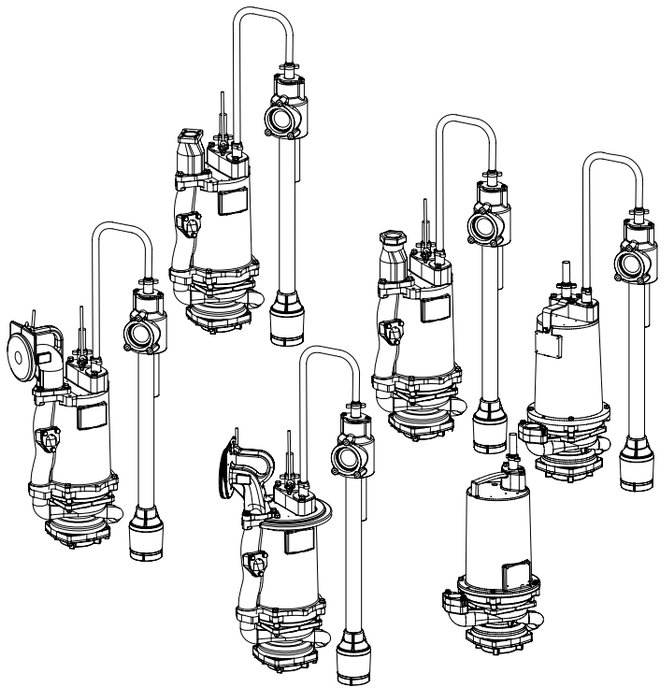
BARNES® PRESSURE SYSTEMS

INSTALLATION MANUAL
Submersible Two-Stage Grinder Pump

Series: OGP
2 HP, 3450 RPM, 60 Hz.



(Standard ESPS shown, SensaPRO optional)

Upgrade Core®

omni GRIND™ plus+ GRINDER PUMPS

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

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SWPA MEMBER

Form No. 119972-Rev. AA

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, burnes or death could result.


Biohazard can cause serious personal injury.


Rotating machinery Amputation or severe laceration can result.


Extremely hot - Severe burnes can occur on contact.


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


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.

A pump that is intended to pump sewage or effluent shall be installed in a tank that is vented in accordance with local plumbing codes and is not classified as hazardous in accordance with the National Electrical Code, ANSI/NFPA 70 unless it is specifically marked for such use.

Replacement Core Unit

200/2000 Series Basins

BARNES®

ECOTRAN SYSTEM

ULTRA GRIND™

GRINDER PUMP SYSTEMS

USER GUIDE

Congratulations on your purchase of a Barnes 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 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 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. 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: _____

BARNES® PRESSURE SYSTEMS

PUMP SPECIFICATIONS:

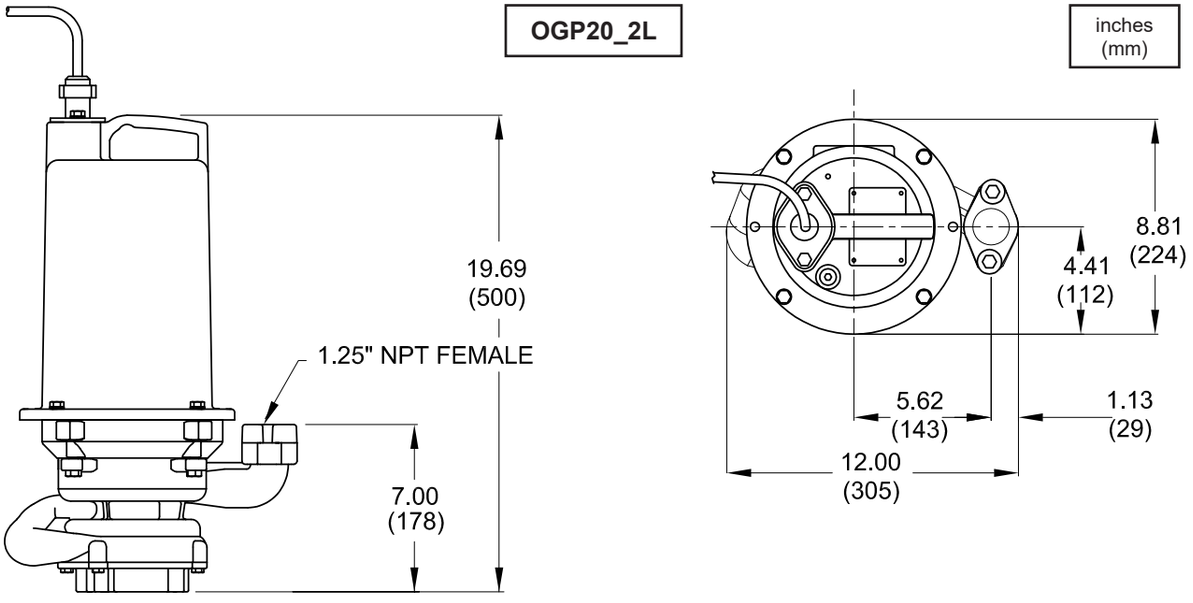
DISCHARGE..... 1¼" NPT, Vertical, Bolt-on Flange
LIQUID TEMPERATURE .... 104°F (40°C) Continuous
MOTOR HOUSING ..... Cast Iron ASTM A-48, Class 30
VOLUTE..... Cast Iron ASTM A-48, Class 30
SEAL PLATE ..... Cast Iron ASTM A-48, Class 30
IMPELLERS
Design ..... 12 vane, vortex, with pump out vanes on back side. Dynamically balanced, ISO G6.3
Material..... 85-5-5-5 Bronze
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
HARDWARE ..... 300 Series Stainless Steel
PAINT..... Air dry enamel, top coat
SEAL *Design*..... Single Mechanical, oil filled reservoir
Material..... Rotating Faces - Silicon-Carbide
Stationary Faces - Silicon-Carbide
Elastomer - Buna-N
Hardware - 300 series stainless steel
CORD ENTRY..... 30 Ft. (9.1m); 15 Ft. (4.5m) Cord on, Compact series (CC, CE,CO, CT) Custom Molded Quick Connected for sealing and strain relief
CORD..... CSA/UL Approved, 12/3, 12/4, or 12/5 Type SOW
SPEED ..... 3450 RPM, 60Hz

UPPER BEARING:
Design..... Single Row, Angular Contact Ball
Lubrication ..... Oil
Load..... Radial & Thrust
LOWER BEARING
Design..... Single Row, Angular Contact Ball
Lubrication ..... Oil
Load..... Radia & Thrust
MOTOR *Design*..... NEMA L-Single Phase Torque Curve, Oil Filled, Squirrel Cage Induction (includes overload protection in the motor), NEMA B-Three Phase Torque Curve.
Insulation..... Class F
SINGLE PHASE..... Capacitor start/capacitor run
THREE PHASE..... Tri-Voltage 200/240-480, requires overload protection to be included in control panel.
LEVEL CONTROL: *AUE, CE, CO, CC & CT*
Standard ..... **SOLD SEPARATELY,** Model ESPS-150, Environmentally sealed pressure switch with CPVC housing, HNBR diaphragm, Custom Molded Quick Connect for Sealing and Strain Relief
Optional ..... SensaPRO, Mechanical Level Control with custom molded quick connect for sealing and strain relief.
OPTIONAL EQUIPMENT.... Additional Cord, Moveable Fitting

Automatic ESPS Level Control
Sold Separately (Single Phase ONLY)

