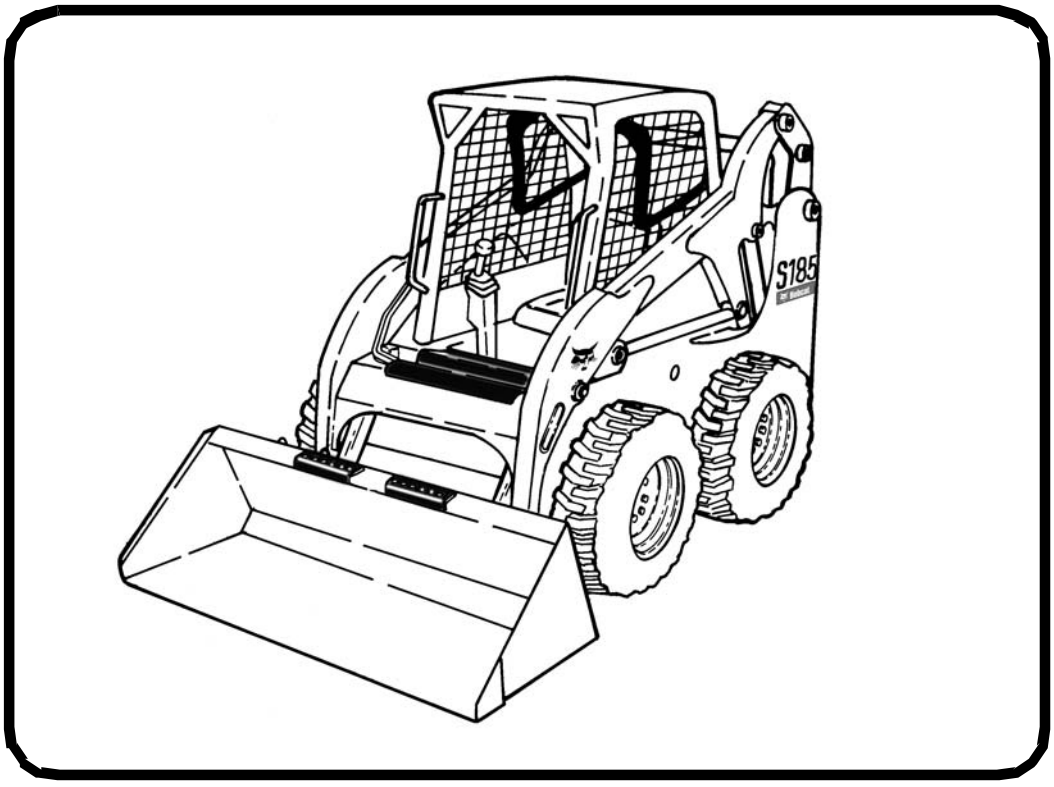
Bobcat®

Service Manual
S185 Skid-Steer Loader

S/N 530360001 & Above
S/N 530460001 & Above
S/N ABRT60001 & Above



EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS™)

6987036 (8-09)

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

IMPORTANT

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

I-2019-0284

DANGER

The signal word DANGER on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.

D-1002-1107

WARNING

The signal word WARNING on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

W-2044-1107

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**.

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

TRANSPORTING LOADER ON A TRAILER

Loading And Unloading

WARNING

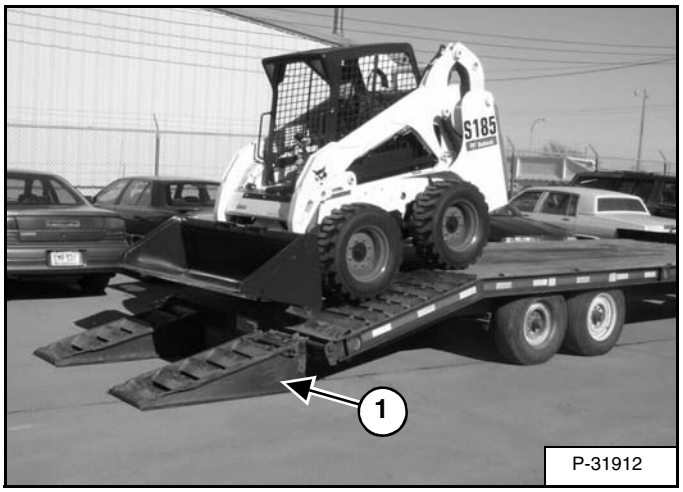
AVOID SERIOUS INJURY OR DEATH

Adequately designed ramps of sufficient strength are needed to support the weight of the machine when loading onto a transport vehicle. Wood ramps can break and cause personal injury.

W-2058-0807

Be sure the transport and towing vehicles are of adequate size and capacity for weight of loader. (See Capacities on Page SPEC-10-4.)

Figure 10-40-1

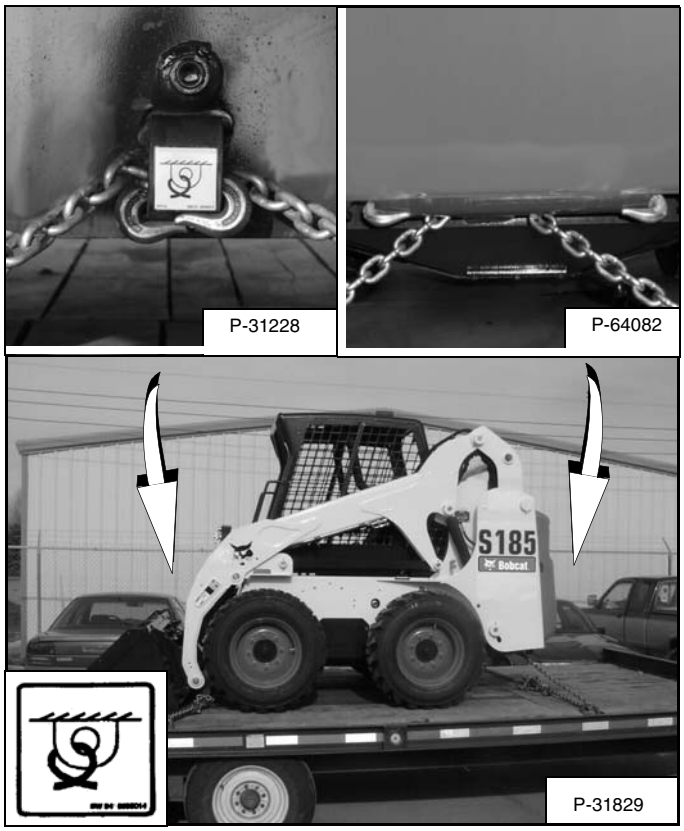


A loader with an empty bucket or no attachment must be loaded backward onto the transport vehicle **[Figure 10-40-1]**.

The rear of the trailer must be blocked or supported (Item 1) **[Figure 10-40-1]** when loading or unloading the loader to prevent the front end of the trailer from raising up.

Fastening

Figure 10-40-2



Use the following procedure to fasten the Bobcat loader to the transport vehicle to prevent the loader from moving during sudden stops or when going up or down slopes **[Figure 10-40-2]**.

- Lower the bucket or attachment to the floor.
- Stop the engine.
- Engage the parking brake.
- Install chains at the front and rear loader tie down positions **[Figure 10-40-2]**.
- Fasten each end of the chain to the transport vehicle.

REMOTE START TOOL (SERVICE TOOL) KIT - 6689779

Description

The Remote Start Tool (Service Tool) Kit is a replacement tool for MEL 1563 Remote Start Tool and MEL 1400B - BOSS® Diagnostic Tool.

The Remote Start Tool (Service Tool) Kit, P/N 6689779, can be used to service older loaders with the BOSS® system using the supplied BOSS® Service Tool Harness P/N 6689745.

The Remote Start Tool (Service Tool) Kit, P/N 6689779, can be used to service newer loaders using the supplied harness P/N 6689747.

A computer can be connected to the Remote Start Tool (Service Tool) for diagnostics and software updates using the computer harness P/N 6689746 in conjunction with the loader harness.

AIR CLEANER SERVICE

Replacing Filter Elements

Figure 10-80-1

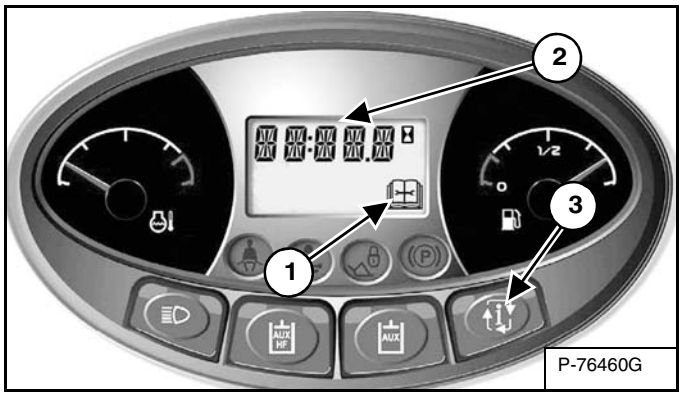
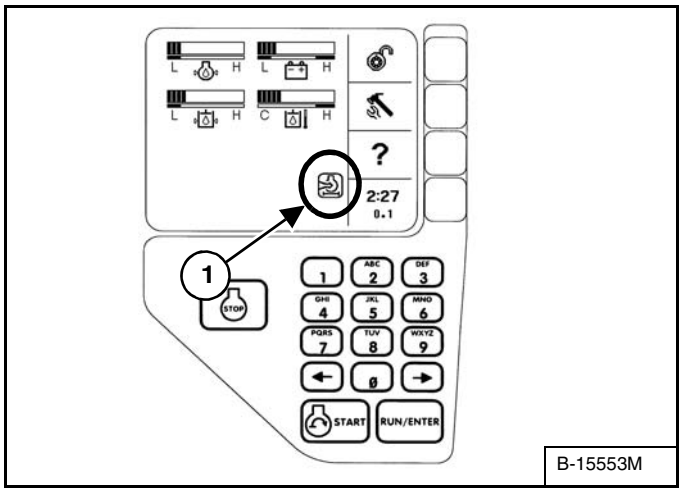


Figure 10-80-2



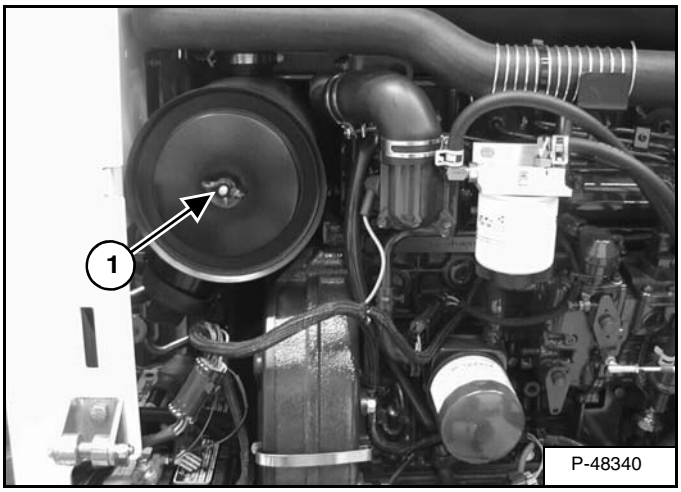
It is important to change the air filter element only when necessary. The Service indicator (Item 1) will FLASH and service code **[M0117]** (Air Filter Plugged) will show in the Data Display (Item 2) when the Information button (Item 3) **[Figure 10-80-1]** is held for two seconds.

The Air Cleaner icon on the Deluxe Instrumentation Panel, if equipped, will be ON (Item 1) **[Figure 10-80-2]**.

Replace the inner filter every third time the outer filter is replaced or as indicated.

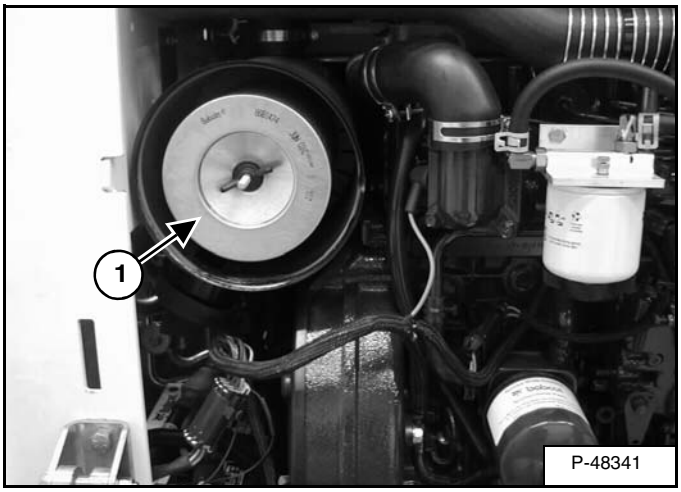
Outer Filter

Figure 10-80-3



Remove the wing nut and remove the dust cover (Item 1) **[Figure 10-80-3]**.

Figure 10-80-4



Remove the wing nut and pull the outer filter element (Item 1) **[Figure 10-80-4]** out and discard.

NOTE: Make sure all sealing surfaces are free of dirt and debris.

Install new filter. Push all the way in until it contacts the base of the housing. Install wing nut.

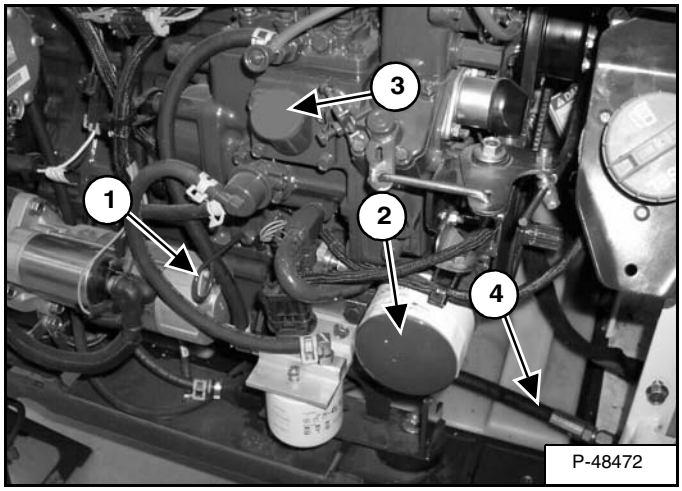
Install the dust cover and the wing nut **[Figure 10-80-3]**

ENGINE LUBRICATION SYSTEM

Checking And Adding Engine Oil

Check the engine oil level every day before starting the engine for the work shift.

Figure 10-110-1

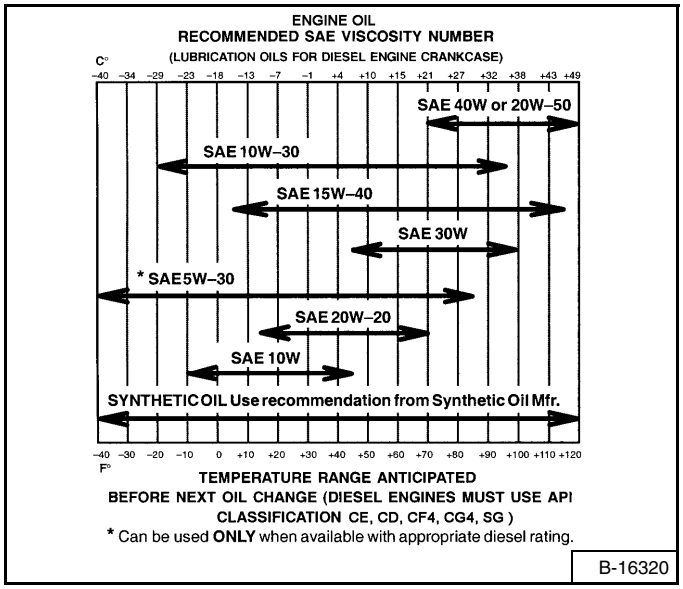


Open the rear door and remove the dipstick (Item 1) **[Figure 10-110-1]**.

Keep the oil level between the marks on the dipstick. Do not overfill.

Engine Oil Chart

Figure 10-110-2



Use a good quality motor oil that meets API Service Classification of CD or better See Oil Chart **[Figure 10-110-2]**.

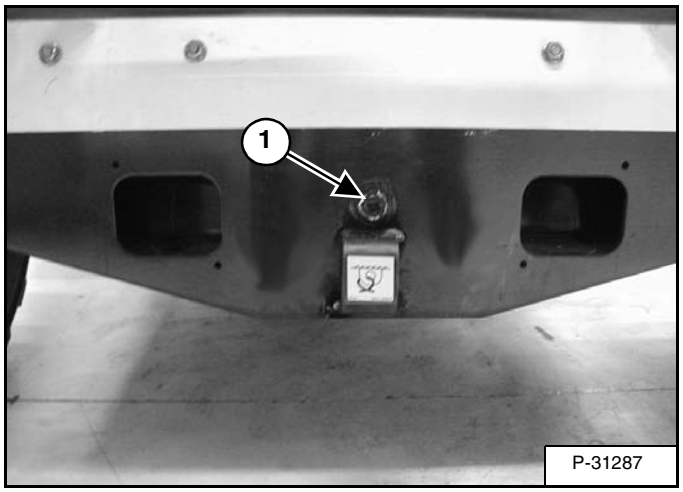
FINAL DRIVE TRANSMISSION (CHAINCASE)

Checking And Adding Oil

The chaincase contains the final drive sprockets and chains. Use the same type of oil as the hydraulic/ hydrostatic system. (See S185 LOADER SPECIFICATIONS on Page SPEC-10-1).

