

INTRODUCTION

This manual is a guide to the operation and maintenance of your Septic Tank, Effluent Pumping (S.T.E.P.) system.

While many homeowners are capable of and occasionally install gravity septic systems, the installation of the S.T.E.P. system is considered by Anchorage Tank to be the province of a professional. We provide assistance to *contractors* to assure the homeowner of proper installation. Due to our time constraints, we are unable to render *installation* assistance on those systems not so installed.

Your Installer is: _____

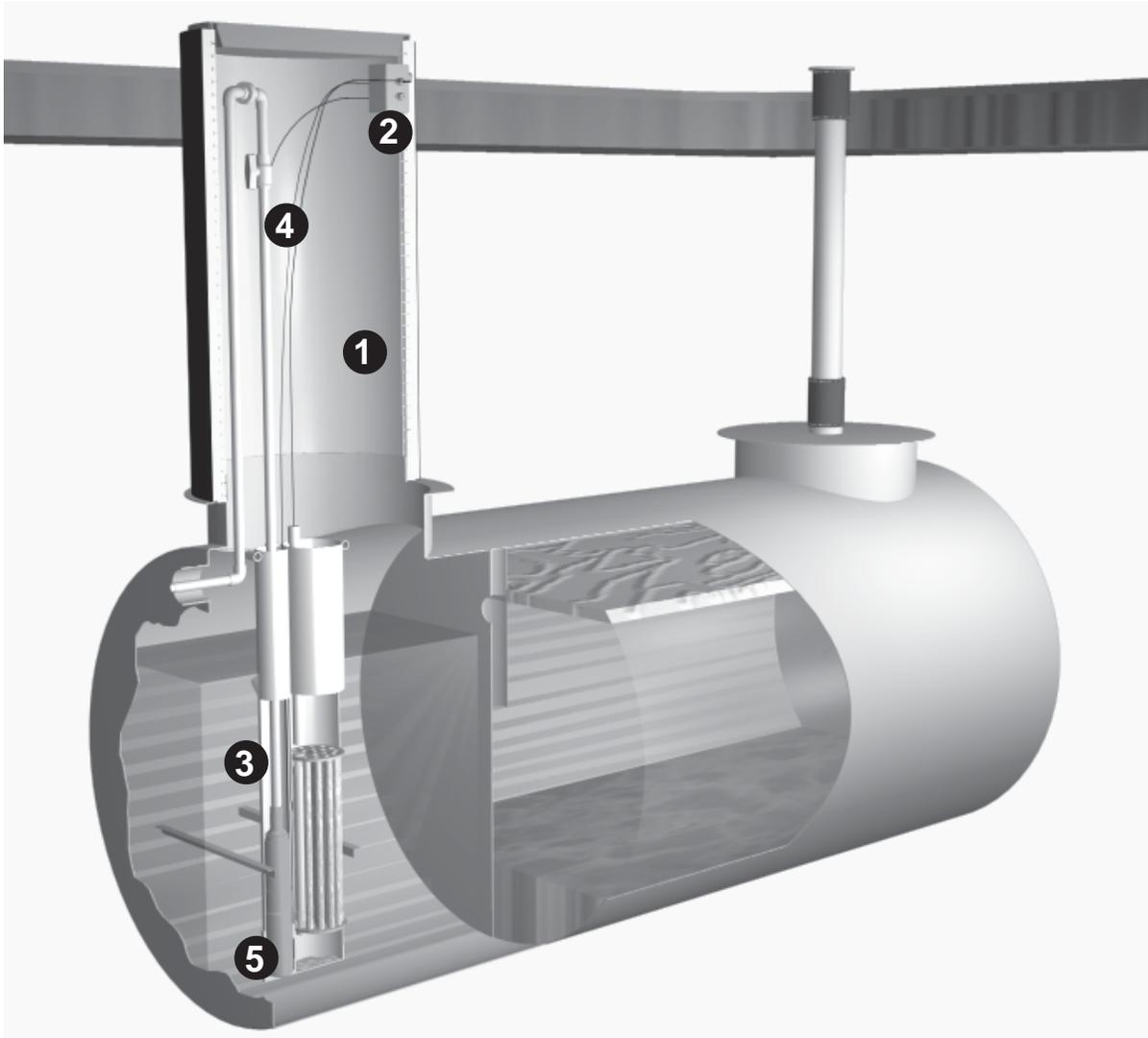
The Telephone # is: _____

Your installer has provided you with the best equipment of its kind available today. It is a professionally designed unit manufactured by, and originally purchased from Anchorage Tank & Welding, Inc. 2723 Rampart Drive, Anchorage, Alaska 99501, telephone (907) 272-3543.

The S.T.E.P. tank is equipped with a patented pumping system designed and manufactured by Orenco Systems, Inc. 814 Airway Avenue, Sutherlin, OR 97479-9012, telephone (541) 459-4449. In the event you have any questions about or any problems with your S.T.E.P. system, please carefully review this manual paying particular attention to the trouble shooting guide. If your difficulties persist, a call to Anchorage Tank can usually clear things up.



We plan to update this manual periodically as our experience with the S.T.E.P. system increases. If you are not the original purchaser of the system, you should contact Anchorage Tank to receive your update.



A residential system is shown, but the concept is the same for commercial applications.

Septic Tank, Effluent Pumping (S.T.E.P.) System

The Anchorage Tank & Welding, Inc. Commercial S.T.E.P. System (also called a Lift Station) is a combination of a specially designed Anchorage Tank septic tank and Orenco Systems, Inc. riser, pumps, and controls.

The S.T.E.P. system works the same as a septic tank, except the effluent is pumped to a drainfield instead of flowing there by gravity.

Designed specially for tough Alaskan conditions, the S.T.E.P. System is available with either single or duplex pumps, in either residential or commercial configurations.



1 Riser, Lid, and Accessories

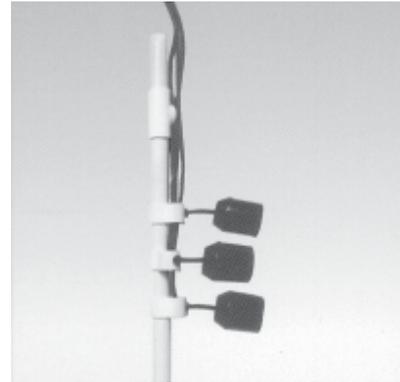
- Allow easy access to tank
- Attractive, non-skid lids
- Strong & lightweight
- Insulated with 2" urethane foam
- Standard 48" length
- Longer risers available in 12" increments
- Tamper resistant



2 External Splice Box

- UL listed
- At-grade installation
- Strong & lightweight
- Completely watertight
- Provides easy access for inspection and servicing
- Covered by U.S. Patent numbers D461,870 & D445,476

An explosion-proof splice box for pump wiring connections is also included.



3 Float Switch Assembly

- For reliable pump control
- Pilot duty or motor-rated switches
- Arrangements for any pumping situation

Your float switch assembly will have only 2 floats.



4 Hose and Valve Assembly

- Intelligently designed with quick disconnect unions, ball valves, and flexible hose and fittings
- Provides easy access for maintenance and servicing of the pump system
- Configurations available for deep installations and designed for Alaskan conditions



5 Effluent Pump

- Turbine-type effluent pump manufactured specifically for wastewater applications. UL listed
- Lightweight (about 25 pounds) yet powerful
- High pressure capacity to clear plugged orifices.
- Extremely durable and versatile



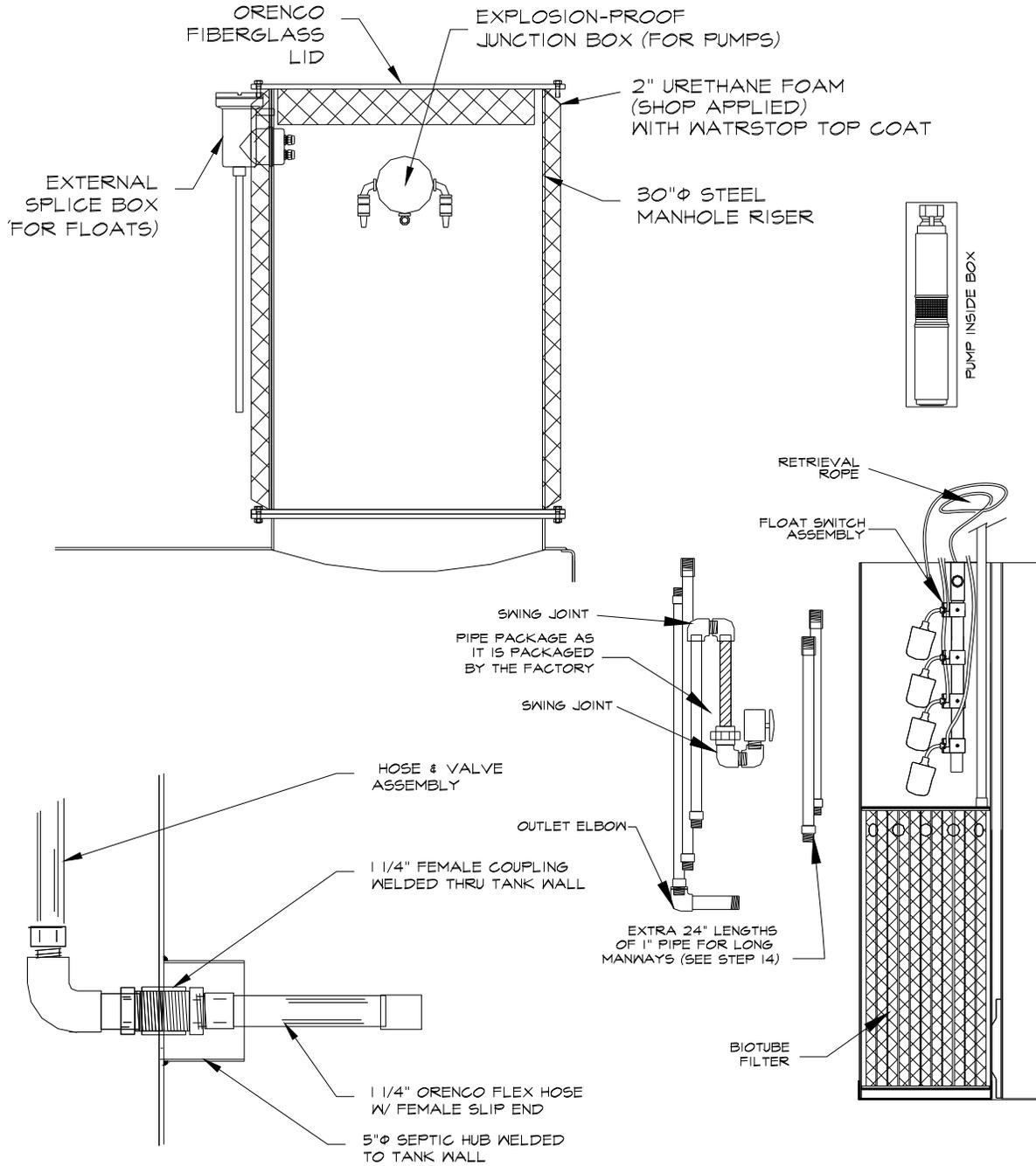
Control Panel

- UL listed
- Engineered specifically for wastewater applications
- Corrosion-proof NEMA 4X rated enclosures
- Models for any need

Commercial Liftstation Manual

DRAWING NO. 1
LIFT STATION COMPONENTS

(TANK NOT SHOWN)



COMPONENTS

Please take a moment here to review the drawings of the S.T.E.P. components, shown in drawing #1, on the facing page. The components include:

1. THE TANK.

Although not shown with the components, your tank is a specialized unit designed and manufactured specifically for the S.T.E.P. system. It is not a standard septic tank. It is factory tested for water tightness and is equipped with vault retaining angles and a flanged manway with insulated riser for pump vault access.

