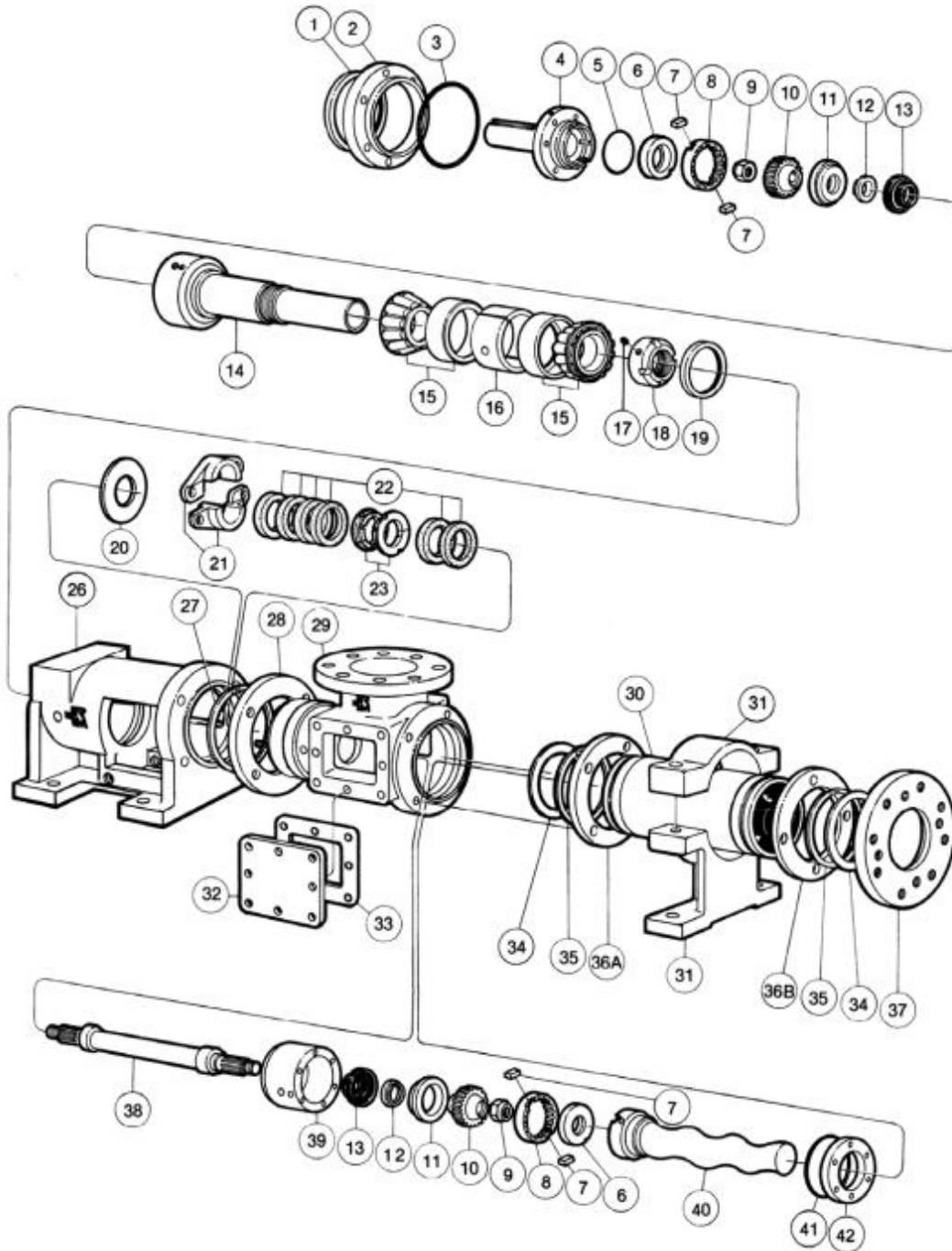




Disassembly and reassembly of a CK 2000 Series pump



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CK 2000 SERIES PUMPS



4-8. DISASSEMBLY

Note: The following instructions cover **ONE** procedure for disassembling all pump components. Major pump components can be disassembled in various ways since specific installation location limitations will determine method of component removal.

