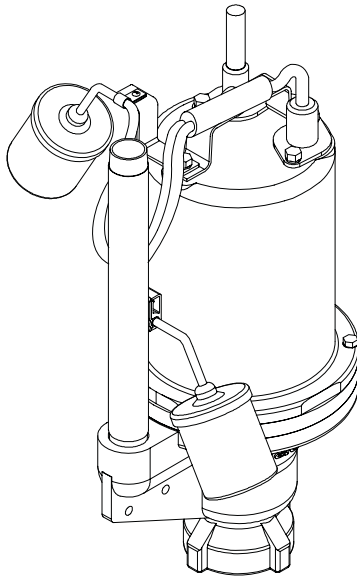
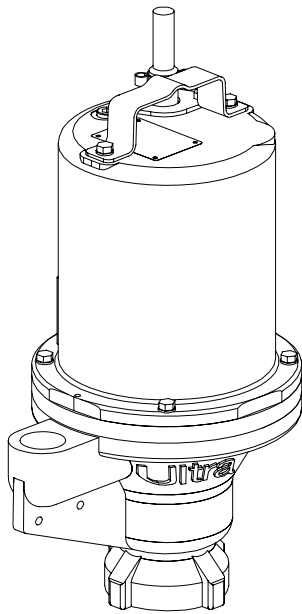


INSTALLATION MANUAL

Submersible Progressing Cavity Grinder Pump



Series: SGPC
0.6 HP, (.45kW)
1450 RPM, 50 Hz.

SUPERSEDED
Some parts may NOT
be available



IMPORTANT!

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

CRANE

A Crane Co. Company

PUMPS & SYSTEMS

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

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



Form No. 114344-Rev. D

SAFETY FIRST!

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



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

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

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



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



Extremely hot - Severe burns can occur on contact.



Biohazard can cause serious personal injury.



Hazardous fluids can Hazardous pressure, eruptions or explosions could cause personal injury or property damage.



Rotating machinery Amputation or severe laceration can result.



Hazardous voltage can shock, burn or cause death.

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



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

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

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

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

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

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

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



CAUTION! Pumps build up heat and pressure during operation-allow time for pumps to cool before handling or servicing.



WARNING! - **DO NOT** pump hazardous materials (flammable, caustic, etc.) unless the pump is specifically designed and designated to handle them.

Do not block or restrict discharge hose, as discharge hose may whip under pressure.



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

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

Make sure lifting handles are securely fastened each time before lifting. Do not operate pump without safety devices in place. Always replace safety devices that have been removed during service or repair.

Do not exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.

Secure the pump in its operating position so it can not tip over, fall or slide.

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



Never handle connected power cords with wet hands.

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



Submersible Pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.

Do not remove cord and strain relief. Do not connect conduit to pump.



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

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



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

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USER GUIDE

Congratulations on your purchase of a Barnes *UltraGRIND*[™] grinder pump system. With proper care and by following a few simple guidelines your grinder pump will give you many years of dependable service.

Use and Care

The *UltraGRIND* grinder pump station is designed to handle routine, domestic sewage. Solid waste materials should be thrown in the trash. While your station is capable of accepting and pumping a wide range of materials, regulatory agencies advise that the following items should not be introduced into any sewer either directly or through a kitchen waste disposal:

- Glass
- Metal
- Diapers
- Socks, rags or cloth
- Plastic objects (e.g., toys, utensils, etc.)
- Sanitary napkins or tampons

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

- Explosives
- Flammable Material
- Lubricating Oil and/or Grease
- Strong Chemicals
- Gasoline

General Information

Your home wastewater disposal service is part of a low pressure sewer system. The key element in this system is the Barnes *UltraGRIND* grinder pump station. The basin collects all wastewater from the house. The solids in the sewage are then ground to a small size suitable for pumping in the slurry.

GRINDER PUMP SYSTEMS The grinder pump generates sufficient pressure to pump this slurry from your home to the wastewater plant.

Power Failure

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

Warranty

Your grinder pump is furnished with a warranty against defects in material or workmanship. A properly completed Start-Up/Warranty Registration form must be on file at the Barnes factory in order to activate your warranty. In addition your pump must be installed in accordance with the installation instructions.

If you have a claim under the provisions of the warranty, contact your local Barnes Distributor.

When contacting your representative for service, please include your station serial number, pump model number, and pump serial number.

For future reference, record the following information:

Station Serial No: _____

Pump Model No: _____

Pump Serial No: _____

Local Distributor: _____

Distributor Telephone: _____



PUMP SPECIFICATIONS:

DISCHARGE 1¼" NPT, Vertical or
32mm BSP, Vertical

LIQUID TEMPERATURE 104°F (40°C) Continuous

MOTOR HOUSING Cast Iron ASTM A-48, Class 30

SEAL PLATE Cast Iron ASTM A-48, Class 30

SUCTION SPACER..... Cast Iron ASTM A-48, Class 30

SUCTION HOUSING..... Cast Iron ASTM A-48, Class 30

PUMP ROTOR ASTM CF-8A Stainless Steel

PUMP STATOR:
Design Double Helix
Material Buna-N

SHREDDING RING Hardened 440C Stainless Steel
Rockwell C-55

CUTTER Hardened 440C Stainless Steel
Rockwell C-55

SHAFT..... 416 Stainless Steel

SQUARE RING Buna-N

O-Ring..... Buna-N

HARDWARE 300 Series Stainless Steel

SEAL: *Design*..... Single Mechanical
Material Rotating Faces - Carbon
 Stationary Faces - Ceramic
 Elastomer - Buna-N
 Hardware - 300 series stainless steel

CORD ENTRY:
AU Series..... 15 Ft. (9m) Cord, Standard
L & CVP 8 Ft. (2.4m), 15 Ft. (4.6m) Std., or
 30 Ft. (9m) Cord, Custom Molded
 Quick Connected for sealing and
 strain relief

CORD: *AU & CVP* CSA/UL Approved 12/5 Type SOW
L CSA/UL Approved 12/3 Type SOW

SPEED 1450 RPM, 50Hz

UPPER BEARING:
Design..... Single Row, Ball
Lubrication Oil
Load..... Radial

LOWER BEARING:
Design..... Single Row, Ball
Lubrication Oil
Load..... Radia & Thrust

