

My Three Burner Propane Forge

Design by L.K. Hults

The author claims no responsibility for any accidents, injuries or death, resulting in the use or misuse of this information or equipment enclosed herein.

Caution:

Carbon Monoxide hazard! Fire hazard! Explosion hazard!

- Use in a well ventilated area.
- Make sure all fittings are tight before lighting.
- Always check for leaks before lighting.
- If you smell gas, extinguish all flames in the area. Turn off the gas and find the source of the leak.
- Avoid galvanized piping. It can give off poisonous fumes when heated.

Tips & Hints:

- Never block the front or back door completely. The forge needs to be able to “breathe”. Propane expands approximately seven times.
- Use a door when possible to conserve heat. The metal will heat faster.
- Make sure the orifice is the right size and is not dirty or plugged (see figure 1).
- These burners will not burn outside of the forge without a burner nozzle. The nozzle is formed by the difference in the I.D. of the burner and the I.D. of the burner holder along with the set back of the burner (see figure 2).
- Use the largest supply line as possible. I use $\frac{3}{8}$ ” supply line, $\frac{3}{8}$ ” copper tube, and $\frac{1}{8}$ ” black iron pipe.
- Never stand at a right angle to any opening or fitting when lighting. Light the burners from outside of the forge, at the top of the burner. When all burners are lit, shut off the burner that is burning up in the tube. Turn the burner back on, it will then light inside the forge.
- Arrange propane supply lines so that flow and volume are as equal as possible to each burner.
- Use propane “rated” materials.

Burner orifice setup.

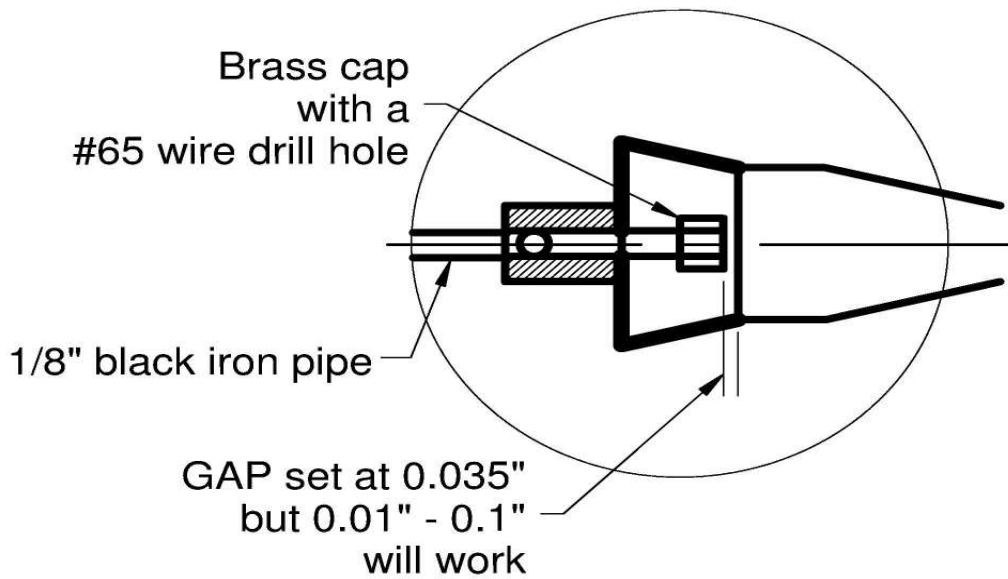


figure 1

Burner adjustment
in relation with burner tube holder.

