



**Installation, Operation &
Maintenance Manual**
Self-Priming Frame
Mounted Pump

**BSP15ICU,
BSP20ICU &
BSP25ICU**

3" x 3"
Universal Drive



IMPORTANT! - Read all instructions in this manual before operating or servicing a pump.

Before installation, read the following instructions carefully. Failure to follow instruction and safety information could cause serious bodily injury, death and/or property damage. Each Barmesa product is carefully inspected to insure proper performance. Closely following these instructions will eliminate potential operating problems, assuring years of trouble-free service.

⚠ DANGER "Danger" indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

⚠ WARNING "Warning" indicates an imminently hazardous situation which, if not avoided, MAY result in death or serious injury.

⚠ CAUTION "Caution" indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.

IMPORTANT! - Barmesa Pumps is not responsible for losses, injury or death resulting from failure to observe these safety precautions, misuse, abuse or misapplication of pumps or equipment.

ALL RETURNED PRODUCTS MUST BE CLEANED, SANITIZED, OR DECONTAMINATED PRIOR TO SHIPMENT, TO INSURE EMPLOYEES WILL NOT BE EXPOSED TO HEALTH HAZARDS IN HANDLING SAID MATERIAL. ALL APPLICABLE LAWS AND REGULATIONS SHALL APPLY.

⚠ WARNING Installation, wiring, and junction connections must be in accordance with the National Electric Code and all applicable state and local codes. Requirements may vary depending on usage and location.

⚠ WARNING Installation and servicing is to be conducted by qualified personnel only.



Keep clear of suction and discharge openings. Do not insert fingers in pump with power connected; the rotating cutter and/or impeller can cause serious injury.



Always wear eye protection when working on pumps. Do not wear loose clothing that may become entangled in moving parts.



⚠ DANGER Pumps build up heat and pressure during operation. Allow time for pumps to cool before handling or servicing the pump or any accessory items associated with or near the pump.



⚠ DANGER Risk of electric shock. To reduce risk of electric shock, always disconnect pump from power source before handling any aspect of the pumping system. **Lock out power and tag.**

⚠ WARNING Do not use these pumps in water over 160° F. Do not exceed manufacturers recommended maximum performance, as this could cause the motor to overheat.



⚠ DANGER This pump is not intended for use in swimming pools or water installations where there is human contact with pumped fluid.



⚠ WARNING Operation against a closed discharge valve will cause premature bearing and seal failure on any pump, and on end suction and self priming pump the heat build may cause the generation of steam with resulting dangerous pressures. It is recommended that a high case temperature switch or pressure relief valve be installed on the pump body.

⚠ WARNING Carefully read instruction manuals supplied with motor or engine before operating or servicing.

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

⚠ DANGER These pumps are not to be installed in locations classified as hazardous in accordance with the National Electric Code, ANSI/NFPA 70.

IMPORTANT! - Prior to installation, record Model Number, Serial, Amps, Voltage, Phase and HP from pump name plate for the future reference. Also record the Voltage and Current Readings at Startup:

