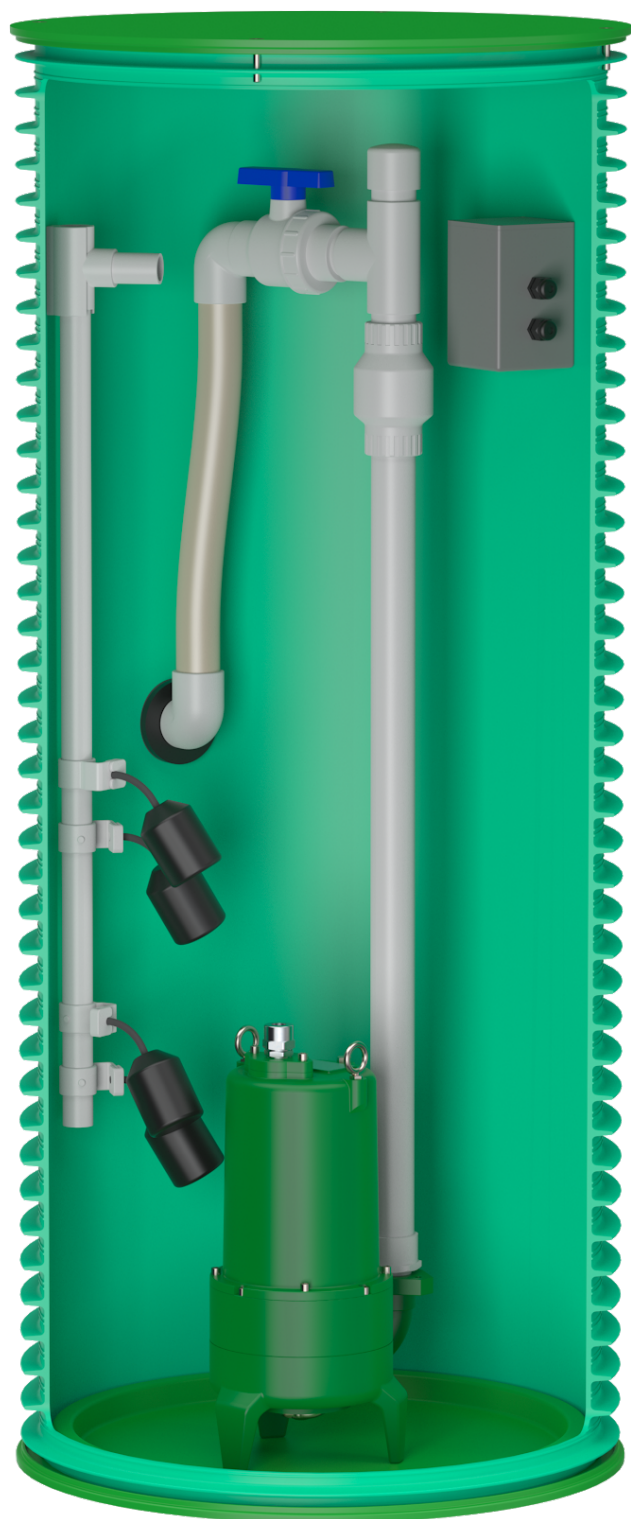


Note:

To the installer. Please insure that a copy of this manual has been left with the owner of this system or to the person or persons responsible for maintaining this system



THE GRUB O & M MANUAL

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General Safety

Before installation and operation of this product please read through this document carefully and adhere to the instructions. Failure to do so may lead to bodily harm, loss of life and/or property damage.

Important! liability limitation: In no event shall R.C. Worst & Co. be liable or responsible for consequential, incidental or special damages resulting from or related in any manner to any R.C. Worst & Co. product or parts thereof. Personal injury and/or property damage may result from improper installation. R.C. Worst & Co. disclaims all liability, including liability under this warranty, for improper installation- R.C. Worst & Co. recommends following the instructions in the installation manual when in doubt, consult a professional.

Pump basins are defined as confined spaces by OSHA's [Code of Federal Regulations Book 29, Section 1910.146](#). Any entry into a pump basin must be done by trained personnel. If at all possible perform repairs outside of the basin.

To avoid the risk of electrocution do not bypass or dismantle the grounding wire on this pump or in the panel. A properly grounded system will help reduce the risk of electrocution. Do not operate the system with an extension cord. This system is required to be installed in accordance to all local electrical, safety code and ordinances and according to the most recent [National Electric Code \(NEC-ANSI/NFPA\)](#). A lock out tag out is required for safety and protection from electrocution.

This basin, pump and equipment are not designed for areas defined as hazardous as defined by the [National Electric Code \(NEC-ANSI/NFPA\)](#). For any Class 1 Division

1 locations please consult with a design engineer or R.C. Worst & Co. for assistance in selecting an explosion proof pump, panel and supporting equipment.

CALIFORNIA PROPOSITION 65 WARNING:

This product and its accessories contain chemicals known to the State of California to cause cancer, birth defects and other harmful reproductive harm. For more information please refer to California's Office of Environmental Health Hazard Assessment's website, [here](#).

Installation and servicing of this equipment shall be conducted by a qualified individual.

This grinder pump station has been designed to handle residential and light commercial sewage. Unprotected exposure to sewage is hazardous to one's health. Bacteria and other pathogenic organisms within the sewage can cause serious disease. Use extreme caution when around raw sewage and wear all appropriate personal protective equipment.

Keep hands free and clear of the cutting blades and suction port of the pump. The rotating equipment and cutting blades can cause serious bodily harm. Keep loose clothing and hair away from the rotating part and the suction end of the pump.

Pumps can build up heat and pressure when in operation. Allow the pump to cool before handling the pump to avoid injury.

This pump is rated for pumping fluids that are less than 140°F (60°C). Pumping fluids hotter than this can cause the pump to overheat.

System Information

Please take a moment and record the pump basin model number below:

AFSGRB _ _ _

Item No.	Item Description
AFSGRB12	AFS Residential Grinder Package 1HP 115V 1.5" Discharge 2' Inlet 24 x 60 Basin
AFSGRB13	AFS Residential Grinder Package 1HP 115V 1.5" Discharge 3' Inlet 24 x 72 Basin
AFSGRB14	AFS Residential Grinder Package 1HP 115V 1.5" Discharge 4' Inlet 24 x 84 Basin
AFSGRB15	AFS Residential Grinder Package 1HP 115V 1.5" Discharge 5' Inlet 24 x 96 Basin
AFSGRB22	AFS Residential Grinder Package 2HP 230V 1.5" Discharge 2' Inlet 24 x 60 Basin
AFSGRB23	AFS Residential Grinder Package 2HP 230V 1.5" Discharge 3' Inlet 24 x 72 Basin
AFSGRB24	AFS Residential Grinder Package 2HP 230V 1.5" Discharge 4' Inlet 24 x 84 Basin
AFSGRB25	AFS Residential Grinder Package 2HP 230V 1.5" Discharge 5' Inlet 24 x 96 Basin
AFSGRBAO12	AFS Residential Grinder Package 1HP 115V 1.5" Discharge 2' Inlet 24 x 60 Basin _Alarm Only
AFSGRBAO13	AFS Residential Grinder Package 1HP 115V 1.5" Discharge 3' Inlet 24 x 72 Basin _Alarm Only
AFSGRBAO14	AFS Residential Grinder Package 1HP 115V 1.5" Discharge 4' Inlet 24 x 84 Basin _Alarm Only
AFSGRBAO15	AFS Residential Grinder Package 1HP 115V 1.5" Discharge 5' Inlet 24 x 96 Basin _Alarm Only
AFSGRBAO22	AFS Residential Grinder Package 2HP 230V 1.5" Discharge 2' Inlet 24 x 60 Basin _Alarm Only
AFSGRBAO23	AFS Residential Grinder Package 2HP 230V 1.5" Discharge 3' Inlet 24 x 72 Basin _Alarm Only
AFSGRBAO24	AFS Residential Grinder Package 2HP 230V 1.5" Discharge 4' Inlet 24 x 84 Basin _Alarm Only
AFSGRBAO25	AFS Residential Grinder Package 2HP 230V 1.5" Discharge 5' Inlet 24 x 96 Basin _Alarm Only

The Pump

The Myers® VR series are submersible wastewater grinder pumps have been designed for pressurized sewer applications or individual residential lift stations. The pump has been designed to handle domestic and light commercial wastewater only. For applications that require an industrial level grinder please contact R.C. Worst & Co.

The pump power supply can either be 115 Vac with the 1 horsepower pump or 230 Vac with the 2 horsepower pump, also in single phase at 60 Hz. Refer to [Appendix A](#) for more information. Information on the replacement parts can also be found in the [Replacement Parts Guide](#) section of this document

Electrical Data										
Model	Engineering Number	HP	Voltage	Phase	Hz	Amps	Cord Length	Discharge	Switch	Weight
VRS10A-11	28172D000	1	115	1	60	13	20	2"	Auto	70
VRS10M-11	28172D001	1	115	1	60	13	20	2"	Manual	70
VRS10A-21	28172D002	1	230	1	60	7	20	2"	Auto	70
VRS10M-21	28172D003	1	230	1	60	7	20	2"	Manual	70
VRS20A-21	28200D000	2	230	1	60	15	20	1-1/4"	Auto	95
VRS20M-21	28200D010	2	230	1	60	15	20	1-1/4"	Manual	95

Electrical

The Panel

The AFS Grinder Pump Packages come standard with a CSI Controls® Power Zone® simplex pump control panel. These panels have been selected for the comprehensive feature list and for the reasonable price point. Please refer to [Appendix B](#) for more information on this panel.

Each panel come in a NEMA 4X rated enclosure and has the option of either time dose or demand dose.

The Power Zone® Panel utilizes “Zero Crossing” technology. This technology helps prolong the life of the relays by limiting the inrush of high current. The relays are programmed to engage when the AC voltage is at or near zero voltage.



An Auxiliary contact is standard on all AFS grinder pump package control panels.

Fuse trip indicators on the Control and the Power Overloads alert the user of a tripped fuse. These fuses reset automatically once the short has been removed.

An elapsed time meter comes standard and is easily accessed. A cycle counter comes standard and is easily accessed.

Float status indication standard

Mercury free mechanical floats come standard

The standard configuration of the AFS Grinder Pump Packages is the redundant off (RO) version of the Power Zone® for an added level of protection.

The Alarm Panel

The SJE Rhombus® Tank Alert XT® is an option within the AFS Grinder Pump Packages that utilizes an automatic version of the Myers® VR series pumps. This product alerts the user of a high-water event. Please refer to [Appendix C](#) for more information regarding this alarm package.



The panel enclosure is watertight and approved for use in either indoor or outdoor applications.

When installed on a separate circuit the alarm panel remains operational even when the pump circuits have faulted.

Mercury free mechanical floats come standard

CSA and UL listed

The Basin

The 24" Diameter Basin

The basins used in the AFS Grinder Pump Packages are made of an ultra-tough reinforced PVC pipe. The ribbed pipes are incredibly stiff and can hold up to the harsh environment of a grinder pump station.

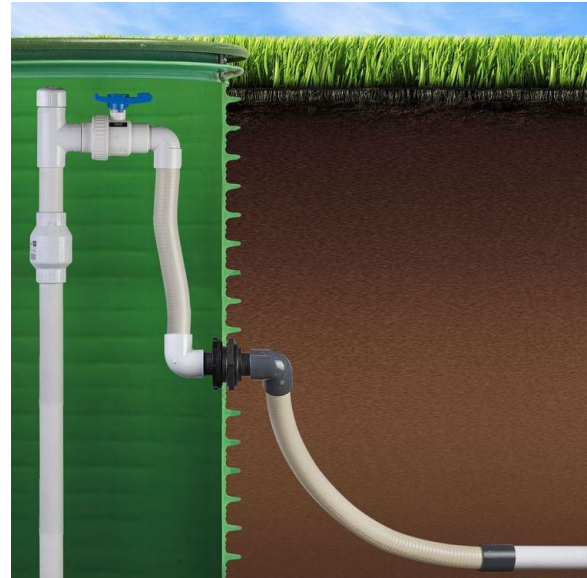
The 24" basin holds 24 gallons per foot.

Please refer to [Appendix D](#) for more information.

The Discharge Assembly

The trusted AFS 2" discharge assemblies come standard on the AFS Grinder Pump Packages. The discharge assembly was developed from decades of experience and development.

