

Shop Made Drum Sander for the Lathe



Our thanks to Awilda (Tita) Wilson for creating and offering this project to fellow woodworkers.

Tita would also like to thank Bob Hewson of the Yahoo Group's Segmented Project Planner Group for sharing his idea for a lathe operated drum sander.

We built the pictured drum sander for about \$44 in parts. The unit is operated by the lathe motor, can be removed easily and is quite compact. The specifications we give are for a sanding unit to fit a Jet midi lathe. You will have to modify the dimensions to fit your particular lathe and the diameter and length of your drum.

The base plate, tilt board, and side plates are all made from $\frac{3}{4}$ plywood—Home Depot sells $\frac{1}{4}$ sheets at a reasonable price, and one quarter sheet was enough for our unit. A 9 inch width for the sander frame was about max for our lathe. The drum sander is secured to the lathe ways using an appropriate length $\frac{3}{8}$ bolt and large top washer. We carefully measured and mounted a piece of $\frac{3}{4}$ inch plywood on the bottom of the support board—that piece falls between the ways, and keeps the frame at exactly 90 degrees to the lathe ways. The tie-down bolt is fed between the ways and into a piece of $\frac{3}{8}$ thick metal tapped for the bolt (A heavy washer and appropriate nut will also work). The metal is just as wide as the hold down washer that came with the lathe stocks (see pictures).

The drum cylinder can be made by cutting rounds (using a hole saw of appropriate diameter, or the Ringmaster) out of $\frac{3}{4}$ or 1" thick MDF and gluing them together to form a cylinder. A threaded rod is inserted through the center although a pen mandrel can be used (this limits the drum length), then the lathe is used to true the cylinder and allows custom cutting of needed diameter and length.



We were fortunate in that we had a piece of round, very hard solid plastic cylinder 2 ½ inches in diameter available (a dump find!), so we drilled and tapped one end for a piece of threaded bolt stock on the chuck end, and merely dimpled the other end for the live center.

(Editor note: I've seen a similar setup using PVC pipe filled with plaster of Paris and the threaded rod)

Once the unit is fastened down, the drum can be inserted into the lathe chuck and live center. With a piece of sandpaper on the tilt board, sand the drum smooth and even by pulling the sandpaper back and forth under the drum. The unit is extremely stable, and run-out on the drum is less than 1/1000 inch.



As for “Note A” on the attached drawing of the pivot assembly of the height adjustment unit, we welded two 3/8 nuts to a small metal plate, after threading a short piece of 3/8 bolt between the two. We then welded a piece of ¼ inch rod for use as the height

adjusting rod to the aforementioned bolt at right angles, fastening the plate to the tip board. This allows the height adjusting rod to swivel the slight amount needed as the tilt board is raised and lowered. Quarter-20 rod for the height adjustment gives a great adjustment potential. Turning the knob 1/8th turn is a gradual enough adjustment to remove small amounts of material at a time. The knob came from OSH. The saddle we placed below the base keeps the adjustment knob out of the way of the tilt board.

There are piano hinges attaching the tilt board to the base and one attaching the dust collection cover to the side panels. To make sure that the piano hinge we used for the tilt board was perfectly aligned, we clamped the tilt board and the hinge block tightly together then used a self-centering-hinge-screw drill bit to drill starter holes—this insured that the hinge didn't wander while screwing it down.

The dust collector hood appears to be absolutely necessary, as the sanding operation generates a lot of dust (obviously), and without it, dust tends to get under the feed tray and change height settings. The collector gets most of the dust, and the 1" clearance to the top of the drum seems the most efficient. The dust collector was made from 5/16 ply we had on hand, with a Lucite front panel to facilitate viewing the drum and material while at the same time providing a measure of safety. The dust hood rear panel is permanently attached to the rear of the upright side panels, and the top and front of the collector is hinged in the rear to facilitate changing the roller paper. We used spray adhesive to attach the sandpaper to the drum and feed tray. Hook and loop attachment can also be used but was more expensive and difficult to work with.

CAUTION!! THE LATHE TURNS SO THAT MATERIAL IS PULLED AWAY FROM YOU. THIS COULD INCLUDE INJURING YOUR FINGERS—SO PAY ATTENTION. (SEE FEED NOTES FURTHER ON IN THIS SHEET)



The hold down rollers serve a dual purpose: First to hold the feed tray down firmly against the tilt board—the feed tray is 1/4 inch MDF and it tends to bow very slightly (1/4" ply tended to bow and twist even more)—the rollers handle this very well; secondly the rollers keep the feed tray from either raising or dropping as the sanded board or ring was

clearing the sanding drum. (Without the hold down rollers the back of the tray would tend to tip up causing the material to be sniped by the drum and damaged.)

We made the spring loaded hold downs using ¼ inch rod running through 3/8 nuts (a fine fit) with a coil spring around (and anchored to) the rod to load the rollers. The “wheels” are small bearings that come with a lip on one side. They came from OSH, and are tack welded onto a shaft, which in turn is welded to a small plate that slides up and down against the main bracket—this small plate keeps the bearings aligned properly so they do not wander off the edge of the feed board.

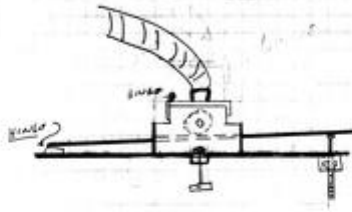
We used a 1” wide strip of the ¼ inch MDF glued to the rear of the feed board as a stop, and also glued 100 grit sandpaper onto the top of the feed tray. This is fine for keeping the work piece in position while feeding through the drum.



Feed Note: PLAN ON FEEDING MATERIAL ONLY FROM THE REAR, AND TAKE LIGHT CUTS. FEEDING MATERIAL FROM THE FRONT WILL CAUSE LOSS OF CONTROL, AND IS DANGEROUS!!!

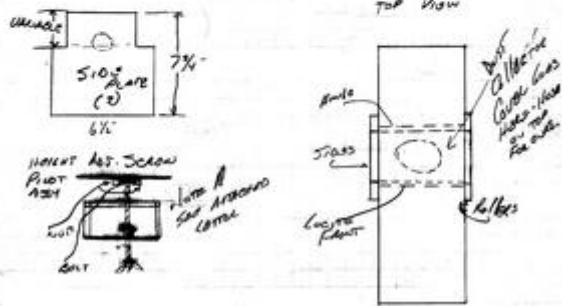
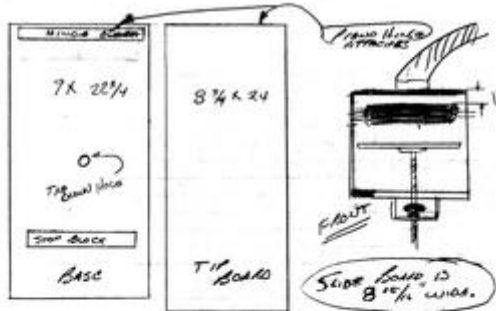
Design Documents:

Side View



NOT TO SCALE AND
SLOTTED, I'M NO DRAWING PERSON,
SO YOU'LL ALL HAVE TO
FILL IN ANY BLANKS

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This sander was built by Craig Thedin

