

INSTRUCTION AND REPAIR MANUAL

**KSB**

Model  
631-632

ENGLISH: PAGES 2-12

**INSTRUCTION AND REPAIR MANUAL**

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.



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## CALIFORNIA PROPOSITION 65 WARNING:

**▲ WARNING** This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

### SERVICE

Your Aurora pump requires no maintenance other than periodic inspection, occasional cleaning and lubrication. The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The pumped liquid determines the type of pump and line bearings supplied and method of bearing lubrication. Refer to lubrication section for specific instruction. The motor may also require lubrication, in which case the motor manufacturer's recommendation should be followed.

### LUBRICATION (BALL BEARINGS)

Regreasable bearings will require periodic lubrication and this can be accomplished by using the zerk or lubrication fitting at each bearing. Lubricate the bearings at regular intervals using high quality grease. The initial bearing lubrication at Aurora is Chevron SRI Grease NLGI 2 (polyurea thickener) (Pentair Part Number 384-0002-639). Before lubricating the bearings, thoroughly flushing the old grease with the new grease is required. We recommend Chevron SRI Grease NLGI 2 (polyurea thickener) for follow-up relubrication after the flushing. Most major brands of Grade No. 2 ball bearing grease are satisfactory for pump operation in both wet and dry applications.

#### CAUTION

Be aware that mixing of different brands or blends of grease should be avoided due to possible incompatibilities that could damage the bearings. A thorough flushing of the old grease with the new grease is required to minimize this potential incompatibility. Avoid using the following: (1) grease of vegetable or animal base that can develop acids or (2) grease containing rosin, graphite, talc or other impurities. Under no circumstances should grease be reused.

#### CAUTION

Over lubrication should be avoided as it may result in overheating and possible bearing failure. Under normal application, adequate lubrication is assured if the amount of grease is maintained at 1/3 to 1/2 the capacity of the bearing and adjacent space surrounding the bearing.

In dry locations, each bearing will need lubrication at least every 4,000 hours of running time or every 6 to 12 months, whichever is more frequent. In wet locations the bearings will need lubrication at least after every 2,000 hours of running time or every 4 to 6 months, whichever is more frequent. A unit is considered to be installed in a wet location if the pump and motor are exposed to dripping water, to the weather, or to heavy condensation such as found in unheated and poorly ventilated underground locations.

At times it may be necessary to clean the bearings due to accumulated dirt or deteriorated lubricants. This can be accomplished by flushing the bearing with a light oil heated to 180 to 200° F. while rotating it on a spindle. Wipe the bearing housing with a clean rag soaked in a cleaning solvent, and flush all surfaces.

Dry bearing thoroughly before relubricating. Compressed air can be used to speed drying, but care should be taken not to let bearings rotate while being dried.

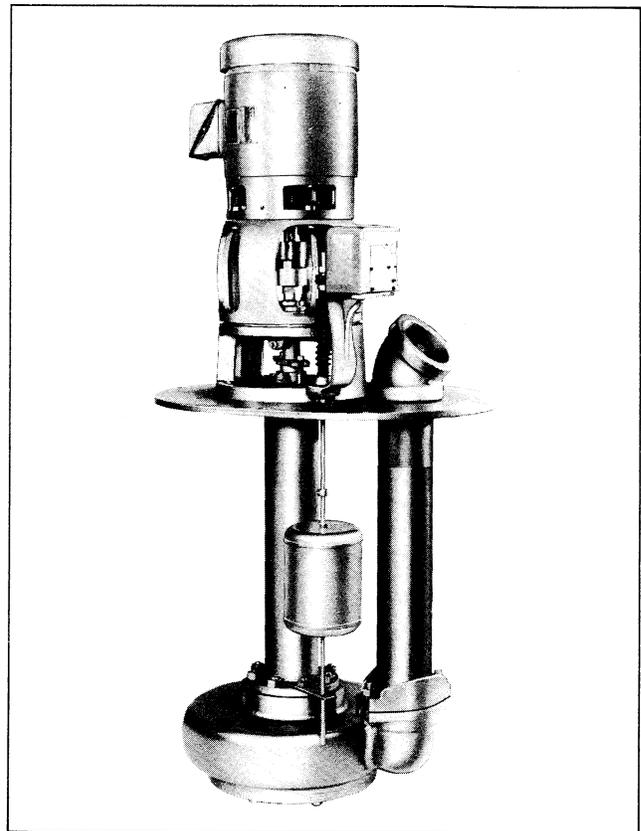
#### CAUTION

Use normal fire caution procedures when using any petroleum cleaner.

### LUBRICATION (LINE SHAFT & PUMP BEARINGS)

Grease lubricated sleeve bearings (standard and relief type) will require frequent lubrication which can be accomplished by using the zerk fitting(s) located on the pump base. It is suggested that relubrication intervals be every 20 hours of running time.

Graphitar, cutless rubber and teflon bearings are lubricated with a water flush. The required number of lube line connections are provided on the pump base.



A. Complete unit assembly.

**REPAIRS**

The pump may be disassembled using the illustrations and text provided. Although complete disassembly is covered, it will seldom be necessary to completely disassemble your Aurora pump.

The illustrations accompanying the disassembly instructions show the pump at various stages of disassembly. The illustrations are intended to aid in the correct identification of the parts mentioned in the text.

Inspect removed parts at disassembly to determine their reusability. Pump or line shaft bearings that are scored or noticeably out of round should not be reassembled. Cracked castings should never be reused and scored or worn pump shafts should be replaced.

All packings and gaskets should be replaced with new ones at reassembly simply as a matter of economy. They are much less expensive to replace routinely than to replace singly as the need arises. In general, it is economical to return to the manufacturer for repair only the motor and motor controller.

