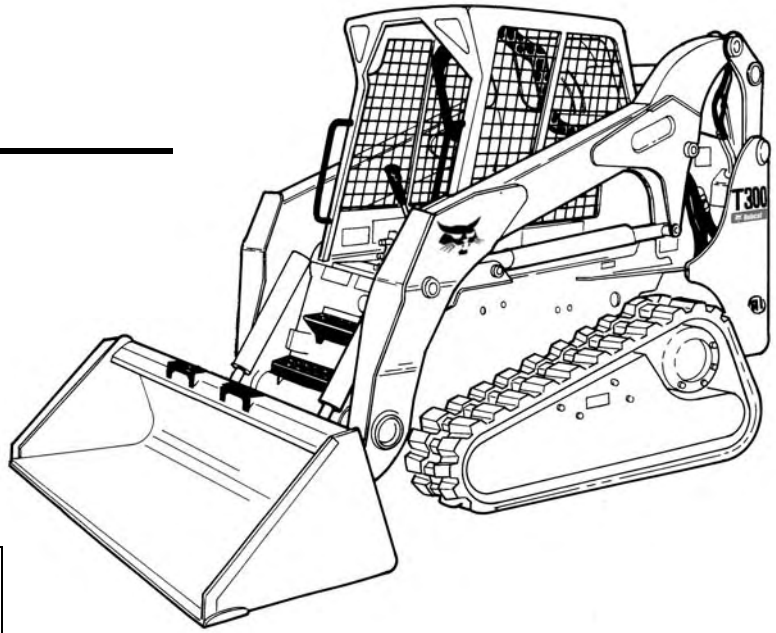
T300
TURBO

T300
TURBO HIGH FLOW

Bobcat®

Service Manual

S/N 525411001 & Above
S/N 525511001 & Above



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EQUIPPED WITH BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

6902726 (6-12)

Ingersoll Rand
Compact Vehicle Technologies

Printed in U.S.A.

SAFETY INSTRUCTIONS

Safety Alert Symbol

This symbol with a warning statement means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.

WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0903

WARNING

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause injury or death.

W-2044-1285

IMPORTANT

This notice identifies procedures which must be followed to avoid damage to the machine.

I-2019-0284

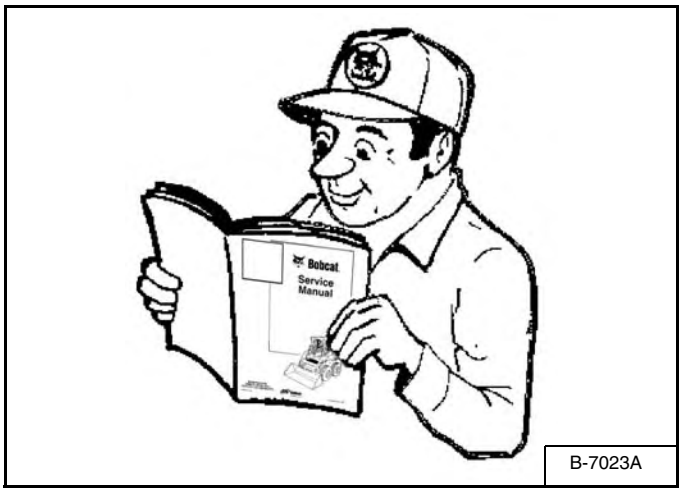
The following publications provide information on the safe use and maintenance of the Bobcat machine and attachments:

- The Delivery Report is used to assure that complete instructions have been given to the new owner and that the machine is in safe operating condition.
- The Operation & Maintenance Manual delivered with the machine or attachment contains operating information as well as routine maintenance and service procedures. It is a part of the machine and can be stored in a container provided on the machine. Replacement Operation & Maintenance Manuals can be ordered from your Bobcat dealer.
- Machine signs (decals) instruct on the safe operation and care of your Bobcat machine or attachment. The signs and their locations are shown in the Operation & Maintenance Manual. Replacement signs are available from your Bobcat dealer.
- An Operator's Handbook fastened to the operator cab. It's brief instructions are convenient to the operator. The handbook is available from your dealer in an English edition or one of many other languages. See your Bobcat dealer for more information on translated versions.
- The AEM Safety Manual delivered with the machine gives general safety information.
- The Service Manual and Parts Manual are available from your dealer for use by mechanics to do shop-type service and repair work.
- The Skid-Steer Loader Operator Training Course is available through your local dealer or at **www.training.bobcat.com** or **www.bobcat.com**. This course is intended to provide rules and practices of correct operation of the Skid-Steer Loader. The course is available in English and Spanish versions.
- Service Safety Training Courses are available from your Bobcat dealer or at **www.training.bobcat.com** or **www.bobcat.com**. They provide information for safe and correct service procedures.
- The Skid-Steer Loader Safety Video is available from your Bobcat dealer or at **www.training.bobcat.com** or **www.bobcat.com**.

LIFTING AND BLOCKING THE LOADER

Procedure

Figure 10-10-1



⚠ WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & M aintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0903

Read the Removal & Installation, Disassembly & Assembly, etc. completely to become familiar with the procedure before beginning **[Figure 10-10-1]**.

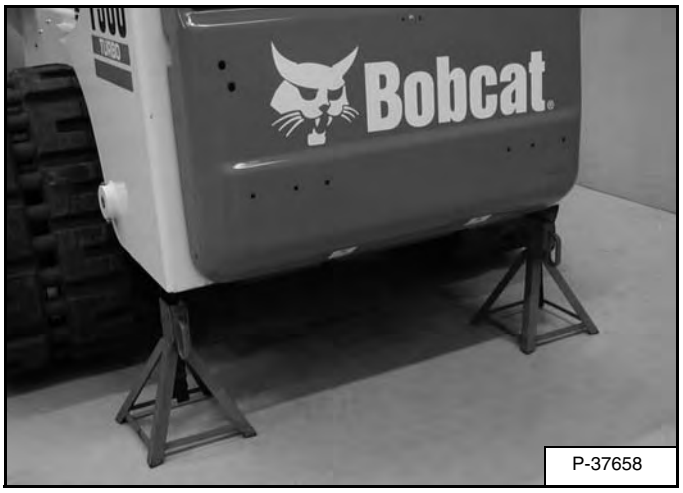
Always park the loader on a level surface.

⚠ WARNING

Put jackstands under the front axles and rear corners of the frame before running the engine for service. Failure to use jackstands can allow the machine to fall or move and cause injury or death.

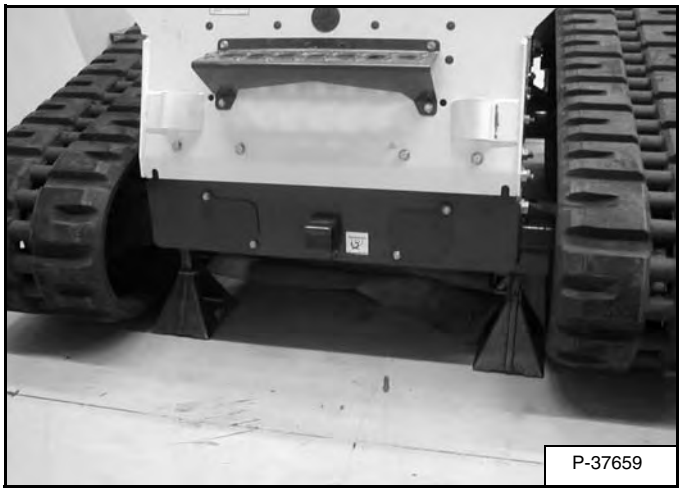
W-2017-0286

Figure 10-10-2



Lift the rear of the loader and install jackstands **[Figure 10-10-2]**.

Figure 10-10-3



Lift the front of the loader and put jackstands under the axle tubes **[Figure 10-10-3]**.

NOTE: Make sure the jackstands do not touch the tracks.

TOWING THE LOADER

Procedure

Because of the design of the loader, there is not a recommended towing procedure.

- The loader can be lifted onto a transport vehicle.

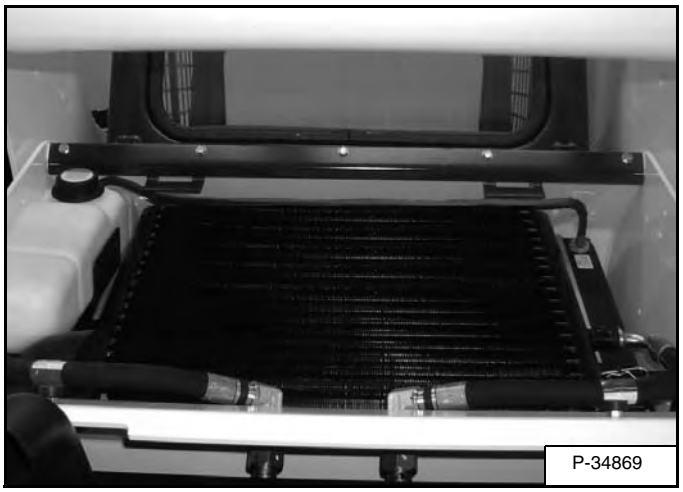
- The loader can be skidded a short distance to move for service (EXAMPLE: Move onto a transport vehicle.) without damage to the hy drostatic system. (The tires/tracks will not turn.) There might be slight wear to the tires/tracks when the loader is skidded.

  The towing chain (or cable) must be rated at 1 & 1/2 times the weight of the loader. (See LOADER SPECIFICATIONS (T300) on Page SPEC-10-1.)

ENGINE COOLING SYSTEM

Cleaning Cooling System

Figure 10-90-1



Check the cooling system every day to prevent overheating, loss of performance or engine damage.

⚠ WARNING

Wear safety glasses to prevent eye injury when any of the flollowing conditions exist:

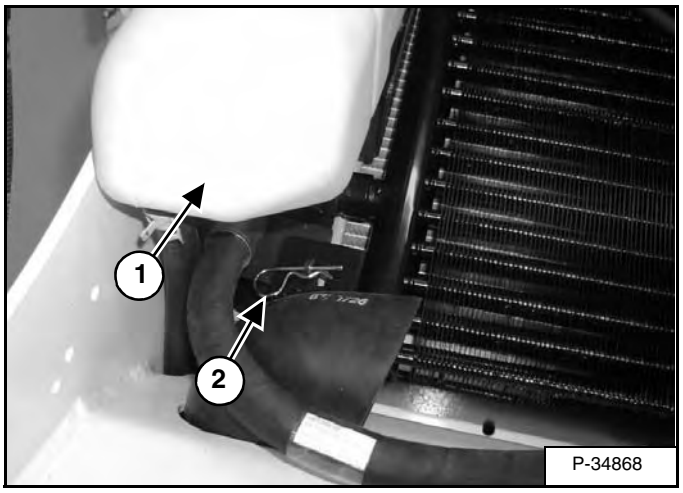
- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

W-2019-1285

Remove the rear grill. (See Removal And Installation on Page 50-60-1.)

Use air pressure or water pressure to clean the top of the oil cooler **[Figure 10-90-1]**.

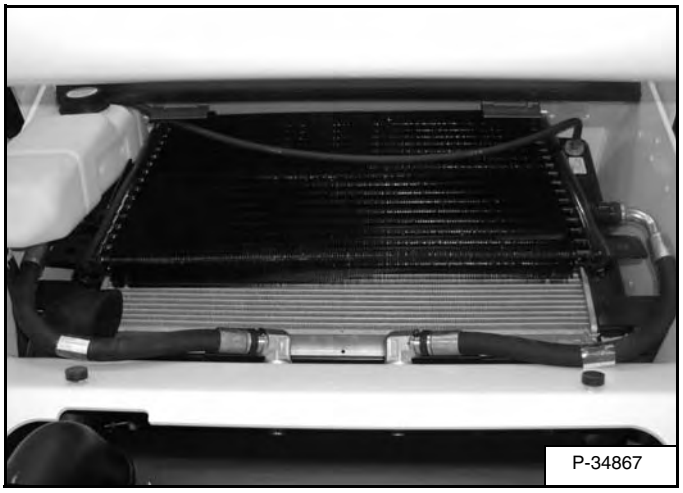
Figure 10-90-2



Lift the overflow tank (Item 1) **[Figure 10-90-2]** out of its mount bracket.

Remove the cotter pin (Item 2) **[Figure 10-90-2]** (both sides) from the oil cooler.

Figure 10-90-3

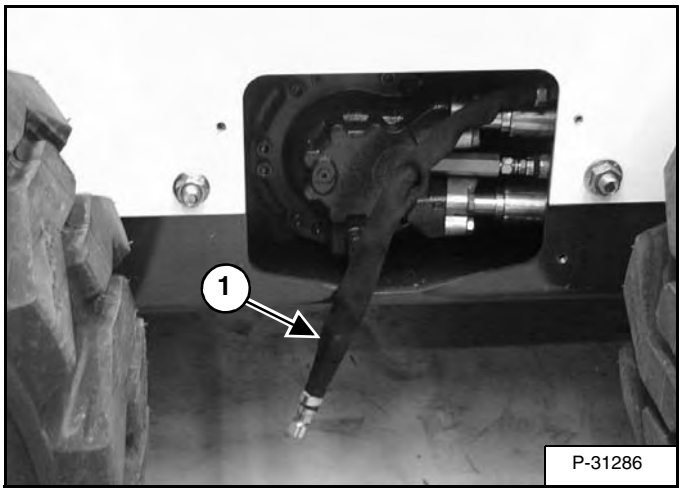


Raise the oil cooler **[Figure 10-90-3]**.

Use air pressure or water pressure to clean the top of the engine oil cooler.

Replacing Hydraulic Fluid And Case Drain Filters

Figure 10-120-5



(See SERVICE SCHEDULE on Page 10-70-1.), for the service interval.

Replace the fluid if it be comes contaminated or after major repair.

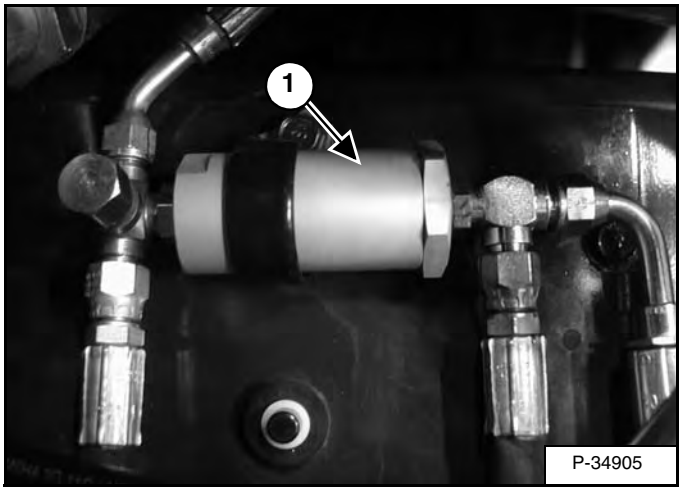
Also clean the hydrostatic motor case drain filter thoroughly after a major repair.

Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

Remove the left hydrostatic motor cover.

Pull the reservoir drain hose (Item 1) **[Figure 10-120-5]** out the motor cover hole. Remove the plug and drain the fluid into a container.

Figure 10-120-6



Disconnect the hoses from the hydrostatic motor case drain filter (Item 1) **[Figure 10-120-6]**.

Remove the case drain filter and clean thoroughly with clean solvent.

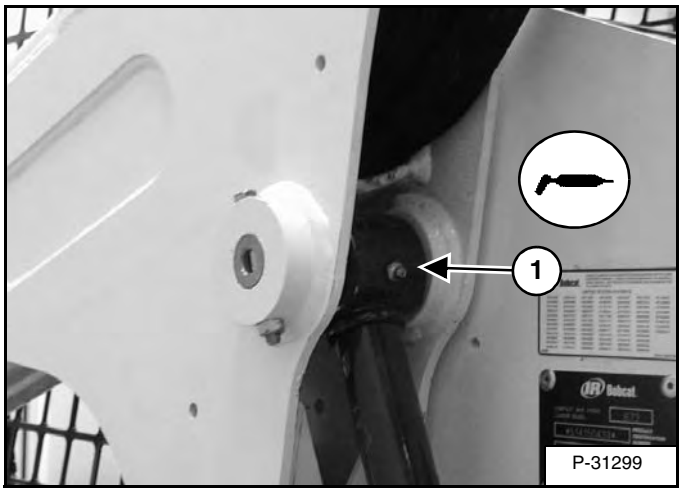
Install the case drain filter and tighten the hoses.

Install the pl ug in the reservoir drain hose and tighten. Install the motor cover.

LUBRICATING THE LOADER

Procedure

Figure 10-150-1



Lubricate the loader as specified in the SERVICE SCHEDULE, Contents Page 10-01 for the best performance of the loader.

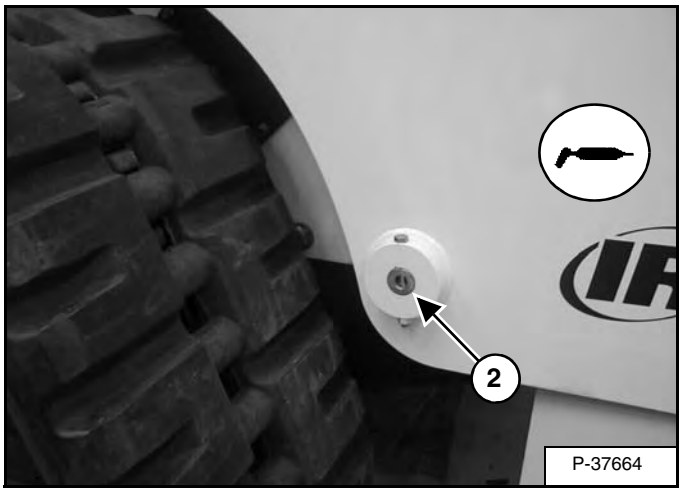
Record the operating hours each time you lubricate the Bobcat loader.

Always use a good quality lithium based multi-purpose grease when you lubricate the loader. Apply the lubricant until extra grease shows.

Lubricate the following locations on the loader:

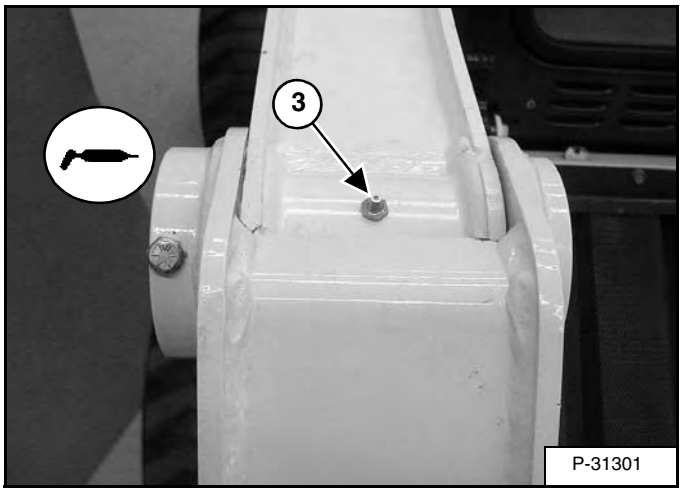
1. Rod End Lift Cylinder (Both Sides) **[Figure 10-150-1]**.

Figure 10-150-2



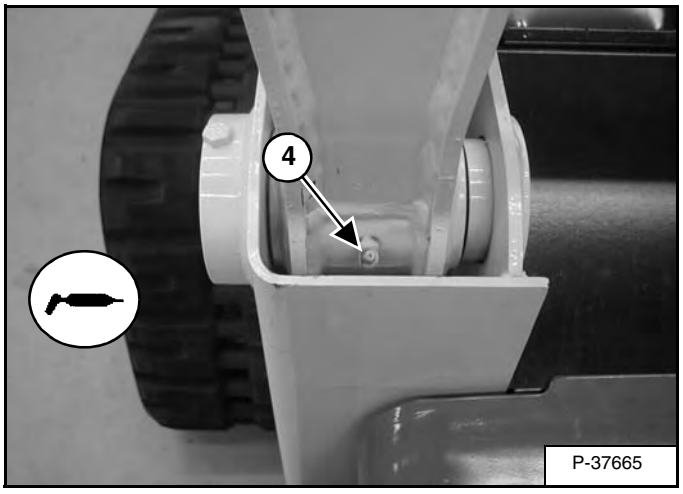
2. Base End Lift Cylinder (Both Sides) **[Figure 10-150-2]**.

Figure 10-150-3



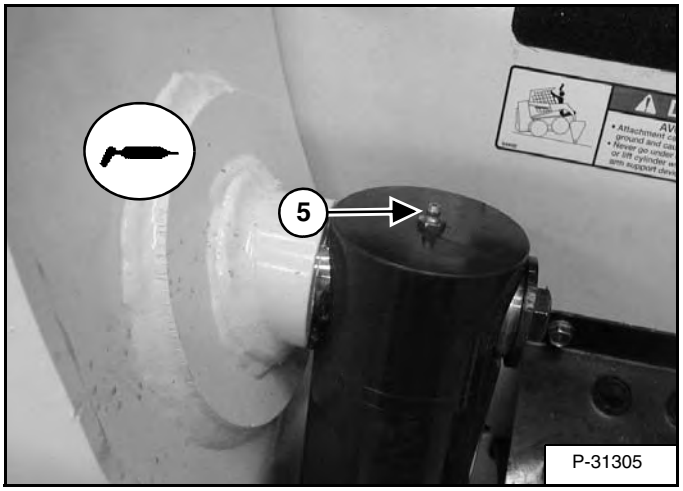
3. Lift Arm Pivot Pin (Both Sides) **[Figure 10-150-3]**.

Figure 10-150-4



4. Lift Arm Link Pivot (Both Sides) **[Figure 10-150-4]**.

Figure 10-150-5



5. Base End Tilt Cylinder (Both Sides) **[Figure 10-150-5]**.

TIGHTEN ALL HARDWARE PER SI ZE TO GRADE 5 TORQUE (SEE STANDARD TORQUE SPECIFICATIONS FOR BOLTS, SECTION SPEC-01) UNLESS OTHERWISE SPECIFIED.

HYDRAULIC/HYDROSTATIC SCHEMATIC
T300 (S/N 525414000 & Above)
(S/N 525512000 & Above)

(PRINTED FEBRUARY 2005)
V-0679legend

Printable Version Click Here

LEGEND

1. RESERVOIR: Capacity . . . . . 21 qt. (19.9 L)
2. FILTER - CASE DRAIN (90 Micron)
3. FILTER - HYDRAULIC (CANISTER)
4. SPRING LOADED FILTER BYPASS VALVE: 45-55 PSI (3,1-3,8 bar)
5. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - HYDRAULIC POWERED BOB-TACH
6. DIFFERENTIAL PRESSURE SWITCH: 36-44 PSI (2,5-3,0 bar)
7. FLOW DIVIDER ADJUSTMENT VALVE
8. CHECK VALVE - BUCKET POSITION VALVE
9. FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC MOTOR
10. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - FLOW CONTROL SPOOL
11. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - UNLOADING SPOOL
12. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - TILT CONTROL
13. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT CONTROL
14. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BICS CONTROL
15. PULL BUTTON ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT ARM BY PASS
16. FILTER - BICS CONTROL VALVE (SCREEN)
17. FILTER - BOB-TACH VALVE
18. LOAD CHECK VALVE
19. RELIEF VALVE - MAIN: at Front Quick Couplers 3250-3350 PSI (224-231 bar)
20. RELIEF/ANTICAVITATION VALVE - PORT (LIFT BASE END) 4000 PSI (275 bar)
21. ANTICAVITATION VALVE
22. RELIEF/ANTICAVITATION VALVE - PORT (TILT BASE END) 4000 PSI (275 bar)
23. RELIEF/ANTICAVITATION VALVE - PORT (TILT ROD END) 4000 PSI (275 bar)
24. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - AUXILIARY
25. RELIEF/ANTICAVITATION VALVE - PORT - OPTIONAL: 3100 PSI (214 bar)
26. RELIEF/REPLENISHING VALVE - HIGH PRESSURE: 5000 PSI (345 bar)
27. PRESSURE SWITCH
28. RELIEF VALVE - CHARGE: 140 degrees F. (60 degrees C.)Fluid at high engine idle 410 - 470 PSI (28,3 - 32,4 bar)
29. CHARGE PUMP: 14.2 GPM (53,8 L/min) at high engine idle
30. HYDRAULIC PUMP . . . . . Gear Type 21.2 GPM (80,3 L/min) at high engine idle
31. DRIVE MOTOR SHUTTLE VALVE
32. SHUTTLE RELIEF VALVE: 200 PSI (13,8 bar)
33. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Base
34. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Rod
35. LOAD SHUTTLE VALVE - BLEED OFF
36. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - (Two Coil)
37. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - REAR AUXILIARY
38. ORIFICE - With 0.140 inch (3,6 mm)
39. RELIEF VALVE: 3000 PSI (207 bar)
40. ORIFICE - With 0.031 inch (0,79 mm)
41. CHECK VALVE - BICS CONTROL VALVE
42. RESTRICTION
43. CHECK VALVE
44. FRONT AUXILIARY MANUAL PRESSURE BLEED-OFF VALVE
45. VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC PUMP
46. RELIEF VALVE - 2000 PSI (138 bar)
47. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE (TWO COIL)
48. RELIEF VALVE - 1200 PSI (83 bar)
49. CHECK VALVE - With 80 PSI (5,5 bar) Spring
50. CHECK VALVE - With 300 PSI (20,7 bar) Spring and 0.016 inch (0,40 mm) orifice
51. ORIFICE - With 0.025 inch (0,64 mm)
52. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BUCKET POSITION VALVE (ON/OFF)
53. FILTER - CASE DRAIN (ATTACHMENT)
54. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BRAKE
55. HYDRAULIC BRAKE - SPRING APPLIED - PRESSURE RELEASE
56. ORIFICE - With 0.089 inch (2,26 mm)

NOTE: Unless otherwise specified springs have NO significant pressure value.

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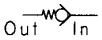
GLOSSARY OF HYDRAULIC/HYDROSTATIC SYMBOLS FOR LOADERS

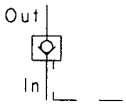
SYMBOL DESCRIPTION

NON-RETURN VALVE, SHUTTLE VALVE: Valve which allows free flow in one direction only

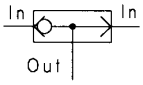
NON-RETURN VALVE (Check Valve) - Used as Replenishing Valve, Load Check Valve or Anticavitation Valve - Opens if the Inlet pressure is higher than the Outlet pressure. Often contains internal spring which has NO significant pressure value



SPRING LOADED VALVE (Bypass Valve) - Opens if the Inlet pressure is greater than the Outlet pressure plus the spring pressure



PILOT CONTROLLED NON-RETURN VALVE - It is possible to open the valve by pilot pressure

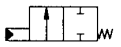


SHUTTLE VALVE - The Inlet port connected to the higher pressure is automatically connected to the Outlet port while the other Inlet port is closed

DIRECTIONAL CONTROL VALVE: Valve providing for the opening (fully or restricted) or the closing of one or more flow paths (represented by several squares)

TWO PORTS and CLOSED FLOW PATHS

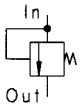
SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE (Two Position) - controlled by an electric solenoid (with return spring)



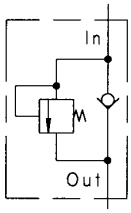
PILOT ACTIVATED DIRECTIONAL CONTROL VALVE (Two Position) - controlled by pressure (with return spring)

SYMBOL DESCRIPTION

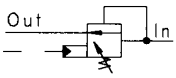
PRESSURE CONTROL VALVE: Valve ensuring the control of pressure



RELIEF VALVE - When the Inlet pressure overcomes the opposing force of the spring, the valve opens permitting flow from the Outlet port.

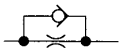


RELIEF/REPLENISHING VALVE or RELIEF/ANTICAVITATION VALVE - When the Inlet pressure overcomes the opposing force of the spring, the valve opens permitting flow from the Outlet port - Allows free flow in the opposite direction



DUAL PRESSURE RELIEF VALVE - When the inlet pressure overcomes the opposing force of the spring, the valve opens permitting flow from the Outlet port. Pilot pressure provides a second pressure value.

FLOW CONTROL VALVE: Valve controlling the flow in one or both directions



ONE WAY RESTRICTOR VALVE (Non-Return Valve with Restriction) - Unit allowing free flow in one direction but restricted flow in the other direction

TOW VALVE - Normally in closed position

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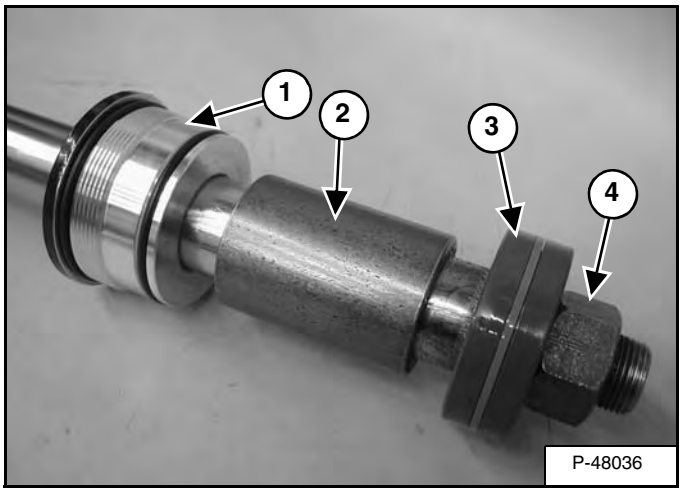
MC 2340-3 (6-2-98)

Assembly (Cont'd)

Figure 20-20-19

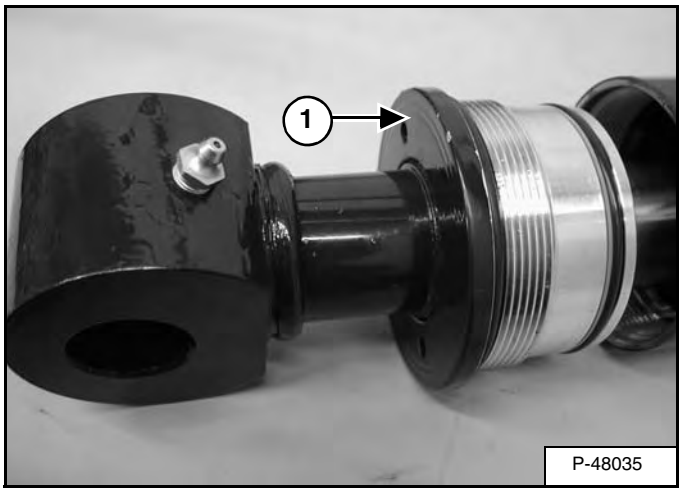


NOTE: Clean and dry the threads before installing the nut. Install the new nut from the kit.

Install the head (Item 1), spacer (Item 2) piston (Item 3), and nut (Item 4) **[Figure 20-20-19]**.

Tighten the nut (Item 4) **[Figure 20-20-19]** to 600 ft.-lb. (814 N•m) torque.

Figure 20-20-20



Put the base end of the hydraulic cylinder in a vise.

Using a spanner wrench, tighten the head (Item 1) **[Figure 20-20-20]** until the head is flush with the end of the cylinder tube assembly.

CYLINDER (POWER BOB-TACH)

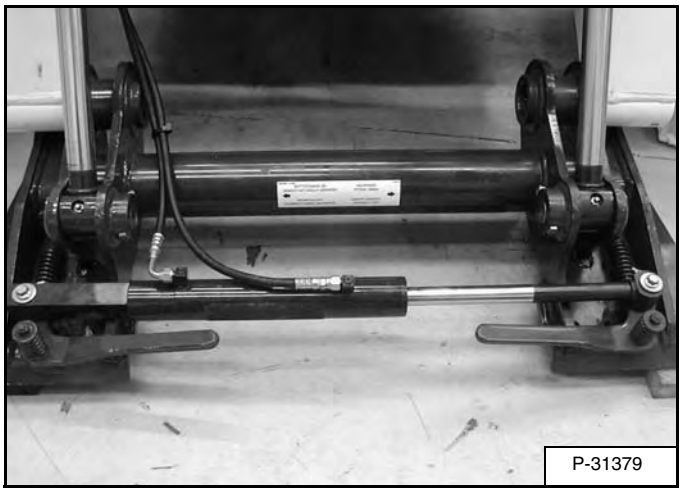
Checking

⚠ WARNING

Diesel fuel or hydraulic fluid unde r pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece or cardboard or wood to find le aks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

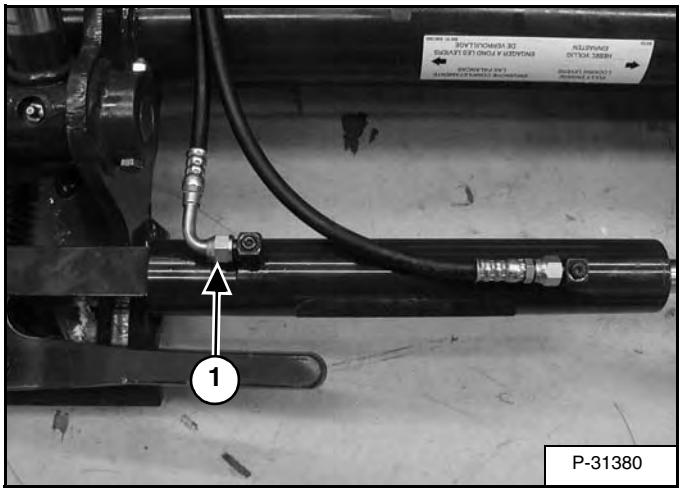
W-2072-0496

Figure 20-22-1



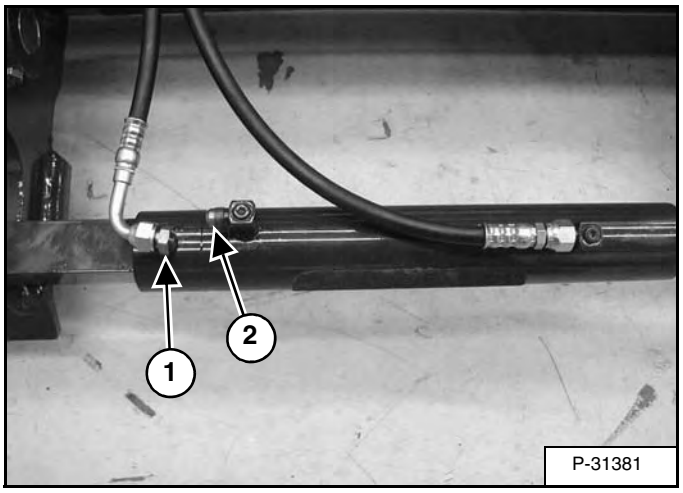
Tilt the B ob-Tach forward, so it i s parallel to th e floor **[Figure 20-22-1]**.

Figure 20-22-2



Disconnect the hose (Item 1) **[Figure 20-22-2]** from the power Bob-Tach cylinder base end port.

Figure 20-22-3



Install a plug in the hose (Item 1) **[Figure 20-22-3]** and tighten.

Engage the parking brake. Lower the seat bar. Start the engine.

Push and hold the BO B-TACH "WEDGES UP" Switch (Front Accessory Panel).

If there is any leakage from the base end cylinder port (Item 2) **[Figure 20-22-3]**, remove the lift cylinder for repair.

⚠ WARNING

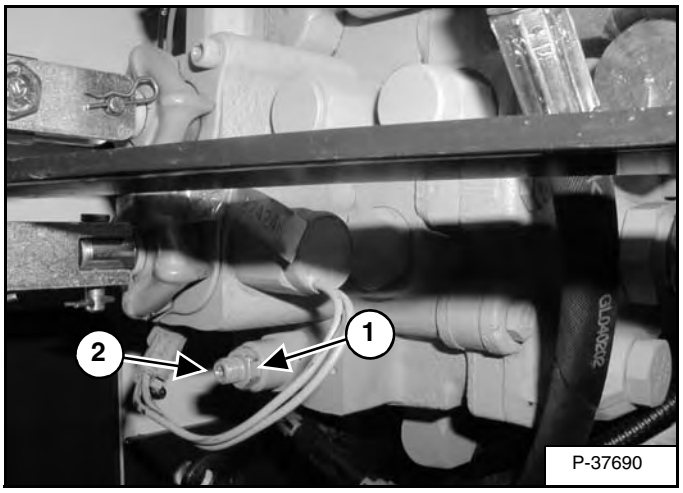
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire which can result in injury or death.

W-2103-1285

Adjustment

NOTE: This procedure is for standard loaders, loaders equipped with ACS o ption and loaders equipped with SJC option. The main relief valve is located in the same place on all of the loaders.

Figure 20-30-5



If the pressure is not correct, adjust the main relief valve. Loosen the lock nut (Item 1) **[Figure 20-30-5]**.

Turn the adjusting screw (Item 2) **[Figure 20-30-5]** in or out until the pressure is correct. Turning screw in wi ll increase pressure.

NOTE: If the correct pressure can not be reached, replace the main relief valve. Check the pressure setting of the new relief valve.

Backslide, Lock Valve Removal And Installation

Figure 20-40-25

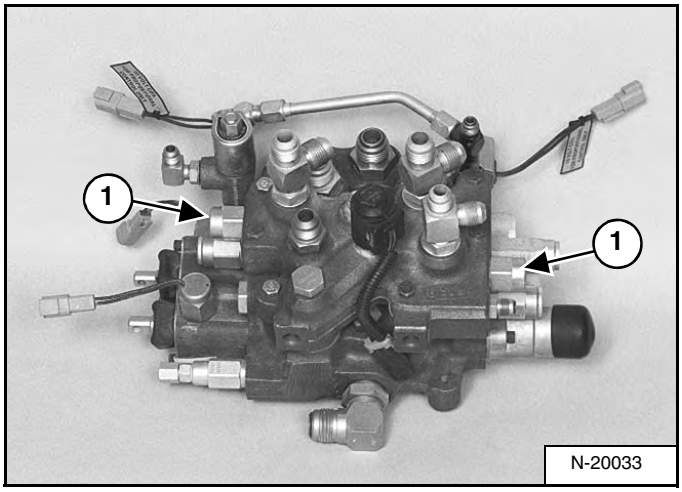


Figure 20-40-26

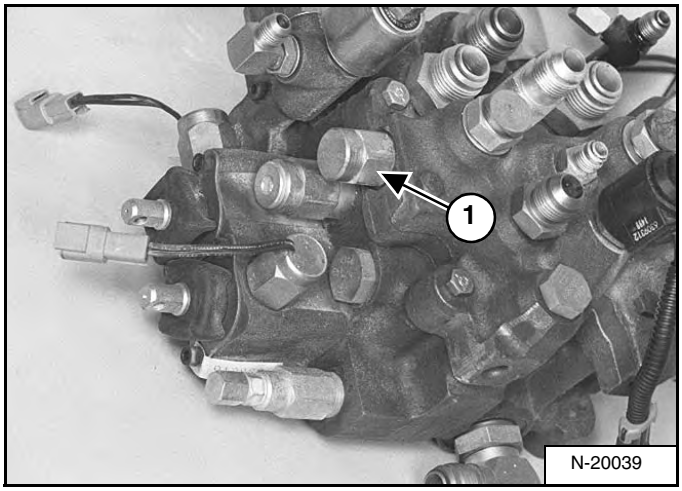
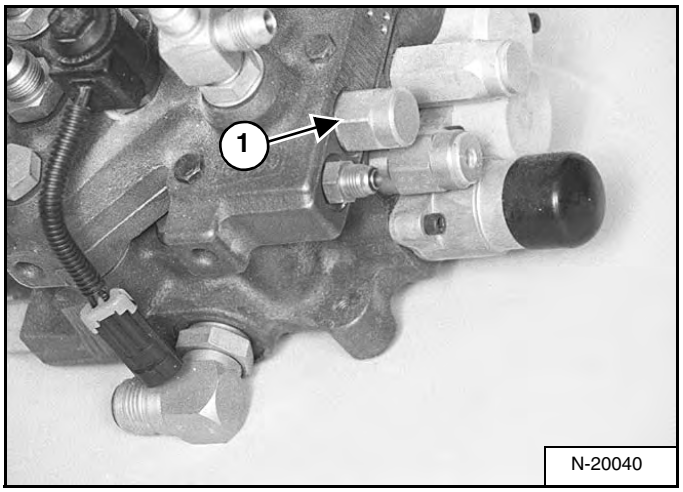


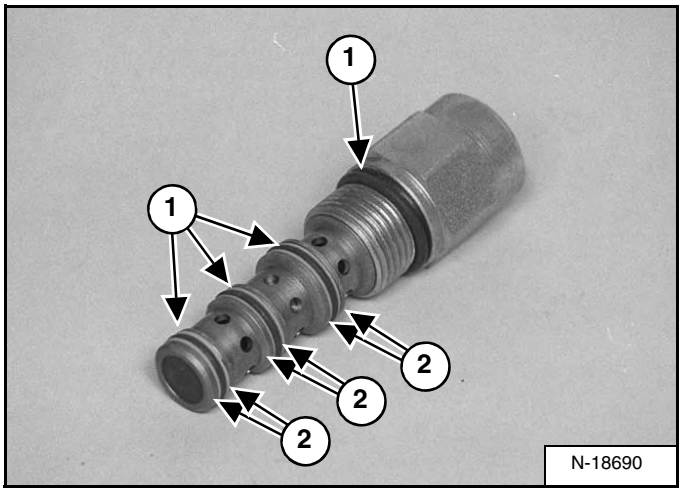
Figure 20-40-27



Remove the lock valves (Item 1) **[Figure 20-40-25]**, **[Figure 20-40-26]** & **[Figure 20-40-27]** from the BICS™ valve.

Installation: Tighten the lock valves to 25 ft.-lb. (34 N•m) torque.

Figure 20-40-28



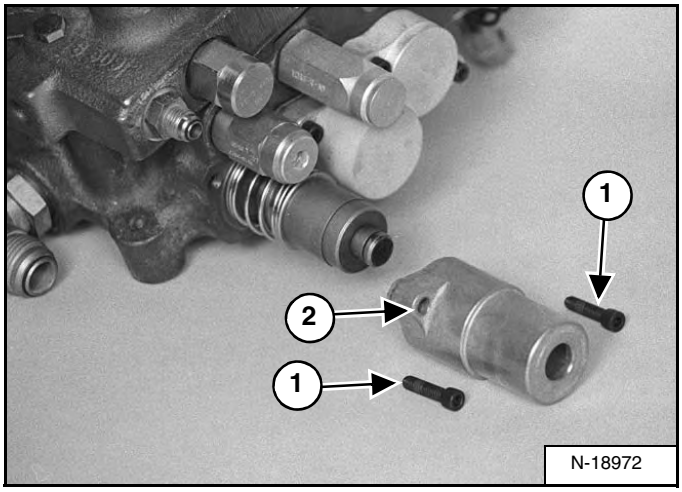
Remove the O-rings (Item 1) and back-up rings (Item 2) from both the tilt and lift lock valves **[Figure 20-40-28]**.

Install new O-rings (Item 1) and back-up rings (Item 2) on the tilt and lift lock valves **[Figure 20-40-28]**.

Reverse the removal procedure to install the lock valve.

Lift Spool And Detent Removal (Cont'd)

Figure 20-40-58



Remove the screws (Item 1) **[Figure 20-40-58]** from the detent bonnet.

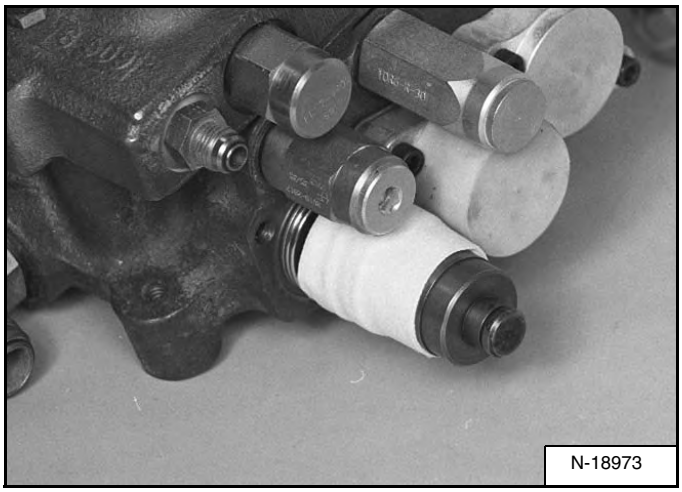
Remove the detent bonnet (Item 2) **[Figure 20-40-58]**.

IMPORTANT

The detent assembly has small springs and balls. Do not lose these parts during disassembly and assembly.

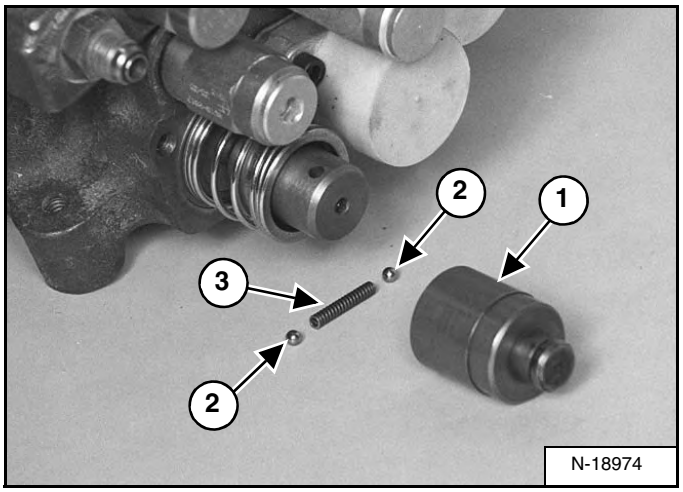
I-2012-0284

Figure 20-40-59



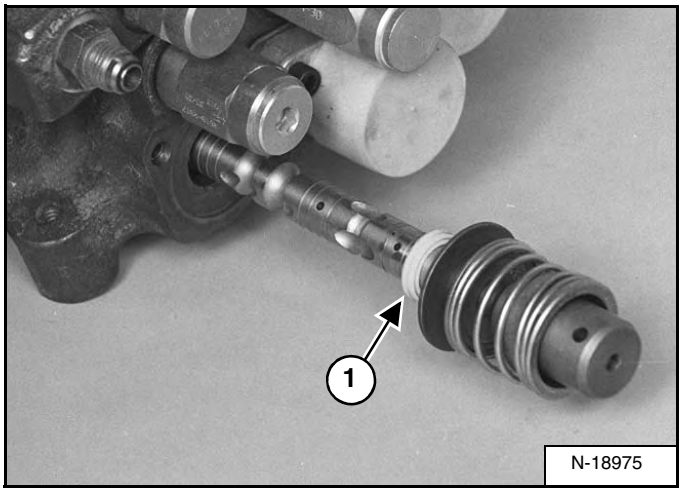
Put a rag around the detent assembly **[Figure 20-40-59]**. This will prevent the detent balls and spring from being lost when the detent sleeve is removed.

Figure 20-40-60



Remove the detent sleeve (Item 1), detent balls (Item 2) and spring (Item 3) **[Figure 20-40-60]**.

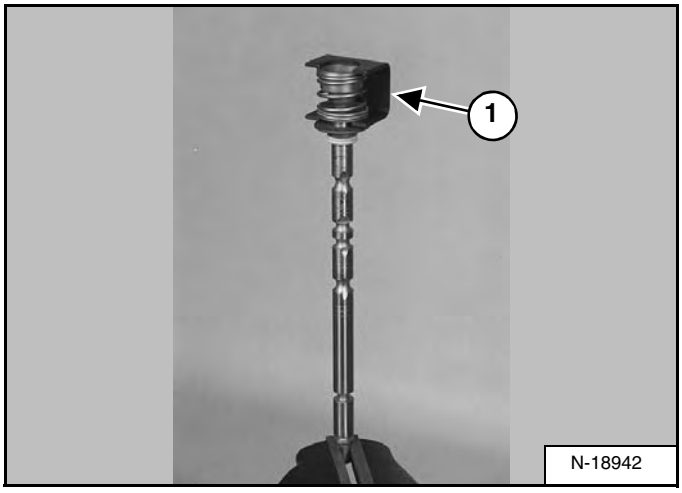
Figure 20-40-61



Remove the spool assembly and seal (Item 1) **[Figure 20-40-61]** from the control valve.

Tilt Spool Disassembly And Assembly

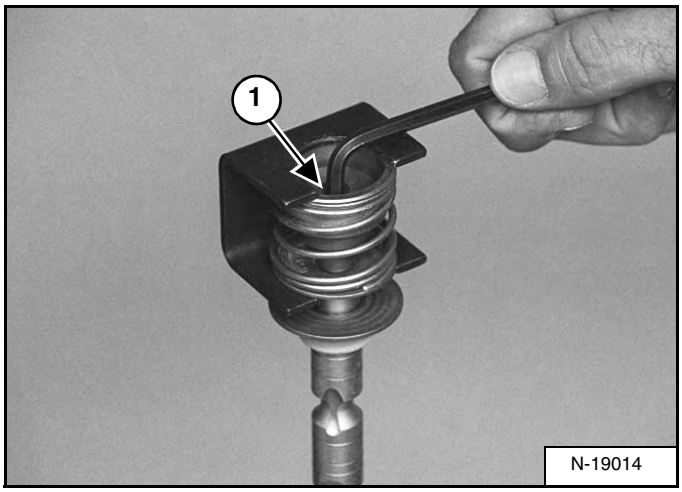
Figure 20-40-93



Put the linkage end of the spool in the vice **[Figure 20-40-93]**.

Install the spool tool (Item 1) **[Figure 20-40-93]** over the centering spring.