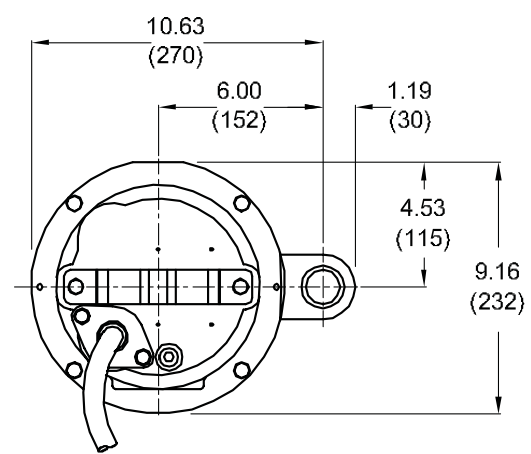
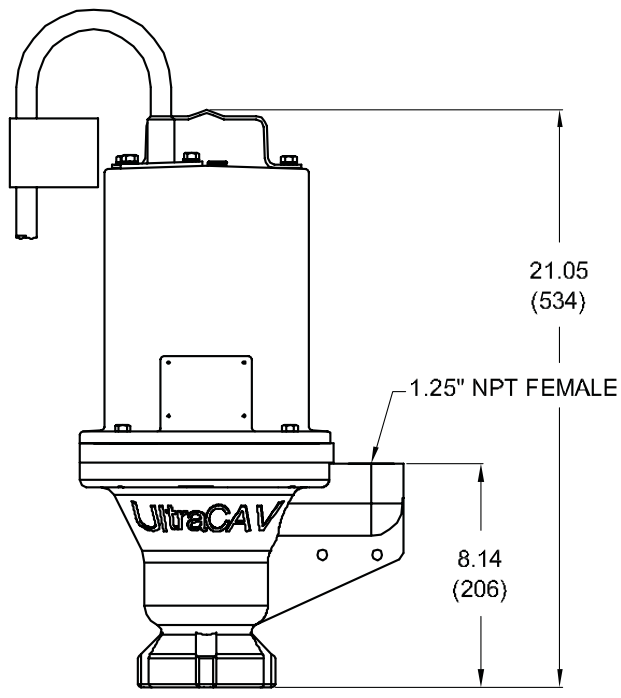
MOTOR: *Design*..... Oil Filled, Squirrel Cage Induction
Insulation Class B
Type Permanent Split Capacitor (PSC),
 Includes overload protection in motor

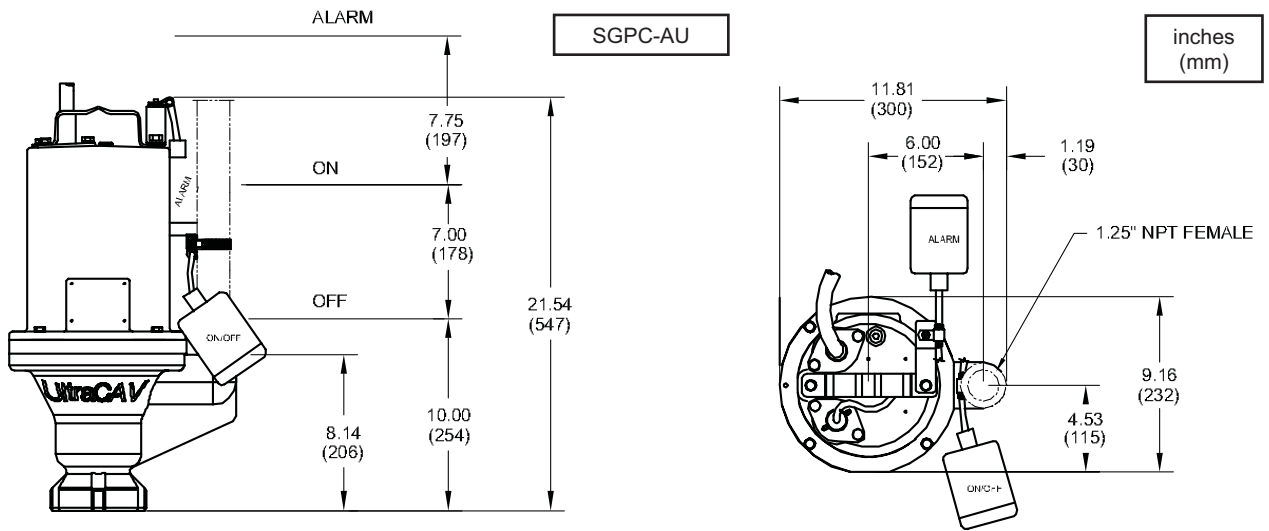
LEVEL CONTROLS:
AU Series..... On/Off & Alarm, Wide Angle, PVC,
 Mechanical, normally open, Integral
 to Pump. Custom molded quick
 connect for sealing and strain relief

OPTIONAL EQUIPMENT.... Seal Material, Additional Cord,
 Closed Valve Protection, (240 Volt
 Only), Moveable Fitting

inches
(mm)

