



# Accessories for Sherline

## Sherline Accessories Safety & Manual & Catalog

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# LatheCity





Various benchtop **screw-on mill tool holders**.  
Fast tool change system for benchtop milling machines.  
**For current prices see our website.**

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**Product description and specifications:**  
Aluminum screw-on-type holders for various mill cutting and boring tools. The holders screw-on the spindle of a milling machine/lathe. The tool holders fit endmills, center drills, deburrs, Jacobs drill chucks, etc. **Add a fast tool change system to your benchtop milling machine.**

A holder fits on a 3/4-16 spindle of a benchtop mill. Screw-on holders for cutting tools of 1 mm to ~1/2 in. O.D. shank size are available (English or Metric sizes). The **detailed P/N list is given below.**

*Adapters are tested on Sherline's tabletop systems only and are restricted to a maximum revolution per minute (rpm) of 2800 for light metal work on a benchtop/tabletop system.*

**Typical application:** A fast tool change system. Switch from center drilling, drilling, to milling in no time.

**Procedure:** Screw the tool holder on the 3/4-16 spindle of the benchtop mill. The screw-on-type holder has an auxiliary boring to fit a spindle bar (not included), but fixing the holder handtight is typically good enough. Don't overtighten it because it can damage the threads. Insert, e.g., an endmill and fix it by

means of the set screw at the flat of the endmill. Make sure that the set screw is tight. Otherwise, the eventually heavy vibrations of the mill may loosen the set screw and the endmill.

**Available sizes**

**Endmills.** Tool holders for 3/8 and 1/4 in. O.D. double- or single-ended endmills will fit. *In stock.*

**Center drills.** Tool holders for #1, #2, and #3 center drills are available. #1 and #2 adapters are longer than endmill holders and have narrower noses. *In stock.*

**Adapters for "mini" drill bits.** Adapters for small diameter e.g. drill bits which are particularly tedious to mount in a Jacobs chuck, are available. We don't stock these sizes up, but they can typically be made to order within 5 business days. Contact us at [sales@lathecity.com](mailto:sales@lathecity.com).

**Jacobs drill chuck adapters.** The chuck is fixed on the screw-on holder using an included 3/8-24 bolt, which has to fit into the Jacobs chuck. We keep a few in stock.

**Custom sizes.** These are available upon request, typically at a rate not much above the price of standard pieces. Contact us at [sales@lathecity.com](mailto:sales@lathecity.com).

**Impact socket tool holders.** These are not available yet. Stop by again.

**Returns:** Returns in resealable conditions are accepted within 30 days after the shipping date. All shipping costs are the responsibility of the customer. No returns of custom designs or customized designs are allowed.

**Shipping:** Current shipping costs are given on our website. Giving you an idea: a single adapter or a few will ship for \$4 (USPS 1<sup>st</sup> class); packages ship typically for about \$6 (USPS priority flat rate boxes). We reserved the right to change these rates any time as well as the price of the adapters. Current rates are given on our website. Retail prices may vary depending on commission fees, etc. Generally you will find the lowest price directly in our on-line store.

**Safety/Disclaimer:** Adapters are not cutting tools in themselves. Still, general safety rules for machine tools are in place. For an extended list of safety notes, consult the literature or go to our website for a free download of a safety booklet (<http://www.lathecity.com/Books/Safety-Booklet-Lathe-City.pdf>).

We do not warrant that any accessories can be used for any particular application. Damage on equipment (particularly damage on the spindle of the mill by overtightened screws) caused by usage of accessories is the customer's responsibility. Endmills are very sharp and have to be handled with caution. Endmills are not like lathe cutters and are sharp. Make sure that the auxiliary screw is tight at all times; otherwise, the endmill will pop out of the holder. In most cases, the endmill may land on the workpiece. However, this can result in unstable and dangerous

situations with any endmill holder. Use endmills with a flat and clamp the endmill at the flat. If you encounter heavy vibrations then replace the steel set-screws with Nylock (vibration tolerant) set-screws. Hobby machinists tend to stick their nose too close to the machinery. Use safety glasses and protective clothing. This manual does not replace books about metal working and/or proper training.

Our products are made entirely in the U.S. by a small business. No China imports.

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**Other sizes can be  
found on our  
website**

**Part numbers: screw-on adapters for benchtop milling machines (3/4-16 spindles)  
(cutting tools not included).**

Type		Part #	Description
	3/8 in. endmill holder	A1021	3/8 in. O.D. for 3/4-16 spindles
	1/4 in. endmill holder / #3 center drill	A1022	1/4 in. O.D. for 3/4-16 spindles
	Set of six 3/8 in. endmill holders	A1023	Six 3/8 in. O.D. endmill holders
	Set of six 1/4 in. endmill holders	A1024	Six 1/4 in. O.D. endmill holders
	Blank short	A1025	Screws on 3/4-16 spindle, 1.1 in. total length
	Blank long	A1026	Screws on 3/4-16 spindle, 2.0 in. total length
	#1 center drill holder	A1027	A holder for #1 center drill, 1.8 in. O.D. for 3/4-16 spindles
	#2 center drill holder	A1028	A holder for #2 center drill, 3/16 in. O.D.
	Center drill set	A1029	Includes #1, #2, and #3 center drill holders
	Mill to Jacobs chuck adapter	A1030	Screws onto a 3/4-16 mill spindle and includes a 3/8-24 hex socket head cap steel bolt to fit on a Jacobs drill chuck
	Fast tool change system package A	A1031	Includes two 3/8 in. endmill holders, one #1 center drill holder, and one mill to Jacobs chuck adapter
	Fast tool change system package B	A1032	Includes two 3/8 in. endmill holders and one #1 center drill holder
	Delux package	A1033	Includes six 3/8 in. endmill holders, center drill holder set of three, and one Jacobs drill chuck adapter

#10-32 (3/16"-32) steel set screws are used for most holders (use a 3/32 Allen hex wrench key). Holders for small diameter cutting tools come with #5-40 (1/8"-40) set screws (use an 1/16" Alan wrench key). Both sizes are fairly standard sizes. Alan wrench keys are not included. **Cutting tools** (endmills, drill bits, etc.) **are not included**. A **Jacobs drill chuck is not included**. Design details may deviate from the images shown here. When using the blank endmill holder, reamers are typically required to bore the hole for the cutting tool, or the cutting tool will not run perfectly true. The boring must be perfectly centered. (If one makes a holder for a one-time application, then drill the hole with the very same cutting tool that will be used later on.) We will not take back messed-up blanks. The mill to a Jacobs chuck adapter cannot run as perfectly true as a Morse-type adapter. However, it is good enough for standard all-day jobs. The total length (including the drill chuck) of the adapter (beyond the spindle) amounts to ~2 in. using a typical mini Jacobs drill chuck.