Stop the loader on a level surface and stop the engine.

Figure 10-130-1



Remove the plug (Item 1) **[Figure 10-130-1]** from the front of the chaincase housing.

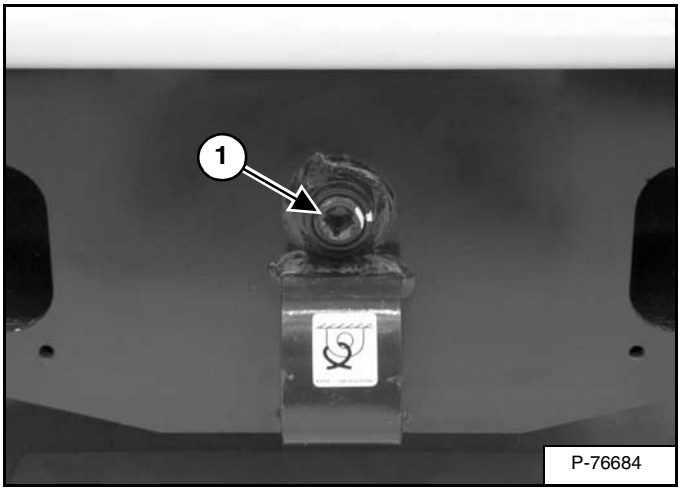
If oil can be reached with the tip of your finger through the hole, the oil level is correct.

If the level is low, add oil through the check plug hole until oil flows from the hole.

Install and tighten the plug.

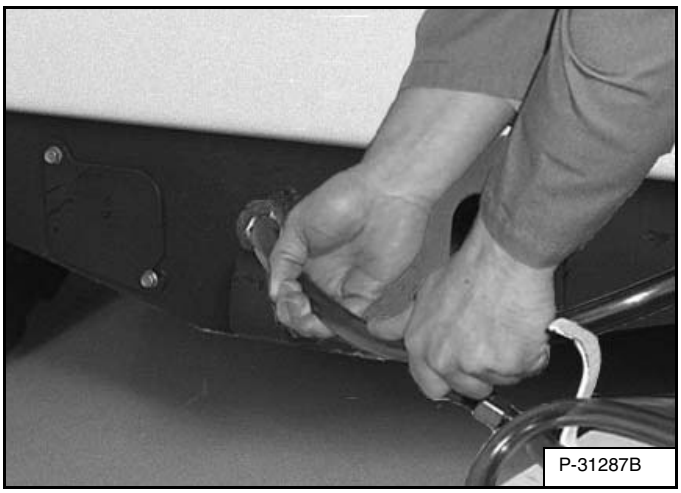
Removing And Replacing Oil

Figure 10-130-2



Remove the check plug (Item 1) **[Figure 10-130-2]** from the front of the chaincase housing.

Figure 10-130-3



Remove the oil from the chaincase **[Figure 10-130-3]**.

Recycle or dispose of the used oil in an environmentally safe manner.

Add oil through the check plug hole until the oil flows from the hole.

⚠ WARNING

AVOID INJURY OR DEATH

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.

W-2103-0508

SPARK ARRESTOR MUFFLER

Cleaning Procedure

See the SERVICE SCHEDULE for service interval for cleaning the spark arrestor muffler. (See SERVICE SCHEDULE on Page 10-70-1.)

Do not operate the loader with a defective exhaust system.

IMPORTANT

This loader is factory equipped with a U.S.D.A. Forestry Service approved spark arrestor muffler. It is necessary to do maintenance on this spark arrestor muffler to keep it in working condition. The spark arrestor muffler must be serviced by dumping the spark chamber every 100 hours of operation.

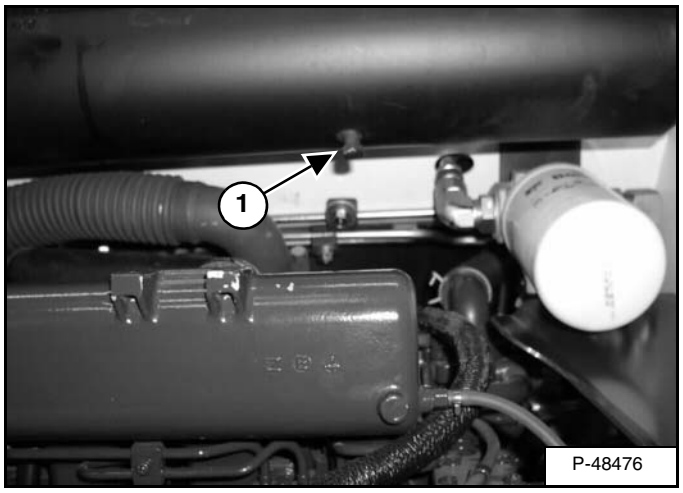
If this machine is operated on flammable forest, brush or grass covered land, it must be equipped with a spark arrestor attached to the exhaust system and maintained in working order. Failure to do so will be in violation of California State Law, Section 4442 PRC.

Consult local laws and regulations for spark arrestor requirements

I-2022-0807

Stop the engine. Open the rear door.

Figure 10-170-1



Remove the plug (Item 1) **[Figure 10-170-1]** from the bottom of the muffler.

⚠ WARNING

When the engine is running during service, the steering levers must be in neutral and the parking brake engaged. Failure to do so can cause injury or death.

W-2006-0284

Start the engine and run for about 10 seconds while a second person, wearing safety glasses, holds a piece of wood over the outlet of the muffler.

This will force contaminants out through the cleanout hole.

Stop the engine.

Install and tighten the plug.

Close the rear door.

⚠ WARNING

AVOID INJURY OR DEATH

When an engine is running in an enclosed area, fresh air must be added to avoid concentration of exhaust fumes. If the engine is stationary, vent the exhaust outside. Exhaust fumes contain odorless, invisible gases which can kill without warning.

W-2050-0807

⚠ WARNING

Stop engine and allow the muffler to cool before cleaning the spark chamber. Wear safety goggles. Failure to obey can cause serious injury.

W-2011-1285

⚠ WARNING

Never use machine in atmosphere with explosive dust or gases or where exhaust can contact flammable material. Failure to obey warnings can cause injury or death.

W-2068-1285

HYDRAULIC SYSTEM (CONT'D)

Continued On Next Page

HYDRAULIC/HYDROSTATIC SCHEMATIC
WITH SJC OPTION
S185 (S/N 530360001 AND ABOVE)
(S/N 530460001 AND ABOVE)
(S/N ABRT60001 AND ABOVE)
(PRINTED MARY 2008)
V-1248legend

LEGEND

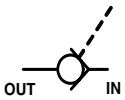
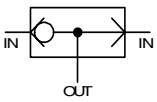
1. RESERVOIR:
   Capacity . . . . . 19.2 qt. (18,2 L)
2. SPRING LOADED FILTER BY-PASS VALVE: 45-55 PSI (3,1-3,8 bar)
3. DIFFERENTIAL PRESSURE SWITCH:
   36-44 PSI (2,5-3,0 bar)
   Normally Closed
4. DRIVE MOTOR SHUTTLE VALVE
5. RELIEF/REPLENISHING VALVE - HIGH PRESSURE: 5075 PSI (350 bar)
6. RELIEF VALVE - CHARGE INLET:
   360 PSI (24,8 bar)
   at High Engine Idle
   With 140 degrees F. (60 degrees C.) Fluid
7. FRONT AUXILIARY MANUAL PRESSURE BLEED-OFF VALVE
8. HYDRAULIC PUMP . . . . . Gear Type
   16.9 GPM (64 L/min.) at High Engine Idle
9. RELIEF VALVE - MAIN:
   3250-3350 PSI (224-231 bar)
   at Front Quick Couplers
10. PORT RELIEF/ANTICAVITATION VALVE
    3500 PSI (241,3 bar)
11. ANTICAVITATION VALVE
12. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - AUXILIARY
13. PORT RELIEF/ANTICAVITATION VALVE:
    . . . . . (Optional)
    3500 PSI (241,3 bar)
14. LOAD CHECK VALVE
15. LIFT CYLINDER SPOOL - MADE TO RESTRICT FLOW DURING BOOM DOWN BUT NOT DURING BOOM UP
16. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BICS CONTROL
17. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - TILT CONTROL
18. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT CONTROL
19. PULL BUTTON ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT ARM BY-PASS
20. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - UNLOADING SPOOL
21. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - FLOW CONTROL SPOOL
22. FLOW DIVIDER ADJUSTMENT VALVE
23. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BASE
24. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - ROD
25. LOAD SHUTTLE VALVE - BLEED OFF
26. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - TWO COIL
27. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - REAR AUXILIARY
28. RESTRICTOR - 0.140 inch (3,6 mm)
29. RESTRICTOR - 0.031 inch (0,8 mm)
30. RELIEF VALVE: 3300 PSI (228 bar)
31. FILTER - HYDRAULIC (CANISTER)
32. FILTER - CASE DRAIN (SINTERED BRONZE)
33. FILTER - BICS CONTROL VALVE (SCREEN)
34. CHECK VALVE - BUCKET POSITION VALVE
35. RESTRICTION
36. VARIABLE CAPACITY DISPLACEMENT BI-DIRECTIONAL HYDROSTATIC PUMP
37. SHUTTLE RELIEF VALVE
    (Not Adjustable - Factory Set)
    65 PSI (4,5 bar)
38. FIXED CAPACITY DISPLACEMENT BI-DIRECTIONAL HYDROSTATIC MOTOR
39. CHECK VALVE - With 80 PSI (5,5 bar) Spring
40. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BUCKET POSITION VALVE (ON/OFF)
41. CHECK VALVE - BICS CONTROL VALVE
42. RESTRICTION - 0.343 inch (8,7 mm)
43. FILTER - Bob-Tach Valve
44. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - HYDRAULIC POWERED BOB-TACH
45. RESTRICTION - 0.089 inch (2,26 mm)
46. RESTRICTION - 0.025 inch (0,6 mm)
47. RELIEF VALVE - 2000 PSI (137 bar)
48. RELIEF VALVE - 1200 PSI (83 bar)
49. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE (TWO COIL)
50. FIXED CAPACITY DISPLACEMENT HYDRAULIC MOTOR
51. ANTICAVITATION VALVE
52. PROPORTIONAL RELIEF VALVE –
    (Fan Speed Regulator):
    1566 - 1784 PSI (108 - 123 bar)
53. CHARGE PUMP -
    12.8 GPM (48,5 L/min) at High Engine Idle
54. CHECK VALVE - With 300 PSI (20,7 bar) Spring with 0.016 inch (0,40 mm) orifice
55. SOLENOID ACTIVATED CONTROL VALVE - FORWARD/REVERSE
56. SERVO PISTON -Swash Plate
57. POSITION SENSOR -Swash Plate
58. CHARGE PRESSURE SENSOR
59. SENSOR – CHARGE PRESSURE – Fan Filter
60. SENSOR – HYD. TEMP. – Hyd. Filter

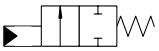
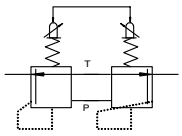
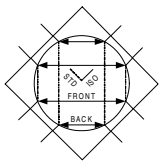
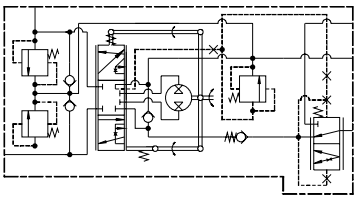
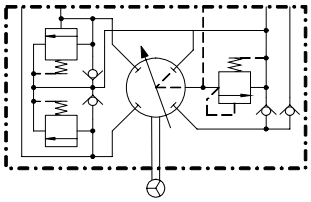
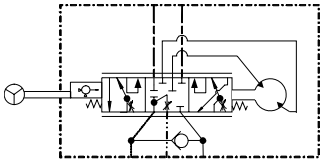
NOTE: Unless otherwise specified, springs have NO significant pressure value.

Printed in U.S.A.

V-1248legend (4-30-08)

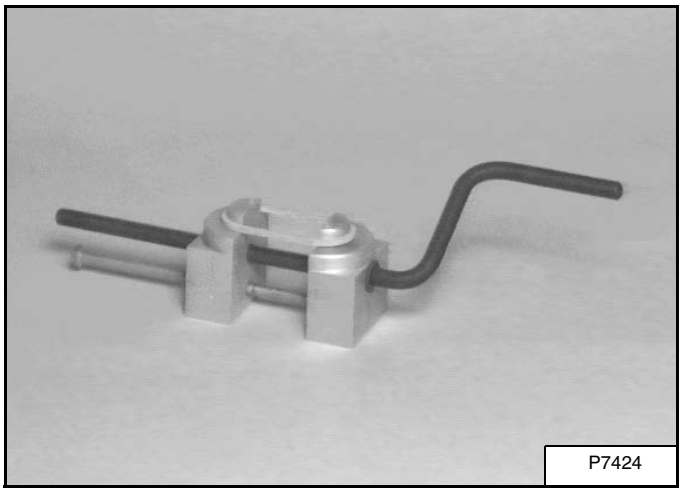
Glossary Of Hydraulic / Hydrostatic Symbols (Cont'd)

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, Lock 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.

SYMBOL	DESCRIPTION
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).
	MANUALLY ACTIVATED DIRECTION CONTROL VALVE (Variable Position) Joystick Controlled, variable pressure to shift the pilot activated directional control valve spool.
	MANUALLY ACTIVATED FLOW CONTROL VALVE (Two Position) allows for changing pilot flow to control switching joystick functions for STD / ISO Control (Excavators Only).
	STEERING CONTROL VALVE (Variable Position) - Used for controlling the hydraulic flow for the steering cylinders in relationship to the amount the steering wheel is rotated.
	
	

Disassembly And Assembly (Cont'd)

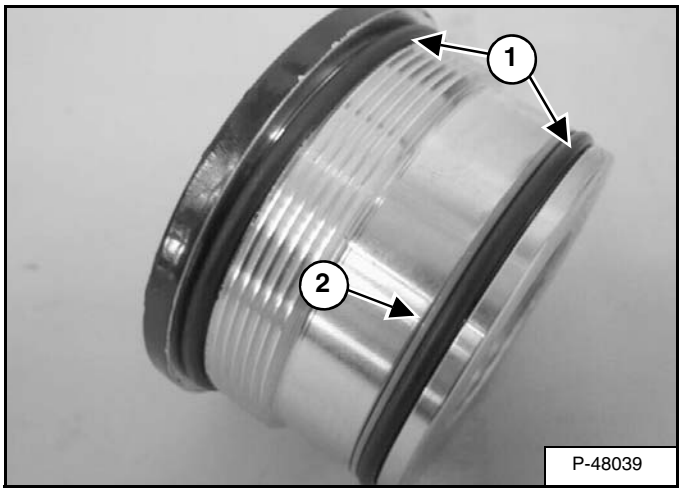
Figure 20-20-13



Assembly: Install the new seal on the tool and slowly stretch it until it fits the piston **[Figure 20-20-13]**. Allow the seal to stretch for 30 seconds before installing it on the piston.

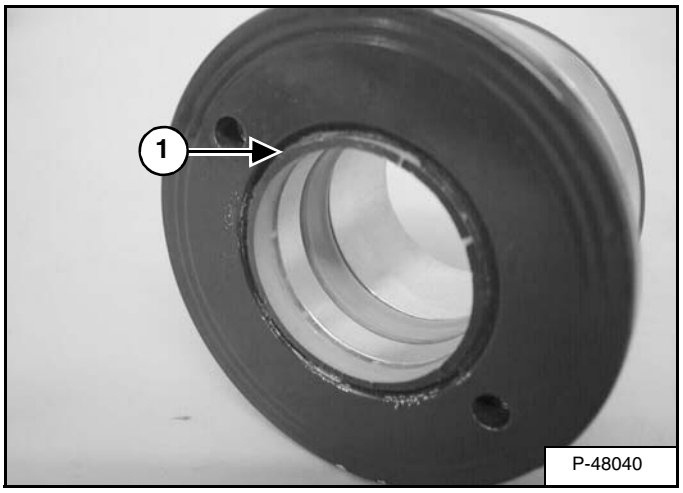
Once the seal is installed on the piston, a piston ring compressor can be used on the piston for 3 minutes to compress the seal into place.

Figure 20-20-14



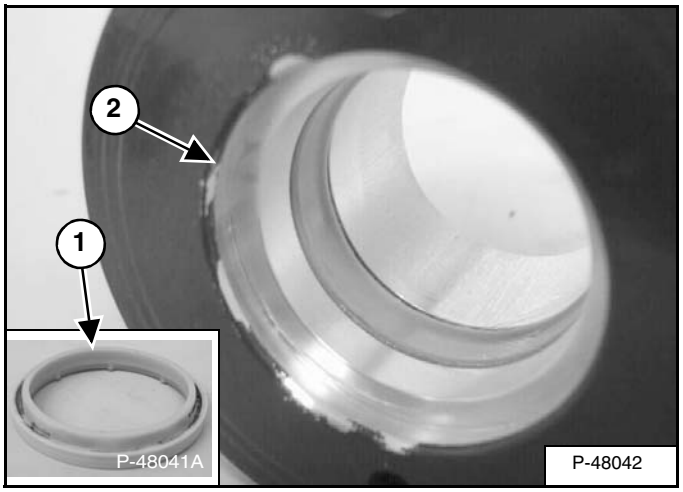
Remove the two O-rings (Item 1) and the back-up washer (Item 2) **[Figure 20-20-14]** from the cylinder head.