2. THE PLASTIC PUMP VAULT.

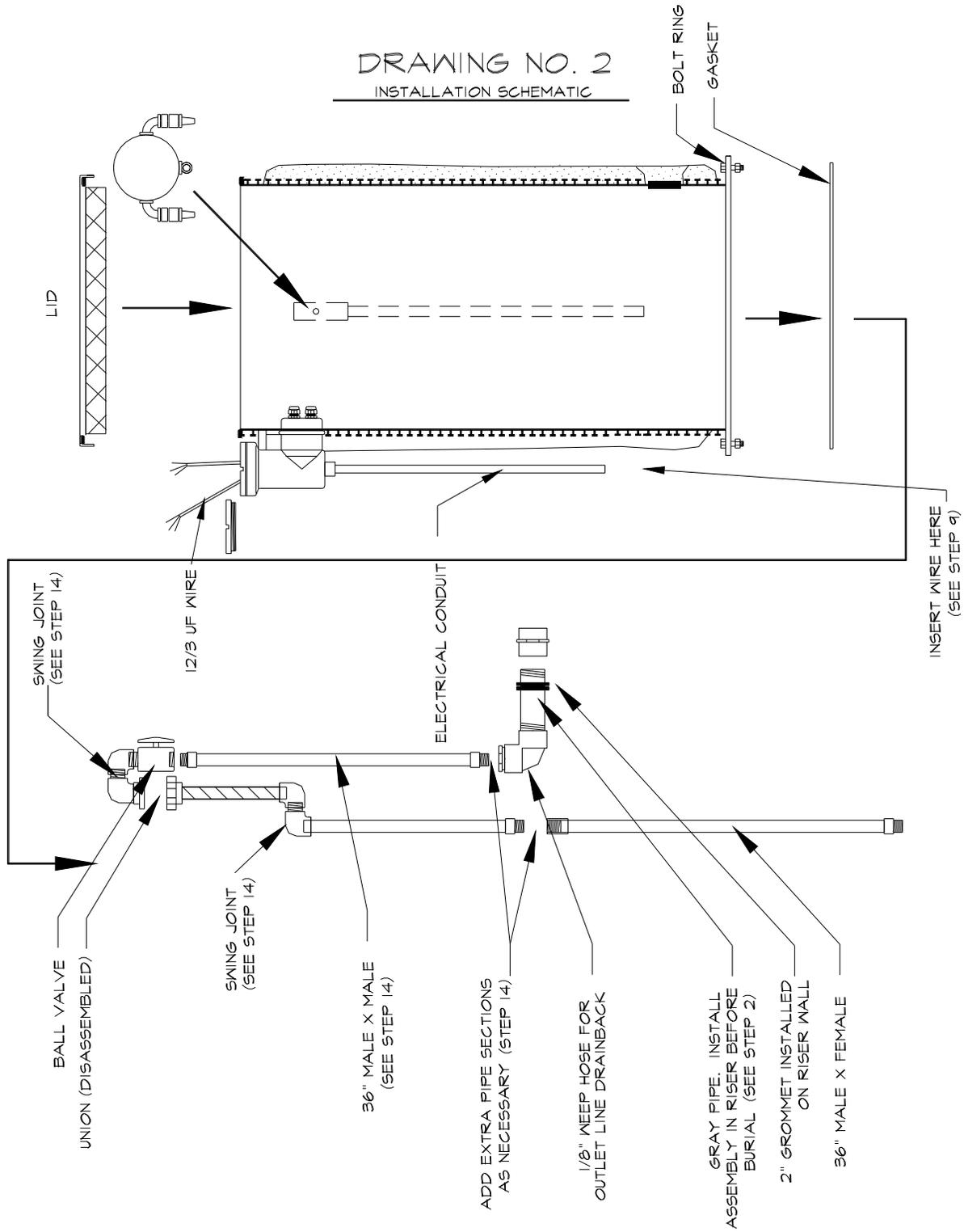
This 15" diameter x 60" long screened vault, is constructed of PVC plastic, because plastic is not affected by the caustic environment of your septic tank. The screened vault is the heart of your system. It is your primary insurance against drainfield failure due to clogging from particulate matter and grease. It must be maintained on a regular basis. See the maintenance section for instructions. This vault contains:

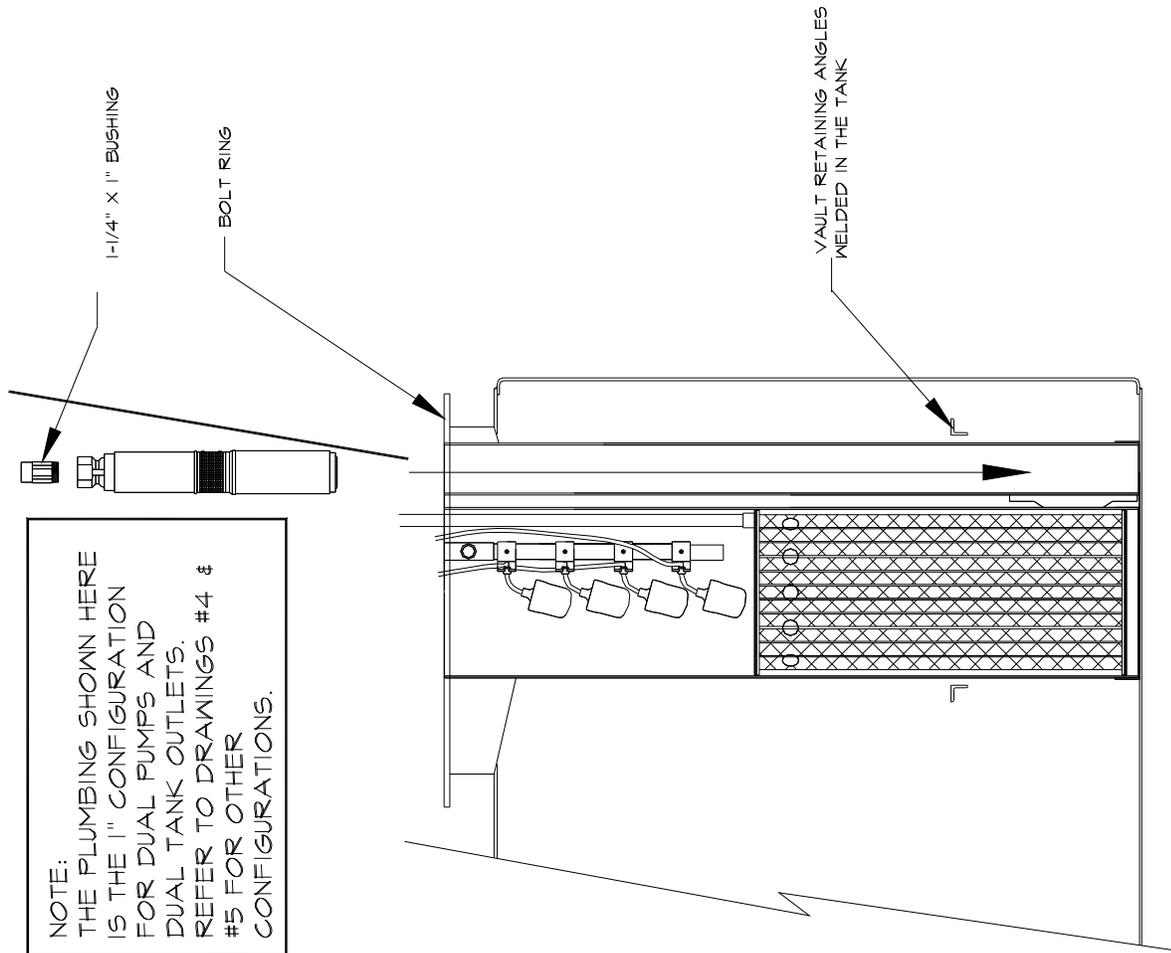
- a.) two 4 inch diameter tubes called a flow inducers, in which the pumps are placed;
- b.) an adjustable float holder for the level control float switches;
- c.) a check valve for draining when the vault is pulled for maintenance;
- d.) a nylon retrieval rope;
- e.) OSI Biotube™ effluent filter;
- f.) the pump is a 1/2 horsepower submersible turbine pump especially designed and Underwriters Laboratories listed as an effluent pump. In the unlikely event that it ever needs to be replaced, it must be replaced by exactly the same type pump, which is available only from Anchorage Tank or Orenco Systems. A similar looking well-water pump is unlisted for and is *not* designed to be used in septic effluent and may fail prematurely. The piping and fittings are all common schedule 40 PVC plastic, available from almost any plumbing store.

3. THE ELECTRICAL CONTROL / ALARM PANEL.

The electrical control/alarm box is weatherproof, and designed to be mounted outside the house within view of the septic tank. Ideally, the electrical control/alarm box should be mounted on the wall inside the garage. The electrical controls inside the box are activated by float switches in the tank. When this control panel is mounted outside, the Municipality of Anchorage, requires a remote alarm mounted indoors as well. This alarm is fed through telephone wire from a relay in the main electrical control box. Inside the control box are the main circuit breaker (gray), the alarm circuitry, and the terminal strip where the connections to the house power and the tank are made. Replacement parts for all electrical components are available from Anchorage Tank. The box is equipped with a hasp and latch so it can be locked when one is working on the electrical components in the system.

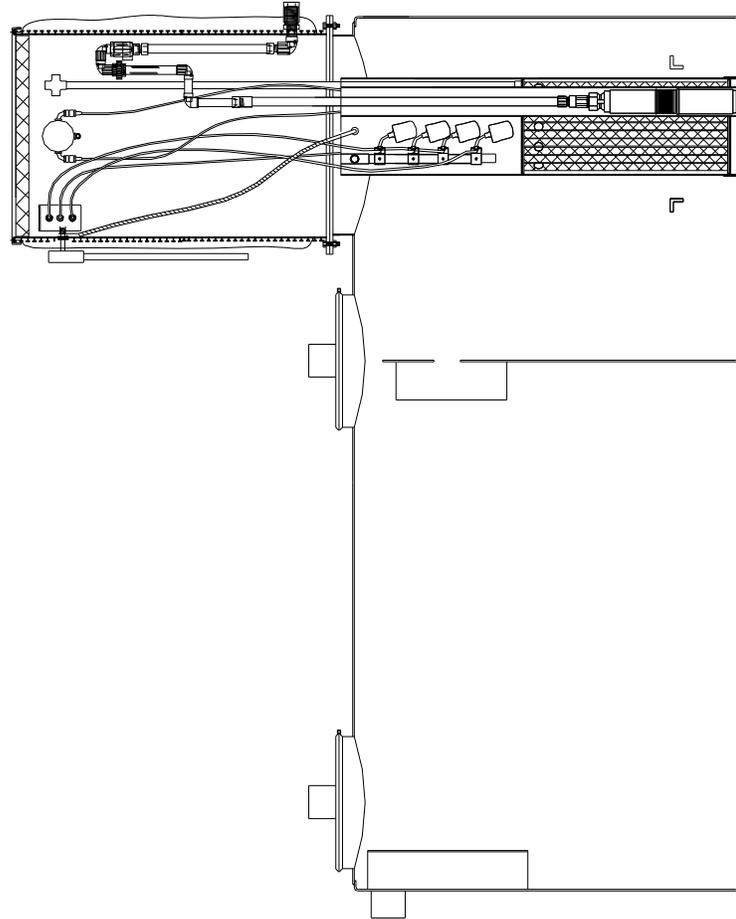
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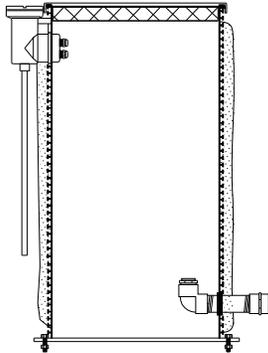


	3000	3500	4000	4500	5000	6000	7500	8000	10,000	
RESERVE CAPACITY ABOVE ALARM	213 GAL	349 GAL	284 GAL	385 GAL	1073 GAL	1265 GAL	1578 GAL	1703 GAL	2140 GAL	
CAPACIATY BETWEEN PUMP ON & PUMP OFF	175 GAL	222 GAL	284 GAL	276 GAL	301 GAL	355 GAL	443 GAL	478 GAL	601 GAL	
FLOAT LEVEL SETTINGS ABOVE VAULT BOTTOM	CENTER FLOAT CORD AT									
ALARM ON / OFF	67"	65"	67"	66"	74"	74"	74"	74"	74"	
	63"	61"	63"	62"	70"	70"	70"	70"	70"	

DRAWING NO. 3
ASSEMBLED LIFT STATION TANK



PREPARING THE RISER



Riser for a steel tank shown.

You may have noticed that your tank has a traditional inlet but no outlet. An increase in the pump vault height has resulted in the outlet of the system punching through the riser at a location to be determined by you. The object here is to pre-install the outlet so the elbow is pointing up. This will make it easy to connect the hose & valve assembly later on.



Grinding access riser ribs

Once you've located the desired position of the outlet through the riser, use a grinder or other cutting tool to notch through the PVC ribs on the outside. (You may also have to chisel away foam insulation from the riser.)

Using a hammer and chisel, break the ribs from the riser. Use a grinder to remove any remaining rib material.

You will need a 2-3/4" hole saw to drill out the 2" diameter opening for the grommet installation .



Removing ribs from the access riser



Drilling hole for grommet

**Once the grommet is installed, be sure to seal it to the riser wall.
Use the Orenco ADH-100 sealant supplied.
It comes in a tube and can be applied with a caulk gun.**

PREPARING THE RISER CONTINUES**NEW RISER GASKET MATERIAL**

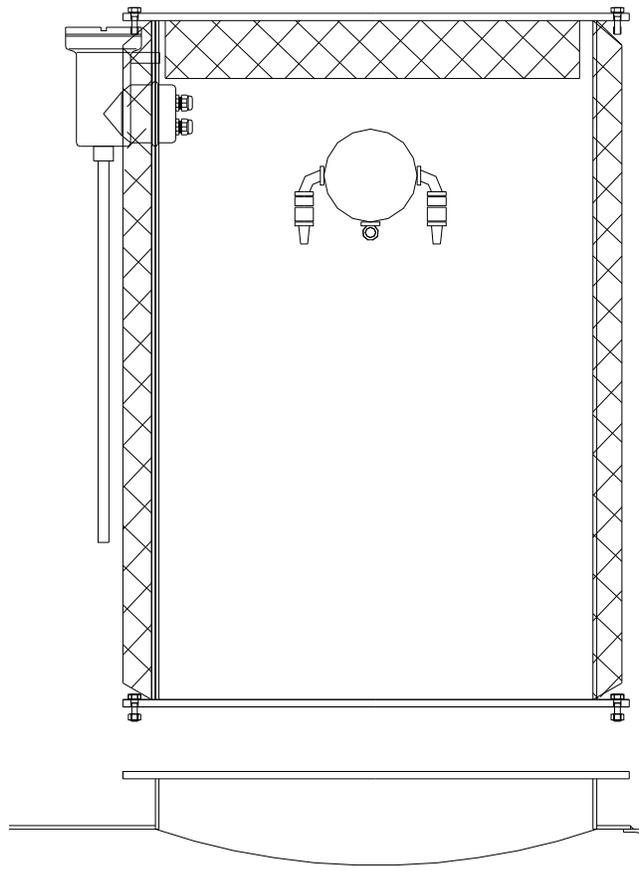
The new process used to make the fiberglass bolt ring creates an uneven surface for the bolt flange. Therefore the 1/8" neoprene gasket has been replaced with a roll of butyl tape to form a watertight seal. Also, you will be supplied with 2" long bolts for this extra thickness.