Model Number: _____

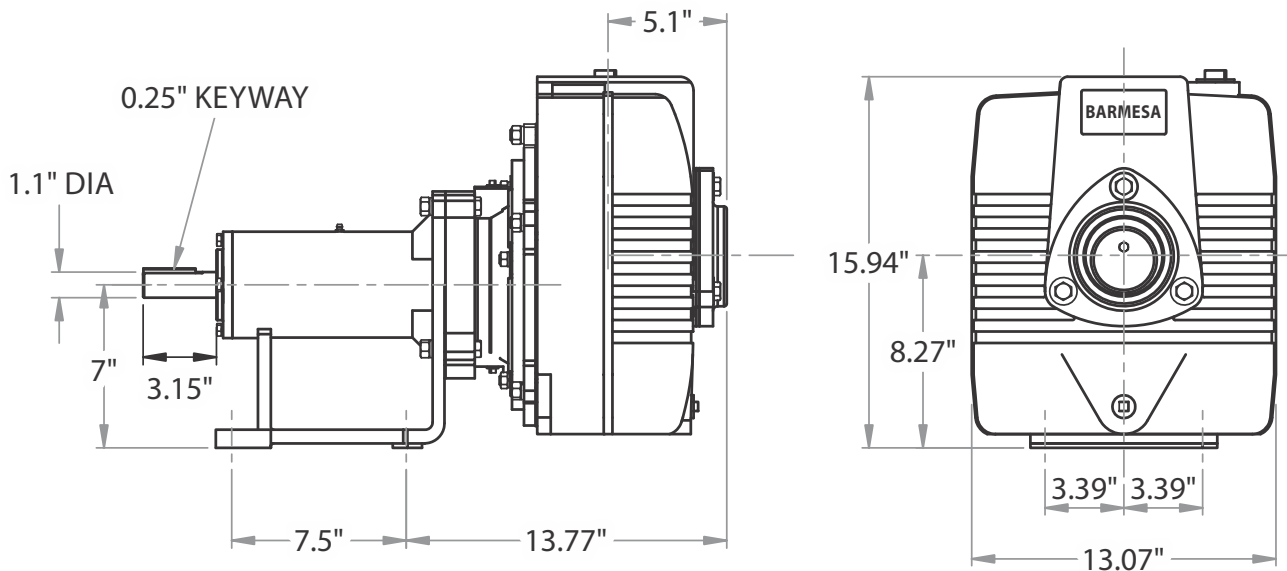
Serial: _____

Amps: _____ Voltage: _____

Phase: _____ HP: _____

SUCTION/DISCHARGE:	3" x 3" NPT, female flange.
LIQUID TEMPERATURE:	160 °F (71 °C) max.
VOLUTE:	Cast iron ASTM A-48 class 30.
BODY:	Cast iron ASTM A-48 class 30.
PEDESTAL:	Cast iron ASTM A-48 class 30.
IMPELLER:	Open, trash type, dynamically balanced. Cast iron ASTM A-48 class 30.
SHAFT:	Stainless steel.
SHAFT SLEEVE:	Stainless steel.
O-RINGS:	Buna-N.
PAINT:	Air dry enamel, water based.
SEAL:	Single mechanical with lip seal, water lubricated. Ceramic stationary part, carbon ring seal and exclusion in the rotating part. Buna-N elastomer and stainless steel spring.
CHECKVALVE:	Flap-neoprene, weight of steel.
HARDWARE:	Steel.
BEARING-DRIVE END:	Single row, ball, grease lubricated.
BEARING-PUMP END:	Single row, ball, grease lubricated.
SHIM SET:	Stainless steel.
OPTIONAL:	Bronze fitted volute and impeller.

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► Receiving inspection

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. If the manual is removed from the packaging, do not lose or misplace.

► Storage

Any product that is stored for a period longer than six (6) months from the date of purchase should be bench tested prior to installation. A bench test consists of, checking the impeller to assure it is free turning and a run test to assure the motor (and switch if provided) operate properly.

► Controls

Manual models require a separate approved pump control device or panel for automatic operation. Be sure the electrical specification of the control selected properly match the electrical specifications of the pump.

► Installation

Location - The pump should be located as near as possible to the liquid to be pumped and in no case should the pump be more than 25 feet above the surface of the liquid supply. The pump should always be as level as possible.

Locate the pump on a firm footing to make sure the pump will not move due to vibration. Flex coupled and V-belt driven units should be permanently grouted onto a cement foundation. The pumps should be level to provide favorable operating conditions. In addition, the flexible coupling should be realigned after grouting in order to eliminate excessive wear on the coupling.

Allow a minimum of 18 inches in front of the pump case cover or hatch cover to permit easy removal and access to the interior of the pump. On belt driven units, allow a minimum of 10 inches at the shaft end to permit easy removal of the pedestal or rotating cartridge.

All pump units rotate clockwise when looking from the driven end of the pump. The impellers are threaded on the shaft and it is necessary to slide one half of the flexible coupling back when checking rotation in order to eliminate the possibility of unscrewing the impeller and damaging the pump. **NOTE:** Where impellers thread on pump shaft, never check the direction of electric motor rotation without first disconnecting flexible coupling.

⚠ CAUTION THIS PUMP SHOULD NOT BE OPERATED WITHOUT A STRAINER ON THE END OF THE SUCTION LINE TO PREVENT STICKS, STONES, RAGS AND OTHER FOREIGN MATTER FROM BEING DRAWN INTO THE IMPELLER. THE STRAINER SHOULD BE CLEANED REGULARLY TO INSURE FULL FLOW.

