

# INSTRUCTION AND REPAIR MANUAL

## MODELS 341A, 342A AND 344A

# 6

### NOTE

This repair manual is applicable to pump Models 341A, 342A and 344A. All photos illustrate Model 344A.

### **ATTENTION: SAFETY WARNINGS:**

Read and understand all warnings before installation or servicing pump.

### **OPERATIONAL LIMITS: \***

Maximum Operating Pressure: 175 psi at Temperatures to 150°F (65.6°C)  
Maximum Operating Temperature: 225°F (107°C)

\* See ASTM A126/ANSI B16.1 for pressure/temperature ratings of flanges.

### **ELECTRICAL SAFETY:**

#### **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

Insure 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 lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

### **HIGH TEMPERATURE SAFETY:**

#### **Warning:** Hot Surface Hazard

If pumping hot water, insure 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 re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

### **HIGH PRESSURE SAFETY:**

#### **Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

#### **Warning:** Expansion Hazard

Water expands when heated. Install properly sized thermal expansion tanks and relief valves. Failure to follow these instructions could result in serious personal injury, death or property damage.

### SERVICE

Your Aurora pump requires no maintenance other than periodic inspection, occasional cleaning and lubrication of bearings (MODEL 344A only). The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The liquid end of the pump is lubricated by the fluid being pumped and therefore does not require periodic lubrication. The motor, however may require lubrication, in which case, the motor manufacturer's recommendation should be followed.

### LUBRICATION OF IMPELLER SHAFT BEARINGS

The MODEL 344A pump is available with three options for lubricating the shaft bearings. They are:

1. Regreasable (standard)
2. Oil Lubrication
3. Sealed Bearings, Permanent Lubrication

Regreasable bearings will require periodic lubrication and can be accomplished by using the zerk or lubrication fittings in the cartridge cap and power frame. Lubricate the bearings at regular intervals using a grease of high quality. Polyurea base

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**PENTAIR PUMP GROUP**

## MODELS 341A-342A-344A

grease is recommended as lubricants for pumps operating in both wet and dry locations. Mixing of different brands of grease should be avoided due to possible chemical reactions between the brands which could damage the bearings. Accordingly, avoid grease of vegetable or animal base which can develop acids, as well as grease containing rosin, graphite, talc and other impurities. Under no circumstances should used grease be reused.

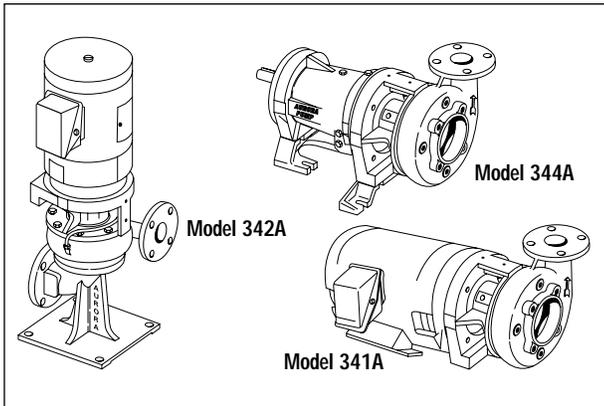
Over lubrication should be avoided as it may result in overheating and possible bearing failure. Under normal application, adequate lubrication is assured if the amount of grease is maintained at 1/3 to 1/2 the capacity of the bearing and adjacent space surrounding it.

In dry locations, each bearing will need lubrication at least every 600 hours of running time or every 6 to 12 months, whichever is more frequent. In wet locations the bearings should be lubricated at least after every 300 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 is found in unheated and poorly ventilated underground locations.

Oil lubricated bearings are optional on MODEL 344 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 insure 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 only be determined by experience.

Under working conditions, oil will breakdown 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 to 3 months.



A. Assembled Units.

## CAUTION

Use normal fire caution procedures when using any petroleum cleaner.

