

Repairing a 1-Ton Arbor Press, Version 1.0

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Although I am presenting a repair, you might want to consider this mod before a failure occurs.



I pressed out a bearing from this block yesterday, and it went well. The trick is first to heat the aluminum block with a hot air gun. My 1-ton arbor press pushed it out with a gentle push on my 2-foot-long cheater bar.

This time was a bit different. I pushed harder until I heard a clunk. Looking at the bearing, I could see that it was unaffected. WTF?

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That clunk was my arbor press transforming from one piece to two.

It took me a moment to realize that the press was lifting up on the area that failed. Cast iron is weak in tension.

I do not have the skill or equipment to weld cast iron. Brazing takes more heat than I can generate from my handheld MAPP torch. Even if the weld or braze held, the original problem of cast iron in tension remained. Buy a new press? The price has gone way up, but the quality is, at best, the same.



Why not try bolting on side straps? I made two from 1/8" X 1" X 8" CRS. The casting will prevent the strap from twisting, and the one inch of steel is extremely strong in shear. I selected 5/16 bolts to have about the same strength in shear.

First, I drilled four holes using my F drill, the tap hole size for a 5/16-18 thread.



I aligned the first strap, by eye, on the rear part of the casting. Then I match-drilled the two holes using the F drill.

I then removed the strap, tapped the casting with my 5/16-18 tap, and opened the holes in the strap with my P drill. I secured the strap with bolts and moved on to the other strap.



With the two casting parts pushed together, I clamped the first strap. Then I repeated the match-drill and tap process.

I used washers under the bolts because these are shoulder bolts and a close fit to the clearance hole. The shoulder was a little long, so the washers took up the extra length.



A lesson learned: check to see what is in the casting before locating the mounting holes. One of the holes grazed the underside of the top, preventing the tap from going through.

I also wish I had lowered the bar down a bit so I could add steel nuts. The threads in cast iron aren't that strong.



I torqued down on all bolts and then applied about as much pressure to my cheater bar as caused the failure.

The repair held, but the rear casting did lift a little. Upon closer inspection, I found one bolt not fully tightened.

I repeated the test, and the casting did not shift.

My press is not as good as new because that crack is still there. However, I believe the press can take a full load.

If I had added these bars, with nuts on the ends of the bolts, before the failure, I could say it is better than new.

I welcome your comments and questions.

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