be in turning a large diameter part that has a long shaft that needs to be steadied to keep it from wobbling or for those who leave their riser blocks in place all the time yet still need to center drill small stock.

Lathe Follower Rest #1090

The purpose of the follower rest is to keep long or small diameter work from deflecting when a cutting tool is applied to it. It is attached to the lathe saddle and moves as the saddle moves, keeping the point of support directly behind the cutting tool. This helps you maintain accuracy on long cuts and on small diameter stock.

The follower rest is mounted to the lathe saddle with one 10-32 set screw. It is not necessary to drill any mounting holes, and full instructions are provided for use. A support bar is attached to the table using a T-nut in the table slot. The support and T-nut are also provided. A small set screw adjustment at the end of the support presses down on the follower base to keep it from rising. It slides along the top of the follower base, allowing the tool post and tool to be moved in and out while still keeping downward pressure on the follower rest.



A follower rest in use supporting thin stock (Optional chip guard installed; see page 27).

Miniature Sherline Lathe and Workbench
by Iqbal Ahmed of Nagpur, India

Morse #1 Taper Tailstock

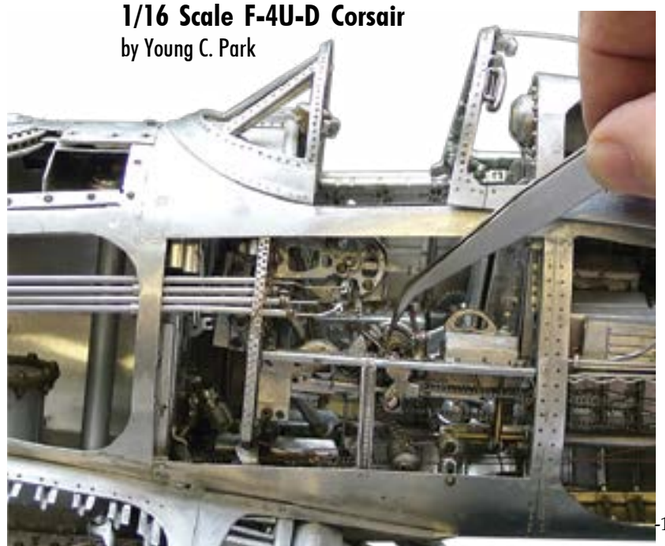
#4112A (4112M Metric), #4412A (4412M Metric)

We designed our Morse #1 tailstock to support our pen maker customers who use our lathes. Pen mandrels and the mandrel saver live centers come with either Morse #2 or #1 tapers on them. This tailstock will allow our customers to use the Morse #1 taper with their pen making accessories. The tailstock assembly includes a brass gib and your choice of a standard or zero adjustable handwheel.

NOTE: We did not make this M#1 taper for larger size tailstock chucks. Our machine is not designed for these larger tools and the forces that they exert on the working parts of our machine.

This photo shows the M#1 taper tailstock, designed for pen turning, mounted with a mandrel, a mandrel saver, and a live center. We do not sell the mandrel or live center for pen making.

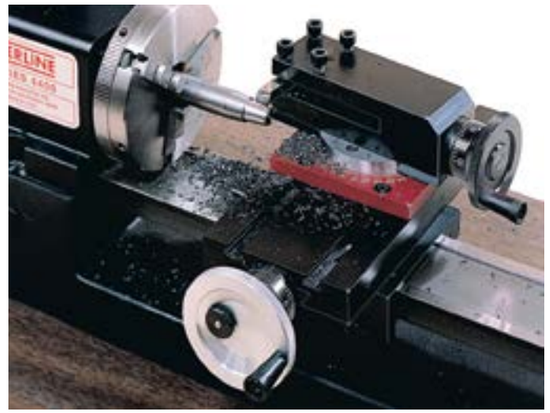
1/16 Scale F-4U-D Corsair
by Young C. Park



Compound Slide #1270 (1280 Metric)

The compound slide offers a way to turn tapers and cut angles on a lathe without rotating the headstock. Four mounting holes are provided in the base for solid positioning on the crosslide. The base has a red anodized finish with laser-engraved angle scales to make setting an angle easy. It utilizes a highly efficient locking ring design to lock it in position without having to overtighten the locking screws. A 1/4" cutting tool can be mounted across the front or on either side of the head.

Unlike compounds used on full-size, conventional lathes, this one was designed to be used from the "back" side of the table. This allows it to be designed in a more compact size and used without interference from the crosslide handwheel. The lathe tool is inserted in the holder "upside down" so the cutting tip faces downward. Because of the small size of the miniature lathe, operating the crosslide handwheel in this position is just as convenient.



The compound slide offers another way to cut tapers. The slide is used on the "back" side of the table with the tool upside down.

Compound Riser #1272

This riser block is about 1" thick and allows the compound slide to be used when riser blocks are in place on the lathe. When mounted to the riser block, the compound slide is used on the "front" portion of the crosslide rather than in back, and the cutting tool is returned to the normal upright position.

Radius Cutting Attachment #2200

The radius cutting attachment swings a tool through an arc to put a radius on the end of a part. The pivot points and tool position are adjustable, so it is capable of cutting either a concave or convex shape. It came about as a result of studying the method used to shape grinding wheels. Conventional thinking says that lathe tools should move parallel to the tool's longitudinal axis or horizontally across it. Once it was realized that the tool could also be pivoted vertically on this axis, the design of this tool became much easier to conceive.

Believe it or not, a technician with a need to cut an accurate radius to make prosthetic eyeballs got us started on putting this tool into production. Now anyone with a need to put a nice looking radius on the end of a part can benefit from the way this accessory makes it easy. It may not be something that a lot of people need, but it is typical of our commitment to serve all of our customers. If you need to (or just think it would be fun to) put a radius onto, or into, the end of a part, there is no easier way to do it than with this accessory. It can also cut a complete ball in a two-step operation covered in the instructions.

The radius cutting attachment can cut a convex or concave radius. Unlike most lathe operations, the tool is moved up and down rather than horizontally.

Knurling Tool Holder #3004

Sherline's knurling system can add that "professional" look to your parts. Knurls are embossed into the surface of a part rather than cut. Straight knurls are often used on the end of a shaft that is to be pressed into another part. Straight or diamond knurl patterns are used to provide better grip on handwheels and thumbscrews.

The holder consists of a right and left side that evenly tighten down on your part, while it is turned in the lathe, creating a knurled pattern. The holder is supplied with one set of spiral knurls that creates a diamond pattern. Other size knurls for diamond or straight patterns are also available. The tool will handle diameters up to 1" (25 mm).

NOTE: *The knurling tool was not designed for use with riser blocks.*

Typical diamond knurl finish; straight knurls also available.

Bump Knurl Tool Holder #2275

See the how-to video, Using the Bump Knurl Tool, on our Sherline YouTube channel.

Our bump knurl holder was designed so customers who have CNC machines could add a knurling operation to their program, but it can also be used on a manual lathe. This holder is the same style that is used on full-sized CNC machines. It is held in position using the 3/8" Insert Holder Tool Post (P/N 7600, not included). The bump knurl tool will handle stock diameters up to 1/2" (12.5 mm), while it is turned in the lathe.

NOTE: *The knurling tool was not designed for use with riser blocks.*

The bump knurling tool holder mounted on the CNC crosslide.

Spindle Handwheel #2049

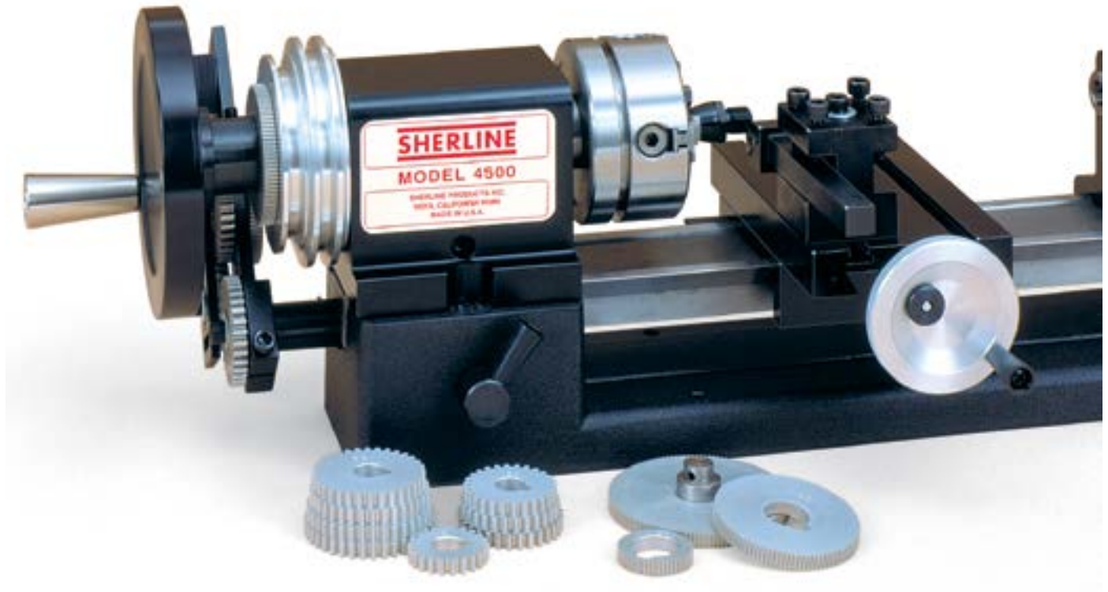
This 2.5" steel handwheel mounts on the end of the spindle shaft and looks and works much like a sewing machine handwheel. It allows the operator to quickly and safely stop a rotating spindle by hand. It also makes it easy to hand index the spindle when working on a part. A black oxide finish was not used, because the smooth, machined surface offers a better feel on your hand.

NOTE: *You can special order the spindle handwheel with a larger bore to fit our ER16 and 9/16" spindle headstocks. Contact us for a quote.*

Thread Cutting Attachment #3100

One of the big advantages of having a lathe is being able to machine threads. Many threads can be cut using taps and dies, but having a tap and die set that will enable you to cut all the non-standard thread sizes would be quite expensive. Sherline offers a unique and versatile thread-cutting attachment for its lathe. This low cost attachment enables you to machine thirty-six different unified thread pitches (Pitch range from 80 to 5 threads per inch) and twenty-eight different metric thread pitches (Pitch range from .25 to 2.0 mm). It also allows you to cut them as either left-hand or right-hand threads. A 60° carbide cutting tool is included, but a standard high speed steel lathe tool can be ground to cut various thread forms on any pitch diameter you desire. This versatility enables you to machine any inside or outside, standard or non-standard thread you might desire as long as it is within the size limitations of the lathe.

The attachment consists of 15 aluminum gears, mounting brackets, engagement mechanism, and 4.00" (102 mm) handwheel. Threads are generated on the Sherline lathe by gearing the spindle to the leadscrew. As the spindle is rotated with the handwheel mounted on the headstock spindle, the tool will advance an amount determined by the ratio of the gears. When the tool has completed its movement, you simply stop cranking, back up the tool and turn the spindle in the opposite direction until the tool is past its starting point. Then reset the tool and you're ready for the next pass. It's as simple as tapping! By using a 127-tooth gear (supplied), true metric threads can be cut on an inch (model 4000, 4500, or 4400) or true inch threads on a metric (model 4100, 4530, or 4410) lathe.



When the lathe is set up with the thread cutting attachment, the motor is removed and the spindle is turned by a large handwheel. A thread is being cut in a part held in a 4-jaw chuck. In the foreground are some of the change gears used for cutting different size threads.

CUTTING TOOLS

Lathe Cutting Tools #3005, -06, -07

P/N 3006 CARBIDE TOOL SET (Includes LH, RH and 60° threading tool)

P/N 3007 HSS TOOL SET (Includes LH, RH and boring tool)

P/N 3005 HSS BLANK

Pre-sharpened 1/4" high-speed steel (HSS) and carbide cutting tool sets and tool blank you sharpen yourself.

Lathe tools, or tool bits as they are sometimes called, are the cutting tools that are used for turning and facing work on the lathe. The most popular lathe tools are those made of high-speed tool steel (HSS). They can be used for machining most materials including wood, plastic, aluminum, brass and free-machining steel. These tools will retain their hardness at temperatures up to 1000° Fahrenheit (588° C.). For this reason, depth of cut, cutting speed and feed rates are important. The big advantage of high-speed steel tools is the ease with which they can be sharpened. A standard aluminum oxide grinding wheel can be used. Once shaped and sharpened, they will retain their cutting edge for a long time.

Carbide lathe tools usually have a tungsten carbide cutting tip brazed or bonded to a softer steel shank. These tools are recommended for cutting hard or abrasive materials. Carbide tools can retain their hardness at temperatures up to approximately 1700°. This permits a higher cutting speed and faster feed rates.

55° and 80° Offset RH and LH Carbide Insert Tool Holders (#2258 shown)

These holders have a 5° offset and hold either a 55° or 80° carbide insert affixed to a 3/8" square steel shank. A 2-ended carbide insert and a Torx screw and wrench are included with each. The 80° tips offer a little more strength for rough cuts, while the 55° cutters will cut into a sharper corner. The holders are made from case hardened steel and are designed to be held in the 3/8" slot in the #7600 tool post. Available individually or as a pair at a substantial cost savings.

#2256 (55° RH), **#2257** (55° LH), **#2258** (Set of both 55° RH and LH holders)
#2253 (80° RH), **#2254** (80° LH), **#2255** (Set of both 80° RH and LH holders)

NOTE: *RH and LH are determined not by which side the cutting edge faces but rather in which direction the chip comes off. A RH tool has the cutting edge on the left and the chip peels off to the right.*

55° and 80° RH and LH Carbide Insert 3/8" Boring Bars (#2261 shown)

These 3/8" diameter boring bars hold a carbide insert secured with a Torx screw. Each comes with either a 2-sided 55° or 80° carbide insert and a Torx wrench. The 55° RH boring tool will fit into a 3/4" starting hole. The 80° holder will fit into a smaller 1/2" hole. The 80° holder offers a little more strength for roughing cuts while the 55° insert will cut into sharper corners. The 3-1/4" long holder can bore a hole a little over 2" deep with two fastening screws tightened on it. The holders are made from 1144 stress-proof steel with a black oxide finish. They are available in both right-hand and left-hand configurations. Available individually or as a pair at a substantial cost savings.

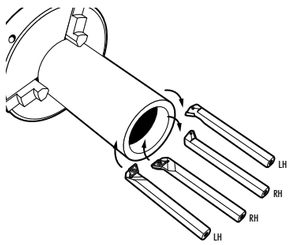
#2260 (55° RH), **#2263** (55° LH), **#2259** (80° RH), **#2264** (80° LH), **#2261** (set of both RH holders)

3/8" Boring Bars w/2 Flats-55° and 80° RH and LH Carbide Insert (#2266 shown)

These boring bars are similar to our standard boring bars but they have a second flat side so they can be held in a tool post with the insert face up or face down. This modification allows the left hand 55° and 80° boring bars to be used as O.D. turning tools on either the front or back side of the part. Each comes with a 2-sided carbide insert and a Torx wrench.

We designed these boring bars with two flats for our customers who wanted to convert their Sherline lathe into a "Chucker Lathe" or gang-tooling lathe and use the gang-tooling tool post (P/N 5930).

#2266 (55° RH), **#2268** (80° RH), **#2273** (55° LH), **#2274** (80° LH)



The left-hand tools are used as turning tools, while the right-hand tools are used as boring tools.

Threading/Grooving Carbide Insert Tool Holder #2267
(inserts sold separately)

Because of the multiple uses and the cost of the inserts, this holder is sold without inserts included. Choose which inserts you need and order them separately. A special clamp, 6-32 hold-down screw and 7/64" hex key are included with the holder.

Ceramic Insert Holder #2265

Ceramic inserts are used to cut hardened tool steel and other materials that might otherwise have to be ground. The triangular insert has 6 cutting surfaces. The holder has a 3/8" shank for use in the #7600 tool post. Extra inserts are available as #2266. Hex key included.

Vertical Sheer Bit #11975

This cutting bit is specifically designed to work with the Sherline Quick-Change Tool Post #2250 that allows easy tool height adjustment. Because it is designed to make sheer cuts using the vertical edge of the bit, the point of contact is not on centerline. This allows you to move the bit up or down to a sharper contact point once the bit begins to dull, greatly extending the amount of time between resharpening. The 1/4" bit is also ground on both ends, effectively doubling the amount of time that it can be used between sharpening. The Vertical Sheer Bit is also the easiest cutting tool to grind properly, making resharpening a breeze.

The vertical sheer bit held in the 1/4" tool holder on the P/N 2250 quick-change tool post.

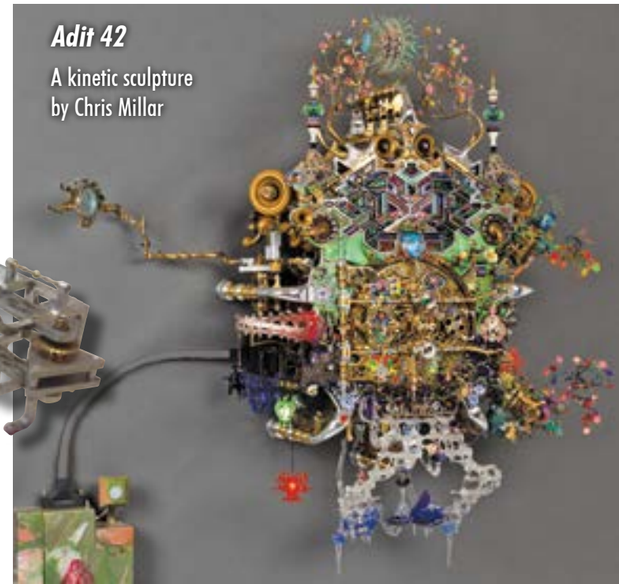
Center Drill Set #3021

Center drills are used with the lathe to drill a hole in the end of stock for mounting between centers in the lathe. They are designed to drill a small diameter pilot hole followed by a 60° countersink that provides a bearing surface for the 60° point of the lathe center. Center drills are also used extensively with the milling machine to accurately start holes. The large diameter shank on the center drill holds the drill point right on center and keeps it from "walking" as the hole is started. Once the hole is started, the center drill is replaced with a drill of the desired diameter and the hole is finished.

