

WH101F

Installation Instructions & Warranty Information

For Simplex Grinder Pump Stations

**Universal Wet Well and
Integrated Ballast Design**

Environment One Grinder Pump Feature Identification

1. **GRINDER PUMP BASIN** – High density polyethylene (HDPE).
2. **ACCESSWAY COVER** – Painted steel, marine-grade enamel coated.
3. **ELECTRICAL QUICK DISCONNECT (EQD)** – Electrical lead from pump core terminates here (NEMA 6P).
4. **POWER AND ALARM CABLE** – Circuits to be installed in accordance with local codes.
5. **ALARM PANEL** – Rainproof (NEMA 4X) enclosure. Equipped with circuit breakers or disconnect switch. Locate according to local codes.
6. **ALARM DEVICE** – Every installation is to have an alarm device to alert the homeowner of a potential malfunction. Visual devices should be placed in conspicuous locations.
7. **INLET** – EPDM grommet (4.5" OD). For 4.5" OD DWV pipe.
8. **SETTLING LOOP** – Coil wire to protect against soil settling if cable is direct buried.
9. **GRAVITY SERVICE LINE** – Standard configuration 4-inch DWV (4.5 inches OD). Supplied by others.
- 9a. **STUB-OUT** – 4" x 5' long watertight stub-out to be installed at time of burial unless the gravity service line is connected during installation. Stub-out is supplied by others.
10. **DISCHARGE OUTLET** – Standard configuration 1 ¼-inch solvent weld.
11. **DISCHARGE LINE** – 1 ¼-inch nominal pipe size. Supplied by others.
12. **BEDDING MATERIAL** – 6-inch minimum depth, rounded aggregate (gravel). Supplied by others.
13. **FINISHED GRADE** – Grade line should be below the cover and slope away from the accessway.
14. **CONDUIT** – 1" or 1-1/4", material and burial depth as required per national and local codes. Conduit must enter panel from bottom and be sealed per NEC section 300.5 & 300.7. Supplied by others.
15. **VENT PORT** – 2" PVC solvent weld socket for 2" DWV pipe. Pipe supplied by others.
16. **VENT LINE** – 2" nominal pipe size. Pipe supplied by others.
- 16a. **STUB-OUT** – 2" X 5' long **watertight** stub-out with watertight cap, to be installed at time of burial unless vent line is completed at this time. Supplied by others.
17. **VENT PIPE SCREEN, SS**
18. **VENT PIPE NUT** – 2" FNPT

