9950
Cotton Picker

JOHN DEERE

TECHNICAL MANUAL

9950
Cotton Picker

TM1349 (01Mar89) English

TM1349 (01Mar89)

LITHO IN U.S.A.
ENGLISH

Introduction

FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and diagnostics. Repair sections tell how to repair the components. Diagnostic sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Binders, binder labels, and tab sets can be ordered by John Deere dealers direct from the John Deere Distribution Service Center.

This manual is part of a total product support program.

FOS Manuals-reference

Technical Manuals-machine service

Component Manuals-component service

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic types of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technicals Manuals are concise guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Component Technical Manuals are concise service guides for specific components. Component technicals manuals are written as stand-alone manuals covering multiple machine applications.

D53;TMIFC 190188

JOHN DEERE DEALERS

Please remove this page and route through your service department.

This is a complete revision for TM-1349, 9950 Cotton Picker.

Binder and tabs from old manual may be saved and used with this manual.

New pages are dated (Mar-89). Listed below is a brief explanation of "WHAT" was changed and "WHY" it was changed.

This manual was revised:

1. To show how to install the new lid parts required on 305 mm (12 in.) extensions.

2. To show replacement procedures and bleeding procedures for one filter fuel system.

3. To remove alternator repair information for both Motorola and Nippondenso. Refer to CTM-11 for repair and diagnostic information.

4. To show new repair information on hydrostatic drive and transmission because of addition of operator presence system.

5. To show new removal/installation and repair procedure for final drive axle.

6. To remove repair, operation and test information on 22.6 cm^3 (1.38 cu. in.) hydraulic pump. Refer to CTM-7 for repair and diagnostic information.

7. To revise main control valve repair information because of addition of an orifice to port "F".

8. To revise basket lift cylinder repair information because of removal of an orifice plate from rear cylinder and revised orifice diameter in front cylinder.

9. To include repair information for new height sensing control valve.

10. To include repair information for new full length sleeved picker bars.

11. To revise the cotton fan repair information. The fan shaft has been revised. The inlet cap screw torque has been increased, and rotor-to-inlet running clearance changed. The water pump drive sheave mounting to fan shaft has been revised.

12. To revise the operational checks to include the operator presence and by-pass system diagnostic procedures.

13. To provide test procedure for operator presence interlock module, adjustment procedure for picking unit engaged switch and a wiring diagram for the operator presence system.

14. To provide a new complete hydraulic and J.I.C. diagrams for machines above Serial No. 4001.

N01;;0000 -AD 060389

Contents

9950 COTTON PICKER TECHNICAL MANUAL TM-1349 (MAR-89)

SECTION AND GROUP CONTENTS

N01;;0000 -AB 060389

N84;I 3 070389

SECTION AND GROUP CONTENTS—Continued

All information, illustrations and specifications contained in this technical manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

N01;;0000 -AC 060389

N84;II 3 0/0389

Section 10
GENERAL

CONTENTS

N84;010 01 070389

HANDLE FLUIDS SAFELY—AVOID FIRES

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

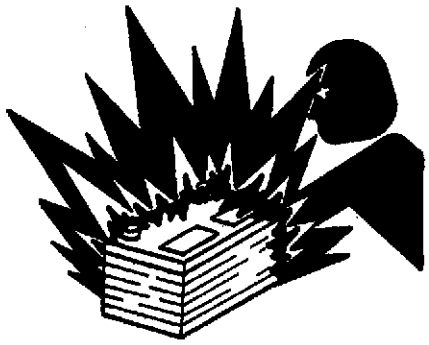
AB6;TS227 053;FLAME 050188

PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



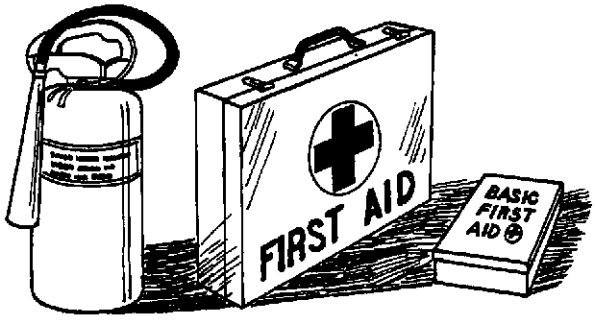
AB6;TS204 053;SPARKS 280688

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



AB6;TS186 053;FIRE2 080785

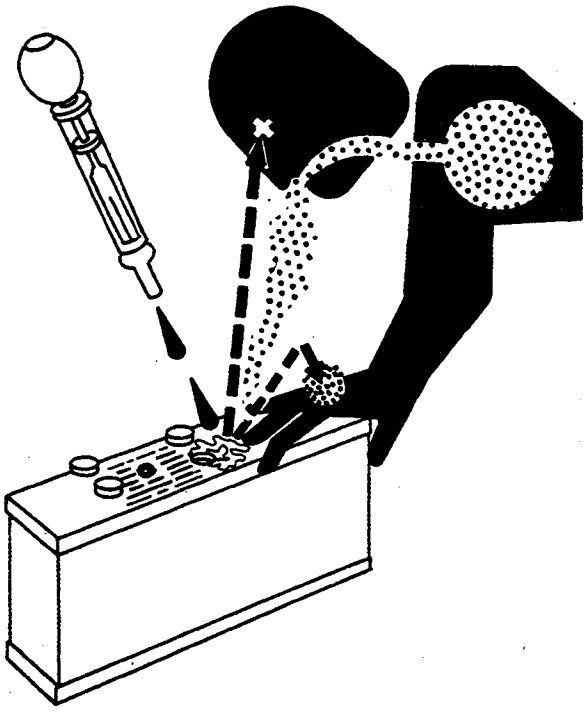
PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:
1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10-15 minutes. Get medical attention immediately.

