OPW Installation & Maintenance Instructions

ASSEMBLY, INSTALLATION, and MAINTENANCE INSTRUCTIONS FOR OPW 61SO VAPOR TIGHT, OVERFILL PREVENTION VALVES.

IMPORTANT: Please read these assembly and installation instructions completely and carefully before starting.

Vapor Tight Overfill Prevention Valves
GENERAL INSTRUCTIONS

The OPW 61SO Overfill Prevention Valve is designed for tight fill, gravity drop applications to help prevent accidental or intentional overfilling of underground storage tanks. It is installed in the UST drop tube in place of a standard drop tube. The main 61SO valve closes when liquid level is at 95% of the top of the tank. A small bypass valve remains open to allow the delivery hose to drain at 3-5 gallons per minute. If the delivery truck valve is not closed after initial shut-off, the bypass valve will close and will restrict all fuel delivery.

The 61SO EVR approved models of the 61SO are designed to be installed with the following OPW products: Face Seal Adapter, Spill Container or Multi-port, Jack Screw Kit, Rotatable Product Adaptor, and Product Cap.

IMPORTANT
Read these assembly and installation instructions completely and carefully prior to starting. Check to make sure all parts have been provided. Use only the parts supplied; substitution of parts may cause product failure.

Failure to follow instructions may cause improper product operation or premature failure which may permit storage tank overfill. An overfilled storage tank may create hazardous conditions and/or environmental contamination.

CAUTION
Do not remove elastic band from around float until instructed to do so, as damage to valve may result.

WARNING
Failure to properly connect delivery hose and elbow, and/or disconnecting a liquid filled delivery hose or elbow will result in a hazardous spill, which may result in personal injury, property damage, fire, explosion, and water and soil pollution.

* Make sure all connections, including the hose and elbow connections, between storage tank and transport are securely coupled.
* Make sure the lip seal and/or all gaskets in the delivery elbow are properly in place to prevent spills.
* Do not operate with damaged or missing parts, which prevent tight connections.

Normal Operation: A Hose "Kick" and reduced flow signal that the tank is full. Close transport delivery valve and drain hose into tank before disconnecting any hose fitting.

Overfilled Tank: Failure of the hose to drain after closing the delivery valve signals an overfilled tank. Do Not Disconnect any delivery hose fitting until the liquid level in the tank has been lowered to allow the hose to drain into the tank. Attention: In the event you are splashed, remove all wetted clothing immediately. Do not go into an enclosed area and stay away from ignition sources.

IMPORTANT
Determine if the underground storage tank is equipped with a ball float vent valve, as illustrated in Figure 16. In all systems, the shut-off point of the 61SO must be reached before the ball float reduces flow to ensure proper overfill valve operation.

TOOLS NEEDED FOR INSTALLATION AND ASSEMBLY:
1. Drill
2. A sharp 1/8" pilot drill bit
3. A sharp 5/16" drill bit
4. Tape measure
5. Hacksaw or cut-off saw, fine tooth; 24 teeth/inch
6. Fine half round file
7. Screwdriver - Phillips blade
8. 1/2" Wrench or socket
9. Two-part sealant (Supplied)
10. Torque Wrench

WARNING
Using electrically operated equipment near gasoline or gasoline vapors may result in fire or explosion, causing personal injury and property damage. Check to assure the working area is free from such hazards, and always use proper precautions.

IMPORTANT: The figures in this installation and maintenance instruction may contain vapor recovery equipment (including model numbers) that is not certified by the California Air Resources Board (CARB) for a specific Phase I Vapor Recovery System. Please refer to Exhibit 1 of the appropriate CARB Phase I Executive Order for a list of certified Phase I Vapor Recovery System Equipment.
HOW TO LOCATE THE POSITION OF THE 61SO AT 95% TANK CAPACITY

The length of the upper tube and the placement of the 61SO valve body determine the shut-off point. Following the standard instructions for the OPW 61SO will provide for initial shutoff at 95%. In all cases, the upper tube length must be a minimum of 6-1/2” plus the length of the riser pipe. All length measurements are in inches.

INSTRUCTIONS

1.) Find tank capacity (in gallons) from tank calibration chart provided by tank manufacturer.

2.) Calculate 95% of capacity.

3.) Locate the 95% volume number on the tank calibration chart.

4.) Find the dipstick number (X) which corresponds to the 95% tank volume. And, find the dipstick number (Y) which corresponds to the 100% volume.

