

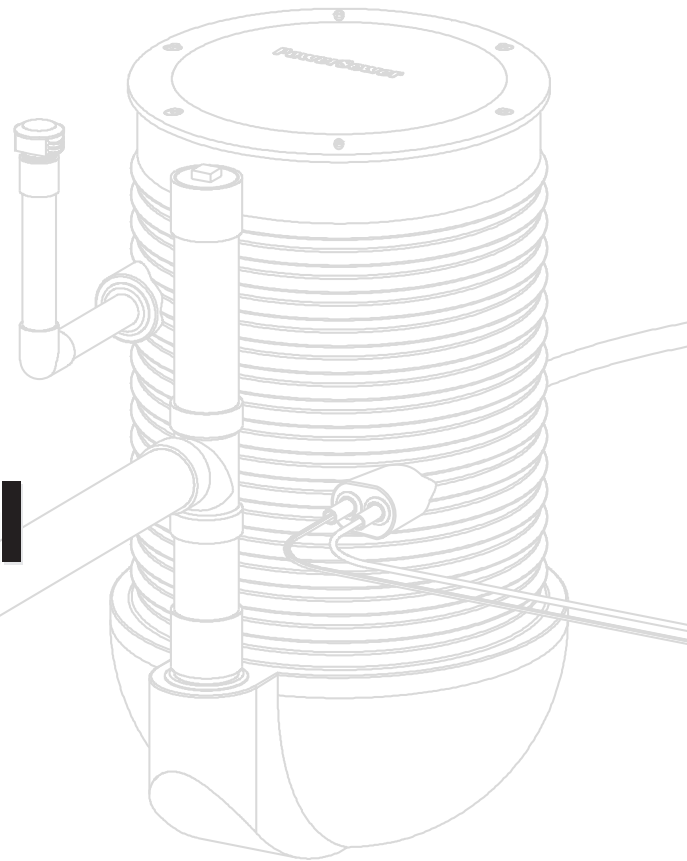
PowerSewer®

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V3P

Installation, Operation and Maintenance

Manual



 **interon**®
Engineered Products Division
Little Giant Pump Company

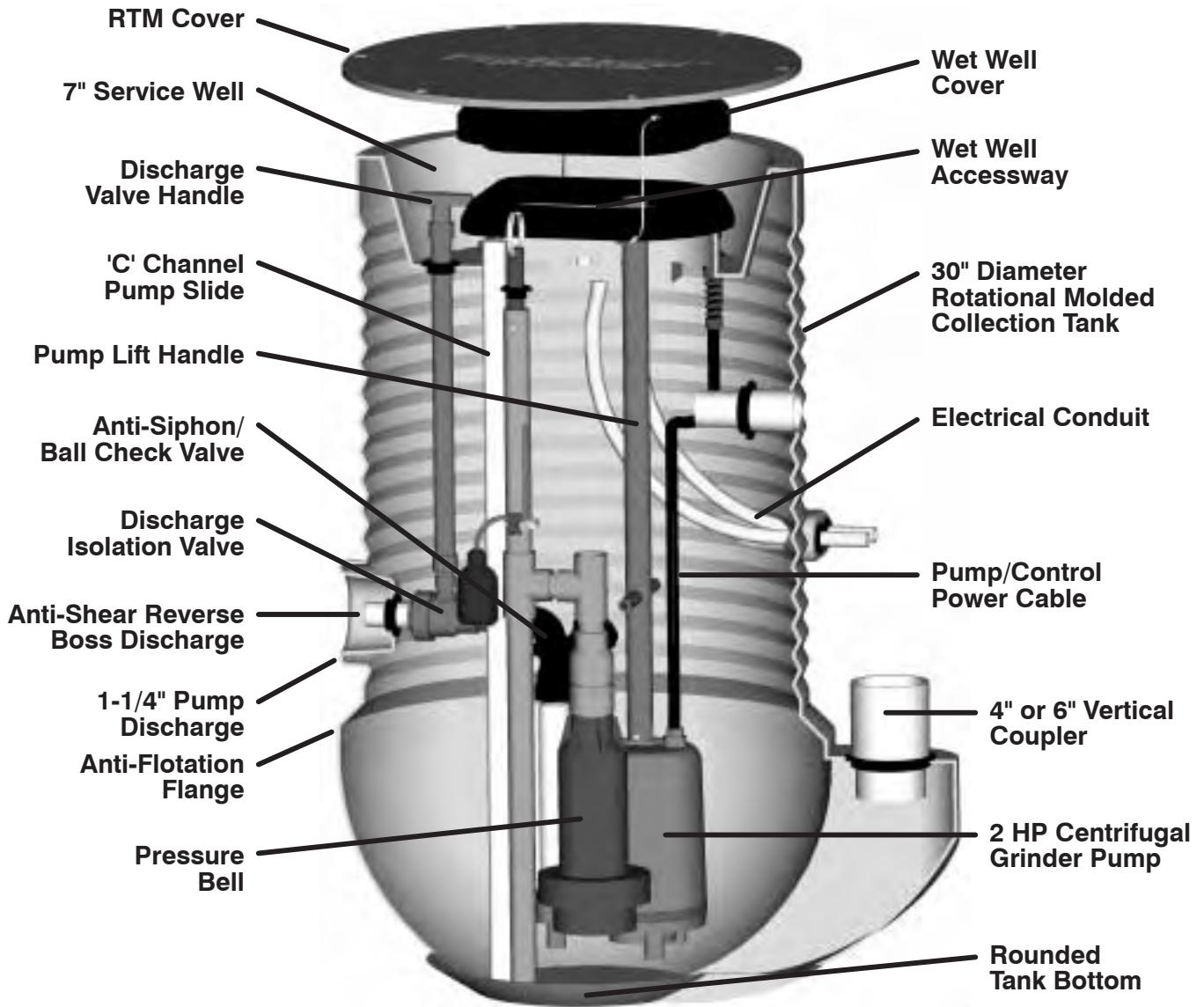


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1.0 INTRODUCTION

The *PowerSewer®* by *Interon®* is a grinder pump pressure sewer system designed primarily for residential applications. The following information is about installation, used as a complete system. The system includes a large capacity, roto-molded polyethylene collection tank, load-rated nylon cover, specially designed grinder pump, pump quick disconnect system, level controller, control panel, and flexible discharge pipe connector.

The grinder pump discharges wastewater from the home to a force main, gravity main or remote treatment facility. The *PowerSewer®* does not rely on slopes since the *PowerSewer®* grinder pump supplies the energy that moves the liquid. The wastewater is pumped from the collection tank through small diameter service lateral piping, which is buried in a shallow, narrow trench that follows the contour of the land.



1.1 Product Description

A ball check valve prevents back flow into the collection tank from the service lateral or force main. It is recommended that a redundant check valve and corporation stop valve be installed at the connection to a force main for added protection from backflows.

If a malfunction were to occur, the *PowerSewer®* will alarm to alert the homeowner so that a service provider can be contacted to remedy the alarm situation.

1.2 Safety Symbols

The following symbols will appear throughout these installation, operation and maintenance instructions for your benefit and to assist you in the installation, operation and maintenance of the *PowerSewer®* grinder pump pressure sewer system.



An exclamation point is a safety alert symbol. When you see this symbol on the equipment or in the instructions, look for one of the following signal words and be alert to the potential for personal injury, death or property damage.

⚠ DANGER Warns of hazards which have a high probability of causing death, serious personal injury or major property damage.

⚠ WARNING Warns of hazards which have some probability of causing death, serious personal injury or major property damage.

⚠ CAUTION Warns of hazards which may cause minor or moderate personal injury or property damage.

NOTICE Indicates special instructions which are extremely important and must be followed to maintain proper system operation and warranty coverage.

1.3 Safety Instructions

Read and understand all safety, installation, operation and maintenance instructions before performing any work on or near the *PowerSewer®* system.

