

INTRODUCTION

The purpose of this manual is to provide specifiers, owners, contractors, and their employees with detailed instructions on the installation and start-up of fiberglass underground Oil/Water Separators (OWS). These tanks are used for stormwater runoff and equipment washdown. This manual must be used in conjunction with the Installation Instructions for all Single-Wall and Double-Wall (Type II) Tanks (Pub. No. INST 6001).

Note: OWS tank installation is a very specialized procedure. If you do not have the proper experience, please contact a contractor who does, or call Containment Solutions for a list of experienced contractors.

WHY IS THIS INFORMATION IMPORTANT?

Proper installation and operation of each OWS tank is essential:

- **To ensure the safety of all individuals involved in the OWS tank installation and start-up.**
- **To prevent OWS tank damage and/or failure, which could lead to environmental contamination.**
- **To ensure the performance of the OWS to meet desired effluent quality.**
- **To validate the OWS tank warranty.**

OWS TANK INSTALLATION - WARNING



- Do not enter OWS tank excavation unless necessary and in compliance with OSHA regulations. Follow OSHA guidelines for tank excavation.
- Collapsing excavation walls can cause injury or death!

What Topics Will Be Covered?

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In Order to Activate the OWS Tank's 30-Year Structural Warranty

- These instructions must be followed.
- Installation checklist (Pub. No. 8894) must be properly completed, signed by the installing contractor's representative and the tank owner's representative.
- **The installation checklist must be retained by the tank owner and/or installing contractor to validate any future warranty claim.**

Important Reminders

- Fiberglass OWS tanks must be installed according to these instructions as well as Containment Solutions Installation Instructions (Pub. No. Inst 6001) and NFPA 30 and 31.
- Any variances to the published Installation Instructions must be approved by Containment Solutions in writing *prior to the installation.*
- Local codes may apply. Please consult them.
- The presence of a Containment Solutions representative at the jobsite does not relieve the contractor of responsibility to follow the published installation instructions.

BEFORE YOU BEGIN:

- Read, understand, and follow these instructions.
- Barricade the OWS tank area until job is completed.
- **Complete the installation checklist (Pub. No. 8894). A copy of the properly completed checklist must be retained by the OWS tank owner and/or installing contractor to validate any future warranty claim.**
- Check with local authorities for final precision testing requirements, if any.
- If you have questions on other installation details, contact Technical Support, 800-537-4730.

SECTION I

INSTALLATION INSTRUCTIONS

1. Handling

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

Special for Oil/Water Separator Tanks:

- Take extreme care when unloading the OWS tank as weight distribution will be very uneven.

2. Bed and Backfill

The same as standard tanks. See Containment SoluTank Installation Instructions Pub. No. Inst. 6001.

3. Pre-Installation Testing

The same as standard tanks. See Containment SoluTank Installation Instructions Pub. No. Inst. 6001.

Special for Oil/Water Separator Tanks:

- Upon delivery, inspect the OWS for exterior damage that may have occurred during shipping and jobsite handling.
- Remove the manway cover plate(s) and inspect the interior to insure that all **baffles, coalescer packs, and internal piping** are secure and have not been damaged during transport.

4. Hole Size

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

5. Burial Depth and Cover

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

Special for Oil/Water Separator Tanks:

- Install the OWS with sufficient truck access (top-side clearance) for removal of oil, sludge, and water.
- OWS tanks are designed for a burial depth to seven feet. Deeper burial requires special design considerations and must be reviewed by Containment Solution Technical Services.

6. Filter Fabric

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

7. Anchoring

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

8. Installation Procedure-Dry Hole

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

Special for Oil/Water Separator Tanks:

- OWS tanks must be installed in either of the following positions:
 - A level and plumb position.
 - The outlet side 1/2" to 1" lower than the inlet side.

