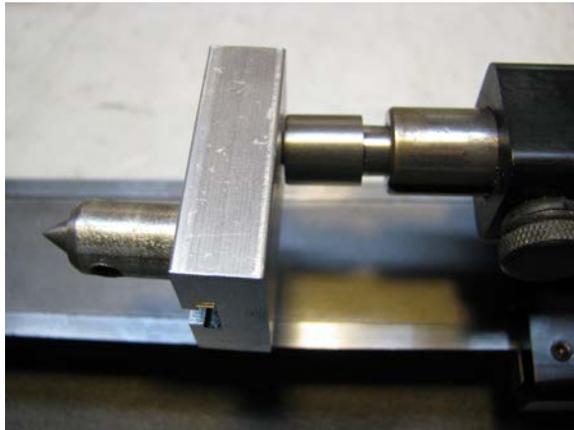




## Sherline, UNIMAT, Craftsman 109, China Lathe Adjustable Tailstock Center

For current prices see our website.

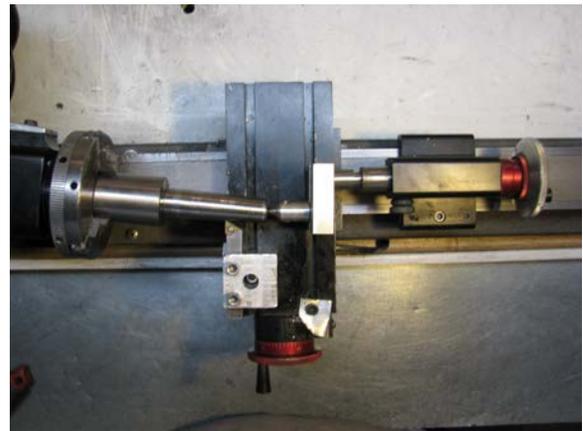
**What does the thing it do?** Adapter mounts in tailstock arbor of a lathe and connects to a dead center (pin). The center is adjustable perpendicular to the lathe bed.



**Design details:** On one side the adjustable center has a fixture for mounting it in a tailstock and it has a dead center on the other side. The center and mounting fixture are screwed on a steel 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. *Aluminum and steel versions are available. In the meanwhile we use a hex bar for the front end.* Versions for Sherline (MT0), UNIMAT (pin end), Craftsman 109 ("MT0"), and China import lathes (MT2) are available. *Life center pins, tilt pins, ball end pins have been made as custom designs. Contact us at [sales@lathecity.com](mailto:sales@lathecity.com)*

**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 wrench.



**Application for Sherline & UNIMAT:** Cutting taper in longer and/or larger diameter stock without a center is dangerous and basically impossible on Sherline/UNIMAT lathes. (The chucks are too small.) This adjustable tailstock center compensates for the offset when cutting taper by rotating the headstock. Therefore, one can now use a center. 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.



#### **Application for Craftsman & China lathe & Sherline & UNIMAT:**

On most lathes which don't have a rotatable headstock, tapers are either cut with a compound slide or by off-setting the tailstock. (See lathe city book vol. 1) Most compound slides allow for cutting perhaps 1.0" to 1.5" long taper. That's not even long enough to machine Morse taper. In addition, the angle setting of compound slides is not very precise. China import lathes come with an adjustable tailstock. However, it's quite tricky getting the headstock and tailstock adjusted again once the factory alignment has been compromised. (We do offer alignment bars, LatheCity buddy bars.) Therefore, smarter is using an adjustable tailstock center. Turn long tapers by off-setting the tailstock. Now you can also use the automatic feed of the lathe. Measure the offset, headstock pin to tailstock pin, with a digital readout and you can set taper angles very precisely. You will also need a headstock center and a so-called drive dog (not included).

**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. Here is the link: <http://www.lathecity.com/Books/Safety-Booklet-Lathe-City.pdf>

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

The adapter may start to rotate in the tailstock spindle. (We have never seen this happening. The dead center pin may rotate, but this doesn't bother us.) 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°) 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 pate 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. 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, all screws 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. Large forces may break the bolts off.

RPM maximum are 2800. The adapter is tested only on Sherline, UNIMAT, and SIEG 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.

Any legal action brought against LatheCity/Uwe Burghaus shall be tried in the State of North Dakota in Fargo, USA.

**WARRANTY:** we do not provide any warranty for our products.

In no event shall LaheCity's liability exceed the purchase price paid for the product. We shall in no event be liable for death, injuries to persons or property or incidental, contingent, special or

consequential damage arising from the use of our products.

Trademarks used in our products (books, manuals, website, etc.): All trademarks and copyrights are the property of their respective owners.

**Returns** in resalable conditions are accepted within 30 days (Factory direct) or 14 days (eBay) 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 1%.

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 for Sherline has a taper length of ~0.75" for short benchtop tailstock spindles. That taper is cut off at the small diameter end. For Craftsman it's the opposite. UNIMAT's don't have a MT, but just a straight pin or threaded bushings. Other sizes are available on request as custom designs. The taper has no tang, i.e., the adapter may start to rotate under heavy load. Adding a tang would not be compatible with Sherline's (/UNIMAT) tailstock spindle. A Morse taper with a tang would not be safer, probably rather the opposite since the tailstock spindle may start to rotate even faster on a small system. Some lathes have left hand quill

spindles which may be somewhat safer. Newer lathe versions often don't have this feature.

We machined versions with a round or hex adapter for the tool steel pin. The round version has an auxiliary hole for a spindle bar in order to tighten the adapter on the T-slot. The hex version can be tightened with a wrench key. Don't over tighten the adapter.

A setscrew is not required to hold the tool steel pin, one also does not use a setscrew to fix a Morse type adapter in a tailstock. The tool steel pin has a tight fit into the adapter. If you need to replace the tool steel pin then unscrew it from the T-slot, remove the T-nut, stick a spindle bar through the adapter and tap it. In so doing, the tool steel pin can be pressed out. We do also offer life center pins.

**Pricing:** This is a rather specialized application. Job-shops easily charge \$60/work hour + materials + tooling. 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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