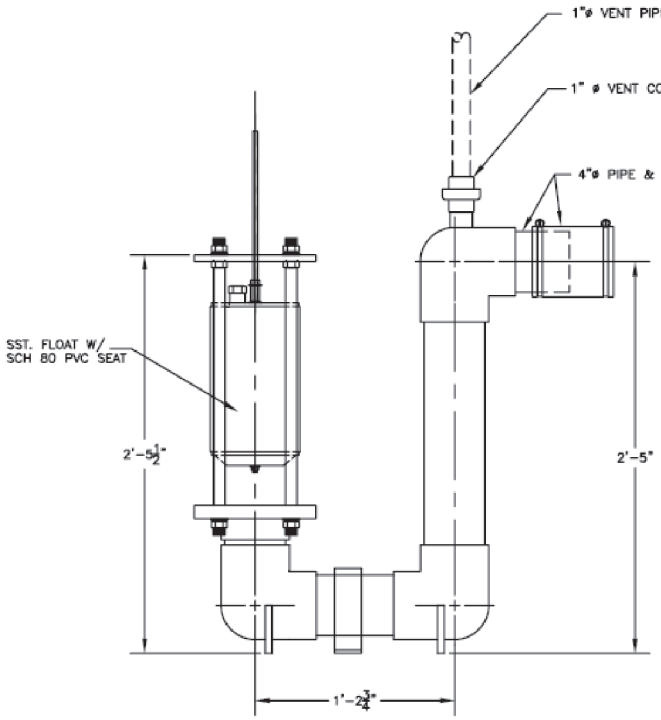
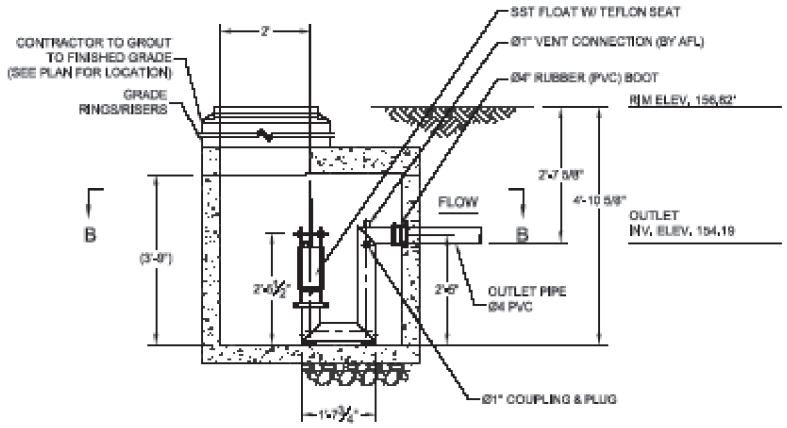
CONTECH®
ENGINEERED SOLUTIONS

Oil Stop Valve Guide
Operation, Installation and Maintenance





SECTION A-A

Principle of Operation

The valve operates on a buoyancy principle. The ballasted float, which is the only moving part, is weighted for a specified gravity of 0.95. In the water, the float will float and keep the valve open. An accumulation of oil around the float will decrease the buoyant force on the float, causing it to float lower in the liquid. As the oil accumulation increases, the float will sink lower and finally close the valve when the oil level is approximately 3" (76 mm) to 4" (101 mm) above the bottom of the float.

OSV Operation

The AFL Oil Stop Valve (OSV) by Contech is designed for easy, efficient operation in confining oil spills to the premises. It is used in oil/water gravity differential separators, coalescing type separators and oil manholes to prevent the entry of oil into the effluent.

Features of the valve include:

1. Dependable gravity operation
2. Corrosion-resistant construction
3. Only one moving part
4. Outlet vent connection (siphon breaker)

The valve is available in a variety of sizes to meet a wide range of flow conditions. The valve is supplied as a stand alone device and can be used in tandem with a Contech VortClarex® coalescing media separator.

On a case by case basis, valve can be fabricated with a "weep hole" which facilitates reopening of the valves after closure due to oil spill. The week hole equalizes the pressures in the valve and will pass a minimal amount of oil/water mixture. This option is only added upon the Engineer's written request.

Hydraulic Capacities

A minimum recommended water level, sufficient to completely submerge the float housing, is required for proper operation of the OSV. Operation at less than the minimum recommended water level will reduce the capacity of the OSV.

The recommended operating flow rate versus its associated head loss is shown in Figure 1, 2 and 3. For the valve to operate properly at required flow(s), the valve discharge pipe centerline must be below the liquid level at a distance equal to (or greater than) the associated head loss. Table 1 indicates the peak flow capacity of each valve size and model.