Note:

- **To avoid freeze damage, install the OWS tank so the highest liquid level (usually the inlet and outlet tee/elbow height) is below the frost line - or supply a temperature activated heating device for the OWS.**
- **To avoid heat damage, do not exceed a temperature of 150° F.**
- **The heating device sensor should be located at the highest liquid level point and have appropriate overheat protection.**

9. Installation Procedure - Wet Hole

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

Special for Oil/Water Separator Tanks:

- OWS tanks must be installed in either of the following positions:
 - A level and plumb position.
 - The outlet side 1/2" to 1" lower than the inlet side.

10. Piping

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

Special for Oil/Water Separator Tanks:

- Always install an appropriate-sized dropout box upstream of the OWS tank. The dropout box should be sized to collect leaves, rags, cigarette butts, gravel, and sand to minimize the frequency of OWS tank maintenance as well as contaminant discharge.
- Plug the inlet and effluent pipe until the drainage site is paved and dropout box is installed.
- Inlet and effluent piping to and from the OWS tank must be greater than or equal to the tank inlet and outlet nozzle size.
- Inlet and effluent piping should be sized to handle the flow through them and maintain laminar flow.
- Inlet and effluent piping must be the same size.
- Slope inlet piping to OWS tank 1/4" to 1/16" per foot downward to maintain proper gravity flow.
- Slope the effluent piping away from the OWS tank following the same pitch as the inlet piping.
- For cleaning and maintenance activities inside the OWS tank and for emergency situations:
 - Use a minimum 42" diameter street box above the 30" manway to allow room for access during periodic maintenance and cleaning.
 - A means to shut-off flow into OWS during maintenance should be installed. Such means include, but are not limited to, butterfly valves, gate valves, or blind flanges.
 - Both valves **MUST BE 100% OPEN** during normal operation to prevent flow turbulence and over pressurization. If customer closes only outlet valve, tank can overpressure.
 - Valves must be the same size as the piping with no valve seat or trim reduction.

11. Venting

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

- **All OWS must be vented.**
- **OWS tanks are designed for operation at atmospheric pressures only.**

- **The vent opening should be the same diameter or larger than the piping used to remove product.**
- **For double-wall tanks, if the annular space is vented, it must be vented independently from the primary tanks.**
- **The annular space of hydrostatically monitored tanks must be vented.**

Special for Oil/Water Separator Tanks:

- Both the inlet and effluent piping tees/elbows **MUST** be vented to the atmosphere.
 - Inlet and effluent tees must be fitted with tapped blind flanges to accept vent piping.
- The vent should not be connected to the manway lid.
- The monitoring cavity of hydrostatically monitored OWS tanks must be vented.
- All vents (primary tank, piping, and annular space) must be separate, not joined together.
- The OWS primary tank vent should either be at the 4" fitting marked VENT or the 4" fitting marked SPARE..
- Owner must provide flame arrestors as required by governing codes or for safety.

12. Manways and Manway Extensions

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.



Entering the manway riser or the tank after installation is a confined space entry. Follow proper safety procedures.

13. Collars and Turbine Enclosures

The same as standard tanks. See Containment Solutions Tank Installation Instructions Pub. No. Inst. 6001.

SECTION II

OIL/WATER SEPARATOR ELECTRONICS

Electronic Monitoring equipment must be installed AFTER the OWS has been installed and PRIOR to start-up operations. OWS electronics include:

- Model CPF 3 Oil/Water Separator Control Panel
- Model FOWS 500 Oil/Water Separator Interface Sensor
- Model FHRB 810 Reservoir Sensor (for hydrostatically monitored double-wall OWS tanks)
- Model DDAS-910 Annular Space Sensor (for dry monitor double-wall OWS tanks)

1. CPF-OW3 CONTROL PANEL

- The CPF3 Oil/Water Separator Control Panel has inputs for the FOWS 500 Interface Alarm Sensor and one FHRB-810 Reservoir Sensor (for hydrostatic monitoring systems) or DDAS-910 Annular Space Sensor (for dry tanks).
- The Model CPF3 comes complete with warning bell, panel lights, and transmission contact for remote beacon or valve shutoff.
- Mount the CPF3 Control Panel as described in Containment Solutions Installation Instructions similar to CPF3 Control Panel (Section D1 & D2) and per CPF3 Schematic Detail. (see schematic - page 6)

2. FOWS 500 INTERFACE SENSOR

- The FOWS 500 is comprised of three (3) parts: housing assembly, float stem, and float switch assembly.
- The FOWS 500 float stem length should be ordered to match the diameter of the tank.