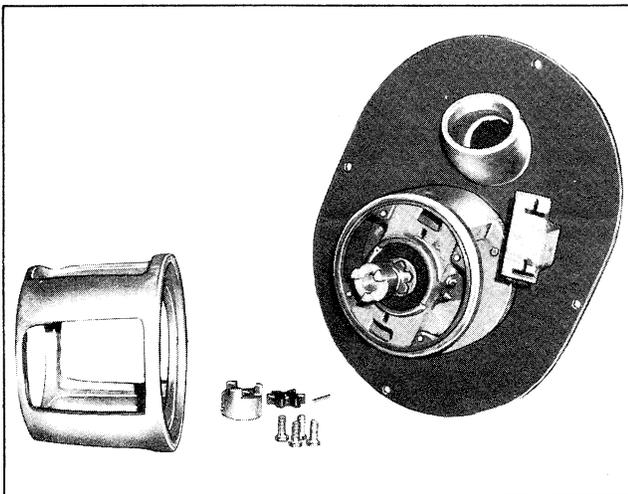
**DISASSEMBLY**

Disassemble only what is needed to make repairs or accomplish inspection. Proceed to disassemble the pump as follows: (refer to figure 1.)

1. Disconnect wiring from motor control panel to motor and float switch. Take any other steps needed to prevent drive unit from being unintentionally energized during disassembly.

2. Remove the float switch. For instructions, refer to the repair notes on float switches.

3. Pump motor (33) and upper head (34) are best removed as a unit. The upper head serves to protect the motor output shaft from accidental damage. Therefore, remove bolts (25) and lift the unit free from lower head (63) and lower half of coupling (29).



B. Upper head, coupling half, pin and insert removed.

4. Coupling half (29) is removed by loosening setscrew (66). Similarly, setscrew (65) will free upper coupling half (27). Remove coupling keys (28 and 30).

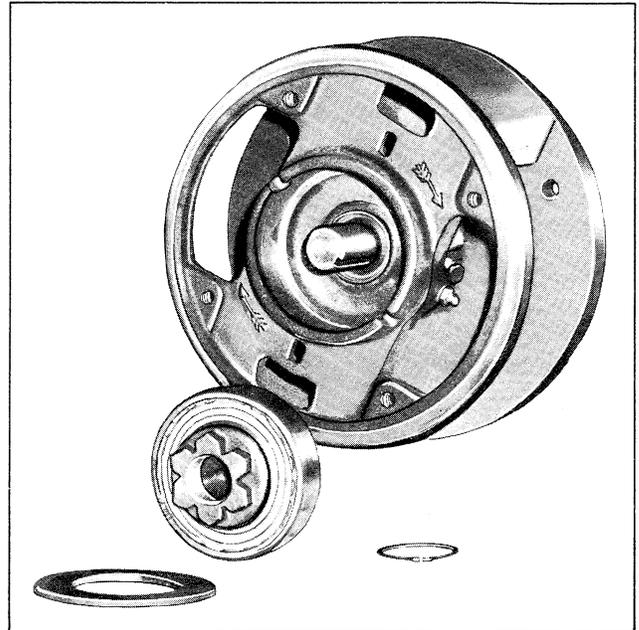
5. Remove remaining pump and connected parts from basin to continue disassembly.

**NOTE**

However, if ventilation piping is used, remove it before lifting off plate.

6. Locknut (36) can be unthreaded, exposing slinger (35) for removal. Then bearing collar (37) with ball bearing (39) is unthreaded from pump shaft. Retaining ring (38) must be removed from collar (37) with a pair of Truarc pliers, if bearing (39) is to be pressed off collar (37).

7. Remove grease seal (40) if necessary.



C. Slinger, bearing collar, bearing and retaining ring removed.

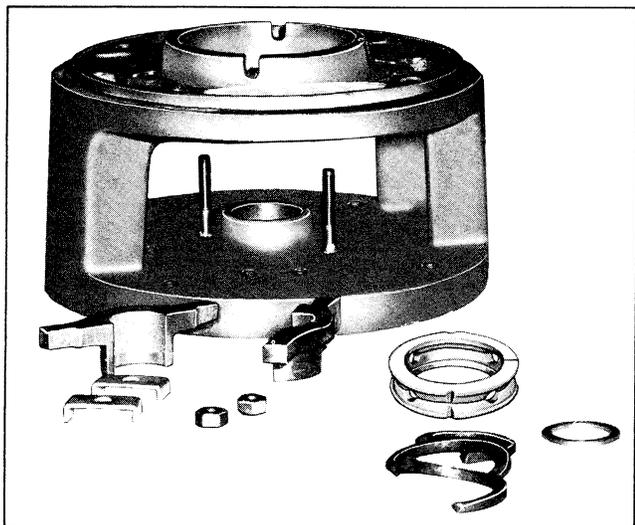
**NOTE**

Grease seal (40) should not be removed except for replacement because it's case is easily damaged. When removal is necessary, it can be tapped out of its seat in the lower head with coupling key (30) used as a driving tool.

8. Remove nuts (44) and clamps (45) from studs (47) and slide gland (46) off shaft (43). Remove packing (48), lantern ring (50) and packing ring (49).

**NOTE**

This stuffing box arrangement is standard.



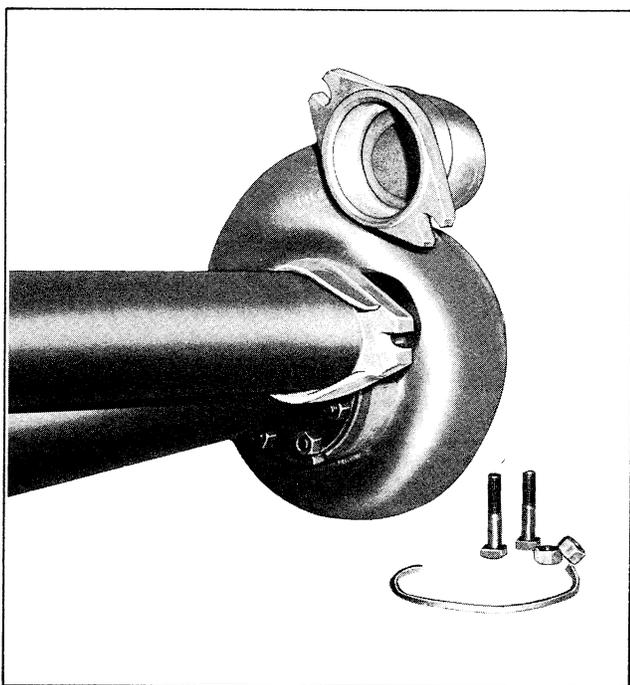
D. Nuts, clamps, gland halves, packing, lantern ring and packing ring removed from lower head.