4-9. Disconnect Pump

1. Flush the pump (preferably with clean water) to remove the pumpage from the unit.
2. Shut off pump.
3. Close suction and discharge valves.
4. Turn off flush water to packing or mechanical seal, if used.
5. Disconnect power source.
6. Drain any fluid in pump by removing the drain plug or inspection plate.
7. Remove inspection plate (32) and gasket (33).

4-10. Packing Removal

1. Shut off pump.
2. Complete Section 4-9, steps 3 - 6.
3. Remove gland adjustment nuts (F), gland studs (H) and gland halves (21) from stuffing box.
4. Remove packing rings (22). This is best done by using flexible packing extractors (see fig. 4-2). Use two extractors simultaneously on opposite sides of each ring. Pull evenly.
5. Remove lantern rings (23) in similar fashion. Twist split rings to remove from shaft.
6. Remove additional packing rings.

4-11. Stator Removal

1. Complete Section 4-9.
2. Remove section of discharge pipe attached to discharge flange (37).
3. Remove top half of stator support (31).
4. Unbolt stator clamp ring (36A) from suction housing (29). Pull stator off rotor. Remove stator gasket (34). Use a screwdriver tip to carefully remove stator retaining ring (35). Remove stator clamp ring (36) from stator (30).
5. Remove discharge flange by unbolting from stator clamp ring (36B) and remove stator gasket (34). Remove stator retaining ring (35) and stator clamp ring from stator (30).
6. Check rotor (40) and stator (30) for wear. See Sections (4-21) and (4-22) for instructions.

4-12. Drive End Gear Joint Removal

1. Complete Section 4-9.
2. Remove drive coupling or V-belts and pulley from drive shaft head (4).
3. Remove vent plugs (C) from drive shaft head (4) and drive shaft (14). Remove set screw (D) from drive shaft (14). Remove six socket head screws (E) from drive shaft head (4) and remove drive shaft head. Remove primary thrust plate (6) from drive shaft head and remove two keys (7).
4. Remove lock nut (9) from end of connecting rod (38). Remove ring gear (8), gear ball (10), secondary thrust plate (11), seal support (12), and gear joint seal (13).

Note: It is recommended that each time the drive end gear joint is disassembled, the drive shaft O-ring (5) and gear joint seal (13) should be replaced.

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4-13. Rotor and Connecting Rod Removal

1. Complete Sections 4-9, 4-11 and 4-12.
2. Pull the rotor/connecting rod assembly from the pump. Remove the vent plug (C) and set screw (S) from the gear joint shell (39).
3. Remove six socket head screws (T) from head ring (42) and remove head ring and O-ring (41). Slide connecting rod/ gear joint assembly off rotor head. Remove gear joint keys (7) and primary thrust plate (6) from rotor (40).
4. Slide gear joint shell (39) off gear ball/connecting rod assembly. Slide ring gear (8) off gear ball (10).
5. Clamp connecting rod (38) in vice or hold with pipe wrench and remove lock nut (9). Remove gear ball (10), secondary thrust plate (11), seal support (12), and gear joint seal (13) from connecting rod.

Note: It is recommended that each time the rotor end gear joint is disassembled, the rotor head O-ring (41) and gear joint seal (13) should be replaced.

4-14. Drive Shaft and Bearings Removal

Note: If the space immediately in front of the pump is unobstructed for a distance equal to the length of the drive shaft, follow steps 1 through 3.

1. Complete Sections 4-9 and 4-12.
2. Remove six hex head screws (A) from bearing cover plate (2). Slide bearing cover plate (2) with radial grease seal (1) and O-ring (3) off drive shaft.
3. Pull drive shaft/bearing assembly out of bearing housing, taking steps to support the weight of the assembly as the bearings clear the housing. Remove grease seal (19) from the bearing housing.

Note: If the space in front of the pump is obstructed, and the obstruction is not easily moveable, follow steps 4 through 6.

4. Complete Sections 4-10 and 4-11, and pull the rotor/connecting rod assembly from the pump.

5. Remove the four cap screws (0) from the clamp ring (28), and the four cap screws fastening the bearing Housing (26) to the base. Slide the bearing housing/shaft assembly out of the suction housing until the quill clears the stuffing box. Assembly may now be turned or removed to an area where sufficient space is available to permit removal of the shaft/bearing assembly.