\* generally in stock; # made to order (1-5 business days) **We do offer custom designs and customized designs.**

### Further technical notes

**How good is our design?** Some comments say that it is very difficult to machine screw-on, e.g., endmill holders. Indeed, it is trickier than it looks like. Our price is very moderate compared with our labor costs.

The holder must be trued perfectly. Otherwise, the endmill will not run true. A none-true running endmill holder would have the side effect of imprecise cuts. (In this regard, Morse-type holders are simpler to manufacture because they are automatically centered. However, it is a hassle to change these Morse-type or collet-type holders all the time when various cutting tools are in use.)



This figure shows a test of endmill holders. A 3/16 in. (0.1875 in.) endmill was used. The width of the keyway was indicated.

**There is a simple way to test how good our design is.** Make a test cut. Lock the mill column and mill table of your milling machine! Use an Al square bar (scrap metal) and cut a keyway using a midsize (for your mill) endmill. Use a not-too-large cutting depth. Measure the width of the keyway (or slot). How well does it fit to the nominal size of the endmill? If the endmill does not run true (if it jiggles around), then the width of the keyway will be off quite a lot. Run this cut with our endmill holder (your new one we hope). Repeat the process with your best endmill holder. How is our system doing?

We did run these tests, of course. In our opinion, our design is as good as the products

from other vendors we have seen so far. **We used a Sherline milling column for our tests and did try out different headstock assemblies.**

**Trouble shooting:** Please note that you need to lock the mill, or the keyway width may be off due to vibrations of the mill table. Similarly, the larger the diameter of the endmill, the stronger the vibrations (particularly in benchtop systems). The endmill should always cut fully into the workpiece. Cutting over an edge (endmill half in air) can cause heavy vibrations. The workpiece must be fixed properly. Using a milling vice would be the best. Furthermore, hard-to-machine materials, such as steel, are trickier to work with and cause stronger vibrations. **Restrict your work to aluminum, plastics, and wood when using a tabletop mill.** Ledloy is sometimes recommended as free machining steel. Because one would not like to measure the vibrations of the mill in this test, we suggested using Al, a midsize diameter endmill, and a not too deep cut. For our tests on a benchtop mill, we used 0.02 in. for the depth of the cut, 900 rpm, a 3/16 in. endmill (four flutes), and aluminum (see the figure). Small diameter endmills are harder to center perfectly than larger O.D. cutting tools. Try different heights of the endmill inside of the holder. The shorter the setup the better. Due to manufacturing tolerances of the endmill holder and the lathe spindle as well as vibrations of you mill table you may expect deviations in the slot width of 0.0030" (0.08 mm) from the nominal size (for a 3/16" endmill).

If the mill does not fit through the boring, then the endmill diameter, rather than the boring diameter in the endmill holder, is off. This rarely happens, however. The boring is cut using a reamer (high-precision drills)—this is ultra precise. Don't open up the boring of the mill holder. (We offer custom sizes.) You may not be able to do so precisely enough. As a result, the mill will not run true. Use a different endmill. The endmill has to fit tight into the endmill holder. The tighter the better.

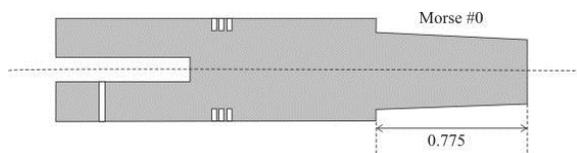


## Benchtop Lathe Tailstock Accessories

Tailstock accessories for benchtop lathes: the adapters have a Morse #0 taper on one side and a boring that fits cutting tools on the other side.

We also offer Morse #0 dead centers and customized designs.

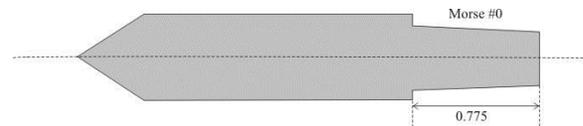
**See photos and complete list of part numbers below.**



**Typical application:** Accessory for benchtop / tabletop lathes. Adapter mounts in a Morse #0 arbor, e.g., in the tailstock spindle of a small tabletop lathe. Perhaps someone recognized that more time is lost clamping center drills and drill bits in Jacobs drill chucks than is necessary. These simple, affordable, and useful accessories give one a fast tool-change system.

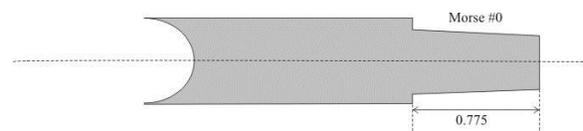
### Available sizes

**Tailstock center drill holders:** We offer three different adapters for #1 to #3 center drills. The adapters are long enough (~3") to reach over a cross-slide typical for benchtop systems. The center drills (not included) are held in place by a steel auxiliary set screw (included). You will be amazed how much time you will save using these snap-on adapters for center drills.



### Morse #0 taper – extended dead center.

This accessory has a Morse #0 taper at one end and a ~30° pin (taper) at the other end. The steel pieces can be used as a dead center. The adapters are long enough (~3") to reach over a cross-slide typical of benchtop systems (replacing an expensive Morse arbor – taper adapter). These pieces are cut from (non-hardened) steel, but the pin end will wear out over time (as usual, use cutting oil when using dead centers). However, any (hobby) machinist can easily sharpen the pin end. (When working mostly with aluminum, we have used these pieces for a year without significant sign of wear.)



**Morse #0 taper – extended concave-dead center.** We also offer an extended dead center with a concave end, which is useful when turning odd-shaped pieces.

**Pricing:** One may consider that a single Jacobs drill chuck for a benchtop systems costs \$60 and more. In addition, Morse tapers are difficult to cut. We explain how this can be done (also on a small lathe) in vol. 1 of the LatheCity book series. However, it's tricky.

**Procedure:** Extend the tailstock spindle by about  $\frac{1}{4}$ ". For best fit, *slightly* (and carefully) slam the taper adapter in the spindle *by hand*. To remove the taper, pull back the spindle. Typically, taper arbors/spindles have an internal draw bar, which will push out the taper.