INSTALLING THE RISER

Set the 30" diameter insulated riser onto the tank with the electrical conduits oriented toward the power source.

Using the butyl tape provided as a gasket, bolt it down evenly and tightly. It is absolutely essential that no ground water leaks into your S.T.E.P. system. The system size was designed only for the expected load from the building and is sure to fail if significant amounts of unanticipated water are introduced.

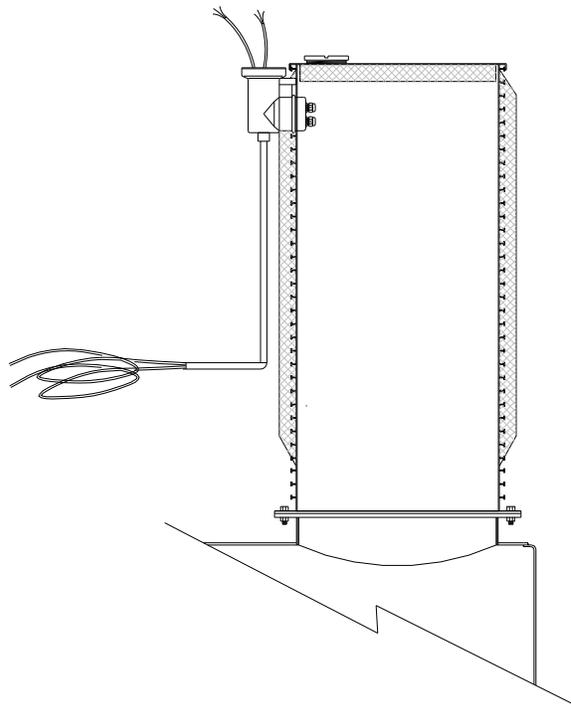


ROUGH IN WIRING

Remove the top of the junction box (J-box). It spins off the top, like opening a plastic jar.

For residential applications lay 2 pieces of 3 wire, UF (for Underground Feed) conductor (with ground) in the trench between the electrical control box and the tank. (Use 12 GA for runs less than 175' and 10 GA for longer runs.) That's a total of 6 insulated wires and 2 bare grounds. **Commercial applications require the wiring to be in conduit.** All exposed wiring must be in conduit. There should be a layer of fill over the piping before laying the wire. Mark one of the cables at each end (usually by taping it) for easy identification once the trench is backfilled. Lay two coils of wire at the house and two more at the base of the manhole.

Push both pieces of UF wire up the 1" conduit on the outside of the manway leaving about 2 feet sticking out of the top of the j-box. Leave the electrician plenty of extra wire on both ends. Seal the conduit at both ends with plenty of silicone caulking.

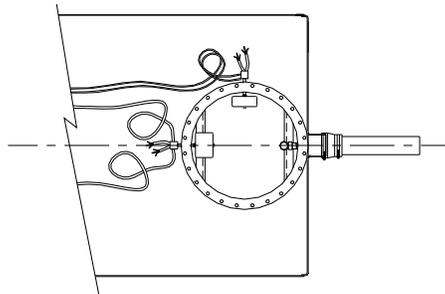


All wiring must be placed in a conduit. Experience has shown that wires between the control panel and the riser can go bad. The homeowner will appreciate your ability to snake a new wire through the conduit rather than digging up their new hydro-seeded lawn.

The entire system may now be backfilled. Leave an open area in the trench about 2' out from the foundation for the electrician to install his conduit on the outside of the building. The conduit elbow on the manway should remain above grade.

FINISH PLUMBING

Stop for a moment and orient ourselves, we are now complete with the dirtwork. We are standing on the ground looking down through the manhole into the tank. We are now going to set the vault and make up all the plumbing. Consult drawing #2.



Step 1 Remove everything but the flow inducer and the float assembly from the pump vault. Referring to drawing #3, check and, if necessary, set the float levels for your size tank. The distance between the floats is not normally factory preset .

Step 2 If the floats must be field adjusted, refer to drawing #3, and remove the float assembly from the vault. Loosen the set screw in the upper float holder and slide it to its proper location. The measurement is made between the centerline of the 2 cords and is the difference between the on/off float cord and the alarm float cord. Retighten the set screw and reinstall the float assembly in the pump vault.

Step 3 Now set the bottom float cord at the appropriate distance above the vault floor by loosening the adjustment collar on the float stem holder and moving the pipe with the floats on it as necessary. *Do not alter the floats' tether lengths.* Make sure the floats can swing freely without hanging up on each other or on the screen.

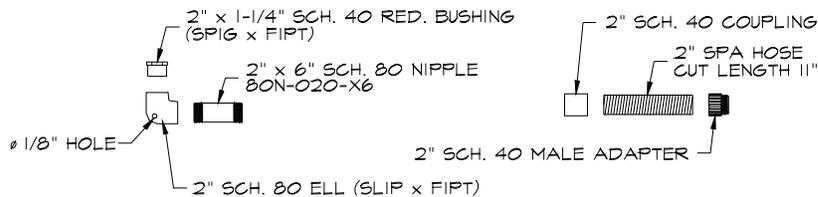
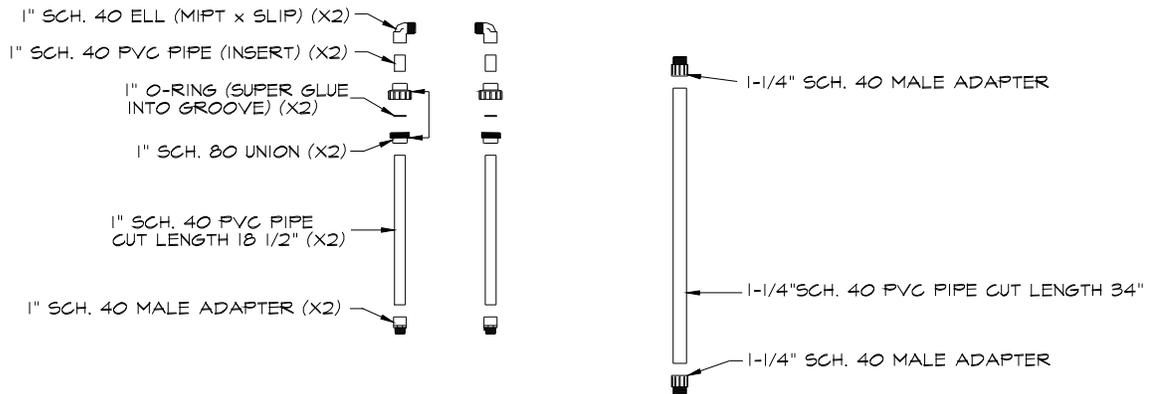
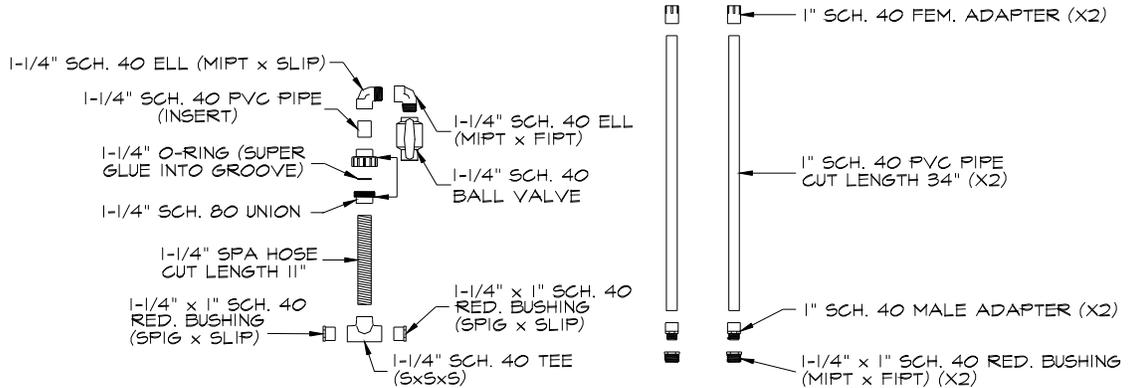
Step 4 Lower the vault to the tank floor between the vault retaining angles.

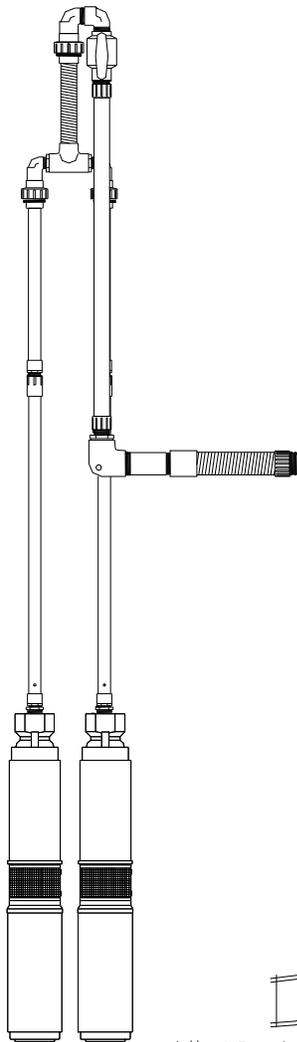
Drape the retrieval rope over the j-box. Be sure to bring up the float wires as the vault is lowered. Push the pump and float cords through the cord grips and hand tighten each grip.

Before completing the following steps, please make note of the following cautions:

Always use lots of Teflon paste on all the threaded joints. They are designed, as you can see, to be taken apart. Therefore, it should go without saying that these joints should never be glued, although we've seen it done. Joints must be hand tightened only. Move the swing joints to make the plumbing fit. If it doesn't fit, you're probably doing something wrong.