Note: Some pumps have a sleeve installed on the drive shaft to receive any possible wear caused by the packings. (See fig. 4-10.) To remove sleeve, refer to Section 4-47.

CAUTION: The bearings are pressed on the shaft during assembly. Care must be taken during disassembly to avoid damaging the bearings or shaft.

6. Remove bearing lock screw (17) from bearing nut (18). Using suitable spanner wrench or soft punch and hammer, thread lock nut off drive shaft. Do not use a pipe wrench to remove the lock nut.
7. Remove both halves of bearing spacer (16) from shaft, and using suitable bearing press and adapters, press bearings off shaft.

4-15. CLEANING

Clean all parts in a suitable cleaning solvent being careful to observe all safety precautions regarding the use of solvent.

4-16. INSPECTION

4-17. Bearings. After cleaning, rotate bearings very slowly under hand pressure to feel for smoothness and even action. Never spin a dry bearing. Check for cracks, galling, pitting, burrs, etc. Replace bearing if there is any doubt concerning complete serviceability.

4-18. Drive Shaft. Inspect drive shaft (14) for scoring, burrs, cracks, etc. Replace as necessary.

4-19. Seals. It is sound practice to always replace grease seals (1 and 19) whenever drive shaft and tapered roller bearings are removed. Apply Loctite 690 to outside diameter of both grease seals.

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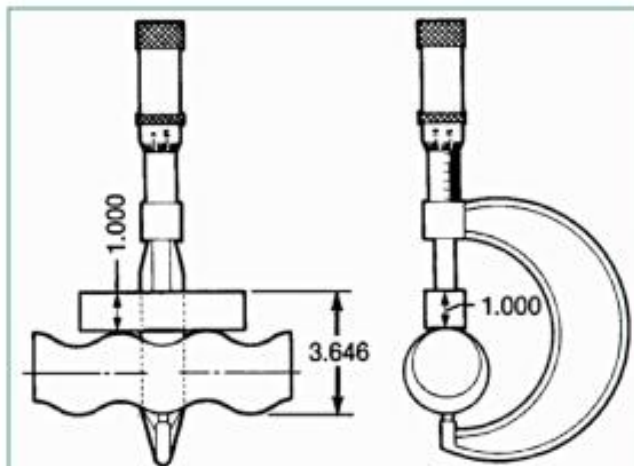
4-20. Packing. It is sound practice to always replace pack-ing (22) whenever the pump bearing housing is disassembled.

4.21. Rotor.

1. To check for excessive wear of rotor (40), measure the rotor crest-to-crest diameter (see fig. 4-4) and compare with the following chart:

Rotor Capacity	Standard *Crest to Crest Dia. (inches)
008	2.772 + .000/- .004
012	2.676 + .000/- .004
022	3.425 + .000/- .004
036	4.015 + .000/- .004
050	4.015 + .000/- .004
065	4.906 + .000/- .004
090	4.906 + .000/- .004
115	5.709 + .000/- .004
175	6.584 + .000/- .004
335	5.800 + .000/- .005
345	7.260 + .000/- .004
620	7.128 + .000/- .005
800	7.658 + .000/- .004

Note: The rotor is designated by the third, fourth and fifth numbers in the Model Number, i.e., 1G065G1



To check any rotor, place 1.000 inch bar across the crest on one side of the rotor. The micrometer reading minus 1.000 equals the rotor crest to crest diameter. Example: 3.646 in.-1.000 in. = 2.646 in. crest to crest.

2. If the measured crest to crest diameter is within 0.010 inch of the standard value and is free of deep nicks, gouges, or other surface defects, the rotor is re-usable.
3. Rotors with crest to crest values 0.011 to 0.050 inch under the standard values should be replaced. These rotors can be renewed by chrome plating to standard dimensions provided that:
 - a. The key slots are not excessively worn.
 - b. The rotor surface is not cracked, pitted or deeply grooved (1/32 inch or more).
 - c. The base surface metal is not pitted or corroded.
4. Rotors may be sent in for evaluation.

4-22. Stator. A worn stator may appear pitted and gouged, or may appear smooth similar to when new. Performance is the best measure of rotor to stator fit. If unable to measure performance adequately, suspected stator wear.

4-23. All Other Parts. Check for cracks, excessive wear, damage to threaded holes, burrs, etc. Replace as necessary. Replace O-rings and all gaskets at each disassembly and reassembly.