SGPC-L

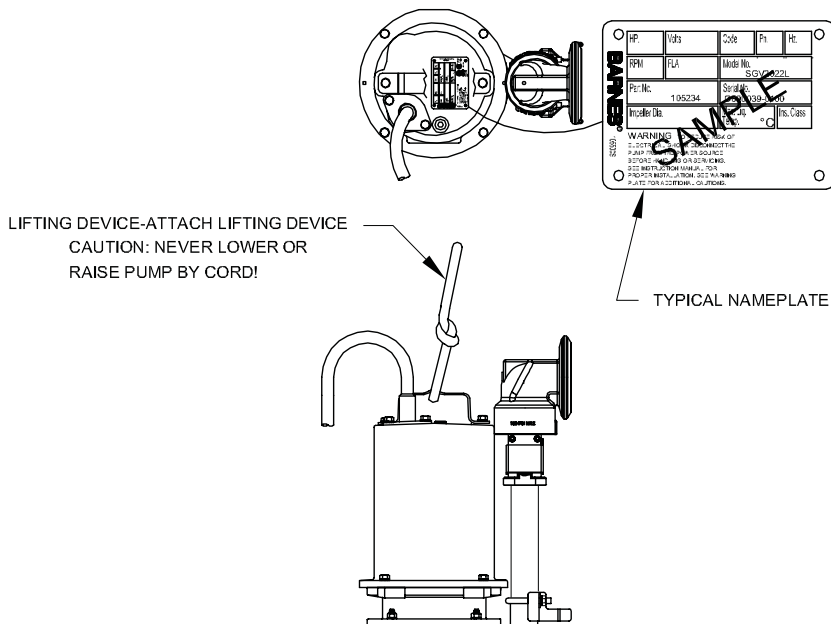




PUMP MODEL	HP 50Hz	VOLT	PH	NEMA START CODE	FULL LOAD AMPS 50Hz	LOCKED ROTOR AMPS	WINDING RESISTANCE MAIN -- START
SGPC10X4L	.6 (.45kW)	230	1	D	9.2	17.5	2.3 -- 9.7
SGPC10X4AU**	.6 (.45kW)	230	1	D	9.2	17.5	2.3 -- 9.7
SGPC10X4CVP	.6 (.45kW)	230	1	D	9.2	17.5	2.3 -- 9.7

PUMP MODEL	BREAKER SIZE	CORD SIZE	CODE TYPE	CORD O.D. ± .02 (.5) in (mm)	CORD LENGTH Ft. (m)
SGPC10X4L	25 AMP	12/3	SOW	.61 (15.5)	15 (4.6)
SGPC10X4AU**	25 AMP	12/5	SOW	.71 (18)	15 (4.6)
SGPC10X4CVP	25 AMP	12/5	SOW	.71 (18)	15 (4.6)

Winding Resistance ± 5%, measured from terminal block.
 Pump rated for operation at ± 10% voltage at motor.
 (**) Double Float Version



RECEIVING/UNPACKING:

Upon receiving the pump, it should be inspected for damage or shortages. If damage has occurred, file a claim immediately with the company that delivered the pump. Unpack pump and record pump serial and model number before installing. If the manual is removed from the packaging, do not lose or misplace.

STORAGE:

Short Term- For best results, pumps can be retained in storage, as factory assembled, in a dry atmosphere with constant temperatures for up to six (6) months.

Long Term- Any length of time exceeding six (6) months, but not more than twenty-four (24) months. The units should be stored in a temperature controlled area, a roofed over walled enclosure that provides protection from the elements (rain, snow, wind-blown dust, etc.), and whose temperature can be maintained between +40 deg. F and +120 deg. F. If extended high humidity is expected to be a problem, all exposed parts should be inspected before storage and all surfaces that have the paint scratched, damaged, or worn should be recoated with a air dry enamel paint. All surfaces should then be sprayed with a rust-inhibiting oil.

Pump should be stored in its original shipping container. On initial start up, rotate shaft by hand to assure seal and motor rotate freely. If it is required that the pump be installed and tested before the long term storage begins, such installation will be allowed provided:

- 1.) The pump is not installed under water for more than one (1) month.
- 2.) Immediately upon satisfactory completion of the test, the pump is removed, thoroughly dried, repacked in the original shipping container, and placed in a temperature controlled storage area.

SERVICE CENTERS:

For the location of the nearest Barnes Service Center, check your Barnes representative or Crane Pumps & Systems, Inc., Service Department in Piqua, Ohio, telephone (937) 778-8947 or in Brampton, Ontario, Canada (905) 457-6223.

INSTALLATION:

Location - The pump is designed to fit into your basin either by sliding down the rail assembly, suspended from the cover or by being mounted on a pump base.

THIS PUMP MUST BE INSTALLED WITH A MINIMUM OF 3 INCHES AND A MAXIMUM OF 4.5 INCHES OF CLEARANCE UNDER THE PUMP FOR THE ENTRANCE OF SEWAGE SOLIDS.

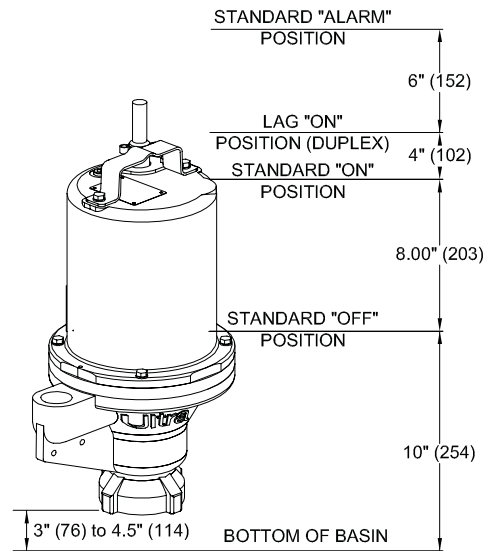


FIGURE 1 - L Series

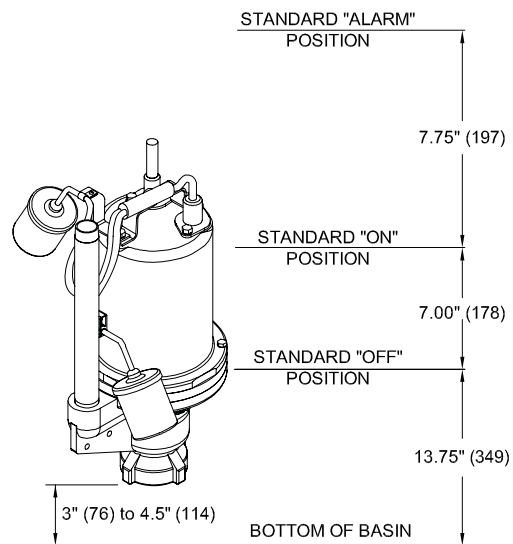


FIGURE 2 - AU Series

Discharge - Assemble discharge piping or hose assembly (whichever is required by your application), to the pump. Discharge piping should be as short as possible. Both a check valve and a shut-off valve are required for each pump being used. The check valve is used to prevent backflow into the sump. Excessive backflow can cause flooding and/or damage to the pump. The shut-off valve is used to stop system flow during pump or check valve servicing.