**Safety Notes, Trouble Shooting, and Disclaimer:** General safety rules for machine/power tools are in place. For an extended list of safety notes, consult the literature or go to our website. You can download free of charge a safety booklet, which is also typically included (free of charge) for first-time customers.

Cutting tools such as center drills can break. The fragments may travel at great speed over large distances. Therefore, use protective clothing including, most importantly, safety glasses for metal work.

The adapter may start to rotate when the center drill gets stuck in the work piece. Therefore, make sure that the setscrews do not stick out of the adapter. In any case, switch the lathe off. Do not try to stop the rotating adapter with your hands. Make sure that the adapter is properly inserted in the Morse arbor – the quill typically needs to be moved out somewhat. Use cutting oil.

Using a deadcenter can result in overheating the work piece and the adapter. Switch the lathe off, and cool down the pieces.

We do not warrant that any accessories can be used for any particular application. Usage of accessories or damage caused is at the risk of the customer. Neither LatheCity nor its owner shall be liable for damage arising from unprofessional use or misuse of LatheCity accessories.

**Returns** in resalable conditions are accepted within 30 days after shipment. All shipping costs will be covered by the customer. No restocking fees, no questions asked. No returns of custom designs or customized designs. No returns of bulk orders. General sells

and business terms as given on our web site are active.

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#### Further technical notes

**Morse taper:** Please note the length and end style of Morse taper varies, depending on application and lathe model. Our version is tailored towards small benchtop lathes. The standard version we offer has a taper length of  $\sim 0.8$ " for short benchtop tailstock spindles. Other sizes are available on request as custom designs. A Morse #0 taper has per definition a larger end with an O.D. of  $\sim 0.36$ ".

**Typically, LatheCity accessories are made from aluminum (Al)**, unless otherwise noted, which keeps the prices low and is durable enough. In addition, the aluminum adapters are guaranteed not to damage, e.g., threads. Looking at rusting pieces made by other vendors out of "stainless" steel ... Well, this does not happen with aluminum adapters.

We do not coat our accessories with a (black) oxide since this has no function, but just increases the costs. Typically, all surfaces are milled or polished, but small scratches may be apparent even on new adapters. These are tools and not jewelry or furniture.

We do test all products thoroughly (typically for at least a year) before offering them for sell.

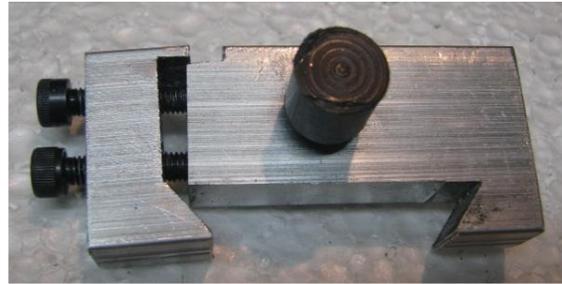
Don't hesitate to contact us if you have any questions regarding the compatibility of our products with your system.

LatheCity accessories, manuals, software, and books are copyrighted by U. Burghaus (LatheCity).

Application		Part #
	Holds #1 center drills (O.D. 1/8) (This one is typically cut from steel.)	P/N A0001
	Holds #2 center drills (O.D. 3/16) Aluminum	P/N A0002
	Holds #3 center drills (O.D. 1/4) Aluminum	P/N A0003
	Set including #1, #2, and #3 center drill holder. Aluminum / steel	P/N A0004
Blank.		P/N A0005
Extended dead center (pin end) Steel		P/N A0006
		P/N A0007
Extended dead center (concave end) aluminum		

Prices are per single piece unless otherwise noted. Allen wrench keys are not included. **Cutting tools are not included.** Set screws included. We use standard screw sizes whenever possible. Therefore, spare set screws etc. are available from a good (local) hardware store. #10-32 (3/16"-32) steel set screws are used for most of our products (use a 3/32 Allen hex wrench key). Holders for small diameter cutting tools such as #1 center drills come with #5-40 (1/8"-40) set screws (use a 1/16" Allen hex wrench key). Both sizes are fairly standard. Design details may deviate from the images shown here. Typically, but not always, O.D. 1/2" Al rounds are used (#1 center drill adapters have smaller O.D.). Typically, only the extended dead center is cut from steel. Length of adapters amounts to ~3". When using the blank holder, typically, reamers are required to bore the hole for the cutting tool or the cutting tool will not run perfectly true. The boring must be perfectly centered. (If one makes a holder for a one-at-a-time application, then drill the hole with the very same cutting tool used later on.) We will not take back messed-up blanks. Custom sizes upon request (starting at \$30/piece). No returns of custom designs.





## Benchtop Lathe Stop / Mill Lock For Sherline Lathes & Mills

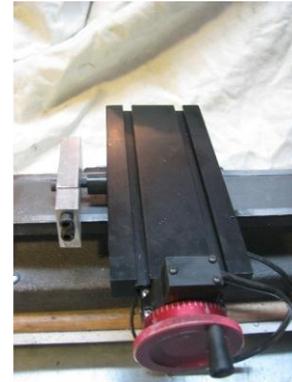
**Typical application.** Accessory clamps onto the 55° dovetail lathe bed of Sherline's lathes and acts as a mechanical stop for the lathe. A pair can be used to lock and stabilize the cross-slide of the lathe when used as a mill table.

lock will help remedy this problem. One can still move the cross-slide perpendicular to the lathe bed, but a pair of dovetail stops is required. The same accessory can also be used for lathe work; typically, just one stop suffices for this.

### What is the purpose?



**Mill.** When using the lathe cross-slide as a mill table, you may have experienced difficulties in milling operations, in particular when using the boring head, fly cutter, or when working on steel. The reason for this is the lack of rigidity of the cross-slide when it is used as a mill table. The cross-slide jiggles around too much, which can be very dangerous. Sherline's mill tables come with a lock (for one direction), but not the lathe cross-slide. Since it stabilizes the cross-slide for milling operations, the mill dovetail

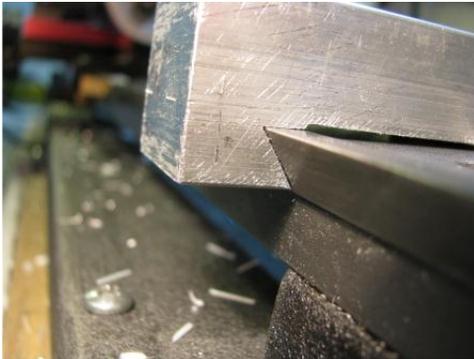


**Lathe.** Even with a DRO (Digital Readout) or zero adjustable hand wheels, it is often convenient and time saving to have a mechanical stop for a lathe. For example, when turning down a work piece, since you cannot over shoot the cut once the lock is set, you don't need to closely watch the DRO. Therefore, this accessory can also be considered a safety feature. Once set correctly, you will never hit the rotating lathe chuck by accident.