The center drill set includes a #1, #2 and #3 double-ended high-speed steel drill. The #1 drill has a 1/8" shank, the #2 drill has a 3/16" shank, and the #3 drill has a 1/4" shank. These and other smaller sizes (#0, #00 and #000) are available individually.

We often think of metalworking as something done to create accurate parts, but the process can also be used to make an item that is strictly decorative.

Chris Millar used his Sherline mill and lathe to cut gears and turn parts for this complex and intricate kinetic sculpture. Chris built it over two years and added, "All the parts of this project are made from scratch, mostly made of brass, aluminum, and resin."



ADJUSTABLE TAILSTOCK TOOLS

Adjustable tailstock tools make it possible to achieve "perfect" alignment between the headstock and the tool held in the tailstock.

Adjustable Live Center #1201

A live center is held in the tailstock of a lathe and supports the unchucked end of the work while allowing it to rotate easily on a bearing, as opposed to a standard "dead" center that does not rotate. If the point of the center is not in perfect alignment with the shaft, or if the center mark on the part is not dead-on, the part will "run out" (wobble), making precise machining impossible.

An adjustable live center allows you to precisely position the center point. The center is attached to one plate, while the shaft is part of another. Two slightly oversize holes in one side allow adjustment screws to be loosened, the center located and then locked down where you want it. In this manner, highly accurate centering can be achieved. If the ultimate in accuracy is your goal, the adjustable live center will help you achieve it.

Adjustable Tailstock Chuck Holders #1202 & #1204

Much like the adjustable live center, holding a tailstock chuck in perfect alignment without some method of adjusting it can be difficult or impossible. The adjustment screws and split design allow perfect centering for the chuck, should the quality of your work demand it. #1202 accepts 1/4" and 3/8" Chucks. #1204 accepts a 5/32" 0JT chuck. The #1204 holder is similar to the #1202 but with a 0 Jacobs male taper to accept the 5/32" chuck (Chucks not included).

Adjustable Tailstock Custom Tool Holder #1203

By making your own custom split collet with a 5/8" outside diameter, this part can hold almost any tool you wish to adapt to it. A set screw tightens on the split collet to hold the tool in place. It is also used to hold the collet adapter, #2085/#2086 (see below). The split face design with adjusting screws allows perfect centering of the tool's tip. Like the previous tools, it is designed for the machinist seeking every advantage in the quest for total accuracy.

Adjustable Bullnose Live Center #1205

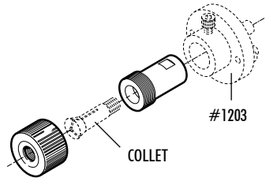
The #1205 live center is much larger than the #1201 and is designed to support parts with a large center hole or tubing. It accommodates a center hole from 3/8" to 1-3/4" diameter. The live center features two preloaded ball bearings inside.

Adjustable Tailstock 1" Die Holder #1206

The 1" die holder utilizes the same split design to achieve centering accuracy. A 1" button die is held in the face plate, and shafts held in a chuck or collet in the lathe headstock spindle can be threaded. The tailstock is not tightened to the bed, so the die is free to feed itself onto the part as the part is rotated by hand with the spindle using the large handwheel from the thread-cutting attachment or the #2049 spindle handwheel. Included is a 13/16" bushing that allows smaller dies of that size to be held as well.

WW Collet Adapter #2085 (8 mm #2086)

Held in the adjustable tailstock tool holder, #1203 (Not included), the collet adapter allows the use of WW collets in the lathe tailstock. This means you can hold extremely small drills accurately on center. Drills of only a few thousandths of an inch are easily broken if not perfectly centered. When you consider the alternative is to spend thousands of dollars for a jeweler's lathe that is far less versatile, the time is well spent.



COLLETS

We have begun marking our collets with a deeper laser cut for better and longer lasting legibility.

WW Collet Set #1160 (#1178 Metric)

Collets provide a quick, easy method of mounting cylindrical parts or bar stock in the lathe with a great deal of centering accuracy. Each collet is actually a small, precision 3-jaw chuck that fits into a special tapered adapter in the headstock. A drawbar that passes through the headstock and threads into the back side of the collet is used to draw the collet up into the tapered adapter. The adapter causes the jaws of the collet to close down, gripping the part to be machined. Typically, collets provide a very accurate part mounting system, but each size collet can accommodate only a small range of diameters of approximately ±.001-.002"(.02 mm).

WW collets differ from milling collets (#3060) in that WW collets have a hole all the way through the collet and drawbar. The maximum diameter stock that can pass entirely through the collet is 3/16" or 4.5 mm. The WW collets that are larger than this diameter are sometimes referred to as "pot" chucks.

These collets are manufactured by Sherline and are built to standard WW specifications, however, we have come across collets that are called WW and will not fit our drawbar and adapter. Be sure to check WW collets made by other manufacturers to be sure they fit our adapter before you purchase them. Sherline manufactures a slightly larger .315" (8.0 mm) adapter and drawbar set (#1163) that will accommodate some of these other brands.

Includes:
Collet Taper Adapter
Drawbar (mechanical steel tubing)
3/8" Knockout Bar
Set of 5 Collets (12L14 steel): 1/16", 1/8", 3/16", 1/4", and 5/16"
(Metric: 2.0 mm, 3.0 mm, 4.0 mm, 5.0 mm, and 6.0 mm)

Deluxe WW Collet Set in Wooden Box #1162 (Metric #1179)

This set contains a complete selection of 17 (14 for the metric set) Sherline WW collets, including a blank, 3/4" and 1" pot chucks with 1/8" dowel pin, an adapter, drawbar and a knockout bar. It is packaged in an attractive wood box with a brass latch and hinges. A machined wood insert locates each part, plus a drawing in the lid reminds you where each part goes to keep things organized. Extra holes are provided should you want to add additional collets to suit your particular needs.

Metric WW Collet Set, 78 Collets in Wooden Box #1180

Sherline offers a set of WW watchmaker's collets that run from 0.3 mm to 8.0 mm by 0.1 mm increments. Also included is a collet blank. The oak box has brass hardware and an insert with 96 holes, leaving room for additional metric or inch size WW collets.

1" WW Collet Blank #2083

To make it easy for you to make your own custom tool holder, we now provide a 1" (25.4 mm) diameter blank collet without hole or slots. It is made from free machining steel so you can drill and machine it to whatever shape you need. The shaft is pre-machined and threaded to accept your WW collet holder.

Collet Pot Chucks #2100 (3/4"), #2101 (1") and #2102 (1-1/4")

These collets (12L14 steel) can be easily machined and are specially designed to hold larger and odd-shaped parts. A 1/8" dowel pin (high-speed steel) is included with the collet to close on while the face is being machined. They require the WW collet adapter and drawbar, #1161, which is purchased separately.

NOTE: *Collet pot chucks are designed to hold material only on the face end, not through the collet. Maximum gripping depth is 3/16" (4.8 mm).*

Lever Collet Closer #1150

Anyone doing repetitive operations using WW collets will appreciate the speed and convenience of this collet closer. Once adjusted to approximate closing position with the drawbar, the collet is pulled closed tightly onto the part with just a short movement of the locking lever. Releasing the part is just as easy. Simply push the lever to the right and remove or reposition the remaining raw material. Features Include:

- Easy to install—just tap one existing 4-40 hole in spindle if not already tapped for threading attachment (self-tapping screw included).
- Wear parts are made from A2 hardened steel, yoke is made from 1018 steel and ball carrier and other parts are made from brass and 12L14 steel.
- Long stock up to 3/16" diameter can be passed all the way through the spindle and collet
- Larger parts can be held with WW collets up to 8mm (3/8") or in a custom machined WW pot chuck.
- Includes 3/8" knockout bar plus special #1 Morse to WW collet adapter with pin to engage keyway in collet to prevent rotation

Lever Collet Closer Riser #1152

Some Sherline lathe users like to keep their riser blocks in place at all times. This new extended base for the lever collet closer mounts the accessory at the proper height to be used with the riser blocks in place.

Collet Closer Stop Kit #1153

An optional material stop is available for the collet closer (P/N 1152). The stop block threads into the back of the collet knob. Included are four different length rods for various ranges of adjustment. The rods are held in place by a set screw.

3C Lever Collet Closer #3025

The 3C lever collet closer was designed to work with our 3C headstock (P/N 30113), and is based on the same design as our standard lever collet closer (P/N 1150), but it can be used on our standard headstock.

Anyone doing repetitive lathe operations on small parts will find this new accessory saves a lot of time when holding parts in a 3C collet.

Long stock up to 1/2" in diameter can be held through the 3C collets and spindle. Larger parts can be held in one of our 3- or 4-jaw chucks with the use of our chuck adapter (P/N 10670).

IMPORTANT NOTE: You must select a mounting base for a 3C headstock or standard headstock when placing your order.

3C Lever Collet Closer installed on our Chucker Lathe (P/N 6600).

3C Collet Closer Stop Kit #3024

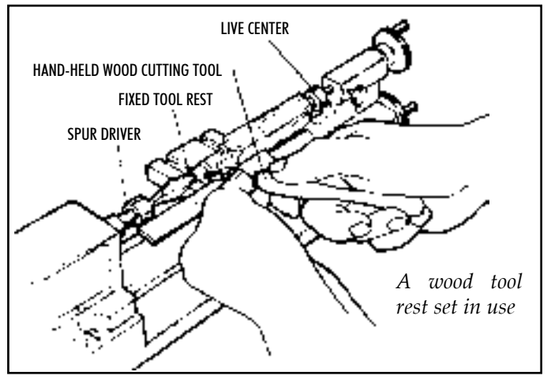
An optional material stop is available for the 3C lever collet closer. The stop block threads into the back of the collet knob. The 9" rod is inserted through the stop block body and is held in place by a set screw. Your material is placed in the collet until it hits the stop. The position of the rod provides a hard stop for running multiple identical parts.

The 3C Collet Closer stop kit installed on our Chucker Lathe (P/N 6600).

Lathe Headstock Hard Stop Kit #40116

Every Sherline headstock now includes the holes to add an optional hard stop. A hole through the headstock base allows the hard stop rod to be set to contact the lathe table, providing a hard stop for the Z-axis during turning operations. The kit includes a 4" hard stop rod, a 8" hard stop rod and a 10-32 x 5/8" thumbscrew. The kit includes instructions with dimensions for those who have an older Sherline lathe and want to add the hard stop (Lathe headstock is shown for reference only, and is not included).

Wood Tool Rest #3038 and #3047



A wood tool rest set in use

The Sherline lathe is used by many craftsmen to turn wooden parts. In wood turning, the chisel-like tool is held by hand rather than in a tool holder as is used to cut metal. These adjustable 3" and 5" rests are placed near the work, and the cutting tool is rested on and moved across their surface to cut wood. The design of the tool rest support system allows great flexibility in adjustment for position. Socket head screw and T-nut fasteners are included for mounting the base to the crosslide. By special request from a number of our wood turning customers, we offer a set of wood tool rests with extended bases (#3047). These are designed to accommodate the additional height needed when using riser blocks (#1291 and #1292) to work on larger diameter parts.

Spur Driver #3035

The spur driver is used in the headstock to drive wood when turning between centers rather than using the 3-jaw chuck. It has a point and four sharp blades that grip a wood part from the end to drive it (see illustration above).

Lathe Digital Readout with RPM Display #8200

A digital readout is available to read the position of the two lathe axes while also providing continuous RPM readout. It allows you to read the position of the leadscrew and crosslide to three and one-half decimal places (.0005") and either axis can be reset to a zero reading at any time with the push of a button. Now you can dial in dimensions larger than .050" (1 mm) without having to keep track of the number of handwheel rotations. If you use your lathe as a mill with the vertical milling column attachment, you can purchase a 3-axis DRO kit. If you add a 2-axis DRO to your lathe now and later purchase a vertical milling column, you can purchase a kit to add the third DRO handwheel and sensor at that time. New lathes can be ordered with the DRO already installed. See page 43 for more details on the similar DRO for the mill.

As a cost-saving measure, accommodation has also been made for owners of both a lathe and mill to use a single electronic display box for both machines. The input cables from the lathe can be unplugged and the readout box transferred from the lathe to the mill and vice versa. Depending on which machine you already have fitted with a DRO, ask for the upgrade for the other machine that allows you to use your existing box.

NOTE: DRO is coming soon for ball screw machines.

Tool Height Gauge #3009

This steel gauge offers a simple way to assure the tip of your cutting tool is set to the centerline height of the lathe. The lower lip is for tools in the standard tool post, while the upper lip is used with the riser tool post. Just set the gauge on the lathe table and position it in front of the tool tip to check height. It is much quicker and easier than checking height against a center in the headstock or tailstock.

Chip Guard #4360

The chip guard mounts to the headstock and swings down over the faceplate or chuck. It is made of a tough, clear polycarbonate material, so you can see what you are doing and still be protected from flying chips. It swings easily out of the way for setups. It is not recommended as a replacement for safety glasses, but rather as an additional safety feature. It also helps keep your work area cleaner by containing chips in a smaller area. It was designed to meet the compliance requirements of countries that require a chip guard.

Lathe Vinyl Dust Cover #4150 (4000/4500-series lathes) #4151 (4400-series lathes)

Fitted 6-mil vinyl dust covers are available for the two different size lathes. They extend the life of your machine and keep it looking like new by keeping it clean and dust-free when not in use. The clear covers have a red Sherline logo printed on them. Add a professional touch to your workshop with these fitted covers.

***NOTE:** While supplies last.*

Toggle Switch Dust Cover #3015

Working with brass or wood often generates a very fine dust that can work its way into the toggle switch, eventually causing your machine to work erratically or even short out. This special nut with a built-in seal replaces the standard mounting nut on the speed control on/off switch. The soft silicon collar slips over the head and shaft of the toggle switch and seals out fine dust to keep the inside of the switch as clean as new for years of reliable operation. This is an easy and inexpensive way to avoid possible headaches later on.

Attention Watch and Clock Makers...

Sherline makes a number of accessories to make your job easier. Shown below are some of the chuck arbors, gear-cutting arbors and 10.0 mm collet pot chucks. In addition, we offer a selection of WW collets, a tailstock WW collet adapter (see pages 23-24) as well as adapters that allow you to use our 3- and 4-jaw chucks on your jeweler's or watchmaker's lathe. Take advantage of the versatility of the Sherline system of tools and accessories. If you're looking for a new lathe or ways to make your old lathe more versatile, check out all that Sherline has to offer.

NOW AVAILABLE: 8.0 mm and 10.0 mm collet-to-live center adapters for your watchmaker's lathe. 8.0 mm–#2106, 10.0 mm–#2107

W.R. Smith T-Rest #2110

The W.R. Smith T-rest turns your Sherline lathe into a first class clockmaker's lathe. The T-rest supports a hand-held "graver," the traditional metal turning tool of watch and clockmakers. World-renowned watch and clockmaker, William R. Smith designed a T-rest especially for the Sherline lathe. It is of solid steel construction and clamps to the lathe's bed in seconds. If you are interested in watch or clock repair or construction but wanted a tool system more versatile and less expensive than a jeweler's lathe, this T-rest makes a Sherline lathe a most attractive choice.

Horological Bushing and Depthing Attachment #2118

Allows you to use your Sherline mill to do clock bushing and depthing tasks that used to require expensive, single-purpose horological tools.

Depthing attachment with a clock movement held in the two posts

Vertical Milling Table #1185 (Metric #1184)

The vertical milling table is another method of milling on the Sherline lathe instead of using the vertical milling column. For general milling we recommend the vertical milling column, but for specific setups you may find this accessory useful.

The Sherline vertical milling table is mounted on the lathe crosslide. Vertical table travel is 2.25" 57 mm. This allows work to be moved up or down on the vertical milling table, back and forth with the crosslide, and in and out with the leadscrew, which covers all the axes needed for milling. This accessory takes two minutes or less to mount on a Sherline lathe. Many of our customers have also found uses for the vertical milling table on special machines that require a reasonably priced, small precision slide. It provides 4.25" of travel when used horizontally as a special fixture, or as a fourth axis.

Adjustable "Zero" Handwheels

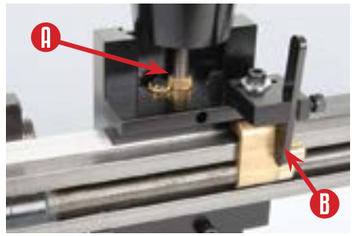
#3420 - 2" Diameter (3430 Metric), #3440 - 2.5" Diameter (3450 Metric), #3460 - 2.5" w/ thrust and ball bearings (3465 Metric)

Most expensive full-size machine tools allow the machinist to reset the handwheel to "zero" (or any desired setting) at any time during the machining operation. That option is available on Sherline's miniature machine tools as well. These handwheels install easily in place of the standard handwheels by simply releasing one set screw. Operation is simple as well. Just release the black locking nut while holding the handwheel. Then reset the handwheel collar to "zero" and retighten the locking nut. Now you can dial in the amount of feed you want starting from zero without having to calculate your stopping point. It's a great time saver and also reduces the chance of errors.

All standard 1-5/8" handwheels can be replaced with 2" adjustable handwheels. Both inch and metric versions are available. For the Z-axis of the mill or vertical milling column, a 2-1/2" diameter handwheel is available. Newer machines come with a ball thrust bearing set to relieve the stress caused by the lifting action of the vertical Z-axis that is not present on the other horizontal axes. Older machines can be upgraded to use the new ball bearing set when getting the resettable handwheel. Call with the model number of your machine and we will help you select the proper handwheel upgrade. (Red anodized handwheels are available upon request.)