If acid is swallowed:
1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.

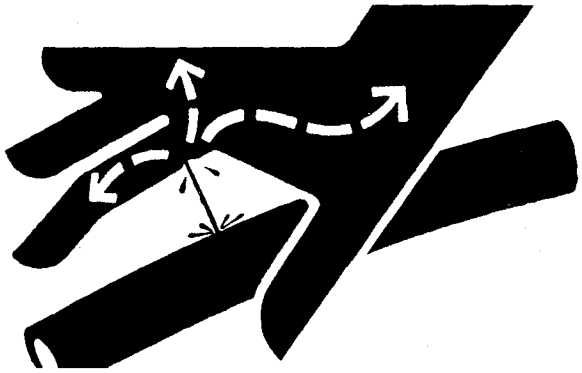


AB6;TS203 053;POISON 211287

AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before unhooking hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard to search for leaks.

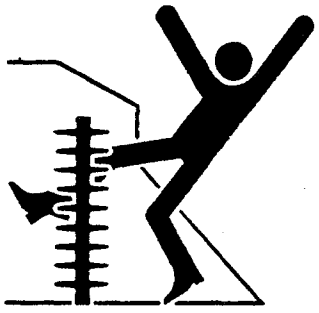
If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.



AB6;X9811 053;FLUID 180987

AVOID CONTACT WITH ENGAGED PICKING UNIT

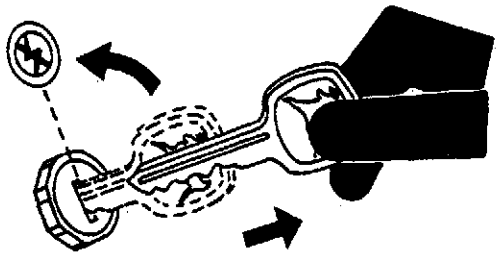
If service is required with engaged picking units, avoid contact with moving parts. Moving parts can puncture or dismember body parts, or cause death.



068;N39613 N01;;1000K -080289

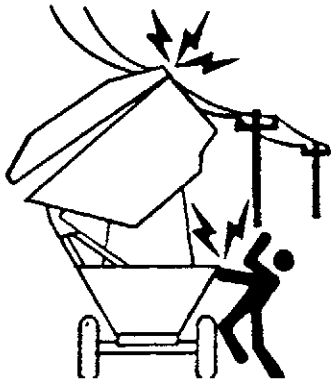
PARK MACHINE SAFELY

Before working on the machine:
- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



AB6;TS230 053;PARK 050188

- Look overhead for electric lines or low ceiling.

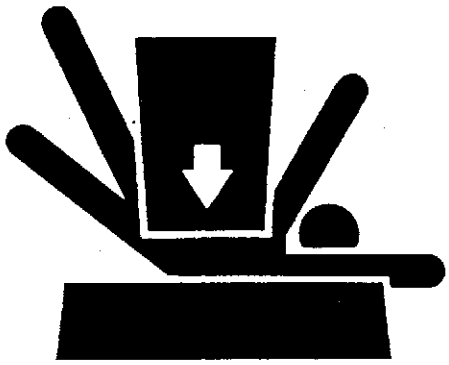


068;N39671 N01;;1000L -080289

SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



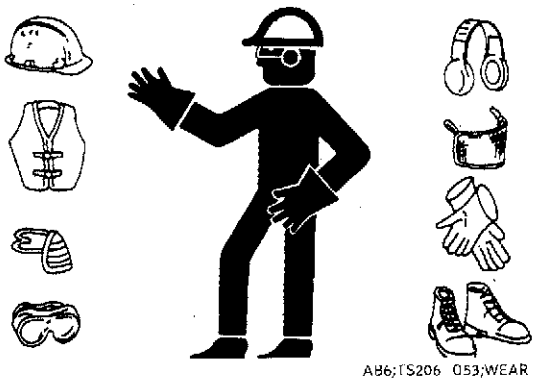
AB6;TS229 053;LOWER 211287

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



AB6;TS206 053;WEAR 230487

CLEAN HYDROSTATIC DRIVE UNIT

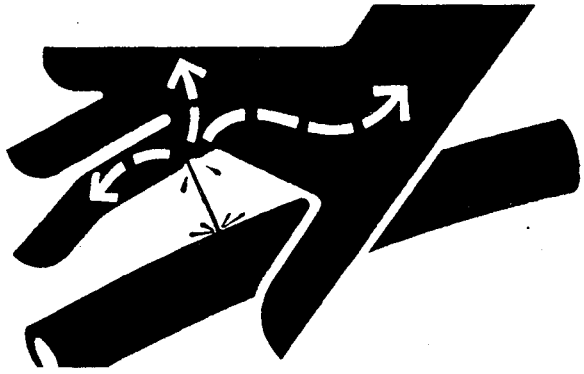
Clean outside of hydrostatic back-to-back unit thoroughly. Either steam clean or wash with solvent. Clean surrounding area so dirt will not get into system when hoses and lines are disconnected.