WARNING: IF THE VALVE IS OPERATED AT GREATER THAN DESIGN OR RECOMMENDED FLOWS IT MAY SHUT OFF AUTOMATICALLY, WHICH MAY NECESSITATE THAT THE VALVE BE REOPENED MANUALLY.

AFL-OSV Model	Discharge Elbow Material	Valve Size	Valve Size	Max. Outlet Pipe Size	Max. Outlet	Max. Capacity gpm	Max. Capacity lps
OSV-4	PVC	4"	101 mm	4"	101 mm	160	10
OSV-6	PVC	6"	150 mm	6"	150 mm	360	23
OSV-8	PVC	8"	200 mm	8"	200 mm	600	39
OSV-4SS	Stainless Steel	4"	101 mm	4"	101 mm	160	10
OSV-6SS	Stainless Steel	6"	150 mm	6"	150 mm	360	23
OSV-8SS	Stainless Steel	8"	200 mm	8"	200 mm	600	39
OSV-10SS	Stainless Steel	10"	250 mm	10"	250 mm	900	57
OSV-12SS	Stainless Steel	12"	300 mm	12"	300 mm	1400	88
OSV-4SST	Stainless Steel	4"	101 mm	4"	101 mm	160	10
OSV-6SST	Stainless Steel	6"	150 mm	6"	150 mm	360	23
OSV-8SST	Stainless Steel	8"	200 mm	8"	200 mm	600	39
OSV-10SST	Stainless Steel	10"	101 mm	10"	101 mm	900	57
OSV-12SST	Stainless Steel	12"	150 mm	12"	150 mm	1400	88

SS = Stainless Steel
SST = Stainless steel extended and is used when designing for fire protection This feature includes an extended pipe through the outlet of the structure, so there is no connection inside the valve structure to melt and fail.