(A) Lathe Crosslide Anti-backlash Upgrade

#40950 (#40951 Metric)



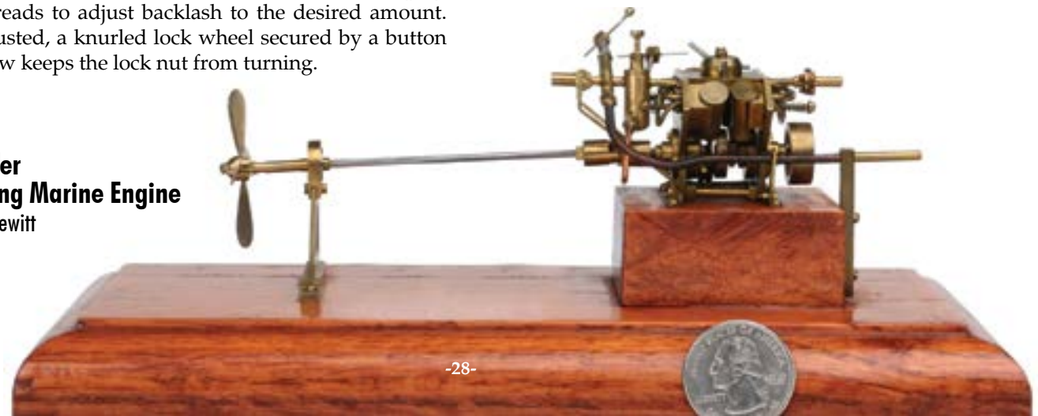
Starting in early 2014, Sherline added backlash adjustment on the lathe crosslide to all new lathes. This kit is available to retrofit any earlier Sherline lathe. Based on a similar design used for years on the mill X- and Y-axes, it uses a round, knurled brass lock nut on the leadscrew that is tightened against the side of the saddle to pull against the threads in the slide screw insert. This takes out excess play in the threads to adjust backlash to the desired amount. Once adjusted, a knurled lock wheel secured by a button head screw keeps the lock nut from turning.

(B) Lathe Anti-backlash Saddle Lock Upgrade

#44177 (#44177M Metric)

Based on the mill locking lever design, this kit adds a locking lever to the saddle nut under the long axis of your lathe. This allows you to control backlash to as little as .001" on this axis. Designed for CNC use, it can also be added to manual lathes. This feature comes standard on all CNC and CNC-Ready lathes.

4-Cylinder Oscillating Marine Engine
by Scotty Hewitt



HEADSTOCKS & MOTORS

Sherline Standard Headstock #30100

Sherline's standard headstock with a #1MT spindle. Threaded to accept 3/4 x 16 tools. Includes spindle pulley.

Also available with a DC motor and standard 2,800 RPM (max.) speed control unit: **#3306 Headstock and Motor Unit**

Electroless Nickel Plated Spindle Headstock #30101

We also offer our standard #1MT spindle headstock with an electroless nickel plating that aids in rust prevention and increases the surface hardness of the spindle for durability. With DC motor unit: **#3311 Nickel Plated Headstock and Motor Unit**

Do you just need the DC motor and speed control unit? It's available separately as **#33050**

#33050 90-volt DC motor & speed control

Sherline 9/16" Headstock #30110

The internal through hole has been opened up to a maximum of 9/16". Please note that while this allows larger stock to pass through the headstock, it also eliminates the #1 Morse internal taper, meaning no tapered tools like drill chucks, fly cutters, etc. can be held in the headstock. The larger O.D. of the pulley through hole also renders the #3100 Thread Cutting Attachment unusable. Threaded tools can still be used, such as 3- and 4-jaw chucks, and end mill holders.

Also available with a DC motor and standard 2,800 RPM (max.) speed control unit: **#3309 Headstock with 9/16" Through Spindle and Motor Unit**

Sherline ER-16 Headstock #30111

For use on a Sherline lathe or mill in place of the standard headstock if you are wanting an ER-16 spindle, collet nut included.

NOTE: *We do not sell the collets used with the ER-16 spindle. Those are available through MSC Industrial Supply Co. or other tool supply sources.*

Also available with a DC motor and standard 2,800 RPM (max.) speed control unit: **#3308 Headstock with ER-16 Spindle Nose and Motor Unit**

Sherline 3C Collet Headstock #30113

With the 3C collet, our customers can now hold stock up to 1/2" diameter that will pass through the headstock. When we designed our 3C Collet Headstock we made sure it would be interchangeable with our standard headstock. The 3C Spindle is electroless nickel plated to aid in rust prevention, and to increase the surface hardness of the spindle for durability. A 1" spindle wrench (#30129) and spindle bar are included to tighten and loosen the collets.

Also available with a DC motor and standard 2,800 RPM (max.) speed control unit: **#3310 3C Headstock and Motor Unit**

Headstock and Motor Unit (10,000 RPM) #3307

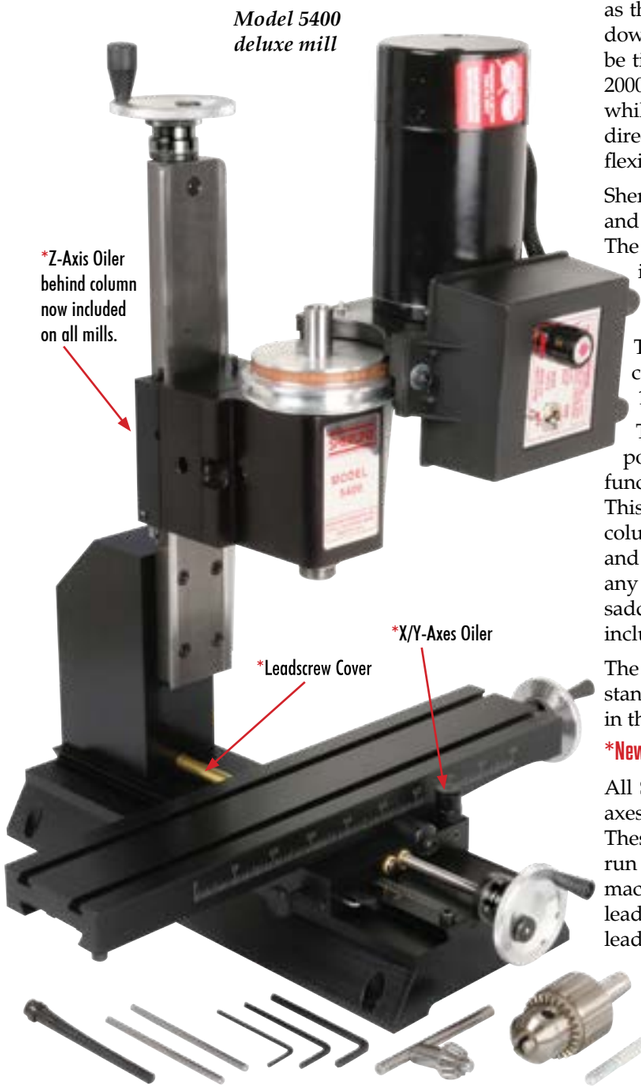
Sherline headstock/motor/speed control units have long been popular with tooling designers and home shop users making special tooling. Why reinvent the wheel when such a powerful, compact and economical powered spindle already exists? Now we have expanded the capability of our spindle by offering a pulley ratio that makes possible spindle speeds of up to 10,000 RPM. It can be used as a stand-alone unit for custom spindle applications or in seconds it can replace the standard 2,800 RPM max spindle used on all Sherline lathes and milling machines.

VERTICAL MILLING MACHINES

The main difference between a lathe and a mill is that on a lathe, the work turns and the cutting tool is stationary, while on a mill, the tool turns and the work is stationary. Because of the tremendous number of operations that can be performed on a vertical mill, it is commonly regarded as the most important tool in the modern machine shop...the workhorse of the industry.

At first glance, a vertical mill looks similar to a drill press, but there are some important differences; such as, a spindle that can take side loads as well as end loads and an accurate method of moving the work in relation to the spindle on all three axes.

Model 5400 deluxe mill



Sherline milling machines can perform all of the tasks and operations that a large commercial machine can perform. Operations such as fly cutting, precision drilling and boring are all routine tasks for the Sherline mill. Because the tool turns rather than the work, much larger parts can be worked on in a mill, and these parts need not be round. The work is securely held, thus extremely accurate hole patterns can be drilled or bored. The longer X-axis table (side-to-side) throw also increases the machine's versatility over that of the lathe with the vertical milling column attachment. It is an extremely rigid, accurate tool that accomplishes tough machining jobs with ease.

In addition to the basic three axes of movement, known as the "X" (left/right), "Y" (in/out) and "Z" spindle (up/down) axes, Sherline mills also offer a headstock that can be tilted to either side to mill angled surfaces. The Model 2000 mill offers four additional directions of adjustment, while the Model 5800 NexGen mill offers three additional directions of adjustment for those who wish the ultimate in flexibility (see following pages).

Sherline milling machines are offered in four models and can be purchased in either inch or metric versions. The inch models have their feeds calibrated in .001" increments, while metric models are calibrated in .01mm increments. The machines are equipped with a high-torque DC motor with variable speed control. This speed control is internally equipped with a converter that automatically adjusts between inputs of 100 VAC to 240 VAC, 50-60 Hz. without loss of torque.

The saddle locking lever is typical of Sherline's policy of constantly striving to improve the accuracy, functionality and value of our machines (see page 34). This lock is standard on all new mills and vertical milling columns. In keeping with our goal to make all accessories and improvements compatible with existing machines, any older Sherline mill can be upgraded to add the new saddle lock by purchasing upgrade kit #4017U, which includes the locking lever and a new saddle nut.

The differences between the various models of the standard, deluxe and multi-direction mills are described in the following pages.

***New Mill Features!**

All Sherline mills now include oil reservoirs on the X/Y axes and the Z axis to help keep critical parts lubricated. These were initially developed for CNC machines that run constantly for hours on end but can benefit manual machines as well. Another new feature is the brass leadscrew cover that keeps chips off the rear of the Y-axis leadscrew.

NOTE: *All Sherline Mills are available "CNC-Ready" with stepper motor mounts. Mills can also be ordered with Digital Readouts factory installed. See page 43 for details.*

5000 Series Vertical Mill #5000 (#5100 Metric)

The 5000-series mills feature a solid 10" (254 mm) aluminum base, precision machined dovetailed slides with adjustable gibs, permanently lubricated spindle bearings, adjustable preload anti-backlash feed screws on the X- and Y-axes, two 1-5/8" (41 mm) laser-engraved aluminum handwheels, one 2-1/2" (63 mm) laser-engraved handwheel with thrust bearings, Z-axis locking lever and many other features found only on the best commercial machines. This milling machine, along with a Sherline lathe, will enable you to complete almost any appropriately sized job in your own machine shop.

5500 Series Vertical Mill #5500 (#5510 Metric)

This mill is identical to the model 5000 shown at the left but with the addition of adjustable "zero" handwheels. The X- and Y-axes are fitted with 2" diameter Adjustable "zero" handwheels with laser-engraved collars. The Z-axis features a larger 2.5" adjustable handwheel. This combination offers our most compact mill with the luxury addition of handwheels that can be reset to zero (or any number) before or after any operation, thus preventing ruined parts due to math errors in handwheel calculations.

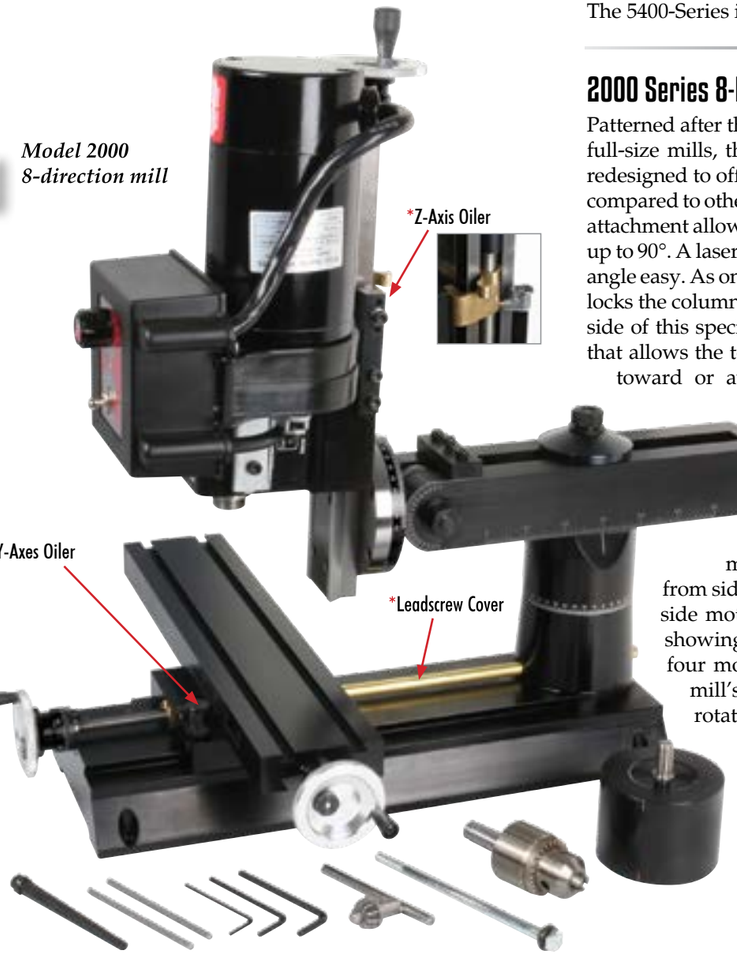
5400 Series Deluxe Vertical Mill #5400 (#5410 Metric)

The deluxe 5400-series mills come equipped with all of Sherline's standard features upgraded to include a laser-engraved 12" (305 mm) solid aluminum base for 2" of additional Y-axis travel, laser-engraved scales on the table and base, 2-1/2" (63 mm) adjustable "zero" handwheel on the Z-axis and 2" (51 mm) adjustable "zero" handwheels on the X- and Y-axes, a mill headstock spacer to provide more throat distance and a 1/4" drill chuck and drawbolt. The 5400-Series is our best selling mill.

2000 Series 8-Direction Vertical Mill #2000 (#2010 Metric)

Patterned after the movements of the industry standard for full-size mills, the Bridgeport® mill, the column has been redesigned to offer four additional directions of movement compared to other Sherline mills. A modified rotary column attachment allows the Z-axis column to tilt from side to side up to 90°. A laser-engraved angle scale makes setting the tilt angle easy. As on the rotary column, a clamping ring design locks the column securely at the desired angle. On the back side of this special rotary column attachment is a knuckle that allows the top of the Z-axis column to be tilted either toward or away from the operator. Laser-engraved scales indicate movement up to 90° in either direction on this axis.

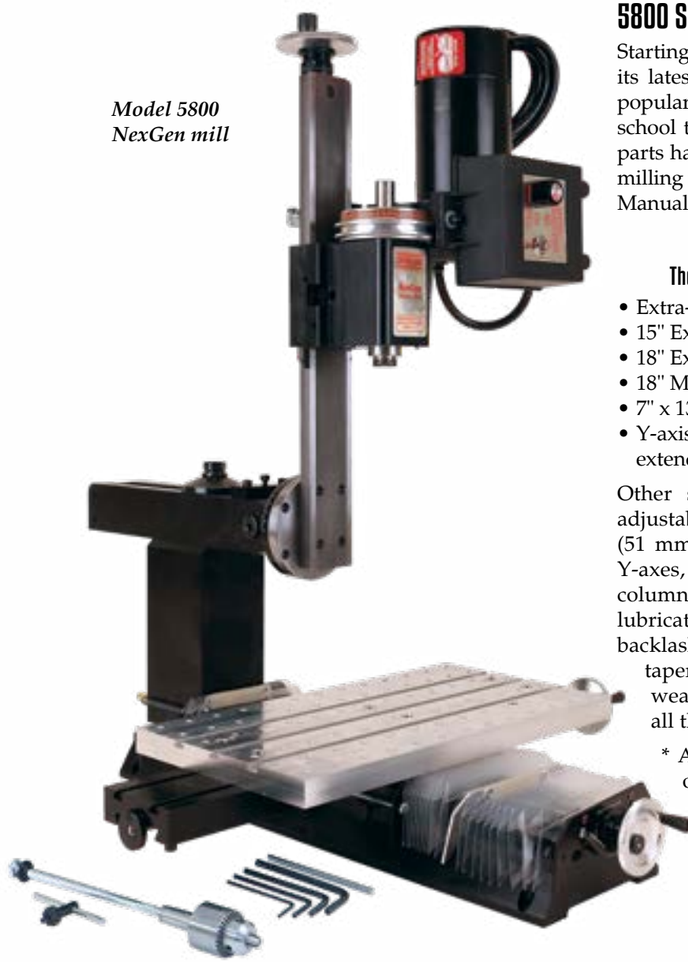
In addition to the side-to-side and fore/aft tilt movements, the new column base offers a center pivot lock that allows the ram to be moved both in and out as well as swung from side to side. In/out travel is 5.50" and side-to-side motion is indicated by laser-engraved scales showing up to 90° of movement either way. These four movements are in addition to the standard mill's X-, Y-, Z-axis travel and headstock rotation movement, giving a total of eight directions of movement or tilt. This much versatility puts the Sherline model 2000 mill in a class by itself in this size range. It is a fully functional shop mill that fits on a tabletop and stores on a closet shelf. When used with accessories like the tilting angle table and rotary table, the machining possibilities of the mill are limited only by part size and the extent of your imagination.



Model 2000
8-direction mill

The 2000-series mill base has been extended an additional 2" over the Model 5400, extending the Y-axis travel to 7.0" (178 mm). This was done to accommodate the pivoting mechanisms and to take advantage of the increased arm movements. Like the deluxe Model 5400 mills, all handwheels are resettable to zero at any time.

The 8-direction mill includes the same laser-engraved scales on the base and table as the 5400-series deluxe mill package. Also included is a 1/4" drill chuck. (The headstock spacer block is not included on the 2000-series mill, as the ram travel makes it unnecessary.) Optional rigid column bases are available for a small fee (see page 34).



Model 5800
NexGen mill

5800 Series NexGen Vertical Mill #5800 (#5810 Metric)

Starting in November 2015 Sherline Products introduced its latest Vertical Milling machine. With the increase of popularity of Sherline mills in industrial, laboratory, and school training environments the need to produce larger parts has led to the development of an extended capacity milling machine. Sherline's NexGen Mills are available in Manual, DRO, CNC-Ready, and full CNC configurations.

The new NexGen Mill has the following standard features:

- Extra-Rigid Column Base
- 15" Extended Column Bed
- 18" Extended Mill Table
- 18" Mill Base
- 7" x 13" Tooling Plate (3 T-slots, Alignment Pins)*
- Y-axis covers—Mill Accordion Way Cover Set and extended 12" brass rear leadscrew cover

Other standard features include a 2-1/2" (63 mm) adjustable "zero" handwheel on the Z-axis and 2" (51 mm) adjustable "zero" handwheels on the X- and Y-axes, and oilers on the X-, Y- and Z-axes to keep the column leadscrew and base saddle leadscrews and ways lubricated during extended CNC operations. In addition, backlash is adjustable on the X-, Y- and Z-axes. Adjustable tapered plastic gibs provide a way to accommodate wear on the aluminum and steel dovetailed slides on all three axes.