Figure 20-40-94

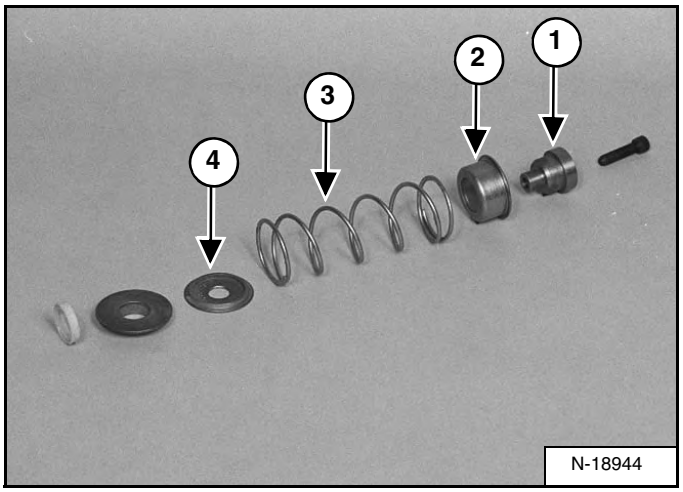


Remove the bolt (Item 1) **[Figure 20-40-94]** holding the centering spring to the spool.

Installation: Tighten the bolt to 90-100 in.-lb. (10,2-11,3 N•m) torque.

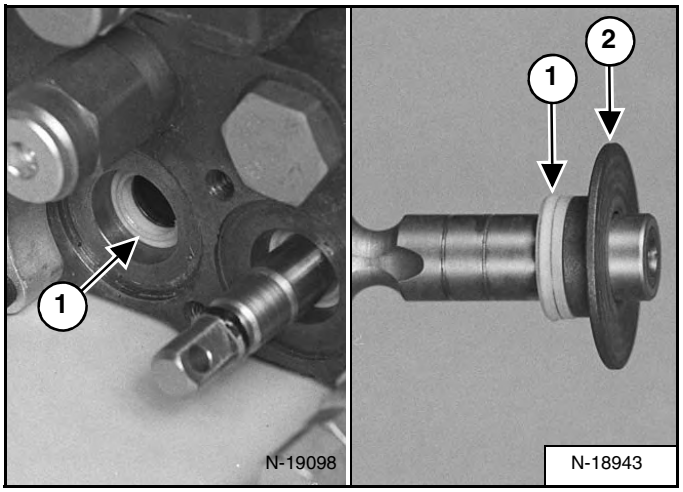
Remove spring tool from the spring assembly.

Figure 20-40-95



Inspect the adapter (Item 1), collar (Item 2), spring (Item 3) and washer (Item 4) **[Figure 20-40-95]**.

Figure 20-40-96

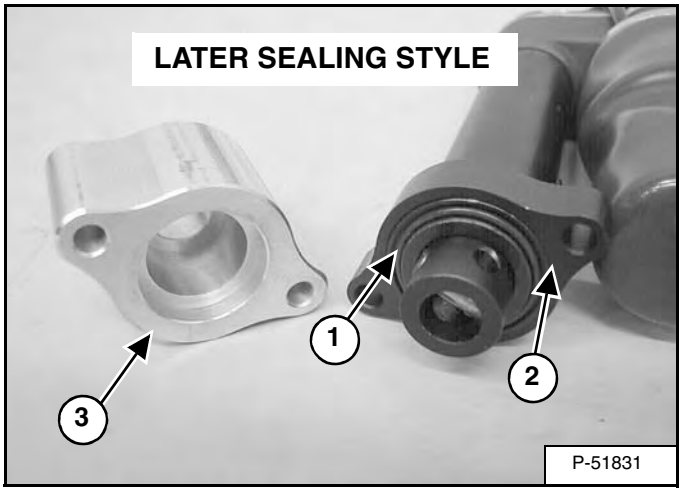


Remove the spool seal(s) (Item 1) and the back-up washer (Item 2) **[Figure 20-40-96]**.

Assembly: Always use a new spool seal.

Actuator Removal And Installation (Out Of Loader) (Cont'd)

Figure 20-41-11



The later style has the O-ring (Item 1) in the actuator sealing face (Item 2). The actuator mount (Item 3) **[Figure 20-41-11]** has no O-ring.

NOTE: The later style actuator can replace the earlier style actuator as long as the actuator mount is changed to the later style actuator mount.

BICS™ Valve, Lock Valve Disassembly And Assembly

Figure 20-41-38

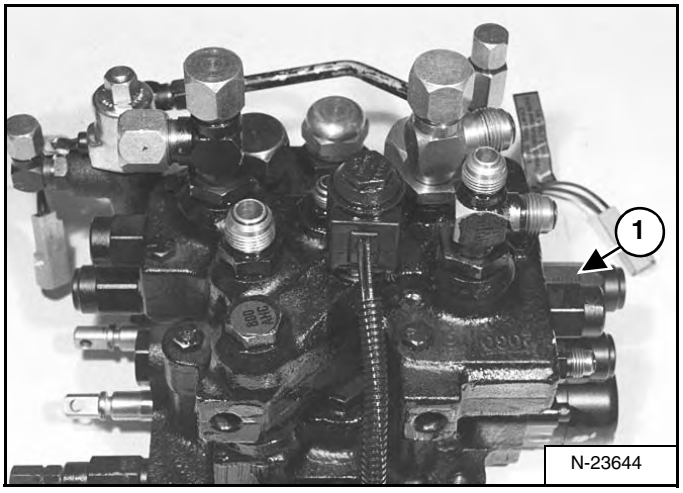


Figure 20-41-39

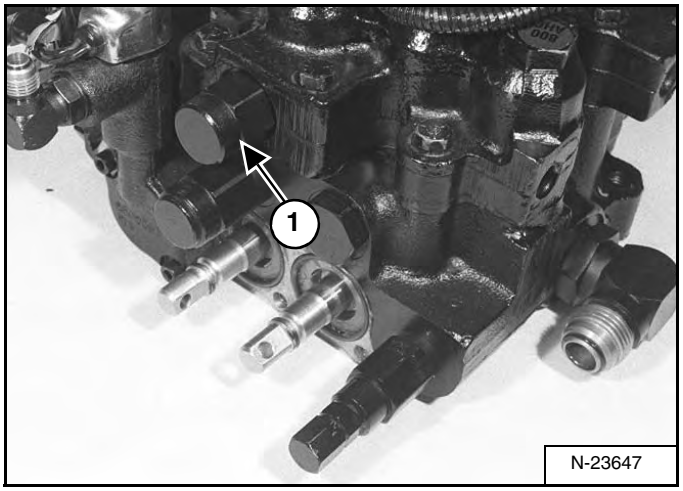
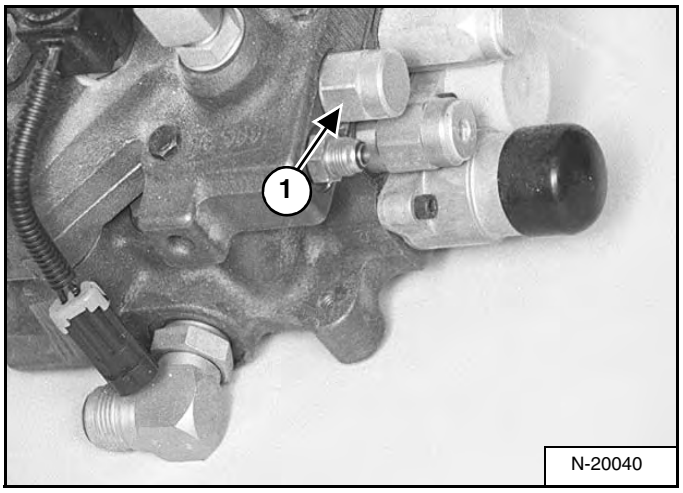


Figure 20-41-40



Remove the lock valves (Item 1) **[Figure 20-41-38]**, **[Figure 20-41-39]** & **[Figure 20-41-40]** from the BICS™ valve.

Installation: Tighten the lock valves to 25 ft.-lb. (34 N•m) torque.

Anti-Cavitation Valve

Figure 20-41-62

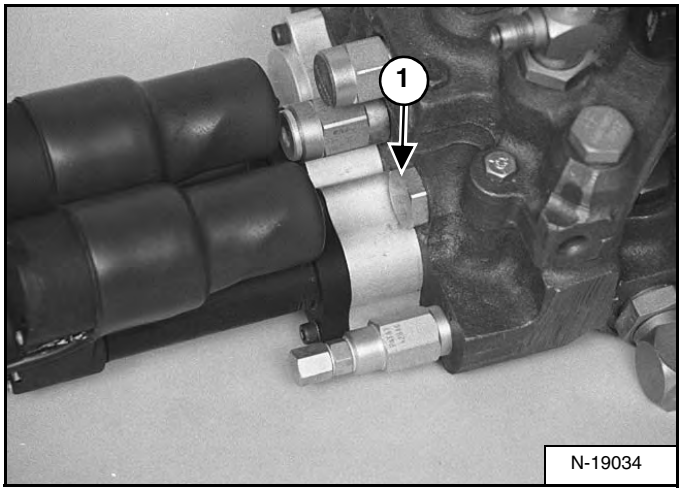
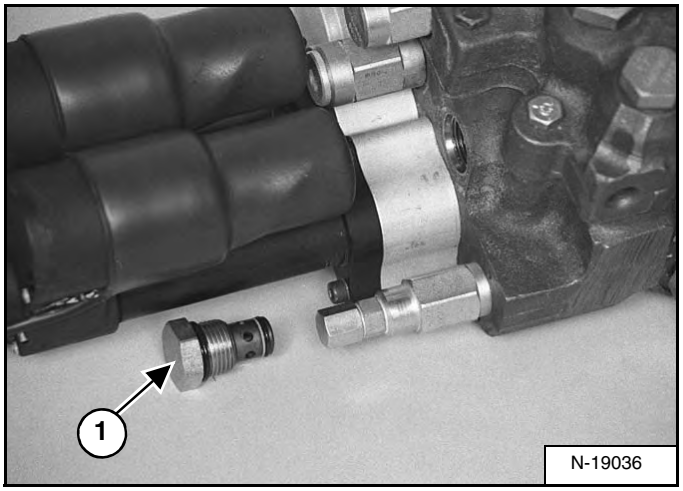
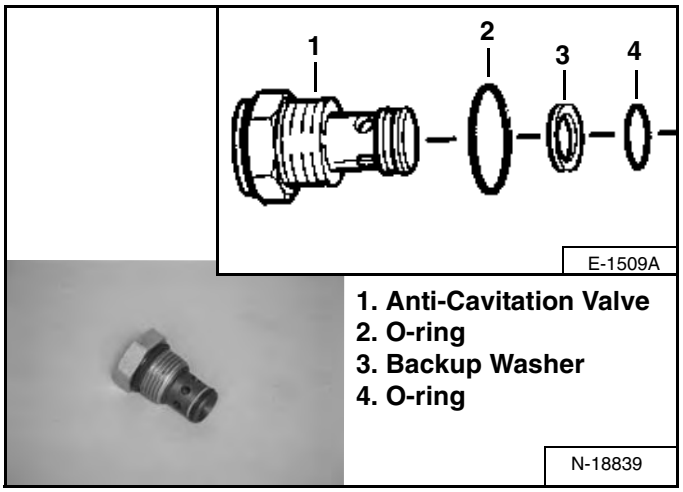


Figure 20-41-63



Remove the anti-cavitation valve (Item 1) **[Figure 20-41-62]** & **[Figure 20-41-63]** from the control valve.

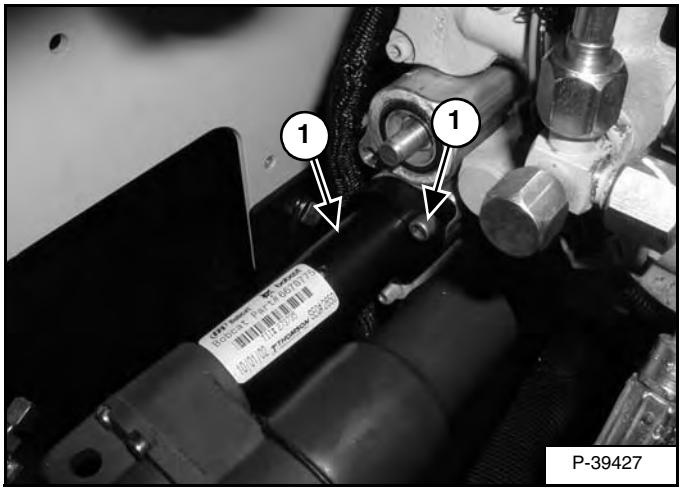
Figure 20-41-64



Remove the O-rings and back-up washer from the anti-cavitation valve **[Figure 20-41-64]**.

Actuator Removal And Installation (In Loader) (Cont'd)

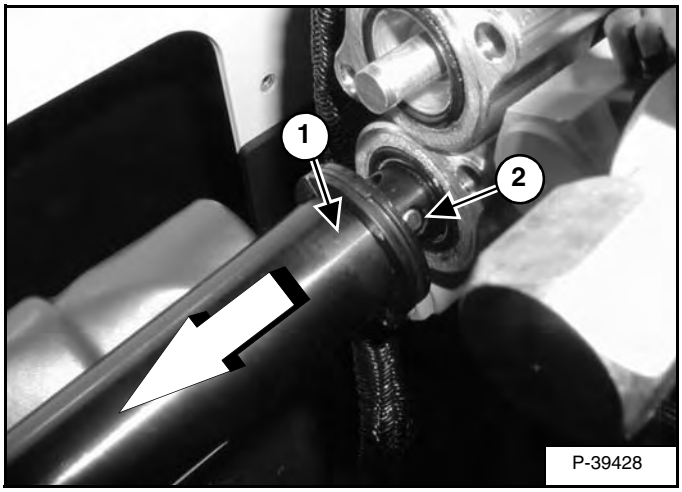
Figure 20-42-5



Remove the two actuator mount bolts (Item 1) **[Figure 20-42-5]** from the bottom actuator.

Installation: Tighten the bolts to 90-100 in.-lb. (10,2-11,3 N•m) torque

Figure 20-42-6



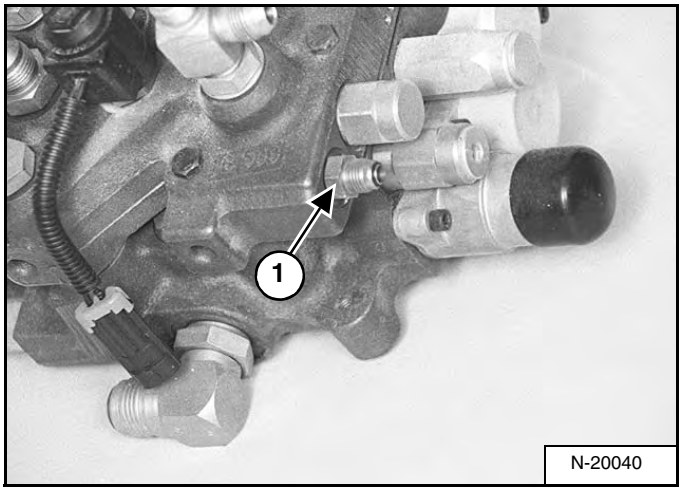
Slide the actuator (Item 1) **[Figure 20-42-6]** away from the control valve.

With a punch, remove the actuator pin (Item 2) **[Figure 20-42-6]** from the actuator and spool.

Remove the bottom actuator from the loader.

BICS™ Valve, Lift Arm By-Pass Orifice Disassembly And Assembly

Figure 20-42-32



Remove the fitting (Item 1) **[Figure 20-42-32]** from the valve.

Figure 20-42-33

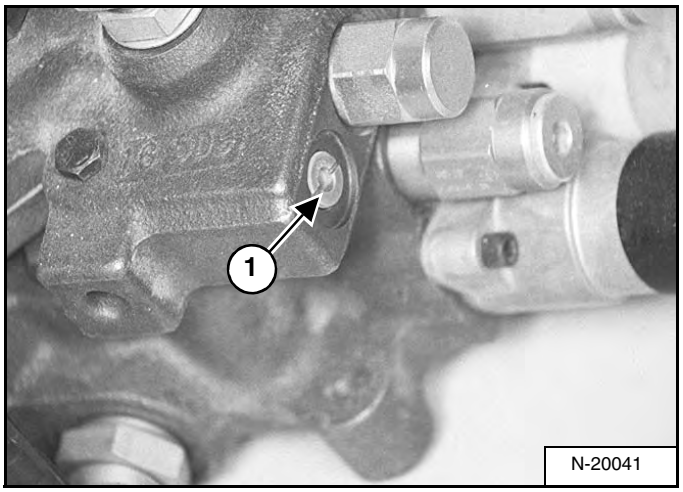
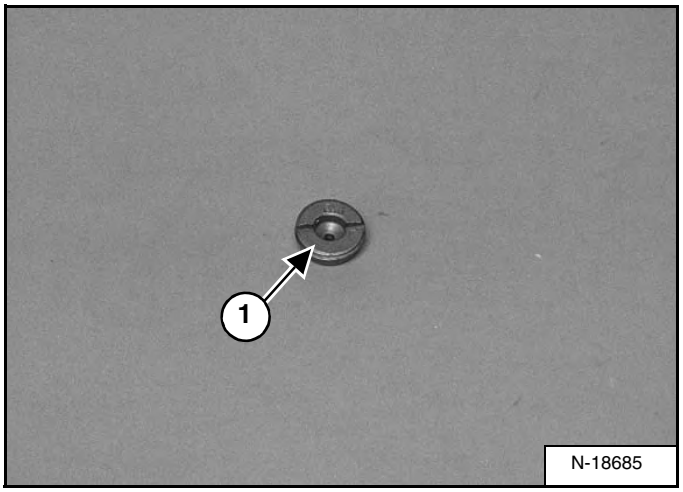


Figure 20-42-34



Using a flat blade screw driver, remove the lift arm by-pass orifice (Item 1) **[Figure 20-42-33]** & **[Figure 20-42-34]**.

Orifice size is 0.078 inch.

Reverse the removal procedure to install the lift arm by-pass orifice.

Port Relief Valve

Figure 20-42-55

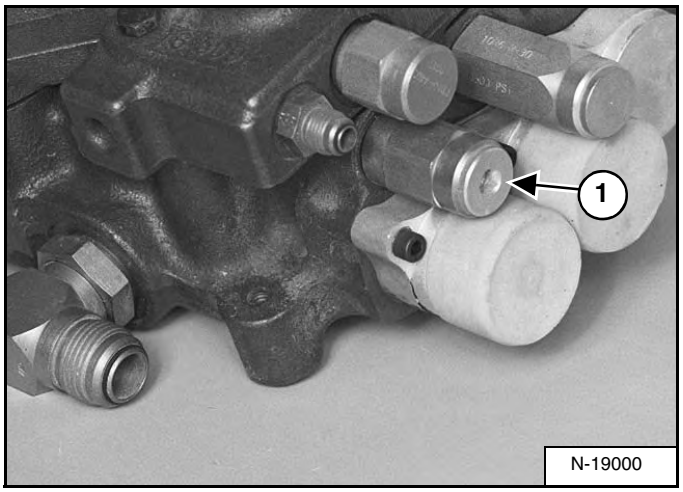
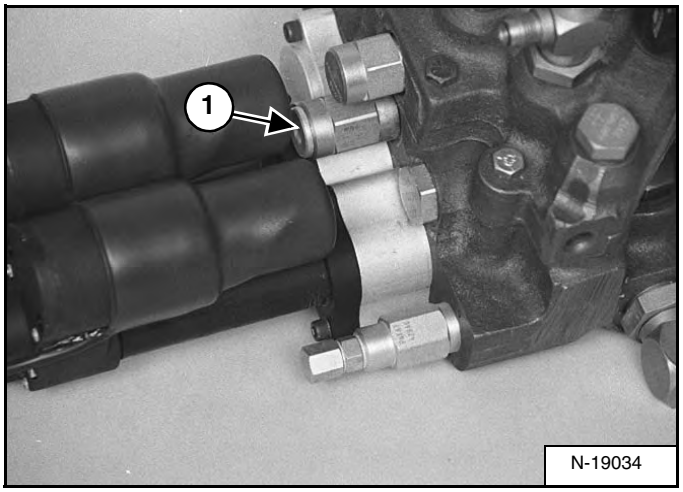


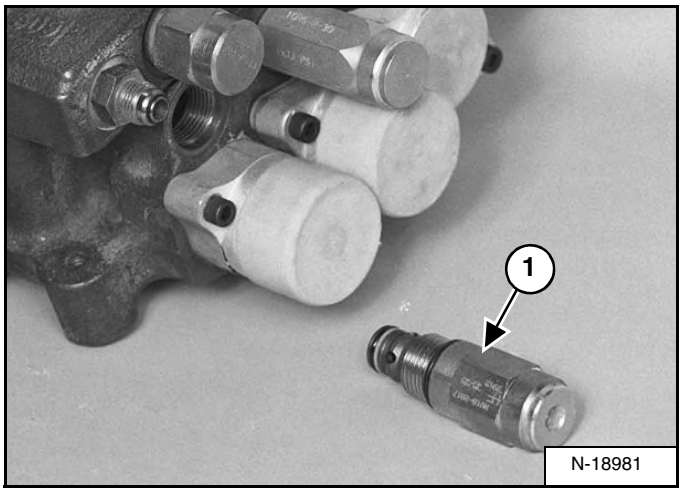
Figure 20-42-56



Loosen the port relief valve (Item 1) **[Figure 20-42-55]** & **[Figure 20-42-56]** (Port E1 or F2). (See Identification Chart on Page 20-41-18.)

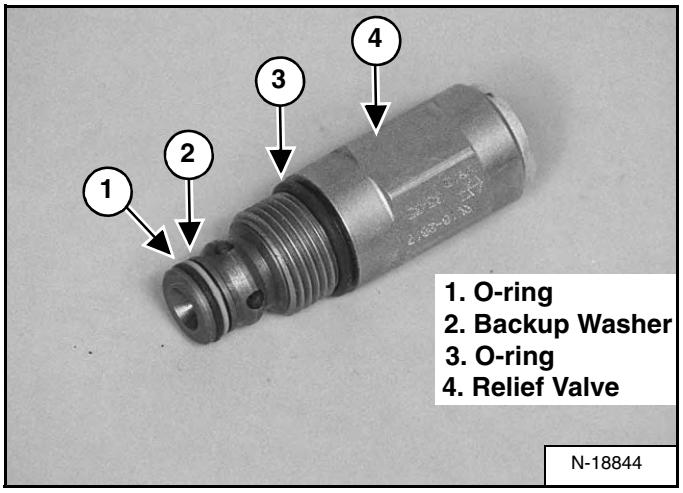
Installation: Always use new O-rings and back-up washers. Tighten to 35-40 ft.-lb. (47-54 N•m) torque.

Figure 20-42-57



Remove the port relief valve (Item 1) **[Figure 20-42-57]**.

Figure 20-42-58

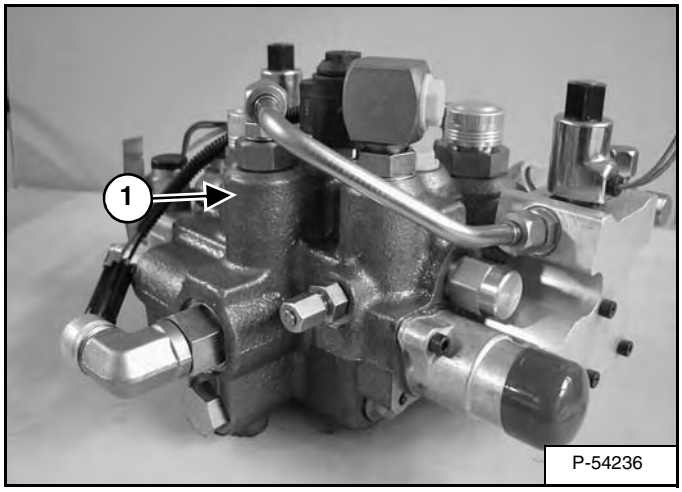


Remove the O-rings and back-up washer from the port relief valve **[Figure 20-42-58]**.

HYDRAULIC CONTROL VALVE (1 PIECE CASTING) (FOOT CONTROL)

Identification

Figure 20-43-1



The hydraulic control valve (1 piece casting) (foot control) (Item 1) **[Figure 20-43-1]** does not have a removable BICS™ section.

The BICS™ section and main control valve are in one casting.

For identification of the hydraulic control valve (2 piece casting) (foot control), (See Identification on Page 20-40-1.)

Removal And Installation

WARNING

Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

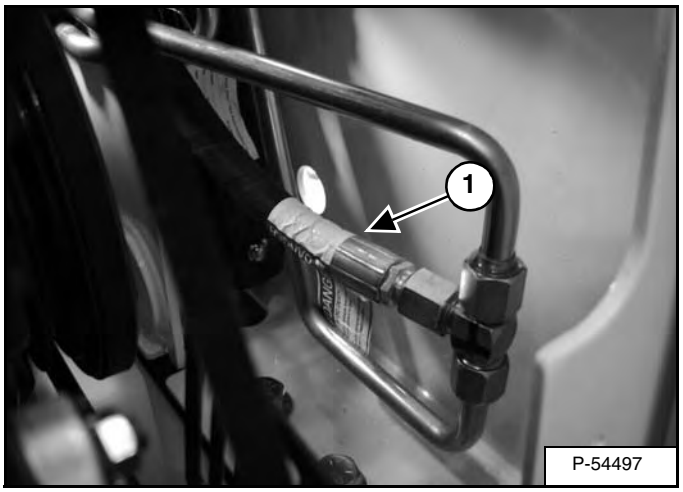
W-2059-0598

IMPORTANT

When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I-2003-0888

Figure 20-43-2



Raise the lift arms and install an approved lift arm support device.

Stop the engine. Raise the seat bar.

Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

Drain the hydraulic reservoir. (See Replacing Hydraulic Fluid And Case Drain Filters on Page 10-120-3.)

Remove the control panel. (See Removal And Installation on Page 50-100-1.)

Clean area around control valve.

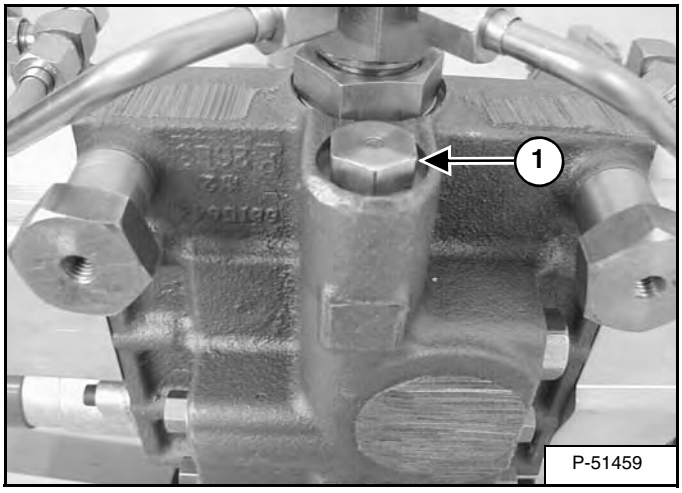
Open rear door.

The fixed end main valve hose assembly (Item 1) **[Figure 20-43-2]** is connected to a fixed end fitting on the control valve. The hose is routed to the upright where the hose is connected to a fitting that feeds the base end of both lift cylinders. The hose can only be removed by first removing it from the tee fitting located at the rear of the loader.

Cap and plug the hose and fitting.

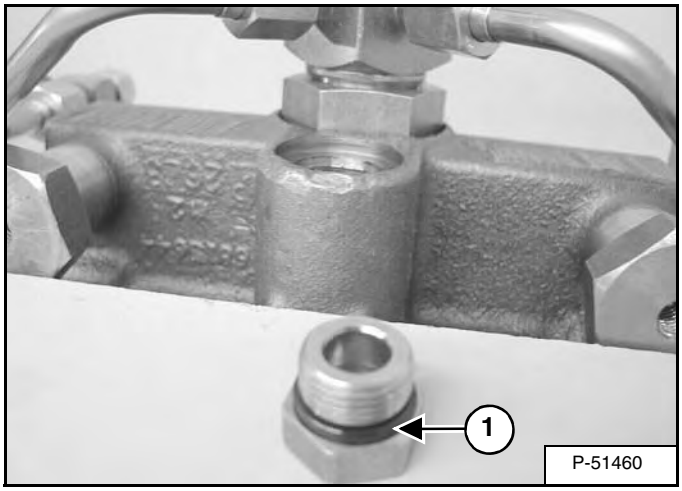
Plug Removal

Figure 20-43-34



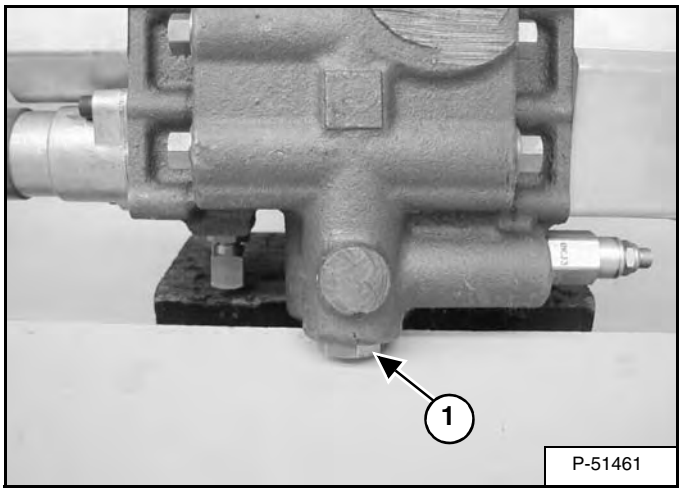
At the top side of the control valve, remove the plug (Item 1) **[Figure 20-43-34]**.

Figure 20-43-35



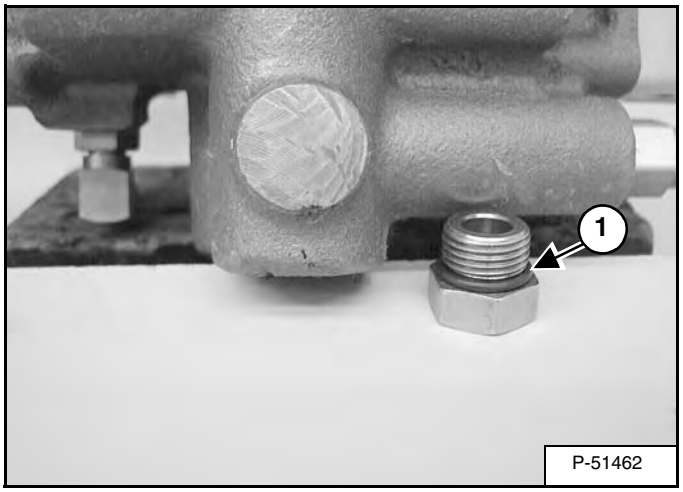
Installation: Always use new O-rings (Item 1) **[Figure 20-43-35]**. Tighten to 40 ft.-lb. (54 N•m) torque.

Figure 20-43-36



At the bottom side of the control valve remove the plug (Item 1) **[Figure 20-43-36]**.

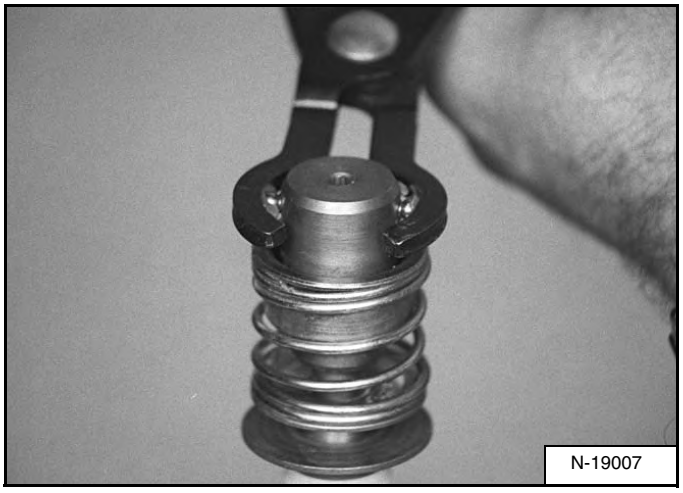
Figure 20-43-37



Installation: Always use new O-rings (Item 1) **[Figure 20-43-37]**. Tighten to 40 ft.-lb. (54 N•m) torque.

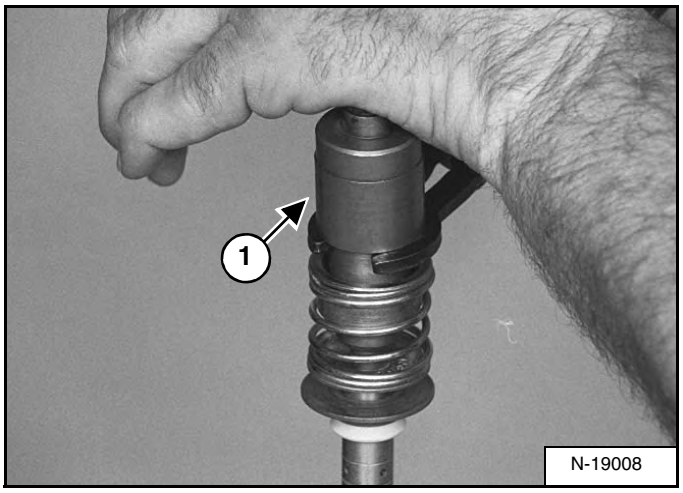
Lift Spool and Detent Removal and Installation (Cont'd)

Figure 20-43-71



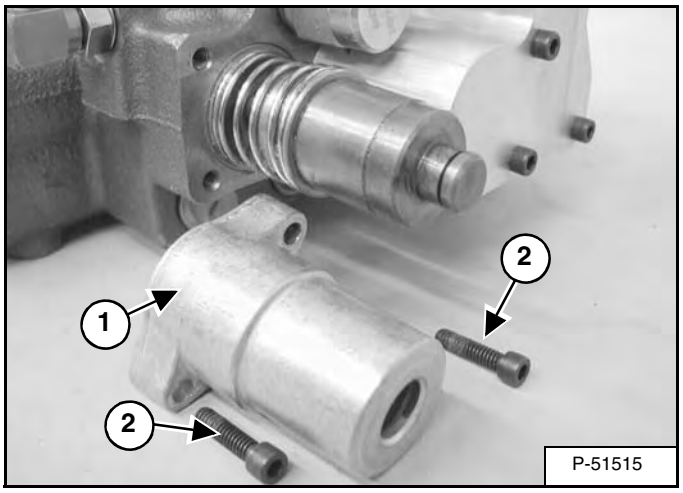
Hold the detent balls in place with the detent pliers **[Figure 20-43-71]**.

Figure 20-43-72



Install the detent sleeve (Item 1) **[Figure 20-43-72]** to the detent adapter.

Figure 20-43-73



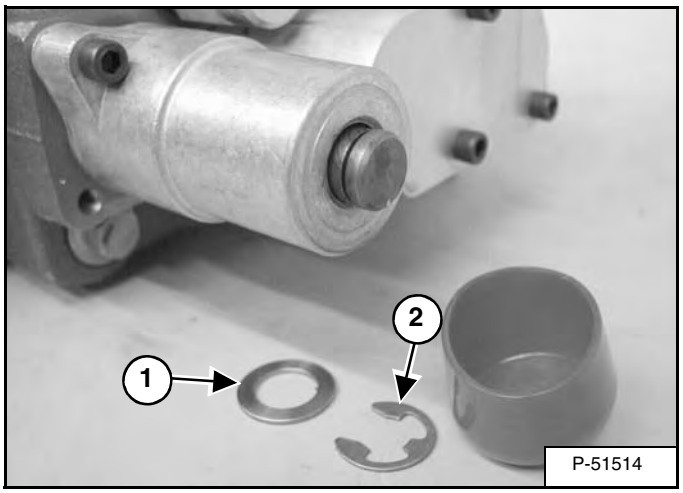
Install the lift spool assembly in the spool bore **[Figure 20-43-73]**.

Install the detent bonnet (Item 1) **[Figure 20-43-73]**.

Install the mounting screws (Item 2) **[Figure 20-43-73]**.

Installation: Lubricate the screws and tighten to 90-100 in.-lb. (10-11,3 N•m) torque.

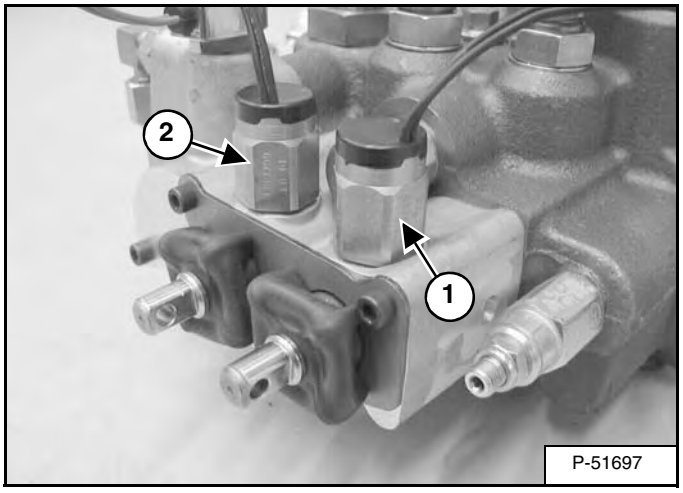
Figure 20-43-74



Install the washer (Item 1) and snap ring (Item 2) **[Figure 20-43-74]**.

BICS™ Valve, Lock Valve Removal And Installation (Cont'd)

Figure 20-43-108

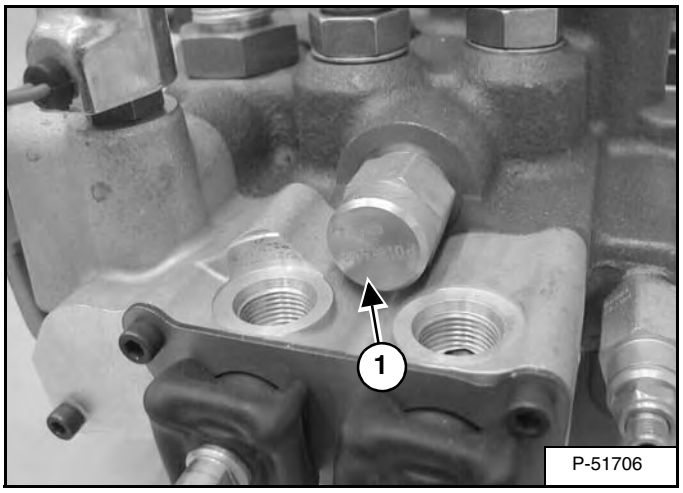


Remove the lift spool lock solenoid (Item 1) **[Figure 20-43-108]**.

Remove the tilt spool lock solenoid (Item 2) **[Figure 20-43-108]**.

Installation: Lubricate the O-rings and tighten the spool lock solenoids to 38-45 ft.-lb. (52-61 N•m) torque.

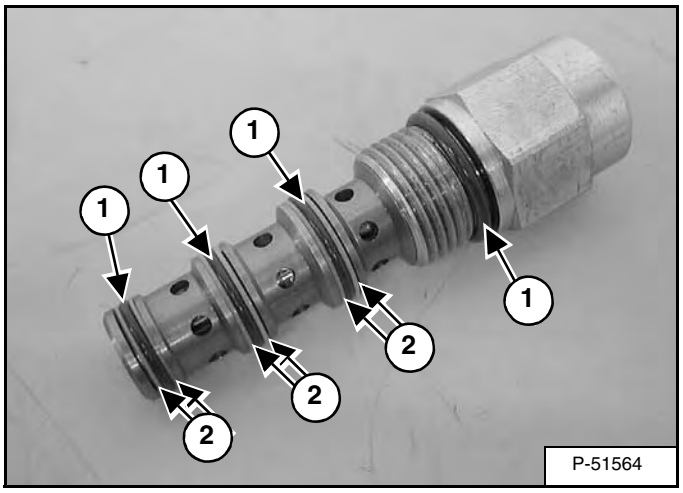
Figure 20-43-109



Remove the tilt lock valve (Item 1) **[Figure 20-43-109]** from the front of the control valve.

Installation: Lightly lubricate the lock valve o-rings and tighten to 20-24 ft.-lb. (27-33 N•m) torque.

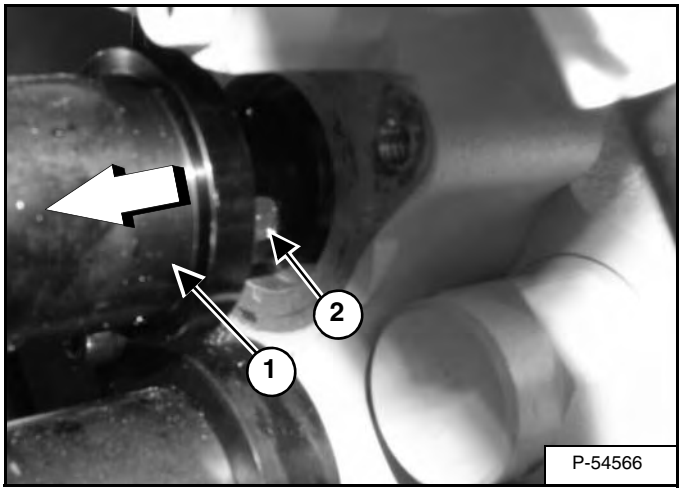
Figure 20-43-110



Remove the O-rings (Item 1) and back-up rings (Item 2) **[Figure 20-43-110]** from the tilt lock valve, and replace with new.

Actuator Removal And Installation (In Loader) (Cont'd)

Figure 20-44-18



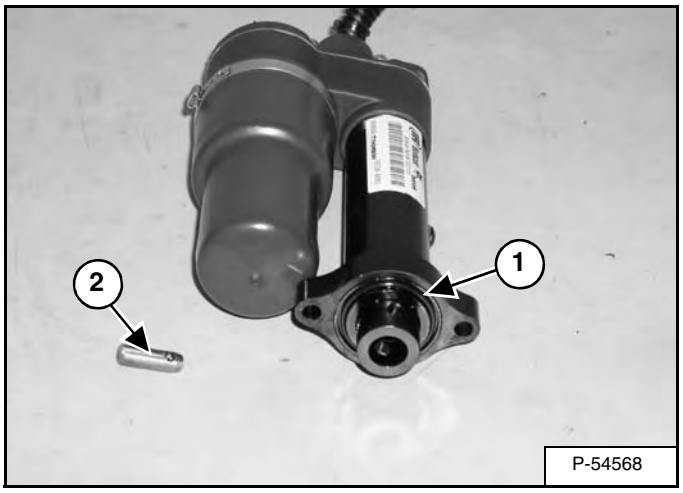
Pull the actuator (Item 1) **[Figure 20-44-18]** away from the control valve.

Use a punch to remove the actuator pin (Item 2) **[Figure 20-44-18]** from the actuator and spool.

Remove the actuator from the hydraulic control valve.

NOTE: The calibration procedure must be followed when replacing a lift or tilt actuator. (See Lift and Tilt Ca libration Procedure (Selectable Joystick Control) (SJC) on Page 60-160-1.)

Figure 20-44-19

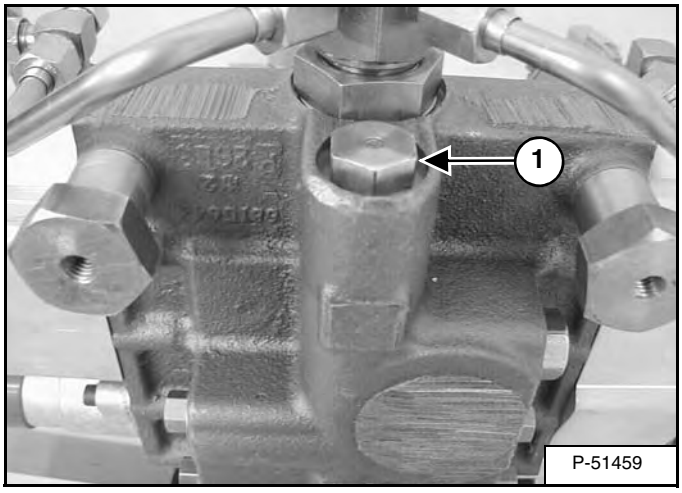


Inspect the O-ring (Item 1) **[Figure 20-44-19]** on the face of the actuator, and replace as needed.

Check the linkage pin (Item 2) **[Figure 20-44-19]** and replace as needed.

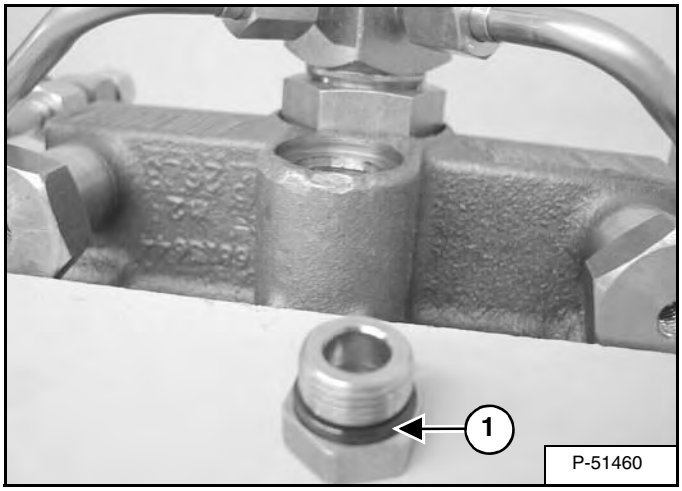
Plug Removal

Figure 20-44-48



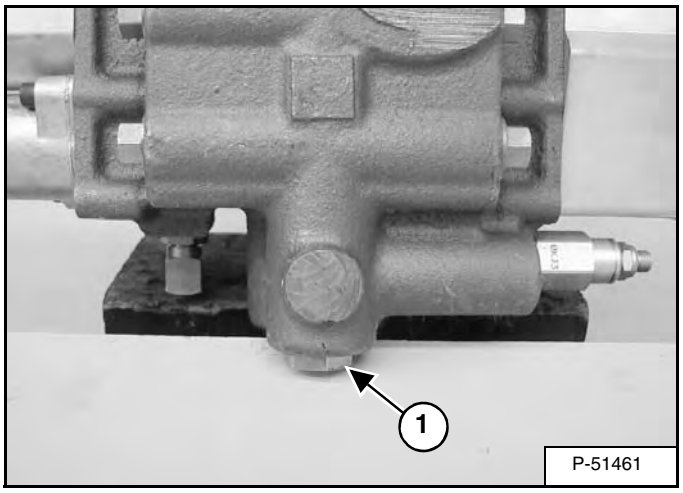
At the top side of the control valve, remove the plug (Item 1) **[Figure 20-44-48]**.

Figure 20-44-49



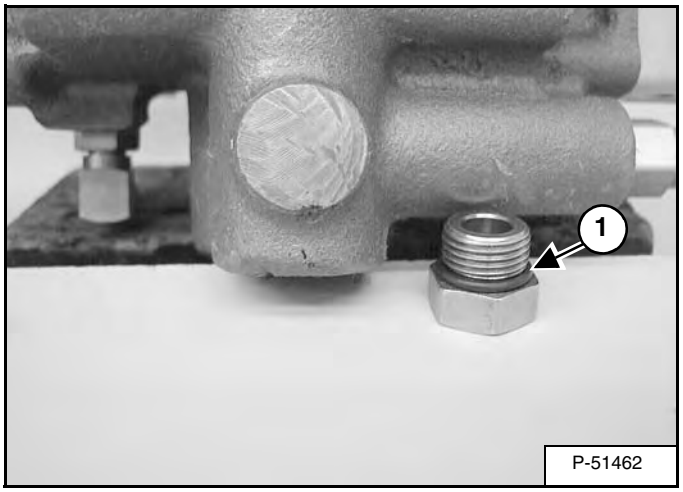
Installation: Always use new O-rings (Item 1) **[Figure 20-44-49]**. Tighten to 60 ft.-lb. (81,3 N•m) torque.

Figure 20-44-50



At the bottom side of the control valve remove the plug (Item 1) **[Figure 20-44-50]**.

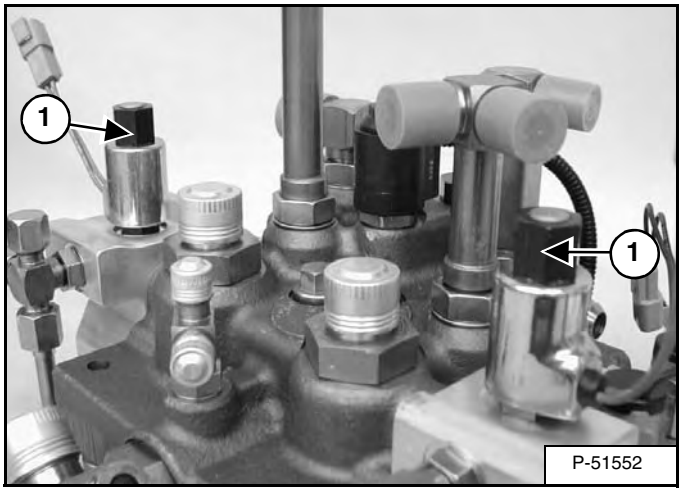
Figure 20-44-51



Installation: Always use new O-rings (Item 1) **[Figure 20-44-51]**. Tighten to 60 ft.-lb. (81,3 N•m) torque.