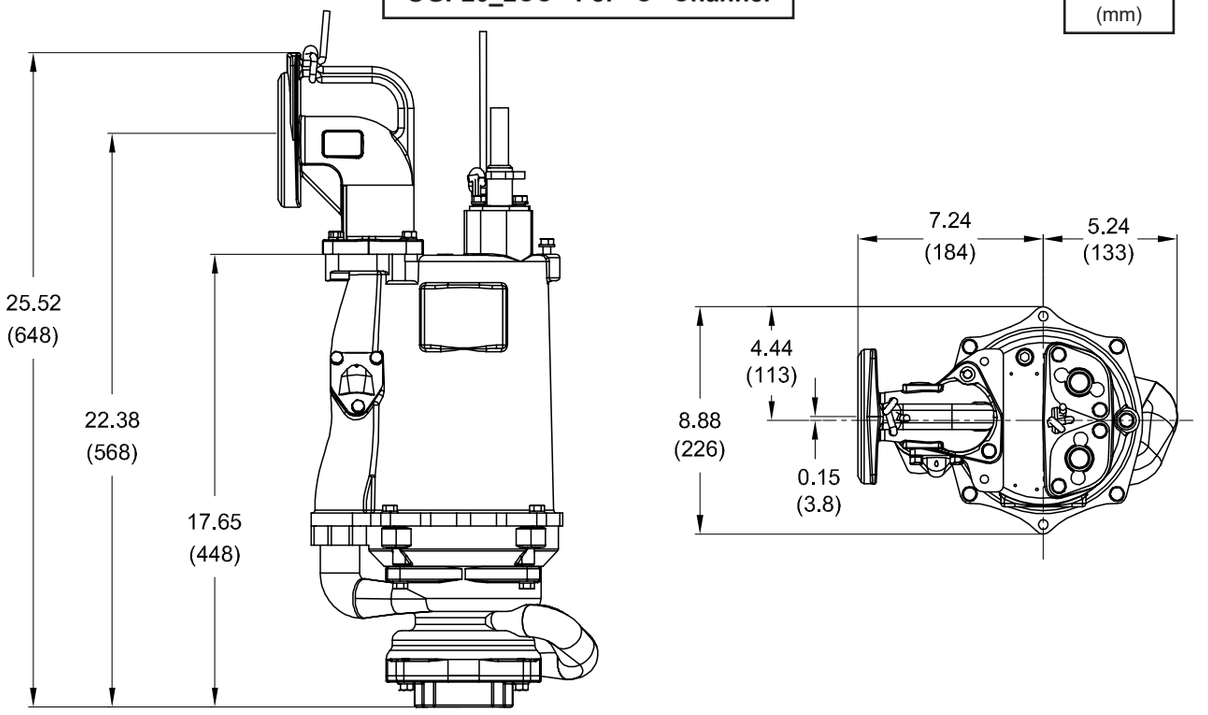
OGP20_2L

inches
(mm)

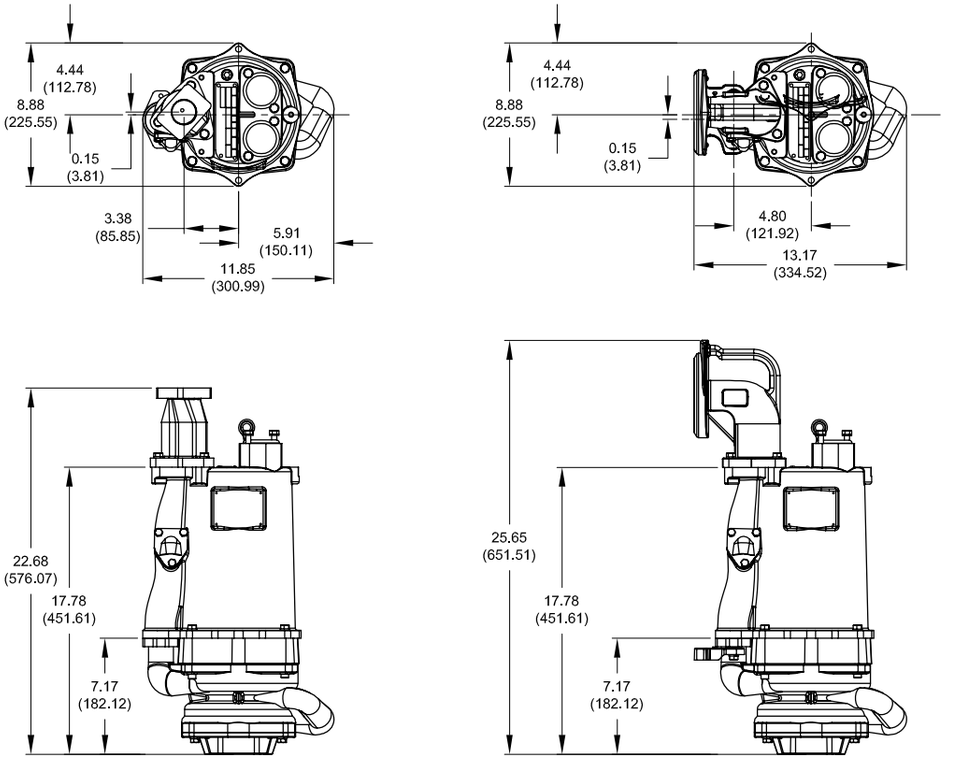


OGP20_2CC - For “C” Channel

inches
(mm)