* A 7" x 18" tooling plate (#3563) is available as an optional upgrade.

Standard Equipment Included with Every Mill

Every Sherline mill comes with a DC motor and speed control, a 2.75" (70 mm) x 13.0" (330 mm) table with two T-slots (2.75" (70 mm) x 18" (457 mm) for 5800 mills), pulleys, drive belt, 3 hex keys, tommy bars, oilers, lead screw cover and a gib removal tool.

The 5000-series mills come with two standard 1-5/8" (41 mm) laser-engraved aluminum handwheels, and one 2.5" (65 mm) handwheel, while the 5500, 5400, 2000, and 5800-series mills come with deluxe adjustable zero handwheels. 5400, 2000, and 5800 mills include a 1/4" drill chuck. 5400 mills also include a #1297 headstock spacer block.

***NOTE:** All mills are available as manual, digital readout, CNC-Ready, and full CNC configurations.*

TECHNICAL SPECIFICATIONS–MILLS

Vertical Mills	5000 (5100)	5400 (5410)	2000 (2010)	5800 (5810)
Max. clearance (table to spindle)	8.00" (203 mm)	8.00" (203 mm)	9.00" (229 mm)	14.00" (356 mm)
Throat (no spacer)	2.25" (50 mm)	2.25" (50 mm)	Adjustable	(Adjustable)
Throat (w/ headstock spacer)	optional	3.50" (90 mm)	Adjustable	(Adjustable)
Travel: X-axis (with stop)	8.65" (220 mm)	8.65" (220 mm)	8.65" (220 mm)	13.65" (347 mm)
Travel: Y-axis	3.00" (76 mm)	5.00" (127 mm)	7.00" (178 mm)	11.00" (279 mm)
Travel: Z-axis	6.25" (159 mm)	6.25" (159 mm)	5.38" (137 mm)	9.38" (238 mm)
Hole through spindle	.405" (10 mm)	.405" (10 mm)	.405" (10 mm)	.405" (10 mm)
Spindle nose thread	3/4-16 T.P.I.	3/4-16 T.P.I.	3/4-16 T.P.I.	3/4-16 T.P.I.
Spindle nose taper	#1 Morse	#1 Morse	#1 Morse	#1 Morse
Spindle runout of Morse taper	.0005" or less	.0005" or less	.0005" or less	.0005" or less
Handwheel graduations	.001" (.01 mm)	.001" (.01 mm)	.001" (.01 mm)	.001" (.01 mm)
Electronically controlled spindle speed range	70 to 2800 RPM	70 to 2800 RPM	70 to 2800 RPM	70 to 2800 RPM
Width overall*	14.75" (375 mm)	15.00" (381 mm)	15.00" (381 mm)	20.00 (508 mm)
Depth overall*	11.75" (298 mm)	14.00" (356 mm)	22.25" (565 mm)	23.13" (588 mm)
Height overall (Max.)*	20.75" (527 mm)	20.75" (527 mm)	23.38" (568 mm)	24.50" (622 mm)
Table size	2.75" x 13.00" (70 mm x 330 mm)	2.75" x 13.00" (70 mm x 330 mm)	2.75" x 13.00" (70 mm x 330 mm)	2.75" x 18.00" (70 x 457 mm)
Hold-down provision	2 T-slots	2 T-slots	2 T-slots	3 T-slots
Shipping weight	33 lb (15.0 kg)	36 lb (16.3 kg)	38 lb (17.2 kg)	50 lb. (22.7 kg)
Movements in addition to X-, Y- and Z-axes	Headstock rotation (90° L/R)	Headstock rotation (90° L/R)	Headstock rotation (90° L/R)	Headstock rotation (90° L/R)
Column rotation	N/A	N/A	(90° L/R)	N/A
Column pivot	N/A	N/A	(90° Fwd/Bk)	(90° Fwd/Bk)
Column swing	N/A	N/A	(90°L/R)	(90°L/R)
Column travel	N/A	N/A	(In/Out) 5.5" (140 mm)	(In/Out) 5.5" (140 mm)

5000-series standard 10" mill

5400-Series Deluxe Manual 12" Mill

2000-series 8-direction 14" mill

5800-series NexGen 18" mill

MILL ACCESSORIES

Mill Saddle Lock Upgrade #4017U (#4117U Metric)

Sherline mills produced before 1999 used a nylon friction lock that was tightened using a socket head screw. It squeezed against the back side of the mill column dovetail. With the introduction of the Model 2000 mill in late 1998, we changed the way the mill saddle was locked. The new system utilizes a brass lever on the leadscrew that locks against the top of the saddle nut. This provides a more secure lock that requires no tool to tighten. Older machines can be upgraded to the new system with the addition of this locking lever and a new saddle nut that has a spring-loaded ball to keep the lever from self-locking when the leadscrew is turned.

Mill Z-axis Saddle Lock Upgrade #4017Z (#4117Z Metric)

On CNC mills, excess backlash is a particular problem on the Z-axis for certain 3D modeling and engraving applications requiring very subtle movements of the Z-axis. This modification to the Z-axis locking lever allows adjustable control over the Z-axis backlash, making it possible to reduce it down to as little as .001". It is now included as standard equipment on all CNC and CNC-ready Sherline Machines and can also be easily installed on existing manual or CNC machines, requiring no new holes. Once the lever is positioned to the desired location removing as much backlash as is desired, the thumbscrew is tightened, holding the locking lever in place.

2" Rigid Column Spacers

#50058 (Rectangle), #56057 (Round)

These spacers are available in round and rectangular formats for the 2000-series mill and the 5400-series mill column bases with a 2000 ram, respectively. The round spacer on the left is designed to be used in conjunction with the 2000-series mill, while the rectangular spacer is meant to be used with either our Short or Tall 5400 Mill Column Bases with the 2000 Ram.

Rigid Column Bases

#5605 (Short), #5606 (Tall)

For those who want the versatility of Sherline's 2000/2010 mill column with it's large work area and multiple directions of movement but have experienced unwanted column rotation during extreme machining loads on the 2000 mill, this new column offers another option. The one-piece column absolutely prevents that from happening, although you do give up the ability to rotate the column ram from side-to-side.

5400 Mill Column Base with 2000 Ram

#5640 (#5641 Metric) (Short), #5645 (#5646 Metric) (Tall)

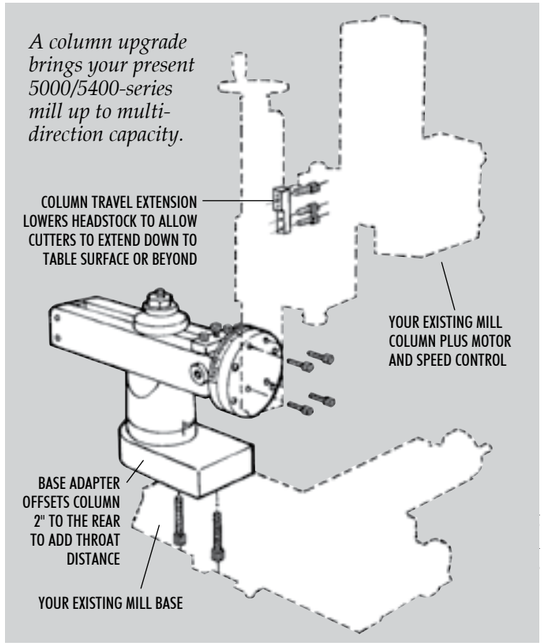
These rigid columns are designed for those who have a 5400-series mill. Each comes with the 2000-series ram and gives the versatility of Sherline's 2000-series mill column with it's large work area and seven directions of movement. The tall column provides more Z-clearance.

NOTE: *The mounting hole pattern for this column is designed to work with the new mill base that has the through-hole for the Y-axis cover tube. It will not mount on an older style mill base. If you wish to use this rigid base with an older style mill base, you will need to drill and C'bore the two new holes in your mill base.*

Multi-Direction Upgrade for 5000-Series Mills
#5650 (#5660 Metric)

If you already own a 5000-series Sherline mill, or if you purchase one now with the thought of upgrading later, you can convert your mill to a multi-direction mill when you feel its additional capabilities would be useful for your projects. Included is an adapter base and all necessary attachment screws. Also included is the column travel extension that allows the headstock to be brought down closer to the table (see also the photo on page 39).

UPGRADE NOTE: *If you are upgrading a current 5000/5400 series mill that has a brass tube leadscrew cover for the Y-axis this column upgrade CANNOT BE USED without the removal of the brass tube.*

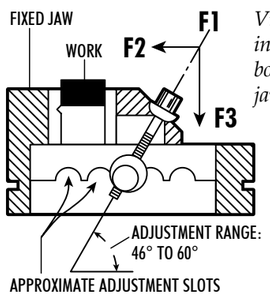


A column upgrade brings your present 5000/5400-series mill up to multi-direction capacity.

Milling Vise #3551

The most convenient way to hold small parts for milling is with the milling vise. Milling vises are different from other machine vises in that they are designed to hold the movable jaw down while clamping, eliminating any chance for the jaw to lift. A cheap drill press vise is almost useless on a milling machine, because it can't be accurately aligned with the machine.

The Sherline milling vise is sized just right to be the perfect working companion to Sherline milling machines. The jaws are 2.00" (50.8 mm) wide by 1.00" (25.4 mm) deep and open a full 2.00" (50.8 mm). The fixed jaw has both



Vise pull-down feature. Tightening in direction F1 produces forces to both hold the part (F2) and keep the jaw from lifting (F3).

The rotating vise base can even be used as a simple rotary table, providing a way to pivot the vise on an arc or in a circle for drilling hole patterns or milling flats.

Rotating Mill Vise Base #3570

The rotating vise base eliminates clamping and unclamping the vise to produce angles. Once mounted square to the table, the vise can be positioned using the laser-engraved protractor scale as a guide for setting the angle. The red anodized base is laser engraved with angle measurements in 1° increments all the way around. A witness mark is engraved on the side of the rotating collar that holds the vise. The locking washers can be loosened, which allows the vise to slide forward and back in the fixture for further adjustment. A locking ring underneath pulls the collar down onto the base to lock it securely when the two hold-down screws are tightened. The low profile tooling plate base only raises the height of the vise 1/2". Four T-nuts and hold-down screws are included.

Mill Vise w/Rotating Base #3575 (not shown)

The mill vise and rotating base can be purchased together at a price that offers a savings compared to buying the two individually.

Standard Hold-Down Set #3012

Sherline now offers two types of hold-down sets; standard and step block. The standard set offers a simple and versatile method of clamping work to the mill table.

This simple hold-down set consists of two strap clamps complete with bolts, T-nuts, washers and a variety of lengths of socket head cap screws. The round heads of the carriage bolts rest upside-down on washers on the table surface and are screwed up or down to support the strap clamp at the same height as the part being held.

Step Block Hold-Down Set #3013

This style clamp set has long been popular on full-size milling machines. The step blocks are notched as are the back of the clamps to make it quick and easy to set your clamps to the proper height. A selection of threaded studs from 1" to 3-1/2" is provided to allow a variety of heights to be selected quickly. The nut and washer design is a nice touch too. The bottom of the nut is convex while the top of the washer has a matching concave surface. Even if the clamp isn't level, the washer will seat flat on top of it while applying even pressure. Also provided is a spare, non-anodized third step block that you can cut down to make smaller size step blocks for low setups.

Though slightly more expensive than the standard set, this type of clamp is easier on the surface of your mill table and also quickly adjusts to a larger range of heights. At least one set of hold-down clamps should be considered a necessity for every milling machine owner.

4-Jaw Chuck Hold-Down Set #3058

This set consists of two clamps complete with screws and T-nuts and can be used to clamp the 4-jaw chuck to the milling table or lathe crosslide. The set provides a little more versatility than the chuck-to-T-slot adapter (#1187) in that the chuck can be located almost anywhere on the table, and the part can be properly aligned with the axis of the machine. The clamps fit in a groove machined around the circumference of the 4-jaw chuck. They are the same as those furnished with the Sherline milling vise and rotary tables, so they are not needed if you already own one of these accessories.

Chuck-to-T-Slot Adapter #1187

This simple adapter can be used with either the 3- or 4-jaw chuck and fastens the chuck securely to the milling table or lathe crosslide T-slots. It slides into the T-slot and the chuck is simply screwed down onto it until it tightens against the table.

90° Angle Plate #3559 (long), #3561 (short)

This angle plate is a very useful work-holding fixture for milling. It can be used to hold parts on either surface, which means you can hold a part perpendicular to the table, even if the bottom is not flat. Parts can also be held from two directions at once. The #3559 has large 3" x 3" x 10" (#3561 3" x 3" x 3.5") machined mounting surfaces with two T-slots running full length on each. It is made from extruded aluminum with a black anodized finish. Provided with the plate are six 10-32 mounting screws and T-nuts (#3561 includes four mounting screws and T-nuts).

Mill Tooling Plates #3560 (4" x 10"), #3562 (7" x 13"), #3563 (7" x 18")

Like those used on our large production machines, the mill tooling plate solves two problems. It not only protects your mill's table from damage, but it also provides an inexpensive, modifiable surface for clamping work that is as flat as the machine's original table. The best way to hold a part more securely is to add more clamping points rather than over-tightening the points you already have. The mill tooling plate allows you to easily do this.

Like a lathe faceplate, the mill tooling plate should be looked at as somewhat disposable. It has a hole pattern predrilled to make it easy to clamp down the Sherline mill vise or the rotary table, but you should feel free to drill whatever additional holes are needed to meet your particular needs. The plates are made from aluminum (#3560 – 1/2" thick, #3562 and #3563 - 3/4" thick). The mounting screw holes are countersunk to keep the working surface free of obstructions. All other holes are drilled and tapped for 10-32 screws.

* #3560 – 6 T-nuts and 10-32 Socket head screws
** #3562 – 3 T-slots, 4 steel dowel pins, and 6 T-nuts and 10-32 Socket head screws
*** #3563 – 3 T-slots, 4 steel dowel pins, and 6 T-nuts and 10-32 Socket head screws

NOTE: *The #3562 and #3563 tooling plates will mount on your table, but it will reduce your "throat depth" by 2", and your overall Y-axis travel by 3.3". A 12" base will be reduced to 1.7" of Y-axis travel, and a 14" base will be reduced to 3.7" of Y-axis travel.*

Tilting Angle Table #3750

This accessory offers a variety of setup options and an alternative to rotating the column. With the base mounted square to the mill table, parts mounted to the tilted table can be machined or drilled at precise angles. It can be set at any angle from 0° to 90°. The hole pattern in the table accepts Sherline's mill vise or rotary table. A threaded chuck mount is also included, which means parts from the lathe can have machining operations done on them without removing them from the chuck. They can then be returned to the lathe for further operations without re-centering. With the rotary table mounted to the tilting table, many additional machining possibilities are opened up (see page 40). The pre-drilled and tapped hole pattern is laid out so that when the rotary table is in the 90° position, its center is the same height as the rotary table tailstock (#3702). This eliminates the need for the #3701 right angle attachment.

Chamfers can be milled using the tilting angle table on a mill.

Milling Collets #3060 (#3090 Metric)

Sherline milling collets are designed to be used with the Morse #1 internal taper that is standard on both the Sherline lathe and vertical mill. Because of the shallow angle of the Morse #1 taper when the drawbolt is tightened, greater clamping force can be applied when compared to the clamping pressure of WW collets. Therefore, we recommend the use of these milling collets for holding miniature size end mills (3/16" or 1/4" shank), #1 and smaller center drills or Dremel® bits (1/8" shank) and assorted other cutters. The Sherline milling collet set consists of a 1/8", 3/16" and 1/4" mill collets, a drawbolt and a thrust washer. (Metric sets include 3 mm, 4 mm and 6 mm sizes.) Other size collets in inch and metric sizes are also available through Sherline.

Cutting tools held by these collets must have a shank size within .001" of the manufactured size. Because of the shallow taper angle, these collets will not loosen from the spindle without backing the drawbolt off a couple of revolutions and tapping the drawbolt to free the collet. Includes drawbolt and washer.

3/8" End Mill Holder #3079 (other sizes available)

This easy-to-use end mill holder screws onto the threaded end of the mill spindle. End mills are held in place with a single set screw that tightens against the flat on the side of the cutter. Because of the ease of use of this type of cutter holder and the fact that it allows the use of longer or double-ended end mills, we have also made it available for 1/8" (#6081), 3/16" (#6080), 1/4" (#6079) and 5/16" (#3075) diameter cutters. For metric tools, we offer the most commonly used 10 mm end mill holder (#3078) as well as 6.0 mm (#3076) and 8 mm (#3077) sizes.

In addition to end mills, special purpose cutters such as those designed for cutting key slots, dovetails and corner radii usually have 3/8" diameter shanks. The Sherline end mill holder will increase the versatility of your milling machine by enabling you to hold these popular cutters.

CAUTION! Always consider power and size limitations of your equipment when using larger cutters. You may want to reduce cutter speed.

3/8" Double-Ended End Mill Sets #7400 and #7401

Of all the end mills available to machinists, by far the most popular are those with a 3/8" shank. Because they are made and sold in great quantities, they are an economical alternative to the smaller but less often used miniature series end mills. They also offer the advantage of being double-ended, so you get twice the cutter for your money. Each has a flat on the side against which the set screw of the end mill holder is tightened to hold it in place.

Sherline offers two sets of six double-ended cutters. Both sets include sizes 1/8", 5/32", 3/16", 1/4", 5/16" and 3/8". (Remember, when cutting in a pocket, the corner radius left by your cutter will be half the cutter diameter.) #7400 is made up of 2-flute cutters, while #7401 offers 4-flute cutters. The 2-flute cutters are recommended for softer materials like aluminum where they are less likely to become clogged. For cutting tougher metals like steel, 4-flute cutters are a good choice. Each set comes with a wooden block to protect and store your cutters.

Double-ended 3/8" end mills fit in the #3079 end mill holder. They are available in a large variety of sizes and shapes. For strength and maximum rigidity, use the largest diameter cutter your job will allow.