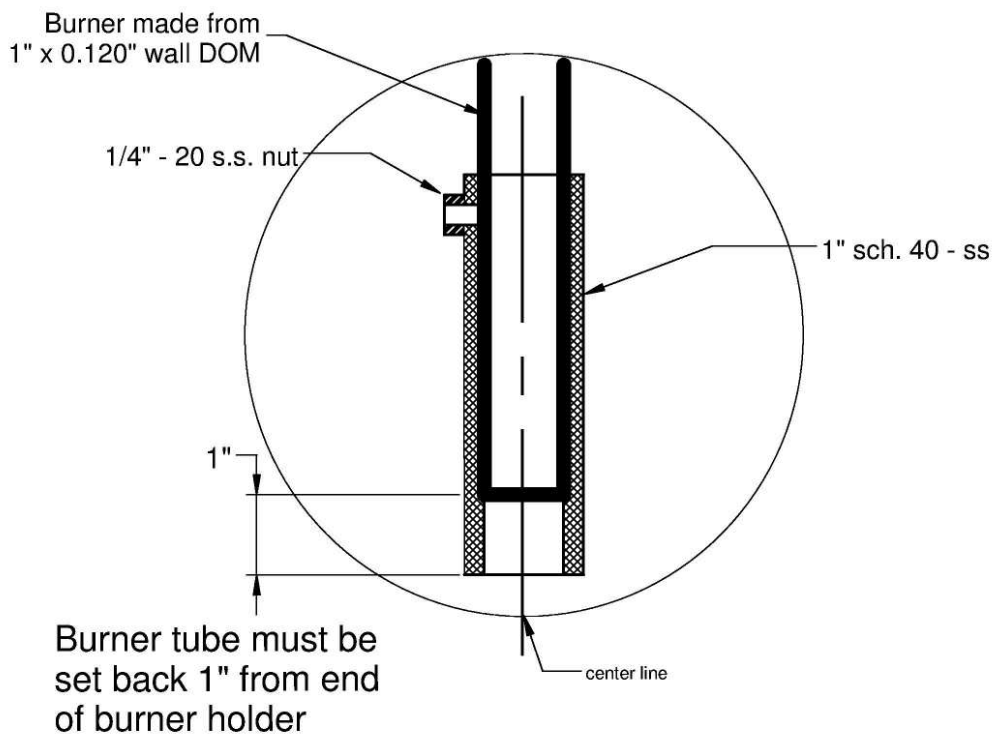
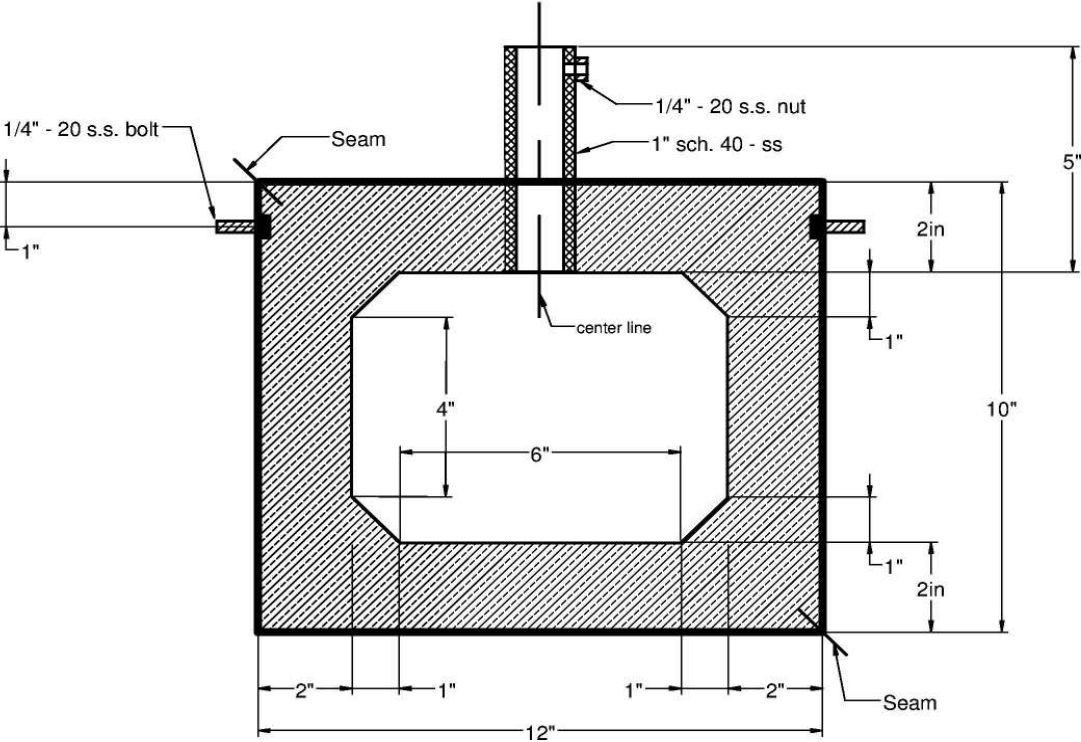