Auxiliary Solenoid Disassembly And Assembly

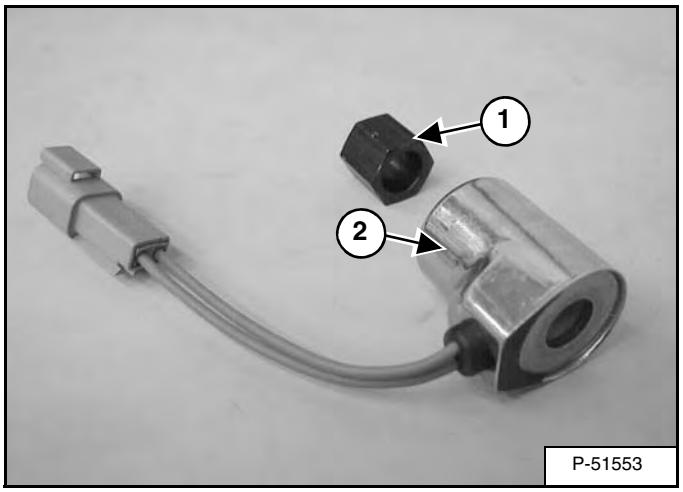
Figure 20-44-84



Remove the nut (Item 1) **[Figure 20-44-84]** from both solenoids.

Installation: Tighten the nut to 48-72 in.-lb. (5-8 N•m) torque.

Figure 20-44-85

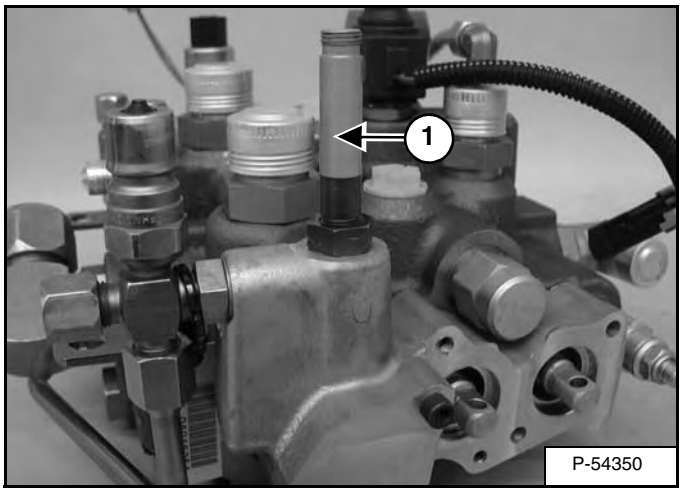


Remove the nu t (Item 1) and solenoid coil (Item 2) **[Figure 20-44-85]**.

Use an Ohmmeter to measure the solenoid coil resistance.

The correct resistance for the coil is **4.9 ± .25 Ohms**.

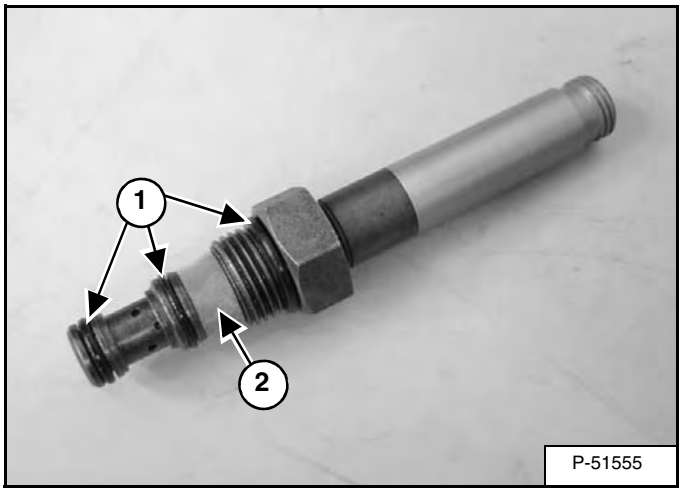
Figure 20-44-86



Remove the solenoid stem (Item 1) **[Figure 20-44-86]**.

Installation: Tighten the stem to 10-14 ft.-lb. (14-19 N•m) torque.

Figure 20-44-87

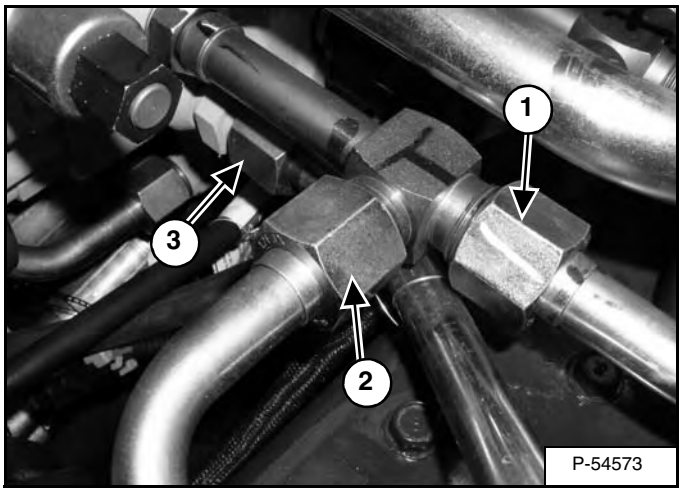


Remove the O-rings (Item 1) **[Figure 20-44-87]** from the solenoid stem.

Check and clean the screen (Item 2) **[Figure 20-44-87]**.

Removal And Installation (Cont'd)

Figure 20-45-12

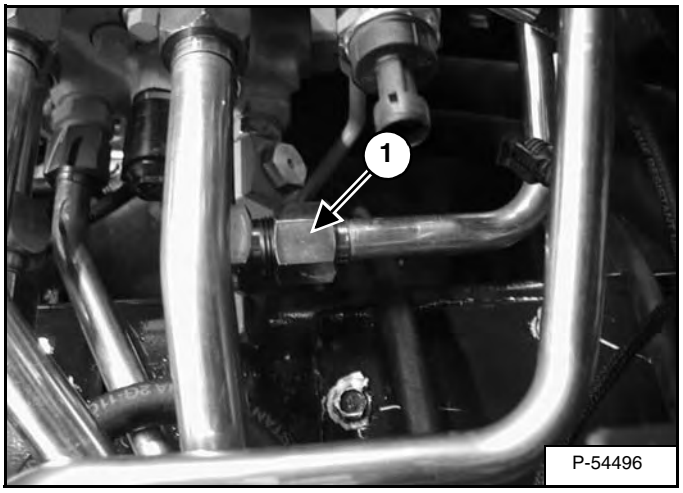


Disconnect the tilt tubeline (Item 1) **[Figure 20-45-12]** from the control valve.

Disconnect the tilt tubeline (Item 2) **[Figure 20-45-12]** from the control valve. (If equipped with Bucket Positioning Valve.)

Disconnect the lift tubeline (Item 3) **[Figure 20-45-12]** from the control valve.

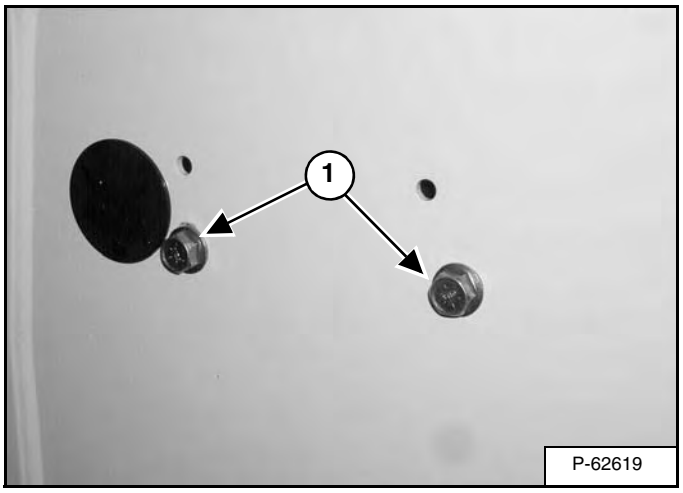
Figure 20-45-13



Disconnect the tilt tubeline (Item 1) **[Figure 20-45-13]** from the control valve.

Cap and plug the tubeline and fitting.

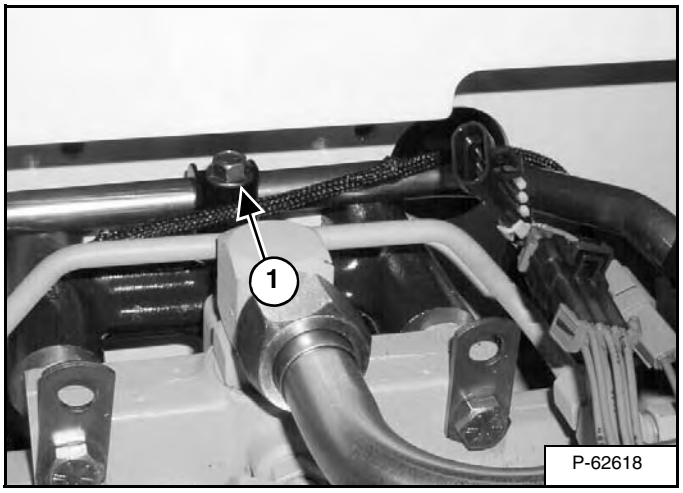
Figure 20-45-14



Remove the two control valve mount bolts (Item 1) **[Figure 20-45-14]** located on the outside of the frame.

Installation: Torque the bolts (Item 1) **[Figure 20-45-14]** to 90-100 ft. lb. (123-135 N•m).

Figure 20-45-15



NOTE: Lifting chains were removed for photo clarity

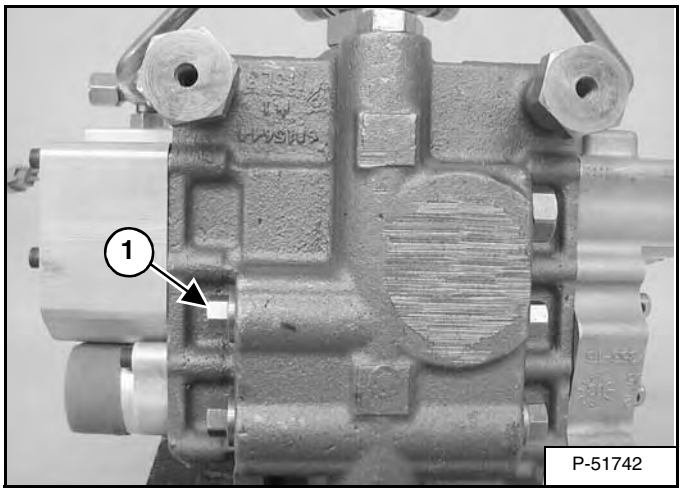
Remove the tubeline clamp mount bolt and clamp (Item 1) **[Figure 20-45-15]** from the mounting plate.

NOTE: Removing the tubeline clamp will help provide added clearance for removing the valve.

Remove the control valve from the loader.

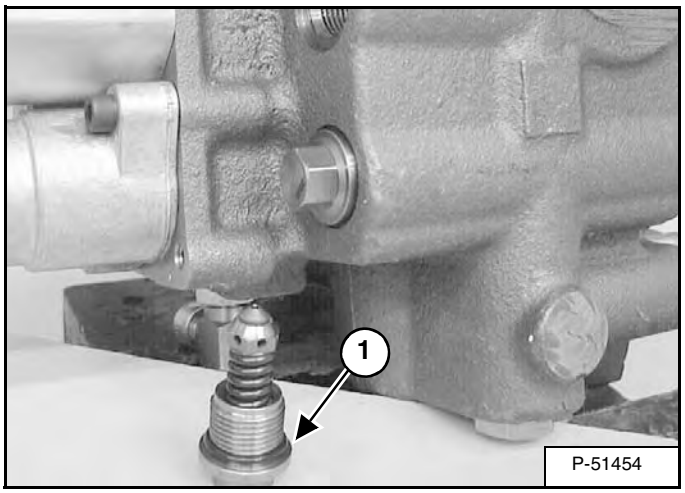
Port Relief/Anti-Cavitation Valve (Tilt, Base End)

Figure 20-45-40



Remove the tilt port relief/anti cavitation valve (Item 1) **[Figure 20-45-40]** from the base end of the tilt section.

Figure 20-45-41

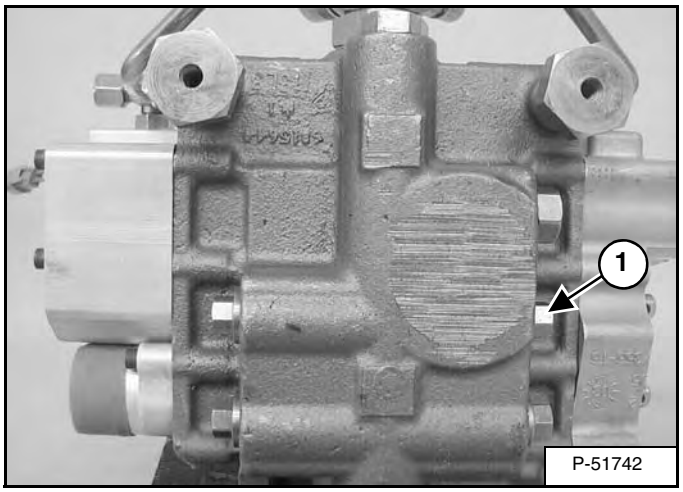


Replace the O-ring (Item 1) **[Figure 20-45-41]** before installation.

Installation: Lightly lubricate with oil and tighten to 38-45 ft.-lb. (52-61 N•m) torque.

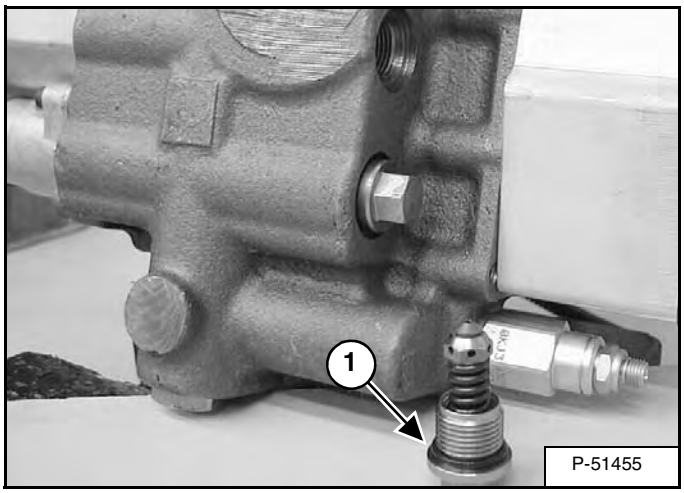
Port Relief/Anti-Cavitation Valve (Tilt, Rod End)

Figure 20-45-42



Remove the ti lt port relief/anti cavitation valve (Item 1) **[Figure 20-45-42]** from the rod end of the tilt section.

Figure 20-45-43

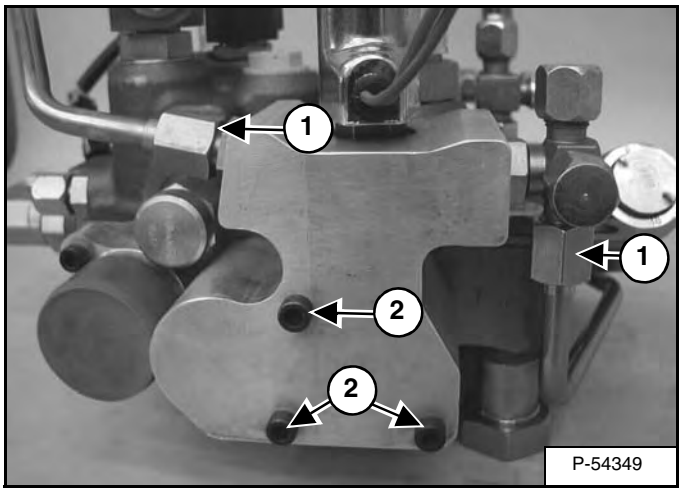


Replace the O-ring (Item 1) **[Figure 20-45-43]** before installation.

Installation: Lightly lubricate with oil and tighten to 38-45 ft.-lb. (52-61 N•m) torque.

Auxiliary Spool Removal And Installation

Figure 20-45-78



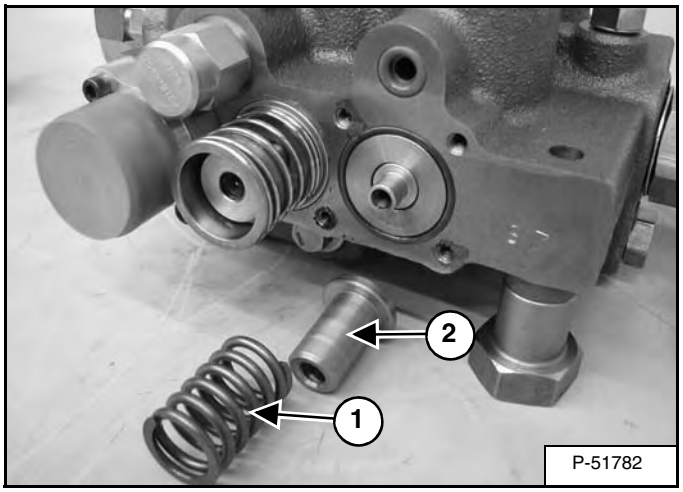
Disconnect the two tubelines (Item 1) **[Figure 20-45-78]** from the spool centering block.

Remove the three screws (Item 2) **[Figure 20-45-78]** from the spool centering block.

Installation: Tighten the bolt to 90-100 in.-lb. (10,2-11,3 N•m) torque.

Remove the spool centering block from the control valve.

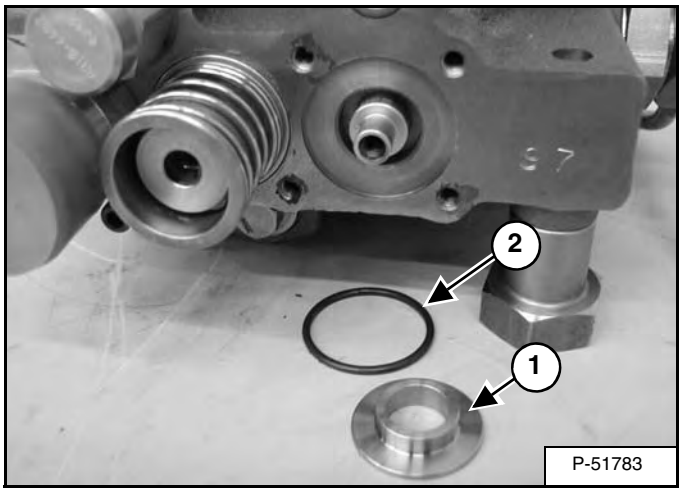
Figure 20-45-79



Remove the spring (Item 1) and center spring retainer (Item 2) **[Figure 20-45-79]** from the auxiliary spool.

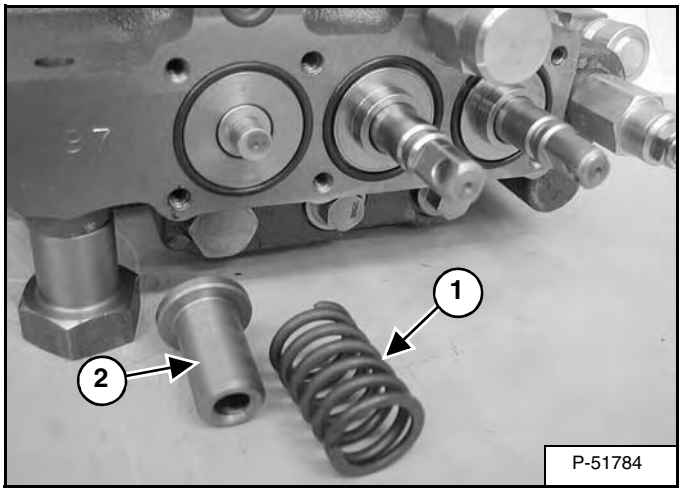
Note: If the centering spring retainer (Item 2) [Figure 20-45-79] must be replaced, replace the retainer on the opposite end also.

Figure 20-45-80



Remove the spacer (Item 1) and O-ring (Item 2) **[Figure 20-45-80]** from the auxiliary spool.

Figure 20-45-81



Remove the spring (Item 1) and center spring retainer (Item 2) **[Figure 20-45-81]** from the auxiliary spool.

NOTE: If the centering spring retainer (Item 2) [Figure 20-45-81] must be replaced, replace the retainer on the opposite end also.

HYDRAULIC PUMP

Check The Output Of The Hydraulic Pump

The tools listed will be needed to do the following procedure:

MEL1563 - Remote Start Tool
MEL10103 - Hydraulic Tester
MEL10106 - Hydraulic Test Kit

⚠ WARNING

Put jackstands under the front axles and rear corners of the frame before running the engine for service. Failure to use jackstands can allow the machine to fall or move and cause injury or death.

W-2017-0286

Lift and block the loader. (See Procedure on Page 10-10-1.)

Raise the lift arms and install an approved lift arm support device. (See Installing The Lift Arm Support Device on Page 10-20-1.)

⚠ WARNING

Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

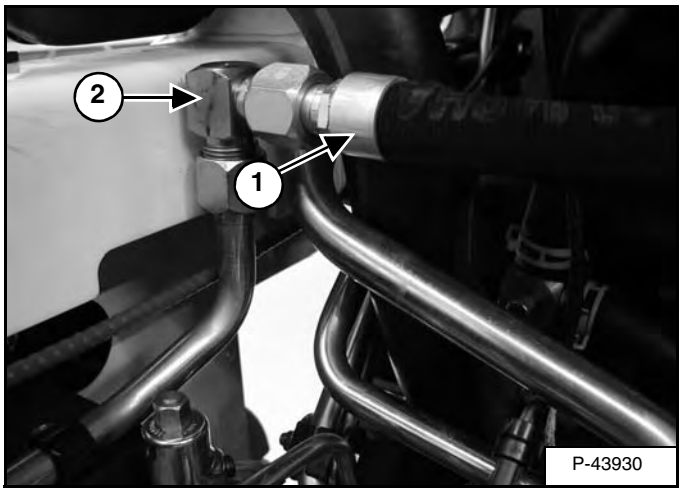
W-2059-0598

Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

Open the rear door of the loader.

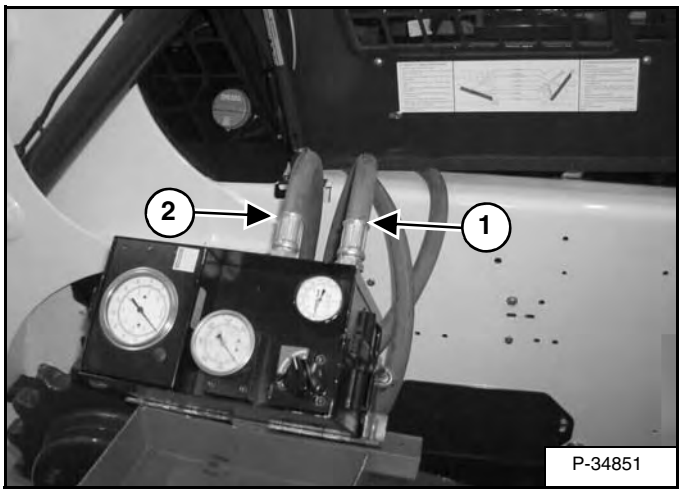
Connect the remote start tool. (See Procedure on Page 10-60-3.)

Figure 20-60-1



Disconnect the OUTLET hose (Item 1) **[Figure 20-60-1]** that comes from the gear pump, and connects to the tubeline on the control valve.

Figure 20-60-2



Connect the INLET hose (Item 1) **[Figure 20-60-2]** from the tester to the OUTLET hose (Item 1) **[Figure 20-60-1]** of the pump. Connect the OUTLET hose (Item 2) **[Figure 20-60-2]** from the tester to the tubeline (Item 2) **[Figure 20-60-1]** on the control valve.

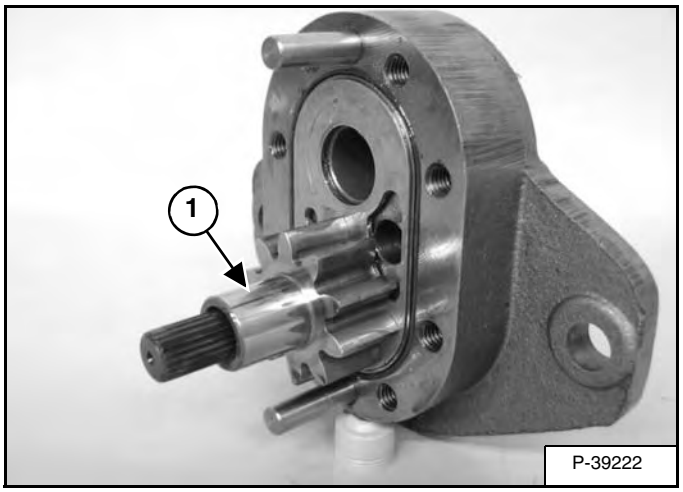
IMPORTANT

The hydraulic tester must be in the fully open position before you start the engine.

I-2024-0284

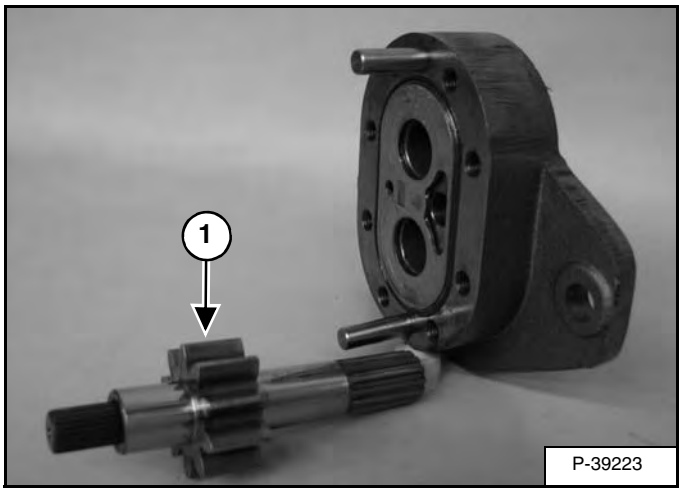
Disassembly And Assembly (Cont'd)

Figure 20-60-31



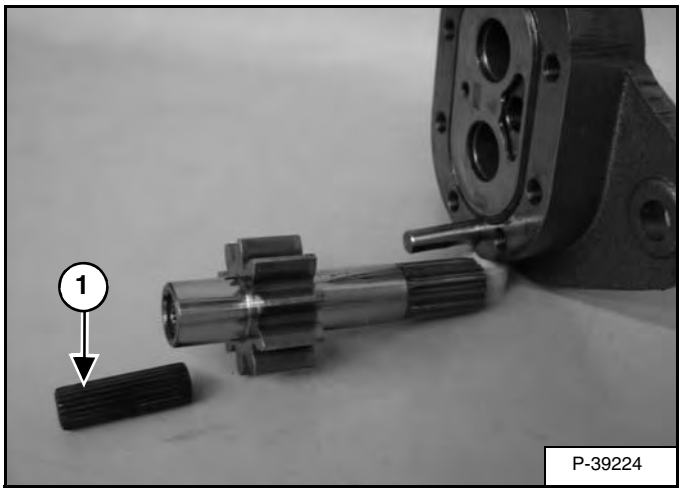
Remove the drive gear (Item 1) **[Figure 20-60-31]** from the pump end section.

Figure 20-60-32



NOTE: Inspect the drive gear (Item 1) [Figure 20-60-32]. If excessive wear or damage is visible, the pump must be replaced.

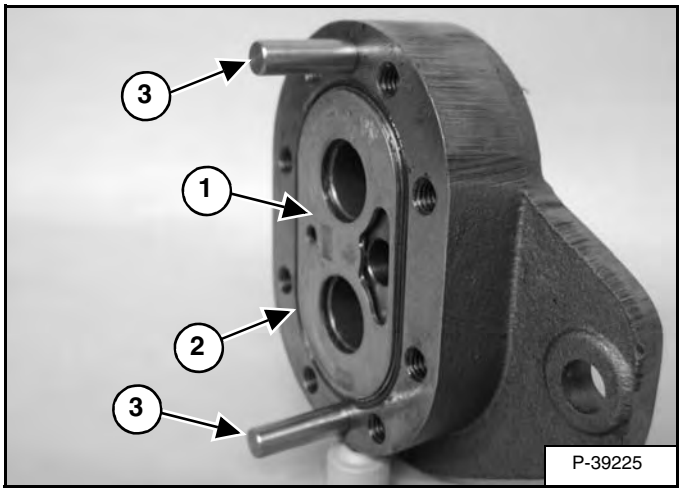
Figure 20-60-33



Remove the spline shaft (Item 1) **[Figure 20-60-33]** from the end of the drive gear.

NOTE: Inspect the spline shaft (Item 1) [Figure 20-60-33]. If excessive wear or damage is visible, the pump must be replaced.

Figure 20-60-34



Remove the wear plate (Item 1) and section seal (Item 2) **[Figure 20-60-34]**.

Remove the locating pins (Item 3) **[Figure 20-60-34]**.

Inline Hydraulic Pump Test (High Flow) (30 GPM And 40 GPM)

The tools listed will be needed to do the following procedure:
MEL10103 - Hydraulic Tester
MEL10106 - Hydraulic Test Kit

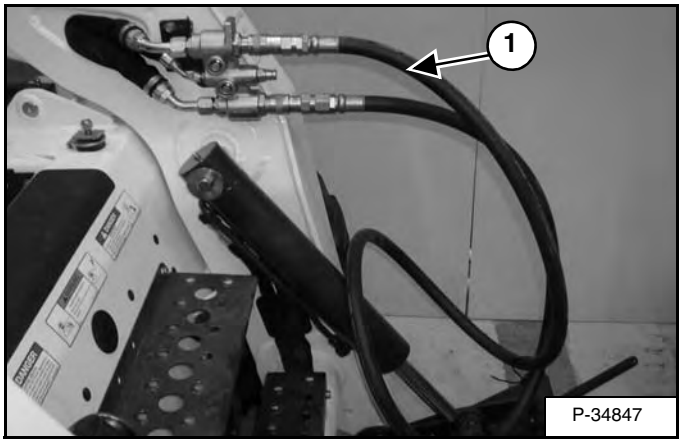
⚠ WARNING

Put jackstands under the front axles and rear corners of the frame before running the engine for service. Failure to use jackstands can allow the machine to fall or move and cause injury or death.

W-2017-0286

Lift and block the loader. (See Procedure on Page 10-10-1.)

Figure 20-62-6



Install a jumper hose (Item 1) **[Figure 20-62-6]** onto the front auxiliary quick couplers.

Raise the lift arms and install an approved lift arm support device. (See Installing The Lift Arm Support Device on Page 10-20-1.)

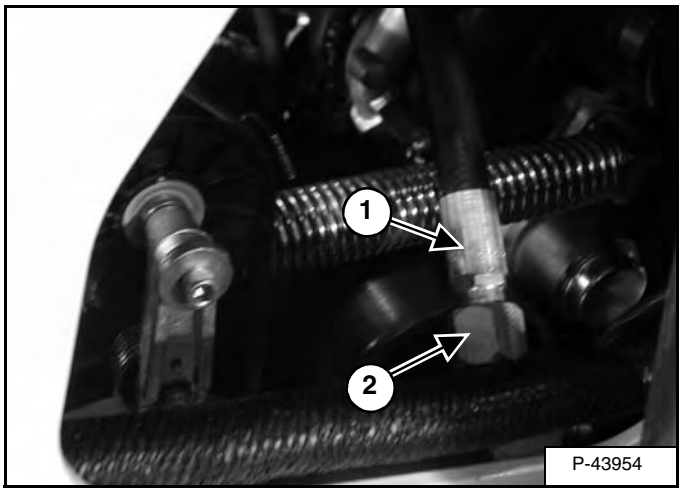
⚠ WARNING

Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

W-2059-0598

Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

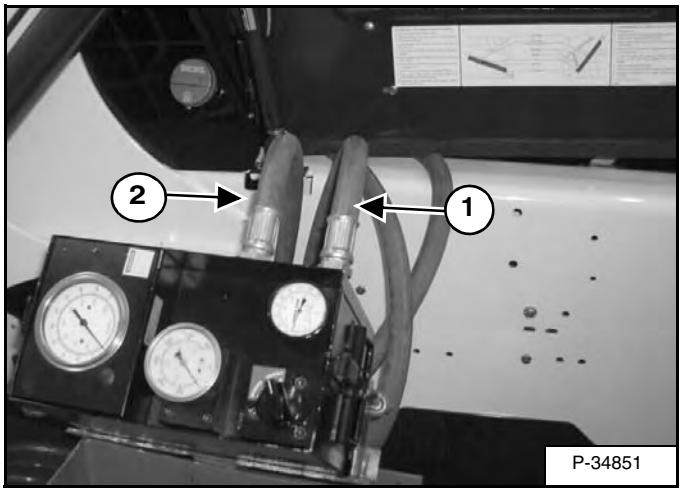
Figure 20-62-7



Remove the left side access cover.

Disconnect the high flow pump OUTLET hose (Item 1) from the fitting (Item 2) **[Figure 20-62-7]** on the tube line.

Figure 20-62-8



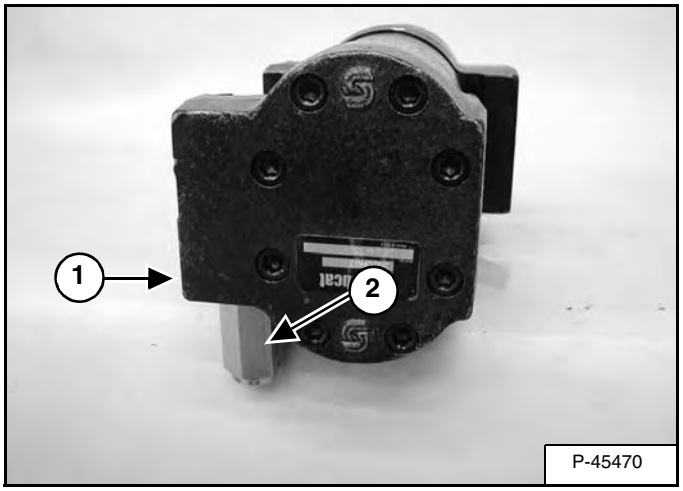
NOTE: When testing the hydraulic flow of a machine hoses must be at least 3/4 inch in diameter and connected directly to the hydraulic tester without using any type of "quick coupler" on the connection to the tester. Also make sure your hydraulic tester is capable of at least 50 GPM.

Connect the INLET hose (Item 1) **[Figure 20-62-8]** from the tester to the OUTLET hose (Item 1) **[Figure 20-62-7]** of the pump. Connect the OUTLET hose (Item 2) **[Figure 20-62-8]** from the tester to the fitting (Item 2) **[Figure 20-62-7]** on the tube line.

Lower the cab down.

Disassembly And Assembly (30 GPM And 40 GPM) (Cont'd)

Figure 20-62-25

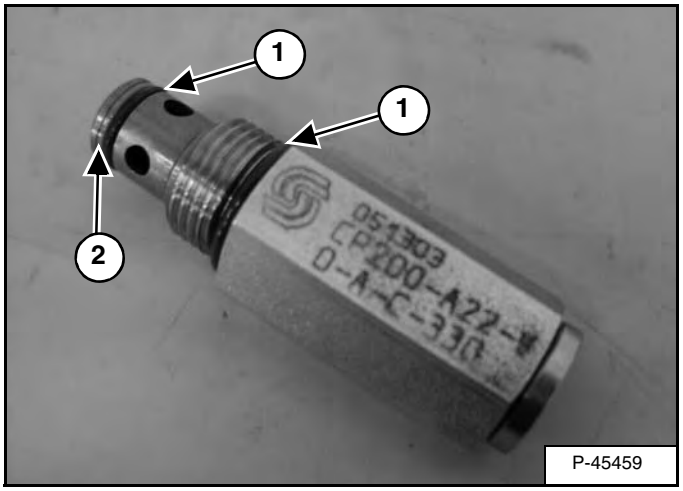


NOTE: Mark the pump housing (Item 1) [Figure 20-62-25] for proper installation of the relief valve.

Remove the relief valve (Item 2) **[Figure 20-62-25]** from the pump

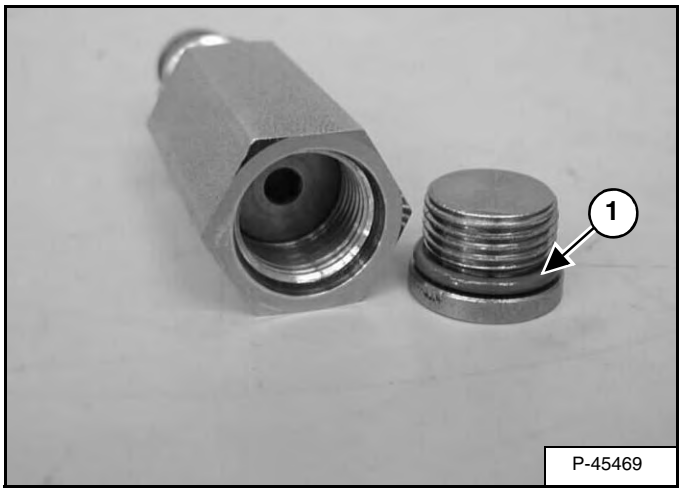
Installation: Tighten the relief valve to 30-35 ft.-lbs (41-47 N•m) torque.

Figure 20-62-26



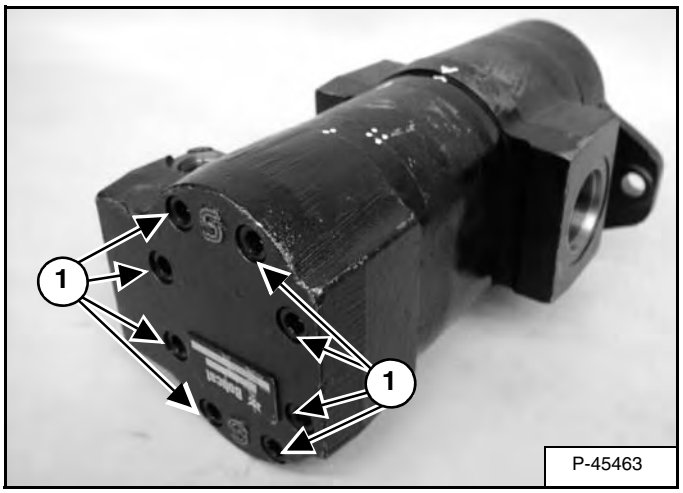
Inspect the relief valve and replace the two o-rings (Item 1) and back-up washer (Item 2)**[Figure 20-62-26]**.

Figure 20-62-27



Inspect the O-ring (Item 1) **[Figure 20-62-27]** on the relief valve adjustment plug for damage and replace as needed.

Figure 20-62-28



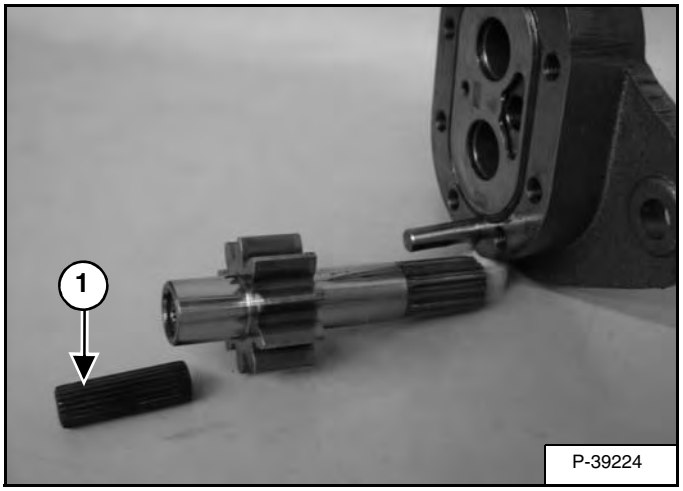
Mark the pump sections for proper installation.

Remove the eight bolts (Item 1) **[Figure 20-62-28]**.

Installation: Tighten the assembly bolts to 45-50 ft.-lbs (60-67 N•m).

Disassembly And Assembly (30 GPM And 40 GPM) (Cont'd)

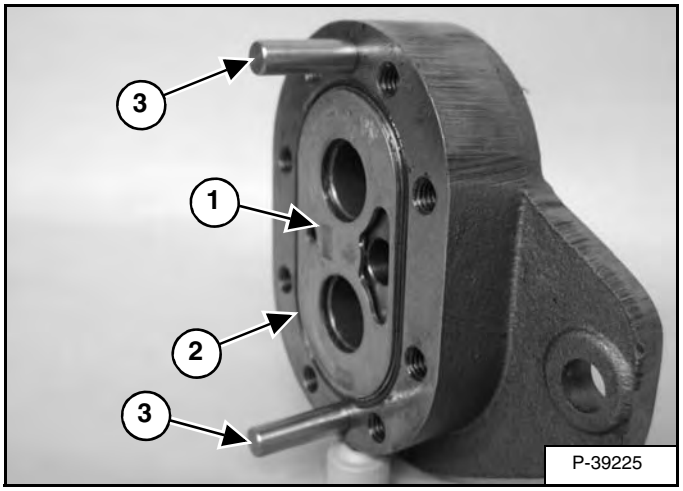
Figure 20-62-66



Remove the spline shaft (Item 1) **[Figure 20-62-66]** from the end of the drive gear.

NOTE: Inspect the spline shaft (Item 1) [Figure 20-62-66]. If excessive wear or damage is visible, the pump must be replaced.

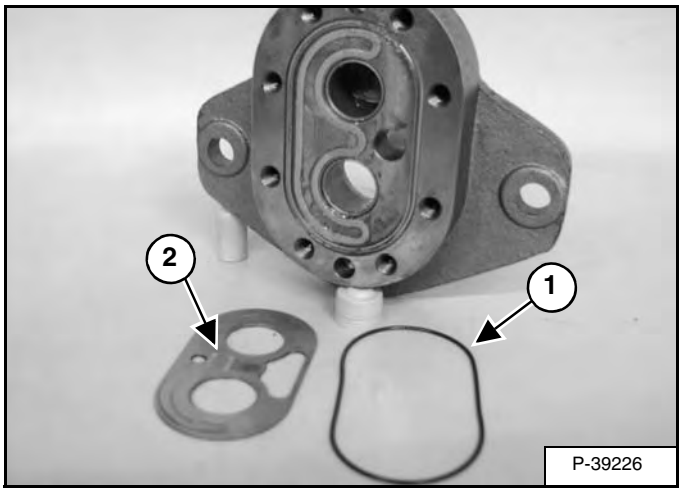
Figure 20-62-67



Remove the wear plate (Item 1) and section seal (Item 2) **[Figure 20-62-67]**.

Remove the locating pins (Item 3) **[Figure 20-62-67]**.

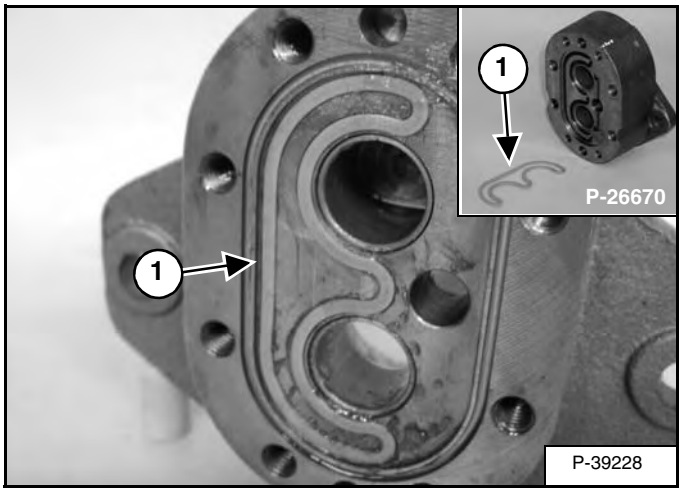
Figure 20-62-68



Inspect the wear plate (Item 1) and the section seal (Item 2) **[Figure 20-62-68]**.

NOTE: Position wear plate (Item 1) [Figure 20-62-68] inlets and traps as shown with br onze side toward gears.

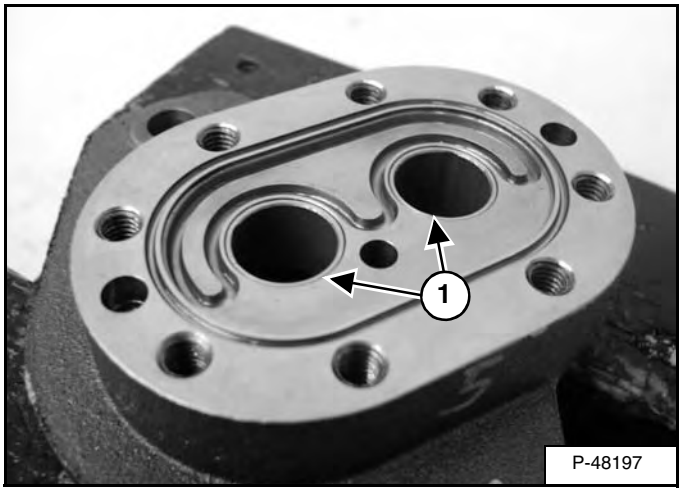
Figure 20-62-69



Remove the load seal (Item 1) **[Figure 20-62-69]**.

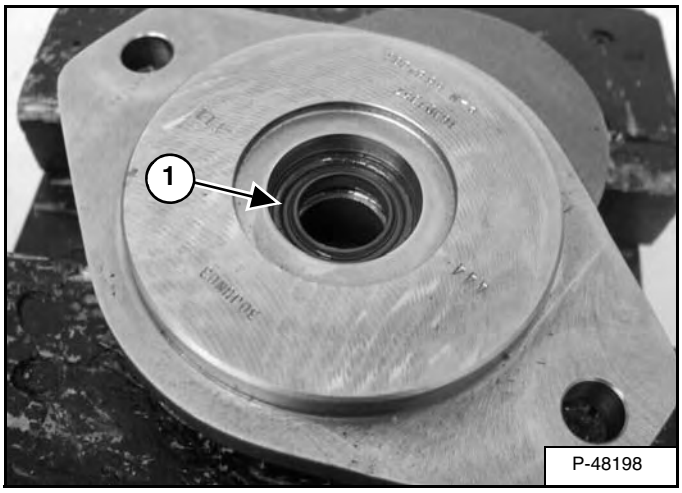
Disassembly And Assembly (Cont'd)

Figure 20-63-23



Inspect the pump end section and bushings (Item 1) **[Figure 20-63-23]**. If excessive wear or damage is visible, the pump must be replaced.

Figure 20-63-24



Replace the end section shaft seal (Item 1) **[Figure 20-63-24]**.

High Flow Relief Valve Removal And Installation (30 GPM And 40 GPM)

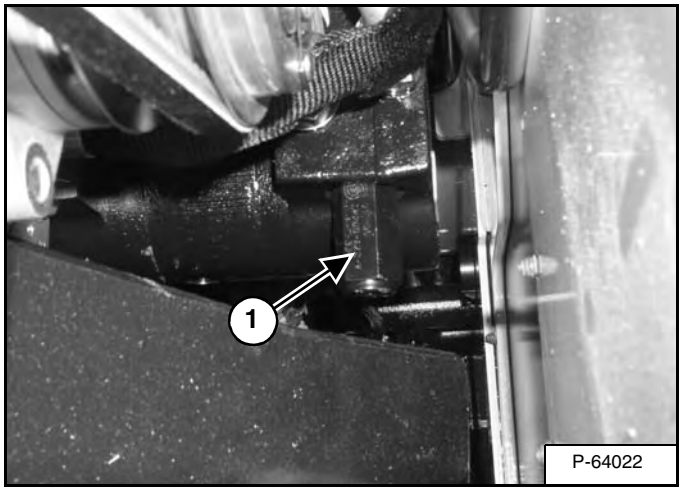
⚠ WARNING

Put jackstands under the front axles and rear corners of the frame before running the engine for service. Failure to use jackstands can allow the machine to fall or move and cause injury or death.

W-2017-0286

Lift and block the loader. (See Procedure on Page 10-10-1.)

Figure 20-64-15

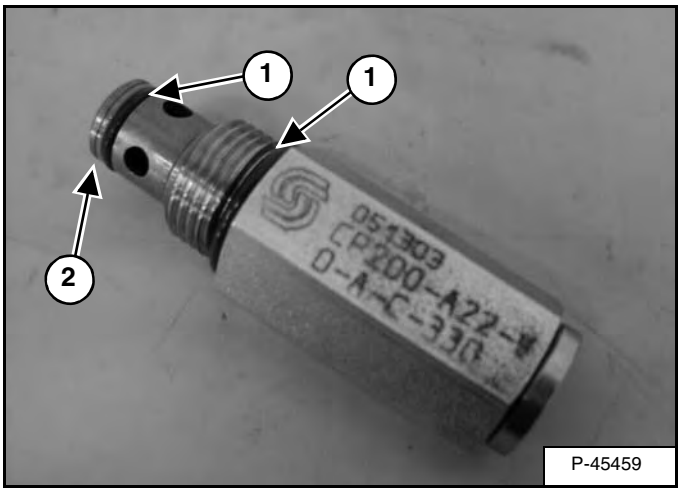


Locate the high flow relieve valve through rear door along the right side of the engine.

Remove the relief valve (Item 1) **[Figure 20-64-15]** from the pump.

Installation: Tighten the relief valve to 30-35 ft.-lb. (41-47 N•m) torque.

