

Rob Meixner - Jewelry

Precious Metal and Lapidary Art

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Flat Lap for Grinding, Sanding and Polishing Lapidary

When I can, I like to make my own tools. Following is a series of pictures with commentary of how I made my flat lapidary lap out of an old saw arbor, common motor, cast aluminum flat lap plate, and other odds and ends.

This is the completed lap. You can see the coolant delivery nozzle, splash guard and splash pan. The following pictures will take it apart and put it back together.



The arbor is an old arbor taken from a broken lapidary saw. It is mounted through a hole in the top of the bench. The drive mechanism will be seen later. The hole to the right is the coolant drain hole.



The drain pan is a heavy duty bundt pan with the inside nose cut down a bit.



A hole was cut into the bottom of the drain pan and a light faucet hose sprayer fitting fitted into the hole. The fitting is casketed so that it seals and is fairly flush with the inside bottom of the pan.



Drain pan fitted over the arbor with the drain fitted into the sump drain.



The bottom of the cast aluminum flat lap.
Note that it is threaded the same thread as the arbor. I sent this casting and the arbor out to be machined so that they both fit together well.



The flat lap is screwed on to the arbor hand tight. Note the dark brown surface of the lap. This is actually a flexible piece of magnetic material that it PSA glued to the top of the lap. It is also the key to this system.



The splash shield is really just the bottom of a plastic bucket that happens to fit over the drain pan.



Splash shield installed. It can be taken off easily to add or remove media discs and it can be tipped if level access to the lap is needed.



The lap is driven by a hinged motor mounted in a board and a belt. The motor and belt are tensioned by a piece of all thread held in place with a wing nut.



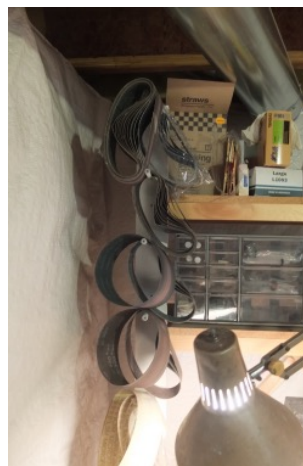
The motor to both the flat lap, Lotone Lap, and sump pump are controlled separately by this switch box.



Standard Lortone 6" arbor. Note that the piping in front delivers coolant from the sump such that it is sprayed up through the PVC pipe. Very small holes are drilled in the pipe to direct the spray. The waste is collected in the gravity drain at the bottom of the picture.



Abrasive belts hung on pegs to dry



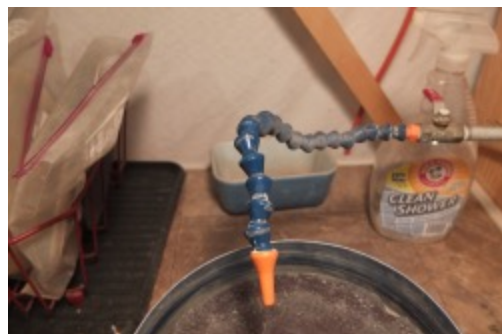
The coolant sump is a repurposed plastic bin with a small bucket inside containing the sump pump. By keeping the coolant level just above the level of the bucket, clean coolant from the top of the sump will flow into the bucket while dirty coolant is delivered back to the bottom of the sump by the gravity drain pipe seen at the top of the picture. This same sump delivers coolant to both flat and circular arbors. Flow is controlled by ball valves at each device.



This picture shows the sump pump in the bucket. The sump pump is a common small pool pump, just make sure that it will pump with enough head and flow capacity to reach the lap.



Coolant flow to the flat lap is directed through a flexible plastic machine tool coolant nozzle and controlled. By the ball valve. The nozzle came from Graingers.



The best part of the design is how the discs are magnetically held in place, but can easily be removed. The picture shows a repurposed dish drainer with a series of 8" discs all with different size media attached. Some of the discs are diamond grinding discs that are a part of the Grid Abrade System as is the PSA attached magnetic holder on the flat lap. Other pieces of abrasive media are PSA applied to 8" steel discs that are magnetic enough to be held in place by the magnetic pad on the lap while the lap spins the disc.



Grid Abrade disc in place



Steel Plate without PSA backed media applied.

The PSA media can be silicon dioxide, diamond resin, flexible cloth, felt or whatever you want to stick to the lap.

Note that you can vary the speed with different pulleys or just use a different location on the disc as it spins.



Everything back together.