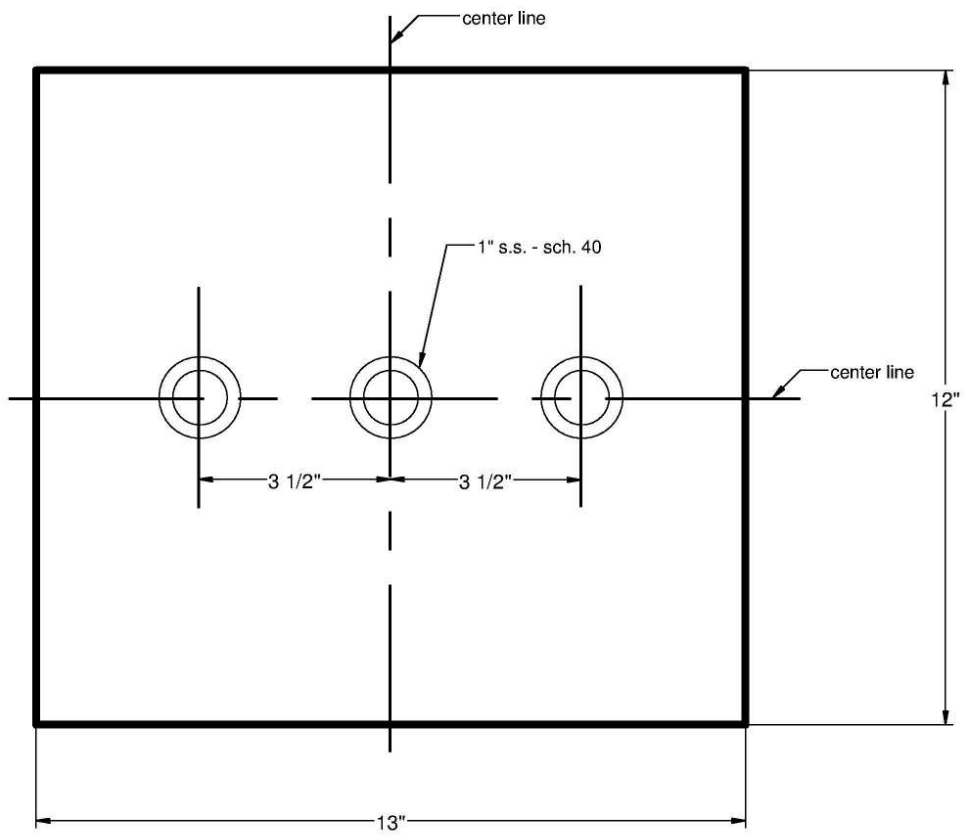