IMPORTANT: Always use clean tools and keep open surfaces free of dirt and foreign matter. Cleanliness is essential when servicing the hydrostatic system.

N01;;5026 A 091084

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard or paper to search for leaks. Do not use your hand.

If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.



IMPORTANT: When disconnecting a line, hose, or transfer tube from a hydrostatic component, always mark end and port from which it was removed so that it can be connected to proper port when reassembling.

Also, when disconnecting a line, hose, or transfer tube from a component, always plug them and component to keep dirt out of system. Use a plastic plug or plastic bag - never a cloth. Cloth contains lint which can damage hydrostatic system.

High pressure hoses have clamp-type bolted fittings with O-rings. When this type of fitting is disassembled, inner surfaces must be cleaned thoroughly and new O-rings installed. This is to insure a tight seal and reduce possibility of leakage.

9A2;X9811 N01;;5005 GA 080385

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.

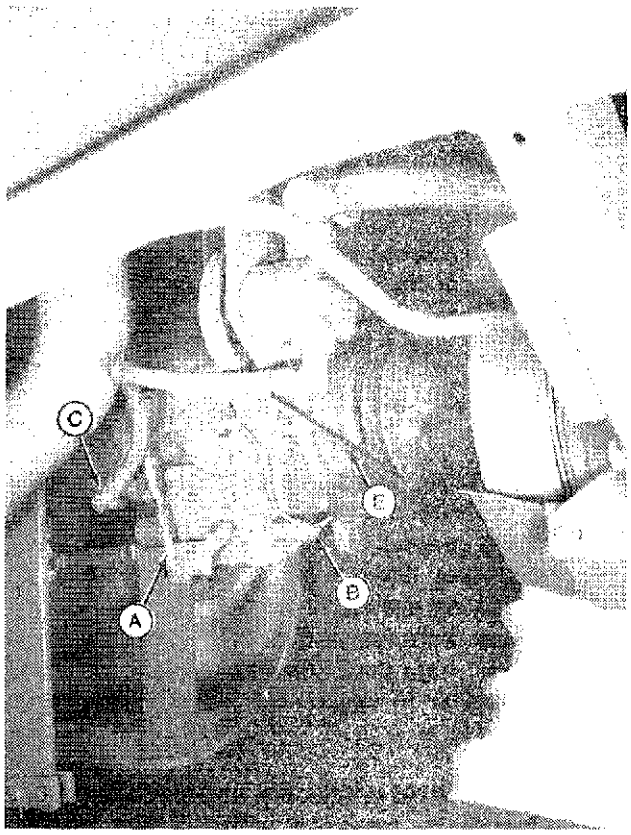
5. Disconnect and cap hydrostatic lines (C). Plug holes in hydrostatic drive unit. Place plastic bags over ends of lines to keep dirt out of system. Secure with rubber bands.

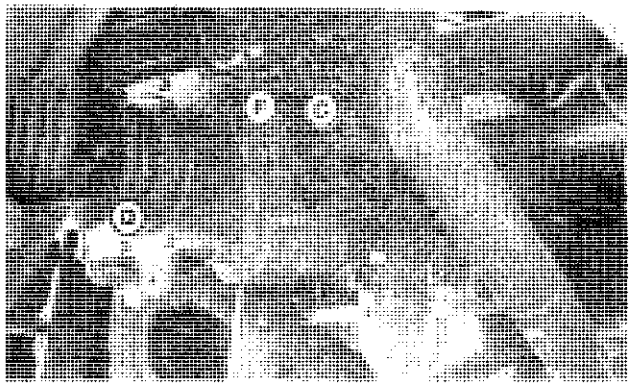
6. Loosen steel line clamp along engine side rail and slide line back out of mounting angle grommet (F).

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.



