ABOVEGROUND OWS OPERATIONS & MAINTENANCE

1. OPERATIONS

1.1. Containment Solutions, Inc. (CSI) Aboveground Oil/Water Separators must be properly installed in accordance with the manufacturers installation instructions, PEI RP 200, and all federal, state and local codes.

1.2. The CSI aboveground Oil/Water Separators are designed to remove free floating oil and grease up to a .95 specific gravity. The CSI Oil/Water Separator is not designed to remove emulsions, either chemical or mechanical, solvents, dissolved oils or volatile organic compounds. If pumping into the Oil/Water Separator is required, pumping must be accomplished via a positive displacement pump, such as an air or electrically operated double-diaphragm pump. Centrifugal inlet pumps are not recommended. It is recommended the pump be of lowest acceptable gallons per minute flow rate, the piping system have as few turns as possible, and that the pump be placed as far away from the inlet of the separator as possible.

2. SAFETY

2.1. These instructions should not be interpreted in any way to put one's health at risk, or to harm property and/or the environment.

2.2. Keep this manual available at the installation site and refer to safety procedures as needed.

2.3. The following definitions will serve as a guide when reading this manual.

⚠WARNING

Indicates a potentially hazardous situation, which if not avoided could result in death or serious injury.

⚠CAUTION

Indicates a potentially hazardous situation, which if not avoided may result in minor or moderate injury.

NOTICE

Indicates a potentially hazardous situation, which if not avoided may result in property damage.

3. NOTATIONS

3.1. Fill the Oil/Water Separator with clean fresh water until water gravity discharges or water is pumped from the effluent handling system. (effluent pumping models only)

3.2. Inlet flow should not exceed design flow rate of the system.

3.3. The CSI Aboveground Oil/Water Separators are designed for stationary use only and should not be transported containing any liquid.

4. PRIMARY CHAMBER

4.1. The flow entering the standard CSI Oil/Water Separator comes into the unit via an inlet pipe through the side of the separator tank.

4.2. The flow is directed via the inlet pipe into the inlet chamber and is contained in the pipe to a depth below the standard level of oil accumulation. This prevents mixing, or re-entrainment of the inlet stream with already separated and accumulated oil in the separator.

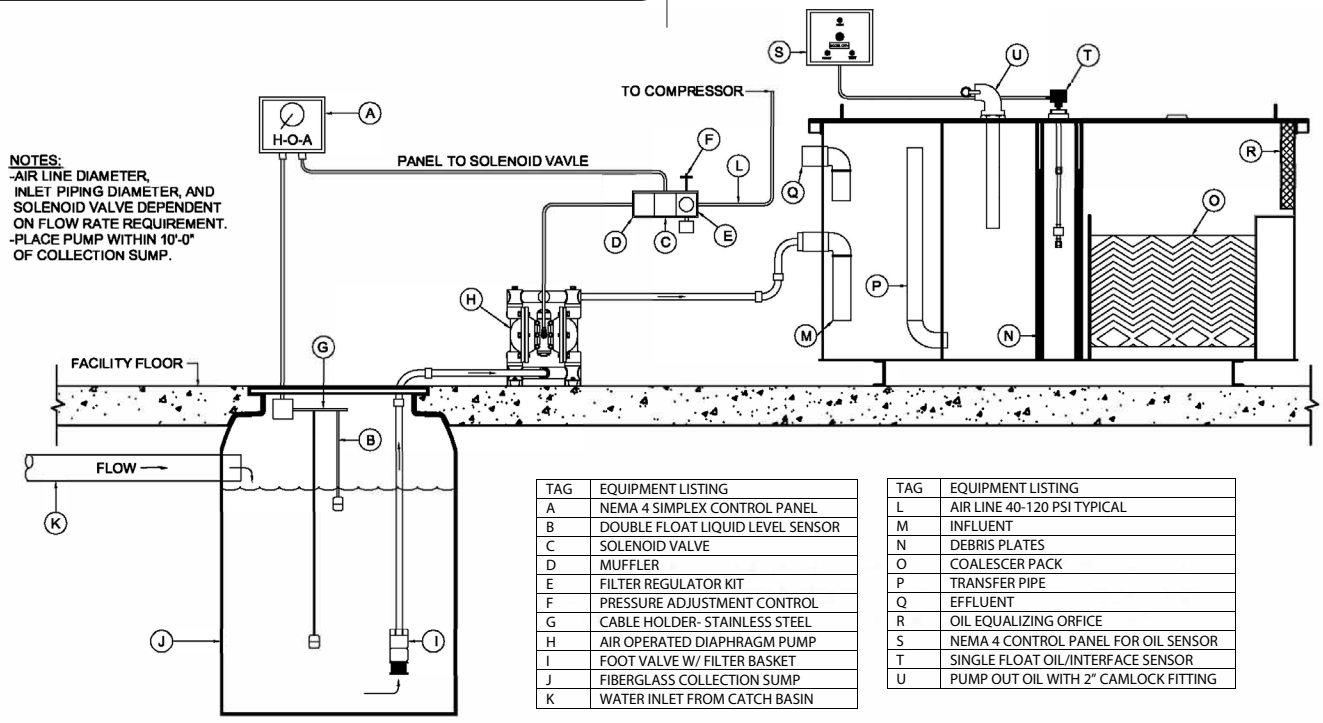
4.3. The flow from the inlet pipe, of a smaller diameter in comparison to the Oil/Water Separator it self, is spread out over the entire cross section of the inlet chamber. This action reduces the velocity of the incoming flow and promotes laminar flow characteristics, thus allowing solids to drop out and oil to rise in accordance with Stokes Law.