Package Systems- Refer to manual supplied with basin package system.

SGPC "AUF" SERIES AUTOMATIC PUMPS:

NOTE: For automatic pumps using ESPS level control, refer to ESPS manual.

Automatic units are supplied with separate ON/OFF float and ALARM float. The alarm float is attached to the top of the pump. The ON/OFF float is attached to the piping at the factory or shipped loose. Hardware is provided for mounting the ON/OFF float typically to a 1.25" NPT pipe. Other various mounting methods can be used so long the ON/OFF float is:

1. Securely mounted to a fixed object such as pipe, brackets, etc.
2. Has a three to three and one half-inch tether length.
3. Basin wall, pump, inflow, etc., DO NOT obstruct float operation.
4. Below normal ALARM level operation.

ALL FLOAT TETHERS SHOULD BE LOCATED BETWEEN ZIP TIES

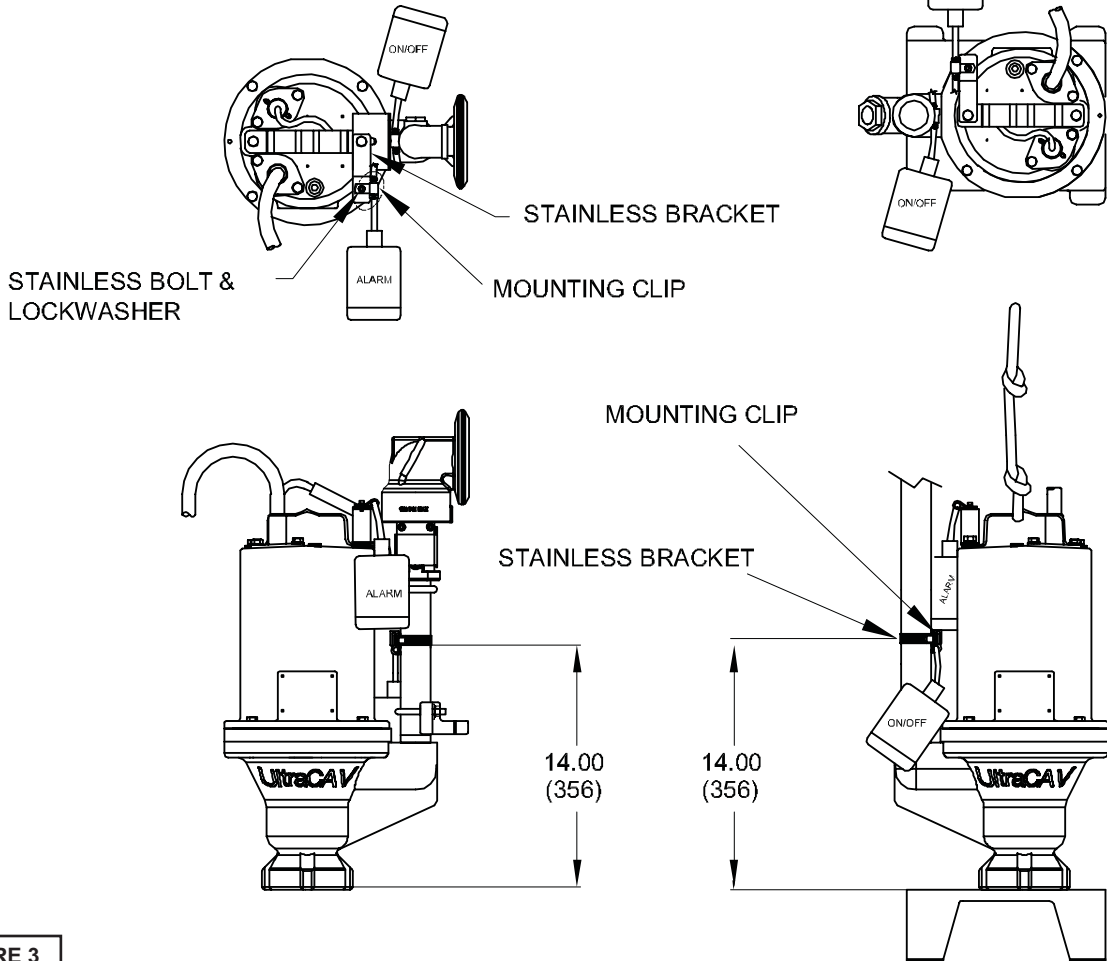
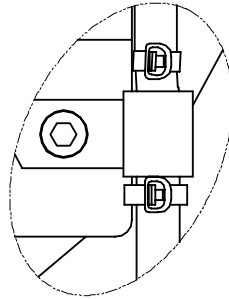


FIGURE 3

ELECTRICAL CONNECTIONS:

Pump Cord - The cord assembly mounted to the pump must **NOT** be modified in any way except for shortening to a specific application. Any supply cables connection between the pump and the control panel must be made in accordance with the National Electric Code or the Canadian Electric Code and all applicable state, province and local electric codes. It is recommended that a junction box, be mounted outside the sump or be of at least Nema 4 (EEMAC-4) construction if located within the wet well. **DO NOT USE THE POWER OR CONTROL CABLES TO LIFT PUMP!**

Overload Protection - The type of in-winding overload protector used is referred to as an inherent overheating protector and operates on the combined effect of temperature and current. This means that the overload protector will trip out and shut the pump off if the windings become too hot, or the load current becomes too high. It will then automatically reset and start the pump after the motor cools to a safe temperature. In the event of an overload, the source of this condition should be determined and rectified immediately. **DO NOT LET THE PUMP CYCLE OR RUN IF AN OVERLOAD CONDITION OCCURS !**

Wire Size - If additional cord is required consult a qualified electrician for proper wire size.

CORD CONNECTIONS:

Power/Control Cord- Insert female end of cord plug into housing bore aligning alignment mark with hole in terminal block see Figure 4. Tighten bolts on compression flange until flush with motor housing.

