

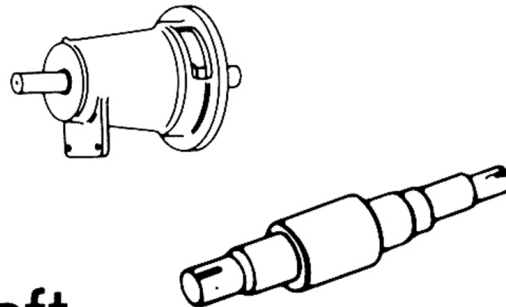


Bell & Gossett
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INSTRUCTION MANUAL

P15758
REVISION C

Instructions for Replacing the Bearing Frame Assembly or Pump Shaft



For 1510 or 3510 Pumps with 1¼" Diameter Standard Seal

INSTALLER: PLEASE LEAVE THIS MANUAL FOR THE OWNER'S USE.



SAFETY INSTRUCTION

This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.

SERVICE INSTRUCTIONS

WARNING: Unexpected Start-up Hazard

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

1. Close valves on suction and discharge sides of the pump. (If no valves have been installed, it will be necessary to drain the system.)

CAUTION: Extreme Temperature Hazard

Allow pump temperatures to reach acceptable level before proceeding. Open drain valve, do not proceed until liquid stops flowing out of drain valve. If liquid does not stop flowing from drain valve, isolation valves are not sealing and should be repaired before proceeding. After liquid stops flowing from drain valve, leave valve open and continue. Remove the drain plug located on the bottom of the pump housing. Do not reinstall plug or close drain valve until reassembly is completed. Failure to follow these instructions could result in property damage and/or moderate personal injury.

2. Remove coupler guard. Loosen set screws in both coupler halves and slide each half back as far as possible on its shaft. Remove coupler sleeve. Where a full diameter impeller is used, it may be necessary to remove the pump coupler half and slide the motor back on its base in order to gain sufficient clearance to remove the pump assembly from the volute.
3. Remove support foot capscrews. Loosen volute capscrews, but do not remove. Begin to remove the pump assembly from the volute by placing capscrews in the jack screw holes for leverage.




