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SOLID BOSS

Installation Manual

Deck Drainage Applications



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1. Unpacking & Inspection

A. Testing, Preparation for Shipment and Storage

Prior to delivery the system is tested in the factory to verify that the system is watertight and that all the pumps, valves, instrumentation and controls are operational. A factory acceptance test, hydrotest report and QC checklist are included in the control panel along with an electrical drawing and mechanical drawing. Moisture packets are included inside each control panel to prevent moisture damage to electrical components during shipping and storage. Once the system has been checked and tested at the factory it is cleaned and prepared for shipping. After the cleaning process, the system is wrapped in stretch wrap and then crated in a wooden crate that is certified to ISPM 15 international shipping standards.

During the cleaning process all water is blown out of the system so that it can be stored in cold temperatures without risk of freezing damage. The unit can be stored indoor or outdoor at a temperature range of -10 C to 40 C. The unit will be shipped enclosed inside a wooden crate specifically designed for the system so it can be moved easily with a forklift. Avoid stacking heavy objects on the crate. It will not support the weight and could cause damage to the vessel inside. The crates will hold up to rain and humidity for a reasonable period of time. Obviously it is better to store the unit inside a warehouse but the unit is also designed to be stored outdoors. No covering or other preservation is required to store the units.

B. Delivery Inspection & Reporting

When the system arrives at its final destination it should be carefully checked for damage that may have been sustained during shipping. All damage should be noted and reported to the shipping company and to the manufacturer. If replacement parts or components are needed the manufacturer should be informed immediately.

When you are ready to use the separator carefully remove the crate and stretch wrap. The unit can be moved either with a forklift, while it is on the pallet, or by a crane using the lifting lugs on the top of the separator.

C. Storing After the Unit Has Been Received

If the unit is unpackaged or has been placed in operation and needs to be stored the following should be done to protect the system from freezing or developing bacteria:

i. Drain.

- a. Turn the pump on and pump everything out of the vessel. This should drain most of the water.
- b. Remove the pump plug.
- c. Remove blank covers and open any valves. Blow air into openings
- d. Remove the OCM cap (if applicable).

- e. Blow air into the OCM (if applicable to make sure as much water as possible has been removed. Clean the cell with the brush provided using a mild, non-corrosive cleaning agent and rinse with clean water. (See O&M manual or separate OCM manual for cell cleaning instructions.)
- ii. **Shrink Wrap.**
Wrap the unit in shrink wrap to protect it.

C. Verify Fitness for Application

In order to assure the proper operation of the separator it is important the separator has the options that fit the application. This should have been accomplished prior to the purchase in the specification of the unit. We have found, however, that sometimes critical information regarding the application is not given prior to the sale resulting in a poor fit and performance. Retrofit adaptations could be needed in these situations.

2. Installation

The SOLID BOSS Separator is a self-contained system that is fully tested and operated under normal operating conditions with water at the factory. Each function of the system is tested and verified. Within the system no piping or wiring will be necessary. A FAT report is provided with the unit to show what test procedures were performed.

Installation normally involves the following:

- Ø Move separator into place and mount the separator to the deck. This is accomplished by using minimum of 4" of 1/4" weld for each foot pad.
- Ø Make the necessary piping connections to your application. It is critical that the connecting pipe runs are sized to permit unrestricted operation of the unit. Piping that is undersized can impair the operation of the system. To facilitate service and testing procedures it is highly recommended that the customer install isolation valves at all piping connections to the separator unit.
- Ø The unit has been set up for the proper voltage requirements at the factory as specified by your purchasing department. Please insure that the voltage you are supplying matches the voltage that the unit is designed to operate on. This voltage is shown on the electrical drawing. This schematic is found inside the control panel, as well as within the attachment section of the operating manual. The power connections to the main power disconnect are shown on the electrical schematics attached. In the event that the electrical drawing is lost or damaged, please contact the factory or your distributor and we can supply you with an electronic copy of it.
- Ø You will need clean instrument quality air for the purge control, pneumatic valve(s), air conditioning unit and the pneumatic pump. All the components needing air are connected so there is only one connection to make. The air pressure provided should be within the following range of 60 - 100 psig (4.14 – 6.9 barg). The volume of air required will depend on the discharge head requirement, the amount of solids that need to be removed and other factors.

