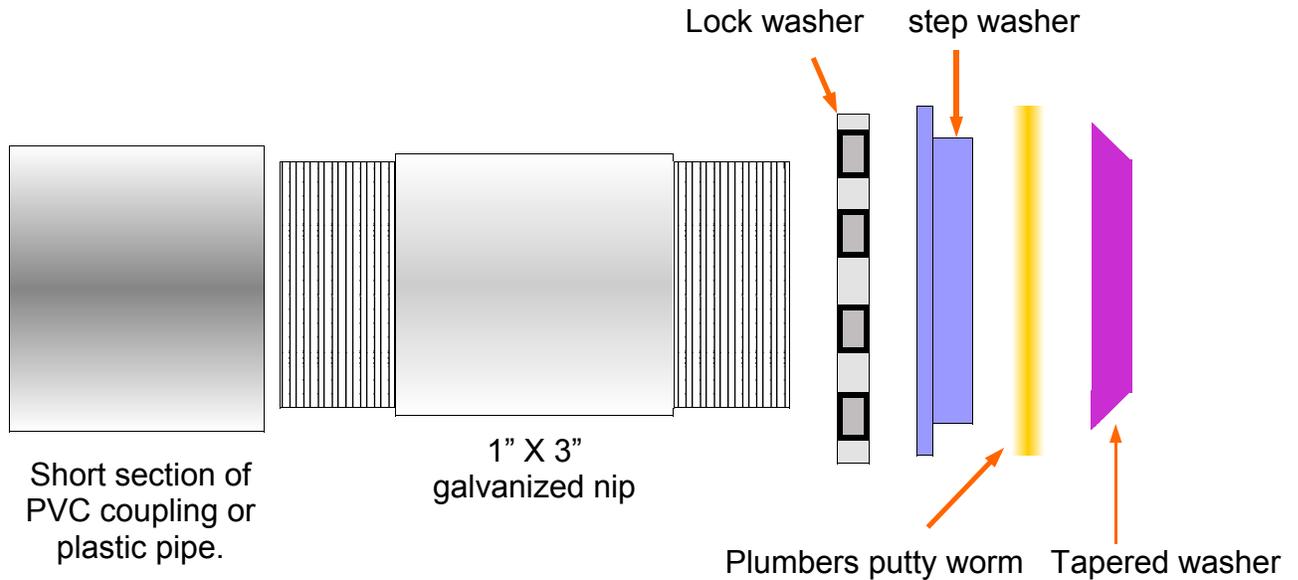
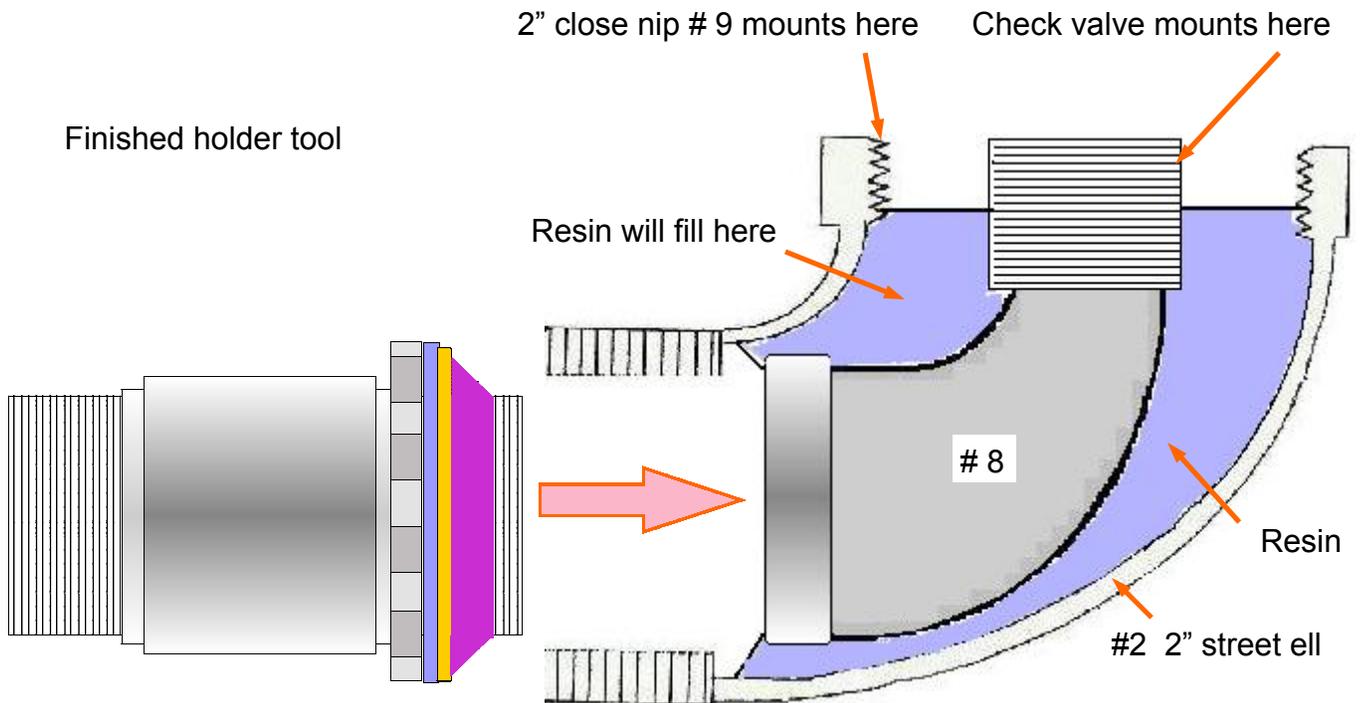


