



Various benchtop **screw-on mill tool holders** starting at \$8.99. Fast tool change system for benchtop milling machines.

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.

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.

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 ground); 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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**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.