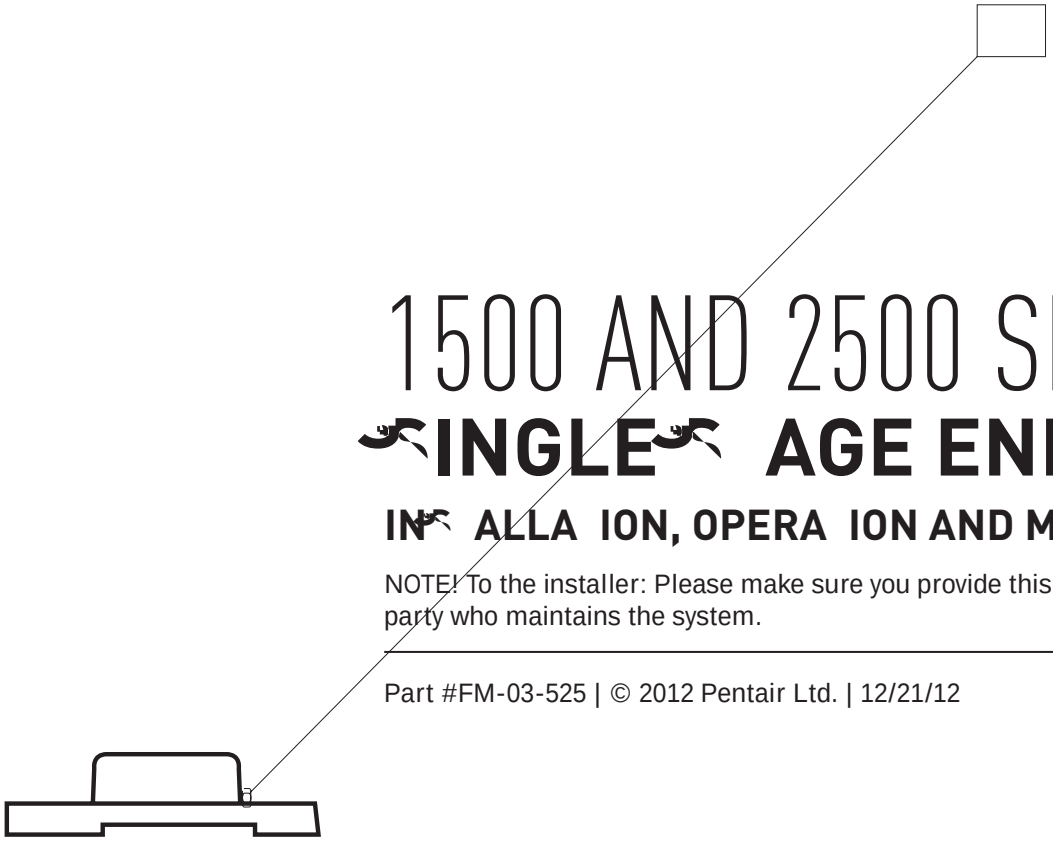

1500 AND 2500 SERIES

INGLE AGE END C

IN ALLA ION, OPERA ION AND MAIN ENAN

NOTE! To the installer: Please make sure you provide this manual to the ow
party who maintains the system.

Part #FM-03-525 | © 2012 Pentair Ltd. | 12/21/12

MODELS 1500 AND 2500

GROUTING THE INSTALLATION:

Grouting the base plate prevents lateral movement of the base plate and improves the vibration absorbing characteristics of the foundation by increasing its mass. A wooden dam should be constructed around the base plate to contain the grout while it is being poured. The dam can either be built tight against the base plate, or slightly removed from it as desired. (See Fig. 2.) The entire base plate should be completely filled with non-shrinkable type grout. The grout should be puddled frequently to remove any air bubbles.

ROTATION:

Pump rotation is clockwise when viewed from the back of the motor. An arrow is also located on the pump to show the direction of rotation.

WARNING: Sudden Start-up Hazzard

Disconnect and lock out power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

INITIAL ALIGNMENT OF THE FLEXIBLE COUPLING:

To check parallel alignment, hold a straight edge against the edges of the coupling halves at any four places 90° apart around the coupling. The straight edge should be parallel to the pump and driver shafts at all times. Insert shims until the straight edge lies flat against both coupling halves at all four checkpoints. The pump and driver will then be in proper parallel alignment. (See Fig. 3.)

PIPE:

The discharge pipe diameter should be the same as, or larger than, the discharge nozzle diameter.

DISCHARGE VALVES:

The discharge piping should include a check valve and a gate valve. The check valve should be located between the gate valve and the pump. If an increaser is used in the discharge piping, the increaser should be installed between the pump nozzle and the check valve. The check valve protects against a reverse flow of the liquid if the driver fails. (See Fig. 5.)