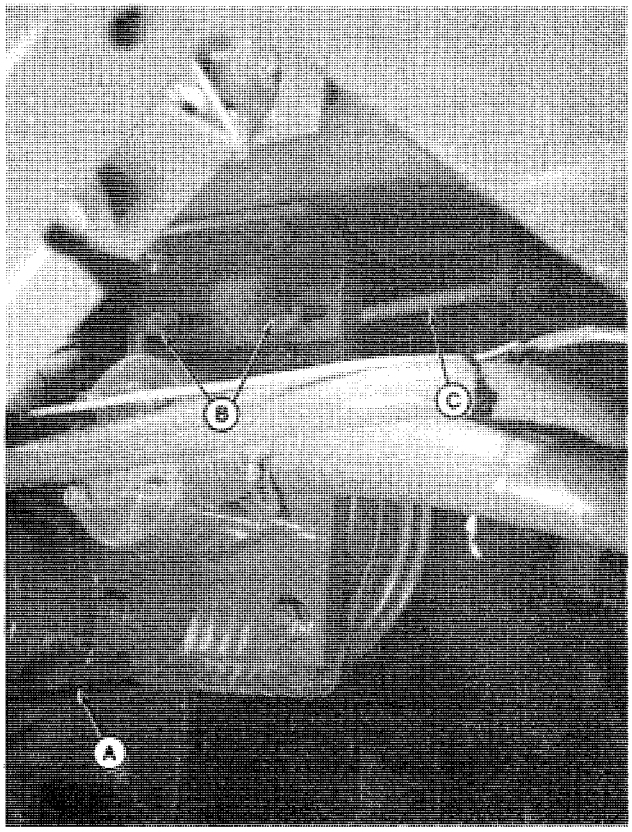


A—Control Linkage
B—Safety Start Switch Wire
C—Hydraulic Lines
D—U-Joint
E—Charge Pump Drive Belt
F—Mounting Angle Grommet

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

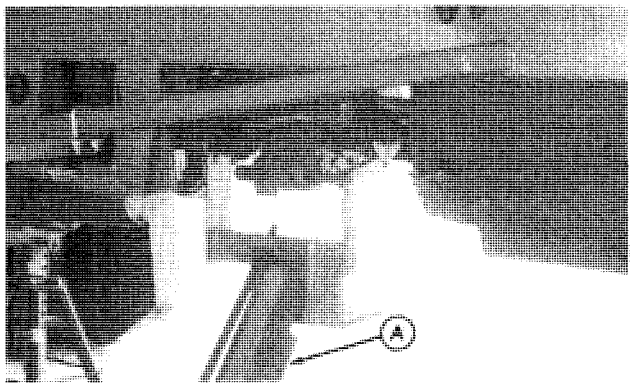
12. Position 341 kg (750 lb) service jack (A) with adapter under unit and attach to pump bracket.

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.

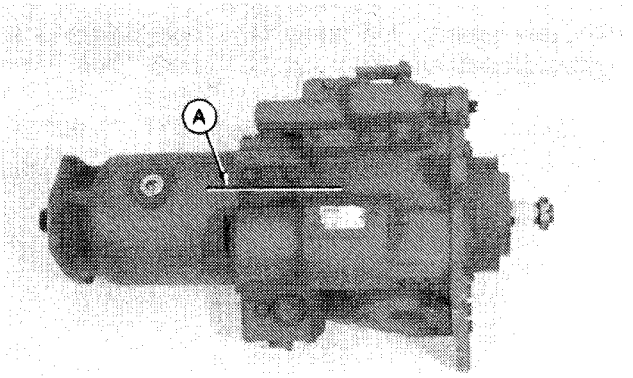
15. Slide unit towards rear, then lower.



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.



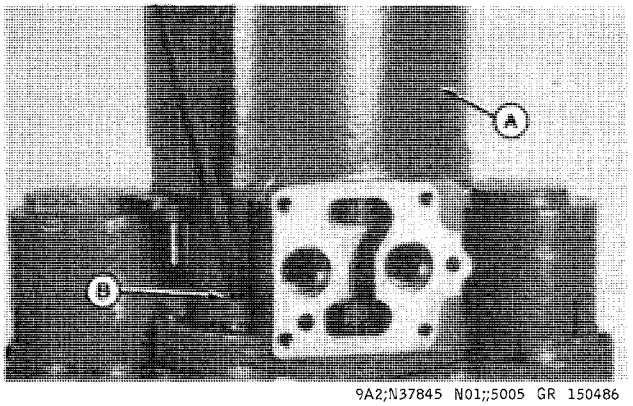
9A2;N84172 N1 N01;;5005 GQ 150486

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.



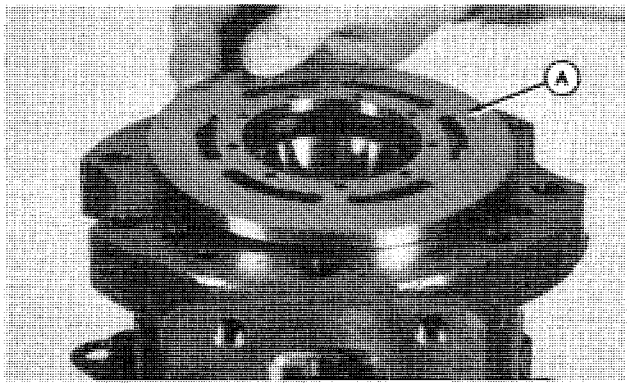
9A2;N37845 N01;;5005 GR 150486

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.

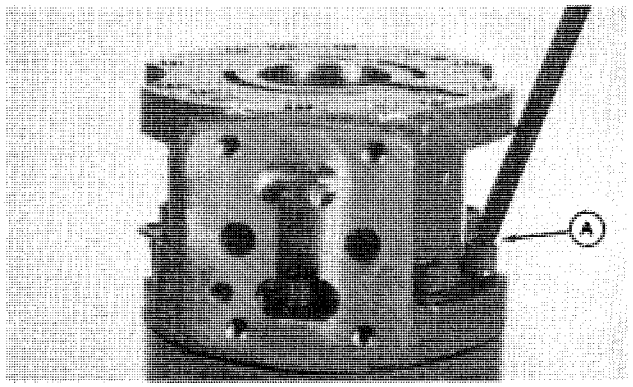
7. Wrap plates separately in clean paper.