CAUTION: Unlike a drill bit that looks similar, end mills are sharpened on the edges as well as the tip. These sharp edges demand a lot of respect when being handled and used! Also, to keep them sharp, store them in the block provided or individually protected in your toolbox.

Miniature End Mill Set #3080

These small, single-ended end mills can be held in a mill collet or a 1/4" end mill holder. Their small size makes them useful where space is limited. The set is made up of the highest quality general purpose 3-flute cutters manufactured in the miniature series. Sizes are 1/8", 3/16" and 1/4" diameter, all with 1/4" shanks.

End mills must run true in order to cut properly. Small end mills or miniature size end mills are very expensive and can be easily damaged if milling is attempted using a drill chuck to hold the end mill. Milling collets or an end mill holder are a must for proper operation of your mill!

Morse #1 Blank #3055 (.83"), #3055-2 (2"), #3055-4 (4")

* (#3055 shown)

The Morse #1 blank is made from free-machining 12L14 steel and is available so that you can make your own custom tool holders. The proper #1 Morse taper is already machined onto the tapered end. You need only turn, drill, tap or slot the blank to fit your special tooling needs. Included with the blank is an instruction sheet showing some common uses with dimensions for making a fly cutter, a slitting saw holder, or an end mill holder. Available in lengths of 1.2", 2", and 4".
A longer blank with a threaded 3/4-16 hole in the end is available as #3082 (shown below).
**Includes drawbolt and washer*

End Mill Holder Style Fixture #3081 (1.2"), #3082 (2"), #3083 (4")

(#3082 shown)

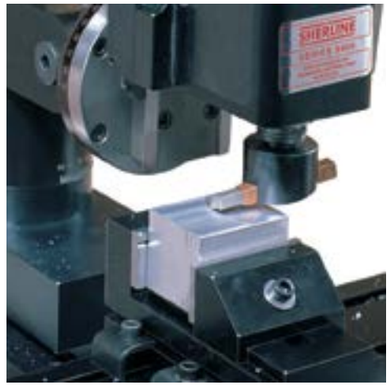
This blank fixture can be screwed directly onto the 3/4-16 thread of the Sherline spindle and then turned or milled to hold a part of your choice. It is made from a 1" diameter 12L14 steel billet available in lengths of 1.2", 2", and 4". The pre-cut thread assures accurate re-seating on the spindle thread each time the fixture is used.

Fly Cutter #3052

Fly cutters are used primarily for machining large, flat surface areas. The fly cutter is a single-point cutting tool similar to a lathe tool mounted in a special holder. The cutter can be adjusted to cut up to a 2.00" (51 mm) diameter and is easily capable of taking a .010" (.25 mm) deep cut in aluminum at this diameter.

The Sherline fly cutter comes complete with the holder, a drawbolt, thrust washer and a left-hand brazed 1/4" carbide cutting tool. It is a worthwhile addition to any shop.

This Model 5400 mill has been converted to 8-direction capacity with a #5650 column upgrade. The adapter base can be seen in the background. A Y-cutting operation is under way.



Carbide Inserted Tip Fly Cutter #7620

This fly cutter offers several advantages over the standard high-speed steel fly cutter. Inserted carbide tips will last much longer without sharpening, plus they provide an excellent finish on hard-to-machine materials like cold-rolled and stainless steel. The cutter path is 1-1/8" (28.6 mm) wide. The cutter shape allows it to cut a straight shoulder on a part— something that cannot be done with the standard fly cutter. Once you use this tool, you will understand why 80% or more of the metal removed in modern machine shops is removed with carbide insert tools.

The cutter comes with one 2-edged carbide insert, a Torx attachment screw, a drawbolt and washer plus a T-15 Torx wrench. Additional inserts are available through Sherline as #7622.

Gear Tooth Cutter #3217

The gear tooth cutter is included with the purchase of the #3200 indexing attachment and can also be purchased separately. It looks much like a small fly cutter and includes a 1/4" high speed steel tool blank that you can custom grind to the particular gear tooth shape you need. The illustration on the following page shows the cutter in use in conjunction with the rotary table. The #1 Morse taper on the shaft is held in the spindle with a drawbolt and thrust washer. This is an economical alternative to round commercial gear cutters.

Slitting Saw Holder #3065

Jeweler's slitting saws are small, circular, metal cutting saw blades that are used for machining thin slots. The Sherline slitting saw holder is designed to mount jeweler's slitting saw blades with 1/2" diameter mounting holes. Saw blades are available through a large network of industrial suppliers. (See our "cutting tools price list" for sizes offered by Sherline.) The slitting saw holder has a #1 Morse taper and mounts directly into the spindle. A drawbolt and thrust washer are also included.

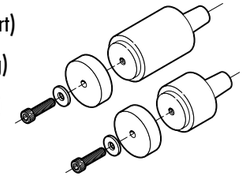
***NOTE:** As with almost all metal cutting operations, a small amount of cutting fluid is helpful when using a slitting saw.*

* *Includes drawbolt and washer*

Mill Cutter Arbors #3230, #3231, #3235 and #3236

If you need to hold 7/8" or 1" I.D. round cutters for milling or gear cutting, these arbors are designed to hold them on your Sherline mill. They are steel arbors turned with a #1 Morse taper and provided with a drawbolt and washer for use in the Sherline headstock spindle. Each is available in a choice of standoff lengths of 3/4" (short) or 1-3/4" (long).

#3230–7/8" (short)
#3231–7/8" (long)
#3235–1" (short)
#3236–1" (long)



Mill arbor cutters hold 7/8" or 1" I.D. round milling cutters.

4" Rotary Table #3700, #3710*

A rotary table used in conjunction with a mill allows a machinist to produce virtually any part they can design. The only limit is size, not complexity.

Machinists who wants to take their capabilities to the ultimate levels should consider purchasing and learning to use a rotary table. Sherline's rotary table is a precision piece of equipment that has been designed to work with Sherline's vertical milling machines; however, it can be used on any mill whenever the compact 4-inch size would be an advantage.

The table is 2" (51 mm) high and 4" (102 mm) in diameter. The main components have been machined from solid bar stock steel, and the complete unit weighs seven pounds. The table has been engraved with a laser, giving sharp and precise lines every 5°, numbered every 15°. These lines are calibrated with the 72-tooth worm gear that is driven by the handwheel. The handwheel is divided into 50 parts, making each line on the handwheel 1/10°. This allows a circle to be divided into 3600 increments without interpolation. Seventy-two revolutions of the handwheel rotate the table one revolution.

What's included:

- Two hold-down clamps and T-nuts.
- Chuck adapter that allows Sherline's 3- and 4-jaw chucks to be mounted directly to the rotary table.

Optional equipment:

- A right angle attachment (#3701) for mounting the rotary table in the vertical position (See illustration at right).
- Adjustable right-angle tailstock (#3702) can be mounted to the mill table.
- The tilting angle table (#3750), in the vertical position, also aligns with the #3702 tailstock.

The rotary table has a unique table locking mechanism that is positive and does not move the table while it is locked. To maintain accuracy and frictionless movements, a ball bearing is used. Worm gears are factory greased and the drives sealed to keep out chips and dirt. An oiler is easily accessible to facilitate lubrication of the table. The appearance is instrument quality with a black oxide base, precision ground finishes, and laser-engraved markings. As with all Sherline tools, the illustrated instructions are very useful. The 8-page manual covers the basics of rotary table use and takes the user through a typical project.

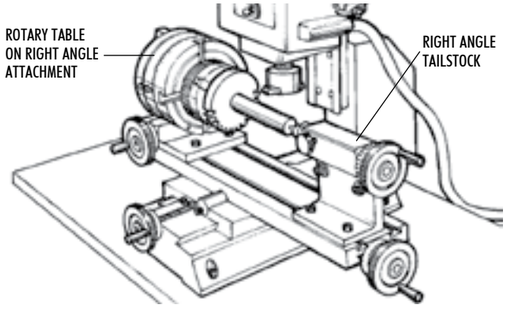
*NEW—Nickel-Teflon Coated Rotary Table w/Larger Through-Hole

We recently introduced our Nickel-Teflon coated rotary tables that has a larger through-hole. This modification came about after requests from our laser engraving customers and is available on any of our rotary table configurations. They wanted a rotary table that had a larger through-hole to which you could mount our chucks. The Nickel-Teflon plating was added for use in an every-day production environment. This coating gives the table a rust resistant surface that is hard and has added lubrication qualities.

Features include:

- The through hole on this rotary table is 15/32".
- The chuck adapter has a 3/4-16 thread for the chuck, a 5/8-24 thread for the rotary table, and its own through-hole. The through-hole allows stock to pass through the chuck when mounted to the rotary table.
- There is a .6485" c'bore at the entrance of the 5/8-24 thread, which is used to locate the chuck adapter concentric to the rotary table.

This setup demonstrates how accessories can be combined to produce sophisticated cuts on miniature machine tools.



Here is a sample setup to cut a gear using the rotary table mounted to the right angle attachment. An adjustable right angle tailstock steadies the other end of the long shaft.

4" Reverse Rotary Table #3700-OP, #3710-OP*

The reverse rotary table is perfect for using on the tilting angle table (P/N 3750). The reverse mount allows access to the handwheel from the front of the machine. If you used a standard rotary table in the previously described set-up the handwheel would be mounted facing the backside of the X-axis. It is also available in CNC-Ready configuration, P/N 3700-CNC-OP.

*Nickel-Teflon w/larger through-hole

3700-OP Rotary Table set up on a 3750 Tilting Angle Table.

4" CNC-Ready Rotary Table #3700-CNC, , #3710-CNC*

Sherline has taken its P/N 3700 manual 4" rotary table and applied a stepper motor mount with dampened coupling in place of the handwheel. The mount accepts a NEMA #23 frame size stepper motor for CNC control. This allows the table to be used as a 4th axis with CNC systems that have the capability to drive a rotary axis.

*Nickel-Teflon w/larger through-hole

4" CNC Rotary Table with Stepper Motor #8730, #8731*

The Sherline 4" rotary table has been adapted for CNC use with the application of a stepper motor mount in place of the standard manual handwheel. The mount accepts a #23 frame size stepper motor. Screws are provided for attachment of the motor. Also included is a handwheel that can be used on the rear shaft of a dual-shaft stepper motor if manual control is desired for simple operations.

*Nickel-Teflon w/larger through-hole

Programmable CNC Rotary Table Indexer #8700, #8711*

Sherline has taken their accurate and reliable 4" rotary table into the 21st century with the addition of Computer Numeric Control (CNC). Clockmakers or anyone with a need to cut gears, splines, or radial hole patterns will find this accessory takes all the headaches out of repetitive indexing operations.

You get everything you need including the 4" Sherline rotary table with installed stepper motor, microprocessor unit with numeric input keypad, 115 VAC power source, and all necessary connecting cables. Operation is very simple. After entering the number of divisions per revolution or the number of degrees per step on a simple numeric keypad, the table advances quickly and precisely to the next position at the touch of a single advance key. If an error is made, previous positions can be accurately recalled by hitting another key. Basic resolution is 28,800 steps per revolution, or ±0.006° per step. This allows the accurate machining of items like gears with odd numbers of teeth. Computations are made internally to many decimal places as on an electronic calculator to avoid cumulative errors.

The CNC rotary indexer is a stand-alone unit. You get everything you need to make complex indexing jobs easy. In addition, the unit can be connected to an existing CNC control to act in conjunction with that system. An input signal triggers the programmed function. When it is complete, it signals back to continue the program. The unit can also be "daisy chained" with other units to trigger sequential actions. As with all Sherline accessories, complete instructions are included.

*Nickel-Teflon w/larger through-hole

Specifications

Rotation Speed: 1°/sec to 50°/sec maximum (programmable)
Resolution: 28,800 steps per revolution (±.006° per step)
Backlash Compensation: Programmable
Stepper Motor: 136 oz-in, 400 steps per revolution
Power Supply Input: 115 VAC 50/60 Hz
Power Supply Output: 24V, 1 Watt

Right Angle Attachment #3701

The rotary table is made even more versatile with the addition of the right angle attachment. This part has been designed to accurately align the rotary table in a vertical position while still maintaining rigidity.

NOTE: *The #3750 tilting angle table can be used in place of this accessory when tilted to the 90° position.*

Right Angle Tailstock #3702

The adjustable right angle tailstock supports the end of long stock held in the rotary table when it is in the vertical position. This allows you to accurately turn a part between centers. See the illustration on page 40 for a typical example of how it can be used on a mill table.

5" Rotary Table Tooling Plate #3725

The rotary table tooling plate is just under 5-1/2" in diameter and comes with a pattern of 10-32 holes in the surface to facilitate mounting fixtures for machining. It can be easily mounted to the T-slots in the #3700 or #8700 rotary table (mounting screws and T-nuts are included.) The 1/2" aluminum plate is made from aircraft grade 6061 T6 aluminum and can be drilled and tapped with additional holes as needed.

Chuck Adapters for Rotary Table #37090 (3/4-16), #37091 (12 x 1 mm), #37092 (14 x 1 mm), #37093 (1/2-20), #37094 (3/8-24), #37097 (15/32" Through Hole), and #37098 (ER-16 thread)

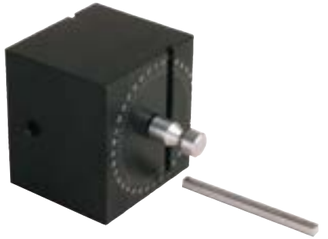
P/Ns left to right, top to bottom: #37090, #37091, #37092, #37093, #37094, #37097, #37098*

Now you can attach a 1/4" or 3/8" drill chuck, an older Unimat chuck with 12 x 1 mm or 14 x 1 mm threads, or a 1/2-20 Sears chuck to your Sherline rotary table. The adapters screw into the 3/8-16 threaded center hole of the table.

**NOTE: The P/N 37097 was designed for our rotary table that has a larger through-hole (P/N 3710). The chuck adapter has a 3/4-16 thread for the chuck and a 5/8-24 thread for the rotary table.*

Mill Headstock Spacer Block #1297

On the mill, having the option to extend the headstock further out can sometimes allow surfaces to be machined that could not otherwise be reached without breaking down the setup and re-clamping the part. The spacer moves the spindle out an additional 1-1/4" (31.8 mm). Precisely machined keyways keep the headstock accurately aligned. An additional precision ground alignment key is included.



Mill Double Headstock Spacer #1299

This spacer moves the spindle out an additional 2-1/2". This is twice as far as the standard P/N 1297 spacer block. Making it in one piece rather than stacking up two 1297 spacer blocks increases the mill's rigidity and accuracy. In many cases, it is much easier to increase your machinable surface area by using this spacer than to re-clamp the part. Precisely machined keyways keep the headstock accurately aligned. A precision ground alignment key is included.

Robot Hand
by Carl Hammons

Mill Digital Readout with RPM Display #8100 (#8160 Metric)

Most full-size shop mills are available with a digital readout, and now that option is available on Sherline mills too. They are popular because they make your life as a machinist easier. Readouts on the X- Y- and Z-axes can be reset to zero at any time with the push of a button. From there, as you move the handwheels, you can read the table position to three and a half decimal places (.0005") on the digital readout. (Metric versions read to .01 mm.) You no longer need to count handwheel revolutions or make difficult calculations when cranking in a negative number.

While we were designing the electronics, we went the extra step to include an RPM readout, adding an additional function to the package. The sensors are easy to install and require no modification of your Sherline mill. A two-axis DRO package is also available for the lathe as #8200 (see page 26). A three-axis package for using the lathe with the vertical milling column can be purchased, or a third axis can be added later if you add the vertical milling column to your lathe. For those with both a lathe and a mill, the electronic readout box can be shared between both machines to offer a cost savings if you buy just the additional handwheels and cables for the second machine. At present, the DRO is only available with a 120 VAC power supply. Those operating on 240 volt current will need to provide a converter.

NOTE: DRO is coming soon for ball screw machines.

Horizontal Milling Conversion #6100

An easy way to increase the size of work that can be machined on your Sherline 5000- or 5400-series mill is the addition of the horizontal milling conversion. By allowing the vertical column to be mounted in various positions in relation to the table, and with the headstock and spindle rotated 90° into the horizontal position, a tremendous variety of machining possibilities are opened up. Plus, the mill can remain mounted to the conversion base and still operate in its conventional vertical mode as well, providing a very sturdy and vibration-free base.

With the work mounted perpendicular to the table, position "A" allows an area of up to 9" by 6" to be machined without moving the work—a very large work area for a machine of this size! (The 90° angle plate, #3559 can be very useful for this purpose.) A second set of holes allows the spindle to be moved further back so longer tools such as drills or a boring tool can be used. In position "B", the table is reversed and the column rotated 90° to the table to take advantage of the long X-axis travel (which becomes the Y-axis in this configuration). This position could offer an advantage when drilling a deep hole, for example.

The horizontal milling conversion allows the mill column to be repositioned in two different ways on a sturdy base plate in order to provide greater versatility in set-up and increase the machinable area of the parts being worked on. To the left of the mill is the base of the Z-axis column, which has been cut off to allow a lower positioning of the headstock in relation to the table.

The base is 3/4" thick aluminum 10.5" by 12.5" and is machined and drilled to accept the base on your mill's vertical column. The headstock is rotated 90°, and the unit is remounted to predrilled holes in various positions on the conversion plate. The mill's vertical column base should be modified by cutting off 2" from its height to lower the spindle in relation to the table. (Machines made prior to 1993 will also require a 90° keyway on the Saddle.) This allows the spindle center to go below the top of the table, meaning you can machine the edge of material overhanging the table. The cutoff piece from the column is machined flat and re-tapped to be used as a spacer block to return the mill to its normal height.

Alignment bars are provided with the conversion so that once the base and column are mounted and squared up, they can be quickly and accurately remounted in the future. Alignment bars, a hex wrench and all necessary fasteners are provided to set up the mill in all of the possible configurations. The plate is mounted on four rubber feet for quiet operation. Complete instructions are provided.