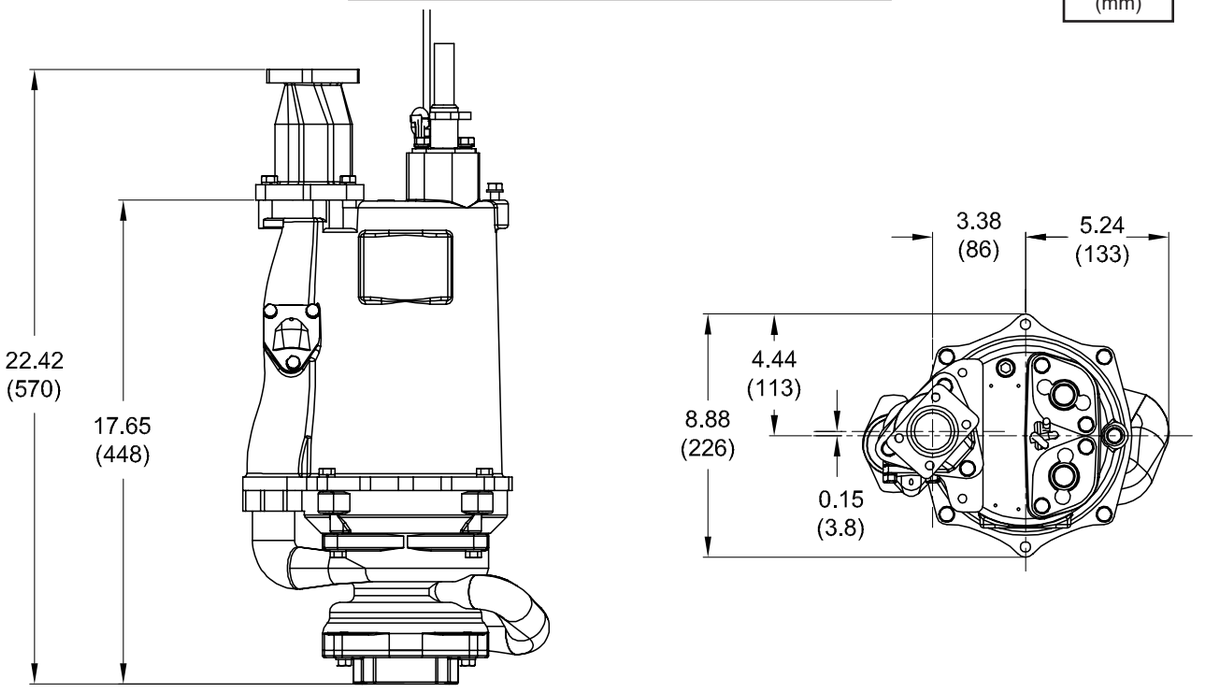


OGP2022CE - For EcoTRAN™

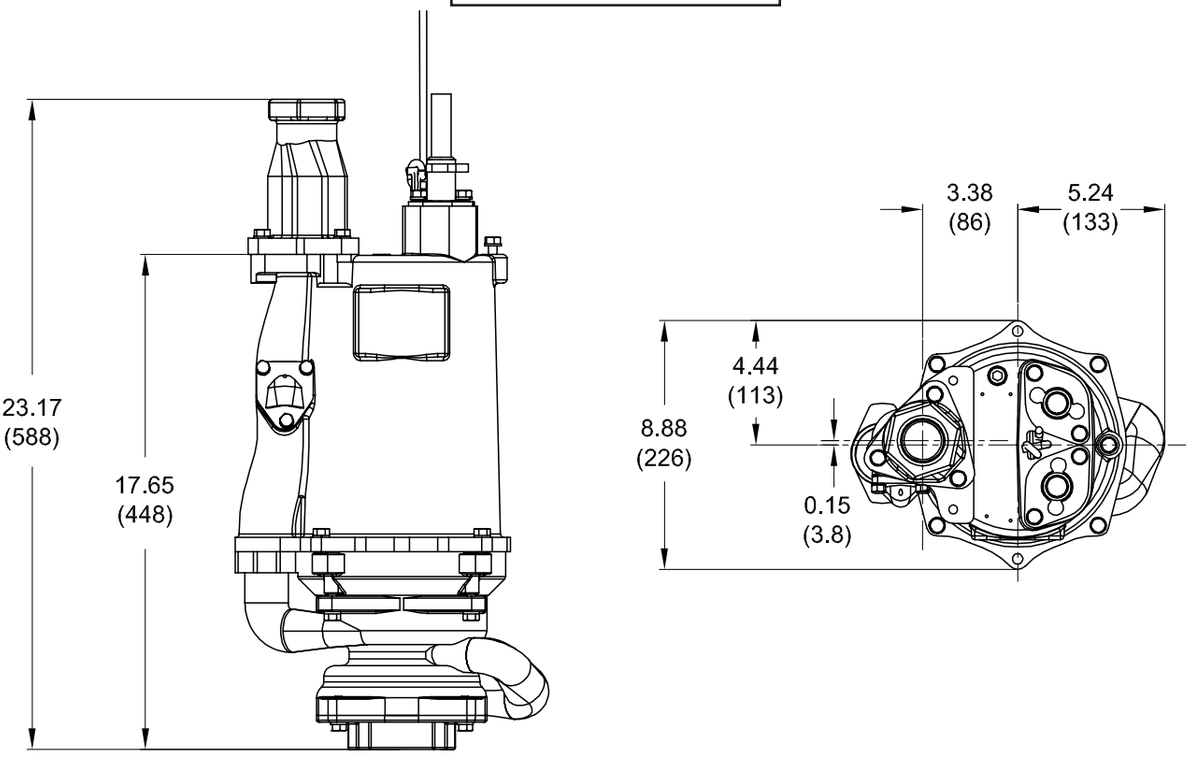


OGP2022CO - For Upgrade Core

inches
(mm)

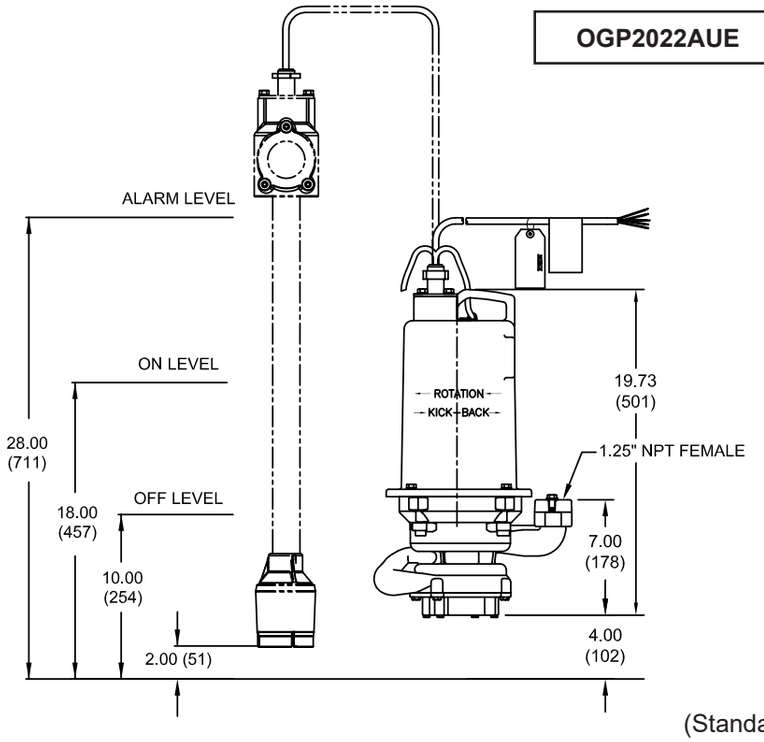


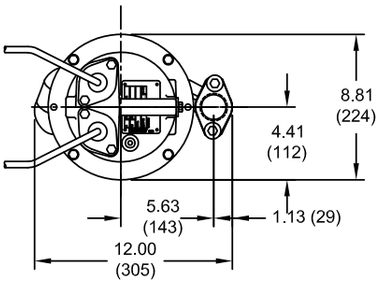
OGP20_2CT - Threaded



OGP2022AUE

inches (mm)





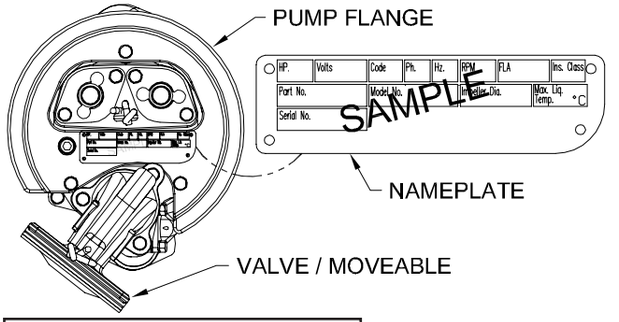
(Standard ESPS shown, SensaPRO optional)

MODEL NO	HP	VOLT	PH	NEMA START CODE	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE	CODE TYPE	CORD O.D. ± .02 (.5) in (mm)	CORD LENGTH Ft. (m)	WINDING RESISTANCE MAIN -- START
OGP2022L	2	240	1	H	16.5	53.8	12/3	SOW	.61 (15.5)	15 (4.6)	1.06 -- 3.60
OGP2022AUE	2	240	1	H	16.5	53.8	12/5	SOW	.71 (15.5)	15 (4.6)	1.06 -- 3.60
OGP2022CC	2	240	1	H	16.5	53.8	12/5	SOW	.71 (15.5)	15 (4.6)	1.06 -- 3.60
OGP2022CE	2	240	1	H	16.5	53.8	12/5	SOW	.71 (15.5)	15 (4.6)	1.06 -- 3.60
OGP2022CO	2	240	1	H	16.5	53.8	12/5	SOW	.71 (15.5)	15 (4.6)	1.06 -- 3.60
OGP2022CT	2	240	1	H	16.5	53.8	12/5	SOW	.71 (15.5)	15 (4.6)	1.06 -- 3.60
OGP2062L	2	200	3	L	10.8	52.7	12/4	SOW	.67 (17.0)	.55 (14.0)	2.08
OGP2032L	2	240	3	L	8.9	43.9	12/4	SOW	.67 (17.0)	.55 (14.0)	2.08
OGP2042L	2	480	3	L	4.5	22.0	12/4	SOW	.67 (17.0)	.55 (14.0)	6.24
OGP2022L Ext. Cap.	2	240	1	H	16.5	53.8	12/4	SOW	.67 (17.0)	.55 (14.0)	1.06 -- 3.60

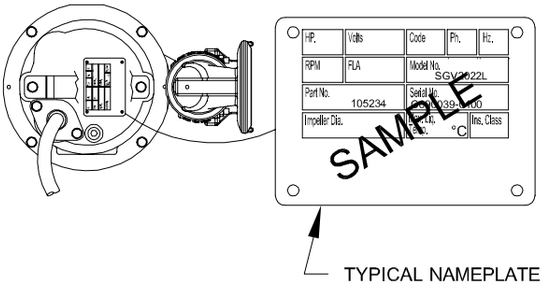
Winding Resistance ± 5%, measured from terminal block.
Pump rated for operation at ± 10% voltage at motor.
For 3 Phase models: Temperature Sensor Cord is 14/3 SOW, 0.55 (14mm) ± .02 (.51mm) O.D.