9. Remove grease fitting (41), and pipe plug (53). Also disconnect any lubrication line used to lubricate line shaft bearings or piping for pressurized support column water supply.

10. Unscrew capscrews (62 and 56) to remove lower head (63).

11. Remove locknut (57) and elbow (58) from discharge piping (59). Then plate can be lifted off.

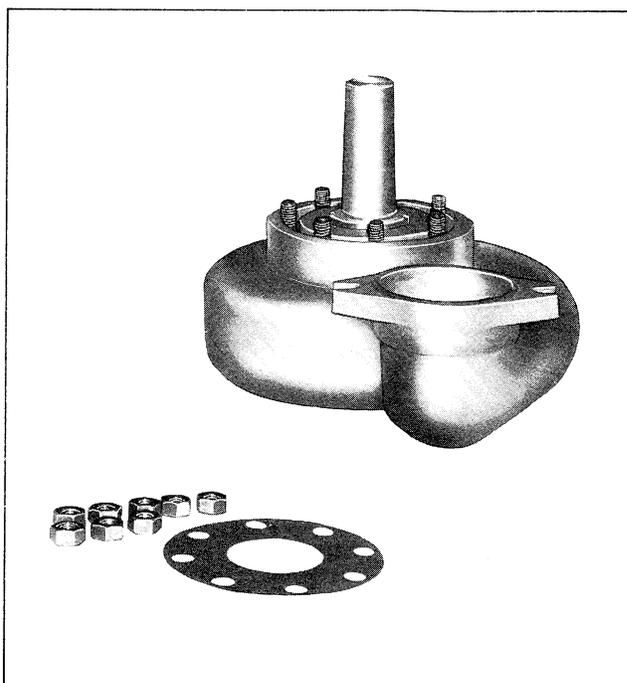
Remove gaskets (64 and 13). Also remove pins (61) and nameplate (60) only if they need replacing.



E. Nuts, bolts and packing removed from gland halves to free discharge piping.

12. Successive lengths of piping and shafting are disassembled as follows:

- a. If a line shaft bearing is lubricated through a lubrication line, detach the line and elbow from pipe nipple in upper support section and then remove nipple.
- b. Unscrew bolts (22) and nuts (9) to lift top support pipe section and expose shaft coupling (42). Use a wrench to hold shaft (43) and a second wrench to unscrew coupling (42). Remove gasket (13).
- c. Remove pipe plug (16) if used, then slide line shaft bearing (24) off shaft.



F. Nuts, support piping and gasket removed from casing.

**CAUTION**

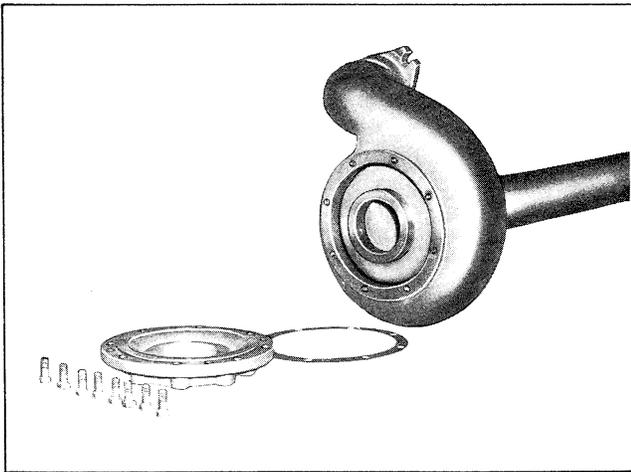
To protect a bearing that can be reused, tape the threaded section of the shaft end before removing bearing.

13. Discharge piping (59) can be removed from casing (11) by unthreading bolts (10) and nuts (9), and removing gland (15) and packing (14).

14. To lift off remaining support piping (23), unscrew nuts (9). Then remove gasket (13) and slide bolts (12) out.

15. Unthread capscrews (4) to remove suction cover (2) and gasket (3), exposing impeller.

16. Unscrew impeller capscrew (5), remove washer (6), impeller (7) and impeller key (8).



G. Capscrews, suction cover and gasket removed to expose impeller.

17. Lift remaining shafting (43) and pump bearing (17) from casing (11). Remove pipe plug (16) from bearing (17), then slide bearing off end of the shaft, using the above caution.

#### REASSEMBLY

Reassembly will generally be in reverse order of disassembly. If disassembly was not complete, use only those steps related to your particular repair program.

1. Slide pump bearing (17) onto pump end of shafting (43) using the last caution mentioned in disassembly with the flanged end of bearing toward the bottom end of shaft. If bearing is not to be lubricated through a lubrication line, place pipe plug (16) in tapped hole in bearing.

2. Slide pump shaft into pump end of support piping (23). Position pump bearing against pump flange of support piping. If bearing is to be lubricated through a lubrication line, align tapped opening in the bearing with vent opening in the support pipe, and install an 1/8 inch pipe nipple to maintain the alignment.

3. Place bolts (12) in slot in casing (11) and hold them in place with gasket (13). Position pump casing (11) against the flange of the support pipe with discharge outlet aligned with vent opening in support pipe. Bolt casing to flange with nuts (9).

4. Assemble impeller (7) with its key (8) on the end of shaft (43) and secure it by means of cap screw (5) and washer (6).

5. Secure suction cover (2) with gasket (3) on pump casing by threading on cover cap screws (4). If used, install float control guide under nut located 45° clockwise (as seen from top) from discharge outlet.