**Further specifications.** The height over the lathe bed of the stops does not exceed the height of the cross-slide. Thus, the stop does not decrease the swing over the cross-slide.

The width of the standard dovetail slide stop amounts to only 0.5". This compact design assures that the distance between centers is not significantly affected. Other sizes are available on request.

**Steel vs. Aluminum.** The aluminum accessory is just fine in our opinion. Some customers love steel; therefore, we also offer this tool in steel.



**Pricing & blanks.** Dovetail accessories are time consuming to machine and difficult to measure. In particular, Sherline's 55° dovetail is very unusual and requires specialty tools for machining. Additionally, drilling and tapping numerous holes is labor intensive. If you want to do part of the work yourself, go for the less expensive dovetail blanks. We also offer a project booklet (that comes without any hardware) for assisting you to machine the entire accessory alone.

Note that all accessories fixed on the lathe bed have a base that will look similar to our dovetail stops/locks. Thus, if you would like to machine yourself a tailstock, 90° tailstock, adjustable tailstock, steady-rest, indexing tool, ... you would need that kind of dovetail design. Therefore, the blanks are useful. Other sizes are available on request.

**Procedure.** Loosen the screws on the front end of the lock. (You don't need to remove the screws. The screws we provide are long enough.) Slide the lock over the lathe bed and lock it. **The screws need to be tight.** Fine adjust the position of the lock with the horizontal screw. That screw will also be used to lock the cross-slide for milling operations. All screws are socket head 10-32 steel screws. That size is used for nearly everything on Sherline lathes and mills.

**Safety Notes and Disclaimer.** The mill lock is designed for Sherline's milling attachment to the lathe and it comes with 55° dovetails. It will not work for other systems. For example, a different size would be required for Sherline's mill table (available on request).

Do not over tighten the screws. Doing so can damage threads and/or the cross-slide beyond repair.



General safety rules for machine/power tools are in place. For an extended list of safety notes, consult the literature or go to our website. You can download a safety booklet free of charge. This safety booklet is also typically included (free of charge) for first-time customers.

Use protective clothing including, most importantly, safety glasses for metal work.

**We do not warrant that any accessories can be used for any particular application. Usage of accessories or damage caused is at the risk of the customer. Neither LatheCity nor its owner shall be liable for damage arising from unprofessional use or misuse of LatheCity accessories.**

We try our best to keep our web sites and manuals current and error free. However, if you find incorrect information, please notify us. We will correct the mistake immediately. We will not accept incorrect prices listed by mistake. Current prices are those found on our web site.

The Sherline cross-slide is shown in some of the images depicted here. None of the

statements or procedures may coincide with Sherline's Inc. opinion or interests. Neither LatheCity coworkers nor LatheCity's owner are employees of/or agents for any of the vendors referenced in the text and they do not sell or represent any of the third party products discussed.



**Fig.:** How well does the dovetail clamp on the lathe bed? See by yourself. You can hand up a Sherline lathe bed in your shop using our dovetails. We test accessories on more than one Sherline system, of course. Making sure that variations in the production don't affect our accessories.

**Returns** in resalable condition are accepted within 30 days after shipment day. The customer will cover all shipping costs. There are no restocking fees and no questions asked. No returns of custom designs, customized designs, or bulk orders (more than one unit) are accepted. General sales and business terms as given on our web site are active.

**Materials** Typically, unless otherwise noted, LatheCity standard accessories are made from aluminum, which keeps the prices low and is sufficiently durable. In addition, the aluminum adapters are guaranteed not to damage, e.g., threads. Regarding the rusting of "stainless" steel pieces made by other vendors, this does not happen with aluminum adapters. Although we now have the option to select different materials for some of the pieces, we still believe that aluminum is just fine for most accessories of tabletop systems.

We do not coat our accessories with a (black) oxide since this has no function, except to increase the costs. Typically, all surfaces are milled or polished, but small scratches may be apparent, even on new adapters. These are tools: not jewelry or furniture. We sometimes color accessories using a staining color. However, this is paint and not oxide coatings. We do test all products thoroughly (typically for at least a year) before offering them for sell. Don't hesitate to contact us if you have any questions regarding the compatibility of our products with your system.



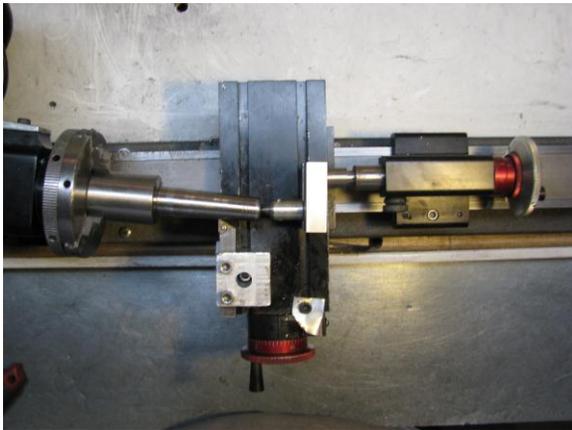


## Benchtop Tailstock Accessories

### Morse #0 Adjustable Tailstock Center (new design)

For current prices see our website.

**Tailstock accessories for benchtop lathes:** the adapter has a Morse #0 taper on one side and a dead center on the other side. Both steel pieces are mounted on a thick aluminum plate. In order to adjust the dead center to tailstock spindle distance the plate has a T-slot keyway and the dead center comes with a T-nut.



**Typical application:** Accessory for benchtop / tabletop lathes. Adapter mounts in a Morse #0 arbor, e.g., in the tailstock spindle of a small tabletop lathe and connects to a dead center (pin).