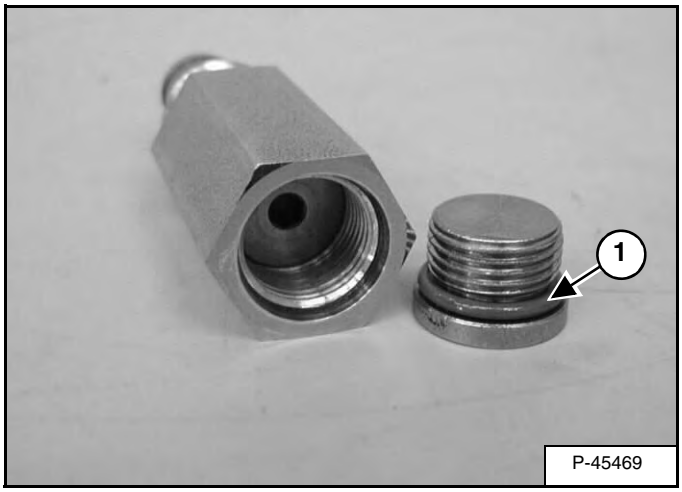
Figure 20-64-16



Inspect the relief valve and replace the two o-rings (Item 1) and washer (Item 2) **[Figure 20-64-16]**.

If the relief valve is bad, it must be replaced as a complete unit.

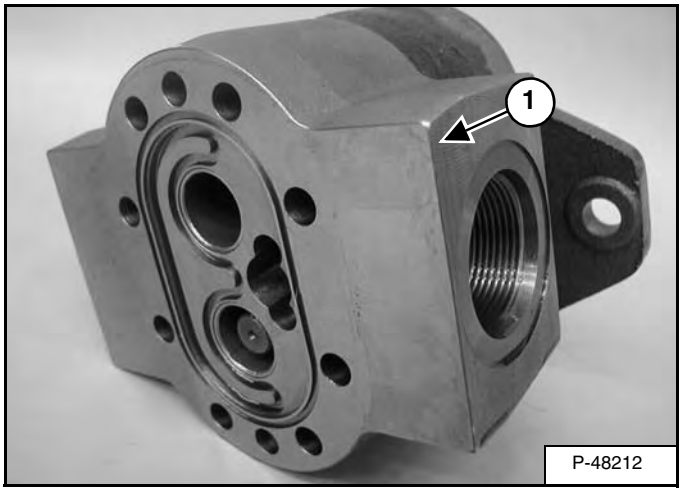
Figure 20-64-17



Inspect the o-ring (Item 1) **[Figure 20-64-17]** on the plug for damage and replace as needed.

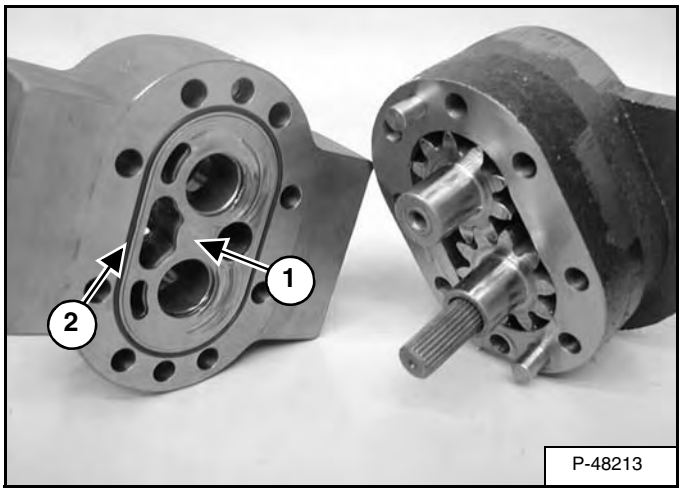
Disassembly And Assembly (30 GPM And 40 GPM) (Cont'd)

Figure 20-64-43



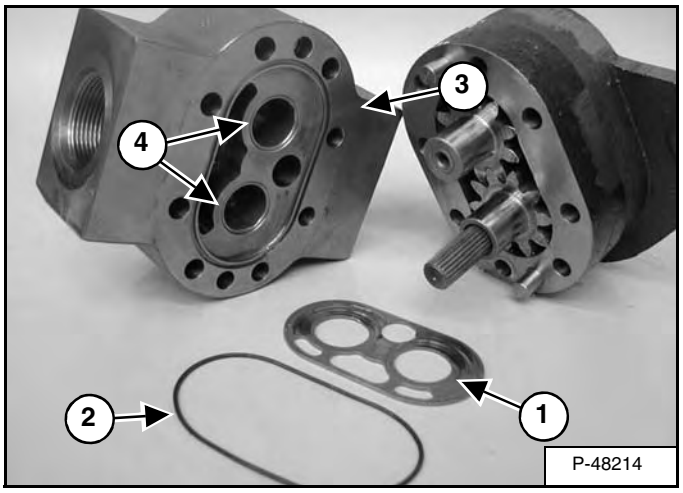
Remove the pump center section (Item 1) **[Figure 20-64-43]** from the pump sections.

Figure 20-64-44



Remove the we ar plate (Item 1) **[Figure 20-64-44]** & **[Figure 20-64-45]** and section seal (Item 2) **[Figure 20-64-44]** & **[Figure 20-64-45]** from the pump section.

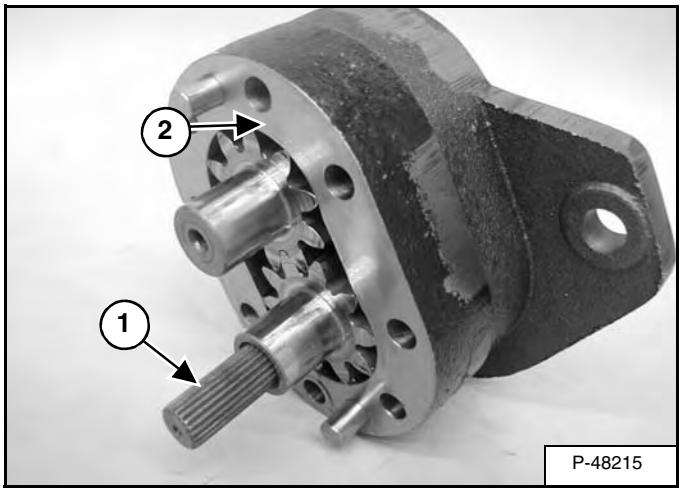
Figure 20-64-45



NOTE: Position wear plate (Item 1) [Figure 20-64-45] inlets and traps as shown with br onze side toward gears.

NOTE: Inspect the pump center section (Item 3) and bushings (Item 4) [Figure 20-64-45]. If excessive wear or damage is visible, the pump must be replaced.

Figure 20-64-46



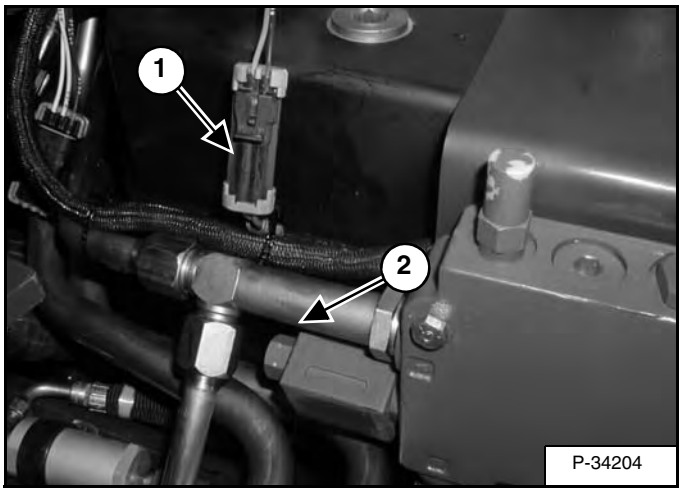
Remove the spline shaft (Item 1) **[Figure 20-64-46]**.

Remove the au xilliary pump center section (Item 2) **[Figure 20-64-46]** from the pump.

BUCKET POSITION VALVE

Solenoid Removal And Installation

Figure 20-90-1

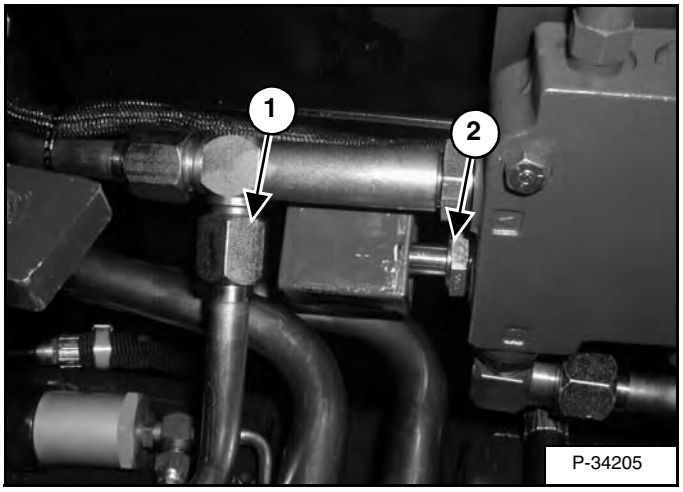


Disconnect the wire harness connector (Item 1) **[Figure 20-90-1]** from the bucket position solenoid.

Remove the solenoid nut (Item 2) **[Figure 20-90-1]**.

Installation: Tighten the solenoid nut to 60 in .-lb. (6,78 N•m) torque.

Figure 20-90-2

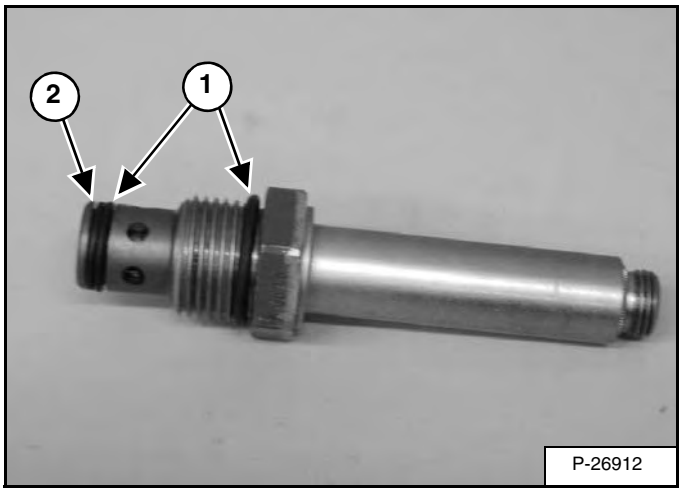


Move the solenoid until it touches the tubeline (Item 1) **[Figure 20-90-2]**.

Remove the solenoid stem and solenoid (Item 2) **[Figure 20-90-2]** from the bucket position valve.

Installation: Put oil on O-rings and back-up washers and tighten the solenoid stem to 30-35 ft.-lb. (40,8-47,6 N•m) torque.

Figure 20-90-3



Inspect the solenoid stem and replace the O-rings (Item 1) and the back-up washer (Item 2) **[Figure 20-90-3]**.

Solenoid Testing

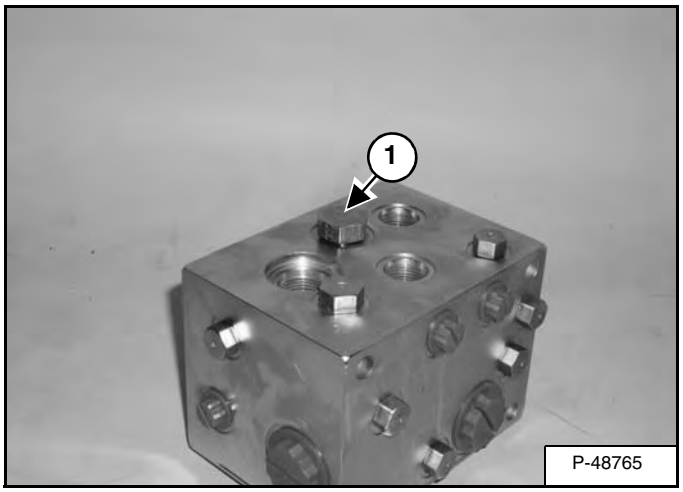
Figure 20-90-4

Use a test meter to measure coil resistance **[Figure 20-90-4]**. Coil wires do not have polarity. Correct resistance for the pressure relief (small) coil is 7-10 ohm and the other coils 5-8 ohms.

Replace the test meter with 12 volt power. You can see and hear the spool shift.

Disassembly And Assembly (Cont'd)

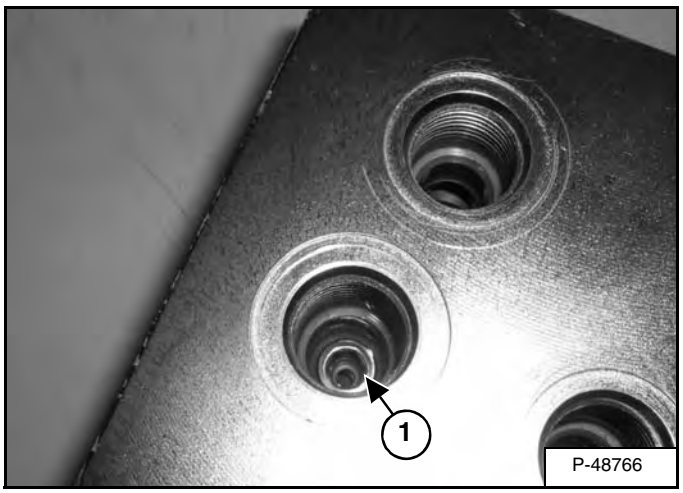
Figure 20-100-23



Remove the plug (Item 1) **[Figure 20-100-23]**.

Installation: Tighten the plug to 38 ft.-lb. (51,5 N•m) torque.

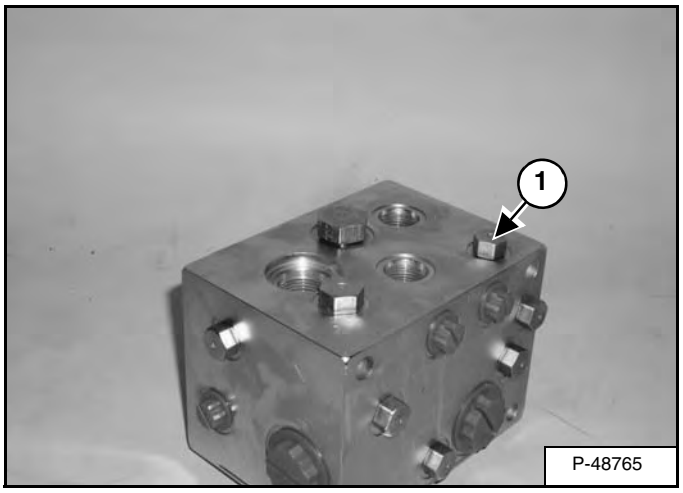
Figure 20-100-24



Remove and inspect the orifice (Item 1) **[Figure 20-100-24]** for dirt and debris.

Installation: Tighten the orifice to 22 ft.-lb. (29,8 N•m) torque.

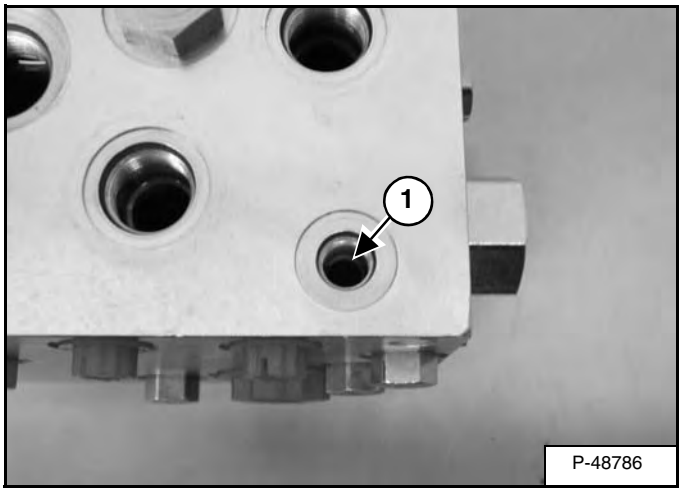
Figure 20-100-25



Remove the plug (Item 1) **[Figure 20-100-25]**.

Installation: Tighten the plug to 10 ft.-lb. (13,6 N•m) torque.

Figure 20-100-26



Remove the orifice (Item 1) **[Figure 20-100-26]**.

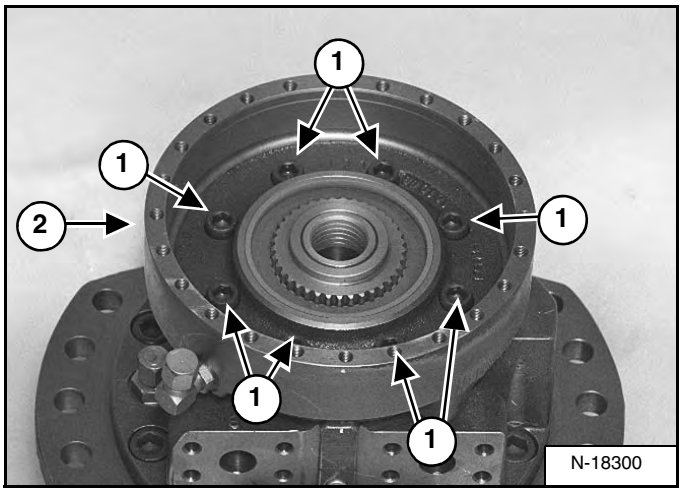
Installation: Tighten the orifice to 3.3 ft.-lb. (4,5 N•m) torque.

HYDROSTATIC SYSTEM

Continued On Next Page

Disassembly (Cont'd)

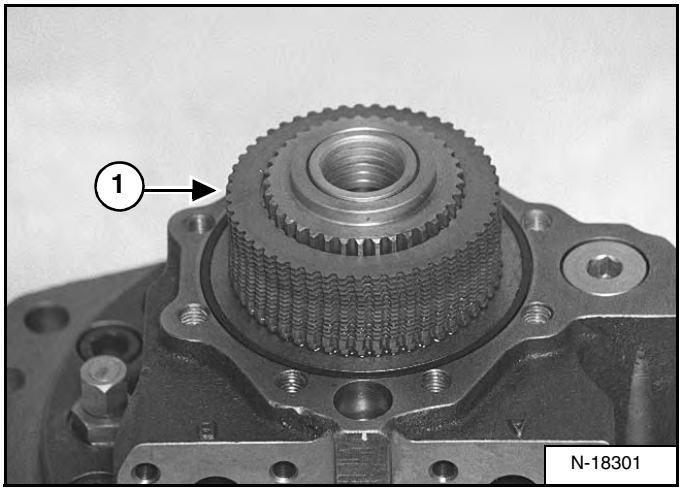
Figure 30-20-9



Remove the eight mounting bolts (Item 1) **[Figure 30-20-9]** and washers from the brake housing.

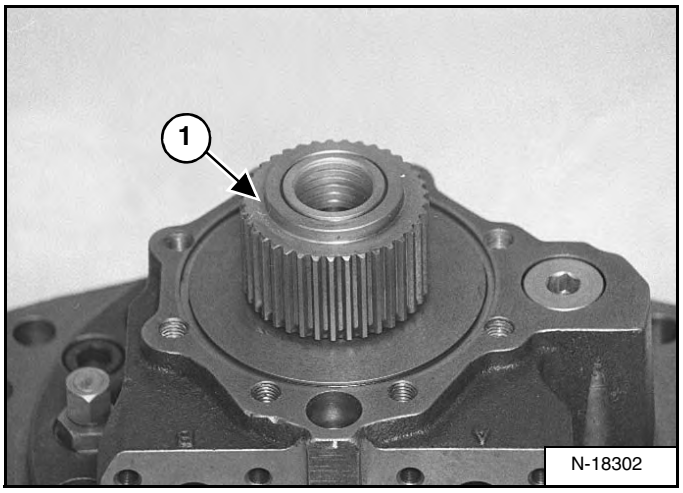
Remove the br ake housing (Item 2) **[Figure 30-20-9]** from the rear housing.

Figure 30-20-10



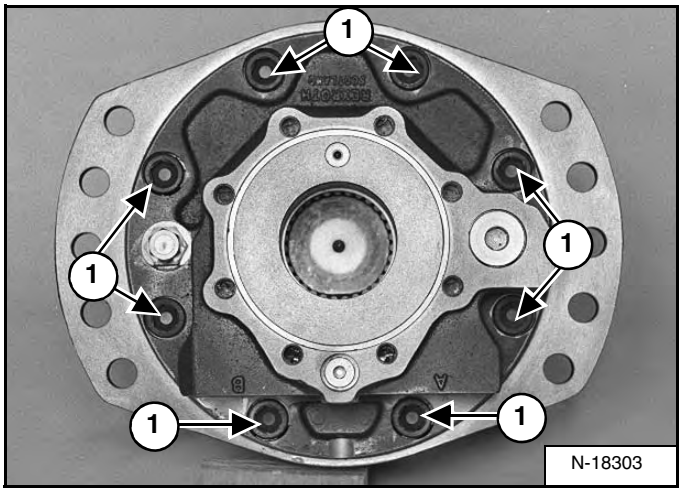
Remove the brake disks (Item 1) **[Figure 30-20-10]** and shims from the brake shaft.

Figure 30-20-11



Remove the brake shaft (Item 1) **[Figure 30-20-11]** from the rear housing.

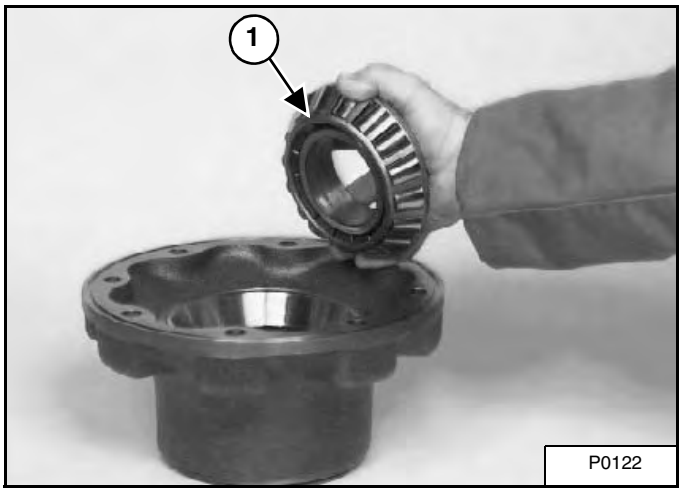
Figure 30-20-12



Remove the eight mounting bolts (Item 1) **[Figure 30-20-12]** from the rear housing.

Assembly (Cont'd)

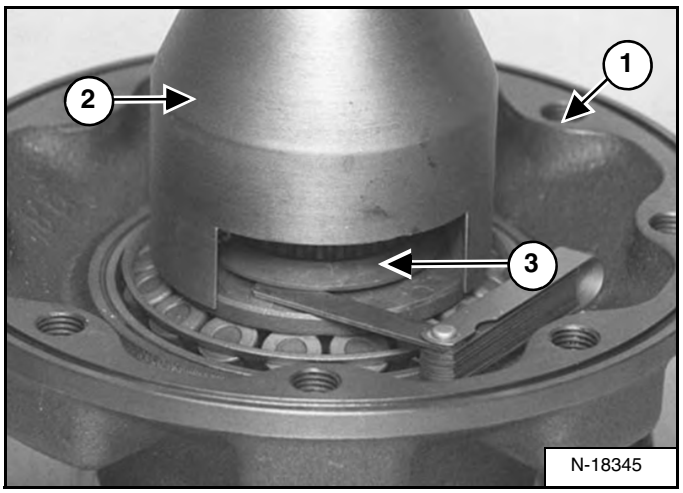
Figure 30-20-49



Install a new bearing (Item 1) **[Figure 30-20-49]** into the front housing.

Place the shaft on a hydraulic press table.

Figure 30-20-50

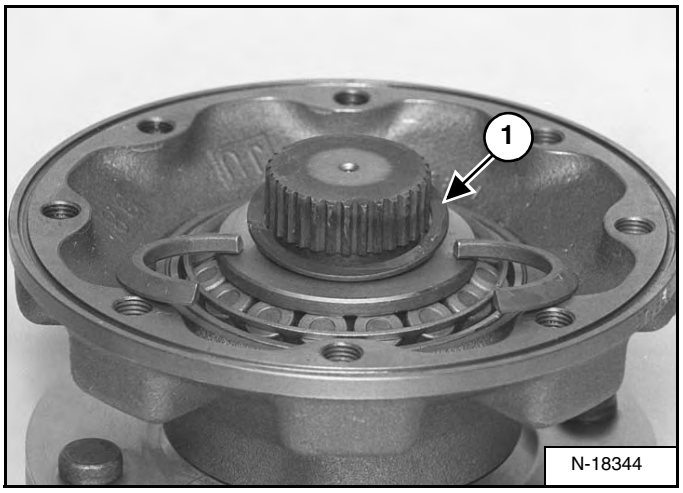


Install the front housing (Item 1) and bearing over the shaft. Install the special tool (MEL1562) (Item 2) **[Figure 30-20-50]** over the bearing and press the bearing onto the shaft. Apply 9000 lb. of pressure to set the bearing. Rotate the housing to check for free travel.

NOTE: The 9000 lb. of force, is NOT the amount of pressure required by the press. It is the amount of force downward force applied by the press.

Install the split ring (Item 3) **[Figure 30-20-50]** with a feeler gauge measure the distance between the split ring and the top of the bearing inner race.

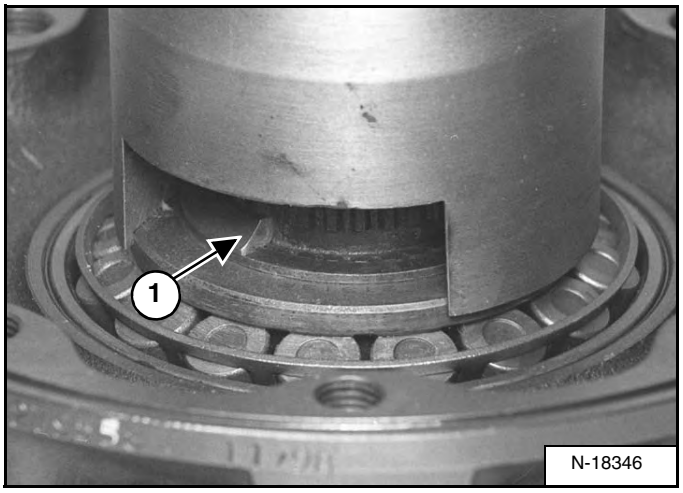
Figure 30-20-51



Release the pressure from the bearing. Remove the tool from the bearing.

Add one pre-load washer (Item 1) **[Figure 30-20-51]** that is closest to the measurement between the bearing race and split ring.

Figure 30-20-52



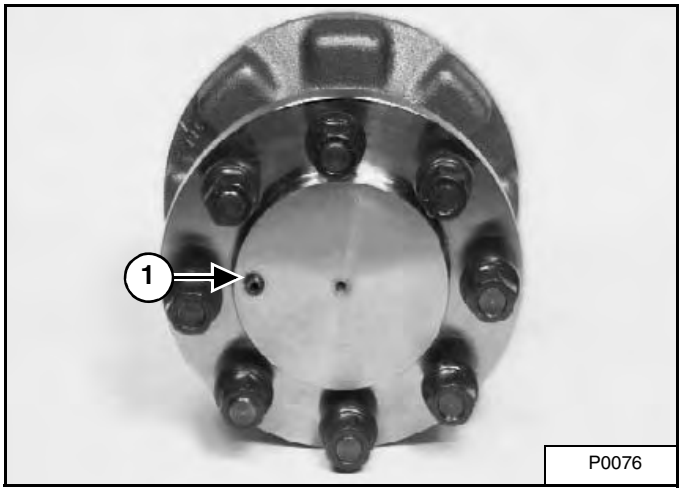
Install the tool and press the bearing to 90 00 lb. pressure.

Install the split rings (Item 1) **[Figure 30-20-52]**.


Bobcat®

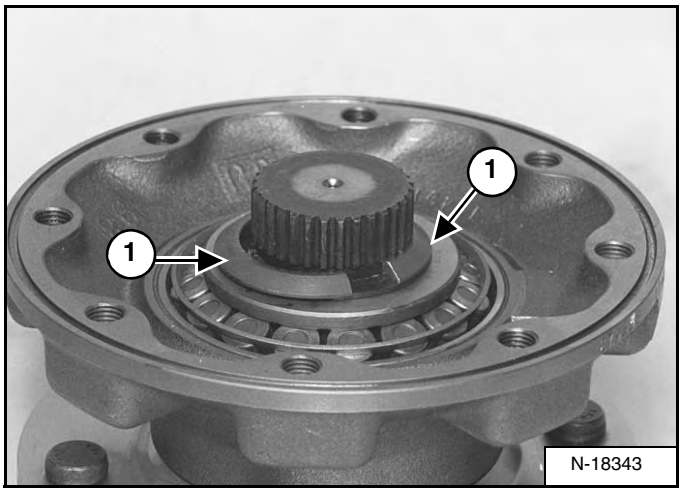
Disassembly (Cont'd)

Figure 30-21-34



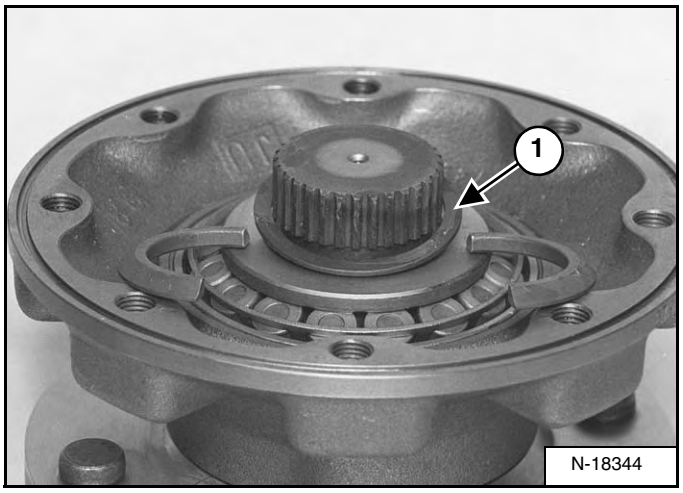
Remove the oil fill plug (Item 1) **[Figure 30-21-34]** from the housing to drain the oil from the bearing and face seal area.

Figure 30-21-35



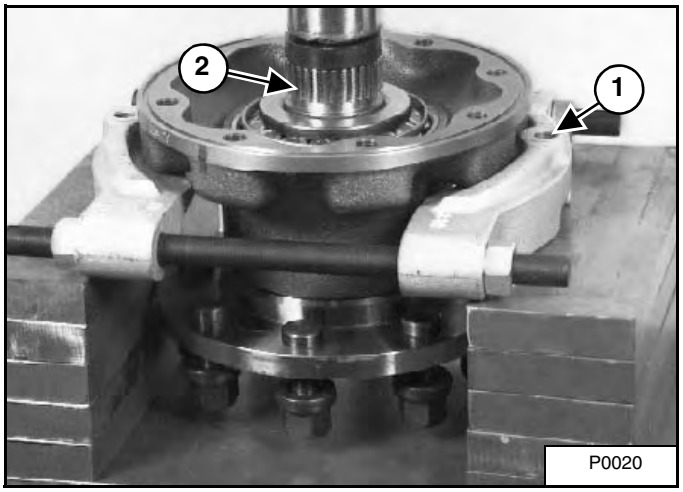
With a hammer and punch remove the split ring (Item 1) **[Figure 30-21-35]**.

Figure 30-21-36



Remove the washer (Item 1) **[Figure 30-21-36]** from under the split ring.

Figure 30-21-37

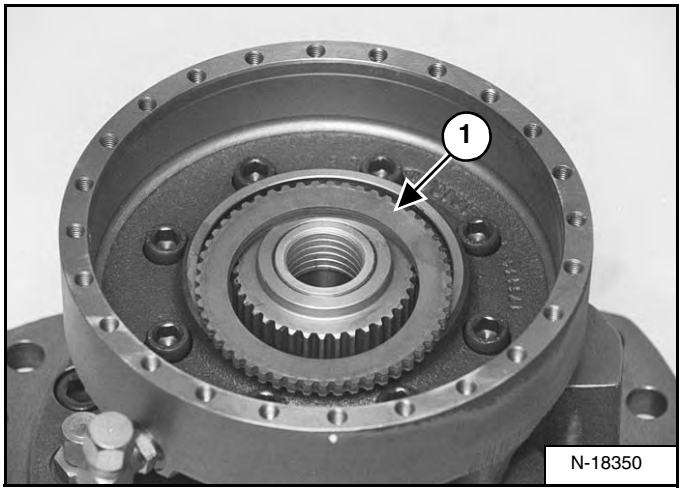


Install the bearing puller (Item 1) **[Figure 30-21-37]** under the fr ont housing and support the puller and housing with blocks.

Press the shaft (Item 2) **[Figure 30-21-37]** from the housing.

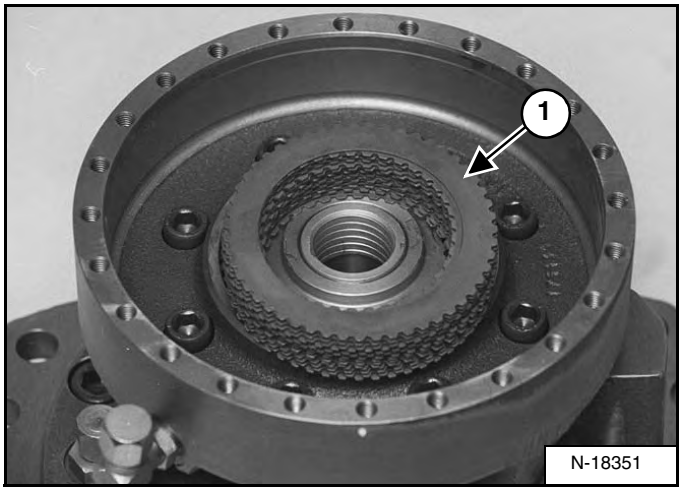
Assembly (Cont'd)

Figure 30-21-74



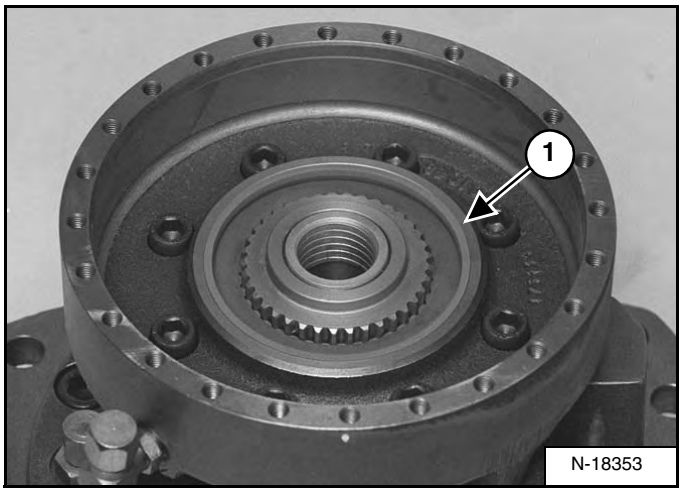
Install the needed amount of outer discs (Item 1) **[Figure 30-21-74]** to act as shims.

Figure 30-21-75



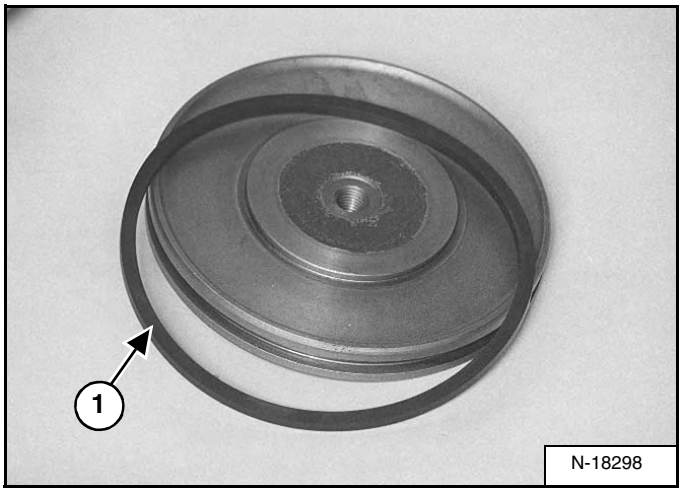
Install the disc pack (Item 1) **[Figure 30-21-75]** starting with an o uter and alternating every other disc with an inner disc.

Figure 30-21-76



Install a new piston inner seal (Item 1) **[Figure 30-21-76]**.

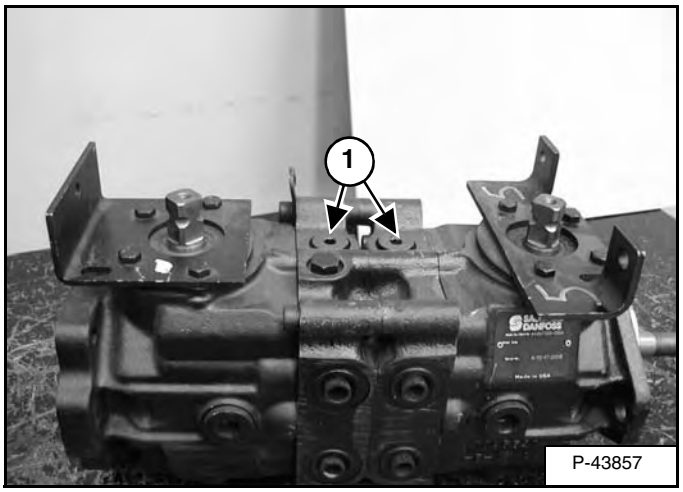
Figure 30-21-77



Install a new piston seal (Item 1) **[Figure 30-21-77]** on the piston.

Replenishing/High Pressure Relief Valve

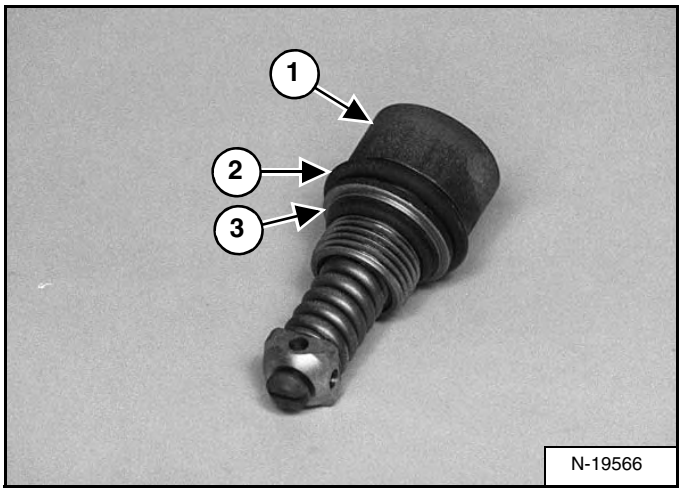
Figure 30-40-8



There are four replenishing/high pressure relief valves (Item 1) **[Figure 30-40-8]** in the hydrostatic pump assembly. Two are located at the top of the pumps and two at the bottom of the pumps. (See Replenishing Valve Function on Page 30-10-2.)

NOTE: The two top v alves are for the reverse drive loop and the two bottom valves are for the forward drive loop.

Figure 30-40-9



Remove the high pressure relief valve (Items 1) **[Figure 30-40-9]** from the pump.

Assemble: Tighten the plug to 30-50 ft.-lb. (41-68 N•m) torque.

Check for damage and replace as needed.

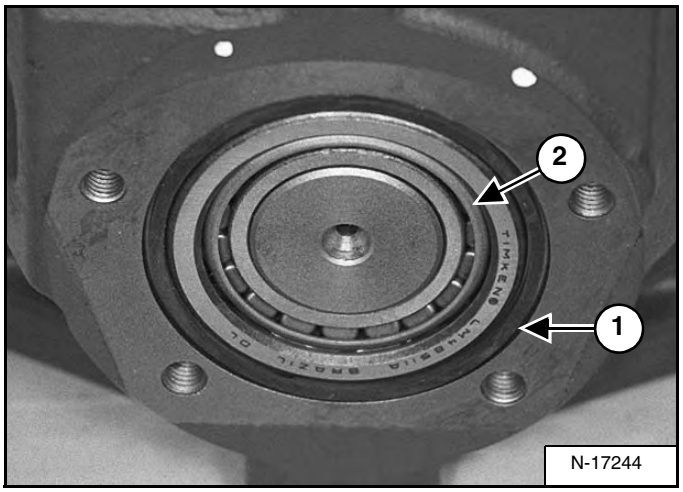
Check the o-rings (Items 2 & 3) **[Figure 30-40-9]** for damage and replace as needed.

If the high pressure relief valve must be replaced, it must be replaced as a complete unit.

The pressure setting for a new high pressure relief valve is 5000 PSI (34475 kPa).

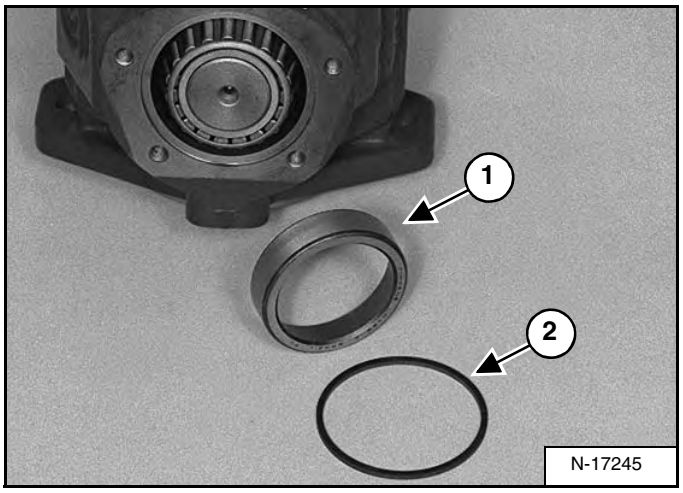
Disassembly (Cont'd)

Figure 30-40-30



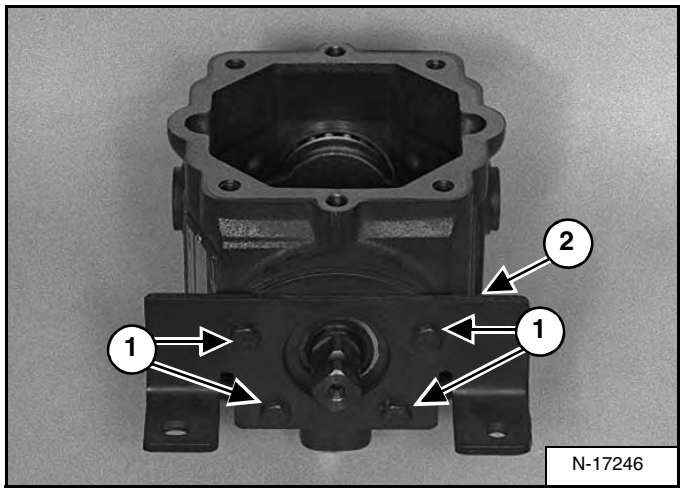
Remove the O-ring (Item 1) and bearing race (Item 2) **[Figure 30-40-30]** from the pump housing.

Figure 30-40-31



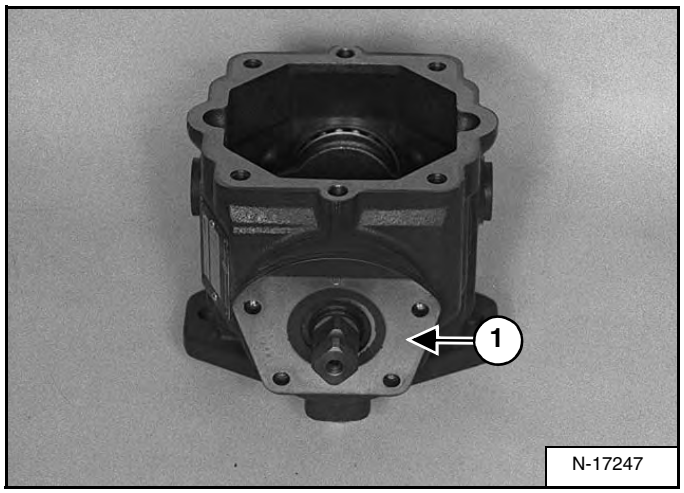
Check the bearing race (Item 1) and O-ring (Item 2) **[Figure 30-40-31]** for wear and replace as needed.

Figure 30-40-32



Remove the four mount bolts (Item 1) from the pump housing and remove the linkage bracket (Item 2) **[Figure 30-40-32]**.

Figure 30-40-33

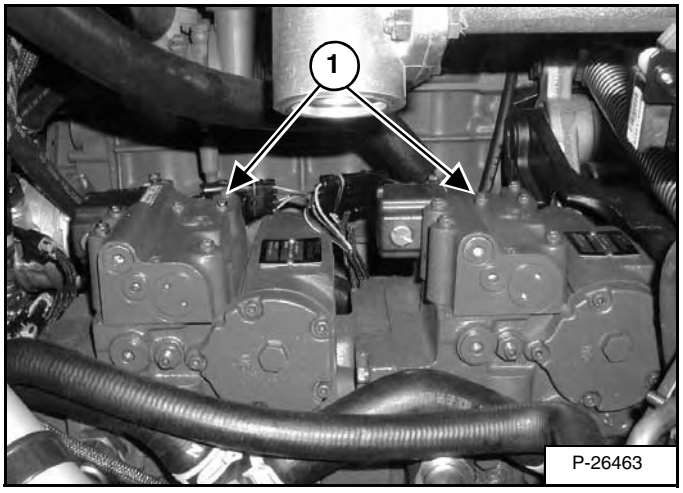


Remove the upper trunnion cover (Item 1) **[Figure 30-40-33]**.

HYDROSTATIC PUMP (SELECTABLE JOYSTICK CONTROL) (SJC)

Pump Controller Removal And Installation

Figure 30-41-1



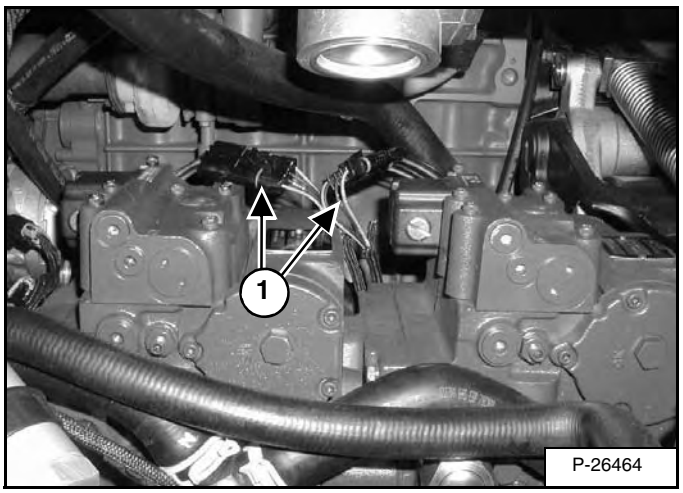
Raise the lift arms and install and approved lift arm support device. (See Installing The Lift Arm Support Device on Page 10-20-1.)

Place the loader on j ackstands. ((See Procedure on Page 10-10-1.)

Raise the operator cab. ((See Raising The Operator Cab on Page 10-30-1.)

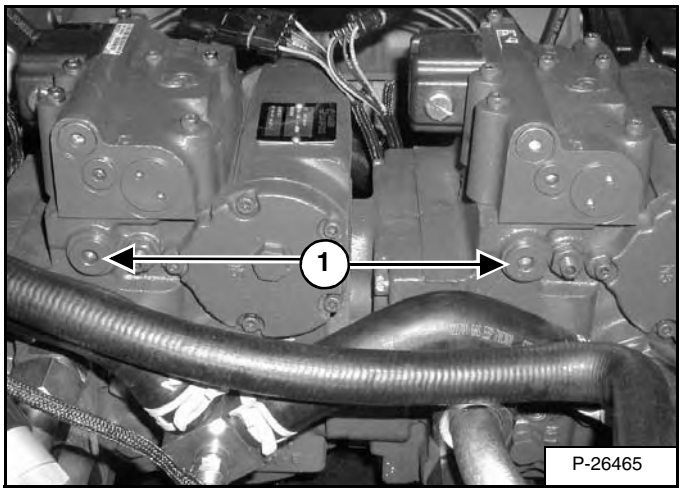
Locate the two pump controllers (Item 1) **[Figure 30-41-1]** on the hydrostatic pumps.

Figure 30-41-2



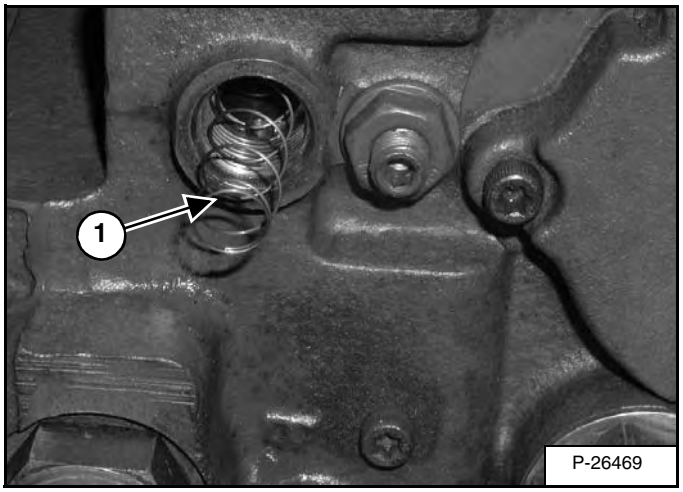
Disconnect the electrical connectors (Item 1) **[Figure 30-41-2]** from the loader harness.