NOTE: *The horizontal milling conversion was not designed to be used with the 2000-series 8-direction mills. The additional flexibility and versatility of that mill makes this attachment unnecessary.*

Rotary Column Attachment #3500

The headstock on the Sherline mill can be rotated so that milling cutters can be used at an angle. However, once the spindle is pivoted, it no longer aligns with the movement of the Z-axis, and the handwheel can not be used to advance the spindle for drilling. Parts to be drilled at an angle must be mounted to the table on a tilting table. For some larger parts this may not be possible. The rotary column attachment goes between the mill column and base to allow the entire column to be rotated to any angle up to 90° in either direction. Now the Z-axis handwheel advances the spindle along its axis, allowing angle drilling to be accomplished on parts mounted square to the table. A laser-engraved collar and magnifying scribe lens make it easy to set angles accurately. No additional holes are required for retrofit. (Not required on 2000- or 5800-series mills or multi-direction vertical milling columns, as this function is already designed into those columns.)

Boring Head #3054 (#3049 Metric)

It is hard to say what is the most important accessory for a milling machine. It really depends on the type of work you want to do, but certainly the boring head must rank highly in importance for any shop. What makes it so important is that it provides a means of accurately machining almost any size hole. It would be very impractical to own drills and reamers for all the possible hole sizes up to 1.75" (44 mm) in diameter. Another point to consider is the fact that larger diameter drills and reamers could not be adapted to fit on a miniature size machine tool. They are unnecessary too, because the boring head is infinitely adjustable so it can machine all of these holes to a high level of accuracy. It is also capable of machining stepped holes for seating bearings and internal grooves for lock rings. Boring tools cut like lathe boring tools with the difference being the tool moves rather than the work.

The Sherline boring head comes complete with drawbolt, thrust washer and a hex key for making adjustments. The cutting tool is not included. The boring head is designed for use with standard 3/8" (10 mm) diameter shank boring tools. For best results, the length of the tools should be kept to a minimum. You will find that a short tool gives you less chatter and it will be easier to hold tolerances. Includes drawbar and washer.

Boring Tools #3061, #3063 and #3064

These high-speed steel cutting tools are designed for use with the Sherline boring head. They have a 3/8" (9.5 mm) diameter shank. The cutting end of #3061 is designed to work in a 1/4" (6.4 mm) minimum hole with a maximum depth of .600" (15.2 mm). #3063 is designed to work in a 5/16" (7.9 mm) minimum hole with a maximum depth of 1.00" (25 mm). #3064 also requires a 5/16" minimum but has a longer 1.5" (38 mm) reach. If desired, they can easily be ground down to work in a smaller hole. These tools can also be used in the round hole of the #7600 tool post on a lathe for boring.

Leadscrew model 5200

Mill XY Bases

If you already own a vertical milling column #3050/3053, #3480/3485 or #3580/3585) for use with your lathe, but feel a sturdier base with a larger work area would be to your advantage, you may purchase the base of any of our vertical mills as an XY base. This combination saves you the amount of money included in the cost of the vertical mill for the column, but gives you the same machine less the headstock and motor/speed control. XY bases have also found their way into the industrial market and are used in various manufacturing setups.

Ball screw model 685401

NOTE: Some columns may need modification to work with the new brass leadscrew covers. Vertical milling columns made before 1995, and milling columns for use with ball screw XY bases, can be returned to the factory to be re-machined (Call for price).

Leadscrew XY Bases

#5200 (Inch) or #5210 (Metric)—10" XY base from 5000-series mill
Travel: X=8.65" (220 mm), Y=3.0" (76 mm)

#5220 (Inch) or #5225 (Metric)—10" XY base from 5500-series mill.
Travel: X=8.65" (220 mm), Y=3.0" (76 mm)

#5401 (Inch) or #5411 (Metric)—12" XY base from model 5400-series deluxe mill
Travel: X=8.65" (200 mm), Y=5.0" (127 mm)

#5600 (Inch) or #5610 (Metric)—14" deluxe base from the 2000-series multi-direction mill (Takes P/N 3580/3585 column)
Travel: X=8.65" (220 mm), Y=7.0" (178 mm)

#5801 (Inch) or #5811 (Metric)—18" deluxe base from the 5800-series NexGen mill
Travel: X=13.65" (347 mm), Y=11.0" (279 mm)

Ball Screw XY Bases*

#685401—12" deluxe XY base from model 5400-series deluxe mill
Travel: X=8.65" (200 mm), Y=5.0" (127 mm)

#685625—14" deluxe base from the 2000-series multi-direction mill (Takes P/N 3580/3585 column)
Travel: X=8.65" (220 mm), Y=7.0" (178 mm)

#685825—18" deluxe base from the 5800-series NexGen mill
Travel: X=13.65" (347 mm), Y=11.0" (279 mm)

Leadscrew model 5201

Ball screw model 685420

Mill XYZ Bases

The Sherline vertical mill can be purchased without the headstock and motor/speed control. This allows lathe owners to swap the headstock and motor/speed control from their lathe to the mill in approximately 60 seconds. This package offers a savings of about 30% when compared to the price of our standard mill, and 10% compared to the cost of a vertical milling column and XY base.

Leadscrew XYZ Bases

#5201 (Inch) or #5211 (Metric)—Standard 10" XYZ base from 5000-series mill
Travel: X=8.65" (220 mm), Y= 3.0" (76 mm), Z=6.25" (159 mm)

#5230 (Inch) or #5235 (Metric)—10" XYZ base from the 5500-series mill
Travel: X=8.65" (220 mm), Y= 3.0" (76 mm), Z=6.25" (159 mm)

#5420 (Inch) or #5430 (Metric)—12" XYZ base from 5400-series deluxe mill
Travel: X=8.65" (220mm), Y= 5.0" (127 mm), Z=6.25" (159 mm)

#5625 (Inch) or #5630 (Metric)—14" XYZ base from the 2000-series multi-direction mill
Travel: X=8.65" (220 mm), Y=7.0" (178 mm), Z=5.38" (137 mm)

#5825 (Inch) or #5830 (Metric)—18" XYZ base with 7-direction capability from the 5800-series NexGen mill
Travel: X=13.65" (347 mm), Y= 11.0" (279 mm), Z=9.38" (238 mm)

Ball Screw XYZ Bases

#685420—12" XYZ base from 5400-series deluxe mill
Travel: X=8.65" (220mm), Y= 5.0" (127 mm), Z=4.85" (123.19 mm)

#685600—14" XYZ base from the 2000-series multi-direction mill
Travel: X=8.65" (220 mm), Y=7.0" (178 mm), Z=5.25" (133.35 mm)

#685801—18" XYZ base with 7-direction capability from the 5800-series NexGen mill
Travel: X=13.65" (347 mm), Y= 11.0" (279 mm), Z=9.25" (235 mm)

Index Block Set #2045

For simple indexing jobs, we offer a set of two blocks. An indexing set offers an easy way to index simple hole patterns or do milling on 2, 3, 4, 6 or 8 sides. Something similar to this has been around in machine shops for years utilizing 5C collets, but we adapted this set to take all the tools and accessories that will fit the spindle of your Sherline tools. A hexagonal block allows indexing to three or six sides, and an octagonal block allows indexing to two, four or eight sides. By mounting your part on the block with a collet or chuck, the block is held in a mill vise on the table. Once located, the first operation is completed. Then the vise is loosened, the block is indexed to the next side, the vise is retightened and the next operation is completed. It is quite simple, but very effective for the most common patterns you will probably do repeatedly, such as the six flats on a hex nut. A drawbolt is available (#11681) to hold WW collets in the #1 Morse taper. A 3/4-16 thread accepts Sherline chucks. Now you can do simple patterns without math and without even moving the mill table!

Drill Chuck #3072

The Sherline milling machine makes an excellent precision drilling machine. Accurate positioning on both the X- and Y-axes provides a simple way to locate holes, and, although the standard Sherline mill does not have a quill feed, the Z-axis feed screw does give you micrometer accuracy for depth control. The drill chuck is similar to the tailstock chuck used with the lathe in that it holds drill bits from 1/32" (.8 mm) to 1/4" (6.4 mm). It is mounted on a #1 Morse arbor that has been drilled and tapped for a drawbolt. This prevents the arbor from working loose during use. The Sherline drill chuck comes complete with key, #1 Morse arbor, drawbolt and thrust washer.

A 5/32" drill chuck is also available for use in the mill. #1010 has a #1 Morse adapter pressed in and includes a drawbolt and washer. It is capable of holding drills as small as #80. The #3073 3/8" chuck can also be used on the mill (see chucks on page 12). Includes drawbar and washer.

NOTE: *These chucks are NOT designed for lateral loads and should not be used for holding end mill cutters. End mills should be held in a collet or end mill holder.*

Drill Chuck Holder #3074

This chuck holder was designed to help CNC users change tools quickly on the mill. End mill holders with a preset diameter and tool length can be entered into the CNC program's tools table. Settings are retained when the tool is returned to the spindle. This works the same way for a drill chuck with a drill bit mounted in it. The 3/8-24 thread accepts a 1/4" or 3/8" chuck.

Sensitive Drilling Attachment #1012

Tiny drill bits are expensive and easily broken. This attachment gives you the proper "feel" for hand feeding when drilling small holes while also speeding up the process. The shaft fits inside the spindle and the mount threads onto the spindle thread in seconds. A 5/32" drill chuck is pushed down by hand using a knurled collar that rides on ball bearings. A spring inside the shaft returns the chuck to the retracted position when pressure is released. You get precise control of the feed with plenty of feel for the cut when the precision of the Z-axis handwheel is not needed for depth control.

10,000 RPM Spindle Pulley Set #4335

The standard Sherline pulley set is geared to turn the spindle at a maximum speed of 2800 RPM. This offers a speed range sufficient for most lathe and mill operations while taking maximum advantage of the motor's torque. However, we often get requests for higher turning speeds from people running small diameter cutters for jobs like engraving. For this purpose we have developed a pulley set that is capable of turning the spindle at speeds up to 10,000 RPM. Naturally, when geared to turn such a high speed, power is somewhat reduced, but this is not normally a problem with small cutters or when turning small shafts. In the second belt position, maximum speed is 2200 RPM, which is about the same as the normal pulley set when you need more torque. Installation takes about 10 minutes.

WW and 8.0 mm Collet Fixtures #1164 and #1165

The collet fixture was designed to be mounted either on the surface of the rotary table or on the mill table. A knurled ring allows WW collets to be tightened without the use of a drawbolt from the back. This is particularly useful for clockmakers for gear cutting on a gear blank that has a pinion shaft attached that can be held in a collet. A bushing is provided that fits into the center hole of the rotary table and helps locate the fixture on center. T-nuts and attaching screws are also provided for clamping the fixture in place in the rotary table or mill table T-slots.

WW collets vary somewhat in size depending on manufacturer. This adapter holds those collets made by Sherline with a .312-.313" body size and .275-40 thread, which we refer to as WW collets. Other common "WW" collets have a body size of .314-.315", which we refer to as 8.0 mm collets. A fixture for these collets is also available as #1165. It looks identical except that it is identified by a groove machined around the body. If you are using a brand of collets other than Sherline, measure the body diameter with a micrometer before deciding which collet fixture to order.

Mill Accordion Way Cover Set #5090, #5816, #5920, and #5958

Leadscrew accordion cover

Ball screw accordion cover

The advent of CNC has increased the demand for a good way to keep chips and coolant off your Y-axis leadscrew. A clever design allows them to install easily on your mill with springs holding them in place rather than the rubber bands from the previous design. Complete, illustrated step-by-step instructions are included, and installation takes only a few minutes.

The durable polypropylene material is resilient enough to withstand the temperature of hot chips. The cover is semi-opaque and is 10 mil thick (mil=0.001").

#5090 – Compatible with the 5000/5400/2000 series mills.

#5816 – Compatible with the 5800 NexGen mills only.

#5920 – Compatible with the 12" and 14" Ball Screw mills.

#5958 – Compatible with the 18" Ball Screw mills only.

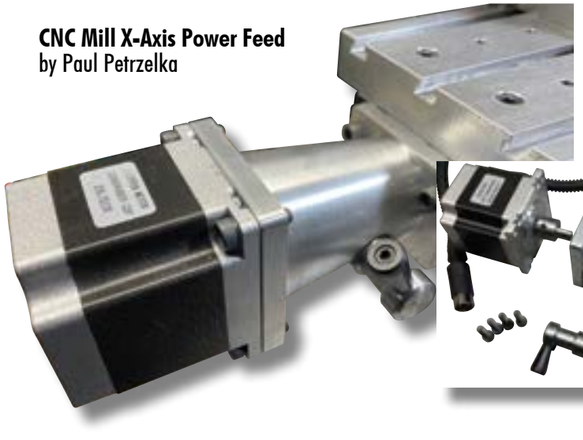
NOTE: *These Y-axis covers were designed to work on Sherline machines. You will have to modify the covers if you have added any after-market accessories such as limit switches, stops, etc.*

Vinyl Dust Cover for Vertical Mill #5150 and #5151

A fitted 6-mil vinyl dust cover is available for your Sherline milling machine. Keeping dust off your machine when it is not in use will not only extend its life, but will also keep it looking like new while adding a professional touch to your workshop. #5150 fits the 5000- and 5400-series mills. #5151 is sized for the 2000-series mill. (Does not completely cover the X and Y stepper motors on CNC mills.)

NOTE: *While supplies last.*

CNC Mill X-Axis Power Feed
by Paul Petrzelka



Paul Petrzelka machines many of his own accessories for his Sherline lathe and mill. He made this X-axis power feed for his manual mill. Paul said, "I have done a lot of machining and getting tired of all the cranking!" He goes on to say, "By being able to shift the stepper from the leadscrew, it can be used for manual cranking of the dial, but then can shift in the feed at any time. I don't like hand cranking on my CNC machine where the stepper is always engaged!" The handwheel is on the right side of the table and the power feed engages the leadscrew from the left side of the table.

Paul's custom power-feed parts include the stepper motor mount, leadscrew, coupling, engagement lever, and sliding shaft.

OTHER PRODUCTS

Super Lube Grease #7550
Dri-Film Spray Lubricant #7555

This Teflon-based lubricant is what comes on your machine from the factory. It works great on handwheels and slides and can be used on other applications around the house and shop. It is available in a 3-ounce tube or an 11-ounce aerosol can of Dri-Film.

NIKX-STIKX Metal Cutting Compound #7560

NIKX-STIKX is applied to cutting tools and saw blades to keep them cutting smoothly (2.2 oz. stick).

Machinist's Parallels #7506

The tops and bottoms of these hardened steel spacers are accurately ground and come in a variety of heights. Parallels are typically used to raise a part a known distance while keeping it parallel to the table surface during machining. The pieces in this set are 2-1/2" long and 1/16" thick. The set includes five pairs of precision ground steel bars in heights of 1/4", 3/8", 1/2", 5/8", and 3/4".

Sherline Hex T-Driver #3020

This tool is used in place of the standard 5/32" hex key that is furnished with your lathe or milling machine. The majority of adjustments are made with this hex size key. Its large, black plastic handle is more comfortable and provides better leverage than the standard key. Also, its larger size is easier to spot on your workbench when you want to use it. This T-driver will quickly become your most often-used tool.

Sherline Apparel #AP-1000, #AP-1200, #AP-2000

These Crewneck T-shirts feature "Sherline USA" screen printed across the chest. The casual, short-sleeve T's are perfect for the shop or everyday wear.

NOTE: *While supplies last.*

T-shirt Features:

- Available in heather gray or black, and women's cut
- Available in sizes L-XXXL (men), and M-XXL (ladies)
- Cotton/Poly blend (50% cotton, 50% polyester)

Tabletop Machining by Joe Martin #5301

Joe Martin's book gives you not just the "hows," but also the "whys" of machining practices. His insights offer a unique and practical perspective on the equipment and processes of machining at both extremes... from intricate miniature machining projects to full size shop production tools and practices.

Joe's book details "real world" practices in machining. For those wishing to design and build their first metal parts, it is a perfect starting point. Sherline tools are featured throughout in the examples, but the rules of machining apply to equipment and projects of all sizes.

Information is given on selecting materials, using a lathe and a mill, using accessories, setting up a home shop, and much more. Several simple projects are provided for beginning machinists. A photo gallery of superb miniature projects will inspire you and show what these small but mighty machines can really do.

- 8-1/2" x 11", softbound with "lay-flat" binding, full color, 352 pages, 400+ color photos, 200+ illustrations

Other Books and Videos of Interest:

- **The Home Shop Machinist's Handbook**
  Book by Doug Briney #5300
- **Machine Shop Essentials–Questions and Answers**
  Book by Frank Marlow #5305
- **Machine Shop Know-How**
  Book by Frank Marlow #5307
- **Sherline Assembly and Instruction Guide**
  Assembly instructions for all Sherline machines #5326
- **Sherline Accessories Shop Guide**
  Complete instructions for all Sherline accessories #5327
- **Building a Small Steam Engine**
  Video and Plans by Rudy Kouhoupt #5328-DVD
- **Shop Secrets–Measuring Tools**
  Video by Mike Rehmus #5329-DVD
- **Using the Sherline Lathe**
  Video by Mike Rehmus #5335

MACHINE AND ACCESSORY PACKAGES

Sherline's Ultimate Machine Shop Package...
Set up a complete machine shop with just one purchase!

Buying tools as a package offers two advantages. First, we have made it easier by helping you with the selection of the most important items when setting up a shop. In addition, we have reduced the price of each package to save you some money compared to buying all the items individually. (Accessories are prepackaged for shipment, so we cannot make substitutions at the discounted price. Additional accessories may be purchased separately.)