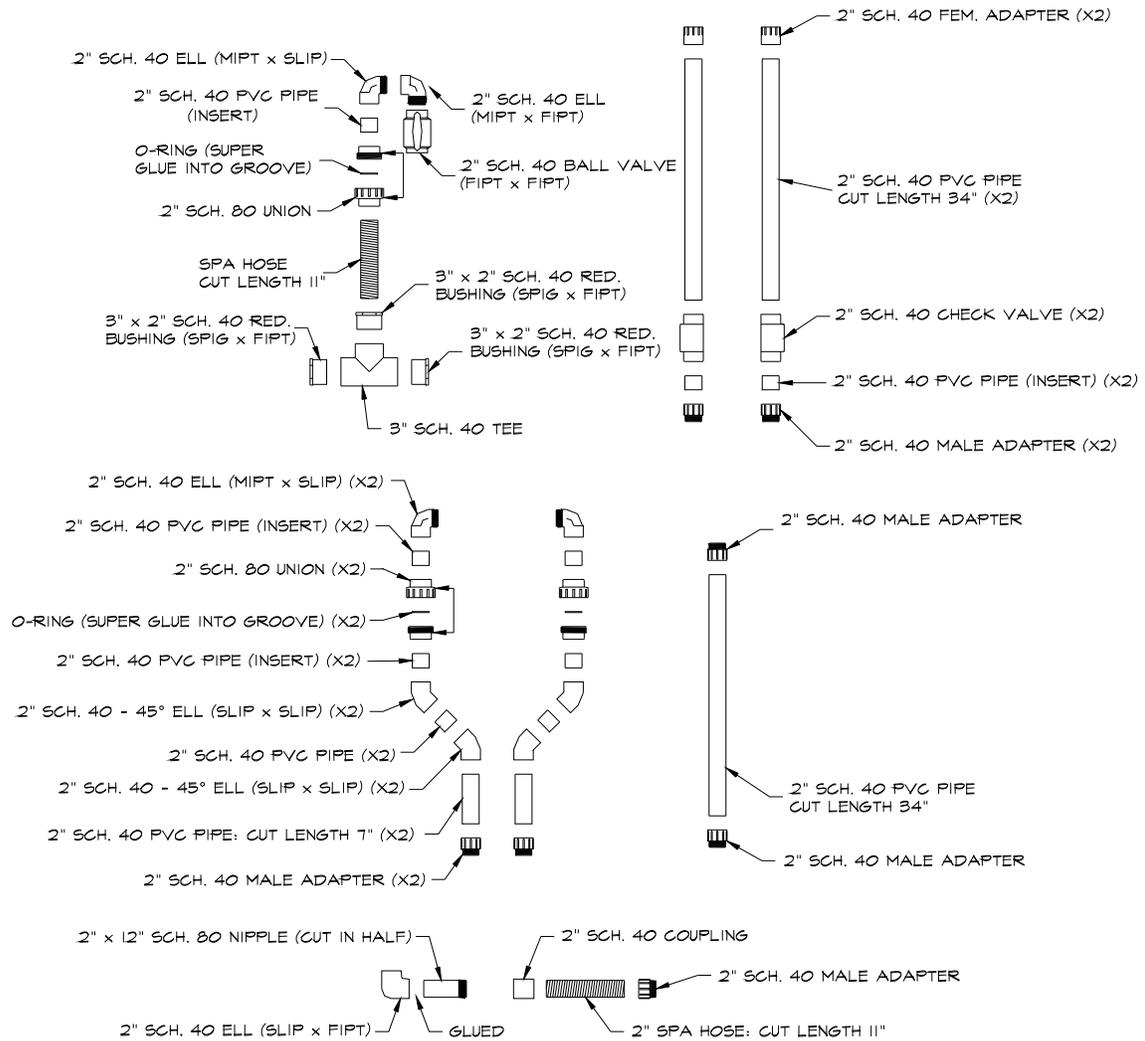
Commercial Liftstation Manual

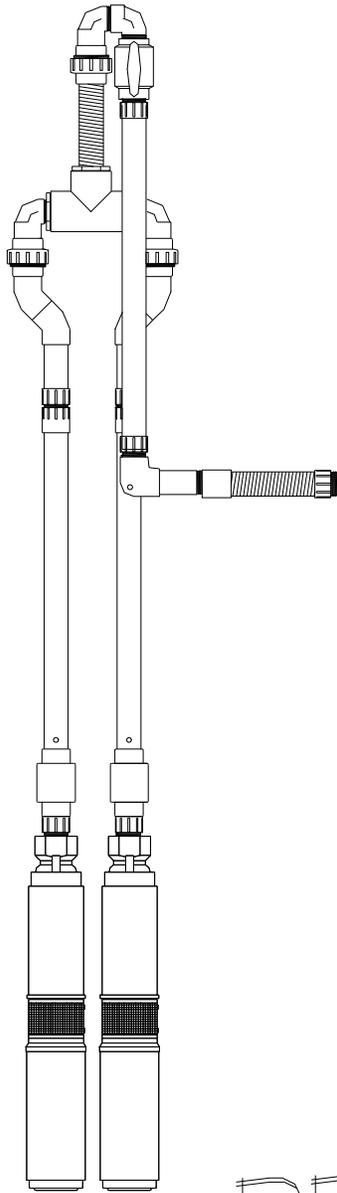




DRAWING NO. 3
1" PVC PIPING - SINGLE TANK OUTLET

Commercial Liftstation Manual





DRAWING NO. 4
2" PVC PIPING - SINGLE TANK OUTLET

Step 5 Lay out the pipe pieces as shown on drawings #2 and either #3 or #4. The swing joint piece usually needs to be twisted into the correct position. If using a 6' long or longer manway, add one of the extra lengths of pipe as shown on drawing #1 to each side of the plumbing. Disconnect the union in the swing joint and thread the double male end pipe into it. Reach down into the tank and screw it into the threaded 90 degree fitting you previously installed in the riser. This is why alignment of the 90 degree elbow and careful backfilling was so important.

Don't cross thread it. If you can't thread this piece in from ground level, it may be necessary to go down into the tank to do it. The PVC piping will stand a little bending but go easy. If excessive strain causes the piping to break, you can bet it will do so at 30 below, after the tank has been in use for a while. In cases of gross misalignment, it may be necessary to cut the vertical pipe and install a small length of 1-1/4" pressure hose to obtain the necessary flexibility for aligning this piece with the other plumbing.

Step 6 Make up the pumps side of the plumbing by connecting all the pieces shown on drawing #2. Lower the pumps into the flow inducer (both pumps will fit). Turn the vault and the swing joints to align the union halves and connect the union hand tight only. Make sure the floats can swing freely without getting hung up on the plumbing or screen.

Step 7 ***Put the lid on the riser and be sure it is secured with the retaining nut. An unsecured lid or open tank is a safety hazard!***

Step 8 Obtain a can of Budweiser and call the electrician. His instructions are in the electrical control box.

FINISH WIRING

In the City of Anchorage, an electrician must be employed to do the wiring. Outside the city, whether required or not, this is a good idea unless one is thoroughly familiar with wiring and local codes.

A set of wiring instructions are inside the electrical control panel, as well as in this manual.

This equipment must be installed in compliance with the National Electric Code, as well as state and local codes.

Panel Wiring Diagram Model MVP-DAX1 PTR0

CAUTION

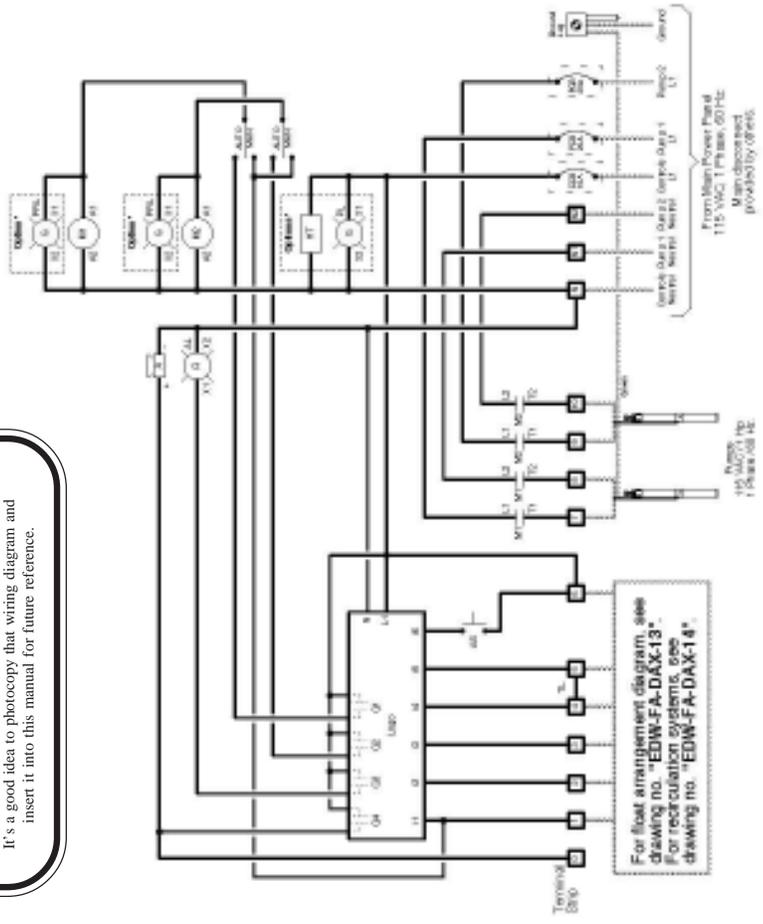
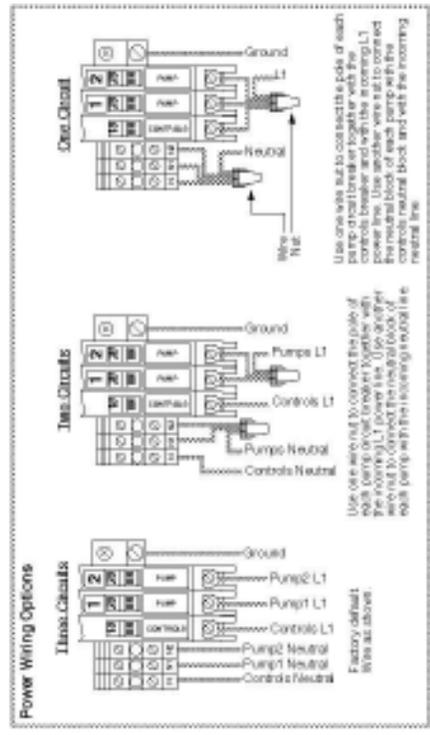
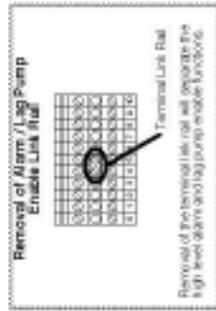
This wiring diagram might be incorrect for your system. To be sure, please refer to the wiring diagram found on the inside front cover of the control panel. It's a good idea to photocopy that wiring diagram and insert it into this manual for future reference.



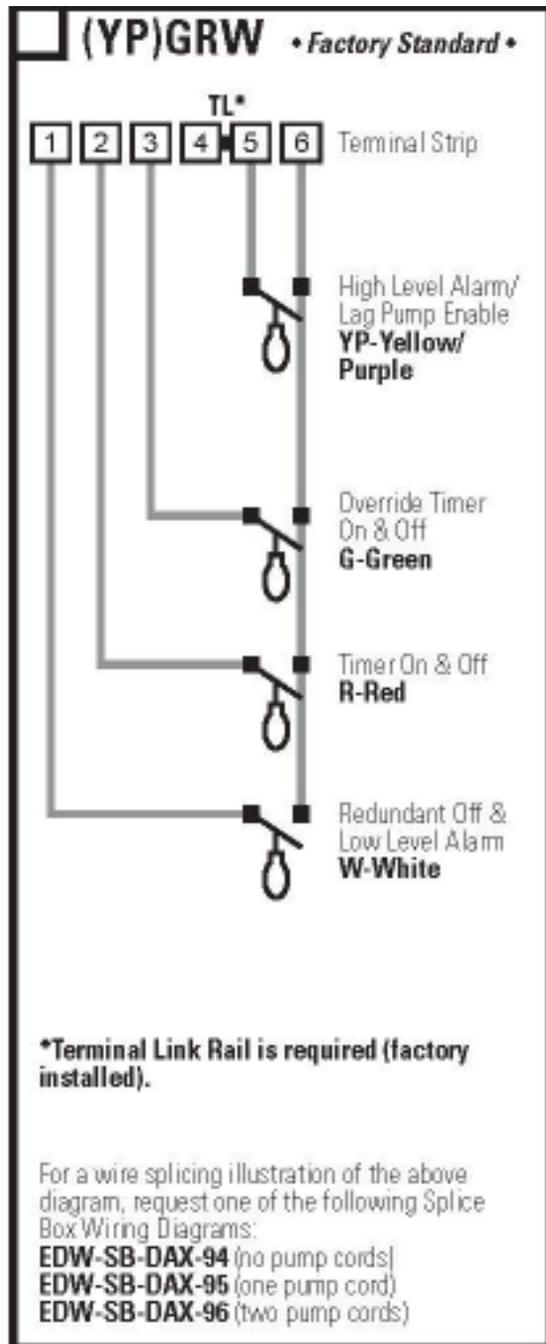
Cresco Systems Incorporated
 814 ASTRAY AVENUE
 SEASIDE, OREGON
 97138-4022
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FACSIMILE: (503) 426-3884

- Key**
- Factory Wire
 - - - Alarm Field Wire
 - A = Audio Alarm, 115 VAC
 - AL = Alarm Light
 - AS = Alarm Service Station
 - CB = Control Board
 - CD = Control Display
 - LC = Logic Controller
 - MCB = Motor Contactor
 - TL = Terminal Link
- *Options**
- HT = Heater
 - PL = Power Light
 - REL = Pump Run Light

For MVP-DAX operation description, see drawing no. "EIN-CP-014".



Float Arrangement Diagram



Float Types

- **Typical Orenco float model: A**
- **Specs:** contact - normally open
differential - no minimum
power rating - signal
- **Possible substitutions: B,C,D**

Control Panel Series :MVP-DAX-PT-RO

Drawing No: EDW-FA-DAX-13 (provided by Orenco Systems, Inc.)

MVP - Control Panel Instructions

Contrast Adjustment and Time & Date Settings

Orengo's Most Versatile Panel (MVP) line of control panels includes an easy-to-use programmable logic unit that incorporates many timing and logic functions. The readability of the display may vary with temperature and ambient light. If the screen is difficult to read, adjusting the contrast is recommended. Instructions for adjusting the contrast are shown below. Setting the date and time is typically not necessary. However, if required, the time and date can be set by following instructions shown below.

To adjust the settings, use the four arrow keys located on the face of the unit (up, down, left, and right), along with the "ESC" key and the "OK" key. Follow the steps, below:



Changing Settings:

Step 1: Press **▼** repeatedly until the display does not change. To begin the configuration process, press the "ESC" key.



Step 2: Select "Set..." (Press **▲** or **▼**), and then press the "OK" key.

Warning: Do not select "Stop". Doing so may erase the panel programming, which can not be restored without the use of an EEPROM card, which is not included with the panel. If this is selected by accident, a confirmation screen will come up. Select "No" and press the "OK" key immediately.

If adjusting contrast, continue with the steps below. If adjusting time & date, skip to "Setting Time and Date:" on next page.



Adjusting Contrast:

Step 3: Select "Contrast" (Press **▲** or **▼**), and then press the "OK" key.



Step 4: Select the desired contrast (Press **←** or **→**), and then press the "OK" key.



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Step 5: To exit, press the “ESC” key once.

Setting Time and Date:



Step 3: Select “Clock...” (Press ▲ or ▼), and then press the “OK” key.



Step 4: Select “Set Clock” (Press ▲ or ▼), and then press the “OK” key.



Step 5: Move the cursor to the desired position by pressing ◀ or ▶.

Step 6: Change the value by pressing ▲ or ▼.



Step 7: To confirm your entries press the “OK” key once. Then, press the “ESC” key twice.