6. Slide discharge pipe gland (15) and packing (14) over unthreaded end of discharge piping (59), slip unthreaded end of pipe into discharge elbow of pump casing (11), and tighten gland on casing by means of bolts (10) and nuts (9).

#### NOTE

If pump bearing is to be lubricated through a lubrication line, assemble the required elbow and tubing on previously installed nipple. If support column is to be pressurized with a flow of fresh water, connect the required 3/4 inch pipe nipple, elbow and pipe to support piping, and ascertain that other vent openings are plugged.

7. Successive lengths of piping and shafting are assembled as follows: (Ejectors designed for pump settings\* deeper than 6 feet, 2 inches are provided with multiple part discharge and support piping and with line shaft bearings at each support piping joint.)

- a. Slide a line shaft bearing (24) down pump shaft, with tapped opening toward upper end until it seats against the flange of the previously assembled section of support piping (23).
- b. To add successive lengths of pump shafting, thread shaft coupling (42) onto threaded end of one shaft until shaft is visible through small hole drilled through middle of coupling, and thread the next length of shafting into coupling. Do not use pipe wrenches on shafting. It is not necessary to tighten shafts in their couplings because the torque of the pump motor will tighten them in operation.
- c. If line shaft bearing is to be lubricated through a lubrication line, turn bearing as required to align tapped opening with lubricant piping. Position support pipe gasket (13) against support pipe flange, and lower the next section of support piping into place. Turn it to align vent opening with tapped opening in line shaft bearing, and secure it by installing bolts (22) and nuts (9). Install any 1/8 inch pipe nipple in tapped opening of line bearing if required, and connect it to previously assembled lubrication piping.
- d. If necessary, screw a discharge pipe coupling onto threaded end of previously assembled section of discharge piping, and thread the next section of piping into coupling. Tighten with a pipe wrench, using a second wrench to hold the previously assembled section.

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\*"Pump Setting" is the distance from bottom of suction cover (2) to bottom of lower head (63). This measurement is normally 4 inches less than "Pit Depth", the distance from bottom of basin to top face of basin.

8. Thread locknut (57) on discharge piping (59) approximately 2". Lower pump support plate over support piping (23) and discharge piping (59). Position gasket (13) on support pipe flange and gasket (64) on top face of pump support plate and slide lower head (63) into place.

NOTE

Install float control at this time if liquid end is not accessible when ejector is lowered into basin.

9. Install a discharge pipe elbow (58) on threaded top end of discharge piping, using a pipe wrench on elbow and another to hold previously assembled piping from turning.

10. Lift pump support plate into position against lower head (63) gasket (64) and discharge elbow (58), and install capscrews (62). Connect pressurization or lubrication piping at this time by using opening provided in pump support plate. For pressurization piping, a 3/4 inch line to water supply is connected to tapped opening in lower head. For lubrication piping, line is connected to fittings in support plate. Pump support plate and ejector assembly may now be lowered into place on basin cover and can be bolted down.

11. Install pump shaft packing ring (49)\* around shaft in lower head. Assemble packing gland halves (46) on gland studs (47), and secure with gland clamps (45) and nuts (44). Do not tighten nuts more than finger tight unless ejector support piping is to be pressurized with fresh water.

12. Seat grease seal (40) with sealing edge upward in its seat in lower head.

NOTE

Cover threads of pump shaft temporarily with a tape or some other means before sliding on grease seal to prevent threads from damaging seal.

13. Press ball bearing (39) onto bearing collar (37) with ball bearing seal facing flange on collar, and secure bearing on collar by installing retaining ring (38).

14. Thread bearing collar onto pump shaft with bearing surface downward. Turn collar clockwise until bearing seats in lower head, then turn it an additional one-half turn. This will raise shaft and impeller approximately 1/64 inch off suction cover, providing the correct clearance for efficient pump operation.

15. Hold bearing collar (37) and install locknut (36) against collar. Ascertain that pump shaft turns freely by hand. Press rubber slinger (35) into place on bearing collar.

16. Install coupling half (29) and key (30) on upper end of pump shaft, and tighten coupling setscrew temporarily to prevent its slipping down shaft.

17. Position coupling insert (26) in lower half of coupling and secure upper coupling half (27) with its key (28) on motor output shaft. Align bottom end of key with key slot in the end surface of motor shaft, and secure by tightening setscrew.

18. Lower motor (33) and upper head (34) carefully into position on lower head while engaging coupling halves with coupling insert. Bolt assembly to lower head with capscrews (25).

19. Loosen setscrew (66) in lower coupling half (29), and slide coupling half and key (30) upward until they engage coupling insert (26) with proper clearance as shown in Section 2, Item 4 of this Instruction Manual.

NOTE

Install float switch at this time. For instructions refer to the repair notes on float switches.

20. Connect wiring from motor control panel to motor and float switch, following exactly the instructions provided by their respective manufacturers. Also connect solenoid valve at this time if used, using diagrams provided. All wiring must comply with applicable electrical code requirements for type of duty ejector is to perform.

\*One ring or packing (48), lantern ring (50) and two more rings of packing (48).