⚠ WARNING This equipment is intended for installation, operation and maintenance by technically qualified personnel. Failure to install, operate and maintain it in compliance with national, state and local electrical and safety codes and *Interon®* installation, operation and maintenance instructions may result in electrical shock or fire hazard, personal injury or death, unsatisfactory performance, equipment failure, and will void the warranty. If you have any questions, call your local *Interon®* Sales Representative or *Interon®* Technical Services at (610) 918-2899.

⚠ WARNING This equipment is not designed for use with hazardous, flammable liquids and gases. These liquids and gases may be present in containment areas. This equipment shall not be installed in locations classified as hazardous in accordance with National Electric Code (NEC), ANSI/NFPA 70.

⚠ WARNING Hazardous voltage can shock, burn or cause death. Failure to disconnect and lock out all electrical power before attempting installation and maintenance can shock, burn or cause death.

⚠ WARNING Biohazard can cause serious personal injury. Grinder pump and attached valves and piping must be flushed and disinfected inside and out prior to performing any maintenance.

⚠ WARNING Hazardous machinery can cause severe personal injury. Cutter assembly is very sharp and can cause severe personal injury.

⚠ WARNING Hazardous voltage can shock, burn or cause death. Do not lift, carry or hang pump by the electrical cable. Damage to the electrical cable can cause shock, burns or death.

⚠ CAUTION This is a sewage-handling pump and must be vented in accordance with national, state and local plumbing codes.

1.4 Installation and Maintenance Tool List

The following tools will assist the installation:

- Hack Saw with blades for inlet and vent pipe cutting
- Backhoe
- Cement mixer or trough for proper anti-flotation ballast cement mix
- Tape Measure to ensure that the excavation is at proper depth for PowerSewer® basin
- PVC glue and primer
- Bubble Level to level the basin prior to back filling
- Shovel, Spade and Rake
- 9/16" wrench or socket for removal of the manhole bolts and cutting ring bolts
- Wire Strippers
- #1 Phillips screwdriver to open the control panel cover
- Small Flathead screwdriver used to connect wire to control panel
- Small Channel Lock Pliers to tighten cord grips in the control box
- Turkey Baster for the removal of the debris from bolt holes and water in dry well



1.4.1 Pump Service Tools

- 9/16" nut drive
- 1/4" hex socket wrench
- 1/2" wrench or socket for the removal of the pump base
- 11/16" wrench or socket pump oil plug removal
- 70mm or 2.75" diameter driver removal of cutter ring
- 2 large pipe wrenches for the removal of the plumbing tree on pump
- 3/8" drive ratchet with extension—*optional*

1.4.2 Optional Tools

- Large Flathead screwdriver
- Wire cutters
- Needle nose pliers
- Utility knife
- Flashlight
- Large channel lock pliers to tighten the cord grip on the pump power cord
- 3/8" 16 thread/inch bottom-end tap and die threaded insert and bolt thread repair

1.4.3 Minimum Requirements for Service Call

- Turkey Baster for the removal of debris from bolt holes and water in dry well
- Multi-meter with O-Scope Feature—*optional*
- 9/16" wrench or socket for the removal of the manhole bolts
- #2 Phillips screwdriver
- Small Flathead screwdriver used to connect wire to control panel

1.4.4 Parts Kit for PowerSewer®

- Assortment of screws, bolts, & washers to replace lost parts in field
- PVC glue and primer
- Pipe thread sealant for replacement of plumbing tree
- Silicone Cement for retrofit sealing of control boxes

1.4.5 Pipe/Tubing Requirements—sufficient lengths and couples to meet connections

- PowerSewer® Inlet – 4" and 6" schedule 40 PVC
- PowerSewer® Outlet – 1.25" I.D. or 2" OD schedule 40 PVC
- PowerSewer® Vent – 2" schedule 40 PVC, vent cap included with PowerSewer®
- Assortment of couples, 45's, 90's, and T's for hookup
- PowerSewer® Water Level Sensor Connection – 1/4" poly tubing (50' length standard)

1.4.6 Electrical Wiring Recommendations

- 2 conductor 12 AWG pump cable with ground

1.4.7 Electrical Supply Requirements

- The System requires its own breakers from the household electrical supply
- Pump Requirement – 20 Amp, 2-pole circuit breaker, 230 VAC Single Phase, and 60 Hz
- Alarm Circuit – 15 Amp, 115 VAC Single Phase 60 Hz

1.5 Shipping Configuration

The PowerSewer® system is shipped ready to install. The system is packaged at the factory to minimize transportation and handling damage. The shipping weight ranges from 200 to 400 pounds depending on the depth of the system.

1.6 Transportation and Handling

The PowerSewer® should be transported and stored in a vertical position. Make sure that it can not fall over. PowerSewer® tanks over 96" can be transported in a horizontal position. Make sure that it can not roll or move around. Make sure that no other equipment or freight is stacked on the PowerSewer®.

Always lift the *PowerSewer*® from the bottom using the provided pallet or by using a non-marring sling around the tank. Before any attempt is made to move the tank, the installer should ensure that the installation equipment has sufficient capacity and reach to lift and position the tank without dragging or dropping it on the ground. Although the exterior surfaces of the *PowerSewer*® are designed to withstand normal handling, they can be damaged during transportation, handling and installation. The basin must not be dropped, dragged, rolled or handled with sharp objects. Handle the tank in an upright position whenever possible.

⚠ WARNING Keep out from under suspended loads. Locate overhead utilities before lifting equipment.

⚠ WARNING Hazardous voltage can shock, burn or cause death. Do not lift, carry or hang grinder pump by the electrical cable. Damage to the electrical cable can cause shock, burns or death.

⚠ CAUTION The use of chains or cables on the *PowerSewer*® tank is not permitted under any circumstances. Do not drop, drag, roll or handle the tank with sharp objects. Failure to follow these warnings and instructions will immediately void the warranty.

NOTICE If the collection tank or other *PowerSewer*® component is suspected of being damaged, installation should be suspended until the extent of the damage can be determined by an authorized *Interon*® representative. Any field repairs or alterations must be authorized in writing by *Interon*® and then performed in accordance with *Interon*® written instructions. Failure to secure written authorization before proceeding with field repairs or alterations will immediately void the warranty.

1.7 Storage

Although *PowerSewer*® systems can be stored outside, it is recommended that the systems be stored inside. For extended periods of storage, the pump and electronic controls must be protected from moisture, heat and UV rays (sunlight). The grinder pump must be transported in a vertical position. Make sure that it cannot fall over.

After an extended period of storage, the system should be inspected before it is put into operation. Pay close attention to all of the valves, grommets and gaskets. Mechanical seal should be inspected. The grinder pump impeller should be rotated by hand to ensure that the mechanical seal faces are not stuck together. If the system is stored for more than six months this manual rotation should occur every other month.

⚠ WARNING Hazardous voltage can shock, burn or cause death. Failure to disconnect and lock out all electrical power before rotating impeller can shock, burn or cause severe personal injury or death.

⚠ CAUTION Hazardous machinery can cause severe personal injury. Cutter assembly is very sharp and can cause severe personal injury.

NOTICE Failure to rotate grinder pump impeller by hand after extended storage period can result in premature mechanical seal failure.

The grinder pump is frost proof as long as it is operating or is immersed in liquid. If the pump is taken up when the temperature is below freezing, the impeller may freeze. The grinder pump should be operated for a brief period after being taken up to expel all remaining liquid. A frozen impeller can be thawed by allowing the pump to stand immersed in liquid for a short period before it is started.

⚠ CAUTION Never use an open flame to thaw a frozen pump.

2.0 PRE-INSTALLATION

The following is required to ensure that the site is ready for installation and that all materials are included.

NOTICE Make sure that the site is ready, *PowerSewer*® is undamaged and complete before disconnecting an existing sewage system or connection.

2.1 *PowerSewer*® Inspection

The packing materials for your *PowerSewer*® grinder pump pressure sewer system are specially designed to prevent shipping damage. As a precaution, the system should remain in the packaging until you are ready to install it. When you are ready to install the system, remove the packaging materials. To ease installation, remove the grinder pump with attached plumbing tree by laying the collection tank down with the discharge connection pointing up. Carefully slide the grinder pump along the guide rail and support its weight as it drops off the guide rail. Examine the equipment for any hidden damage that may have occurred during shipping. If damage has occurred, handle all claims with the shipper.