### REPAIRS

Before starting any work, insure 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 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 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 lockout 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, insure 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

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

### **Warning:** Spraying Water Hazard

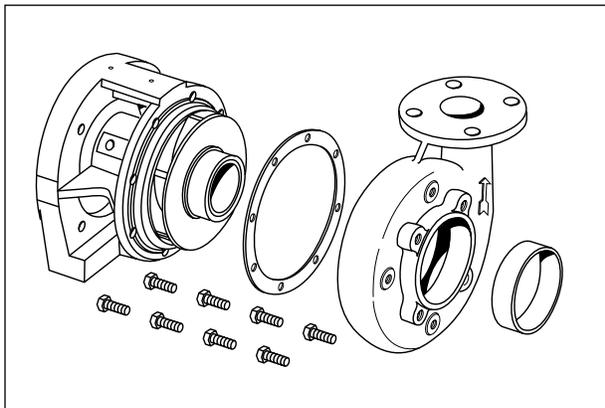
When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

## MODELS 341A-342A-344A

### DISASSEMBLY

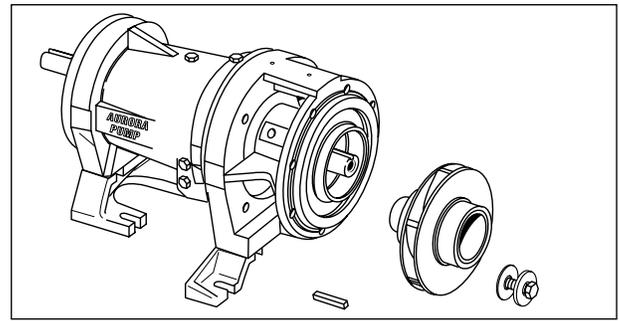
Disassemble only what is needed to make repairs or accomplish inspection. (See Figure 2 for Model 341A, Figure 3 for Model 342A and Figure 3 for Model 344A.)

1. Disconnect and lockout power source to prevent drive unit from being energized during disassembly.
2. Unscrew the two drain plugs (4) from the casing (6). On Model 342A pumps, remove plugs (74 and 75) to drain pump. Also unscrew the two plugs (4) from casing (6).
3. Remove all relief, cooling, flushing or drain lines from pump, including compression connections (1 and 2) and tubing (3). Break suction and discharge connections unless it is intended to remove the power frame or motor assembly and leave casing (6) in the line. On Model 342A pumps, break discharge connections only, unless it is desired to remove base (73). Remove capscrews (39) and lift pump assembly from base (73). Remove gasket (72).
4. On Model 344A pumps, remove the flexible coupling from between the pump and motor. Next unscrew the bolts that hold support(s) (41 and 64) to the base and slide the pump out to be worked on.
5. Remove capscrews (5) and pull casing (6) from bracket (35). Remove gasket (8).
6. Unscrew impeller screw (9) and remove washer (9A), taking care not to damage gasket (9B) or capscrew seal (9C).



B. Casing, Gasket, and Wearing Ring Removed.

7. Slide impeller (11) and impeller key (12) from the shaft, again taking care not to damage gasket (10) located behind impeller. Remove gasket (10).
8. Wearing ring(s) (7 and 16) are pressed into their housings with an interface fit and must be removed with a puller. New ring(s) should be used for reassembly since it is likely that during removal this fit will be lost. Do not remove wearing rings if not being replaced.

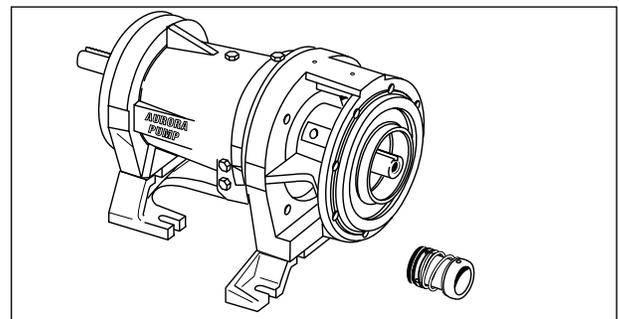


C. Impeller and Key Removed.

9. Impeller wearing rings (optional - 14 and 15) are pressed on and must be cut off if replacement is necessary. If they are turned off in a lathe, take care not to cut into the impeller.
10. 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 be remaining in the seal area. The rubber in seal (27) may have become 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 1) 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.