STANDARD  
STUFFING BOX  
ILLUSTRATED

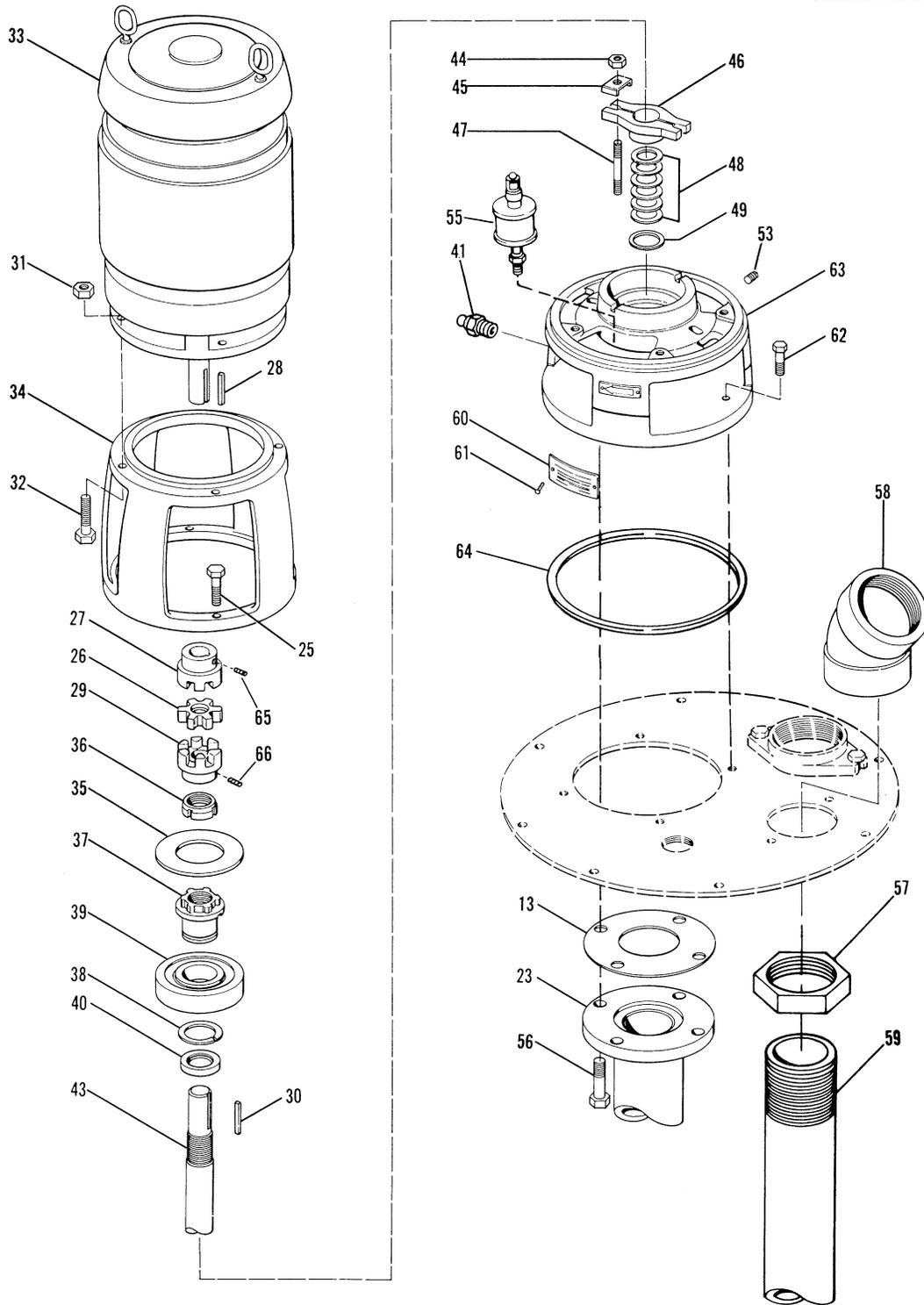


Figure 1. Model 631-632 Exploded View (Sheet 1 of 3)