MVP-DAX PT RO Operation



Oreco Systems*
Incorporated

214 ARWAY AVENUE
SOUTH BEND, INDIAN
47309-0612

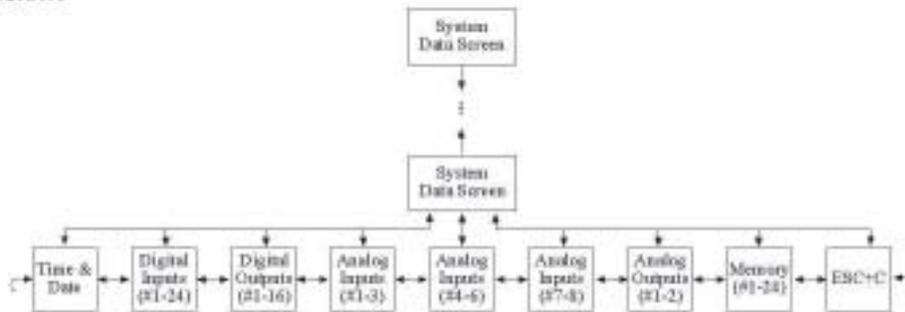
TELEPHONE:
(317) 453-4443

FACSIMILE:
(317) 453-2084

Oreco's Most Versatile Panel (MVP) line of control panels includes an easy-to-use programmable logic unit that incorporates many timing and logic functions. The units have built in screens which show the time and date, digital input status, digital output status, analog input status (3 screens), analog output status, memory flag status and an ESC + Cursor key status. (The analog input status, analog output status, memory flag status and ESC + Cursor key status screens are not used in this application.) Additionally, the following system data screens have been included in your panel:

System Data Screens:	Description:
1. Pump 1 CT & ETM	Pump 1 cycle counter at top of screen and pump run time in minutes beneath
2. Pump 2 CT & ETM	Pump 2 cycle counter at top of screen and pump run time in minutes beneath
3. OVR 1 CT & OVR 2 CT	Pump 1 override counter at top and pump 2 override counter beneath
4. High Lvl CT & Low Level CT	High level alarm counter at top of screen and low level counter beneath
5. Power Faults & Operating Hr	Power fault counter at top of screen and operating hours beneath

To move between screens, use the four arrow keys. The screens are accessed as shown below:



Digital Input and Digital Output Screens: The unit will activate various inputs and outputs as it operates (please refer to the Liquid Crystal Display screens shown below). Knowing what conditions cause the inputs and outputs to activate can be a helpful installation and troubleshooting tool. The following inputs and outputs have been used with your control panel:

Input Functions:

1. Redundant Off & Low Level Alarm Float
2. Timer On & Off Float
3. Override Timer On & Off Float
4. Lag Enable Float
5. High Level Alarm Float
6. Push To Silence

Activation Conditions:

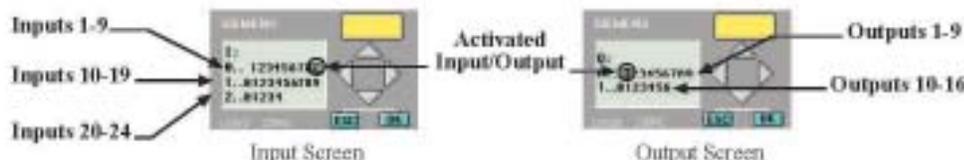
- Float in up position
- Pushbutton is pressed

Output Functions:

1. Pump #1
2. Pump #2
3. Level Alarm Light
4. Audible Alarm

Activation Conditions:

- Pump #1 is activated
- Pump #2 is activated
- Level Alarm Light is activated
- Audible Alarm is activated



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Your control panel can perform the float functions listed below. Depending on the number of floats for your application, some functions may be omitted or combined.

High Level Alarm: This float activates the alarm light (steady) and audible alarm when lifted for longer than the high level alarm delay. The audible alarm may be silenced by pressing the illuminated PUSH TO SILENCE button on the front of the control panel. The alarm light (steady) will remain on until the float is lowered, and the audible alarm will reactivate in 12 hours if condition is not corrected.

Lag Pump Enable: This float will activate both pumps when the timer function enters the on cycle. Both pumps will continue to run together until the lag pump enable float lowers.

Override Timer On & Off: This float activates the override timer function when lifted for more than two seconds. This timer function controls the pump cycles during high flow conditions. The override timer function will remain active until at least the set minimum number of override cycles have been completed and the float has lowered. When the override timer function has been completed, normal timer operation will resume.

Timer On & Off: This float activates the timer function when lifted. The timer will be activated while the float is up and will be deactivated 30 seconds after the float is lowered. This timer function controls the pump cycles during normal flow conditions. Note: The timer will start with its off cycle.

Redundant Off & Low Level Alarm: This float turns off the pumps when lowered for more than two seconds. This float is a secondary off float which will operate if the Timer On & Off float fails. Pumping will be disabled in both the automatic and manual modes. This float also activates the alarm light (flashing) and audible alarm. The audible alarm may be silenced by pressing the illuminated PUSH TO SILENCE button on the front of the control panel. The alarm light will remain flashing until the float is lifted, and the audible alarm will reactivate in 12 hours if condition is not corrected.

This panel supports four different modes of operation relating to the pump alternation which are based on selected parameter settings. See the setting page for this panel for information on how to adjust these parameters.

Alternating (default): Parameters "Pmp1Lead" and "Pmp2Lead" set to "Off"

The lead and lag pumps will alternate and for each cycle. This mode provides equal wear on each pump and is recommended for most applications.

Pump 1 Lead: Parameter "Pmp1Lead" set to "On" and parameter "Pmp2Lead" set to "Off"

The lead pump is locked to pump #1 and the lag pump is locked to pump #2. No alternation will occur. Pump #1 will be the primary pump for the system. Pump #2 will only be used during high flow conditions.

Pump 2 Lead: Parameter "Pmp1Lead" set to "Off" and parameter "Pmp2Lead" set to "On"

The lead pump is locked to pump #2 and the lag pump is locked to pump #1. No alternation will occur. Pump #2 will be the primary pump for the system. Pump #1 will only be used during high flow conditions.

Both Pumps: Parameters "Pmp1Lead" and "Pmp2Lead" set to "On"

Both pumps will run together for every cycle.

MVP-DAX PT RO Setting



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Oreco's Most Versatile Panel (MVP) line of control panels includes an easy-to-use programmable logic unit that incorporates many timing and logic functions. The unit has been programmed at the factory for the control functions required. The unit includes adjustable operational parameters and viewable monitoring information. Some operational parameters may need changing for your particular application.

The unit uses block names to identify the various parameters (please refer to the Liquid Crystal Display screen shown in Step #3). The following block types have been used with your control panel:

Block Names	Description	Factory Default	Time Range	Block Type
HLA Dly	High Level Alarm Delay	5 seconds	MM:SS	Timer
Off Time	Timer Off Time	60 minutes	MM:SS	Timer
On Time	Timer On Time	40 seconds	MM:SS	Timer
OVR Off	Override Timer Off Time	30 minutes	MM:SS	Timer
OVR On	Override Timer On Time	40 seconds	MM:SS	Timer
MinOCycl	Minimum Override Cycles	3 cycles		Counter
Pmp1Lead	Pump 1 Lead Select	Off		Softkey
Pmp2Lead	Pump 2 Lead Select	Off		Softkey

Timer blocks have three timebase units that can be used; s = seconds, m = minutes, h = hours. If an h appears after the timer setting then the time will be HH:MM (e.g. 01:55h = 1 hour and 55 minutes). If an m appears after the timer setting then the time will be MM:SS (e.g. 05:00m = 5 minutes and 0 seconds). If an s appears after the timer setting then the time will be SS.ss (e.g. 25:13s = 25.13 seconds).

All adjustable parameters DO NOT use the same type of blocks, check the block types above to determine which steps apply to your application.



Changing Adjustable Parameter Blocks:

Step 1: Press \blacktriangledown repeatedly until the display does not change. To begin the configuration process, press the "ESC" key.



Step 2: Press \blacktriangledown on the unit to select "Set Param." Then press the "OK" key.

Warning: Do not select "Stop." Doing so may erase the panel programming, which can not be restored without the use of an EEPROM card, which is not included with the panel. If this is selected by accident, a confirmation screen will come up. Select "No" and press the "OK" key immediately.

Changing Adjustable Parameter Timer Blocks:



Step 3: Press \blacktriangle or \blacktriangledown to view the parameter values. In this example, "Off Time" is being viewed.



Step 4: The first line indicates the set value for the parameter. In this example, the set time is 1 hour and 55 minutes, "T=01:55h." To change the set value for the parameter, press the "OK" key.

The second line indicates, in real time, how much time has elapsed for the cycle that is currently in process. The current value of the parameter is 45 minutes, "Ta=00:45."



Step 5: The cursor will appear in the set value. To select the digit to be changed, press \blacktriangleleft or \blacktriangleright . To change the value of a digit, press \blacktriangle or \blacktriangledown . In this example, the set value has been changed from 1 hour and 55 minutes to 58 minutes and 15 seconds. (The timebase can be changed from hours = h to minutes = m or seconds = s by moving the cursor to the far right and pressing \blacktriangle or \blacktriangledown).



Step 6: When the desired time value has been entered, press the "OK" key. The new time value will now be in effect.



Step 7: To exit parameter mode, press the "ESC" key twice.

Changing Adjustable Parameter Counter Blocks:



Step 3: Press \blacktriangle or \blacktriangledown to view the parameter values. In this example, "MinOCycl" is being viewed.



Step 4: The first line indicates the on threshold for the parameter. In this example, the "MinOCycl" is 3, "On = 3." To change the set value for the parameter, press the "OK" key.

The second line indicates the off threshold. This value must be set to zero, "Off = 0."

The third line indicates, in real time, how many counts have occurred for this process. The current value of the parameter is 2, "Cnt = 2."



Step 5: The cursor will appear in the set value. To select the digit to be changed, press \blacktriangleleft or \blacktriangleright . To change the value of a digit, press \blacktriangle or \blacktriangledown . In this example, the set value has been changed from 3 to 2.



Step 6: When the desired counter value has been entered, press the "OK" key. The new value will now be in effect.



Step 7: To exit parameter mode, press the "ESC" key twice.

Changing Adjustable Parameter Softkey Blocks:

Step 3: Press \blacktriangle or \blacktriangledown to view the parameter values. In this example, "Pmp1Lead" is being viewed.



Step 4: The bottom line indicates the current state of the softkey switch. In this example, the softkey is set to "Off". To change the set value for the parameter, press the "OK" key.



Step 5: The cursor will appear on the switch parameter. To change the value of the softkey switch, press \blacktriangle or \blacktriangledown . In this example, the set value has been changed from "Off" to "On."



Step 6: When the desired value has been entered, press the "OK" key. The new value will now be in effect.



Step 7: To exit parameter mode, press the "ESC" key twice.



MVP-DAX PT RO Reference Chart

Program Code: DA103-50

Input Functions:

1. RO & Low Level Alarm Float
2. Timer On & Off Float
3. Override Timer On & Off Float
4. Lag Enable Float
5. High Level Alarm Float
6. Push to Silence

Conditions for activation:

- Float in up position
- Pushbutton is pressed

Output Functions:

1. Pump #1
2. Pump #2
3. Level Light
4. Audible Alarm

Condition for activation:

- Pump #1 is activated
- Pump #2 is activated
- Alarm Light is activated
- Audible Alarm is activated

Built In Screens:

Built in screens are time & date, digital inputs, digital outputs, analog inputs, analog outputs, memory flag, and ESC+cursor key status. To view these screens, press the down arrow repeatedly until a built in screen appears, then use the left and right arrow keys to change between screens.

System Data Screens:

To change between screens, press the up and down arrow keys. The following screens have been used with your panel.

Screens:

1. Pump 1 Cycl CT & ETM
2. Pump 2 Cycl CT & ETM
3. OVR 1 CT & OVR 2 CT
4. High Lvl CT & Low Level CT
5. Power Faults & Operating Hr

Description:

- Pump #1 cycle counter on top and pump run time in minutes below
- Pump #2 cycle counter on top and pump run time in minutes below
- Pump #1 override counter on top and pump #2 below
- High level alarm counter on top and low level alarm counter below
- Power fault counter on top and operating hours below

Selecting Blocks for Viewing or Adjusting:

To begin to adjust parameters, press 'ESC'.

Block Names:	Description:	Time Range:
HLA Dly	High Level Alarm Delay	MM:SS
Off Time	Timer Off Time	MM:SS
On Time	Timer On Time	MM:SS
OVR Off	Override Timer Off Time	MM:SS
OVR On	Override Timer On Time	MM:SS
MinOCycl	Minimum Override Cycles	
Pmp1Lead	Pump 1 Lead Select	
Pmp2Lead	Pump 2 Lead Select	

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MVP-DAX PT RO Reference Chart

Program Code: DA103-50

Input Functions:

1. RO & Low Level Alarm Float
2. Timer On & Off Float
3. Override Timer On & Off Float
4. Lag Enable Float
5. High Level Alarm Float
6. Push to Silence

Conditions for activation:

- Float in up position
- Pushbutton is pressed

Output Functions:

1. Pump #1
2. Pump #2
3. Level Light
4. Audible Alarm

Condition for activation:

- Pump #1 is activated
- Pump #2 is activated
- Alarm Light is activated
- Audible Alarm is activated

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- Power fault counter on top and operating hours below

Selecting Blocks for Viewing or Adjusting:

To begin to adjust parameters, press 'ESC'.

Block Names:	Description:	Time Range:
HLA Dly	High Level Alarm Delay	MM:SS
Off Time	Timer Off Time	MM:SS
On Time	Timer On Time	MM:SS
OVR Off	Override Timer Off Time	MM:SS
OVR On	Override Timer On Time	MM:SS
MinOCycl	Minimum Override Cycles	
Pmp1Lead	Pump 1 Lead Select	
Pmp2Lead	Pump 2 Lead Select	

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MVP-DAX PT RO Reference Chart

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- Float in up position
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- Pump #1 is activated
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- Alarm Light is activated
- Audible Alarm is activated

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OVR Off	Override Timer Off Time	MM:SS
OVR On	Override Timer On Time	MM:SS
MinOCycl	Minimum Override Cycles	
Pmp1Lead	Pump 1 Lead Select	
Pmp2Lead	Pump 2 Lead Select	

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Splice Boxes Model SB ____

The electrical splice box provides a safe and legal space for splicing cables, typically from float switches. It should be mounted inside the access riser where the floats are within sight of the installer. For explosion proof splice boxes, usually used for pump wiring, refer to the next section titled *Explosion Proof Splice Boxes*.