Recommended Breaker Sizes				
Pump Model	**HP**	**Phase**	**Volts**	**Breaker Size**
OGP2022	2	1	240	25 AMP
OGP2062	2	3	200	15 AMP
OGP2032	2	3	240	15 AMP
OGP2042	2	3	480	10 AMP

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

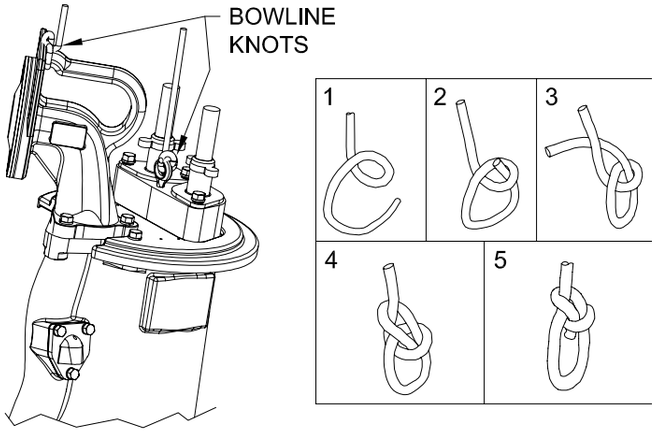


OGP2022CC, CE, CO, CT



OGP20_2L

NOTE: For any reason the Flange Support on the OGP2022CE units is removed or replaced, be shure not to loose Name plate, or re-attached to new support.



Tie the bowline knot where shown per the directions provided (Steps 1 through 5).

On the CC and CE series, tie one bowline knot on the handle of the moveable fitting and one bowline knot in the eyebolt on the pump (See Fig 1).

On the CO and CT (Not Shown) series tie bowline knot on the eyebolt.

On the L series tie bowline knot on the lifting handle. (See Fig 2).

FIGURE 1

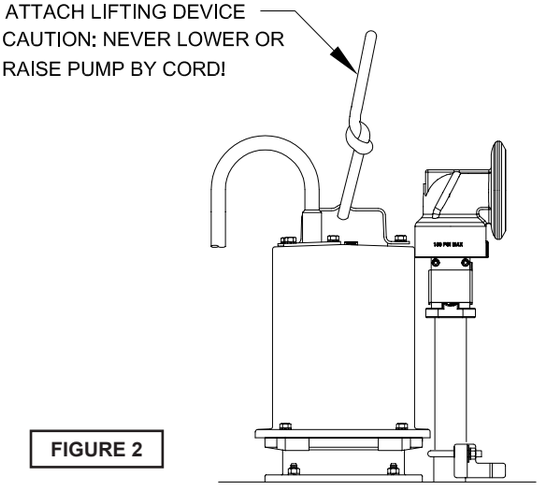


FIGURE 2

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 impeller by hand to assure seal and impeller 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.
3.) Before placing pump into service, pump should be brought to operational temperature range. Excessive or direct heating or cooling should **NOT** be used.

OPERATION TEMPERATURE RANGE: +35ºF (2ºC) to 104ºF (40ºC).

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.**

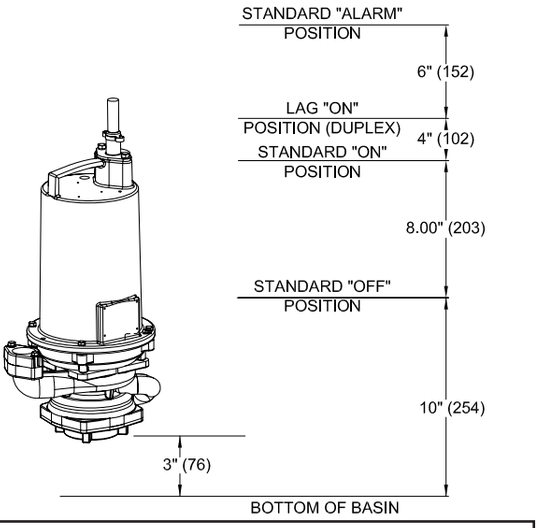


FIGURE 3 - L Series (For Automatic see Level Control manual)

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.

ELECTRICAL CONNECTIONS:

Pump Cables - The cord assembly mounted to the pump must **NOT** be modified in any way except for shortening to a specific application. Any splice 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!**

Thermal Protection The normally closed (N/C) over temperature sensor is embedded in the motor windings and will detect excessive heat in the event an overload condition occurs. The thermal sensor will trip when the windings become too hot and will automatically reset itself when the pump motor cools to a safe temperature. It is recommended that the thermal sensor be connected in series to an alarm device to alert the operator of an overtemperature condition and/or motor starter coil to stop pump.

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

CABLE CONNECTIONS:

Power/Control Cable- Insert female end of cable plug into housing bore aligning alignment mark with hole in terminal block see Figures 4 & 5. Tighten bolts on compression flange until flush with motor housing.

Pump Power - Large Pin
Level/Control - Small Pin

Level control cord has molded fitting at both ends of the cord. Install one end to the Pump and the other end to the Level Control.