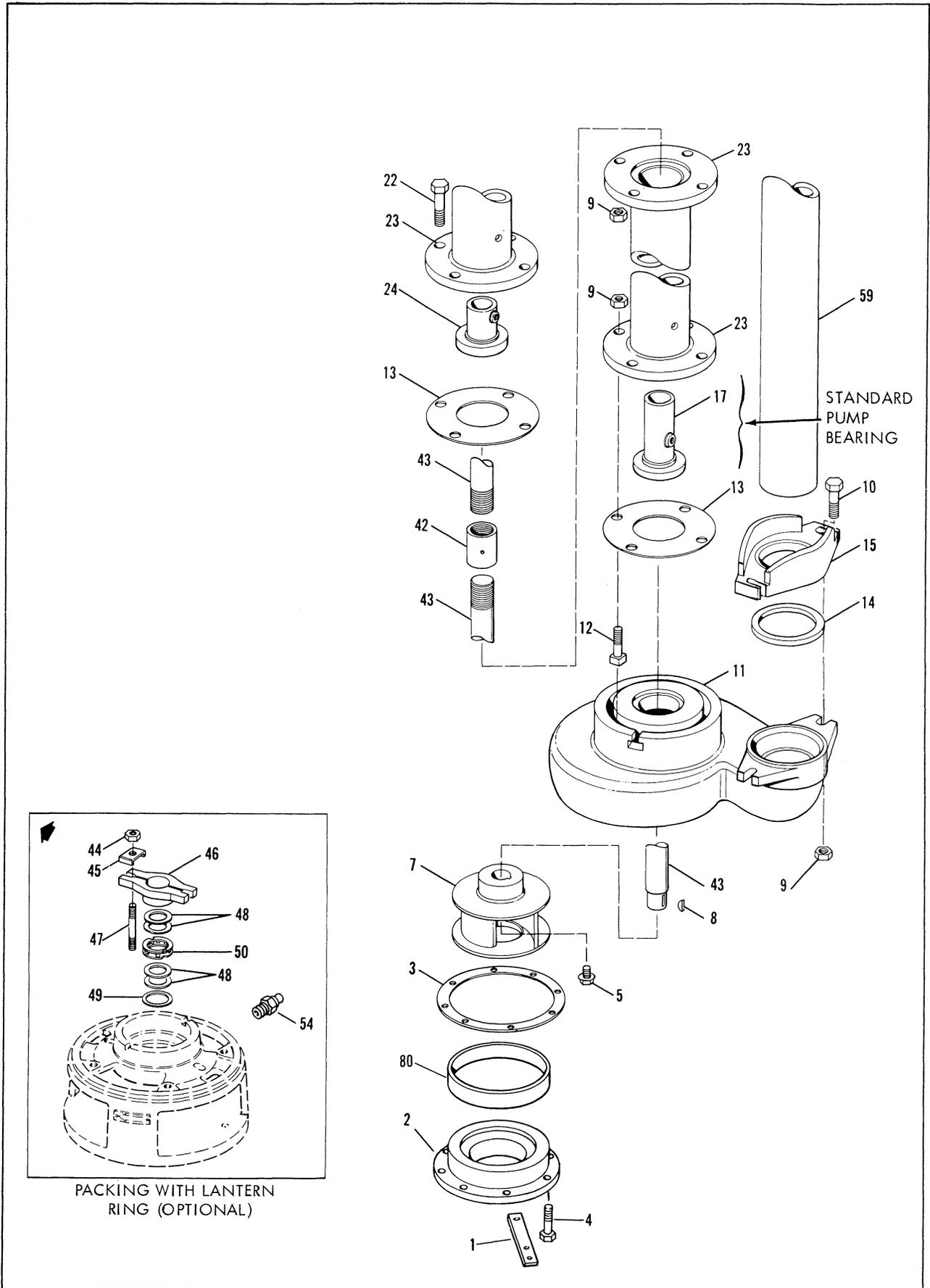
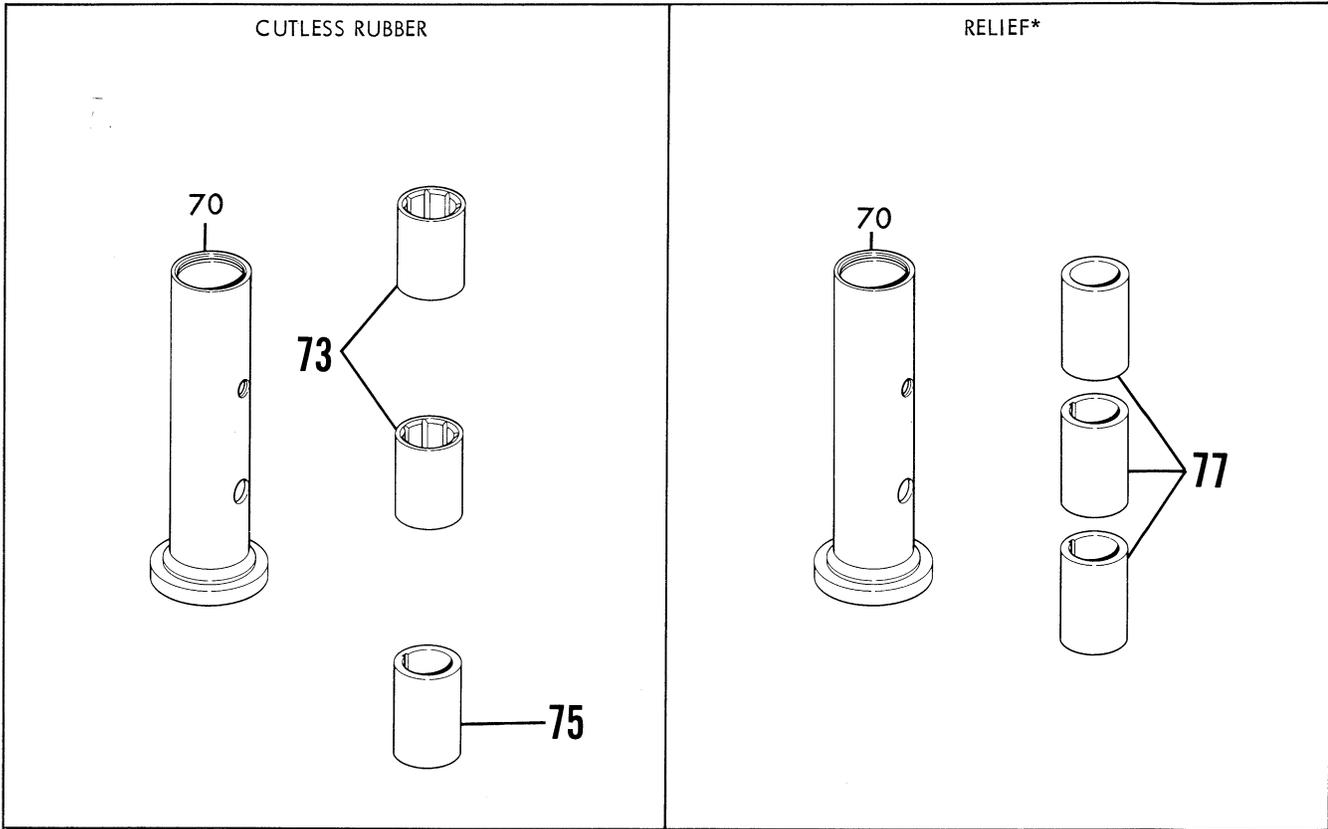


Figure 1. Model 631-632 Exploded View (Sheet 2 of 3)

MODEL 631-632  
OPTIONAL RELIEF HOUSING



\*Standard for pump settings over 10 feet.