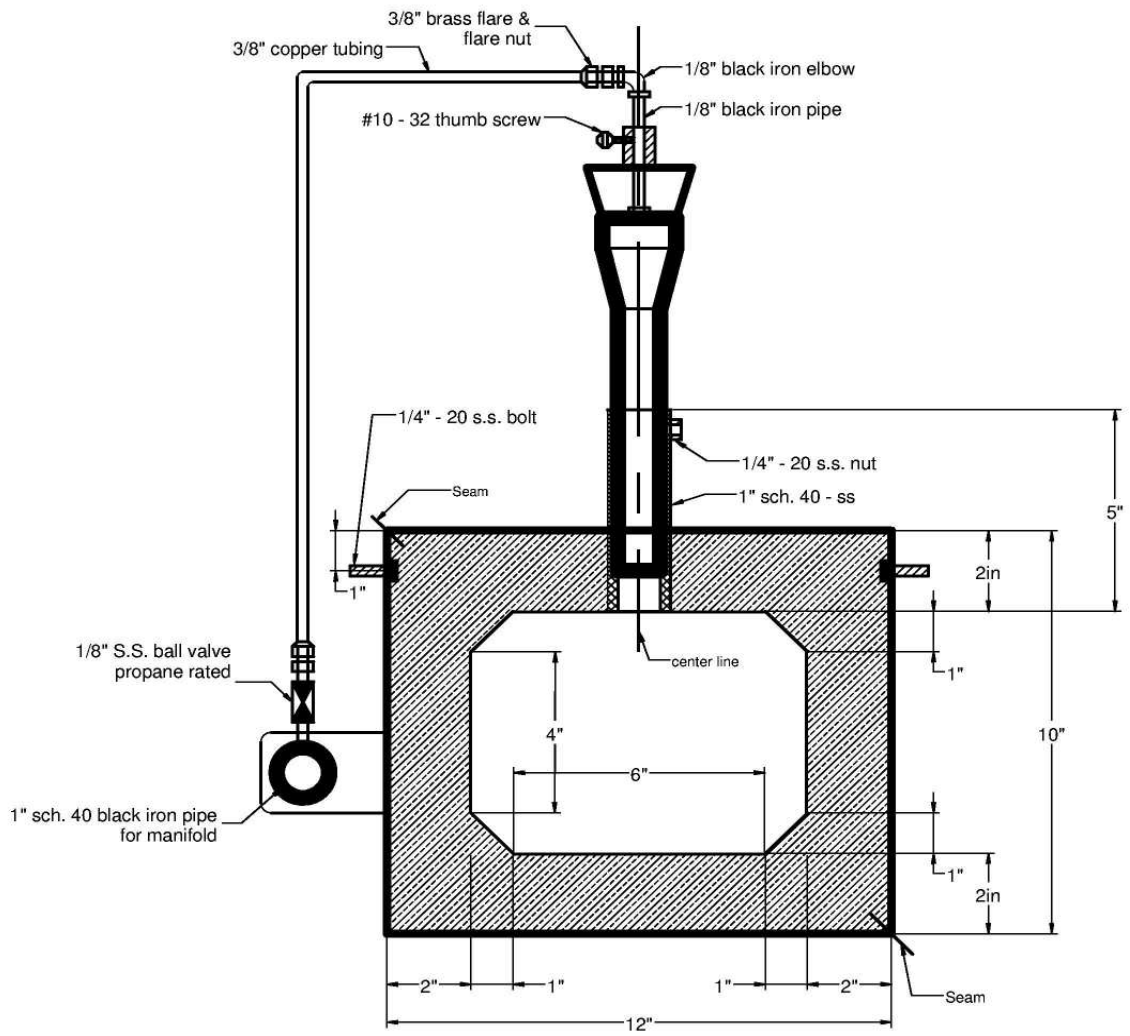
figure 2

End View with refractory

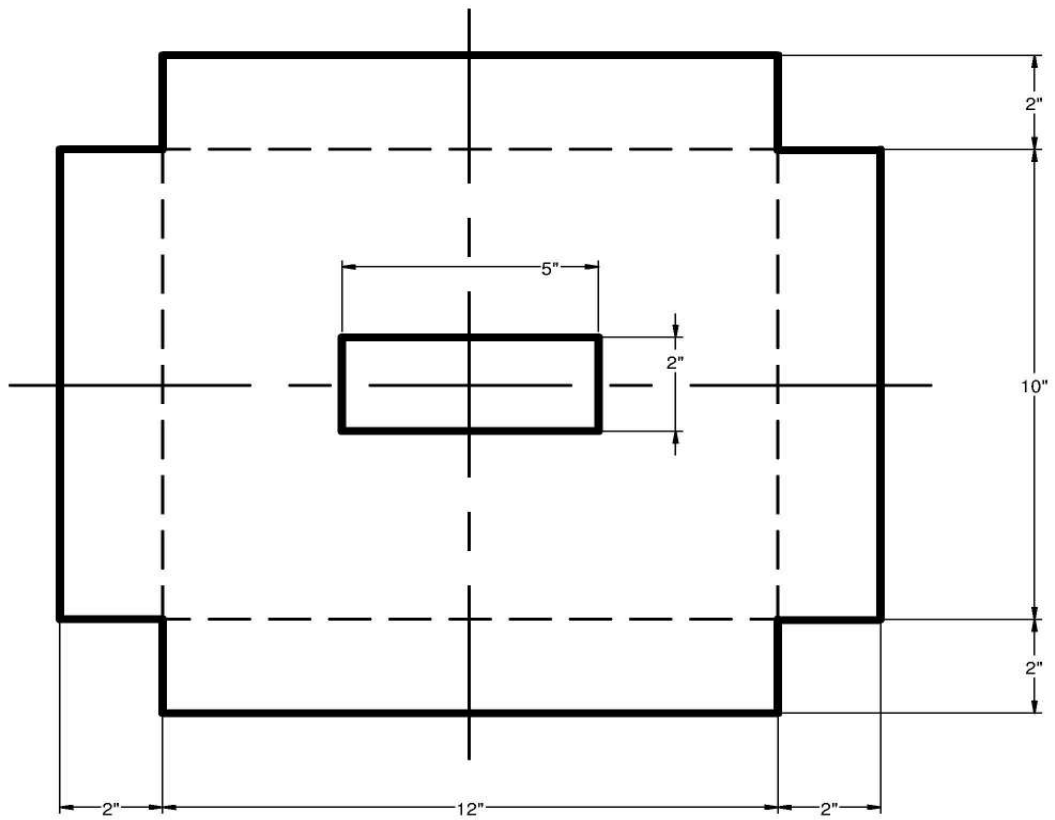


Top view

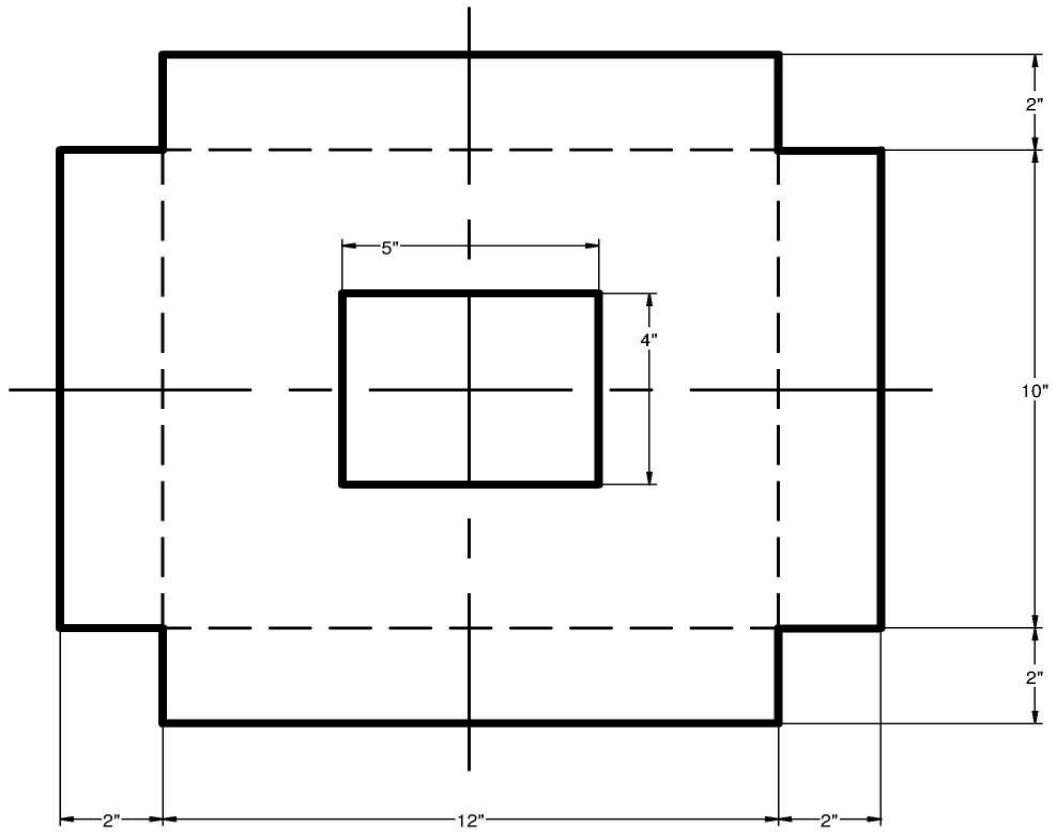




Door Opening 2" x 5"



Door Opening 4" x 5"



Notes:

- Use a high temperature refractory.
- On my first forge I used approximately 110 lbs of KAST-O-LITE 30. It was rated at 3000°F. Light weight with excellent heat reflection, but not very durable.
- The next forge was cast using PLY-GUN 2700. Very Good heat reflection. The forge was a lot heavier, but very durable. This refractory has metal shavings in it.
- The regulator used is an adjustable Fischer® Type 67CH.
- I installed a 0 – 30 psig gauge, POL hand wheel, and a $\frac{3}{8}$ " flare.
- I used $\frac{3}{8}$ " propane motor fuel hose reinforced with steel mesh. The fittings are two-piece, screw-on, high-pressure fittings.
- Follow refractory manufacture's procedure for curing refractory. If the forge is heated too fast before curing, the escaping steam could cause the refractory to crack and blow pieces of refractory out of the casting.