WARNING: Excessive Pressure Hazard

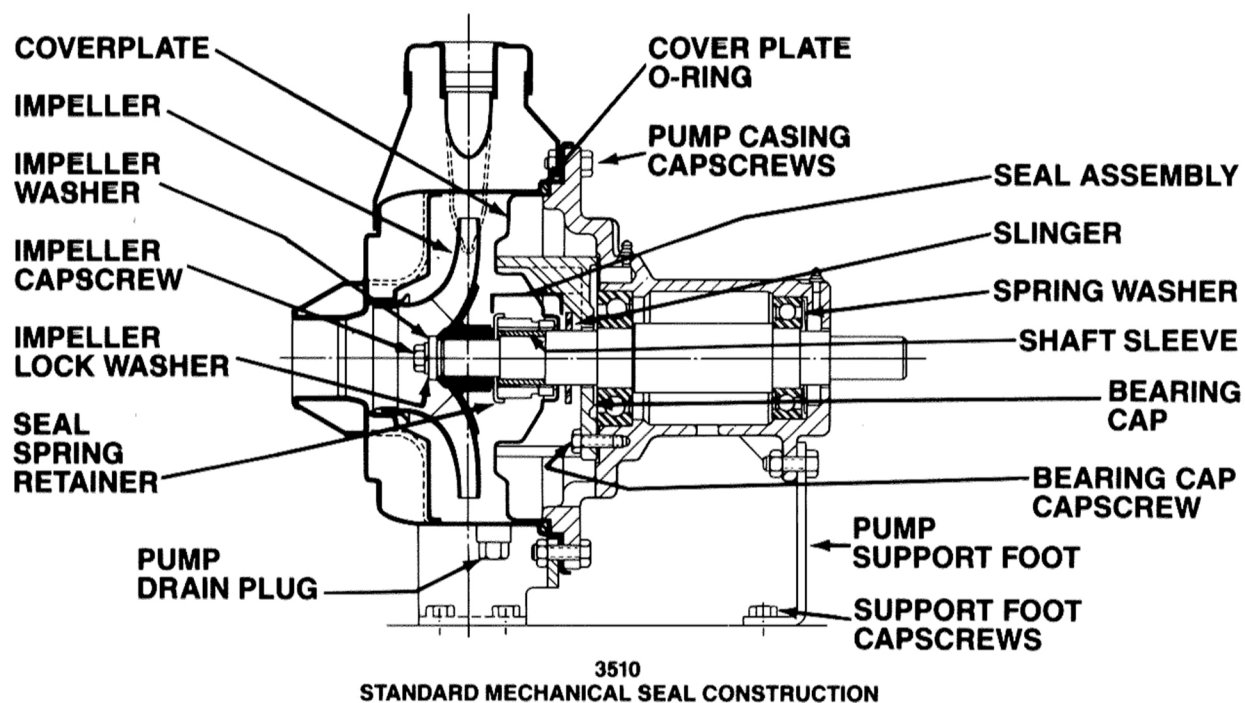
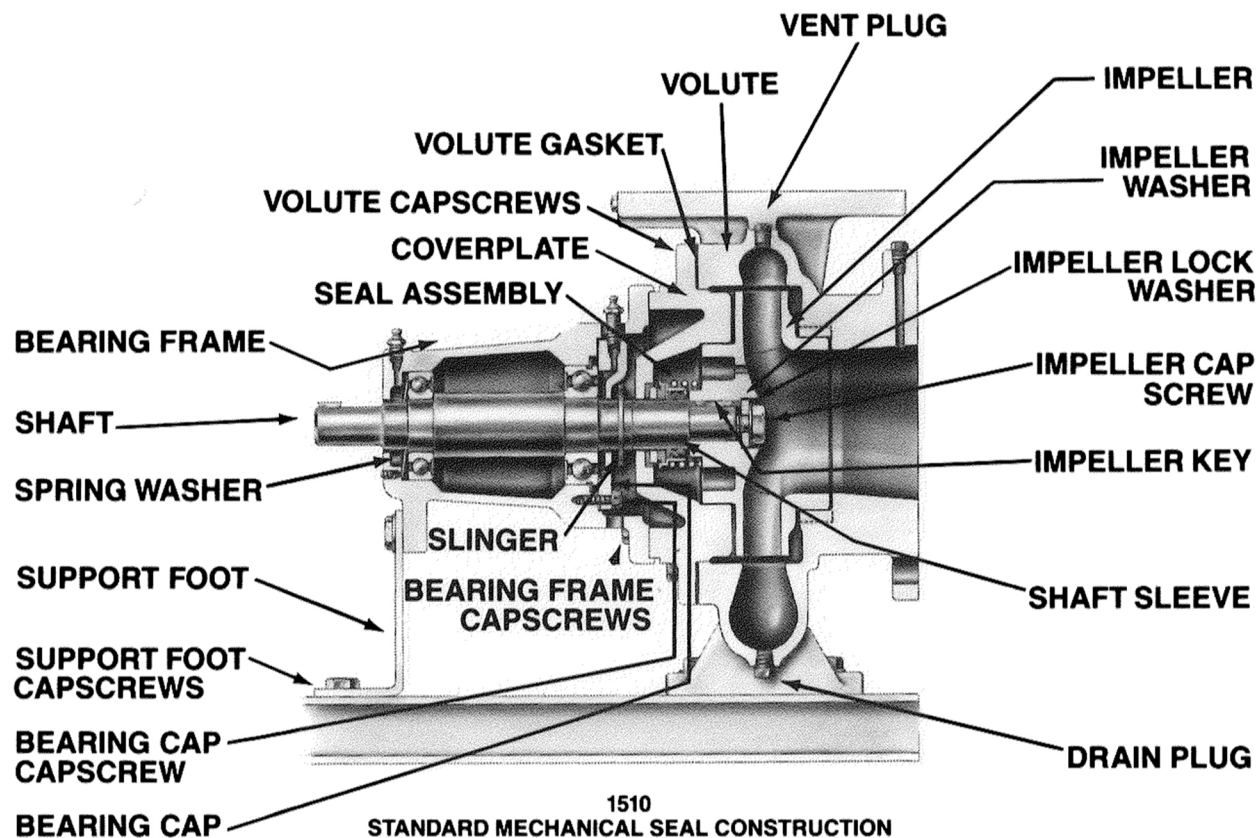
Make certain internal pressure is relieved before continuing. Failure to follow these instructions could result in serious personal injury or death, and property damage.

4. Remove flushing tube, if any. Remove the volute capscrews, and remove the pump assembly from volute.
5. Remove the impeller capscrew, lockwasher, washer and impeller.
6. Remove the rotating portion of the seal, using a screwdriver, if necessary, to loosen the rubber ring.
7. Remove the seal insert, insert gasket and insert retainer (if used).

