

SAFETY

Best Practices #060: Protective Equipment Building a Safety Shield



Having a lathe safety shield is an essential part of Chapter Protective equipment. There are many different options for incorporating one into your club's arsenal of assets, and we have found one that is not only simple and cost effective, but also has a small footprint for those Chapters who are short on room. This lathe shield is put together with parts that you can find at the local hardware store, with the exception of the Lexan® poly-carbonate that can be purchased and shipped for a cost of approximately \$50. The ultimate cost depends on whether or not you have a friend who welds. A neighbor who owns a welding shop made this happen for us, and it really allowed for the cost to stay down. Either way, you are not looking at a large investment in order to keep your demonstrator and your audience safe!

Here is the “short list” of supplies you will need:

- 1 each ~ 2' x 3' by 1/4" thick clear poly carb
- 1 each ~ 1 1/2" x 1 1/2" x 1/8" Thick Steel Angle x 3' Long Bottom
- 2 each ~ 1" x 1" x 1/8" Thick Steel Angle x 2' Long Sides
- 1 each ~ 3/4" Steel Pipe (Water Pipe) x 40" Long
- 1 each ~ 2" x 12" x 1/8" Thick Steel Plate (Gussets)
- 1 each ~ 2" x 2" x 1/4" Thick x 16" Steel Angle (Main Support from Lathe)
- 1 each ~ 1" x 1" x 20" Square Metal Tubing (Support Leg)
- 1 each ~ 3/4" x 3/4" x 36" Square Metal Tubing (Support Leg)
- 1 each ~ 2" x 2" x 1/8" Steel Plate (Leg Foot)
- 1 each ~ Pipe welded to 1/4" Thick Angle for 40" pipe to slide through (Support Leg)
- 9 each ~ 8-32 Machine Bolts w/nuts & Flat Washers
- 9 each ~ Rubber Grommets - To cover 7/16" holes drilled in plastic
- 9 each ~ 3/4" OD Flat Washers
- 1 each ~ 3/8" -16 Threaded Knob, OT Make, w/bolt

Assembly Instructions as follows:

Picture A



Headstock is tapped with 1/2" x 13tpi tap to the Powermatic's 7/16" through holes located in the headstock that are 4" o-c on this particular lathe. The main bracket is attached using 1/2" bolts x 1" long to hold the 16" long x 1/4" thick steel angle on to the lathe.

Support bushing for frame is fabricated from 1" steel water pipe, 3"-4" long, which is subsequently welded to the 1/4" thick angle (main support bracket). This piece of pipe will need a nut welded to it, and a set screw knob in order to set the height of the lathe shield. To prevent the shield from hitting the banjo you can use a 1" piece of PVC pipe approx. 8" in length.

Picture B



Weld a 3/4" x 40" long water pipe to the vertical risers on the main frame of the lathe shield. Note: It is important that the angle iron on the main frame is facing the correct direction before welding the pipe so that the Lexan® poly-carbonate is mounted properly to absorb any impact from flying objects. Refer to picture for proper direction of steel angle.

The 2 corner gussets on the bottom of the frame are fabricated from a 2" x 12" x 1/8" thick steel plate.

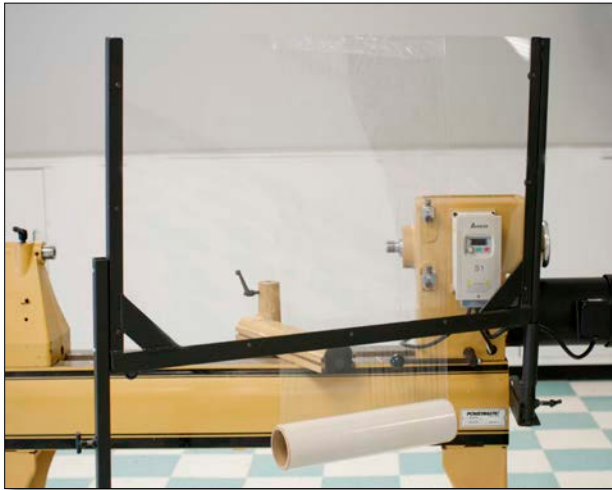
The support leg is made to not only carry the weight of the frame, but also acts as a vibration dampener.

1" x 1" x 20" Square Metal Tubing is welded to the opposite side on the main frame along with a 3/8" nut welded to it, and a set screw knob to set the height of the lathe shield.

3/4" x 3/4" x 36" square metal tubing is used to slide into the 1" square tubing.

Weld to the bottom of the 3/4" square tubing a piece of 2" x 2" x 1/8" steel plate to act as a foot for the support leg. You can glue a piece of rubber to the end of the foot to prevent floor damage.

Picture C



The Lexan® poly-carbonate is set using the Rubber Grommets and 8-32 Machine Bolts with nuts & flat washers, 3 on each side and 3 on the bottom.

Before setting the Lexan® poly-carbonate the assembly can be painted to your liking.

While this particular shield assembly outlines use on a Powermatic lathe, we have also fabricated one on a Stubby lathe for another Local Chapter using these same design techniques.

~ Dave Jolliffe
President
Tri-County Woodturners
& Hands On Woodturners in Florida
Issued 09/2014