# UNIMAT Buddy Bars

Size: Double pin end (steel) that fits in the UNIMAT SL DB lathe headstock spindle and tailstock spindle. In the meanwhile we use tool steel.

We do also offer MT0-MT0 buddy bars for our Morse type spindles. These are usually nut in leadloy.

Purpose of that tool: If one wants to machine pieces with a small run-out (high centricity), the work piece must be perfectly center drilled. That doesn't work too easily on an UNIMAT SL DB since the headstock is rotatable and it is only aligned with a pin. Even if that pin is used, one can easily rotate the headstock by a degree or more in both directions. Therefore, finding the correct center line is just a guess.
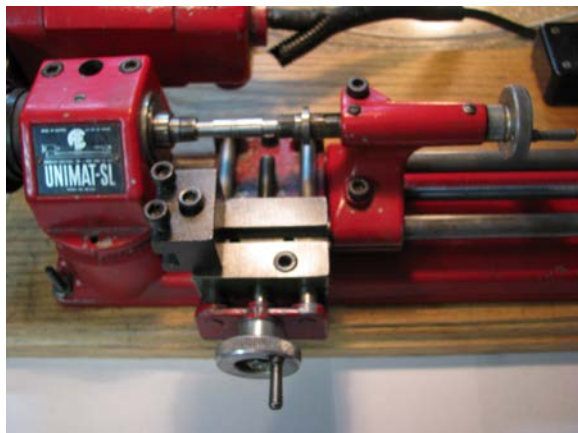
How can we improve on that?

1) Use centers in the head and tailstock to align the lathe. That works probably to 1/32", and will give you work pieces with a run-out as large as 0.040" or so.

2) Turn down a round and measure the diameters of its ends. Tap the headstock to fine tune the angle setting. That works theoretically (run-outs of 0.002" can be reached), but it is a more than tedious procedure and can take an hour all the time. (I have seen recommendations to glue -epoxy- the headstock on the lathe … I would not do this)
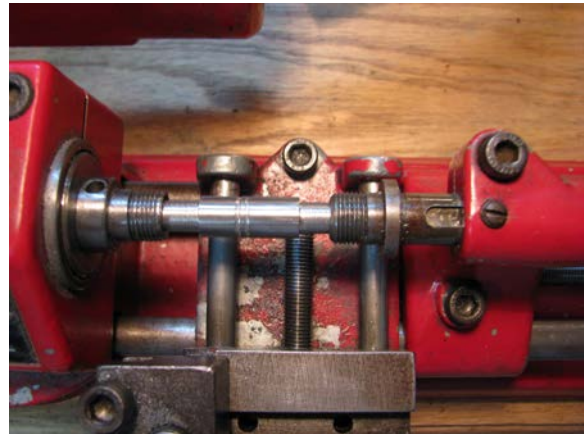

3) We offer a third strategy that is more convenient although also not perfect. Switch off the lathe. Remove the alignment pin of the lathe. Loosen up tailstock and headstock. Stick the buddy bar in the tailstock. Move tailstock all the way towards the headstock and insert pin in the headstock. Jiggle around on the headstock to find

a first alignment. Crank the tailstock. Push pin in headstock a little more using the hand wheel on the tailstock. Crank the headstock. You can reach an alignment that result in run-outs smaller than 0.005", depending on your skills. Good luck.

4) Another idea may be using a LASER pointer and shooting through headstock/tailstock centers which have a small hold drilled in. No idea how good that would work, but it would be quite expensive machining a fixture to adjust the LASER pointer. And, again that would be a rather tedious procedure. LatehCity does actually offer accessories that use a LASER pointer.

5) If you would like to provide your ideas and experiences, then sent us an e-mail.
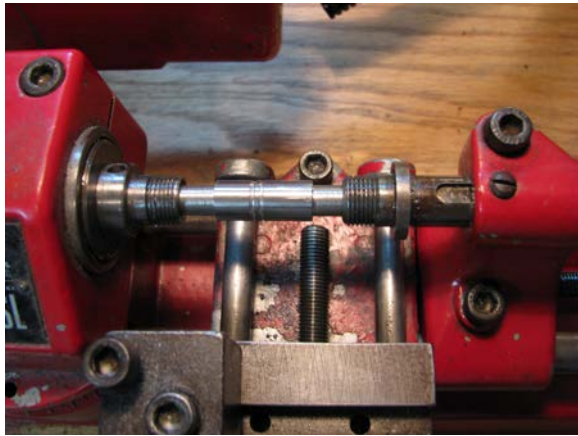
Technical notes: The buddy bar is machined in tool steel to close tolerance. However, there are manufacturing tolerances of these 40-50 years old lathes. (We have more than one spindle set in the shop…). Therefore, you may need to use sandpaper to obtain a perfect fit of the bar in your lathe. If the bar gets stuck in the spindle, stick a rod through the spindle and tap it. In addition, one can rotate the bar losing it up in that fashion. Don't force the pin into your lathe spindles.

All LatheCity tools come with a small manual and safety booklet. The manual includes further tips and tricks about how to improve on the centricity of work pieces.

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. LatheCity shall not be liable for any damage caused by unprofessional use of LatheCity accessories.

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

Returns in resalable condition accepted within 30 days, no questions asked. However, we do NOT reimburse shipping costs (Priority mail $5.20), credit card fees, broker fees, taxes, etc. We will charge the respective shipping costs to customers for products that were offered as free shipping when returned. Note that the return rate of LatheCity products is below 1%.

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Tips and Tricks
End mill holders BLANKS
Sherline: ¾-16
UNIMAT: M12-1.0 or M14-1.0

Typical application: You will obtain the most true running end mill holder when you true the screw-on accessory directly on your lathe spindle. Therefore, we offer various blanks with ¾-16", M12-1.0, M14-1.0, etc. bushings ends, long or short versions.

Procedure. 1) Screw the blank on the lathe spindle of your Sherline, UNIMAT, etc. lathe. Fixing the blank well hand-tight is typically good enough. **2)** Turn down the blank by a few 0.1". For example, when starting with an O.D. 1-1/4" turn is down to about an O.D. of 1". Less than that is often also good enough. That will perfectly true the holder with respect to your spindle. **3)** Square the blank by facing it off. This is as important as step 2. **4)** Remove any small pin on the center line of the part with a file and/or sand paper. **5)** Use your best center drill to center drill the blank. **6)** Bore the hole for the cutting tool using a drill bit and reamer. Having, the exact hole diameter for the cutting tool is important or the end mill will not run true. Thus, indeed use a reamer or a boring bar. The end mill must fit tight into the boring! **7)** Add holes for a set screw and spindle bar or use our hex bar blanks which allow one using a wrench. **8)** Finished.

When working with steel adapters use inserted tip carbide cutters (inserts). Some steel varieties generate hot chips.

Safety/Disclaimer:). Damage on equipment (particularly damage on the spindle of the mill by over tightened screws) caused by usage of accessories is the customer's responsibility. End mills are very sharp and have to be handled with caution. End mills are not like lathe cutters and are sharp. Make sure that the auxiliary screw is tight at all times; otherwise, the end mill will pop out of the holder. In most cases, the end mill may land on the work piece. However, this can result in unstable and dangerous situations with any end mill holder. Use end mills with a flat and clamp the end mill 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.

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. Use accessory for light lathe work on miniatures. Max RPM 2800. Do not touch the over-heated parts. 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.

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. No returns of mess-up blanks. General sells and business terms as given on our web site are active.

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