Table 1. Contech AFL-OSV Model Sizes and Peak Flow Capacity

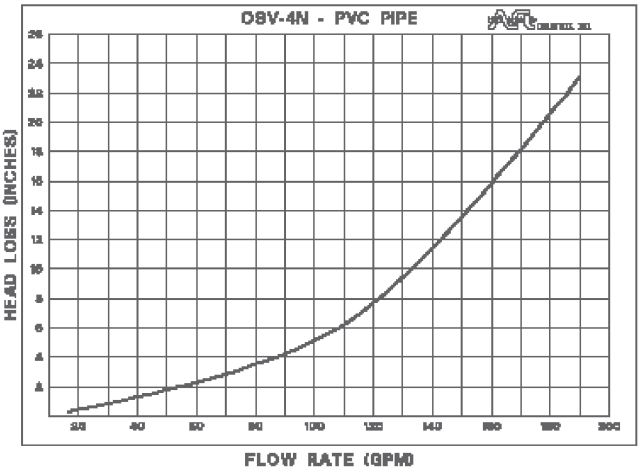


Figure 1. OSV-4 inch

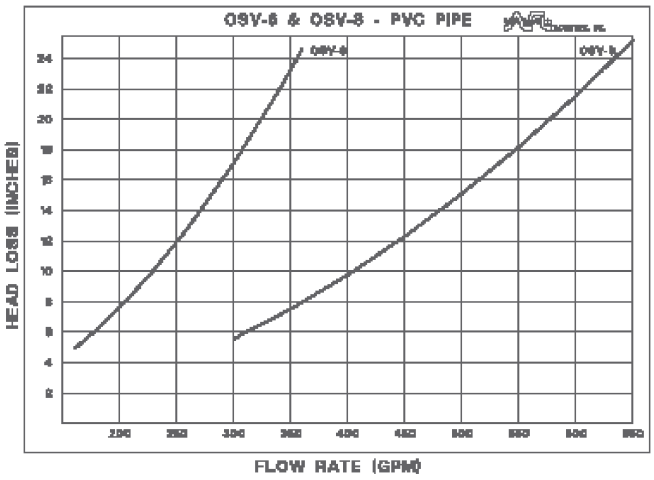


Figure 2. OSV-6 and OSV-8 inch

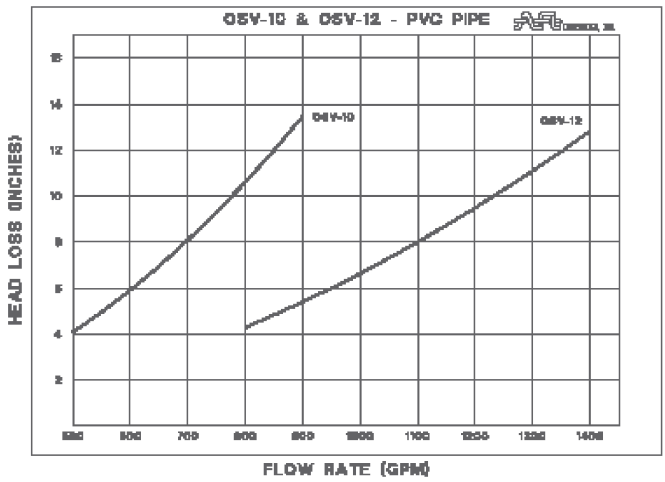


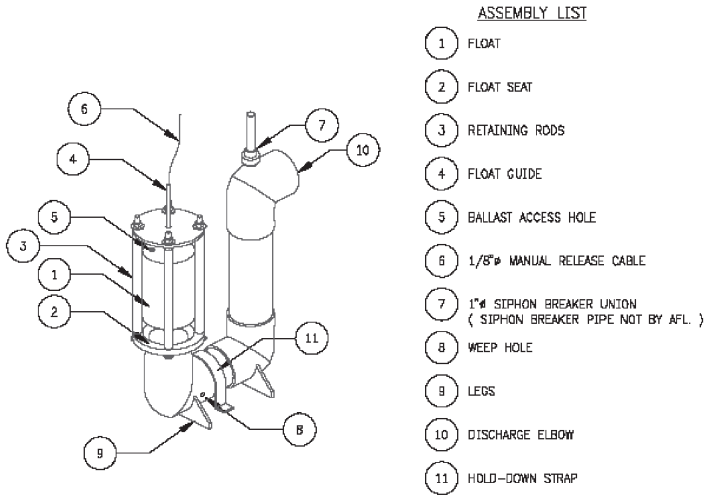
Figure 3. OSV-10 and OSV-12 inch

Installation

1. Unit must be installed utilizing a crane, backhoe, fork truck, or similar equipment due to the size and weight (approximately 300-425 pounds [136-193 Kg]).
2. Pick up unit slowly using the supplied lifting cable harness.
3. Unit will tip to the outlet pipe side. This is the desired angle to prevent excess pressure on the float cage.
4. Lower unit into manhole.
5. Remove lifting harness for use on next valve.
6. Remove rubber boot. (To be installed outside of sump)
7. Reposition valve to allow outlet pipe of valve to extend through manhole plus 4" (101 mm). Make sure valve top plate is level in both directions.
8. Grout outlet pipe in place.
9. Install anchors using the (4) 5/8" (16 mm) diameter holes provided in the support angles at the bottom of the valve.
10. Attach the stainless steel float guide cable to the under side of concrete lid within reach of the manhole cover. This will allow the manual opening of the valve.
11. Install 1" (25 mm) 76 vent/siphon leaving approximately 1" (25 mm) gap between pipe and underside of lid.
12. Fill manhole with clean water to outlet invert. The 3/8" (9.5 mm) guide rod should be approximately 8" (200 mm) above the cage top plate.
13. Push down gently on guide rod, release pressure from rod and allow float to rise. Upon rising, unit is ready for operation.
14. Step #12 is used periodically to insure float operation. If float remains closed, gently pull on lift cable to break seat suction.

NOTE: DO NOT ATTEMPT TO OPEN VALVE WHEN SUMP IS EMPTY OF WATER. WATER LEVEL MUST BE AT INVERT OF OUTLET TO LIFT.

NOTE: IF FLOAT DID NOT OPEN, FILL VENT PIPE WITH WATER TO EQUALIZE PRESSURE ON THE VALVE FLOAT.



OSV discharge pipe (not shown here and plain end connections) to be supplied by others. The contractor, at his discretion, may solvent glue to the valve discharge elbow, or select other suitable means for connecting OSV discharge elbow to outlet pipe.

A. Plain End Connections

Valves with plain end connection can be connected with PVC coupling and two stainless steel worm drive hose clamps. Slide the coupling on valve discharge elbow and install the clamps by sliding them on the coupling. Line up the valve discharge elbow with outlet pipe, leave ¼" gap (6 mm) between pipe ends, and slide this coupling and clamp on the outlet pipe. Do not tighten the hose clamps at this time.

B. Flanged End Connections

Line up the flange bolt holes, insert a gasket and bolt flanges. Do not tighten bolts at this time.

ATTENTION: FLANGES SUPPLIED WITH THE VALVES ARE FLAT FACE; MAKE SURE THE MATING FLANGE IS OF THE SAME DESIGN. USE OF RAISED FLANGES WILL BREAK THE PVC FLANGES.

C. Anchorage

OSV valves are supplied with hold down straps, which are designed to secure the valves to the concrete. After the valve has been lined up with outlet nozzle, install the strap on the valve body and use the two holes as a template for locating the anchor bolts.

