

## ***Tartan 37 Technical Resources***

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# **Chapter 4: Plumbing**

## **Section 2: Propane Locker Installation**

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### **Materials**

Tank: Purchase a propane tank, such as either a Worthington Cylinder 10 lb aluminum tank (15.9" height, 10.3" diameter), a Worthington Cylinder 11 lb steel tank (16.8" height, 9.1" diameter), or Lite Cylinder 10 lb composite tank (17.25" height, 9.25" diameter). Any tank with height higher than 17.5" or diameter wider than 10.5" will not fit in the locker.

Regulator: Purchase a propane regulator kit (such as Seaward 93141 with regulator and 120 psi gauge)

Detection system: Purchase a propane detection system (such as Trident Marine 1300-7761 with 12v solenoid)

Vapor tight fitting: Purchase a vapor tight fitting for the propane hose (such as Trident Marine 1438-8439)

Deck plate: Purchase a 10" deck plate (such as Bomar G844-W),

Thru-Hull: Purchase a 5/8" Delrin thru-hull (such as Attwood 3872-3/TH2)

Propane hose: Purchase a 15' long 1/4" inside diameter propane hose (such as Mr. Heater F271470).

Pipe section: obtain about a 24" length of scrap 12" inside diameter 1/2" thick fiberglass pipe. 12" is a standard inside diameter and your local water utility is a good place to begin the search.

Miscellaneous: Also, you'll need to purchase locally about 4' of 5/8" inside diameter vent hose, a 12" propane pigtail where the tank fitting can be unscrewed from the hose, a 2' x 4' sheet of 1/2" marine plywood, 2' x 2' sheet of 3/4" marine plywood, a 5/8" barb 90 degree plastic elbow that can be screwed into the plywood, tubes of butyl rubber, 3M 5200 and 3M 4200, epoxy for precluding water penetration through fiberglass cores, exterior waterproof wood glue (Titebond III), some fiberglass cloth, resin and hardener, primer and polyurethane paint, assorted brass fittings for connecting the gauge, regulator, solenoid and hoses to the extent not included in the kits, two stainless steel clamps for the vent hose, and assorted stainless steel screws, bolts and flat washers.

Assemble the tank, psi gauge, regulator, and solenoid in that order using appropriate brass fittings and a short hose on one or both sides of the gauge. Measure how high the pipe has to be and how large a rectangular box has to be for the gauge to be readable and for these items to just fit inside the 12" diameter pipe with an opening into a box attached to the side. What worked best for me was for the gauge to connect directly to the tank valve followed by a hose which connects to a regulator and solenoid inside a box. (See the picture of the finished locker.) But, a hose connected to both sides of the gauge would allow more flexibility in the placement of the gauge inside the pipe.

Cut the pipe to 1/2" plus the measured height, thereby allowing 1/2" for the bottom plate. My pipe length was about 19 inches. If the desired length is more than that, measure the T37 interior space below the port side of the aft seat to be sure the pipe fits, recognizing that the pipe extends through the shelf. My box dimensions were roughly 12" long, 3" wide and 3" deep.

Check the inside diameter of the pipe to be sure it is 12". Then from the 1/2" marine plywood, cut a 12" diameter bottom plate, and from the 3/4" marine plywood cut a 12" outside diameter and 10.5" inside diameter top flange. (As noted later, this 10.5" inside diameter is based on a Bomar deck plate).

Sand the bottom inside inch or so of the pipe so that the fiberglass resin that will subsequently cover the bottom has a better footing. Attach the bottom plate and top flange to the inside of the fiberglass pipe using screws and 3M 5200. Because the bottom will be covered with fiberglass resin, tape the pipe bottom and bottom plate enabling easy removal of any 3M 5200 that squeezes out. Also, from the 1/2" plywood build the rectangular box using waterproof wood glue and screws. As the box will fit against the outside of the pipe, cut the outer edge of the long sides at an angle and cut the outer edge of the short sides at the outside pipe diameter.

Starting an inch below the top of the pipe, cut an opening in the pipe's side equal to the box's inside dimensions, and attach the box to the outside of the pipe using screws and 3M 5200. Drill a hole in the center of the bottom of the box for the vapor tight fitting. Coat the exposed plywood with fiberglass resin. Lay soaked fiberglass cloth in the resin at the bottom of the locker and a little bit along the locker wall, as you want the bottom to be strong and waterproof. Except for the outside of the flange (it will be covered with 3M 4200), paint the locker with primer and polyurethane paint.