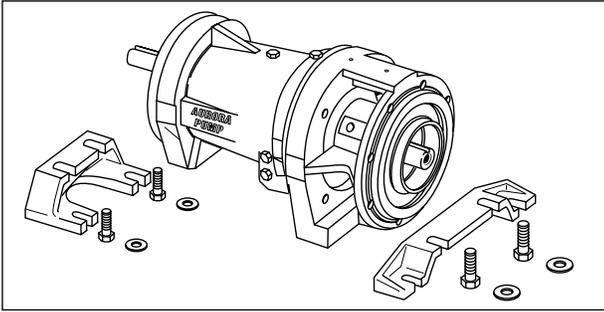


D. Mechanical Seal Removed.

11. On Model 344A pumps, remove capscrews (39 and 62) and washers (40 and 63) to take off support feet (41 and 64). On Model 341A frame size 143 thru 184-JM only, unscrew capscrews (39) washers (40) and remove support (41) from bracket (35).
12. Unscrew capscrews (32) to remove bracket (35) from frame (57) or motor on Models 341A and 342A.

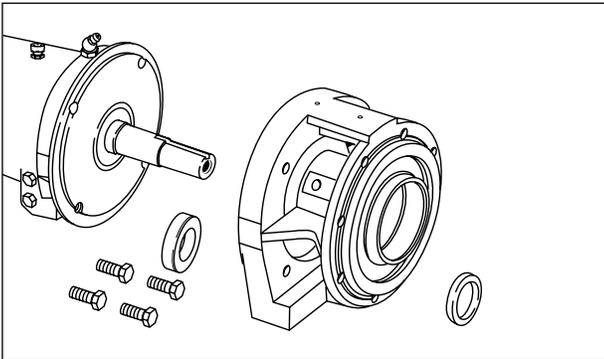
## MODELS 341A-342A-344A

13. 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 inch radius in the seal seat cavity is not damaged during disassembly since a sharp edge can easily cut the flexible cup during reassembly.



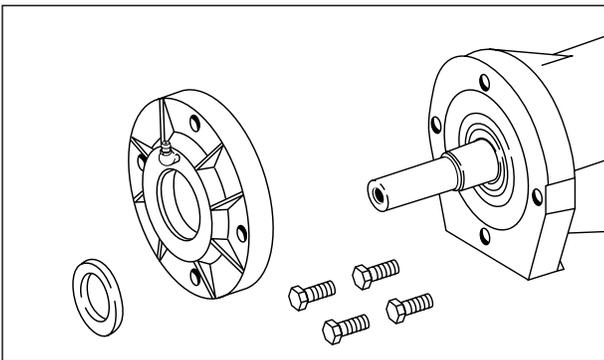
E. Support Feet Removed.

14. On Model 344A pumps, remove key (42) from the shaft and remove slingers (47 and 47A).
15. Unscrew capscrews (48) and remove bearing cap (49). Remove "O" ring (oil lubed only) (50) and retainer ring (52).



F. Bracket and Slinger Seal Flexible Cup and Stationary Seat Removed.

16. Slide out shaft (55) and bearings (53 and 54). Since bearings (53 and 54) are press fitted on the shaft, they will have to be pulled or pressed off the shaft. Remove grease seals (51) from frame (57), and bearing cap (49).
17. Remove nameplate (34) and screws (33) only if replacement is needed.

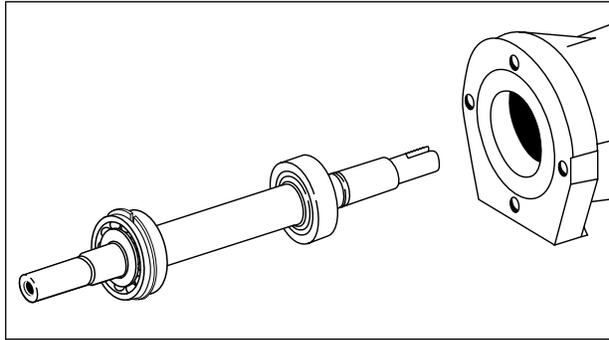


G. Bearing Cap and Slinger Removed.

## 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. Press grease seals (51) into frame (57). (344A)
2. Press bearings (53 and 54) onto shaft (55). Snap retainer ring (52) into place. (344A)



H. Shaft Assembly Removed.

3. Slide shaft (55) and bearings (53 and 54) into frame (57) until retainer ring on bearing (54) comes in contact with frame (57). Place "O" ring (oil lubed only) (50) in place. (344A)
4. Fasten bearing cap (49) in position with capscrews (48). Insert grease seals (51A) and position slingers (47 and 47A) on the shaft. (344A)
5. The mechanical seal (27) (see Figure 1) cannot be installed as an assembly. It is necessary to have the seal seat properly in place in bracket (35) before the balance of parts can be added.