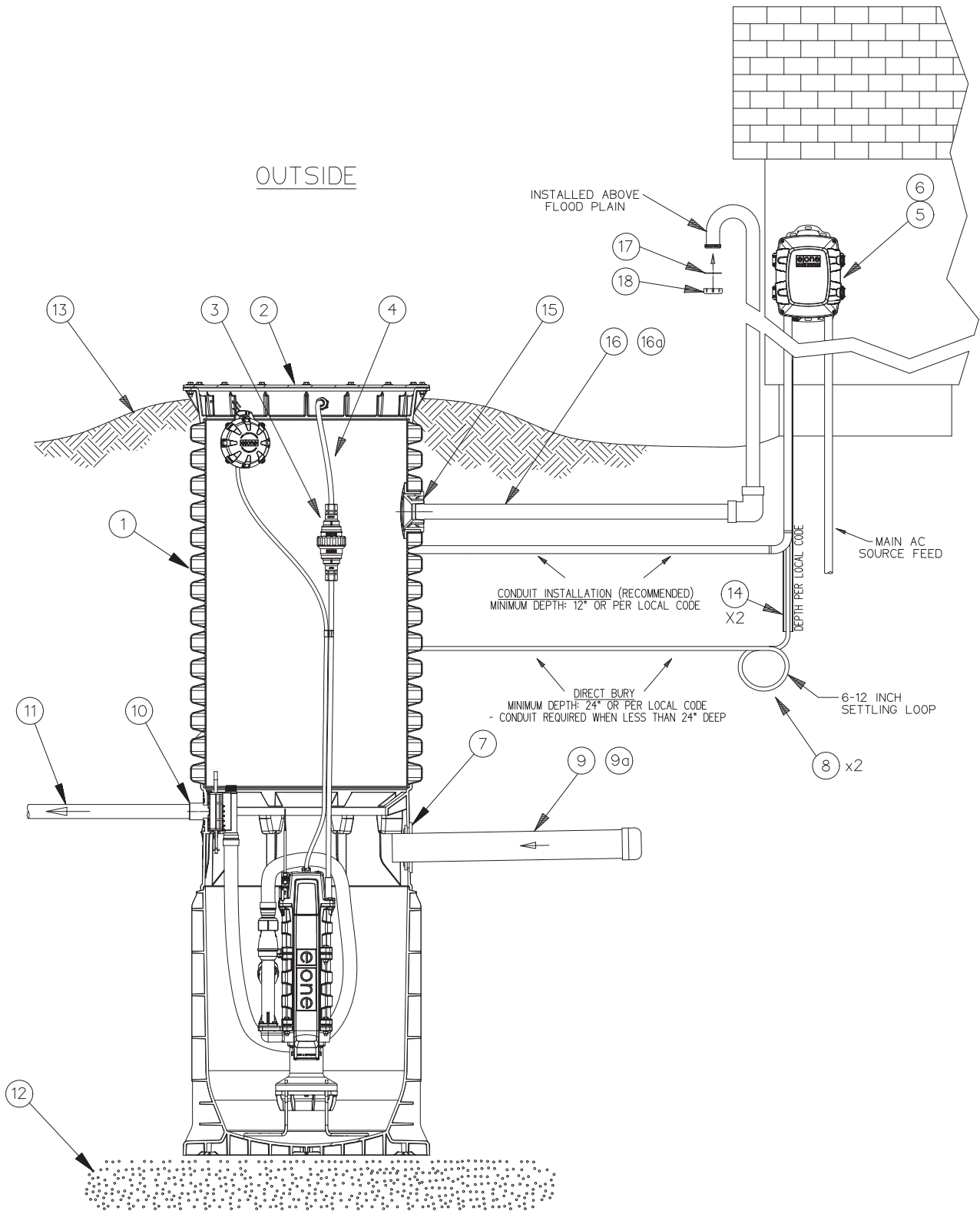


Figure 1
Overview of WH101F Station Installation

**FAILURE TO COMPLY WITH INSTALLATION
INSTRUCTIONS WILL VOID WARRANTY**

The following instructions define the recommended procedure for installing the Model WH101F grinder pump station.

The Model WH101F is a sewage-handling pump station and must be vented in accordance with local plumbing codes. Do not install the unit in locations classified as hazardous in accordance with the National Electric Code, ANSI/NFPA 70. All piping and electrical systems must be in compliance with applicable local and state codes.

1. REMOVE PACKING MATERIAL: Give the User Instructions to the homeowner. Hardware supplied with the unit, if required, will be used during installation.

2. TANK INSTALLATION: The tank is supplied with a standard 4-inch PVC DWV (4.5 inches inside dia.) inlet socket for connecting the incoming sewer drain. Do not drop, roll or lay the tank on its side. Doing so may damage the unit and void the warranty. Excavate a hole to a depth so the removable cover extends above the finished grade line; the grade should slope away from the unit. The diameter of the hole must be large enough to allow for appropriate bedding and backfill installation (Fig. 8). Place the unit on a 6-inch bed of gravel, naturally rounded aggregate, clean and free-flowing, with particle size not less than 1/8 inch or more than 3/4 inch in diameter. WH101F tanks that feature the Universal Wet Well do not require additional concrete anchor to prevent flotation in the presence of high ground water. WH101F tanks with a corrugated bottom section require alternative installation instructions that detail a concrete anchor for ballast. Contact your local E/One distributor for assistance.

3. INLET INSTALLATION: The type, size, and venting requirements of the inlet pipe must be in accordance with all national and local plumbing codes. The pump is a sewage-handling pump and requires ventilation for proper and safe operation. WH101 stations with the Universal Wet Well are available with a factory installed or field-installed grommet to accept a 4" DWV sewer inlet pipe. The grommet is self-sealing and does not require the use of additional sealant or adhesives. Other grommet sizes are available upon request. Verify that the grommet supplied with the station will accommodate the selected inlet piping.

Place a mark on the inlet pipe 3-1/2" in from the end that will enter the tank. A bevel should be ground or filed on the pipe end to aid in installation through the grommet. Clean the grommet and pipe surfaces to remove any debris. Apply a film of pipe soap or dish soap to the outside surface of the inlet pipe end and the inside of the grommet. Insert the pipe end into the grommet and push the inlet pipe into the tank until the 3-1/2" mark lines up with the grommet outside edge. Inspect the grommet flange on the outside of the tank. The flange should be flush against the tank wall and completely visible when the pipe and grommet are installed properly.