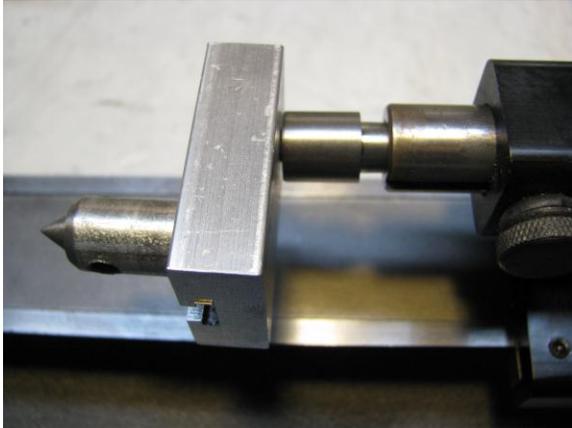
Cutting taper in longer and/or larger diameter stock without a center is dangerous and basically impossible. This adjustable tailstock center compensates for the offset when cutting taper by rotating the headstock. One may shim the plate to

square it with the backend of the work piece – typically not required. Note that this accessory is designed for cutting small taper angle as those common on machine taper. The dead center can be moved in and out of the center line. Therefore, very small and large adjustments of the dead center's position are possible.



**Procedure:** Extend the tailstock spindle by about  $\frac{1}{4}$ ". For best fit, *slightly* (and carefully) slam the taper in the spindle *by hand*. To remove the taper, pull back the spindle. Typically, taper arbors/spindles have an internal draw bar, which will push out the taper.

Slide the dead center along the T-slot until it aligns with the center hole of your work piece. Tighten the dead center using a spindle bar.



**Safety Notes, Trouble Shooting, Limitations, and Disclaimer:** General safety rules for machine/power tools are in place. For an extended list of safety notes, consult the literature or go to our website. You can download free of charge a safety booklet, which is also typically included (free of charge) for first-time customers.

Use protective clothing including, most importantly, safety glasses for metal work.

The adapter may start to rotate in the tailstock spindle. Do not try to stop the rotating adapter with your hands. Make sure that the adapter is properly inserted in the Morse arbor – the quill typically needs to be moved out somewhat. **The tailstock needs to be locked.**

This accessory is designed for small taper angle as those common on machine taper. For large angle settings ( $>5^\circ$ ) unstable and dangerous working conditions may appear. Don't use this accessory for large taper angles. A typical application may be machining MT2 or MT1 ends in longer stock rods.

The plate used to mount the dead center cannot be tilted, i.e., use this design for small taper angles on not too long metal rods.

Be aware of that you may generate significant side forces on the tailstock. The MT0 used to mount that plate in the tailstock is only about 0.7". Therefore, don't overdo it with the size of the work pieces. In addition, working on hard to machine materials such as stainless steel will

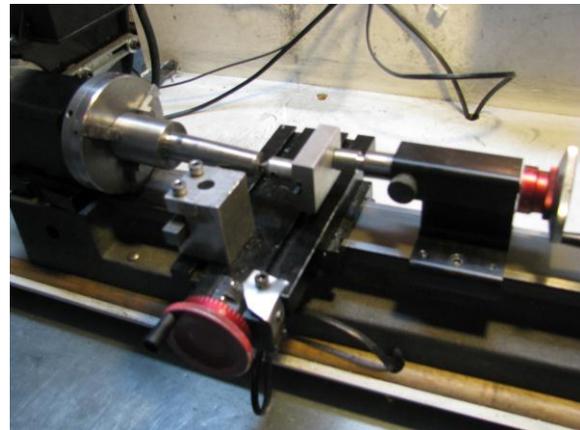
generate larger forces and is in any case not recommended on a small benchtop lathe. Similarly, the screws and bold end holding the dead center and MT0 must be tight. Large forces on the adapter may loosen these screws which may result in a sudden change of the position of the dead center.

RPM maximum are 2800. The adapter is tested only on Sherline standard lathes.

**We do not warrant that any accessories can be used for any particular application. Usage of accessories or damage caused by unprofessional use is at the risk of the customer.** Neither LatheCity nor its owner shall be liable for damage arising from unprofessional use or misuse of LatheCity accessories.

**Returns** in resalable conditions are accepted within 30 days after shipment. All shipping costs will be covered by the customer. No restocking fees, no questions asked. No returns of custom designs or customized designs. No returns of bulk orders. Note that the return rate of LatheCity products is below 2%.

General sells and business terms as given on our web site are active.



#### Further technical notes

**Morse taper:** Please note the length and end style of Morse taper varies, depending on application and lathe model. Our version is tailored

towards small benchtop lathes. The standard version we offer has a taper length of ~0.7" for short benchtop tailstock spindles. Other sizes are available on request as custom designs. A Morse #0 taper has per definition a larger end with an O.D. of ~0.36".

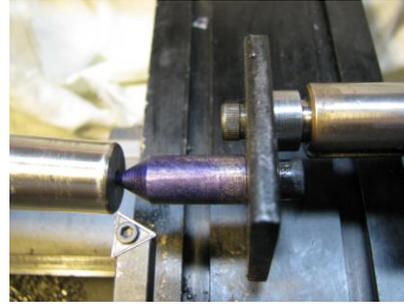


**Pricing:** This is a rather specialized application. Job-shops easily charge \$60/work hour + materials + tooling. Machining that piece takes longer than 60 min. Our price is fair and reasonable, in our opinion. We offered a low budget version for \$30 some time ago. However, that one does not allow for moving the dead center through the center line of the lathe which restricts its application rather severely. The current version is an improved design which allows one to machine very small and larger taper angles in short and longer stock rods.

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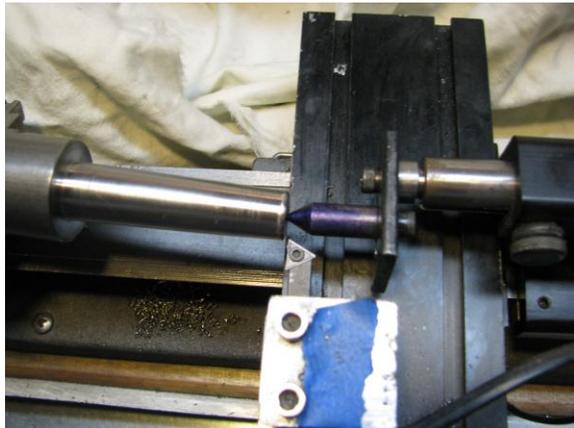




## Benchtop Tailstock Accessories

### Morse #0 Adjustable Tailstock Center (old design)

**Tailstock accessories for benchtop lathes:** the steel adapter has a Morse #0 taper on one side and a dead center on the other side. Both are mounted on a steel plate in order to adjust the dead center to tailstock spindle distance.