Figure 20-20-15



Remove the wiper seal (Item 1) **[Figure 20-20-15]** from the cylinder head.

Figure 20-20-16



Install the wiper seal, with the wiper side of the seal (Item 1), toward the outside of the head (Item 2) **[Figure 20-20-16]**.

CYLINDER (BOB-TACH)

Testing

WARNING

AVOID INJURY OR DEATH

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.

W-2103-0508

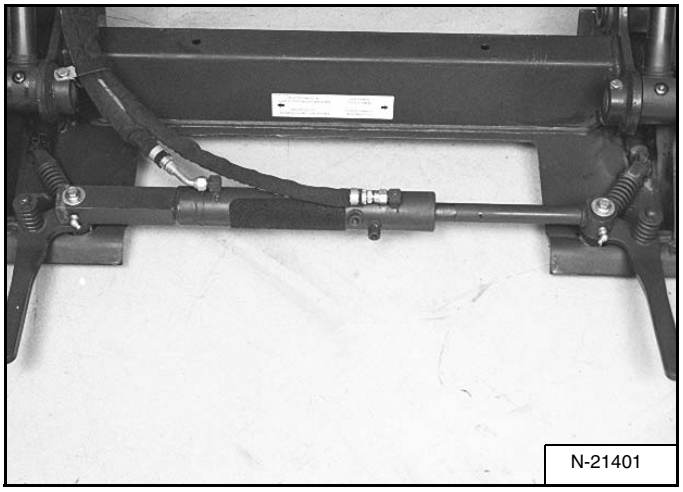
WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. 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.

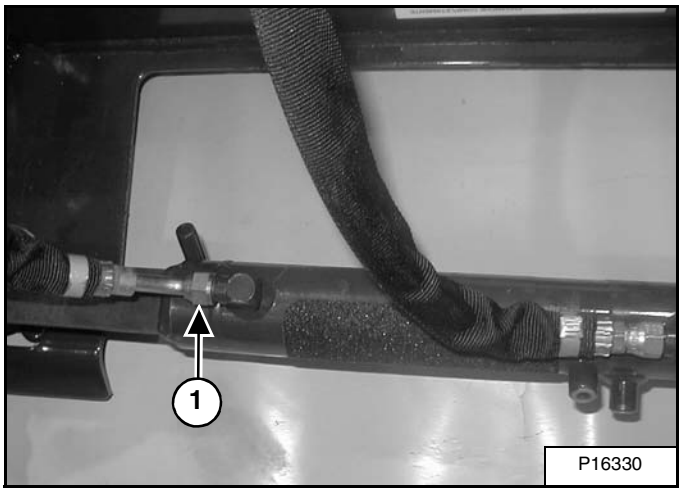
W-2072-0807

Figure 20-22-1



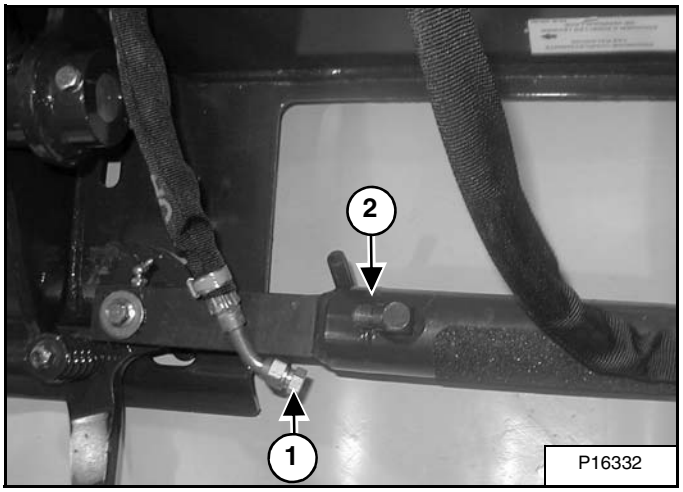
Tilt the Bob-Tach forward, so it is parallel to the floor **[Figure 20-22-1]**.

Figure 20-22-2



Disconnect the hose (Item 1) **[Figure 20-22-2]** from the 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 BOB-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 Bob-Tach cylinder for repair.

Removal And Installation

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.

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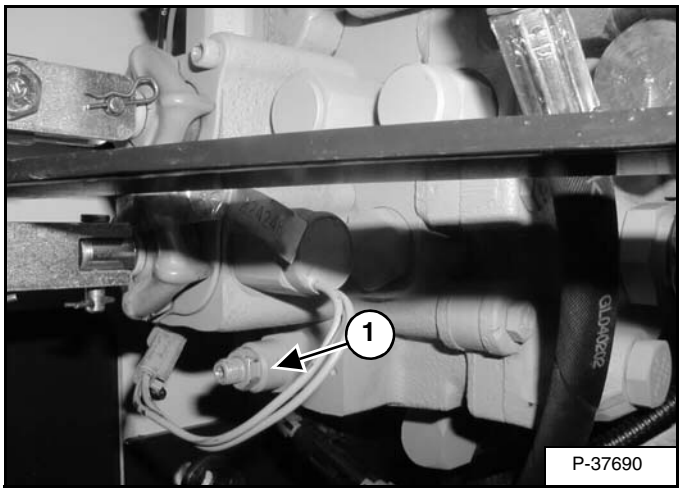
Raise the operator cab. (See Raising on Page 10-30-2.)

Clean the area around the control valve.

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

Figure 20-30-6



NOTE: The right side motor cover if removed may provide better access to the main relief valve on some machines.

The main relief valve (Item 1) **[Figure 20-30-6]** is located at the lower front of the control valve below the lift and tilt spool connections.

Loosen and remove the main relief valve (Item 1) **[Figure 20-30-6]**.

Figure 20-30-7

Remove the O-rings and back-up washers from the main relief valve **[Figure 20-30-7]**.

Clean the main relief valve in clean solvent. Use air pressure to dry the valve.

Install new O-rings and back-up washers. Install the main relief valve and tighten **[Figure 20-30-7]**.

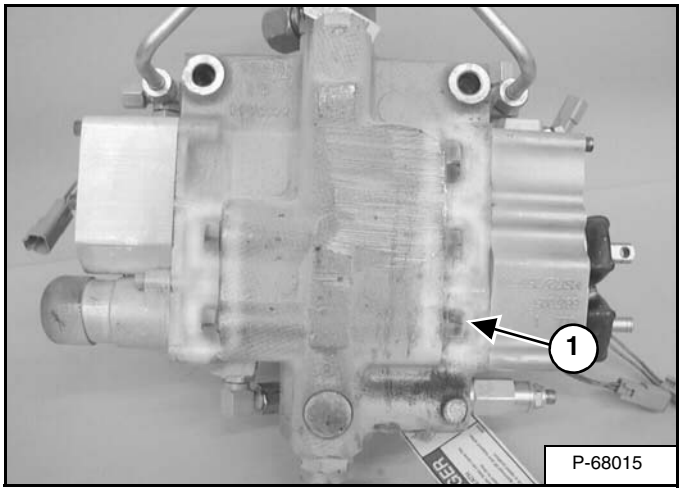
Installation: Tighten the main relief valve to 35 - 40 ft.-lb. (47 - 54 N•m) torque.

Check the pressure again. (See Testing on Page 20-30-2.)

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

Anti-Cavitation Valve Removal And Installation (Lift, Rod End)

Figure 20-40-26



At the back side of the control valve, remove the lift section anti-cavitation valve (Item 1) **[Figure 20-40-26]**.

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.

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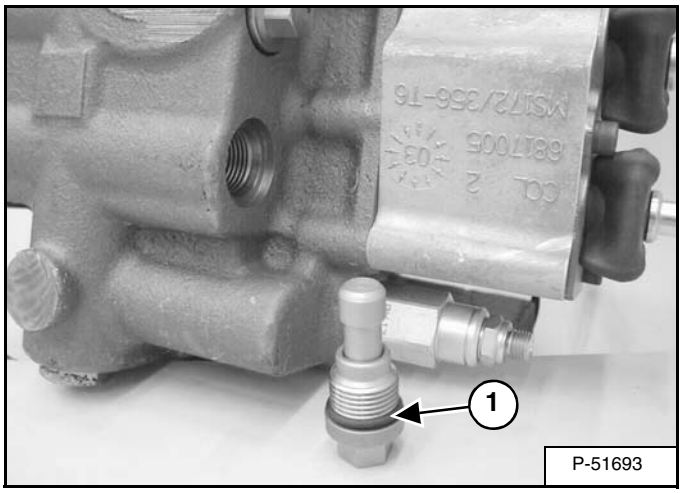
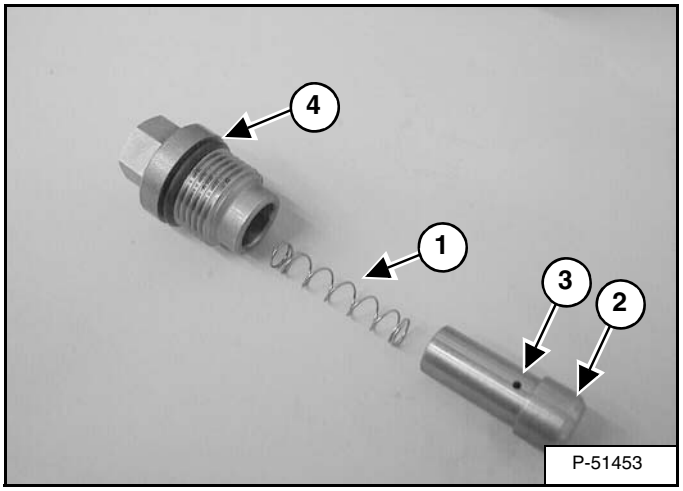
Figure 20-40-27



Installation: Always use new O-ring (Item 1) **[Figure 20-40-27]** on the anti-cavitation valve plug. Tighten the plug to 35 - 40 ft.-lb. (47 - 54 N•m) torque.

Figure 20-40-28



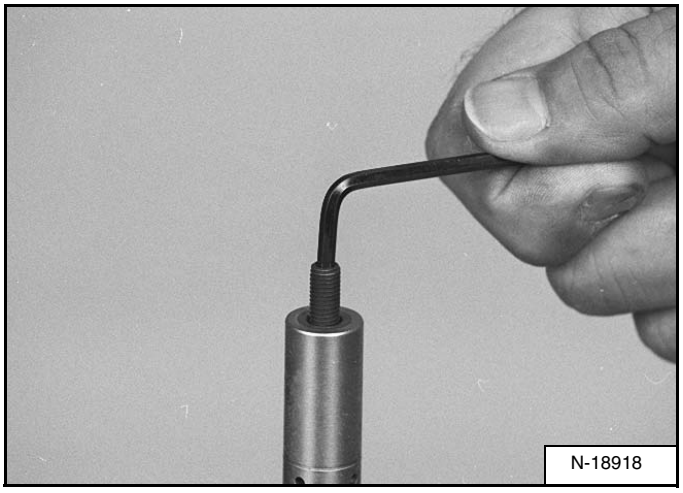
Remove the spring (Item 1) and poppet (Item 2) **[Figure 20-40-28]**.

Check the orifice (Item 3) **[Figure 20-40-28]** in the poppet to be sure it is not plugged.

Installation: Install a new O-ring (Item 4) **[Figure 20-40-28]** on the plug and lightly lubricate with oil before installing. Tighten the plug to 38 - 45 ft.-lb. (52 - 61 N•m) torque.

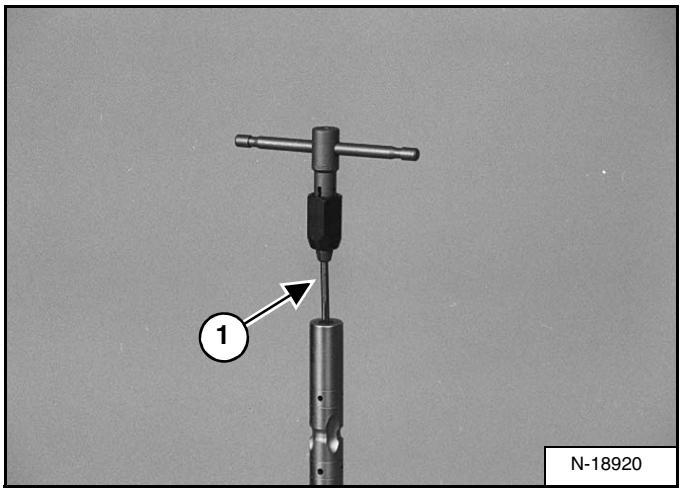
Lift Spool And Detent Removal And Installation (Cont'd)

Figure 20-40-64



Remove the stud from the end of the spool **[Figure 20-40-64]**.

Figure 20-40-65



Removal of the plastic plug:

Make a center point in the plug using a 1/16 in. drill.

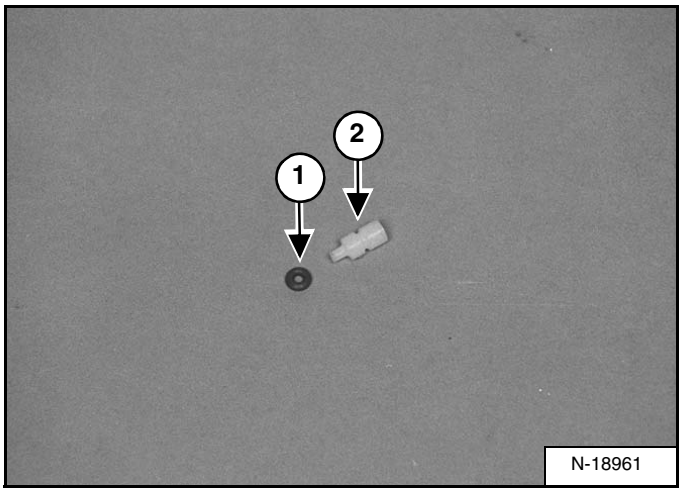
Drill a hole all the way through the plug using a 7/64 in. tap drill

Turn a 6-32 tap (Item 1) **[Figure 20-40-65]** into the plug. Pull the tap and plug out of the spool. Be careful, do not break the tap.

Clean all the debris from inside the spool bore.

NOTE: DO NOT USE Loctite® ON THE STUD THREADS.

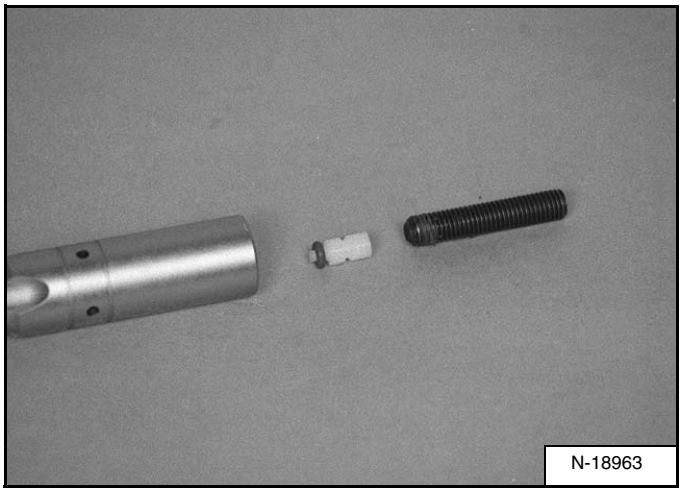
Figure 20-40-66



Install the O-ring (Item 1) over the nipple on the plastic plug (Item 2) **[Figure 20-40-66]**.

NOTE: Check the O-ring for damage. The lift spool will have an internal leak if there is damage to this O-ring. Always replace the o-ring and recheck the lift spool before the control valve is replaced.

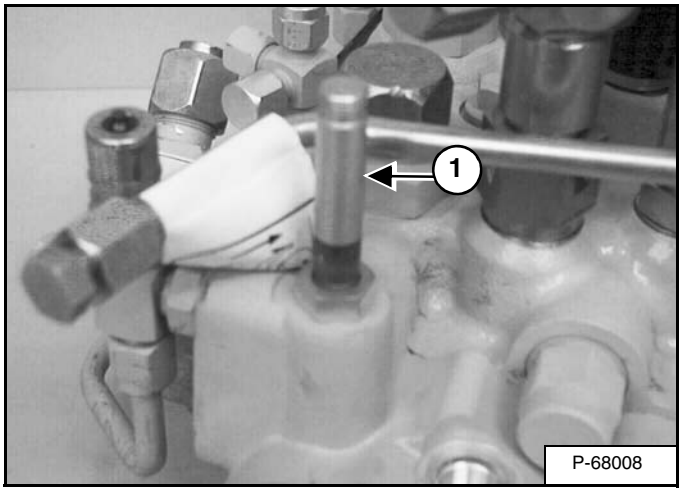
Figure 20-40-67



Install the plastic plug and O-ring in the spool **[Figure 20-40-67]**.