Thoroughly inspect the seal cavity in seal bracket, 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 and seal seat. Insert seat in cup and install in seal bracket, taking care to seat it evenly and squarely.

## NOTE

If it is not possible to insert seat with fingers, place the cardboard protecting ring furnished with seal over lapped face of seat and press into place with a piece of tubing having end cut square. Tubing should be slightly larger than the diameter of the shaft. Remove cardboard after seat is firmly seated.

6. On Model 344A pumps, mount bracket (35) by screwing capscrews (32) evenly into frame (57) to assure proper alignment. Turn all capscrews in an even amount. Fasten the bracket and frame to supports (41 and 64) by placing washers (40 and 63) over capscrews (39 and 62) and screwing them into position.

On Model 341A and 342A pumps position bracket (35) on the motor and secure with capscrews (32). Tighten screws evenly to assure proper alignment.

## MODELS 341A-342A-344A

Secure support (41) to bracket (35) with capscrews (39) and washers (40). Frame sizes 143 thru 184-JM Model 341A only.

7. If nameplate (34) was removed, install and attach with screws (33).
8. Wipe the sealing faces of the seat and seal washer clean. Replace pin (61) in sleeve if it was removed during disassembly. Apply a film of liquid dishwashing detergent to the washer and bellows of the seal and slide the remaining seal parts onto the sleeve making sure the washer is seated against the seal seat. Check the proper sequence of assembly as indicated in Figure 1. The shaft sleeve with the seal rotating assembly on it may now be replaced onto the motor shaft. Spring tension will probably prevent the sleeve from remaining in position axially until the impeller is locked against it.
9. Press wearing ring(s) (7 and 16) in casing (6) and bracket (35). Rings should not be hammered into place. Use a press, or clamp the parts in a bench vise, using wooden blocks to protect the rings. It may be necessary to pin or dowel the rings after assembly if the insert or casing has had rings replaced before, since each reassembly can stretch or tear metal and thereby loosen the fits. If the facilities are available, it is good practice to take a very light finish cut or to ream the inside diameter of the casing rings after pressing to restore roundness. When rings are pressed, they may get squeezed out of shape.
10. Coat the mating surfaces of impeller wear ring(s) (optional - 14 and 15) and impeller (11) with Loctite sealant grade 271. Replace wear rings, using the same care as for the case wear ring(s). If the rings are to be trued on a lathe, do not clamp the impeller so tightly that it is permanently distorted.
11. Carefully replace gasket (10) on motor end of impeller. Assemble key (12) and impeller (11) to motor shaft. Secure impeller with gasket (9B), washer (9A), capscrew seal (9C) and impeller screw (9).
12. Install the two pipe plugs (4) in the pump casing. Position the gasket (8) and casing (6) against the motor bracket and secure with screws (5). On Model 342A pumps position gasket (72) and set pump assembly in place. Tighten pump to base (73) with capscrews (39).
13. Replace all relief, cooling, flushings, or drain lines from the pump including compression connections (1 and 2) and tubing (3). Replace all grease fittings pipe plugs, tube vents and oiler assembly for oil lubricated units. Connect discharge piping and suction piping, if required. Make sure to install gaskets on the flanged connections. On Model 342A pumps replace plugs (74 and 75) in base elbow (73).
14. Read carefully the section of the manual titled INSTALLATION, especially those paragraphs referring to pump and coupling alignment.
15. Connect electricity to the motor.