9A2;N37846 N01;;5005 GS 150486

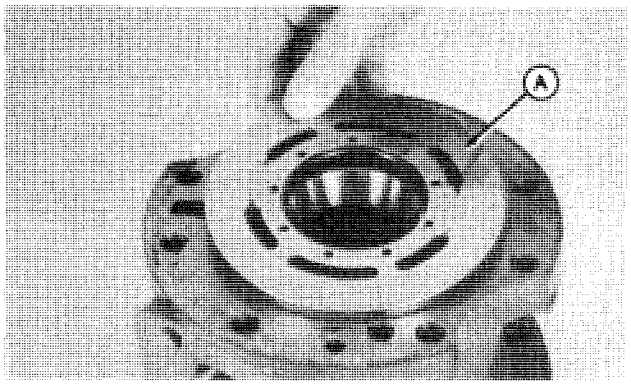
8. Remove center section-to-motor hex. socket head screws using JDG-352 Wrench (A).

9. Lift center section off motor.



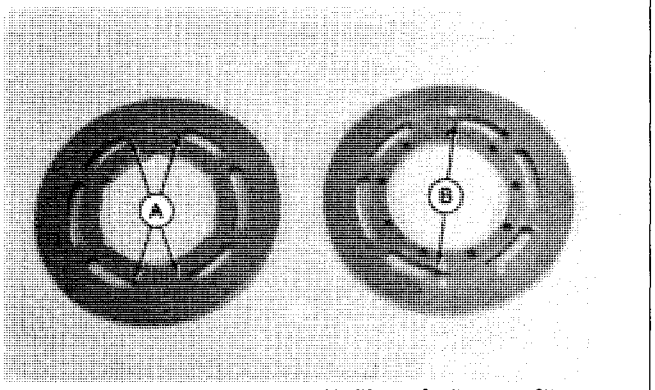
9A2;N37847 N01;;5005 GS1 150486

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).



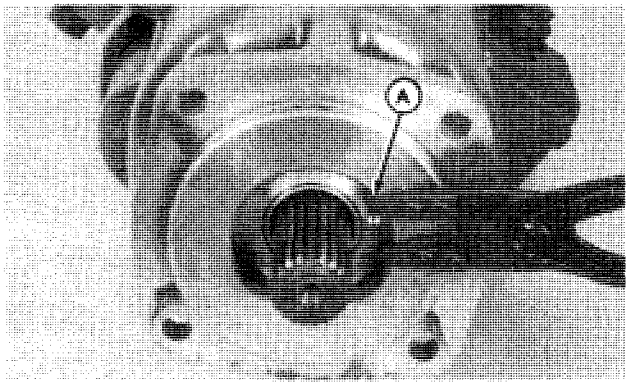
9A2;N84170 Q1 N01;;5005 GU 150486

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.

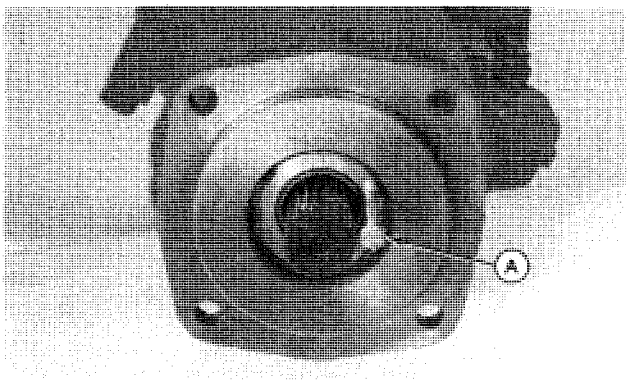
IMPORTANT: Do not use solvent from parts cleaning tank. This solvent may be contaminated and defeat the purpose of cleaning shaft area.

2. Remove snap ring (A).



9A2;N37849 N01;;5005 -GV 180189

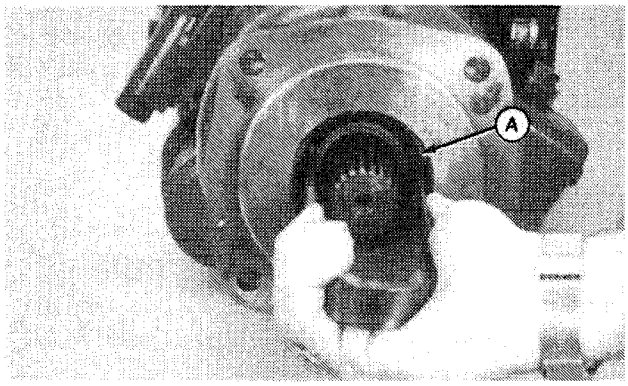
3. Remove stationary seal using a 1/4 x 20 UNC bolt (A).