Figure 30-41-3



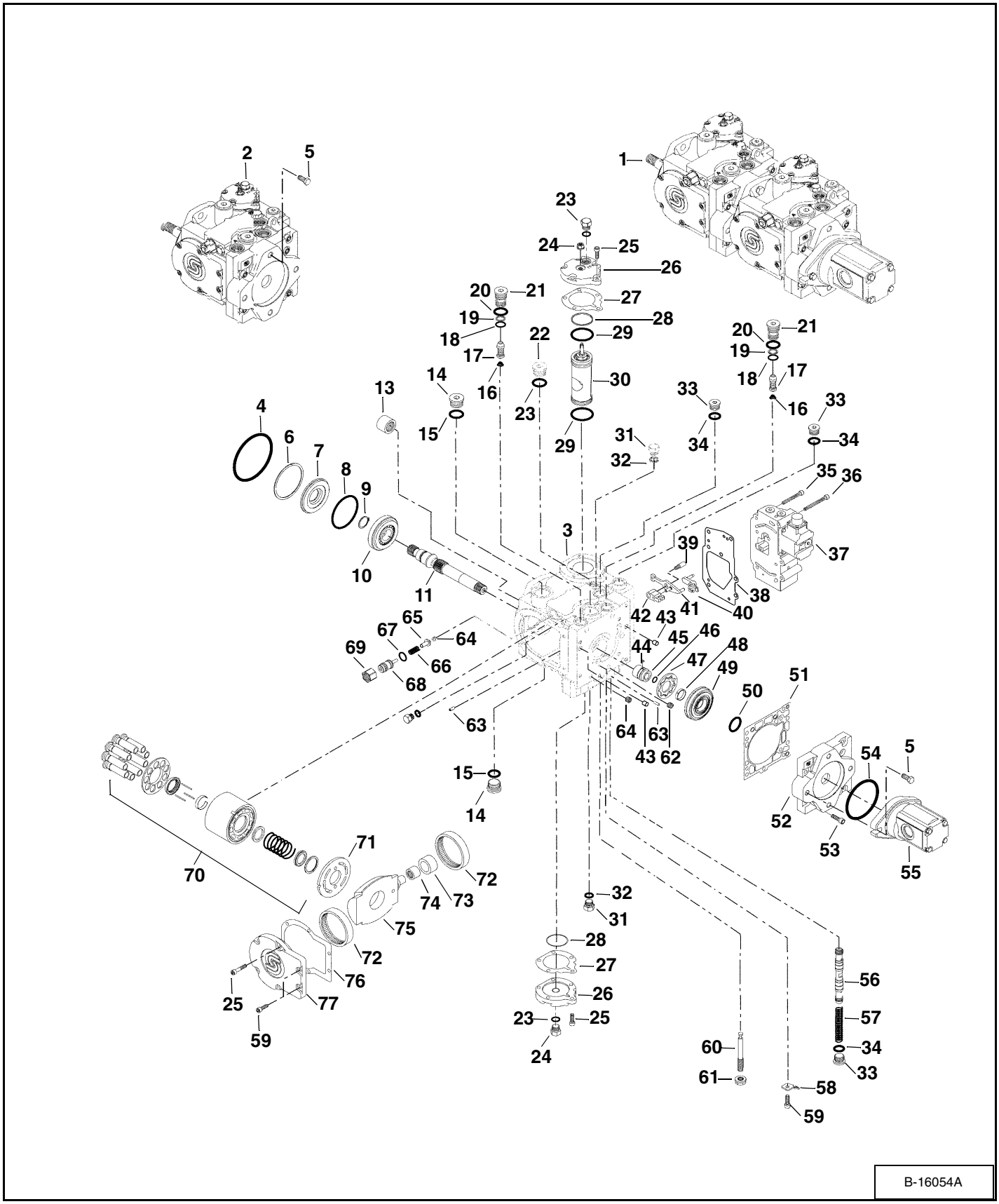
Remove the control spool plug (Item 1) **[Figure 30-41-3]** at the front side of the pump.

Figure 30-41-4



Do Not remove the spring (Item 1) **[Figure 30-41-4]**,as it is attached to the control spool.

Parts Identification (Right Half)



Shaft Seal And Shaft Installation

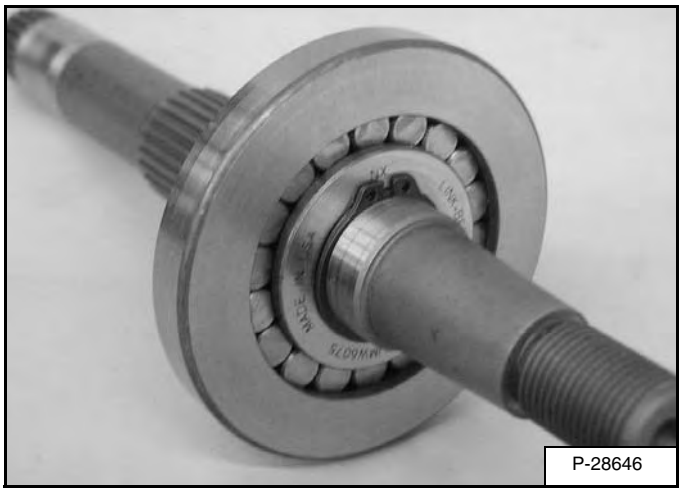
Figure 30-41-57

Inspect the shaft **[Figure 30-41-57]** for wear and replace as needed.

Figure 30-41-58

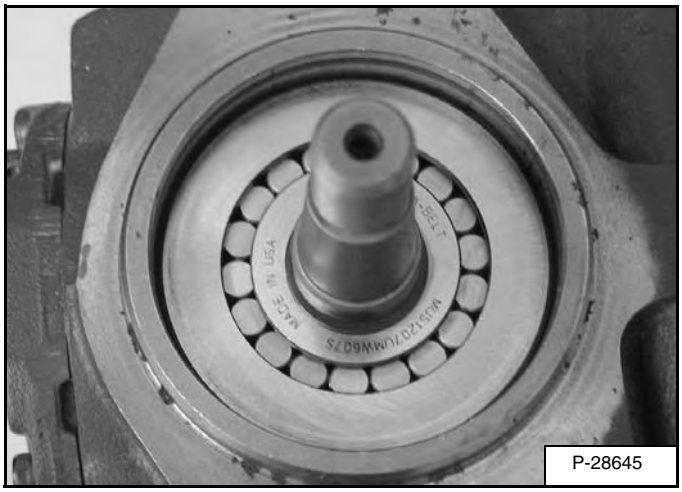
Inspect the snap ring **[Figure 30-41-58]** and replace as needed.

Figure 30-41-59



Install the bearing and snap ring on the shaft **[Figure 30-41-59]**.

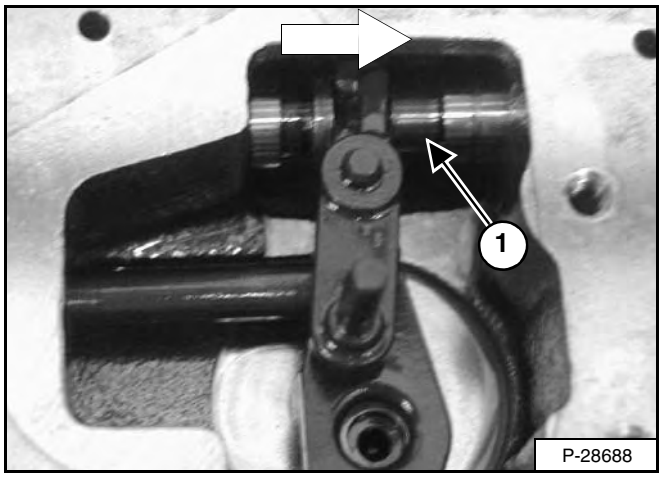
Figure 30-41-60



Install the shaft and roller bearing in the pump housing **[Figure 30-41-60]**.

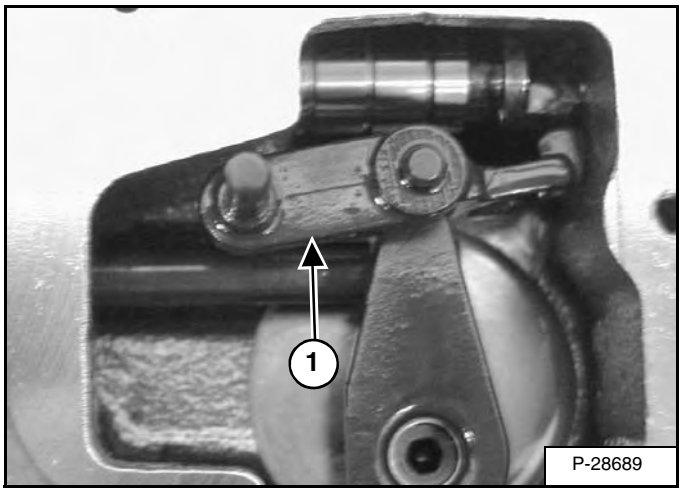
Disassembly (Cont'd)

Figure 30-41-97



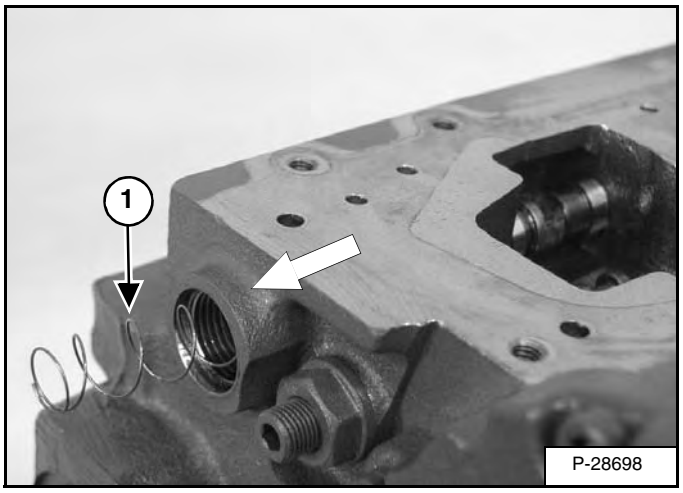
Move the control spool and summing link (Item 1) **[Figure 30-41-97]** until the summing link disconnects from the control spool.

Figure 30-41-98



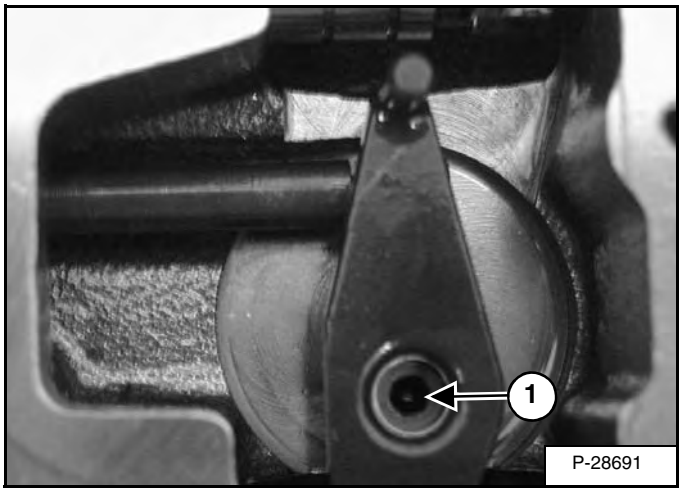
Remove the summing link (Item 1) **[Figure 30-41-98]**.

Figure 30-41-99



Remove control spool and spring (Item 1) **[Figure 30-41-99]**.

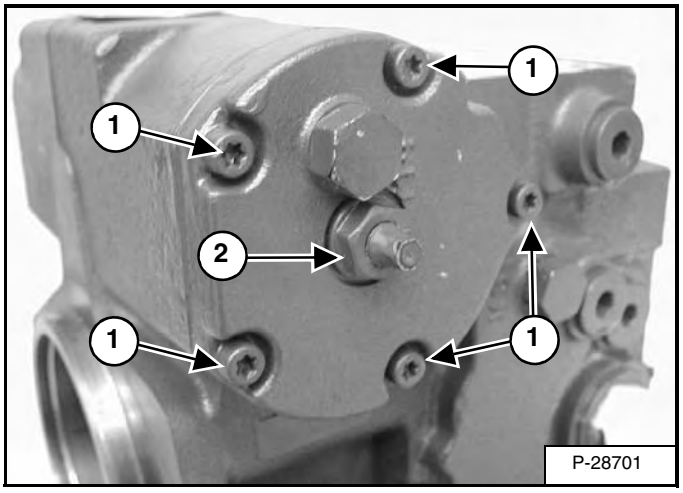
Figure 30-41-100



Remove the linkage pivot bolt (Item 1) **[Figure 30-41-100]**.

Assembly (Cont'd)

Figure 30-41-136

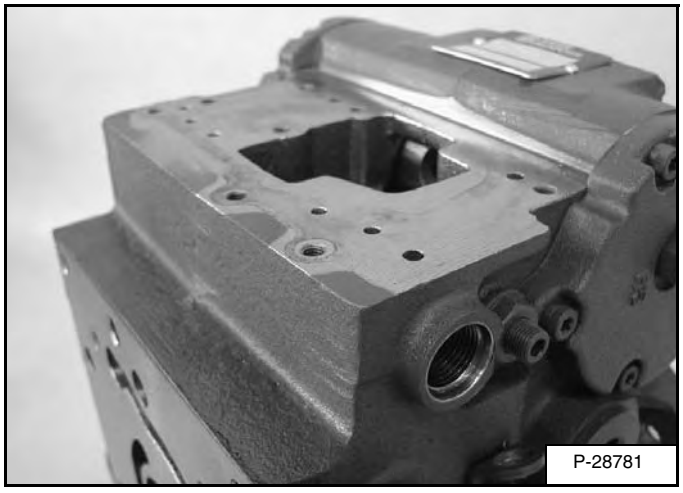


Tighten the tie bolt end, mount bolts (Item 1) **[Figure 30-41-136]** to 11-13 ft.-lb. 15-17,5 N•m) torque.

Install a new adjustment seal nut (Item 2) **[Figure 30-41-136]** and tighten until the sealing face touches the servo cover.

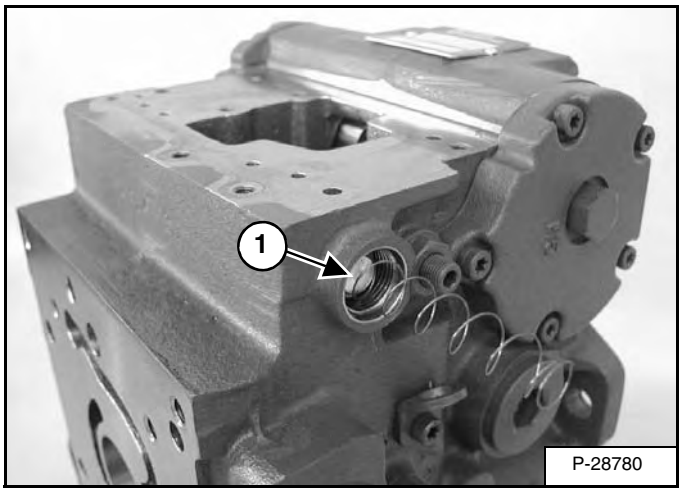
NOTE: The pump neutral adjustment must be made to the pump after it is installed in the loader. (See Pump Neutral Adjustment on Page -48.)

Figure 30-41-137



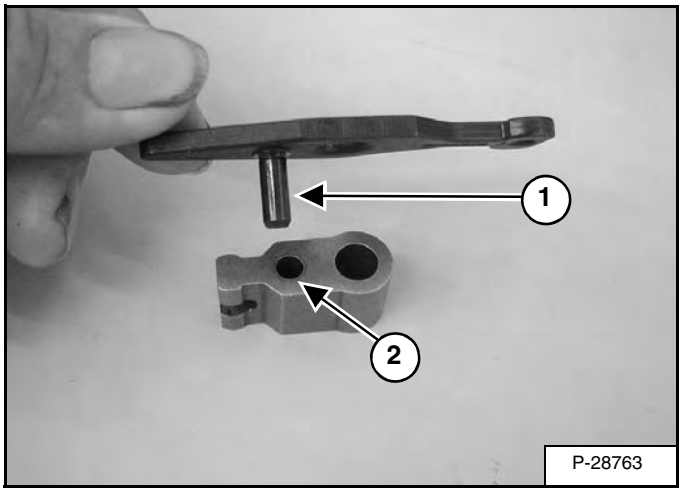
Rotate the pump housing so that th e control face is accessible **[Figure 30-41-137]**.

Figure 30-41-138



Install the control spool and spring (Item 1) **[Figure 30-41-138]** into the pump housing.

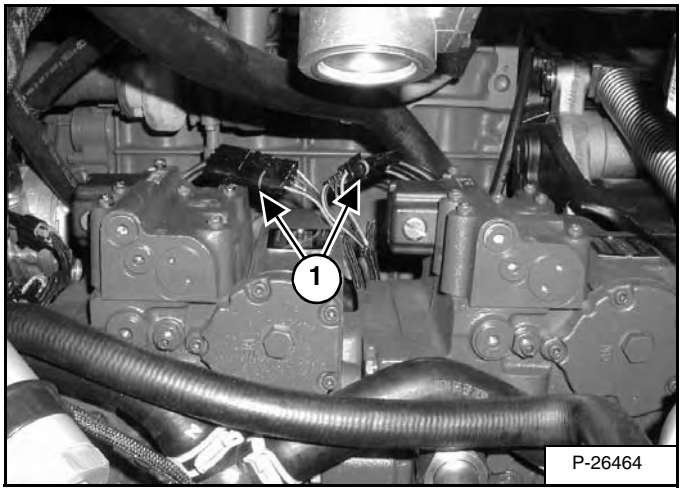
Figure 30-41-139



Install the center pin on the control feedback link (Item 1) into the bore in the neutral adjustment link (Item 2) **[Figure 30-41-139]**.

Pump Controller Neutral Adjustment

Figure 30-41-174



The pump controller neutral adjustment, aligns the pump swashplate and the control spool so that a zero angle control setting provides a zero degree swashplate setting. This adjustment should be performed whenever any part of the control or swashplate mechanisms are adjusted or removed or after the pump neutral setting is adjusted.

Place the loader on jackstands. (See Procedure on Page 10-10-1.)

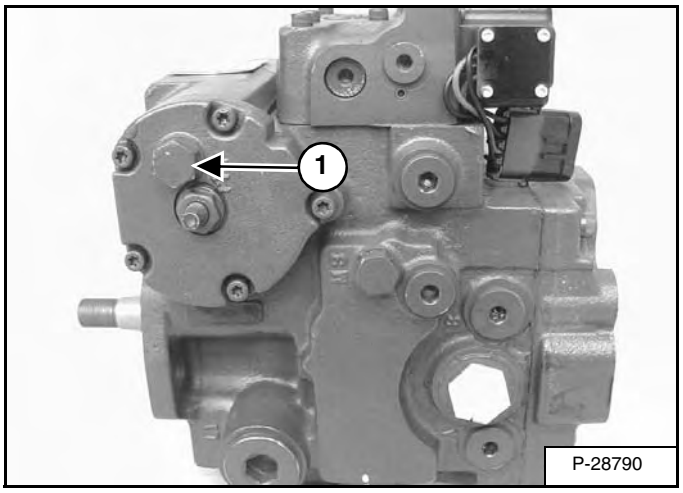
Raise the lift arms, and install an approved lift arm support device. ((See Installing The Lift Arm Support Device on Page 10-20-1.)

Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

Connect the remote start tool. (See Procedure on Page 10-60-3.)

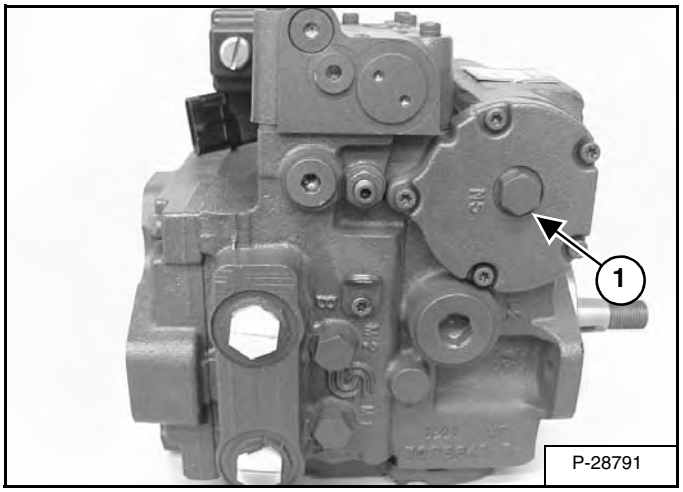
Disconnect the pump controllers (Item 1) **[Figure 30-41-174]** from the loader wiring harness.

Figure 30-41-175



Remove the M4 plug (Item 1) **[Figure 30-41-175]** and install a 500 PSI pressure gauge.

Figure 30-41-176



Remove the M5 plug (Item 1) **[Figure 30-41-176]** and install a 500 PSI pressure gauge.

DRIVE SYSTEM

TIGHTEN ALL HARDWARE PER SI ZE TO GRADE 5 TORQUE (SEE STANDARD TORQUE SPECIFICATIONS FOR BOLTS, SECTION SPEC-01) UNLESS OTHERWISE SPECIFIED.

Track Idler (Front) Removal And Installation (Cont'd)

⚠ WARNING

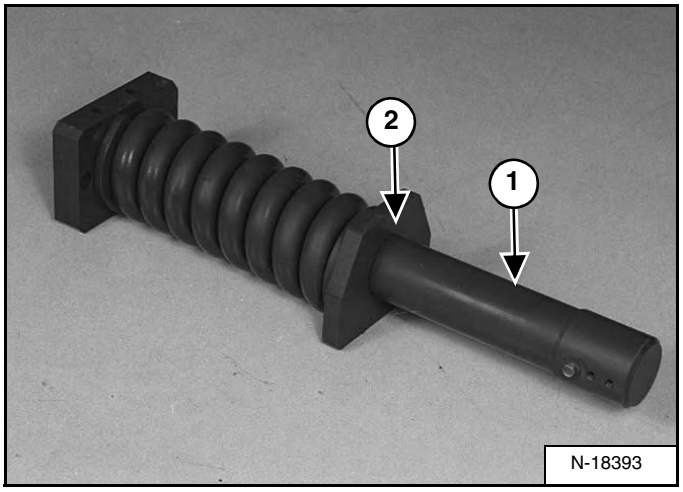
P-62574

AVOID INJURY OR DEATH

- **Spring loaded components under pressure can cause serious injury or death.**
- **Do not disassemble the coil spring assembly.**

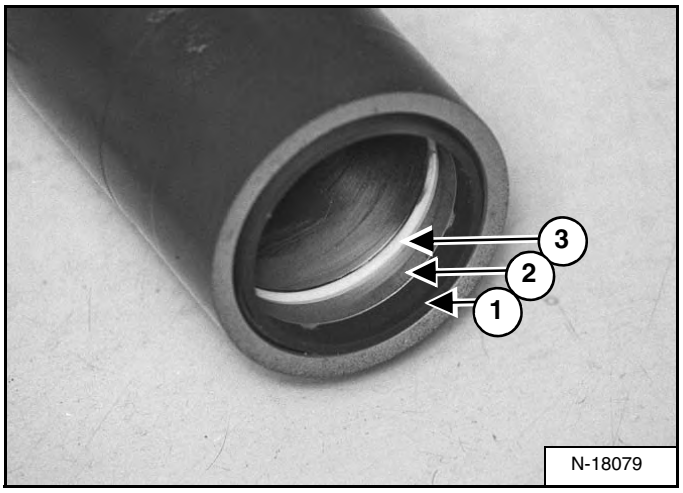
W-2617-1004

Figure 40-20-21



Remove the cylinder (Item 1) **[Figure 40-20-21]** from the shaft.

Figure 40-20-22

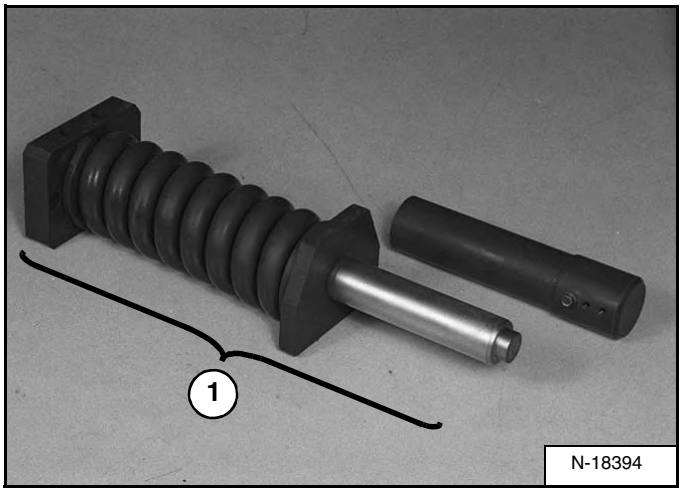


Remove the seal (Item 1), back-up ring (Item 2), and O-ring (Item 3) **[Figure 40-20-22]** from the cylinder.

Installation: Apply oil to the O -ring, back-up ring and seal before installation.

NOTE: The grease cylinder (Item 1) must be completely retracted against the spring assembly block (Item 2) [Figure 40-20-21] before adding grease, to prevent air from being trapped in the grease cylinder.

Figure 40-20-23

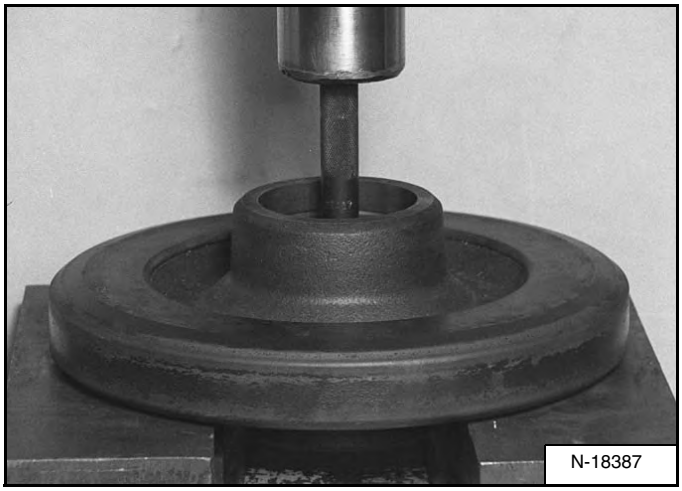


DO NOT DISASSEMBLE OR REPAIR THE COIL SPRING ASSEMBLY. THE COMPRESSION FORCE OF THE SPRING EXCEEDS 10,000 LBS.

The coil spring assembly (Item 1) **[Figure 40-20-23]** is only sold as a complete unit from Bobcat Parts.

Track Idler (Rear) Disassembly (Early Version) (Cont'd)

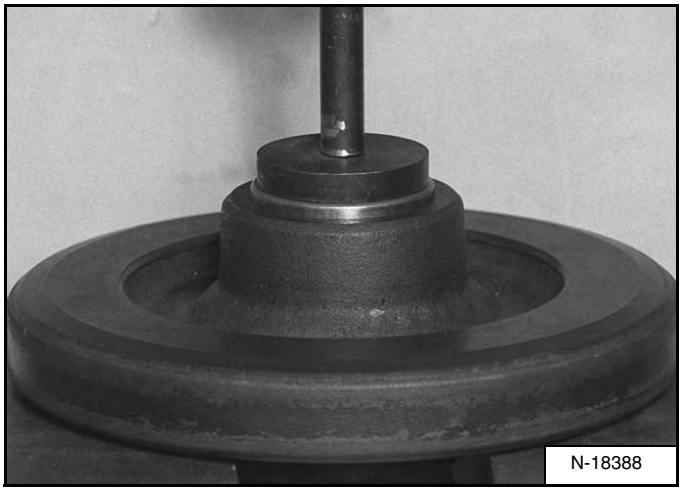
Figure 40-20-46



Turn the rear idler over and press the old bearing out **[Figure 40-20-46]**.

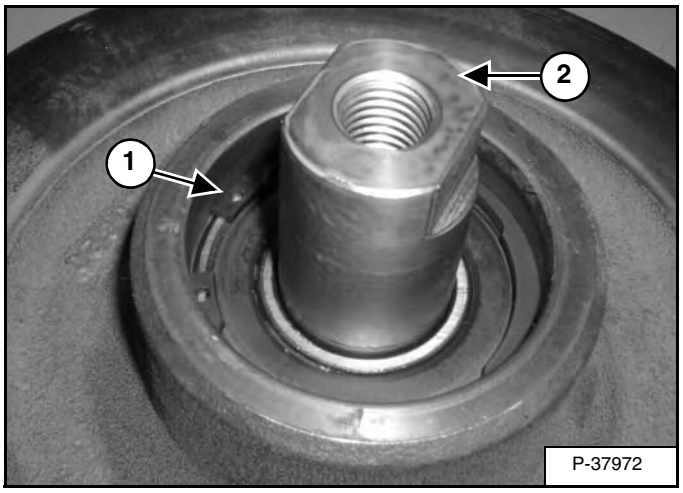
Check the idler and replace as needed.

Figure 40-20-47



Install a new bearing into the rear idler using a press and bearing driver tool **[Figure 40-20-47]**.

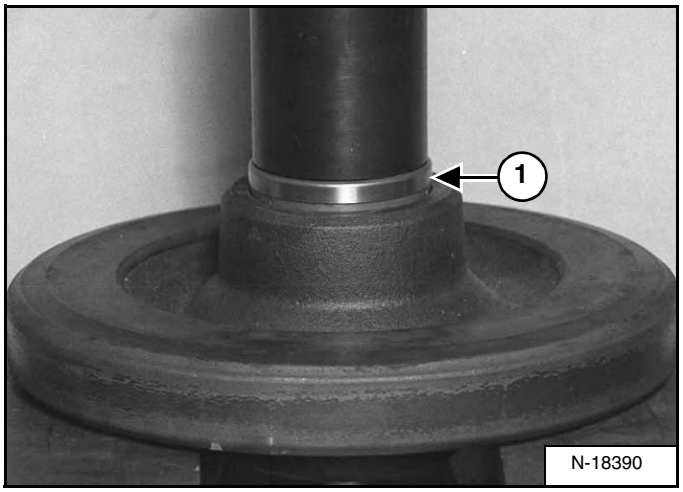
Figure 40-20-48



Install a snap ring (Item 1) **[Figure 40-20-48]**.

Install the axle shaft (Item 2) **[Figure 40-20-48]** into the idler from the opposite side.

Figure 40-20-49

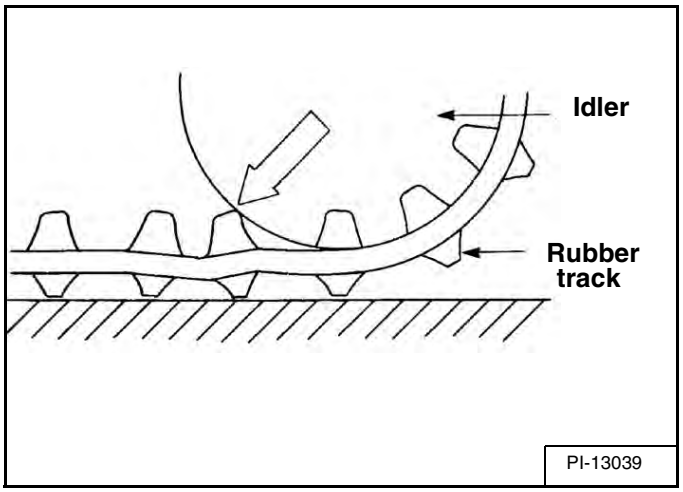


Place the idle, bearing and axle shaft assembly in a press.

Press a new bearing (Item 1) **[Figure 40-20-49]** over the axle shaft into the rear idler.

Track Damage Identification (Cont'd)

Figure 40-20-77

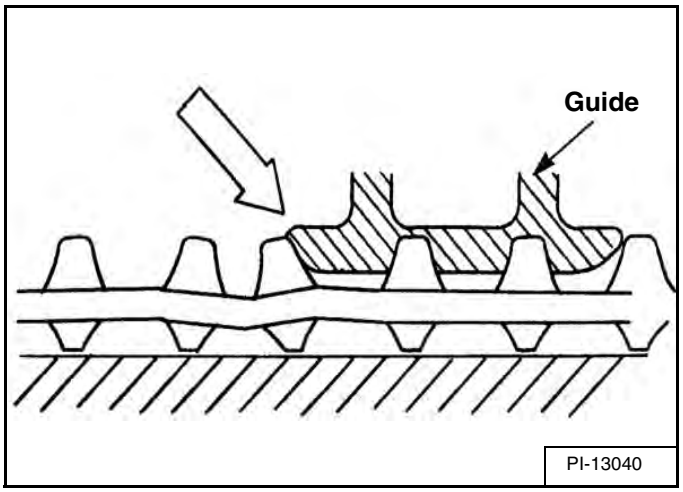


Causes of the damage:

Embedded metals are adhered between the steel cords and the rubber body. The following cases generate external forces greater than the adhesion strength, causing separation of the embedded metals:

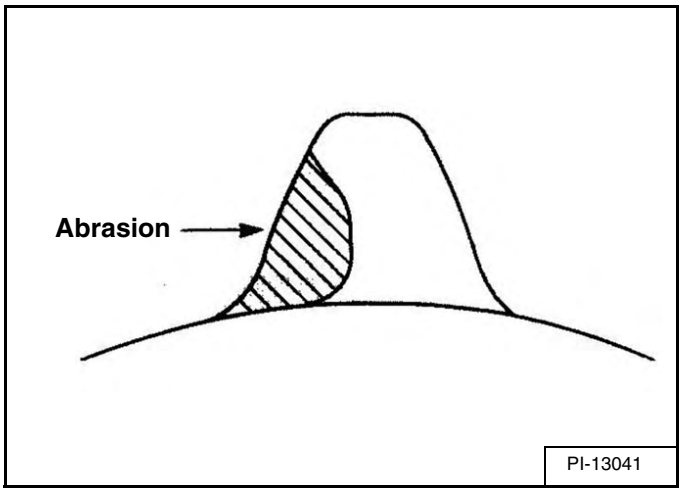
When the idler continually rides on the projections of embedded metals, the embedded metals will eventually peel off **[Figure 40-20-77]**.

Figure 40-20-78



When a rubber track is detracted, it becomes stuck between the guide or the undercarriage frame, causing the separation of embedded metals **[Figure 40-20-78]**.

Figure 40-20-79



Abnormally worn sprockets as shown will pull embedded metals out **[Figure 40-20-79]**.

Prevention:

Similar to the prevention against the cutting of the steel cords:

Recommended track tension should be periodically checked. (See Track Checking on Page 40-20-1.)

Quick turns on bumpy and rocky fields should be avoided.

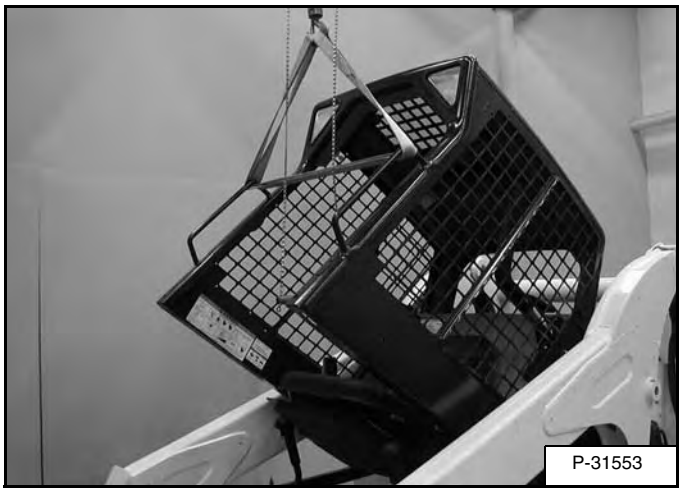
If abnormal wear of sprockets is observed, they should be immediately replaced.

MAIN FRAME (CONT'D)

TIGHTEN ALL HARDWARE PER SI ZE TO GRADE 5 TORQUE (SEE STANDARD TORQUE SPECIFICATIONS FOR BOLTS, SECTION SPEC-01) UNLESS OTHERWISE SPECIFIED.

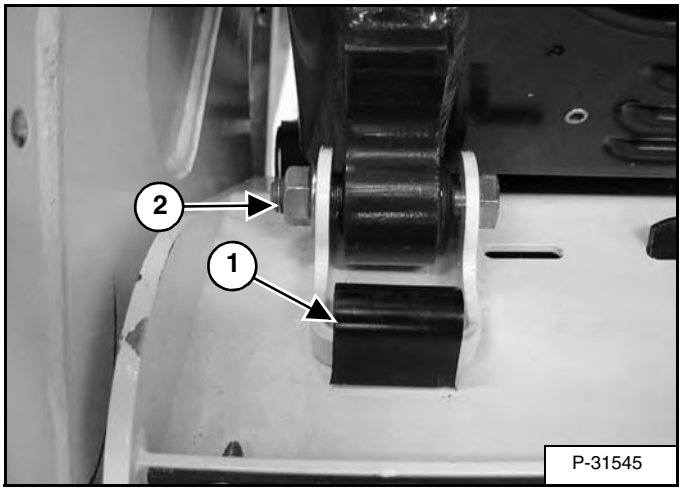
Removal And Installation (Cont'd)

Figure 50-20-14



Connect a sling and chain hoist to the operator cab grab handles and lower (or raise) the operator cab when the gas cylinders are disconnected **[Figure 50-20-14]**.

Figure 50-20-15



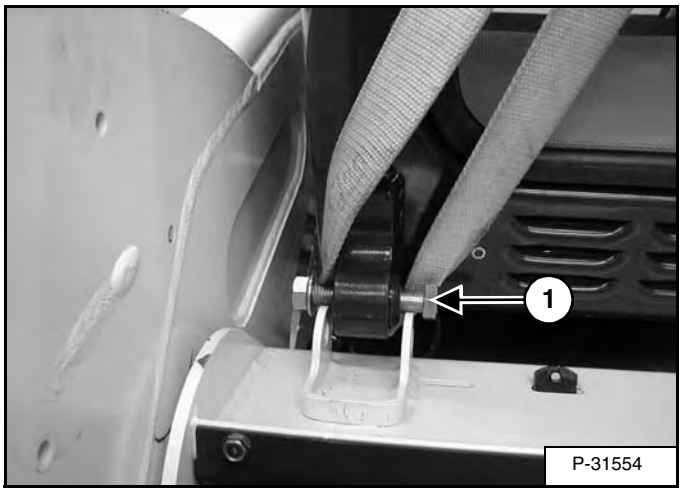
Remove the operator cab stop (Item 1) **[Figure 50-20-15]**.

Remove the nut (Item 2) **[Figure 50-20-15]** from the pivot bolt (both sides).

Installation: Tighten the pivot bolt and nut to 25-35 ft.-lb. (34-47 N•m) torque.

Remove the pivot bolt (both sides).

Figure 50-20-16

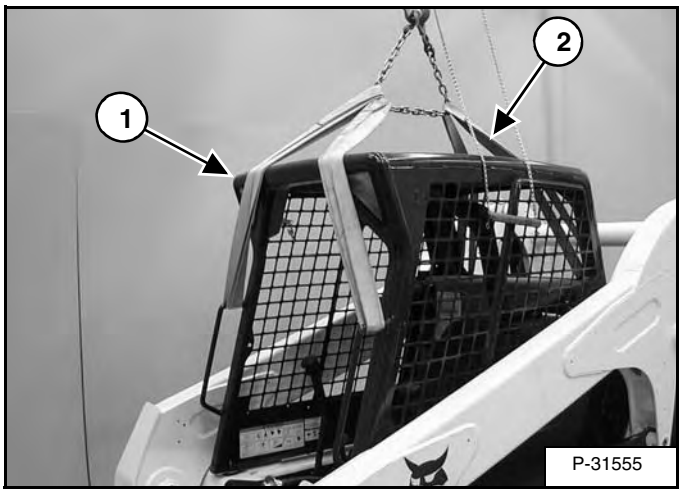


Move the operator cab forward a small amount for clearance at the pivot mounting brackets **[Figure 50-20-16]**.

Install the pivot bolt, washer and nut (Item 1) **[Figure 50-20-16]** in the cab pivot (both sides).

Install the sling under the pivot bolt and pivot of the operator cab **[Figure 50-20-16]**.

Figure 50-20-17

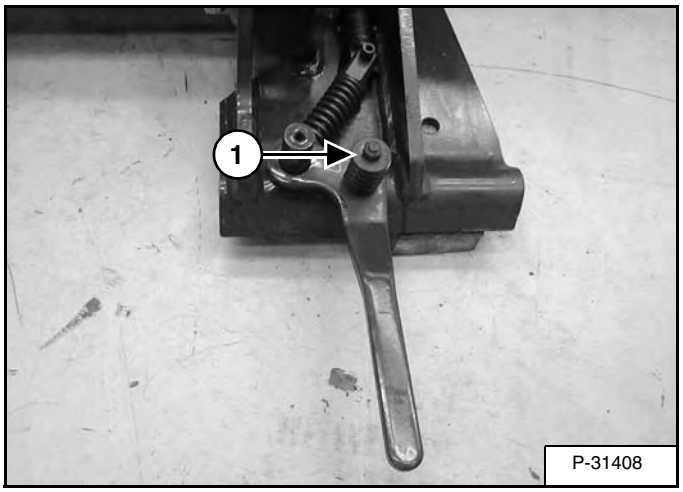


Connect the slings (Items 1 & 2) **[Figure 50-20-17]** to a chain hoist.

Remove the operator cab from the loader **[Figure 50-20-17]**.

Bob-Tach Lever And Wedge

Figure 50-40-9

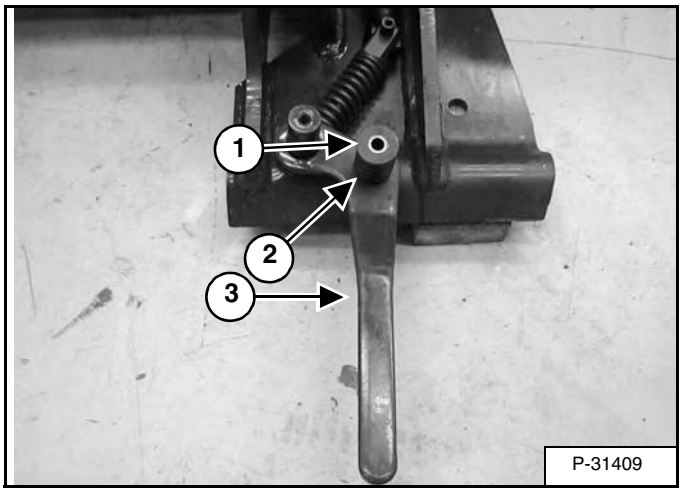


Tilt the Bob-Tach forward, so it is parallel to the floor. Put blocks (approximately 3 inches) under each side of the Bob-Tach **[Figure 50-40-9]**.

Remove the nut (Item 1) **[Figure 50-40-9]** from the Bob-Tach lever pivot bolt.

NOTE: Removal procedure is shown for the left side. Right side procedure is the same.

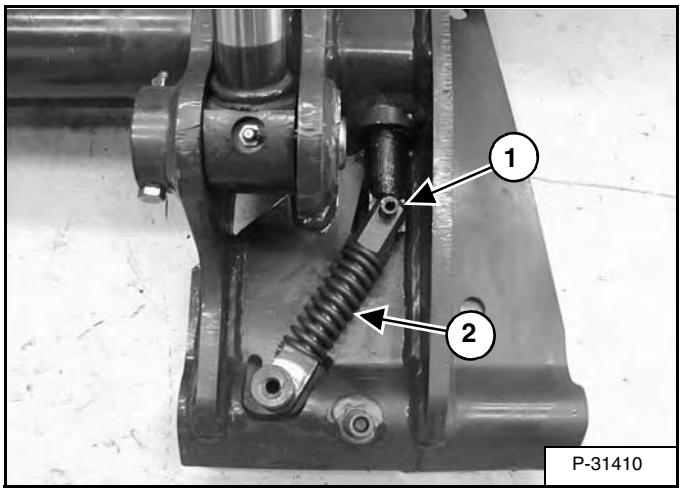
Figure 50-40-10



Remove the lever mounting washer (Item 1), spring (Item 2) and lever (Item 3) **[Figure 50-40-10]**.

Installation: Tighten the nut to 25-28 ft.-lb. (34-38 N•m) torque.

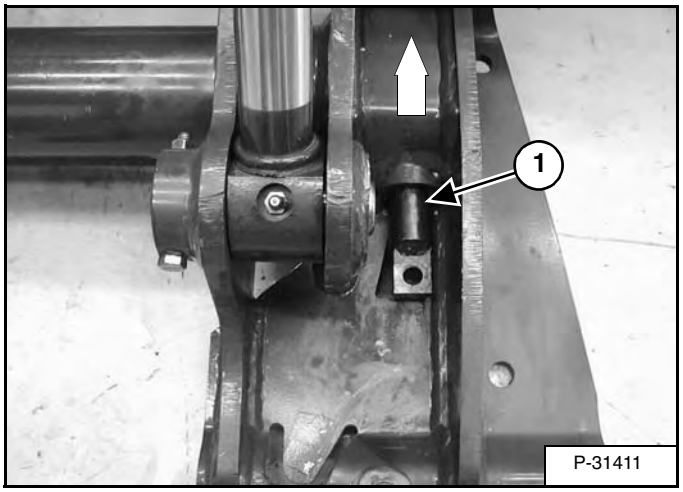
Figure 50-40-11



Use a punch and hammer, remove the roll pin (Item 1) **[Figure 50-40-11]** from the Bob-Tach wedge and spring clevis.

Remove the spring/clevis (Item 2) **[Figure 50-40-11]** assembly.

Figure 50-40-12

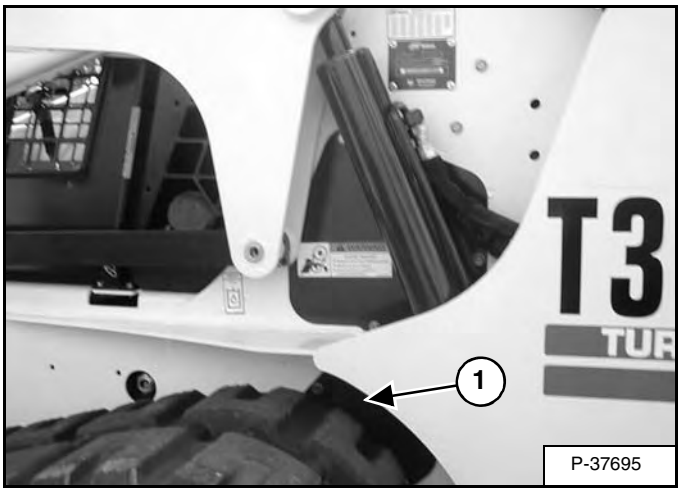


Remove the wedge (Item 1) **[Figure 50-40-12]** out of the bottom of the Bob-Tach

Always replace bent or broken wedges.

Removal And Installation

Figure 50-50-9



⚠ WARNING

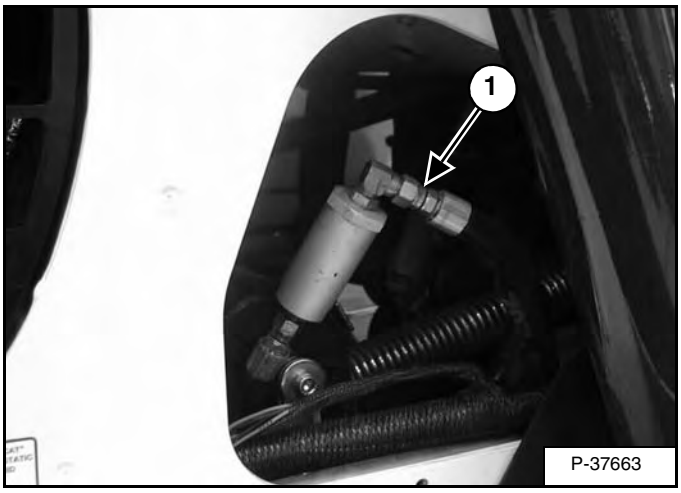
Lift arms must be fully lowered before removing the stabilizer link pins. Even with the approved lift arm support installed, the lift arms and links can suddenly move if both link pins are removed with the lift arms raised.

W-2358-0999

Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

Remove the left side access panel (Item 1) **[Figure 50-50-9]**.

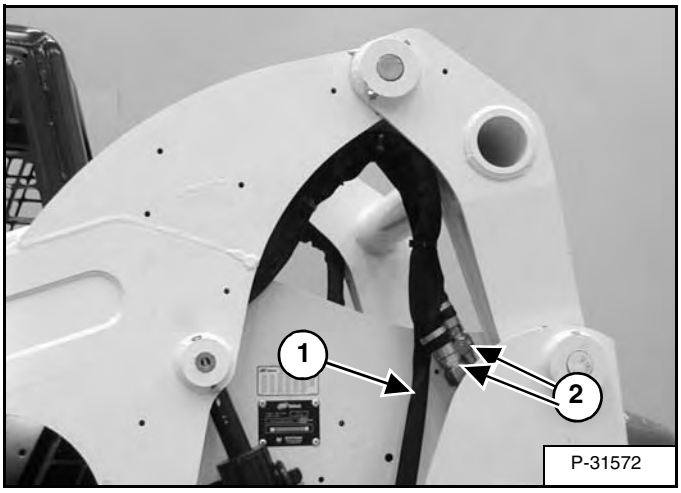
Figure 50-50-10



Disconnect the hydraulic hose (Item 1) **[Figure 50-50-10]** from the filter that goes to the case drain on the auxiliary hydraulic coupler.