4-24. ASSEMBLY

The CK 2000 pumps are reassembled in the reverse order of dismantling. The following suggestions are offered:

1. While pump is dismantled, check all gaskets, seals, packing, and O-rings. Replace all worn items. It is recommended that the gear joint seals (13), gear joint O-ring (41), and drive shaft O-ring (5) be replaced each time either of the gear joints is disassembled.
2. During the assembly process, cleanliness is important. To avoid premature failure, bearings and gear joint components must be handled with care and kept clean.

4-25. Lubrication During Assembly

Note: The bearings are lubricated at the factory, and will only need to be re-lubricated when the shaft/bearing assembly is completely removed from pump.

1. **Bearings.** Pack bearings after installation on shaft (Section 4-28). Lubricant should be packed around all of the rollers and should completely cover the faces of the races. The void inside the spacer between the bearings should be filled approximately half way with lubricant.

2. Gear Joints. Both gear joints should be packed with lubricant during assembly (Sections 4-30 and 4-32). DO NOT use zerk fittings to lubricate gear joints after assembly. The pipe plugs (C) in the drive shaft head, drive shaft, and gear joint shell are vent plugs and MUST BE REMOVED during assembly of the gear joints to allow excess lubricant to vent from the gear joints.

3. Packing. Lubricate packing rings during assembly. Ad-ditional grease can be added after assembly through the zerk fittings installed in the side of the stuffing box.

4. Approved lubricants:

CAUTION: Do not mix different brands of lubricants for the same application.

Area to Lubricate	Approved Lubricant or Equivalent
Bearings, Gear Joints & Packing	ACG-2 (Dubois Chemical, Inc.)

4-26. Packing Installation

1. The standard packing set (22) consists of six braided packing rings. Lantern ring halves (23) must be ordered separately.

2. Install packing and lantern ring halves into the stuffing box area of the suction housing (29) in the following sequence:

- a. Wipe a film of lubricant on each packing ring and install two rings. Push each ring firmly in place.

Note: Install the packing rings with the splits staggered at 90 degrees to the adjacent ring of packing. On initial assembly, one ring of packing may not fit in stuffing box. This final ring of packing should be installed after pump is started and packing is seated.

CAUTION: Always use a proper packing tamper tool to install packing. Do not use a pointed or sharp tool, as damage to the packing material or drive shaft could result. To assure proper shaft lubrication, never use a one-piece spiral wrap packing.

- b. Install the two lantern ring halves with the flat side against the packing.
- c. Install final four packing rings, firmly pushing each ring into place.

3. Install packing gland studs (H), packing gland halves (21), and gland adjusting nuts (F). Tighten nuts finger tight at this time.

4-27. Bearing Housing/Suction Housing Assembly

This procedure may be performed now or after the bearing/drive shaft assembly is installed in the bearing housing.

1. Place clamp ring (28) on suction housing (29) and install retaining ring (27) in groove on suction housing.
2. Slide turned diameter of suction housing into bore on end of bearing housing (26). Align holes in clamp ring (28) with four threaded holes in bearing housing (26) and thread four hex head screws (0) with lock washers into threaded holes. Tighten finger tight.
3. Rotate suction flange to desired position (if not already fastened to piping) and tighten four hex head screws (0).

Note: Refer to Torque Guidelines Chart (page 12) for the proper torque requirement for all threaded fasteners.

4-28. Bearing/Drive Shaft Assembly

1. Bearings must be pressed on the shaft in the following sequence: [Larger units (G drive end and larger) require heating of the bearings to 250° F before assembly.]

- a. Press bearing cone on shaft (14), making sure rollers face in proper direction to receive cup (step b). Cone should be pressed firmly against shoulder on shaft.
- b. Place cup on rollers.
- c. Place bearing spacer (16) halves on cup.
- d. Place second cup on spacers.
- e. Press second bearing cone on shaft with rollers facing seat in cup. Cone should be pressed on until face of cone is flush or even with shoulder on shaft.

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CAUTION: Do not press second cone past shoulder on shaft.

2. Thread bearing nut (18) on shaft (14) and tighten until it rests against the shoulder on the drive shaft. Install brass tip set screw (17) in bearing nut and tighten.