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

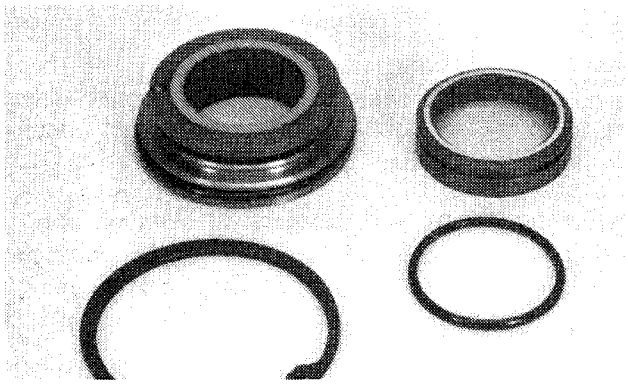
4. Remove rotating seal using JDG-351 Seal Remover (A). Be careful not to scratch sealing surface.

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



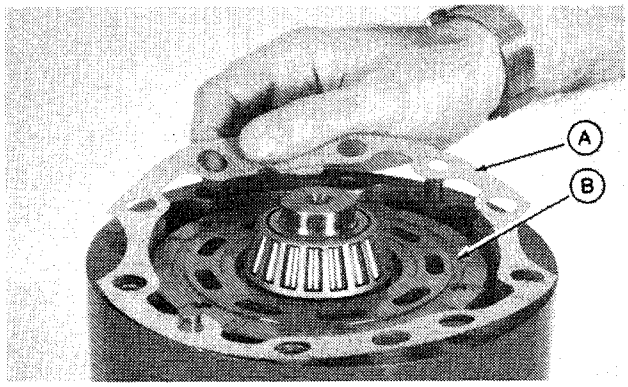
9A2;N37850 N01;;5005 -JN 240987

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



9A2;H50395 N01;;5005 -JO 240987

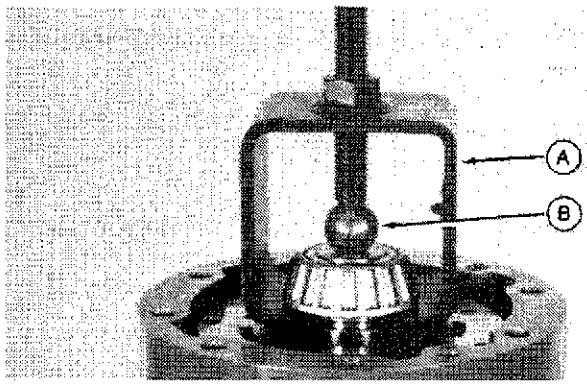
7. Remove gasket (A) and bearing plate (B), if not already removed.



9A2;H50432 N01;;5005 -JP 240987

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

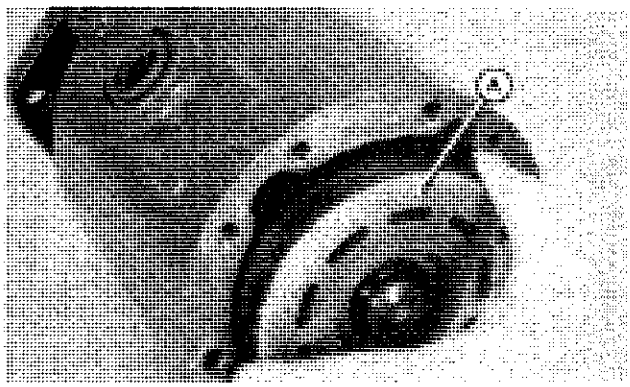
9. Pull rear bearing using puller (A) and hardened washer or steel ball (B).



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.



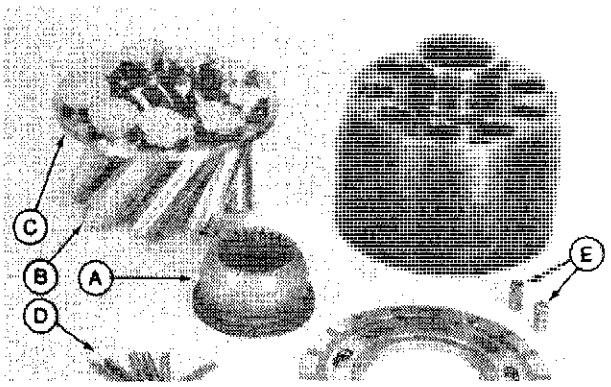
9A2;N37851 N01;;5005 -JQ 240987

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)



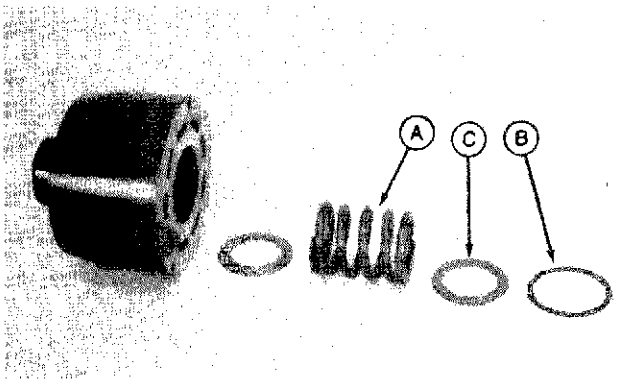
9A2;H50435 N01;;5005 -JR 240987

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.