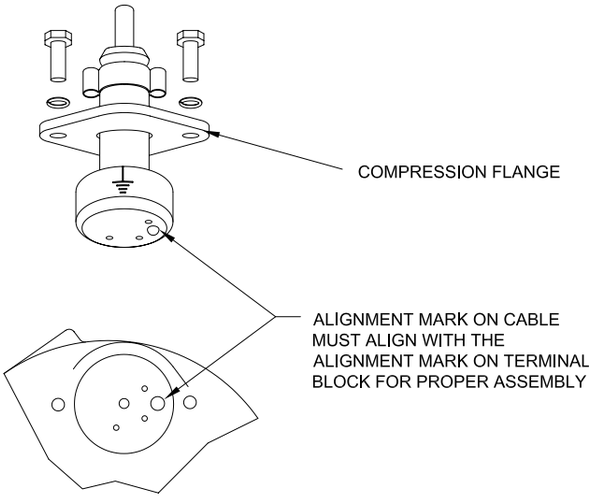


FIGURE 4 -OGP2022L

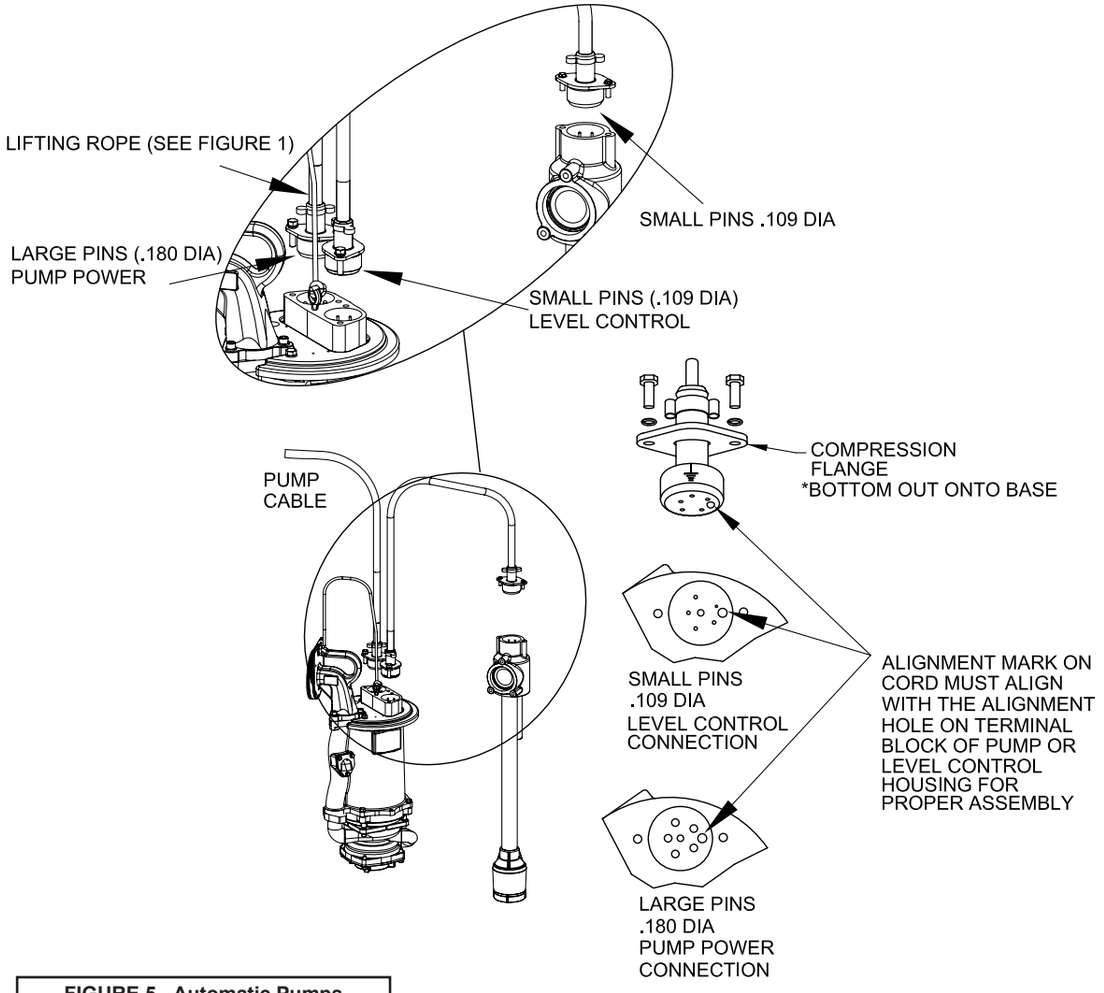
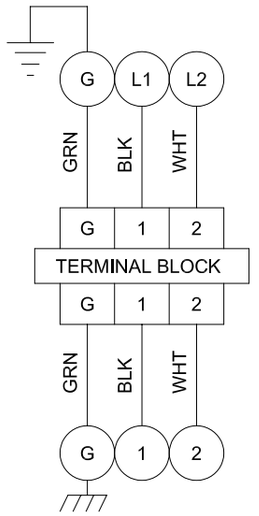


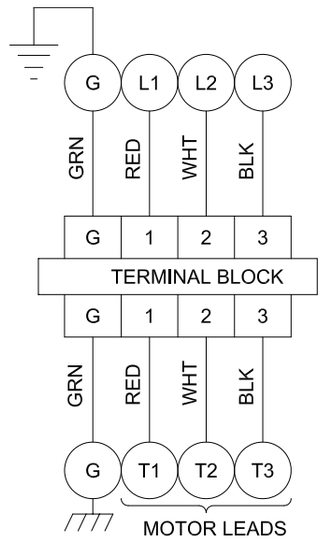
FIGURE 5 - Automatic Pumps OGP2022AUE, CC, CE, CO, CT

(Standard ESPS shown, SensaPRO optional)



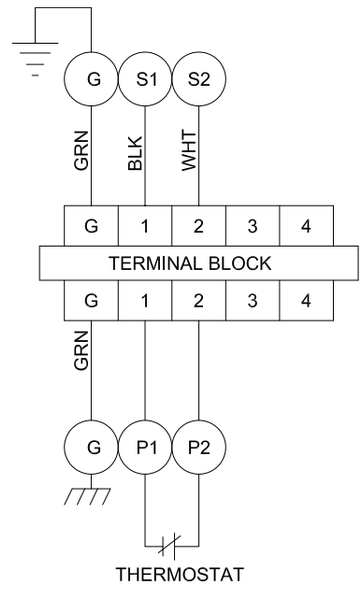
Single phase 240 Volt AC, 60Hz
"L" Series, 12/3 SOW

FIGURE 6



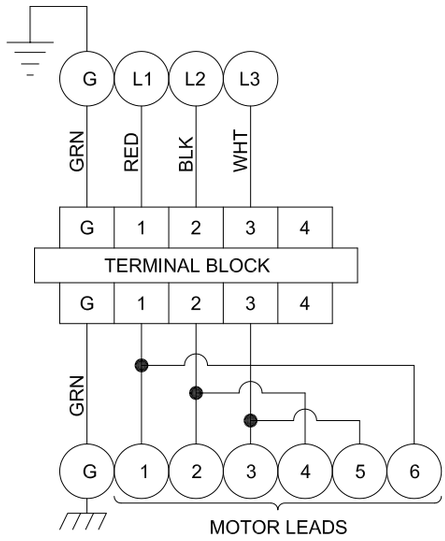
Single phase 240 Volt AC,
External Capacitor