HOLDER TOOL PARTS DIAGRAM

This tool is used to make the check / tank mount unit. It serves the dual function of holding the 1" street ell #8 firmly, and sealing the resin when it is poured. The tool is re-useable.



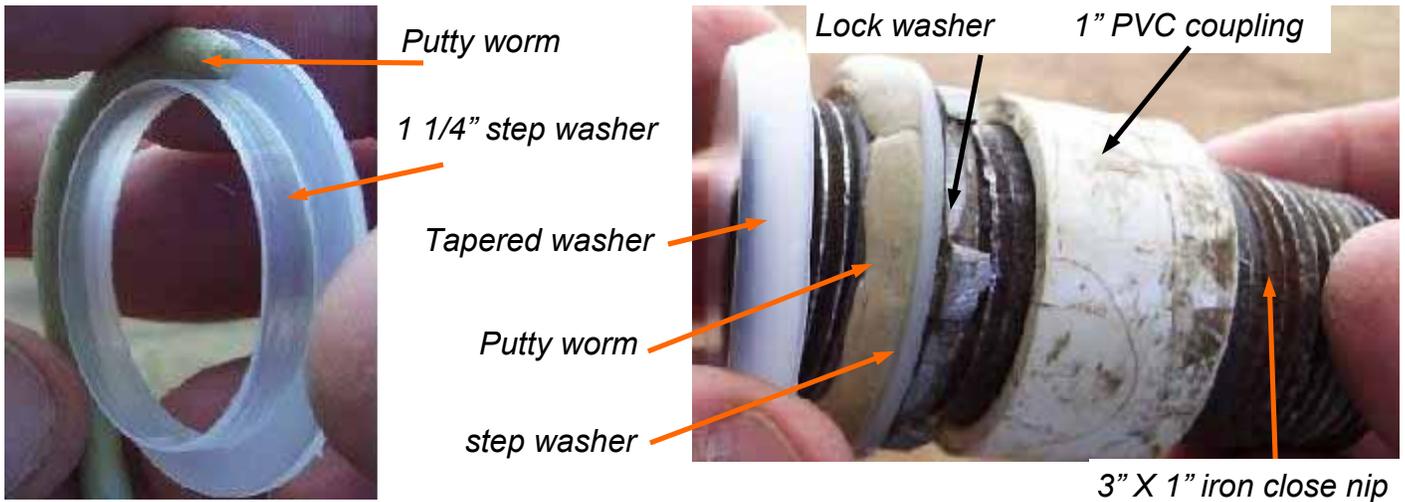
HOLDER TOOL AND CHECK MOUNT DIAGRAM



The holder tool is used to align and firmly hold the 1" street ell (# 8) inside the 2" street ell (# 2) and seal the resin on the large end of the 2" street ell until it hardens, The tool is then removed. Holder tool slides into the 2" ell and screws into the 1" ell. The washer may have to be trimmed and the inside of the 2" ell ground and wire brushed *smooth*. Petroleum jelly on the threads will ease removal.

MAKING THE HOLDER TOOL

The holder tool is used to align and firmly hold the 1" street ell (part #8) inside the 2" street ell. (part #2). This will all end up being the check / tank mount unit. You will need a 1 1/4" drain pipe plastic washer kit (step washer and tapered washer), plumbers putty, a 1" lock washer (used for conduit work) and a 3" X 1" iron close nipple. First, roll some of the putty into a long worm. Wrap this around the step washer as shown (left photo below). Thread the 1" lock washer onto the 1" PT X 3" iron close nip. Then slip the step washer (with the putty worm) onto the close nip, followed by the tapered washer (photo, right). Later, when this is threaded into the 1" street ell inside the 2" street ell, the putty is squeezed between the washers and out the edge, sealing the resin gel on the upper side of the 2" ell. There should be a collar from half a 1" pvc coupling on the 3" pipe to help center the unit **when** it is later threaded in.