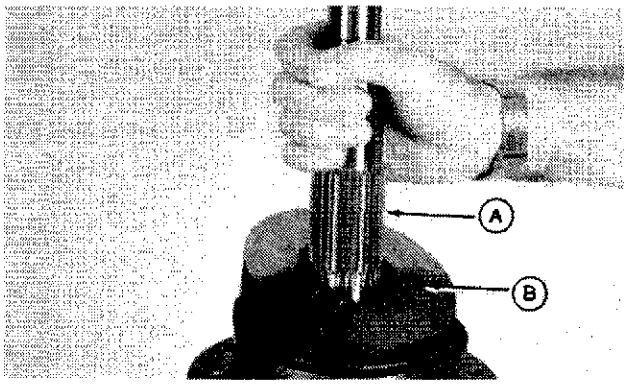


9A2;N37852 N01;;5005 -JS 240987

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.

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(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.

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(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.

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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.

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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.

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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.

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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.

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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.

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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.

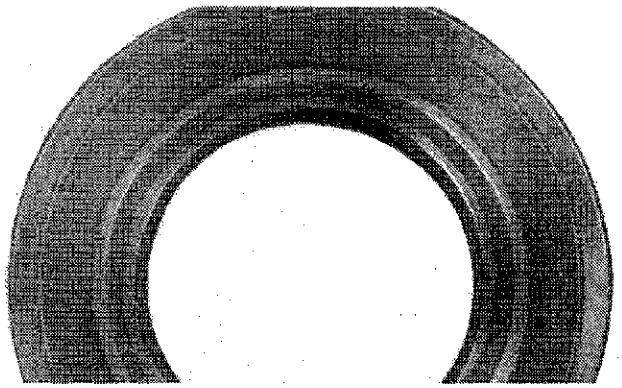
A64; N01;5005 CV 170383

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.

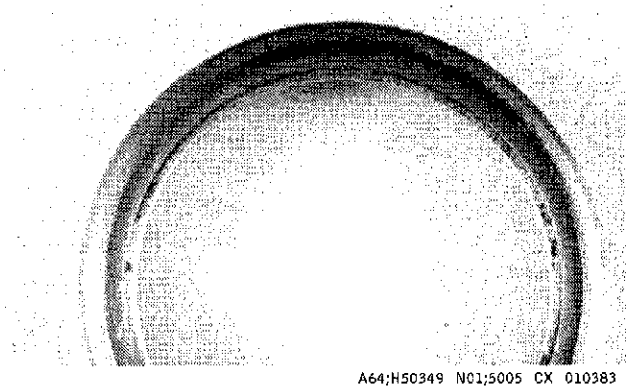
To properly seal the shaft, the fire lapped sealing surface located on each seal half must be smooth, flat, and free of all nicks, burrs, and scratches.

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

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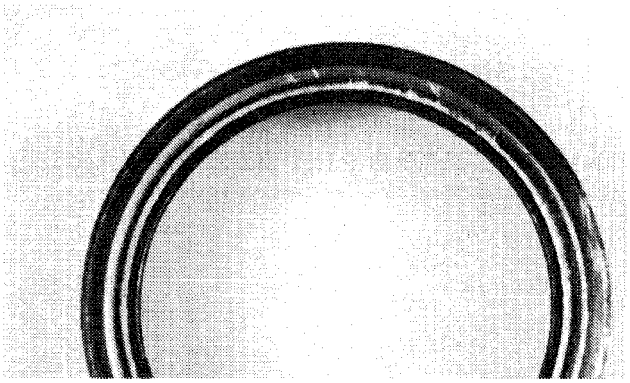
The smearing around the center of the sealing surface indicates it was subject to a lack of/or insufficient lubrication. This condition usually is a result of insufficient oil film to properly lubricate rotating part mating surfaces.

The discoloration on this bronze seal half indicates the possibility of excessive oil temperatures.

Water not only creates an improper lubrication condition, but will also cause undesirable chemical changes to the oil. This chemical change to the oil usually will cause the bronze parts to discolor or turn dark.