FIGURE 6a



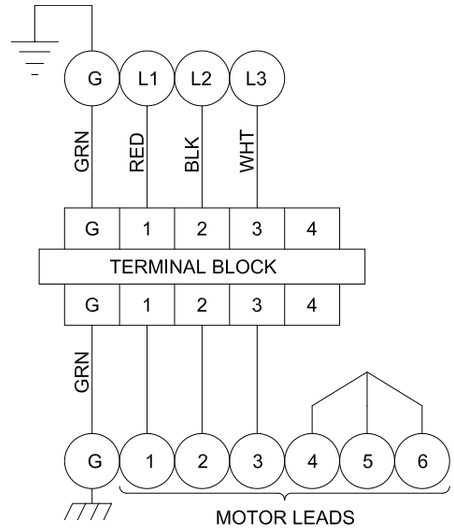
Temperature Sensors

FIGURE 6b



Three Phase, 200-240 Volt AC

FIGURE 6c



Three Phase, 460 Volt AC

FIGURE 6d

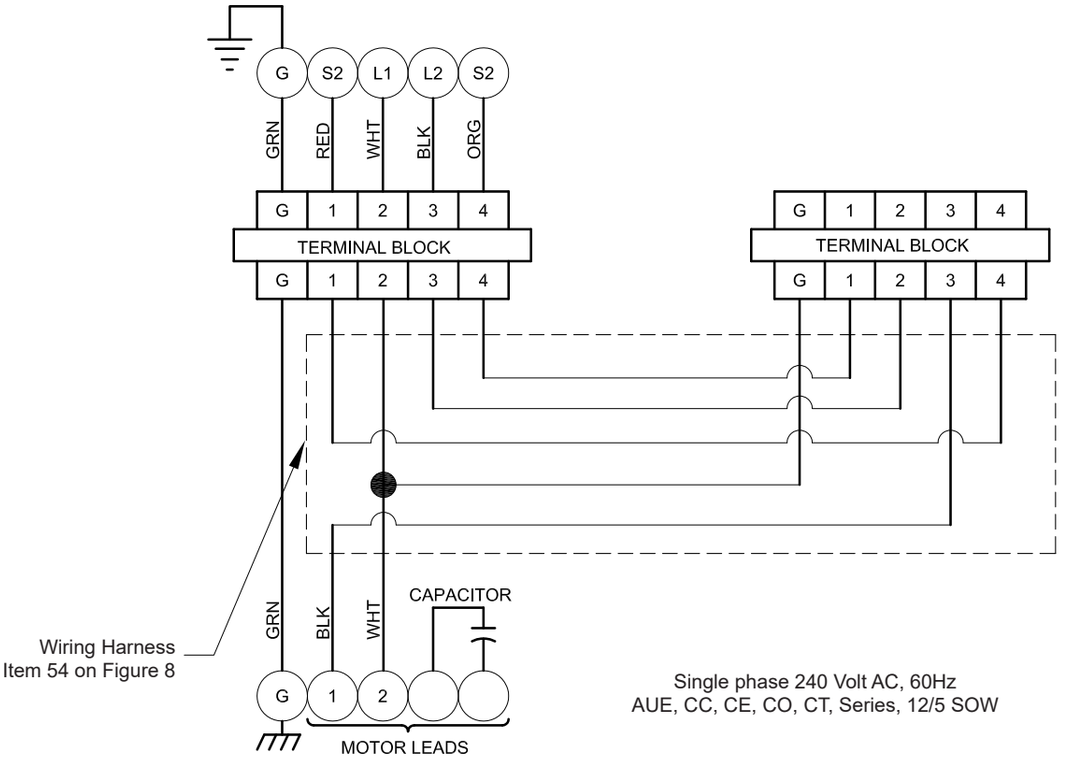

G
S2
L1
L2
S2
GRN
RED
WHT
BLK
ORG
G 1 2 3 4
TERMINAL BLOCK
G 1 2 3 4
G 1 2 3 4
TERMINAL BLOCK
G 1 2 3 4
CAPACITOR
GRN
BLK
WHT
Wiring Harness
Item 54 on Figure 8
G
1
2
MOTOR LEADS
Single phase 240 Volt AC, 60Hz
AUE, CC, CE, CO, CT, Series, 12/5 SOW

FIGURE 7

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	**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. **3a.** Insufficient liquid level. 3b. Switch is unable to activate	1. Check all electrical connections for security. Have electrician measure current in motor leads, if current is within ±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). 3a. Make sure liquid level is at least equal to suggested turn-on point. 3b. Rotate ESPS level control in horizontal position. 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.
Pump will not turn off	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	1. Incorrect voltage 8. Cutter jammed or loose on shaft, worn or damaged, inlet plugged.	
Pump delivers insufficient capacity	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	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.	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	4. Operating at too high a pressure. 5. Discharge restricted. 8. Cutter broken. 13. Piping attachments to buiding structure too rigid or too loose.	