4. DISCHARGE: The use of 1-1/4" PVC pressure pipe Schedule 40 and polyethylene pipe SDR 11 or SIDR 7 are recommended. If polyethylene is chosen, use compression type fittings or electrofusion type fittings to provide a smooth inner passage. E/One requires that an E/One Uni-Lateral assembly (E/One part number NB0184PXX or NC0193GXX) or E/One Redundant Check Valve (E/One part number PC0051GXX) be installed in the pipe lateral outside the home between the pump discharge and the street main on all installations. Never use a ball-type valve as a check valve. E/One recommends the valve be installed as close to the public right-of-way as possible. Check local codes for applicable requirements.

CAUTION: *Redundant check valves on station laterals and anti-siphon/check valve assemblies on grinder pump cores should not be used as system isolation valves during line tests.*

5. BACKFILL REQUIREMENTS (Fig. 8): Proper backfill is essential to the long term reliability of any underground structure. Several methods of backfill are available to produce favorable results with different native soil conditions.

The recommended method of backfilling is to surround the unit to grade using Class I or Class II backfill material as defined in ASTM 2321. Class I, angular crushed stone, offers an added benefit in that it needs minimal compaction. Class II, naturally rounded stone, may require more compactive effort, or tamping, to achieve the proper density.

If the native soil condition consists of clean, compactible soil with less than 12% fines, free of ice,

rocks, roots, and organic material, it may be an acceptable backfill. Such soil must be compacted in lifts not to exceed one foot to reach a final Proctor Density between 85% and 90%. Non-compactable clays and silts are **not** suitable backfill for this or any underground structure such as inlet or discharge lines. If you are unsure of the consistency of the native soil, it is recommended that a geotechnical evaluation of the material be obtained before specifying backfill.

Another option is the use of a flowable fill (i.e., low slump concrete). This is particularly attractive when installing grinder pump stations in augured holes where tight clearances make it difficult to assure proper backfilling and compaction with dry materials. Flowable fills should not be dropped with more than 4 feet between the discharge nozzle and the bottom of the hole because this can cause separation of the constituent materials.

6. VENT INSTALLATION: The station must be vented to a height above the expected maximum flood level. Using 2 inch PVC pipe, solvent weld pipe into the PVC socket near the top of the tank. Route pipe above flood level, ensuring the pipe always angles down towards the station so no traps (low spots) are created. Place a gooseneck at the top of the vent to prevent rainwater and other foreign objects from entering the vent. Install factory-provided screen and nut to bottom of gooseneck. Failure to vent the station properly will prevent the station from venting and will void the warranty.

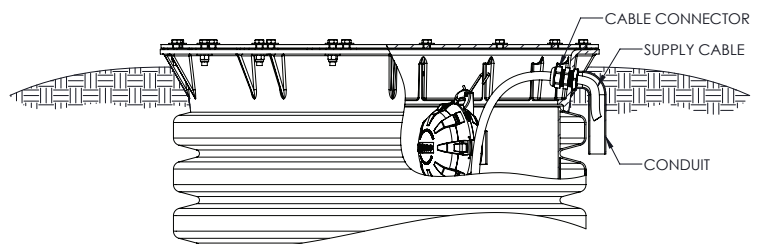
7. ELECTRICAL CONNECTION: (Supply Panel to E/One Alarm Panel) Before proceeding verify that the service voltage is the same as the motor voltage shown on the name plate. An alarm device is to be installed in a conspicuous location where it can be readily seen by the homeowner. An alarm device is required on every installation. There shall be no exceptions. Wiring of supply panel and alarm panel shall be per alarm panel wiring diagrams included inside the Alarm Panel enclosure and in accordance with local codes. A dedicated 30-amp breaker with ground and separate neutral is required before all standard alarm panels.

8. ELECTRICAL CONNECTION: (Pump to Panel) The cable provided for connection between the station and alarm panel is a six-conductor tray cable. E/One recommends the cable is installed in a suitable conduit that meets local and national code. However, the cable meets NEC requirements for direct burial as long as a minimum of 24 inches of cover is maintained and is acceptable to install without conduit in accordance with local and national codes. Those portions of cable that have less than 24 inches of cover must be contained within suitable conduit. This includes the vertical section that drops to a 24-inch depth at the station and the length exiting out of the ground at the alarm panel. *NOTE: Wiring must be installed per national and local codes. Conduit must enter panel from bottom and be sealed per NEC section 300.5 & 300.7.*

Plug and seal all electrical components (junction box, conduit, etc.) inside tank and control panel to ensure a watertight connection. Failure to seal all moisture may cause premature pump failure and void warranty.

