REMOVE HYDROSTATIC UNIT

1. Remove plant tunnel shields from either side.

2. Using locking pliers, or two pieces of metal and C-clamp; clamp off hydrostatic supply hose from bottom of hydrostatic reservoir to charge pump.

3. Disconnect control linkage (A).

4. Disconnect safety start switch wire (B) and unthread from pump.

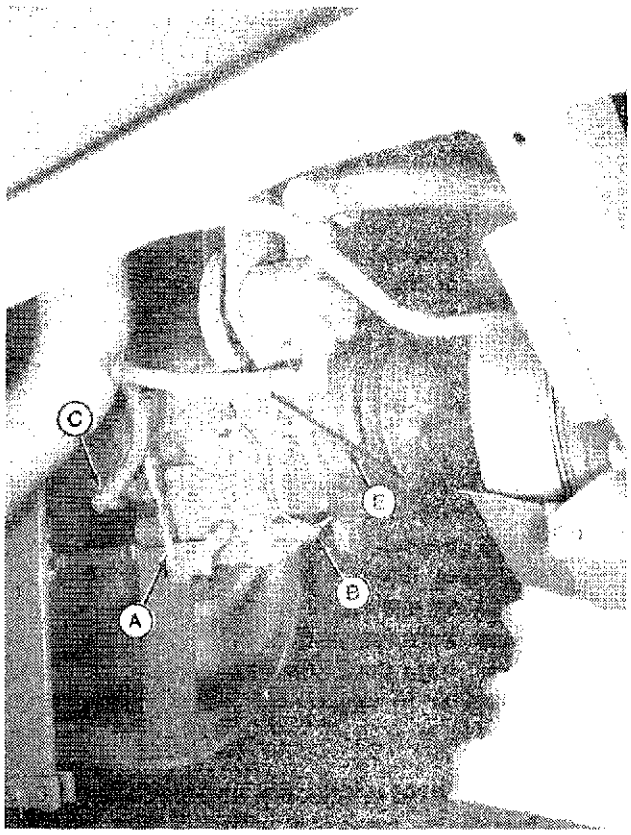
5. Disconnect and cap hydrostatic lines (C). Plug holes in hydrostatic drive unit. Place plastic bags over ends of lines to keep dirt out of system. Secure with rubber bands.

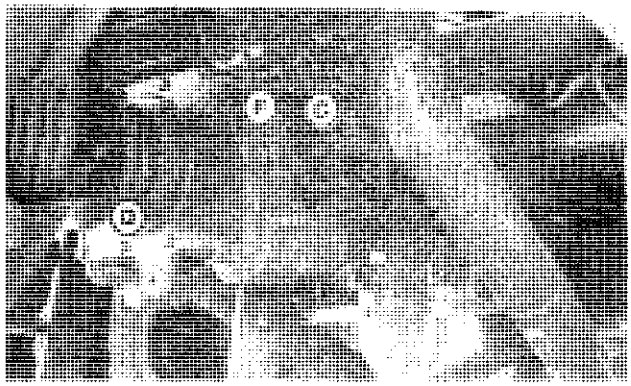
6. Loosen steel line clamp along engine side rail and slide line back out of mounting angle grommet (F).