A union is built in for easy pump removal and maintenance.



Internal flexible tubing for superior vibration suppression and torque mitigation along with easy pump alignment.

External flexible tubing for discharge pipe protection. Even the most skillfully packed soil can settle over time. The flexible tubing allows for settling and transportation pipe misalignment.

Please refer to [Appendix E](#) for more information

System Installation

Receipt Inspection

Before signing for the delivery, please insure that the crating and basin show no signs of being damaged during transit. Once the item has been signed for it becomes very difficult and problematic to file claims with the freight company.

If the package is showing any signs of damage take many pictures and document straight away. Contact R.C. Worst & Co. Inc. to begin the claims process. Call at 855.329.4519 or write to

customer.service@rcworst.com. R.C. Worst & Co. will act on behalf of the customer.

The basin is shipped complete with the pump, panel and floats all contained within the basin to save on shipping costs. An Allen wrench has been provided to access the basin and the contents therein. A wooden frame has been constructed to ensure the safe arrival of the contents. Simply pull this frame out and proceed with the installation.

Product Storage

If the AFS Grinder Pump Package is to be stored for a prolonged amount of time, please adhere to the following.

Store in a cool dry location. The use of a vapor phase inhibitor is recommended for use on all unprotected surfaces.

Insure that the pump is stored in an upright orientation. Rotate the shaft clockwise several times each month of storage. Rotate the shaft with an Allen wrench only. Do not use fingers.

It is not recommended that pumps are stored longer than two years.

Pre-installation

Before installation please insure that all permits have been acquired and are on hand. Perform all work in accordance to all Federal, State and local codes and regulations. Call the local county or the national 811 before digging or excavating. Allow 1 – 2 business days before digging.

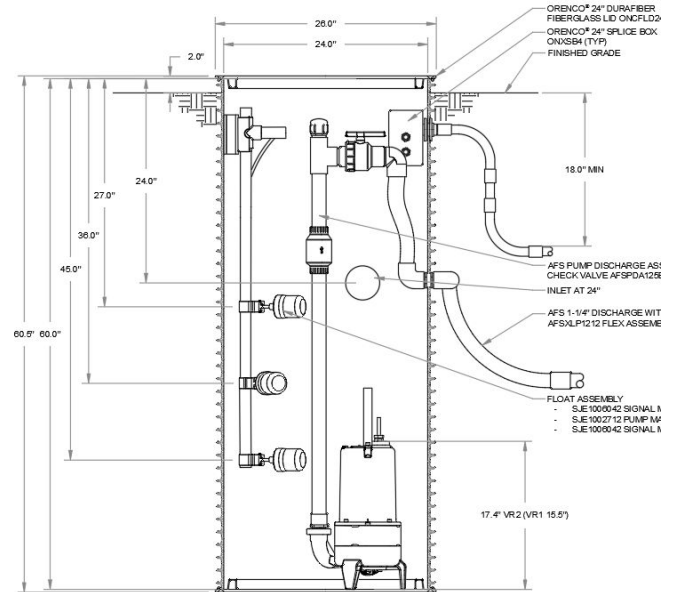
Insure that all safety procedures are on hand and adhered to. All personal protective equipment (PPE) shall be worn at all times during installation.

Check with the regulations as to the required ventilation used on the pump basin. Insure that the project is compliant with all codes. Contact R.C. Worst & Co. to purchase any additional equipment.

Installation

This document is not meant to be a complete or comprehensive installation guide. This document is meant to be a best practices for field installations. Refer to the expertise of professionals within the area and one can always reach out to R.C. Worst & Co and rely on our expertise.

Below is an illustration of a typical installation of the GRUB.



Excavation

Select backfill in accordance with the design engineer or appropriate authorities. If backfill has not been defined use what has been defined by local code or #4 pea gravel or crushed gravel. The backfill is required to be a compacted depth of no less than 6". Insure that the bottom of the excavation is level after compaction.

The AFS Grinder Pump Basins are intended to be no less than 2" above finished grade. The basin is also required to be installed such that the inlet piping can maintain the minimal required slope from the incoming waste stream and in accordance with the local codes. e.g. 2% or ¼" drop per foot.

Allow for extra room, if required, for ballast. Ballast, or anti-floatation, is used in the presence of high ground water. In most cases, it takes the form of concrete cast at the job site, the basin can also be anchored to concrete blocks using stainless steel hardware.

Lower the basin into the prepared dig site. Align as needed and insure the basin remains level. Use caution to ensure that dirt, rocks or other debris does not enter the basin. Such debris can damage the pump.

It is vitally important to not ever lift the pump with the cord. Only lift the pump by the lifting handle. The cord is not designed to handle this heavy of a load and will be damaged if used to lift the pump.

The discharge piping must be installed below the frost line if applicable. A drain back system may also be utilized if these depths cannot be reasonably reached, contact R. C. Worst & Co. for more information.

Make all piping connections. A tube of Orenco® ADH100 to aide in the installation, refer to [Appendix F](#) for more details.

Electrical

Ensure that all power has been disengaged before working with electrical supply lines, perform a lock out tag out for increased safety. When installing a pump, motor and panel an electrical permit is generally required.

Important. Two separate circuits are required for this installation. One circuit is for the pump and the second circuit is for the controls/ alarm. If the system were on only one circuit and the pump tripped the breaker, the audio/ visual alarm would not alert the user of the situation. This may result in a system overflow resulting in possible property damage.

Note: Electrical outlets should not be installed within the pump basin.

When selecting wire great care should be given to ensure that the wire gauge is appropriate for the expected amp draw of the system. Refer to the graphic below. The control floats are rated for 5 amps.

Electrical Data										
Model	Engineering Number	HP	Voltage	Phase	Hz	Amps	Cord Length	Discharge	Switch	Weight
VRS10A-11	28172D000	1	115	1	60	13	20	2"	Auto	70
VRS10M-11	28172D001	1	115	1	60	13	20	2"	Manual	70
VRS10A-21	28172D002	1	230	1	60	7	20	2"	Auto	70
VRS10M-21	28172D003	1	230	1	60	7	20	2"	Manual	70
VRS20A-21	28200D000	2	230	1	60	15	20	1-1/4"	Auto	95
VRS20M-21	28200D010	2	230	1	60	15	20	1-1/4"	Manual	95

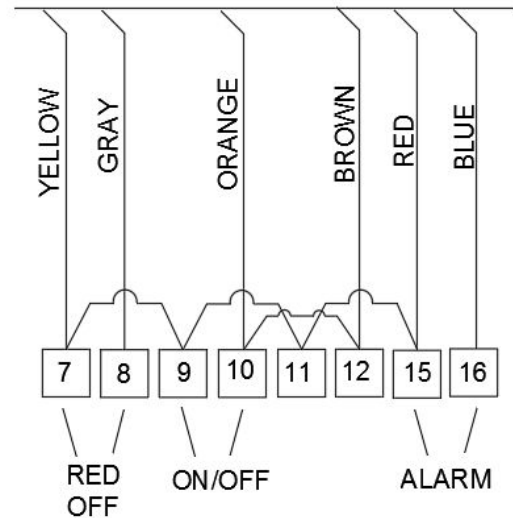
If used, lay out the conduit within pre-dug trenches. Using the appropriate compound, glue the conduit together. Feed the wires through the conduit and make the connections at the control panel. It is recommended that a duct seal is installed within the conduit to prevent sewer gases and excess condensation reaching either the splice box or the control box. Sewer gas is very corrosive and condensation can reduce the

effectiveness of the sealant in the wire nuts, which can cause shorts in the system.

If direct bury wire is used place wire in pre-dug trenches and wire the panel. Panel installation: The panel may be mounted on an exterior wall of the home; however, the panel contains a magnetic contactor that can be heard through the walls of the home. Great care should be taken to avoid mounting this panel near the living areas of the house. A treated post may be used as a mounting alternative.

On the standard basin package the float and pump wires have been pre-labeled and pre installed into the splice box. The wire connections and conduit installation is all that is required for field install. The wire nuts provided within the splice box have a sealant that covers and protects the wire splices. The wire nuts are considered to be single use only. Ensure that the opening of the wire nuts is facing down to prevent any condensation from corroding the splices.

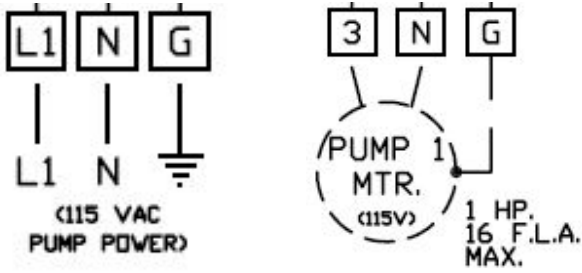
Refer to the diagram below. The panel shall be installed within line of site of the basin and within 50' (15.24 m). All wires leave the factory labeled for ease of installation.



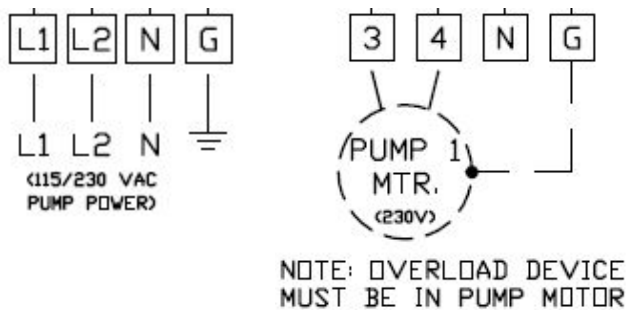
All of the common float wires are tied together within the splice box and a single common wire will be thread through the conduit to the control box and connected to terminal 7. From here the common lead has been jumped to terminals 9, 11 and 15. The wide-angle float

is to be wired to terminal 10 and has been jumped to 12. The high-water alarm float is wired to terminal 16.

For 115 Vac panels the wiring is as follows:

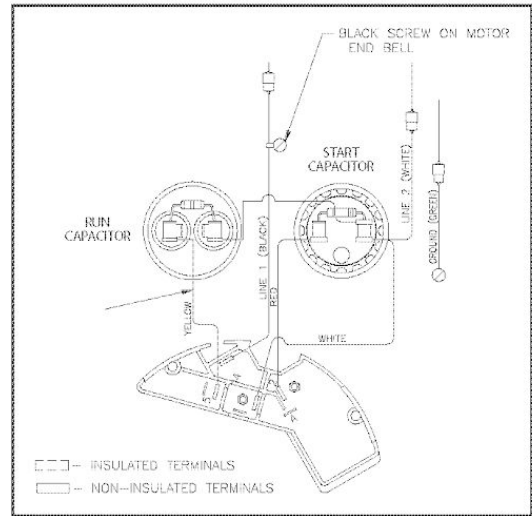


For 230 Vac panels the wiring is as follows:



For Alarm only basins the wiring has also been preinstalled. All that is required in this instance is to connect the float wires to the alarm panel and run the power supply wires to the spice box. Mount the alarm panel in a location that can be heard if the alarm were to activate.

Below is a copy of the capacitor wiring diagram.



Pre-Start Up

Once the piping and the electrical has been installed perform a site walk through checking for any loose ends that may be completed. Some authorizing agencies require an inspector to perform a site visit before the system can be backfilled in order for the final permit to be issued.

Ensure that all valves are open and the backflow preventer is open at the service, if applicable. Prefill the basin with clean water free of debris. Energize the system. Once the electrical connections and the plumbing verified that it is leak free, a discharge test can be made. The running pressure can be recorded at the top of the discharge tee. Simply remove the cap and temporarily install a pressure gauge. Record the operating pressure, line voltage and amperage when the pump is running and record here:

Operating Pressure: _____

Line Voltage: _____

Amperage: _____

This information will be invaluable in the future if any troubleshooting were needed. These three numbers will help determine if the pump or motor are about to fail.

More on this in the troubleshooting guide in this document.

Maintenance

There are few requirements for maintaining the GRUB. All of the time lines described below may need to be modified to meet the individual use. Some systems under high use will require far more maintenance than those with less use.

Approximately every 6 month open the lid to the system and verify that the floats are free from debris and build up.

The cutters on this grinder pump are self sharpening. The cutters should not dull during the operation life of the pump. Annually check the clearance of the rotating

cutter with the stationary cutter. A 0.008" feeler gauge is required for this operation.

