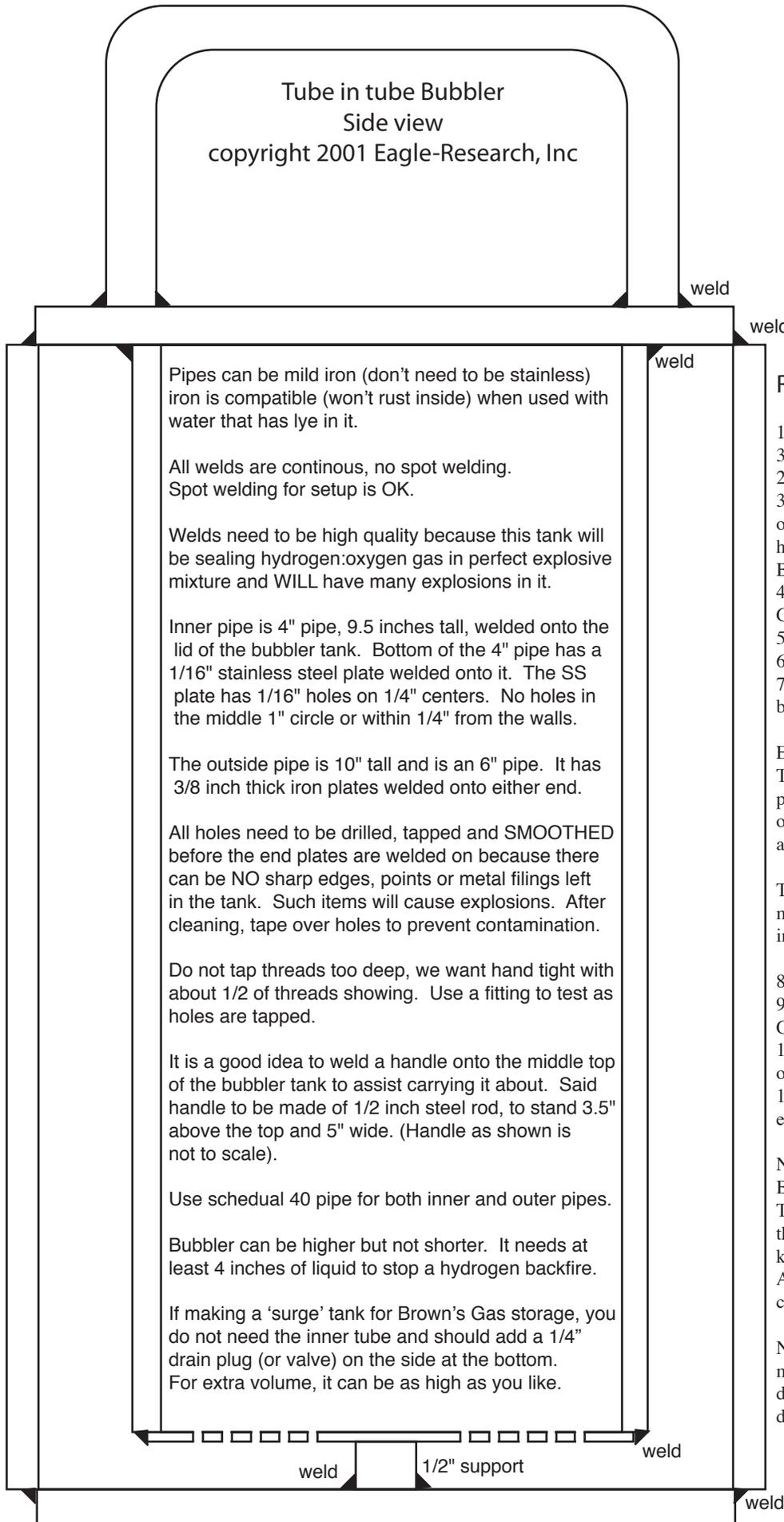


Tube in tube Bubbler
Side view
copyright 2001 Eagle-Research, Inc



Recommended Water fill Proceedure

1. With no hoses attached, fill the Bubbler about 3/4 full.
2. Install the 3/8" fill plug, using teflon tape to seal.
3. Put a drain hose, with a valve, on the 'Brown's Gas out' fitting (do not use your torch handle). Direct the hose into a container to catch excess water from the Bubbler
4. Attach a hose from your WaterTorch to the 'Brown's Gas in' fitting on the Bubbler.
5. Close the valve on the Bubbler drain hose.
6. Build Brown's Gas pressure in your WaterTorch.
7. Once full pressure is obtained, release the pressure by opening the valve on the Bubbler drain.

Excess water will drain into your container. Then Brown's Gas will spit out and you'll lose pressure in your WaterTorch. Lose pressure a couple of times, making sure to open the drain valve quickly and fully.

This proceedure will assure that you have maximum water level without getting excessive water into your torch hoses.

