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Information Package for Installation Or Modification of Grinder Pump Stations

Please be aware that all new grinder pump installations or modifications to existing grinder pumps must meet the attached standard and be pre-approved by the Oakland County Drain Commissioner's (OCDC) office.

1. Building Plan Requirements

The following items will need to be addressed on your building plans:

- a) Station location and inlet invert must be clearly shown.
- b) At time of review, it will be determined by OCDC whether an Environment/One or Barnes pump will be used. See Attachment A for typical installation instructions for E/One and Attachment B for Barnes pumps.
- c) Stations in excess of 10 feet in depth may require special installation considerations.
- d) Stations must be greater than 20 feet from the forcemain.
- e) Homes with more than 20 fixture units will require more than 1 grinder pump; Attachment C.
 - i. 21-35 fixture units: Duplex grinder stations (2 pumps).
 - ii. >35 fixture units: Calculations that demonstrate that the adequacy of the proposed grinder station(s) must be shown on the plans.

2. Operating Guidelines

To ensure that your grinder pump and station operate properly, you must be prudent about the materials that go into the station. Attachment D contains important guidelines for operating your pump.

3. Additional Materials

Attachment E contains the following information for your use: Village of Franklin Inspection/Permit Procedures, OCDC Pressure Sewer Information sheet, Village of Franklin Building Application, Building Checklist and Required Inspections list.

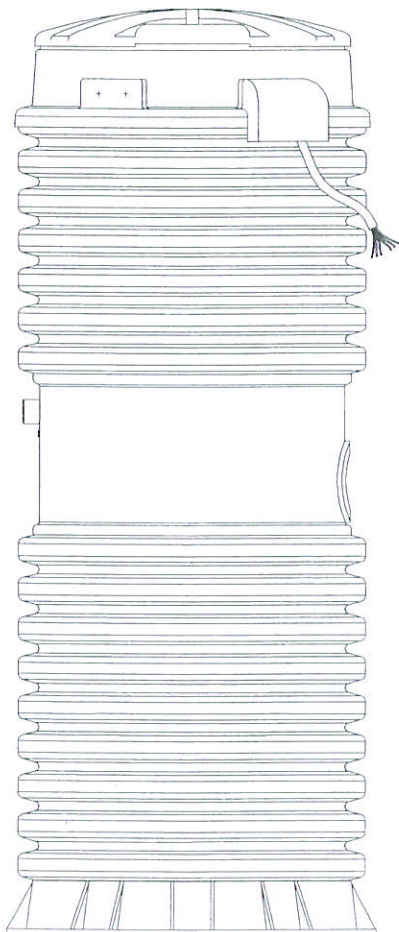
If you have questions about this information package or any other aspect of your grinder pump installation, please feel free to call Mike Walsh at 248-452-2026.



ATTACHMENT A

Environment/One Simplex Grinder Pump Typical Installation Instructions

Note: The enclosed specifications are for simplex grinder units. Please refer to manufacturer's installation instructions for duplex grinder units. Electrical requirements vary across the Environment/One product line.



DH071 & DR071 Typical Installation Instructions & Warranty Information

**Simplex Station
70-Gal. Capacity**

Environment One Grinder Pump Feature Identification

1. **GRINDER PUMP BASIN** – High density polyethylene (HDPE).
2. **ACCESSWAY COVER** – FRP
3. **ELECTRICAL QUICK DISCONNECT (EQD)** – Cable from pump core terminates here.
4. **POWER AND ALARM CABLE** – Circuits to be installed in accordance with local codes.
5. **ALARM PANEL** – NEMA 4X enclosure. Equipped with circuit breakers. 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 very conspicuous locations.
7. **INLET** – EPDM grommet (4.5" ID). For 4.5" OD DWV pipe.
8. **WET WELL VENT** – 2.0" tank vent, supplied by factory in units with accessways.
9. **GRAVITY SERVICE LINE** – 4" DWV, (4.5" 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. Supplied by others.
10. **DISCHARGE VALVE** – 1-1/4" Female pipe thread.
11. **DISCHARGE LINE** – 1-1/4" Nominal pipe size. Supplied by others.
12. **CONCRETE ANCHOR** – See Ballast Calculations for specific weight for station height. Supplied by others.
13. **BEDDING MATERIAL** – 6" minimum depth, round aggregate, (gravel). Supplied by others.
14. **FINISHED GRADE** – Grade line to be 1" to 4" below removable lid and slope away from the station.
15. **VENT** – Indoor installation. See section 6, Venting, on page 6.
16. **VALVE** – Full ported ball valve. Recommended option; for use during service operations. Supplied by others.
17. **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.
18. **UNION** – 1-1/4" or compression type coupling. Supplied by others. (Do not use rubber sleeve and hose clamp type coupling.)
19. **VALVE** – Ball valve, must provide a full-ported 1-1/4" round passage when open. Supplied by others.
20. **REBAR** – Required to lift tank after ballast (concrete anchor) has been attached, 4 places, evenly spaced around tank.

Figure 1a

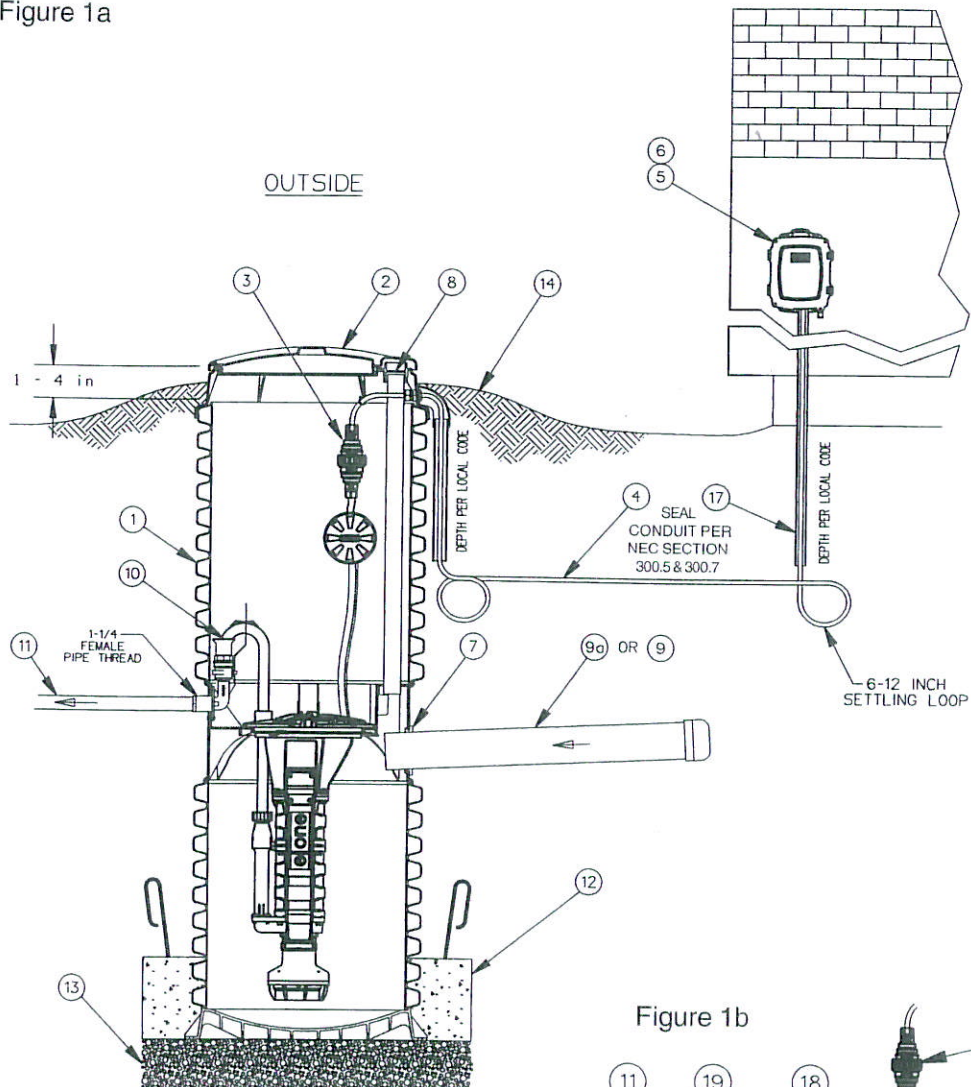
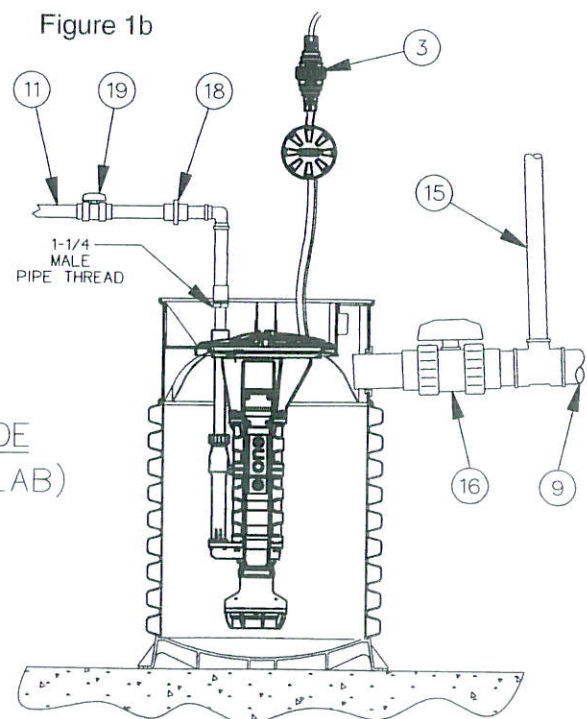


Figure 1b



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

INSIDE
(ON-SLAB)

The Environment One grinder pump is a well engineered, reliable and proven product: proper installation will assure years of trouble-free service. The following instructions define the recommended procedure for installing the grinder pump station. These instructions cover the installation of units with and without accessways.

This is a sewage handling pump and must be vented in accordance with local plumbing codes. This pump is not to be installed in locations classified as hazardous in accordance with 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: The User Instructions must be given to the home owner. Hardware supplied with the unit, if any, will be used at installation.

2. TANK INSTALLATION:

The tank is supplied with a standard grommet for connecting the 4" DWV (4.50" outside Dia.) incoming sewer drain. Other inlet types and sizes are optional (caution 4" DR-35 pipe is of smaller diameter and won't create a water tight joint with the standard grommet). Please confirm that you have the correct inlet before continuing. If a concrete ballast is attached to the tank lift only by the lifting eyes, (rebar) embedded in the concrete. **Do not drop, roll, or lay tank on its side. This will damage the unit and void the warranty.**

If the tank has no accessway (Fig. 1b) (Indoor

Installation): The pump may be installed on or in the basement floor (see Fig. 1b). If the tank is to be set on the floor it must be a flat and level bearing surface. If the tank is to go into the basement floor, it must be anchored to prevent unit from floating due to high ground water (see Chart 1, page 12 for weight).

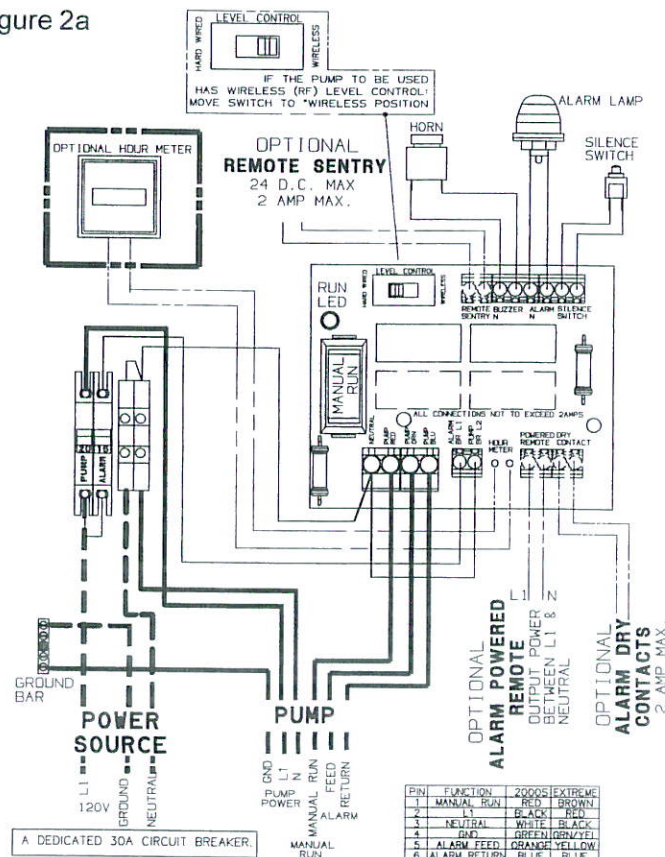
If the tank is to go in the floor: A hole of the correct width and depth should be excavated. The tank must be placed on a 6" bed of gravel made up of naturally rounded aggregate, clean and free flowing, with particle size not less than 1/8" or more than 3/4" in diameter. The wet well should be leveled and filled with water prior to pouring the concrete to prevent

the tank from shifting. If it is necessary to pour the concrete to a level above the inlet, the inlet must be sleeved with an 8" tube before pouring.

There must be a minimum clearance of three feet directly above the tank to allow for removal of the pump core.

If the tank has an accessway (Fig. 1a): Excavate a hole to a depth, so that 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 a concrete anchor. Place the unit on a bed of gravel, naturally rounded aggregate, clean and free flowing, with particles not less than 1/8" or more than 3/4" in

Figure 2a



120 VOLT WIRING

diameter. The concrete anchor is not optional. (See Chart 1 on page 12 for specific requirements for your unit)

The unit should be leveled and the wet well filled with water to the bottom of the inlet to help prevent the unit from shifting while the concrete is being poured. The concrete must be vibrated to ensure there are no voids.

If it is necessary to pour the concrete to a higher level than the inlet, the inlet must be sleeved with an 8" tube before pouring.

If your unit is a model taller than 93" it may be shipped in two sections, requiring field assembly. See Field Joint Assembly Instructions on page 8 for additional information.

3. INLET PIPE

INSTALLATION: Mark the inlet Pipe 3 1/2" from the end to be inserted. Inlet pipe should be chamfered and lubricated with a soap solution. Lubricate the inlet grommet with soap solution as well. Insert the pipe into the grommet up to the 3 1/2" mark. Inspect to ensure the grommet has remained intact and in place.

4. DISCHARGE: The use of 1-1/4" PVC pressure pipe Schedule 40 and polyethylene pipe SDR 11 or SDR 7 are recommended. If polyethylene is chosen use compression type fittings to provide a smooth inner passage. It is recommended that a Redundant Check Valve Assembly (E/One part no.

PC0051GXX) be installed between the pump discharge and the street main on all installations. Never use a ball type valve as a check valve. We recommend 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.

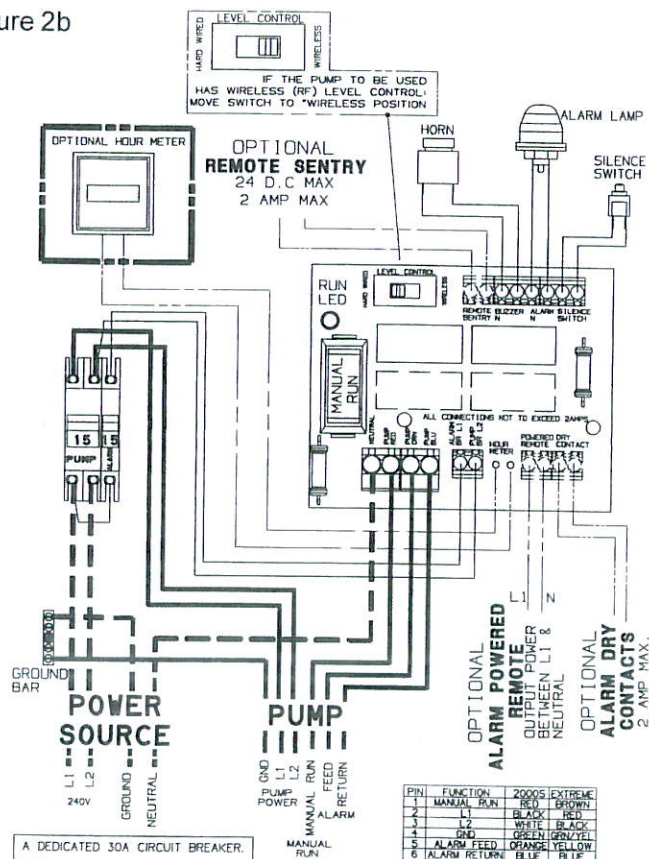
If the tank has no accessway: (Indoor Installation) The discharge connection is a 1-1/4" male NPT. The discharge piping must incorporate a shut-off valve and a union with a minimum pressure rating of 160 PSI, or a suitable piping disconnect to allow for removal of the pump core. The valve should be of the type that provides a full-ported passage (i.e. a ball or gate valve). A standard 1-1/4" union or a compression type coupling should be used as a disconnect joint.

If the tank has an accessway: There is a ball valve and a quick disconnect pre-installed in the accessway. There is a 1-1/4" female NPT discharge connection on the outside of the tank 41" above the bottom of the tank.

5. BACKFILL

REQUIREMENTS: 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.

Figure 2b



240 VOLT WIRING

The most highly 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 1A and Class 1B are recommended where frost heave is a concern, Class 1B is a better choice when the native soil is sand or if a high, fluctuating water table is expected. 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 consist 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 of 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 four feet between the discharge

nozzle and the bottom of the hole since this can cause separation of the constituent materials.

6. VENTING: The unit must be properly vented to assure correct operation of the pump. If you have an indoor unit it can be vented through the 2" port supplied at the top of the wet well or through the incoming sewer line with a 2" pipe (the vent must be within four feet of the grinder pump, and before the first change of direction fitting).

The outdoor units are supplied with a vent pipe from the wet well to the top of the accessway.

Failure to *properly vent* the tank will result in faulty operation and will void the warranty.