7. Disconnect U-joint (D) from charge pump drive sheave.

8. Unscrew U-joint coupling and remove front half of driveline.

9. Loosen charge pump drive belt (E) and remove.



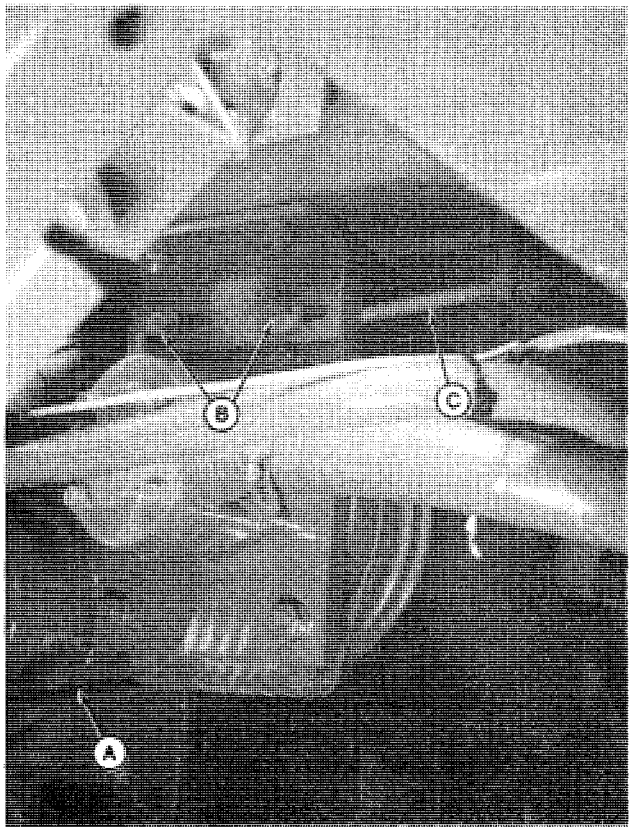


A—Control Linkage
B—Safety Start Switch Wire
C—Hydraulic Lines
D—U-Joint
E—Charge Pump Drive Belt
F—Mounting Angle Grommet

9A2;N85274 AC2 N84156 E2 N01;;5005 GN 140486

10. Loosen lubrication pump drive belt (A) by loosening screws (B) and adjusting bolt (C). Remove belt.

11. Remove charge pump and lubrication pump drive sheave, cotter pin, slotted nut, and key.



9A2;N85274 W2 N01;;5005 GO 140486

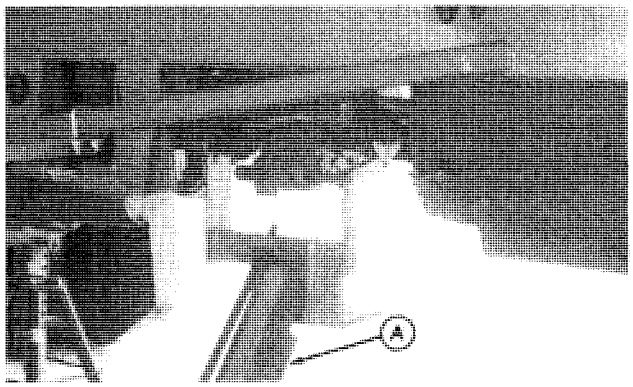
12. Position 341 kg (750 lb) service jack (A) with adapter under unit and attach to pump bracket.

CAUTION: Combined unit weighs approximately 123 kg (270 lb). Use care in handling to avoid personal injury.

13. Remove four pump-to-transmission attaching bolts.

14. Remove pump-to-angle mounting bolts and angle-to-main frame mounting bolts.

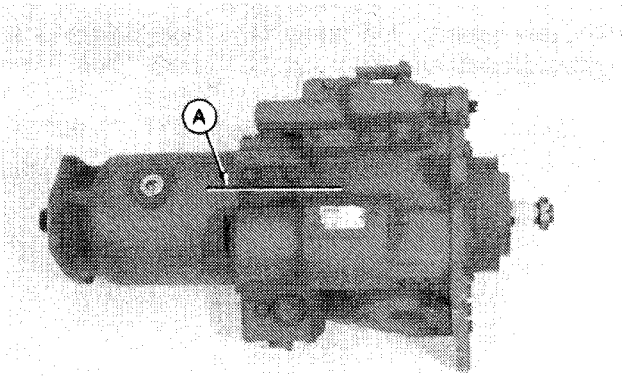
15. Slide unit towards rear, then lower.



9A2;N80143 C2 N01;;5005 GP 150486

SEPARATE HYDROSTATIC UNIT

1. Before separating the unit, scribe a line (A) across the motor housing flange, center section, and pump housing to assure correct reassembly. It is possible to attach the motor 180 degrees off of its correct location. This would give opposite rotation to the system.