3. Startup & Commissioning

A. Factory Startup and Acceptance Test Procedures

A factory acceptance test and hydrotest is performed on every system prior to shipping. A factory authorized technician is available to come on site for a field startup, commissioning and acceptance test if desired. This is not required for the system, however, it is a good idea and one that we highly recommend. The following procedures are those that a factory authorized technician will perform. If the customer does their own startup they will need to follow these same procedures. If the customer initially elects to do their own startup and then changes their mind the factory startup can be done at any time. Contact your representative or the factory for the associated costs. The factory startup can also be performed by your distributor if they have a factory trained technician. Check with your distributor to determine if they have a factory trained technician. The fee charged by the distributor's technician will be determined by the distributor.

The general steps for startup are listed here.

1. Verify that the installation of the system is complete before applying power.
2. Verify that any isolation valves are closed until the system is ready. There should be isolation valves on the inlet and outlet of the system. These are not included from the factory but should be installed with the installation of the system.
3. Verify proper voltage to the system.
4. Connect power to the separator.
5. Turn the main disconnect on to power up the separator. It is not necessary to fill the system with water to begin operations.
6. Purge the air out of the system as much as possible.
7. Verify operation of the OCM (if applicable) (OCM power on, PPM reading, 3-way valve operation).
8. Verify operation of the recycle valve (if High Flow option is included) (valve is open when PPM > 15, closed when PPM < 15).
9. Verify operation of the discharge valve (if High Flow option is included) (valve is open when PPM < 15, closed when PPM > 15).
10. Turn the separator on and set the designed discharge pump flow rate and flow control parameters using the touch screen HMI.
11. Simulate alarm and warning conditions to verify that they function properly.
12. Make any adjustments that are appropriate. Open the isolation valves.

B. Before applying Power

Before applying power to the unit, be sure all isolation valves to and from the system are closed.

Verify that the power is at the voltage and frequency indicated on the electrical drawing and connected as shown on the electrical drawing. There are 2 copies in the electrical enclosure. One copy should be kept there.

C. Voltage

The system has been supplied at the voltage that was specified when the system was ordered. Check the voltage that was supplied to make sure that it agrees with the voltage that is required. If the voltage supplied does not agree with what is required then it is possible to change the voltage or frequency. Contact the factory or your distributor if there is a problem with the voltage.

D. OCM Test:

If the system has an OCM, the OCM needs to be tested while the system is running on clean water to verify that it reads zero. If the OCM is not reading zero this may be caused by air in the sample lines or turbidity in the water. After a few minutes of running with clean water the air will work itself out of the system and any turbidity from the system should be eliminated. It is possible you may need to clean the cell with the brush. When the unit returns with a display of "0" PPM the unit is ready for operation.

If the monitor continues to read > 0 it may need to be reset. For further explanation of the OCM see the vendor O&M manual.

E. Introduce Process Water & Set Flow Rate:

The system is designed to take whatever the flow of water is. There is nothing in the system to restrict flow. As the flow of water increases the amount of solids that are removed will go down but the system will process the water. The only restriction is the size of the inlet and outlet piping.

F. Simulate Alarm Conditions for OCM (if applicable):

The 107(49) oil content monitor (if the Oil Recovery option is installed is factory calibrated by law and so no calibration is needed on startup.

If an inspector comes to verify the operation of the SOLID BOSS separator, he will want to see that the monitor will open the discharge valve when less than 15ppm (or 5 ppm) and that the recycle valve will activate when over the limit.

There is no reason to put oil in the system to verify its operation. If you put oil directly into the monitor it will take a while to purge the oil out of the system once you start up and it will be harder to demonstrate the switching back and forth between the no alarm and alarm modes.

The proper operation of the monitor can be demonstrated by simulating the alarm conditions. Instructions for doing this are in the OCM manual attached.

You can check that the valves are actuating by shutting off the isolation valves (customer supplied) and observing the pressure gauges on the separator. For example if the discharge is isolated and the recycle is not, you will have pressure when it is trying to discharge and no pressure when it is recycling.

The monitor can also be forced into alarm by emptying the cell by using the brush to push all the water out. Then when you turn the separator on the air in the monitor will cause the alarm to go above set point for a short period. This will show that above 15 ppm reading that the alarm works.

You can also simulate an alarm condition by using WD-40. This is done by turning the OCM off, removing the plastic tubing line that is for the sample inlet and spraying the WD-40 into the line. After spraying the WD-40 inside the line, reconnect the line to the fitting and turn the system back on. The monitor will read zero for a few seconds but as the WD-40 (which is an oil based product) passes through, the PPM level will raise and then lower as the WD-40 runs out.