5.) Subtract the dipstick number (X) from the tank diameter (Y) to find the upper tube reference number (Z).
   \[ (Y) - (X) = (Z) \]

6.) Subtract 2” from (Z) to find the upper tube depth (C).
   \[ (Z) - 2" = C \]

7.) Is C less than 6-1/2”?

   NO Upper tube length is C plus the distance from the top of the FSA-400 Face Seal Adaptor installed on the riser pipe to the inside, top lip of the storage (A).
   \[ \text{Upper Tube Length} = C + (A) \]

   YES Upper tube length is 6-1/2” plus the riser pipe measurement (A).
   \[ \text{Upper Tube Length} = 6-1/2" + (A) \]

   NOTE: You must find the actual tank capacity number that correlates to the 6-1/2” + (A) depth for the station records. This number may also be used for the purposes of calibrating an electronic tank level system.

EXAMPLE

1.) For an Owens-Corning Model G-3 Fiberglass® Tank Calibration Chart:
   Tank Capacity - 10,000 gal., nominal 9,403 gal.
   **NOTE:** Use actual capacity only

2.) 95% of actual tank capacity = 0.95 x 9403 gal. = 8933 gal.

3.) The closest number which is less than 8933 gal. Is 8910 gal. Choosing the closest number less than 95% of actual capacity ensures that the initial shutoff will occur when the tank is no more than 95% full.

4.) The calibration chart reading of 8910 gal. corresponds to a dipstick measurement of 82”.

5.) Dipstick number (X) = 82"
   \[ (Y) - (X) = (Z) \]
   \[ (Y) - (X) = (Z) \]
   \[ (Y) - (X) = (Z) \]
   \[ (92" - 82" = 10") \]
   \[ (Z) = 10" \]

6.) \[ (Z) - 2" = C \]
   \[ (10" - 2" = 8") \]
   \[ C = 8" \]

7.) Is 8” less than 6-1/2”?

   NO Measure the distance from the top of the Face Seal Adaptor installed on the riser pipe to the inside, top lip of the storage tank and obtain measurement (A).
   \[ \text{Upper tube length} = C + (A) \]
IMPORTANT: Each of the numbered steps in the installation instructions are designed as a CHECK LIST to insure proper installation and trouble free operation of the OPW 61SO Overfill Prevention Valve.

Read and follow these steps carefully, checking them off as you proceed.

Figure numbers correspond to step numbers for easy reference.

STEP 1: MEASURE
Install the OPW Face Seal Adaptor and the Thread-on Spill Container on the Fill Riser (Refer to the Installation Instructions Supplied with the Spill Container). Insert the 61SO measuring stick through the riser pipe and hook it under the inside of the tank in the lengthwise direction. Mark the measuring stick at the top of the Face Seal Adaptor threads inside the base of the spill container bucket just below the drain valve outlet window (See Figure 1 & 1A). The top flange on the 61SO will rest on the Face Seal Adaptor just below the drain valve outlet, and be locked in place between the Face Seal Adaptor and the 4” nipple that is installed in the spill container with the Jack Screw Kit (See Figure 1A). (For riser pipe configurations other than that shown, consult installation drawings or use other necessary means to measure Dimension “A”).

Using a tape measure, measure the distance from the top of the Face Seal Adaptor in the spill container to the bottom of the tank (Dim. “B”).

IMPORTANT: Inspect the riser pipe for any foreign material. Over spray from tank relining or any internal burrs inside of pipe must be removed prior to installation. Failure to have an unobstructed riser pipe may prevent proper installation and operation of the valve. The 61SO is designed to be installed into schedule 40 riser pipes. The 61SO cannot be installed into schedule 80 riser pipes.

STEP 2: MARK THE TUBE
Use the result from STEP 1 and HOW TO LOCATE THE POSITION OF THE 61SO AT 95% TANK CAPACITY to mark the upper tube. Measure the distance from the point where the upper tube and valve body meets. For “C” measurements less than or equal to 6-1/2” see Figure 2. For “C” measurements greater than 6-1/2” use tape measure to mark the calculated upper tube length onto the upper tube.

Figure 1

Figure 1A

Figure 2 (For “C” less than or equal to 6-1/2 “ only)
STEP 3: CUT THE UPPER DROP TUBE
Carefully saw through the tube squarely, at the mark made in Step 2. Use a hacksaw with a new fine-tooth blade. Rotating the upper tube as the sawing progresses will minimize run out and ensure a square 90-degree cut. A piece of paper, taped square with the tube or a hose clamp can be used as guides for making a square cut.