8a. INSTALLING E/ONE SUPPLY CABLE WITH EQD:

a) Open the lid of the station, locate the cable and the feed-thru connector on the wall of the tank. Loosen the nut on the connector and pull the supply cable out through the connector until it hits the crimped-on stop feature on the cable, approximately 24" from the EQD. ****IMPORTANT: All but 24" of the cable must be pulled out of the station, and the portion of the cable between the EQD and the molded in cable breather should be secured in the hook provided to ensure that the pump functions properly. Do not leave the excess cable in the station.**



Power at the station must not drop below 10% of nameplate voltage. Maximum Recommended Length:

- 120 Volt 60' (min. voltage at pump — 108V)
- 240 Volt 150' (min. voltage at pump — 216V)

Figure 2

Supply Cable Configuration and Voltage Drop

b) Retighten the nut. This

connection must be tight or ground water will enter the station.

c) Feed the wire through the length of conduit (contractor provided) which will protect it until it is below the 24" burial depth.

d) Position the conduit vertically below the cable connector along the side of the station reaching down into the burial depth.

e) Run the cable underground, in a trench or tunnel, to the location of the E/One panel. If directly burying any portion of the cable, leave a 6- to 12-inch loop of cable at each end to allow for shifting and settling. Connections made at the panel are shown in the panel wiring diagram per the wiring diagram included inside the Alarm Panel enclosure.

Note: A continuous run of E/One cable should be used to ensure proper operation. Underground splices should not be used. Longer cables are available from E/One.

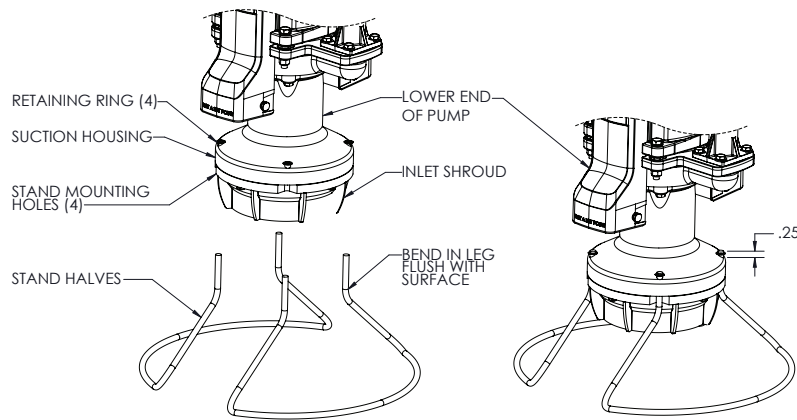


Figure 3
Grinder Pump Stand Installation

9. STAND ASSEMBLY (Fig. 3): Temporarily rest the grinder pump on its side. Using a block of wood or similar object, prop up the lower pump end to allow installation of the pump stand. Align the two legs of each pump stand half with two of the holes in the pump lower end. Push the stand legs into the pump lower end. Using a mallet, ensure that the stand legs bottom into the mounting holes. Repeat for the other stand half. Turn the pump upright on the installed stand. Install the four retaining rings (included with installation instructions; Fig. 3).

10. DEBRIS REMOVAL: Before the start-up test procedure, flush the incoming sewer line to force all miscellaneous debris into the tank. Next, remove all liquid and debris. Once the tank is clean, install the pump and test.

11. PUMP INSTALLATION: Install the flex discharge hose on the pump check valve (Fig. 4). Carefully lower the pump into the tank. Rotate discharge hose and male adapter to create a loop or coil. Slide male adapter into slide face receiver until it seats. Push down on slider valve assembly to open (Figs. 4 and 5). **Hang power cable, breather tubing with Equalizer, and lifting rope to prevent them from laying in sewage.** Keep between 18 inches and 24 inches of power supply cable in tank. The Equalizer should be hung as high as possible in the tank. Refer to the "Installation Layout" drawing in the front of this manual.