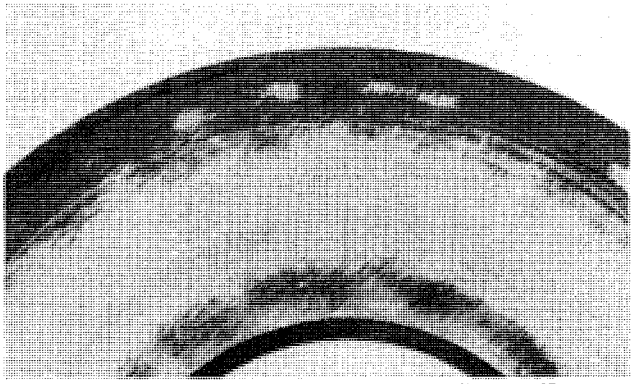


A64;H50350 N01;5005 CY 010383

INSPECT THRUST PLATE

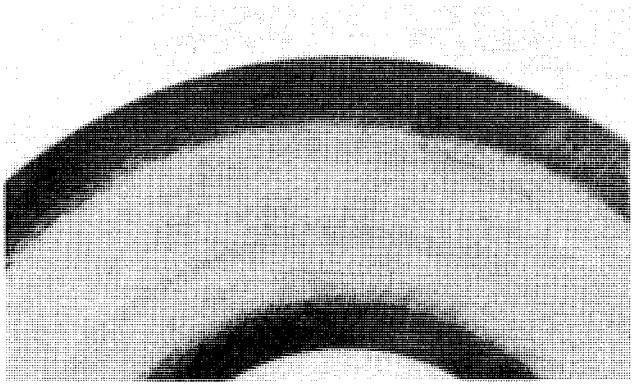
The smearing on this thrust plate surface indicates it was subjected to a lack of/or insufficient lubrication. This condition usually is a result of insufficient oil film required to properly lubricate rotating part surfaces.

This thrust plate may be reused by installing it with the smeared side toward the swashplate, only if the thrust plate is not damaged in any way. The other finished side must be smooth, flat and free of any nicks, burrs and scratches.



A64;H50351 N01;5005 CZ 010383

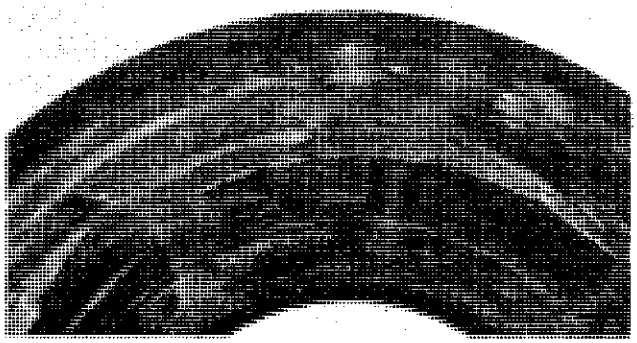
The scoring marks on this thrust plate indicate it was subjected to abrasive contamination. This contamination may have been suspended in the oil.



A64;H50352 N01;5005 DA 170383

The discoloration on this thrust plate indicates it was subjected to extremely high temperature. This condition is a result of very high oil temperature.

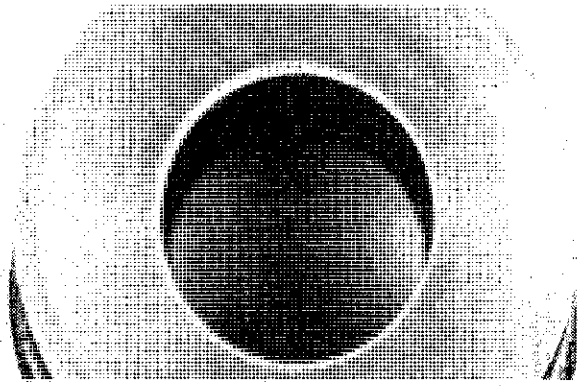
This thrust plate should not be reversed and reused because the excessive temperature created bends.



A64;H50353 N01;5005 DB 170383

INSPECT FIXED SWASHPLATE

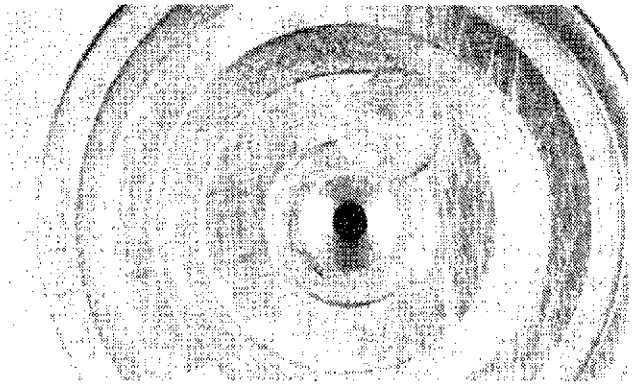
The scoring on this fixed swashplate indicates it was subjected to abrasive contamination.



A64;H50354 N01;5005 DC 010383

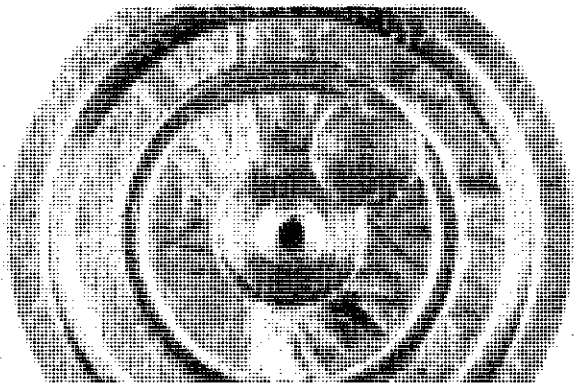
INSPECT PISTON SLIPPER

The small scratch marks across this slipper face indicates that it was subjected to some very fine abrasive.



A64;H50355 N01;5005 DD 170383

The scoring on this piston slipper face indicates it was subjected to abrasive contamination. A small particle of contamination is embedded into the balance land of this piston slipper.



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