Note: The tapered bearings are designed such that when properly installed there may be a very slight end play in the bearings (bearing spacer halves may slip freely out of place) or they may have a slight pre-load (bearing spacer halves held tightly in place and bearings do not turn freely).

3. Remove bearing spacer halves (16). Thoroughly pack lubricant around rollers and on bearing races. Install one half of bearing spacer. Fill area between bearings half full of lubricant, and install other half of bearing spacer.

Note: Assuming the bearings are not too hot, an alternate method of lubricating bearings is as follows: Pack the rollers of the first cone immediately after it is pressed on shaft. Lubricate race of first cup before it is installed. Place bearing spacer halves in place and fill it full of lubricant. Lubricate race of second bearing cup and place on spacer. Pack rollers of second cone with lubricant, and press on shaft until flush with shoulder.

Note: If too much grease is packed into the bearings during assembly, it may seep from the grease seals during the first few hours of operation until the proper lubricant level is achieved. This lubricant should be wiped from the seal area, when the pump is not operating, to prevent contaminants from collecting in the seal area.

4. Install (light press) grease lip seals (1 and 19) into bearing cover plate (2) and bearing housing (26) with Loctite. The lip of the radial grease seal (1) should be facing outward with spring visible. The lip of the seal (19) should be facing the bearings. The lips of both seals should be wiped with grease.

5. Install drive shaft with bearings in bearing housing, being careful to avoid damaging the grease seal (19).
6. Place O-ring (3) on bearing cover plate and bolt bearing cover plate to bearing housing using six hex head screws (A) and lock washers. The six screws should be tightened evenly, and care should be taken to insure the O-ring becomes seated in the step in the bearing housing. When the bearing cover plate is fully secured to the bearing housing, a small gap of 0.010 to 0.020 inch will exist between the bearing cover plate and the bearing housing.

Note: Some pumps have a sleeve installed on the drive shaft to receive any possible wear caused by the packing. (See fig. 4-10.) If the sleeve is used, install at this time. Refer to Section 4-48 for details.

4-29. Rotor/Stator Assembly

1. Slide head ring (42) over rotor (40) contour to the rotor head. The side of the head ring with the smallest diameter holes should be facing the rotor head.

Note: On some models the head ring is a two-piece component which eliminates this step.

2. Slide stator clamp rings (36) on both ends of the stator (30) and secure in position with retaining rings (35).
3. On F012, G022, H036, H050 and K115 models, place one stator gasket (34) in recess of adapter flange (25A), and fit adapter flange with gasket to end of stator.
4. Coat the rotor (40) contour with waterless hand cleaner, glycol or other lubricant compatible with the stator elastomer. Insert rotor into stator so that rotor head is at the specified distance from the end of the stator (Dimension "A," fig. 4-5). On F012, G022, H036, and K115 models, be sure the rotor is inserted in the end of the stator fitted with the adapter flange (25A) and gasket (34).

Note: Turning the rotor counterclockwise while inserting into stator will ease assembly.

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4-30. Rotor Gear Joint Assembly

- Slip O-ring (41) over the rotor head and allow to hang loose with head ring. Insert primary thrust plate (6) into rotor head, flat side first. Thrust plate and rotor head surfaces must be flush to assure proper assembly and operation of the pump. (See fig. 4-6.)
- Assemble the rotor end gear joint by first fitting a gear joint seal (13) onto the connecting rod assembly (38). The seal must be positioned so that the flat face of the seal neck fits into the seal retainer component of the connecting rod assembly. Apply a small coating of approved gear joint lubricant to the inside surfaces of the seal.
- Apply a small amount of lubricant to the flat face of the seal support (12) and slide it onto the connecting rod so that the flat face and radius of the support is against the seal.
- Grease the concave spherical surface of the rear thrust plate (11) and position thrust plate against the seal (13) with the lip on the outside diameter of the seal fitting the step on the back side of the thrust plate.