12. TEST PROCEDURE: When the system is complete and ready for use, the following steps should be taken for each pump in the station to verify proper pump and high-level alarm operation.

a) Make certain that all discharge shutoff valves are fully open (curb stops, slider valve, etc.). Valves must not be closed when the pump is operating.

b) Turn off the power at main power supply and panel. (Ignore all Trouble indications, LEDs and/or messages until the panel is reset at the end of this procedure.) Use an ohmmeter set at the 2-meg

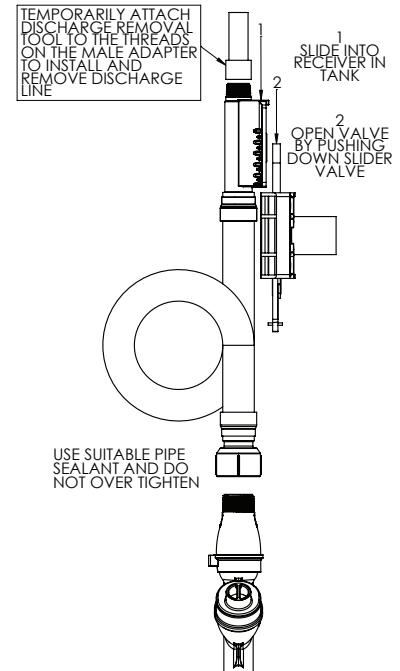


Figure 4
Discharge Hose Slide Face Adapter Details

scale. Check the continuity between the following leads from the pump (tests should be performed with the pump and alarm breakers inside the panel OFF):

- Green/yellow (ground) to red (L1)
- Green/yellow (ground) to black (L2 or neutral)
- Green/yellow (ground) to brown (manual run)
- Brown (manual run) to yellow (alarm power feed)

All of these tests must read an open circuit. A short at any of these test points will cause premature pump failure if not corrected.

- Turn on power at main power supply only.
- Check voltage from the main power supply. The voltage must be 240 VAC (or 120 VAC for a 120V model) within 10 percent. Note the voltage.
- Verify the panel wiring matches the wiring diagram located in the alarm panel enclosure. Then turn on the alarm power circuit breaker. Leave pump breaker off.
- Fill the tank with water until the alarm turns on. This should occur when the water level reaches the top of the pump approximately. Then turn off the water.
- Turn on the pump power circuit breaker. The pump should turn on within a few seconds.
- Take a current (amperage) reading off the black lead (L2 or neutral) to the pump. Note the amperage. The reading should be as follows

- Between 5 and 8 amps for 240VAC/60Hz service
- Between 10 and 16 amps for 120VAC/60Hz service
- For the acceptable current range of other service power types, reference the appropriate service manual. To view technical documentation, including service manuals visit eone.com/technician.

Higher amperage readings equal a higher discharge pressure. If the amperage is greater than the listed maximum check the discharge line for a blockage.

The alarm should turn off after a few minutes. Following that, it should be a few additional minutes before the pump turns off.

- Clear/Reset the alarm panel:
 - Sentry panels: Reset is not required.
 - Protect Panel: Turn pump and alarm breakers off and back on simultaneously.
 - Protect Plus Panels: Perform a “cold start” from the Initialize System menu. Any user settings that were previously chosen will not be reset.

If any Trouble or alarm conditions are indicated after the panel is reset, contact your local service provider.

- Close and lock the alarm panel.
- Inspect the lid gasket and fasten lid to tank.

Call your local E/One distributor if you experience any problems. Please have ready the unit serial number, voltage, amperage read during startup, type of application, and a description of the problem.