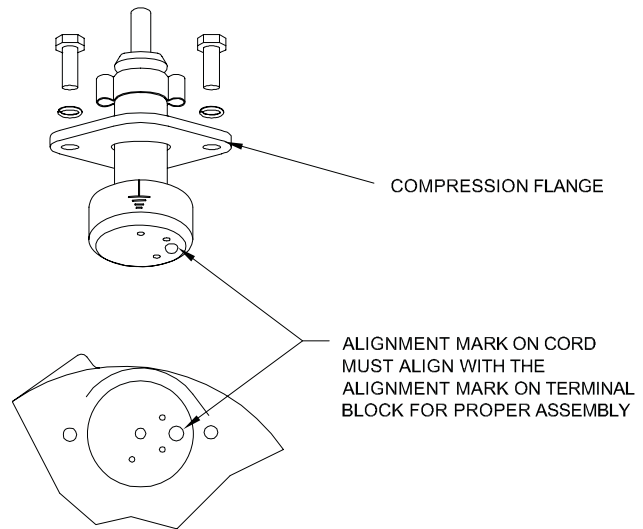


FIGURE 4

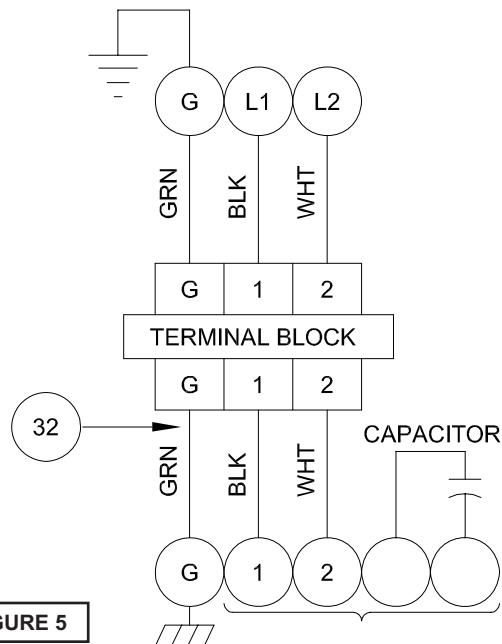


FIGURE 5

**Wiring Schematic For Pumps
With Dual Hole Motor Housing**

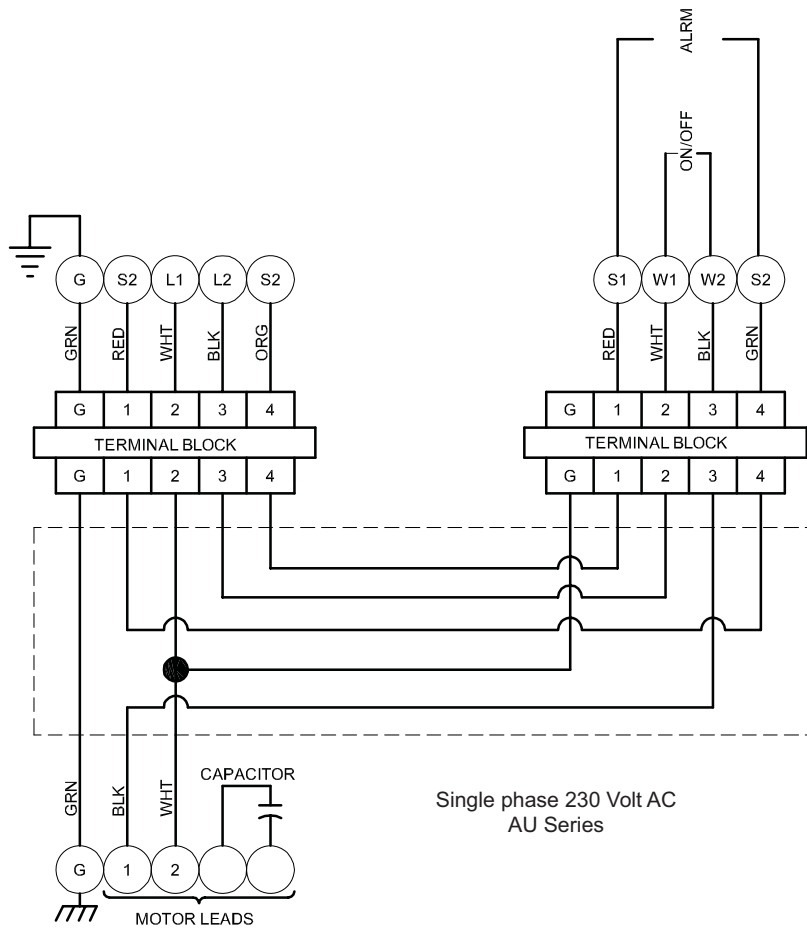
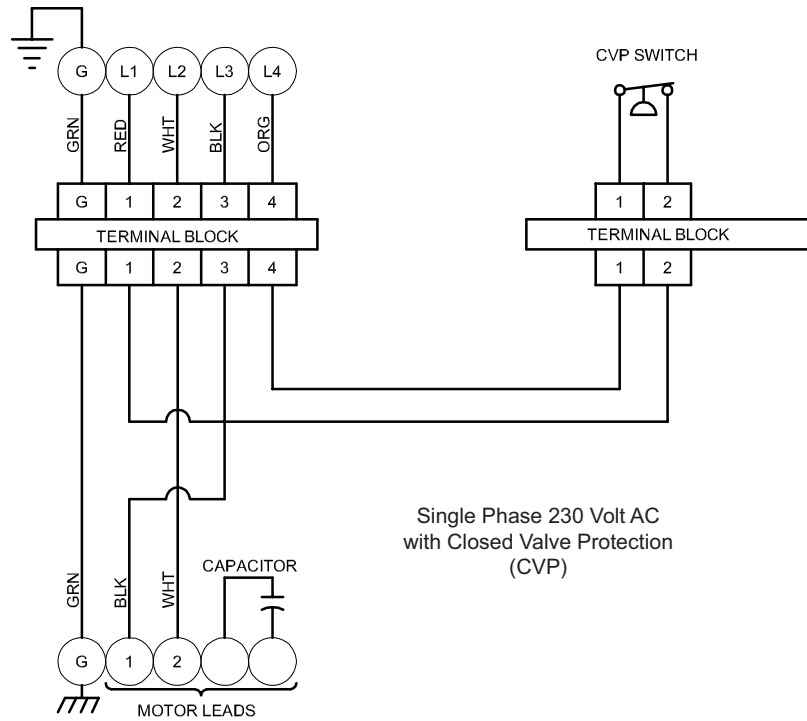


FIGURE 5

SGPC GRINDER PUMP TROUBLE SHOOTING

CAUTION ! Always disconnect the pump from the electrical power source before handling.
If the system fails to operate properly, carefully read instructions and perform maintenance recommendations.
If operating problems persist, the following chart may be of assistance in identifying and correcting them:

MATCH "CAUSE" NUMBER WITH CORRELATING "CORRECTION" NUMBER.