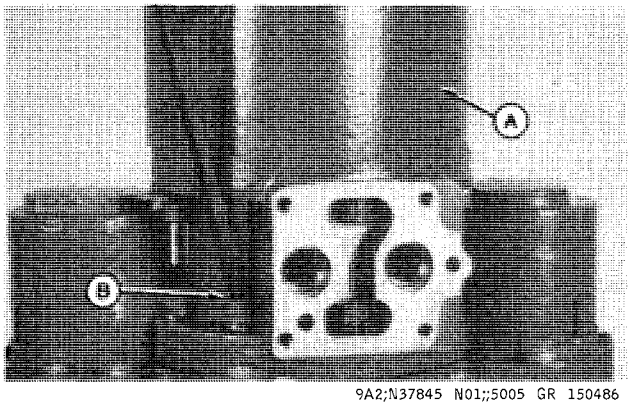
9A2;N84172 N1 N01;;5005 GQ 150486

2. Set hydrostatic unit on wood support block with motor (A) on top.

CAUTION: The approximate weight of motor is 41 kg (90 lb).

3. Remove center section-to-pump hex. socket head screws with JDG-352 Wrench (B).

4. Lift-off center section and motor.



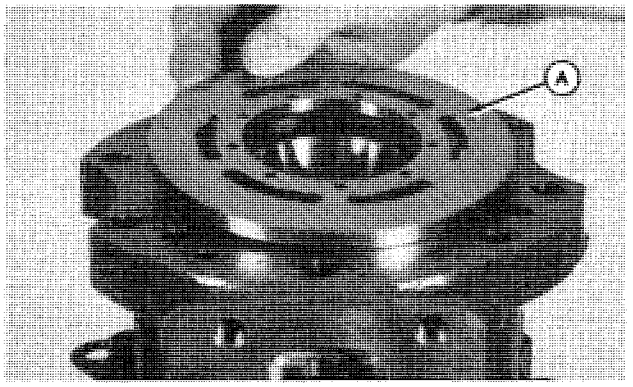
9A2;N37845 N01;;5005 GR 150486

5. Remove pump and set motor with center section on wood block.

6. Remove valve plate (A). The bearing plate may also come off at same time.

If necessary to pry plates apart, insert a small screwdriver in oil drain slots of valve plate. Carefully pry valve plate away from bearing plate.

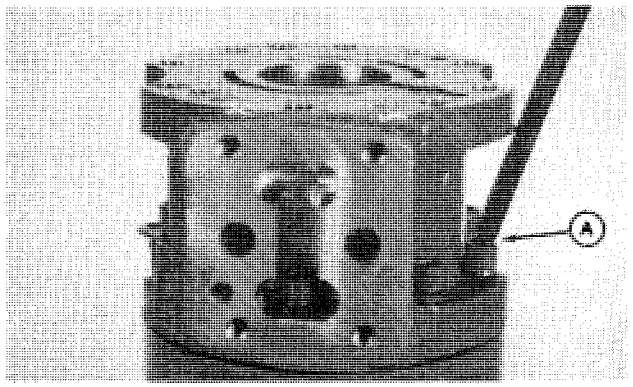
7. Wrap plates separately in clean paper.



9A2;N37846 N01;;5005 GS 150486

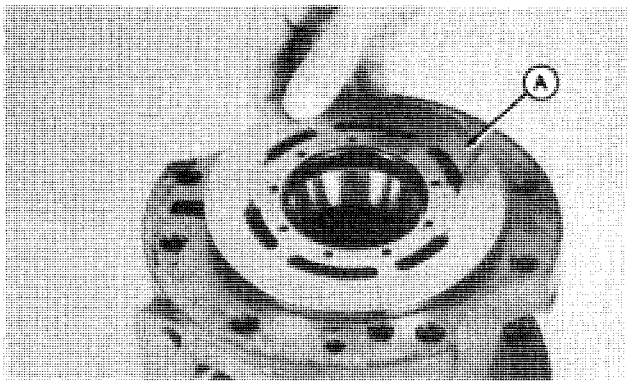
8. Remove center section-to-motor hex. socket head screws using JDG-352 Wrench (A).