The gate valve is used in the priming operation as a throttling valve to control pump

MODELS 1500 AND 2500
OPERATION INSTRUCTIONS

Centrifugal pumps operate under a wide range of conditions. The pump you have selected exactly fits your specific requirements. Before putting your pump into operation, however, there are certain basic ground rules that must be followed to assure maximum efficiency, long pump life, and maintenance-free service.

Centrifugal pumps should never be started or run dry. Operating a pump dry can cause burning of the packings or seal, resulting in destruction of the packings or seals, and possible scoring of the pump shaft. To prevent the pump from being run dry, the pump should be primed before starting it.

A centrifugal pump should not be throttled, or the volume controlled on the suction side of the pump. Throttling the pump on the suction side not only reduces the capacity, but also reduces pump efficiency and, more importantly, can cause serious damage to the pump due to cavitation. Cavitation occurs when the pressure at any point inside the pump drops below the vapor pressure of the liquid. The liquid flashes and forms vapor bubbles. These bubbles move along with the liquid into a higher pressure area, where the bubbles collapse or implode, creating an area of low pressure. The implosion phenomenon is characterized by a crackling noise and sometimes by loud knocking as the vapor bubbles are collapsed. Repetition of this action causes a wearing away of the metal on the impeller and other parts of the pump, and if allowed to continue can result in serious damage to the pump.

Pump capacity can be effectively controlled by use of a throttling valve in the discharge piping. Most centrifugal pumps can be operated for brief periods of time with the throttling valve closed without building up excessive pressure or overloading the drive unit. In fact, a centrifugal pump operating against a closed discharge line at its rated capacity actually requires less power to operate than it does when the throttling valve is open.

The pump should never be started with the throttling valve completely closed, however, because a condition of water hammer could exist. The condition of water hammer is caused by an increase in pressure due to changes in velocity of the liquid flowing through the pipe line. When the velocity is changed by closing a valve or by some other means, the magnitude of the pressure produced is frequently much greater than the static pressure on the line, and may cause rupture or damage to the pump, piping, or fittings. Water hammer may be controlled by regulating valve closure or by the use of relief valves and slow-closing check valves.

On pumps equipped with packings, there should be sufficient leakage from the packing to ensure lubrication of the packing and effective cooling of the stuffing box. The packing glands should always be adjusted evenly and not too

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AIR EJECTOR:

One type of vacuum primer is the air ejector. If liquid under pressure, or steam, is available, an ejector can be used. The ejector is connected to the air vent orifice. A stream of the ejecting medium is passed through the ejector, creating a vacuum in the ejector and drawing air from the pump casing and suction piping. When liquid flows steadily from the ejector discharge pipe, the pump is primed.

POSITION OF SUCTION PIPING GATE VALVE:

In flooded suction applications, the gate valve is opened when the pump is being primed and will remain open for starting and operation.

COOLANT VALVES:

Valves in the cooling liquid line should be opened prior to starting the pump, and should remain open while the pump is in operation unless it is desirable to check the rate of leakage from the stuffing box.

SHUTTING DOWN THE PUMP:

To shut down your pump, simply close the discharge gate valve and shut down the motor. If it is necessary for the pump to maintain its prime while it is shut down, it is advisable to install either a foot valve or a check valve in the suction piping.

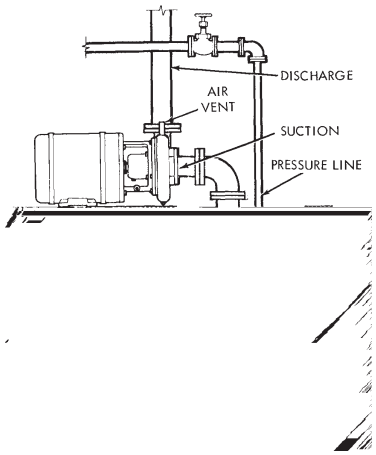


Fig. 13 Inductor Priming.

running time or every 4–6 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 is found in unheated and poorly ventilated underground locations.

Oil lubricated bearings are optional on Model 1520/2520 pumps. A fixed oil level is maintained with the power frame by an oiler which allows visual indications of reserve oil. At initial installation and before starting a unit that has been shut down for repairs or for any extended length of time, run enough 10W-30 weight motor oil through the oiler to maintain a constant oil level to ensure that the bearing will never be without an oil supply. Oil will have to be added at intervals to maintain a constant level in the oiler. This interval can be determined only by experience.