## 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, insure 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 re-use 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

Insure 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 lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

MODELS 341A-342A-344A

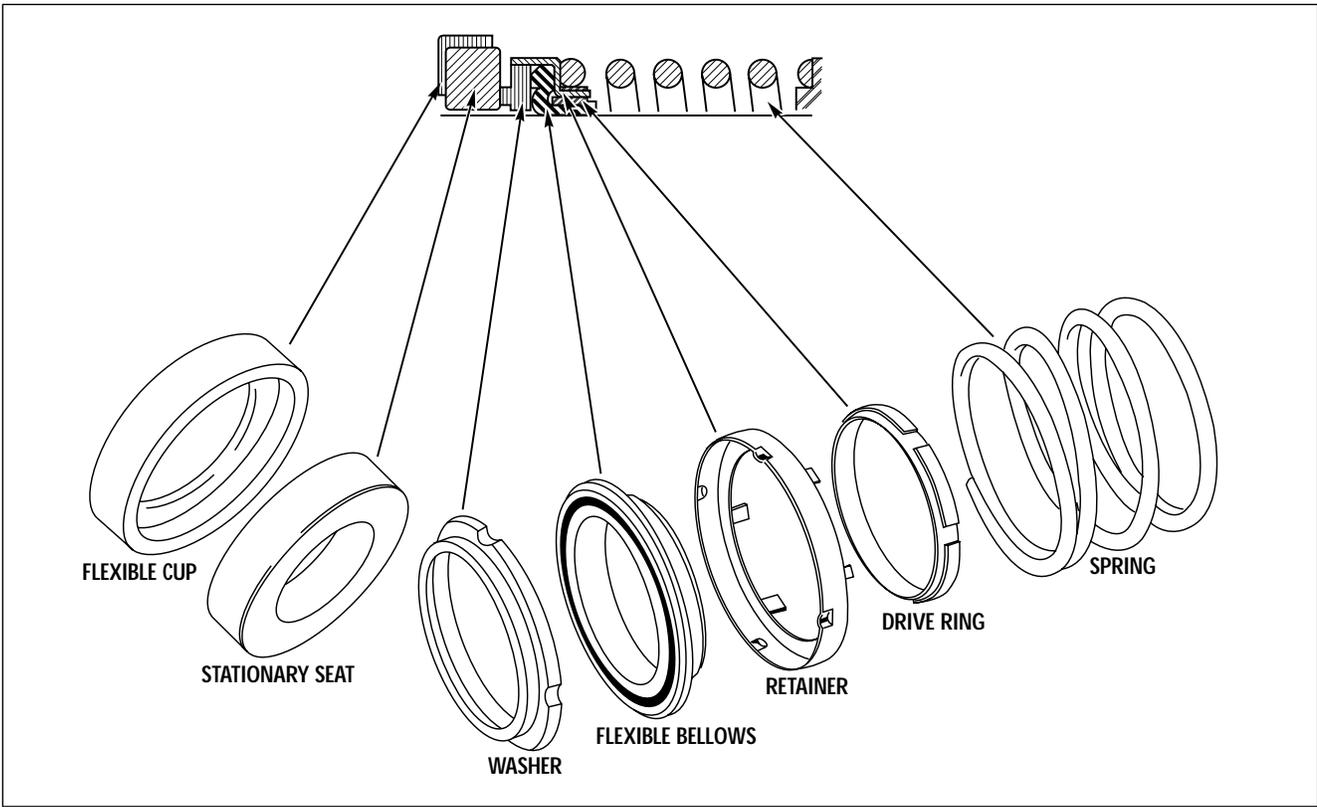


Figure 1. Mechanical Seal

**MODELS 341A-342A-344A**

**MODEL 341A LIST OF PARTS**

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

**MODEL 342A LIST OF PARTS**

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

**MODEL 344A LIST OF PARTS**

1. Elbow	25. Sleeve	50. O-Ring
2. Connector	27. Seal	51. Seal
3. Tubing	32. Capscrew	51A. Seal
4. Plug, Pipe	33. Screw	52. Retaining Ring
5. Capscrew	34. Nameplate	53. Bearing
6. Casing	35. Bracket	54. Bearing
7. Wear Ring	39. Capscrew	55. Shaft
8. Gasket	40. Washer	56. Plug, Pipe
9. Impeller Screw	41. Support	57. Frame
9A. Washer	42. Key	58. Grease Fitting
9B. Gasket	43. Grease Fitting	59. Plug, Pipe
9C. Capscrew Seal	44. Tube, Vent	60. Oiler Assembly
10. Gasket	46. Plug, Pipe	61. Pin
11. Impeller	47. Slinger	62. Capscrew
12. Impeller Key	47A. Slinger	63. Washer
14. Wear Ring	48. Capscrew	64. Support
15. Wear Ring	49. Bearing Cap	
16. Wear Ring		