NOTE: Not all problems and corrections will apply to each pump model.

PROBLEM	CAUSE	CORRECTION
Pump will not run	<ol style="list-style-type: none"> 1. Poor electrical connection, blown fuse, tripped breaker or other interruption of power, improper power supply. 2. Motor or switch inoperative (to isolate cause, go to manual operation of pump). 2a. Float movement restricted. 2b. Switch will not activate pump or is defective. 3. Insufficient liquid level. 16. Check jumper between #7 and #8 in control panel. 	<ol style="list-style-type: none"> 1. Check all electrical connections for security. Have electrician measure current in motor leads, if current is within $\pm 20\%$ of locked rotor Amps, impeller is probably locked. If current is 0, overload may be tripped. Remove power, allow pump to cool, then recheck current. 2a. Reposition pump or clean basin as required to provide adequate clearance for float. 2b. Disconnect level control. Set ohmmeter for a low range, such as 100 ohms full scale and connect to level control leads. Actuate level control manually and check to see that ohmmeter shows zero ohms for closed switch and full scale for open switch. (Float Switch). 3. Make sure liquid level is at least equal to suggested turn-on point. 4. Recheck all sizing calculations to determine proper pump size. 5. Check discharge line for restrictions, including ice if line passes through or into cold areas. 6. Remove and examine check valve for proper installation and freedom of operation. 7. Open valve. 8. Check cutter for freedom of operation, security and condition. Clean cutter and inlet of any obstruction. 9. Loosen union slightly to allow trapped air to escape. Verify that turn-off level of switch is set so that the suction is always flooded. Clean vent hole. 10. Remove & examine for damage. Replace pump stator if required. 11. Repair fixtures as required to eliminate leakage. 12. Check pump temperature limits & fluid temperature. 13. Replace portion of discharge pipe with flexible connector. 14. Turn to automatic position. 15. Check for leaks around basin inlet and outlets. 16. A jumper between #7 and #8 is required for standard SGPC grinder pumps. For pumps with Closed Valve Protection (CVP) the jumper is replaced with the red and orange leads from the pump, the system pressure may exceed the rating of the CVP.
Pump will not turn off	<ol style="list-style-type: none"> 2a. Float movement restricted. 2b. Switch will not activate pump or is defective. 4. Excessive inflow or pump not properly sized for application. 9. Pump may be airlocked. 14. H-O-A switch on panel is in "HAND" position 	
Pump hums but does not run	<ol style="list-style-type: none"> 1. Incorrect voltage 8. Cutter jammed or loose on shaft, worn or damaged, inlet plugged. 	
Pump delivers insufficient capacity	<ol style="list-style-type: none"> 1. Incorrect voltage. 4. Excessive inflow or pump not properly sized for application. 5. Discharge restricted. 6. Check valve stuck closed or installed backwards. 7. Shut-off valve closed. 8. Cutter jammed or loose on shaft, worn or damaged, inlet plugged. 9. Pump may be airlocked. 10. Pump stator damaged/torn. 	
Pump cycles too frequently or runs periodically when fixtures are not in use	<ol style="list-style-type: none"> 6. Check valve stuck closed or installed backwards. 11. Fixtures are leaking. 15. Ground water entering basin. 	
Pump shuts off and turns on independent of switch, (trips thermal overload protector). CAUTION! Pump may start unexpectedly. Disconnect power supply.	<ol style="list-style-type: none"> 1. Incorrect voltage. 4. Excessive inflow or pump not properly sized for application. 8. Cutter jammed, loose on shaft, worn or damaged, inlet plugged. 12. Excessive water temperature. 	
Pump operates noisily or vibrates excessively	<ol style="list-style-type: none"> 4. Operating at too high a pressure. 5. Discharge restricted. 8. Cutter broken. 13. Piping attachments to building structure too rigid or too loose. 	

MOVEABLE ASSEMBLY P/N: 116601
For SGPC UltraCAV Grider Pump with "C" Channel Rail

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	116610	Upper Bracket Kit
2	1	107368	Pipe Nipple
3	1	107360	Lower Guide Bracket Assembly
4	1	112354	Check Valve / Upper Moveable
5	1	116470	Street Elbow

(*) Pump **NOT** included under these part numbers. The Moveable Assembly will be factory assembled to the pump when a Basin Package system is ordered.