**Typical application:** Accessory for benchtop / tabletop lathes. Adapter mounts in a Morse #0 arbor, e.g., in the tailstock spindle of a small tabletop lathe and connects to a dead center (pin).

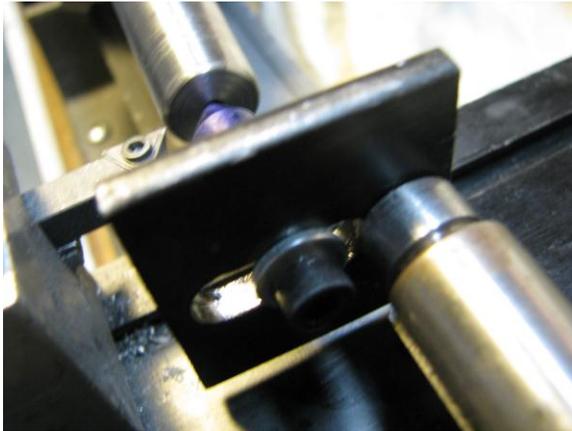
Cutting taper in longer and/or larger diameter stock without a center is dangerous and basically impossible. This adjustable tailstock center compensates for the offset when cutting taper by rotating the headstock. One may shim the plate to square it with the backend of the work piece – typically not required. Note that this accessory is

designed for cutting small taper angle as those common on machine taper.



**Assembling the tool.** To save on shipping costs, this tool is shipped disassembled. For mounting it, two screws need to be tightened, see images.

**Procedure:** Extend the tailstock spindle by about  $\frac{1}{4}$ ". For best fit, *slightly* (and carefully) slam the taper in the spindle *by hand*. To remove the taper, pull back the spindle. Typically, taper arbors/spindles have an internal draw bar, which will push out the taper.



Slide the dead center along the keyway until it aligns with the center hole of your work piece. Tighten the two bolts of the adjustable dead center.



**Safety Notes, Trouble Shooting, and Disclaimer:** General safety rules for machine/power tools are in place. For an extended list of safety notes, consult the literature or go to our website. You can download free of charge a safety booklet, which is also typically included (free of charge) for first-time customers.

Use protective closing including, most importantly, safety glasses for metal work.

The adapter may start to rotate in the tailstock spindle. Do not try to stop the rotating adapter with your hands. Make sure that the adapter is properly inserted in the Morse arbor – the quill typically needs to be moved out somewhat. **The tailstock needs to be locked.**

This accessory is designed for small taper angle as those common on machine taper. For large angle settings ( $>5^\circ$ ) unstable and dangerous working conditions may appear. Don't use this accessory for large taper angles.

RPM maximum are 2800.

**We do not warrant that any accessories can be used for any particular application. Usage of accessories or damage caused by unprofessional use is at the risk of the customer.** Neither LatheCity nor its owner shall be liable for damage arising from unprofessional use or misuse of LatheCity accessories.

**Returns** in resalable conditions are accepted within 30 days after shipment. All shipping costs will be covered by the customer. No restocking fees, no questions asked. No returns of custom designs or customized designs. No returns of bulk orders. General sells and business terms as given on our web site are active.

#### Further technical notes

**Morse taper:** Please note the length and end style of Morse taper varies, depending on application and lathe model. Our version is tailored towards small benchtop lathes. The standard version we offer has a taper length of  $\sim 0.7$ " for short benchtop tailstock spindles. Other sizes are available on request as custom designs. A Morse #0 taper has per definition a larger end with an O.D. of  $\sim 0.36$ ".

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# Lathe City Accessories



## P/N A0008 Stop for compound slide

**Product description / specifications:** This accessory is specifically designed for a compound slide of a benchtop lathe. The compound slide does not need to be modified. The stop will be attached on the backside of the compound slide by one nut (included).

The mechanical stop is set by a slide-lock-nut which allows to slide the stop on a lead screw by bushing a button. Releasing a small button on the nut will lock the stop in position using the threads of the lead screw.

**Typical application:** Generally a compound slide is used to cut external and internal taper shapes (slopes) on a lathe. In doing so, not only the angle needs to be set precisely, but also the length of the cut. The “stop” allows to control the length of the cut precisely and conveniently.

The following text is adapted from Lathe City, “Working safely with benchtop lathes – featuring the Sherline system”, vol. 1 – basic lathe operations, by U. Burghaus. When making matching parts or combinations of slopes, the cuts must be fairly precise. Therefore, the angle, but also the length of the slope has to match exactly with the desired sizes. Unfortunately, a digital readout is typically not available for the compound slide. Using the scales on the wheel of the compound slide to set the length of the cuts perfectly is doable, but not very practical,

in particular not when one wants to make several matching pieces. In order to set the length of the cuts precisely one may have the following options:

- Sometimes the slopes may go to a ring, groove, or edge of the work piece which can be used as a positional mark. This is reasonably precise.
- Cut a marking line with a grooving tool. This is, however, problematic in hard materials and larger stock sizes on any benchtop lathe.
- Set the end position of the compound slide such that the large/small diameter end of the taper coincides with the end of the compound slide movement. Thus, one uses the end of the compound slide movement as a stop position. This is simple, but not precise and may damage the compound slide in the longer run.
- Using a mechanical stop for the compound slide (as described here) to precisely set the length of the cut. This may also be considered a safety feature, since it prevents that the lathe cutter hits the rotating chuck, for example.

**Procedure:** Mount the mechanical stop on the backside of the compound slide.

1) Remove one of the rotating-base-lock-nuts of your compound slide. Use the one closest to the hand wheel of the compound slide. (Keep it at a safe place in order to go back to the original setup). This nut is typically used to adjust the gib of the compound slide, i.e., it defines how easy or hard the compound slide can be rotated.

2) Mount the holding block of the stop with the provided nut. The holding block will replace the nut one just removed. The nut in the holding block can be used as before to adjust the gib of the compound slide. This adjustment typically needs to be done only once and is not too critically. The holding block will rotate together with the compound slide. As always, don't over tighten nuts.

3) Typically this accessory will be pre-mounted. Otherwise, insert the lead screw of the mechanical stop in the holding block. Tighten the lead screw using the set screw in the holding block. The stop nut is pre-mounted on this lead screw.