MODEL	TANK DIAMETER
FOWS 504	4' Diameter Tank
FOWS 506	6' Diameter Tank
FOWS 508	8' Diameter Tank

Sensor Placement- INSERT DIAGRAM

The FOWS 500 Dual Float Sensors must be placed in the designated 4" NPT port in the top center line of the Oil/Water Separator tank. The sensor assembly must remain in the vertical position for proper operation. It has been designed to be installed with the top portion of the sensor located at the top of the tank (see Figure 1). Locating the sensor assembly in the tank at this position is accomplished as follows:

1. After the tank and sensor riser have been installed, the contractor must measure the distance from the top of the tank, to the top of the riser pipe, including any adapters, reducers or couplings that will be installed on top of the riser.
2. A length of 1/2" rigid conduit must be cut to the above measurement and threaded on both ends. This length of conduit, when attached to the sensor and double tap bushing, will place the sensor correctly within the tank to provide the correct alarm positions (see Figure 1).
3. A 1/2" coupling must be threaded on the top of the sensor and the conduit threaded to the coupling. The 10' length of wire must be placed through the coupling and conduit so that it protrudes from the open-end of the conduit.
4. The end of the wire must next be placed through the double tap bushing before threading the conduit into the bushing.
5. Upon threading the conduit into the bushing, but before lowering the sensor unit into the riser, connect an Ohm meter to the wires and test the sensor, following the Testing Procedures in Section 5 under Start-up Instructions.
6. After the sensor has been tested (and passed), place into position, through the riser.
7. Connect the sensor cable to control panel wire according to the Wiring Detail. An explosion proof junction box has been provided in which this connection can be made.
8. Upon completion of the wiring connections, test the sensor following the Testing Procedures in Section 5 under Start-up Instructions.

Electrical Installation of the FOWS Sensor

Intrinsically safe wiring must be kept separate from non-intrinsically safe wiring. An approved seal should be used at the point where the intrinsically safe control circuit wiring enters the hazardous zone. For intrinsically safe wiring of OWS Control Panels use 14-16 AWG Type MTW or THHN wire. For additional guidance on "Hazardous Locations Installations" and intrinsically Safe Devices" consult ANSI/ISA Standard RP-2-6 or NEC Articles 500 through 516. In addition see the Containment Solutions OWS control panel installation/operation assembly instructions.

- All splices, conduits, and wiring runs to the FOWS sensor should be suitable to prevent moisture from entering the wiring components. Failure to do so could result in the system not operating properly.
- Flexible liquid tight conduit is recommended for use between the FOWS housing and the junction box.
- Connect the sensor wiring to the CPF3 Oil/Water Separator Control Panel per CPF3 Schematic Detail.

3. FHRB-810 RESERVOIR SENSOR - WET TANK ONLY

Connect FHRB-810 per CPF3 Schematic Detail and Containment Solutions Installation Instructions Pub. No. INST 6001.