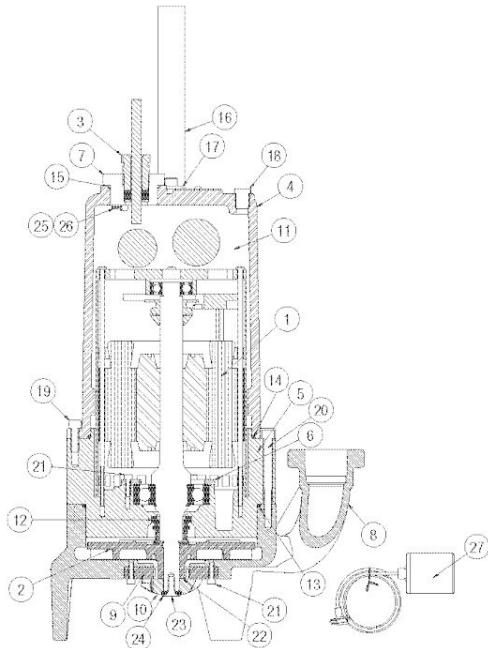
The best way to maintain the GRUB is to prevent foreign objects from entering the basin. Such things as "flushable" wipes, paper towels and feminine hygiene products. The pump will be able to grind these product into a fine slurry, however it will wear the blades down faster.

Replacement Parts Guide

Below are the vendor provided replacement part guides for the VR series grinder pumps.

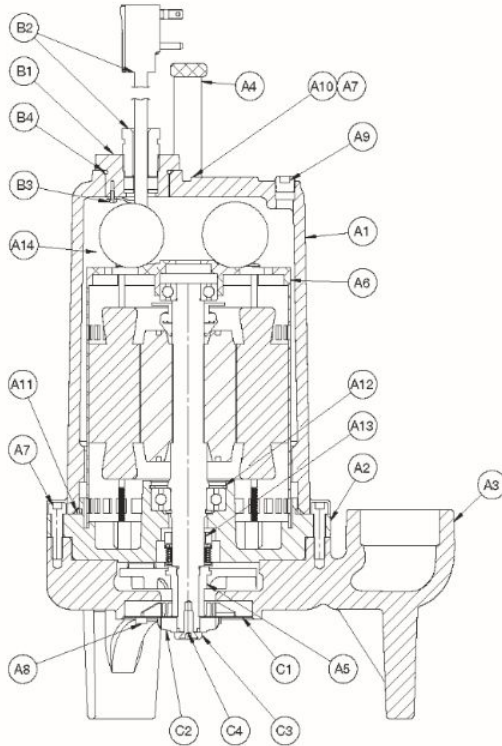
MOTOR END PARTS

COMMON PARTS LIST For use with product built with Marathon® motor.



Item	Engineering No.	Description	Qty
1	28165B000	VRS20A-21 Motor Assembly	1
		VRS20M-21 Motor Assembly	1
2	28197B001	Impeller, 5.25" O.D.	1
3	25338B001	Power Cord, 14-3, 20'	1
4	28132B000	Motor Housing	1
5	28188D000	Seal/Dearing Housing	1
6	28190A000	Bearing Retainer, VRS20	1
7	28193B000	Cord Cap Plate	1
8	28133D000	Volute	1
9	28145B000	Stationary Cutter	1
10	28146B001	Rotating Cutter	1
11	132531001	Premium Oil	0.8 Gallons
12	21576A011	Seal, 7/8" Shaft	1
13	05876A120	O-ring, 1/8" X 6.25 I.D.	1
14	001500321	O-ring, 1/8" X 5.859 I.D.	1
15	008340151	O-ring, 3/32" X 1.737 I.D.	1
16	25371B010	Lifting Bail	1
17	05030A020	Washer, Flat, 5/16"	2
18	05022A088	Plug, 1/4" Pipe	1
19	001780081	Screw, Socket Head, 5/16" X 8.75"	8
20	001780101	Screw, Socket Head, 5/16" X 3.00"	4
21	048200061	Screw, Socket Head, 10-24 X .625"	7
22	006280571	Shim, 1.00 OD x .625 ID x .002	1
	006280591	Shim, 1.00 OD x .625 ID x .020	1
	006280601	Shim, 1.00 OD x .625 ID x .030	1
	006280581	Shim, 1.00 OD x .625 ID x .005	1
23	07597A018	Screw, Flat Head, 1/4" x .75"	1
24	21583A000	Washer, Retaining	1
25	000630021	Screw, 6-32 x .25"	1
26	009950011	Lockwasher, Star	1
27	145950201	Float Switch, Wide Angle, 20" (VRS20A)	1

MOTOR END PARTS



COMMON PARTS LIST For use with product built with Marathon® motor.

Item #	Description	Qty	Component Part #
A1	Motor Housing	1	28132B000
A2	Bearing/Seal Housing	1	28169D000
A3	Case, Volute	1	28170D000
A4	Handle, Neoprene Grip	1	28196B000
A5	Impeller, Thermoplastic	1	28185B000
A6	Canned Motor Assembly	1	CHARTED
A7	5/16 -18 x 1" Screw	12	001780041
A8	10-24 Screw	4	048200061
A9	1/4 Pipe Plug	1	05022A092
A10	Washer	2	05030A020
A11	O-ring 1/8 x 5.859	1	001500321
A12	Retaining Ring, Internal	1	009740081
A13	Seal 7/8 Shaft 21/BF501C1	1	21576A011
A14	Oil, Transformer	.625 gal	24709110000
B1	Plate, Cord Cap	1	28193B000
B2	Cord; 14/3 with Moulded Plug	1	CHARTED
B3	Ground Screw	1	000630021
B4	O-ring	1	008340151
C1	Stationary Cutter	1	28168B000
C2	Rotating Cutter	1	28187B000
C3	Retaining Washer	1	21583A000
C4	Retaining Screw	1	07597A013

Troubleshooting Guide

Within this section there are a few basic troubleshooting guides that help one diagnose some of the more common and basic faults that may occur in the field. Once these steps have been followed please contact R.C. Worst & Co. for more advanced troubleshooting.

Below are the manufacturer's troubleshooting guides for the grinder pump.

TROUBLESHOOTING GUIDE

Pump does not run or hum.

See A, B, C, D, E or F.

Pump runs but does not deliver water.

See G, H, I, J, K or L.

Pump runs and pumps out sump but does not stop.

See M.

Pump runs but delivers only small amount of water.

See I, J, K, L or N.

Fuse blows or circuit breaker trips when pump starts.

See K, L, N, O or P.

Motor runs for short time then stops. Then after short period starts again. Indicates tripping overload caused by symptom shown.

See K, L, N or P.

For any other symptoms contact a Myers authorized service facility.

- A.** Line circuit breaker may be off; or fuse, if used, may be blown or loose.
- B.** Water level in sump may be too low. Run in more water.
- C.** Pump cord plug may not be making contact in receptacle.
- D.** If pump is using the series cord plug, the two plugs may not be plugged tightly together.
- E.** Float may be stuck. Be sure float operates freely in basin. Check tether length of switch.
- F.** If all symptoms check OK, motor winding may be open; take to service center for repair.
- G.** Check valve may be installed backward. Arrow on valve points in direction of flow.
- H.** Discharge shut-off valve, if used, may be closed.
- I.** Pump may be air locked. Start and stop several times by plugging and unplugging cord. Check vent hole on pump case for plugging.
- J.** Pump head may be too high. Horizontal distance does not affect pumping, except loss due to friction.
- K.** Inlet holes in pump base may be clogged. Remove pump and clean out openings.
- L.** Impeller or volute openings may be plugged or partially plugged. Remove pump and clean. Check tether length of switch.
- M.** Float is stuck in up position. Be sure float operates freely in basin.
- N.** Pump impeller may be partially clogged causing motor to run slow, resulting in motor overload.
- O.** Fuse size or circuit breaker is too small. Must be 20 amps.
- P.** Defective motor stator. Return to Myers service center.

Below is the vendor provided alarm codes for the Power Zone panel.

Alarms / Flash Codes

Alarm	LED Flash	Audible Flash	Other Indication
High Level	2 per sec.	2 per sec.	Aux. contact closed
Low Level	1 every 2 sec.	Chirp every sec.	X
Float Fail	2 every other sec.	2 every other sec.	Fail Indicated in "FLt5" menu
Timer Override	1 every 4 sec.	1 every 4 sec.	X
Alarm Power Fail	1 every 4 sec.	X	Power Short OFF Power Light OFF
Alarm Power Short	1 every 4 sec.	X	Power Short ON Power Light OFF
Control Power Short	1 every 4 sec.	1 every 4 sec.	Control Short ON Control Light OFF

Warranty

R.C. Worst & Co. Inc. (RCW) warrants to the original consumer purchaser of RCW products, that they will be free from defects in material and workmanship for the Warranty Period of 36 months from date of purchase with a completed start up report. A 24 month warranty is standard without the start up report. Our warranty will not apply to any product that, in our sole judgement, has been subject to negligence, misapplication, improper installation, or improper maintenance. Your only remedy, and RCW's only duty, is that RCW repair or replace defective products (at RCW's choice). You must pay all labor and shipping charges associated with this warranty and must request warranty service as soon as a problem is discovered. No request for service will be accepted if received after the Warranty Period has expired. This warranty is not transferable.

Appendices

Please refer to the documents below provided by the manufactures of the sub systems and components.

MYERS® VR1 & VR2 SERIES 1-2 HP SUBMERSIBLE GRINDER PUMPS

SHREDDING WASTEWATER CHALLENGES



PATENT-PENDING AXIAL
CUTTER TECHNOLOGY



EASY INSTALLATION



MYERS® VR1 & VR2 SERIES SUBMERSIBLE GRINDER PUMPS

The new MYERS VR1 and VR2 grinders feature a patent pending axial cutter technology that easily slices through solids and trash found in domestic wastewater without roping or clogging. They come with plenty of standard features to make installation a breeze.

The VR1 is an ideal upgrade for residential sewage pumps struggling with trash and debris found in residential wastewater. The VR2 is a rugged and economical solution for residential and pressure sewage systems.



PATENT- PENDING AXIAL CUTTER TECHNOLOGY

Easily slices through solids and trash found in domestic wastewater without roping or clogging.

Watch the video at www.femyers.com



POLY ROPE



SHOP RAG



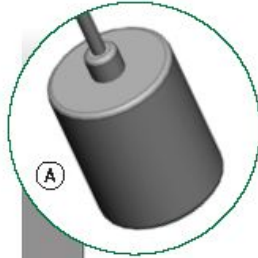
SWIFFERS™



MOP HEAD



FEATURES



A. Wide Angle Float Switch

- Piggy-back cord for easy maintenance

B. Cable Entry System

- Cable jacket sealed by compression fitting and individual wires sealed by compression grommet for double seal protection against water ingress

C. Oil-Filled Motor

- Maximizes heat dissipation and provides constant bearing lubrication for long life
- High torque start/run capacitor for single phase motors for assured starting under heavy loads.
- Internal capacitors eliminate need for control panel

D. Integrated Heat Sensor

- Protects motor from burnout due to excessive heat from any overload condition. Automatically resets when motor has cooled

E. Shaft and Fasteners

- Stainless steel for maximum corrosion resistance and long life

F. Shaft Seals

- Oil lubricated single carbon and ceramic faced seal provides motor protection

G. Impeller

- Semi-open impeller handles ground slurry without clogging or binding
- Pump-out vanes help keep trash from seal and reduces pressure at seal face for longer life

H. Axial Cutter System

- Easily slice through solids and trash commonly found in domestic wastewater without roping or clogging
- Constructed of 440 SST hardened to 57-60Rc for long life
- Easily replaceable without dismantling pump