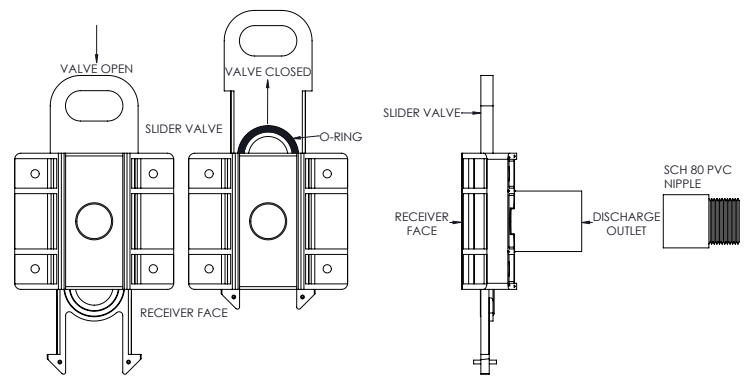


Figure 5
Discharge Slide Face Receiver Details

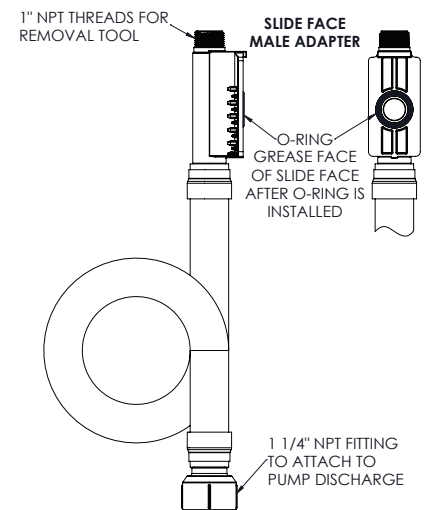


Figure 6
Slide Face Male Adapter Details

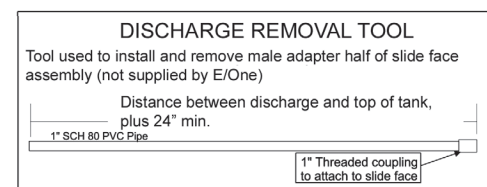
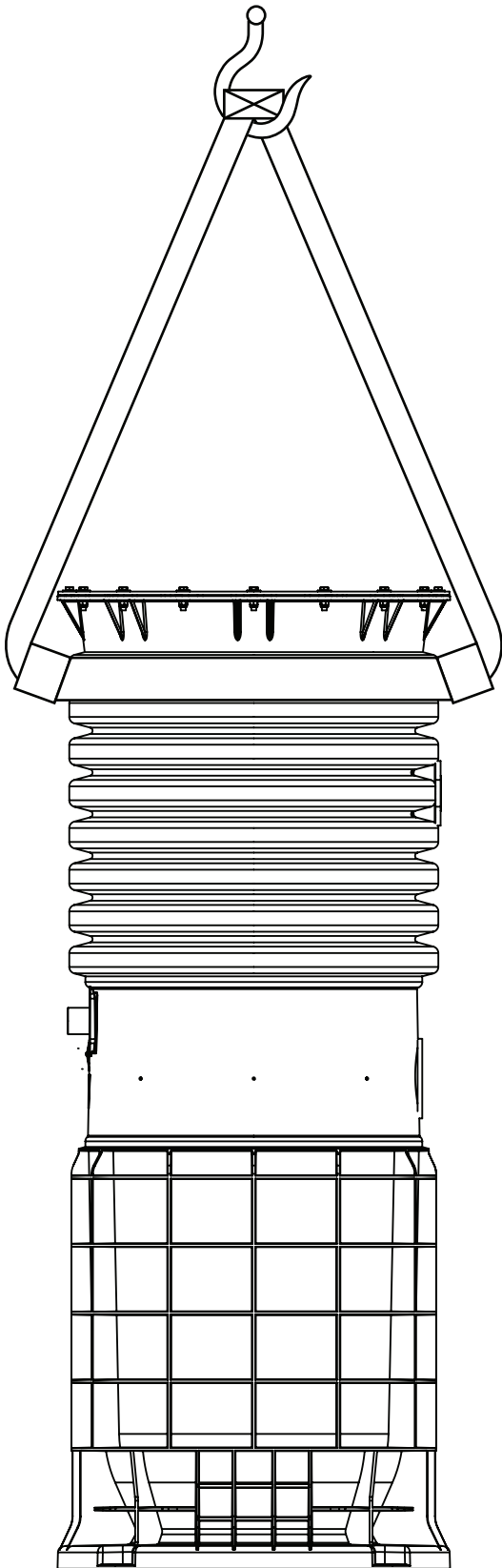


Figure 7
Discharge Removal Tool Details

Lifting Instructions

FAILURE TO FOLLOW THESE INSTRUCTIONS COMPLETELY WILL VOID THE WARRANTY.



Transporting unit to installation site: Always lift a unit from the bottom for the purpose of transportation. The station should be received attached to a pallet for this purpose. **Never roll a station or move it on its side.**

To install the basin into the excavation, lift it using 2 nylon straps wrapped around the accessway to make a sling (as shown here). Keep the station oriented vertically to avoid any damage. Only lift from the accessway to put the station in the hole, this is not recommended for moving the station any distance.

Grinder Pump Station Ballast Calculations and Assumption

Any buried vessel that is submerged or partially submerged in water will be acted on by an upward buoyant force that attempts to return the vessel to a non-submerged state. The magnitude of this buoyant force is equal to the volume of the vessel that is submerged multiplied by the density of water. To counteract this buoyant force, a suitable ballast is required.

Unique to the E/One models DH071 and WH101 (including the WH101F) incorporating an injection molded Universal Wet Well, the bottom flange of the tank is designed to capture a suitable column of backfilled soil to resist the upward buoyant force. The weight of the backfill soil along with the soil shear resistance of the soil can retain the tank in the ground – when properly installed in suitable soil conditions. See figure 8 for proper tank burial.