Cap and plug the hose and filter fittings.

Figure 50-50-11



Pull the hose (Item 1) **[Figure 50-50-11]** up and out of the upright to allow for lift arm removal.

Mark the auxiliary hydraulic hoses and tubelines for proper installaion.

Disconnect the two auxiliary hydraulic hoses (Item 2) **[Figure 50-50-11]**.

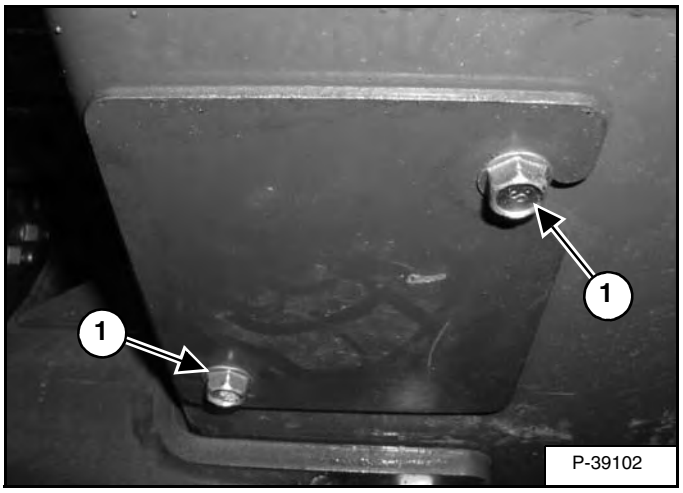
FUEL TANK

Removal And Installation

Place the loader on jackstands. (See Procedure on Page 10-10-1.)

Remove the loader tracks. (See Track Removal And Installation on Page 40-20-3.)

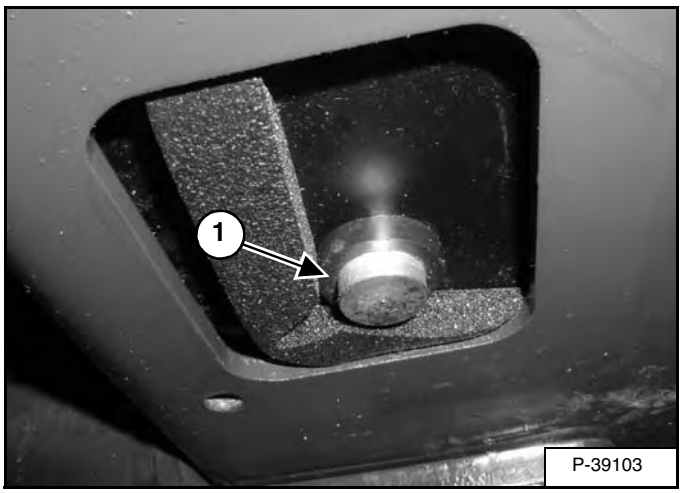
Figure 50-80-1



At the rear, left side of the lower main frame, remove the two mount bolts (Item 1) **[Figure 50-80-1]** from the access cover.

Remove the access cover.

Figure 50-80-2

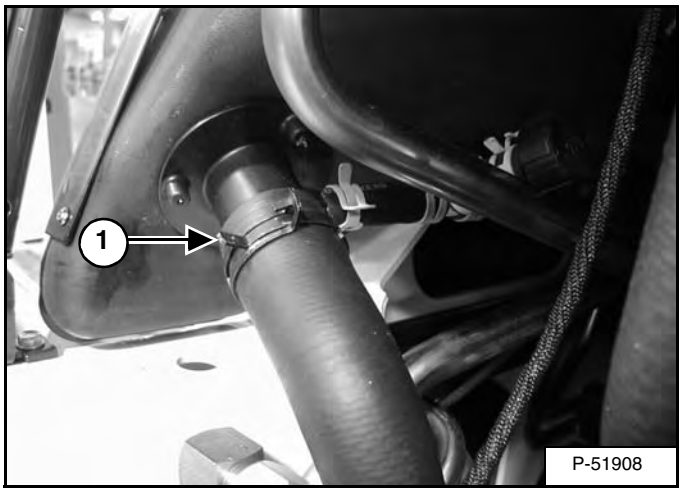


Remove the drain plug (Item 1) **[Figure 50-80-2]**.

Drain the fuel into a container.

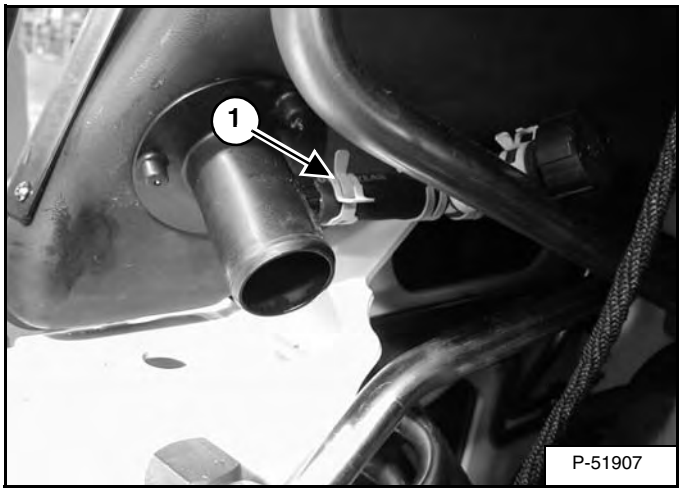
Check the drain plug and replace if necessary.

Figure 50-80-3



Disconnect the fuel fill hose (Item 1) **[Figure 50-80-3]**.

Figure 50-80-4



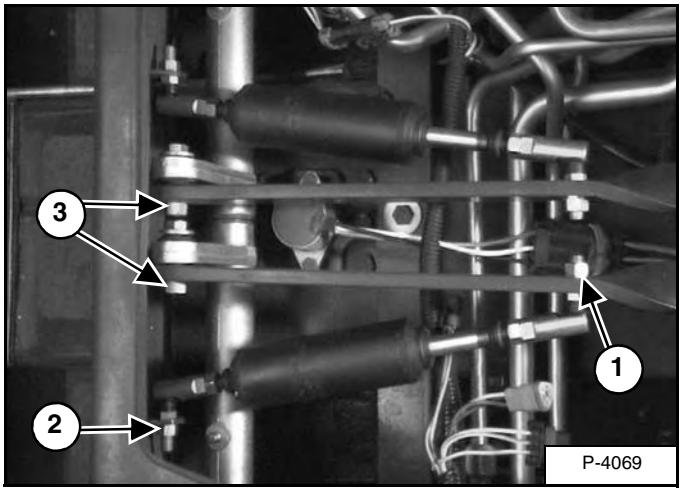
Disconnect the tank vent hose (Item 1) **[Figure 50-80-4]**.

Remove the engine/hydrostatic pump assembly from the loader. (See Removal And Installation on Page 70-70-1.)

CONTROL PANEL (NON-ADJUSTABLE PINTLES) (CONT'D)

Shock Removal And Installation

Figure 50-100-8



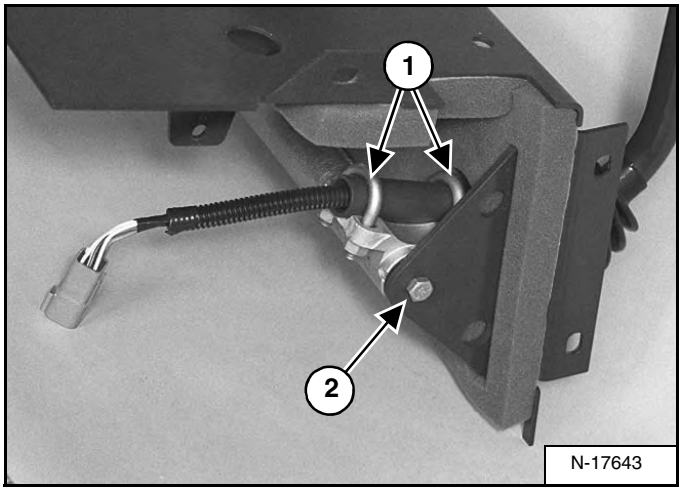
Remove the mounting nut (Item 1) **[Figure 50-100-8]** from the end of the shock connected to the steering linkage.

Remove the mounting nut (Item 2) **[Figure 50-100-8]** from the other end of the shock connected to the bracket on the control panel.

Installation: Tighten the mounting bolts to 25-28 ft.-lb. (34-38 N•m) torque.

Shaft Removal And Installation

Figure 50-100-9



NOTE: The steering shaft can be removed without removing the control panel from the loader. Photo [Figure 50-100-9] shows the control panel removed for clarity purpose only.

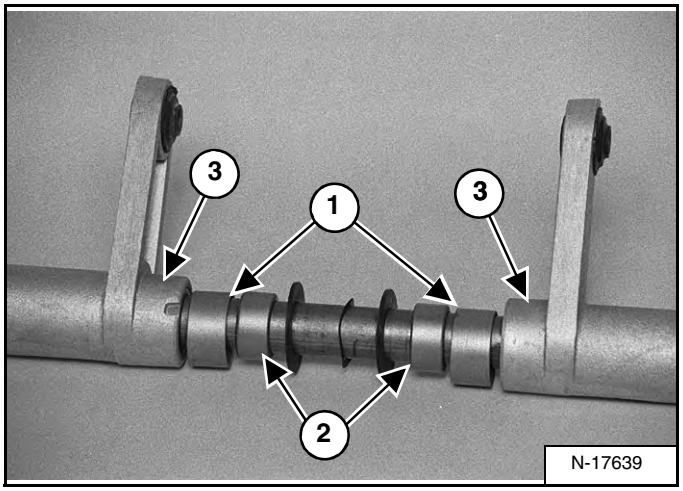
Loosen both U-bolts (Item 1) **[Figure 50-100-9]** at the steering lever (both sides).

Remove the steering cross shaft mounting bolts (Item 2) **[Figure 50-100-9]** (both sides).

Installation: Tighten the mounting bolts to 180-200 in.-lb. (21-23 N•m) torque.

Shaft Disassembly And Assembly

Figure 50-100-10



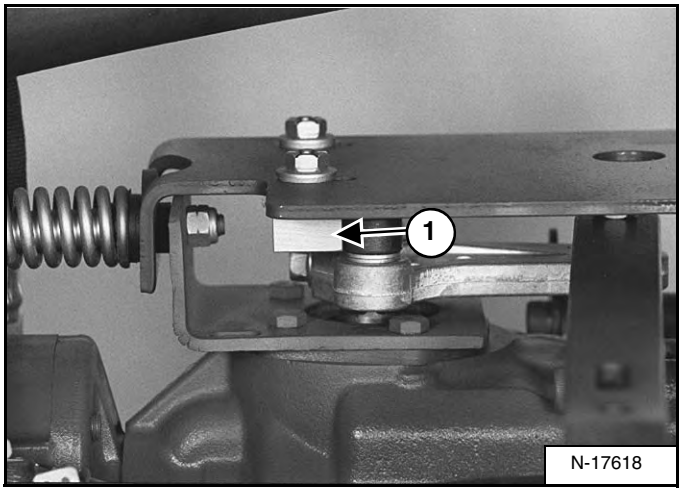
Remove the steering cross shaft from the control panel.

Disassemble the right and left steering shafts from the cross shaft assembly.

NOTE: Some loaders may have a sleeve (Item 1), between the bearing (Item 2) and the bell crank (Item 3) [Figure 50-100-10].

Linkage Neutral Adjustment (Cont'd)

Figure 50-100-39



Adjust the right side centering block (Item 1) **[Figure 50-100-39]**.

Move the right side steering lever until the tires do not turn (neutral position).

Move the right side centering block to the left until it contacts both pintle cams and the steering lever is still in the neutral position **[Figure 50-100-39]**.

Tighten the bolts to 25-28 ft.-lb. (34-38 N•m) torque.

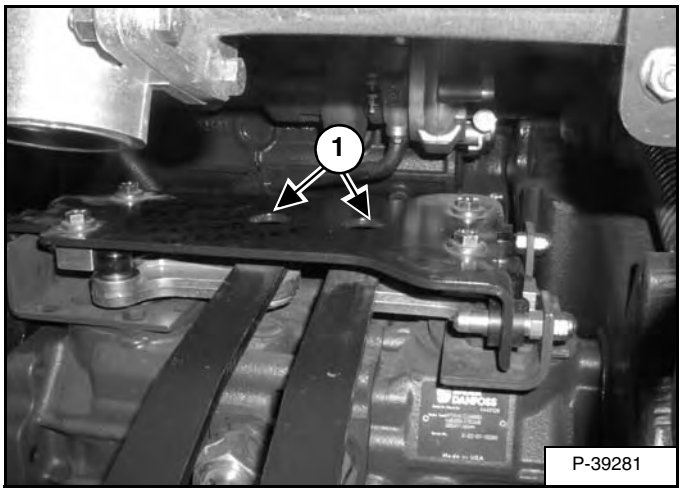
Test both levers by moving them backward and forward and letting them return to neutral by the return spring force.

If the levers do not return to neutral and the tires do not come to a complete stop, repeat the adjustment procedure again.

Stop the engine.

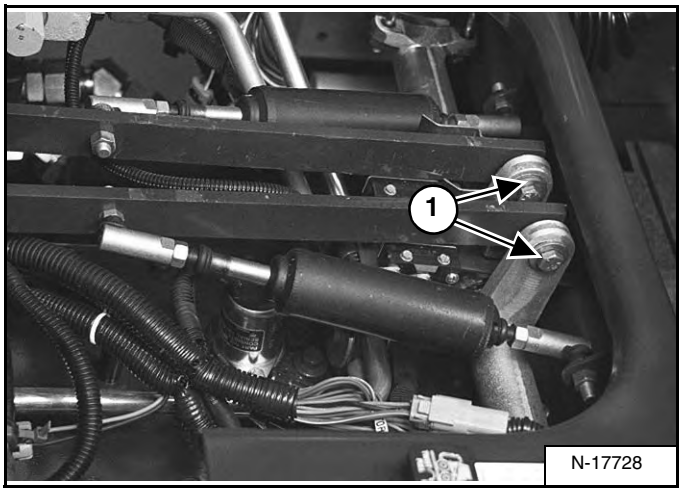
Remove the remote start tool from the loader.

Figure 50-100-40



Tighten the two linkage bar bolts to 221-25 ft.-lb. (28-33 N•m) torque, then tighten the two nuts to 21-25 ft.-lb. (28-33 N•m) torque at the pintle levers (Items 1) **[Figure 50-100-40]**.

Figure 50-100-41



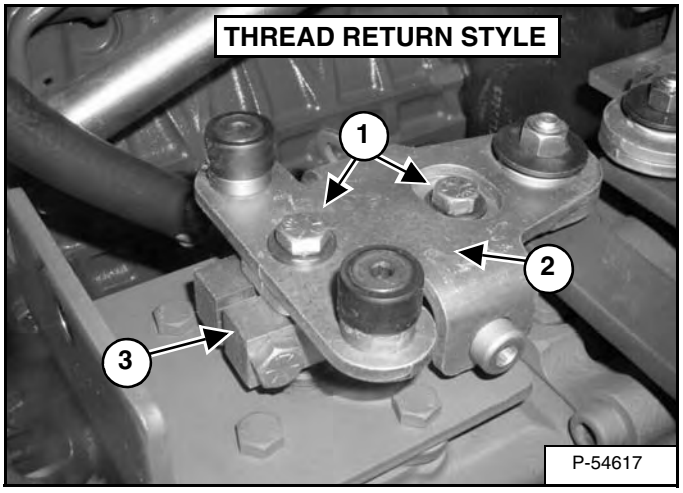
Tighten the two linkage bar bolts to 21-25 ft.-lb. (28-33 N•m) torque, then tighten the two nuts to 21-25 ft.-lb. (28-33 N•m) torque at the steering cross shaft (Item 1) **[Figure 50-100-41]**.

Remove the loader from the jackstands.

CONTROL PANEL (ADJUSTABLE PINTLES) (CONT'D)

Linkage Removal And Installation (Cont'd)

Figure 50-101-20

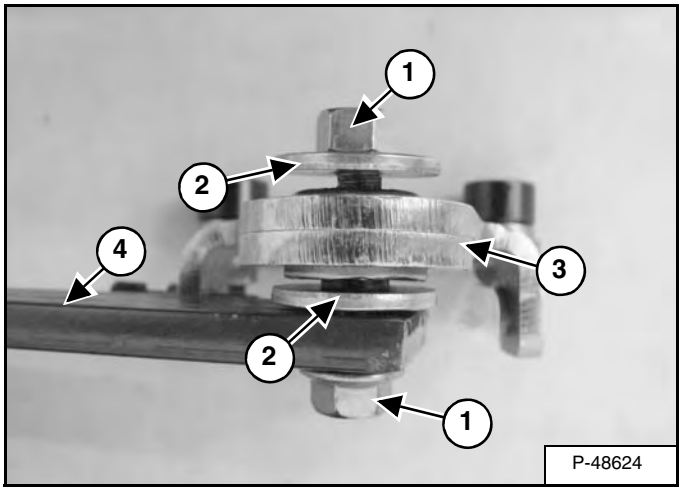


Remove the bolts and washers (Item 1) **[Figure 50-101-20]** from the pintle.

Installation: Tighten the bolts to 35-40 ft.-lb. (47,5-54,2 N•m) torque.

Remove the pintle arm (Item 2) from the pintle base (Item 3) **[Figure 50-101-20]**.

Figure 50-101-21

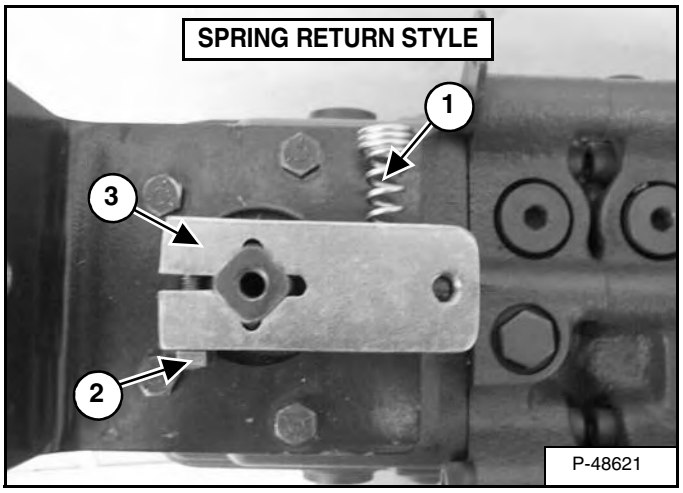


Remove the bolt and nut (Item 1) **[Figure 50-101-21]**.

Inspect the washers (Item 2), pintle arm (Item 3) and the steering control lever (Item 4) for damage and replace as needed **[Figure 50-101-21]**.

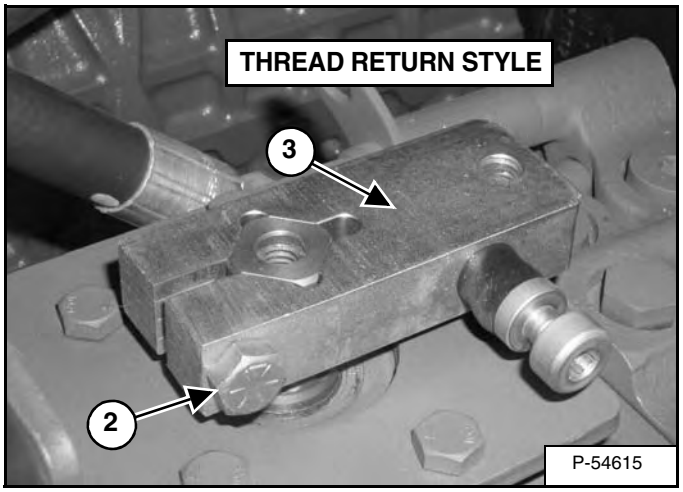
NOTE: The washers (Item 2) [Figure 50-101-21] are hardened, and should only be replaced through Bobcat Parts.

Figure 50-101-22



Remove and inspect the spring (Item 1) **[Figure 50-101-22]**. **Spring return style only.**

Figure 50-101-23

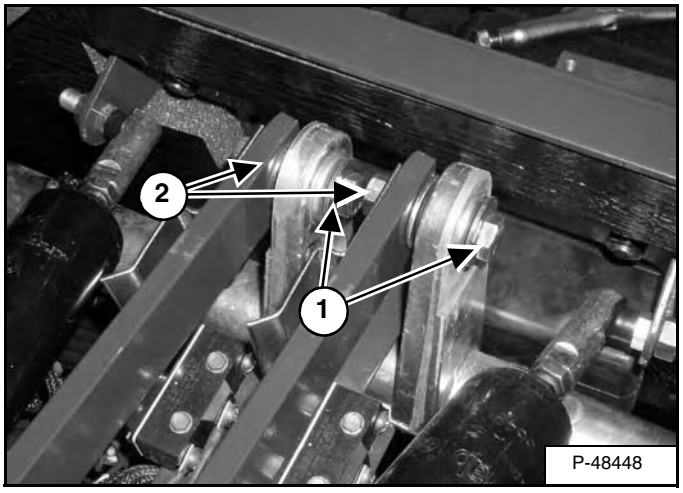


Loosen the bolt (Item 2) **[Figure 50-101-22]** and **[Figure 50-101-23]**.

Remove the pintle base (Item 3) **[Figure 50-101-22]** and **[Figure 50-101-23]**.

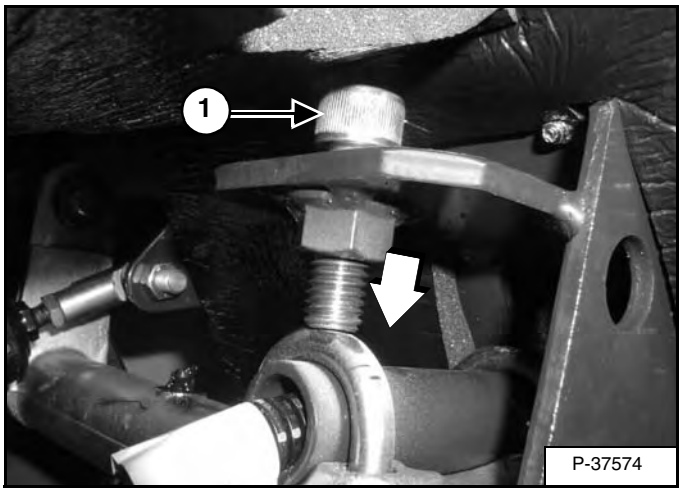
Linkage Travel Adjustment (Cont'd)

Figure 50-101-47



Tighten the two bolts and nuts (Items 1 & 2) **[Figure 50-101-47]** to 35 -40 ft.-lb. (47,5-54,2 N•m) torque at th e steering bell cranks.

Figure 50-101-48



Push the control lever to full stroke and turn drift adjustment bolt (Item 1) **[Figure 50-101-48]** in until it touches the U-bolt holding the control lever.

Repeat steps on the other control lever.

Drive the loader forward and check for drift.

The traditional benchmark for drift is less than 10 ft. of “drift” in 100 ft. of travel distance.

If the dr ift is excessive to the left, turn the r ight adjustment bolt (Item 1) **[Figure 50-101-48]** in.

If the dr ift is excessive to the right, turn the left adjustment bolt in.

NOTE: When using the drift adjustment bolts, only adjust one bolt for each test drive.

In addition, only move each bolt a maximum of one turn for each test drive. This will help prevent over-correction and excessive reduction in travel speed.

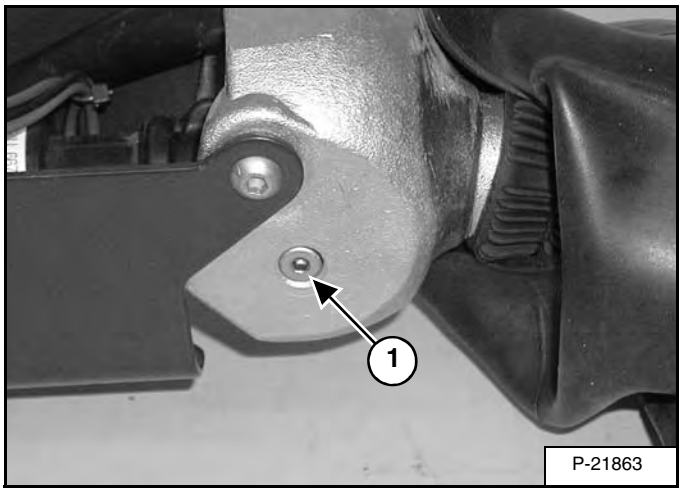
Drift adjustment is for forward travel only.

Adjust the drift to an acceptable level.

Re-install the plug in the drift bolt access hole after adjustment.

Handle Sensor Removal And Installation (Cont'd)

Figure 50-111-9



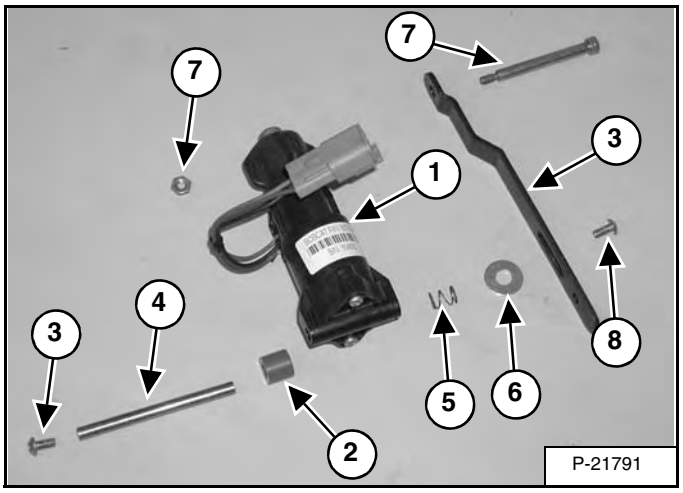
EARLIER VERSION HAND CONTROLS ONLY:

Remove the top mounting bolt (Item 1) **[Figure 50-111-9]**from the handle sensor.

NOTE: Be careful not to loose the recessed nut on the other side of the handle.

Installation: Tighten bolt to 32-38 in.-lb. (3,6-4,3 N•m) torque.

Figure 50-111-10

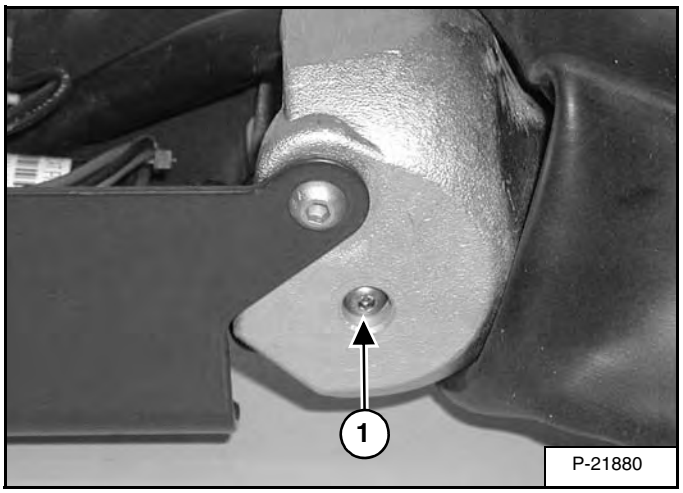


Remove the handle sensor (Item 1) **[Figure 50-111-10]** from the handle assembly.

NOTE: The handle sensor (Item 1) [Figure 50-111-10] can only be replaced as a complete assembly.

Check the spacer (Item 2) and screws (Item 3), mounting pin (Item 4), spring (Item 5), washer (Item 6), bolt/nut (Item 7), stop strap (Item 8) **[Figure 50-111-10]** and replace as needed.

Figure 50-111-11



CURRENT VERSION HAND CONTROLS:

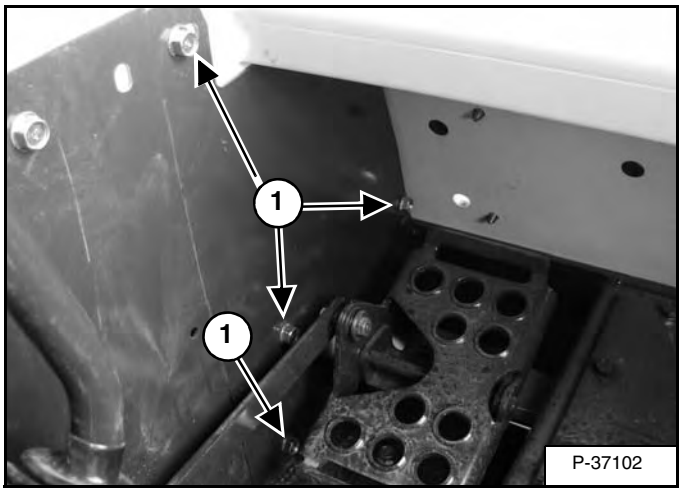
Remove one of the two mounting screws (Item 1) **[Figure 50-111-11]** from the handle sensor.

Installation: Tighten bolt to 32-38 in.-lb. (3,6-4,3 N•m) torque.

INSIDE ACCESS PANEL

Removal And Installation (Left)

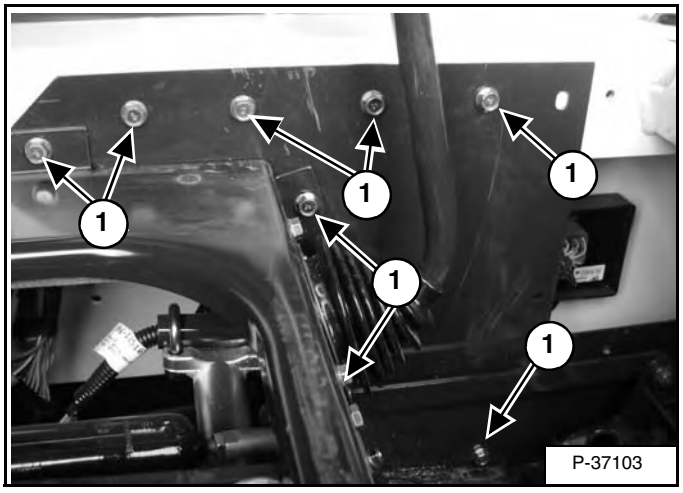
Figure 50-120-1



Remove the four mounting bolts (Item 1) **[Figure 50-120-1]** from the front access panel.

Remove the front access panel from the loader.

Figure 50-120-2

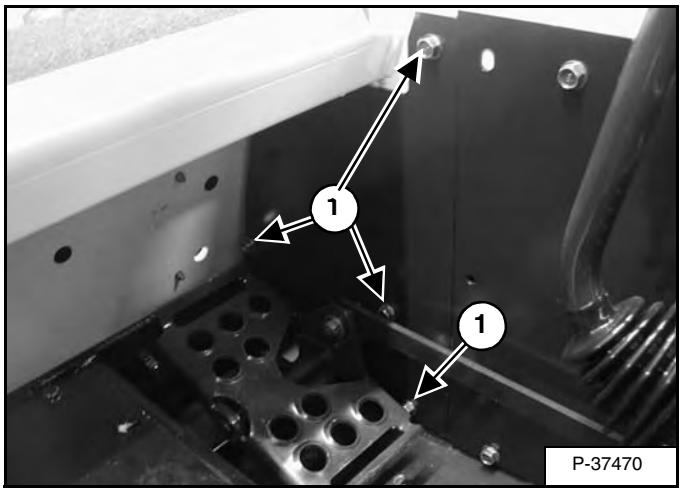


Remove the eight mount bolts (Item 1) **[Figure 50-120-2]** from the rear access panel.

Remove the rear access panel from behind the steering panel, remove the panel from the loader.

Removal And Installation (Right)

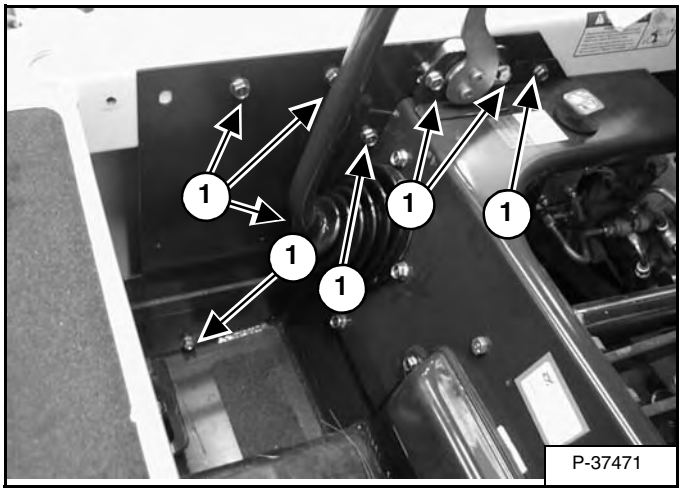
Figure 50-120-3



Remove the four mounting bolts (Item 1) **[Figure 50-120-3]** from the front access panel.

Remove the front access panel from the loader.

Figure 50-120-4



Remove the eight mount bolts (Item 1) **[Figure 50-120-4]** from the rear access panel.

Remove the throttle lever assembly from the ac cess panel.

Remove the rear access panel from behind the steering panel, remove the panel from the loader.

WIRING SCHEMATIC (Without Option)

T300 (S/N 525411001 AND ABOVE)
(S/N 525511001 AND ABOVE)
(PRINTED OCTOBER 2003)
V-0407

Printable Version Click Here

RED = RED
RNG = ORANGE
BLK = BLACK
LBL = LIGHT BLUE
DBL = DARK BLUE
LGN = LIGHT GREEN
DGN = DARK GREEN
YEL = YELLOW
PNK = PINK
WHT = WHITE
BRN = BROWN
TAN = TAN
PUR = PURPLE
GRY = GRAY

UNSWITCHED POWER 1000-1999 RED
FUSED, UNSWITCHED POWER 1000-1999 RED/WHT
SWITCHED POWER 1000-1999 RNG
GROUND 2000-2999 BLK
MONITORING 3000-3999 LBL
HYDRAULIC 4000-4999 LGN
ATTACHMENT CONTROLS 5000-5999 YEL
LIGHTS 6000-6999 PNK
ACCESSORIES 7000-7999 WHT
ENGINE 8000-8999 TAN
COMMUNICATION 9000-9999 PUR

WIRES CONNECT BY LETTER ACROSS CONNECTORS

SOME CONNECTOR BODIES NOT SHOWN FOR DRAWING CLARITY

GROUNDS

HYDRAULIC FILTER 6717247

TAILGATE / WORKLIGHTS 6716419

MAINFRAME HARNESS 6730292

FUSE / RELAY CENTER

RELAY GROUNDS 2000-2060 ARE CONNECTED IN SERIES

CAB 6727178

Printed in U.S.A.

V-0407 (10-8-03)

Troubleshooting

The following troubleshooting chart is provided for assistance in locating and correcting BICS system problems. It is recommended that these procedures be done by authorized Bobcat Service Personnel only.

⚠ WARNING

Instructions are necessary before operating or servicing machine. Read and understand the Operation & M aintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0903

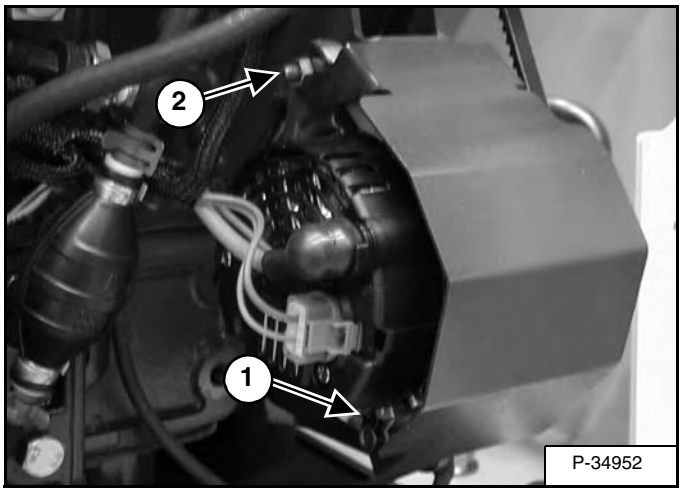
PROBLEM	CAUSE
Battery will not take a charge.	2, 3, 4, 5
Alternator will not charge.	1, 4, 5
Starter will not turn the engine.	2, 3, 4, 6, 7, 8, 9

KEY TO CORRECT THE CAUSE
1. Alternator belt is loose or damaged.
2. Battery connections are dirty or loose.
3. Battery is damaged.
4. The cable & wire connection are not making a good contact.
5. The alternator is damaged.
6. The engine is locked.
7. The starter is damaged.
8. The wiring or the solenoid is damaged.
9. Check the fuses.

ALTERNATOR

Adjusting The Alternator Belt

Figure 60-30-1



Stop the engine.

Raise the operator cab. ((See Raising The Operator Cab on Page 10-30-1.)

Loosen the alternator adjustment bolt (Item 1) **[Figure 60-30-1]**.

At the top side of t he altenator, loosen the alternator mounting bolt (Item 2) **[Figure 60-30-1]**.

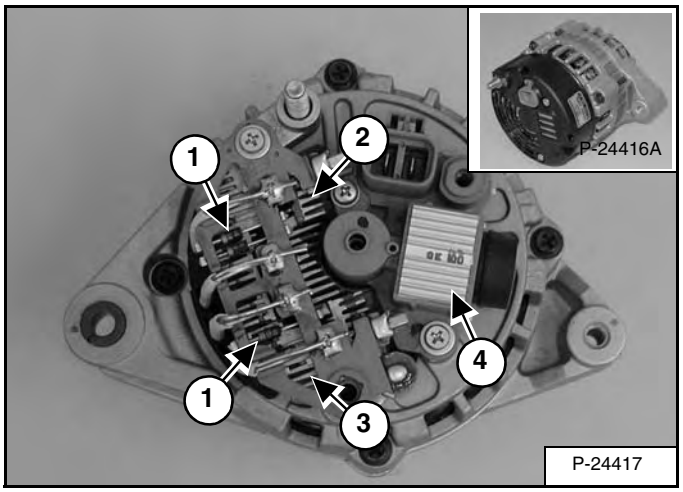
Move the alternator until the belt has 5/16 inch (8,0 mm) movement at the middle of the belt span with 15 lb. (66 N) of force.

Tighten the adjustment bolts and mounting bolt.

Lower the operator cab. (See Lowering The Operator Cab on Page 10-30-2.)

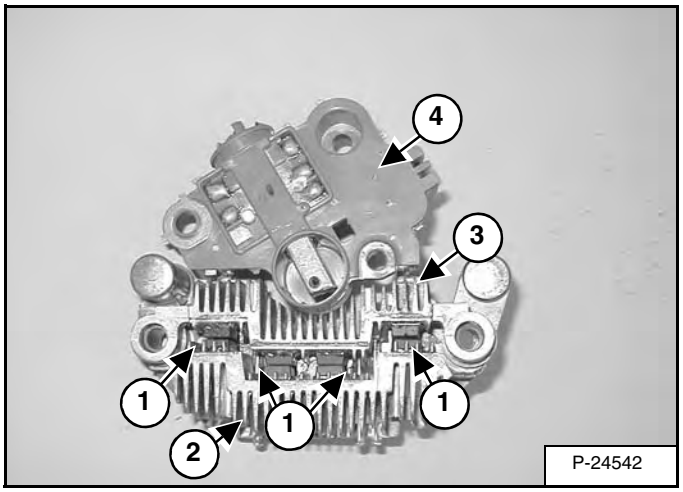
Alternator Identification

Figure 60-30-2



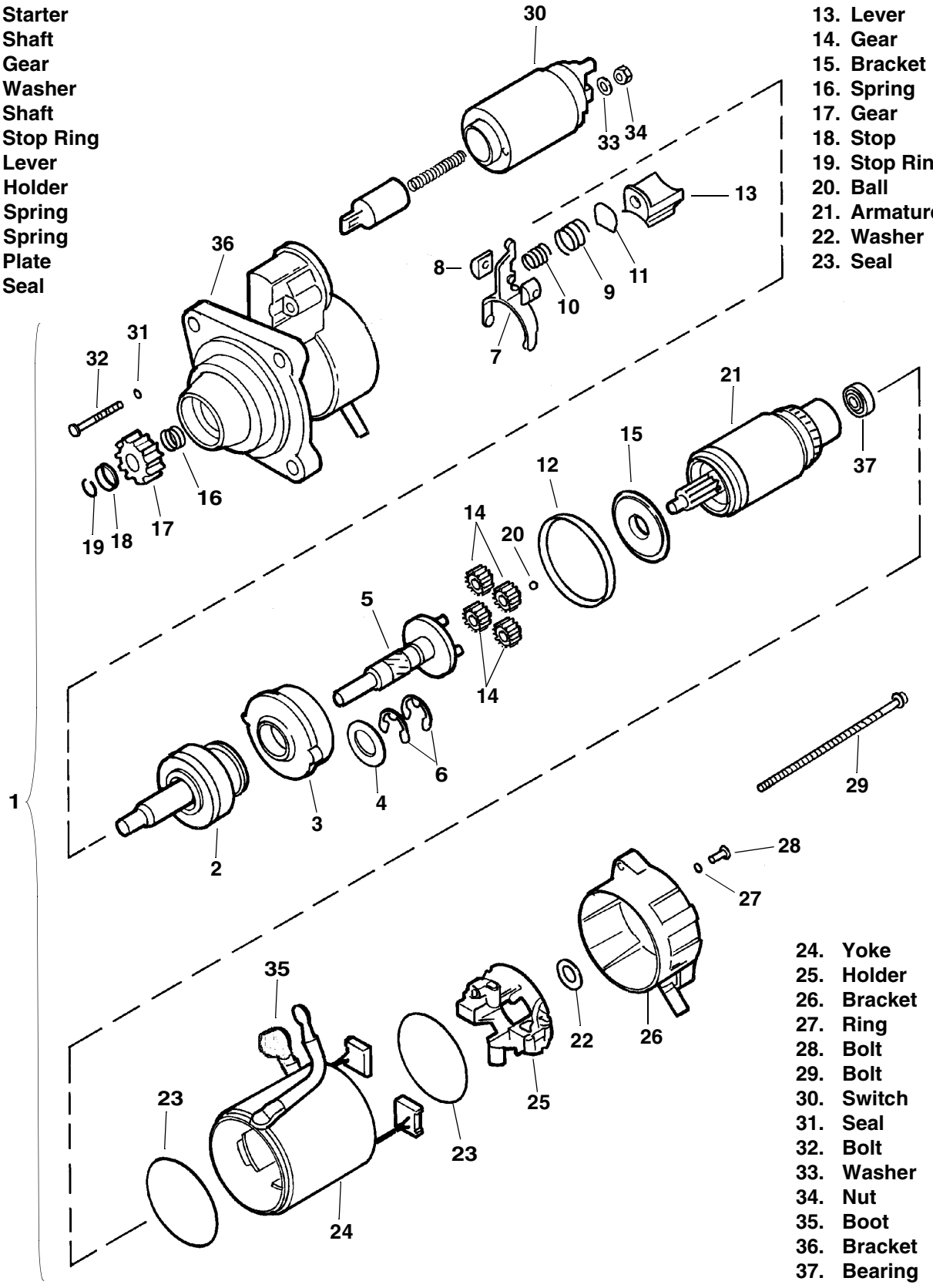
The black cover has been removed to show alternator rectifier/regulator assembly. The alternator contains field coil diodes (low current) (Item 1) **[Figure 60-30-2]**, grounded heat sink (Item 2) **[Figure 60-30-2]** & **[Figure 60-30-3]**, B+ power heat sink (Item 3) **[Figure 60-30-2]** & **[Figure 60-30-3]**, regulator (Item 4) **[Figure 60-30-2]** & **[Figure 60-30-3]**, and four pair of large power diodes (Item 1) **[Figure 60-30-3]** on the underside of the rectifier.

Figure 60-30-3



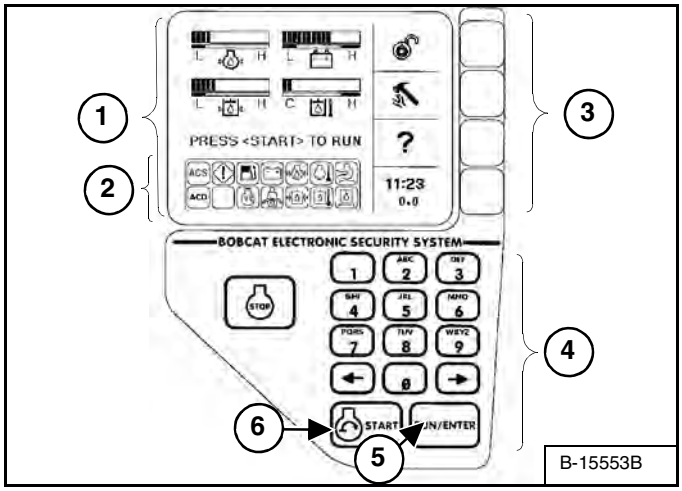
NOTE: The rectifier/regulator assembly has been removed from the alternator and flipped over for component identification [Figure 60-30-3].

Parts Identification



Right Panel (Deluxe) (With Keyless Start)

Figure 60-50-3



The right instrument panel shown **[Figure 60-50-3]** is the Deluxe Panel.

1. Display Panel: The Display Panel is where all system setup, monitoring, troubleshooting, and error conditions are displayed.

2. Function Icons: The lower left area of the Deluxe Panel has the same Icons as the Standard Panel (See Right Panel (Standard) (With Key Switch) on Page 60-50-2.) These Icons are only visible when the monitoring system has detected an error.

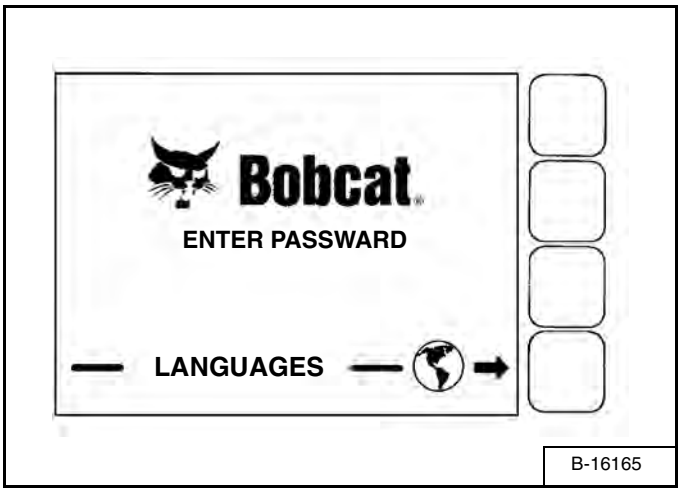
3. Selection Buttons: The four Selection Buttons allow you to select items from the Display Panel and scroll through screens.

4. Keypad: The numeric keypad (Item 4) **[Figure 60-50-3]** has two functions:

   (a) To enter a number code (password) to allow starting the engine (Keyless Start).

   (b) To enter a number as directed for further use of the Display Panel.

Figure 60-50-4



The first screen you will see on your new loader will be as shown in **[Figure 60-50-4]**.

When this screen is on the display you can enter the password and start the engine or change the Display Panel setup features.

NOTE: Your new loader (with Deluxe Instrument Panel) will have a Owner Password. Your dealer will provide you with this password. Change the password to one that you will easily remember to prevent unauthorized use of your loader. (See ELECTRICAL SYSTEM SERVICE MANUAL.) Keep your password in a safe place for future needs.

Start Engine: Use the Keypad to enter the numbers (letters) of your password and press the RUN / ENTER key (Item 5) **[Figure 60-50-3]**.

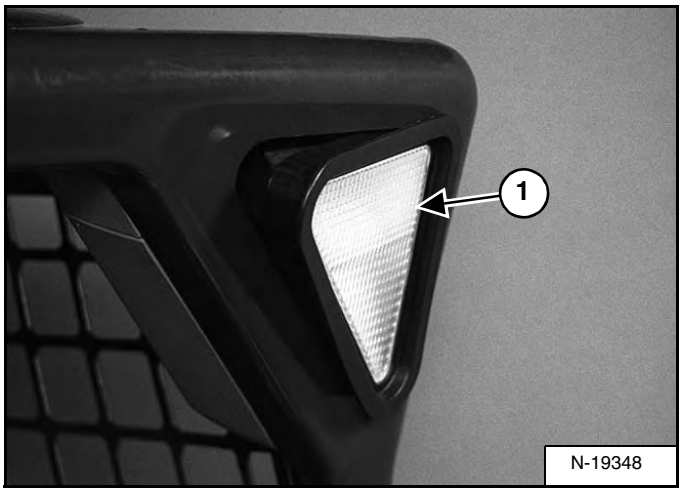
Press and hold the START Button (Item 6) **[Figure 60-50-3]** until the engine starts.

Change Language: Press the Selection Button at the end of the arrow **[Figure 60-50-4]** to go to the next screen.

LIGHTS

Front Removal And Installation

Figure 60-60-1

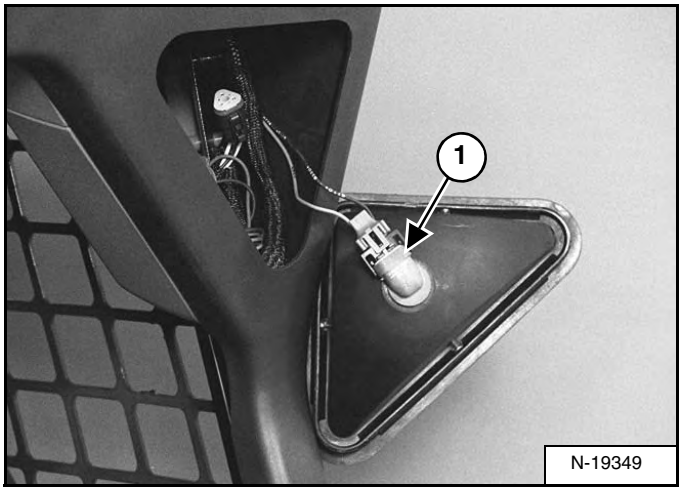


Open the rear door.