I. Volute Case

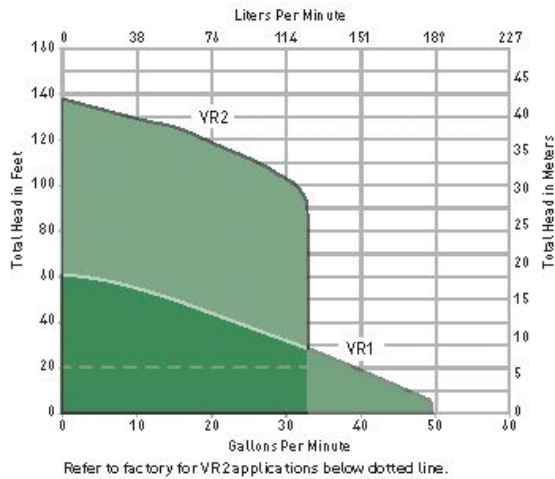
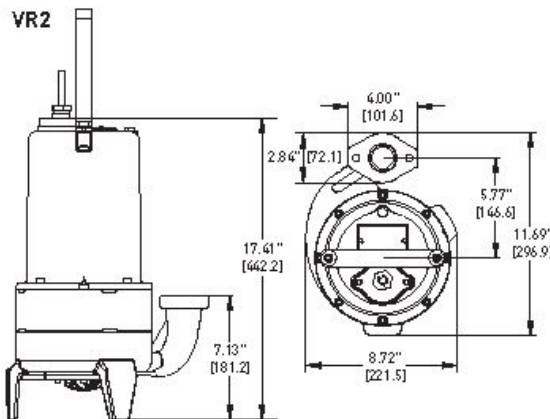
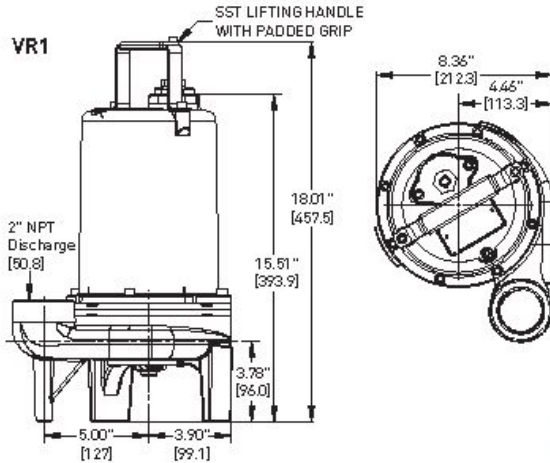
- Cast iron, 1-1/4" vertical, flanged discharge (VR2)
- 2" vertical discharge (VR1)



PERFORMANCE DATA AND DIMENSIONS



3450 RPM
[Dimensions in mm]



Product Capabilities			
Capacities To:	VR1	50 gpm	189 lpm
	VR2	33 gpm	125 lpm
Heads To:	VR1	53 ft.	16.2 m
	VR2	138 ft.	42.1 m
Liquids Handling	domestic raw sewage		
Intermittent Liquid Temp.	up to 140°F		up to 60°C
Winding Insulation Temp. (Class F)	311°F		155°C
Motor Electrical Data	3450 rpm, 60 Hz, 1 ph 115V (VR1), 230V (VR1 and VR2)		
Std. Third Party Approvals	CSA		
Acceptable pH Range	6 - 9		
Specific Gravity	.9 - 1.1		
Viscosity	28 - 35 SSU		
Discharge (Flange Dia.)	VR1	2 in.	50.8 mm
	VR2	1-1/4 in.	31.75 mm
Min. Sump Diameter	VR1	24 in.	61.0 mm
	VR2 Simplex	24 in.	61.0 cm
	VR2 Duplex	36 in.	91.4 cm

Electrical Data										
Model	Engineering Number	HP	Voltage	Phase	H _z	Amps	Cord Length	Discharge	Switch	Weight
VRS10A-11	28172D000	1	115	1	60	13	20	2"	Auto	70
VRS10M-11	28172D001	1	115	1	60	13	20	2"	Manual	70
VRS10A-21	28172D002	1	230	1	60	7	20	2"	Auto	70
VRS10M-21	28172D003	1	230	1	60	7	20	2"	Manual	70
VRS20A-21	28200D000	2	230	1	60	15	20	1-1/4"	Auto	95
VRS20M-21	28200D010	2	230	1	60	15	20	1-1/4"	Manual	95

Construction Materials	
Motor Housing, Seal Housing, Cord Cap and Volute Case	Cast Iron, Class 30, ASTM A48
Semi-Open Impeller	VR1 = thermoplastic VR2 = stainless steel
Power Cord	SJ00W
Mechanical Seals: Standard	Carbon and Ceramic
Pump, Motor Shaft	416 SST
Fasteners	300 Series SST
Cutting Mechanism	440 SST 58-60 Rockwell



1101 MYERS PARKWAY, ASHLAND, OH 44805 WWW.FEMYERS.COM
PH: 419-289-1144

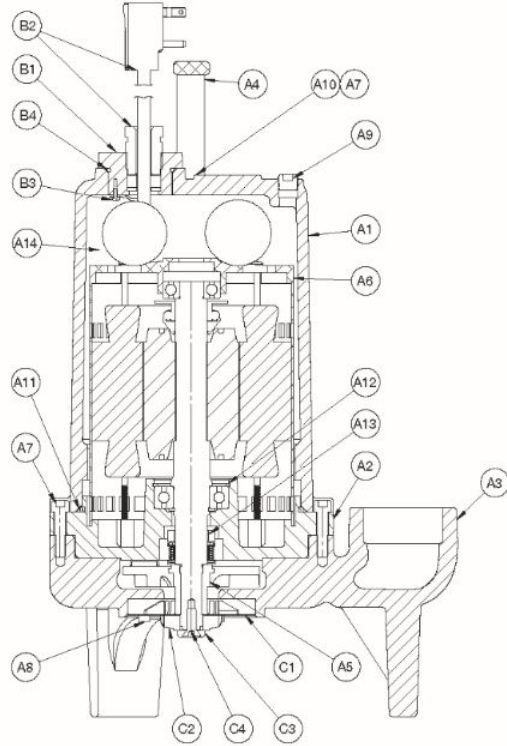
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M-02-4070 (02/08/16)



MOTOR END PARTS

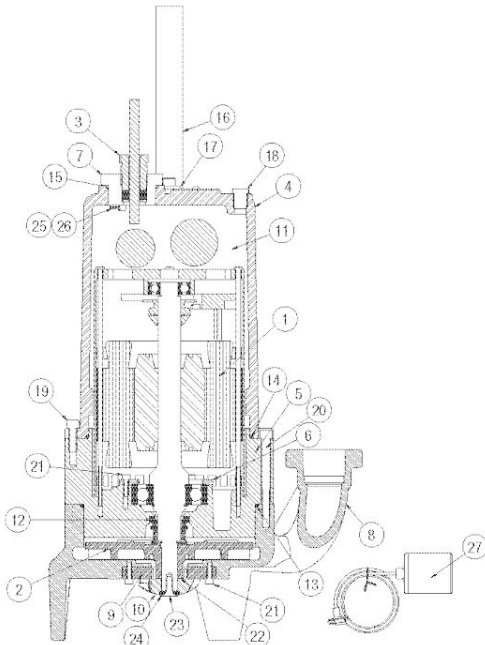


COMMON PARTS LIST For use with product built with Marathon® motor.

Item #	Description	Qty	Component Part #
A1	Motor Housing	1	28132B000
A2	Bearing/Seal Housing	1	28169D000
A3	Case, Volute	1	28170D000
A4	Handle, Neoprene Grip	1	28196B000
A5	Impeller, Thermoplastic	1	28185B000
A6	Canned Motor Assembly	1	CHARTED
A7	5/16 -18 x 1" Screw	12	001780041
A8	10-24 Screw	4	048200061
A9	1/4 Pipe Plug	1	05022A092
A10	Washer	2	05030A020
A11	O-ring 1/8 x 5.859	1	001500321
A12	Retaining Ring, Internal	1	009740081
A13	Seal 7/8 Shaft 21/BF501C1	1	21576A011
A14	Oil, Transformer	.625 gal	24709110000
B1	Plate, Cord Cap	1	28193B000
B2	Cord; 14/3 with Moulded Plug	1	CHARTED
B3	Ground Screw	1	000630021
B4	O-ring	1	008340151
C1	Stationary Cutter	1	28168B000
C2	Rotating Cutter	1	28187B000
C3	Retaining Washer	1	21583A000
C4	Retaining Screw	1	07597A013

MOTOR END PARTS

COMMON PARTS LIST For use with product built with Marathon® motor.



Item	Engineering No.	Description	Qty
1	28165B000	VRS20A 21 Motor Assembly	1
		VRS20M 21 Motor Assembly	1
2	28197B001	Impeller, 5.25" O.D.	1
3	25338B001	Power Cord, 14-3, 20'	1
4	28132B000	Motor Housing	1
5	28188D000	Seal/Bearing Housing	1
6	28190A000	Bearing Retainer, VRS20	1
7	28193B000	Cord Cap Plate	1
8	28133D000	Volute	1
9	28145B000	Stationary Cutter	1
10	28146B001	Rotating Cutter	1
11	132531001	Premium Oil	0.8 Gallons
12	21576A011	Seal, 7/8" Shaft	1
13	05876A120	O-ring, 1/8" X 6.25 I.D.	1
14	001500321	O-ring, 1/8" X 5.859 I.D.	1
15	008340151	O-ring, 3/32" X 1.737 I.D.	1
16	25371B010	Lifting Bail	1
17	05030A020	Washer, Flat, 5/16"	2
18	05022A068	Plug, 1/4" Pipe	1
19	001780081	Screw, Socket Head, 5/16" X .875"	8
20	001780101	Screw, Socket Head, 5/16" X 3.00"	4
21	048200061	Screw, Socket Head, 10-24 X .625"	7
22	006280571	Shim, 1.00 OD x .625 ID x .002	1
	006280591	Shim, 1.00 OD x .625 ID x .020	1
	006280601	Shim, 1.00 OD x .625 ID x .030	1
	006280581	Shim, 1.00 OD x .625 ID x .005	1
23	07597A018	Screw, Flat Head, 1/4" x .75"	1
24	21583A000	Washer, Retaining	1
25	000630021	Screw, 6-32 x .25"	1
26	000950011	Lockwasher, Star	1
27	145950201	Float Switch, Wide Angle, 20' (VRS20A)	1

CONTROL PANELS

POWER-ZONE Control Panels



Power Zone™ control panels utilize “zero crossing” technology to maximize relay life by increasing load capacity of the relay.

Each **NEMA 4X** control panel features an **exclusive front mounted touch-to-silence-pad** with exterior LED indicator lights and a **digital display** for programming pump information, including elapsed time, cycle counter, high level counter, float status indicators, low level alarm on/off selection, lead pump selection and alarm settings.

Power Zone™ panels are available in single phase models: Junior (demand dose), Simplex (demand and timed dose) and Duplex (demand dose) applications. Optional pedestal with access door is available for easy installation (see accessories). **UL/cUL Listed.**

Features:

- Exterior touch to silence/touch twice to test circuitry
- External alarm & control power lights
- External pump run light(s)
- Internal hand run button(s) with latching feature
- Internal pump run indicator light(s)
- Alarm & control short indicator lights
- No holes drilled or cut for lights, audible, or silence devices
- Quick disconnect circuit boards - simple field troubleshooting
- Field wiring terminal strip
- Lockable hasp
- Standard digital display center includes:
 - Elapsed time meter for each pump (resetable)
 - Cycle counter for each pump (resetable)
 - High level counter
 - Float status indication
 - Alternation with lead pump selection (duplex panels)
- Optional time dose version:
 - Pump run/off timer
 - Timer override counter
 - Override timer with settable override run and off time
 - Duplex time dose available (consult factory for details)

FUSION Control Panels



FUSION™ control panels package traditional, user-friendly components with an enhanced design into a NEMA 4X polycarbonate enclosure.