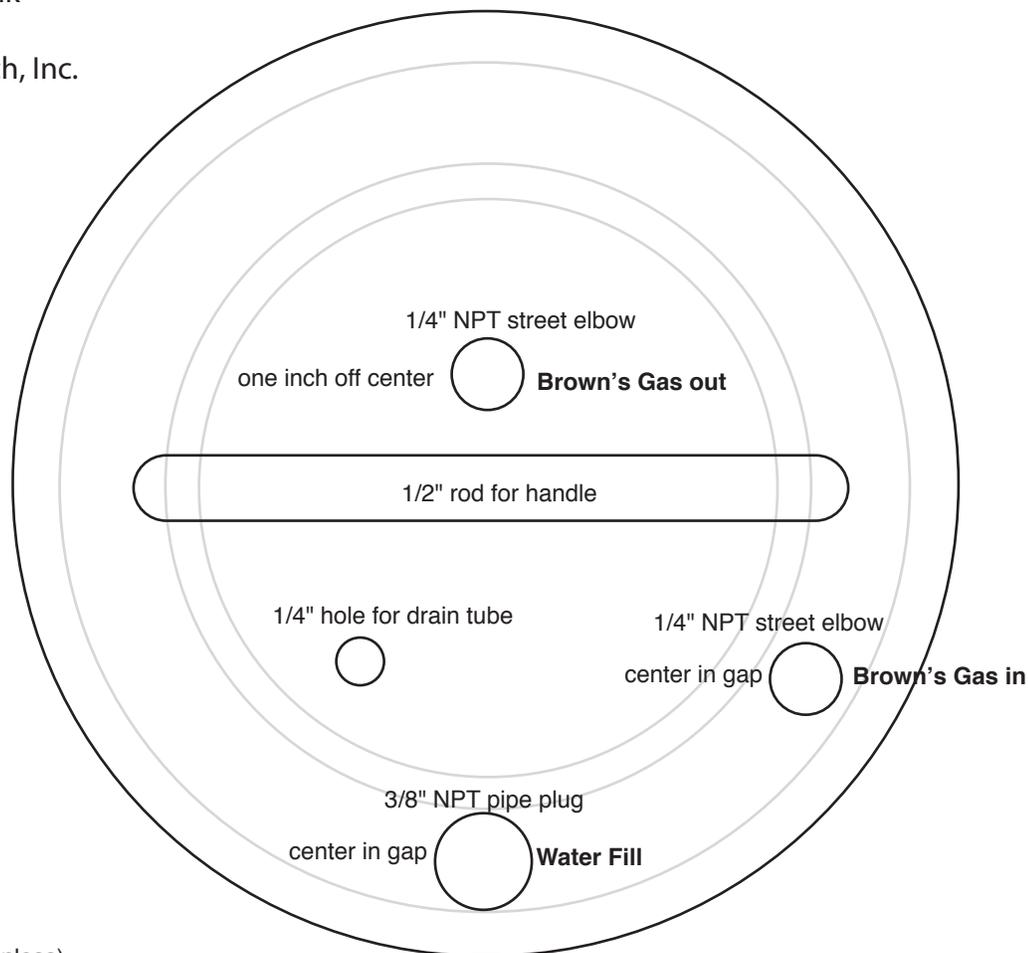
8. Shut off your WaterTorch.
9. Remove the drain valve and hose from the Brown's Gas out fitting.
10. Attach your torch handle hoses to the Brown's Gas out fitting.
11. Operate the WaterTorch as per instructions elsewhere.

Note: When periodically draining the water out of the Bubbler, you'll notice a bunch of fine powdered rust. This is normal as the lye solution cleans the rust off the interior walls. The Bubbler will not rust if it is kept pressureized within the Brown's Gas environment. After a couple of cleanings, there will be no more rust coming out with the drain water.

Note: To check the fluid level (with a dip stick), you must have the hose, that goes to the torch handle, disconnected or you will get an incorrect fluid level due to trapped pressure or vacuum.

Tube in tube Bubbler Tank
top view
copyright 2001 Eagle-Research, Inc.

Bubbler Top view



Construction Notes:

Pipes can be mild iron (don't need to be stainless) iron is compatible (won't rust inside) when used with water that has lye in it.

All welds are continous, no spot welding. Spot welding for setup is OK.

Welds need to be high quality because this tank will be sealing hydrogen:oxygen gas in perfect explosive mixture and WILL have many explosions in it.

Inner pipe is 4" pipe, 9.5 inches tall, welded onto the lid of the bubbler tank. Bottom of the 4" pipe has a 1/16" stainless steel plate welded onto it. The SS plate has 1/16" holes on 1/4" centers. No holes in the middle 1" circle or within 1/4" from the walls.

The outside pipe is 10" tall and is an 6" pipe. It has 3/8 inch thick iron plates welded onto either end.

All holes need to be drilled, tapped and SMOOTHED before the end plates are welded on because there can be NO sharp edges, points or metal filings left in the tank. Such items will cause explosions.

After cleaning, tape over holes to prevent contamination.

Do not tap threads too deep, we want hand tight with about 1/2 of threads showing. Use a fitting to test as holes are tapped.