Under working conditions, oil will break down and need to be replaced at regular intervals. The length of these intervals will depend on many factors. Under normal operation, in clean and dry locations, the oil should be changed about once a year; however, when the pump is exposed to dirt contamination, high temperatures (200°F or above) or a wet location, the oil may have to be changed every 2–3 months.

CAUTION:

Use normal fire caution procedures when using any petroleum cleaner.

The motor that drives your Fairbanks Nijhuis pump may or may not require lubrication. Consult the manufacturer's recommendations for proper maintenance instructions.

REPAIRS:

Before starting any work, ensure the electrical power is locked out, the system pressure has been lowered to 0 psi and temperature of the unit is at a safe level.

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 Fairbanks Nijhuis 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 if they can be reused. Ball bearings that turn roughly or show wear should be replaced. Cracked castings should never be reused. Scored or worn pump shafts should be replaced. Gaskets should be replaced at reassembly simply as a matter of economy. They are much less expensive to replace routinely than to replace singly as the need arises.

WARNING: Sudden Start-Up Hazard

Disconnect and lock out power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

WARNING: Hot Surface Hazard

If pumping hot water, ensure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

WARNING: High Pressure Hazard

C. Slide sleeve (25) with rotating parts of mechanical seal (27) from the shaft. The sleeve should be carefully cleaned to remove any residue that may remain in the seal area. The rubber in the seal may have partially adhered to the sleeve. The sleeve must also be checked for abrasion or corrosion that can occur when fluid residue penetrates between the seal (27) and sleeve (25). The sleeve under the seal may be polished lightly to a 32RMS finish before reassembly. Do not reuse a pitted sleeve. Pin (61) maybe removed from the sleeve (25) if necessary.
D. Remove gland (23) and gasket (66).
E. The seal flexible cup and stationary seat should be pressed out of the gland (23) and the cavity cleaned of all residue. Make sure that the 1/32" radius in the seal seat cavity is not damaged during disassembly since a sharp edge can easily cut the flexible cup during reassembly.

10b. For Models 2550, 2530, 2520: Slide sleeve (25) with rotating parts of mechanical seal (27) from the shaft. The sleeve should be carefully cleaned to remove any residue that may remain in the seal area. The rubber in seal (27) may have partially adhered to the sleeve. The sleeve must also be checked for abrasion or corrosion that can occur when fluid residue penetrates between the seal (27) and sleeve (25). The sleeve under the seal may be polished lightly to a 32 RMS finish before reassembly. Do not reuse a pitted sleeve. Pin (61) may be removed if necessary.

CAUTION:

The mechanical seal (see Figure 25) is a precision product and must be treated as such. During removal, great care must be taken to avoid dropping any part of the seal. Take particular care not to scratch the lapped faces on the washer or the sealing seat. If any wear of the seal faces is noted, it is recommended to replace with a new seal during reassembly.

11.

14. For Models 2550, 2530, 2520: The seal flexible cup and stationary seat should be pressed out of the bracket (35) and the cavity cleaned of all residue. Make sure that the 1/32" radius in the seal seat cavity is not damaged during disassembly since a sharp edge can easily cut the flexible cup during reassembly.
15. Remove key (42) from the shaft and remove slingers (47). (1520/2520)
16.

capscrews should be either loosened or tightened one quarter turn at a time to acquire the correct leakage (both nuts or capscrews must be turned equally to prevent cocking of the gland). It will take approximately ten minutes at any one gland setting before the leakage rate will stabilize. When in doubt, choose the greater leakage rate since overly tight packing will ruin not only the packing, but the sleeve as well.

MECHANICAL SEAL (OPTIONAL):

The mechanical seal (27) (see Figure 25), should not be installed as an assembly. It is necessary to have the seal seat properly in place before the balance of parts can be added.

A. Wipe the sealing faces of the seat and seal washer clean. Apply a film of liquid dishwashing detergent (do not use oil or grease) to the flexible bellows in the rotating assembly and shaft sleeve (25). Slide the entire rotating assembly onto the sleeve, making sure that the carbon washer faces away from the step in the sleeve.
B. Thoroughly inspect the gland (23), checking for burrs or nicks which could damage flexible cup of mechanical seal. Apply a film of liquid dishwashing detergent (do not use oil or grease) to the flexible cup. Insert seat in cup and install in gland (23). NOTE: If it is not possible to insert seat with fingers, place cardboard protecting ring furnished with seal overlapped face of seat and press into place with a piece of tubing having end cut square. The tubing should be slightly larger than the diameter of the shaft. Remove cardboard after seat is firmly in place. Carefully slip the seal gland assembly (23) over the shaft with the stationary seat facing away from the motor. Insert gasket (66) over shaft.
C. The shaft sleeve with the seal rotating assembly on it may now be replaced on the shaft. Carefully slide the seal gland (23) and gasket (66) onto the sleeve before seating the sleeve (25) against the shaft shoulder.
D. Carefully slip cover assembly (26) over the shaft into its original position and secure with either capscrews (20 or 5).
E. Position seal gland (23) and gasket (66) onto the cover (26) taking care to seat it evenly and squarely. Secure by tightening capscrews (65) evenly. Spring tension will probably prevent the sleeve from remaining in position axially until impeller is lra1blybuTjEMC 1.3 ller is lra1blybuTjEMC 1.365) elyrjso ev Figurgibls27(,2