Compact Series - CC, CE, CO, CT

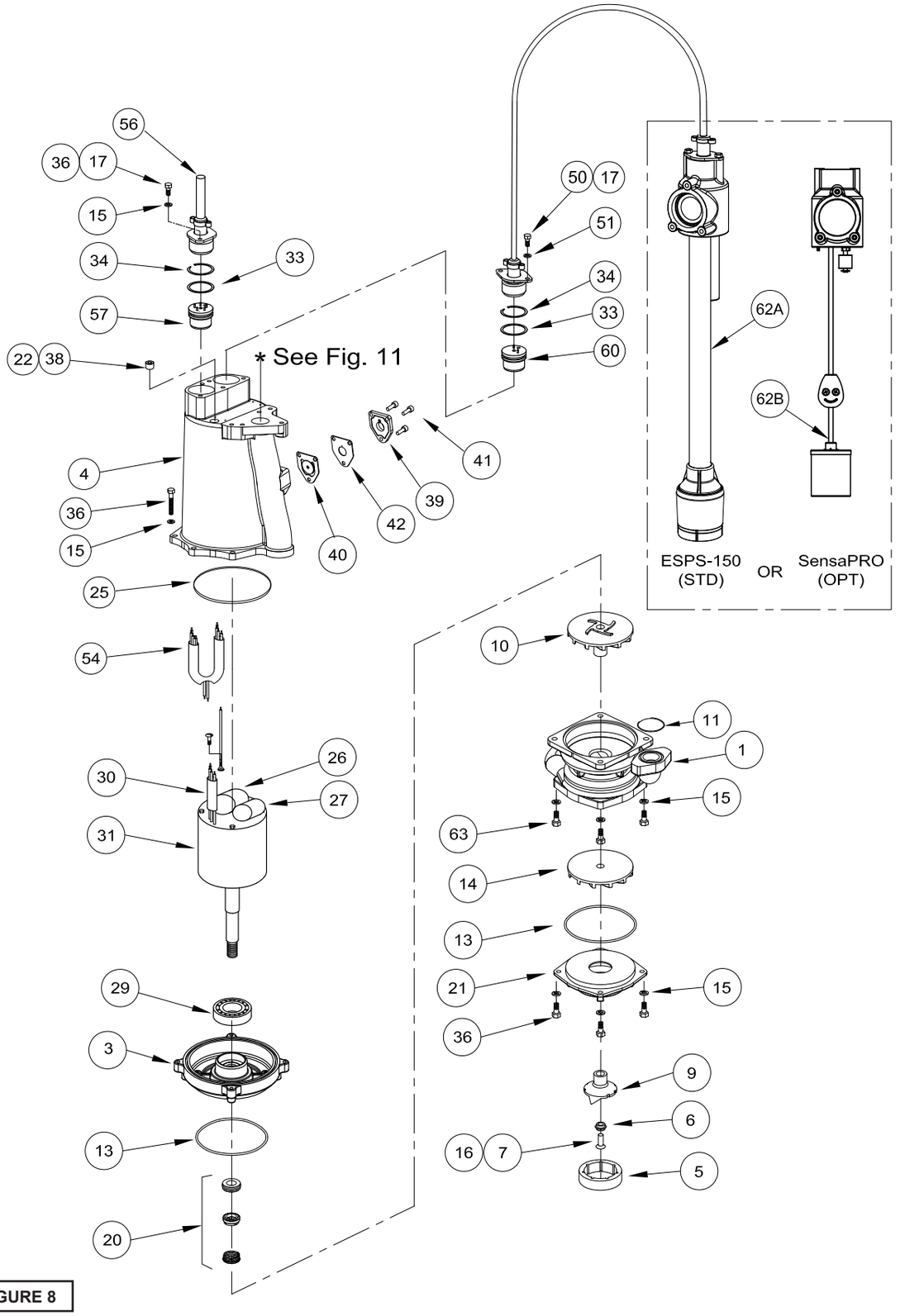


FIGURE 8

Standard Series - L & AUE

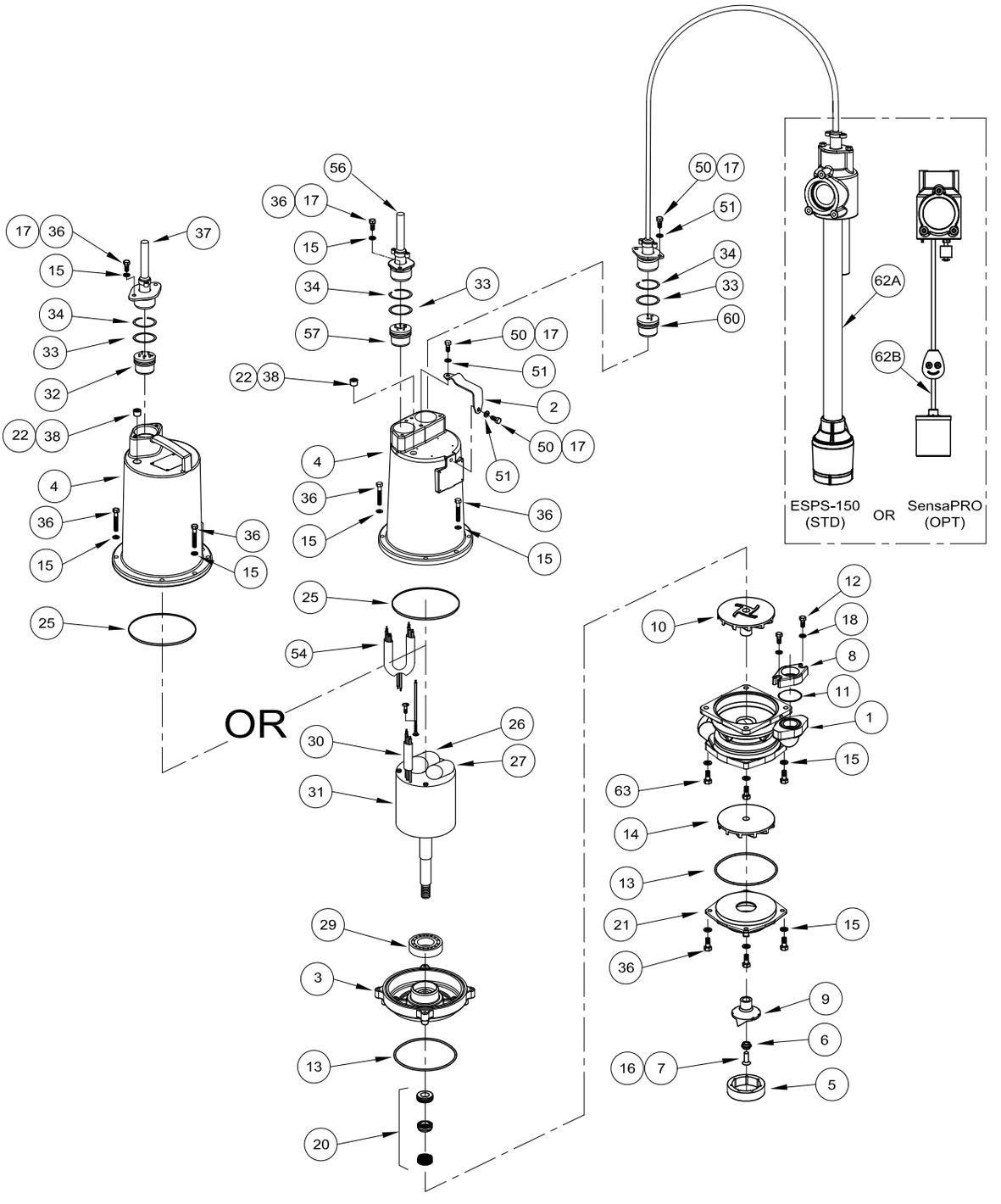


FIGURE 9

PARTS KITS

Seal Repair Kit.....P/N: 116664 Item #'s: 6, 7, 13, 15, 20, 25, 33, 36, 38

Overhaul Kit ..... P/N: 116665 116664 Item #'s: 9, 26, 27, 28, 29, 34

Cutter Kit .....P/N: 116666 Item #'s: 5, 6, 7, 9, 13, 15, 36

PARTS LIST

ITEM	QTY	PART NO.	DESCRITION
1	1	115321 115321A	Volute (L & AU) Volute (CC, CE, CO, CT)
2	1	110331	Handle (AUE)
3	1	115322	Seal Plate
4	1	108342 110328 118256	Motor Housing (L) Motor Housing (AUE)(3PH-L) Motor Housing (CC, CE, CO, CT)
5	1	082085B	Shredding Ring
6	1	067556	Washer
7	1	070704	Skhd Screw, 1/4-20 x .75" SS
8	1	108369 †	Discharge Flange 1-1/4" NPT
9	1	082088	Radial Cutter
10	1	142403	Impeller, Second Stage
11	1	625-01558	O-Ring (-223)
12	2	1-131-1 †	Screw, 5/16-18 x 1.25" SS
13	2	067567	Square Ring
14	1	115323	Impeller, First Stage
15	14	026322	Lockwasher, 5/16" SS
16	A/R	---------	LOCTITE™ RC609
17	A/R	---------	LOCTITE 242
18	2	062941 †	5/16" Flatwasher
20	1	110395SD	Seal, Silicon-Carbide (STD)
21	1	115326	Suction Cover
22	A/R	---------	Permatex Sealent 2C
24	90 oz	029034	Cooling Oil - Mtr. Housing
25	1	095368	Square Ring
26	1	115327A-RC	Capacitor, Run
27	1	115327A-SC ----- OR ----- 144703	Capacitor, Start (200-240 MFD) Capacitor, Start (130-156 MFD)
27A	1	115327A-SSR	Solid State Relay (Not Shown)
28	1	116658	Ball Bearing, Upper (Not Shown)
29	1	116659	Ball Bearing, Lower
30	1 or 2	625-02117	Sleeve
31	1	115327A	Motor, 2HP, 240 Volt, 1 Phase (Includes items 26 thru 29)
		115327B	Motor, 2HP, 240 Volt, 1 Phase External Cap
		125375	Motor, 2HP, 3PH, OGP, 50/60Hz
32	1	103760	Terminal Block, Power, Manual
33	1 or 2	2-31051-224	O-Ring
34	1 or 2	105197	Retaining Ring

ITEM	QTY	PART NO.	DESCRITION
36	14	1-156-1	Screw, 5/16-18 x 1.00" SS
37	1	109498XC 109498 109492XC 103741XC	12/3 Cord Set, 30Ft (STD) 12/3 Cord Set, 15Ft (Compact) 12/4 Cord Set, 30Ft (STD) (For 3PH or Ext. Cap 1PH) 14/3 Cord Set, 30Ft (STD) (For Temperature Sensors)
38	1	014270	Pipe Plug, C'sunk, 3/8" NPT
39	1	119104B	Anti-Siphon Cover
40	1	112422	Gasket
41	3	03121-B	HXHD Screw 1/4-20 x .75" SS
42	1	105377B	Anti-Siphon Cover Plate
*** Models with ESPS Level Control**			
50	4	1-156-1	Screw, 5/16-18 x .1" SS
51	4	026322	Lockwasher, 5/16" SS
54	2	113287A	Wiring Harness Assy
56	1	113274XC 113274 EcoTRAN	Cord Set (AUE), 30 Ft Cord Set (CC, CT, CE), 15 Ft Cord Set (CE-See man.119061)
57	1	113271	Terminal Block, Power
60	1	134127	Terminal Block, Level Control (AU - series)
62A	1	121676-M 119068	ESPS-150 (STD) Level Control CE Only
62B	1	142571	SensaPRO (OPT) CE & CO Only
63	4	2-23030-50	SkHd Screw 5/16-18 x 1.25"

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

(*) Automatic - ESPS Level Control

(†) L Series ONLY. NOT USED ON CC, CE, CO, CT

MOVEABLE ASSEMBLY P/N: 116596* (OGP-L) & 116597* (OGP-AU) PARTS LIST For Grinder, “C” Channel Basin Package			
ITEM	**QTY.**	**PART No.**	**DESCRIPTION**
1	1	112354	Check Valve/Upper Moveable
2	1	116605 116606	Upper Pump Bracket Assy - OGP Upper Pump Bracket Assy - OGP-AU, OGP 3-Phase
3	1	102174	Pipe Nipple
4	1	107360	Lower Guide Bracket Assy

(*) Pump **NOT** included under this part number. The Moveable Assembly will be factory assembled to pump when a Basin Package Sytem is ordered.