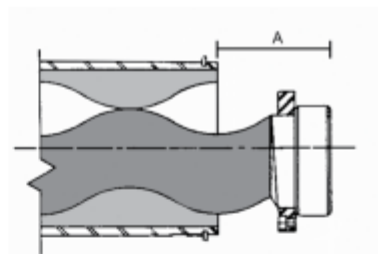


Figure 4-5. Rotor Installation

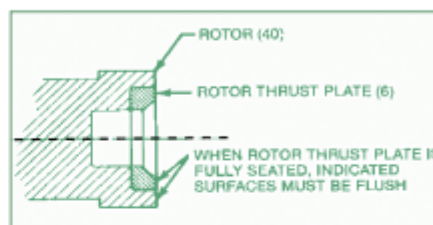


Figure 4-6. Rotor Thrust Plate Seating Detail

Frame Designation	A (inches)
1E008G1	4.06
2E008G1	4.06
4E008G1	4.06
6E008G1	4.06
1E012G1, 1E018EG1	4.06
2E012G1, 2E018EG1	4.06
4E012G1	4.06
1E022G1, 1E033EG1	3.62
2E022G1, 2E033EG1	3.62
1E038G1	4.56
1F022G1	4.62
2F022G1	4.62
4F022G1	4.62
6F01231	5.00
1F039G1, 1F0543G1	4.00
2F036G1, 2F054EG1	4.00
1F060G1, 1F075EG1	4.00
2F050G1, 2F075EG1	4.00
4F050G1	4.00
1F065G1	4.75
1G036G1	5.68
2G036G1	5.68
4G036G1	5.68
4G050G1	5.68
6G050G1	5.68
6G022G1	6.06
1G065G1, 1G098EG1	6.06
2G065G1, 2G098EG1	6.06
1G090G1	6.06
2G090G1	6.06
1G115G1	6.19

Frame Designation	A (inches)
1H065G1	6.25
2H065G1	6.25
4H065G1	6.25
2H090G1	6.25
4H090G1	6.25
6H036G1	6.62
6H050G1	6.62
1H115G1	6.25
2H115G1	6.25
1H175G1	6.75
1J115G1	6.84
2J115G1	6.84
4J115G1	6.84
6J065G1	6.84
6J090G1	6.84
1J175G1	7.00
2J175G1	7.00
1J335G1	7.19
1K175G1	8.70
2K175G1	8.70
4K175G1	8.70
6K115G1	9.20
1K335G1	8.70
2K335G1	8.70
3K335G1	8.75
1K345G1	8.75
2K345G1	8.75
3K345G1	8.75
1K620G1	8.75
2K620G1	8.75
1K800G1	7.50
2K800G1	7.50

- Apply a film of grease to the splines on the inside of the gear ball (10). Install gear ball on connecting rod (38), with counter-bored end (end without splines) first on connecting rod. Gear ball should slide freely against shoulder on connecting rod. Place lock nut (9) on connecting rod and tighten against gear ball. Apply grease to spherical surfaces and teeth of gear ball.
- Apply grease to the teeth of the ring gear (8), and slide ring gear onto the gear ball. When ring gear is in place, keyways should be facing the lock nut end of connecting rod.
- Apply a thin coating of grease to the spherical surface of the thrust plate (6) already installed in the rotor head. Fill the recessed area in the rotor head with grease.
- Slide the gear joint shell (39) over the connecting rod and assembled gear joint components, being careful to seat the outside diameter of the gear joint seal (13) in the end of the gear joint shell (39). The two tapped holes in the gear joint shell should be in line with one of the keyways in the ring gear.
- Place keys (7) in the keyways in the ring gear. Check to insure the tapped holes in the side of the gear joint shell are aligned with one of the keyways.

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10. Align the keys in the ring gear with the keyways in the rotor head. Slide assembled gear joint shell onto the rotor head, checking to be sure the keys are properly engaged in the rotor head and ring gear. The shallow hole in the rotor head should be aligned with the first threaded hole in the outside of the gear joint shell. Thread the set screw (S) into the threaded hole in the shell until light contact is made with the hole in the rotor head.
 11. Place O-ring (41) into step in gear joint shell. Align holes in head ring (42) with six threaded holes in end of gear joint shell and install stainless socket head screws (T). Tighten the six socket head screws evenly, checking to insure O-ring (41) remains in place. When tightened properly, a small gap of a few thousandths of an inch may exist between the shell (39) and head ring (42).
 12. Excess grease in the assembly will be purged from the vent hole while the socket head screws are tightened. Tighten the setscrew (S) in the shell. Move the free end of the connecting rod in a circular motion to assure that the joint is free and assembled properly. This will also help to purge excess grease from the assembly.
 13. Install the stainless steel pipe plug (C) in the second hole in the shell and tighten.
4. Check the dimension "C" between the end of the connecting rod and face of the drive shaft as shown in fig. 4-7. For proper assembly of the drive end gear joint, this dimension should be no less than that shown in column C, and should not exceed the amount in column C by more than 1/8 inch. Reposition rotor/stator assembly in or out of suction housing as required to achieve the proper dimension.