Auxiliary Solenoid Removal And Installation (Cont'd)

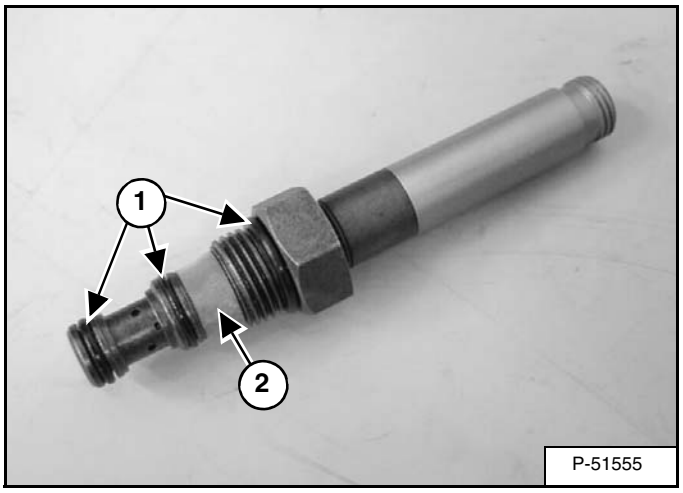
Figure 20-40-103



Remove the solenoid stem (Item 1) **[Figure 20-40-103]**.

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

Figure 20-40-104

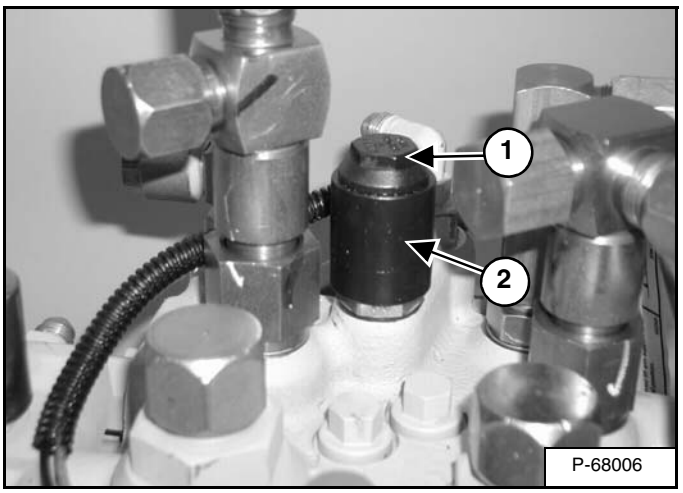


Remove the O-rings (Item 1) **[Figure 20-40-104]** from the solenoid stem.

Check and clean the screen (Item 2) **[Figure 20-40-104]**.

Solenoid Removal And Installation

Figure 20-40-105

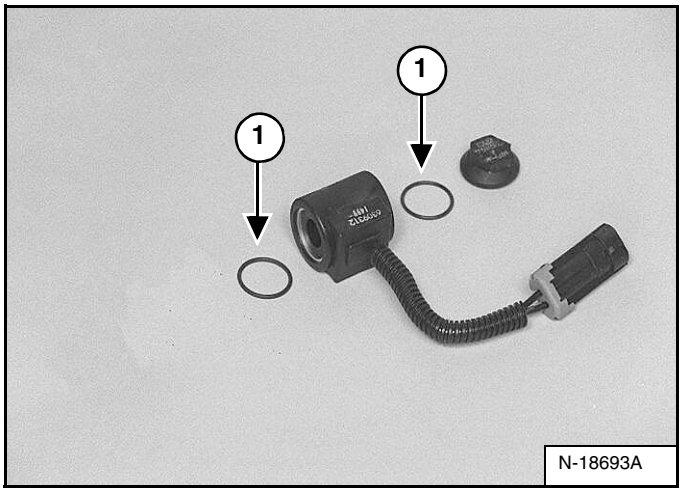


Remove the nut (Item 1) **[Figure 20-40-105]** from the solenoid stem.

Installation: Tighten the nut to 53 in.-lb. (6 N•m) torque.

Remove the solenoid coil (Item 2) **[Figure 20-40-105]**.

Figure 20-40-106



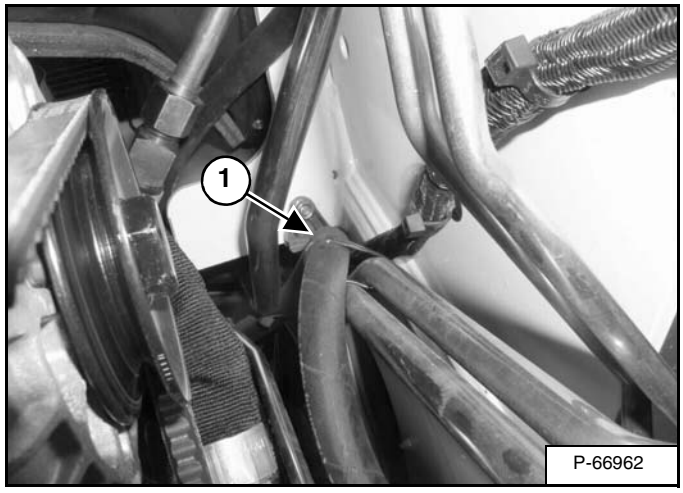
Remove the O-rings (Item 1) **[Figure 20-40-106]** from both ends of the solenoid coil.

Use an ohm meter to measure the solenoid coil resistance.

The correct resistance for the coil is **9.79 ± 0.29 ohm**.

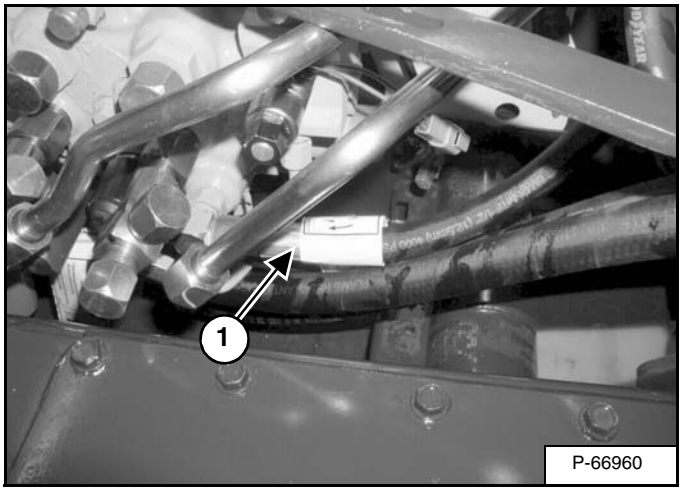
Removal And Installation (Cont'd)

Figure 20-41-13



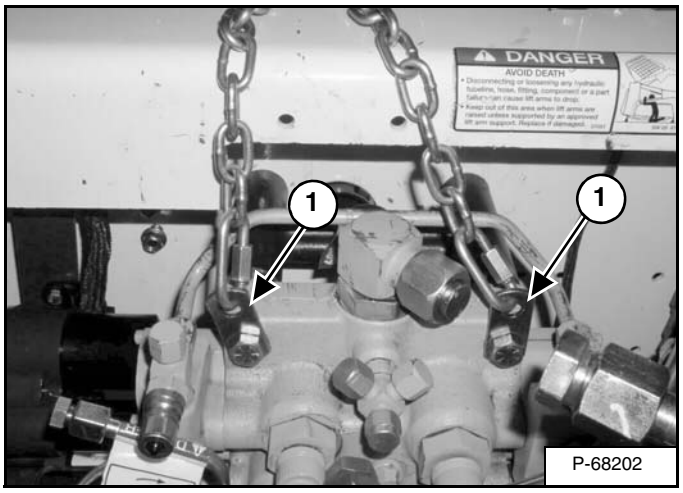
Remove any tie-straps (Item 1) **[Figure 20-41-13]** securing the fixed end main valve hose.

Figure 20-41-14



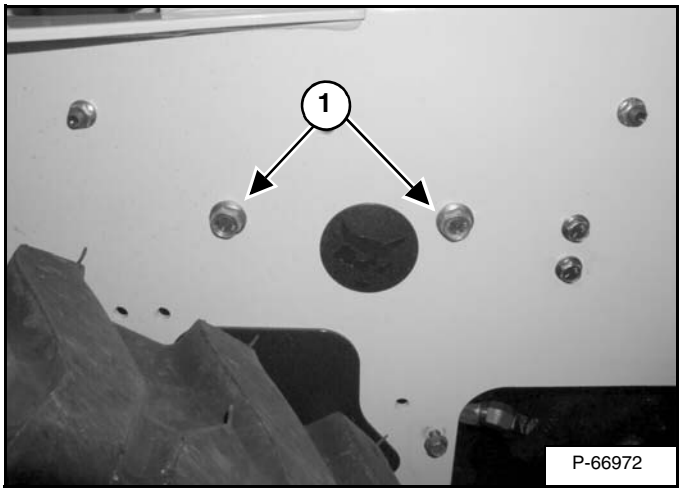
Remove the fixed-end main valve hose (Item 1) **[Figure 20-41-14]** from the main control valve fitting.

Figure 20-41-15



Connect a hoist to the lifting brackets (Item 1) **[Figure 20-41-15]** on the control valve.

Figure 20-41-16



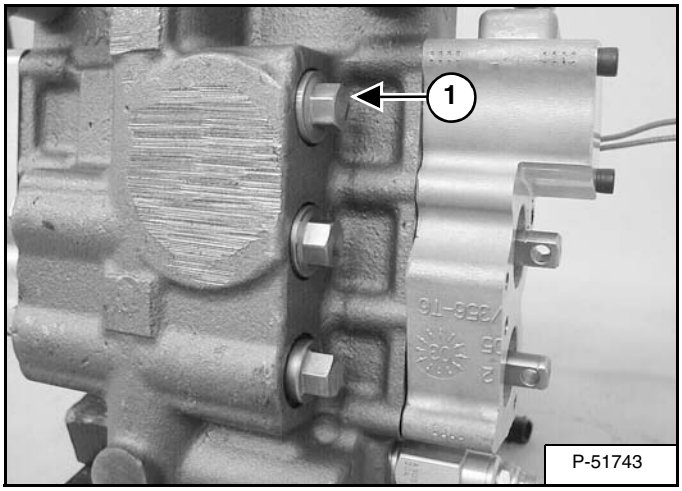
Remove the two mounting bolts (Item 1) **[Figure 20-41-16]** fastening the control valve and bracket to the side of the loader.

Remove the control valve from the loader.

Reverse removal procedure to install the hydraulic control valve.

Port Relief Valve Removal And Installation (Cont'd)

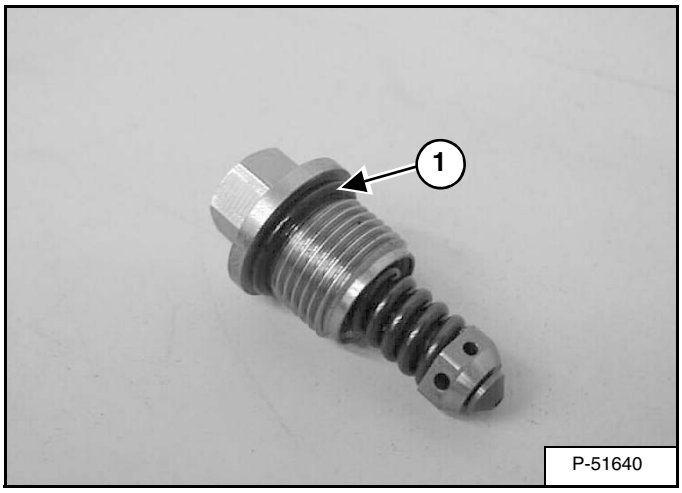
Figure 20-41-45



The control valve may be equipped with an optional auxiliary port relief valve (Item 1) **[Figure 20-41-45]**.

Remove the auxiliary port relief valve.

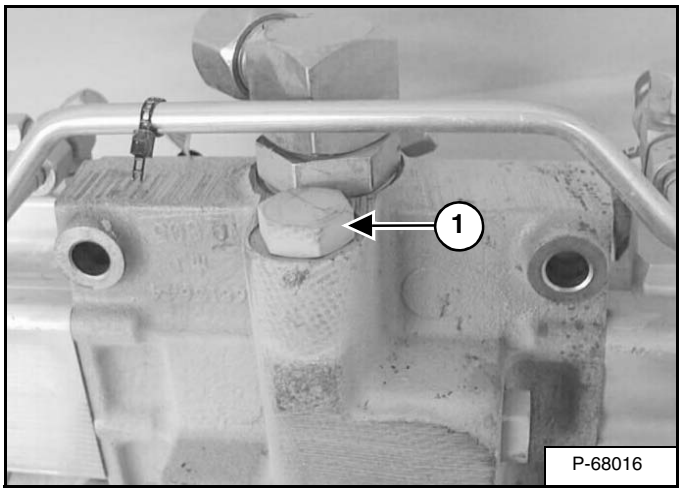
Figure 20-41-46



Installation: Always use new O-rings (Item 1) **[Figure 20-41-46]**. Lightly lubricate with oil and tighten to 38 - 45 ft.-lb. (52 - 61 N•m) torque.

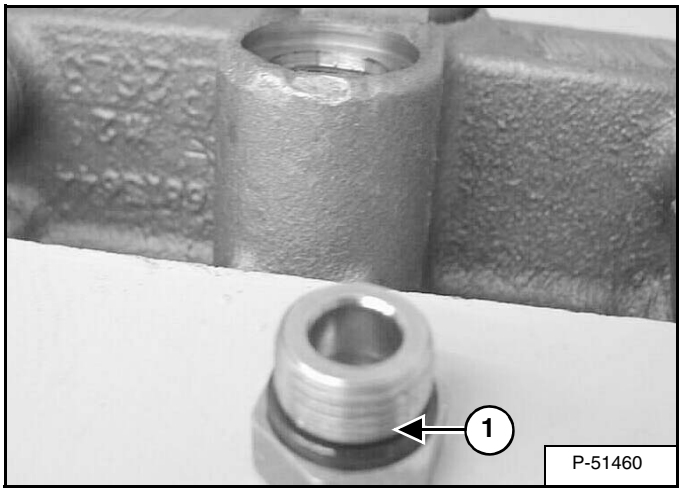
Plug Removal And Installation

Figure 20-41-47



At the top side of the control valve, remove the plug (Item 1) **[Figure 20-41-47]**.

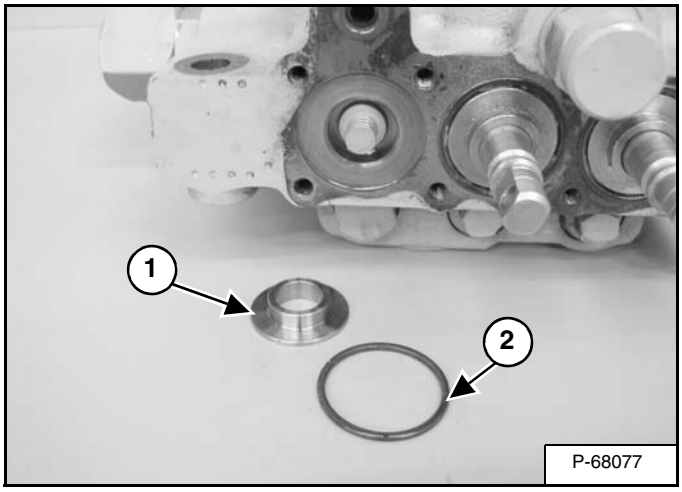
Figure 20-41-48



Installation: Always use new O-rings (Item 1) **[Figure 20-41-48]**. Tighten to 40 ft.-lb. (54 N•m) torque.

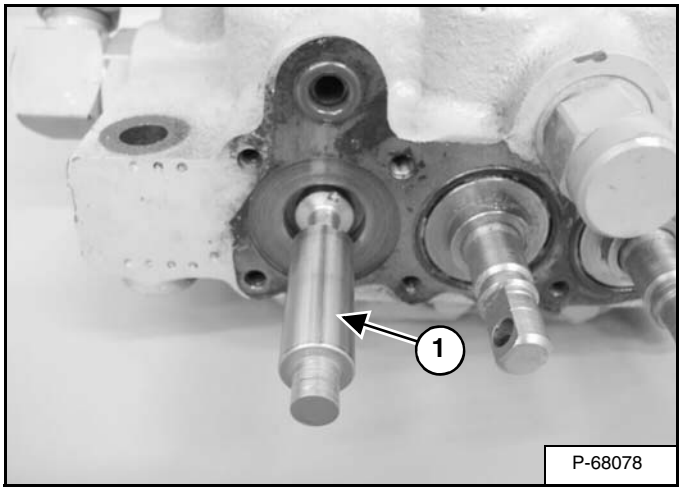
Auxiliary Spool Removal And Installation (Cont'd)

Figure 20-41-84



Remove the spacer (Item 1) and O-ring (Item 2) **[Figure 20-41-84]** from the auxiliary spool.

Figure 20-41-85



Remove the auxiliary spool (Item 1) **[Figure 20-41-85]**.

HYDRAULIC PUMP (STANDARD)

Description

The hydraulic gear pump is attached to the end of the hydrostatic pumps and is located on the right side of the loader between the hydraulic control valve and the engine.

