

Pocket Anvil

Welding Project



PURPOSE

In this activity you will be practicing basic MIG Welding skills to manufacture a Mini Anvil.

PREPARATION

For this activity you will need the following:

- | | |
|---|---|
| <input type="checkbox"/> 3/4"x3/4"x3/4" mild steel square stock | <input type="checkbox"/> Demonstrated safe use of Bench Grinder |
| <input type="checkbox"/> Horizontal Bandsaw or Hacksaw | <input type="checkbox"/> Welding Helmet |
| <input type="checkbox"/> Demonstrated safe use of MIG Welder | <input type="checkbox"/> Welding Jacket |
| <input type="checkbox"/> Demonstrated safe use of Angle Grinder | <input type="checkbox"/> Welding Gloves |

FIRST: MIG WELDING SAFETY

The light from arc welding is bright enough to **BURN** your skin and **BURN** the inside of your eyes

As such, you **MUST** to wear the following:

- Full-face welding helmet shade 9 or darker
- Leather welding jacket
- Leather welding gloves
- **DO NOT TOUCH HOT METAL WITH YOUR SKIN**
 - It's 5000° and **HURTS**
- **DO NOT TOUCH HOT METAL WITH THE GLOVES**
 - It **WRECKS** the gloves
 - **USE PLIERS!**



STOCK BREAKOUT

- Use the Horizontal Bandsaw or a Hacksaw to cut a piece of 3/4" square stock to about a thumb width
- Please tell me you know the difference in thumb WIDTH vs. thumb LENGTH.



MAKING THE HORN

TACK weld a series of weld spots to slowly BUILD UP the surface into a horn shape.



You can TACK by pulling the trigger and counting "one-thousand one" and letting go of the trigger.

- We are more concerned with BUILDING UP the material (called "padding" in the welding world) than we are with good weld penetration
- We want to make sure we don't leave any CRATERS or CAVITIES
- We want to make sure we don't have any UNDERCUTS (parts where it MELTED more than it BUILT)

**LET THE WELD COOL SO THE RED DISAPPEARS
(You will see it fade out)**

**THE RED MUST DISAPPEAR, OR IT IS GOING TO GET
TOO HOT AND JUST MELT**

Then add some more tacks.



Keep adding more and more tacks until you get the shape you want. INSPECT it and see how you are doing for CRATERS – *You want NONE*

Make the horn a THUMB WIDTH in length

MAKING THE TABLE

Do the same to the opposite end of the Anvil, except THIS TIME, it needs to be very flat and rectangular.

PAY ATTENTION to the sides and ends – it's easy to NOT be rectangular. MAKE IT RECTANGULAR!



**LET THE WELD COOL SO THE RED DISAPPEARS
(You will see it fade out)**

**THE RED MUST DISAPPEAR,
OR IT IS GOING TO GET TOO HOT AND JUST MELT**



Make the table a THUMB WIDTH in length.

We're NOT done yet:



MAKING THE FEET

Repeat the process to make four feet at the base of the anvil

Maybe take a look at the anvil in the shop to see what they actually look like.



SHAPING THE SIDES

Use grinders, files, and sandpaper to make everything look like you never welded it.

If you did a good job welding, you will have less work to do here.

I used a large round file to make the sides concave



NOTE: Anvil sides are not usually flat!

FINISHING THE TOP

Make the top of the anvil perfectly flat and smooth by filing with smooth flat files

Make it smoother by wrapping the file in sandpaper and using the file as a sanding block

Alternatively, you could place sandpaper on a hard flat surface, and rub the anvil on that

Work your way up in grit: 150 > 180 > 220 > 280 > 320 > 400 > 600

Then polish the top of the anvil to a bling reflection!



MAKING THE TOOLING

Do you want the highest of marks ?

Take the skills you just developed, and make some tools for the anvil



- Hammers?
- Tongs?
- Hardies?
- ???

HAND IN your awesome wicked cool project for awesome wicked cool marks.