Suction - It is advisable to use a suction line of the same size as the pump port size. All horizontal suction lines should slope up to the pump to avoid trapped air pockets. An adjustable stand, pipe clamp or floor flange must be installed to support the weight of the suction line. Using a smaller suction line than the pump port size can cause internal damage to the pump.

Discharge - Connect discharge hose or pipe to the side outlet on the discharge tee or to the discharge elbow.

Pump Lubrication - The only part of the pump requiring lubrication is the bearing housing. The impeller and shaft seal are lubricated by the liquid being pumped and need no other lubrication.

The bearing housing is factory filled with 90 weight oil, for bearing lubrication. The oil level in the bearing housing should be periodically checked. This is accomplished by removing the oil dip stick and checking oil level shown on it. If oil is required, add through the dip stick hole.

► Operation

Priming - Remove the priming plug(s) (25) in the top of the pump body (18), and fill the pump body completely with liquid as free of solids as possible. In freezing weather, the pump should be primed with warm water, if possible, to prevent any damage that may be caused by ice films within the pump.

⚠ CAUTION DO NOT OPERATE PUMP WITHOUT LIQUID IN PUMP BODY AS OPERATING DRY WILL RESULT IN DAMAGE TO THE SEAL.

Starting - Start pump by applying power to motor or by starting engine as outlined in the **ENGINE or MOTOR INSTRUCTION MANUAL**.

Shutdown - Operation may be discontinued by stopping the engine as outlined in the **ENGINE MANUAL** or by disconnecting electric power if motor driven. When the pump has been operating in freezing weather or in liquid containing a considerable amount of solids, it is advisable to drain the pump body by removing drain plug and flushing the solids out of the body. Replace the drain plug.

► **Service & Repair**

Check Valve Service - To clean out or repair check valve, disconnect suction piping. Remove hex. head screw (24) and suction flange (23). Remove gasket (22B), weights (22A), (22F), hex. head screw (22D), lockwasher (22C) and hex. nut (22E) and replace if worn or damaged.

When replacing gasket and weight assembly onto pump body make sure that HINGE section of gasket is at TOP and that LARGE weight is on PUMP SIDE of gasket.

Body, Volute and Impeller - Disconnect suction and discharge piping. Remove hex. nuts (21) and lockwashers (20) then remove body (18) and O-ring (4) from seal plate (38). Pull volute (15) and gasket (17) from seal plate (38). Remove hex. head screw (13) and shakeproof washers (14). Unscrew the impeller (12) from shaft (1) in the right hand direction. Take note of the size and quantity of shims (10) & (11) used.

At reassembly make sure to use a combination of impeller shims (10) and (11) to result in an impeller-to-body clearance of approximately 0.015" max.

Shaft Seal Service - Remove rotating member, spring and retaining ring of seal (9) from shaft. To remove stationary, remove hex. nuts (34) and lockwashers (37) and pull seal plate (38) from coupling head (32). Press stationary out of seal plate. If any part shows wear or damage replace complete seal (9).

To reassemble, lightly oil ring and press stationary into seal plate (38). Lightly oil inner surface of stationary and replace seal plate (38) onto couplig head (32). With lapped surface facing pedestal, slide rotating member onto shaft until lapped faces of rotating member and stationary are together.