CENTERING THE CHECK MOUNT step 1

The 1" street ell (#8) must fit loosely inside the 2" street ell (#2) with the 1" threads up as shown. Both the fittings will likely need some cleaning and rasping of burrs and rough spots. The 1" ell may need some grinding as well. It has to fit loosely inside so it can be centered perfectly. **Proper centering is vital** — you only get one chance with resin, so make it count.



The 1" (smaller) fitting must fit loosely so it can be centered perfectly.



The holder fits in this end to hold the fitting tightly and sealing for the resin pour.

CENTERING THE CHECK MOUNT step 2



First insert the holder tool carefully into the 2" ell. It should be smooth inside and the fit firm but not too tight. Get the threads started into the 1" ell inside, do not tighten. *When tightened later* the putty will be squeezed out between the two plastic washers and should seal perfectly. The PVC collar on the holder tool should help center the tool as well. The inside of this fitting and the 2" close nip should be **ground** smooth.

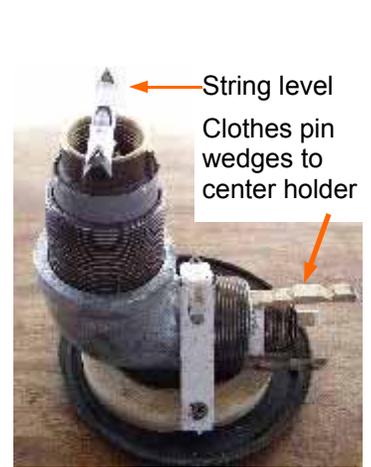


Next thread in the 2" close nip to the 2" ell (check mount). In order to center the check mount as perfectly as possible, use a check valve with a couple of wraps of duct tape around the body. Thread this valve into the 1" street ell inside the check mount. This should get the valve centered. This is tricky but necessary as the clearance is close and resin is unforgiving.



After centering the taped check valve, mount the whole unit to the bench -- I use a roll of masking tape and an angle iron. The purpose is to secure the thing in a level position.