The hydraulic gear pump is a combination of gear pumps that provide hydraulic flow to several hydraulic systems.

The hydraulic gear pump has a dedicated charge pump. This supplies flow to the hydraulic fan motor and charge pressure to the hydrostatic pump.

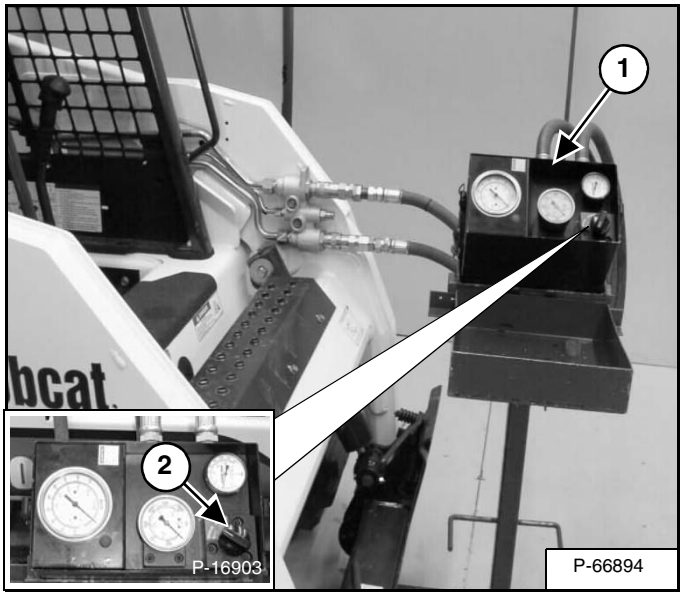
A seal kit is available to service the hydraulic pump. If any of the main components of the pump are damaged, the entire pump must be replaced.

Pump Test At Quick Couplers

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

MEL10003 - In-Line Hydraulic Tester
MEL10006 - Flow Meter Fitting Kit

Figure 20-60-1



NOTE: When testing the hydraulic flow of a machine, hoses must be at least 3/4 in. 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.

Install a hydraulic tester (Item 1) **[Figure 20-60-1]** onto the front auxiliary quick couplers.

This procedure will require a operator in the cab and one operator running the tester.

Start the engine and run at low idle RPM. Press the Front Auxiliary button. Engage the front auxiliary with the trigger on the right handle. Make sure the tester is connected correctly. If no flow is indicated on the tester, the hoses are connected wrong. With the hoses connected correctly, increase the engine speed to full RPM*.

Warm the fluid to 140° F (60° C) by turning the restrictor control clockwise on the tester so it reads about a 1000 PSI (69 bar).

NOTE: *DO NOT EXCEED 3300 PSI.*

Turn the restrictor control (Item 2) **[Figure 20-60-1]** on the tester counterclockwise to obtain free flow, the flow should be approximately 16-17 GPM. Start turning the restrictor clockwise, causing more restriction on the flow. The GPM should drop off slightly until the pressure reaches approximately 2800 PSI. At approximately 2800 PSI the flow should start decreasing rapidly until the pressure reaches 3250 - 3300 PSI. At 3250 - 3300 PSI the flow should be at 0 GPM. Turn the restrictor (Item 2) **[Figure 20-60-1]** counterclockwise to free flow. Shut the front auxiliary hydraulics off.

If flow and pressure specs are not obtained, go to Direct Pump Testing. (See Direct Pump Test (Standard Section) on Page 20-60-2.)

*Refer to (See Hydraulic System on Page SPEC-10-3.) for system relief pressure and full RPM.

Disassembly And Assembly (Cont'd)

Figure 20-60-19

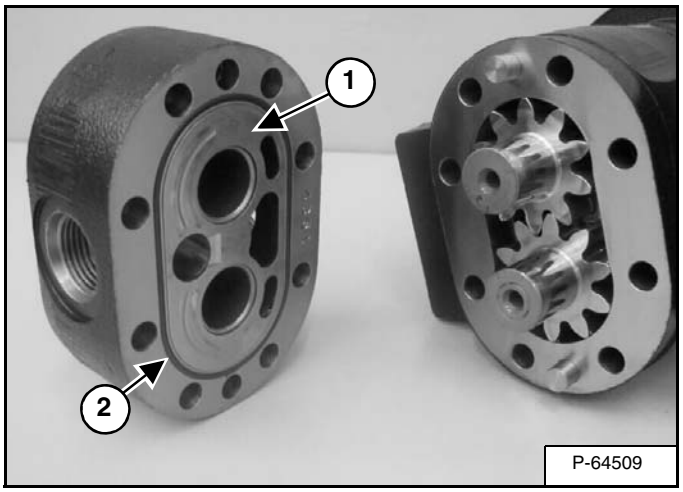
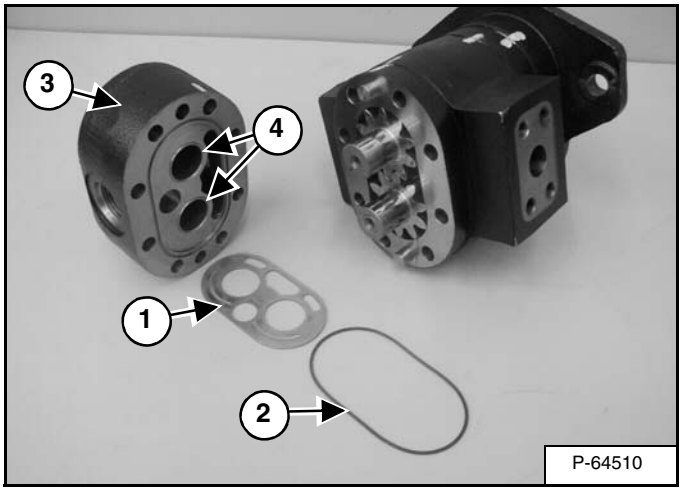


Figure 20-60-20



Remove the wear plate (Item 1) and section seal (Item 2) **[Figure 20-60-19]** & **[Figure 20-60-20]** from the pump end section.

NOTE: Position wear plate (Item 1) [Figure 20-60-20] inlets and traps as shown with bronze side toward gears.

NOTE: Inspect the pump end section (Item 3) [Figure 20-60-20] and bushings (Item 4) [Figure 20-60-20]. If excessive wear or damage is visible, the pump must be replaced.

Figure 20-60-21

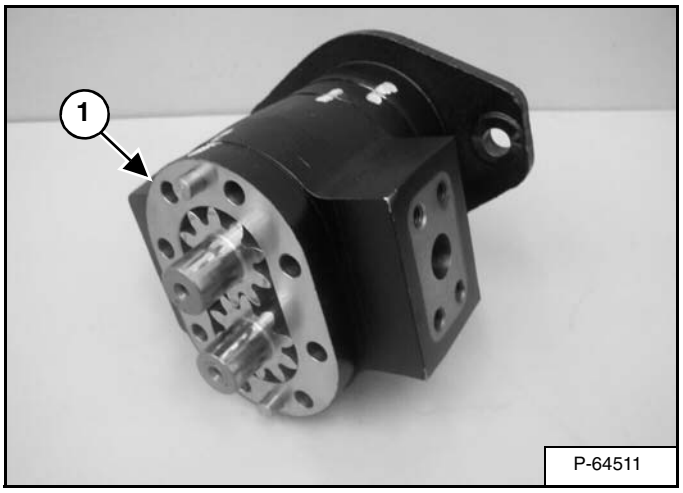
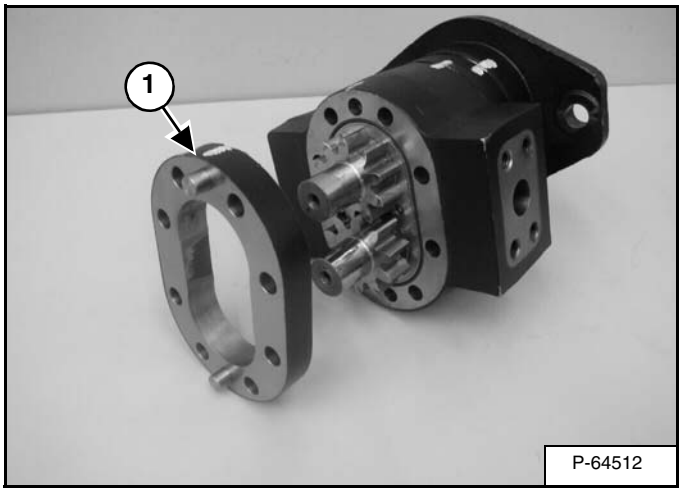


Figure 20-60-22

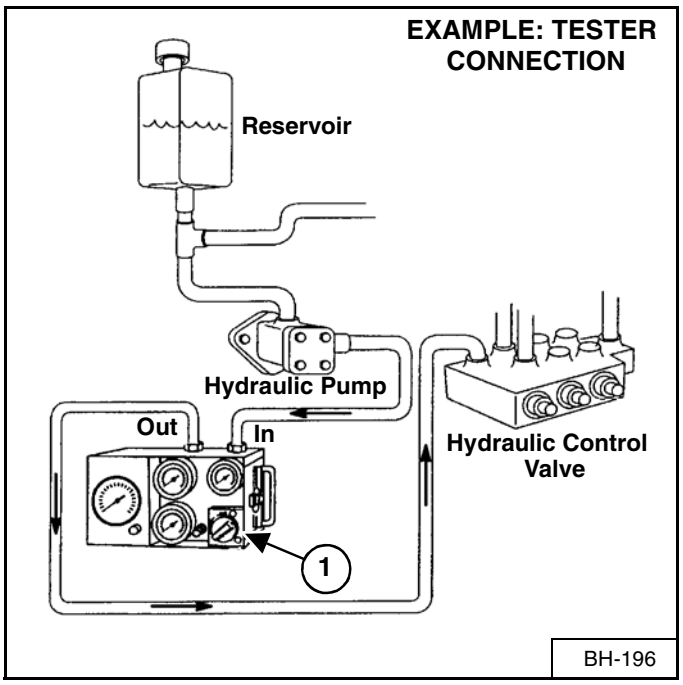


Remove the charge pump section (Item 1) **[Figure 20-60-21]** & **[Figure 20-60-22]** from the pump center section.

NOTE: Inspect the pump section (Item 1) [Figure 20-60-22]. If excessive wear or damage is visible, the pump must be replaced.

Direct Pump Test (Standard Section) (Cont'd)

Figure 20-61-50



Sample tester connection shown **[Figure 20-61-50]**.

Start the engine and run at low idle RPM. Make sure the tester is connected correctly. If no flow is indicated on the tester, the hoses are connected wrong. With the hoses connected correctly, increase the engine speed to full RPM*.

Warm the fluid to 140° F (60° C) by turning the restrictor control (Item 1) **[Figure 20-61-50]** on the tester to about 1000 PSI (6895 kPa). DO NOT exceed system relief pressure. Open the restrictor control and record the free flow (GPM) at full RPM*.

Push the maximum/variable flow switch (on the remote start tool) to engage the front auxiliary hydraulics, the light will come ON. Push the button (on the right control lever) for fluid flow to the quick coupler (fluid pressure will go over main relief). Record the highest pressure (PSI) and flow (GPM). The high pressure flow must be at least 80% of free flow.

$$\% = \frac{\text{HIGH PRESSURE FLOW (GPM)}}{\text{FREE FLOW (GPM)}} \times 100$$

A low percentage may indicate a failed pump.

*Refer to (See Hydraulic System on Page SPEC-10-3.) for system relief pressure and full RPM.

Disassembly And Assembly (Cont'd)

Figure 20-61-69

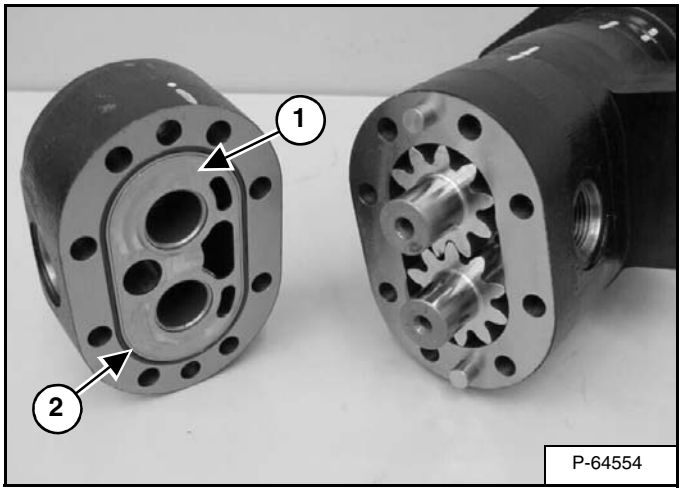
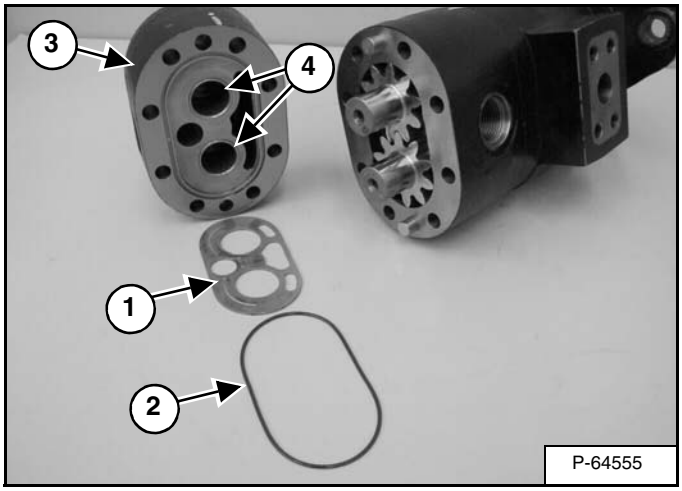


Figure 20-61-70



Remove the wear plate (Item 1) and O-ring (Item 2) **[Figure 20-61-69]** & **[Figure 20-61-70]** from the high flow end section.

NOTE: Position wear plate (Item 1) [Figure 20-61-70] inlets and traps as shown with bronze side toward gears.

NOTE: Inspect the high flow end section (Item 3) and bushings (Item 4) [Figure 20-61-70]. If excessive wear or damage is visible, the pump must be replaced.

Figure 20-61-71

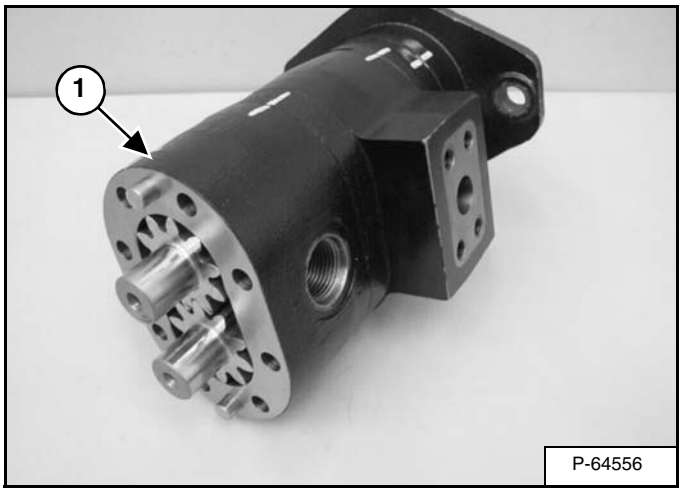
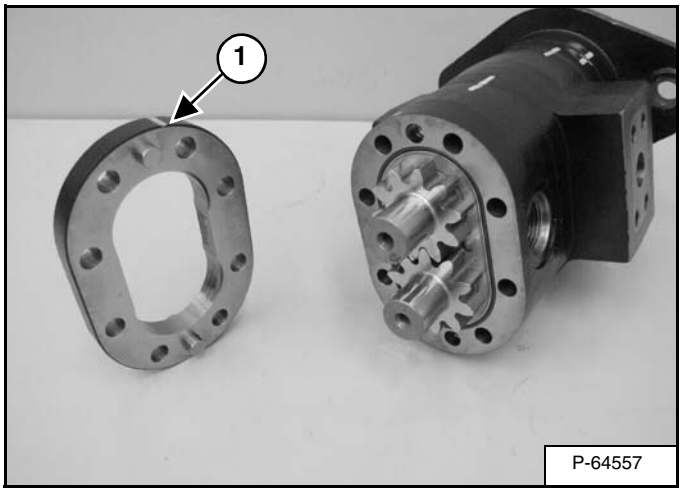


Figure 20-61-72

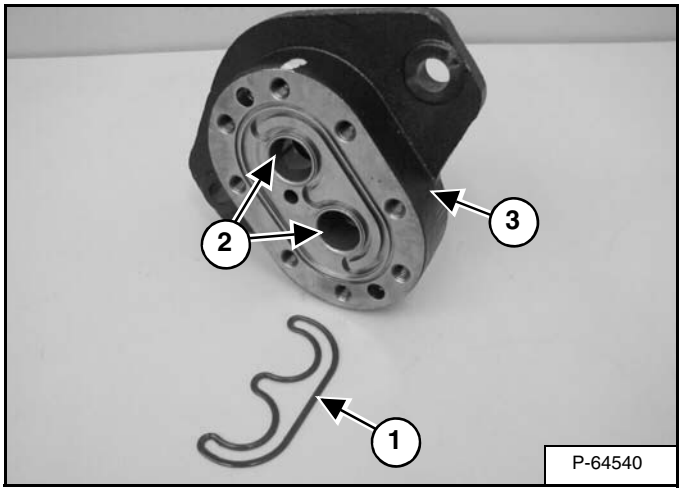


Remove the high flow pump section (Item 1) **[Figure 20-61-71]** & **[Figure 20-61-72]** from the charge center section.