READ BEFORE INITIAL STARTING OR STARTING AFTER REASSEMBLY

STARTING PUMP AFTER REASSEMBLY:

Do not start pump until all air and vapor has been bled and until making sure that there is liquid in the pump to provide the necessary lubrication. Without the fluid around it, the seal may be ruined in a few seconds of operation. It is possible that the mechanical seal may drip during the first few minutes to one hour of operation.

WARNING: Hot Surface Hazard

If pumping hot water, ensure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

WARNING: Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not reuse old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

WARNING: Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

WARNING: Electrical Overload Hazard

Ensure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

WARNING: Sudden Start-Up Hazard

Disconnect and lock out power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

WARNING:

On the 1520 with a 15" impeller on a #21 power frame, reverse rotation will destroy the pump.

You must make sure that the motor rotates in the proper direction BEFORE coupling the motor to the pump. Start the drive motor to make sure the direction of rotation is the same as the direction indicated by the arrow on the pump casing.

The arrow on the casing always points clockwise when the pump is viewed from the motor end.

On 3 phase motors, you can reverse one of the power leads if the motor is not rotating clockwise.

WARNING:

Reverse rotation will quickly destroy the pump.

After you are sure the motor is rotating clockwise you can couple the motor to the pump. Again, after coupling but BEFORE starting it is important to check coupling and shaft alignment. Use a standard dial indicator to align the motor shaft and pump shaft to within 0.003"–0.005".

Model 1550 List of Parts

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
17. Retaining Ring
18. Jacket
19. Gasket
19A. Gasket
20. Capscrew (not shown)
21. Nut
22. Clamp
23. Gland
24. Stud
25. Sleeve
26. Cover
27. Seal
28. Packing
29. Lantern Ring
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew

Model 1530 List of Parts

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
17. Retaining Ring
18. Jacket
19. Gasket
19A. Gasket
20. Capscrew (not shown)
21. Nut
22. Clamp
23. Gland
24. Stud
25. Sleeve
26. Cover
27. Seal
28. Packing
29. Lantern Ring
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
61. Pin
65. Capscrew
66. Gasket
67. Plug, Pipe
68. Plug, Pipe
69. Nipple
70. Gasket
71. Locknut
72. Gasket
73. Base
74. Plug, Pipe
75. Plug, Pipe
76. Coupling, Pipe

Model 1520 List of Parts

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
17. Retaining Ring
18. Jacket
19. Gasket
19A. Gasket
20. Capscrew (not shown)
21. Nut
22. Clamp
23. Gland
24. Stud
25. Sleeve
26. Cover
27. Seal
28. Packing
29. Lantern Ring
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
40. Washer
41. Support
42. Key
43. Grease Fitting
44. Tube, Vent
46. Plug, Pipe
47. Slinger
47A. Slinger
48. Capscrew
49. Bearing Cap
50. Gasket
51. Seal
51A. Seal
52. Retaining Ring
53. Bearing
54. Bearing
55. Shaft
56. Plug, Pipe
57. Frame
58. Grease Fitting
59. Plug, Pipe
60. Oiler Assembly
61. Pin
62. Capscrew
63. Washer
64. Support
65. Capscrew
66. Gasket
67. Plug, Pipe
68. Plug, Pipe
69. Nipple
70. Gasket
71. Locknut
76.