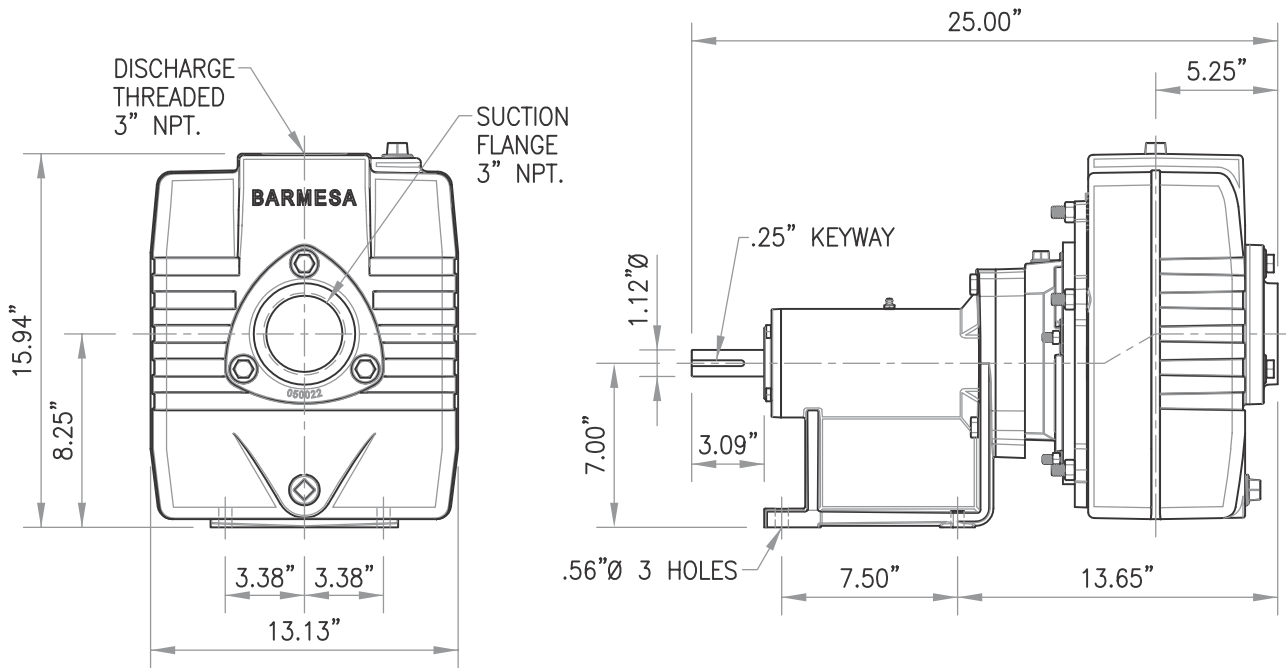
Pedestal & Shaft - Remove hex. head screws (5) and lockwashers (6) from bearing frame (2). Remove bearing cap (28), o-ring (41), lip seal (42) and snap ring (52). Remove shaft, slinger and bearing assembly. To replace inboard bearing (7) remove snap ring (27) and slinger (3).

Press off bearings (7) & (8) from shaft (1). Remove hex. head screws (44), lockwashers (47) & hex. nuts (48) and pull coupling head (32) from bearing frame (2), replace lip seal (36).

REASSEMBLE REMAINDER OF PUMP IN OPPOSITE ORDER. Refill coupling head with gear oil and pedestal with grease.