9. Lift center section off motor.



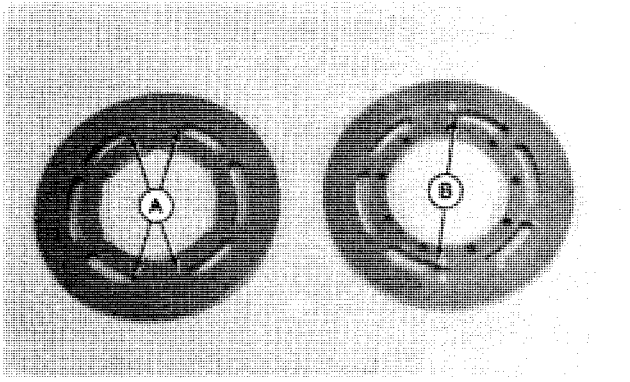
9A2;N37847 N01;;5005 GS1 150486

10. Remove motor valve plate (A).



9A2;N37848 N01;;5005 GT 150486

11. The pump and motor valve plates are not interchangeable. The motor valve plate has four metering slots (A) and pump plate has only two slots (B).



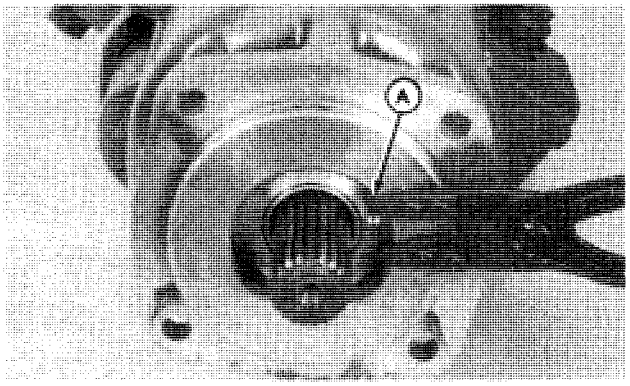
9A2;N84170 Q1 N01;;5005 GU 150486

DISASSEMBLE MOTOR

1. Clean dirt out of shaft seal area with a spray cleaner, such as SCOTCH 3M No. 1606 Electrical Contact Cleaner or if not available, PERMATEX Gasket Remover No. 81110.

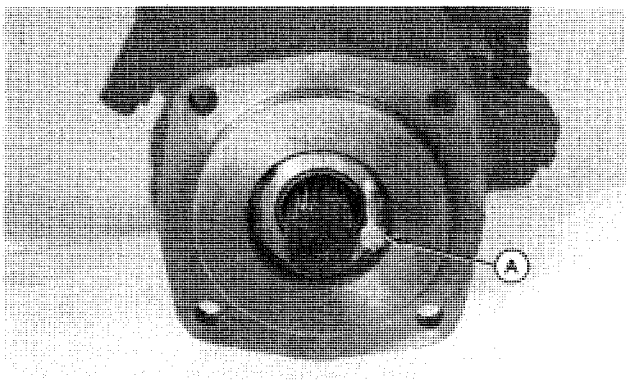
IMPORTANT: Do not use solvent from parts cleaning tank. This solvent may be contaminated and defeat the purpose of cleaning shaft area.

2. Remove snap ring (A).



9A2;N37849 N01;;5005 -GV 180189

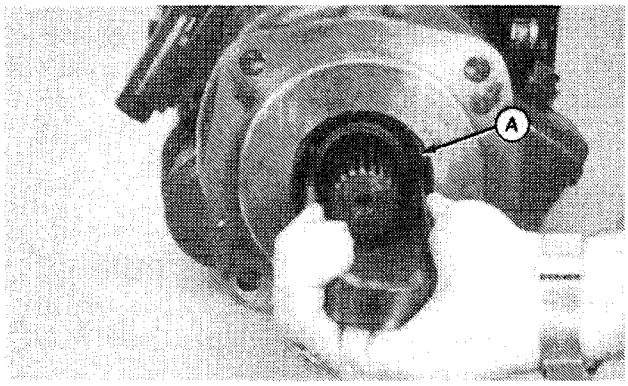
3. Remove stationary seal using a 1/4 x 20 UNC bolt (A).