Model 2550 List of Parts

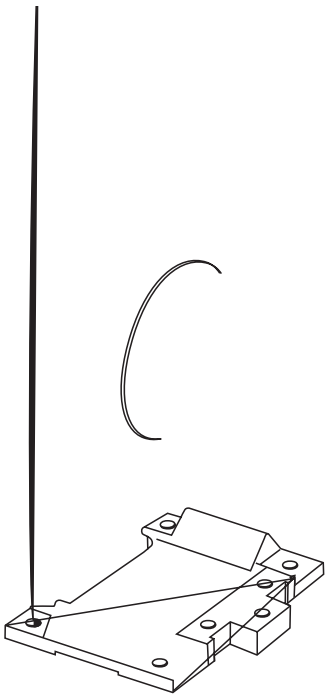
1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
25. Sleeve
27. Seal
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
40. Washer
41. Support
61. Pin

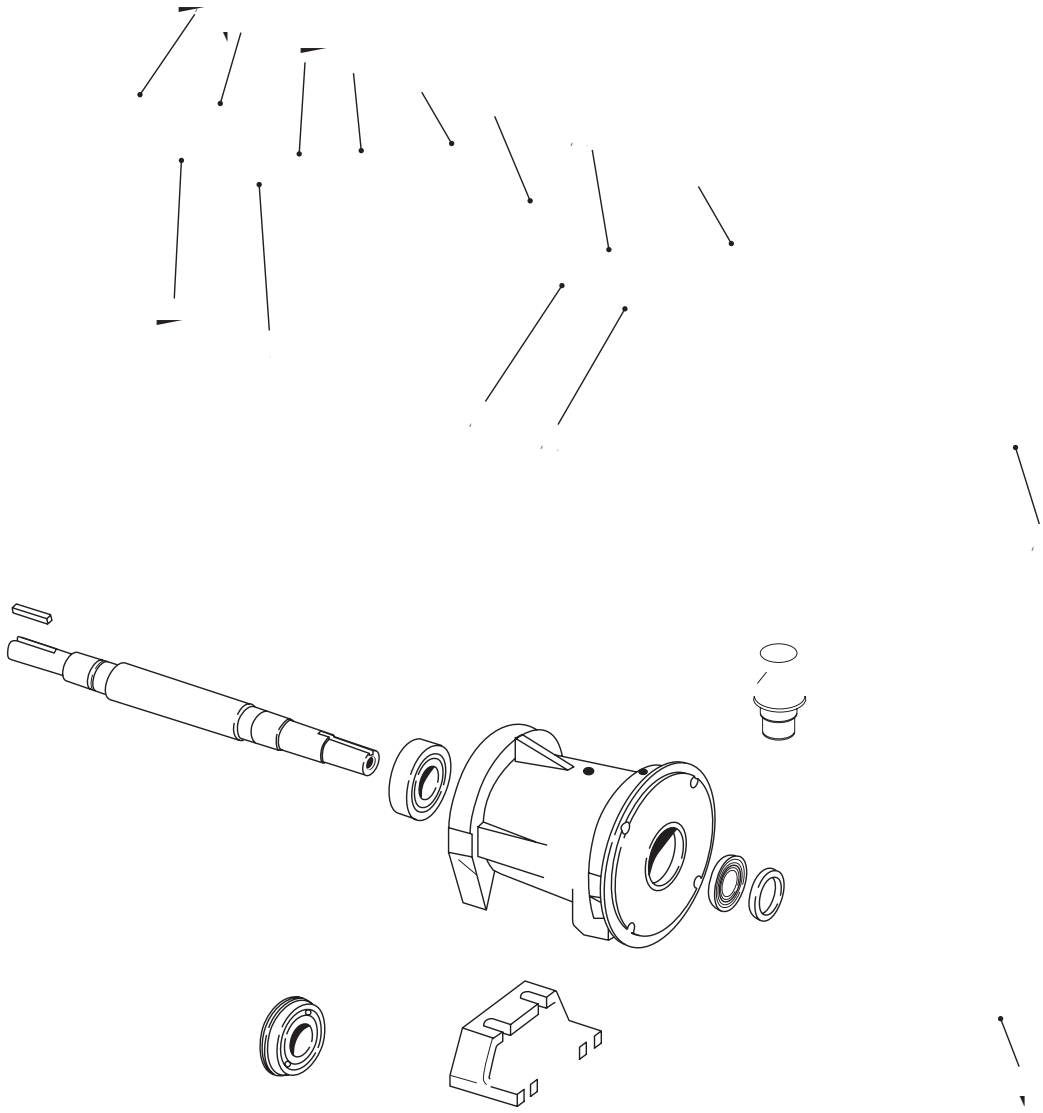
Model 2530 List of Parts

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
25. Sleeve
27. Seal
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
61. Pin
72. Gasket
73. Base
74. Plug, Pipe
75. Plug, Pipe

Model 2520 List of Parts

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
25. Sleeve
27. Seal
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
40. Washer
41. Support
42. Key
43. Grease Fitting
44. Tube, Vent
46. Plug, Pipe
47. Slinger
47A. Slinger
48. Capscrew
49. Bearing Cap
50. O-g





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