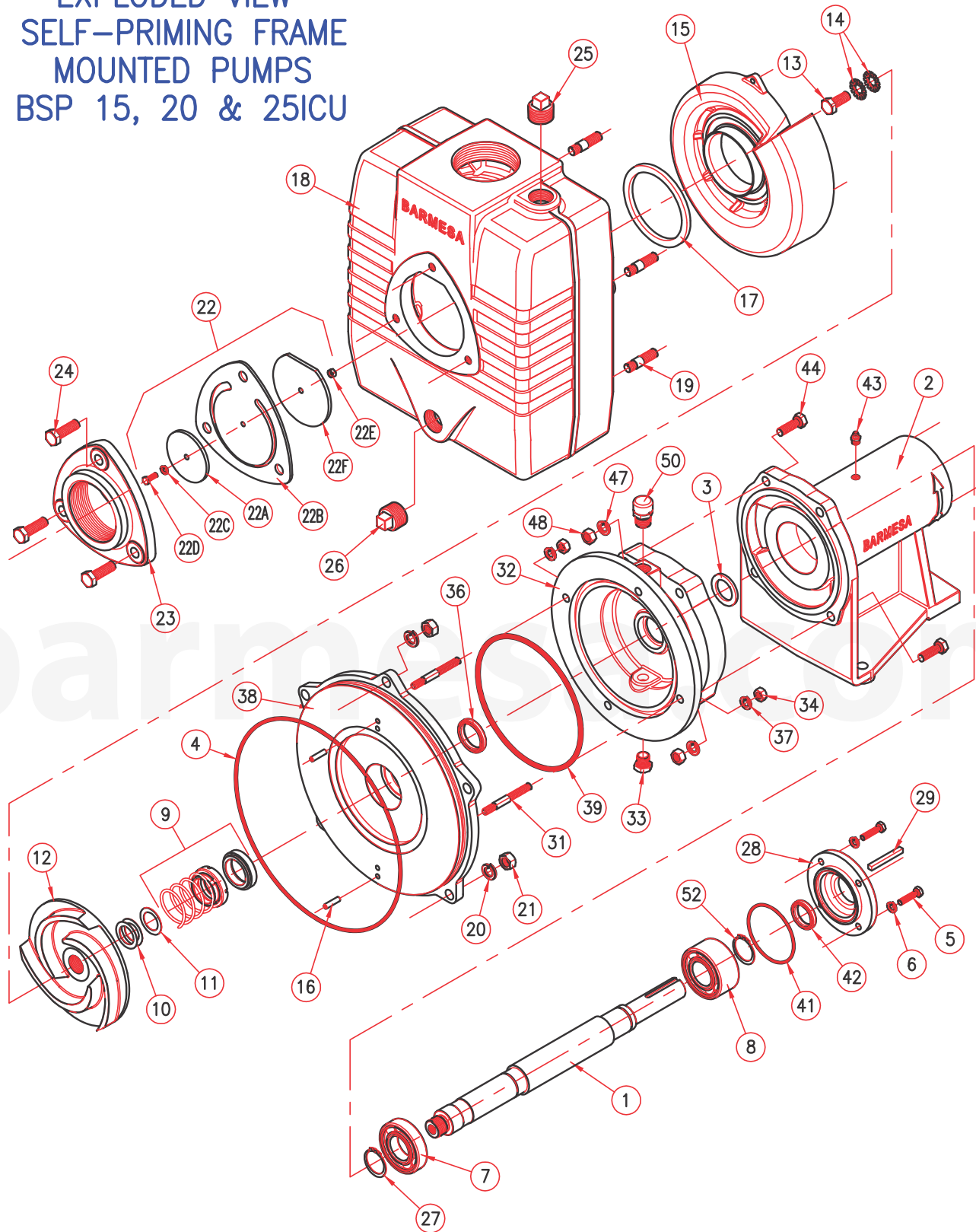
⚠ CAUTION HANDLE SEAL PARTS WITH EXTREME CARE. DO NOT DAMAGE LAPPED FACES.

DIMENSIONAL DRAWING SELF-PRIMING UNIVERSAL/ELECTRIC DRIVEN PUMP BSP251CU



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EXPLODED VIEW
 SELF-PRIMING FRAME
 MOUNTED PUMPS
 BSP 15, 20 & 25ICU



For repair part please supply: Model Number and Serial as shown on Name Plate, and Part Description and Part Number as shown on parts list.