9A2;N84172 P1 N01;;5005 -JM 240987

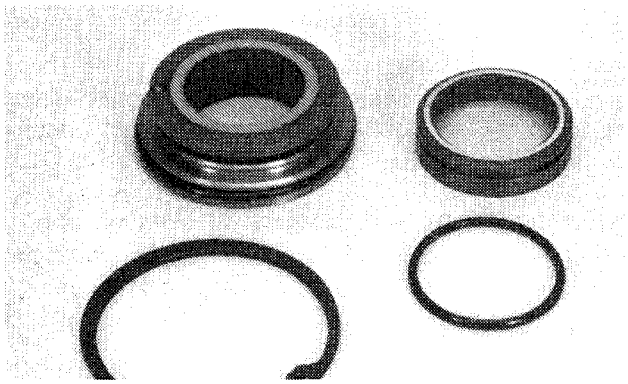
4. Remove rotating seal using JDG-351 Seal Remover (A). Be careful not to scratch sealing surface.

5. Remove O-ring if it did not come out with rotating seal.



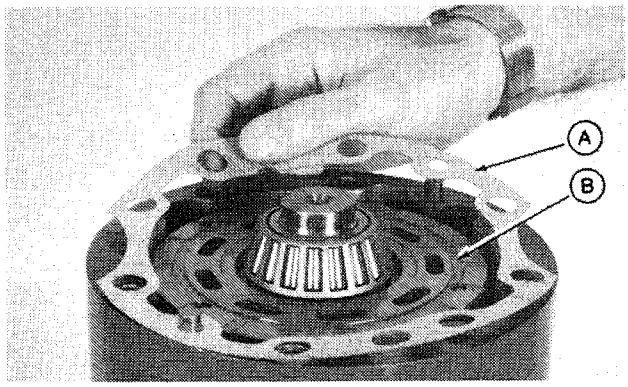
9A2;N37850 N01;;5005 -JN 240987

6. Inspect seal parts for nicks, scratches, or other damage. Replace all damaged parts. Install new O-rings.



9A2;H50395 N01;;5005 -JO 240987

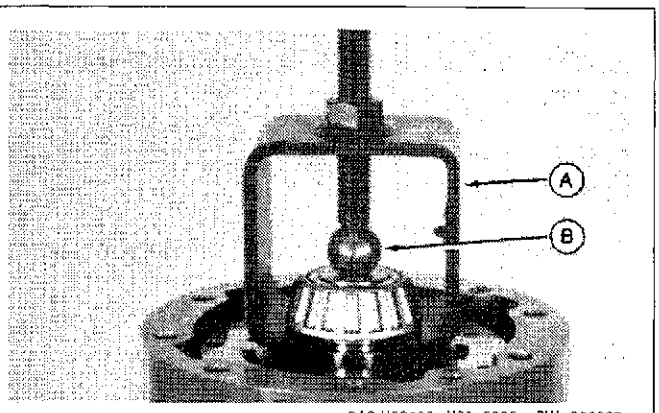
7. Remove gasket (A) and bearing plate (B), if not already removed.



9A2;H50432 N01;;5005 -JP 240987

8. Protect cylinder barrel with clean paper or cloth before pulling bearing.

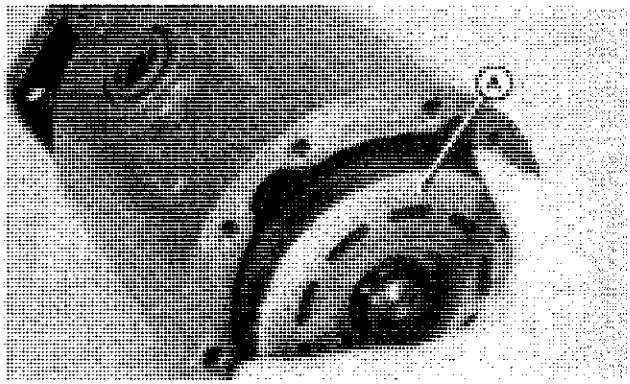
9. Pull rear bearing using puller (A) and hardened washer or steel ball (B).