MOVEABLE FITTING
 WITH CLOSED VALVE
 PROTECTION

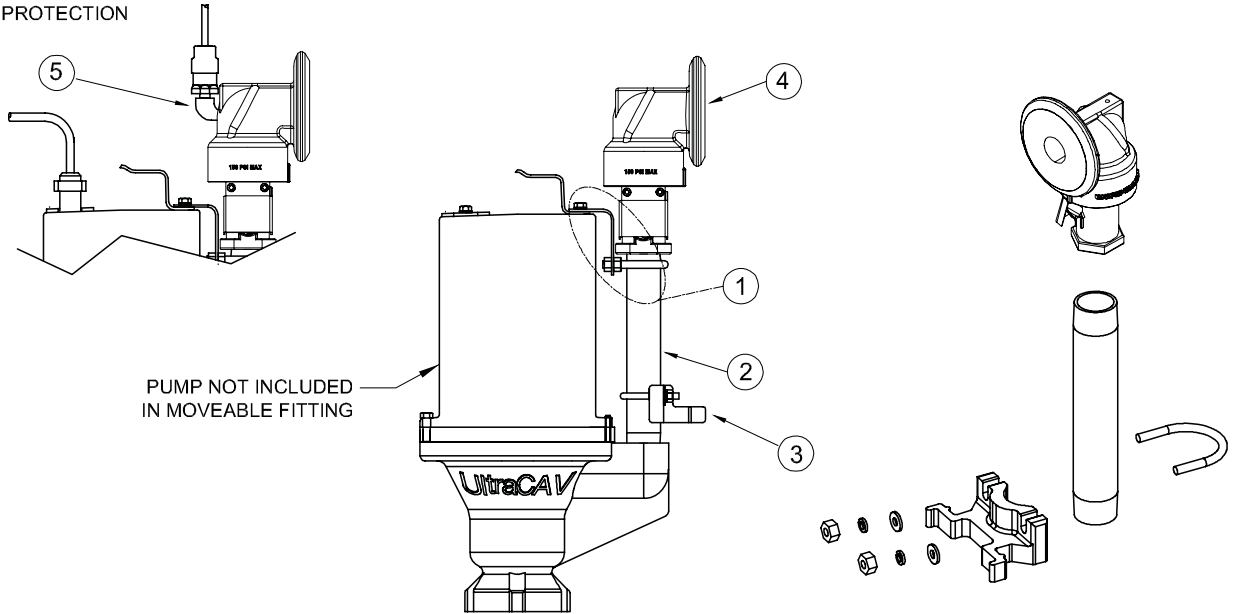


FIGURE 6

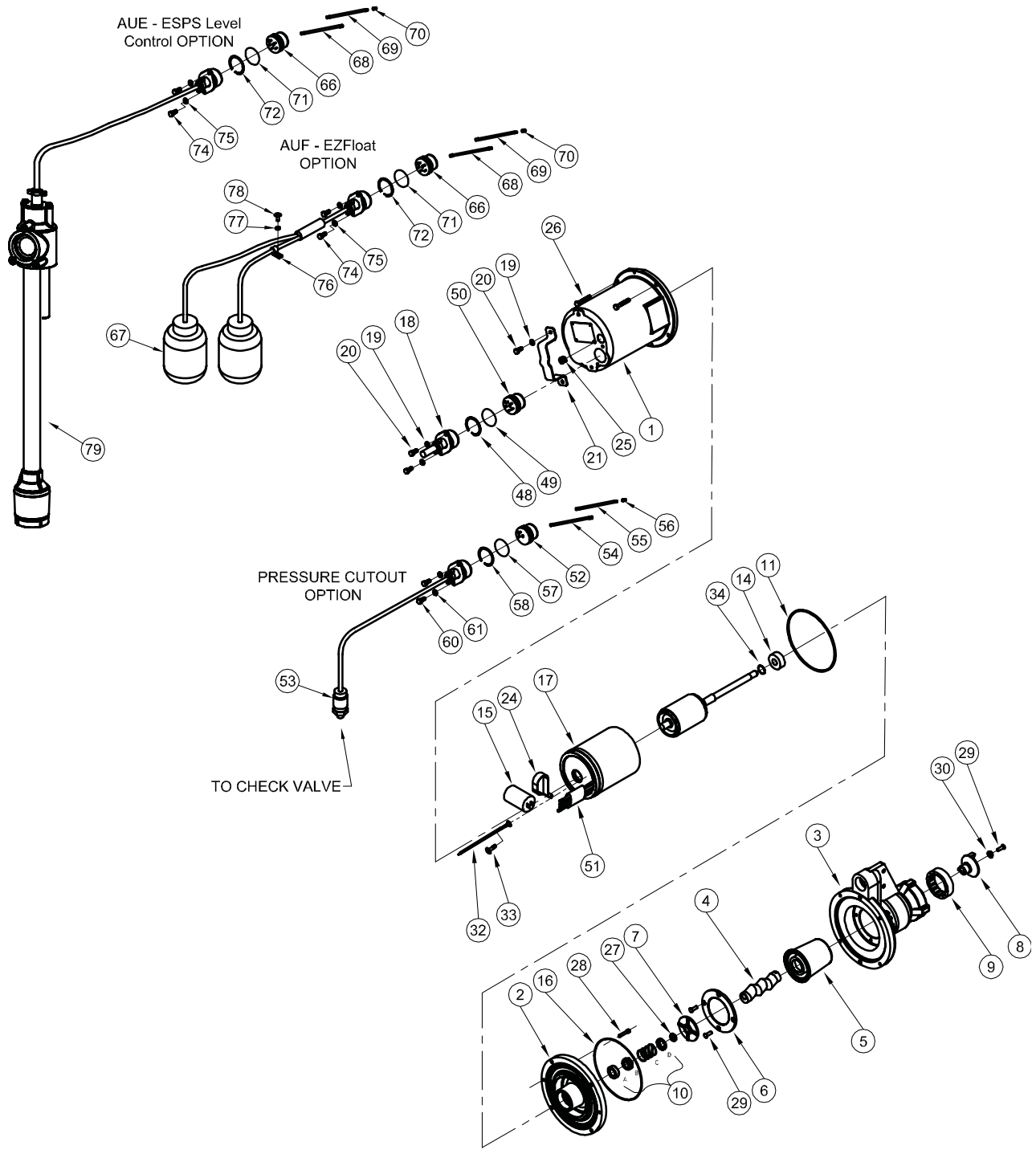


FIGURE 7

PARTS KITS

Seal Repair Kit.....P/N: 110477

Overhaul KitP/N: 110478

Cutter KitP/N: 110479

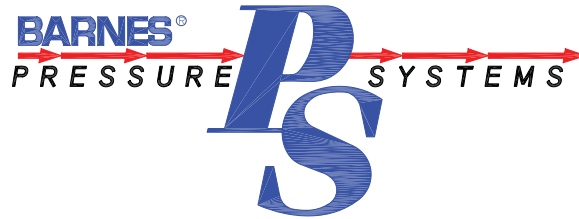
PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION
1	1	105196 105196HA	Motor Housing Motor Housing w/Press cutout or AU
2	1	084343	Seal Plate
3	1	101771	Suction Housing
4	1	117679	Rotor
5	1	117678	Stator
6	1	101772	Stator Retainer
7	1	101773A	Pumpout Spacer
8	1	101774	Radial Cutter
9	1	082085	Shredding Ring
10	1	067562	Shaft Seal C/C/B
11	1	027269	Tetra Seal
12	113oz	029034	Cooling Oil
14	1	039734	Ball Bearing
15	1	034964	Capacitor 230V/1Ph, 370V, 30MFD
16	1	102171	O-Ring
17	1	101729BG-50	Motor 0.6HP, 230V/1Ph
18	1	109498 113274	Cord Set, 15Ft. (STD) Cord Set, 15FT. (AU or Press. Cutout)
18A	1	103582	Compression Flange*
19	4	026322	Lockwasher, 5/16, Stainless
20	4	1-156-1	Hex Hd Capscrew, 5/16-18 x 1.00", Stainless
21	1	103503	Lifting Handle
24	1	039858	Capacitor Bracket
25	1	014270	Pipe Plug
26	4	1-140-1	Screw, 5/16-18, Stainless
27	1	107481	Snap Ring
28	2	084948	Sck. Hd Screw, 1/4-20, Stainless
29	5	070704	Flt. Hd. Screw, 1/4-20, Stainless
30	1	067556	Washer, Cutter, Stainless
32	1	105111A	Wire Assy, 10GA, Green
33	1	016660	Self Tapping Screw, #8-32, Stainless
34	1	061143	Snap Ring
36	A/R	-----	LOCTITE 609
37	A/R	-----	LOCTITE 242
39	A/R	-----	Permatex 2C
41	A/R	-----	Grease, Food-Grade, 450 deg. MP
48	1	105197	Snap Ring
49	1	2-31051-224	O-Ring
50	1	103760 113271	Terminal Block (STD) Terminal Block (AU or Press. Cutout)

ITEM	QTY	PART NO.	DESCRIPTION
51	1	625-02117	Sleeving
PRESSURE CUTOUT SWITCH OPTION			
52	1	103759	Block, Terminal, 2Pin
53	1	113281	Switch, Pressure Cutout
54	1	105147B	Wire, Jumper, 10"
55	1	105149	Wire Jumper
56	1	625-00163	Connector, Wire
57	1	2-31051-224	O-Ring
58	1	105197	Snap Ring
60	2	1-156-1	Hex Hd Capscrew, 5/16-18 x 1.00" Stainless
61	2	26322	Lockwasher, 5/16
62	1	111203	Reducer Bushing 1.00" NPT x .25" NPT
63	1	111202	Elbow, Pipe, 1.00" NPT
64	1	111201	Nipple, Pipe 1.00" NPT x 1.50" Lg
65	1	111204	Reducer Bushing, 1.50" NPT x 1.00" NPT
"AU" LEVEL CONTROL OPTION			
66	1	103759 113272	Terminal Block, 2 pin - Single Terminal Block, 5 pin - AUF or AUE
67	1	103746 113273	Float Switch - Single Float Switch - Dual, AUF
68	1 3	105147B 105147A	Jumper Wire, 10" - Single Jumper Wire, 10" - Dual
69	1	105149 105149A	Jumper Wire - Single Jumper Wire - Dual
70	1	625-00163	Wire Connector
71	1	2-31051-224	O-Ring
72	1	105197	Snap Ring
74	2	1-156-1	Hex Hd Screw, 5/16-18 x 1.00" Stainless
75	2	026322	Lockwasher, 5/16
76	1	090516	Cord Clip, Lined
77	1	20-12-1	Lockwasher, #10
78	1	11-17-1	Sck Hd Screw, 10-32 x .375" Lg
79	1	115669-M	ESPS-150 Level Control