OPTIONAL SPOOL HOUSING

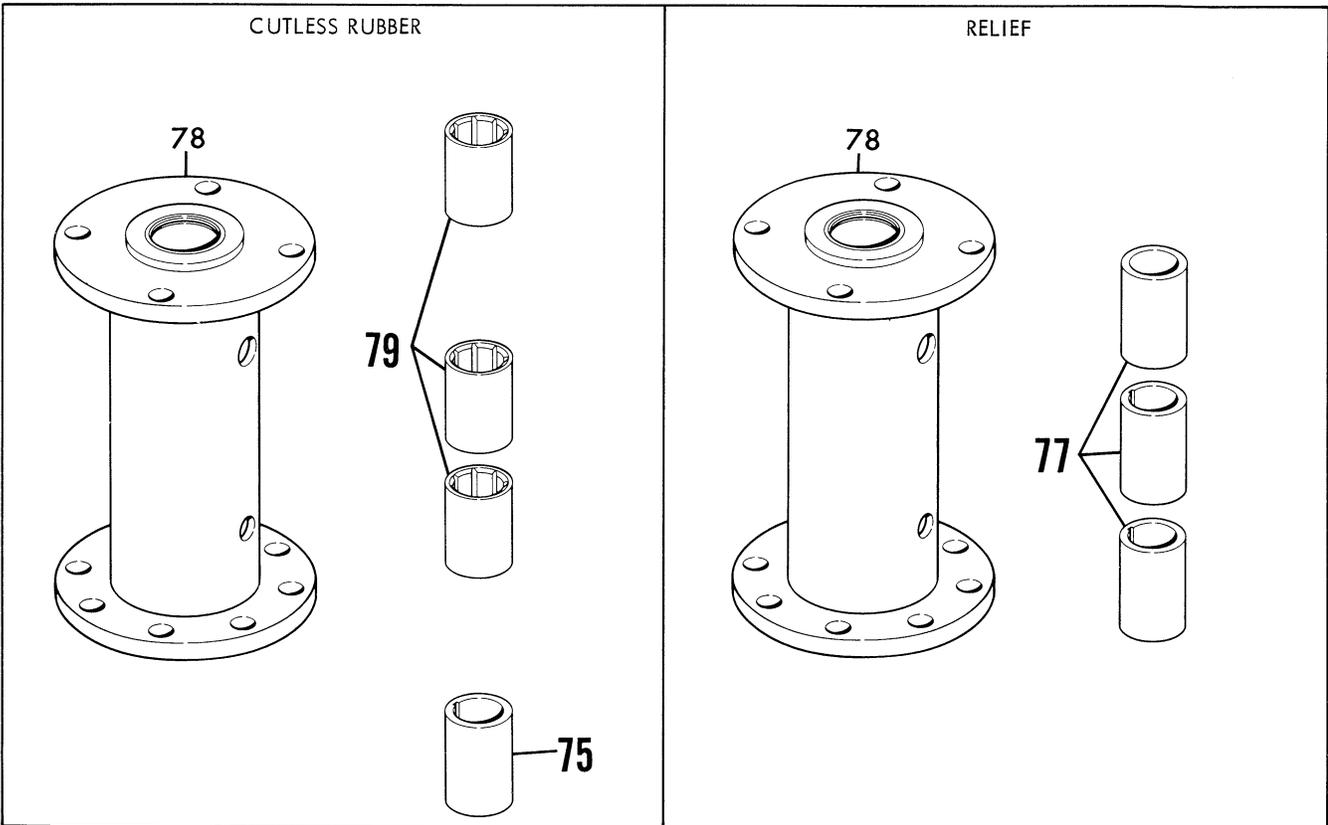


Figure 1. Model 631-632 Exploded View (Sheet 3 of 3)

Model 631-632 List of Parts (See Figure 1)

1. Float rod guide	26. Insert	46. Gland, packing	66. Setscrew
2. Suction cover	27. Coupling half	47. Stud	70. Bearing housing (opt)
3. Gasket	28. Key, motor shaft	48. Packing	73. Bushing (opt)
4. Capscrew	29. Coupling half	49. Ring, packing	75. Bushing (opt)
5. Capscrew	30. Key, coupling	50. Ring, lantern	77. Bushing (opt)
7. Impeller	31. Nut	51. Seal, shaft	78. Spool bearing housing (opt)
8. Key	32. Capscrew	52. Slinger	79. Bushing (opt)
9. Nut	33. Motor	54. Grease fitting	80. Wear ring (opt)
10. Bolt	34. Upper head	55. Oiler (opt)	90. Grease fitting
11. Casing	35. Slinger	56. Capscrew	91. Elbow
12. Bolt	36. Locknut	57. Locknut	92. Coupling
13. Gasket	37. Collar	58. Elbow, discharge	93. Close nipple
14. Packing	38. Ring	59. Piping, discharge	94. Nipple
15. Gland	39. Bearing	60. Nameplate	95. Comp. fitting
16. Plug, pipe	40. Seal, grease	61. U Drive screws	96. Comp. fitting
17. Bearing	41. Grease fitting	62. Capscrew	97. Nylon tube
22. Bolt	42. Coupling, shaft	63. Lower head	
23. Piping, support	43. Shaft	64. Gasket	
24. Bearing, line shaft	44. Nut	65. Setscrew	
25. Capscrew	45. Clamp, gland		

NOTE

WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER, AND THE PIECE NUMBER FROM THE EXPLODED VIEW IN THIS MANUAL.

ORDER ALL PARTS FROM YOUR LOCAL AUTHORIZED DISTRIBUTOR, FACTORY BRANCH SALES OFFICE OR THE FACTORY AT NORTH AURORA, ILLINOIS

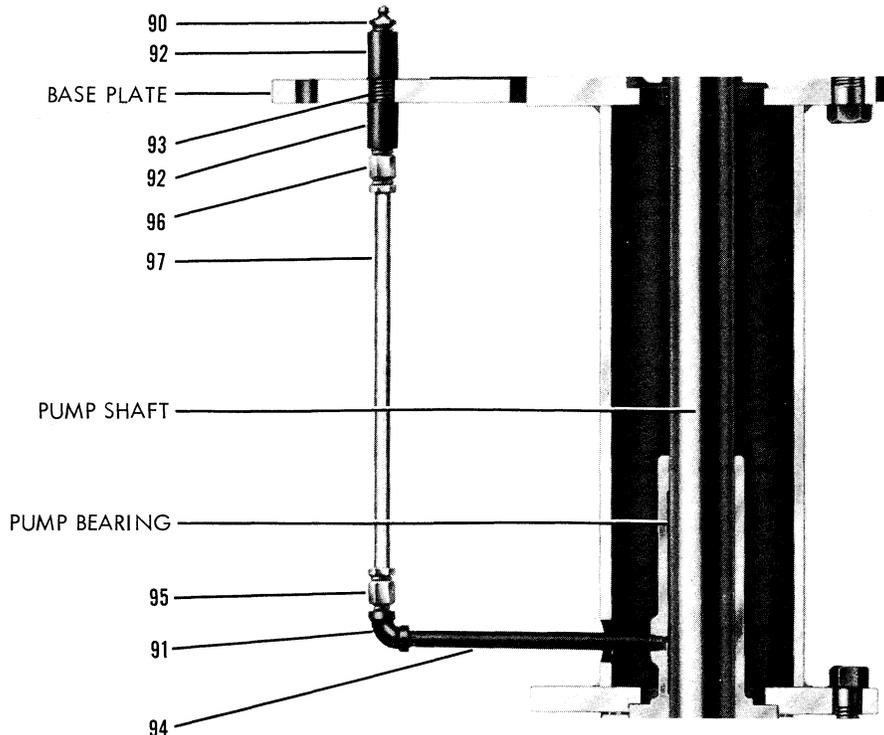


Figure 2.