The splice box is typically mounted to the access riser and is provided with heat shrink/butt connectors and waterproof wire nuts necessary to splice the appropriate floats. The splicing materials are provided inside the splice box. Remove the lid to the splice box and take out the splicing materials; set them aside for later use.

1. The access riser is typically supplied with the splice boxes installed. Make sure the splice boxes are snug against the riser wall, allowing the removal of any pumping equipment below.

2. Push the appropriate float control wires through the watertight cord grips into the electrical splice box. Leave an adequate length of electrical cable coiled inside the riser to allow for easy removal of the float assembly. **Do not remove the colored markers or the paper tags from the float cables, and do not try to thread the markers and tag through the cord grip.** Tighten the cord grips by hand, not by tool, then test the tightness by tugging on each cable. A cable is secure then the cord grip is tight enough to prevent slippage. Adequate lengths of cable should be left within the splice box to allow easy removal for future disconnecting and re-splicing.



3. Run properly sized wires from the control panel to the splice boxes. The wires can be brought through a conduit, or can be direct-buried using suitable direct-burial wire. Conduit that enters the splice box must be sealed in a conduit seal or acceptable watertight cord connection must be used, even if the wires are direct buried, to prevent the infiltration of water into the splice boxes. The number of wires required depends on the control panel and the number of floats and pumps used. This can be determined by consulting the *Splice Box Wiring Diagram* provided in the control panel and the *Float Arrangement* being used.

If the floats do not carry direct pump current, the wire should be sized 14 AWG. Refer to Chart 1 below to determine the proper size for the pump wire and any float wire required to carry direct pump current. When calculating wire size, you need to take the length and size of your branch circuit wires *from the service entrance panel to the pump control panel* into account. Wire that is too small can cause excess voltage drop.

Chart 1. Recommended Breaker & Wire Size

Pump Motor Size		Breaker Size	Wire Size	Max Distance
115 VAC	1/3 hp	20 amp	12 AWG	210 feet
	1/2 hp	20 amp	12 AWG	160 feet
230 VAC	1/2 hp	15 amp	14 AWG	400 feet
	1 hp	20 amp	12 AWG	400 feet
	1-1/2 hp	20 amp	12 AWG	310 feet

Wires should be color coded or otherwise marked to aid in wiring the control panel. The following chart lists common colors recommended for each of the wires. Colors may refer to either the color of the wire's insulating jacket or the color of an electrical tape marker.

Chart 2. Recommended Field Wire Colors

Float Cables

Float Function	Float Marker	Wire Color
High Water Alarm	Yellow	Yellow
Lag Pump On (Duplex)	Purple	Purple
Lead Pump On (Duplex)	Blue	Blue
Lead Pump Off (Duplex)	Red	Red
On / Off	Green	Blue
Redundant Off / Low Level Alarm	White	Grey

Pump Cables

Pump Wire (L1)	Black
Pump Wire (L2 or Neutral)	White
Ground	Green

All splices within the splice box must be made waterproof using wire nuts or butt connectors and heat shrink tubing as shown on the *Splice Box Wiring Diagram*. The splices must be waterproof! Splices that are not waterproof may cause a malfunction of the pump controls if water should leak into the splice box. Refer to the *Splice Box Wiring Diagram(s)* provided for instructions on how to connect the floats and pumps.

5. Splicing With Butt Connectors & Heat Shrink

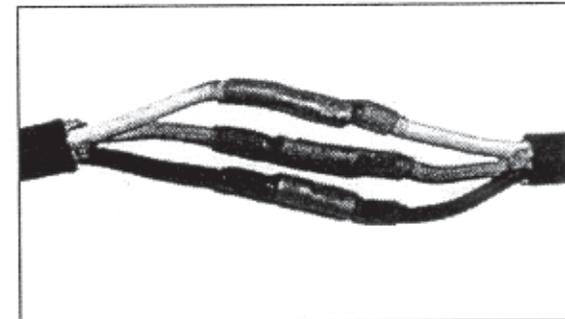
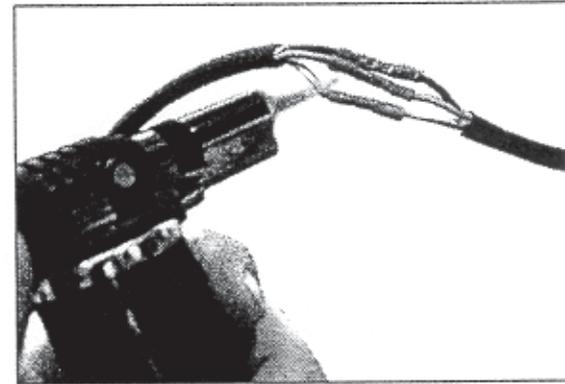
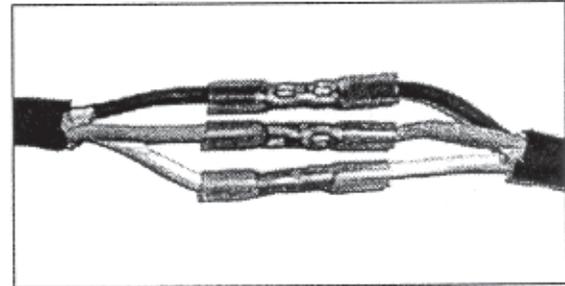
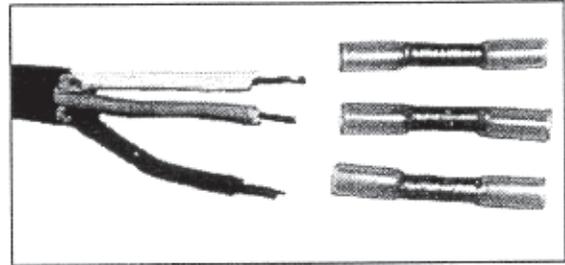
a. Remove approximately 3/8" of insulation from the end of each wire to be connected.

b. Insert bare lead ends into the butt connector and crimp with a crimping tool designed to crimp insulated connectors. Other types of tools can puncture the heat shrink tubing. Once a connection is crimped, tug on the butt connector to check the connection.

c. To shrink the insulated heat shrink tubing, apply moderate heat with a propane torch or heat gun (or any tool that will provide adequate heat). **Caution: Keep the torch moving; too much concentrated heat will damage the tubing.**

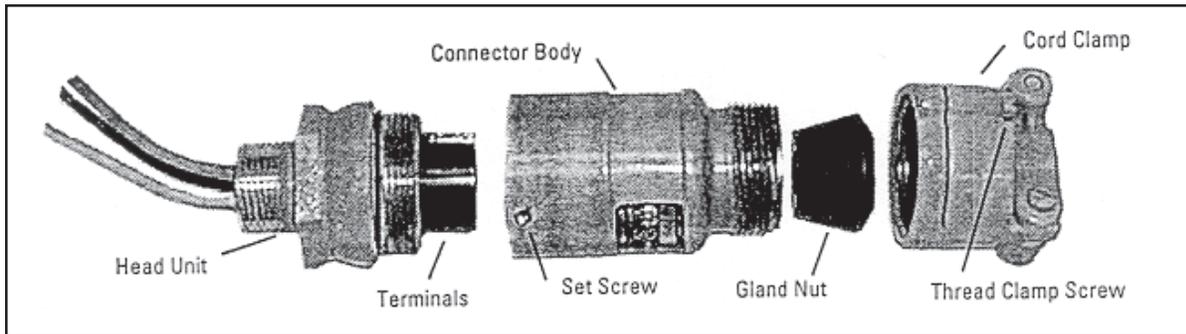
d. When the tubing begins to shrink, increase concentration of heat at the edge of the butt connector. As the tube collapses on the wire, work heat out to each end until entire tube has collapsed tightly around the wire. Enough heat should be applied to melt the sealing glue on the inside of the shrink tube. As the tube collapses around the wire, some sealant should ooze out of the end of the tube providing a watertight seal.

6. After splicing is completed, reattach the splice box lid using the stainless steel screws provided.



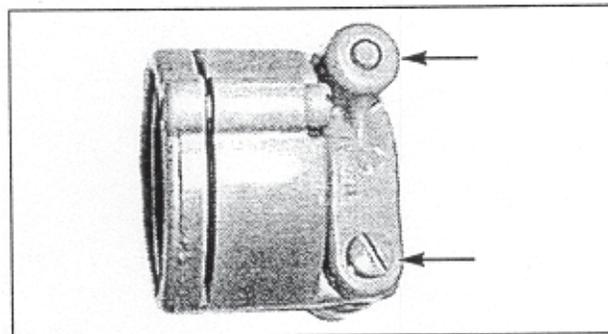
Explosion-Proof Cord Connectors Model SBX _____

The explosion-proof cord connectors provide a safe and legal way to splice cables, typically from pumps. It will be mounted to an explosion-proof junction box, over the pump, where the pumps being spliced are within sight of the installer.



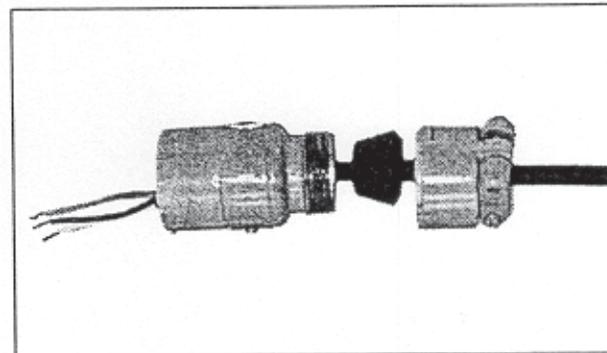
1. Disassemble one of the provided cord connectors by first loosening the set screw on the connector body and then unscrewing the connector body from the head unit. Remove the cord clamp by unscrewing it from the connector body. The gland nut may then be removed from the connector body.

2. Loosen the strain-relief screws on the cord clamp so that the pump cord can slide easily through it.



3. Thread the pump cord through the cord clamp, the rubber gland nut, and connector body.

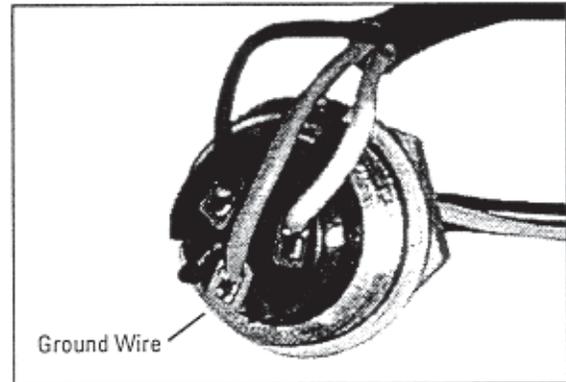
Note: Make sure that the tapered portion of the gland nut faces the connector body.



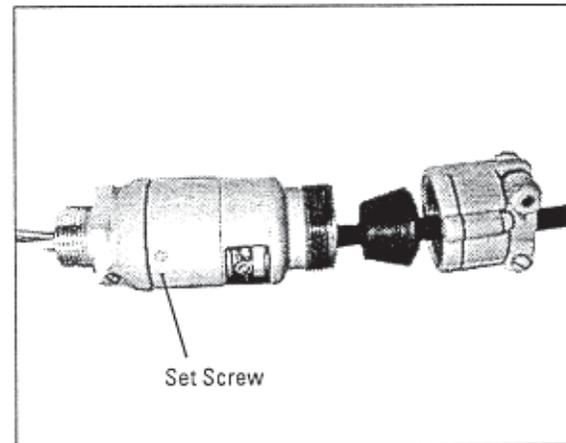
4. Strip 2" of outer insulation from the cord to reveal the wires. Strip 1/2" of insulation from the end of each wire.

Commercial Liftstation Manual

5. Connect the wires to the terminals on the head unit. Connect the green ground wire to the center connection (painted green). With the ground connection facing down, connect the white (or red) wire to the right of the ground connection, and the black wire to the left of the ground connection.



6. Screw the connector body onto the head until it is tight against the rubber seal. Once the connector body is screwed down, tighten the screw to keep the unit from loosening.

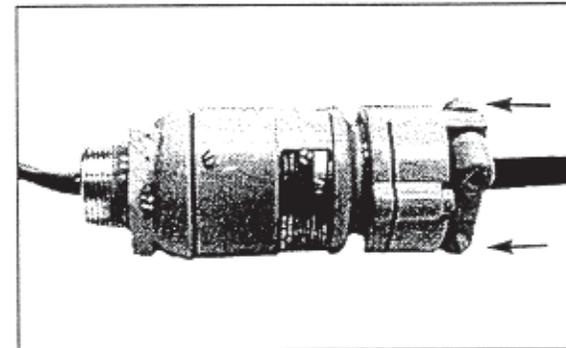


7. Push the gland nut into the connector body, and then screw on the cord clamp.

Note: Make sure that the tapered portion of the gland nut faces the connector body.

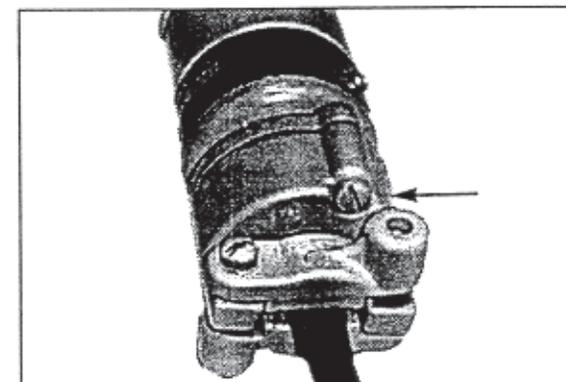
8. Tighten the strain-relief screws on the cord clamp until the cord is held firm.