4) Pushing the button on the stop will allow one to move the stop freely along the lead screw. Releasing the button will lock the stop in position. The accuracy of the stop position depends on the backlash of the lead screw / stop. This backlash depends mostly on the pitch of the leadscrew. We do use a fine thread steel lead screw. The backlash should typically be smaller than the pitch.

5) Start cutting your parts. An example is given below.

**Returns** in resaleable conditions are accepted within 30 days after shipment. All shipping costs will be covered by the customer. No returns of custom designs or customized designs.

**Safety:** General safety rules for machine tools are in place. For an extended list of safety notes consult the literature or go to our website. We do not warrant that any

accessories can be used for any particular application. Usage of accessories or damage caused on equipment is at the risk of the customer.

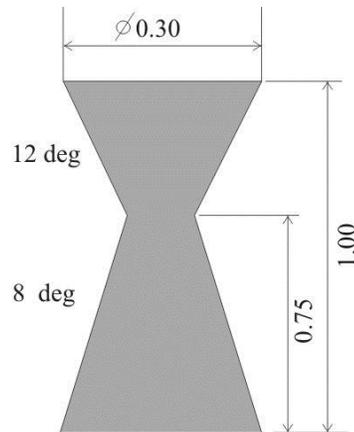


Fig.: Example project.

**Example project:** For machining the shape shown in the figure proceed as follows when using Sherline's lathe.

1) Switch off the lathe. Mount compound slide at the end of the cross-slide (i.e. at the backside of the work piece). Use inverted right hand cutter.

2) Set the 8° angle by rotating the compound slide base towards you. Lock rotating base of compound slide.

3) Move compound slide by 2/3 of the maximum slide length toward the lathe spindle.

4) Lock the compound slide at that position using the compound slide lock.

5) Align cutter tip with the front edge of the work using the lead screw of the lathe. (If you have a digital readout or wheels with zero adjustment then zero at that position.)

6) Move cross-slide towards spindle by 0.75" using the leadscrew. Since the compound slide is locked you cannot overshoot this end position of the taper even if chips block the view.

7) Make sure that cutter clears the work. Switch on the lathe. Start cutting the taper as usual by moving the compound slide using the compound slide handwheel. (Don't use the lead screw of the lathe.) Adjust cutting depth with

the cross slide position. The compound slide moves towards the stop. The cuts stop when the compound slide just touched the stop.

8) The taper is finished when you start to touch the end with the larger diameter with the tip of the cutter.

Follow the same procedure for cutting the 12° angle. Here, you would need to rotate the compound slide away from you. For more detailed examples, see vol. 2 of the Lathe City book series.

**Spare parts:** We do currently not sell any parts of the compound lock separately. The lead screw, screw, and set screw are standard sizes available in good hardware stores or on-line tool/hardware shops.

**Pricing.** This mechanical stop is tricky to manufacture, in particular the bush button nut. Therefore, we had to go higher with the price. However, for customers seeking an ultimate precision, this accessory will be very useful.

**For what systems can Lathe City accessories be used?** Our parts are designed for benchtop lathe and mill systems such as Sherline's systems, but they may also work on full size systems. We

offer accessories that attach to a lathe spindle, tailstock, and/or T-slot tables.

Screw-on type accessories fit on a ¼-16 threaded spindle, at least ~0.5" long. (Nominal diameter ¼ and 16 threads per inch.) The length is not too critically, the thread size is.

Tailstock accessories are for a Morse #0 taper which has per definition a larger diameter of 0.356". The taper length is not too critically.

Various T-slot tables are in use. We provide Sherline's standard ¼" square nuts. However, if one has the right square nut, the accessories will be useful also for other T-slot tables as long as the bolt to fix the piece on the T-slot has a diameter no larger than 3/16. Otherwise the drilled through hole of our accessories would need to be enlarged which is simple to do.

You can easily measure your system or find the required information in the manual of your lathe/mill.

Most pieces are made from aluminum (Al) which keeps the prices low and it is durable enough. In addition, the aluminum adapters guarantee not to damage the threads of the lathe spindle etc. Looking at rusting pieces made by other vendors out of "stainless" steel ... Well, this does also not happen with aluminum adapters. We do not coat the adapters with a (black) oxide since this has no function, but increases the costs. Typically all surfaces are milled, but small scratches may be apparent even on new adapters. These are tools and not jewelry or furniture. We do test all pieces for at least a year before offering them for sell.

Don't hesitate to contact us if you have any question regarding compatibility of our products with your system.

(Lathe City)





## Hand wheels

### 2-1/2" O.D. Hand wheels for Sherline Mills and Lathes

**Typical application:** Replaces little tiny hand wheels on, for example, Sherline mills and lathes. For 1/4" spindle, about 2" long, 9/64" hole at the back side.

**Why do we offer this? Specs.** We recently purchased a Sherline mill table from a non-Sherline vendor (, but apparently genuine Sherline,) since we have had already a milling column at hand. Well, the mill table did fit the budget, but came with little tiny 1.5" or something hand wheels. That's probably good for a workout; however, it's not practical in particular on a mill. Looking around: Sherline hand wheels cost apparently \$40 the piece. Thus, \$80 for hand wheels to upgrade the mill table? Hello, apparently the Sherline stuff can be weight in gold pressed Latinum. Therefore, we came up with a perfectly working but "slightly" cheaper alternative. The LatheCity hand wheels are made from a 2.5" O.D. steel or brass washer. That washer is connected to an aluminum shaft that fits on Sherline's mills or lathes and is hold by an auxiliary 10-32 steel setscrew. The slotted disk (not included) for the digital readout (DRO) can be mounted on it, or the wand wheel can be used as is. Since most of us anyhow have a DRO, no sophisticated scale is provided/required. The hand wheels come with paper glue on scales if required at all. Adhesive

paper scales for English or Metric systems will be provided which you would need to fix by yourself (or specify what you need at point of order). One hand wheel revolution equals 0.050" or 1 mm.

**Procedure:** Remove carefully the slotted DRO plate from your old hand wheels. Don't break these, we don't offer them and Sherline's doesn't either, at least not separately, as far as we know. Mount the slotted DRO disc on the new hand wheel (figures below). It's pressed in, but may need some glue, since it should not rotate when rotating the hand wheel. If the fit is too tight use a round file and give the plastic disc carefully a few strokes. Next, slide the new hand wheel over the mill/lathe spindle and secure with the auxiliary setscrew. Make sure to remove any end play in the lead screw by adjusting the position of the hand wheel on the lead screw. Mount the DRO plastic clamp that included the DRO sensor. Finished.