8. Remove the bearing frame capscrews and dislodge the bearing assembly from the coverplate (1510 only). If the bearing frame assembly is being replaced, skip to step 15. If replacing the shaft, continue to step 9.
9. Remove the grease fitting from the bearing cap (1510 only).
10. Remove the bearing cap capscrews and lift out the bearing cap and the shaft assembly.
11. Press the ball bearings off the shaft by pressing the inner race only. If a press is not available, a drift pin may be used to force the bearings off of the shaft. Ideally, old bearings should be replaced, or at least regreased (see page 4 for lubrication instructions) before installing on the new shaft.
12. Press the new or regreased ball bearings on the shaft, shield-side first, as far as they can go. Replace spring washer and place shaft assembly into bearing frame.
13. Remove any oil or dirt from new shaft and sleeve. Use Loctite retaining compound (included with shaft and sleeve) to coat the entire sleeve area of the shaft. Slip on sleeve and rotate to distribute Loctite compound evenly. Allow to set for 10 minutes before re-assembling the pump. Remove any excess Loctite compound.
14. Reinstall the bearing cap. Fasten bearing cap capscrews and tighten per torque chart below. Place the water slinger on the shaft, leaving approximately $\frac{1}{8}$ " between the slinger and the bearing cap. Fasten grease fitting into bearing cap (1510 only).
15. Mount the bearing frame assembly onto the coverplate (if required) and tighten the bearing frame capscrews (per torque chart).
16. Thoroughly clean the coverplate seal cavity and inspect for surface damage such as pitting, corrosion, nicks or scratches. Replace the coverplate if necessary.
17. Lubricate the shaft sleeve and coverplate seal cavity with soapy water. **DO NOT USE PETROLEUM LUBRICANT.** Install a new cup gasket and a new seal insert with indentation side down into the cup.
18. Slide a new rotating seal assembly onto the shaft sleeve. Using a screwdriver, push on the top of the compression ring until the seal is tight against the seat insert. Install seal spring. Install spring retainer (3510 only).
19. Install impeller, impeller washer, lockwasher and cap-screw. Tighten capscrew per torque chart below.
20. Scrape all particles of old volute gasket off volute and coverplate surfaces and replace with new gasket (1510 pumps). Remove and replace coverplate O ring on 3510 pumps. Install pump assembly into volute and tighten volute capscrews per torque chart. Install seal flushing tube (if used). Install support foot capscrews and tighten per torque chart.
21. Install coupler and align, following directions on page 4. Install coupler guard and drain plug and close drain valve.
22. Open isolation valves and inspect pump for leaks. Return pump to service.

⚠ WARNING: Rotating Components Hazard
Do not operate pump without all guards in place. Failure to follow these instructions could result in serious personal injury or death and property damage.

Capscrew Type	Head Marking	CAPSCREW TORQUE (FOOT-POUND)					
		Capscrew Diameter					
		$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$
SAE Grade 1 & 2		3	6	10	16	24	46
Stainless Steel							
SAE Grade 5		8	17	30	50	76	148



NOTE: To assure continued quality performance, use only genuine Bell & Gossett replacement parts.

BEARING MAINTENANCE

Bearing lubrication schedule

Type of bearing	First lubrication, assembled pumps and replacement bearing frames	First lubrication, replacement bearings	Lubrication interval, pump, polyurea-based grease, operating hours
Grease-lubricated bearings	Not applicable, lubricated before shipment	Hand pack bearings before pressing on the shaft. After bearing frame assembly, follow relube instructions to lube bearings.	<ul style="list-style-type: none"> • 3600 hours, 2 pole • 7200 hours, 4 pole • 50% for severe conditions: dirty, wet and/or above 100°F (38°C) ambient • 50% for bearing frame temperature above 180°F (82°C) • 75% for lithium-based grease

Regrease the grease-lubricated bearings

It is important to lubricate pumps and motors that require regreasing with the proper grease. See the motor service instructions and nameplate for motor regreasing information. Pumps are to be regreased using the grease types listed below or approved equal. Always keep pump and motor properly lubricated.

NOTICE:

Make sure the grease container, the greasing device, and the fittings are clean. Failure to do so can result in impurities entering the bearing housing when you regrease the bearings.