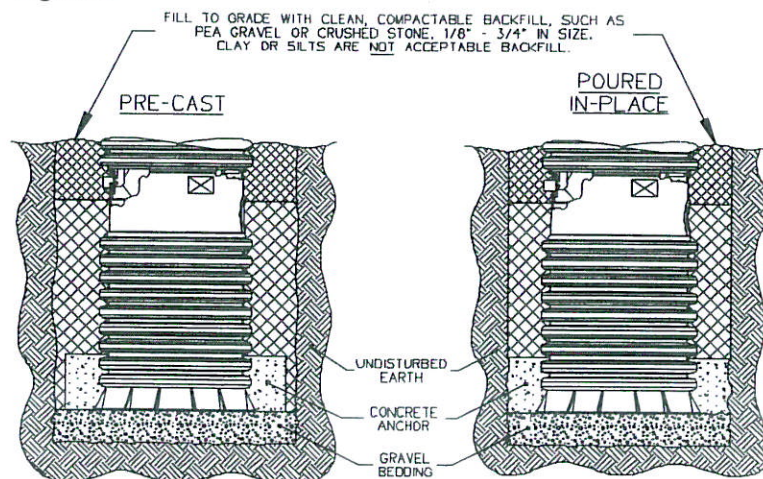
7. ELECTRICAL CONNECTION: (Supply panel to E/One Alarm Panel) Before proceeding verify that the service voltage is the same as the motor voltage shown on

the name plate. An alarm device is to be installed in a conspicuous location where it can be readily seen by the home owner. An alarm device is required on every installation. There shall be no exceptions.

Wiring of supply panel and alarm panel shall be per figures 2a and 2b, Alarm Panel wiring diagrams and local codes.

8. ELECTRICAL CONNECTION: (Pump to Panel) (Fig. 4) The grinder pump station is provided with a cable for connection between the station and the alarm panel called the supply cable. The supply cable is shipped inside the station with a small portion fed through the cable connector mounted on the wall of the fiberglass shroud. The supply cable, a six conductor tray cable, meets NEC requirements for direct burial as long as a minimum of 24" burial depth is maintained. Those portions of the cable which have less than 24" of

Figure 3



TYPICAL IN-GROUND SECTION VIEW

cover must be contained in suitable conduit. This includes the vertical portion dropping to a 24" depth at the station and the length rising out of the ground at the control 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.

8a. Procedure for installing E/One supply cable:

1) Open the lid of the station. Locate the cable and the feed-thru connector on the wall of the shroud. If the station has a field joint and was delivered in two pieces be sure the 2 halves of the EQD are securely assembled together. 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.**

2) Retighten the nut. This connection must be tight or ground water will enter the station.

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

4) Position the conduit vertically below the cable connector along side of the station reaching down into the burial depth. Attach the small fiberglass guard (protective shroud) provided with the station to protect the exposed cable where it enters the station. Four self tapping screws are provided.

5) Run the cable underground, in a trench or tunnel, to the location of the

alarm panel. Leave a 6-12 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 (Fig. 2a and 2b).

9. DEBRIS REMOVAL: Prior to start-up test procedure, the core must be removed and the incoming sewer line flushed to force all miscellaneous debris into the tank. Next, all liquid and debris must be removed. Once tank is clean, re-install the pump and proceed with the test.

10. TEST PROCEDURE:

When the system is complete and ready for use, the following steps should be taken to verify proper installation and operation:

a) Make sure that the discharge shutoff valve is fully open. This valve must not be closed when the pump is operating. In some installations there may be a valve, or valves, at the street main that must also be open.

For model DH071:

b) Turn on the alarm power circuit breaker.

c) Fill tank with water until the alarm turns on. Shut off water. Proceed to Step D.

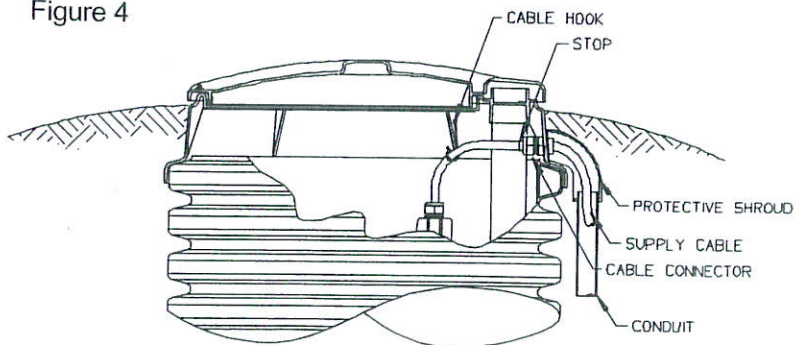
For model DR071:

b) Fill tank with 50 gallons of water.

c) Turn on pump power and alarm circuit breakers; the pump and alarms should turn on immediately. Monitor the pump to ensure the alarms and pump turn off. Proceed to Step D.

d) Turn ON pump power circuit breaker; the pump should turn on immediately. Within one minute the alarm will turn off. Within three minutes the pump will turn off.

Figure 4



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)

Consult factory for longer lengths

TYPICAL SUPPLY CABLE CONFIGURATION

Field Joint Assembly Instructions

IT IS EXTREMELY IMPORTANT THAT THE JOINT IS SEALED PROPERLY BEFORE BACKFILLING. EXCAVATING A UNIT FOR REPAIR IS VERY EXPENSIVE AND CAN BE EASILY AVOIDED BY USING PROPER CAUTION DURING THE FOLLOWING PROCEDURE.

Parts included in Field Joint Kit: Identify all parts before proceeding with installation.

- (16) 3/8-16 X 1-1/2 long screws
- (16) 3/8-16 Elastic Stop Nuts
- (32) Flat Washers
- (1) Length Sealant (Sika) Tape
- (1) Hole Punch
- (1) Vent Pipe Extension

1) Carefully clean and dry both accessway flanges with solvent. **IMPORTANT: Sealing surfaces must be dry to ensure the sealant adheres correctly.**

2) Starting at one hole of tank flange, apply two layers of Sika Tape around the inside half of the flange. Align the outside edge of the tape with the bolt circle. Move to the adjacent hole and apply one layer of Sika Tape around the outside of the flange. Align inside of tape with the bolt circle. Remove the backing paper as you lay the adhesive on the flange. **Do not stretch Sika tape during application, it may result in a leak.** The tape should overlap at the end by approximately 1/2 inch, as shown in Fig. 5a. If a section of Sika Tape is misapplied, the bad section may be cut out and replaced. Cut away the poorly laid portion cleanly with a knife and be sure to overlap the tape at each end about 1/2 inch.

3) Using the tool provided, punch a hole through the tape at each of the 16 existing bolt holes in the flange. **Be careful to keep the exposed sealant**

clean and dry.

4) Insert three of the sixteen 3/8-16 x 1-1/2" long bolts, with a flat washer, into the flange attached to the upper part of the accessway. These will act as guides while aligning the bolt pattern of the two flanges.

5) Support the upper accessway section a few inches over the tank with the green stripes on each lined up. Once aligned, lower the upper section onto the mating flange using the three bolts to guide it to the proper position. See Fig. 5b.

6) Insert the remaining 13 bolts with flat washers into the flanges. Place a flat washer and elastic stop nut on the end of each bolt, turning the nut on just enough to hold the washer in place.

7) Tighten up the bolts until the sealant begins to squeeze out from between the flanges. To ensure a consistent, sturdy seal tighten them in the following sequence: 1, 9; 5, 13; 3, 11; 7, 15; 2, 10; 4, 12; 6, 14; 8, 16. Always be sure to tighten

one bolt and then the bolt at the position 180° from it, see figure 1 for position numbers.

8) Using the same sequence as in step 7 tighten each bolt to 60 in-lbs. Visually inspect the joint, each bolt and each nut should have a flat washer between it and the flange, and a uniform amount of sealant should be protruding from the seam along the entire perimeter.

In the event that there are any voids in the sealant, the joint may leak. Take corrective actions if necessary and be sure that the joint is leak free before continuing.

9) Install the vent pipe extension piece which was shipped inside the upper piece of the accessway. Push the extension pipe into the bell mouth fitting on the pipe installed in the wet well tank. Be sure the pipe is seated correctly. Slide the top end of the extension pipe into the receptacle on the bottom of the lid.

Figure 5a

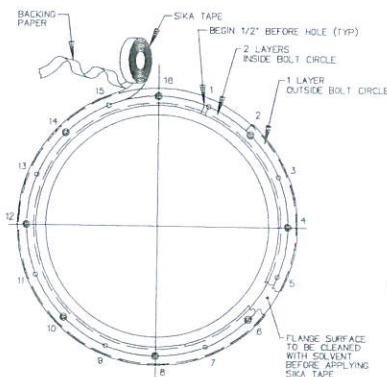
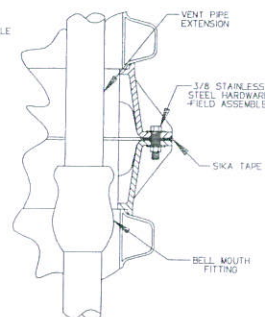


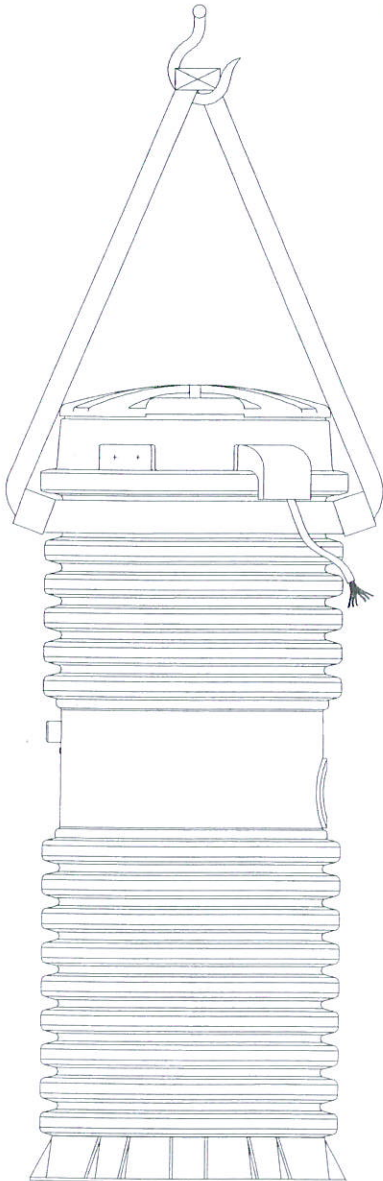
Figure 5b



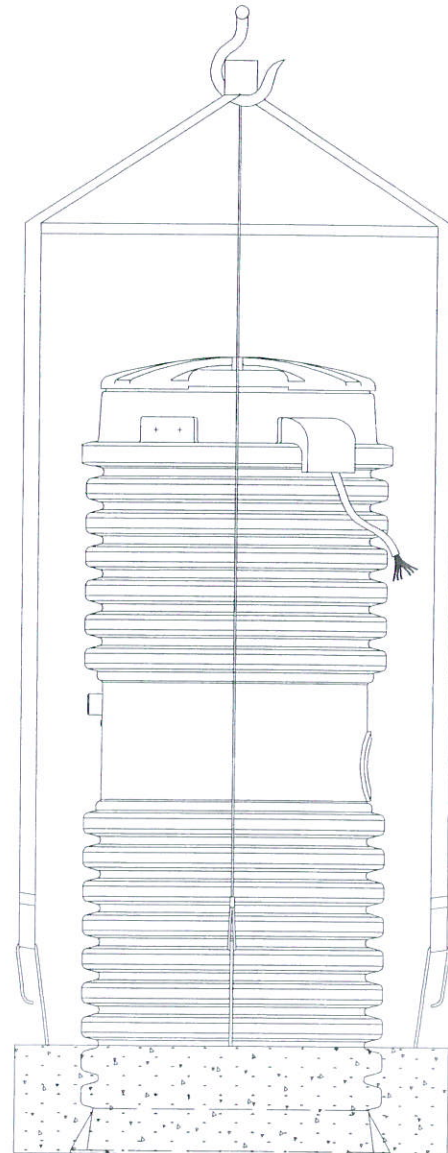
Lifting Instructions

FAILURE TO FOLLOW THESE INSTRUCTIONS COMPLETELY WILL VOID THE WARRANTY.

1. 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.**



2. No Ballast (to be poured in place): If the concrete anchor is to be poured while the station is in place lift the unit using 2 nylon straps wrapped around the accessway making a sling, as shown below. Keep station oriented vertically to avoid any damage. Only lift from the accessway to put unit in hole, not for moving any distance.



3. Precast Ballast: Never lift a station that has a ballast attached by any means except the rebar. The weight of the concrete will damage the station if you attempt to lift it from any part of the station.

E/One Grinder Pump Station Ballast Calculations

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. On most in-ground installations a ballast, or concrete anchor, of proper volume and weight is required to resist the buoyant force. The amount of ballast required for a given set of installation site conditions may be calculated as follows.

Installation Site Assumptions

1. Low water table – under worst case ground water or flood conditions only the wet well portions of the E/One grinder pump stations will be submerged.
2. Backfill materials are per these installation instructions.
3. The consulting engineer should perform a soil test to determine if the assumptions that have been made are valid for the specific installation site. If the site conditions differ from these assumptions, then the consulting engineer must revise the calculations as shown in this document.

Physical Constants

1. Density of Water = 62.4 lb/cu ft
2. Density of Concrete = 150 lb/cu ft (in air)
3. Density of Concrete = 87.6 lb/cu ft (in water)
4. Density of Dry Compacted Backfill = 110 lb/cu ft
5. Density of Saturated Backfill = 70 lb/cu ft

Procedure

- A. Determine The Buoyant Force Exerted On The Station
 1. Determine the buoyant force that acts on the grinder pump station when the wet well is submerged in water.
 2. Subtract the weight of the station from the buoyant force due to the submerged wet well to determine the net buoyant force acting on the station.
- B. Determine The Ballast Force Exerted On The Station
 1. Determine the ballast force applied to the station from the concrete, saturated soil and dry soil.
- C. Subtract The Ballast Force From the Buoyant Force.
 1. Note – if the installation site conditions are different from those listed above, the consulting engineer should recalculate the concrete ballast.

Ballast Calculations

The following calculations are to outline the areas used to determine the volumes of the different materials for the ballast. All sections referred to in the calculations are marked on the accompanying drawing.

E/One Grinder Pump Station Ballast Calculations

Sample Calculation

Volume of Station Wet Well = 13.2 cu ft

Station Weight = 270 lb

Station Height = 91.8 in

A. Buoyant Force

1. The buoyant force acting on the submerged DH071-93 is equal to the weight of the displaced water for the section of the tank that is submerged (wet well).

$$\begin{aligned}F_{\text{buoyant}} &= (\text{density of water})(\text{volume of DH071-93 wet well}) \\&= (62.4 \text{ lb/cu. ft})(13.2 \text{ cu. ft}) \\&= 823.7 \text{ lb}\end{aligned}$$

2. The net buoyant force acting on the station ($F_{\text{net-buoyant}}$) is equal to the buoyant force (F_{buoyant}) minus the weight of the grinder pump station.

$$\begin{aligned}F_{\text{net-buoyant}} &= 823.7 \text{ lb} - 270 \text{ lb} \\&= 553.7 \text{ lb}\end{aligned}$$

B. Ballast Force

1. Determine the volume of concrete (if applicable) & soil (saturated and dry)

Section I: Used To Determine The Volume Of Concrete

$$\begin{aligned}\text{Area} &= (\text{Height})(\text{Width}) \\&= (10'')[(36'' - 26.4'')/2] \\&= 48\text{in}^2\end{aligned}$$

$$\begin{aligned}\text{Volume} &= (\text{Area})(\text{Average Perimeter of the cylinder}) \\&= (48\text{in}^2)(\pi)((36'' + 26.4'')/2) \\&= (4704.8 \text{ in}^3)(1/1728 \text{ ft}^3/\text{in}^3) \\&= 2.7 \text{ ft}^3\end{aligned}$$

Section II: Used To Determine The Volume Of Saturated Soil

$$\begin{aligned}\text{Area} &= (\text{Height})(\text{Width}) \\&= (28.5'')[(36'' - 26.4'')/2] \\&= 136.8\text{in}^2\end{aligned}$$

$$\begin{aligned}\text{Volume} &= (\text{Area})(\text{Average Perimeter of the cylinder}) \\&= (136.8\text{in}^2)(\pi)((36'' + 26.4'')/2) \\&= (13408.8\text{in}^3)(1/1728 \text{ ft}^3/\text{in}^3) \\&= 7.8 \text{ ft}^3\end{aligned}$$

E/One Grinder Pump Station Ballast Calculations

Sample Calculation, Continued

Section III: Used To Determine The Volume Of Dry Soil

$$\begin{aligned}\text{Area} &= (\text{Height})(\text{Width}) \\ &= (50.3\text{in})[(36\text{in} - 26.4\text{in})/2] \\ &= 241.4\text{in}^2\end{aligned}$$

$$\begin{aligned}\text{Volume} &= (\text{Area})(\text{Average Perimeter of the cylinder}) \\ &= (241.4\text{in}^2)(\pi)((36'' + 26.4'')/2) \\ &= (23661.5\text{ in}^3)(1/1728\text{ ft}^3/\text{in}^3) \\ &= 13.7\text{ ft}^3\end{aligned}$$

2. Determine the combined ballast

Ballast (total) = Ballast (concrete) + Ballast (saturated soil) + Ballast (dry soil)

$$\begin{aligned}&= (V_{\text{concrete}})(\text{density concrete in water}) + (V_{\text{soil}})(\text{density wet soil}) + (V_{\text{soil}})(\text{density dry soil}) \\ &= (2.7\text{ cu ft})(87.6\text{ lb/ft}^3) + (7.8\text{ cu ft})(70\text{ lb/ft}^3) + (13.7\text{ cu ft})(110\text{ lb/ft}^3) \\ &= 236.5\text{ lb} + 546.0\text{ lb} + 1507.0\text{ lb} \\ &= 2289.5\text{ lb}\end{aligned}$$