NOTICE If the collection tank or other *PowerSewer*® component is suspected of being damaged, installation should be suspended until the extent of the damage can be determined by an authorized *Interon*® representative. Any field repairs or alterations must be authorized in writing by *Interon*® and then performed in accordance with *Interon*® written instructions.

2.2 Verify Site Readiness

The *PowerSewer*® grinder pump pressure sewer system is shipped ready for immediate installation and operation. To facilitate and speed installation, make sure that the site is prepared. Site preparation requirements include:

- Location of collection tank, piping and accessory installations identified
- Suitable excavation equipment
- Rounded aggregate for collection tank foundation
- Concrete for collection tank ballast (minimum 6 cubic feet)
- Approved backfill materials (section 10.1, *Approved Backfill Materials*)
- 230 volt, single phase power main supply
- 30 amp, 2 pole circuit breaker for the main power supply

- Inlet Piping and Fittings, 4" Schedule 40 PVC
- Discharge Piping, 1-1/4" Schedule 40 or SDR 21 PVC or SDR 11 PE3408
- Vent Piping and Fittings, 2" Schedule 40 PVC
- 12 gauge, 2 conductor with ground, direct bury cable (12-2w/GND UFB cable) **supplied by installer**
- 1/4" poly tubing (50' length standard)

⚠ WARNING Hazardous voltage can shock, burn or cause death. The grinder pump electrical supply power must be 230 volt, 60 hertz, single phase. Using the incorrect voltage or phase can cause fire or damage to the pump motor or cause severe personal injury and will immediately void the warranty.

2.3 General Installation Steps

The following installation steps are an outline of the detailed installation requirements, which follow:

1. Excavate for collection tank, inlet piping, electrical cables and discharge piping
2. Set and ballast collection tank
3. Install inlet, vent and discharge piping/tubing
4. Run electrical cabling between house service panel, control panel
5. Bolt cover on
6. Backfill collection tank, piping and electrical cables
7. Install pump
8. Make wiring connections
9. Turn system on and test

NOTICE Failure to install this product according to the instructions and warnings found in this manual will void all warranties associated with this product and may result in serious injury or death.

3.0 INSTALLING COLLECTION TANK

Strict adherence to these proven methods and procedures will ensure the long-term performance of your *PowerSewer*® system. Studies by regulatory agencies and trade organizations indicate that the most significant source of leaks and failures in underground storage structures is improper handling and installation.

3.1 Excavating for Collection Tank

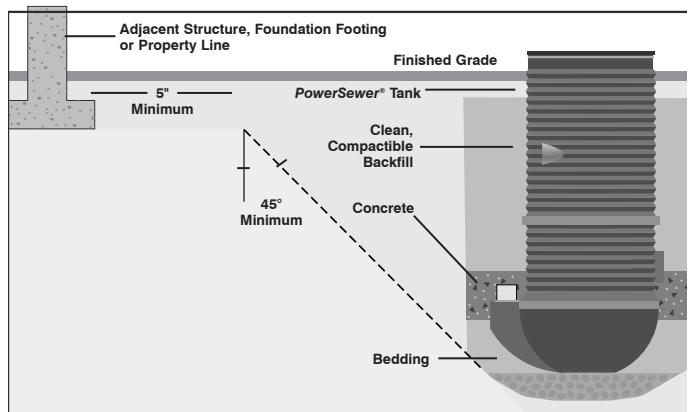
The excavation should provide adequate space for the collection tank, piping and other buried equipment and for the placement and compaction of back fill materials. The size, shape and wall slope should be determined by the site's soil conditions, depth of excavation, shoring and sheeting requirements and safety regulations.



⚠ WARNING Safe excavation procedures are the responsibility of the installer. Work safety requirements are defined by US Department of Labor 29 CFR part 1926, subpart P, Excavations.

3.2 Excavation Location

Excavation for the *PowerSewer*® collection tank should be made with due care to avoid undermining foundations of existing structures and contact with overhead or underground utilities. In the absence of specific code requirements, maintain a distance of 5 feet with a slope of 45 degrees from the collection tank to adjacent structures, foundations, footings and property lines. Additional distances may be required to assure that any loading carried or created by adjacent structures can not be transferred to the *PowerSewer*® collection tank.



⚠ WARNING Locate all underground and overhead utilities before excavation. Call 1-888-258-0808 at least two business days before excavating for a referral to your local "One-Call" utilities location center.

NOTICE Do not locate the *PowerSewer*® excavation in drainage areas or other low points on the building lot. Failure to locate *PowerSewer*® in proper location will void warranty.

3.3 Excavation Depth

Excavate the hole to a depth equal to five inches plus the collection tank depth. When finished, the collection tank rim should be at least 1" above final grade. The final grade should slope away from the collection tank to avoid surface water from ponding on or around the collection tank and cover.

NOTICE Do not install collection tank rim below final grade. Below grade installations void warranty.

3.4 Bedding Material

Place and compact gravel bedding to a minimum depth of six inches. The gravel should be a naturally rounded aggregate, clean and free flowing with a particle size not less than 1/8 inch or more than 3/4 inch in diameter.

3.5 Setting the Collection Tank

Ensure that all packaging materials have been removed from the PowerSewer® prior to setting the collection tank. Lift and lower the collection tank using the methods previously outlined in section 1.6, *Transportation and Handling*.

3.6 Positioning the Collection Tank

Center and level the collection tank on the compacted gravel bedding. Fill the collection tank with water to the bottom of the discharge piping to limit the movement of the collection tank during backfilling and pouring of the concrete ballast.

3.7 Ballasting Collection Tank with Concrete

A concrete ballast anchor must be poured over the collection tank's integral anti-flotation flange to properly secure the collection tank in the ground. This will prevent the collection tank from floating up out of the ground due to hydrostatic pressure from high water tables. The concrete ballast must extend at least six inches above the integral anti-flotation flange and 12 inches out from the collection tank.

CAUTION Concrete ballast is not optional. Failure to properly ballast the collection tank may result in collection tank floating up out of the ground causing damage to the piping and equipment.

NOTICE This ballast method requires that proper compacted backfill material be used as described in section 10, *Backfilling Around the Collection Tank*. This is the only acceptable method of ballasting the collection tank. To receive detailed anti-flotation calculations or approval of alternative methods, contact Interon® Technical Services at (610) 918-2899.

4.0 SOLVENT CEMENTING JOINTS

The flexible discharge pipe connector and inlet piping are joined to the PowerSewer® system with solvent-cement joints for easy, cost-effective, liquid-tight connections. To ensure proper connections, carefully follow the instructions that follow.

WARNING Solvent cements and primers for PVC pipe and fittings are flammable. Extinguish all smoking materials, flames or other ignition sources in working and storage areas. Avoid eye and unnecessary skin contact with all cements, primers and solvents. Ingestion or intentional inhalation of vapors can cause severe personal injury or death. Additional safety precautions may apply; consult solvent cement, primer or solvent manufacturers for more information.



4.1 Preparing Joints

Wipe away all loose dirt and moisture from the pipe and fitting surfaces with a clean, dry, cotton rag.

4.2 Pre-connection Inspection

Check the joint to make sure there is an interference fit between the pipe and fitting. This is necessary for proper fusion of the joint. To check, lightly push the pipe into the fitting. Do not use force. Interference between the pipe and fitting should occur between 1/2 inch of socket depth "full interference fit" and the socket bottom "net fit".

NOTICE Do not use force when checking interference fit. Do not use components that do not fit properly.

4.3 Applying Primer

Primer is necessary to penetrate and soften both the pipe and the fitting surfaces in order for the solvent cement to properly bond.

NOTICE The most frequent cause of joint failures is insufficient application of primer and solvent cement. This results in inadequate solvent penetration and softening of bonding surfaces during the solvent welding process.