IMPORTANT! Do not tighten the strain-relief screws too tight. The cord can become pinched which may damage the cord.

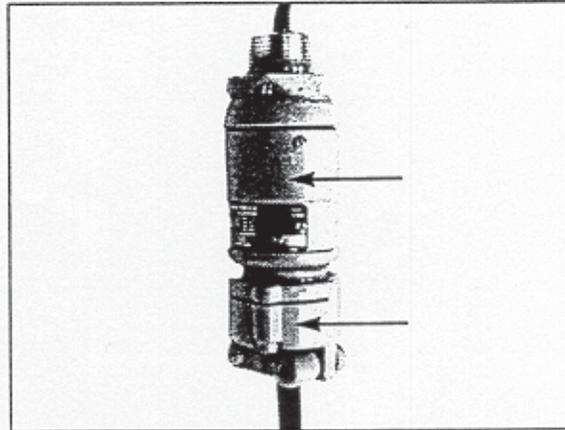


9. Tighten the screw on the thread clamp until the cord clamp will not unscrew. The thread clamp keeps the cord clamp from loosening.

Note: This will require a properly sized screwdriver as the screw will be hard to turn.

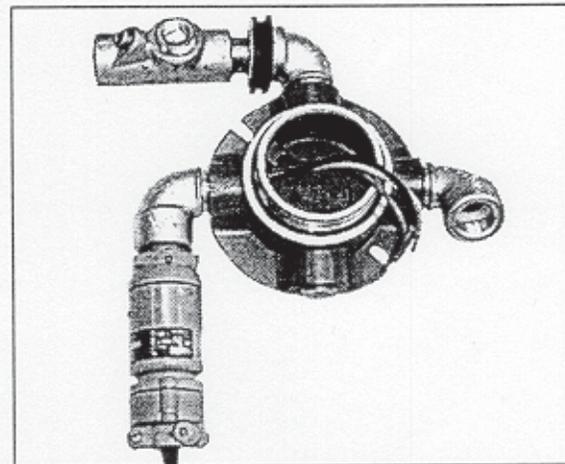


10. With the bare wires of the cord connector facing up, twist the assembly five times to the left (this is to pre-twist the pump cord).

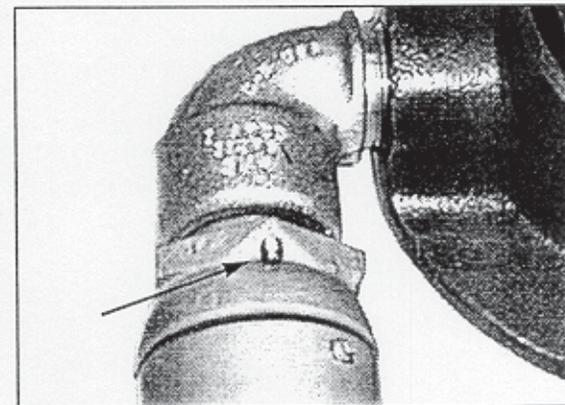


11. Push the wires through one of the elbows of the explosion-proof junction box until they come out inside the junction box. Tighten the cord seal down on the elbow until tight (at least five turns).

Note: *Be sure that the wires inside the junction box do not become excessively twisted.*



12. Using a 2mm Allen head wrench, tighten the set screw on the head unit, until it is tight against the elbow.



13. Repeat the above with the remaining cord connections.

Note: *A third cord connection may be added directly to the bottom hub.*

14. Follow the instructions in the proceeding section titled *Splice Boxes* to ensure that you have a watertight splice connection. Place the spliced wires into the junction box, and screw the cover firmly against the rubber gasket.

Panel Installation

Before Installing Panel

1. *Read all instructions before proceeding with the installation. Improper installation may void warranties.*
2. Inspect your order for completeness and inspect each component for shipment damage. If something is missing or damaged, you will need to contact Anchorage Tank to obtain replacements.
3. Wiring diagrams and instructions are also found in the front cover of the panel. Refer to them first as they may be more current than this publication. Check to be sure the instructions and items supplied comply with state and local regulations.
4. A qualified electrician must be employed to install and service the panel and ancillary wiring.

Placement of the Control Panel

5. If possible, install the electrical control panel in view of the tank. The ideal location would be on an interior wall of the garage, however, **panels that contain motor contactors should not be mounted on a wall unless the mounting method includes sound deadening.** It's best to mount those panels on a post near the exterior wall, because when the motor contactors activate, the panel sounds like a moose kicking the wall. If you choose an exterior location, be aware that extreme temperatures can cause inconsistent performance of the electrical components. Locate the panel at a convenient height (about 5 feet above the ground) where it will be accessible for maintenance.

Floats and Pumps

6. At this point, the electrical splice boxes are installed near the top of the riser, the floats are positioned on the float stem, and the pumps are inside their flow inducers.
7. Thread the float cords through the cord grips into the PVC splice box, and the pump cords to the explosion proof j-box. For instructions on slicing float cord connections, refer to the section titled *Splice Boxes* and instructions for pump cord connections are found in *Explosion Proof Splice Boxes* section.

8. In the *Rough In Wiring* section, the wires were run from the control panel to the appropriate splice box. Conduit that enters the splice boxes must be sealed with a conduit seal. A conduit seal should be used, even if the wires were direct buried, to prevent the infiltration of water into the splice box.
9. All splices made in the splice boxes should use waterproof wire nuts or butt connectors and heat shrink tubing. **The splices must be waterproof!** Splices that are not waterproof may cause malfunction of the pump controls if water should leak into the splice box. Refer to the *Splice Box Wiring Diagram* for instructions on how to connect the floats together.

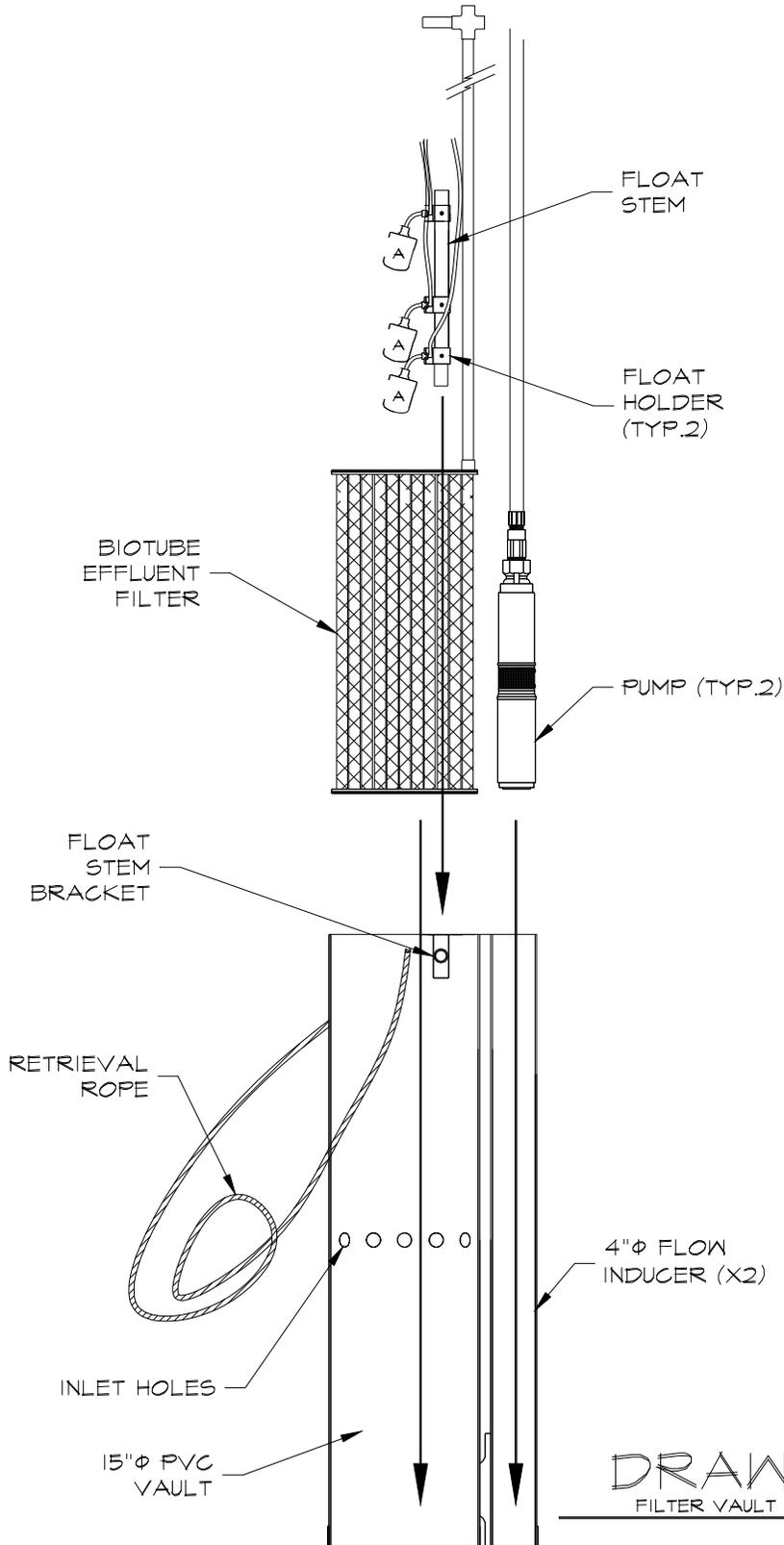
Connect Control Panel

10. Connect wires coming from the floats to the terminals in the control panel. Refer to the appropriate *Float Arrangement Diagram* or *Splice Box Wiring Diagram* for the correct terminal connections.
11. Connect wires coming from the pump to the pump terminals. Refer to the panel wiring diagram for the correct terminal connections.
12. Connect the incoming power to the panel. Power to the panel must be appropriate to the control panel and pump motor (i.e. 120VAC, single phase for a 120VAC motor, 240VAC single phase for a 240VAC motor, etc.) Insure that the panel is properly grounded and that the fuse or breaker wire size, from the main power panel and to the pump, are sized correctly. Separate circuits for the pump controls and each of the pump motors is recommended. Note: voltage for the controls in the panel is always 120VAC, although the pump voltage may be 120VAC or 240VAC.
13. Use 60 degree CU conductors only. Torque the terminal blocks to 7.1 LB-IN. Torque the circuit breaker and ground lugs to 45 LB-IN.
14. When power is applied to the control panel, the wires to the pump may be energized. Do not service the pump or any electrical wiring in the pump vault without disconnecting the power at the circuit breaker and fuse. The pump vault area is a hazardous area, and may contain explosive gases. Take appropriate precautions before working in the pump vault.

SYSTEM STARTUP

1. Recheck the float levels. See Steps 10-12, or the repair and maintenance section.
2. ***Make sure the pump is submerged in water before continuing.***
3. Turn on the main circuit breaker or the switch which powers the control panel. This is usually in a box on the outside of the house or a circuit breaker in the circuit breaker panel within the house.
4. Open the S.T.E.P. system control box and turn on the circuit breaker inside.
5. Flip the steel toggle switch in the upper right hand corner to “man”. Check to make sure the pump is running, then position the switch to “auto”. Check the automatic pump operation by raising the bottom float to turn the pump on and lowering it to turn the pump off.
6. Test alarm operation by raising the top float. This will cause both the alarm in the control box (and the remote alarm in the house if so equipped) to beep. While holding the float up, have someone push the lighted button on the door of the panel. The horn will stop but the light will stay on. Lower the float and the light should go Out and the horn will reset. Raising the float again should re-sound the alarm.
7. ***Put the lid on the tank and be sure it is secured with the retaining nut. An unsecured lid or open tank is a safety hazard!***

This completes the operational check of your system. If the tank is empty, it will usually take a few days for it to fill and the system to operate on its own.



DRAWING NO. 5
FILTER VAULT DISASSEMBLY SCHEMATIC

OPERATION

Every day operation is automatic, however the normal cautions observed when operating any septic system also apply to this one. Premature plugging of the screen may result from abuse of the system. Such abuse might take the form of a large scale home canning project with concurrent overuse of the garbage disposal. More likely though, it will be excessive inflow resulting from plumbing leaks in or under the house, excessive use of the laundry or more people using the system than it was designed for. Plugging of the screen, however, should be considered a success, not a failure, as the screen serves to protect the drainfield from the damage that solids carryover can cause.

Don't let anyone talk you into "starter kits" or any type of chemical septic tank cleaner or enhancer.

MAINTENANCE

WARNING: Before doing any work on either the wiring to the level control floats and the pump in the vault or on the S.T.E.P. system control panel, pull the isolation fuse, and turn off the circuit breaker. Then switch off the power to the entire system at the main circuit breaker panel. Close and lock the S.T.E.P. system control panel door to prevent inadvertent activation of the system while work is being performed.

Refer to the leaflets inserted in this manual, as these contractors are OSI trained and authorized to properly maintain these systems.

The tank.

It is recommended that the tank be checked every year. In the city of Anchorage, it is required that the tank be pumped every 2 years preferably in the springtime. **Be there.** Make sure the pumper pumps both compartments of the tank. This tank cannot be completely pumped from only one end.

Screened vault, floats, and pump.