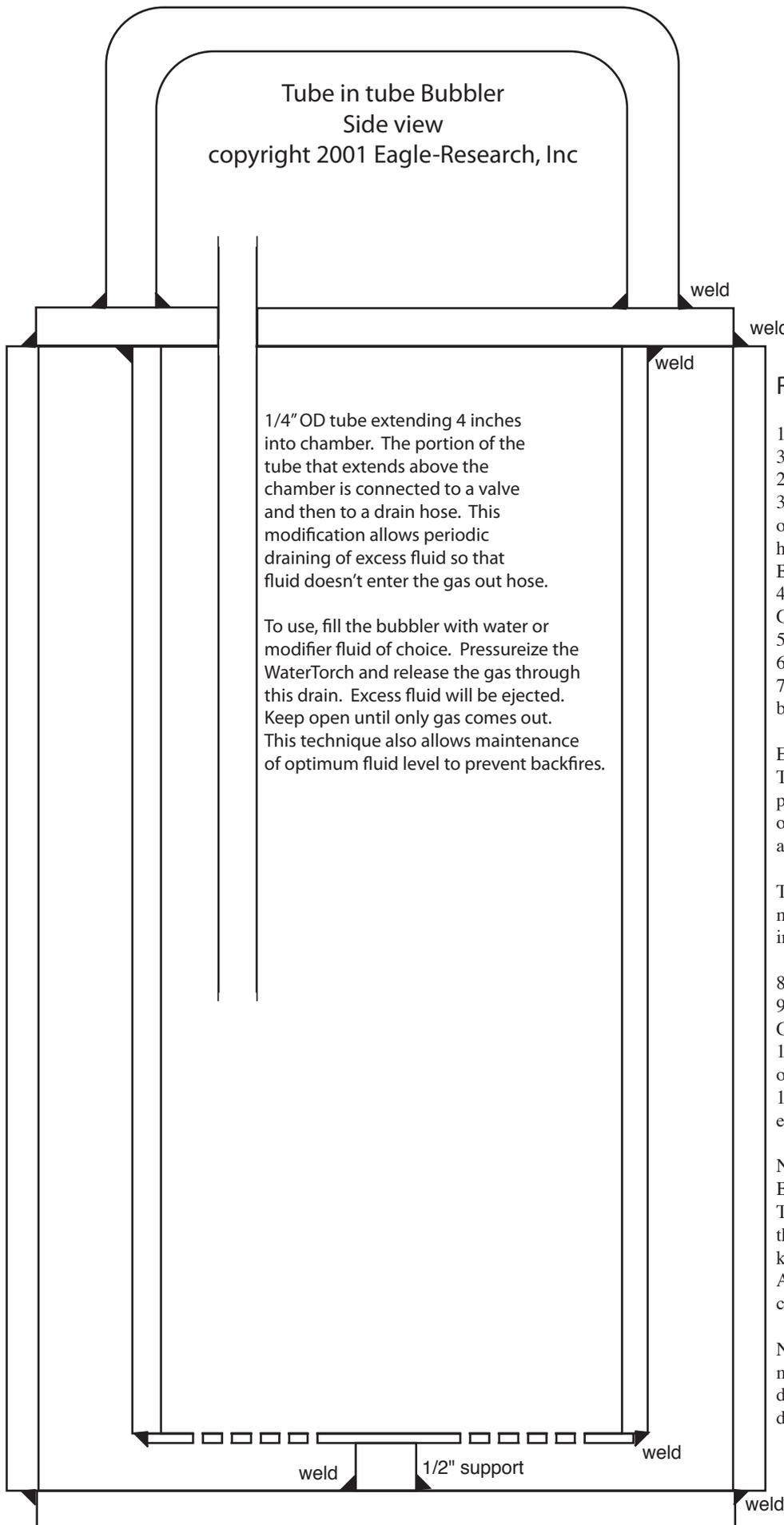
It is a good idea to weld a handle onto the middle top of the bubbler tank to assist carrying it about. Said handle to be made of 1/2 inch steel rod, to stand 3.5" above the top and 5" wide. (Handle as shown is not to scale).

Use schedual 40 pipe for both inner and outer pipes.

Bubbler can be higher but not shorter. It needs at least 4 inches of liquid to stop a hydrogen backfire.

If making a 'surge' tank for Brown's Gas storage, you do not need the inner tube and should add a 1/4" drain plug (or valve) on the side at the bottom. For extra volume, it can be as high as you like.

Tube in tube Bubbler
Side view
copyright 2001 Eagle-Research, Inc



1/4" OD tube extending 4 inches into chamber. The portion of the tube that extends above the chamber is connected to a valve and then to a drain hose. This modification allows periodic draining of excess fluid so that fluid doesn't enter the gas out hose.

To use, fill the bubbler with water or modifier fluid of choice. Pressureize the WaterTorch and release the gas through this drain. Excess fluid will be ejected. Keep open until only gas comes out. This technique also allows maintenance of optimum fluid level to prevent backfires.

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This procedure will assure that you have maximum water level without getting excessive water into your torch hoses.

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