

Log Splitter-to-Forging Press Conversion January 2010

Below are some photos and notes on the “conversion kit” I just completed that turns a hydraulic log splitter into a forging press. I set it up so I can convert back and forth between log splitter and forging press by changing one bolt.

I have no idea if it will be safe to use – so this note is just to let you know what I did. If you decide to do some version of the same thing that's your choice and I'd love to hear about it. But don't do it on my account – I'm not interested in being liable. I'm just sharing what I did!



Here's the 21 ton log splitter. It's a gas-powered rig. The Briggs & Stratton engine and hydraulic fluid tank are on the far side.

I've got a few acres, most of it forested. What with wind storms, persistent rain, and an occasional heavy snow – a few trees come down every year. I call 'em volunteer firewood. So I want to preserve the wood-splitting ability of this fine piece of equipment!

As you might guess this is not a precision piece of machinery. Well

the hydraulics are, but the splitting wedge isn't. So I'm not expecting to do precision press forging on this beast. I'm looking for mechanical help pounding out hidden tangs and doing forge-welding. Between the desire to retain the log-splitting capability and no need for great precision... I decided to go for the simplest modification I could devise.

Wayne Goddard was kind enough to supply me with a chunk of railroad rail – and Dave Rider was kind enough to saw it in half with equipment in his shop. This is what I'm using for my press dies.

To attach one rail die to the foot and the other rail die to the wedge of the log splitter I decided to form pieces of 1/4” steel plate and bolt the rail to the plate. The foot plate could just be a C shape that slips over the “foot” backstop of the splitter. The wedge is a little more complex to attach to. There is a bolt-hole through the head of the piston. Attaching one plate to each side, then bending the plate so that each plate can bolt to its side of the rail die *should* keep the die fairly well secured in use.

I destroyed several drill bits and one old hand drill making holes in the two pieces of railroad rail. The 1/4” steel plate is butter compared with the rail. I think I also did in the old belts in my Shop Smith using it as a drill press with the rail – I had to go back to a (new) hand drill. Occasionally the rail would grab the bit and pummel me mercilessly with the hand drill. I learned more in the last few days about sharpening drill bits than in all my previous years combined. And forget tungsten drill bits on railroad rail, they just crumble. Cobalt bits held up OK – but they chip, so between chipping and sharpening my 1/2” diameter cobalt bit wore down like a #2 pencil in math class.

One chunk of rail is bolted to a 1/4" plate forged into a C shape that slides over the log splitter's foot. The other chunk of rail is bolted to two separate pieces of plate that are bent to fit around the wedge. A bolt runs through these two separate pieces of 1/4" plate and through the bolt-holes in the wedge and head of the piston. All the bolts are 1/2".



I did not want the bolts to be under much stress, so on the wedge side there is about 1/4" gap between the steel plate and the rail that it is bolted to. The wedge itself pushes against the base of the rail. I didn't want to dull the wedge, so I cut a slot in the base of the rail that the wedge seats into, so the sides of the wedge actually push against the railroad rail.



Here you see another photo of the wedge side of my "conversion kit". I shaped it around the wedge contours so that I could get bolt-holes lined up with the base of the rail.

As you can see, the foot piece just lifts off.

Pressure against the foot is not passed through the bolt heads (as it might appear).

The 21 tons is pressed against raised steel pieces welded to the log splitter's foot that are intended to keep logs in place during splitting. These protrusions happen to be thicker than the bolt heads.





Here's the conversion kit off the splitter. You can see the slot I cut in the railroad rail to keep the front edge of the wedge from being dulled by letting it set into the rail.

Obviously, the tops of the rails are not square. And there is some play in the wedge itself as the piston moves it back and forth. So if I wanted to do some fullering I'd need to do something like replacing the foot railroad rail with a spring fuller. I would not trust two separate fuller dies (one on the foot, one on the wedge) to meet exactly opposite each other.

So we'll have to see how it works in practice. The proof will be in the pudding – or rather in the tangs and forge-welding!

Wish me luck with this beast – you will be seeing the results on my Facebook page at <http://www.facebook.com/pages/Elemental-Forge/167616684372>

... and at <http://elementalforge.com/> when my sweetie gets that site built (It's in prototype).

Keep well – keep safe!

Michael Kemp
Elemental Forge LLC