NOTE: Inspect the high flow pump section (Item 1) [Figure 20-61-72]. If excessive wear or damage is visible, the pump must be replaced.

Disassembly And Assembly (Cont'd)

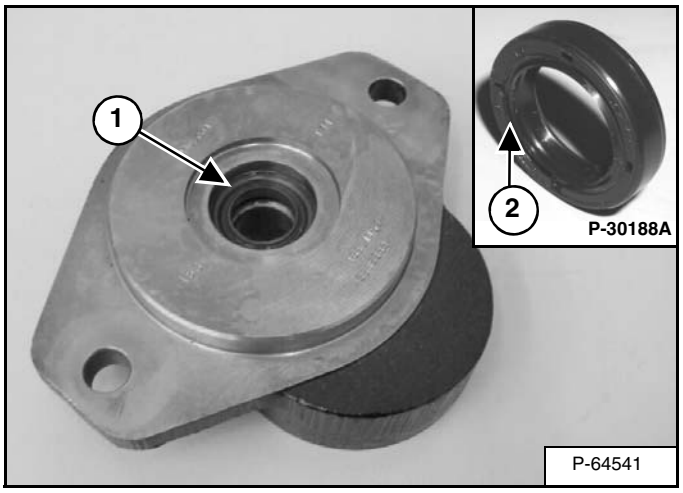
Figure 20-61-109



Inspect the pre-load seal (Item 1) **[Figure 20-61-109]** for damage and replace as needed.

NOTE: Inspect the pump flange section (Item 2) and bushings (Item 3) [Figure 20-61-109]. If excessive wear or damage is visible, the pump must be replaced.

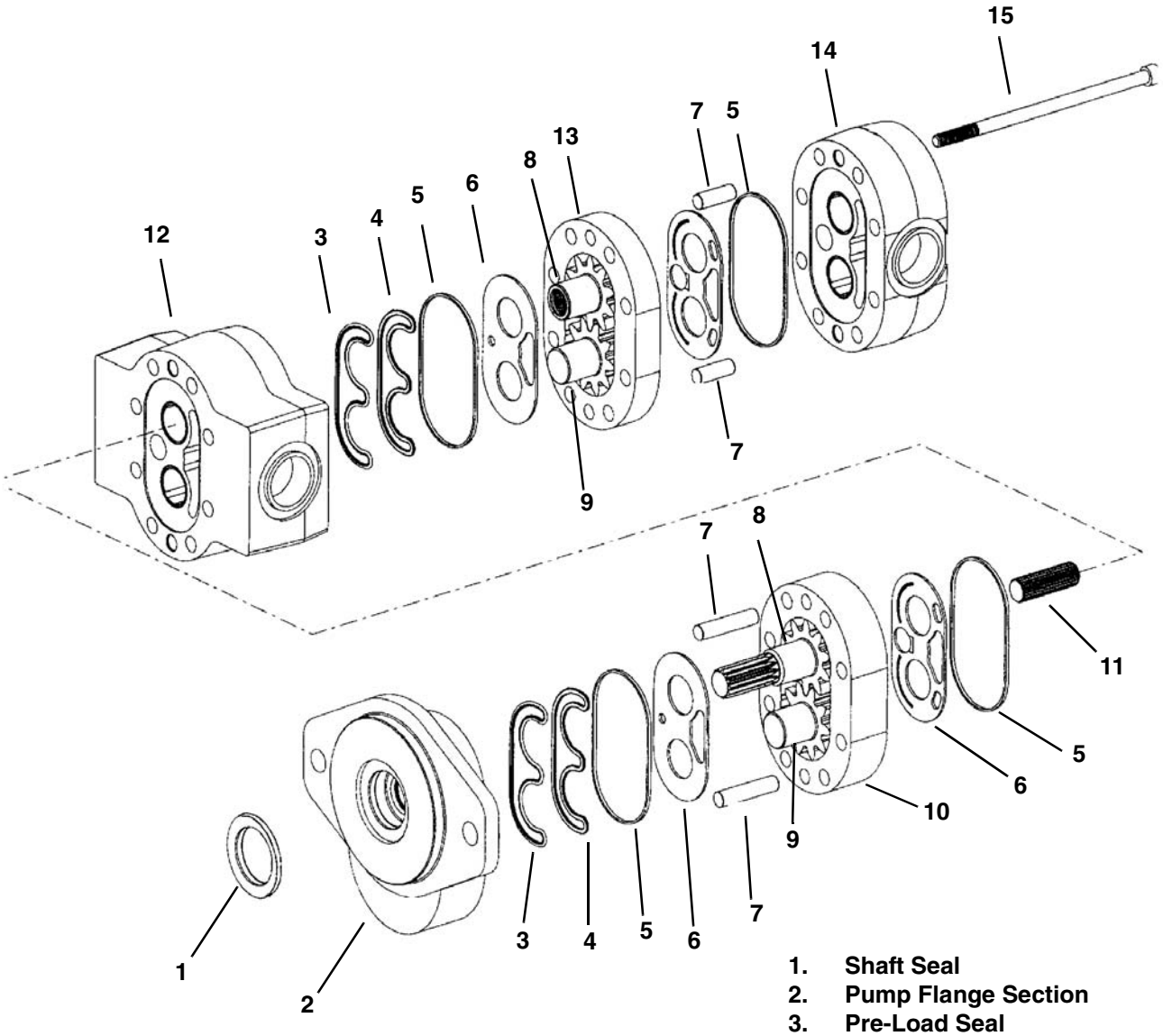
Figure 20-61-110



Remove the shaft seal (Item 1) **[Figure 20-61-110]** from the pump flange section.

Installation: The shaft seal flush surface (Item 2) **[Figure 20-61-110]** must be facing out away from the pump.

Parts Identification



1. Shaft Seal
2. Pump Flange Section
3. Pre-Load Seal
4. Load Seal
5. O-ring
6. Wear Plate
7. Pins
8. Drive Gear
9. Idler Gear
10. Auxiliary Pump Section
11. Spline Shaft
12. Pump Center Section
13. Charge Pump Section
14. Pump End Section
15. Bolt (8)

B-21259A

HYDRAULIC PUMP (SJC) (HIGH FLOW)

Description

The hydraulic gear pump is attached to the end of the hydrostatic pumps and is located on the right side of the loader between the hydraulic control valve and the engine.

The hydraulic gear pump is a combination of gear pumps that provide hydraulic flow to several hydraulic systems.

The hydraulic gear pump has a dedicated charge pump. This supplies flow to the hydraulic fan motor and charge pressure to the hydrostatic pump.

The high flow hydraulic pump has an additional pump section that provides an additional amount of flow that is controlled by an external valve. The valve is switched from a button on the panel in the cab.

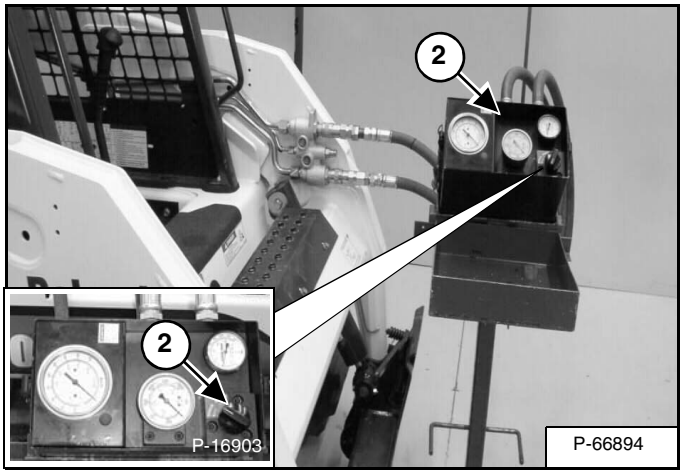
A seal kit is available to service the hydraulic pump. If any of the main components of the pump are damaged, the entire pump must be replaced.

Pump Test At Quick Couplers

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

MEL10003 - In-Line Hydraulic Tester
MEL10006 - Flow Meter Fitting Kit

Figure 20-71-47



Install a hydraulic tester (Item 1) **[Figure 20-71-47]** onto the front auxiliary quick couplers.

NOTE: When testing the hydraulic flow of a machine, hoses must be at least 3/4 in. 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.

This procedure will require a operator in the cab and one operator running the tester.

Start the engine and run at low idle RPM. Press the Front Auxiliary button. Engage the front auxiliary with the trigger on the right handle. Make sure the tester is connected correctly. If no flow is indicated on the tester, the hoses are connected wrong. With the hoses connected correctly, increase the engine speed to full RPM*.

Warm the fluid to 140° F (60° C) by turning the restrictor control clockwise on the tester so it reads about a 1000 PSI (69 bar).

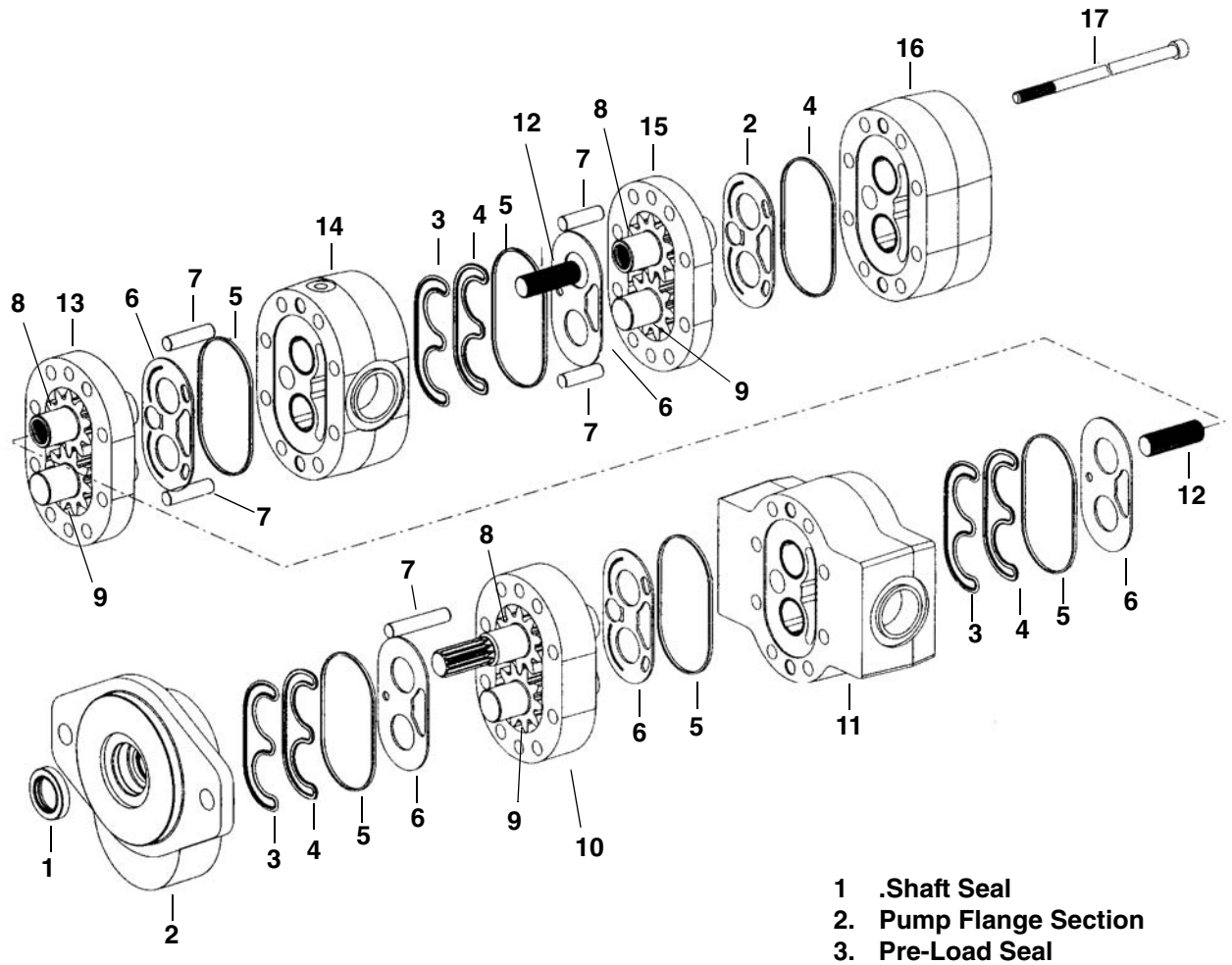
NOTE: ***DO NOT EXCEED 3300 PSI.***

Turn the restrictor control (Item 2) **[Figure 20-71-47]** on the tester counterclockwise to obtain free flow, the flow should be approximately 16 - 17 GPM. Start turning the restrictor clockwise, causing more restriction on the flow. The GPM should drop off slightly until the pressure reaches approximately 2800 PSI. At approximately 2800 PSI the flow should start decreasing rapidly until the pressure reaches 3250 - 3300 PSI. At 3250 - 3300 PSI the flow should be at 0 GPM. Turn the restrictor (Item 2) **[Figure 20-71-47]** counterclockwise to free flow. Shut the front auxiliary hydraulics off.

If flow and pressure specs are not obtained, go to Direct Pump Testing. (See Direct Pump Test (Standard Section) on Page 20-71-2.)

*Refer to (See Hydraulic System on Page SPEC-10-3.) for system relief pressure and full RPM.

Parts Identification

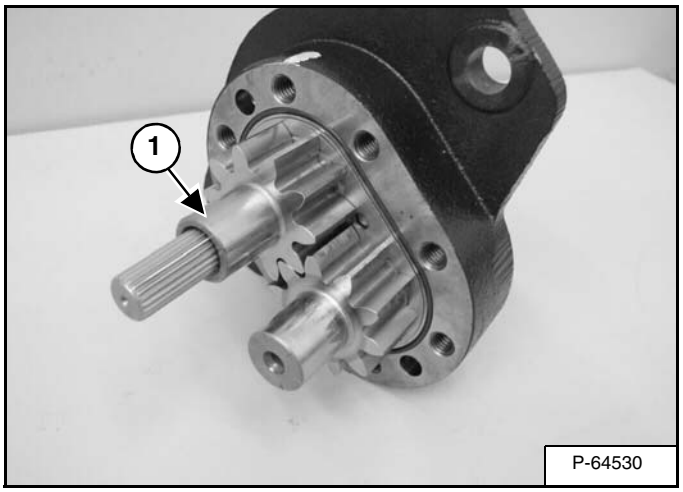


1 .Shaft Seal
2. Pump Flange Section
3. Pre-Load Seal
4. Load Seal
5. O-Ring
6. Valve Plate
7. Pin
8. Drive Gear
9. Idler Gear
10. Auxiliary Pump Section
11. Auxiliary Center Section
12. Splined Shaft
13. Charge Pump Section
14. Charge Center Section
15. High Flow Pump Section
16. High Flow End Section
17. Bolt

B-18248

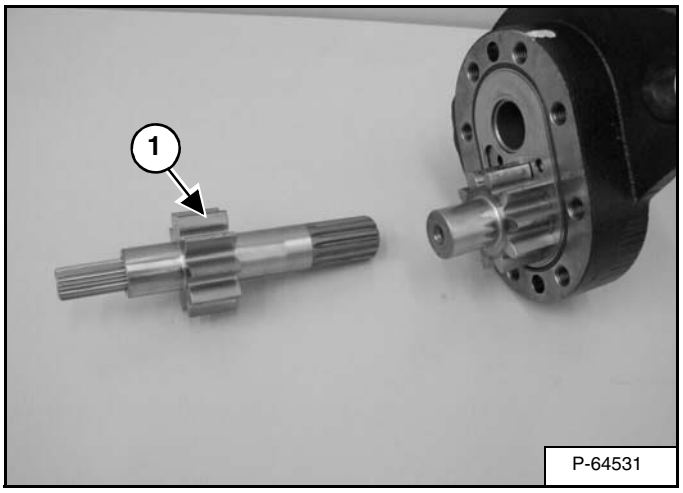
Disassembly And Assembly (Cont'd)

Figure 20-71-102



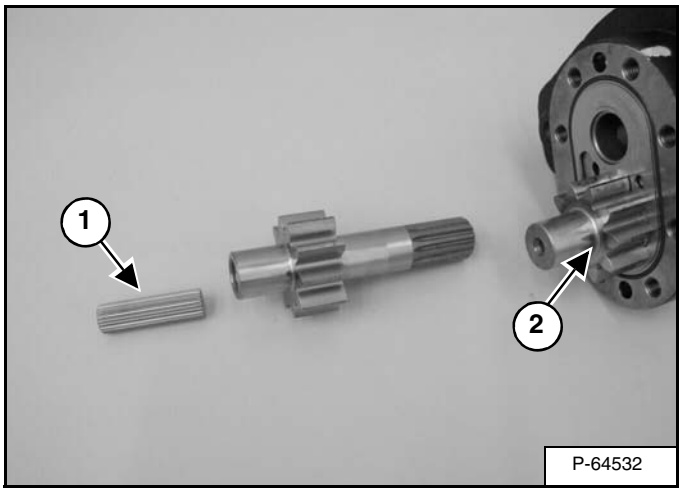
Remove the drive gear (Item 1) **[Figure 20-71-102]** from the pump flange section.