**CAUTION** - DO NOT use a pipe or tubing cutter to cut the upper drop tube, this may damage the tube, causing it to be out of round thereby prohibiting assembly of the unit.

**Figure 3**

STEP 4: FILE THE DROP TUBE
File the upper tube square and remove any burrs or rough edges. Make sure the cut is flat and square.

**IMPORTANT:** Carefully file a good chamfer on the inside of the drop tube to provide a lead-in for the o-ring and inlet tube to be installed in step 6. **Caution:** Failure to properly apply and cure sealant may result in a failure of a pressure decay leak test.

**Figure 4**

STEP 5: APPLY SEALANT
Prepare sealant by thoroughly mixing 1/3 of each packet together until color is uniform. Generously apply sealant to the inside diameter of the upper drop tube. Make sure coverage is completely around the tube as shown in Fig. 5.

**Figure 5**

STEP 6: INSTALL INLET TUBE
Install o-ring in the o-ring groove of inlet tube (DO NOT USE GREASE). Insert the inlet tube into the upper tube until it seats against the flange on the upper inlet tube.

**Figure 6**

STEP 7: DRILL HOLES
With the inlet tube in place, carefully drill (3) 1/8" diameter pilot holes through the drop tube and inlet tube at three locations at 120 degree intervals around the tube, 1 inch below the flange. Using the pilot holes, drill (3) 5/16" dia. holes through the tubes. Remove the burrs from the drilling operation from the inside of the drop tube assembly with a fine half round file.

**IMPORTANT:** A 5/16" drill bit must be used. Do not substitute any other size drill bit.

**Figure 7**

STEP 8: ASSEMBLE AND SEAL CLINCH STUDS
Loosely assemble the three (3) clinch studs, lock washers, and nuts in holes. Do not tighten at this time. Mix up a small amount of sealant. Generously apply sealant underneath each clinch stud head, each nut, and on the outside of the tube around the holes.

**Figure 8**
STEP 9: TIGHTEN SELF-CLINCHING STUDS
Tighten clinch studs securely with a ½" wrench. Use only the self-clinching studs that are supplied with the unit. Seating torque is 11.5 ft-lbs min. to 13.5 ft-lbs max. Do not over tighten.

**Note:** Failure to properly apply and cure the sealant may result in a failure of a pressure decay leak test.

STEP 10: LOWER TUBE ASSEMBLY
If a vise is used, clamp on the valve body casting only to avoid damage to the float. Mix the remaining sealant until the color is uniform. Using the mixing stick, generously apply sealant to the first 6 male threads on the valve body as shown in figure 10. Make sure coverage is completely around the threads, and work the sealant down into the thread profile. Quickly thread the lower tube onto the valve body. Tighten the tube securely by hand or with a strap wrench. Remove excess sealant and smooth sealant bead with water moistened mixing stick.

**Important:** Allow sealant (epoxy) to cure for 24 hours before installing into tank.

### Figure 10
Apply Sealant completely around first 6 threads.

**Note:** Before installing the valve in the tank, a pressure test can be performed on the valve to check for vapor tightness. Seal off both ends of the tube with inflatable plumber’s plugs. Apply a maximum 10" W.C. (1/3 PSI) air pressure. If pressure does not hold and a leak can be located with soap solution, do not install the valve. Send the valve back to OPW for warranty evaluation.

**Caution:** Do not over-pressure. Excess pressure can damage the valve.

STEP 11: CUT LOWER TUBE AT 45° ANGLE
Measuring from the underside of the inlet tube flange, mark the overall length of the drop tube a distance of (B) minus 6” or as per local codes or requirements. Determine dimension (B) from the measurements taken in Step 1, Figure 1 (Top of the Face Seal Adaptor below the drain valve outlet in the spill container to the bottom of the tank). Saw off the excess tube at a 45-degree angle and file off any sharp burrs (Refer to Figure 16). Optional: Install the OPW Tank Bottom Protector on the lower tube (Refer to Installation instructions supplied with the Tank Bottom Protector).

STEP 12: PREPARE FILL RISER FOR VALVE INSERTION

**IMPORTANT:** Inspect the riser pipe for any foreign material. Over spray from tank relining or any internal burrs inside of pipe must be removed prior to installation. Failure to have an unobstructed riser pipe may prevent proper installation or operation of the valve. Thoroughly clean top of riser pipe.