Using a brush or applicator, size no less than 7/8 inch diameter, apply a liberal coat of primer with a scrubbing motion to the fitting socket until the entire surface is softened and semi-fluid. This may take 5 to 15 seconds depending on the temperature. Lower temperatures will increase the required time. Apply the primer to the pipe in the same manner. Apply a second coat to both the fitting socket and pipe. Check solvent penetration and softening by scratching the primed surfaces. A few thousands of an inch of the fitting's surface should be semi-fluid. Apply another coat of primer if necessary.

4.4 Applying Solvent Cement

Solvent cement must be applied immediately to the primed surfaces before the primer dries, in an alternating three coat application. Using a brush or applicator, size no less than 7/8 inch diameter, apply a liberal coat of solvent cement to the primed pipe bonding surface. Then apply a light to medium coat to the primed fitting socket. If a "net fit" was experienced during the *Pre-connection Inspection*, section 4.2, apply an additional coat of solvent cement to the pipe surface.

NOTICE The most frequent cause of joint failure is insufficient application of primer and solvent cement. This results in inadequate solvent penetration and softening of bonding surfaces during the solvent welding process. Make sure to apply the solvent cement before the primer dries.

4.5 Joining Pipe and Fittings

Immediately following application of solvent cement and before it starts to set, push the pipe into the fitting socket with 1/4-turn twisting motion to evenly distribute the solvent cement within the joint. A full bead of solvent cement should form around the circumference of the joint. Hold the joint together for approximately 30 seconds to make sure that the joint does not move or come apart.

NOTICE The absence of bead formation, or the presence of voids or gaps in the bead areas is a sign of insufficient solvent cement application. If this is observed, immediately pull the joint apart and reapply an adequate amount of solvent cement.

4.6 Cleaning Joint

Using a clean cloth, wipe all excess solvent cement from the exterior of the pipe and fitting.

4.7 Joint Curing

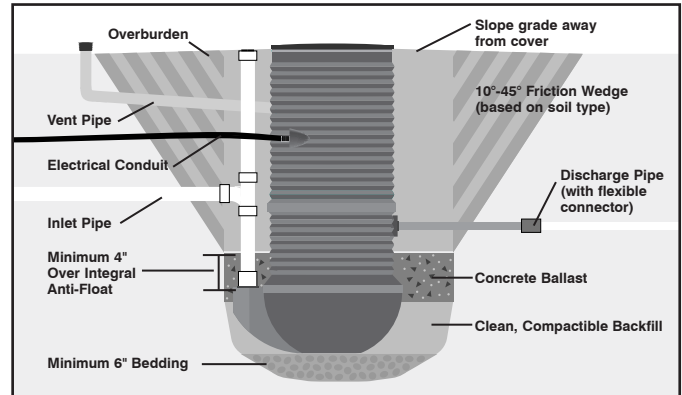
The joint must not be moved or handled for a minimum of 2 minutes, after which the joint must be carefully handled until the solvent cement has gone through the proper set time based on ambient temperature. Suggested set times are:

- Ambient Temperature 60 to 100°F (15° to 40°C) 1/2 hour set time
- Ambient Temperature 40 to 59°F (5° to 14°C) 1 hour set time
- Ambient Temperature 20 to 39°F (-5° to 4°C) 2 hour set time
- Ambient Temperature 10 to 19°F (-12° to -6° C) 4 hour set time

NOTICE The joint must be adequately set prior to use. Required set time depends on site temperature. The above table is based on the guidelines of ASTM D2855, "Standard Practice for Making Solvent-Cemented Joints with Poly Vinyl Chloride (PVC) Pipe and Fittings". It is the installer's responsibility to determine that the joint has properly set for handling, testing and use.

5.0 INSTALLING DROP INLET PIPE

The *PowerSewer*® has been designed with a unique, factory installed drop inlet connection, which provides complete connection flexibility. The inlet pipe can rotate over 180 degrees. It can also be raised or lowered. The factory supplied grommet seals to the inlet pipe and drop inlet chute without fasteners, adhesive, sealant or threads.



NOTICE The *PowerSewer*® system ships with a standard 4 inch Schedule 40 PVC Female Coupling installed in the drop inlet chute. Other inlet coupling sizes and types are available upon request.

5.1 Preparing Drop Inlet Pipe

Measure and cut the drop inlet pipe to the height necessary to accommodate the service lateral from the house.

NOTICE Do not cut the drop inlet pipe shorter than 12 inches. Cutting the drop inlet pipe shorter than 12 inches could result in sewage surcharging back into the service lateral. Drop inlet heights of less than 12 inches void warranty.



5.2 Assembling Drop Inlet Pipe

After the drop inlet pipe has been cut to size, dry fit it into drop inlet coupling. Next, dry fit elbow or sanitary tee onto the drop inlet pipe. Then, dry fit service lateral from house into elbow or sanitary tee. Make any necessary adjustments to the drop inlet pipe for a proper fit.

NOTICE If a clean-out is not available in the house service lateral, it is recommended that a sanitary tee be installed with a riser near final grade and clean-out fitting.

NOTICE Do not use force when dry fitting drop inlet pipe and fitting connections.

⚠ WARNING Disconnect power before checking impeller.

Determine if there is siphoning effect causing debris to be drawn into impeller. Discharge wastewater from basin. After the pump shuts off, the wastewater should no longer leave the tank. Close the ball valve to break siphoning if present. Check anti-siphoning valve for debris.

If the impeller spins freely and the breaker is tripped, the start capacitor may be defective. To test, disconnect power to the pump and check the resistance from P1 to P2. It should read 1.2 to 1.6 Ω . If the resistance reads higher and then degrades, the start capacitor is defective.

⚠ WARNING Disconnect power before checking resistance.

14.2.4 Pump Starts but Motor Protection Trips

Is the impeller difficult to turn by hand?

⚠ WARNING Disconnect power before checking impeller.

Inspect the cutter ring and verify the impeller is not bound on foreign material. The impeller should spin freely. If not, foreign material has bound the pump. See section 13.5 for detailed disassembly instructions.

Is the insulation between the phases and earth (ground) in the stator defective?

Using an insulation tester, with a 1000 VDC megger, the insulation between T1 and GND and T2 and GND should be greater than 1 megohm. Replace the grinder pump if reading is less than 1 megohm.

NOTICE Do not override the motor protection repeatedly if it has tripped.

14.3 Pump Does Not Stop Pumping

The pump is running continuously and wastewater has been evacuated from tank. The level detect sensor may require a reset. Follow steps in section 14.2.2.

If pump is running continuously and the wastewater is not leaving the basin, verify that there is no leakage in the piping and discharge connections and that the impeller is not clogged.

⚠ WARNING Disconnect power before checking impeller.

⚠ WARNING Hazardous machinery can cause severe personal injury. Cutter assembly is very sharp and can cause severe personal injury.

Verify the operation of the ball valve and that all of the isolation valves in the service lateral and force mains are in the open position.

Verify that the discharge piping, service lateral and force main is not blocked with debris.

Verify that the grinder pump has adequate pumping capacity for the site.

14.4 Pump Starts-Stops-Starts in Rapid Sequence

The pump may be starting due to back flow, which fills the collection tank to the "on" set point. Verify the operation of the ball valve on the pump plumbing tree. Open and close the isolation valve on the tank and witness that no back flow enters the tank from the sewer main.

Verify that pump "on" and "off" set points are not too small.

Verify the current draw of the pump motor, if over 20 Amps the Clog-Jog feature is activated.

14.5 Pump Runs but Evacuates Little or No Sewage

The pump is running continuously and the wastewater is not leaving the basin. Verify that there is no leakage in the piping and discharge connections and that the impeller is not clogged.

⚠ WARNING Disconnect power before checking impeller.

⚠ WARNING Hazardous machinery can cause severe personal injury. Cutter assembly is very sharp and can cause severe personal injury.

Verify the operation of the ball valve and that all of the isolation valves in service lateral and force mains are in the open position.

Verify that the discharge piping, service lateral and force main are not blocked with debris.