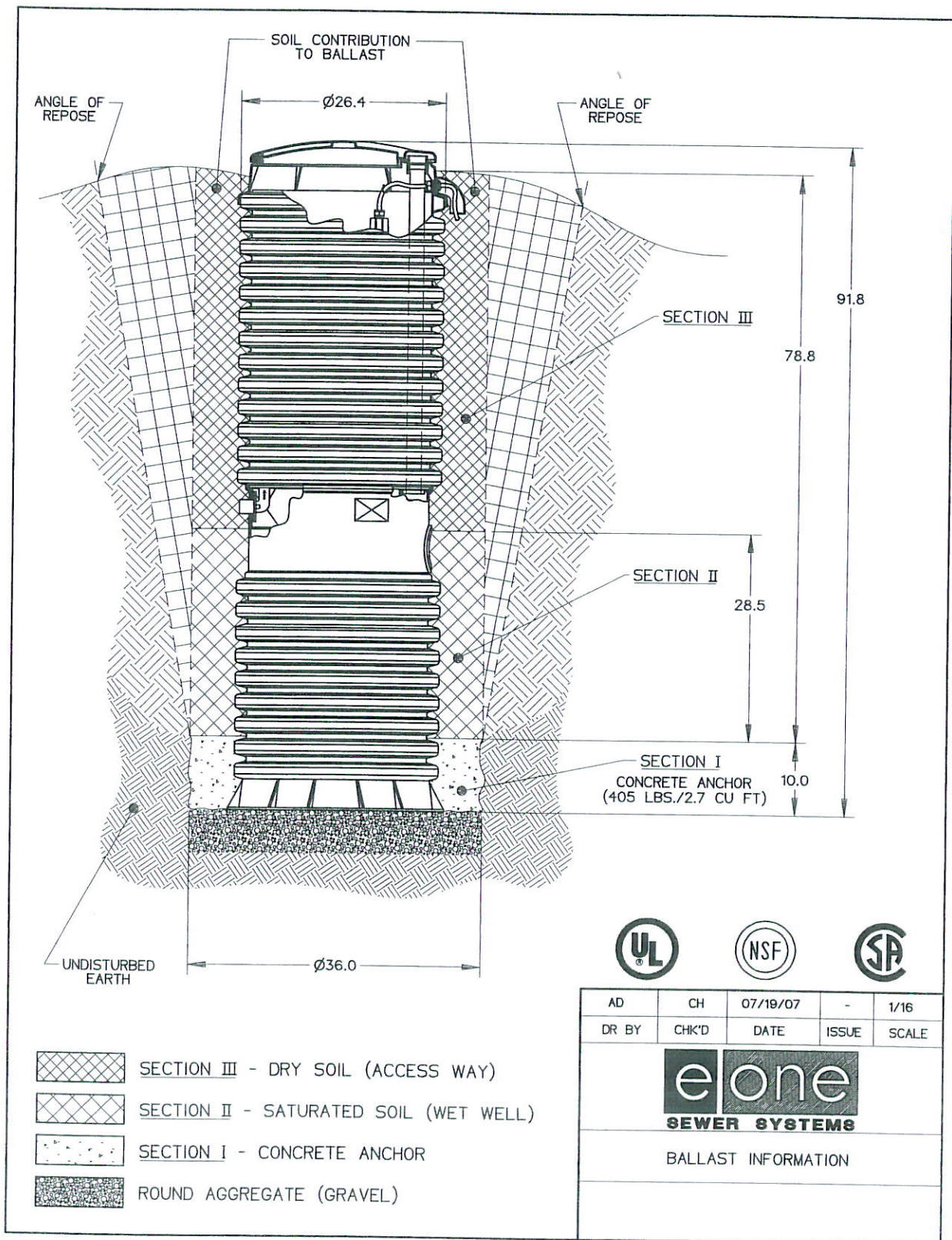
C. Subtract the buoyant force from the ballast force to determine the final condition

$$\begin{aligned}\text{Final Condition} &= \text{Ballast Force} - \text{Buoyant Force} \\ &= 2289.5\text{ lb} - 553.7\text{ lb} \\ &= 1735.8\text{ lb}\end{aligned}$$

The approach outlined above may be used to calculate the ballast requirements listed below.

Chart 1

Station Height (in)	Wetwell Volume (cu ft)	FNet-Buoyant (lb)	Station Weight (lb)	Fballast (lb)	Volume Concrete (cu ft)	Weight Concrete in Air (lb)
61 inches	13.2	582.7	241	1332.5	2.7	405
74 inches	13.2	569.7	254	1717.5	2.7	405
93 inches	13.2	553.7	270	2289.5	2.7	405
124 inches	13.2	543.7	280	3213.5	2.7	405
129 inches	13.2	523.7	300	3367.5	2.7	405
158 inches	13.2	498.7	325	4236.5	2.7	405
160 inches	13.2	494.7	329	4291.5	2.7	405



Adjusting the Height of the Grinder Pump Station

REMOVE EXISTING COVER ASSEMBLY (Fig. 6)

If your existing station has a welded-on cover shroud you will need the appropriate replacement cover kit (see Table 2, page 15).

1. Turn off all power to the grinder pump station.
2. Remove the tank lid and the electrical shroud.
3. Unplug the electrical quick disconnect (EQD) and remove the EQD from the supply cable. *Note: DO NOT CUT CABLE.* Loosen liquid tight cable connector and pull the supply cable out through the connector on the side of tank.
4. Tape the pump breather cable to the vent pipe in the tank.

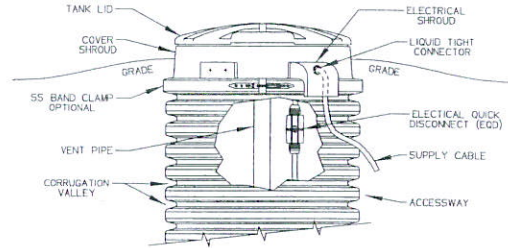


Figure 6

5. Remove the soil around the tank, exposing three of the tank corrugations below grade. Use caution not to damage buried cable.
6. Remove existing cover shroud.

6a. Welded-on shroud (standard) - Using a hand saw, cut the tank in the valley between the two corrugations at grade, discard existing welded-on shroud and attached corrugations (*shroud is not to be reused*). *Caution: Be careful not to cut either the vent pipe or the pump breather cable.*

6b. Clamped-on shroud - Remove band clamp and cover shroud.

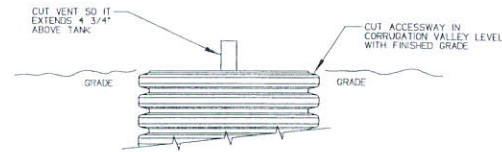


Figure 7

REDUCING STATION HEIGHT (Fig. 7)

7. Using a hand saw, cut the tank in the valley between the two corrugations at grade.
 8. Cut vent pipe 4 3/4" above the cut made on the tank.
- Proceed to step 16.

INCREASING STATION HEIGHT (Fig. 8 and Fig. 9)

9. Remove the soil around the tank exposing it 18" deeper than the extension being installed. For example, if you have a 2' extension (not including the coupler) you must dig down 3'6" minimum from grade; if you have a 4' extension (not including the coupler) you must dig down 5'6" minimum from grade. Use caution not to damage buried cable.

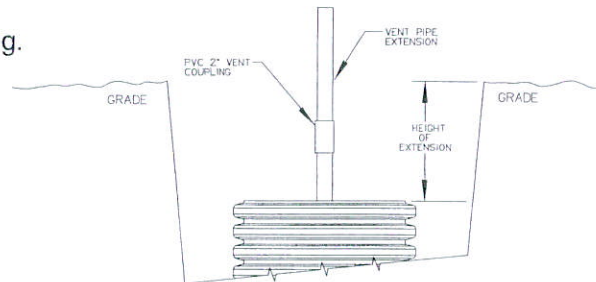


Figure 8

10. Measure from grade down 2' (for a 2' extension) or 4' (for a 4' extension) and mark accessway. Using a hand saw, cut the tank in the valley between the two corrugations that are closest to your mark. *Note: Make sure the welded-on shroud of the extension will be at grade level. Be sure you are not cutting into the wet well and you must have two corrugations below your cut, if there are less than two corrugations, this extension kit can not be used.*

Caution: Be careful not to cut either the vent pipe or the pump breather cable.

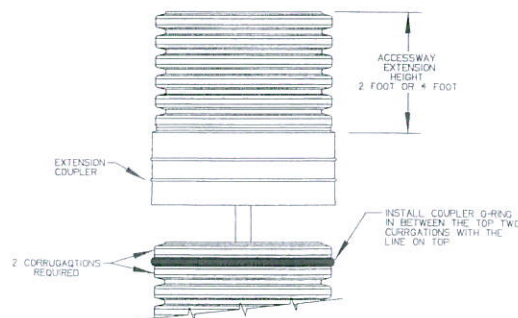


Figure 9

11. Attach the vent pipe extension with the 2" vent coupling, bringing the vent well above grade.
12. Clean all dirt and debris from top four corrugations on tank. Install the 24" coupler O-ring on the tank between the top two corrugations with the white or yellow line facing out and on top.
13. Lube extension coupler and coupler O-ring with pipe lube or dish soap.
14. Manually press coupling evenly over lubricated O-ring. If additional force is needed, place a plywood cover over the accessway and apply gentle mechanical pressure to the coupler. *Note: Care must be used when pushing down on the coupler. Excessive force or impact may result in damage and leakage.*
15. Frequent visual inspections during installation must be performed to determine when the tank has fully engaged the coupler.

INSTALL REPLACEMENT COVER ASSEMBLY (Fig. 10)

16. Clean top corrugation on accessway extension and mating surface of replacement shroud with acetone.
17. Liberally apply the silicone sealer provided to the under side of the replacement shroud where it will come in contact with the accessway extension.
18. Lube wet well vent grommet and vent pipe extension with pipe lube, non-grit hand cleaner or dish soap and slide vent pipe through grommet until tank shroud seats to accessway.
19. Place SS band clamp around top corrugation and the replacement shroud. Tap with a mallet around clamp to help seat the clamp. Torque stud assembly on band clamp to a maximum 125 inlb.
20. Reinstall the supply cable, EQD**, tank lid and electrical shroud and tighten cable connector. (**See "EQD wiring order," Table 1)
21. Follow start-up procedures to ensure proper pump operation (you will find the start-up instructions in our service manual or the station installation instruction guide).

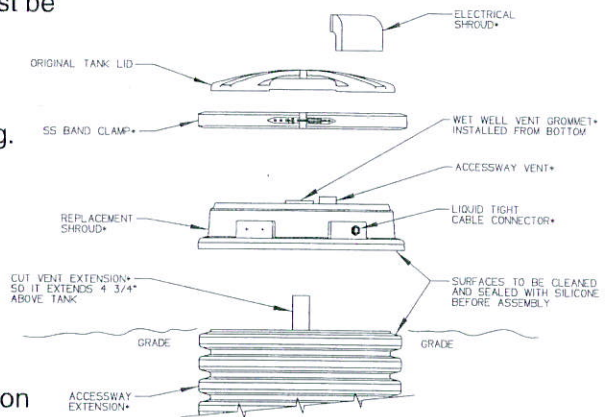


Figure 10

**EQD wiring order

PIN #	COLOR
1	Brown
2	Red
3	Black
4	Gm/Yellow
5	Yellow
6	Blue

Table 1

Table 2

DESCRIPTION	PART NO.
Simplex station	PC0569G15
Simplex, flood plain config	PC0569G16
Duplex station	PC0569G17
Duplex, flood plain config	PC0569G18

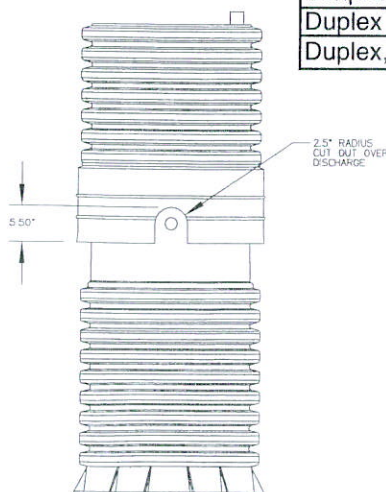


Figure 11

NOTE: IF EXISTING ACCESSWAY HAS ONLY 2 CORRUGATIONS (Fig. 11)

- If the coupler will not engage completely because the discharge piping is in the way, and it doesn't have a cut out, you will need to cut a slot in the coupler.

- Using a hand, reciprocating or hole saw, cut an arch in the coupler; the cut-out is not to exceed 5.50" tall or 5.00" wide.

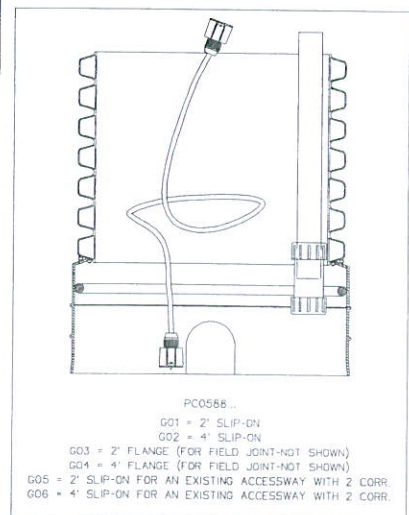


Figure 12

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A Precision Castparts Company

Environment One Corporation
2773 Balltown Road
Niskayuna, New York 12309-1090

Voice: (01) 518.346.6161
Fax: 518.346.6188

www.eone.com

NA0061P01 Rev. —

User Instructions for the Environment One Grinder Pump

Congratulations on your Environment One grinder pump investment. With proper care and by following a few guidelines, your grinder pump will give you years of dependable service.

General Information

In order to provide you with suitable wastewater disposal, your home is served by a low pressure sewer system. The key element in this system is an Environment One grinder pump. The tank collects all solid materials and effluent from the house. The solid materials are then ground to a small size suitable for pumping as a slurry with the effluent water. 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. 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
Metal	Plastic objects (toys, utensils, etc.)	Kitty litter
Goldfish stone	Sanitary napkins or tampons	

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

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

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

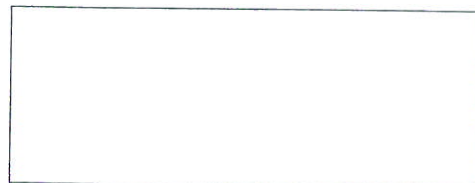
Power Failure

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

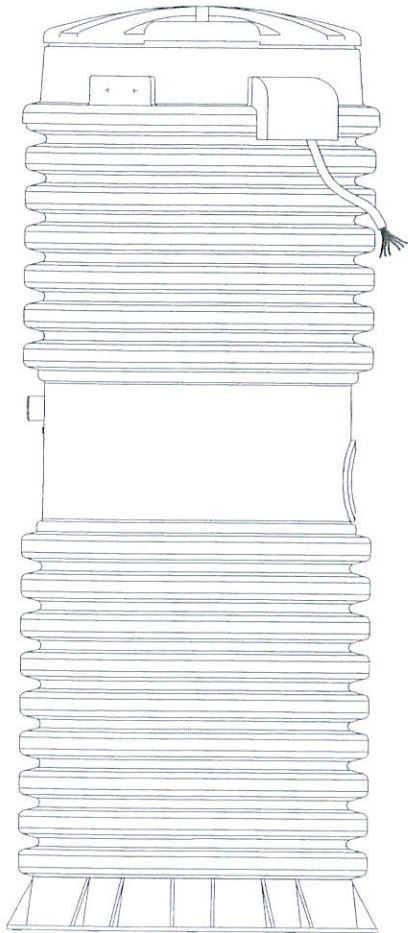
Your Environment One grinder pump has been manufactured to produce an alarm signal (120 volt) in the event of a high water level in the basin. The installer must see that the alarm signal provided is connected to an audible and/or visual alarm in such a manner as to provide adequate warning to the user 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: _____



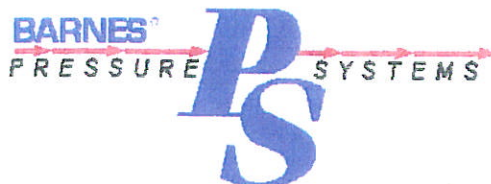
SEWER SYSTEMS

2773 Balltown Rd • Niskayuna NY USA 12309
(01) 518.346.6161 • www.eone.com

ATTACHMENT B

Barnes SGPC Simplex Grinder Pump Typical Installation Instructions

Note: The enclosed specifications are for simplex SGPC grinder units. Please refer to manufacturer's installation instructions for duplex units or for OGP grinder pumps. Electrical requirements vary across the approved Barnes product line.



STATION INSTALLATION MANUAL

STATION TYPE

Simplex

DIAMETER X DEPTH

24" x 84"

WIRING TYPE

Factory Pre-Wired

COVER TYPE

UltraCAP2

PUMP SERIES - VOLTAGE/PHASE

1HP SGPC - 240 Volt/ 1 Phase

PUMP SENSOR OPTION

TEMP. ONLY

LEVEL CONTROL TYPE

FloatTREE

INLET

4" sch. 40

PANEL OPTIONS

Alarm Light / Horn

IMPORTANT!

Read all instructions in this manual before operating pump. As a result of Crane Pumps & System, Inc., constant product improvement program, product changes may occur. As such Crane Pumps & Systems reserves the right to change product without prior written notification.

CRANE

A Crane Co. Company

PUMPS & SYSTEMS

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Fax: (937) 773-7157
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CONFIGURATION I.D. -
75137

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SAFETY FIRST!

Please Read This Before Installing Or Operating Pump.
This information is provided for **SAFETY and to PREVENT EQUIPMENT PROBLEMS**. To help recognize this information, observe the following symbols:



IMPORTANT! Warns about hazards that can result in personal injury or indicates factors concerned with assembly, installation, operation, or maintenance which could result in damage to the machine or equipment if ignored.

CAUTION! Warns about hazards that can or will cause minor personal injury or property damage if ignored. Used with symbols below.

WARNING! Warns about hazards that can or will cause serious personal injury, death, or major property damage if ignored. Used with symbols below.



Hazardous fluids can cause fire or explosions, burns or death could result.



Hazardous voltage can shock, burn or cause death.



Biohazard can cause serious personal injury.



Rotating machinery Amputation or severe laceration can result.

Only qualified personnel should install, operate and repair pump. Any wiring of pumps should be performed by a qualified electrician.



DO NOT drop or roll basin. This will damage unit and void the warranty.

Minimize the amount of cooking grease entering the system.

DO NOT leave pump cover off the basin, except while servicing, to prevent entrance of foreign materials such as rocks, metal, soil, animals or humans.

Prevent infiltration or direct flow of rain or run-off water into the pump basin to minimize pump cycling. This will prevent overloading the treatment facility, and will facilitate swift transportation of sewage.



To reduce risk of electrical shock, pumps and control panels must be properly grounded in accordance with the National Electric Code (NEC) or the Canadian Electrical Code (CEC) and all applicable state, province, local codes and ordinances.

To reduce risk of electrical shock, always disconnect the pump from the power source before handling or servicing. Lock out power and tag.

