

Resetting the Bed Stone in a Meadows Twelve-Inch Mill

Millstones have large flat areas called lands, and grooves angling out from the center called furrows. The furrows are deeper and wider at the center and taper and shallow towards the outside to allow the grain to feed between the stones and be sheared by the passing of the stones very close to each other. At the edge of the stones the furrows taper to nothing to allow the finest grinding.

After grinding about 70,000 lbs. of grain, mostly corn, with my granite stone mill and dressing (flattening and roughing) the stones nine or ten times, the bed stone was worn down to the point that I could not deepen the furrows anymore. Sooner or later, many of you will be faced with the same situation, so I will pass on what I learned about the process. I don't claim to have the final word on how to do this since I am self-taught.

The bed stone is set in mortar and the runner stone rotates on a shaft at a variable distance from it. In the first photo you can see that the stainless steel grain cup in the middle of the stone reaches almost to the surface of the stone. Once the stone is at that point there is no room for deepening the furrows. The solution to this is to break the bed stone loose from the mortar, add new mortar, and set the stone in it at a higher level relative to the edge of the mill casing. Meadows mills have vertically-oriented stones but mills like the Ostiroller and Jansen with horizontal stones are probably similarly set up.



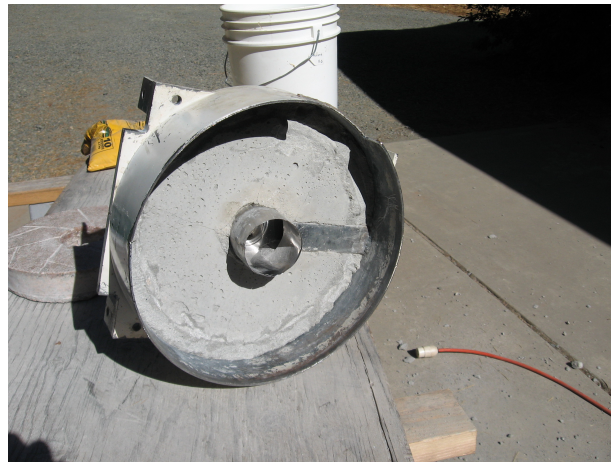
The first step in the process was to disassemble the mill. With the Meadows this only requires removing the hopper, feeder, and drive pulley and then the side of the case with the bed stone. The runner stone can remain in place because the stones will have to be "trained" to match after resetting the bed stone.

Once I had the case with the bed stone off and set on a sturdy table outside where the mess wouldn't be a problem, I set out to remove the mortar with a pneumatic chisel. I started on the mortar at the end of the case where the flour comes out so I could judge how far to go down. I had already decided that I would not go deeper than the bottom of the stone even though there was another inch of mortar below the stone. This proved to be the hardest part of the whole job. Though I have a 2 HP/20 gallon tank compressor, the chisel would use up the air in the compressor tank pretty quickly. I already had these tools, but if one did not I would suggest renting or buying an electric chisel that wouldn't have the air problem.

At first I just waited for the tank to recharge but then realized that it would take a very long time to get the mortar out. I had a hammer drill with carbide bits, so I started using the waiting time to drill holes in the mortar every inch or so. That speeded things up a lot but it still took me a couple hours to get all the mortar out around the edge of the stone.



I found I had to be careful with the chisel to avoid damaging the edge of the case, which would make reassembly difficult. Once I got all the mortar out I used a big screwdriver to drive under the stone bit by bit, being careful not to crack the stone, until it popped loose. It still took some fiddling to get it off the grain cup.



With the stone out, I knocked off small bits of remaining mortar on the back and edges of the stone and on the remaining mortar in the case. I mixed up ordinary Quikcrete mortar patch from the local lumber yard to a fairly stiff consistency and wetted down the old mortar in the case to avoid drawing moisture out of the wet mix too fast. I then pressed the stone into the wet mortar until it was about a 1/4 inch proud of the case edge. Meadows recommended a final set with the surface of the stone about 1/8 inch above the case. To get it even I made a little gauge out of wood with two 1/8 inch shims glued to the ends that rested on the case. I tapped the gauge with a hammer evenly across the width, rotating the gauge around to several different spots, and the stone settled pretty easily at the right height.



The last step was to fill in around the stone with mortar and taper it off away from the stone so milled flour can get to the case outlet. I quickly added the mortar and, using a narrow tile grouting trowel, got it pretty evenly shaped with a slope away from the stone to what looked like enough clearance for the edge of the other case that nests inside the bed stone case.



I cleaned up and left the mortar to dry for a couple days in the shade and then tried to reassemble the case. I discovered that the mortar at the outside edge was too high for the lip of the other case to fit in. I spent another hour carefully paring the mortar with a mason's chisel, attempting to fit the cases together, failing, and paring some more. The lesson, obviously, is to give plenty of room for the lip of the other case if you have a Meadows.

Eventually I got the mill back together and started the "training" of the stones, a term Roger Jansen gave to me. It consists of running the stones together, a few seconds at a time over and over, long enough to get the mating surfaces pretty parallel. When dressing stones I run the painted surfaces together for possibly eight or ten minutes total over three or four sessions, but resetting the bed stone it can get the two stones considerably out of parallel. I did this for a long time, maybe 40 minutes total. It is tedious and time-consuming taking the case apart, painting the

stones, reassembling to run them together to find the high spots, then disassembling to work the stones down with a pneumatic bushing chisel. I found it easier to just spend a long time running them together before taking them apart. Maybe that much time wasn't necessary but it worked out well because when I disassembled and put a straightedge on each stone they were quite flat. I doubt I took off more than 1/16 inch. The bed stone is an inch-and-a-half thick, so it will last a long time.

Finally, I deepened the furrows on both stones, roughed the lands, reassembled, and did a test milling. To my relief, the speed and quality of the milling was excellent. My mill is now set for many stone dressing sessions until the runner stone wears down and has to be replaced.