Remove straps and drill in anchors.

Replace the strap and bolt down the strap.

D. Siphon Breaker

Siphon breaker connection is located on the valve discharge elbow and is furnished with a union to facilitate installation of siphon breaker pipe.

In order to calculate siphon breaker pipe length, determine the maximum liquid level in the sump/tank at a spill condition, subtract elevation of the top of the OSV discharge pipe from maximum liquid level and add 1'-6" (450 mm). After the length of the pipe has been cut, attach the pipe to the union using PVC solvent cement. Install the siphon breaker pipe on the valve and support it as required. Ideally, the top of the pipe should be as close to grade as possible.

ATTENTION: IMPROPER SIPHON PIPE ELEVATION WILL RESULT IN OIL DISCHARGE THROUGH THE SIPHON BREAKER DURING SPILL CONDITION.

Maintenance

1. Remove solids from bottom of sump as required. Six (6") [150 mm] of build up maximum.
2. With water level in sump at outlet invert, gently push guide rod downwards approximately 6" (150 mm). This will allow float to come in contact with the bottom flange.
3. Release guide rod. The rod should rise up to the original position. If this procedure was successful the valve is in proper working order.
4. Occasionally the float will stay seated on the bottom flange when pushed down. Simply pull upwards on the stainless steel cable attached to the guide rod. This will break the suction and allow the float to rise. If when attempting to push the guide rod downwards and it appears to be stuck, pull up on stainless steel cable to raise the float again approximately 6" [150 mm]. If the float rises, release cable. If the float sinks it is inoperable and must be replaced.
5. This procedure should be performed at least yearly.

ATTENTION: UPON VALVE CLOSURE DUE TO A SPILL, THE OIL COLLECTED IN THE SUMP, TANK OR OIL SEPARATOR, MUST BE EVACUATED FROM THE VALVE CHAMBER AND DISPOSED OF PROPERLY. AFTER THE OIL HAS BEEN REMOVED, FILL CHAMBER WITH CLEAN WATER AND RE-OPEN THE VALVE BY LIFTING THE FLOAT BY PULLING ON LIFT CABLE. THE SAME PROCEDURE MUST BE USED DURING PROCESS START UP.

Support

- Drawings and specifications are available at www.conteches.com
- Site-specific design support is available from our engineers.

SECTION 02723

AFL-OSV by Contech SPECIFICATIONS

PART 2.0 Oil Stop Valves

A. Manufacturers

1. Contech Engineered Solutions: Model AFL-OSV-4SST with slave valve (stainless steel) or approved equal installed inside prefabricated manhole.

B. General

1. Description: Fabricated control valve designed to control oil spills. Valve assembly shall consist of a base, guides, inlet housing, float and outlet connection. Valve shall be designed to operate on specific gravity differential principle.
2. Float Weight: Ballasted for 0.95 specific gravity
3. Flow: 160 GPM (10 lps) Gravity (Maximum)
4. Inlet Pipe Size: 12" (300 mm) Diameter
5. Vents: 1" (25 mm) SS threaded coupling located on top of discharge pipe. Vent pipe to extend above maximum oil level to be supplied by Contractor. Material to be galvanized pipe.
6. Coupling: 1" (25 mm) SST threaded coupling and plug located on side of discharge pipe.
7. Outlet connection to 12" (300 mm) Diameter plain end pipe. Contractor to supply connection flexible connector and clamps.

C. Materials of Construction

1. Base, Housing and Outlet Piping. 304L SST
2. Float: SST with Teflon Seat
3. Float Guides: Type 304 Stainless Steel sleeves

D. Design Requirements

1. Pressure Rating: Atmospheric
2. Temperature: Ambient with 450 °F (232 °C) maximum

PART 2.10 Slave Valve

A. General

1. Application: Oil spill prevention
2. Model Number: SV-S.S/PVC
3. Description: Fabricated to reopen oil stop valve in the event of water loss caused by leakage or evaporation, etc.)
4. Float Weight: Ballasted for 0.95 specific gravity

B. Materials of Construction

Base, Housing, and Piping: SS

Float: PVC

Float Guides: Type 304 Stainless Steel

Pressure Rating: Atmospheric

Temperature: Ambient with 130 °F (54 °C) maximum

C. Principle of Operation

1. The slave valve is added to an oil stop valve to allow the main float to reopen. Due to the lack of water the main float will close. When additional rain enters the sump, the slave valve float will open and allow water to enter the oil stop valve body. As the water level rises the main float will open due to water pressure pushing up against the bottom of the main float. In the event of an oil spill, the slave valve float and the main float will close containing the spill.