Place the bottom of the locker on top of the port side of the aft T37 seat just far enough from the front and center seat edges to clear the fiberglass bottom sides of the seat when the locker is mounted below the seat. Mark with a pencil the outside diameter of the locker on the seat. Cut a circular opening in the seat so that the deck plate is centered inside the pencil mark and rests flush with the seat. (See the finished locker picture.)



The Bomar deck plate has a 10" diameter opening with about a 1/4" thick flange resulting in a circular cutout of about 10.5". The locker's 10.5" flange should fit directly under the cutout. This is why a tank with a dimension of more than 10.5" cannot fit inside the locker. Chip out the core material around the seat cutout and fill with epoxy thereby precluding water penetration of the core. Using a T square held against the bottom of the seat, measure where the locker will intersect the shelf. A plumb bob will not work as the seat is not horizontal. Cut an arc on the starboard side of the intersection equal to the outside diameter of the locker and remove the portion of the shelf on the port side leaving the back of the shelf still attached to the hull. (See the picture of the T37 locker and shelf)



In marking the intersection of the locker and shelf it may help to use a piece of cardboard having the outside diameter of the locker. Cut the shelf with a slightly less diameter and then trim to fit.

From inside the hull, drill a pilot hole for the thru-hull that is as close to the bottom of the transom as practical, leaving enough room for the vent hose to clamp to the thru-hull. The pilot hole should be below the engine exhaust. Then from outside the hull, enlarge the hole and mount the thru-hull, sealing with 3M 4200. This area of the transom may be cored. If so, chip out some of the core and replace with epoxy so as to preclude water penetration of the core. Clamp the vent hose to the thru-hull. Remove the panel in the port quarter berth just aft of the engine and squeeze the locker through the opening. (The diameter of the locker is too big to fit through the starboard lazarette.) Position the locker with the box to the port side so it doesn't interfere with the shelf. Drill bolt holes (same quantity and diameter as the deck plate screws) through the seat and the locker flange using the deck plate for a template. Countersink the holes so that the flange bolt heads will not interfere with the deck plate, which will cover the heads. Set the deck plate aside and attach the locker flange to underneath the seat using bolts and 3M 4200. (Use 3M 4200, rather than 3M 5200, as you might want to remove the locker later to gain better access to the engine instrument panel and AC electrical inlets). Attach the shelf lip to the side of the locker using screws and 3M 4200. Scrape some primer and paint off the locker for better adhesion of the 3M 4200. Sprinkle water in the bottom of the locker and note the locker's low point. Drill a hole in the bottom at the low

point for the vent. Make the hole a size or two larger than the diameter of the vent plastic elbow. Lightly spray with Pam the threads of a brass fitting having the same diameter and tread size as the elbow and tape it to the bottom of the hole. Then fill around the fitting with epoxy. This should result in a waterproof hole into which you can screw the elbow. As there will undoubtedly be water condensation in the locker, you want to preclude water leakage into the plywood and T37 interior (unless you don't mind water dripping onto the hull's inside. Cut the vent hose so that it runs continuously downhill to the thru-hull, and and clamp it to the elbow. As a possible prophylactic, glue a piece of treated lumber between the bottom of the locker and a hull stringer. (This is probably overkill as the seat is more than sufficiently strong to support the weight of a full locker.)

Attach the vapor fitting to the bottom of the box and insert the 15' propane output hose through the fitting. Connect the input hose, regulator, solenoid, and output hose and position in the box. Insert the solenoid wire through a nearby hole drilled in the side of the box, and fasten the regulator and solenoid to the box. Seal the solenoid wire hole with butyl rubber. Place the propane tank inside the locker and connect the gauge between the tank valve and regulator. Lastly, screw the deck plate to the seat. The deck plate screw holes should be positioned so that they fall between the bolt holes. I used plumbers putty to seal the plate so that I could easily remove the plate to refill the tank. (My aluminum tank has a 10.3" diameter width which will fit through a 10.5" cutout, but not through a 10" plate.) Slightly reposition the teak strip, which holds in place the port side of the T37's aft teak seat cover, to accommodate the deck plate.