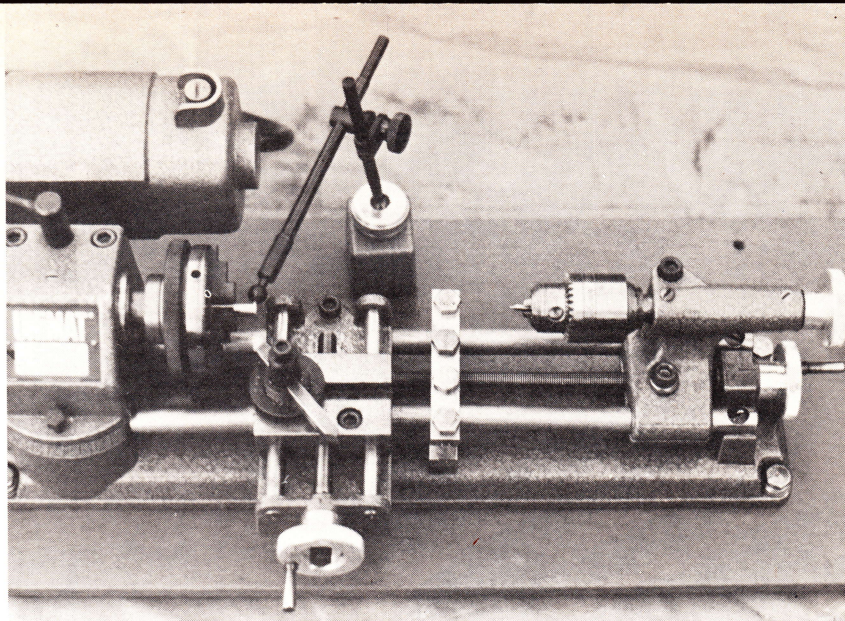


# Some minor modifications for the Unimat

BY EARL JOHNSON



**A** BASIC problem with the Unimat lathe is its lack of sufficient rigidity, which is due to the way the tool is made. As my demands on my lathe grew with my experience, I found it necessary to try to make the setup more rigid so I could do more precise turnings.

When I first got the lathe, I mounted it on a 1"-thick pine board. A machinist friend suggested mounting it on a steel plate. I ordered from a local shop an 8" x 18" plate cut from  $\frac{5}{16}$ " steel, sanded it smooth, and primed it. Then I drilled and tapped it for  $\frac{1}{4}$ " mounting bolts. I also put small self-sticking rubber feet (Radio Shack—as used on the bottom of stereo components) on the bottom of the plate, to prevent sliding on the worktable and to allow ease in picking up and moving the assembly. This plate provides space for the various lathe tools, keeps them all in one place, and also gives me a place to stick a magnetic base indicator. And it does quite a bit to cut down flexing of the lathe bed.

Since my attention had focused on the bed, I noted that there was still some flexing to get rid of. When I lifted the cross slide, I could see the bed rise from the steel plate. So, the next step was to fill the underside of the bed about nine-tenths full of Hydrocal. I suppose Cerro metal or Linotype metal could be used, but Hydrocal is just as good for this purpose and is less expensive. (Do not use plaster. It is not hard enough, and will crack.) Note in fig. 1 that I left

the end cavities open to allow access to the screws that mount the ways. The Hydrocal, combined with the steel base, gave me the rigidity I wanted for the bed, so I turned my attention to the ways.

I had seen ideas about cutting the length of the bed to shorten the ways and thus make them more rigid, but I didn't want to go that route. Then I saw a simple clamp as used by Richard Schulenberg. I made one out of two  $\frac{1}{4}$ " x  $\frac{1}{2}$ " x  $3\frac{1}{2}$ " brass bars, drilled and tapped for  $\frac{1}{4}$ " x 28 cap screws. This seemed to do more than any one thing to reduce flex, and I am indebted to Mr. Schulenberg for the idea.

There are no critical dimensions to the clamp, which should be a snap to make from fig. 2. I do think the four bolts are necessary, but someone may come up with a simpler method. Admittedly, this clamp takes a bit of time to put on and take off, and when in use, it interferes with tailstock operations. I tend to work without it unless I really need it for precise work. But this bar really helps when it is clamped near the center of the ways but far enough away to allow working room for the cross slide. Be sure to use brass or aluminum for the bar pieces, so as not to mar the ways.

Some other things will help give ultimate use from a lathe:

- Be sure to clean off the packing grease and lube with machine oil on

all moving parts. The Cosmoline-type packing grease on the new lathe will prevent you from taking up slack, particularly in the feed wheels, where they seat against the bed and slide castings. I had my lathe 2 years before I found out why I couldn't adjust the slack out of the micrometer feed screws.

- Set up the friction locks fairly tightly; pay particular attention to the one for the cross slide on the way bars. Because this lock is at the rear of the cross slide, there is a considerable lever arm that magnifies any looseness in this lock. Check by lifting on the cross slide adjustment wheel. I have got my lathe to where I cannot make the cross slide move up when I jerk on it—a far cry from when I started out.

- Add lock washers beneath the nuts on the four screws that mount the way bars on the bed. My lathe didn't have them; the screws will work loose without the washers.

As a final note, I suspect many people who own small lathes don't use them as much as they should because they don't really know how. I was in this boat, and had to force myself to learn. I found the line of kits that Edelstaal (the Unimat people) put out to be great fun to build, and they are the quickest way to become acquainted with basic machining. I have built the launch engine and steam-powered pickup truck and learned as much from these projects as I have from several books.