Self Priming Frame Mounted Pumps BSP15, 20 & 25ICU, Parts List

Item	Part No.	Description	Qty		Material
1	30400776	Shaft	1		Stainless
2	03040031	Pedestal	1		Cast Iron
3	92010014	Slinger	1		Buna
4	92010062	O-Ring	1	■ ◆	Buna
5	91010343C	Hex Head Screw 5/16-18UNC x 1.0" lg.	4		Stainless
6	91010060	Lockwasher 5/16"	4		Stainless
7	31020022	Inboard Bearing	1	◆	
8	31020044	Outboard Bearing	1	◆	
9	31030156	Shaft Seal	1	■ ◆	C/CE/N/SS
10	91010121	Shim 0.010"	3	■ ◆	Stainless
11	91010130	Shim 0.031"	2	■ ◆	Stainless
12	03140233	Impeller 15CCE-ICU 6.00"Ø	1		Cast Iron
	03140226				Bronze
	03140234	Impeller 20CCE-ICU 6.00"Ø			Cast Iron
	03140227				Bronze
	03140235	Impeller 25CCE-ICU 7.00"Ø			Cast Iron
03140228	Bronze				
13	91010349B	Hex Head Screw ½"-20UNF x 1.0" SS	1	■ ◆	Stainless
14	91010081	Shakeproof Washer ½" SS	2	■ ◆	Stainless
15	03120040	Volute 15-20CCE-ICU	1		Cast Iron
	03120036				Bronze
	03120041	Volute 25CCE-ICU			Cast Iron
	03120037				Bronze
16	91010181	Volute Pin	2		Steel
17	92010122	Volute Gasket	1	■ ◆	Buna
18	03090098	Body	1		Cast Iron
19	91010378C	Stud ½"-13UNC x 2" lgo. SS	5		Stainless
20	91010062	Lockwasher ½" SS	5		Stainless
21	91010415	Hex Nut ½" SS	5	■	Stainless
22		Check Valve Assy	1	■	
22A	03080007	Weight 2¾"Ø	1		Steel
22B	92010217	Gasket	1	■ ◆	Neoprene
22C	91010066	Lockwasher ¼" SS	1		Stainless
22D	91010407B	Round Hd Screw ¼"-20UNC x 1.0" lg.	1		Stainless
22E	91010411C	Hex Nut ¼" SS	1		Stainless
22F	03080012	Weight 4"Ø	1		Steel
23	03050022	Suction Flange	1		Cast Iron
24	91010263	Hex Head Screw ½"-13UNC x 1½"	3		Steel
25	93010141	Pipe Plug 1" NPT	1		Cast Iron
26	93010141	Pipe Plug 1" NPT	1		Cast Iron
27	31010004	Snap Ring	1	◆	Steel
28	03170022	Bearing Cap	1		
29	30400633	Shaft Key ¼" x ¼" x 2¼" lg.	1	◆	Steel
31	91010374	Stud 3/8"-16UNC x 2.00" SS	4		Stainless
32	03020054	Coupling Head	1		Cast Iron
33	93010149	Pipe Plug 3/8" NPT	1		Steel
34	91010433	Tuerca de 3/8"-16UNC SS	4		Stainless
36	31010017H	Lip Seal (1.375"x1.828"x.312")	1	■ ◆	Brand CR
37	91010061	Lockwasher 3/8" SS	4		Stainless
38	03180064	Seal Plate	1		Cast Iron
39	92010066H	O-Ring	1	■ ◆	Buna N
41	92010066G	O-Ring	1	◆	Buna N
42	31150013	Lip Seal (1.125"x1.562"x.312")	1	◆	Brand CR
43	93010041	Relief Fitting 1/8" NPT	1		Steel
44	91010348C	Hex Head Screw 7/16-14UNC x 2½" lg.	4		Stainless
47	91010071	Lokwasher 7/16"	4		Stainless
48	91010434	Hex Nut 7/16"-14UNC	4		Stainless
49	31010035	Gear Oil, ISO VG68	4 oz.		
50	80062501	Vented Plug	1		Steel
51	91010043	Grease, Lithium Soap Base, NGLI-2	4 oz.		
52	31010004	Snap Ring	1		Steel

Seal Kit (■): 4, 9, 10, 11, 13, 14, 17, 20, 21, 22B, 36, 39

Overhaul Kit (◆): 4, 7, 8, 9, 10, 11, 13, 14, 22B, 27, 29, 36, 39, 41, 42, 43

For repair part please supply: Model Number and Serial as shown on Name Plate, and Part Description and Part Number as shown on parts list.