Prevent large articles of clothing, large amounts of chemicals, other materials or substances such as are uncommon in domestic sewage from entering the system.

During power black-outs, minimize water consumption at the home(s) to prevent sewage from backing up into the house.

Always keep the shut-off valve completely open when system is in operation (unless advised otherwise by the proper authorities). Before removing the pump from the basin, be sure to close the shut-off valve. (This prevents backflow from the pressure sewer.)

Keep the control panel locked or confined to prevent unauthorized access to it.

If the pump is idle for long periods of time, it is advisable to start the pump occasionally by adding water to the basin.



WARNING! Do not pump hazardous materials (flammable, caustic, etc.) unless the pump is specifically designed and designated to handle them.



DO NOT wear loose clothing that may become entangled in the impeller or other moving parts.



Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.



Always wear appropriate safety gear, such as safety glasses, when working on the pump or piping.



Cable should be protected at all times to avoid punctures, cut, bruises and abrasions - inspect frequently.



Never handle connected power cords with wet hands.

To reduce risk of electrical shock, all wiring and junction connections should be made per the NEC or CEC and applicable state or province and local codes. Requirements may vary depending on usage and location.



Products Returned Must Be Cleaned, Sanitized, Or Decontaminated As Necessary Prior To Shipment, To Insure That Employees Will Not Be Exposed To Health Hazards In Handling Said Material. All Applicable Laws And Regulations Shall Apply.



Bronze/brass and bronze/brass fitted pumps may contain lead levels higher than considered safe for potable water systems. Lead is known to cause cancer and birth defects or other reproductive harm. Various government agencies have determined that leaded copper alloys should not be used in potable water applications. For non-leaded copper alloy materials of construction, please contact factory.



IMPORTANT! - Crane Pumps & Systems, Inc. is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

Other brand and product names are trademarks or registered trademarks of their respective holders.

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USER GUIDE AND STATION COMPONENT OVERVIEW

General Information - In general, your home wastewater disposal service is part of a larger low-pressure sewer system. The key element in this system is the Barnes grinder station. The station collects all wastewater from your house or facility. The solids in the sewage are then ground into a small size by the grinder pump within your station, suitable for pumping in the system. The grinder pump generates sufficient pressure to pump the slurry created from your home to the wastewater treatment plant.

With proper care and by following a few simple guidelines, your station will give you many years of dependable service. The station is designed to handle routine, domestic and light industrial sewage. Solid waste materials should be thrown in the trash. A preventative maintenance schedule should be developed to further increase the longevity of your station.

Regulatory agencies advise that the following items **SHOULD NOT BE** introduced into any sewer either directly or through a drain or waste disposal:

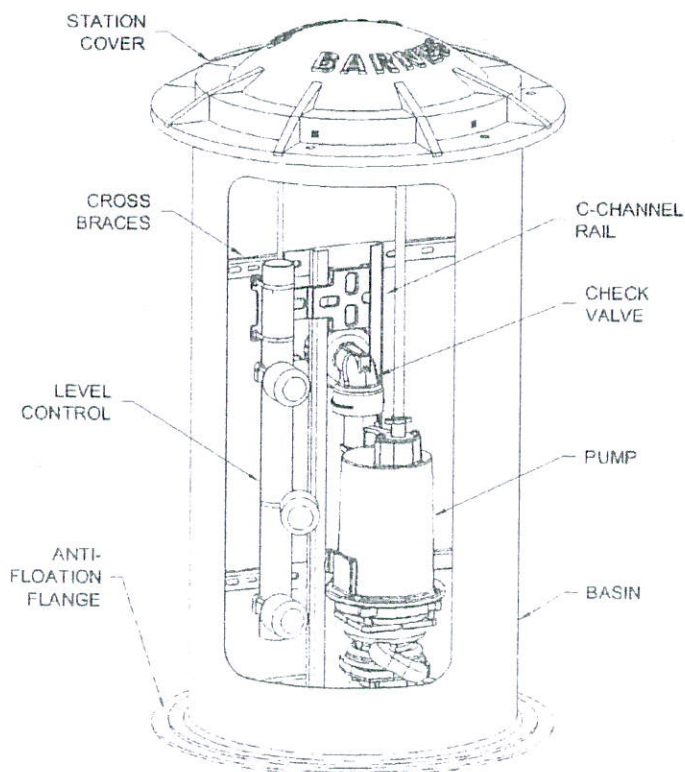
- Glass, metal, or plastic
- Diapers, Sanitary napkins, or tampons
- Socks, rags, or cloth

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

- Explosives or Flammable material
- Lubricating oils or Grease
- Strong Chemicals or Gasoline

Power Failure - Your grinder pump station cannot dispose of wastewater or provide an alarm signal without electrical power. If an electrical outage occurs, keep your water usage to a minimum. Your station has reserve capacity available to help avoid alarm or high-level occurrences during power outages.

Station Start-up/Warranty Registration - A start-up/warranty registration form is included in the back of this manual. It must be properly completed and sent to the factory for review before a warranty can be activated. Invalid or missing data or failure to return the form will delay or void warranty. If you feel you have a claim under the provisions of your warranty, please contact your local Crane Pumps & Systems, Inc. Distributor. Please be sure to have your station part number and model number along with the pump part number and model number.



YOU SHOULD READ THIS MANUAL CAREFULLY BEFORE BEGINNING YOUR INSTALLATION

Various references to ballasting, proper backfill procedures, and other steps required to properly install your new basin package are located throughout the manual. You should understand these aspects to avoid installation issues. If you have questions or concerns regarding your particular installation, contact your local Barnes representative or contact the factory at (937) 778-8947.

BEFORE YOU BEGIN

- **Read This Manual Completely Before Starting Your Installation.**
- Consult local officials for any applicable codes and regulations. Obtain all necessary permits. Call your local utilities committee before digging to locate all underground lines and cables.
- Determine the best location for your basin and control panel (page 8). **DO NOT** drop or roll basin. This will damage unit and void the warranty.
- **Insure a minimum 1/8" per foot drop on the inlet line while staying within the allowable inlet zone.** (page 11) Minimize the use of elbows on the inlet line. If required only use 45° elbows.
- Determine where the incoming power will be supplied from and if it properly rated for your station.
- Use only the electric cable specified. (page 13) **DO NOT USE ANY OTHER CABLE.**
- Mount electrical panel in accordance with all national and local electrical codes and where alarm light can be easily seen.
- **Determine the ballast requirements for your particular station.** (pages 6&7)
- Make sure you have the necessary equipment and supplies before starting your installation. (see lists below)

EQUIPMENT REQUIRED LIST (NOT INCLUDED)

- | | |
|---|---|
| • 9/16" WRENCH | • LARGE NYLON LIFTING STRAP(S) |
| • REGULAR AND PHILLIPS SCREWDRIVERS | • HOLESAW FOR INLET (PAGE 11) |
| • 1/8" FLAT TIP ELECTRICIAN SCREWDRIVER | • WIRE STRIPPERS(10 AWG TO 18AWG) AND CUTTERS |
| • PIPE WRENCH(S) | • ELECTRICAL MULTI-METER |
| • CORDED OR CORDLESS DRILL | • ELECTRICAL MEGGER |
| • NEEDLE NOSE PLIERS | • WINCH OR ASSISTED LIFTING DEVICE |
| • LEVEL AND TAPE MEASURE | • EXCAVATING EQUIPMENT |
| • HACKSAW/PIPECUTTER | |

MATERIAL LIST (NOT INCLUDED)

- | | |
|--|---|
| • BEDDING MATERIAL (PAGE 9) | • PVC PIPE CLEANER AND GLUE |
| • BALLAST MATERIAL (PAGES 6 & 7) | • GREEN ELECTRICAL TAPE |
| • EXTERNAL DISCHARGE PIPING AND VALVING FROM BASIN TO MAIN | • CIRCUIT BREAKER (PAGE 16) |
| • INLET PIPING | • WATER |
| • CONDUIT AND FITTINGS | • 1/4" ELECTRICAL ENCLOSURE MOUNTING HARDWARE |
| • CONDUIT SEALANT | • INK PEN |

MATERIAL LIST (INCLUDED)

- | | |
|-----------------|--------------------------|
| • CONTROL PANEL | • DIRECT BURIAL CABLE(S) |
| • BASIN PACKAGE | • PUMP |

Before installing your station, open the cover and remove the parts box located on the back side of the rail assembly. This box typically contains your inlet flange, lifting device, hardware, and cover gasket. It is easier to remove the box now than after it is installed, especially if the box fell to the bottom of the tank during shipment.

BALLASTING REQUIREMENTS

The basin, when installed, has natural buoyant forces acting upon it. Think of this as putting an empty glass, bottom first, into a sink filled with water. Ballast is required to compensate for these forces. Ballasting can be done in a variety of different methods.

- o Poured in place is when the tank is set into the hole and poured at the site.
- o Pre-cast is when a mold or form is placed around the basin and poured at an off-site location. This method utilizes lifting hooks cast into the ballast so it can be moved once cured.
- o Engineered ballast may consist of preformed shapes secured to the basin at time of installation or before hand.

Below are the steps used in calculating the ballast weight required for your specific station size. The formula assumes the basin is installed without internal components (pump(s), discharge, etc.) being installed.

NOTE: FAILURE TO BALLAST STATION WILL VOID WARRANTY AND MAY RESULT IN PERSONAL INJURY AND PROPERTY DAMAGE!

BALLASTING CALCULATIONS

1.) CALCULATE BASIN VOLUME

A.) $\text{PYE } (3.1415) \times \text{BASIN RADIUS SQUARED (INCHES)} \times \text{HEIGHT OF BASIN (INCHES)} =$

BASIN VOLUME IN CUBIC INCHES (IN³)

FORMULA $3.1415 \times r^2 \times h = \text{basin volume (IN}^3\text{)}$

B.) $\text{DIVIDE CUBIC INCHES BY } 1728 =$

BASIN VOLUME IN CUBIC FEET (FT³)

FORMULA $\text{BASIN VOLUME (IN}^3\text{)} \times 1728 = \text{FT}^3$

2.) CALCULATE BOUYANCY FORCE

A.) $\text{BASIN VOLUME (FT}^3\text{)} \times \text{WEIGHT OF WATER PER CUBIC FOOT (62.4 LBS./FT}^3\text{)} =$

BOUYANCY FORCE (LBS./FT³)

FORMULA $\text{VOLUME (FT}^3\text{)} \times 62.4 \text{ LBS./FT}^3 = \text{BOUYANCY FORCE (LBS./FT}^3\text{)}$

3.) FORCE REQUIRED FROM BALLAST

A.) $\text{BOUYANCY FORCE (LBS./FT}^3\text{)} \text{ MINUS BASIN WEIGHT} =$

BALLAST FORCE REQUIRED (LBS./FT³)

FORMULA $\text{BOUYANCY FORCE (LBS./FT}^3\text{)} - \text{BASIN WEIGHT} = \text{BALLAST FORCE}$

4.) CUBIC FEET OF BALLAST REQUIRED*

A.) $\text{BALLAST FORCE REQUIRED DIVIDED BY WEIGHT OF CONCRETE PER CU. FT. IN WATER (87.6 LBS./CU.FT.)} =$

CUBIC FEET OF CONCRETE BALLAST REQUIRED

FORMULA $\text{BALLAST FORCE} / 87.6 = \text{CUBIC FEET OF BALLAST NEEDED}$

5.) WEIGHT OF CONCRETE REQUIRED

A.) $\text{WEIGHT OF CONCRETE IN AIR} = 150 \text{ LBS./CU.FT}$

$\text{CUBIC FEET OF CONCRETE REQUIRED} \times \text{WEIGHT OF CONCRETE PER CUBIC FOOT IN AIR} =$

WEIGHT OF CONCRETE REQUIRED IN CUBIC YARDS

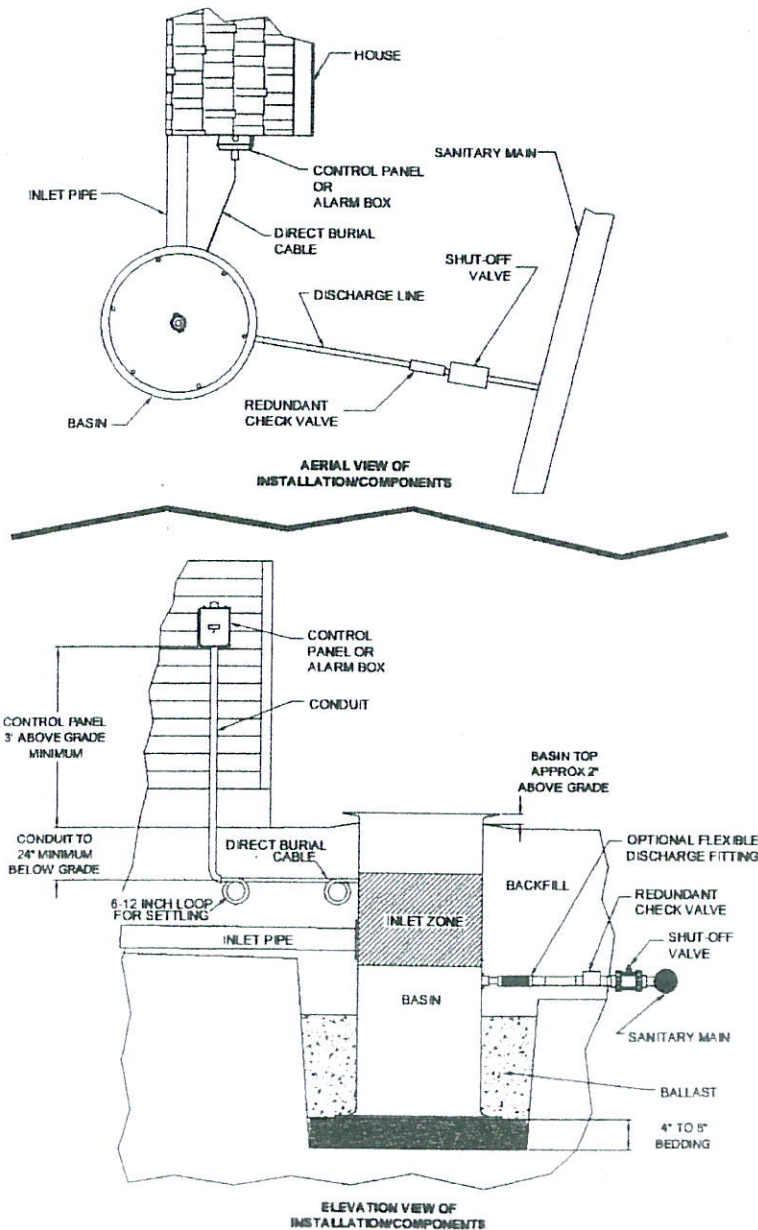
BASIN DIAMETER	BASIN DEPTH	BALLAST REQ'D
24	84	0.53

SETTING THE BASIN: LOCATION OVERVIEW

You should have your local utilities committee mark all utility lines to help determine the proper location. You may also call 888-258-0808 between 7am and 6pm EST, which is a national directory to identify your local utility authority. On the Internet you can go to the following website to find your specific states information about One Call information. <http://www.undergroundfocus.com/onecalldir.php>

The location of your basin should meet the following conditions:

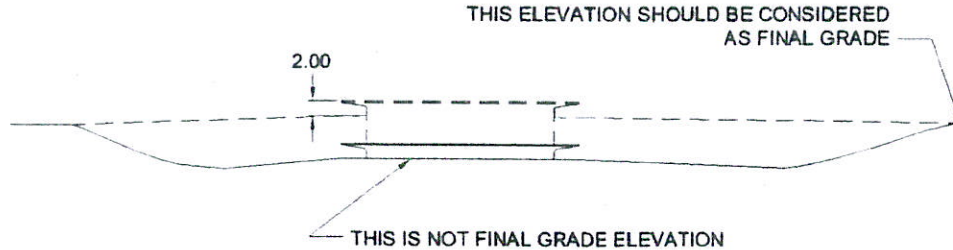
- Not placed in low lying or frequently flooded areas
- Ground slopes away from the basin
- Have well draining soil
- Removed from normal traffic routes
- Close proximity to the structure sewage is originating from to reduce inlet length
- Does not damage foundations of structure
- Placed in an area accessible to authorized personnel at all times



HOLE DEPTH AND FINAL GRADING

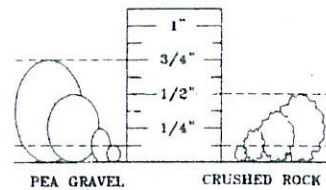
To calculate the hole depth need, add the basin depth plus the amount of bedding used under the basin, then subtract 2 inches. ***Basin depth plus bedding thickness minus two inches = Hole depth required***

If the basin is installed in an area prone to frequent flooding due to heavy rains, make sure the top of the basin is above the normal standing water level that occurs. Remember to slope the grade away from the basin to avoid collection of water around the basin. See illustration below.



BEDDING MATERIAL

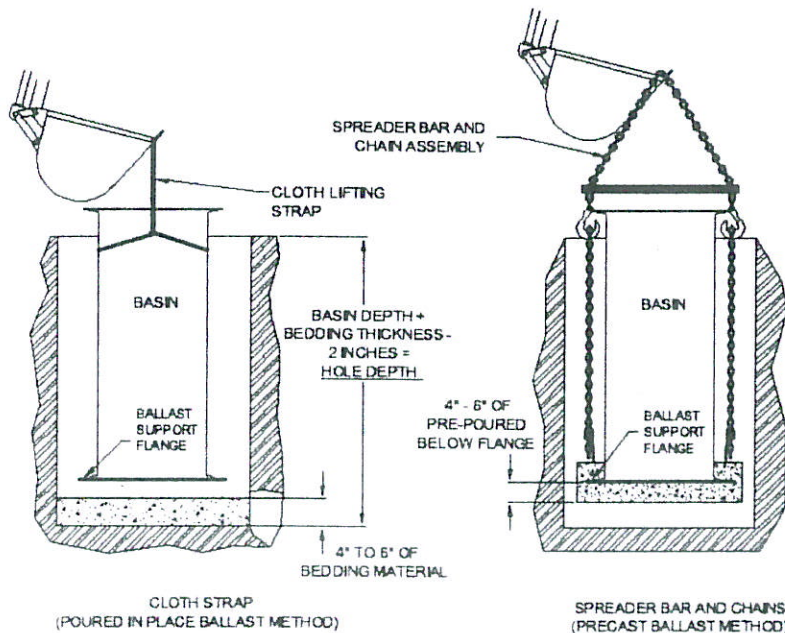
DESCRIPTION - The basin should have a 4 to 6 inch compacted bed of round or angular crushed rock with a minimum size of 1/8" and no larger than 3/4". The bedding should be placed and compacted using a hand or vibratory tamper.