- Never stand at a right angle to any opening or fitting when lighting. Light the burners from outside of the forge, at the top of the burner. When all burners are lit, shut off the burner that is burning up in the tube. Turn the burner back on; it will then light inside the forge.
- The forge works fine with the front door off for use with larger projects. The only drawback is that I HAD TO use gloves. There is a lot of heat coming out.

Supplies:

- **MFA Oil & Propane**
regulator setup and supply hose.
- **Hi Temp Refractories Co., Inc.**, 2250 N. Lark Drive, Fenton, MO 63026
KAST-O-LITE 30.
- **Haslag Steel Sales, Inc.**, 6560 Highway YY, Washington, MO 63090 - steel and fabricated parts.
- **Ace, R & R Stores, Inc.**, 845 N. Commercial Avenue, St. Clair, MO 63077
fittings, valves, and hardware.

Resources:

- <http://www.bamsite.org>
- <http://www.reil1.net/Forge1.shtml>
- <http://www.reil1.net/design.shtml>
- <http://www.geocities.com/zoellerforge/forge.html>
- <http://www.hybridburners.com/>
- <http://www.cashenblades.com/Info/Info.html>
- <http://www.John-Wasser.com/NEMES/PropaneBurner.html>
- <http://www.geocities.com/zoellerforge/flare.html>