The Ultimate Machine Shop package shown above includes a long-bed lathe and deluxe mill plus all of the most important accessories most people choose when setting up a shop. The package can be purchased with either the 5400-series, 2000-series, or 5800-series mill. It can also be ordered with digital readouts or stepper motor mounts installed. Here is what you get in the package:

Machine Tools
- #4400/4410 3.5" x 17" deluxe long bed lathe (See page 7)
- #5400/5410 deluxe mill (Pg. 29), #2000/2010 8-direction mill (Pg. 30), or #5800/5810 NexGen mill (Pg. 31)

Lathe Accessories
- #1040 3.1" 3-Jaw self-centering chuck
- #1069 3/8" drill chuck, key, #0 and #1 Morse arbors and drawbolt
- #1074 Steady rest
- #1191 Live center
- #3018 Rear-mount cutoff tool and holder
- #3007 3-piece 1/4" HSS cutting tool set (RH, LH, Boring)

Mill Accessories
- #1297 Headstock spacer block (with 5400/5410 mill only)
- #3013 Step block hold-down set
- #3052 Fly cutter with 1/4" brazed-tip carbide cutting tool
- #3054 Boring head, inch (#3049 metric boring head with metric orders)
- #3060 3-piece mill collet set w/ drawbolt (#3090 metric)
- #3063 Boring tool (5/16" min. hole, 1" max. depth)
- #3072 1/4" drill chuck and key w/ #1 Morse arbor and drawbolt
- #3079 3/8" End mill holder
- #3551 Milling vise
- #3700 4" Manual rotary table (#8730 4th axis CNC rotary table with stepper motor included with CNC shop packages)
- #3750 Tilting angle table
- #7400 6-piece 3/8" shank double-ended, 2-flute end mill set

Other Accessories
- #3020 Sherline 5/32" hex T-driver
- #3021 3-piece center drill set
- #5327 ***Sherline Accessories Shop Guide*** instruction book
- #5330 Safety glasses

Ultimate Machine Shop Packages
#6000 (#6010 metric) - Ultimate Package with #5400-series mill
#6200 (#6210 metric) - Ultimate Package with #2000-series mill
#6280 (#6281 metric) - Ultimate Package with #5800-series mill
Available in manual, DRO, and CNC-ready configurations.

Ultimate CNC Machine Shop Packages
#8600 (#8601 metric) - Ultimate CNC Package with 5400-series mill, steppers motors, 4-axis driver, computer and software
#8620 (#8621 metric) - Ultimate CNC Package above with 2000-series mill
#8658 (#8659 metric) - Ultimate CNC Package above with 5800-series mill
Complete CNC systems are available with a MASSO controller or a Linux OS computer.

4000A *

4400B *

4400C *

5400A

* The *Assembly and Instruction Guide* & The *Sherline Accessories Shop Guide* are included with every Package (excluding the "A" Lathe package).

Lathe and Mill Accessory Packages

Unless you are replacing an existing Sherline machine, most new machinists need certain accessories right away in order to get started. Chucks, holding fixtures, and cutting tools are the most often purchased and are, therefore, included in these popular, money-saving packages. Lathe packages include your choice of model 4000 or 4500-series 3.5" x 8" lathe, or deluxe model 4400-series 3.5" x 17" lathe, and the following accessories:

Lathe "A", "B", and "C" Packages

"A" Packages Include Lathe PLUS:
- #1041 2.5" 3-Jaw chuck (with 4000/4500-series lathes) or, #1040 3.1" 3-Jaw chuck (with 4400-series lathes)
- #1072 1/4" Tailstock drill chuck (with 4000/4500-series lathes) or, #1069 3/8" Tailstock drill chuck (with 4400-series lathes)

"B" Packages Include "A" package chucks PLUS:
- #1074 Steady rest
- #1191 Live center
- #3018 Rear-mount cutoff tool and holder
- #3007 3-piece 1/4" HSS cutting tool set (LH, RH, Boring)
- #3020 5/32" Sherline hex T-driver
- #3021 3-piece center drill set
- #5327 ***Sherline Accessories Shop Guide*** book

"C" Package includes all "A" and "B" package items PLUS:
- #1270 Compound slide (#1280 metric)
- #3100 Thread cutting attachment

#4000/#4100 (3.5" x 8" lathe)
#4500/#4530 (3.5" x 8" lathe w/adjustable handwheels)
#4400/#4410 (3.5" x 17" lathe)

Milling Machine "A" Packages

Mill "A" packages include your choice of 5000, 5500, 5400, 2000 or 5800-series mill and the following accessories:

"A" Packages Include Mill PLUS:
- #3072 1/4" drill chuck with key, arbor , drawbolt
- #3013 Step block hold-down set
- #3020 5/32" Sherline hex T-driver
- #3021 3-piece center drill set
- #3052 Fly cutter with 1/4" carbide cutting tool
- #3060 3-piece mill collet set with drawbolt (#3090 metric)
- #3079 3/8" end mill holder
- #3551 Milling vise
- #5327 ***Sherline Accessories Shop Guide*** book
- #7400 or 7401 6-piece, 3/8" shank, double-ended, 2-flute or 4-flute end mill set

#5000A/#5100A (Standard mill with 10" base)
#5500A/#5530A (Mill with 10" base w/adjustable handwheels)
#5400A/#5410A (Deluxe mill with 12" base)
#2000A/#2010A (8-direction mill with 14" base)
#5800A/#5810A (7-direction mill with 18" base)

· For digital readouts, add "–DRO" to part number
· For CNC-ready machines, add "–CNC" to part number
· Accessory packages also available with full CNC machines.

FREQUENTLY ASKED QUESTIONS

Q: How accurate are Sherline tools?

A: You can easily turn a diameter close to the chuck on the lathe within .0002" (two ten-thousandths of an inch). Does this mean the machine is built to that tolerance? No, but it does mean that the leadscrews are accurate, the cutting tool is proper, and the diameter being cut is large enough not to deflect.

Most problems associated with making very tight tolerance parts are not caused by the machines but rather are the result of the level of craftsmanship of the operator. As your technique improves, you'll find your machine keeps making better and better parts. It is not uncommon for a good craftsman to be able to make parts accurate to within a thousandth of an inch or less on our tools. Headstock/tailstock alignment is within .003" or less when it leaves the factory. Adjustable tailstock tool holders are available to align the headstock and tailstock "dead on" if you need it.

Q: What is backlash and how much do the leadscrews have?

A: Backlash is the play in the engagement between the threads of the leadscrew and the nut that drives the axis that allows a handwheel to be turned a small amount before the slide starts to move when changing directions. This is a fact of life on any machine tool and is accounted for by always making your cuts in the same direction and keeping track of which way you turned the handwheel last. On Sherline tools, backlash is usually set to about .003" or less to .005" (.08 mm or less) at the factory. Backlash is adjustable on all axes.

Q: What kind of materials can I machine?

A: There are almost no limits to the kind of materials you can machine. Anything from wood or plastic to exotic materials like stainless steel or titanium can be cut as long as the part is appropriately sized, can be safely and firmly held, and the proper cutting tool and speed are used. (See **sherline.com/test-cuts/**)

Q: On how big a part can I work?

A: The Lathe is capable of turning a 3.5" (90 mm) part over the bed or 1.88" (45 mm) over the crosslide. A 1.25" riser block kit increases that to 5.5" (140 mm) over the bed or 4.3" (109 mm) over the crosslide. A .405" (10 mm) diameter hole through the headstock allows long material of up to that size to be fed through and worked on. The 4000 lathe has 8" (200 mm) between centers and the 4400 lathe has 17" (430 mm) between centers.

That gives you the physical limitations of the machine, but what does the hardness of the material you are working with do to those numbers in the real world? If the materials you plan to work with are free-machining (aluminum, brass, and free-machining steel), you will be pleased with a Sherline lathe if the average part you make is approximately 1" in diameter. For hard materials like stainless, your average part size should be around 3/4" in diameter or less. Wood and plastic are so easy to machine that only the physical size limitations of the machine need be considered. That doesn't mean you can't machine a 3" flywheel, but if you are planning to consistently make parts of that size, you will probably be happier with a larger machine and more horsepower. Removing large amounts of metal on a small machine takes time. If you have plenty of time, the size of the part is less critical. Users of any machine are happier with its performance when they are not consistently pushing the limits of its capabilities.

The vertical milling machine is capable of holding much larger parts than the lathe, because the part is held and only the tool turns. It also has a much longer table throw (X-axis). A deluxe version is available, which offers an additional 2" of travel on the Y-axis compared to the standard mill. With the addition of the horizontal milling conversion, surfaces up to 6" x 9" can be machined without moving the part. This is a very large machinable area for a tool of this compact size. The 2000-series 8-direction mills open up even more machining possibilities.

Q: What is the power of the motor and the speed range?

A: The 90-Volt DC motor offers far more torque than the 1/2 HP AC/DC motors we used to use. (It is also much smoother and quieter.) The electronic speed control adjusts automatically for any voltage worldwide from 100 to 240 VAC, 50 or 60 Hz. An electronic circuit in the speed control unit compensates for load, keeping the RPM constant during cuts. The electronically controlled speed range of 70 to 2800 RPM requires no changes of gears or belts to achieve. For even higher torque at low speeds when turning large parts, a second drive belt position is available on the motor drive and headstock pulleys.

Q: How heavy a cut can I make on the lathe?

A: This depends mostly on the diameter and type of material you are attempting to cut. It is also dependent on the sharpness of your cutter and the firmness of your setup. For aluminum, you should expect to be able to take cuts of up to .060" (1.5 mm) on 3/4" diameter stock, while stainless steel of the same size would require taking no more than .015" (.4 mm) with each pass. On free-machining steel you could take that same .015" cut on a 3" (76 mm) diameter piece. Heavy cuts at high RPM or feeding the tool too slowly will cause the tool to "chatter." Rule #1 in any machining operation is:
"If the tool chatters, reduce speed (RPM), reduce depth of cut and increase the rate of feed."

Q: Do I have to be an expert machinist to use Sherline tools?

A: No. In fact, a good craftsman who has never cut metal before will often do better than a professional machinist on small tools. Machinists who normally work on big, expensive machines often tend to push a smaller machine too hard. Sherline tools were designed to be operated by people with a "common sense" knowledge of mechanics. We also provide the most complete instructions in the industry. With our tools, accessories, and instructions, plus a willingness to take the time to make good parts, you have everything you need to enjoy the world of miniature machining.

Want to learn more?

There is a more extensive FAQ on our website at **sherline.com/standard-faq/** and other FAQ pages dedicated solely to Digital Readout, CNC Machining, Ball Screws, and MASSO Controllers.

CNC FOR SHERLINE MACHINES

Sherline offers complete CNC systems at a great price. Each CNC system includes a lathe or mill with stepper motors mounted on each axis. Any Sherline machine or shop package can be purchased this way.

There are now two controller options for your CNC machines. We recently partnered with MASSO to offer a modern CNC controller, or you can choose our Sherline Linux system. Both come with a 4-axis driver box and connecting cables that plug into each stepper motor.

- The machines feature powerful NEMA 23 size, dual shaft stepper motors: Your choice of Standard (136 oz/in) or High-torque (191 oz/in) options
- Standard leadscrews or ball screws are available on each machine
- Priced for the model engineer, but suitable for running small prototype or limited production work
- One-year warranty on lathes, mills, and accessories for home (non-production) use
- 90-day warranty on CNC and computer-related components

All our standard accessory packages can also be ordered. For example, you could order a CNC mill with the "A" accessory package, or you could order a complete shop package including lathe, mill, and rotary table all fitted with stepper motor mounts, stepper motors, a controller or computer, drivers, and all the tooling and accessories.

Your CNC Options

Sherline offers CNC machine options depending on your budget and/or knowledge of putting together a working CNC system.

Retrofit kits—Any manual Sherline machine can have stepper motor mounts added in place of the handwheels. Complete CNC retrofits kits are available as well.

CNC-Ready—You can order any new Sherline machine with stepper motor mounts installed. You add the stepper motors, controls, software, computer, and other components to turn it into a complete CNC system.

NOTE: CNC-ready machines cannot be operated manually until stepper motors are installed.

Complete CNC—Complete turnkey systems are available with everything you need to get started like the system shown above. Your choice of the Sherline/MASSO CNC controller or a Linux PC system.

Part Numbers for CNC Leadscrew Systems

#8400/#8410—4000-series lathe with computer (2 axes)

#8440/#8441—4400-series lathe w/Controller or PC (2 axes)

#8540/#8541—5400-series mill w/Controller or PC (3 axes)

#8020/#8021—2000-series mill w/Controller or PC (3 axes)

#8580/#8581—5800-series mill w/Controller or PC (3 axes)

#8600/#8601—Ultimate CNC shop package with 4400-series lathe, 5400-series mill, 4th-axis rotary table, and accessories* w/Controller or PC (2 axes–lathe, 4 axes–mill)

#8620/#8621—Same as above but with 2000-series mill instead of 5400-series mill.

#8658/#8659—Same as above but with 5800-series mill instead of 5400-series mill.

Part Numbers for CNC Ball Screw Systems

#6844—6840-series lathe, choice of Controller or PC (2 axes)

#86854—6854-series mill, choice of Controller or PC (3 axes)

#86820—6820-series mill, choice of Controller or PC (3 axes)

#86858—6858-series mill, choice of Controller or PC (3 axes)

#88600—Ultimate CNC shop package with 6844-series lathe, 6854-series mill, 4th-axis rotary table, and accessories* w/MASSO Controller or PC (2 axes–lathe, 4 axes–mill)

#88020—Same as above but with 6820-series mill instead of 6854-series mill.

#88658—Same as above but with 6858-series mill instead of 6854-series mill.

* See pages 49-50 for accessories that come with a complete shop package.

About the Sherline/MASSO CNC Controller

The Sherline/MASSO controller allows you to write your CNC programs on your computer (Windows, Mac, etc.) and then transfer your programs to the controller via a USB flash drive. No more having to use a dedicated operating system like Linux to control your machine. You can even do some minor program editing directly in the controller interface.

The Sherline/MASSO controller box is available with our 4-Axis CNC Driver Box (P/N 8780), or you can purchase it separately (P/N 8781) if you already have a driver box (P/N 8760).

Main Features of the MASSO CNC Controller

- Control the spindle speed with g-code
- Optical encoder
- Do single-point threading
- Accurate RPM readout
- Limit switches
- Homing ability for each axis
- WiFi communication*
- Regular software upgrades
- USB 4 GB flash drive to transfer your programs from your computer to the controller
- Full set of written instructions

You must provide the following: a VGA* monitor, a wireless keyboard and mouse set with a USB dongle.

NOTE: The USB dongle plugs into the USB AUX port on the controller and needs to work with both devices.

***Upgrade options**

- The controller is WiFi capable, but to use this feature you must purchase the WiFi software directly from MASSO
- The controller has a VGA monitor port. If your monitor has an HDMI connection, you will need to buy a VGA-to-HDMI converter
- Upgrade your MASSO CNC controller software to fully support a touch-screen interface

SAMPLE SCREENS:

The tool offset screen allows you to define your tools and their offsets for you machining operations.

A threading operation as shown in the conversational programming window.

About Linux and LinuxCNC

Operating System (OS)—Linux is an operating system like Windows®, except it offers some advantages: 1) It is open source, which means we don't have to charge you extra for it. This keeps our system cost down. 2) It operates in "real time" and can handle multi-tasking, so the information stream to your stepper motors is uninterrupted and glitch-free, and 3) It is graphically almost identical to Windows, so most operators familiar with Windows will not have any trouble adapting to a new environment.

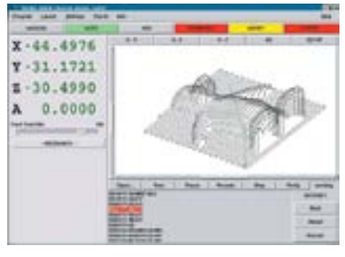
LinuxCNC—LinuxCNC is a free but highly capable open source CNC control program. Because this sophisticated program is available at no charge, we are able to pass the savings on to you by eliminating one of the biggest sources of expense in most CNC systems...the operating system and software.

Main Features of LinuxCNC

- Utilizes industry standard g- and m-codes that you write yourself or generate from a CAD/CAM program (not included) that generates G-code
- Capable of accuracy to 0.001" (0.01 mm) or better
- Tool offsets—Enter the tool diameter in the "tools" table and the computer calculates how far to offset the tool path so the side of the tool cuts the desired path
- Accepts inch or metric dimensions using G20, G21
- Instructions by Joe Martin—the most practical, concise and down-to-earth you will find on the subject of CNC
- Keyboard, mouse, and USB 4 GB flash drive included. You must provide a monitor.

SAMPLE SCREENS:

Coordinate systems offset screen also shows jog controls at bottom. (X-axis is highlighted)

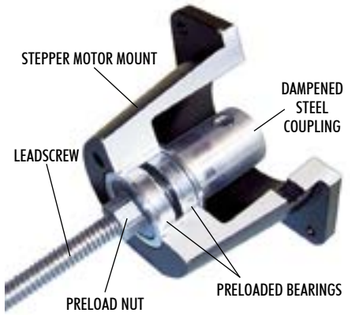


Back plotter and auto mode screen. Tool paths are shown graphically and the G-code is displayed at the bottom with the current line highlighted in red.

The simple, straightforward LinuxCNC visual interface is customized to the capabilities of Sherline machines.

Stepper Motors #67126 and #67127

***LEFT:** A 2-amp, NEMA #23 stepper motor, #67127, comes standard on all CNC leadscrew machines. **RIGHT:** A 2-amp, NEMA #23 High-torque stepper motor, #67126, comes standard on all CNC ball screw machines, and is available as an option for CNC leadscrew machines.*



Sherline's stepper motor mounts feature dual, preloaded ball bearings to eliminate end play and a dampened coupling to protect the motor.

CNC Driver Box #8760

The #8760 Driver Box runs up to four stepper motors and plugs into a parallel port. It includes cables, a power supply, and is now fuse protected. LinuxCNC software is included if you choose the Linux PC system option.

Limit Switches

All CNC limit switch kits include the necessary mounting brackets, eccentric triggers, and screws for attaching to your machine.

The limit switches were designed to work with our Sherline/MASSO CNC Controller, but you can connect them to any controller that is configured to work with our limit switches, such as Mach 3, Mach 4, etc.