**Important:** Before installing the valve, allow sealant to cure for 24 hours.

STEP 13: REMOVE ELASTIC BAND
Remove the elastic band securing the float to the valve body. The float will move into an outward position.

STEP 14: INSERT DROP TUBE
Make sure the O-Ring gasket is under the flange of the inlet tube. Hold the float down against the valve body and slowly insert the drop tube overfill valve into the riser pipe. Do not force valve into the riser pipe. If any obstruction or foreign matter interferes with smooth insertion of the valve, the riser pipe must be cleared.

**WARNING**
Failure to follow the assembly and installation instructions or use of excessive force to insert the OPW 61SO will VOID THE WARRANTY!

Difficulty in removing the existing fill tube (if there is one) means there may be an obstruction in the riser pipe. Look for burrs, deformations, excess tank lining material or other projections that may interfere with easy insertion of the OPW 61SO. The 61SO is designed for insertion into schedule 40 pipe. If schedule 80 pipe has been
used for the riser, the 61SO can not be installed. If seamed pipe has been used, the internal weld bead may interfere with the OPW 61SO and prevent installation. If the OPW 61SO won’t slip in easily DON’T FORCE IT! Damage to the valve may result if excess force is used. Examine the riser pipe carefully; determine the nature of the obstruction; take appropriate steps to remove it.

STEP 15: CHECK INSTALLATION
Insert the drop tube all the way into the tank until the flange and gasket seat onto the top of the Face Seal Adaptor. The float will swing out into the operating position as it passes into the tank. Make sure that the float is aligned along the length of the tank. The length of the tank can easily be determined by locating other manholes or pump boxes that are installed around other tank fittings. Look into the drop tube and align the deflector with the length of the tank. CAUTION: No obstruction in the tank can be within 13” from the center of the riser pipe or the valve may not operate properly.

STEP 16: ALIGN VALVE
Install the OPW Jack Screw Kit and a 4” nipple to lock the valve in place. Refer to the Installation Instructions supplied with the Jack Screw Kit. Install the Rotatable Product Adaptor (Refer to Installation Instructions supplied with the Rotatable Product Adaptor.) Make sure that the valve does not rotate while tightening the adaptor by observing the position of the deflector. The valve must remain aligned along the length of the tank as in Step 15. Repeat this step as necessary to assure proper valve alignment.

STEP 17: INSTALL WARNING PLATE
Slide the tie wrap over the warning plate ears and position warning plate against riser pipe approximately 1” below the adaptor. Tighten the tie wrap securely. The valve is now fully installed and in operating position.

STEP 18: VALVE REMOVAL
The valve can be removed for tank leak testing, inspection, etc., by removing the Rotatable Product Adaptor, the 4” nipple, and the Jack Screw Kit. Reinstall per the above instructions.
STEP 19: ELECTRONIC LIQUID LEVEL MONITORING
If an electronic level monitor is installed, it must be calibrated to match the top of the 61SO valve body, which must correlate with 95% of the actual tank capacity.

PREVENTATIVE MAINTENANCE
Annually, inspect the flapper in the 61SO to see that it is open by looking down the drop tube opening. Test the 61SO drop tube seals with CARB procedure TP-201.1D. If the drop tube seal passes testing, no further maintenance is required. If the drop tube fails testing, replace the drop tube seal with OPW P/N: H11931M for 4” Tubes. Re-test the 61SO drop tube with CARB procedure TP-201.1D. If this does not correct the leak the 61SO needs to be replaced.

CAUTION: Do not insert any foreign object into drop tube if flapper is in the closed position. For example a tank level measuring stick. This will damage the valve and void the Warranty. ALWAYS check flapper location before “sticking” the tank. If flapper is in the closed position the tank is either over filled and you need to wait until the liquid level goes down or the 61SO is damaged and needs to be replaced.

61SO Performance Specifications:
This Overfill Prevention Valve has been manufactured and tested to, and met, the following California specifications. Performance Requirement: Leak rate to be less than or equal to 0.17 CFH @ 2.0” W.C.
Torque Specification:
Self-Clinching Studs, 5/16-8 UN thread, 11.5 ft-lbs minimum to 13.5 ft-lbs maximum.

Important: Leave these installation instructions and maintenance procedures with the station operator.

Notice: OPW products must be used in compliance with applicable federal, state, and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. All illustrations and specifications in this literature are based on the latest production information available at the time of publication. Prices, materials, and specification are subject to change at any time, and models may be discontinued at any time, in either case, without notice or obligation.