## WARRANTY

Seller warrants equipment (and its component parts) of its own manufacture against defects in materials and workmanship under normal use and service for one (1) year from the date of installation or start-up, or for eighteen (18) months after the date of shipment, whichever occurs first. Seller does not warrant accessories or components that are not manufactured by Seller; however, to the extent possible, Seller agrees to assign to Buyer its rights under the original manufacturer's warranty, without recourse to Seller. Buyer must give Seller notice in writing of any alleged defect covered by this warranty (together with all identifying details, including the serial number, the type of equipment, and the date of purchase) within thirty (30) days of the discovery of such defect during the warranty period. No claim made more than 30 days after the expiration of the warranty period shall be valid. Guarantees of performance and warranties are based on the use of original equipment manufactured (OEM) replacement parts. Seller assumes no responsibility or liability if alterations, non-authorized design modifications and/or non-OEM replacement parts are incorporated. If requested by Seller, any equipment (or its component parts) must be promptly returned to Seller prior to any attempted repair, or sent to an authorized service station designated by Seller, and Buyer shall prepay all shipping expenses. Seller shall not be liable for any loss or damage to goods in transit, nor will any warranty claim be valid unless the returned goods are received intact and undamaged as a result of shipment. Repaired or replaced material returned to customer will be shipped F.O.B., Seller's factory. Seller will not give Buyer credit for parts or equipment returned to Seller, and will not accept delivery of any such parts or equipment, unless Buyer has obtained Seller's approval in writing. The warranty extends to repaired or replaced parts of Seller's manufacture for ninety (90) days or for the remainder of the original warranty period applicable to the equipment or parts being repaired or replaced, whichever is greater. This warranty applies to the repaired or replaced part and is not extended to the product or any other component of the product being repaired. Repair parts of its own manufacture sold after the original warranty period are warranted for a period of one (1) year from shipment against defects in materials and workmanship under normal use and service. This warranty applies to the replacement part only and is not extended to the product or any other component of the product being repaired. Seller may substitute new equipment or improve part(s) of any equipment judged defective without further liability. All repairs or services performed by Seller, which are not covered by this warranty, will be charged in accordance with Seller's standard prices then in effect.

THIS WARRANTY IS THE SOLE WARRANTY OF SELLER AND SELLER HEREBY EXPRESSLY DISCLAIMS AND BUYER WAIVES ALL OTHER WARRANTIES EXPRESSED, IMPLIED IN LAW OR IMPLIED IN FACT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Seller's sole obligation under this warranty shall be, at its option, to repair or replace any equipment (or its component parts) which has a defect covered by this warranty, or to refund the purchase price of such equipment or part. Under the terms of this warranty, Seller shall not be liable for (a) consequential, collateral, special or liquidated losses or damages; (b) equipment conditions caused by normal wear and tear, abnormal conditions of use, accident, neglect, or misuse of said equipment; (c) the expense of, and loss or damage caused by, repairs or alterations made by anyone other than the Seller; (d) damage caused by abrasive materials, chemicals, scale deposits, corrosion, lightning, improper voltage, mishandling, or other similar conditions; (e) any loss, damage, or expense relating to or resulting from installation, removal or reinstallation of equipment; (f) any labor costs or charges incurred in repairing or replacing defective equipment or parts, including the cost of reinstalling parts that are repaired or replaced by Seller; (g) any expense of shipment of equipment or repaired or replacement parts; or (h) any other loss, damage or expense of any nature.

The above warranty shall not apply to any equipment which may be separately covered by any alternate or special warranties.

**PERFORMANCE:** In the absence of Certified Pump Performance Tests, equipment performance is not warranted or guaranteed. Performance curves and other information submitted to Buyer are approximate and no warranty or guarantee shall be deemed to arise as a result of such submittal. All testing shall be done in accordance with Seller's standard policy under Hydraulic Institute procedures.

**LIABILITY LIMITATIONS:** Under no circumstances shall the Seller have any liability under the Order or otherwise for liquidated damages or for collateral, consequential or special damages or for loss of profits, or for actual losses or for loss of production or progress of construction, regardless of the cause of such damages or losses. In any event, Seller's aggregate total liability under the Order or otherwise shall not exceed the contract price.

**ACTS OF GOD:** Seller shall in no event be liable for delays in delivery of the equipment or other failures to perform caused by fires, acts of God, strikes, labor difficulties, acts of governmental or military authorities, delays in transportation or procuring materials, or causes of any kind beyond Seller's control.

**COMPLIANCE WITH LAW:** Seller agrees to comply with all United States laws and regulations applicable to the manufacturing of the subject equipment. Such compliance shall include: The Fair Labor Standards Acts of 1938, as amended; Equal Employment Opportunity clauses of Executive Order 11246, as amended; Occupational Safety and Health Act of 1970 and the standards promulgated thereunder, if applicable. Since compliance with the various Federal, State, and Local laws and regulations concerning occupational health and safety, pollution or local codes are affected by the use, installation and operation of the equipment and other matters over which Seller has no control, Seller assumes no responsibility for compliance with those laws and regulations, whether by way of indemnity, warranty, or otherwise. It is incumbent upon the Buyer to specify equipment which complies with local codes and ordinances.



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