FUSION™ control panels are available in Simplex and Duplex models for demand dose applications. **UL/cUL Listed.**

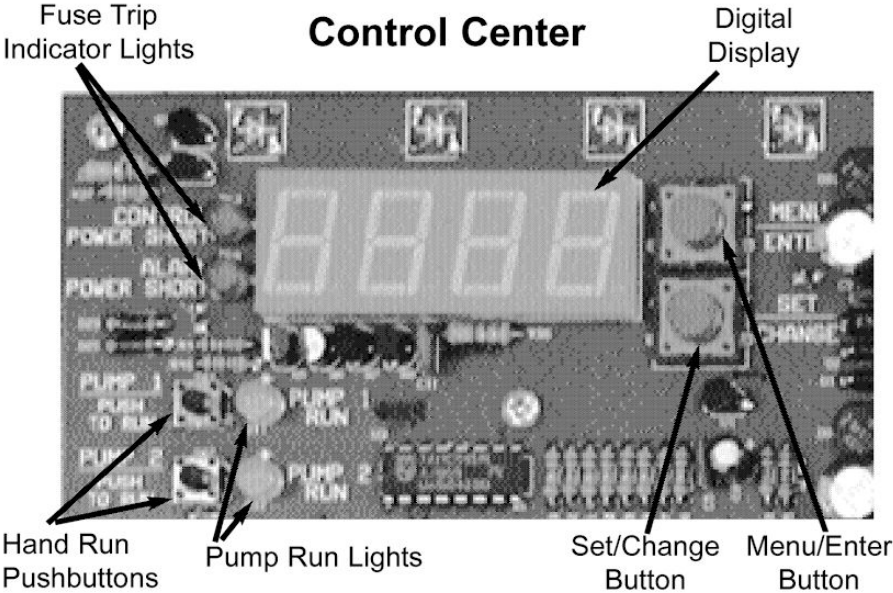
Features:

- NEMA 4X weatherproof enclosure for indoor/outdoor installations
- Inner door for added safety
- Red flashing alarm beacon and horn
- Separate control and alarm fuses
- Lockable hasps
- Pump run light
- Hand/off/auto heavy duty toggle
- Alarm on/off/test heavy duty toggle
- Raised field wiring terminal strip for easier installations
- Pump and alarm/control circuit breakers
- Options:
 - Auto dialer
 - Elapsed time meters
 - Cycle counters
 - Seal fail indicator
 - Auxiliary alarm contacts
 - Timed dose operation

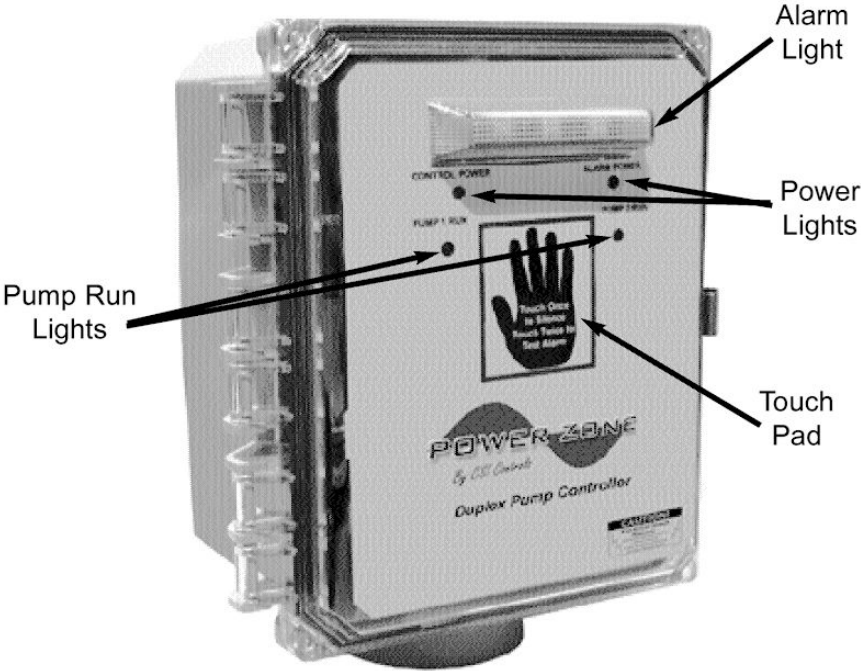
Power Zone

Panel Features

Panel Features



Outer Door



Power Zone

Standard Features

Alternation and Lag Delay on the Duplex Controllers

On the duplex controller the level settings are labeled ON and LAG because there is a built-in alternator in the controller. The alternator cycles which pump is the lead pump after each PUMP RUN cycle, however, a permanent lead pump can be assigned in the *LCOP* menu. A non-adjustable delay causes the lag pump to wait ten seconds before turning on after the Lead Pump has turned on. This is useful during a power outage when the liquid level may reach the lag pump setting. The lead pump will turn on when power is restored and the lag pump will turn on ten seconds later.

Hand Run Buttons

Power Zone panels include push-to-run (HAND) pushbuttons for the motor outputs accessible on the circuit board below the power short indicators. The push-to-run (HAND) pushbuttons toggle their respective outputs off and on each time pushed under normal operation. However, to protect the pumps should the sump go below pump off float (in float panels) or the low level setting (in pressure panels), the HAND pushbuttons revert to momentary contact and must be held down to maintain their respective outputs on. This is a safety feature that keeps the pumps from running dry.

Zero Crossing

All CSI Power Zone products utilize “Zero Crossing” technology. This is a technology designed to reduce damage to relay contacts caused by high inrush loads. “Zero Crossing” refers to engaging the relay contacts near the point on the AC sine wave where the voltage crosses zero. This maximizes relay life when controlling inductive or capacitive loads and, therefore, increases the load capability of the relay.

Note: This technology is designed specifically for CSI relays.

Audible Alarm Circuitry

Power Zone panels come standard with an audible alarm and the patented front mounted “Touch Once to Silence / Touch Twice to Test Alarm” pad. With this feature the user is able to silence the audible by simply touching the hand on the front of the enclosure or touch it twice and hold to test the alarm.

Note: Touch with your entire hand (not just a finger).

Aux. Contact

The auxiliary alarm contact is an option that is included on the Power Zone “+” panels (see page 23). If your panel has this option it will have terminal blocks 17 & 18. This is an unfused dry contact rated for 120 VAC 5 amps max.

Power Zone

Standard Features

Fuse Trip Indicators

These lights are located to the left of the digital display (Control & Alarm Power Short). If a control or alarm power overload occurs an indicator will light up and the power light on the front of the door for that circuit will be off to indicate that the automatically resettable fuses have tripped. When the short (overload) is removed the fuse will automatically reset and normal operation will continue. However, if the power light is off and the power short light is not lit then that circuit is not getting any power.

Elapsed Time Meters

Power Zone provides Elapsed Time Meters as a standard feature. This information is accessed through the digital display. Just cycle through the display menu by pressing the Menu/Enter button. The Elapsed Time information is identified by "E_T. 1" for pump 1 and "E_T. 2" for pump 2 (Duplex Panel Only). Once you reach this field the information will alternate between the identifier "E_T. 1" or "E_T. 2" and the total elapsed run time for that pump in hours. Press the Set/Change button to view minutes and seconds.

Cycle Counters

Power Zone provides Cycle Counters as a standard feature. This information is accessed through the digital display. Just cycle through the display menu by pressing the Menu/Enter button. The Cycle Count information is identified by "C_C. 1" for pump 1 and "C_C. 2" for pump 2 (Duplex Panel Only). Once you reach this field the information will alternate between the identifier "C_C. 1" or "C_C. 2" and the total number of cycles the corresponding pump has run.

Alarms / Flash Codes

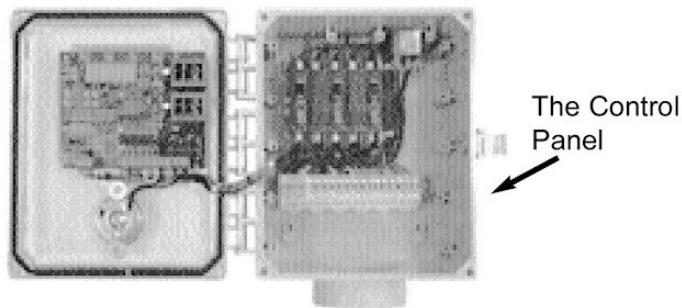
Alarm	LED Flash	Audible Flash	Other Indication
High Level	2 per sec.	2 per sec.	Aux. contact closed
Low Level	1 every 2 sec.	Chirp every sec.	X
Float Fail	2 every other sec.	2 every other sec.	Fail Indicated in "FLT5" menu
Timer Override	1 every 4 sec.	1 every 4 sec.	X
Alarm Power Fail	1 every 4 sec.	X	Power Short OFF Power Light OFF
Alarm Power Short	1 every 4 sec.	X	Power Short ON Power Light OFF
Control Power Short	1 every 4 sec.	1 every 4 sec.	Control Short ON Control Light OFF

Power Zone

Float Systems

The Power Zone is an innovative approach to today's pump control system requirements with standard features unmatched by most competitors. The Power Zone offers a revolutionary design for housing common control panel features such as circuit breakers, relays, alarm light, audible and a terminal strip. Some standard features include: a lockable latch, flashing red LED alarm lights with an audible alarm, elapsed time, cycle count, and the innovative touch to silence/test pad all in a UL Type 4X enclosure. In addition to unsurpassed standard features the Power Zone offers an exclusive control circuit board. Conveniently located on the Inside of the Door the display center allows the user to see the status of each float and enables the user to completely customize the operation of the panel. Available in simplex and duplex, these innovative controllers are certain to revolutionize the industry.

Standard Float Systems Include:

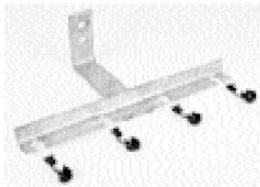


Floats Sold Separately

Float Panels

Available Float Mounting Options



Float Mounting Bracket



The installer may also choose to install the floats using one of our optional float mounting brackets w/cord snubbers and float weights.

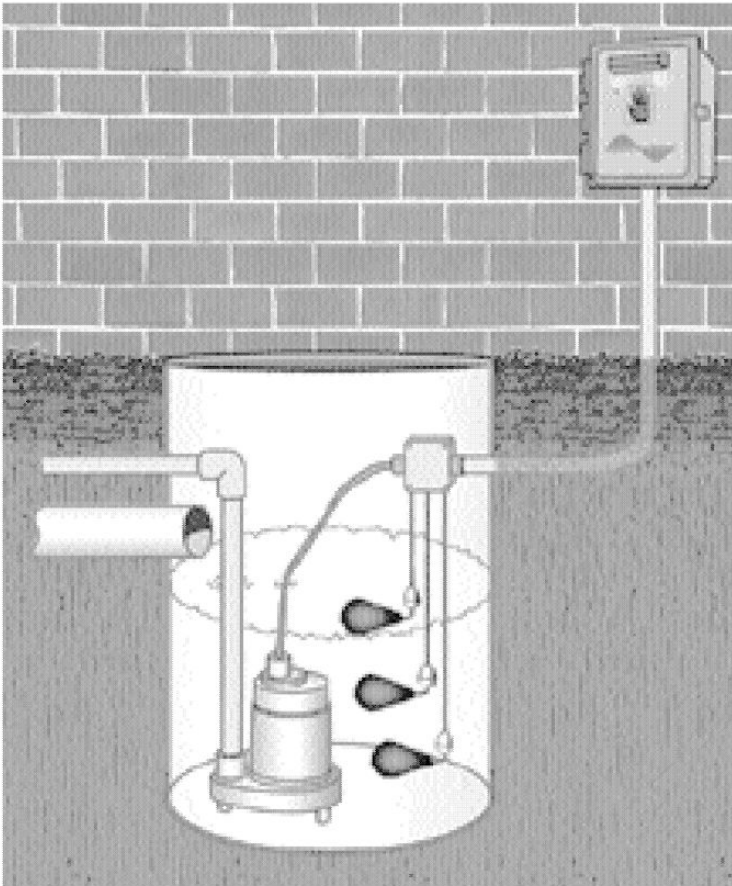
Power Zone

Float System Installation

WARNING 	ELECTRICAL SHOCK HAZARD Disconnect power before installing or servicing this product. A qualified service person must install and service this product according to applicable electrical and plumbing codes.	WARNING 	EXPLOSION OR FIRE HAZARD Do not use this product with flammable liquids. Do not install in hazardous locations as defined by National Electrical Code, ANSI/NFPA 70.
Failure to follow these precautions could result in serious injury or death. Replace product immediately if switch cable becomes damaged or severed. Keep these instructions with warranty after installation. This product must be installed in accordance with National Electric Code, ANSI/NFPA 70 so as to prevent moisture from entering or accumulating within boxes, conduit bodies, fittings, float housing, or cable.			

Note: Care should be taken to insure that sewage gases are not allowed to enter the control panel with an approved sealing means! **(Damage caused by sewage gas is not covered by warranty).**

Typical Simplex Float System Installation



Float Panels

Power Zone

Float System Installation Contd.