Disconnect the negative(-) cable from the battery. ((See Removal And Installation on Page 60-20-1.)

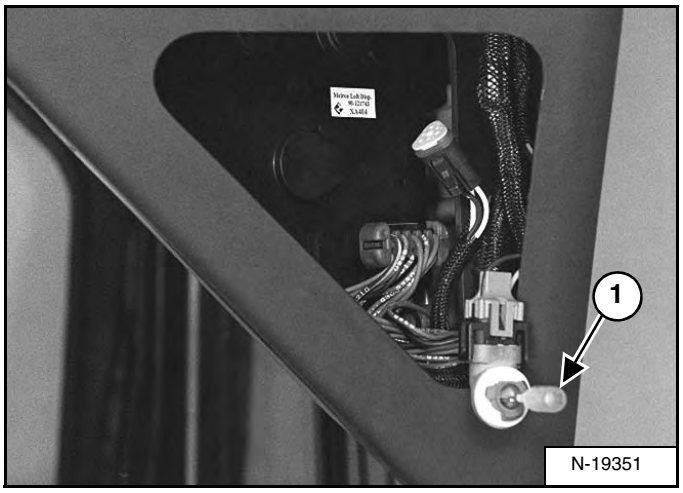
Remove the light housing (Item 1) **[Figure 60-60-1]** from the operator cab.

Figure 60-60-2



Remove the bulb assembly (Item 1) **[Figure 60-60-2]** from the light housing by turning bulb assembly a 1/4 turn.

Figure 60-60-3

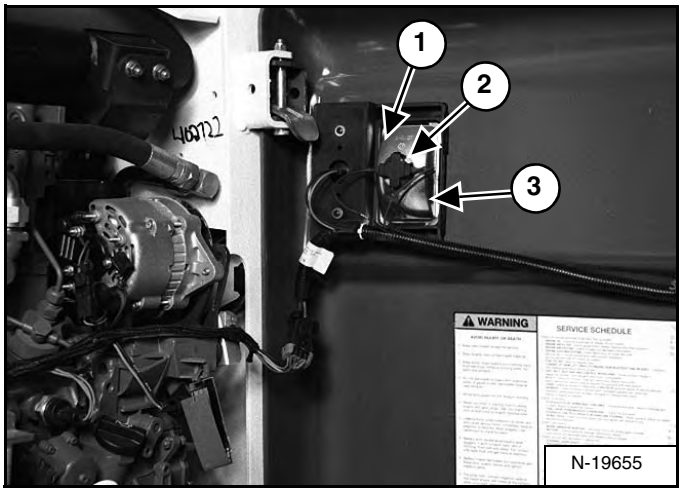


Remove the bu lb (Item 1) **[Figure 60-60-3]** from the socket.

Reverse the above procedure to install the bulb.

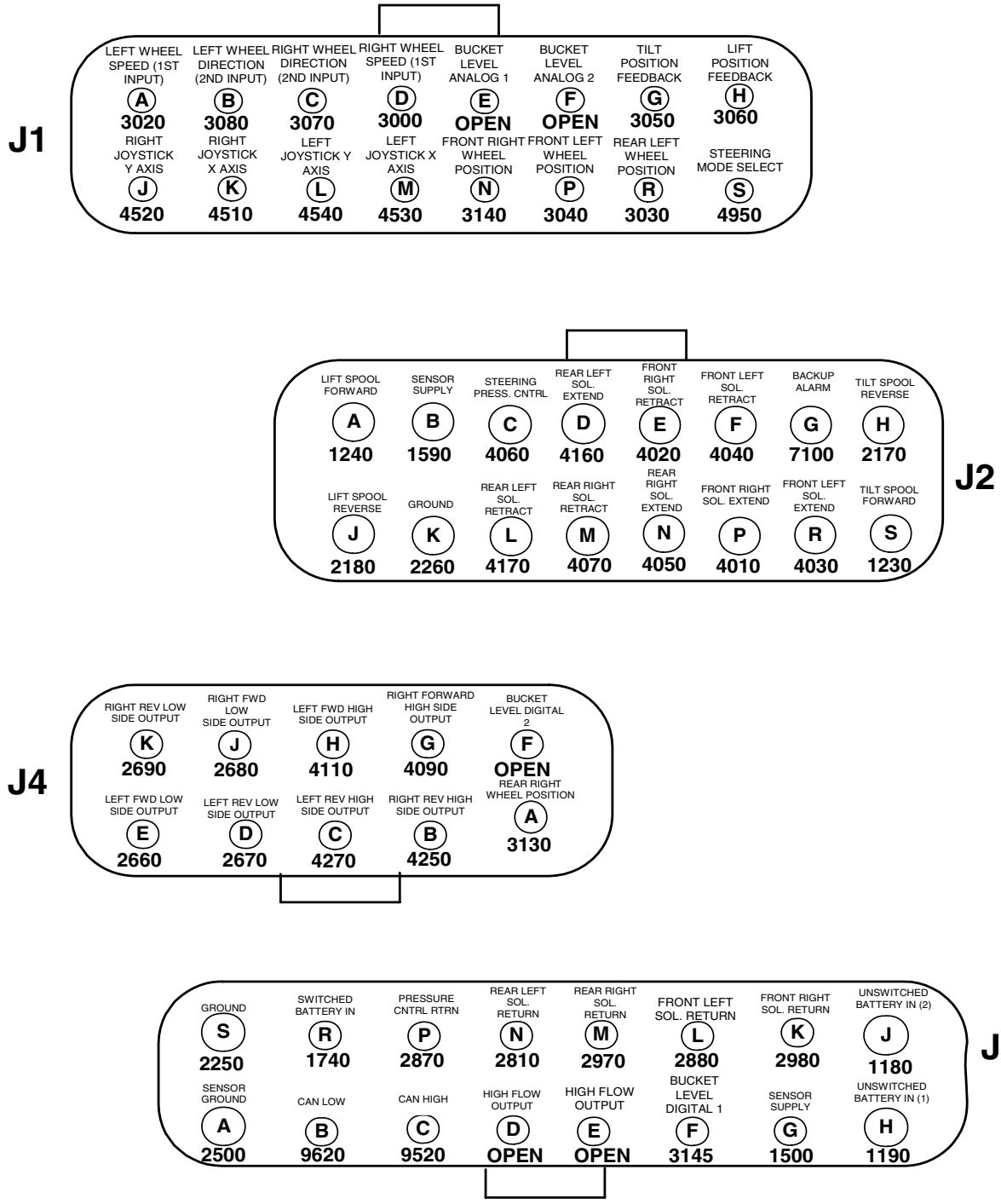
Rear Removal And Installation

Figure 60-60-4



Remove the bulb assembly (Items 1 & 2) from the light housing (Item 3) **[Figure 60-60-4]** by turning bulb assembly a 1/4 turn.

Identification Chart (Cont'd)



Connectors are Viewed From the Wire Side.

V-0111 (6-14-01)

V-0111

Number Codes List (Cont'd)

CODE		CODE	
39-04	Left joystick no communication to Bobcat controller	50-38	Front reverse error OFF
		50-39	Rear PWM error on
40-04	Right joystick no communication to Bobcat controller	50-41	Rear PWM no signal
		50-42	Rear PWM not calibrate
44-02	Horn error ON	50-43	Rear forward error ON
44-03	Horn error OFF	50-44	Rear forward error OFF
		50-45	Rear reverse error ON
45-02	Right blinker error ON	50-46	Rear reverse error OFF
45-03	Right blinker error OFF	50-47	Two speed error OFF
		50-48	Two speed error ON
46-02	Left blinker error ON	50-49	Brake solenoid error ON
46-03	Left blinker error OFF	50-50	Brake solenoid error OFF
		50-51	Brake solenoid no signal
47-21	8 volt sensor supply out of range high	50-52	Brake light relay error ON
47-22	8 volt sensor supply out of range low	50-53	Brake light relay error OFF
		50-54	Differential lock error ON
48-02	Front light relay error ON	50-55	Differential lock error OFF
48-03	Front light relay error OFF	50-56	CAN communications fault
		50-57	Drive controller not calibrated
49-02	Rear light relay error ON		
49-03	Rear light relay error OFF	50-59	Front speed sensor missing pulses
		50-60	Rear speed sensor missing pulses
50-01	Travel pedal out of range high		
50-02	Travel pedal out of range low		
50-03	Travel pedal not calibrated	50-63	Front angle sensor not calibrated
50-04	Brake Pedal out of range high		
50-05	Brake Pedal out of range low		
50-06	Brake Pedal not calibrated	50-66	Rear angle sensor not calibrated
50-07	Drive selector switch no signal	50-67	Front forward no signal
50-08	Drive selector switch multiple inputs	50-68	Front reverse no signal
50-09	Front wheel speed sensor out of range high	50-69	Rear forward no signal
50-10	Front wheel speed sensor out of range low	50-70	Rear reverse no signal
50-11	Rear wheel speed sensor out of range high	50-99	In calibration mode
50-12	Rear wheel speed sensor out of range low		
50-13	Front wheel speed sensor no signal	60-21	Rear auxiliary control out of range high
50-14	Rear wheel speed sensor no signal	60-22	Rear auxiliary control out of range low
50-15	Dual wheel speed sensor fault	60-23	Rear auxiliary control not returning to neutral
50-24	Battery voltage over voltage		
50-27	5V sensor #1 over voltage	62-04	Load moment monitoring in error
50-28	5V sensor #1 under voltage		
50-29	5V sensor #2 over voltage	63-05	Short to battery
50-30	5V sensor #2 under voltage	63-06	Short to ground
50-31	Front PWM error on		
50-33	Front PWM no signal	64-02	Switched power relay error ON
50-34	Front PWM not calibrate	64-03	Switched power relay error OFF
50-35	Front forward error ON		
50-36	Front forward error OFF		
50-37	Front reverse error ON		

TRACTION LOCK

Troubleshooting Chart

The following troubleshooting chart is provided for assistance in locating and correcting BICS™ system problems. It is recommended that these procedures be done by authorized Bobcat Service Personnel only.

⚠ WARNING

Check for correct function after adjustments, repairs or service. Failure to make correct repairs or adjustments can cause injury or death.

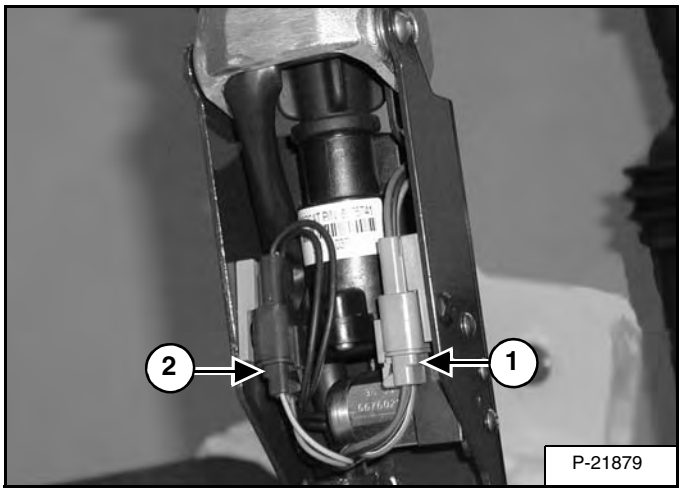
W-2004-1285

PROBLEM	SOLUTION #
Brake stays engaged.	1, 2, 3, 4, 5, 6, 7,11
Intermittent activation of brake.	8, 9, 10,11

SOLUTION SUGGESTIONS
1. Make sure brake swtch is not engaged.
2. Check the dash display for an error code. (See Electrical System Service Manual.)
3. If all lights indicate the brake should be released, but it doesn't, check the brake 30 amp fuse.
4. When checking fuse, also check other fuses. Check the fuse block for correct orientation and location of fuses. (See ELECTRICAL SYSTEM INFORMATION on Page 60-10-1.)
5. To test the solenoid, the coil should be about 9.8 ohms.
6. Check brake solenoid wiring voltage, solenoid wiring should read 12 volts.
7. Check the brake solenoid mounting nut for correct torque.
8. Check wire connections for loose connector body.
9. Check for loose or bent pins in connectors.
10. Check for loose spade connectors in fuse holder.
11. Check the flywheel RPM sensor and wiring.

Switch Handle Removal

Figure 60-130-12

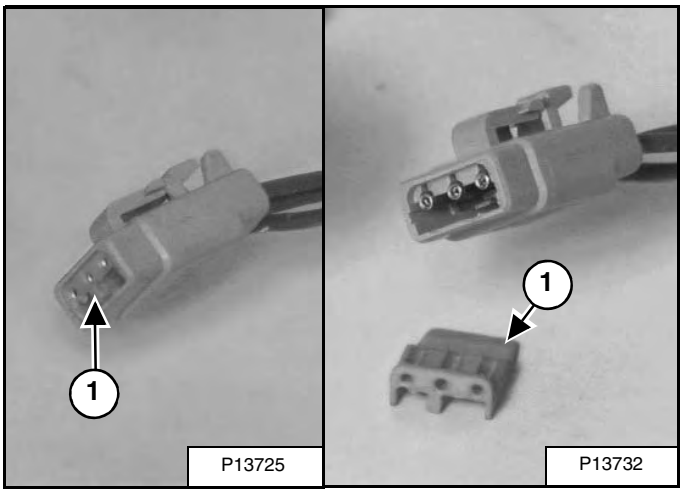


NOTE: Switch handle can be removed and installed while in loader.

Disconnect the harness connector (Item 1) **[Figure 60-130-12]** from the handle sensor connector.

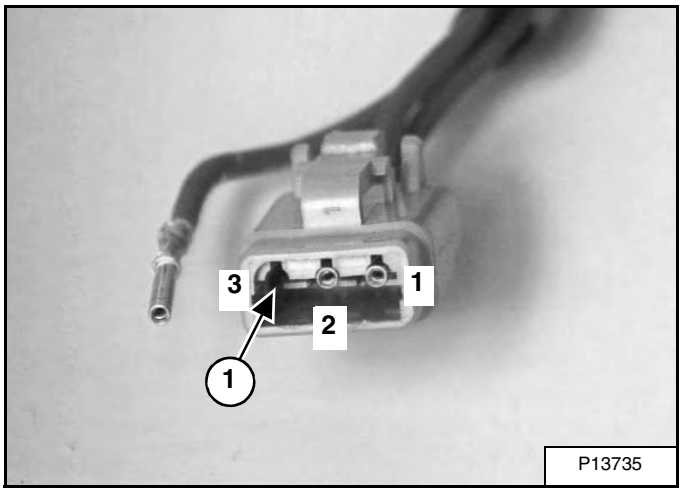
Disconnect the harness connector (Item 2) **[Figure 60-130-12]** from the handle lock solenoid connector.

Figure 60-130-13



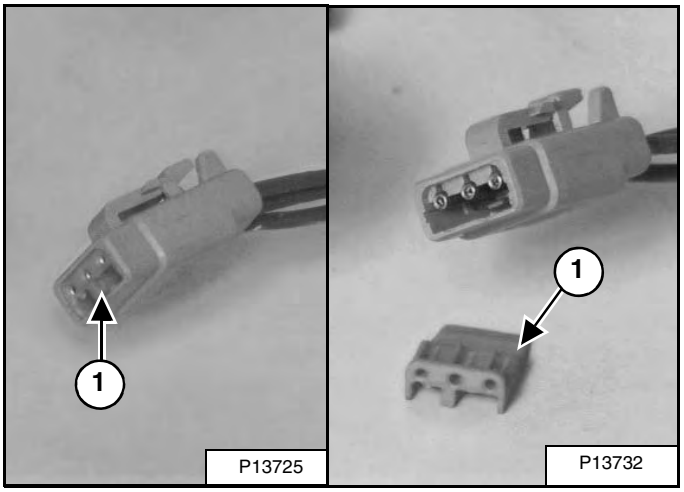
Remove the wedge (Item 1) **[Figure 60-130-13]** from the harness connector (Gray) that connects to the handle sensor connector.

Figure 60-130-14



Using a pointed tool, press down on the tab (Item 1) **[Figure 60-130-14]** and pull the wire from the connector.

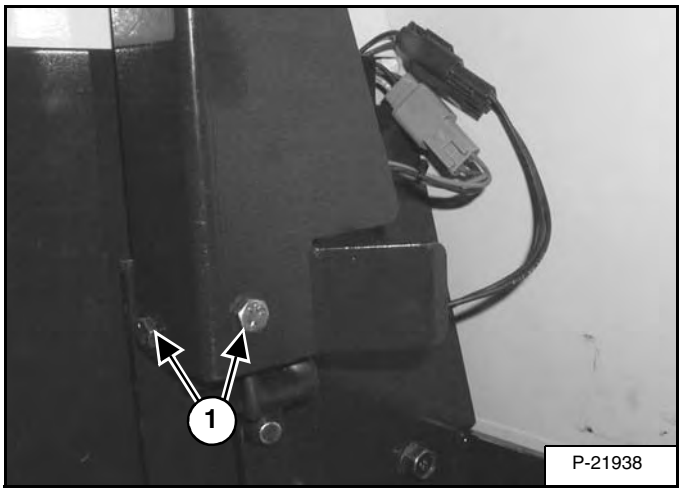
Figure 60-130-15



Remove the wedge (Item 1) **[Figure 60-130-15]** from the harness connector (Black) that connects to the handle lock solenoid connector.

Foot Lock Solenoid Removal And Installation

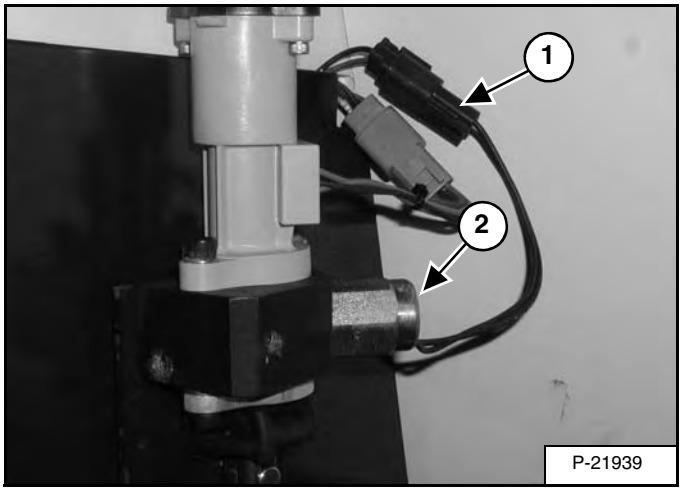
Figure 60-130-45



Remove the two bolts (Item 1) **[Figure 60-130-45]** from the foot sensor shield.

Installation: Tighten the bolts to 80-90 in.-lb. (9,0-10,2 N•m) torque.

Figure 60-130-46

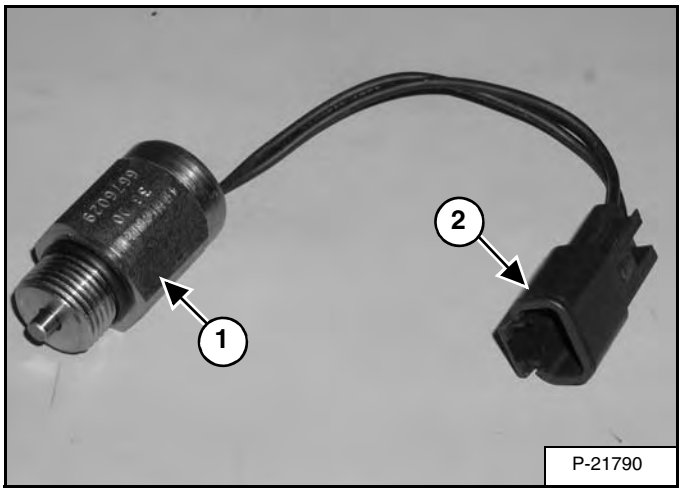


Disconnect the foot lock solenoid connector (Item 1) **[Figure 60-130-46]** from the harness.

Remove foot lock solenoid (Item 2) **[Figure 60-130-46]**.

Installation: Apply a drop of oil on the solenoid threads and tighten the solenoid to 35-40 ft.-lb. (47-54 N•m) lubed torque.

Figure 60-130-47



Check the O -ring (Item 1) **[Figure 60-130-47]** for damage. Replace as necessary.

CALIBRATION

Lift and Tilt Calibration Procedure (Selectable Joystick Control) (SJC)

NOTE: This calibration procedure must be followed when replacing the lift or tilt actuator, SJC controller or joystick. Failure to calibrate after component replacement may result in poor performance or reduced life of actuator(s).

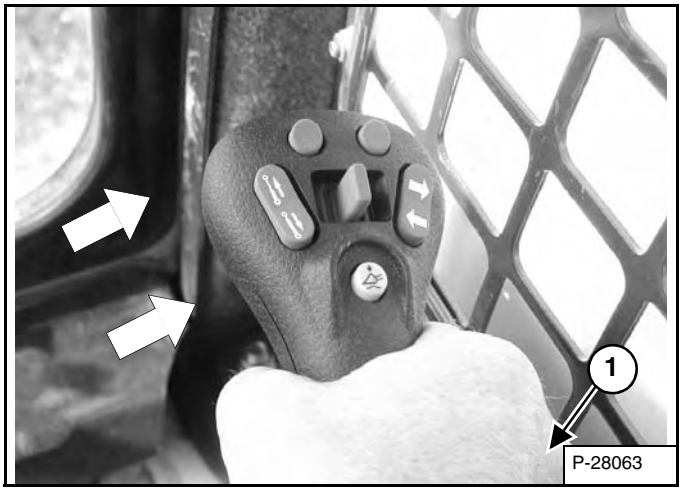
Figure 60-160-1

With an operator in the seat and the seat bar down.

Close the cab door. (If loader is so equipped.)

Place the loader Control Pattern Switch (Item 1) **[Figure 60-160-1]** in the **ISO** position.

Figure 60-160-2



Move the right joystick to th e full forward position and toward the side screen **[Figure 60-160-2]** and hold in position.

Figure 60-160-3

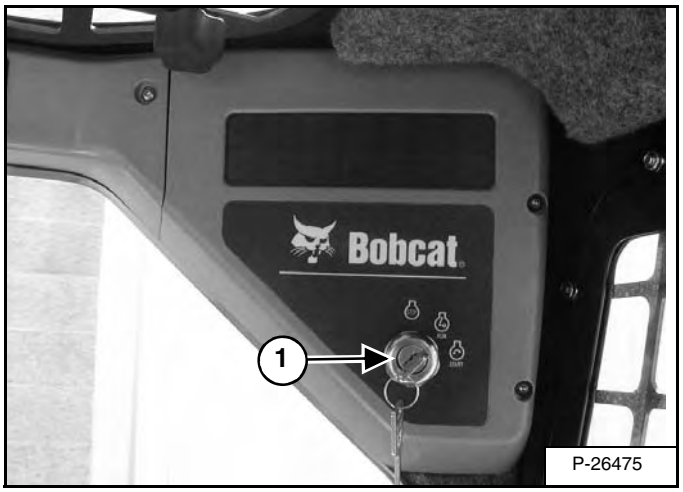


Figure 60-160-4

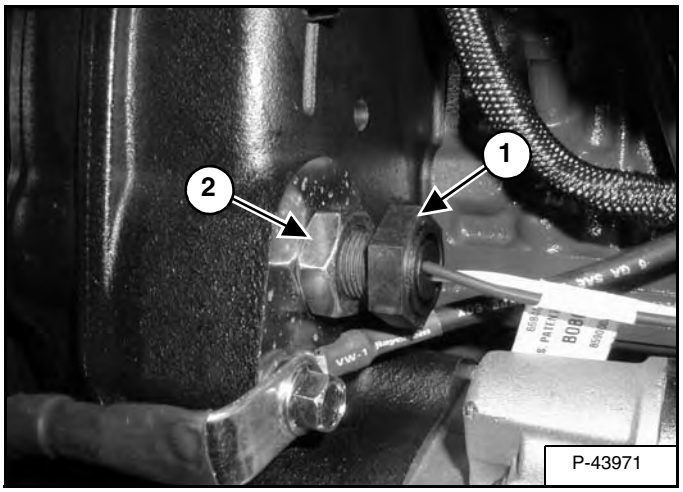
Turn the key (Item 1) **[Figure 60-160-3]** to the RUN position or press the RUN/ENTER button (Item 1) **[Figure 60-160-4]** for power, without starting the loader.

The loader Control Pattern Switch (Item 1) **[Figure 60-160-1]** will start flashing and will continue to flash until the calibration procedure is completed.

FLYWHEEL RPM SENSOR

Adjustment

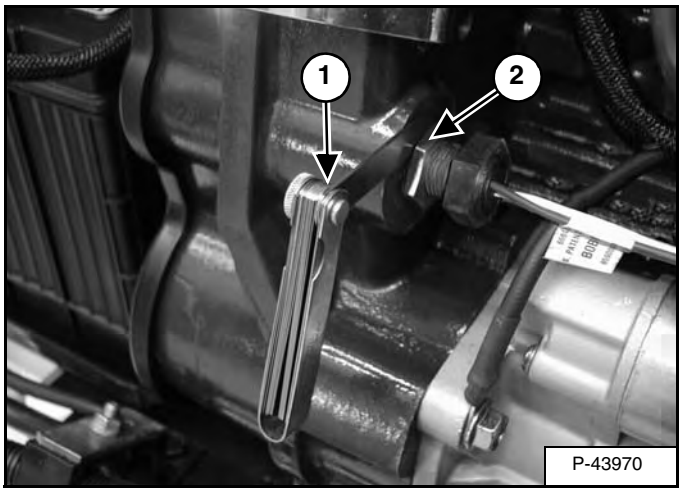
Figure 60-170-1



When reinstalling the RPM sensor, turn the RPM sensor (Item 1) **[Figure 60-170-1]** in until it makes contact with the engine flywheel.

Turn the jam nut (Item 2) **[Figure 60-170-1]** until it contacts the flywheel housing. The jam nut should not be tightened, it needs to turn with the RPM sensor when the sensor is turned back out for adjustment.

Figure 60-170-2



Turn the RPM sensor and the jam nut out from the flywheel. Set a clearance of 0.050 inch. (1,27 mm) between the jam nut and the housing with a feeler gauge (Item 1) **[Figure 60-170-2]**.

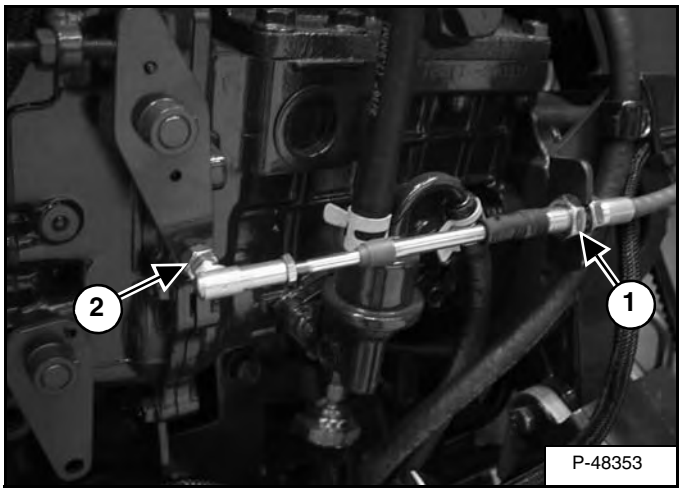
Remove the feeler gauge.

Tighten the jam nut (Item 2) **[Figure 60-170-2]** to 12-17 ft.-lb. (16-23 N•m) torque.

NOTE: New RPM sensors have a plastic tip which is used as a gauge during installation. The plastic tip is designed to come off after the engine is started.

Speed Control Cable (Cont'd)

Figure 70-20-8



Loosen the jam nut (Item 1) **[Figure 70-20-8]** from the speed control cable.

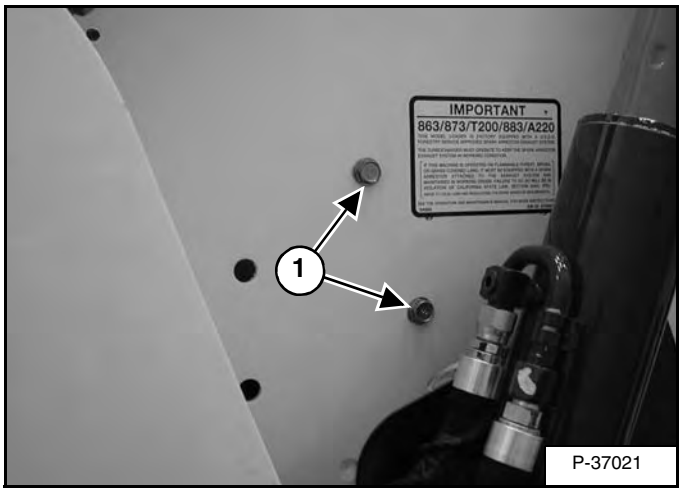
Remove the nut (Item 2) **[Figure 70-20-8]**, and disconnect the cable from the linkage.

Remove the speed control cable.

RADIATOR

Removal And Installation

Figure 70-50-1



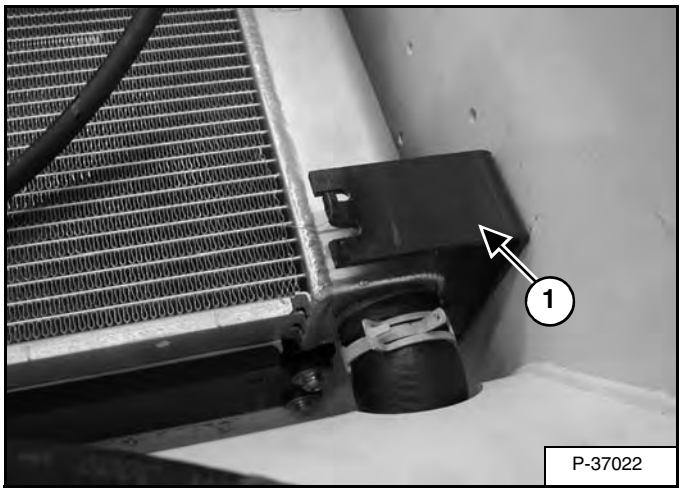
Remove the rear grill.

Drain the fluid from the radiator.

Remove the hydraulic oil cooler. (See Hydraulic Oil Cooler Removal And Installation on Page 30-60-1.)

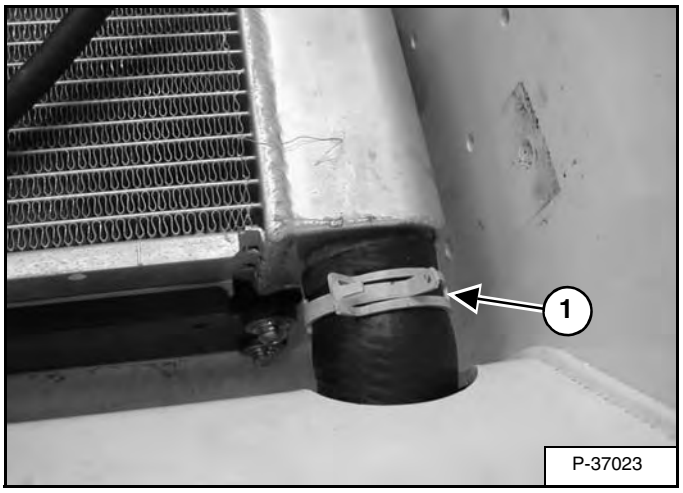
Remove the two mounting bolts (Item 1) **[Figure 70-50-1]** from the oil cooler mount bracket. (Both sides.)

Figure 70-50-2



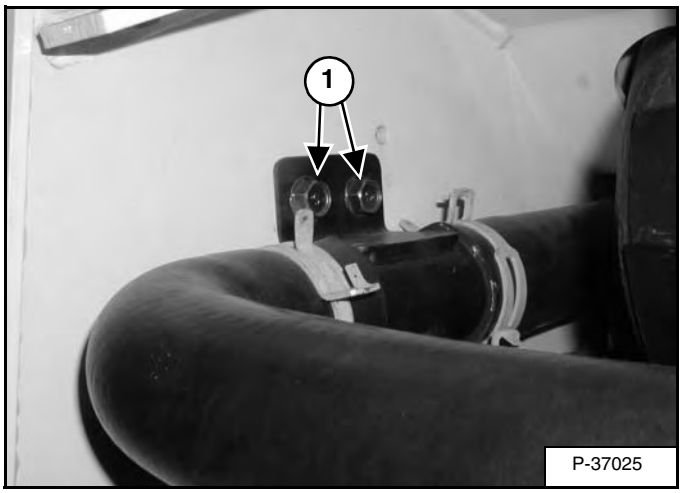
Remove the oil cooler mount bracket (Item 1) **[Figure 70-50-2]**. (Both sides.)

Figure 70-50-3



Remove the radiator hose clamp (Item 1) **[Figure 70-50-3]** and remove the right side radiator hose from the radiator.

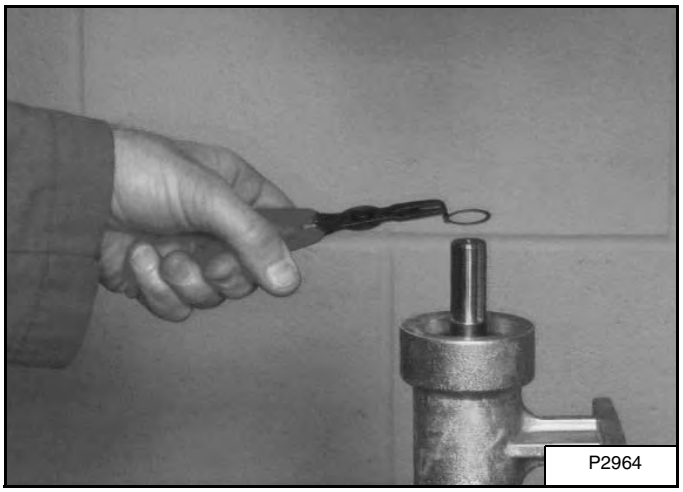
Figure 70-50-4



Remove the two mounting bolts (Item 1) **[Figure 70-50-4]** from the radiator hose mounting bracket.

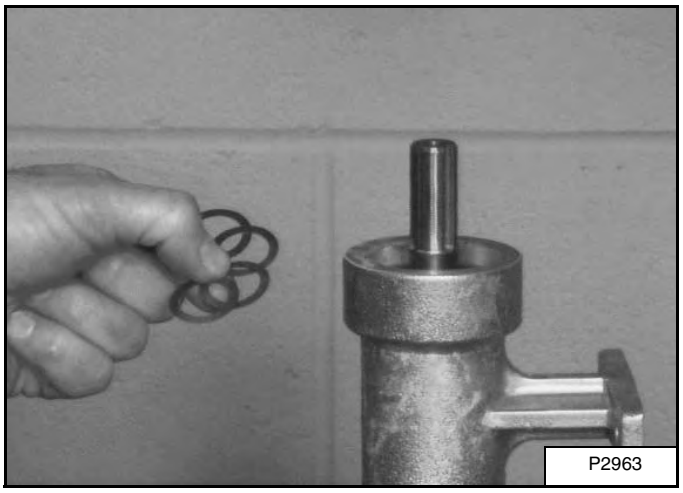
Gearbox Disassembly (Cont'd)

Figure 70-60-18



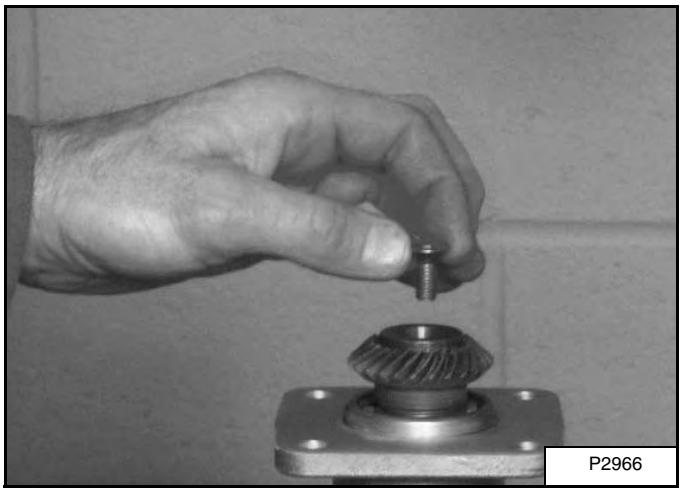
Remove the small snap ring **[Figure 70-60-18]**.

Figure 70-60-19



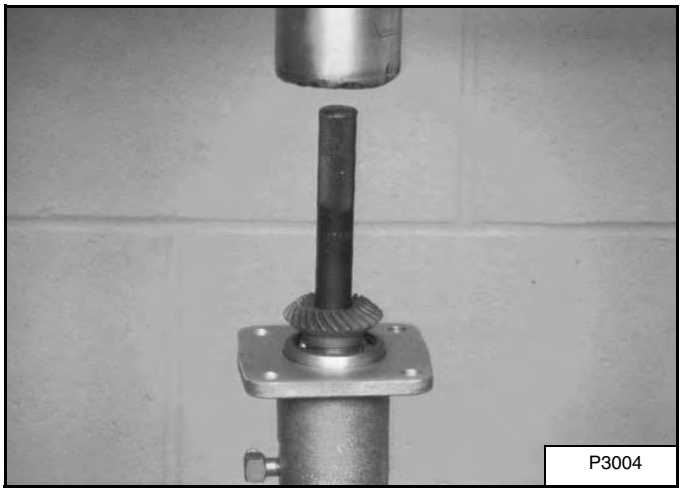
Remove the small shims **[Figure 70-60-19]**.

Figure 70-60-20



Remove the screw and washer from the shaft **[Figure 70-60-20]**.

Figure 70-60-21

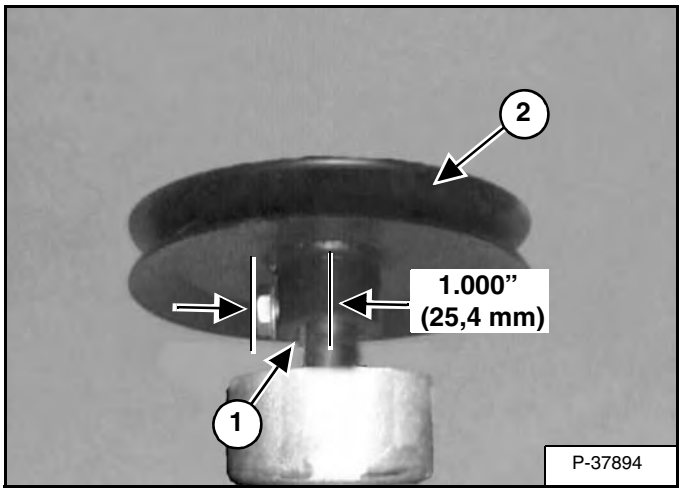


Support the lower flange and press the shaft from the bearing **[Figure 70-60-21]**.

NOTE: The gear and the other bearing (pulley end) will be removed with the shaft.

Gearbox, Checking Backlash (Cont'd)

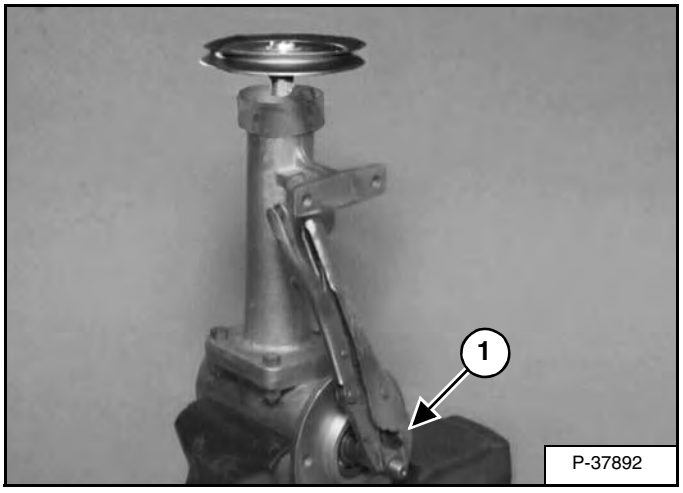
Figure 70-60-54



Install the long key (Item 1) and the pulley (Item 2) **[Figure 70-60-54]**.

Install a bolt in the set screw hole to maintain a 1.000 inch (25,4 mm) distance from the shaft center to the bolt head (to be used with a dial indicator) **[Figure 70-60-54]**.

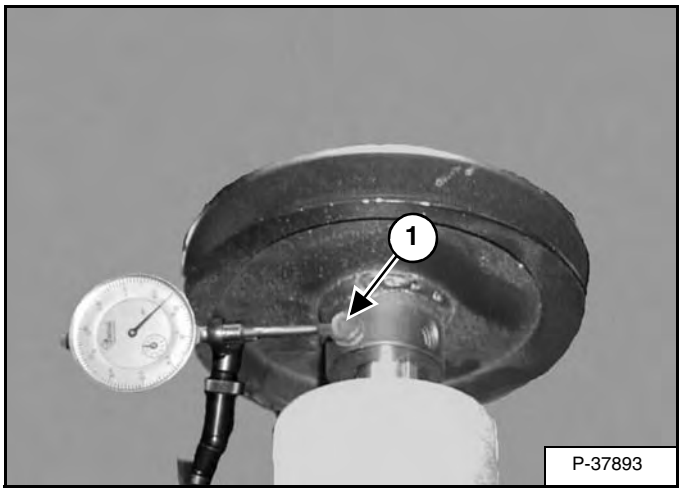
Figure 70-60-55



Put the fan nut (Item 1) **[Figure 70-60-55]** on the shaft and tighten snugly.

Install a locking pliers on the fan nut and support the handle against the long housing **[Figure 70-60-55]**.

Figure 70-60-56



Using a magnetic based dial indicator mounted on a bench vise, touch the dial stem on the bolt (Item 1) **[Figure 70-60-56]**.

Hold the locking pliers against the long housing and rotate the pulley back and forth to read the dial gauge **[Figure 70-60-56]**.

If the backlash is GREATER than 0.008 inch (0,203 mm), do the following:

1. Remove a square shim(s) (if present) between the two housings.

2. Remove a large shim(s) from the tapered end of the short shaft and add a small shim(s) of the same thickness between the bearing and the gear on the screw end of the shaft.

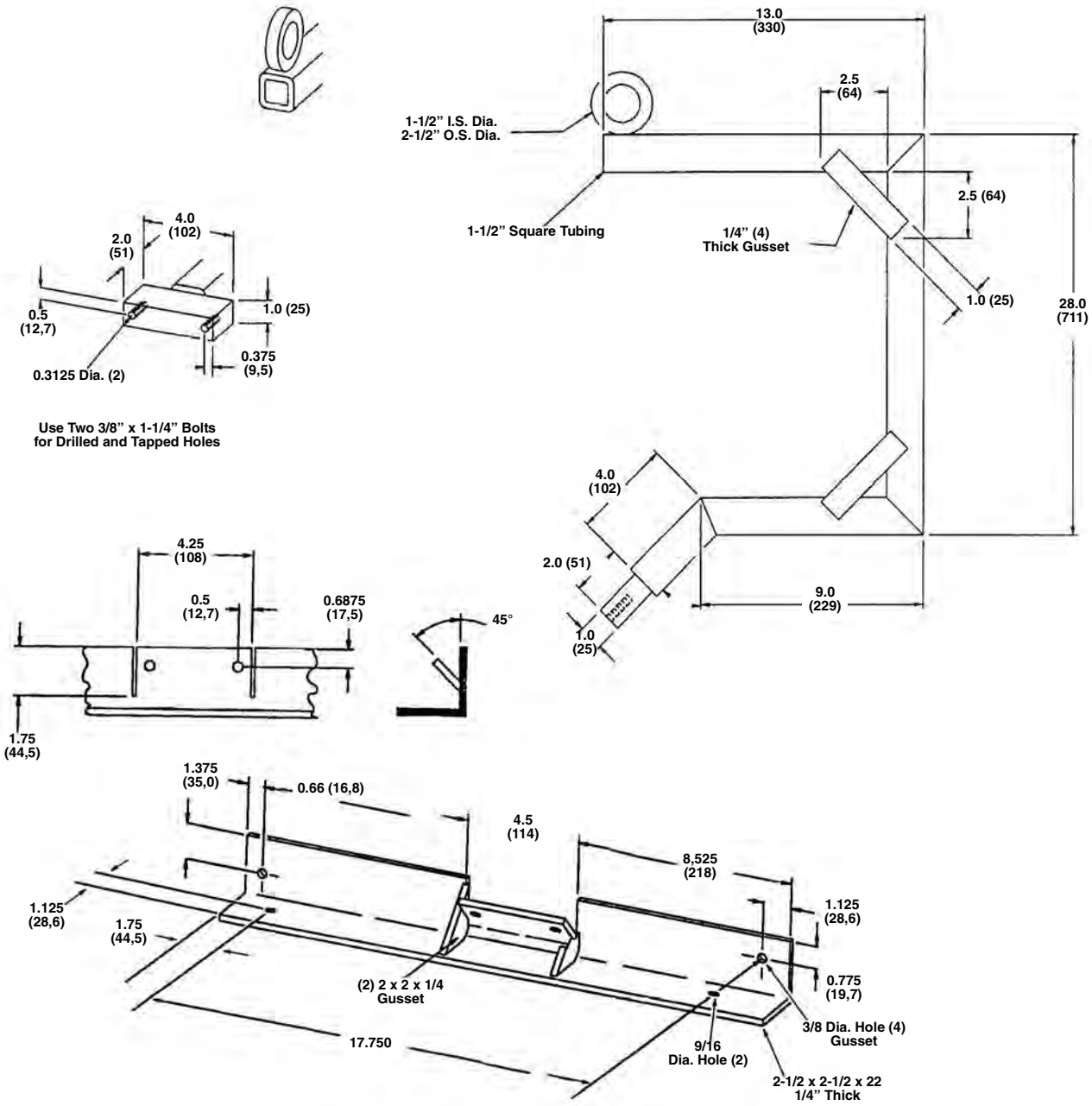
If the backlash is LESS than 0.005 inch (0,127 mm) do the following:

1. Add a square shim(s) between the two housings.

2. Remove a small shim(s) between the bearing and the gear on the screw end of the short shaft and add a large shim(s) of the same thickness between the snap ring and the bearing on the tapered end of the shaft.

Removal And Installation Tools

Figure 70-70-31



MC-1799B

Cylinder Head Clearance (Cont'd)

Remove the cylinder head, and measure squeezed fuse wires for thickness.

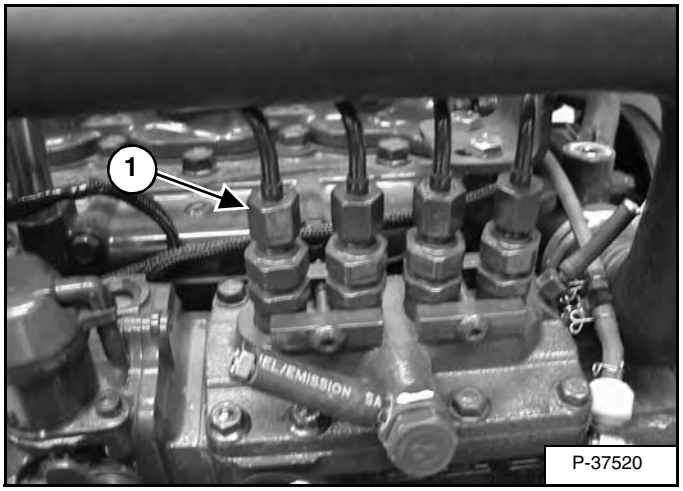
If the measurement is not within the specified value, check the oil clearance of the crank pin journal and the piston pin.

Top clearance	Factory spec.	0.72 to 0.90 mm 0.0283 to 0.0354 in.
Tightening torque	Cylinder head screw	98.1 to 107.9 N•m 10.0 to 11.0 kgf·m 72.3 to 79.6 ft.-lb.

Valve Cover, Injector Nozzle And Seal Removal And Installation

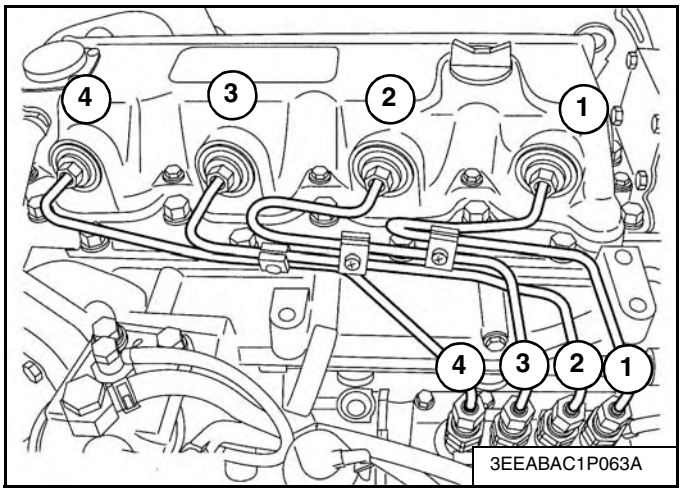
Remove the engine muffler.