While the following procedure may seem involved, it is really quite simple. And it is vital that maintenance is performed. It takes a few minutes and a few dollars to do it, but it takes a few thousand dollars to replace your drainfield or to fix your basement if you don't do it. Be there when the maintenance is performed to make sure it is properly done. Please refer to the pump vault drawing #4 on the preceding page. Also refer to the installation schematic. When you call a pumper, ascertain whether he is familiar with the Anchorage Tank/Orenco liftstations, and whether he will clean your screen. Again, *be there*. Some of them won't disassemble and clean the liftstation components unless you are present, and some of them won't do it at all. None of them will replace your basement carpet or leach field.

The screened vault should be serviced when the tank is pumped as follows:

1. String out a garden hose to the tank. Obtain a pair of chanel lock pliers, a 3/4" open end or crescent wrench, and a small padlock or other locking device.
2. Remove the manhole cover and pump the tank clean.
3. **Observe the warning at the beginning of this section.**
4. Separate the plumbing at the union and carefully pull the pump and attached piping out of the tank. It is not necessary to disassemble the pipe sections. Pull up the pump using the plumbing; Do not pull on the pump cord. Hose it off into the tank as you withdraw it paying particular attention to the screened pump inlet. Lay the pump on the fiberglass lid or on a piece of visqueen to protect it from sand or dirt.

5. It is not usually necessary to remove the entire vault from the tank. Hose the Biotube filter assembly as you pull it out of the vault, trying not to get any “gunk” into the vault.
6. Reassemble components in reverse order. Before replacing the Biotube in the vault, refer to drawing #4, and the manual section on system startup. Recheck or reset the float levels measuring from the bottom of the vault. Replace vault and pump in the tank.
7. Take a shower.

Alarm.

Now is a good time to recheck the alarm function. See startup procedure. If you have a remote alarm and it is battery powered, replace the battery and test it with the switch on the alarm box.

REPAIRS

WARNING: Before doing any work on either the wiring to the level control floats and the pump in the vault or on the S.T.E.P. system control panel, pull the isolation fuse, and turn off the circuit breaker. Then switch off the power to the entire system at the main circuit breaker panel. Close and lock the S.T.E.P. system control panel door to prevent inadvertent activation of the system while work is being performed.

The first indication of system malfunction is usually the alarm horn and light, activated by the high water alarm float in the tank. **When a high water alarm is present, immediately discontinue major uses of water such as toilets, dishwashing, and laundry, until the cause can be found and the liquid level in the tank can be lowered.** Disregard for the alarm will soon cause the tank to overflow and may cause sewage to back up into the house. It also causes an overflow of solid floating matter into the screened vault which fouls the pump inlet screen and prevents the tank from emptying properly. Follow the maintenance procedures for cleaning the vault and screen while making the repair. Following the procedures below sequentially should quickly isolate the problem.

1. When an alarm is present, the first thing to check is always the circuit breakers, switches, and fuses in the system control panel, and the circuit breaker in the main power panel. If the system restarts, observe the operation for continuous tripping of the breaker. If the condition persists, see the trouble shooting guide for isolation of the problem. If any of these are off or the circuit breaker is tripped, the problem may have been found. Remove the tank lid and, with all switches in their "on" or "automatic" positions, make sure the floats are "up", then ascertain if the pump is now running.
2. If, after checking all the circuit breakers, fuses and switches, there is still no pump action, flip the man-off auto switch to "manual". If the pump is now activated, the problem is most likely a faulty on/off float. Pump the tank down to the level of the bottom float and turn the manual switch back to auto.

Never operate the system in the "manual" mode unattended. Misuse of the manual mode switch setting can overload the drainfield, can draw solids to the screen, and can pump the tank down to a level which exposes the turbine section of the pump, resulting in turbine and/or motor failure, which is not covered by your warranty.

3. To confirm a faulty on/off float, go to main circuit breaker panel in the house and deactivate the circuit for the septic system. Call an electrician or make the following tests.

Make a jumper wire from a piece of #12 guage wire. Remove the wires in the control box which are connected to the on/off float and replace them with the jumper. Reactivate the system. If the pump now works, with the man/off/ auto switch at "auto", the problem is in the on/off float. Deactivate the system, remove jumper wire, replace the on/off wires, and proceed to the appropriate repairs for float replacement instructions.

4. If there is no action in the manual position, but the pump can be heard, the problem is most likely a fouled pump or broken plumbing. Shut the system down and have the tank pumped or, if it can be seen, disconnect the plumbing at the union remove the pump. Clear any fouling and return it to the vault, it is not necessary place the pump into the flow inducer which is probably not visible at this anyway. Don't make up the union. **Getting everyone out of the way**, reactivate the pump. If it squirts a strong stream into the air, shut it off, make up the and restart the system. If the stream is weak or if water doesn't run at a problem is a faulty or worn out pump. To replace the pump, see the appropriate section of the repair manual. If the pump doesn't draw down the tank in spite of a healthy stream, there is a blockage downstream from the pump. Have the tank pumped and check for broken or frozen plumbing.

INOPERATIVE FLOATS REMOVE & REPLACE

1. **Switch the circuit breaker in the S.T.E.P. system electrical control panel, to its "off" position, then switch off the power to the system at the main power panel. Close and lock the S.T.E.P. system control panel door to prevent inadvertent activation of the system during repair or maintenance.**
2. Raise the Biotube filter and floats to the top of the manhole.
3. See the maintenance section for this procedure and the installation section for float setting instructions.
4. Remove the lid from the junction box. Don't drop the stainless steel screws. Remove the float from its holder, loosen the cord grip and appropriate wire nuts, remove the float wires (or remove the wire nuts), and remove the inoperative float from the vault. Replace it with a new float in the reverse order of removal.
5. Re-energize the electrical controls and test the system operation. **Put the lid on the tank and be sure it is secured with the retaining nut. An unsecured lid or open tank is a safety hazard!**

CHECKING ELECTRICAL CONNECTIONS

1. **Switch the circuit breaker in the S.T.E.P. system electrical control panel, to its "off" position, then switch off the power to the system at the main power panel. Close and lock the control panel door to prevent inadvertent activation of the system during repair or maintenance.**
2. Remove the lid from the manway. Remove the lid from the Junction Box. Don't drop the stainless steel screws. Carefully pull the wiring out of the J-Box. Check that each wire is secure. If the J-Box has been submerged, it may have water in it. Remove any liquid, dry thoroughly, and carefully return the wiring to the J-Box and replace its lid. Moisture inside the J-Box can cause voltage to short circuit the floats and a low voltage (24 volts) will cause the buzzer to project a weak sound. **Replace the lid on the tank and be sure it is secured with the retaining nut. An unsecured lid or open tank is a safety hazard!**
3. **Before working in the S.T.E.P. system control panel, recheck the circuit breaker at the main circuit breaker panel. Close and lock the main circuit breaker panel or otherwise make sure that no one can reactivate the main breaker or switch while work is performed in the control box.** Obtain the proper size screwdriver. Carefully tug on each wire going to the tank. Correct any improperly made connections. Reactivate and retest the system.

PUMP REMOVE & REPLACE

1. **Switch the circuit breaker in the S.T.E.P. system electrical control panel, to its "off" position, then switch off the power to the system at the main power panel. Close and lock the control panel door to prevent inadvertent activation of the system during repair or maintenance.**
2. Remove the manhole cover. Separate the plumbing at the union and carefully pull the pump and attached piping out of the tank. It is not necessary to disassemble the pipe sections. Pull the pump using the plumbing, not the pump cord. Lay the pump on the fiberglass lid or on a piece of visqueen to protect it from sand or dirt.
3. Remove the lid from the junction box. Don't drop the stainless steel screws. Carefully remove wiring out of the j-box. Disconnect the wire nuts. Remove the pump from the plastic plumbing and replace it with a new one in the reverse order of removal. **Replace the lid on the tank and be sure it is secured with the retaining nut. An unsecured lid or open tank is a safety hazard!**

FINDING UNWANTED WATER SOURCES

Unwanted water sources are detailed below:

1. The most common source of excess water in the system is plumbing leaks in the house, usually from running toilets or dripping faucets. This water can usually be seen or heard running into the tank when the cap is removed from the pumpout at the inlet. If water can still be heard dripping into the tank, after shutting off the house water supply completely and draining the pressure tank (if appropriate), it is probably a poor seal at the manhole(s) or broken inlet plumbing. Excavation is usually the only cure.
2. To determine if drainfield feedback is the problem, observe and time the flow of water returning to the tank through the drainback hole in the outlet elbow, immediately after the pumping cycle. Unless the drainfield is a very long distance from the tank, drainback time should not be more than a few minutes. If the drainback seems excessive, the actual distance from the tank to drainfield, the size of the pipe in this run, and the vertical elevation between the tank and drainfield should be determined. From these three items, the quantity of water in the pipe, and the time it should take to return can be estimated. Drainfield siphoning can be indicative of field failure or groundwater entering through breaks in the line to the drainfield. The problem can usually be eliminated only by excavating.

COMMERCIAL LIFTSTATION OPERATION

While the physical and biological processes of handling and treating the wastewater in a commercial liftstation system occurs automatically, it is important that operators exercise discretion in their disposal of waste to the system. As a rule of thumb, it is recommended that nothing be disposed of in the S.T.E.P. tank - with the exception of toilet paper and mild detergents - that hasn't first been ingested. Avoid dumping toxic chemicals, grease, water softener backwash, and septic tank additives into your system. Also, the use of a garbage disposal in a kitchen sink is not recommended.

Daily use of water should be kept within a reasonable range. Excessive water usage can be detrimental to the S.T.E.P. tank and the final disposal area (a drainfield if your system has one). Excessive water usage will usually result in periodic short alarm occurrences (approx. 2 - 3 minutes long). These short-term alarms may be the result of doing too many wash loads in one day, a leaking S.T.E.P. tank (ground water infiltration), a running toilet, improper float or timer settings, or large social gatherings that might overload the system.

The do's and don'ts lists that follow suggest practices that will help to ensure a long life and minimal maintenance for your commercial liftstation system.

COMMERCIAL LIFTSTATION OPERATION - DO'S & DON'TS



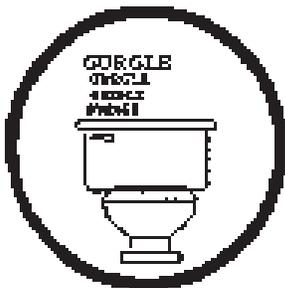
DO feel free to place a bird bath, potted plant, or other decoration on the tank riser lid, as long as it can be readily removed for the sake of maintenance. Landscaping or permanent structures should be planned prior to installation in order to ensure that the integrity of the system is not jeopardized.



DO keep accurate records of maintenance and service calls. The results will be valuable if system problems occur. Periodic inspections are provided in the purchase price of your system. Make sure whoever inspects your system keeps a complete record and ask for a copy for your records.



DO practice water conservation. By reducing the amount of water going into your system, you can extend the life of the system and reduce power consumption. Wash clothes and dishes only when you have a full load, and you've heard all this before, right? When possible, avoid running several loads of laundry in one day. Take short showers, avoid turning water fixtures on all the way, and don't let the water run unnecessarily while washing hands, food, teeth, etc.



DO be aware that a simple toilet float hang-up can result in over 2,000 gallons of wasted water per day. Normal household usage ranges from 100 gallons to 200 gallons per day. Use water saving devices in the toilet tank, and don't flush unnecessarily.

COMMERCIAL LIFTSTATION OPERATION - DO'S & DON'TS



DON'T accidentally dig up an underground utility with your backhoe. Before you or your excavator digs, telephone the local Underground Locating Services. The number in Anchorage is 278-3121. Just one easy call can provide a free utility locating service that will help you avoid a potential disaster.



DON'T connect rain gutters or storm drains to your septic tank, or allow surface water to drain into it. Your system is designed to process only wastewater from your dwelling.



DON'T use excessive quantities of water. Sure, we are in Alaska with water to spare, but too much water will significantly reduce the performance of your system. Repair leaky toilets and other faucets or plumbing fixtures.



DON'T flush undesirable substances into the S.T.E.P. tank. Flushing flammable and toxic products is downright dangerous, while other materials such as paper towels, rags, newspaper, cigarettes, coffee grounds, egg shells, sanitary napkins, large amounts of hair and cooking grease are a maintenance nuisance. These objects will not biologically "break down" in your tank and will only have to be pumped out.



DON'T dump recreational vehicle (RV) waste into your S.T.E.P. tank because it will increase the amount of solids in the tank, and you'll only have to pump out the tank sooner. Some RV waste may contain chemicals that are toxic and may adversely affect the biological action happening in your tank.



DON'T use the garbage disposer in your kitchen sink as it also increases the amount of solids in your tank. Toss food scraps to the dog or in the trash.

COMMERCIAL LIFTSTATION OPERATION - DO'S & DON'TS



DON'T use special additives or "starter kits" that claim they will enhance the performance in your S.T.E.P. tank. Additives *do not* enhance the tanks' performance and can cause major damage to your sand filter and/or drainfield. Believe it or not, everything will occur naturally in your system. The naturally occurring organisms will generate their own enzymes for breaking down and digesting nutrients. Sounds gross, doesn't it?



DON'T drive over your tank or sand filter. If they are in an area subject to possible traffic, consider putting up a barricade of shrubs or perhaps a fence.



DON'T enter your tank. The S.T.E.P. system is designed to be serviced from the surface. Not that you would ever be tempted to do enter your tank, but be aware that the gases generated down there and/or lack of oxygen can be fatal.



DON'T dispose water softener backwash in to tank. The backwash brine contains high levels of chlorides that can destroy the microorganisms in the tank.