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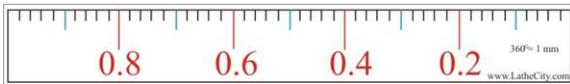
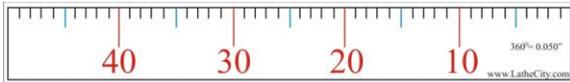


Fig.: The adhesive scales on the hand wheels will look like this.

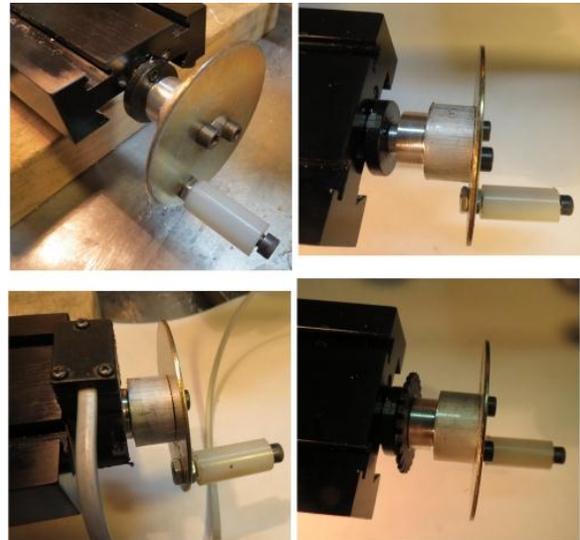


Fig.: Mounting the hand wheel. Design details may deviate from the images shown. Sherline's mill table is shown as well as Sherline's DRO (not included).



Fig.: Front and back side of the hand wheels. Paper scale not shown.

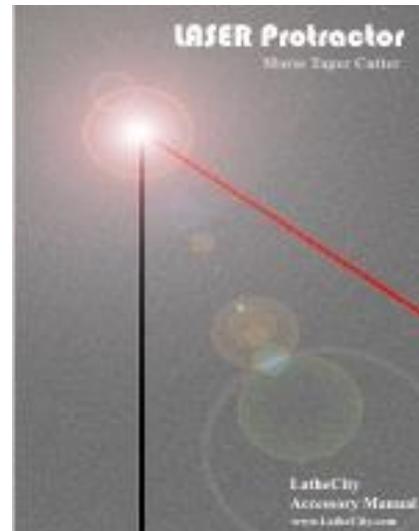
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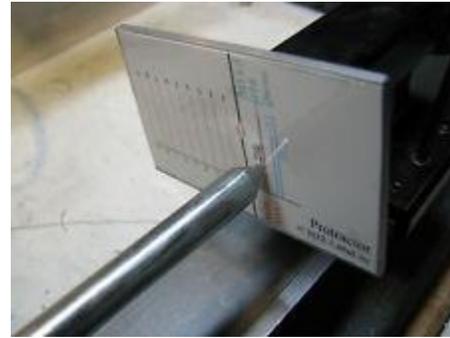


## Morse Taper Cutter LASER Protractor

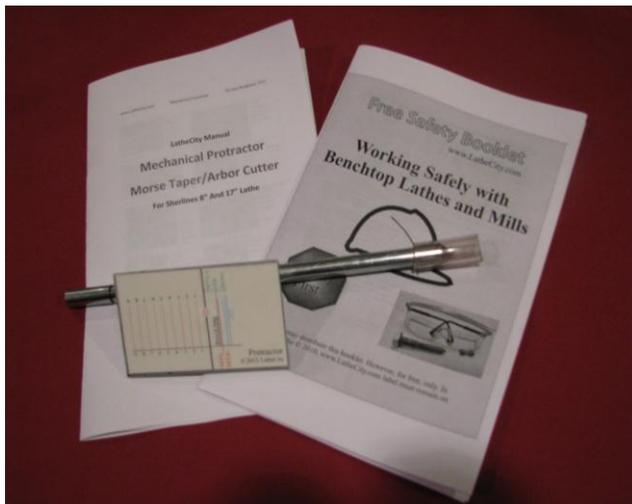
**LASER Protractor** - Sherline Compatible - Cutting Easily Morse Taper

One can cut Morse Taper easily even on a small home shop lathe. Since labor costs are not an issue for hobby type work, you can make these accessories by yourself for close to zero dollars. All you need to do is setting the cutting angle precisely enough. Our LASER protractor is exactly doing this for you, making the entire process a piece of cake. Cutting a perfectly fitting Morse taper takes 10 min / piece. Actually, we are crazy offering this kind of tool, but it will cost you.





## Morse Taper Cutter Mechanical Protractor

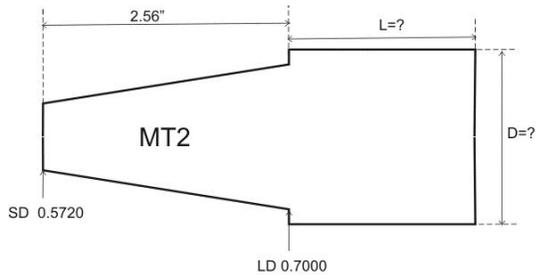


For details, please, go to our website.



# EXAMPLES

## Custom designs are our pleasure

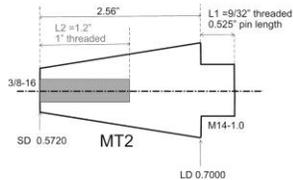
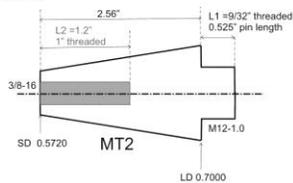


specify materials: steel 1018, steel LeadLoy, Aluminum, ...  
 Specify: length L; diameter D  
 Taper M0, M1, M2  
 Taper length: full length, half length (Sherline)  
 Tang: yes/No  
 Price: \$25-\$35

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Project:  
 Myford Speed10 to UNIMAT 3.2 Adapter  
 Using UNIMAT accessories on Myford  
 according to this drawing

### Quotation



Aluminum: \$30/each  
 For one each (in total two) pieces as shown here: \$60  
 Shipping: USPS priority mail small flat rate box + tracking \$6.20  
 Grand total \$66.20  
 Lead time about 5 business days (depending on work load) after  
 receiving payment.  
 No returns of custom designs.

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