 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.		
Symptom	Possible Cause(s)	Corrective Action
Little or no discharge and unit will not prime	<ol style="list-style-type: none"> 1. Casing not filled with water 2. Total head too high 3. Suction head higher than pump designed for 4. Impeller partially or completely plugged 5. Hole or leak in suction line 6. Foot-valve too small 7. Impeller damaged 8. Foot-valve or suction line not submerged deep enough in water; pulling air 9. Insufficient inlet pressure or suction head 10. Suction piping too small 11. Casing gasket leaking 12. Suction or discharge line valves closed 13. Piping is fouled or damaged 14. Clogged strainer or foot-valve 15. Incorrect engine speed 	<ol style="list-style-type: none"> 1. Fill pump casing. Using a foot-valve will extend pump life and facilitate immediate priming 2. Shorten suction head 3. Lower suction head, install foot-valve and prime. 4. Disassemble pump and clean out impeller 5. Repair or replace suction line 6. Match foot-valve to piping or install one size larger foot-valve 7. Disassemble pump and replace impeller 8. Submerge lower in water 9. Increase inlet pressure by adding more water to tank or increasing back pressure by turning gate valve on discharge line partially closed position 10. Increase pipe size to pump inlet size or larger 11. Replace 12. Open 13. Clean or replace 14. Clean or replace 15. Increase speed
Loss of suction after satisfactory operation	<ol style="list-style-type: none"> 1. Air leak in suction line 2. When unit was last turned off, water siphoned out of pump casing 3. Suction head higher than pump designed for 4. Insufficient inlet pressure or suction head 5. Clogged foot-valve, strainer, or pump 6. Defective wearplate(s) 	<ol style="list-style-type: none"> 1. Repair or replace suction line 2. Refill (reprime) pump casing before restarting 3. Lower suction head, install foot-valve and primer 4. Increase inlet pressure by adding more water to tank or increasing back pressure by turning gate valve on discharge line to partially closed position 5. Unclog, clear or replace as necessary 6. Replace
Pump overloads driver	<ol style="list-style-type: none"> 1. Total head lower than pump rating, unit delivering too much water 2. Specific gravity and viscosity of liquid being pumped different than the pump rating 3. Speed too high 	<ol style="list-style-type: none"> 1. Increase back pressure on pump by turning gate valve on discharge line to partially closed position that will not overload motor 2. Consult factory 3. Check and correct, lower speed
Pump vibrates and/or makes excessive noise	<ol style="list-style-type: none"> 1. Mounting plate or foundation not rigid enough 2. Foreign material in pump causing unbalance 3. Impeller bent 4. Cavitation present 5. Piping not supported to relieve any strain on pump assembly 	<ol style="list-style-type: none"> 1. Reinforce 2. Disassemble pump and remove 3. Replace impeller 4. Check suction line for proper size and check valve in suction line if completely open, remove any sharp bends before pump and shorten suction line 5. Make necessary adjustments
Pump runs but no fluid	<ol style="list-style-type: none"> 1. Faulty suction piping (air leak) 2. Pump located too far from fluid source 3. Gate valve closed 4. Clogged strainer 5. Fouled foot-valve 6. Discharge height too great 7. Fouled impeller 8. Faulty mechanical seal 	<ol style="list-style-type: none"> 1. Replace 2. Replace 3. Open 4. Clean or replace 5. Clean or replace 6. Lower the height 7. Clean or replace 8. Replace
Pump leaks at shaft	<ol style="list-style-type: none"> 1. Worn mechanical seal 2. Replacement seal not installed properly 	<ol style="list-style-type: none"> 1. Replace 2. Follow Maintenance instructions carefully

BARMESA PUMPS FACTORY WARRANTY

Barmesa Pumps warrants that products of our manufacture will be free of defects in material and workmanship under normal use and service for 18 months from date of manufacture or 12 months from installation date whichever occurs first. This warranty gives you specific legal rights, which vary from state to state.

This warranty is a limited warranty, and no warranty related claims of any nature whatsoever shall be made against Barmesa Pumps, until the ultimate consumer or his/her successor 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 as instructed by Barmesa Pumps. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE. PRODUCT SHALL BE EITHER REPLACED OR REPAIRED AT THE ELECTION OF BARMESA PUMPS. Guarantees relating to performance specifications provided in addition to the foregoing material and workmanship warranties on a product manufactured by Barmesa Pumps, if any, are subject to possible factory testing. Any additional guarantees, in the nature of certified performance specifications or time frame must be in writing and such writing must be signed by our authorized factory manager at time of order placement and/or at time of quotation. Due to inaccuracies in field testing and should a conflict arises between the results of field testing conducted by or for the user, Barmesa Pumps reserves the right to have the product returned to our factory for additional testing.

This warranty shall not apply when damage is caused by (1) improper installation, (2) improper voltage, (3) lightning, (4) excessive sand or other abrasive material, (5) corrosion build-up due to excessive chemical content or (6) uncontrollable acts of god. 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 pumps, parts or systems. Barmesa Pumps will not 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 TRAVEL EXPENSES, CONTRACTOR FEES, UNAUTHORIZED REPAIR SHOP EXPENSES, 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. 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.

IMPORTANT!

If you have a claim under the provision of the warranty, contact Barmesa Pumps or your authorized Barmesa Pumps Distributor:
warranty@barmesapumps.com
www.barmesapumps.com