Contact your local Distributor or the Factory for other seal materials, cord lengths and other optional equipment.

(*) Included with cord set item #18.



Limited 1 Year Warranty

We warrant that products of our manufacture will be free of defects in material and workmanship under normal use and service for twelve (12) months after notice of owner's acceptance, but no greater than twenty-four (24) months after receipt of shipment, when installed and maintained in accordance with our instructions.

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

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

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

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

CRANE[®]

A Crane Co. Company

PUMPS & SYSTEMS

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

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

START-UP / WARRANTY REGISTRATION FORM

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

When complete, mail this form to:

Crane Pumps & Systems, Inc
Warranty Service Group
420 Third Street
Piqua, Ohio 45356

REPORTS THAT ARE NOT RETURNED CAN DELAY OR VOID WARRANTY.

Pump Owner's Name: _____

Address: _____

Location of Installation _____

Phone _____

Purchased From (Crane Pumps & Systems Representative/Distributor) _____

Pump Model _____ Serial No. _____

Part Number _____

Voltage _____ Phase _____ Hertz _____ Horespower _____

Condition of Cable Jacket Good _____ Fair _____ Poor _____

Resistance of Cable and Pump Motor (measured at pump control)

White-Black _____ Ohms

Resistance of Ground Circuit between Control Panel and outside of pump _____ Ohms

MEG Ohms check of insulation: White to Ground _____ Black to Ground _____

Was Equipment Stored? _____ Length of Storage _____

Liquid Being Pumped _____

Debris in bottom of station? _____ Was debris removed in your presence? _____

Tip bottom two floats (All pumps should remain off).

Tip third float, (and Off float) one pump comes on.

Tip fourth float (and Off float), high level alarm on (on simplex) (both pumps On).

Is the control panel used a Barnes' control panel? Yes _____ No _____

Barnes Pumps control panel part number _____

ELECTRICAL READINGS:

Single Phase:

Voltage supply at panel line connection, Pump Off, L1, L2 _____

Voltage supply at panel line connection, Pump On, L1, L2 _____

Amperage: Load connection, Pump On L1 _____ L2 _____

FINAL CHECK:

Flow; Does station appear to operate at proper rate? _____ Pump down time _____

Comments: _____

Equipment difficulties during start-up _____

MANUALS:

Has operator received pump instructions and part manual? _____

I Certify this report to be accurate (Name of Start-Up person) _____

Employed By: _____ Date: _____

FOLD HERE AND TAPE, DO NOT STAPLE

PLACE
STAMP
HERE

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