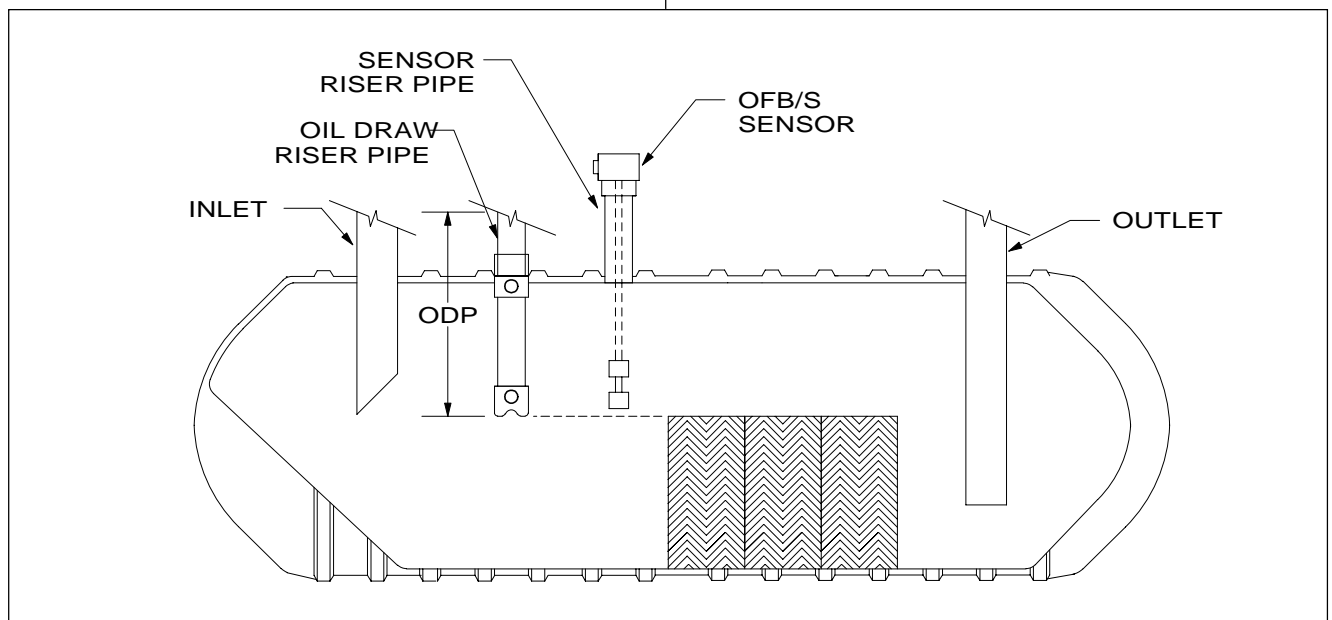
4. DDAS-91 0 ANNULAR SPACE SENSOR - DRY TANK ONLY

Connect FHRB-810 per CPF3 Schematic Detail and Containment Solutions Installation Instructions Pub. No. INST 6001.

5. SYSTEM TESTING AND MAINTENANCE

The on/off switching control operation of the CPF panels makes it simple to test and trouble-shoot the system. Pressing the TEST button performs a functional test of the horn, all indicator lights and all relay contacts. Before pressing TEST, make sure all externally controlled devices are on standby or are accordingly addressed.

To check the operation of the CPFs from a field wiring location, e.g., at the field sensor location, simply place a jumper wire between the field wire pair for normally open sensors, or open the field wire pair for normally closed sensors. This action will set the CPFs into alarm mode.



SECTION III

OIL/WATER SEPARATOR START-UP INSTRUCTIONS

CAUTION: Never directly connect the water fill hose to any OWS tank fittings. Over-pressurization

and OWS tank damage could occur. Place the hose through the fitting so the hose outlet is resting

inside the OWS tank.

- Open the inlet and effluent pipe valves.
- Fill the tank with clean water using any of the following:
 - Tanker truck
 - Fire hose
 - Garden hose
- The OWS tank can be filled through any of the following tank openings:
 - OWS inlet or effluent piping
 - Manway
 - 4" OIL OUT Fitting
 - 4" GAUGE Fitting
- Check the water level using a gauge stick.

NOTE:

The OWS is full when the gauge stick water level reading equals the height of the effluent piping

above the tank top as measured from the OWS tank bottom. Also watch for water leaving the tank

through the effluent piping.

- Verify that water flows through the OWS to insure that no blockage exists.
- Check the effluent outlet to insure that water is flowing.
- Check the inlet piping for water backup.



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