The amount of ballast force needed is equal to the weight it would take to counterbalance the buoyant force that is exerted on the station.

The total ballast force is a combination of the weight of the soil column acting on the bottom flange of the tank, the weight of the tank, and the soil shear resistance. The ballast force, the force resisting uplift of the station, must be greater than the buoyant force, the force pushing the station up, to have an acceptable installation.



FOR MORE INFORMATION, refer to E/One [Universal Wet Well Grinder Pump Station Ballast Calculations and Assumptions](#) (document NA0842P01) available on the WH101F product catalog page of the E/One website.

Scan the QR Code at Left or Visit:

<https://eone.com/sewer-systems/products/grinder-pump-systems/w/wh101f>

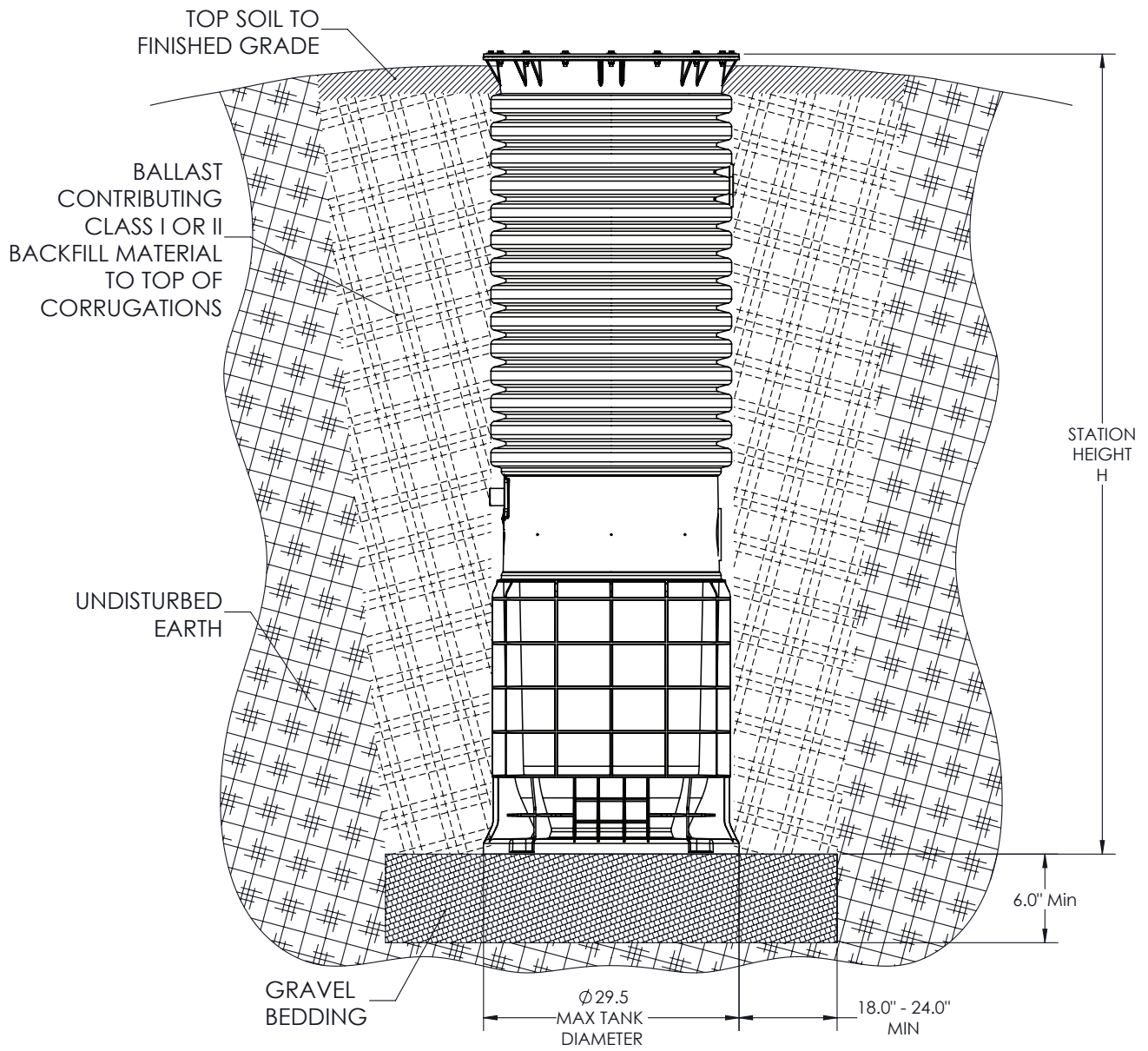


Figure 8



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NA0068P01 Rev E
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User Instructions for the Environment One Grinder Pump