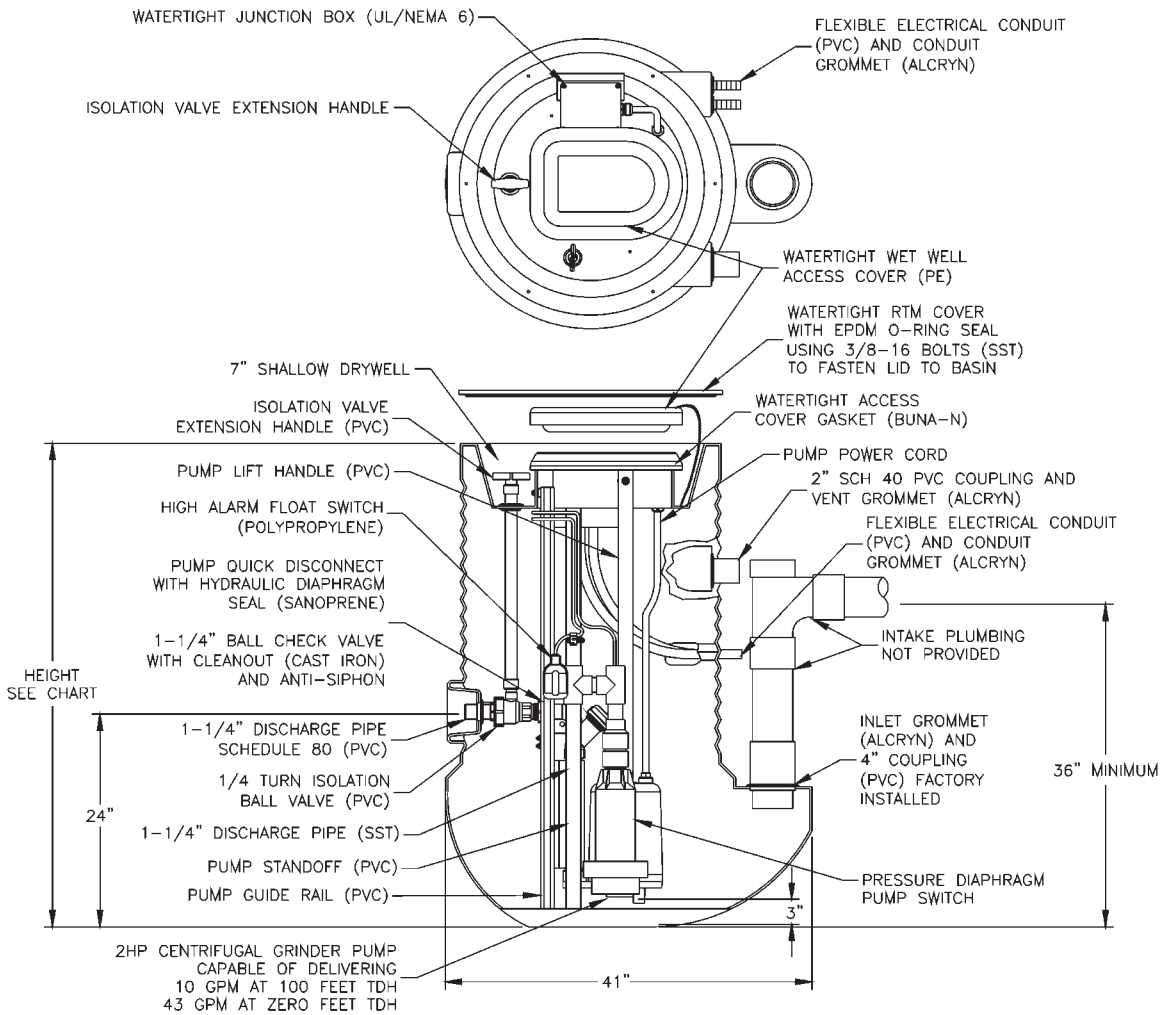
Verify that the grinder pump has adequate pumping capacity for the site.

14.6 Technical Support

If troubleshooting efforts fail to restore the operation of the *PowerSewer*[®] contact your local *Interon*[®] Sales Representative. If unavailable, contact *Interon*[®] Field Services at 610.918.2899.

Appendix

- Outdoor Control Panel Wiring Diagram
- Technical Drawings
 - *PowerSewer*[®] Models (54" Thru 165")
 - *PowerSewer*[®] Installation Drawing: Model 515004
- Grinder Pump Parts List (515889)
- Grinder Pump Performance Data
- Limited Warranty
- Notes



HEIGHT (IN)	HEIGHT (CM)
54	137.16
72	182.88
84	213.36
96	243.84
108	274.32
120	304.80
165	419.10

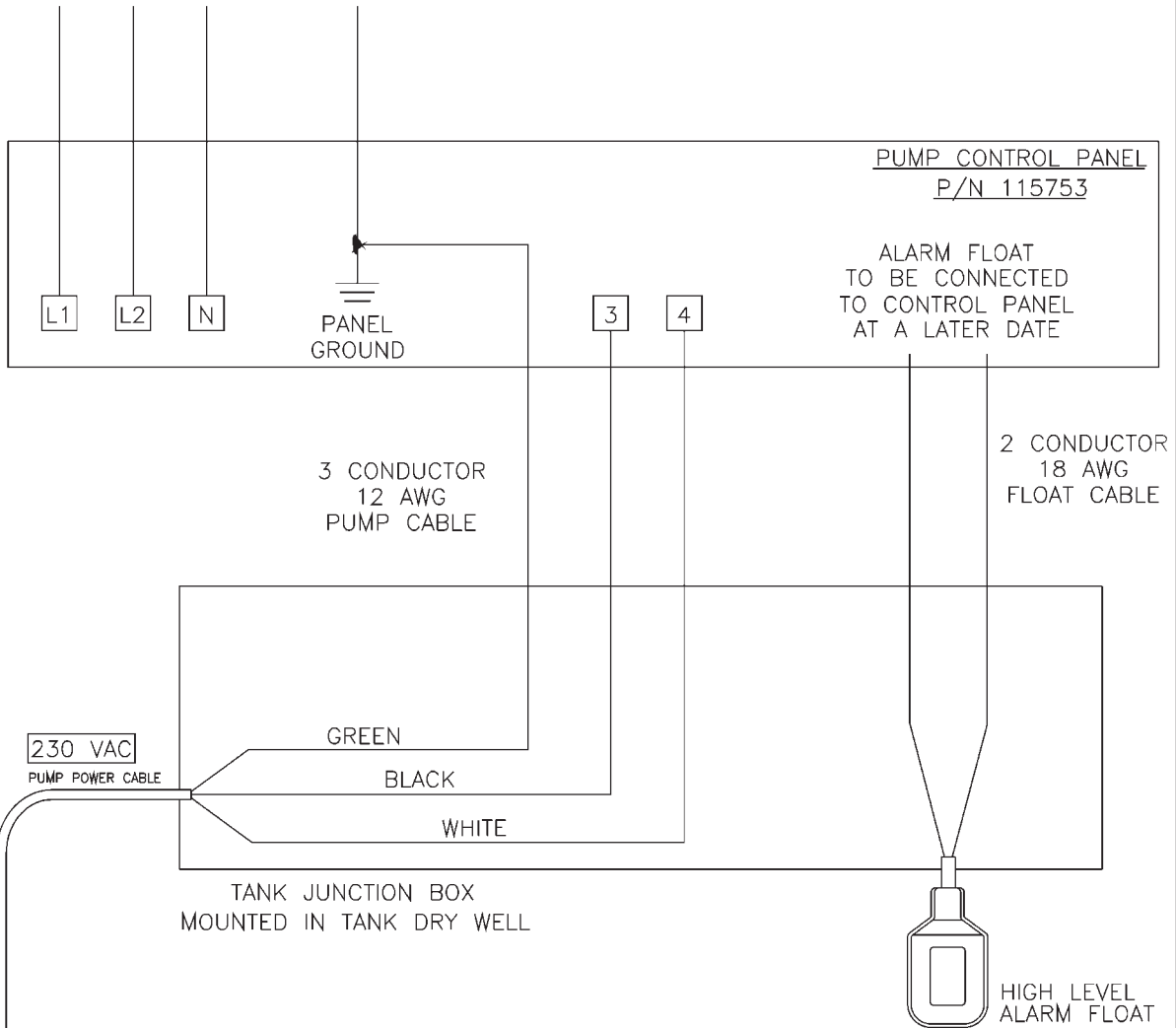
PRESSURE DIAPHRAGM POWERSEWER MODELS (54" THRU 165")