HANDLING THE BASIN

Improper handling could result in fractures or permanent structural damage. Handle the tank in a vertical manner whenever possible.

- Never place a chain around the basin when moving the basin.
- Only use a nylon lifting strap or similar device around the basin.
- Never lift basin by flange of tank or by screwing lifting hooks into the threaded inserts in the flange for lifting.
- Never drag, drop, or roll basin.



Once the basin is installed in the hole, place a level on top of the basin flange. The basin should be level within half a bubble. If the basin is not level, lift basin from hole and level bedding material out. **Never try to level the basin out by pushing down on top of basin with excavating equipment!**

DISCHARGE CONNECTIONS

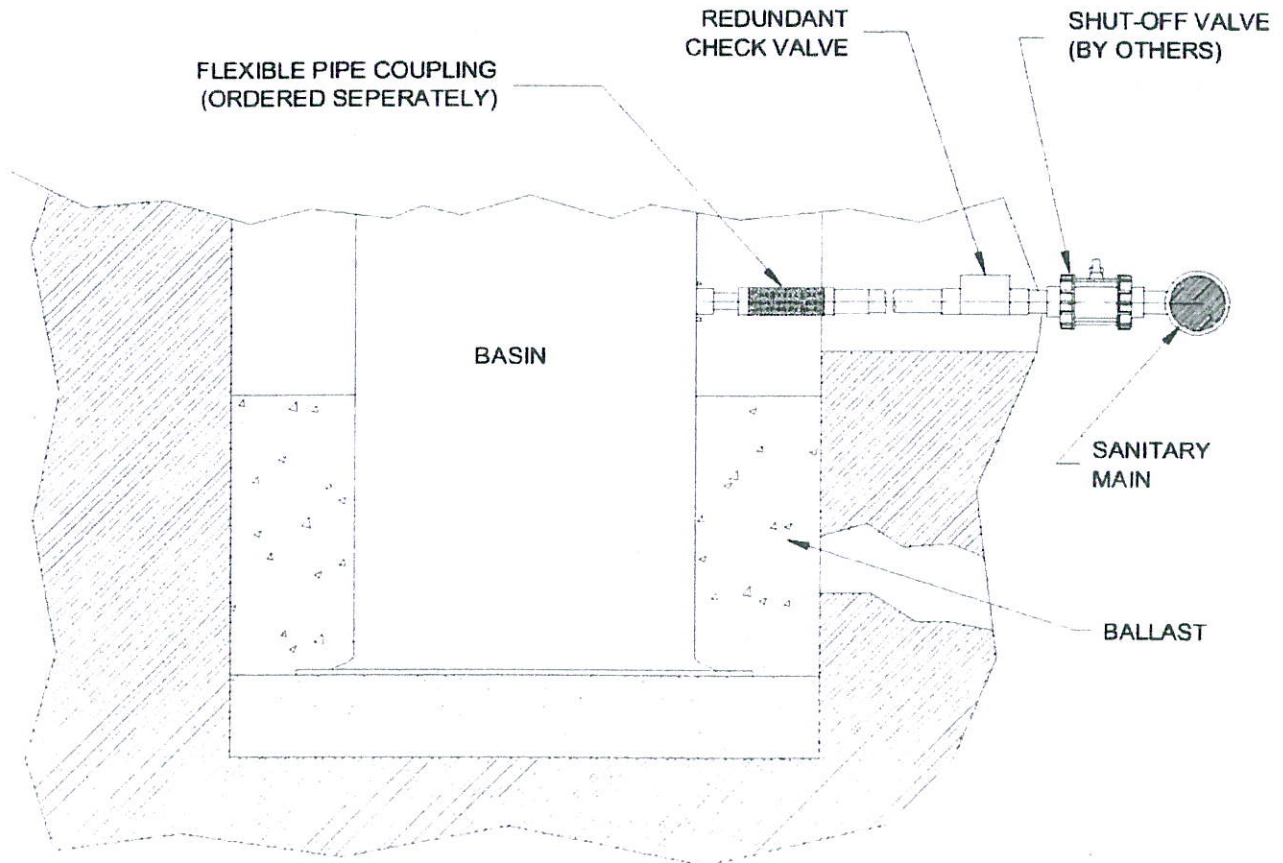
The basin is equipped with a female NPT coupling located 27.50 inches from the bottom of the station. Typical discharge sizes are 1.25 NPT or 2.00 NPT for simplex and 1.50 NPT or 2.50 NPT for duplex. Verify the size of the discharge coupling supplied with your basin.

Your discharge MUST include the following items:

- (1) Flexible pipe coupling - ordered separately - to compensate for varied settling rates of backfill materials
- (1) Flap style redundant check valve - supplied with station when ordered as pre-wired - to prevent backflow from the main into the lateral
- (1) Shut-off valve - supplied by others - near force main connection for station isolation from main. This valve is to be placed between the force main and redundant check valve
- Pipe of proper size and strength for rated conditions - supplied by others

Important Notes about the discharge

- All discharge components should be below frost depth. If above frost depth, all components must be properly insulated to prevent freezing.
- Pressure checking of discharge should not exceed 150 PSII Prior to checking laterals be sure to close the shut-off valve inside the station to avoid damage to basin components.
- All components of your discharge should have a pressure rating of 150 PSI at 73° F (23°C) or greater.



INLET LOCATION - INSTALLING FLEXIBLE INLET FLANGE

The majority of basin problems originate from excessive inflow or infiltration. While all aspects of basin installation are critical, the inlet installation should not be deviated from! Make sure to fully read this page before beginning your inlet installation.

Refer to the illustration below for proper inlet zones. The inlet is supplied in the parts box (page 5) that was inside the basin. Your basin inlet location should meet the following criteria:

WHAT TO AVOID

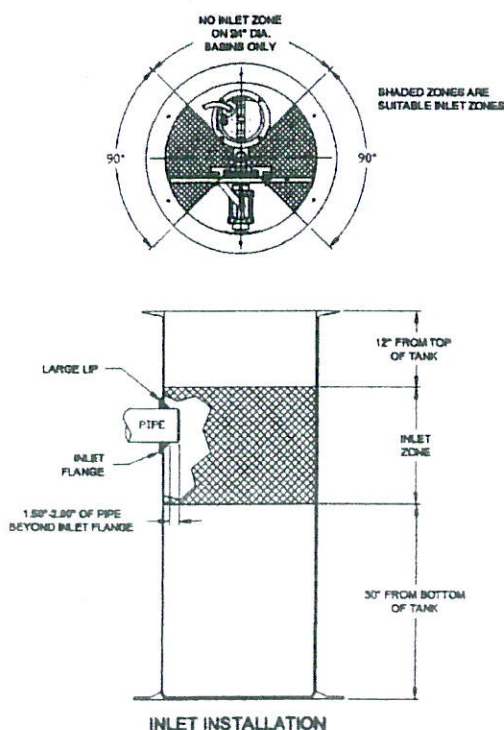
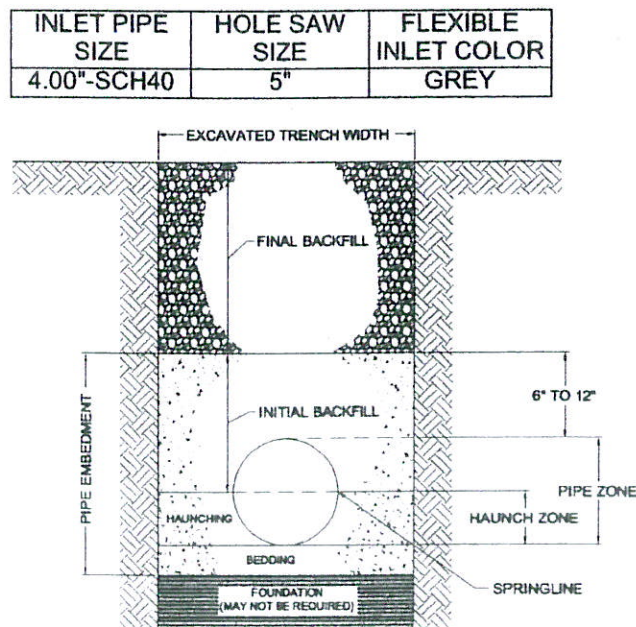
- **NEVER** install additional inlets or additional sources of inflow unless approved by project engineers. Excessive amounts of unplanned inflow will change expected system designs, add possible sources of infiltration, and potentially overwork the treatment facilities.
- Inlet pipe must NOT interfere with pump and level control installation or removal
- DO NOT let inflow pour directly on level control

WHAT TO DO

- Verify pipe O.D. is properly sized for the inlet fitting being used. Schedule 40 and SDR 35 pipe require different size fittings!! Do not mix pipe and fitting sizes!
- MUST have a minimum of 1/8" per foot drop. If required only use 45 degree elbows.
- MUST be a minimum of 30" from the bottom of the basin to bottom of inlet pipe
- Should be a minimum distance of 12" from top of basin. (Fig. 1)

INSTALLATION NOTES

- The hole **MUST** be cut with a **HOLE SAW** to ensure proper sealing around inlet flange. (See chart below for hole saw size.) *Use of any other tool or method is prohibited!*
- The end of the pipe should be chamfered and lubricated with soapy water to aid in installation.
- Install fitting so the large lip of the flange is on the outside of the tank. Make sure pipe is clean to provided good sealing area.
- Backfill and haunch per the ASTM D 2321 specification to prevent damage or failure of the inlet piping! Work in and compact the material in the haunching area to provide complete contact with the pipe bottom and ensure there are no voids. The material in the haunching area supports the vertical load applied to the pipe. Not compacting the embedment material will allow excessive deflection of the pipe and potential failure. Compact to 70% STANDARD PROCTOR DENSITY or a 700PSI SOIL MODULUS. (Fig. 2)
- **Note: 6" pipe fittings are not to be used with 24" and 30" diameter basins.**



BACKFILLING

When backfilling around the basin, care should be taken to prevent damage to the installed components. It is imperative that proper backfill materials and methods be used to prevent leaks, cracks and failures. Listed below are materials approved for backfill per the ASTM D 2321 specification.

Any other material used will void warranty!

Angular Aggregate, Open Grade, Class IA Materials - Class IA materials provide maximum stability and support for a given density due to angular interlock of particles. With minimum effort these materials can be installed at relatively high densities over a wide range of moisture contents. In addition, the high permeability of Class IA materials may aid in the control of water, and these materials are often desirable for embedment in rock cuts where water is frequently encountered. However, when ground water flow is anticipated, consideration should be given to the potential for migration of fines from adjacent materials into the open-graded Class IA materials. **Examples of material types:** *Angular, crushed stone or rock, crushed gravel, broken coral; contain little or no fines.*

Aggregates, Dense Grade, Class IB Materials - Class IB materials are processed by mixing Class IA and sands to produce a particle size distribution that minimizes migration from adjacent materials that contain fines. They are more densely graded than Class IA materials and thus require more compactive effort to achieve the minimum density specified. When properly compacted, Class IB materials offer high stiffness and strength and, depending on the amount of fines, may be relatively free draining. **Examples of material types:** *Angular, crushed stone (or other Class 1A materials) and stone/sand mixtures with gradations selected to minimize migration of adjacent soils; contain little or no fines.*

Gravel and Soils, Class II Materials - Class II materials, when compacted, provide a relatively high level of pipe support. In most respects, they have all the desirable characteristics of Class IB materials when densely graded. However, open graded groups may allow migration and the sizes should be checked for compatibility with adjacent material. Typically, Class II materials consist of rounded particles and are less stable than angular materials unless they are confined and compacted. **Examples of material types:** *Graded gravels and gravel-sand mixtures with less than 5 % fines; Sands and gravels, which are borderline between clean and with fines varying from 5 to 12 %. These materials are usually contained with a fabric or other type of liner to provide proper support.*

Backfill materials must be free of lumps, clods, boulders, frozen matter, and debris. The presence of such material in the backfill material may prevent uniform compaction and result in cracks, fractures, or deflections.

FINAL GRADING

The final grade should slope away from the basin to avoid collecting ground water around the station. Your final grade should be approximately 2" below the top of the basin flange. Any height taller than this may allow freezing to develop inside the station if not properly insulated. The top of the basin should never be below grade. This will allow ground water and sediment to infiltrate into the basin.

INSTALLING DIRECT BURIAL CABLE AND MOUNTING ENCLOSURE

The direct burial cable must be a UL Approved, type TC round style cable rated for burial use.

FLAT TYPE UF CABLE WILL NOT BE PERMITTED AND WILL VOID WARRANTY!

The conductor size specified in the chart below is based on a maximum length of 300 feet.

DIRECT BURIAL REQUIREMENTS	
PUMP MODEL	D/B CABLE REQUIRED FOR PUMP POWER
1HP SGPC	12/5
LEVEL CONTROL & PUMP SENSOR	D/B CABLE REQUIRED FOR LEVEL CONTROL & PUMP SENSOR
FloatTREE&TEMP. ONLY	NONE

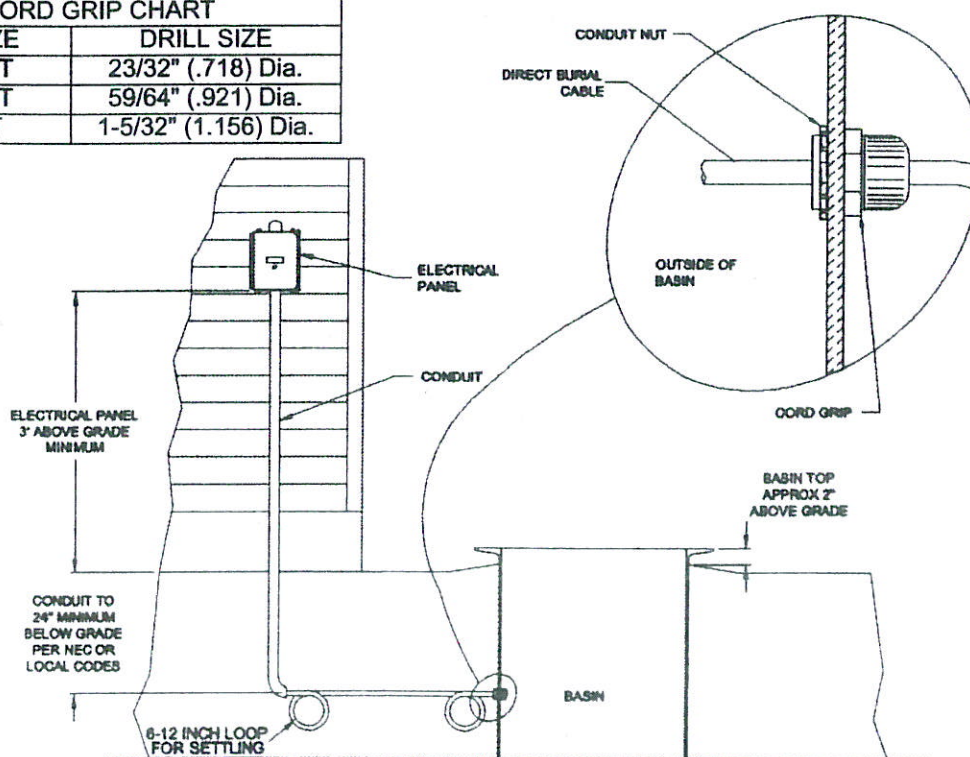
When installing the direct burial cable be sure to consider the following points:

- Cable should be a minimum of 24" below grade for residential dwellings or otherwise buried per Table 300-5 of the National Electric Code and/or per local codes
- A coil of 6 to 12 inches of excess cable at conduit ends to allow for settling of backfill
- Cannot have damaged or nicked insulation or conductors
- All penetrations through the basin must be sealed watertight. Any cord grip penetrations made must be done with a properly sized drill and then tapped.
- Be sure to leave approximately three feet of cable above the top of the basin to allow for cover removal
- All cable is ran inside of conduit when going from the control panel to 24" below grade
- All connections made are utilizing Third party listed devices

MOUNTING ELECTRICAL ENCLOSURE

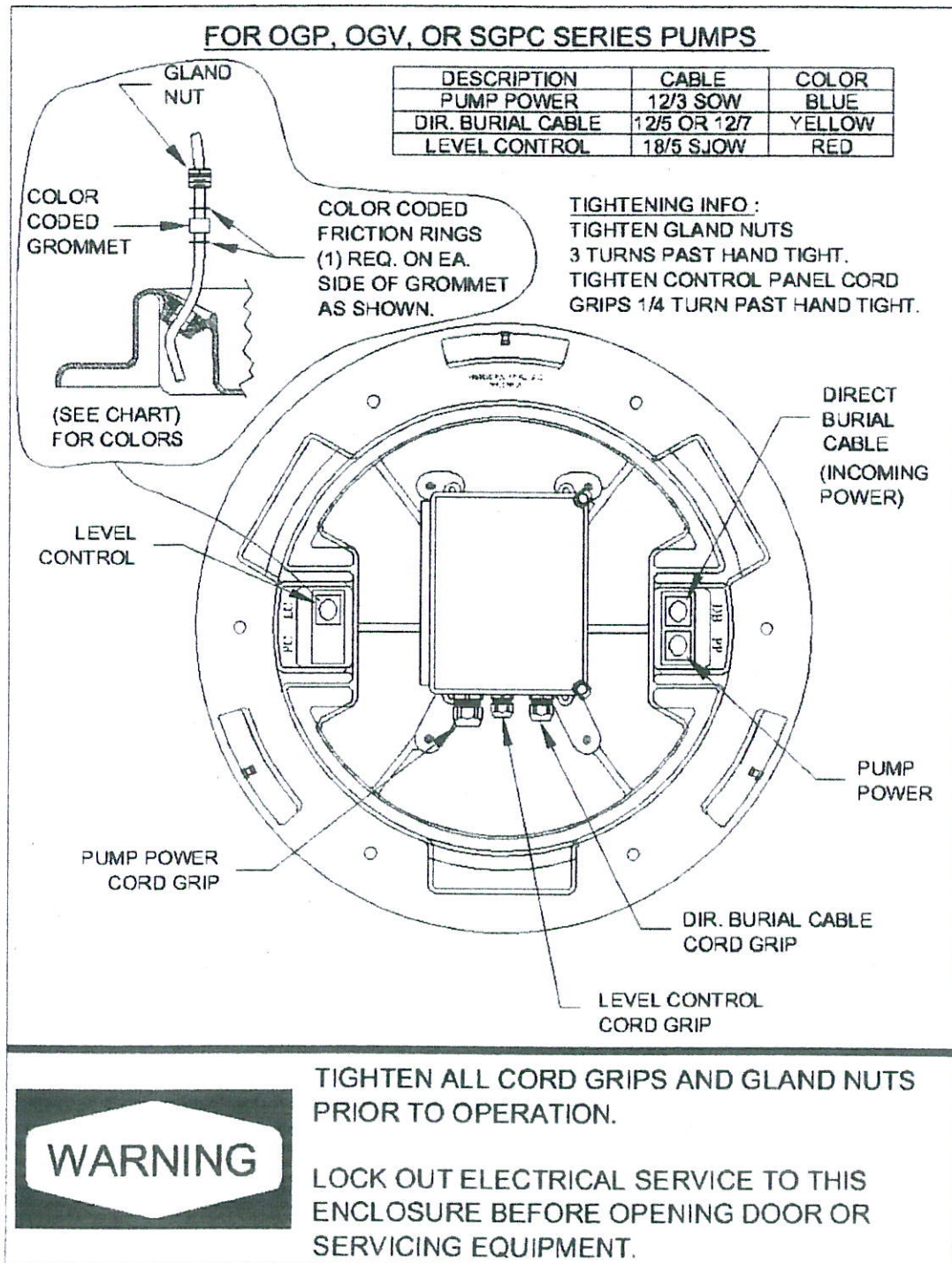
- Make sure bottom of enclosure is a minimum of 36" above grade and level
- Proper style and size of hardware is used to mount to surface
- Alarm devices are audible/visible and in a direct line of sight from the station
- Only use Third party listed devices when connecting to the enclosure

CORD GRIP CHART	
NPT SIZE	DRILL SIZE
1/2" NPT	23/32" (.718) Dia.
3/4" NPT	59/64" (.921) Dia.
1" NPT	1-5/32" (1.156) Dia.