Installing the Controller

1. Determine a mounting location for the panel.
2. Determine the location of the conduit(s) coming in to the panel.
3. Drill holes in the panel for conduit entry.
4. Mount panel using the provided mounting feet or optional pedestal.
5. Bring the float and power wires into the panel through the conduit or CSI poly pedestal.
6. Wire the panel according to the schematic included in the panel.
7. Check installation by turning power on and manually tipping the floats or running up the water level to test for proper installation.
8. Test the unit periodically to ensure proper operation.

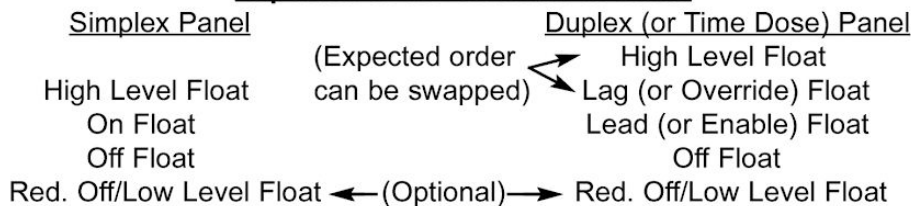
Redundant Off / Low Level Float Option

The redundant off float option reassures that the pump(s) will not run dry. To use the redundant off option connect a normally open float switch to terminals 7 & 8; otherwise install a jumper across terminals 7 & 8 if you do not wish to use this feature. When the float is in the open position the pumps will not be able to run except by using the hand run push buttons in momentary contact mode. This will also trigger a low level alarm if that feature is enabled in the programming.

Float Failure Routine

The Power Zone float controllers attempt to detect when a system float has failed. The controller does this by assuming the floats are hung in the correct order in the basin.

Expected Order of Floats in Basin



The program looks for a float to change its state from Open to Closed, and assumes that a changing state indicates that the float is working. The program then looks at the state of the other floats to see if they are Open or Closed as expected. If a float is not in the expected state the program marks that float as failed. The failure for the float will be cleared if its state ever changes, or if power is cycled and the problem is corrected. The float failure can optionally cause an alarm (see Alarm/Flash Codes section and the "FFRL" menu setting for more details). Also, on a duplex panel or time dose panel the expected order for the High Level float and the Lag (or Timer Override) float can be swapped, see "L9FL" setting for a duplex panel or "OrFl" for a Time Dose panel.

Power Zone

Field Wiring Connections

Terminal Strip With All Available Options

Note: This is only a sample, please follow the specific connection instructions located inside your panel.

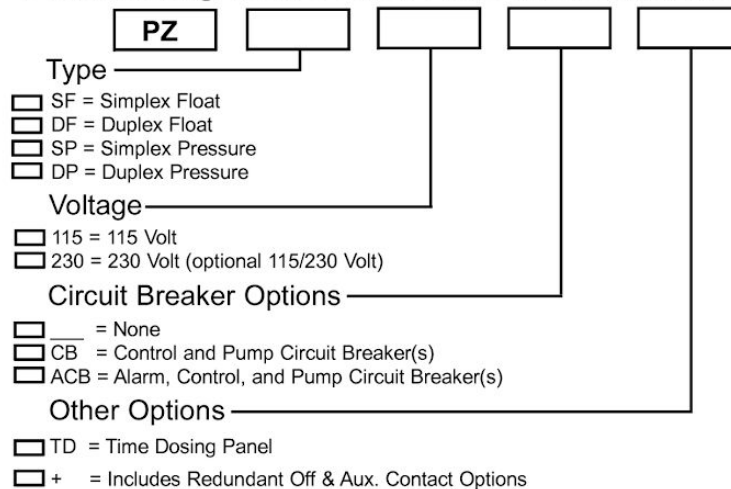
L1	L2	N	G	1	2	3	4	N	G	5	6	N	G	7	8	9	10	11	12	13	14	15	16	17	18
----	----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----

Sample PZDF230ACB+ Terminal Strip

- L1, L2 & N** 115/230 VAC Pump Power
- 1** 115 VAC alarm power
- 2** 115 VAC control power
- 3 & 4** Pump 1 Mtr.
- N** For 115 Volt Pump Connection
- 5 & 6** Pump 2 Mtr.
- N** For 115 Volt Pump Connection
- 7 & 8** Redundant Off / Redundant On & High Level
- 9 & 10** Off
- 11 & 12** Lead On
- 13 & 14** Lag On
- 15 & 16** Alarm
- 17 & 18** Aux. Alarm Contact

Note: Terminal strips differ between Power Zone models and options. Your panel may be missing some of these terminal strip numbers. However, this example shows all possible field wiring connections.

Determining Your Power Zone Model Number



Specifications

	Float	Pressure
Available in Simplex & Duplex	Duplex Includes alternator & lag pump delay	
Enclosure Dimensions	10" X 8" X 5"	
Overall Dimensions	12" X 10.5" X 7.5"	
Enclosure	UL Type 4X with Molded Mounting Feet	
Audible Alarm	Includes "Touch to Silence/Test" circuitry	
Float Status	Accessed Thru Display	N/A
Level Settings	N/A	Accessed Thru Display
Flashing Red Alarm Light	Includes Multiple LED Lights	
Weight	6 lbs	
Measurement Range	N/A	42"
Includes:	Floats Sold Separately	Air Bell & 25ft of tubing
Pressure Input	N/A	Min: 0 psi Max: 1.73 psi Max Overpressure: 10.8 psi
Controller Temp. Range	-40°F (-40°C) - +185°F (+85°C)	
Humidity	95% non-condensing	
Terminal Torque Ratings	Large - 35 inch lbs., Small - 12 inch lbs.	
Voltage to Floats	120 VAC	N/A
Voltage to Pump Relays	12 VDC	
Aux. Alarm Contact Rating	5 amp 120 VAC	
Fuses	Thermal Fuse Current Limiting	
Max Current when shorted	3 A	
Trip Current	0.1 A	
cULus 508 Listed		
Maximum 2 HP, 115V (24FLA) - 5 HP, 230V (28FLA)		

For catalog, options, or pricing information go to:
www.csicontrols.com

TANK ALERT® XT Alarm System

Versatile, indoor or outdoor liquid level alarm system.

This alarm system monitors liquid levels in lift pump chambers, sump pump basins, holding tanks, sewage, agricultural, and other non-potable water applications.

The Tank Alert® XT indoor/outdoor alarm can serve as a high or low level alarm depending on the float switch model used.

The alarm horn sounds and the red beacon illuminates when a potentially threatening liquid level condition occurs. A "power on" light on the switch indicates power to the alarm panel.



ALARM SYSTEMS

FEATURES

- Enclosure meets Type 3R water-tight standard.
- Automatic alarm reset, horn silence switch, and alarm test switch.
- Alarm horn sounds at 85 decibels at 10 feet (3 meters).
- Alarm system (when installed on separate circuit) operates even if pump circuit fails.
- Complete package includes standard SJE SignalMaster® control switch with 15 feet (4.57 meters) of cable (other lengths available) and mounting clamp.
- UL Listed for indoor or outdoor use.
- CSA Certified.
- Three-year limited warranty.



OPTIONS

When ordered with the alarm, the system is available with:

- alternate float switch models for high or low liquid level warning.
- auxiliary dry normally open contacts for easy attachment of remote devices.
- premounted terminal block so enclosure can also be used as a junction box for splicing pump, pump switch, and pump power. Meets NEC standard for junction boxes.
- 6 foot (1.8 meter) power cord and liquid-tight connectors.

SPECIFICATIONS

- VOLTAGE:** 120 VAC, 50/60 Hz
- ALARM ENCLOSURE:** 6.5x4.5x3.0 inch (16.51 x 11.43 x 7.62 cm), indoor-outdoor, weatherproof, thermoplastic meets Type 3R water-tight standard
- ALARM HORN:** 85 decibels at 10 feet (3 meters), meets Type 3R water-tight standard as installed by factory
- ALARM BEACON:** UL Listed, Type 4x beacon assembly
- TEST/SILENCE SWITCH:** certified to IP66 and IP68 standards
- AUXILIARY ALARM CONTACTS (OPTIONAL):** 120 VAC, 5 amps max., 50/60 Hz
- PRE-MOUNTED TERMINAL BLOCK (OPTIONAL):** 20 amps, 120/230 VAC
- POWER CORD (OPTIONAL):** 6 foot (1.8 meter) cord with 120 VAC plug
- FLOAT SWITCH:** SJE SignalMaster® control switch with mounting clamp
 - Cable:** 15 feet (4.57 meters), flexible 18 gauge, 2 conductor (UL) SJOW, water-resistant (CPE)
 - Float:** 2.74 inch diameter x 4.83 inch long (7 cm x 12.3 cm), high impact, corrosion resistant polypropylene housing for use in sewage and non-potable water up to 140°F (60°C)
 - Maximum Water Depth:** 30 feet (9 meters), 13 psi
 - Electrical:** 5 amps, 125 VAC/250 VAC, 50/60 Hz

SEE BACKSIDE FOR ORDERING INFORMATION.
SEE PRICE BOOK FOR LIST PRICE.



PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: sje@sjerhombus.com
www.sjerhombus.com

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TANK ALERT® XT Alarm System

Versatile indoor or outdoor liquid level alarm system.

ORDERING INFORMATION

STANDARD ALARM (120 VAC)		
Part#	Description	Shipping Weight
1009923	TAXT-01H (120 VAC w/15' SJE SignalMaster® High Level)	3.00 lbs.
1010251	TAXT-01L (120 VAC w/15' SJE SignalMaster® Low Level)	3.00 lbs.
1004442	TAXT-01H (120 VAC w/15' SJE Sensor Float® High Level)	3.00 lbs.
1005140	TAXT-01L (120 VAC w/15' SJE Sensor Float® Low Level)	3.00 lbs.
1005141	TAXT-01X (120 VAC no float)	1.50 lbs.

STANDARD ALARM (120 VAC) with terminal block		
Part#	Description	Shipping Weight
1012416	TAXT-01HAUXTB (120 VAC w/15' SJE SignalMaster® High Level Auxiliary Contacts TB)	3.50 lbs.
1022241	TAXT-01HTB (120 VAC w/15' SJE SignalMaster® High Level TB)	2.00 lbs.
1005481	TAXT-01HTB (120 VAC w/15' Sensor Float® High Level TB)	3.50 lbs.
1005835	TAXT-01LTB (120 VAC w/15' Sensor Float® Low Level TB)	3.50 lbs.
1005836	TAXT-01XTB (120 VAC no float TB)	2.00 lbs.
1009214	TAXT-01HAUXTB (120 VAC w/15' Sensor Float® High Level Auxiliary Contacts TB)	3.50 lbs.

STANDARD ALARM (120 VAC) with options		
Part#	Description	Shipping Weight
1006850	TAXT-01HAUX (120 VAC w/15' Sensor Float® High Level & Aux Con)	3.50 lbs.
1006690	TAXT-01HPC (120 VAC w/15' Sensor Float® High Level Power Cord)	3.50 lbs.

H = High Level L = Low Level X = No Float TB = Includes Terminal Block PC = Power Cord
 AUX = Auxiliary Contacts **MASTER CARTON holds 12 boxed units.**

[View List Price](#)

SPECIFICATIONS

- VOLTAGE:** 120 VAC, 50/60 Hz
- ALARM ENCLOSURE:** 6.5 x 4.5 x 3 inches (16.51 x 11.43 x 7.62 cm), indoor -outdoor, weatherproof, thermoplastic, meets Type 3R water-tight standard
- ALARM HORN:** 85 decibels at 10 feet (3 meters), meets Type 3R water-tight standard as installed by factory
- ALARM BEACON:** UL Listed, Type 4X beacon assembly
- TEST/SILENCE SWITCH:** certified to IP66 and IP68 standards
- AUXILIARY ALARM CONTACTS (OPTIONAL):** 120 VAC, 5 amps max., 50/60 HZ
- PRE-MOUNTED TERMINAL BLOCK (OPTIONAL):** 20 amps, 120/230 VAC
- POWER CORD:** (optional) 6 foot (1.8 meters) cord with 120 VAC plug
- FLOAT SWITCH:** SJE SignalMaster® control switch with mounting clamp
- CABLE:** 15 feet (4.57 meters), flexible 18 gauge, 2 conductor (UL) SJOW, water-resistant (CPE)
- FLOAT:** 2.74 inch diameter x 4.83 inch long (7 cm x 12.3 cm), high impact, corrosion resistant polypropylene housing for use in sewage and non-potable water up to 140°F (60°C)
- MAXIMUM WATER DEPTH:** 30 feet (9 meters), 13 psi
- ELECTRICAL:** 5 amps, 125 VAC/250 VAC, 50/60 Hz

Call or fax your order!