9A2;H50433 N01;;5005 -GW 250987

10. Lay motor on its side and slide out cylinder barrel (A) with ball guide, pistons, and piston retainer.

The cylinder barrels and pistons must not be switched between the pump and motor. Also, do not switch pistons from one cylinder barrel to another.



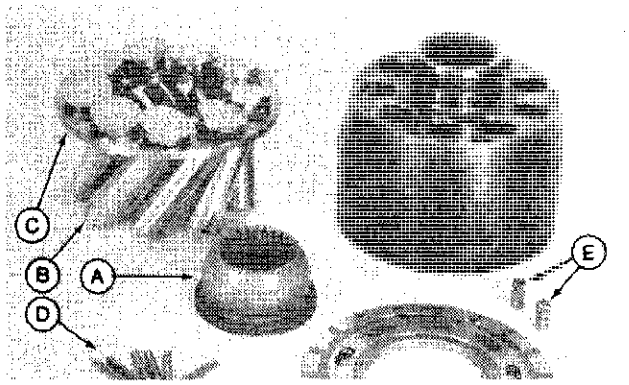
9A2;N37851 N01;;5005 -JQ 240987

11. Remove ball guide (A).

12. Remove nine pistons (B) with retainer (C). Protect face of slippers. Wrap parts in clean paper.

13. Remove ball guide pins (D) and bearing plate index pins (E).

A—Ball Guide
B—Pistons
C—Retainer
D—Ball Guide Pins (6)
E—Bearing Plate Pins (2)



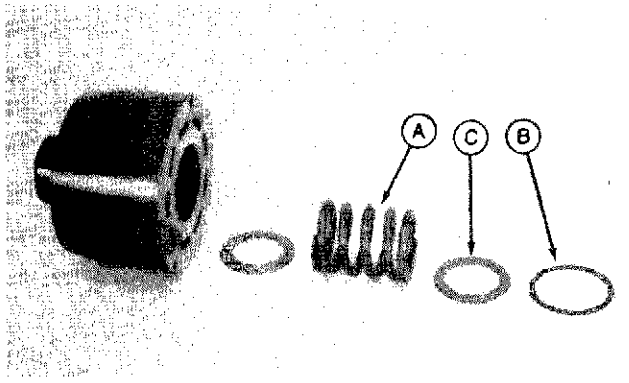
9A2;H50435 N01;;5005 -JR 240987

14. If spring (A) appears damaged or contaminated, it must be removed to clean the cylinder barrel. Contamination collects in the spring bore of barrel and cannot be flushed out with spring in place.

15. To remove spring, use a press to compress spring and spring retaining ring (C).

16. Remove outer retaining ring (B).

17. Remove spring retaining ring, spring, and inner spring retaining ring.

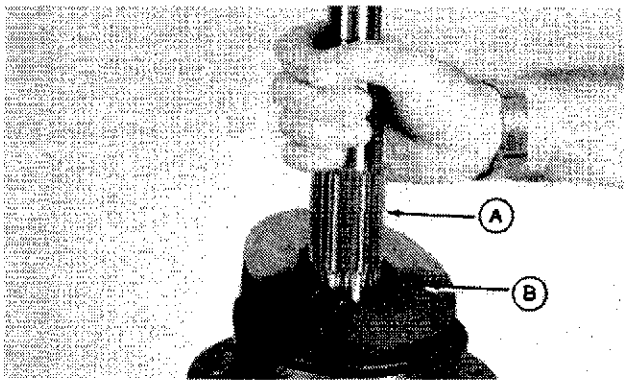


9A2;N37852 N01;;5005 -JS 240987

18. Remove shaft (A) with bearing and swash plate (B) from motor housing.

19. Remove swash plate from shaft and wrap in clean paper to protect lapped surface.

20. In most cases the bearing will not need replacement. If replacement is necessary, use a press to remove it.



9A2;H50437 N01;;5005 -JT 240987

INSPECT PARTS

NOTE: Some internal parts of the motor and pump are similar in appearance and function; others have the same part number. Note the various areas indicated in this illustration. Use the following illustrations to analyze failures.