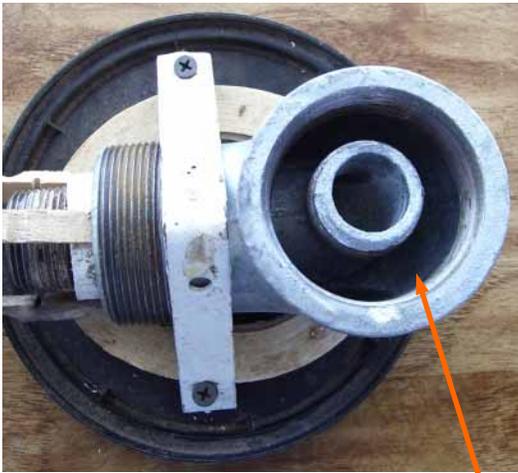
Tighten the holder tool carefully--the putty is being squeezed out inside the 2" ell to seal the check mount for the resin pour. Some wooden wedges can be used to center and secure the end of the holder tool when tight; I use half clothes pins. Keep checking the centering and level while tightening down on the mounting screws. After a final check and it's time to **Carefully** remove the check valve and 2" close nip.



Here you can see the unit ready for the resin pour. Be sure to check the level and especially the centering again using a clean check valve and 2" close nip. Polyester resin (fiberglass) is to be mixed and poured into the gap between the fittings and filled to the first threads on the 2" fitting. Carefully lubricate the threads so no resin can stick to them.



USING FIBERGLASS RESIN TO FILL THE GAP AND SECURE THE FITTING



Resin is carefully poured into this gap

Working with fiberglass resin is tricky. There are two parts...resin, and hardener (or catalyst). To mix up this pouring I usually use about 8 tablespoons of resin and about 15 drops of catalyst. This will do about half of the fitting. This is done at room temperature...Hotter: use less catalyst; cooler: use more. Read the directions and test some before trying with this fitting as there is no second chance. A small heat lamp helps too. A steady hand is needed for pouring into the small gap between the fittings, Be sure to grease the threads (and only the threads!) with petroleum jelly or similar so any drips can be removed easily. After hardening make up a second mix to top it off at the last or bottommost thread on the 1" fitting.



The second pouring will seal any small gaps that may have formed from the resin pulling away from the inside of the fitting. This rarely happens, generally only when the resin gets too hot. Bring the level up to the bottom thread of the 1" fitting. *We no longer rely on a gasket seal where the check valve seats on the resin. We rely on the tapered threads of the fittings to seal the check valve to the mount.*



After resin pour

Check the threads for resin and clean them up with acetone and paintbrush. After about 24 hours and the resin does not feel sticky, the holder can be removed. The two washers and putty come out next. Scrape out the rest of the putty and get ready to wire brush the inside where some resin may have leaked out and to smooth and clean the surface for resin coating inside.



FINISHING THE CHECK MOUNT UNIT

Use a stiff circular wire brush on a drill to really clean out the putty and resin debris inside the 2" ell. This will also shape the resin into a smooth angle into the 1" ell inside. Wipe the inside well with acetone for the next step...coating with resin. Use a small artist brush for this.



Mix a small amount of resin, about a tablespoon. Paint the inside of the level and upright 2" ell, stroking from the bottom up. The purpose is to make the inside as smooth as possible to reduce friction. *During operation of the pump, this is where the water is rammed through the 1" ell and the internal check valve into the high pressure side of the pump.* Be sure to get the inside of the



1" ell in the same way, from both sides. Watch those threads! When cured, a shot of gloss black spray paint inside the 2" and 1" ells will hide most any visible defect and help prevent the threads from rusting as well. Really only cosmetic. Below, note that the fitting may appear to be off center (left). You can test this with a check valve and the 2" close nip to be sure.



Finished Check / Tank Mount Unit

You can see how close the clearance is between the check valve and the 2" close nip.

clearance →
2" elbo →
2" close nip →
Check valve →



Check valve top view



Here you can see how this unit fits into the other fittings to form the base. Left, the unit screws into the 2" tee. Middle, the bushing for the clack valve screws into the top of the 2" tee. Right, the 2" close nip screws into the top of the check mount unit.