UltraCAP2 WIRING FOR OGP, OGV, OR SGPC PUMP SERIES OVERVIEW:

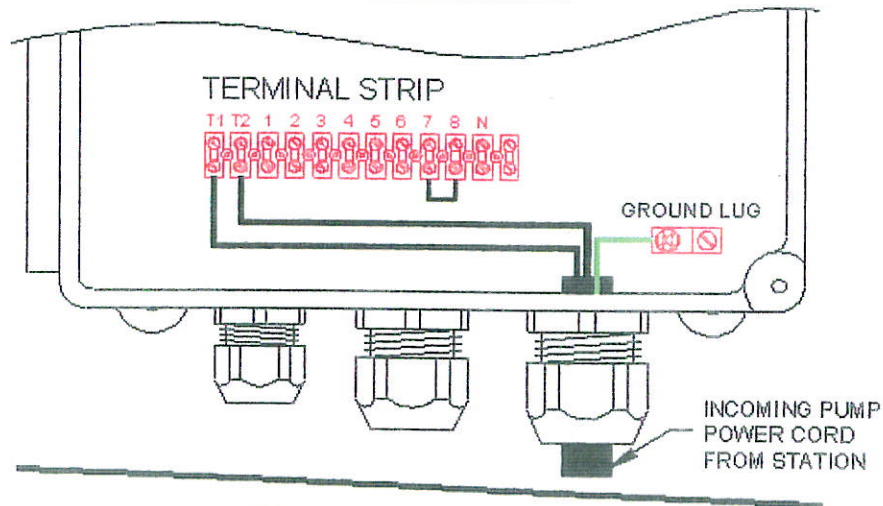
The UltraCAP2 comes completely factory pre-wired. Below is the label that is placed on top of your control panel that illustrates the color of grommets and washers used, as well as wire locations. This is for reference and is shown in case future repairs or replacements of cables/cords within the UltraCAP2 are needed. These components are properly adjusted at the factory and should not be adjusted unless service is required. Compromising the integrity of the UltraCAP2 assembly will void warranty and could cause serious personal or property damage if altered or adjusted.



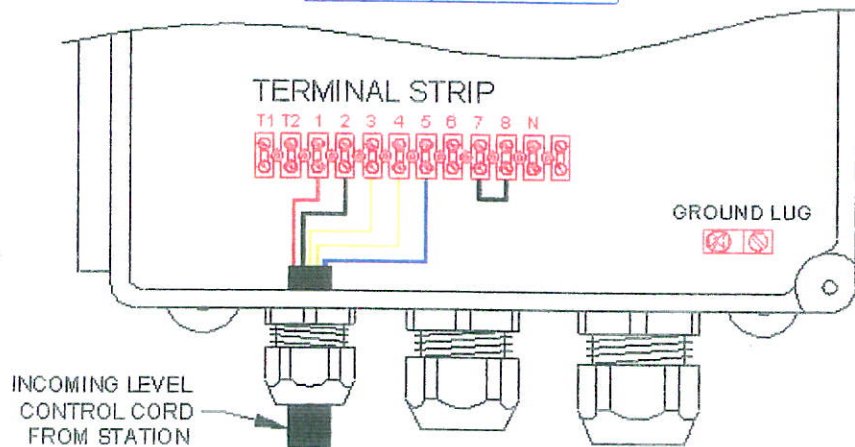
WIRING THE PUMP AND LEVEL CONTROL

Strip the outer jacket of the cord or cable back about six inches making sure not to damage the individual leads. Strip about ½" of the insulation off the ends of the individual leads. Wire per the illustration below. Wire colors are shown for reference. Wire colors may vary on your installation.

TERMINAL STRIP	PUMP POWER CORD
T1	BLACK
T2	WHITE
GND LUG	GREEN



TERMINAL STRIP	LEVEL CONTROL CABLE
1	RED
2	BLACK
3	WHITE
4	ORANGE
5	BLUE OR GREEN



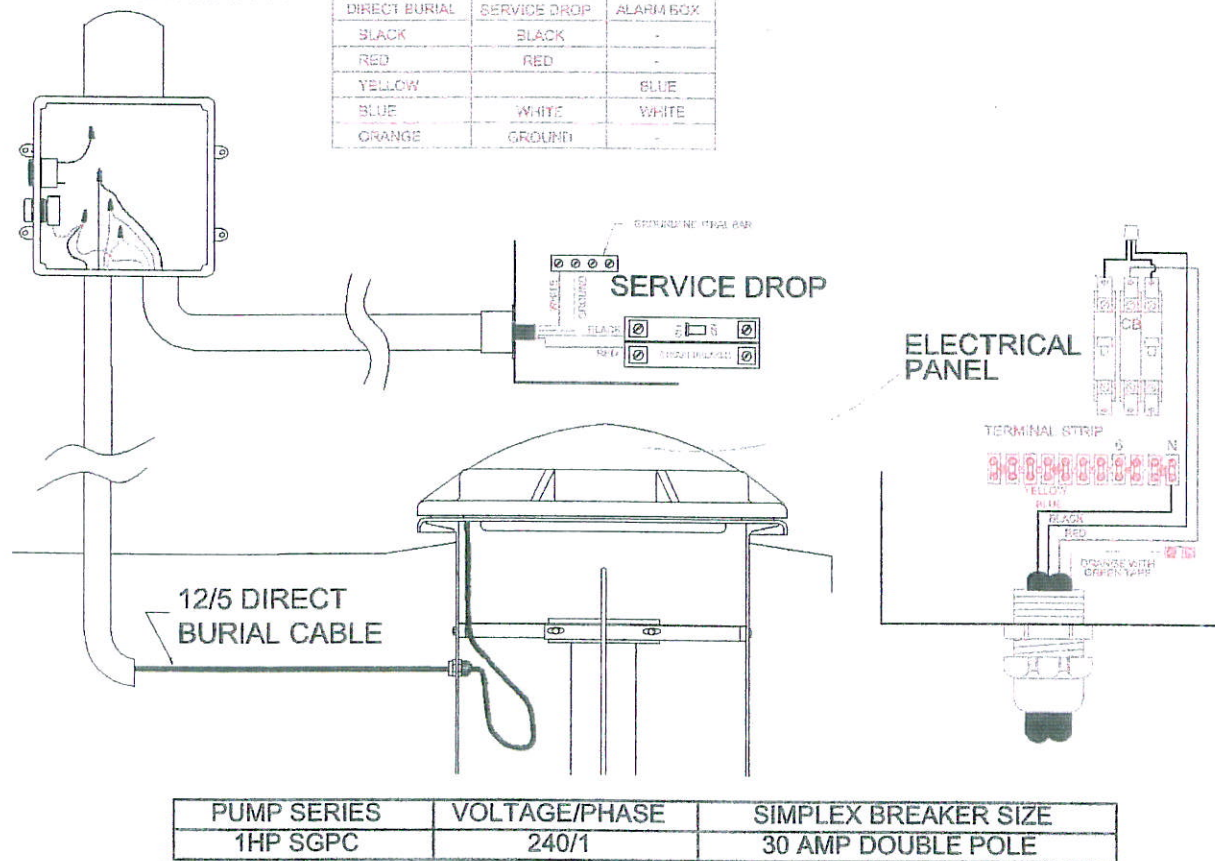
UCAP2 - SGPC, OGV, OGP
With FloatTREE or ESPS-100

WIRING THE SERVICE POWER TO THE ELECTRICAL PANEL

The service supply panel will be required to have a separate double pole breaker to supply power to the control panel. The following work is to be performed only by certified, experience personnel. Be sure to consider the following:

- All work is done per the National Electric Code (NEC) and local codes.
- Circuit breaker is properly sized for your pump (See chart below)
- Service supply panel has an opening to fit a double pole breaker
- Panel is in good physical condition (free of corrosion and electrically stable)
- Cable with three conductors plus a ground properly sized for the rated loads - to be used between the service supply panel and station electrical panel.

REMOTE ALARM BOX



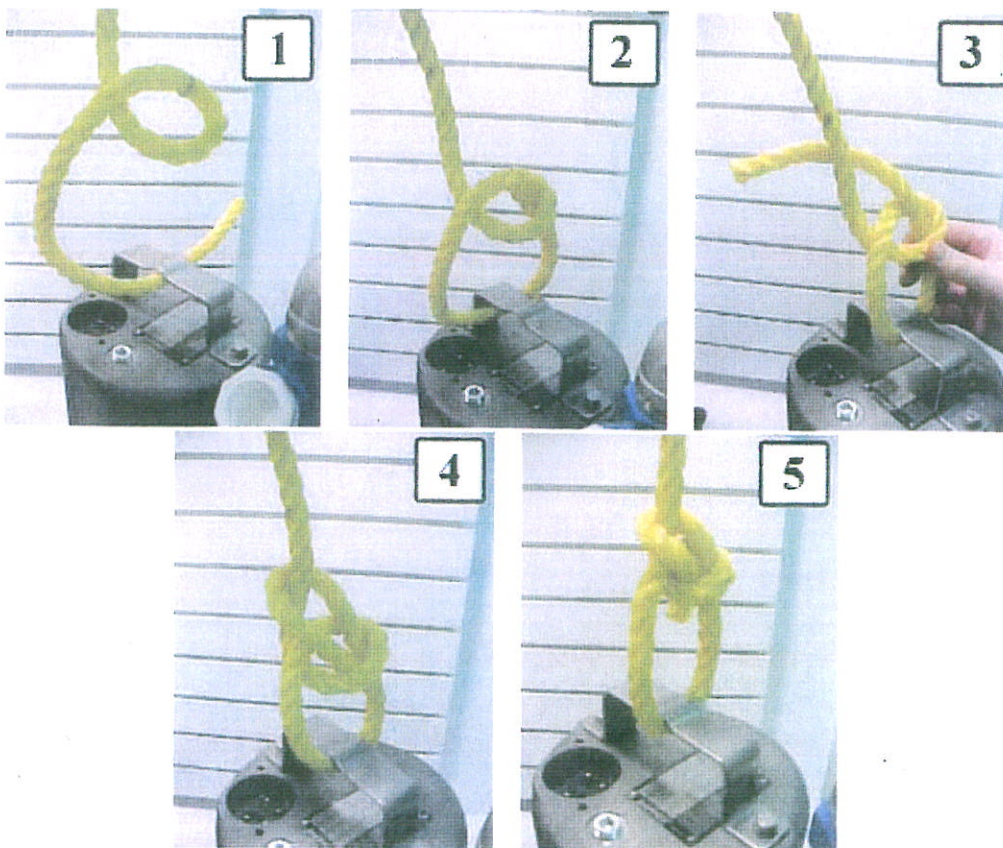
ATTACHING THE LIFTING DEVICE

The lifting device for the pump is located in the accessories carton. Read below to identify suggestions on how to install your type of lifting device.

• ROPE

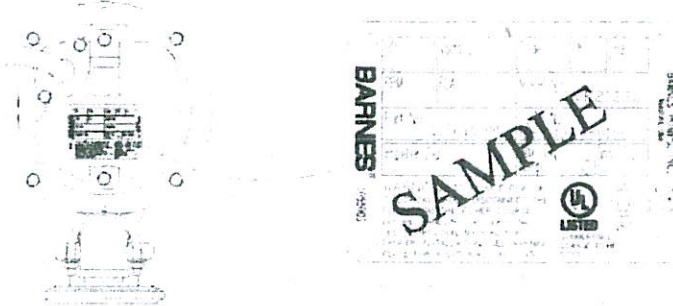
The rope can be secured in a variety of ways. The most common method is to tie a simple knot. The knot should be self-tightening meaning that as you pull on the rope, the knot tightens on itself. An example of this is a bowline knot, which is illustrated below. The steps to tie this knot are as follows.

1. Make a small overhand loop in the rope
2. Bring the short end through the overhand loop.
3. Place the short end behind the fixed part of the rope.
4. Bring the end around the and back into the loop.
5. Pull the fixed on of the rope away from the loop to tighten the knot.



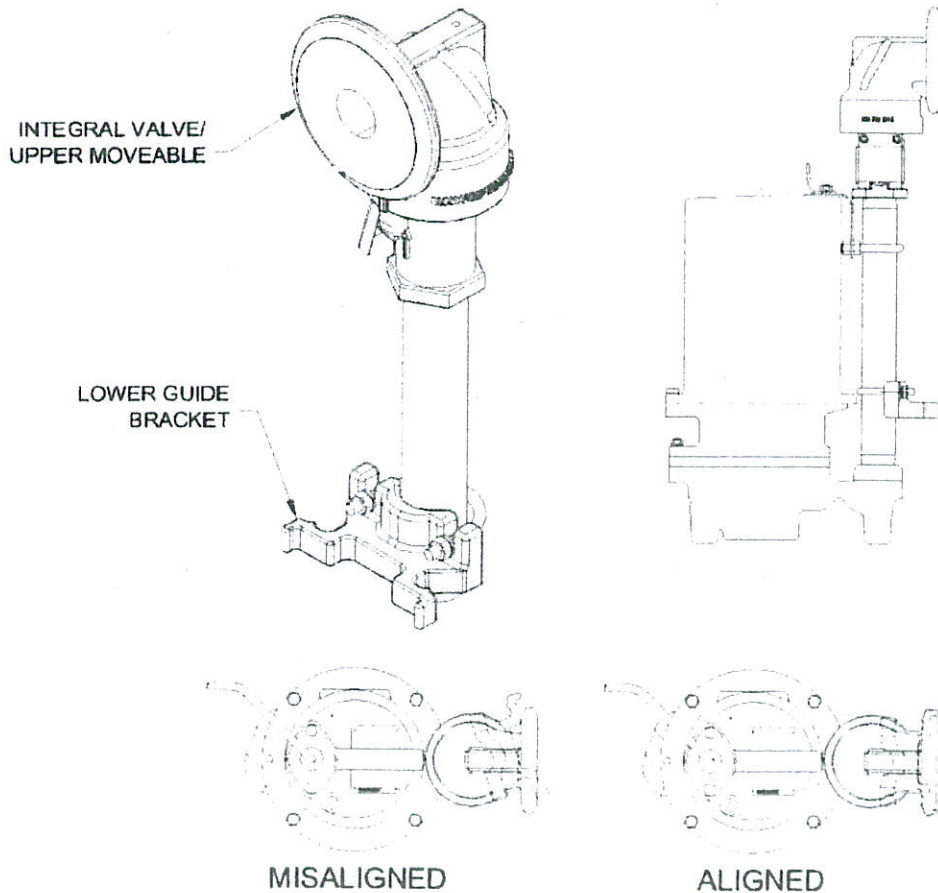
RECORDING PUMP NAMEPLATE INFORMATION

The nameplate is located on top of the pump. This contains the pumps part number, horsepower voltage, phase, and serial number, as well as other information. The start-up form located in the back of this manual contains a place to record this data. The information should be recorded now so the pump does not have to be pulled again later. The start-up form can be left in the control panel until station start-up is completed later.