Most part failures are identifiable by inspecting the part and comparing it to the following illustrations and information to determine the suspected cause of failure.

A64; N01;5005 CN 010383

(Worn) This condition is usually indicated by a smooth but definite wear pattern in or across finished surfaces. A worn condition is usually caused by a lack of lubrication or very fine abrasive contamination suspended in the fluid.

(Scored) This condition is usually indicated by fine scratch marks in or across finished surfaces. Scoring usually is caused by a lack of or improper lubrication or possible abrasive contamination suspended in the fluid.

(Scratched) This condition is usually indicated by small scratches in or across finished surfaces. It is usually caused by abrasive contamination suspended in the fluid.

(Grooved) This condition is usually indicated by grooves cut in or across finished surfaces. Grooving is usually caused by a lack of lubrication or large particle contamination suspended in the fluid.

A64; N01;5005 CN 010383

(Discoloration) This condition is usually indicated by a noticeable change in color on the finished surfaces. Discoloring usually is caused by a lack of or improper lubrication.

Excessive fluid temperature may also cause this condition by increasing the lubricating film loss between rotating mating parts.

(Smeared) This condition is usually indicated by the presence of bronze embedded in or across finished mating surfaces. Smearing is usually caused by a lack of or improper lubrication or possible abrasive contamination suspended in the fluid. Excessive fluid temperature may also cause this condition by the lubricating fluid film loss between rotating mating parts.

A64; N01;5005 CO 170383

(Galled) This condition is usually indicated by the presence of material that has been removed from one surface, normally by friction, and sometimes adhered to its mating component surface. Galling usually is caused by a lack of or improper lubrication. Excessive fluid temperature may also cause this condition by increasing the lubricating fluid loss between rotating mating parts.

(Eroded) This condition is usually indicated by erosion (pitted appearance) or removal of material from finished surfaces. Eroding is usually caused by cavitation or voids in the fluid.

(Rolled) This condition is usually indicated by the extreme outer edge of the finished surface being deformed or rolled over. Rolled usually is caused by a lack of lubrication to the edges of these finished surfaces when subjected to overspeeding or block lift conditions.

A64; N01;5005 CP 170383

The following terminology will be used for determining probable causes of system and/or part failure.

Lack of lubrication is probably the most common, yet misinterpreted terminology associated with failure analysis of system and/or part failures. It usually is a result of condition(s) that create an insufficient oil film required to lubricate rotating part surfaces.

Without the proper oil film, rotating metal-to-metal surfaces create friction and excessive temperatures that usually cause premature part failures.

Depending on the severity of the oil film loss and friction, rotating critical surfaces will become severely worn, smeared, galled or noticeably discolored.

A64; N01;5005 CQ 010383

Abrasive contamination is probably the second most common, yet identifiable terminology.

This condition usually is system-related by the introduction of abrasive foreign particles that damage the critical surface areas as they pass through the system.

These abrasive particles usually are larger than the lubricating oil film thickness required to lubricate part surfaces.

A lack of lubrication may also be created by abrasive contamination that creates excessive leakage passages between critical rotating surfaces.

Depending on the size and amount of abrasive contamination passing through or contacting parts, the rotating surfaces will become worn, scored, scratched or grooved.

A64; N01;5005 CR 170383

Cavitation is sometimes confused with the lack of lubrication which usually is the result of, but not the cause of cavitation.

This condition usually is created by the presence of air suspended in the oil.