1-888-DIAL-SJE (1-888-342-5753) ■ Fax 218-847-4617

OPTIONS

CONTROL SWITCH OPTIONS

The Tank Alert® XT alarm system comes standard with a 15 foot **SJE SignalMaster®** control switch with mounting clamp. Other float switches are available. See control switch section of the catalog.

To determine the price of alarm with an alternate float, add the price of the part number with "no float" to the price of the float switch.

UL Listed for Water & Sewage



OTHER INFORMATION

Option	Description
AUX	Auxiliary Alarm Contacts (installed)
PC	6 foot power cord with two RCC8 1/2 inch liquid-tight connectors



www.sjrhombus.com
sje@sjrhombus.com

Cat Page PN 1016796L
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ALARM SYSTEMS

Ultra-Rib™ PVC Sewer Pipe

Short Form Specification

Product Data Form

Extrusion Technologies, Inc.

Introduction

Ultra-Rib PVC Gravity Sewer pipe, manufactured by Extrusion Technologies, Inc., is a unique combination of PVC pipe technology and innovative engineering design. Ultra-Rib brings to the marketplace a cost effective, high quality sewer pipe system. Ultra-Rib offers the user a pipe having a homogenous and seamless cross-sectional wall, ribs perpendicular to the axis of the pipe and a smooth interior for excellent flow characteristics. The Ultra-Rib design enables it to resist earth and impact loads normally associated with sewer pipe installation. The outstanding chemical and corrosion resistance of Ultra-Rib PVC pipe and its integral bell and rubber gasket joint, make it an excellent choice for sanitary sewer systems and other drainage applications.

Joining System

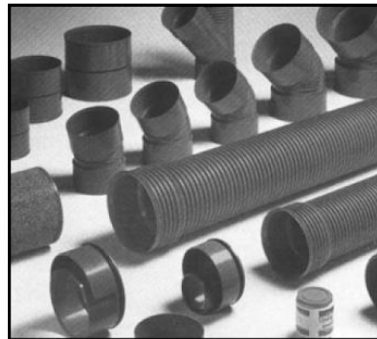


Ultra-Rib features a bell and spigot joint. The rubber gasket is pretensioned around the spigot of the pipe and is inserted into a smooth bell to provide a tight joint in compliance with ASTM D3212.

Flow Characteristics

The Ultra-Rib manufacturing process produces a smooth interior pipe for efficient hydraulic design. The non-porous PVC, together with longer lengths and fewer joints, yield a Manning "n" value of .009.

Fittings



All fittings furnished with Ultra-Rib pipe are made from smooth wall SDR 35 pipe to Ultra-Rib's sealing dimensions. Fittings are generally Bell x Bell and include Tees, Wyes, T/Ys, Bends, Couplings, Saddles and Gaskets.

Structural Design

Ultra-Rib PVC Sewer Pipe is a flexible conduit having a minimum pipe stiffness ($F/\Delta y$) of 60 psi in sizes 8"-12" and 46 psi in sizes 15"-30" when tested in accordance with ASTM D2412. Ultra-Rib is tough and durable, designed to handle up to 220 ft. lbs. of impact when tested in accordance with ASTM D2444. The relatively thick minimum wall of Ultra-Rib offers excellent resistance to abrasions, gouging and scarring. Ultra-Rib will not rust, rot or corrode and can not be harmed by sewer gas, acids or fluids found in ordinary domestic sewage.



Field Cutting and Joining

Because the ribs are perpendicular to the axis of the pipe, the pipe can be cut between any rib. The rubber gasket can then be placed between the second and third ribs and the pipe joined together to form a water-tight seal. The gasket material meets the requirements of ASTM F477, Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

Installation and Testing

When installing Ultra-Rib pipe, the trench should be excavated with bell holes to give uniform bearing along the full length of each pipe section. The ditch should be wide enough to allow for proper placement and compaction of haunching material. While only the engineer may specify and approve installation and testing procedures, Uponor ETI recommends adherence to Uni-Bell publication UNI-PUB-6, Installation Guide for PVC Sewer Pipe.

Infiltration Testing

Infiltration shall not exceed 50 U.S. gallons/ inch dia./mile/day. Standard air, infiltration, exfiltration tests as described in Uni-Bell, UNI-B-6, Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe, and/or TV scan are recommended.

Deflection Testing

When specified, tests for pipe deflection shall be conducted on a random basis with the engineer determining the number and location, depending on the project size and soil conditions encountered. Deflection shall be measured by pulling a mandrel or other device through the pipe.



Extrusion Technologies, Inc.

Short Form Specification: Ultra-Rib™ PVC Gravity Sewer Pipe Sizes 8”-30”

Scope

This short form specification designates the requirements for Ultra-Rib PVC Gravity Sewer Pipe and Fittings for sanitary gravity sewer systems.

General Requirements

Ultra-Rib PVC Gravity Sewer Pipe is available in sizes 8”-30”. Pipe shall have a smooth interior with a solid cross sectional rib exterior. Exterior ribs shall be perpendicular to the axis of the pipe to allow placement of the sealing gasket without additional cutting or machining. Ultra-Rib PVC Gravity Sewer Pipe shall be green in color. Ultra-Rib shall meet the requirements of ASTM F794, Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter, and Uni-Bell Uni-B-9, Recommended Performance Specification for Poly(Vinyl Chloride) (PVC) Profile Wall Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

Material

Ultra-Rib shall be made of PVC material having a cell classification of 12454B, 12454C, or 13364B as defined in ASTM D1784, Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

Workmanship

The pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. The pipe shall be as uniform as commercially practicable in color, opacity, density and other physical properties.

Flattening

There will be no evidence of splitting, cracking or breaking when the pipe is flattened between parallel plates to 60% of its nominal diameter.

Extrusion Quality

Pipe shall not disintegrate or flake when tested in accordance with ASTM D2152, Test Method for Degree of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion.

Impact Resistance

The impact resistance of Ultra-Rib shall meet the requirements shown below when tested in accordance with ASTM D2444, Test Method for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight): 8” 210 ft/lbs, and 10”-30” 220 ft/lbs.

Pipe Stiffness

The minimum pipe stiffness ($F/\Delta y$) at 5% deflection shall be 60 psi for 8”-12” when tested in accordance with ASTM D2412, Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading. The minimum pipe stiffness ($F/\Delta y$) at 5% deflection shall be 46 psi for 15”-30” when tested in accordance with ASTM D2412.

Marking

Each length of pipe shall be marked with the following information: size, company name or logo, cell classification, PS 46 or 60 PVC Sewer Pipe, ASTM F794, Ultra-Rib™, and the manufacturer’s code.

Applicable ASTM Specifications

- D618 Practice for Conditioning Plastics and Electrical Insulating Materials for Testing
- D883 Terminology Relating to Plastics
- D1784 Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compound
- D2122 Test Method of Determining Dimensions of Thermoplastic Pipe and Fittings
- D2152 Test Method for Degree of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion
- D2321 Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- D2412 Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- D2444 Test Method for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
- D2855 Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings
- D3212 Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- F402 Practice for Safe Handling of Solvent Cements, Primers and Cleaners Used for Joining Thermoplastic Pipe and Fittings
- F412 Terminology Relating to Plastic Piping Systems
- F477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- F794 Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter

Ultra-Rib™ Dimensions

Pipe Size	Avg. I.D.	Avg. O.D. Barrel	Min. Wall	wt/ft*	Bell O.D.*
in. (mm)	in. (mm)	in. (mm)	in. (mm)	(lbs/ft)	in. (mm)
8 200	7.89 200.4	8.81 223.8	.085 2.41	2.5	10.20 259.1
10 250	9.86 250.5	11.02 279.8	.085 2.41	3.5	12.80 325.2
12 300	11.74 298.1	13.10 332.7	.085 2.41	4.9	15.26 387.7
15 375	14.37 365.0	15.91 404.0	.105 2.67	7.3	18.04 458.1
18 450	17.65 448.3	19.46 494.2	.130 3.30	10.5	22.02 559.3
21 525	20.75 527.0	22.92 582.2	.160 4.06	14.5	26.17 664.8
24 600	23.50 597.0	26.77 684.4	.160 4.57	21.2	28.91 734.4
27 675	26.50 673.1	29.14 740.2	.205 5.21	24.7	32.85 834.4
30 750	29.50 749.3	32.38 822.3	.235 5.97	35.5	36.68 931.5

* approximate

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Rt. 10 Box 1393
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Plant/Customer Service
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Columbia, MO 65202
800-341-0053
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Plant
101 East Ave M
Conroe, TX 77301
936-760-2888

Rev. 4/03 UR6



Extrusion Technologies, Inc.

Automated Flow Systems

Pump Discharge Assemblies



Automated Flow Systems (AFS) Pump Discharge Assemblies

AFS pump discharge assemblies provide the essential plumbing inside of a pump basin or septic tank. Flexible hose is used to dampen vibrations, simplify installation, and absorb pump starting torque. AFS pump discharge assemblies use a universal design that is suitable for both high head and low head style pumps. Pump Discharge Assemblies are built using non-corrosive materials. 150 PSI rated high pressure configurations are available.

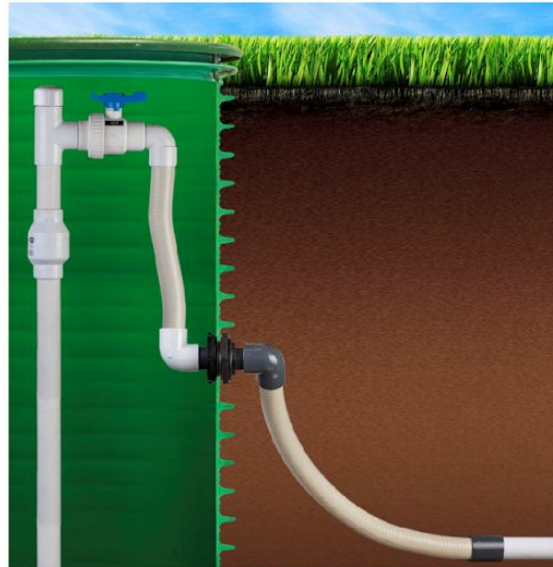
AFS Pump Discharge Assembly Applications

- residential pump stations
- light commercial pump stations
- onsite systems
- effluent pump stations
- sewage pump stations
- grinder pump stations
- sizes from 1" - 2"

AFS Pump Discharge Assembly Features

- isolation valve and union
- optional check valve
- optional high pressure configurations
- suitable for both high head and low head style pumps
- relieves pipe stress due to misalignment
- dampens vibrations
- absorbs shock from pump starting torque
- unrestricted I.D. (standard configuration) for solids handling applications*
- easy access test gauge port
- test gauges in various pressure ranges available
- adapters for common pump discharge connections included

* high pressure configurations designed for effluent applications only



shown with external flex assembly





AFS External Flex Assembly Specifications

MODEL	PIPE SIZE	PUMP CONNECTIONS	WORKING PRESSURE	MAX FLOW	MAX SOLIDS	HOSE LENGTH	BENDING RADIUS
PDA100BC	1"	1" / 1.25"	75 PSI	12 GPM	0.90"	18"	3"
PDA125B	1.25"	1.25" / 1.5"	80 PSI	45 GPM	1.35"	18"	4"
PDA125BC	1.25"	1.25" / 1.5"	75 PSI	22 GPM	1.35"	18"	4"
PDA150B	1.5"	1.25" / 1.5" / 2"	65 PSI	60 GPM	1.55"	18"	4"
PDA150BC	1.5"	1.25" / 1.5" / 2"	65 PSI	30 GPM	1.55"	18"	4"
PDA200B	2"	1.5" / 2"	60 PSI	100 GPM	1.95"	18"	5"
PDA200BC	2"	1.5" / 2"	60 PSI	50 GPM	1.95"	18"	5"
PDAHP100B	1"	1" / 1.25"	150 PSI	25 GPM	0.75"	18"	8"
PDAHP100BC	1"	1.25"	150 PSI	25 GPM	0.75"	18"	8"
PDAHP125B	1.25"	1.25" / 1.5"	150 PSI	45 GPM	0.95"	18"	9"
PDAHP125BC	1.25"	1.25"	150 PSI	45 GPM	0.95"	18"	9"
PDAHP150B	1.5"	1.25" / 1.5" / 2"	150 PSI	60 GPM	1.125"	18"	10"
PDAHP150BC	1.5"	1.25"	150 PSI	60 GPM	1.125"	18"	10"
PDAHP200B	2"	1.5" / 2"	150 PSI	100 GPM	1.65"	18"	14"
PDAHP200BC	2"	2"	150 PSI	100GPM	1.65"	18"	14"

Material Safety Data Sheet

(Orenco ADH-019)

ADH100 (NON-FLAM)

PRODUCT NAME: ADH100
PRODUCT CODE: ADH100

HMIS CODES: H F R P
3*0 1 H

SECTION 1 - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: ORENCO SYSTEMS, INC.
814 AIRWAY AVENUE
SUTHERLIN, OR 97479

DATE REVISED: 10/19/97
DATE PRINTED: 10/19/97

EMERGENCY PHONE: (800) 535-5053
INFORMATION PHONE: (541) 459-4449

NAME OF PREPARER: MSDS/COMPLIANCE DEPT.