INSTALLING THE PUMP

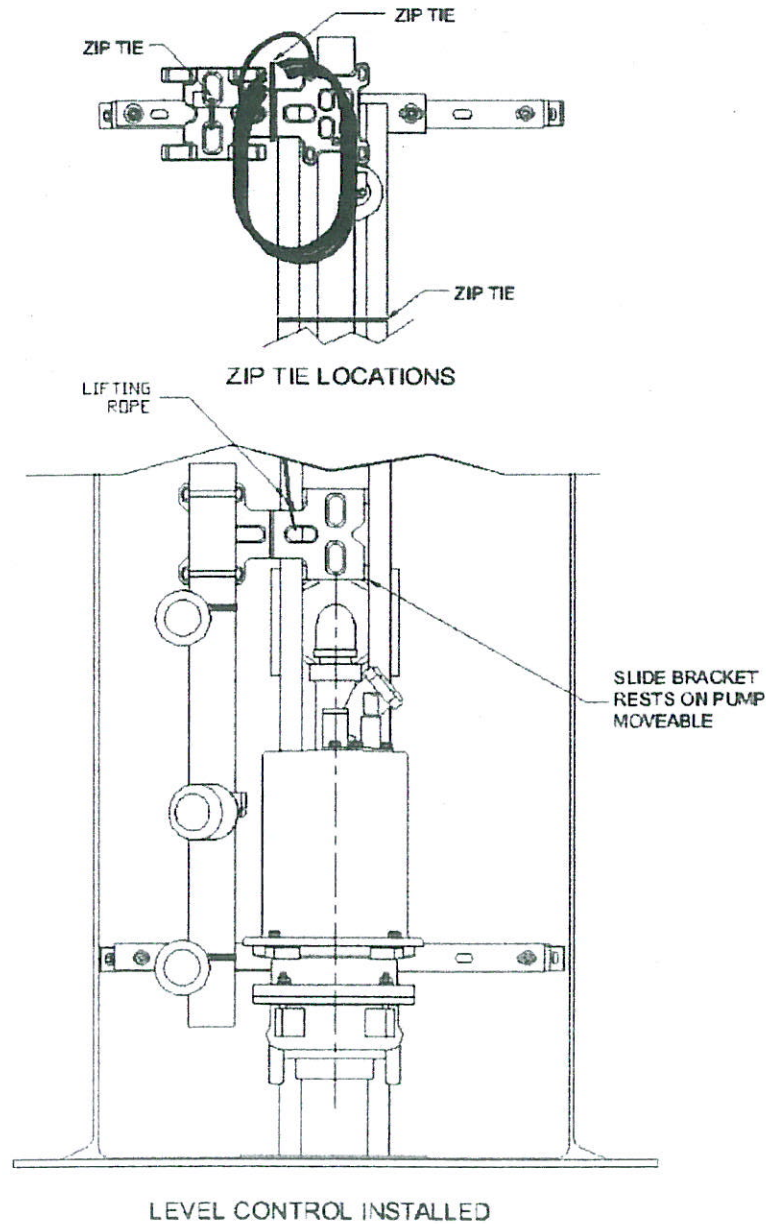
The pump moveable has an integral valve/upper moveable and a lower guide bracket. This will guide the pump down the c-channel rail and rest on the stop built into the rail. Check to make sure the upper and lower moveables are aligned before lowering into the rail. When lowering or lifting the pumps always use the lifting device and appropriate lifting equipment. NEVER MOVE THE PUMP BY THE POWER CORD!



INSTALLING THE LEVEL CONTROL

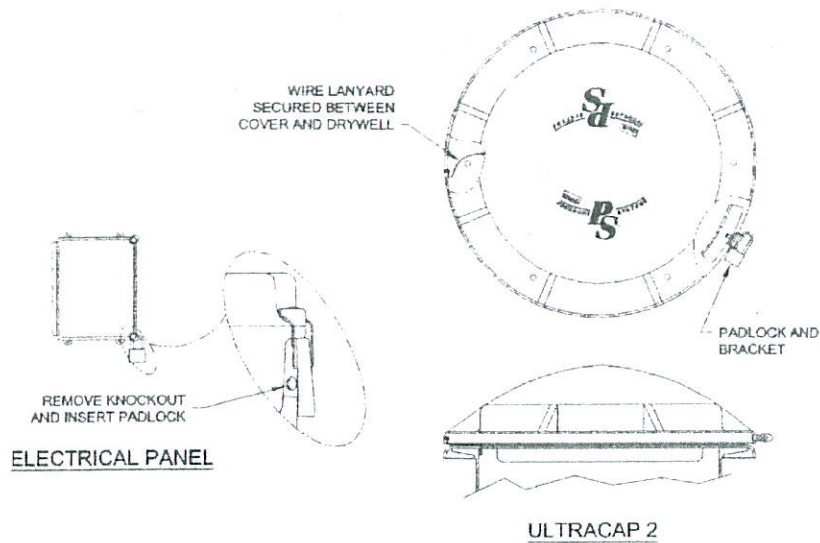
The level control is secured to the c-channel rail and cross brace with zip ties. Cut the zip ties to remove the level control. Do not let the ties fall into the bottom of the basin. To install the level control, the pump must first be installed. Once the pump is installed, place the slide bracket into the c-channel rail and lower the level control until it rests on the top of the moveable of the pump. When installing your level control make sure of the following:

- Floats should be able to move freely
- Inflow is not dumping directly on top of floats
- Hanging cords are clear of float operation
- Refer to your level control manual for further information.



LOCK INSTALLATION

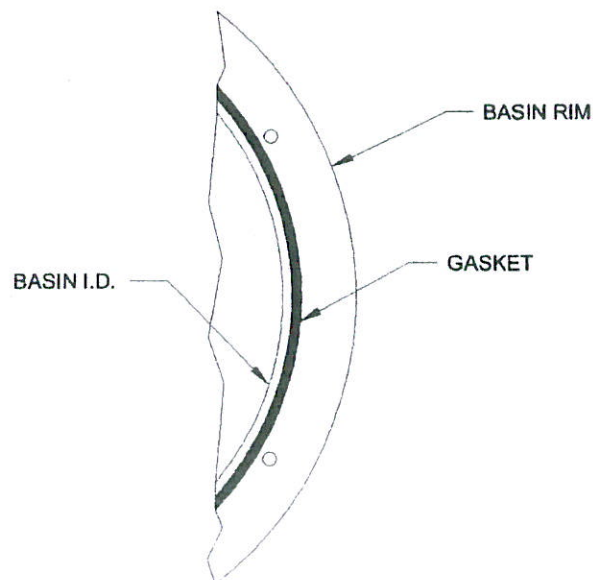
Most cover assemblies have bolt sleeve required to mount a padlock to the cover. Some covers have hardware factory installed or require no special tools to field install. Barnes locks are keyed alike and are made of all Brass construction. Shackle diameter is .25 inches.



COVER GASKET INSTALLATION

The cover gasket is located in the parts box removed earlier. The surface the gasket will be applied to should be clean, dry, and fairly smooth. To properly install the gasket, place between basin I.D. and bolt circle.

NOTE: On the UltraCAP2 assembly, the gasket should roughly follow the bottom side of the insert to allow for maximum sealing surface contact. Turn the drywell over and you can see the contour changes around the vent and mounting provisions.



NOTES

START-UP PRE-CHECKLIST

Prior to performing an electrical and hydraulic performance check of the complete station, verify all of the following criteria are met:

- The shut-off and redundant check valve at force main are installed in the lateral discharge and are in the open position
- Discharge piping has been pressure tested to 150 PSI max without leakage
- Inlet has a minimum of 1/8" per foot drop and does not obstruct pump or level control removal or operation
- All penetrations through basin and electrical enclosure sealed water-tight
- Proper backfill and compaction has been done to prevent deflection or possible failure of equipment
- All cords are secured and clear of pump cutter and level control
- Electrical supply is of proper voltage, phase for the pump
- A properly sized double pole circuit breaker has been installed in the service disconnect panel
- Proper gauge and conductor wire installed from service disconnect to basin control panel or alarm box (3 conductors with separate ground)
- All wire nut connections and terminal connections secure
- Circuit breakers in the basin control panel turned to the "OFF" position
- Circuit breaker in the service disconnect turned to "ON"
- Pump is properly seated on the discharge opening in the rail
- Level control has unobstructed movement for operation
- Final grade slopes away from the basin to avoid runoff water collection/ basin inflow
- All construction and shipping debris has been removed from the basin
- Vent, if required has been properly installed on cover

START-UP CHECKLIST

- A minimum of 32" of water has been added to the basin
- Valve(s) within the basin and lateral are in the "ON" position
- Record pump and basin nameplate information on the start-up form
- All alarm devices are turned to the "ON" position

WINTERIZATION STEPS:

If the basin will not be used for an extended period, especially during colder months, proper steps should be taken to ensure uninterrupted use upon restarting the basin.

- Remove the basin cover and check the liquid level.
- Manually pump the station level down to the normal OFF level.
- DO NOT pump the liquid level below the suction at the bottom of the pump.
- With the liquid level at the normal OFF level, add fresh water until the pump turns ON by itself and liquid level is reduced to its normal OFF level again.
- Turn the power to the station off in the basin electrical panel.
- Add an appropriate amount of propylene glycol (non-toxic) to the basin liquid to achieve a 50/50 solution mixture. See list below for your basin diameter.
 - 24" diameter will need 20 gallons of antifreeze added to the basin.
 - 30" and 30" diameter reduced will need 30 gallons of antifreeze added to the basin.
 - 36" diameter will need 45 gallons of antifreeze added to the basin.
- After the antifreeze has been added, turn the power back on and let the pump run for approximately 10 to 30 seconds to help mix the antifreeze into the pump and discharge. Turn the pump off at this time.
- Turn the circuit breaker back to off and reinstall the basin cover.

TO REACTIVATE THE BASIN, TURN THE CIRCUIT BREAKER ON AND MANUALLY TURN THE PUMP ON FOR 10 SECONDS.



Limited 2 Year Warranty

We warrant that products of our manufacture will be free of defects in material and workmanship under normal use and service for twenty-four (24) months after notice of owner's acceptance, but no greater than twenty-seven (27) months after receipt of shipment, when installed and maintained in accordance with our instructions.

This warranty gives you specific legal rights, and there may also be other rights which vary from state to state. In the event the product is covered by the Federal Consumer Product Warranties Law (1) the duration of any implied warranties associated with the product by virtue of said law is limited to the same duration as stated herein, (2) this warranty is a **LIMITED WARRANTY**, and (3) no claims of any nature whatsoever shall be made against us, until the ultimate consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURE OR AUTHORIZED REPAIR STATION, SUCH PRODUCTS AND/OR PARTS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE.** Unless expressly stated otherwise, guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on a product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing if a conflict arises between the results of field testing conducted by or for user, and laboratory tests corrected for field performance, the latter shall control. **RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDATIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PERFORMANCE AND NO SUCH WARRANTY IS GIVEN.**

This warranty shall not apply when damage is caused by (a) improper installation, (b) improper voltage (c) lightning (d) excessive sand or other abrasive material (e) scale or corrosion build-up due to excessive chemical content. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts. Neither will we accept charges incurred by others without our prior written approval.

This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and/or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the application and use of the product. **UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND/OR WORKMANSHIP AND/OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.



A Crane Co. Company

PUMPS & SYSTEMS

420 Third Street
Picua, Ohio 45356
Phone: (937) 778-8947
Fax: (937) 773-7157
www.cranepumps.com

83 West Drive, Brampton
Ontario, Canada L6T 2J6
Phone: (905) 457-6223
Fax: (905) 457-2650

SIMPLEX BASIN PACKAGE

START-UP / WARRANTY REGISTRATION FORM

This form is designed to provide assurance that customer service and a quality product are the number one priority with Barnes Pumps, Inc. Please fill out the following questions as **completely and accurately** as possible.

When complete, mail this form to: **Warranty Service Group**
Crane Pumps & Systems, Inc.
420 Third Street
Piqua, Ohio 45356

UPON RECEIPT OF YOUR FORM, A WARRANTY REGISTRATION CARD WILL BE SENT TO YOU. THIS IS YOUR PROOF OF HAVING YOUR STARTUP/WARRANTY REGISTRATION FORM ON FILE AT THE FACTORY.

Before beginning, the circuit breaker in the basin control panel should be turned off and the circuit breaker in the service panel should be turned on.

A.) General Information (MUST BE COMPLETELY FILLED OUT!)

Owner Name: _____
Address: (location of unit) _____
City: _____ State: _____ Zip Code: _____
Basin Part Number: _____ Basin Serial Number: _____
Basin Model: _____ Pump Serial Number: _____
Panel Part Number: _____ Pump Part Number: _____

B.) Basin Information (Do Not Install Below Grade)

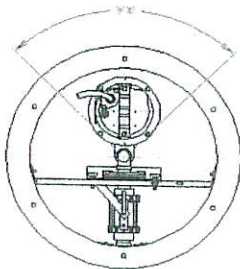
Basin top relative to finish grade: ☐ After ☐ Even
If above Grade, how far: _____ inches

Amount of ballast in cubic yards: _____ Type of ballast used: _____

Basin installed plumb (level): ☐ Yes ☐ No

I have inspected and removed debris from the bottom of basin: ☐ Yes ☐ No

Sketch Inlet Location on Diagram Below:



**** Not an Inlet Zone on 24" Diameter Basins Only!**

RAIL SYSTEM

Distance from top of basin to center of inlet pipe: _____ inches

Cable size(s) from control panel to basin: _____ (Example: 12/4 and 18/6)

* If direct wired from pump to electrical enclosure, write in "DIRECT WIRED"

Method of cable entry into basin: ☐ Direct Burial W/ Cord Grips ☐ Conduit Coupling

Valve at sewer main: (REQUIRED) ☐ Check Valve ☐ Manual Shut-off Valve

C.) Control panel and/or junction box or alarm box

Is the interior dry: ☐ Yes ☐ No

Is the cover tight: ☐ Yes ☐ No

Are all conduit entries sealed: ☐ Yes ☐ No

Are all connections and grips tight: ☐ Yes ☐ No

D.) Electrical Check

Voltage Supply at Panel with Breaker in Panel Off: (for Single Phase Pumps, use L1-L2 only)

L1-L2 _____ Volts L2-L3 _____ Volts L3-L1 _____ Volts

Resistance of pump power cable connections at terminal strip in panel with power Off:
Consult the pump manual for the proper values for the pump being used

A) **SGPC & OGV & OGP MODEL PUMPS**

Black to White _____ Ohms

B) **SGV MODEL PUMPS**

Red to Black _____ Ohms Black to White _____ Ohms Red to White _____ Ohms

Meg-Ohm insulation check taken a control panel. (With pump power off)
Readings of 5 or lower are unacceptable.

A) **SGPC & OGV & OGP MODEL PUMPS**

Black/Ground _____ M-Ohm White/Ground _____ M-Ohm

B) **SGV MODEL PUMPS**

Red/Ground _____ M-Ohm Black/Ground _____ M-Ohm White/Ground _____ M-Ohm

E.) Performance Check

With control panel circuit breaker OFF fill the basin with a minimum Of 32" of water.
NEXT, turn the circuit breaker(s) in the basin control panel to the "on" position.
Is the high water alarm on: ☐ Yes ☐ No

When the alarm turns OFF, turn power "OFF" to the pump at the control panel.
Did the alarm shut off with the water level in the basin at approximately 26" from the bottom: ☐ Yes ☐ No

Turn the circuit breaker back to the "ON" position and record the pump amperage readings
Consult the pump manual for the proper values for the pump being used

Amperage reading at line connection with the pump running:

A) **SGPC, OGV, OGP, AND SGV MODEL PUMPS**

LINE 1 _____ AMPS LINE 2 _____ AMPS LINE 3 _____ AMPS (3 PHASE ONLY)

Did the pump shut off with approximately 10 inches of water left in the basin: ☐ Yes ☐ No

Are there any leaks within the basin: ☐ Yes ☐ No

F.) Final Check

Has the end user received the User Guide with the pump and basin information filled out: ☐ Yes ☐ No

Equipment difficulties during start up:

G.) Station require follow - up/corrective action: ☐ Yes ☐ No

If yes give reason:

I certify this report to be accurate: (name of start up person)

Signature: _____ Date: _____

Employed By: _____

REPORTS NOT RETURNED CAN DELAY OR VOID WARRANTY

To be filed out by the factory:

Start - up form checked by: _____

Date warranty registration card mailed: _____

FOLD HERE AND TAPE. DO NOT STAPLE

PLACE
STAMP
HERE

**CRANE PUMPS & SYSTEMS, INC.
WARRANTY SERVICE GROUP
420 THIRD STREET
PIQUA, OHIO
45356- U.S.A.**

BALLAST CHART

CHART 1										
BALLAST (in cubic yards)										
BASIN I.D.	BASIN HEIGHT									
	48"	60"	72"	84"	96"	108"	120"	144"		
24"	0.30	0.38	0.46	0.53	0.61	0.69	0.78	0.93		
30"	0.48	0.60	0.71	0.84	0.96	1.08	1.21	1.45		
36"	0.70	0.88	1.03	1.21	1.39	1.57	1.75	2.10		
42"	0.94	1.19	1.42	1.66	1.90	2.15	2.39	2.87		
48"	1.24	1.56	1.85	2.17	2.48	2.80	3.11	3.74		
60"	1.88	2.38	2.88	3.37	3.86	4.36	4.85	5.84		



ATTACHMENT C

Drainage Fixture Unit Values for Various Plumbing Fixtures

TABLE P3004.1
DRAINAGE FIXTURE UNIT (d.f.u.) VALUES FOR VARIOUS PLUMBING FIXTURES

TYPE OF FIXTURE OR GROUP OF FIXTURES	DRAINAGE FIXTURE UNIT VALUE (d.f.u.) ^a
Bar sink	1
Bathtub (with or without shower head and/or whirlpool attachments)	2
Bidet	1
Clothes washer standpipe	2
Dishwasher	2
Floor drain ^b	0
Kitchen sink	2
Lavatory	1
Laundry tub	2
Shower stall	2
Water closet (1.6 gallons per flush)	3
Water closet (greater than 1.6 gallons per flush)	4
Full-bath group with bathtub (with 1.6 gallon per flush water closet, and with or without shower head and/or whirlpool attachment on the bathtub or shower stall)	5
Full-bath group with bathtub (water closet greater than 1.6 gallon per flush, and with or without shower head and/or whirlpool attachment on the bathtub or shower stall)	6
Half-bath group (1.6 gallon per flush water closet plus lavatory)	4
Half-bath group (water closet greater than 1.6 gallon per flush plus lavatory)	5
Kitchen group (dishwasher and sink with or without garbage grinder)	2
Laundry group (clothes washer standpipe and laundry tub)	3
Multiple-bath groups ^c :	
1.5 baths	7
2 baths	8
2.5 baths	9
3 baths	10
3.5 baths	11

For SI: 1 gallon = 3.785 L.

a. For a continuous or semicontinuous flow into a drainage system, such as from a pump or similar device, 1.5 fixture units shall be allowed per gpm of flow. For a fixture not listed, use the highest d.f.u. value for a similar listed fixture.

b. A floor drain itself adds no hydraulic load. However, where used as a receptor, the fixture unit value of the fixture discharging into the receptor shall be applicable.

c. Add 2 d.f.u. for each additional full bath.