Figure 20-71-103



NOTE: Inspect the drive gear (Item 1) [Figure 20-71-103]. If excessive wear or damage is visible, the pump must be replaced.

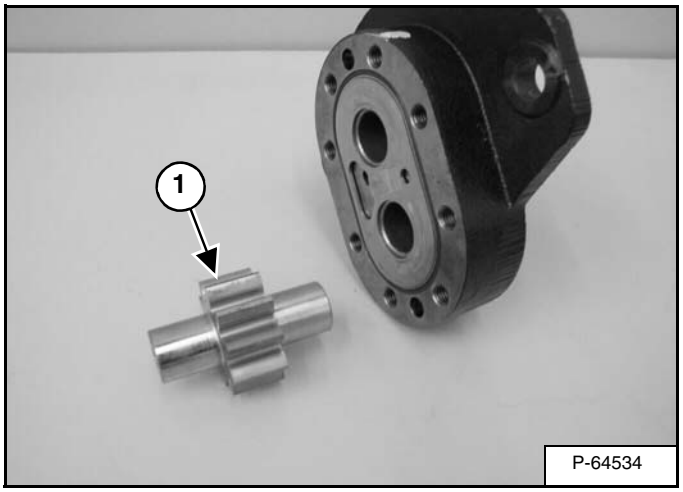
Figure 20-71-104



Remove the spline shaft (Item 1) **[Figure 20-71-104]** from the end of the drive gear.

Remove the idler gear (Item 2) **[Figure 20-71-104]**.

Figure 20-71-105

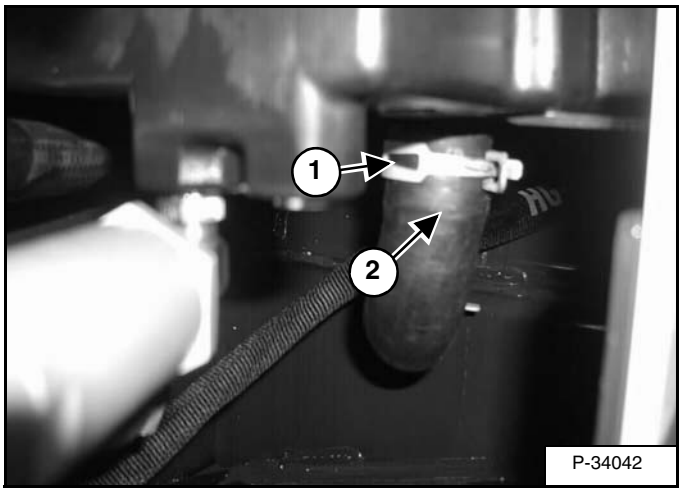


Remove the idler gear (Item 1) **[Figure 20-71-105]** from the pump flange section.

NOTE: Inspect the idler gear (Item 1) [Figure 20-71-105]. If excessive wear or damage is visible, the pump must be replaced.

Removal And Installation (Cont'd)

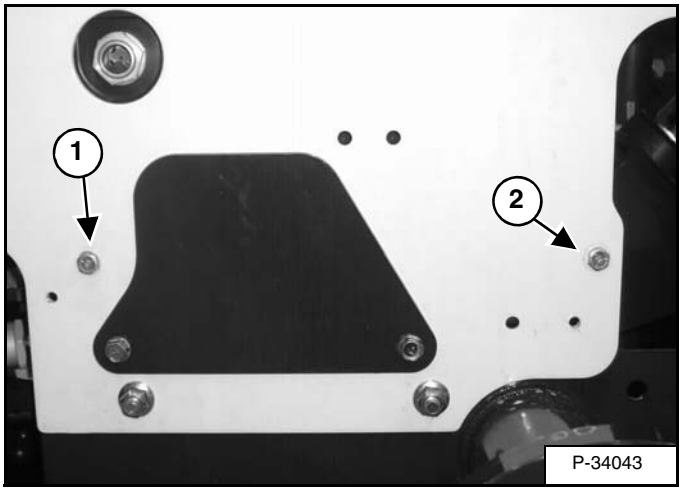
Figure 20-90-6



Remove the hose clamp (Item 1) **[Figure 20-90-6]** from the tank outlet.

Remove the hydrostatic supply hose (Item 2) **[Figure 20-90-6]** from the bottom of the reservoir.

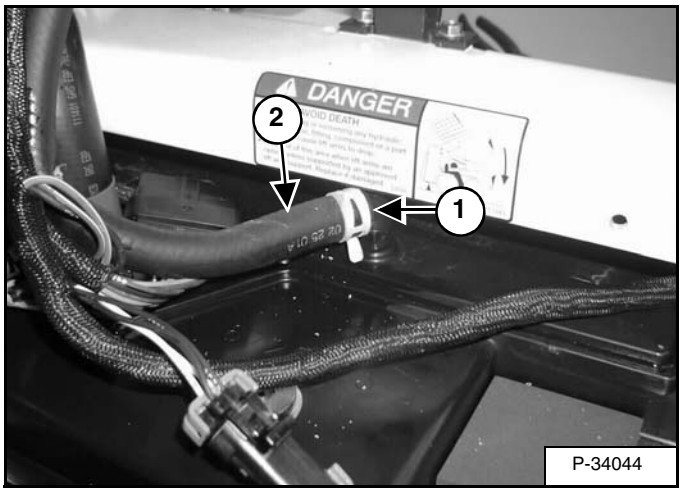
Figure 20-90-7



Remove the bolt and nut (Item 1) **[Figure 20-90-7]**.

Loosen the bolt and nut (Item 2) **[Figure 20-90-7]** to allow the hydraulic reservoir mount to drop down.

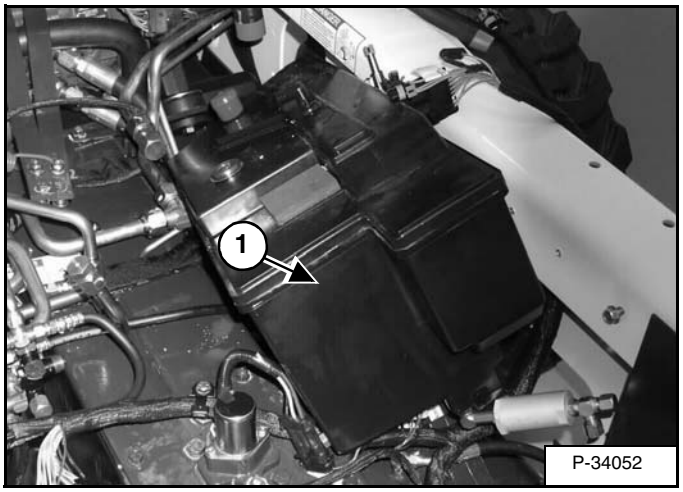
Figure 20-90-8



Remove the hose clamp (Item 1) **[Figure 20-90-8]** from the fitting.

Remove the breather hose (Item 2) **[Figure 20-90-8]** from the hydraulic reservoir.

Figure 20-90-9



Remove the hydraulic reservoir (Item 1) **[Figure 20-90-9]** from the loader.

REAR AUXILIARY DIVERTER VALVE

Description

The rear auxiliary diverter valve is an optional valve that diverts oil from the front auxiliary circuit to two sets of rear auxiliary couplers or the right side auxiliaries. The couplers are used for rear mounted attachments.The right side auxiliaries are used for older attachments.

The rear couplers are located, one set on each side of the rear frame uprights.

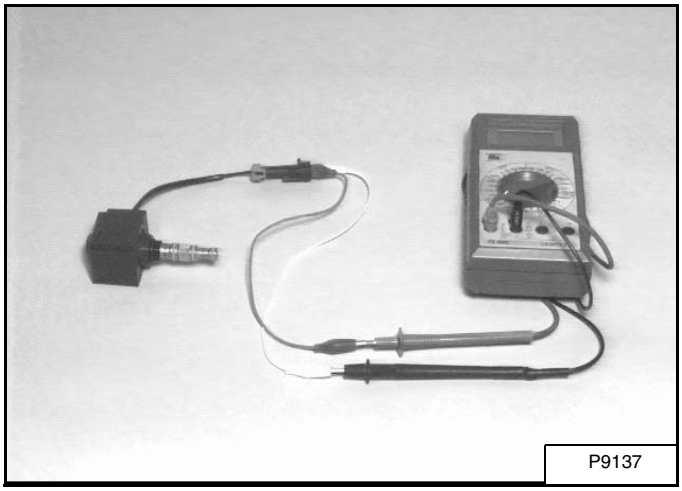
The right side auxiliaries are located on the inside of the right side lift arm at the front of the machine.

The rear auxiliary valve is located on the right side of the machine behind the blower housing. The valve is accessed by remove a panel on the right side of the machine.

See Hydraulic Schematic for more circuit information.

Solenoid Testing

Figure 20-120-19



Use a test meter to measure coil resistance **[Figure 20-120-19]**. Coil wires do not have polarity. Correct resistance is 8.6 - 9.5 ohm @ 68° F.

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

BOB-TACH (POWER) BLOCK

Description

The power Bob-Tach block is an option that allows the operator to hydraulically control the Bob-Tach levers for mounting and dismounting the attachments.

The power Bob-Tach is operated by a switch on the front console.

The power Bob-Tach block is mounted on the right side of the machine in front of the engine on the backside of the hydraulic gear pump.

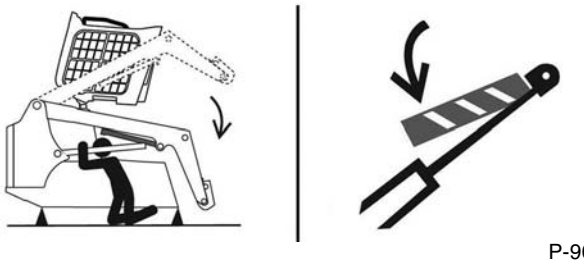
Removal And Installation

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

DANGER



P-90328

AVOID DEATH

- **Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.**
- **Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.**

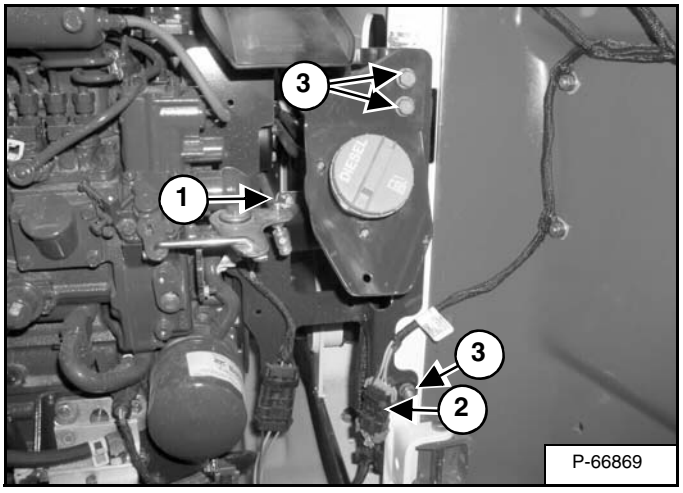
D-1009-0409

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 20-130-1



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

Raise the lift arms and install an approved lift arm support device. (See Installing Page 10-20-1.)

Raise the operator cab. (See Raising Page 10-30-2.)

Open the rear door.

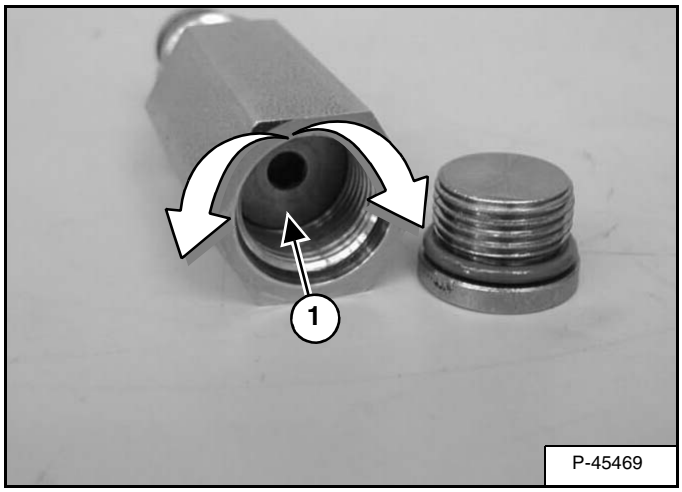
Drain the hydraulic reservoir. (See Removing And Replacing Hydraulic Fluid Page 10-120-2.)

Remove the nut from the speed control linkage (Item 1) and unplug the rear lights electrical connector (Item 2) **[Figure 20-130-1]**.

Remove the fuel fill bracket mounting bolts (Item 3) **[Figure 20-130-1]**.

High Flow Relief Valve Adjustment (Cont'd)

Figure 20-150-5



To increase the high flow relief valve PSI turn the screw (Item 1) **[Figure 20-150-5]** clockwise a 1/4 turn and recheck the high flow relief valve. (1/4 turn equals approximately 200 PSI.)

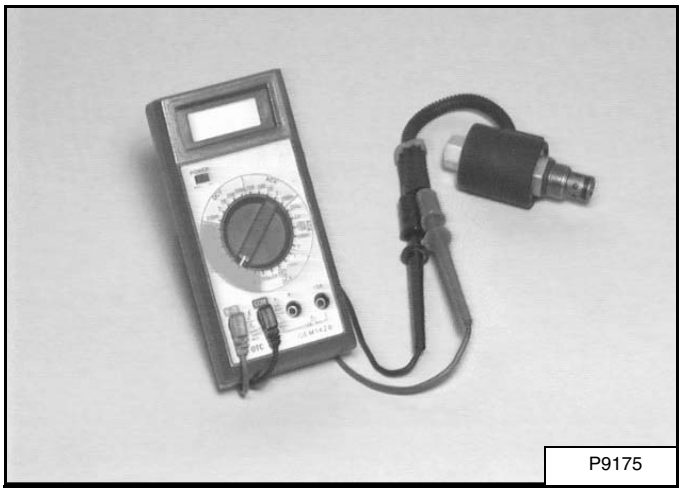
To decrease the high flow relief valve PSI turn the screw (Item 1) **[Figure 20-150-5]** counterclockwise a 1/4 turn and recheck the high flow relief valve. (1/4 turn equals approximately 200 PSI.)

NOTE: If the relief screw (Item 1) [Figure 20-150-5] has been turned in 1/4 turn and the pressure remains the same, remove and inspect the high flow relief valve, replace as needed.

Install the plug into the high flow relief valve.

Solenoid Testing

Figure 20-150-6



Use a test meter to measure coil resistance **[Figure 20-150-6]**. Coil terminals do not have polarity. Correct resistance for the pressure relief coil is 7.5 ohm.

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

HYDROSTATIC MOTOR

Description

The hydrostatic motors are driven by high pressure from the hydrostatic pumps.

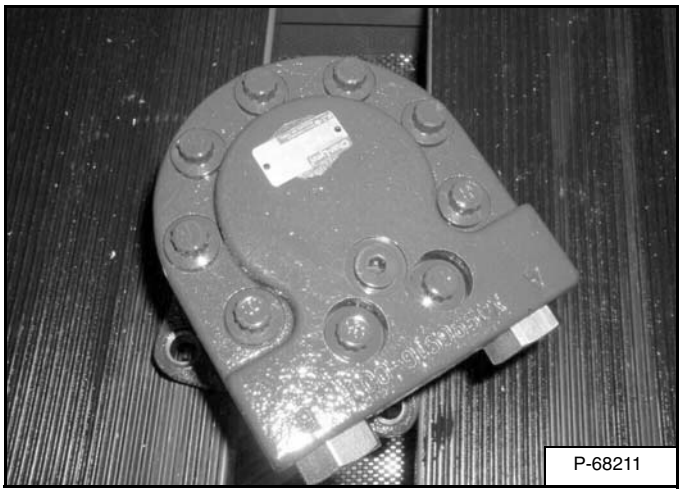
In this system there is a case drain filter for each motor to filter the excess low pressure oil before the oil enters the hydraulic reservoir.

There are two hydrostatic motors mounted to motor carriers. The motor carriers are mounted to the transmission tub which houses the drive chains.

The hydrostatic motors do not have an internal brake.

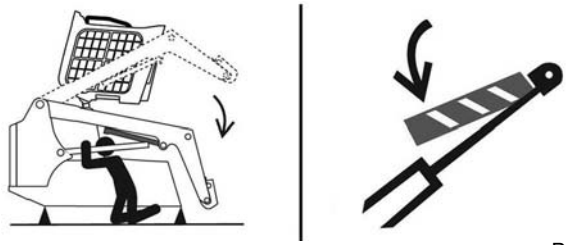
Inside the endcap of the hydrostatic motor, there is a shuttle valve. The shuttle valve helps to keep the motor cool by mixing case drain oil with cooled low pressure oil from the charge circuit. The shuttle valve is shifted by the high pressure oil coming from the hydrostatic pumps. If the shuttle valve sticks, a delay or lack of drive may or may not be felt in the controls and/or an overheated hydrostatic motor will result.