REV.	REV. DATE	DRAWN	ISSUE DATE	DRAWING NO.
B	02/27/04	R. CHASE	12/10/03	A-M002

interon
 Engineered Products Division
 Little Giant Pump Company
 1140 McDermott Drive, Valley Plaza,
 Suite 102, West Chester, PA 19380

PowerSewer™ INTERON CONTROL PANEL WIRING DIAGRAM PRESSURE DIAPHRAGM SYSTEM

230V POWER FROM HOUSE PANEL



230 VAC
PUMP POWER CABLE

TANK JUNCTION BOX
MOUNTED IN TANK DRY WELL

HIGH LEVEL
ALARM FLOAT

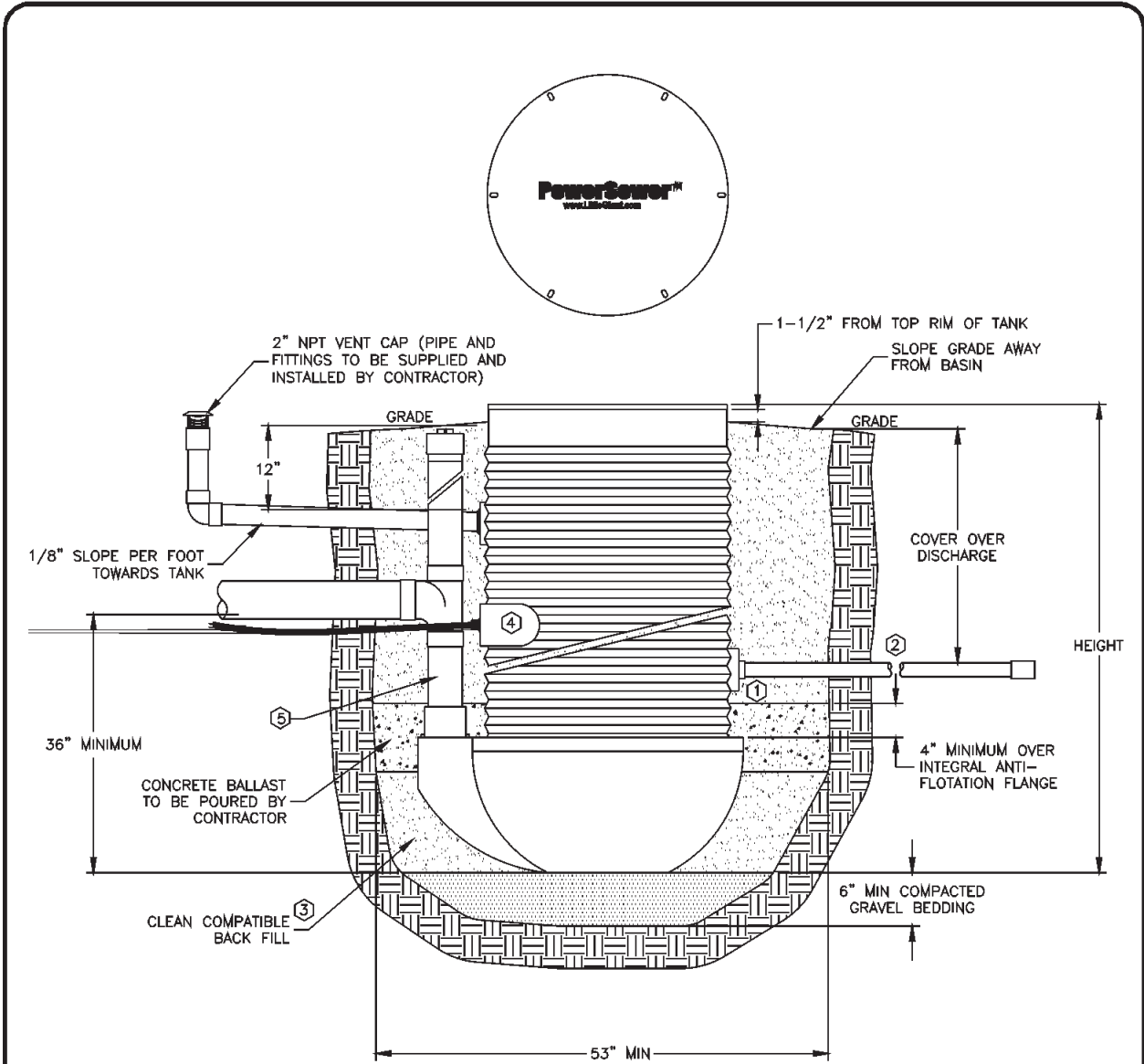
LEGEND

NOTICE THIS IS A CONTROL DRAWING ONLY AND DOES NOT REFLECT THE ACTUAL LOCATIONS OF CABLE PENETRATIONS.

1. FOLLOW NATIONAL ELECTRIC CODE NEC / NFPA / ANSI 70 AND LOCAL REGULATIONS WHEN INSTALLING ALL WIRING.
2. THIS SYSTEM IS MEANT TO BE USED WITH INTERON APPROVED COMPONENTS ONLY. DO NOT REPLACE/SUBSTITUTE ANY SYSTEM COMPONENTS WITH NON-INTERON COMPONENTS.

POWERSEWER PRESSURE DIAPHRAGM WIRING DIAGRAM				
REV.	REV. DATE	DRAWN	ISSUE DATE	DRAWING NO.
B	02/27/04	R. CHASE	12/10/03	A-M003

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NOTES:

- ① TANK DISCHARGE CONNECTION: 1-1/4" SCH 80 PVC SPIGOT
- ② 48" FLEXIBLE DISCHARGE CONNECTION: COMBINATION 1-1/4" PVC SOCKET CONNECTION AND 2" PVC SPIGOT
- ③ SEE INSTALLATION INSTRUCTIONS FOR BACKFILL REQUIREMENTS
- ④ 24" MIN OR DEPTH PER LOCAL ELECTRICAL CODES
- ⑤ 4" PIPE (4.5" OD) AND FITTINGS TO BE SUPPLIED AND INSTALLED BY CONTRACTOR

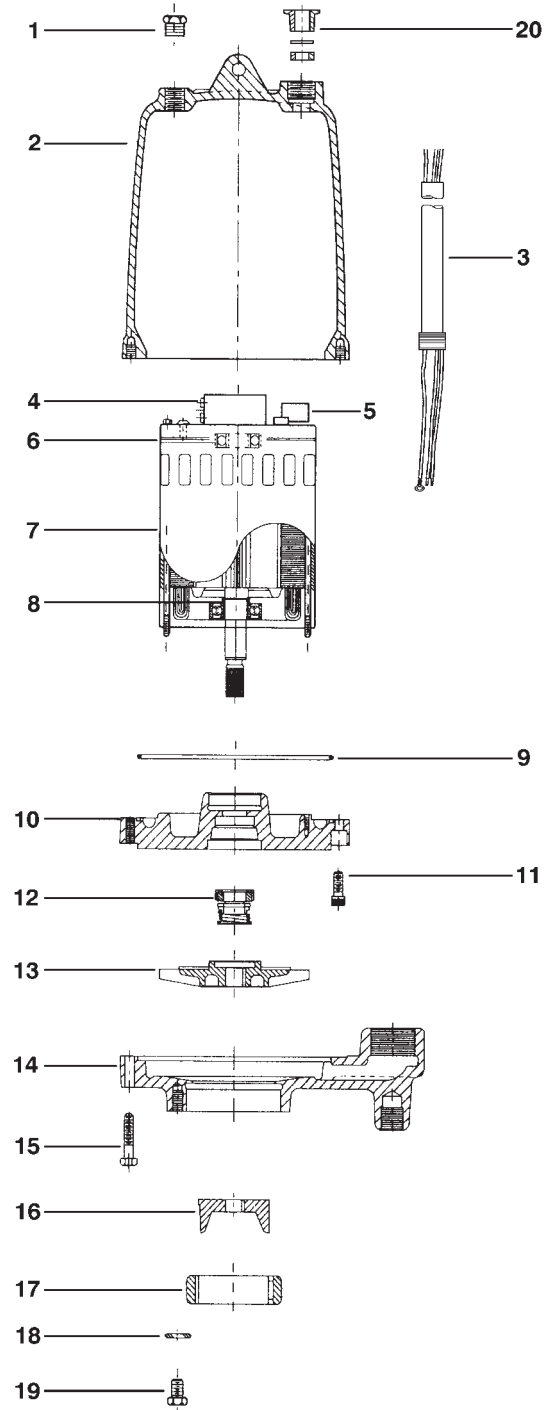
HEIGHT (IN)	HEIGHT (CM)
54	137.16
72	182.88
84	213.36
96	243.84
108	274.32
120	304.80
165	419.10