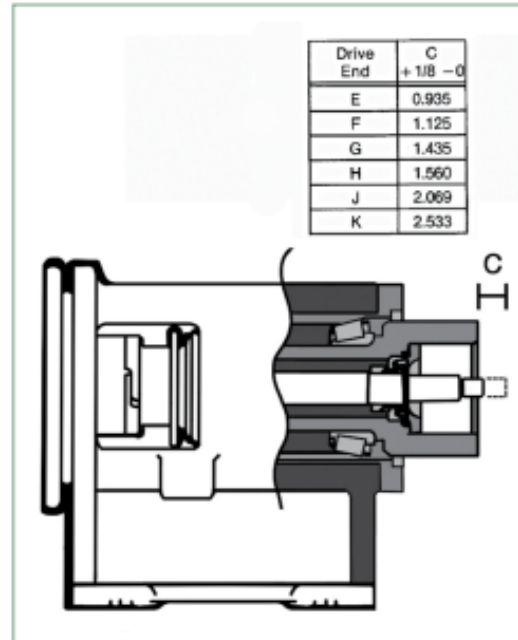


Figure 4-7. Gear Joint Installation

4-31. Rotor/Stator to Drive End Assembly

1. If not already in place, slip stator clamp rings (36) on both ends of stator (30), and install retaining rings (35) in grooves provided on both ends of stator.
2. Place stator gasket (34) in recess in end of suction housing:
 - a. On J335 model, stator gasket (34) will be installed in recess in adapter housing (25B).
 - b. On F012, G022, H036, and K115 models, stator gasket (34) will fit recess in adapter flange (25A) and adapter flange gasket (24A) will fit recess in suction housing.
3. Move the rotor/stator/connecting rod assembly in position, and insert connecting rod through the suction housing and drive shaft. Align stator with bore in suction housing, and slide stator in place, checking to insure that stator gasket (34) remains properly positioned.
5. If the stator is firmly seated against stator gasket in suction housing recess, and connecting rod extends beyond face of drive shaft by specified amount, stator may be secured to suction housing. If the specified dimension cannot be maintained with stator firmly seated, do not perform the following step 6 until the drive end gear joint is properly assembled.
6. Align holes in clamp ring (36A) with threaded holes in suction housing, and thread four hex head screws (R) with lockwashers through holes in clamp ring into threaded holes in suction housing. Tighten hex head screws evenly.

4-32. Drive End Gear Joint Assembly

1. Check to see that connecting rod extends beyond face of drive shaft by amount specified in column C of fig. 4-7. (See Section 4-31, step 4.)
2. Fit the gear joint seal (13) on the connecting rod (38). Push the seal firmly in place on the connecting rod so that the neck on the seal seats in the recess in the seal retainer component of the connecting rod.
3. Apply a film of gear joint grease to the inside of the gear joint seal and to the flat face of the seal support (12). Slide the seal support (12) onto the connecting rod such that the flat face fits against the seal.
4. Apply a film of grease to the concave spherical surface of the secondary thrust plate (11), and slowly push the thrust plate into the drive shaft until it rests firmly against the seal.
5. Apply a film of grease to the gear ball (10) splines and spherical surfaces, and install gear ball on connecting rod, counter-bored end first (end without splines). Gear ball should slide freely on rod until it contacts shoulder on rod. Install connecting rod lock nut (9) and tighten against gear ball. While tightening lock nut, prevent connecting rod from turning by carefully holding with pipe wrench or vise grips through inspection ports in suction housing.
6. Apply liberal amount of grease to gear ball teeth and ring gear (8) teeth, and slide ring gear into the drive shaft assembly. Keyways in ring gear should be facing out, and one of the keyways should be aligned with drilled and tapped holes in outside diameter of drive shaft.
7. Place keys (7) in keyways of the ring gear. A small amount of grease may be used to hold the keys in place. The flat face of the ring gear should be approximately flush with the face of the drive shaft.
8. Place primary thrust plate (6) in drive shaft head (4), aligning slot in outside diameter of thrust plate with pin in drive shaft head. When the thrust plate is properly seated, the face of the thrust plate should be flush with the face of the drive shaft head.
9. Lubricate the spherical surface of the thrust plate and fill the recess in the drive shaft head with grease.
10. Place O-ring (5) in the groove on drive shaft head (4). Align the keyways in the drive shaft head with the keys in the ring gear, and insert the head into the drive shaft assembly.