SECTION 2 - HAZARDOUS INGREDIENTS/SARA III INFORMATION

REPORTABLE COMPONENTS	VAPOR PRESSURE CAS NUMBER	WEIGHT mm Hg @ TEMP	PERCENT
*TETRACHLOROETHYLENE OSHA PEL: TWA-100 ppm; CEILING = 200 ppm ACGLH TLV: TWA=25 ppm (170 mg/m3); STEL=100 ppm (685 mg/m3)	127-18-4 13	68 69	

Indicates a toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

PROPOSITION 65 STATEMENT: This product contains a chemical known to the state of California to cause cancer.

DOT CLASS: SMALL PKG., CONSUMER COMMODITY, ORM-D; I GALLON & LARGER - TETRACHLOROETHYLENE MIXTURE, 6. 1, UN 1897, PG 111.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE: >250 DEGREES F
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER
APPEARANCE AND ODOR: VISCOUS LIQUID WITH ETHER-LIKE ODOR

SPECIFIC GRAVITY (H2O=1): 1.35
MATERIAL VOC: 7.77 LB/GL
SOLUBILITY IN WATER: NEGLIGIBLE

VOC calculations are based on the federal EPA definition of volatile organic compound under the Clean Air Act. State and local air quality authorities may have more stringent regulation.

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE
FLAMMABLE LIMITS IN AIR BY VOLUME - LOWER: N/A
METHOD USED: N/A
UPPER: N/A

EXTINGUISHING MEDIA: FOAM, CO2, DRY CHEMICAL, WATER FOG

SPECIAL FIRE FIGHTING PROCEDURES

1. WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (SCBA). 11. COOL FIRE EXPOSED CONTAINERS WITH WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT IS NON-FLAMMABLE AND NON-EXPLOSIVE UNDER NORMAL CONDITIONS OF USE. AT HIGH TEMPERATURES, PRODUCT DECOMPOSES TO GIVE OFF HYDROCHLORIC ACID AS GAS PLUS OTHER TOXIC AND IRRITATING VAPORS SUCH AS PHOSGENE AND CHLORINE. IF STORAGE CONTAINERS ARE EXPOSED TO EXCESSIVE HEAT, OVER-PRESSURIZATION CAN RESULT IN CONTAINER RUPTURE.

Material Safety Data Sheet

ADH100 (NON-FLAM)

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID: AVOID EXTREME HEAT, FLAME OR SPARKS.

INCOMPATIBILITY (MATERIALS TO AVOID): STRONG ACIDS AND OXIDIZING MATERIALS. AVOID MIXING WITH CAUSTIC SODA OR POTASH.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: I. TOXIC/IRRITATING GASES AND FUMES. 11. HYDROGEN CHLORIDE, CO₂, SIMPLE HYDROCARBONS, PHOSGENE, AND CHLORINE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION 6 - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

DIZZINESS MAY OCCUR AT 200 PPM; PROGRESSIVELY HIGHER LEVELS CAN CAUSE IRRITATION OF THE RESPIRATORY TRACT, DRUNKENNESS, NAUSEA, UNCOORDINATION, UNCONSCIOUSNESS AND EVEN ASPHYXIATION IN CONFINED, POORLY VENTILATED AREAS. OVEREXPOSURE CAN CAUSE CENTRAL NERVOUS SYSTEM DAMAGE.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE

EYES: PRODUCT IN DYDS CAN RESULT IN DISCOMFORT, PAIN AND IRRITATION. VAPORS MAY IRRITATE THE EYES AT ABOUT 100 PPM. SKIN: IRRITATION CAN DEVELOP FOLLOWING REPEATED AND/OR PROLONGED CONTACT AND MAY CAUSE DRYING OR FLAKING OF SKIN.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

A SINGLE PROLONGED EXPOSURE IS NOT LIKELY TO RESULT IN MATERIAL BEING ABSORBED THROUGH THE SKIN IN HARMFUL AMOUNTS. THE LD₅₀ OF TETRACHLOROETHYLENE FOR SKIN ABSORPTION IN RABBITS IS >10,000 mg/kg.

INDIGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

SINGLE DOSE ORAL TOXICITY IS LOW. INGESTION MAY RESULT IN IRRITATION OF THE MOUTH AND GASTROINTESTINAL TRACT ALONG WITH OTHER EFFECTS AS LISTED ABOVE FOR INHALATION. VOMITING AND SUBSEQUENT ASPIRATION INTO THE LUNGS MAY LEAD TO INJURY OF OTHER BODY SYSTEMS.

HEALTH HAZARDS (ACUTE AND CHRONIC)

TETRACHLOROETHYLENE HAS BEEN SHOWN TO INCREASE RATE OF SPONTANEOUSLY OCCURRING MALIGNANT TUMORS IN CERTAIN LAB RATS AND MICE. OTHER LONG TERM INHALATION STUDIES IN RATS FAILED TO SHOW TUMORIGENIC RESPONSE. EPIDEMIOLOGY STUDIES ARE LIMITED AND HAVE NOT ESTABLISHED AN ASSOCIATION BETWEEN TETRACHLOROETHYLENE EXPOSURE AND CANCER. DID NOT CAUSE BIRTH DEFECTS IN ANIMALS, THEREFORE, BIRTH DEFECTS UNLIKELY. PROLONGED EXPOSURE ABOVE OSHA PERMISSIBLE LIMITS MAY RESULT IN LIVER AND KIDNEY DAMAGE.

CARCINOGENICITY:

NTP CARCINOGEN: Yes

IARC MONOGRAPHS: OSHA REGULATED: No

TETRACHLOROETHYLENE IS LISTED AS POTENTIAL CARCINOGEN BY IARC & NTP. RESULTS OF IN VITRO MUTAGENICITY TESTS HAVE BEEN NEGATIVE. PRUDENT HANDLING PRACTICES SHOULD BE FOLLOWED TO MINIMIZE HUMAN EXPOSURE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

PRE-EXISTING EYE, SKIN, AND LUNG CONDITIONS.

EMERGENCY AND FIRST AID PROCEDURES

EYES: FLUSH WITH WATER FOR AT LEAST 15 MINUTES. SEEK MEDICAL CARE IF IRRITATION PERSISTS OR DEVELOPS. SKIN: WIPE FROM SKIN AND WASH WITH SOAP AND WATER. IF IRRITATION DEVELOPS SEEK MEDICAL ATTENTION. INHALATION: REMOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GIVE ARTIFICIAL RESUSCITATION IF NOT BREATHING. INGESTION: DO NOT INDUCE VOMITING. CALL A PHYSICIAN. GIVE 1 OR 2 GLASSES OF WATER TO DRINK. ***SEE NOTE TO PHYSICIAN UNDER "OTHER PRECAUTIONS."

Page 2 of 3

Material Safety Data Sheet

ADH100 (NON-FLAM)

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

I. SMALL LEAKS: WIPE UP OR SOAK UP IMMEDIATELY WITH INERT MATERIAL. REMOVE TO OUTDOORS. 11. LARGE SPILLS: EVACUATE AREA. CONTAIN LIQUID, TRANSFER TO CLOSED METAL CONTAINERS. KEEP OUT OF WATER SUPPLY.

WASTE DISPOSAL METHOD

I. RECLAIM OR INCINERATE THE NON-HARDENED PRODUCT. II. MATERIAL RESULTING FROM CLEAN UP OPERATIONS MAY BE HAZARDOUS WASTE, THEREFORE, SUBJECT TO SPECIFIC REGULATIONS. DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS AT TIME OF DISPOSAL.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

IN LARGE QUANTITIES, LETHAL CONCENTRATIONS MAY EXIST IN AREAS WITH POOR VENTILATION. DO NOT USE IN POORLY VENTILATED OR CONFINED SPACES WITHOUT PROPER RESPIRATORY PROTECTION. VAPORS WILL COLLECT IN LOW PLACES SUCH AS PITS, STORAGE TANKS AND OTHER CONFINED SPACES. DO NOT ENTER THESE AREAS UNLESS SPECIAL BREATHING APPARATUS IS USED AND AN OBSERVER IS PRESENT.

OTHER PRECAUTIONS

*** NOTE TO PHYSICIAN: BECAUSE RAPID ABSORPTION MAY OCCUR THROUGH LUNGS IF ASPIRATED AND CAUSE SYSTEMIC EFFECTS, THE DECISION OF WHETHER TO INDUCE VOMITING OR NOT SHOULD BE MADE BY PHYSICIAN. IF LAVAGE IS PERFORMED, SUGGEST ENDOTRACHEAL AND/OR ESPHOAGAL CONTROL. DANGER FROM LUNG ASPIRATION MUST BE WEIGHED AGAINST TOXICITY WHEN CONSIDERING EMPTYING THE STOMACH. DO NOT ADMINISTER SYMPATHOMIMETIC DRUGS UNLESS ABSOLUTELY NECESSARY. NO SPECIFIC ANTIDOTE. SUPPORTIVE CARE. TREATMENT BASED ON JUDGMENT OF THE PHYSICIAN IN RESPONSE TO REACTIONS OF THE PATIENT.

SECTION 8 - CONTROL MEASURES

RESPIRATORY PROTECTION

I. IF VENTILATION IS INADEQUATE TO MAINTAIN ATMOSPHERIC LEVELS BELOW THE TLV, WEAR A NIOSH APPROVED AIR PURIFYING ORGANIC CARTRIDGE RESPIRATOR. 11. FOR EMERGENCY AND OVER EXPOSURE, USE AN APPROVED POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS.

VENTILATION

ADEQUATE VENTILATION SHOULD BE PROVIDED TO KEEP VAPOR CONCENTRATIONS BELOW ACCEPTABLE EXPOSURE GUIDELINES. USE ONLY WITH ADEQUATE VENTILATION.

PROTECTIVE GLOVES

GLOVES ARE RECOMMENDED. NEOPRENE-LATEX GLOVES HAVE BEEN USED SATISFACTORILY.

EYE PROTECTION

SPLASH PROOF GOGGLES ONLY REQUIRED IF HANDLING POSES A RISK OF EYE CONTACT.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT

AS NECESSARY TO PREVENT SKIN CONTACT. SELECTION OF SPECIFIC ITEMS SUCH AS GLOVES, BOOTS, APRON, OR FULL BODY SUIT WILL DEPEND ON OPERATION. WORK STATION CONDITIONS SHOULD BE EVALUATED BY MANAGEMENT TO DETERMINE PROPER PERSONAL PROTECTION.

WORK/HYGIENIC PRACTICES

DO NOT ALLOW EYE OR SKIN CONTACT. AVOID BREATHING VAPORS. WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING OR DRINKING.

SECTION 9 - DISCLAIMER

TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION PROVIDED HEREIN IS ACCURATE AND OBTAINED FROM SOURCES BELIEVED TO BE ACCURATE. SINCE THE CONDITIONS AND METHODS OF USE OF OUR PRODUCT ARE BEYOND OUR CONTROL, WE DISCLAIM ANY AND ALL LIABILITY ARISING OUT OF THE IMPROPER USE OF THIS PRODUCT OR THE INFORMATION PROVIDED HERewith.

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