General Information

Your home is served by a low pressure sewer system; the key element is an Environment One grinder pump. The tank collects all solid materials and wastewater from the house. The solid materials are then ground to a small size suitable for pumping as a slurry with the wastewater. The grinder pump generates sufficient pressure to pump this slurry from your home to the wastewater treatment receiving line and/or disposal plant.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference; and 2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Care and Use of your Grinder Pump

The Environment One grinder pump is capable of accepting and pumping a wide range of materials, and an extensive grind test is required in order to obtain NSF approval. However, regulatory agencies advise that the following items should not be introduced into any sewer, either directly or through a kitchen waste disposal unit:

Glass	Seafood shells	Diapers, socks, rags or cloth	Syringes
Cotton swabs	Personal/cleaning wipes & sponges	Disposable toothbrushes	Latex/vinyl items
Metal	Plastic objects (toys, utensils, etc.)	Kitty litter	Dental floss
Aquarium gravel	Sanitary napkins or tampons	Cigarette butts	

Caution: Kitchen garbage disposals do not keep grease/oil out of the plumbing system

In addition, you must **never** introduce into any sewer:

Explosives	Strong chemicals	Lubricating oil and/or grease
Flammable material	Gasoline	

Items introduced into the sewer system from your home can potentially impact the water environment. Proper disposal of household wastes such as window cleaners, unused/expired pharmaceuticals, paint thinners, fats, fruit labels, etc. is important. For more information, visit <http://www.wef.org>.

Periods of Disuse

If your home or building is left unoccupied for longer than a couple of weeks, perform the following procedure:

Purge the System. Run clean water into the unit until the pump activates. Immediately turn off the water and allow the grinder pump to run until it shuts off automatically.

Duplex Units. Special attention must be taken to ensure that both pumps turn on when clean water is added to the tank.

Caution: Do not disconnect power to the unit

Power Failure

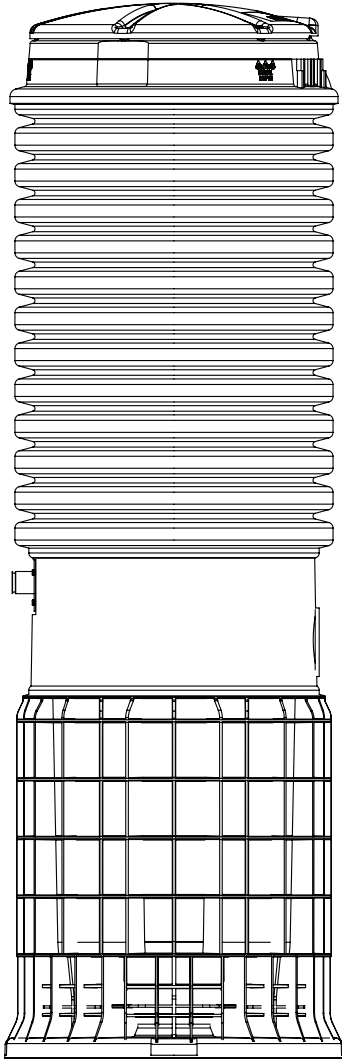
Your grinder pump cannot dispose of wastewater without electrical power. If electrical power service is interrupted, keep water usage to a minimum.

Pump Failure Alarm

Your Environment One grinder pump has been manufactured to produce an alarm signal (120 volt) in the event of a high water level in the basin. The installer must see that the alarm signal provided is connected to an audible and/or visual alarm in such a manner as to provide adequate warning to the user that service is required. During the interim prior to the arrival of an authorized service technician, water usage must be limited to the reserve capacity of the tank.

For service, please call your local distributor:





Limited Warranty

For E/One Extreme D-Series,
W-Series & Upgrade

Environment One Corporation offers a limited warranty that guarantees its product to be free from defects in material and factory workmanship for a period of two years from the date of installation, or 27 months from the date of shipment, whichever occurs first, provided the product is properly installed, serviced and operated under normal conditions and according to manufacturer's instructions. Repair or parts replacement required as a result of such defect will be made free of charge during this period upon return of the defective parts or equipment to the manufacturer or its nearest authorized service center.

Model Number: _____

Serial Number: _____

Installation Date: _____



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