V3 POWERSEWER INSTALLATION DRAWING

REV.	REV. DATE	DRAWN	ISSUE DATE	DRAWING NO.
C	08/13/03	R. CHASE	05/15/02	A-L628

interon
 Engineered Products Division
 Little Giant Pump Company

1140 McDermott Drive, Valley Plaza,
 Suite 102, West Chester, PA 19380



Item # 515889 Residential Grinder Pump

No.	Part Name	Item No.	Qty.	Material
1	3/8" NPT Oil Plug	929304	1	Steel
2	Motor Cover	115893	1	Cast Iron
3	Power Cord	951000	1	-
4	Start Capacitor	950805	1	-
5	Solid State Start Switch	950806	1	-
6	Upper Ball Bearing	948101	1	Steel
7	Motor	115894	1	-
8	Lower Ball Bearing	948102	1	Steel
9	O-Ring	924045	1	BUNA-N
10	Bearing Housing	115895	1	Cast Iron
11	Bearing Housing Screw	901220	4	AISI 300 SS
12	Mechanical Seal	926101	1	Silicon Carbide
13	5 5/8" dia. Impeller	115896	1	Silicon Bronze
14	Casing	115886	1	Cast Iron
15	Casing Screw	901221	4	AISI 300 SS
16	Cutter	115891	1	AISI 440C SS
17	Cutter Ring	115892	1	AISI 440C SS
18	Cutter Washer	921206	3	AISI 300 SS
19	Cutter Screw	901222	3	AISI 300 SS
	Insulating Oil (quarts)	990450	3	Turbine Oil
20	Strain Relief Assembly		1	



Item # 515889 Residential Grinder Pump

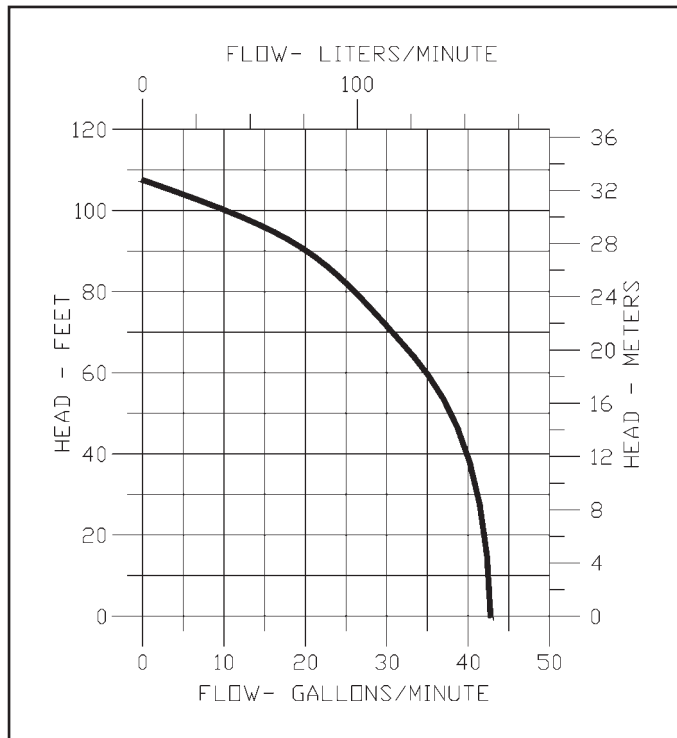
The *PowerSewer*[®] residential grinder pump represents a new direction in grinder pump technology. All assumptions and conventional designs were set aside in a total re-engineering effort. Every concept, new and old, had to be proven through a rigorous testing program.

The program included prototypes and industry leading designs. In addition to the typical mechanical and electrical tests, super slow motion video was used to conclusively determine the best performing designs. The result of this re-engineering effort is a significantly new and better way to grind and pump residential sewage.

After surviving the rigorous lab testing program, the final design was subjected to an extensive field testing program under actual grinding and pumping conditions. This ensures that the *PowerSewer*[®] grinder pump meets your residential sewage pumping needs reliably and cost-effectively.



Performance Curve



Performance Features

- More compact and lighter package, only 75 pounds
- High head performance, 10 gpm at 100 feet TDH
- Non-overloading design
- Internally mounted motor start components simplify wiring and protect homeowners from high voltage components
- Silicon carbide mechanical seal delivers up to 15 times the performance of carbon/ceramic seals
- Deflection resistant, short motor shaft keeps cutters sharp longer
- Anti-roping cutter design, optimized for minimal deflection
- Corrosion resistant, lead-free silicon bronze impeller minimizes downtime and maintenance
- Two vane, angled face, non-clogging, balanced impeller
- Tighter clearances eliminate areas for ground material to collect and clog
- Baked-on acrylic finish inside and out slows corrosion
- Built-in overload protection prevents over-current and over-temperature damage
- Delivers high flows when few pumps are operating, providing critical scouring velocities
- Automatically absorbs peak flows in excess of system design flows without reliance on mechanical protection devices

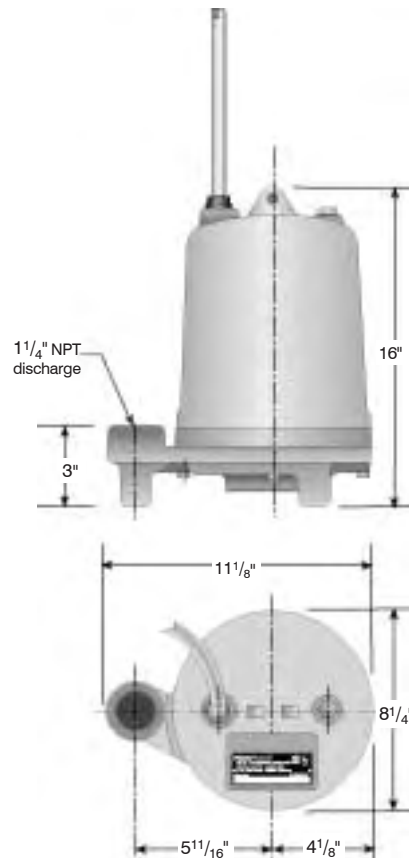
Construction Specifications

Motor Cover	Gray cast iron-ASTM A48
Motor Cover O-Ring	BUNA-N, AS 568A-166
Motor Design	NEMA 48 frame, oil filled, bolt-in-place
Insulation Class	F
Overload Protection	Internal, on winding klixon thermal protector
Motor Chamber Oil Capacity	3.0 U.S. quarts
Motor Shaft	AISI 300 series stainless steel
Bearing Housing	Gray cast iron, ASTM A48
Ball Bearing-Upper	Single row ball, SKF 6203-2Z
Ball Bearing-Lower	Single row ball, SKF 6204-2Z
Seal Housing	Gray cast iron, ASTM A48
Mechanical Seal	Single, John Crane Type 21 silicon carbide/silicon carbide
Casing	Gray cast iron, ASTM A48
Casing Minimum Thickness	.5/16"
Casing Corrosion Allowance	.1/8"
Cast Iron Finish	Baked-on acrylic, inside and out
Impeller	Precision cast silicon bronze-ASTM C87500
Impeller Type	Balanced, semi-open, two vane, with pump out vanes on back shroud
Rotary Cutter	2 blade design, AISI 440C stainless steel, through hardened to Rockwell 55-60C 15° blade profile optimized for minimum shaft deflection, Aligned with impeller
Stationary Cutter	Reversible design, AISI 440C stainless steel, through hardened to Rockwell 55-60C
External Hardware	300 series stainless steel
Power Cable	14/3 AWG, 600V, 18A, STOW, 0.55" dia.