ATTACHMENT D

Oakland County Drain Commissioner Grinder Pump Operation Guidelines

OAKLAND COUNTY DRAIN COMMISSIONER OPERATIONS & MAINTENANCE DIVISION**Grinder Pump Operating Guidelines - Please Keep For Future Reference**

For information or for service, call 248-624-6366 (Oakland County Safety Dispatch)

- ◆ **DO** control excessive water discharge from your home. Your grinder pump is sized to handle water from your home up to about 11 gallons per minute. Water output from multiple fixtures can exceed the capacity and cause a sewage back-up. Controlling discharge from your home to at or below the grinder station discharge rate will reduce the potential for sewage back-ups and increased system costs due to unnecessary service calls.
- ◆ **DO** refrain from water usage during **any** pump malfunction until repairs are made.
- ◆ **DO** refrain from water use during any DTE electrical outage, unless your grinder pump is connected to an emergency/stand by generator. If you wish to supply power to your grinder pump station by using an emergency generator, the station power requirements are as follows: 5KW, 240 VAC, 20 amps with a neutral lead. **A larger generator will be needed if additional loads will be put on the generator.** Improperly installed or sized generators can cause damage to the grinder station resulting in malfunction and damage to various components. The homeowner is responsible for paying all costs incurred to repair or replace grinder station components for damage caused by improper installation or size of a generator. We recommend the use of a licensed electrician to size and install all emergency generators that will provide power to your grinder pump station.
- ◆ **DO** call Oakland County Safety Dispatch at 248-624-6366 whenever an alarm occurs. If your neighbor's grinder system is in an alarm state, and you suspect that they are not home, please call the dispatch number.
- ◆ **DO** ensure the grade around your grinder pump stations **slopes down** from the outside of the station. **Please allow grinder cover to be at least 4" above grade and remain uncovered.**
- ◆ **DO** familiarize yourself with the location of the grinder pump control panel and note the service center phone number on the panel. If you have a house sitter, be sure to tell them the function and location of the control panel.
- ◆ **DO** be aware that maintenance of the plumbing from the home/business to the grinder pump is the responsibility of the property owner.

DO NOT introduce the following materials into your grinder pump:

Kitchen related – grease and seafood shells.

Bathroom – dental floss, large amounts of hair, sanitary napkins, tampons/applicators, condoms, baby or adult wipes, disposable or cloth diapers, orthodontic or other rubber bands.

Misc. Household - elastic, "Swiffer" type cloths, glass, rope/string, cat litter, aquarium gravel, or other abrasives.

Construction related – sand, steel wool, metal or wood shavings, lapping compound, sawdust, screws/staples/nails, drywall compound, dust from drywall installation, grout, rags or paint (latex and/or acrylic).

Chemicals – liquid drain cleaners, dark room chemicals, explosives, gasoline or other flammable/combustible materials.

- ✓ **DO NOT** interrupt the electrical power supply to the grinder pump alarm panel. Ensure contractors working at a home/business equipped with a grinder pump understand that the grinder pump power should remain on at all times.
- ✓ **DO NOT** attempt to make grinder pump or service line repairs yourself.
- ✓ **DO NOT** attempt connecting to a pressure sewer or gravity sewer without the proper approvals and permits.
- ✓ **DO NOT** excavate (by hand or machine) near the grinder pump, grinder pump wiring, or grinder inlet/discharge piping before underground utilities are located and marked. Phone MISS DIG at 1-800-482-7171, at least 72 hours in advance of any digging.
- ✓ **DO NOT** connect water softeners, downspouts, sump pumps or storm drains to the grinder pump, or allow any other surface water to get into the grinder pump.
- ✓ **DO NOT** drive on the grinder pump cover. You will damage your grinder pump cover and accessway.

ATTACHMENT E

Village of Franklin Inspection/Permit Procedures

**OAKLAND COUNTY DRAIN COMMISSIONER
GRINDER PUMP INSPECTION/PERMIT PROCEDURES
FOR THE VILLAGE OF FRANKLIN**

1. OCDC review of construction plans relative to placement of grinder. Review and approval by OCDC before ground break.
2. All grinder pump installations with certification by Oakland County Drain Commissioner's office (OCDC) must be done prior to the issuance of the OCDC sewer connection permit.
3. All electrical connections and phone line installation (with inspection by the Village of Franklin) must be done prior to the issuance of the OCDC sewer connection permit. Call 248-626-9666 to set up inspection with the Village electrical inspector.
4. Homeowner's contractor pulls the OCDC sewer connection permit at the Village of Franklin. The contractor must be bonded with OCDC to do sewer connections and disconnections in Oakland County. The contractor must have a \$500 cash deposit on file with OCDC Water & Sewer Operations, as well as a current \$5,000 surety bond. Only contractors meeting these requirements will be allowed to schedule an inspection.
5. The bonded contractor should call OCDC at 248-618-9690 to schedule the inspection. Request for inspection must be made 48 hours prior to the time desired. An OCDC Pump Maintenance representative will witness the connection from the house to the grinder pump.

NOTE: Grinder pump station must be clean and completely empty at the time of inspection.

6. After the connection, all grinder pump components will be tested to ensure proper functionality. Contractor/builder will provide all fresh water necessary to complete the process.
7. If grinder pump installation is for septic system abandonment, OCDC Pump Maintenance representative will verify components of the septic system are abandoned properly. (See page 2 of Pressure Sewer Information sheet)

**OAKLAND COUNTY DRAIN COMMISSIONER
PRESSURE SEWER SYSTEM INFORMATION SHEET
FOR THE VILLAGE OF FRANKLIN**

This document outlines the items you must have completed before the discharge line from your home/business can be connected to the grinder pump and the grinder pump put into operation.

THE FOLLOWING WORK, AND RELATED COSTS, ARE THE RESPONSIBILITY OF THE PROPERTY OWNER.

ELECTRICAL WORK

1. **Your electrician** must obtain a permit from the Village office before he begins work and have it inspected by the Village electrical inspector once it is complete. Inspections are scheduled by calling 248-626-1601.
2. The Village contractor is responsible for installing the pump control panel box but not for connecting it to any wiring within your home/business. **Your electrician** must make that connection. See grinder pump manufacturer's specifications for your application.

EJECTOR PUMPS ARE NOT ACCEPTABLE FOR USE WITH GRINDER PUMPS.

3. At the request of the Village, the homeowner/builder is responsible for the installation of an extension phone line installed and connected at the house phone junction box. **(The extension phone line must be installed and be LIVE at the time of the Village electrical inspection.)** From there, the extension phone line will be run to the pump control panel leaving a three foot (3') coil of line. OCDC personnel will connect this at a later date.

PLUMBING WORK & SEPTIC TANK ABANDONMENT

1. All plumbing work and the abandonment of the septic tank must be done as soon as possible after the grinder pump connection is made.
2. If your laundry tub is not currently connected to the house sanitary discharge line they will have to be rerouted to empty into the sanitary discharge line.
3. Footing drains, sump pumps, water softener discharge and pump pits **MUST NOT** be discharged into the sanitary sewer system. If they are currently connected to the sanitary discharge line they must be disconnected and directed elsewhere.
4. The contents of your septic tank must be removed by a State Licensed Septic Tank Hauler.
5. The bottom of the septic tank must be fractured, the top of the septic tank must be crushed and the tank filled with sand. Arrangements for this work can be made with a licensed septic contractor of your choice.
6. The plumbing permit for any of the above work must be obtained from the Village Office before work is begun. When the work is complete, call the Village Office at 248-626-9666 to schedule an inspection. Advance notice of 48 hours is required and the inspections are done Tuesday and Thursday 2-5 p.m. and Saturday 9 a.m.-1p.m.

SANITARY DISCHARGE LINE

A contractor bonded with the Oakland County Drain Commissioner must make the connection of the grinder pump to your home or business. The resident must pay all costs to the contractor. A permit must be obtained at the Village of Franklin for inspection of the connection of the pump to the home/business. All electrical and plumbing work and inspections must be completed prior to the issuance of an OCDC Sewer Connection Permit. The fee for the OCDC permit is \$100.00 and is normally obtained by the contractor. The inspections require 48-hour advance notice and can be arranged by calling 248-618-9690 during regular business hours.

It is advisable for the homeowner or current resident to be home during the connection of the grinder pump since the contractor cannot make the connection if power is not supplied to the control box panel.

After the connection is made an Oakland County Inspector will verify that the system is operational.

If you have any questions, please call either the Village office at 248-626-9666 or the Oakland County Drain Commissioner's office at 248-858-1122.

Word/Franklin/Information Sheet
mdm
03-31-08



BUILDING APPLICATION

INSPECTIONS 248-626-1601

PERMIT No. _____

DATE STAMP

FOR WORK INVOLVING GRINDER PUMPS, PLANS WILL BE REVIEWED AND APPROVED BY OCDC PRIOR TO ISSUANCE OF A BUILDING PERMIT. FOR A LIST OF REQUIREMENTS SEE INFORMATION PACKAGE FOR INSTALLATION OR MODIFICATIONS OF GRINDER PUMP STATIONS. FOR GRINDER PUMP QUESTIONS, PLEASE CALL THE OCDC OPERATIONS ENGINEER AT 248-452-2026.

The undersigned hereby applies for a permit to (describe project)

Current market value of project \$ _____

SUBMIT CHECKLIST WITH APPLICATION

I. LOCATION OF PROJECT		Historic District ? yes no		Zoning District	
Address: _____					
II. PARCEL IDENTIFICATION #					
A. OWNER OR LESSEE					
Name: _____			Telephone No: _____		
Address: _____		City: _____		State: _____ Zip Code: _____	
B. ARCHITECT OR ENGINEER					
Name: _____			Telephone No: _____		
Address: _____		City: _____		State: _____ Zip Code: _____	
License No: _____			Expiration Date: _____		
C. CONTRACTOR					
Name: _____			Telephone No: _____		
Address: _____		City: _____		State: _____ Zip Code: _____	
License No: _____			Expiration Date: _____		
Federal Employer Number or Reason for Exemption: _____					
Worker's Comp Insurance Carrier or Reason for Exemption: _____					
MESC Employer Number or Reason for Exemption: _____					
III. TYPE OF IMPROVEMENT AND PLAN REVIEW					
A. TYPE OF IMPROVEMENT					
<input type="checkbox"/> New Building <input type="checkbox"/> Addition / Remodel <input type="checkbox"/> Demolition <input type="checkbox"/> Property <input type="checkbox"/> Other					
B. REVIEW(s) TO BE PERFORMED					
<input type="checkbox"/> Building / Trades <input type="checkbox"/> Engineering <input type="checkbox"/> Arborist <input type="checkbox"/> Legal <input type="checkbox"/> Other					

IV. PERMIT PROPOSAL

A. RESIDENTIAL BUILDING – show most recent use

☐ One Family ☐ Detached Condominium - number of units _____

☐ Attached Garage ☐ Detached Garage ☐ Other (describe) _____

B. NON-RESIDENTIAL BUILDING – show most recent use

☐ Church, Religious ☐ Public Utility ☐ Restaurant
☐ Service Station ☐ School, Library, Educational ☐ Grocery
☐ Office, Bank, Professional ☐ Store, Mercantile ☐ Other (describe) _____

C. PROPERTY – Describe proposal in detail _____

V. SELECTED CHARACTERISTICS FOR BUILDING PERMIT

A. PRINCIPAL TYPE OF FRAME

☐ Masonry, Wall Bearing ☐ Wood Frame ☐ Structured Steel
☐ Reinforced Concrete ☐ Other (describe) _____

B. PRINCIPAL TYPE OF HEATING FUEL

☐ Gas ☐ Oil ☐ Electricity ☐ Coal ☐ Other _____

C. TYPE OF SEWAGE DISPOSAL

☐ Pressure Sewer System ☐ Septic System

D. TYPE OF WATER SUPPLY

☐ Public or Private Company ☐ Private Well or Cistern

E. TYPE OF MECHANICAL

Will there be air conditioning? ☐ yes ☐ no Will there be an elevator? ☐ yes ☐ no

F. DIMENSIONS

First Floor (sq ft) _____ Garage / Accessory (sq ft) _____
Second Floor (sq ft) _____ Total Building Area (sq ft) _____
Basement (sq ft) _____ Total Land Area (sq ft) _____

G. NUMBER OF OFF-STREET PARKING SPACES

Enclosed _____ Outdoors _____

VI. APPLICANT INFORMATION:

Applicant is responsible for the payment of all fees and charges applicable to this application and must provide the following information:

Name:		Telephone No.	
Address:	City:	State:	ZIP:
Federal ID no. (if applicable)			

I hereby certify that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent, and we agree to conform to all applicable laws of the State of Michigan. All information submitted on this application is accurate to the best of my knowledge.

Section 23a of the State Construction Code Act of 1972, Act No. 230 of the Public Acts of 1972, being Section 125.1523a of the Michigan Compiled Laws, prohibits a person from conspiring to circumvent the licensing requirements of this state relating to persons who perform work on a residential building or a residential structure. Violators of Section 23a are subject to civil fines.

Signature of Applicant

Application Date

VII. FOR INTERNAL USE ONLY

	REQUIRED	APP / REJ	DATE	BY
A ~ BUILDING PERMIT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
B ~ CULVERT PERMIT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
C ~ FENCE PERMIT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
D ~ FLOODPLAIN PERMIT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
E ~ LANDFILL PERMIT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
F ~ SOIL EROSION PERMIT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
G ~ TREE REMOVAL PERMIT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
H ~ WETLANDS PERMIT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
I ~ HISTORIC DISTRICT	<input type="checkbox"/> Yes <input type="checkbox"/> No			
J ~ ZONING BOARD **	<input type="checkbox"/> Yes <input type="checkbox"/> No			

** Zoning District _____ Required Setback _____ Front _____ / _____ Side _____ Back _____
Proposed Setback _____ Front _____ / _____ Side _____ Back _____

VIII. VALIDATION**DATE STAMP**

Approved by:

(signature)

VILLAGE OFFRANKLIN BUILDING OFFICIAL

BUILDING CHECKLIST

ADDRESS:

☐ Permit Application

- ☐ Completed application, signed and dated
- ☐ Proof of ownership (ie: copy of title insurance policy)
- ☐ Current market value of proposed construction indicated
- ☐ Square footage indicated
- ☐ Homeowner's Permit requires signed and dated Home Owner's Affidavit on file
- ☐ Builder's Registration – copy builder's license and driver's license on file
- ☐ Permit application fee of \$ **20.00**
- ☐ Bond / Deposit amount of \$ _____
- ☐ Is project located in the Historic District?
 - ☐ yes - submit to Historic District Commission for review
 - ☐ no
- ☐ Two copies of certified plot plan indicating:
 - ☐ Dimensions of all property lines – indicate any easements
 - ☐ Dimensions of existing and proposed work
 - ☐ Setback dimensions of all yards
 - ☐ Well location
 - ☐ Location of septic system or pressure sewer facility
- ☐ Two FOLDED copies of construction plans – signed & sealed by licensed architect
- ☐ Two copies of building specifications (where applicable)
 - ☐ OCDC review of construction plans relative to placement of grinder
- ☐ Copy of approved site plan to Oakland County Pump Maintenance

☐ Culvert Permit

- ☐ Completed application / checklist
- ☐ Application Fee of \$ _____
- ☐ Engineering / Consultant Review

☐ Fence Permit

- ☐ Completed application / checklist
- ☐ Application Fee of \$ _____
- ☐ Engineering / Consultant Review

NOTE: Pool permit will not be finalized
nor bond refunded until fence
is installed and approved.

☐ Floodplain Permit

- ☐ Completed application / checklist
- ☐ Application Fee of \$ _____
- ☐ Engineering / Consultant Review
- ☐ Copy of MDEQ Floodplain Permit

☐ **Landfill Permit** (addition or subtraction of 10 cubic yards of fill)

- ☐ Completed application / checklist
- ☐ Application Fee of \$ _____
- ☐ Engineering / Consultant Review

☐ **Sanitary System**

- ☐ Septic System
 - ☐ Copy of current Septic Operating Permit
 - ☐ Approval from OCHD indicating septic will support remodel / addition
- ☐ Pressure Sewer System
 - ☐ Application / Engineering / Installation Fees of \$ 13,450.00
 - ☐ Pressure Sewer Easement Agreement – signed and dated
 - ☐ Grinder Pump Station specification, location on property, station invert on plans with OCHD approval
 - ☐ Fixture unit count _____

☐ **Soil Erosion Permit** (property: over 1 acre OR within wetlands OR has storm drain)

- ☐ Completed application / checklist
- ☐ Application Fee of \$ _____
- ☐ Engineering / Consultant Review
- ☐ Copy of Oakland County Drain Commission Permit

☐ **Tree Removal / Replacement Permit or Tree Waiver Affidavit**

- ☐ Completed application / checklist
- ☐ Application Fee of \$ _____
- ☐ Engineering / Consultant Review - **OR**
- ☐ Affidavit confirming no trees will be disturbed during construction

☐ **Well**

- ☐ Use existing well
- ☐ Abandon existing well
- ☐ Install new well
 - ☐ Copy of Oakland County Health Department analysis of water

☐ **Wetlands Permit**

- ☐ Completed application / checklist
- ☐ Application Fee of \$ _____
- ☐ Engineering / Consultant Review

THIS LIST ACCURATELY DESCRIBES ALL WORK DONE AT THIS ADDRESS

REQUIRED INSPECTIONS

The following is a list of required inspections necessary for issuance of a Certificate of Occupancy in the Village of Franklin.

1. Footings: Trench, spread, interior bearing wall and/or exterior wall footings
2. Electrical – Temporary connect
3. Backfill
4. Mechanical – Gas line test
5. Plumbing – Underground: drain, waste and vents
6. Exterior foundation drains
7. Waterproofing or Damp-proofing
8. Basement slab – stone, gravel, wire mesh, Visqueen
9. Garage Slab – compaction
10. Electrical – Rough
11. Mechanical – Rough: H.V.A.C. & Gas
12. Mechanical – Rough: Pre-fab fireplace
13. Plumbing – Rough: water, tub & shower sets
14. Brick – Flashing & Weep Holes
15. Rough framing
16. Pressure Sewer System / Sewer Lines by OCDC
17. Insulation
18. Electrical –Final
19. Plumbing – Final: including well pump / water report from OCHD
20. Mechanical & H.V.A.C. – Final
21. Mechanical – Final: pre-fab fireplace
22. Final Grade and Trees
23. Final Building

The above are customary inspections. Not all projects require all of the above inspections. Some projects may be unique, requiring additional inspections as stipulated by the building official.