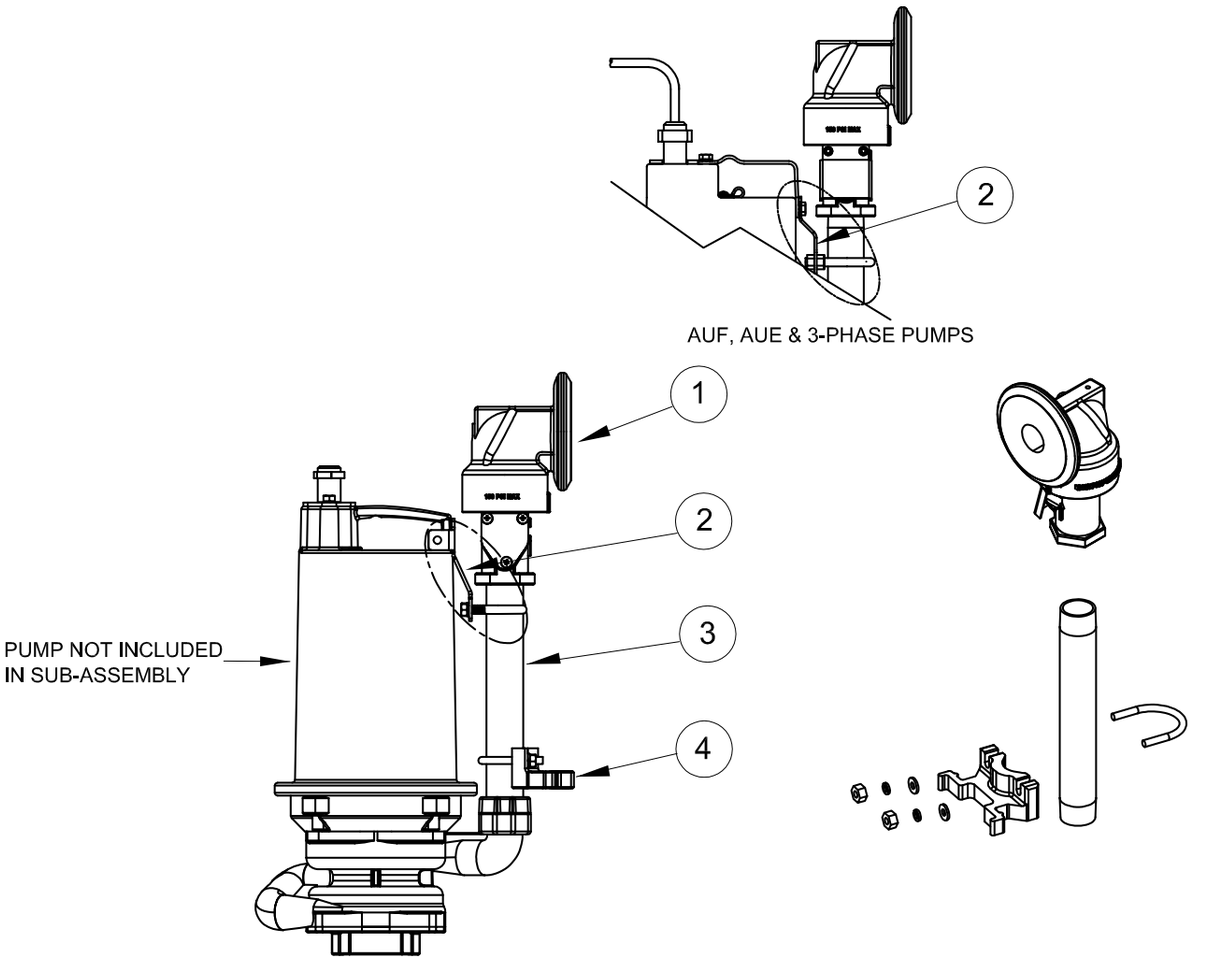


FIGURE 10

DISCHARGE ASSEMBLIES for CC, CE, CO & CT Grinder Pumps			
ITEM	**QTY.**	**PART No.**	**DESCRIPTION**
1	1	121225	O-ring, 4mm
2	1	122891	Valve Seat Flapper, Valox
3	1	118252	Gasket
4	1	124538	Lower Guide Bracket
5	2	027113	HXHD Screw, 5/16-18 x .875”
6	3 or 5	026322	Lock Washer 5/16 SS
7A 7B 7C 7D	1 1 1 1	120896 118250 118794 118794 NPT	Valve Body (CC) Valve Body (CE) Valve Body (CO) Valve Body (CT)
8	1	625-01558	O-Ring, -223, 1.609”
9	1	119854	Diaphragm
10	1	118248	Diaphragm Retaining Plate
11	8	118267	FHHS Screw #10-32 x .75” SS
12	3	2-23030-50	SkHd Screw 5/16-18 x 1.25”

The Discharge Assembly will be factory assembled to pump.

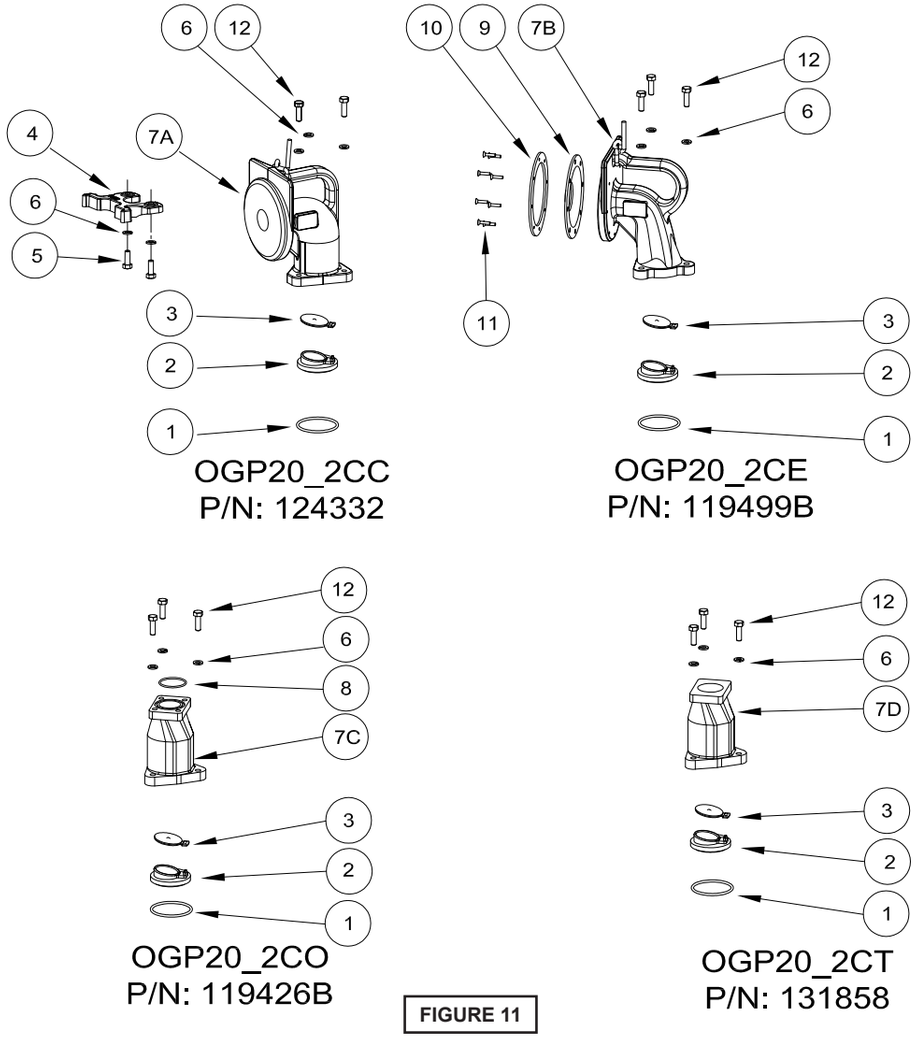


FIGURE 11

IMPORTANT!
WARRANTY REGISTRATION

Your product is covered by a warranty:
www.cranepumps.com/downloadables/CATALOGS_OIPMs/Warranty/24MonthWarranty.pdf

If you have a claim under the provisions of the warranty, contact your local Crane Pumps & Systems, Inc. Distributor.

RETURNED GOODS
RETURN OF MERCHANDISE REQUIRES A "RETURNED GOODS AUTHORIZATION".
CONTACT YOUR LOCAL CRANE PUMPS & SYSTEMS, INC. DISTRIBUTOR.

Products Returned <u>Must</u> 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.