Figure 70-90-15



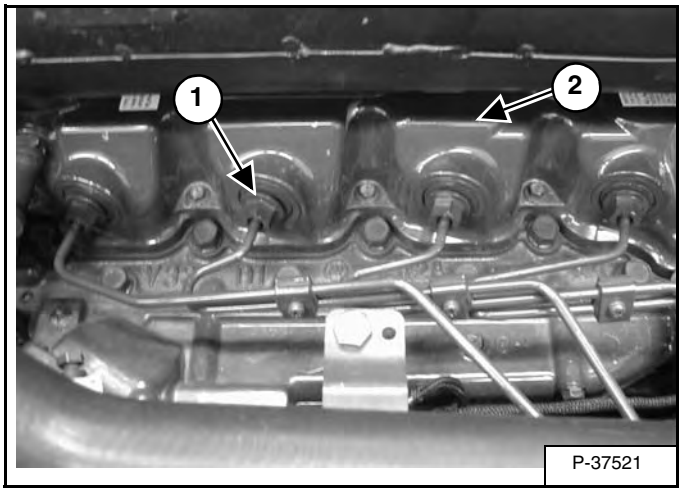
Remove the four injector lines (Item 1) **[Figure 70-90-15]** from the injector pump.

Figure 70-90-16



Connection between injection pump and nozzle	
Injection Pump	Nozzle
1	1
2	3
3	2
4	4

Figure 70-90-17

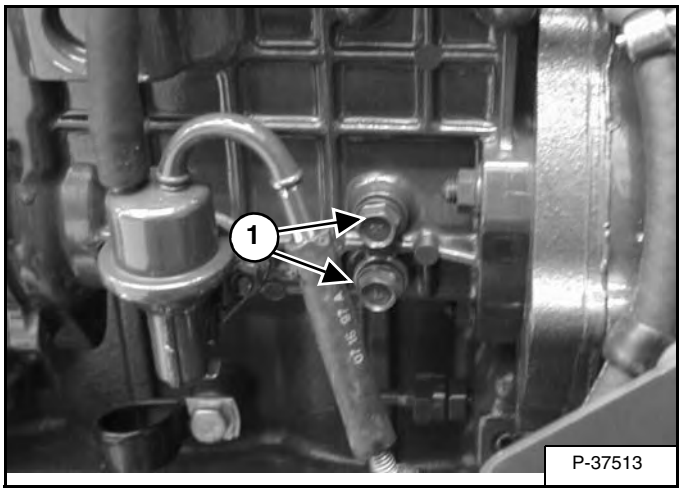


Remove the four injection lines (Item 1) **[Figure 70-90-17]**.

Remove the valve cover (Item 2) **[Figure 70-90-17]**.

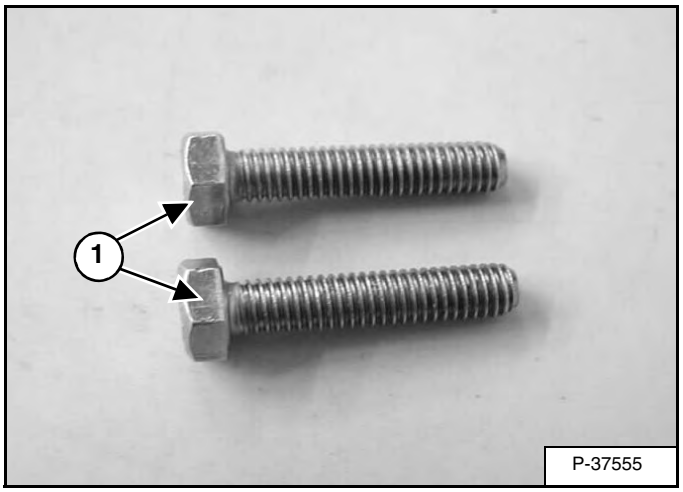
Injection Pump Housing Removal (Cont'd)

Figure 70-90-45



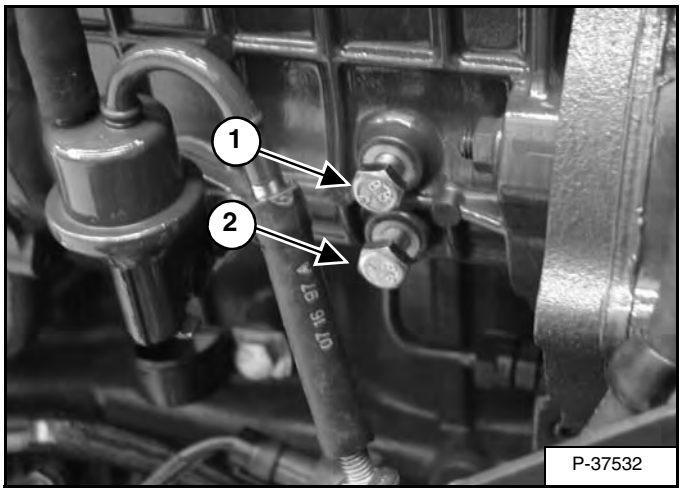
Unscrew the two flange bolts (Item 1) **[Figure 70-90-45]** from the injection pump unit. Have the fuel cam shaft lock bolts at hand.

Figure 70-90-46



The fuel cam shaft lock bolts (Item 1) **[Figure 70-90-46]** are M8 X P1.25 X L30 mm.

Figure 70-90-47

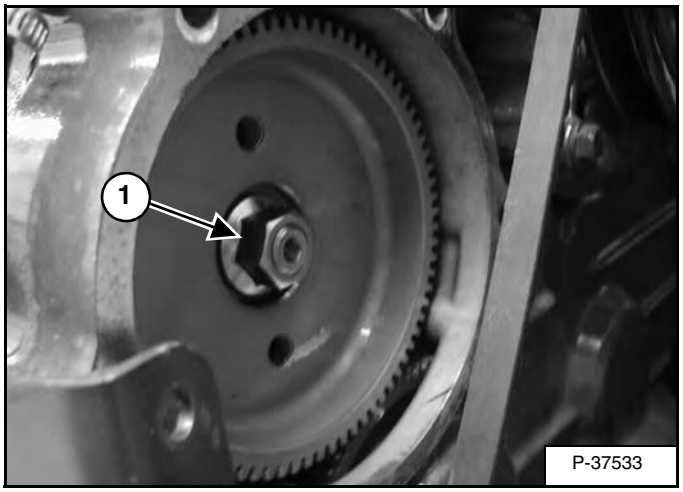


Tighten the upper fuel cam shaft lock bolt (Item 1) **[Figure 70-90-47]** until it comes into contact with the fuel cam shaft. Make sure the cam shaft does not move.

Tighten the lower fuel cam shaft lock bolt (Item 2) **[Figure 70-90-47]** until it comes into contact with the fuel camshaft.

Do not over tighten the lock bolts when they have come in contact with the cam shaft.

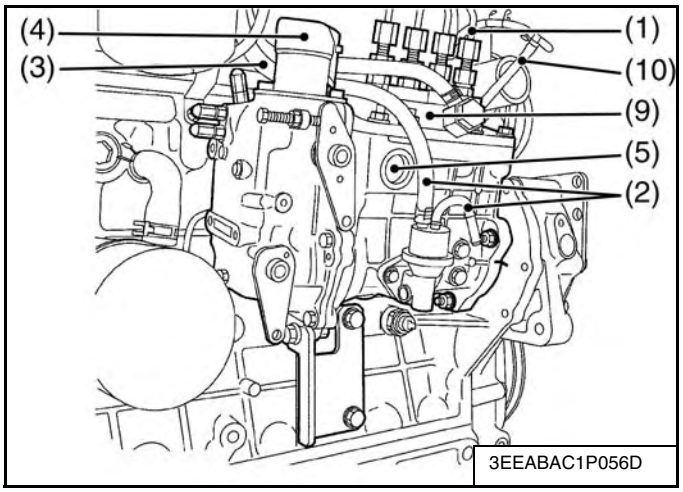
Figure 70-90-48



Loosen the in jection pump gear mounting nut (Item 1) **[Figure 70-90-48]**.

Injection Pump Removal And Installation (Cont'd)

Figure 70-90-83



The injection pump can be replaced with the crankshaft in whatever position.

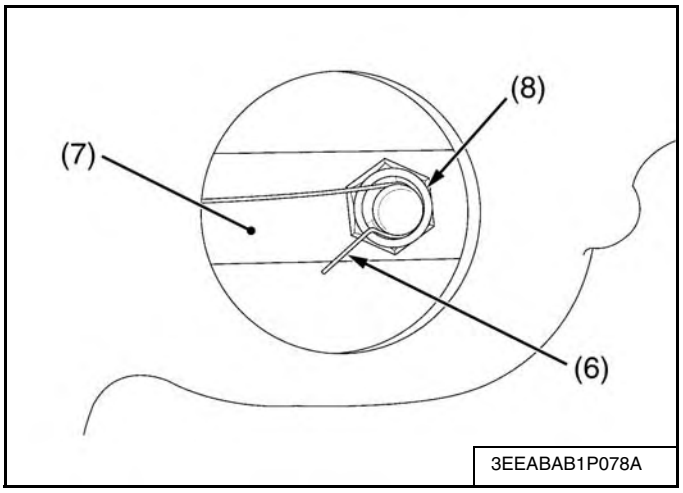
Disconnect all injection pipes (Item 1) **[Figure 70-90-83]**.

Disconnect the fuel pipe (Item 2) and fuel overflow pipe (Item 10) **[Figure 70-90-83]**.

Disconnect the connector (Item 3) from the stop solenoid. Then remove the stop solenoid (Item 4) **[Figure 70-90-83]**.

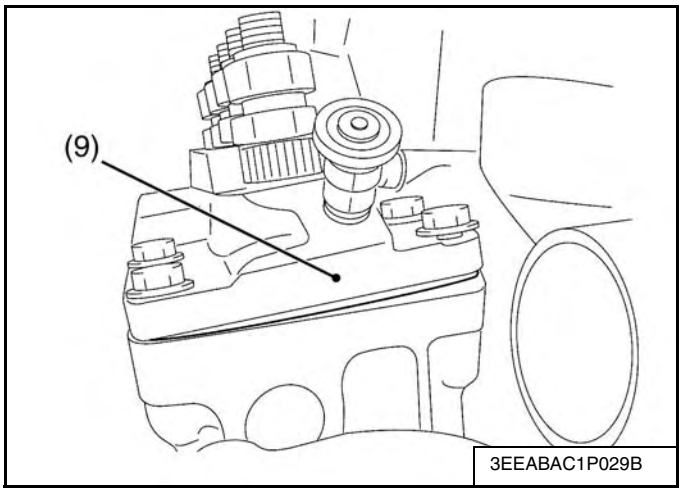
Detach the sight cover (Item 5) **[Figure 70-90-83]** from the injection pump unit.

Figure 70-90-84



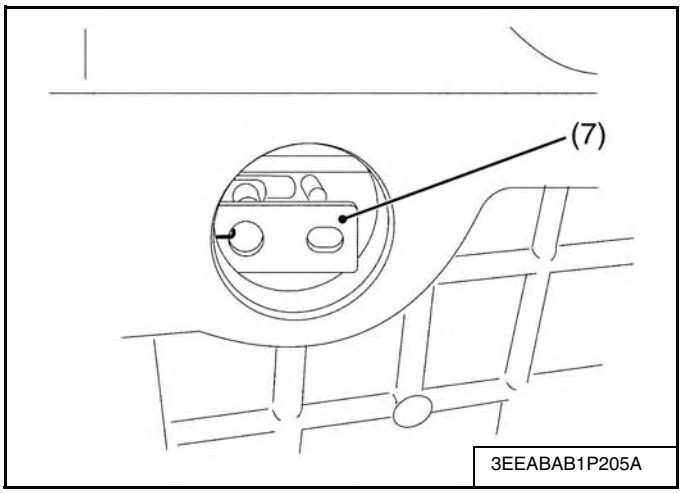
Unhook the start spring (Item 6), and remove the anti-rotation nut (Item 8) **[Figure 70-90-84]**.

Figure 70-90-85



Just loosen the injection pump assembly mounting bolts and nuts, which the injection pump assembly (Item 9) **[Figure 70-90-85]** keeps tilted.

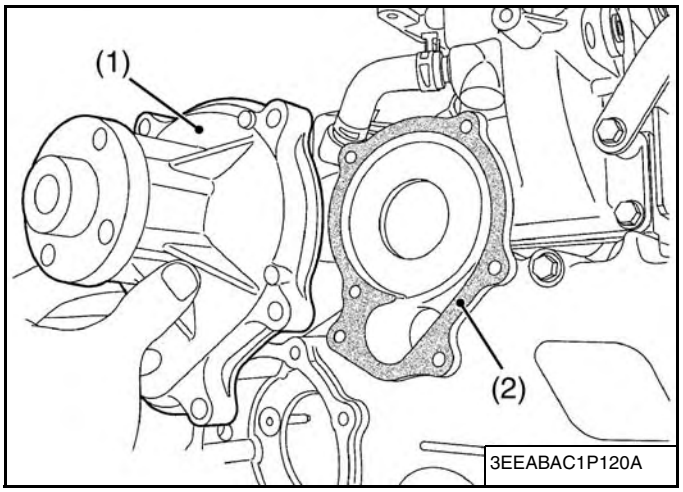
Figure 70-90-86



Slide off the governor connecting rod (Item 7) **[Figure 70-90-86]** from the rack pin of injection pump assembly.

Water Pump Disassembly And Assembly

Figure 70-90-123

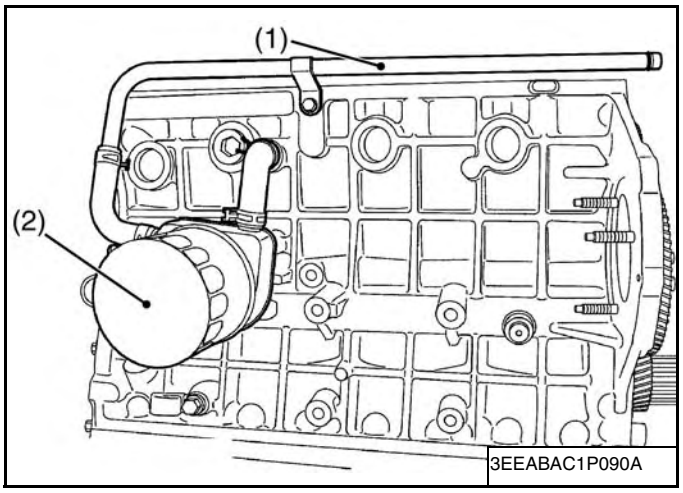


Remove the water pump (Item 1) **[Figure 70-90-123]** from the gearcase.

When mounting the water pump, use the ne w gasket (Item 2) **[Figure 70-90-123]**.

Oil Cooler And Water Pipe Disassembly And Assembly

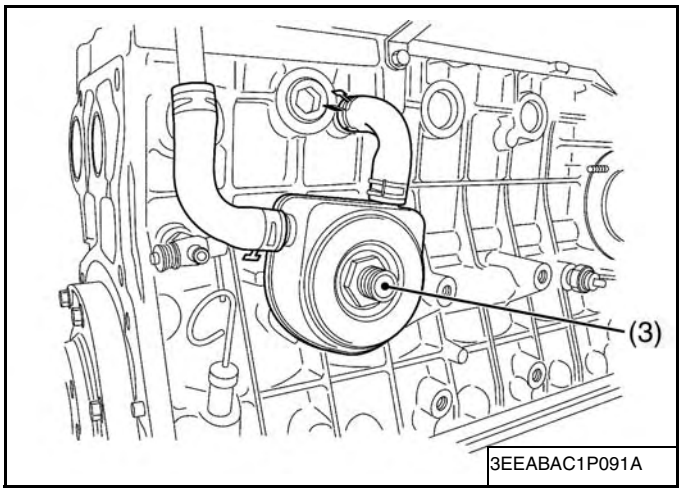
Figure 70-90-124



Remove the water pipe (Item 1) **[Figure 70-90-124]**.

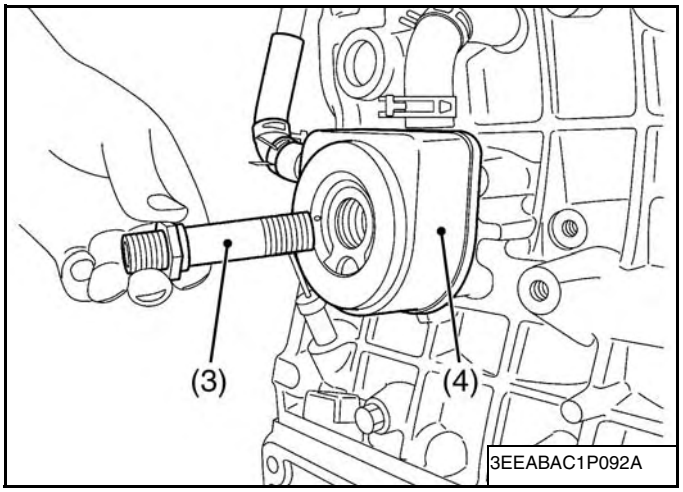
Remove the oil filter cartridge (Item 2) **[Figure 70-90-124]**.

Figure 70-90-125



Remove the oil cooler joint bolt (Item 3) **[Figure 70-90-125]** & **[Figure 70-90-126]**.

Figure 70-90-126

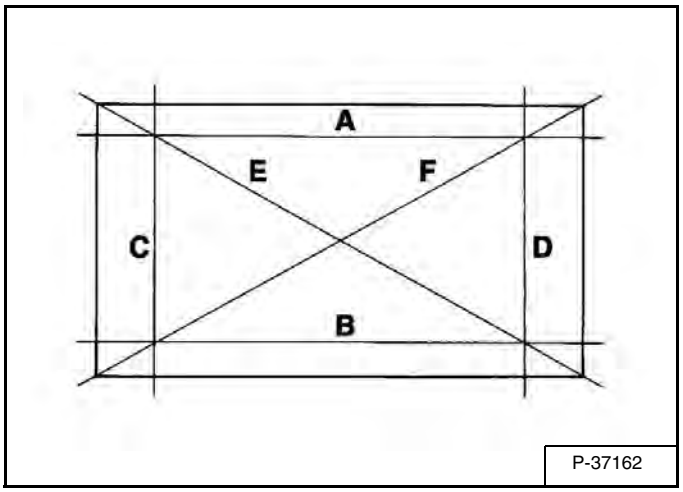


Remove the oil cooler (Item 4) **[Figure 70-90-126]**.

Tightening torque	Oil cooler joint bolt	39.2 to 44.1 N•m 4.0 to 4.5 kgf·m 28.9 to 32.5 ft.-lb.

Cylinder Head Surface Flatness (Cont'd)

Figure 70-90-157



Thoroughly clean the cylinder head surface.

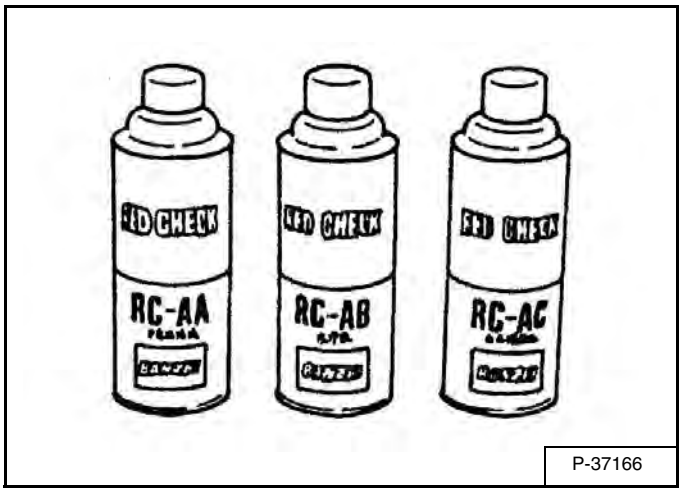
Place a straightedge on the cylinder head's four sides and two diagonal **[Figure 70-90-157]**. Measure the clearance with a feeler gauge **[Figure 70-90-156]**.

If the measurement exceeds the allowable limit, correct it with a surface grinder. (See LOADER SPECIFICATIONS (T300) on Page SPEC-10-1.)

NOTE: Be sure to check the valve recessing after correcting.

Cylinder Head Flaw

Figure 70-90-158



Prepare an air spray red check (Code No. 07909-31371).

Clean the surface of the cylinder head with detergent (Item 1) **[Figure 70-90-158]**.

Spray the cylinder head surface with the red permeative liquid (Item 2) **[Figure 70-90-158]**. Leave it five to ten minutes after spraying.

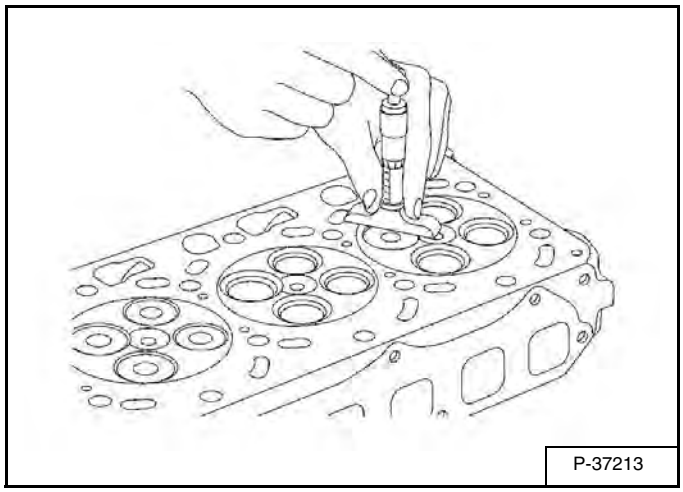
Wash away the red permeative liquid on the cylinder head surface with the detergent (Item 1) **[Figure 70-90-158]**.

Spray the cylinder head surface with white developer (Item 3) **[Figure 70-90-158]**.

If flawed, it can be identified as red marks.

Valve Recessing

Figure 70-90-159



Clean the cylinder head, the valve face and seat.

Insert the valve into the valve guide.

Measure the valve recessing with a depth gauge **[Figure 70-90-159]**.

If the measurement exceeds the allowable limit, replace the valve.

If it still exceeds the allowable limit after replacing the valve, correct the valve seat face of the cylinder head with a valve seat cutter or valve seat grinder.

Then, correct the cylinder head surface with a surface grinder, or replace the cylinder head.

Valve recessing	Factory spec.	Intake valve	(recessing) 0.6 to 0.8 mm (0.0236 to 0.0315 in.)
		Exhaust valve	(recessing) 0.85 to 1.05 mm (0.0335 to 0.0413 in.)
	Allowable limit	(recessing) 1.2 mm (0.0472 in.)	

Replacing Small End Bushing

Figure 70-90-183

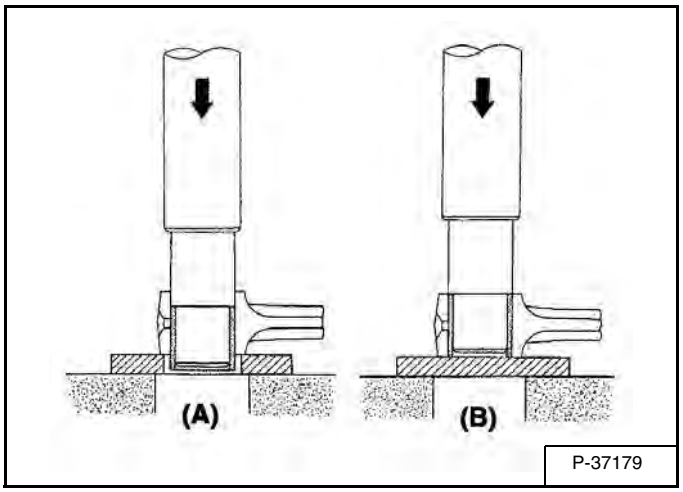
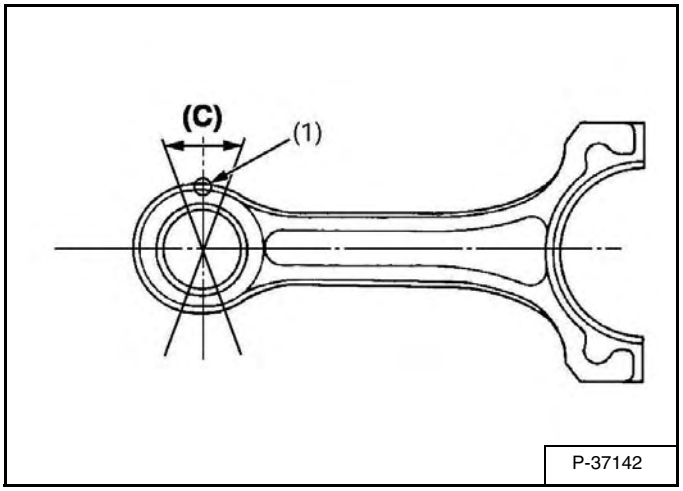


Figure 70-90-184



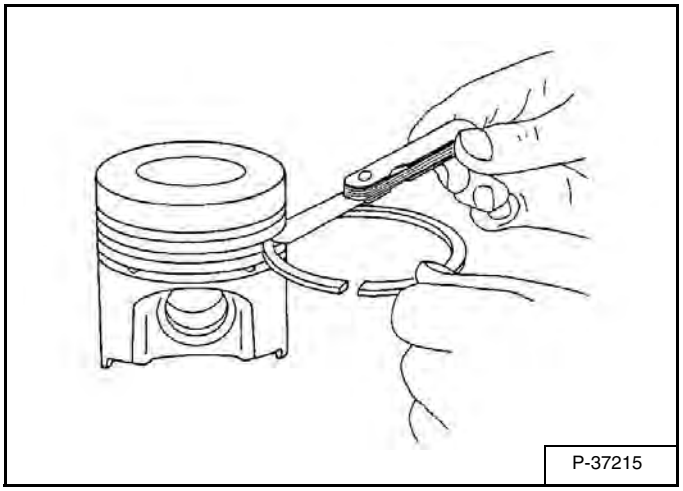
Press out the used bushing using a small end bushing replacing tool **[Figure 70-90-183]**.

Clean a new s mall end bushing and bo re, and apply engine oil to them.

Insert a new bushing onto the tool and press-fit it with a press so that the seam (Item 1) **[Figure 70-90-184]** of the bushing is flush with the connecting rod.

Clearance Between Piston Ring And Groove

Figure 70-90-185



Remove carbon from the ring grooves.

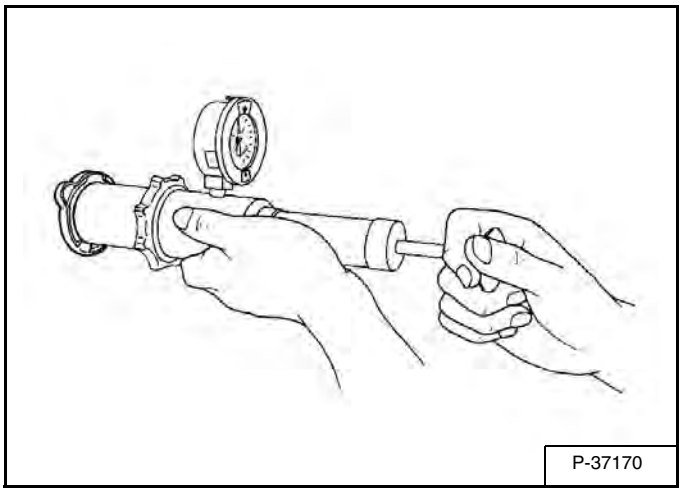
Measure the clearance between the ring and the groove with a feeler gauge **[Figure 70-90-185]**.

If the clearance exceeds allowable limit, check the new rings on an old piston and if it is out of spec, replace the piston.

Factory spec.	Compression ring 1	0.05 to 0.07 mm 0.0020 to 0.0028 in.
	Compression ring 2	0.093 to 0.120 mm 0.0037 to 0.0047 in.
	Oil Ring	0.020 to 0.060 mm 0.0008 to 0.0023 in.
Allowable limit	Compression ring 1	0.15 mm 0.0059 in.
	Compression ring 2	0.20 mm 0.0079 in.
	Oil ring	0.15 mm 0.0059 in.

Radiator Cap Air Leakage

Figure 70-90-207



Set a radiator tester on the r adiator cap **[Figure 70-90-207]**.

Apply the specified pressure of 88 kPa (0.9 kgf/cm² 13 PSI).

Check if the pressure drop to less than 59 kPa (0.6 kgf/cm², 9 PSI) in 10 seconds.

If the pr essure is less than the fac tory specification, replace it.

Thermostat Assembly

Figure 70-90-208

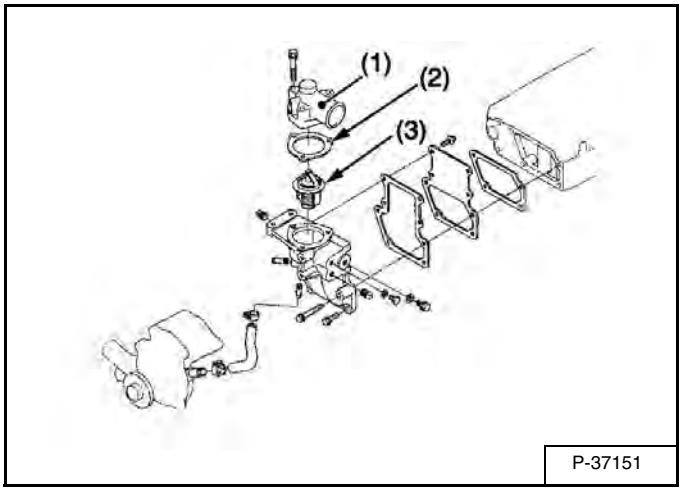
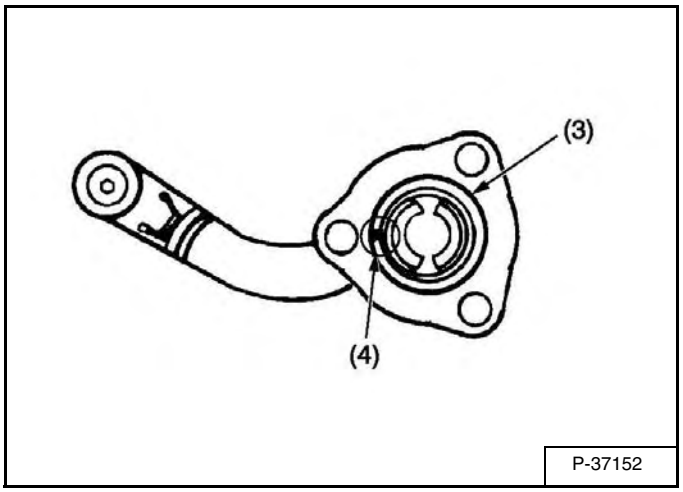


Figure 70-90-209



Remove the thermostat cover mounting screws, and remove the thermostat cover (Item 1) **[Figure 70-90-208]**.

Remove the thermostat assembly (Item 3) **[Figure 70-90-208]**.

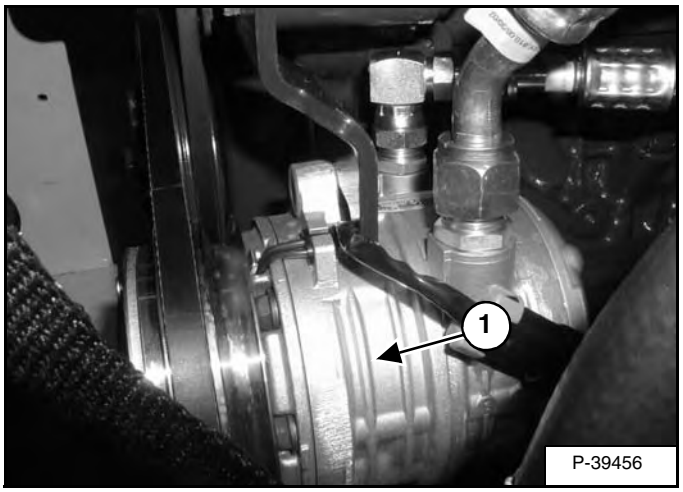
Apply a liquid gasket (Three Bond 1215 or equivalent) only at the th ermostat cover side of the g asket (Item 2) **[Figure 70-90-208]**.

Attach the thermostat (Item 3) wi th its hole (Item 4) **[Figure 70-90-209]** facing toward the air suction side.

COMPONENTS

Identification

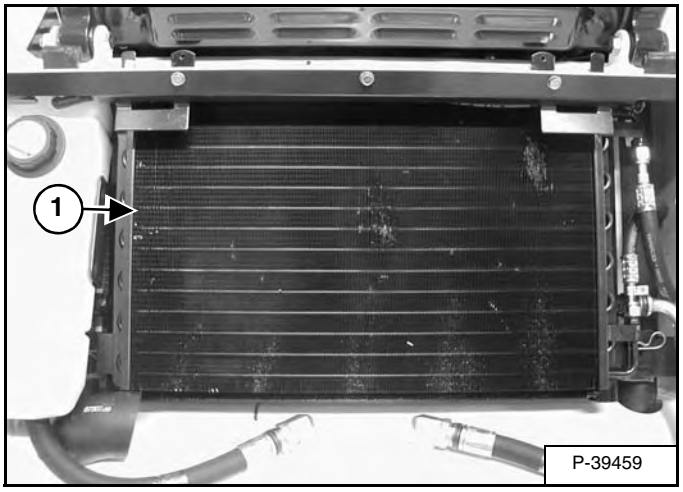
Figure 80-20-1



Compressor: The compressor (Item 1) **[Figure 80-20-1]** is the pump that circulates the refrigerant throughout the system. It raises the pressure of the refrigerant for heat transfer through the condenser and evaporator.

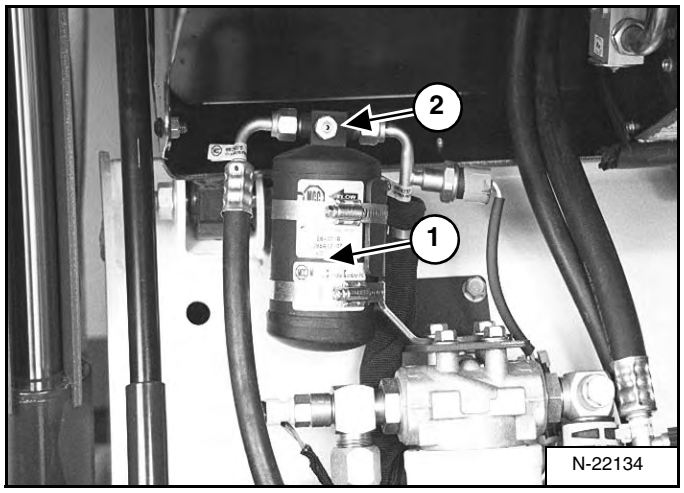
NOTE: The A/C system (Compressor) is recommended to be turned on for at least 5 minutes weekly throughout the year to lubricate the internal components.

Figure 80-20-2



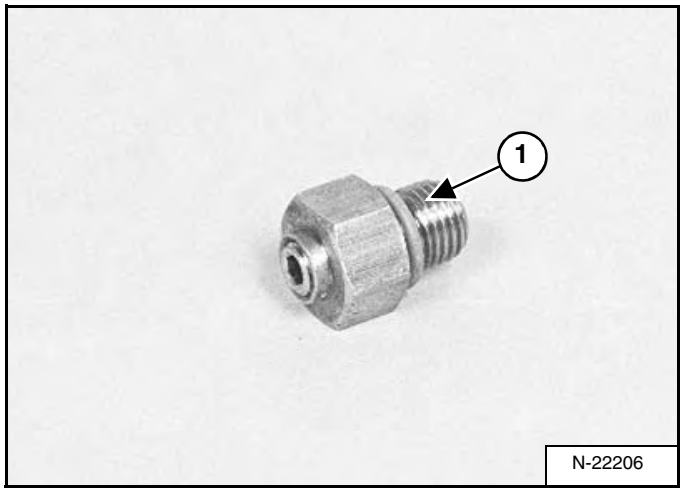
Condenser: The condenser (Item 1) **[Figure 80-20-2]** is the unit that receives the high pressure, high temperature refrigerant vapor from the compressor and condenses it into a high temperature liquid.

Figure 80-20-3



Receiver/Drier: The receiver/drier (Item 1) **[Figure 80-20-3]** is the unit that receives the liquid refrigerant from the condenser and removes moisture and foreign matter from the system. It also serves as a storage tank for the extra liquid refrigerant until it is needed by the evaporator.

Figure 80-20-4



Pressure Relief Valve: The pressure relief valve (Item 2) **[Figure 80-20-3]** is located on the r eceiver drier assembly. This small brass valve (Item 1) **[Figure 80-20-4]** is a safety feature that is designed to open and release the A/C charge if the pressure reaches 535 PSI.

BASIC TROUBLESHOOTING

Poor A/C Performance

Start the loader, lock the park brake, and engage the A/C system with the blower fan on High. Run the loader at full throttle for approximately 15 minutes, with the loader cab door closed.

Figure 80-50-1

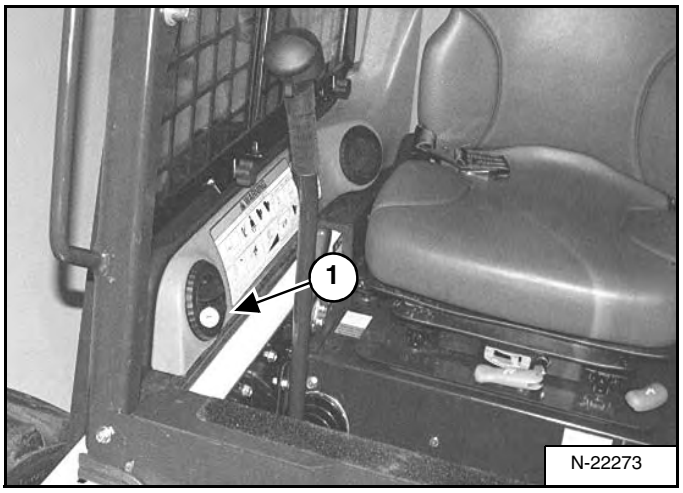
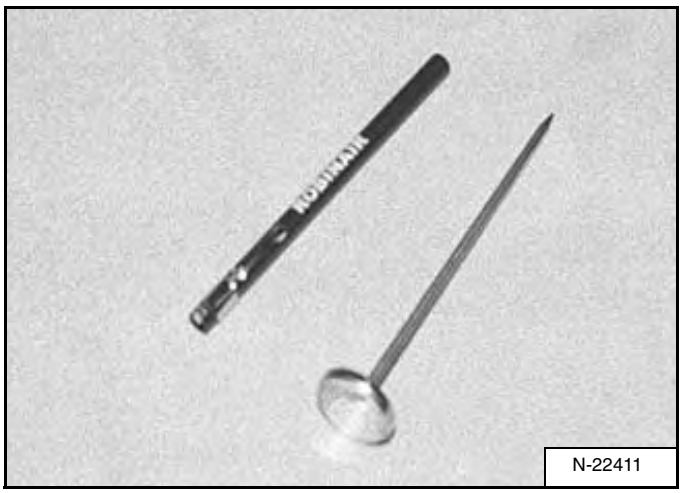


Figure 80-50-2



Check the temperature at the louvers (Item 1) **[Figure 80-50-1]** with a thermometer **[Figure 80-50-2]**.

The louver temperature should be between 45-53° F. (2,2-11,6° C) depending on the amount of humidity in the air and ambient temperature.

If louver temperature is too hi gh. (See SYSTEM TROUBLESHOOTING CHART on Page 80-70-1.)

Check the blower for proper operation, or noise, and replace if necessary. (See BLOWER FAN on Page 80-210-1.)

Check the belt tension on the A/C compressor. (See Compressor Drive Belt Inspection on Page 80-50-2.)

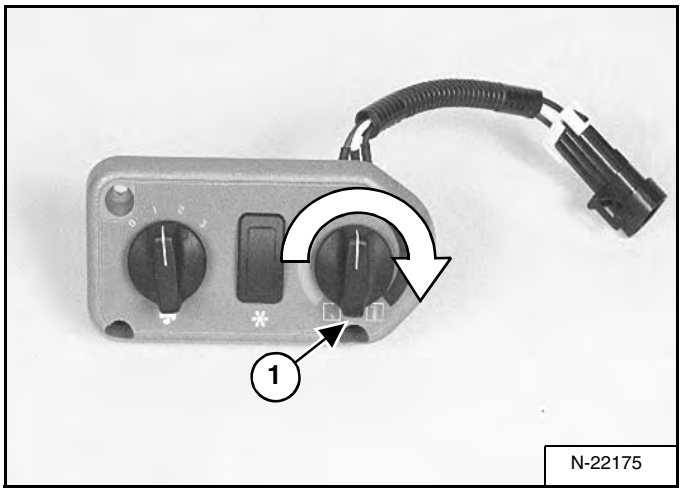
Check the A/C condenser for dirt or mud and clean if necessary. (See REGULAR MAINTENANCE on Page 80-40-1.)

Check the A/C evaporator coil for dirt or mud and clean if necessary. (See Cleaning The A/C Evaporator Coil & Heater Coil on Page 80-50-2.)

Check the engine coolant to see if it is by-passing the heater valve. (See Engine Coolant By-Passing The Heater Valve on Page 80-50-11.)

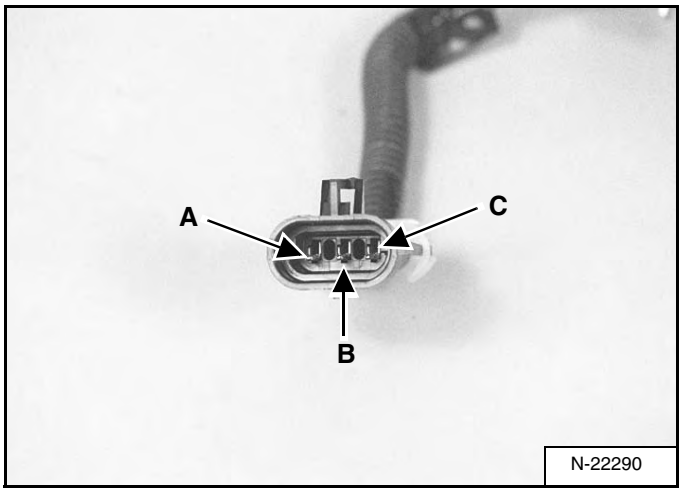
Checking The Electrical System (Cont'd)

Figure 80-50-35



To check the resistance of the w hite wire, turn the potentiometer control (Item 1) **[Figure 80-50-35]** to the full Heater position.

Figure 80-50-36



Check the resistance between the wire terminal **A** and wire terminal **B** frame **[Figure 80-50-36]** should be around 39K Ohms.

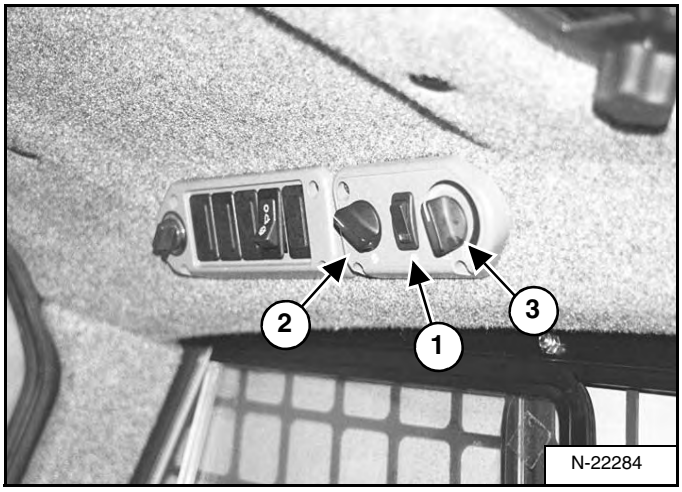
Check the resistance between the wire terminal **C** and wire terminal **B** frame **[Figure 80-50-36]** should be around 49K Ohms.

If the resistance is not found replace the potentiometer.

Engine Coolant By-Passing The Heater Valve

Raise the lift arms and install an approved lift arm support device. (See Installing The Lift Arm Support Device on Page 10-20-1.)

Figure 80-50-37



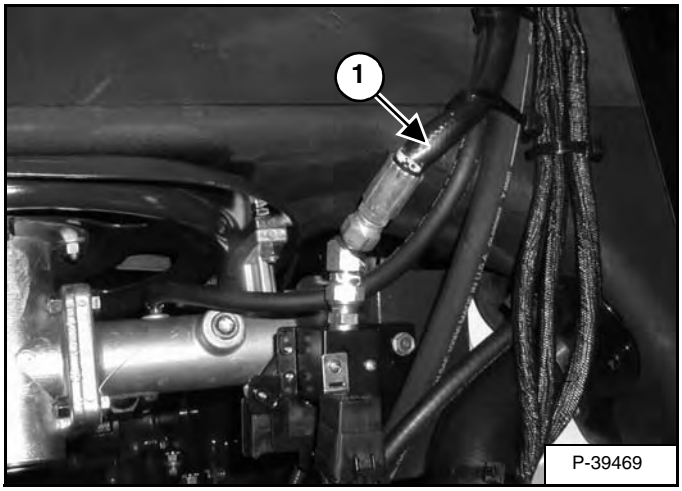
Push the A/C switch (Item 1) to the OFF position, turn the blower switch (Item 2) to p osition **1**, then turn the temperature control (Item 3) **[Figure 80-50-37]** to the High A/C position, with the loader ignition switch OFF.

Raise the operator cab. (See Raising The Operator Cab on Page 10-30-1.)

Connect the r emote start tool to th e loader. (See Procedure on Page 10-60-3.)

Start the loader and run at high idle, for ten minutes.

Figure 80-50-38



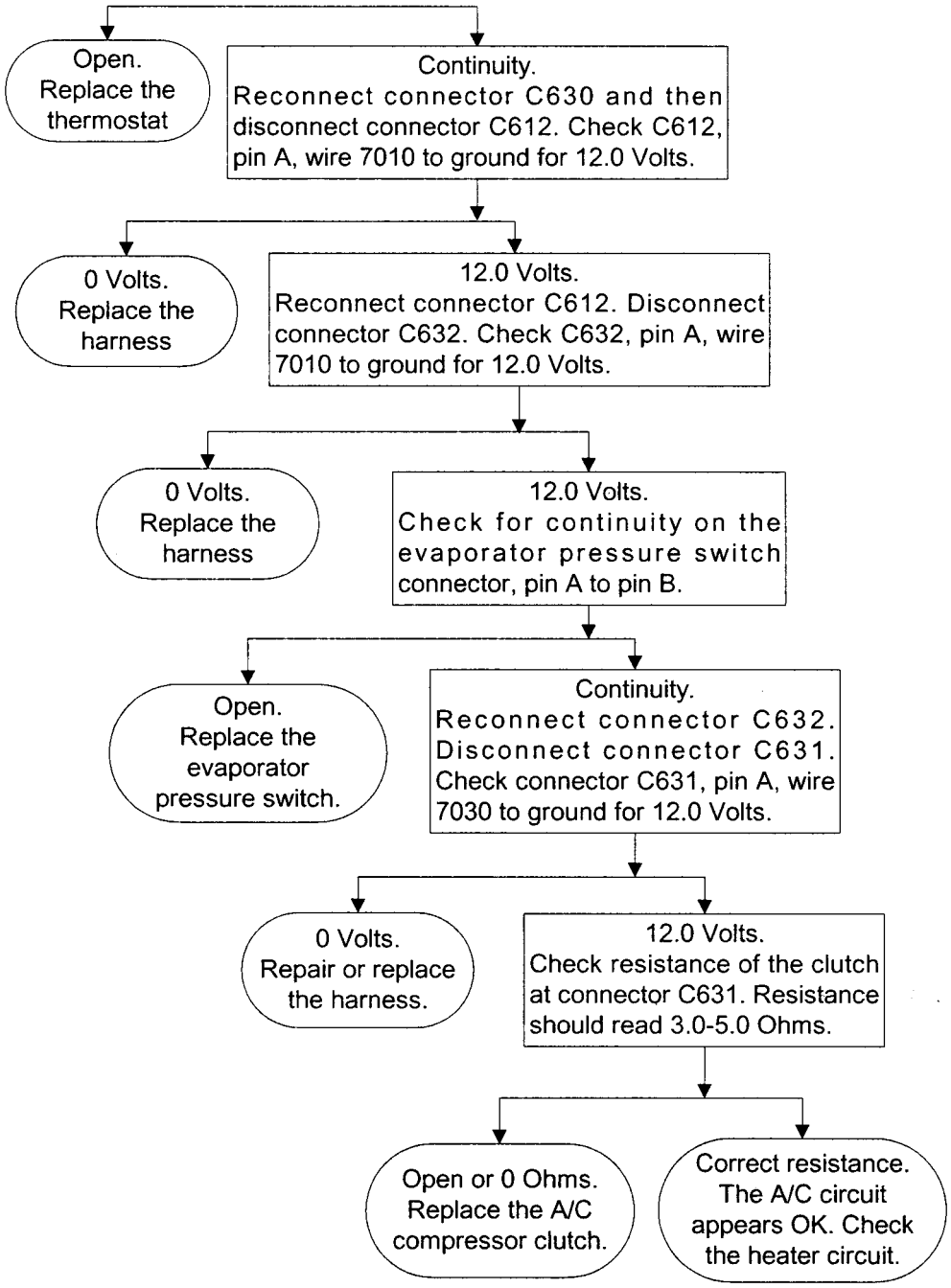
Check the heater hose (Item 1) **[Figure 80-50-38]** for temperature.

If the hose is hot, the heater valve is leaking by, and needs to be replace.

Troubleshooting Tree (Cont'd)

Air Conditioning

Continued on previous page.



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