11. Thread the six socket head screws (E) through the drive shaft head into the drive shaft. Tighten them evenly until face of drive shaft head is tight against face of drive shaft. Excess grease in the gear joint assembly will be purged from the holes in the drive shaft and drive shaft head.

Note: If the standard socket head screws are not long enough initially to engage the threads in the drive shaft, two longer screws may be used 180 degrees apart to pull the drive shaft head close enough to the drive shaft to engage the standard screws.

12. After the six socket head screws (E) are secured and the grease has been purged from the assembly, install the pipe plugs (C) in the drive shaft head and drive shaft. Also install the locking set screw (D) in the drive shaft in the threaded hole nearest the bearing housing.
13. If the stator was not previously tightened to the suction housing (Section 4-31, step 5), it should be tightened at this time.

4-33. Stator Support/Discharge Assembly

1. Place top of stator support(s) (31) over stator and fasten to bottom half of stator supports using hex head screws (L).
2. Place stator gasket (34) in recess in discharge flange (37) and position discharge flange on end of stator. Align holes in stator clamp ring (36B) with threaded holes in discharge flange, and install and tighten hex head screws (M).

4-34. Final Assembly

1. Install inspection plates (32) to suction housing (29) with gaskets (33), using hex head screws (P) and lockwashers.
2. Install pipe plugs (Q and J) and zerk fittings (K) in appropriate threaded holes in suction housing. Install pipe plugs (N) in threaded holes in bearing housing, or attach drain lines if preferred.
3. Connect power source. Turn on flush water to packing if used. Open suction and discharge valves, and start pump.

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4-35. PACKING ADJUSTMENT

Packing gland nuts should be evenly adjusted so they are little more than finger tight. (See fig. 4-1.) Over-tightening the packing gland may result in premature packing failure and possible damage to the shaft and gland.

When packing is new, frequent minor adjustments during the first few hours of operation are recommended in order to compress and seat each ring of packing evenly.

1. Upon initial start-up of the pump, adjust the gland nuts for a leakage rate of 1-2 drops per second until the packing has seated and adjusted to the operating temperature (approximately 10-15 minutes).
2. If leakage is excessive after 15 minutes of operation, tighten the gland nuts until a desired leakage rate is obtained.

CAUTION: Do not tighten until zero leakage is obtained. Over-tightening of the packing gland may result in accelerated wear on the packing and damage to the shaft. In those situations where no packing leakage can be tolerated, consult your Continental Dist. for Mech. seal quote.

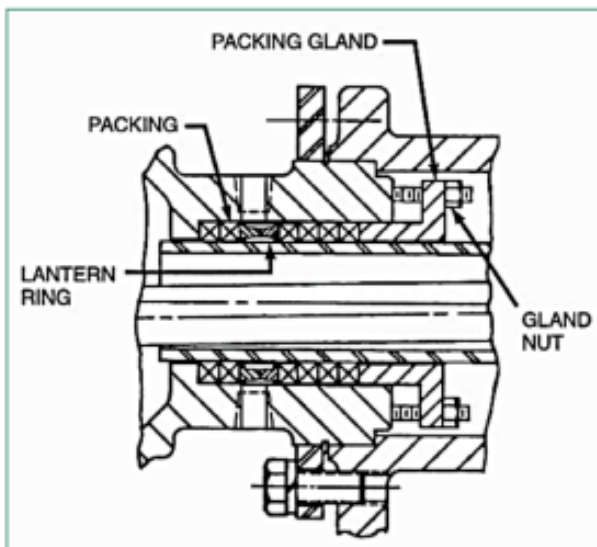


Figure 4-1. Cross Section of Stuffing Box

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