1. With fully enclosed coupling guards, regrease pump while pump is running.
 - a. With old style open ended guards, stop pump, re-grease, and hand turn shaft before re-starting.
2. Wipe dirt from the grease fittings before greasing.
3. Fill both of the grease cavities through the fittings with the recommended grease. Stop when grease leaks out at shaft.
4. If needed, stop pump and wipe off excess grease.
5. Restart pump.

The bearing temperature usually rises after you regrease due to excess supply of grease. Temperatures return to normal in about two to four operating hours as the pump runs and purges the excess grease from the bearings. Maximum normal bearing housing temperature for polyurea-based grease is 225°F (107°C) and for lithium-based grease 180°F (82°C).

Lubricating grease requirements

NOTICE:

- Never mix grease of different consistencies (NLGI 1 or 3 with NLGI 2) or with different thickeners. For example, never mix lithium-based grease with a polyurea-based grease. This can result in decreased performance.
- Remove the bearings and old grease if you need to change the grease type or consistency. Failure to do so can result in equipment damage or decreased performance.

Specifications – Grease Types

Polyurea-based greases	Lithium-based greases, NLGI 2
Pumps built on or after Dec 1, 2014 use Polyurea-based greases. See date code label and lubrication label on pump or bearing frame indicating polyurea-base grease	Pumps built before Dec 1, 2014 were built with Lithium-based greases, NLGI 2, and do not have lubrication label on pump or bearing frame indicating pump grease type
ExxonMobil Polyrex™ EM	Shell Gadus® S2 V100 2 (was Alvania® RL 2)
Chevron SRI NLGI 2	Chevron Multifak® EP 2
Shell Gadus® S5 T100 2	ExxonMobil Unirex™ N2

ALIGNMENT OF SLEEVE TYPE COUPLERS

Before aligning the coupler, make sure that there is about $\frac{1}{8}$ " end clearance between the sleeve and the two coupler halves.

Rubber and Hytrel sleeves should not be interchanged as they have completely different ratings relative to motor horsepower.

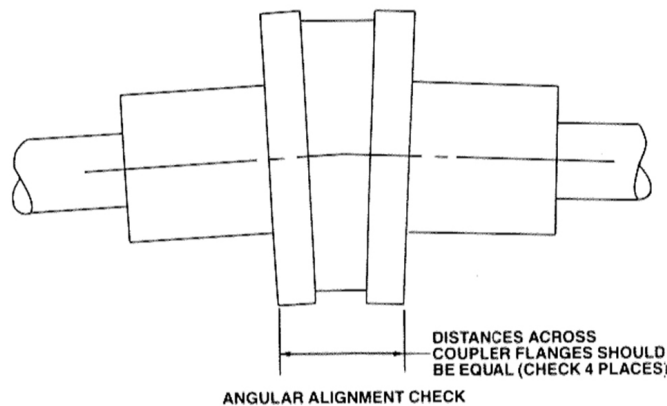
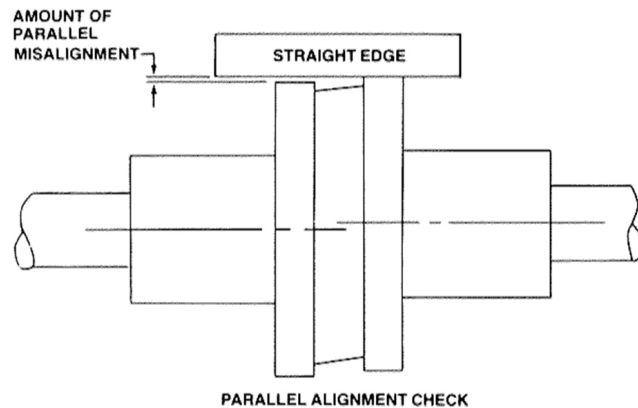
To align sleeve type couplers:

1. Parallel alignment must be made with a straight edge across the two coupler flanges at four points 90° apart. DO NOT ROTATE COUPLER.

2. Angular alignment must be checked with a micrometer or caliper, measure from the outside of one flange to the outside of the other flange at four points 90° apart. DO NOT ROTATE COUPLER.

All alignment should be done by moving or shimming the motor only. Adjustments in one direction may alter alignment in another. Therefore, check alignment in all directions after a correction is made.

If couplings are to operate at speeds higher than 1800 RPM, greater accuracy of shaft alignment will be required. A dial indicator should then be used.



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