Motor Specifications

Horsepower	.2
Revolutions per minute	3450
Voltage	230V
Phase	single
Cycles, Hz	60
Amps	1.5
KVA Code	F
Power Cable Size, AWG	14/3
Fuse/Circuit Breaker Size, AMP	20
Starting Components	Internal, no external capacitor kits required

Dimensional Specifications



Application Specifications

Discharge Size	1 1/4" NPT
Recommended Flow	10 to 45 gpm
Total Dynamic Head	0 to 100 Feet
Maximum Solid Size	.3"
Maximum Working Pressure	.50 psi
Minimum Submergence	.6" below top of motor dome
Environmental Temperature	104° F max continuous 140° F max intermittent

Agency Listings



Interon[®] Consumer Warranty

Interon[®], Engineered Products Division of Little Giant Pump Company, (“Manufacturer”) makes the following Limited Warranty. This Limited Warranty extends both to the original purchaser and to any person(s) obtaining title to the original purchaser’s residence at which Manufacturer’s PowerSewer[®] product is installed within the warranty period.

Limited Warranty

Every PowerSewer[®] product is guaranteed to be functionally operable when it leaves the factory. Manufacturer warrants its PowerSewer[®] against defects in material or workmanship according to the following schedule:

The PowerSewer[®] control panel, roto-molded tank and grinder pump core assembly are warranted for 30 months (2.5 years) from date of manufacture or 24 months (2 years) from date of installation, whichever comes first.

This warranty commences from the date of manufacture or the date of installation, whichever comes first. During this period, the Manufacturer will repair or replace a defective product or part without charge to the person to whom the warranty is extended. Normal maintenance services and the parts used in connection with such service are not covered in the warranty. Any oral statements about the product(s) made by the seller, the Manufacturer, the representatives or any other parties, do not constitute warranties, and shall not be relied upon by the user and are not part of the contract for sale. No person is authorized by Manufacturer to assume for it any liability of any kind in connection with the sale or use of the products manufactured and sold by it.

Product Improvement

Interon[®] reserves the right to change or improve its products or any portion thereof without being obligated to provide such a change or improvement for units sold and/or shipped prior to such change of improvement. The Manufacturer may (but is not required to) provide such a changed or improved product as part of its repair or replacement of a defective product or part thereof in accordance with this Limited Warranty.

Warranty Exclusions

The following are excluded from coverage under this Limited Warranty:

1. Any product which is installed in a manner which fails to comply with Manufacturer’s written installation instructions or fails to meet proper power requirements, as outlined in the instructions in the Installation, Operations, and Maintenance Manual or other instructions by Manufacturer;
2. Any product which is installed in a manner not installed in accordance with applicable national, state or provincial and local codes, ordinances and good trade practices;
3. Any product that is connected to voltage other than that indicated on the nameplate;
4. Any product which is modified without the prior written consent of Manufacturer;
5. Any product on which any maintenance or repair service is performed by any person other than Manufacturer or a Service Provider authorized by Manufacturer (“Authorized Service Provider”);
6. Damage resulting from external causes including but not limited to weather, soil erosion or excavation, animals and accidents that are beyond the control of the Manufacturer;
7. Damage resulting from the introduction of foreign objects or substances to include but not limited to sand, gravel, cement, grease, plaster, mud, tar, hydrocarbons or hydrocarbon derivatives, (oils, gasoline, solvents, etc.) or other abrasive or corrosive substances;
8. Damage resulting from negligence, accident, misuse or operation contrary to the Installation, Operations, and Maintenance Manual or other instructions;
9. A pump, which is not activated within two months of installation, unless the Manufacturer or an Authorized Service Provider provides service to the pump before activation. The cost of this service is the responsibility of the owner.

Your Responsibility

The above warranty is subject to the following conditions:

1. You must retain proof of purchase and installation documents. Completing and mailing in the attached registration card, which is enclosed in your Homeowner Start-Up Kit, within ten (10) days after installation is the best way of providing such proof of installation.
2. You must notify Manufacturer or an Authorized Service Provider within two (2) days after you discover a defective product or part.
3. All warranty service or repair must be performed by the Manufacturer or an Authorized Service Provider.
4. Labor costs for original installation or removal and reinstallation and adjustments are not covered by this Limited Warranty.
5. All return of parts to the Manufacturer for evaluation and/or repair should be made through your Authorized Service Provider. If you are not sure of the Authorized Service Provider in your area, call 866.271.2859.

Owner's Manual and Warranty Registration

You should read the Installation, Operations and Maintenance Manual for the *PowerSewer*[®] and all other instructions provided by Manufacturer completely. You should also complete and mail the registration card, which is enclosed, in your Homeowner Start-Up Kit, within ten (10) days after installation of the *PowerSewer*[®] in order to register yourself as a purchaser. This is the best way to enable the Manufacturer to establish the date of installation. Failure to return the card does not affect your rights under this Limited Warranty so long as you retain other written proof of installation and otherwise comply with this Limited Warranty. Without written proof of installation, the warranty period will commence with date of purchase as appearing in Manufacturer's records.

DISCLAIMER

NEITHER SELLER NOR MANUFACTURER SHALL BE LIABLE FOR ANY INJURY, LOSS OR DAMAGE, WHETHER ACTUAL, DIRECT, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOST PROFIT, LOST SALES, INJURY TO PERSON, LIVESTOCK OR PROPERTY, INSTALLATION, REMOVAL AND/OR RE-INSTALLATION OF ANY UNIT (S), EXCAVATION, DOWNTIME, CLEANUP, LOSS OF OPPORTUNITY OR RENTAL VALUE, SHELTER COSTS OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS OR EXEMPLARY DAMAGE ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT. SELLER'S AND MANUFACTURER'S ONLY OBLIGATION, AND YOUR ONLY REMEDY, SHALL BE REPLACEMENT AND/OR REPAIR BY THE MANUFACTURER OR AUTHORIZED SERVICE PROVIDER, AS DESCRIBED HEREIN. YOU AGREE THAT NO REMEDY SHALL BE AVAILABLE OTHER THAN THAT STATED HEREIN.

WITH THE EXCEPTION OF ANY WARRANTIES IMPLIED BY STATE LAW AS HEREBY LIMITED, THE FOREGOING WARRANTY IS AN EXCLUSIVE WARRANTY IN LIEU OF ANY OTHER EXPRESS WARRANTIES OR IMPLIED WARRANTIES OF ANY KIND WHATSOEVER INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, GUARANTEES, AGREEMENTS OR SIMILAR OBLIGATIONS WITH RESPECT TO THE REPAIR OR REPLACEMENT OF ANY PRODUCT OR PART. ALL OF SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED BY MANUFACTURER AND SELLER. TO THE EXTENT EITHER APPLIES TO *POWERSEWER*[®] PRODUCTS, THE WARRANTY SHALL BE LIMITED IN DURATION TO THE PERIODS OF THE EXPRESS WARRANTIES GIVEN ABOVE.

Limitations/Rights

Some states and countries do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental, consequential or exemplary damages; therefore, the above limitations or exclusions may not apply to you. This limited warranty gives you specific legal rights and you may also have other rights, which vary from state to state and country to country.

The time period within which an action must be commenced to enforce any obligation of Manufacturer under this Limited Warranty or under any statute or law of the United States or of any state is hereby limited to one (1) year from the date you discover or should have discovered the defect. This limitation does not apply to implied warranties arising under state law. Some states do not permit limitation of the time within which you may bring an action beyond the limits provided by state law, so the this provision may not apply to you.

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