Excessive amounts of air in the oil will not provide an adequate film required to properly lubricate.

Partial or total restriction of the pump inlet will also create cavitation.

Depending on the severity of cavitation, rotating surfaces will become eroded. scored, smeared or galled.

A64; N01;5005 CS 170383

Excessive oil temperature is sometimes the result of lack of lubrication, but not necessarily the direct cause. This condition usually is system-created by improper system cooling, high pressure oil passing over relief valves and excessive closed loop leakage. Excessive oil temperatures usually will decrease the fluid viscosity or lubrication oil film thickness required to lubricate rotating surfaces.

Depending on the condition or severity of oil temperature, rotating surfaces usually will become scored, smeared, galled or discolored.

A64; N01;5005 CT 010383

The most common cause of improper lubrication is created by *chemical contaminants* present in the hydraulic fluid such as water. Water not only creates improper lubrication to rotating surfaces, but also creates undesirable chemical changes to the oil and mating surfaces.

Depending on the severity of the improper lubrication used, component parts usually will become discolored, scored, smeared, or galled.

A64; N01;5005 CU 170383

Overspeeding is sometimes associated with lack of lubrication, which usually is the result of, but not necessarily the direct cause of overspeeding.

Hydrostatic transmissions by design, are subject to operate within certain speed limitations. When units are operated above their design limitations, certain parts separate or tip, creating excessive loading to small areas of these parts.

This small area usually is located on the outer edge of rotating parts, and because of the excessive loading subject to this area, the lubrication is removed also. Depending on the severity of overspeeding that creates this excessive loading and loss of lubrication to rotating parts, a rolled, scored, smeared or galled condition will occur.

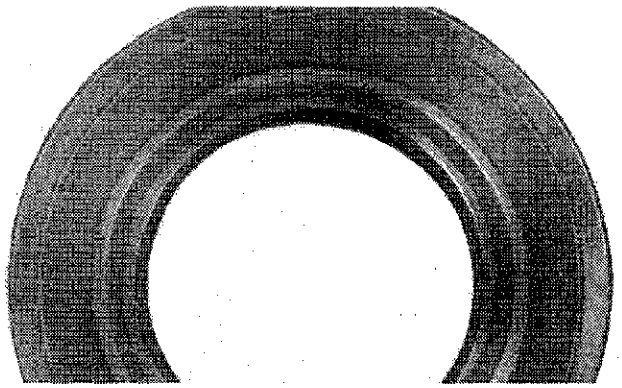
A64; N01;5005 CV 170383

INSPECT SHAFT SEAL

The shaft seal assembly is a pressure-type mechanical seal that consists of two mating parts, a bronze rotating half and a steel stationary half.

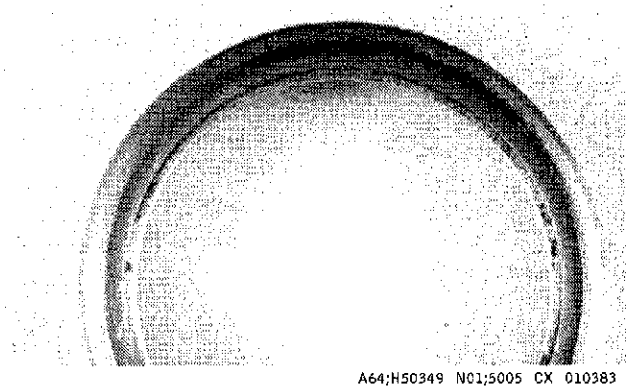
To properly seal the shaft, the fire lapped sealing surface located on each seal half must be smooth, flat, and free of all nicks, burrs, and scratches.

The scoring across the sealing surface indicates the seal was subject to abrasive contamination.



A64;N36987 N01;5005 CW 010383

The scoring marks across the sealing surface indicate that it was subject to abrasive contamination.



A64;H50349 N01;5005 CX 010383

N84;050005 16 070389

Suggest:

If the above button click is invalid.

Please download this document

first, and then click the above link

to download the complete manual.

Thank you so much for reading