Ball Screw Mill Limit Switches

- P/N 8782 X-axis limit switch
- P/N 8783 Y-axis limit switch
- P/N 8777 Z-axis limit switch
- P/N 8788 XY Ball Screw Limit Switch Assembly Set
- P/N 8785 XYZ Ball Screw Limit Switch Assembly Set
- P/N 8793 XYZ & A Ball Screw Limit Switch Assembly Set

Ball Screw Lathe Limit Switches

- P/N 8791 X-axis limit switch
- P/N 8792 Z-axis limit switch
- P/N 8795 XZ Ball Screw Limit Switch Assembly Set

Leadscrew Mill Limit Switches

- P/N 8796 X-axis limit switch
- P/N 8797 Y-axis limit switch
- P/N 8798 Z-axis switch (5400 mills)
- P/N 8777 Z-axis switch (2000 & 5800 mills)
- P/N 8789 XY Leadscrew Limit Switch Assembly Set (All Leadscrew Mills)
- P/N 8772 XYZ Leadscrew Limit Switch Assembly Set (5400 Mills)
- P/N 8799 XYZ Leadscrew Limit Switch Assembly Set (2000 & 5800 Mills)
- P/N 8794 XYZ & A Leadscrew Limit Switch Assembly Set (5400 Mills)
- P/N 8779 XYZ & A Leadscrew Limit Switch Assembly Set (2000 & 5800 Mills)

Leadscrew Lathe Limit Switches

- P/N 8773 X-axis limit switch
- P/N 8774 Z-axis switch, mount
- P/N 8778 XZ Leadscrew Limit Switch Assembly Set

Chucker Lathe Limit Switches

- P/N 8786 X-axis limit switch
- P/N 8783 Z-axis limit switch
- P/N 8790 XZ Chucker Lathe Limit Switch Assembly Set

Rotary Table Limit Switches

- P/N 8740 A-axis limit switch

P/N 8793 XYZ & A Ball Screw Mill Limit Switch Assembly Set shown for reference. The A-axis is for the CNC rotary table.

CNC BALL SCREW MACHINES

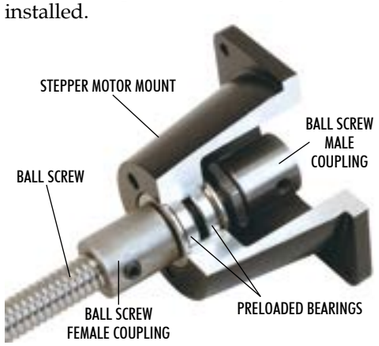
About Our Sherline CNC Ball Screw Machines

Our new ball screw machines come with all new saddles developed for the ball screws. The ball screws are rolled with a BSH nut, are 10 mm in diameter with a 2 mm lead. The ball screw machines are available only in CNC configurations.

Standard equipment for the ball screw machines include:

- Large, improved saddles to accommodate the 10 mm diameter ball screws
- #23 NEMA frame stepper-motor mounts with high-torque couplings
- Adjustable "zero" handwheels*
- Oil reservoirs on all the saddles to help keep critical parts lubricated
- Covers to keep chips off the ball leadscrew including brass tubes and accordion way covers
- A powerful 90V DC motor with electronic speed controller
- Pulleys, drive belt, three hex keys, spindle bars, gib removal tool, eight-foot three-wire power cord, and instruction manual

***NOTE:** The ball screws only come in a metric pitch, so the numeric graduations on the handwheel dials are 2 mm per revolution and .02 mm per line, and CNC-ready machines cannot be operated manually until stepper motors are installed.



Sherline's ball screw stepper motor mounts feature high-torque couplings and dual, preloaded ball bearings to eliminate end play.

Ball Screw Mill "A" Package

The Ball Screw Mill "A" package is the same as that for the standard leadscrew mills (see page 50 for details).

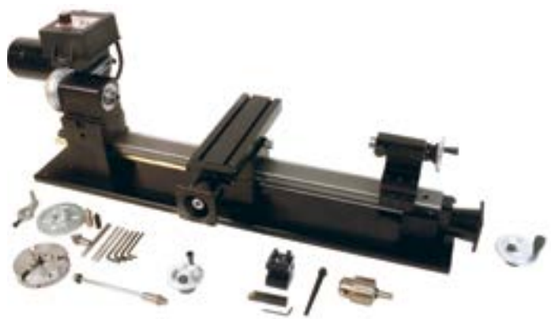
Ball Screw Lathe "D" and "E" Packages

"D" Package Includes Lathe PLUS:

- #1040 3.1" 3-Jaw chuck
- #1069 3/8" Tailstock drill chuck

"E" Package Includes "D" package chucks PLUS:

- # 1191 Live center
- # 2267 Threading/Grooving carbide insert tool holder
- # 22675 60° Threading carbide insert
- # 2269 .031" Carbide grooving insert
- # 3018 Rear-mount cutoff tool and holder
- # 3020 Sherline 5/32" hex T-driver
- # 3021 3-piece center drill set
- # 5327 ***Sherline Accessories Shop Guide*** book
- # 7604 Rear-mount tool holder



The standard ball screw lathe ships with a faceplate, lathe dog, two dead centers , hex adjustment keys, 3/8" tool post, 55° R/H carbide tool holder, tommy bars, Assembly and Instruction Guide, and gib removal tool. The CNC-Ready Ball Screw Lathe "D" package with chucks shown for reference.

Ball Screw Lathe #6840 (CNC-Ready)

Our new ball screw lathe is based on our popular 17" 4400-series lathe and is available with an assortment of accessories. The ball screw lathe was designed with the ball screws directly under the lathe bed and crosslide, to help avoid chip contamination and give direct in-line feed from the ball screw. You can order it as CNC-ready if you already have #23 NEMA frame stepper motors, or you can order it with our high-torque stepper motors.

The essential upgrade parts for the ball screw lathe include the ball leadscrews, a solid aluminum base, stepper motor high-torque couplings, the ball screw lathe saddle, an 8" crosslide, and optional limit switches on each axis.

This view of a ball screw lathe shows the ball leadscrews on both the Z- and X-axes. It also has the high-torque stepper motors (P/N 67126) and optional limit switches installed.

The base on the ball screw lathe is a new design; the base plate is 5" (127 mm) wide by 1/2" (12.7 mm) thick and it is constructed of solid aluminum that creates a very rigid assembly, and it has a black anodized finish.

The 10 mm ball screws necessitated an increase in the saddle height. To make the new lathe design work with existing accessories, we configured the height of the lathe saddle so it would work with the addition of the slightly higher 8" crosslide, a headstock spacer/riser block (P/N 1297), and our tailstock riser block (P/N 1292).

Accessory and Shop packages are available.

Ball Screw Vertical Mill #6854, #6820, #6858 (CNC-Ready)

Our ball screw mills are based on our standard leadscrew mills and come with all the same accessories. The dimensions listed in the names refer to the length of the mill base of the various machines.

The X/Y-mill saddle has been beefed up to accommodate the larger ball screws, and it has an electroless nickel/Teflon coating. This coating offers a hard surface that is rustproof, while the Teflon provides a friction coefficient of .1-.2u for smoother movement of the saddle and the table.

In addition to the standard features for the ball screw machines listed on the previous page, each ball screw mill comes with the following:

#6854 (12" base) and # 6820 (14" base)

- 13.0" (330 mm) x 2.75" (70 mm) table with two T-slots
- 11" standard mill column bed (Option to upgrade to a 15"mill column bed with nickel/Teflon coating is available)
- Headstock spacer block
- Accordion way cover and brass-tube leadscrew cover

#6858 (18" base)

- 18.0" (457 mm) x 2.75" (70 mm) table with two T-slots
- 15" mill column bed with nickel/Teflon coating
- 7" x 13" tooling plate with three T-slots
- Headstock spacer block
- Accordion way cover and brass-tube leadscrew cover

Accessory and Shop packages are available.

CNC-Ready ball screw mills shown for reference. Mills with stepper motors ship with our high-torque motors (P/N 67126).

Mills from left to right, top to bottom: P/N 6854 12" ball screw mill, P/N 6820 14" ball screw mill, P/N 6859 18" ball screw mill.

Ball Screw Mill Retrofit Kits 6800 (Z-Axis), 6800 (X/Y-Axes), 6800 (X/Y/Z-Axes)

You can convert almost any Sherline mill with standard leadscrews to a ball screw mill with a Ball Screw Retrofit Kit. To see if you can convert your machine, make sure it has a steel column and the headstock has a laser engraved serial number.

Industrial CNC Chucker Lathe

P/N 6600 (w/PC)
P/N 6610 (CNC-Ready)
P/N 6620 (w/4-axis Driver Box)

We designed our CNC chucker lathe for our industrial customers who want the convenience of using multiple tools in a single set-up. The standard chucker lathe has a 13" crosslide that accommodates the 3/8" gang-tooling tool post, and two optional tool posts that can be used for boring and parting tools (tools not included).

Standard Features of the Chucker Lathe Include:

- 3/8" Gang-tooling tool post, which holds up to four tools
- 14" Base
- 13" Mill table
- Mill Saddle: Has electroless nickel coating with Teflon. This offers a hard surface that is rust proof. The Teflon provides a friction coefficient of .1-.2u for smoother movement of the saddle and the table.
- 3C Collet headstock*: TIR (total indicator runout) is rated at 0.001" (.0005" or less upon request for an additional charge) on the 3C headstock. Also, the 3C spindle is electroless nickel plated to aid in rust prevention and to increase the surface hardness of the spindle for durability.
- Largest diameter through the collet is 1/2" (13mm).
- Powerful 90V DC motor with electronic speed controller
- Two, 2-amp high-torque stepper motors
- Maximum feed rate is 32 in/min.
- Accordion way cover and brass-tube leadscrew cover

* **NOTE:** 3C collets are not available through Sherline Products. We recommend buying them from Hardinge.

Optional Accessories for the Chucker Lathe:

- P/N 3025 3C Lever Collet Closer (see photo at right)
- P/N 1150 Standard Lever Collet Closer
- P/N 30100 Standard Headstock w/#1 Morse Spindle
- P/N 30101 Standard Headstock w/Nickel Plated Spindle
- P/N 4335 10,000 RPM Pulley Set
- 18" Extended Table (see photo at lower right)
- 18" Extended Base (see photo at lower right)

Tool Posts (see page 15)

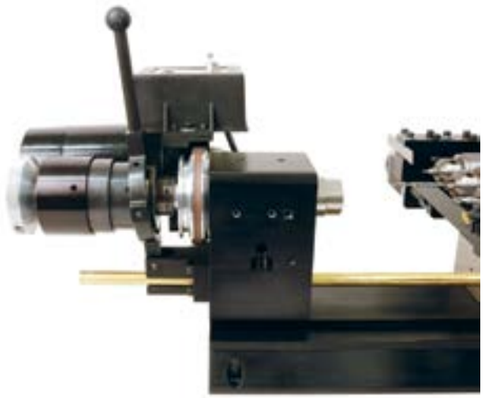
- P/N 5935 5/8" Gang-Tooling Tool Post
- P/N 5931 3/8" Rear Side Cutoff Multi-Tool Holder
- P/N 5932 3/8" Front Side Multi-Tool Holder
- P/N 5936 5/8" Rear Side Cutoff Multi-Tool Holder
- P/N 5937 5/8" Front Side Multi-Tool Holder

Boring Tools* (see page 21)

- P/N 2266 Carbide Tip RH 55° 3/8" Boring Bar w/2 Flats
- P/N 2268 Carbide Tip RH 80° 3/8" Boring Bar w/2 Flats
- P/N 2273 Carbide Tip LH 55° 3/8" Boring Bar w/2 Flats
- P/N 2274 Carbide Tip LH 80° 3/8" Boring Bar w/2 Flats

* **NOTE:** We added a second flat to our standard boring bars so they could be held with the carbide insert face up or face down.

The 3/8" Gang-Tooling Tool Post (P/N 5930) installed on the chucker lathe.



Shown with the optional 3C Lever Collet Closer (P/N 3025) installed on the 3C headstock of the chucker lathe.

Chucker lathe with the optional 18" base and 18" table.

TECHNICAL SPECIFICATIONS–BALL SCREWS

CNC-Ready Lathes	6610 (Chucker)	6840 (17")
Swing over bed	4.950" (125.7 mm)	5.97" (151 mm)
Swing over carriage	1.875" (47.6 mm)	1.75" (45 mm)
Distance between centers	n/a	17.00" (430 mm)
Hole through spindle	.5" (12.7 mm)	.405" (10 mm)
Spindle nose thread	n/a	3/4-16 T.P.I.
Spindle nose taper	3C, 24 degrees	#1 Morse
Spindle runout of taper	.0005" or less	.0005" or less
Travel of crosslide (X-axis)	7.8" (198 mm)	4.6" (116 mm)
Travel of Z-axis	5.8" (147 mm)	14.45" (367 mm)
Tailstock spindle taper	n/a	#0 Morse
Tailstock spindle travel	n/a	1.75" (44.5 mm)
Protractor graduations	n/a	0° to 45° by 5°
Handwheel graduations	.02 mm	.02 mm
Electronically controlled Spindle speed range	70 to 2800 RPM	70 to 2800 RPM
Length overall*	22.625" (574.7 mm)	33" (838 mm)
Width overall*	15.375" (340 mm)	10.375" (264 mm)
Height overall	9.5" (241 mm)	10" (254 mm)

Sherline Ball Screw Specifications

Rolled Ball Screw with BSH Nut

10 mm Diameter, 2 mm Lead

C7Accuracy*, P1 Preload
**The C7 C7 accuracy has a linear tolerance of 50 micrometers/300 mm or .002"/12.0"*

High-Torque Stepper Motor Specifications

Step Angle	1.8°/full step
Step Angle Accuracy	±5%
Number of Phase	4
Rated Voltage	4.5V DC
Rated Current	2.0 A
Holding Torque	1.35 N.m (Newton meters) or 11.94in/lb (inch pound)
Weight	1.0 Kg (2.2 lb.)
Axial-Force	Fa=15 N Max., or 3.37 lbf Max.
Distance	a=20 mm
Radial-Force	Fr=75 N Max., or 16.86 lbf Max.

*Add 4.625" to each axis for a high-torque stepper motor.

CNC-Ready Ball Screw Mills	6854 (12" Base)	6820 (14" Base)	6858 (18" Base)
Max. clearance (table to spindle)	6.875" (176 mm)	7.875" (200 mm)	12.875" (327 mm)
Throat (no spacer)	2.25" (50 mm)	Adjustable	Adjustable
Throat (w/ headstock spacer)	3.50" (90 mm)	Adjustable	Adjustable
Travel: X-axis (with stop)	7.8" (198 mm)	7.8" (198 mm)	12.80" (325 mm)
Travel: Y-axis	5.00" (127 mm)	7.00" (178 mm)	11.00" (279 mm)
Travel: Z-axis (11" bed)	4.85" (123.19 mm)	5.25" (133.35 mm)	N/A
Travel: Z-axis (15" bed)	8.85" (224.79 mm)	9.25" (235 mm)	9.25" (235 mm)
Hole through spindle	.405" (10 mm)	.405" (10 mm)	.405" (10 mm)
Spindle nose thread	3/4"-16 T.P.I.	3/4"-16 T.P.I.	3/4"-16 T.P.I.
Spindle nose taper	#1 Morse	#1 Morse	#1 Morse
Spindle runout of Morse taper	.0005" or less	.0005" or less	.0005" or less
Handwheel graduations	.02 mm	.02 mm	.02 mm
Electronically controlled spindle speed range	70 to 2800 RPM	70 to 2800 RPM	70 to 2800 RPM
Width overall*	15.375" (391 mm)	15.375" (391 mm)	20.375" (518 mm)
Depth overall*	17.25" (438 mm)	21.625" (537 mm)	28.375" (721 mm)
Height overall (Max.)	17.625" (448 mm)	20.75" (527 mm)	24.75" (629 mm)
Table size	2.75" x 13.00" (70 mm x 330 mm)	2.75" x 13.00" (70 mm x 330 mm)	2.75" x 18.00" (70 x 457 mm)
Hold-down provision	2 T-slots	2 T-slots	3 T-slots
Movements in addition to X-, Y- and Z-axes	Headstock rotation (90° L/R)	Headstock rotation (90° L/R)	Headstock rotation (90° L/R)
Column rotation	N/A	N/A	N/A
Column pivot	N/A	(90° Fwd/Bk)	(90° Fwd/Bk)
Column swing	N/A	N/A	N/A
Column travel	N/A	(In/Out) 5.5" (140 mm)	(In/Out) 5.5" (140 mm)

The Sherline shop floor, showing just a few of the millions of dollars worth of CNC production tools used to manufacture the Sherline tool line.

SHERLINE...
High Quality
Machine Tools
and Accessories
Made in the USA
Since 1974.

SHERLINE PRODUCTS

INCORPORATED 1974

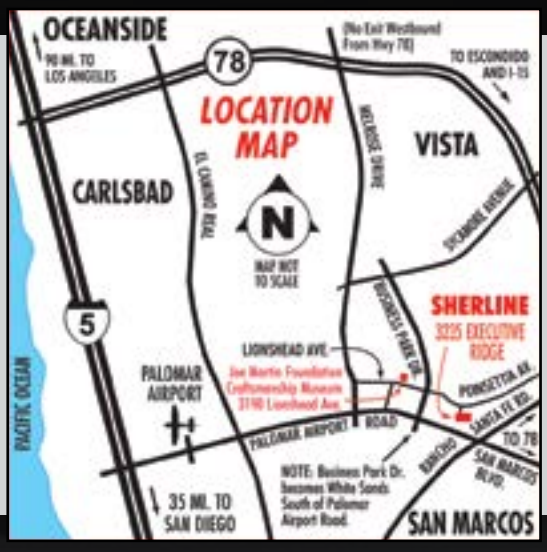
Sherline's modern 66,000 square foot manufacturing facility is located in Vista, California. If you would like to see how we produce our high quality tools at such a reasonable price, we invite you to visit our factory. You will see state-of-the-art equipment, including computer-controlled machining centers and laser engravers producing the extremely accurate parts that make up our lathes, mills and accessories.

Vista is located approximately 35 miles North of San Diego. Our showroom display includes examples of all our tools and accessories. Manual and CNC lathes and mills are available for demonstration by appointment. Our showroom is open Monday–Friday, 8 AM to 3 PM and closed holidays.

The Internet Craftsmanship Museum

The Joe Martin Foundation for Exceptional Craftsmanship hosts a spacious new museum in Carlsbad, California that features some of the world's finest miniature craftsmanship. Featured are engines, models, guns, tools, doll house miniatures and a working machine shop. If you can't visit in person, there is an online version that is open 24 hours a day. Admission to either museum is free.

www.CraftsmanshipMuseum.com



3235 Executive Ridge, Vista, CA 92081-8527
Technical Assistance or International: 1-760-727-5857
Fax: 760-727-7857
Email: sherline@sherline.com

www.sherline.com

Toll Free Order Line: 1-800-541-0735 (USA and Canada)

Your Sherline dealer is:

Secure online ordering is available 24 hours a day at

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