4.4. Oleophilic debris plates promote oil coalescence in the primary chamber as well as filter out any large solids that may enter into the separator.

4.5. Larger globules of oil will rise to the upper region of the Oil/Water Separator prior to the plate pack.

5. SEPARATION CHAMBER

5.1. Under laminar flow conditions, remaining solids may settle on the top of the inclined plates in the coalescer section, following the down slope of the incline and through solid dropout openings in each plate pack to accumulate in the sludge chamber below the plate packs.



TAG	EQUIPMENT LISTING
A	NEMA 4 SIMPLEX CONTROL PANEL
B	DOUBLE FLOAT LIQUID LEVEL SENSOR
C	SOLENOID VALVE
D	MUFFLER
E	FILTER REGULATOR KIT
F	PRESSURE ADJUSTMENT CONTROL
G	CABLE HOLDER- STAINLESS STEEL
H	AIR OPERATED DIAPHRAGM PUMP
I	FOOT VALVE W/ FILTER BASKET
J	FIBERGLASS COLLECTION SUMP
K	WATER INLET FROM CATCH BASIN

TAG	EQUIPMENT LISTING
L	AIR LINE 40-120 PSI TYPICAL
M	INFLUENT
N	DEBRIS PLATES
O	COALESCER PACK
P	TRANSFER PIPE
Q	EFFLUENT
R	OIL EQUALIZING ORFICE
S	NEMA 4 CONTROL PANEL FOR OIL SENSOR
T	SINGLE FLOAT OIL/INTERFACE SENSOR
U	PUMP OUT OIL WITH 2" CAMLOCK FITTING

5.2. As oil enters the plate pack, the oil globules rise at a rate based on Stokes Law. The oil is slightly attracted to the underside of the polypropylene coalescer plate because the corrosive resistant material is also oleophilic and has a natural affinity to oil.

5.3. This continuing process causes oil globules to collide and coalesces into larger globules. Larger globules rise quickly and efficiently to the oil accumulation area in the upper region of the separator.

6. DISCHARGE CHAMBER/CLEAR WELL

6.1. As inlet flow continues, water will be discharged from the separator into the clearwell area. This is accomplished via a vertical downcomer from the separator chamber into the clearwell, drawing oil free water from bottom of the separator. Optional system designs also allow for pump discharge in the event a vertical lift is required or secondary treatment systems following the separator may require pumped inlet flow.

7. OPTIONAL OIL ALARM SYSTEM

7.1. Oil alarm only (single or dual float alarm levels)

7.1.1. Oil should be removed via the waste oil pump out pipe when the oil alarm sounds. This can be done inserting a vacuum hose or suction line into the oil pump out pipe provided on all CSI aboveground separators.

7.1.2. After the oil is removed from the OWS it is necessary to refill the OWS with clean, fresh water to the normal operating level of the tank.

7.1.3. Proper disposal of all fluids removed is required.

8. MAINTENANCE

8.1. Annual inspection and maintenance is the minimum recommended maintenance inspection frequency.

8.2. Additional inspection / maintenance should be implemented if:

8.2.1. Discharge quality is not acceptable and within design guidelines.

8.2.2. Larger quantities / concentrations of oil routinely enter the separator (greater than 20% of oil storage capacity).

8.2.3. Large amounts of debris are encountered during routine annual maintenance.

8.3. Proper maintenance is required to achieve effective separation. Separator may contain flammable and/or combustible liquids. Proper handling and disposal of all contaminants should be in accordance with all federal, state and local codes.

8.3.1. Waste oils should not be intentionally drained into an OWS tank.

8.3.2. Filling the tank with waste oils reduces the capacity of the tank to separate oil from runoff flow.

8.3.3. Waste oils may contain chemicals which could damage the tank, piping and/or internal components.

8.3.4. All oil recovered and removed from the tank should be recycled or disposed of in compliance of all applicable Federal, State, Local or Provincial safety and environmental codes and regulations.

8.4. Maintenance Instructions

⚠WARNING

Liquid oil and vapors may be present. To prevent fire or explosion hazard, keep ignition sources away when removing oil from tank.

ASPHYXIATION **FIRE** **EXPLOSION**

8.4.1. Disconnect /disable all power sources, including air source to influent pump(s) and power to any accessories.

8.4.2. Disconnect any lines (air or electricity) that may interfere with top cover(s) removal.

8.4.3. Disconnect and remove level sensor from the Oil/Water Separator. (optional equipment)

8.4.4. Remove Oil/Water Separator cover(s). Care should be taken so as not to damage any accessories that may penetrate through the cover(s).

8.4.5. Remove all liquids from the Oil/Water Separator.

8.4.6. Inspect Oil Interface Sensor (optional) for free movement. Remove sludge or accumulation from float(s).

8.4.7. Flush and remove any accumulated sludge or debris from the chambers of the Oil/Water Separator.

8.4.8. Coalescer plate pack and debris plate removal is optional under normal operating conditions. Plate pack /debris plates may be cleaned in place or removed from the separator for cleaning.

8.4.9. If an emulsifying detergent is used in separator cleaning, removal of all remaining detergent is required and flushing with clean water is recommended. The use of a quick break detergent is recommended instead of a standard emulsifying detergent.

8.4.10. Replace the cover(s).

8.4.11. Refill the Oil/Water Separator with clean fresh water.

8.4.12. Re-connect all disconnected/disabled systems.

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