**NOTES:**

1. BRONZE FITTED CONSTRUCTION WILL BE FURNISHED AS STANDARD UNLESS SPECIFIED.
2. REFER TO FACTORY FOR SPECIAL ALLOYS.
3. AURORA PUMP RESERVES THE RIGHT TO SUBSTITUTE MATERIALS WITHOUT NOTICE
4. PIECE NUMBERS 14 AND 15 ARE NOT FURNISHED AS STANDARD, WHEN FURNISHED, IMPELLER MUST BE MODIFIED.
5. PIECE NUMBERS 39, 40, 41 USED ONLY WITH MOTOR FRAMES 143 THRU 184-JM ON MODEL 341A PUMPS.

**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.**

MODEL 341A

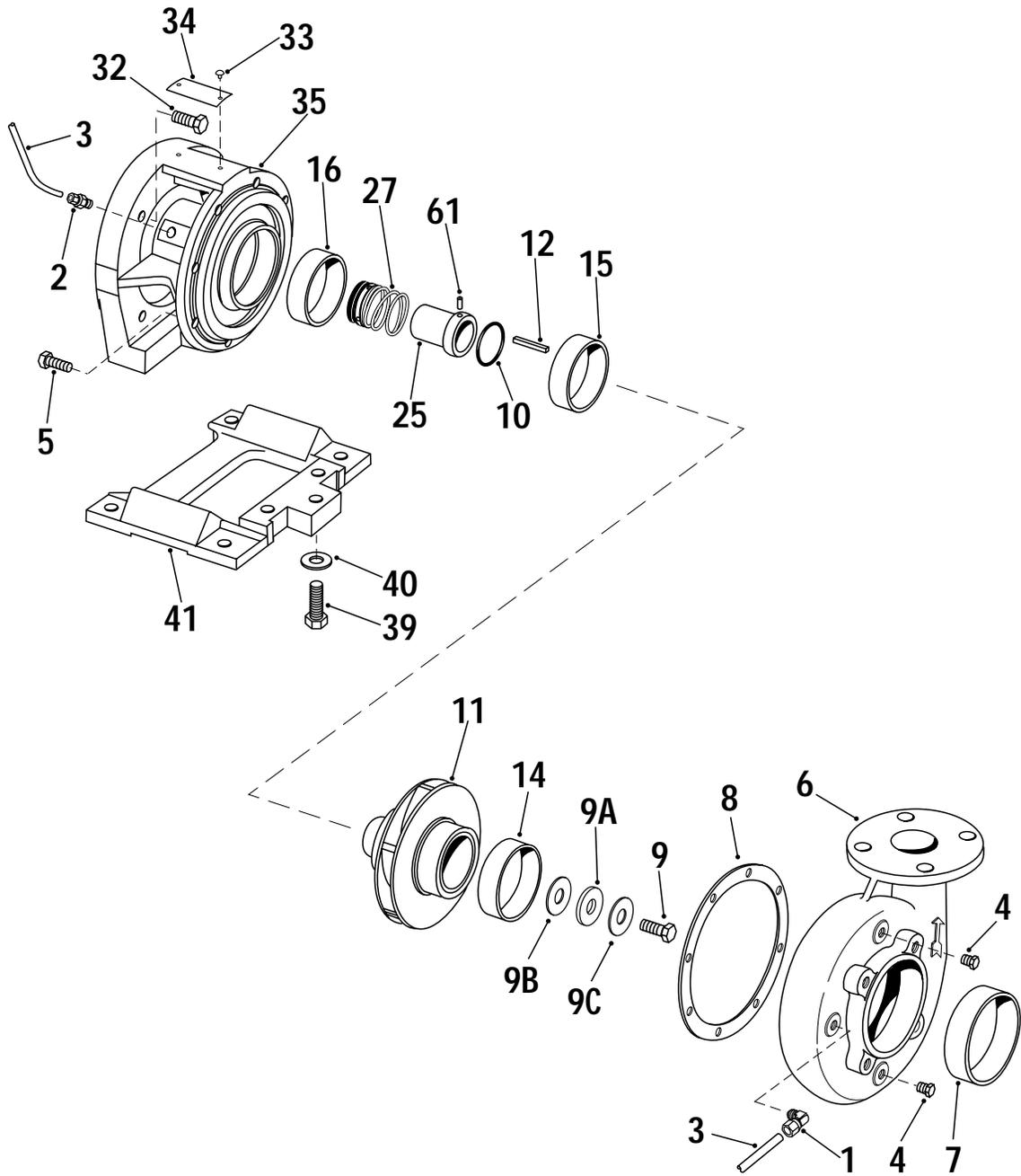


Figure 2. Model 341A Exploded View

MODEL 342A

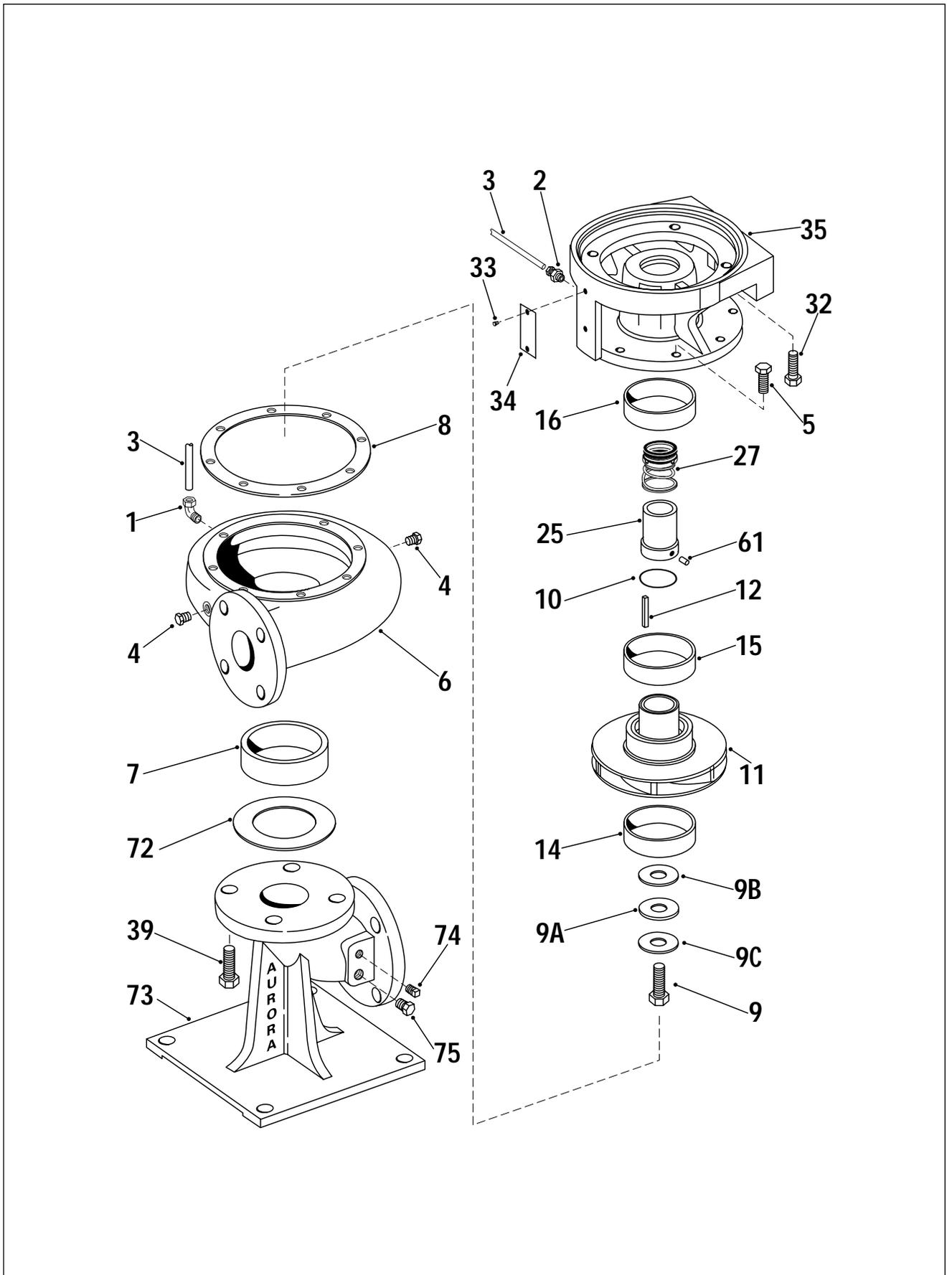


Figure 3. Model 342A Exploded View

MODEL 344A

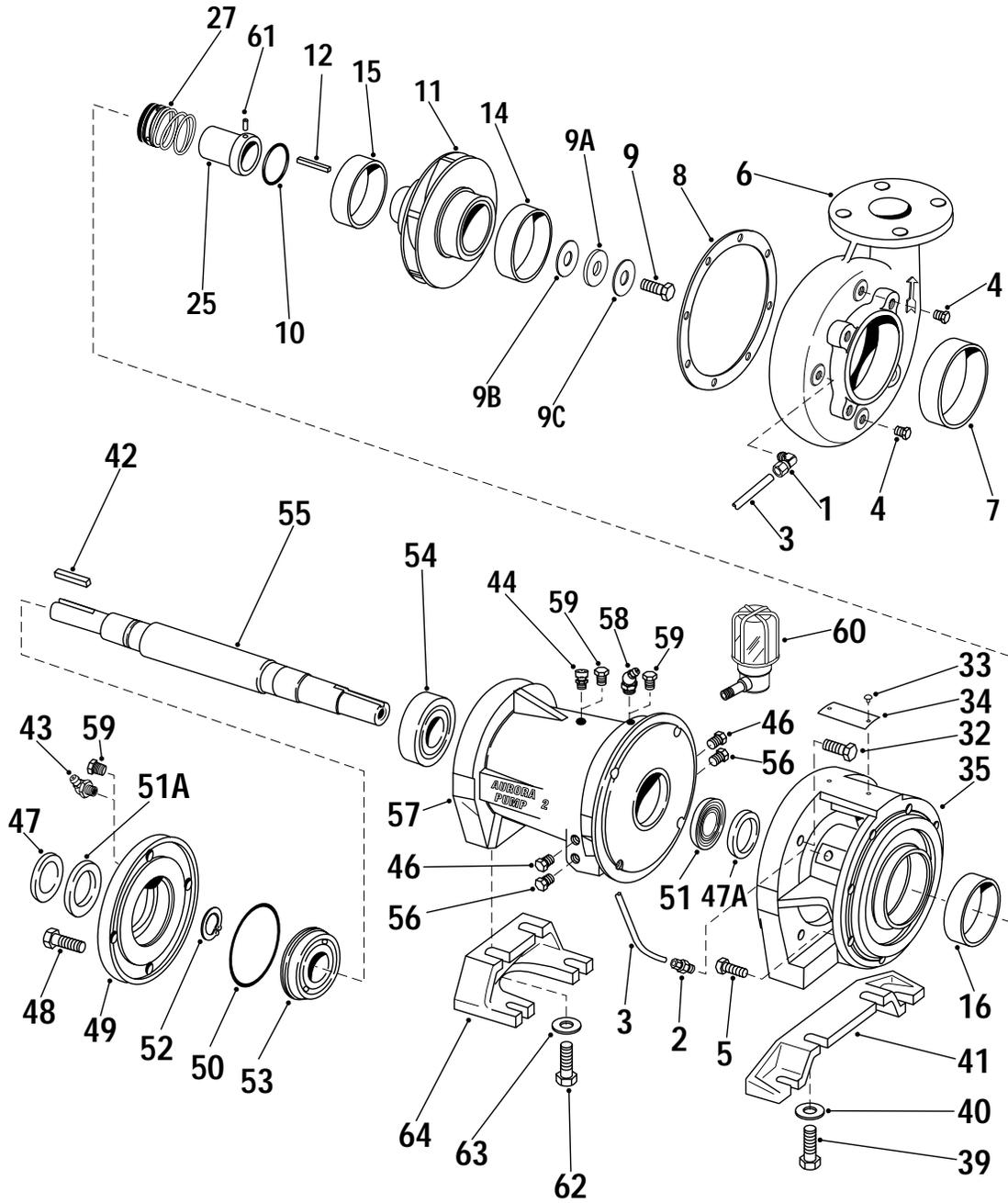


Figure 4. Model 344A Exploded View