Figure 30-20-1



Removal And Installation

DANGER



AVOID DEATH

- **Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.**
- **Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.**

D-1009-0409

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

WARNING

AVOID INJURY OR DEATH

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.

W-2103-0508

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

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

Raise the operator cab. (See Raising on Page 10-30-2.)

Remove the front and rear wheel/tire assemblies. (See TIRE MAINTENANCE on Page 10-160-1.)

HYDROSTATIC MOTOR (TWO-SPEED)

Description

The hydrostatic motors are driven by high pressure from the hydrostatic pumps.

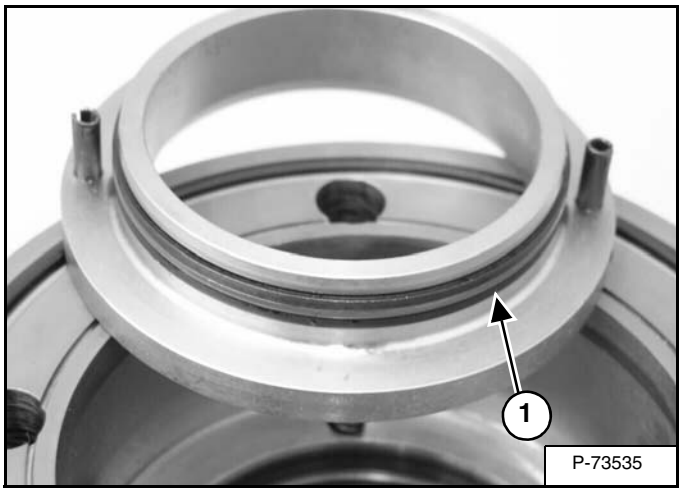
In this system there is a case drain filter for filtering the excess low pressure oil before the oil enters the hydraulic reservoir.

The hydrostatic motor contains a shuttle valve. The shuttle valve helps to keep the motor cool by mixing drive loop return oil with cooled low pressure oil from the charge circuit. The shuttle valve is shifted by the high pressure oil coming from the hydrostatic pumps. If the shuttle valve sticks, a delay or lack of drive may or may not be felt in the controls and/or an overheated hydrostatic motor will result.

There are two hydrostatic motors mounted to motor carriers. The motor carriers are mounted to the transmission chaincase which houses the drive chains.

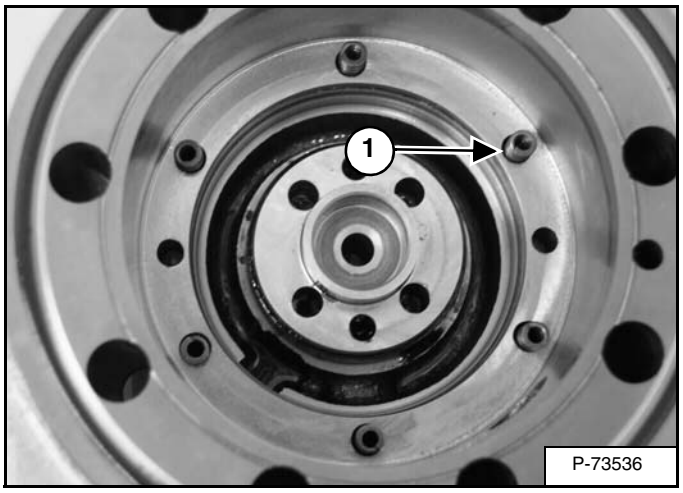
Disassembly (Cont'd)

Figure 30-21-26



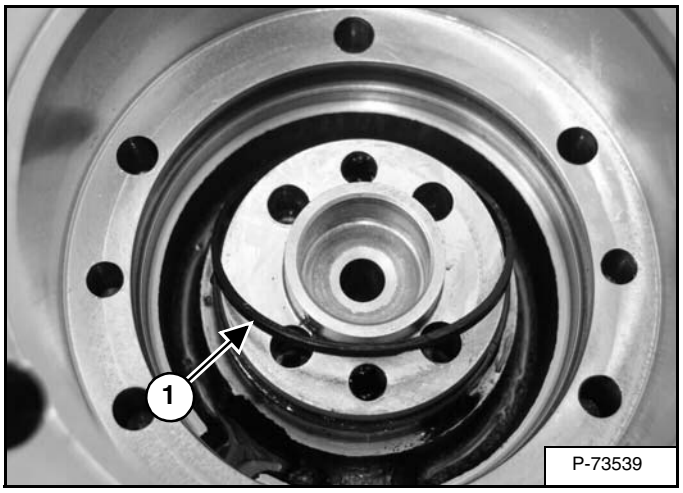
Remove and discard the O-ring and two backup rings (Item 1) **[Figure 30-21-26]** from the outer balance ring.

Figure 30-21-27



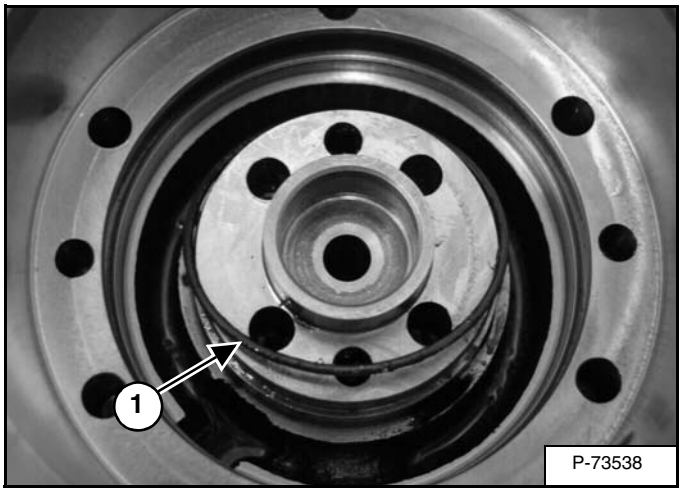
Remove the six compression springs (Item 1) **[Figure 30-21-27]** and inspect for damage.

Figure 30-21-28



Remove and discard the backup ring (Item 1) **[Figure 30-21-28]** from the valve housing.

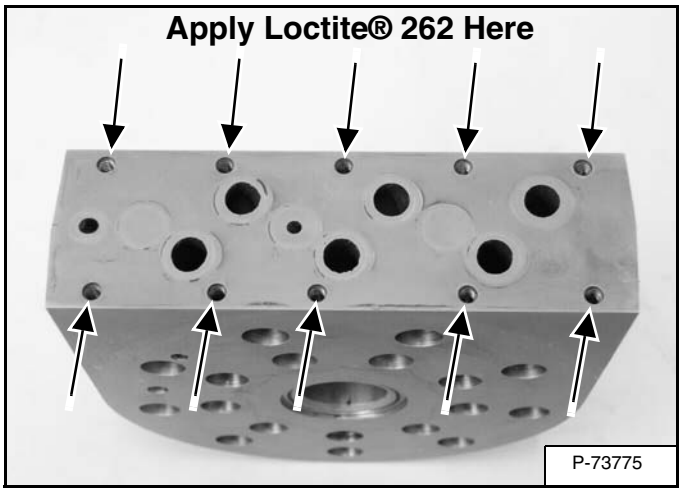
Figure 30-21-29



Remove and discard the O-ring (Item 1) **[Figure 30-21-29]** from the valve housing.

Assembly (Cont'd)

Figure 30-21-64



NOTE: Before assembling the new gasket, the spool housing, or the screws, remove any old thread sealer from the threaded holes.

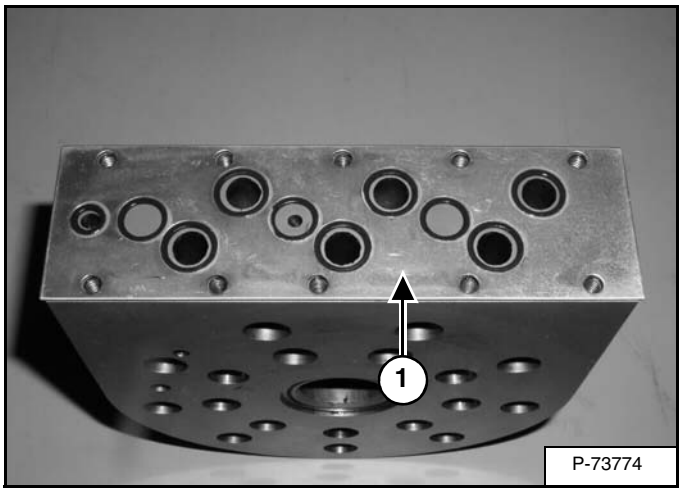
Put a VERY SMALL amount of Loctite® 262 into each of the ten threaded holes of the selector plate. DO NOT put Loctite® on the screw threads **[Figure 30-21-64]**.

Remove any trapped air from below the Loctite®. Wipe any excess Loctite® from the selector plate surface.

NOTE: If too much Loctite® is applied and any trapped air is not removed, it can pool in the bottom of the threaded holes. This can prevent the screws from reaching full thread contact and the correct torque may not be reached.

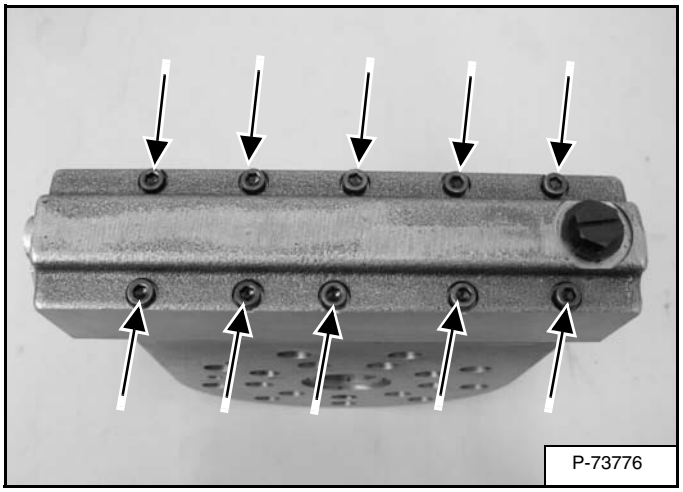
NOTE: Installing the screws can force some of the Loctite® out of the holes and onto the selector plate surface. If any Loctite® gets between the new gasket and the selector plate it will create a poor seal. Be sure to wipe excess Loctite® from the surface.

Figure 30-21-65



Install the new gasket (Item 1) **[Figure 30-21-65]** onto the selector plate.

Figure 30-21-66



Install the ten screws **[Figure 30-21-66]** through the spool housing and into the selector plate.

HYDROSTATIC MOTOR CARRIER (SINGLE AND TWO-SPEED WITH MANUAL CONTROLS)

Description

The hydrostatic motor carrier is the mating connection from the hydrostatic drive motor to the transmission case.

The hydrostatic motor carrier contains a shaft that rotates on two tapered roller bearings. the shaft has two sprockets that turn the drive chains. Damaged or severely worn bearings can destroy a drive motor.

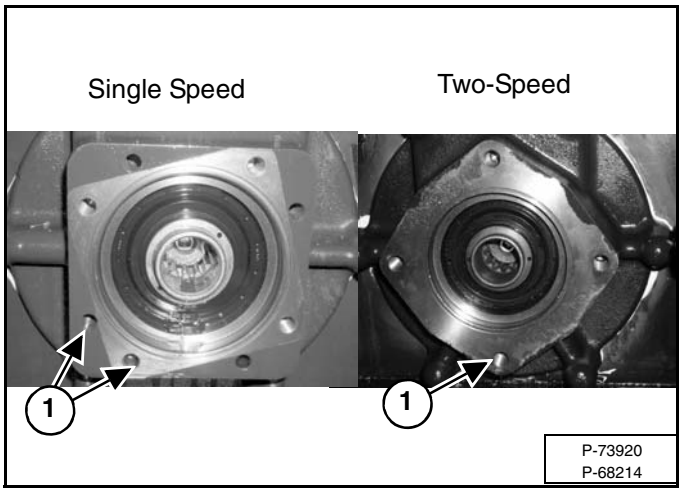
The hydrostatic motor carrier is sealed to the transmission case with a polyurethane sealant. A gasket is not used. Replacement sealant can be ordered through Bobcat Parts part number 6685372.

The hydrostatic motor carrier has a seal which isolates the chain case oil from the hydrostatic motor case drain oil.

A brake disk is installed on each hydrostatic motor carrier. The brake disk is mounted to the shaft in the motor carrier.

The hydrostatic motor carriers are made to fit on both the right or left hand side of the loader. There are two sets of mounting holes on each hydrostatic motor carrier to fasten the hydrostatic motors. One set for the left hand side and another set for the right hand side of the loader.

Figure 30-30-1



The motor carrier hydrostatic motor mounting holes (Item 1) **[Figure 30-30-1]** are the only difference between the single and two-speed motor carriers with manual controls. The disassembly and assembly procedures are the same.

Shaft Seal Removal And Installation

The tool listed is necessary for the following procedure:

MEL1420 - Carrier Seal Tool

Remove the hydrostatic motor. (See HYDROSTATIC MOTOR on Page 30-20-1.) or (See HYDROSTATIC MOTOR (TWO-SPEED) on Page 30-21-1.)

WARNING

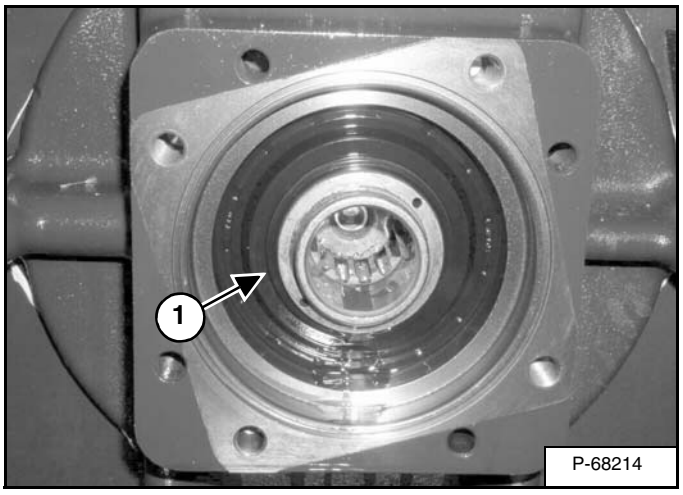
AVOID INJURY OR DEATH

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

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

W-2019-0907

Figure 30-20-1



The motor carrier seal (Item 1) **[Figure 30-20-1]** is located on the outside of the motor carrier shaft.

HYDROSTATIC MOTOR CARRIER (SINGLE AND TWO-SPEED WITH SJC CONTROLS)

Description

The hydrostatic motor carrier is the mating connection from the hydrostatic drive motor to the transmission case.

The hydrostatic motor carrier contains a shaft that rotates on two tapered roller bearings. the shaft has two sprockets that turn the drive chains. Damaged or severely worn bearings can destroy a drive motor.

The hydrostatic motor carrier is sealed to the transmission case with a polyurethane sealant. A gasket is not used. Replacement sealant can be ordered through Bobcat Parts part number 6685372.

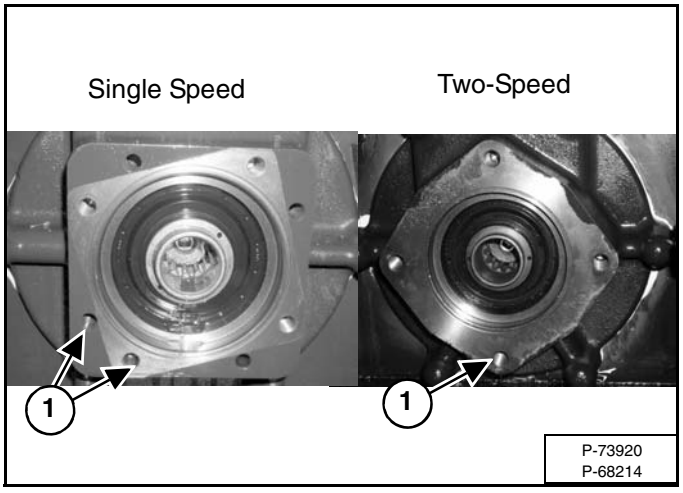
The hydrostatic motor carrier has a seal which isolates the chain case oil from the hydrostatic motor case drain oil.

Loaders equipped with Selectable Joystick Controls (SJC) use a speed sensor installed in the motor carrier housing. The speed sensor senses a disk that is fixed to the shaft in the motor carrier. If the loader does not have (SJC), a plate covers the hole where the sensor would be.

A brake disk is installed on each hydrostatic motor carrier. The brake disk is mounted to the shaft in the motor carrier.

The hydrostatic motor carriers are made to fit on both the right or left hand side of the loader. There are two sets of mounting holes on each hydrostatic motor carrier to fasten the hydrostatic motors. One set for the left hand side and another set for the right hand side of the loader.

Figure 30-31-1



The motor carrier hydrostatic motor mounting holes (Item 1) **[Figure 30-31-1]** are the only difference between the single and two-speed motor carriers with SJC controls. The disassembly and assembly procedures are the same.

Shaft Seal Removal And Installation

The tool listed is necessary for the following procedure:

MEL1420 - Carrier Seal Tool

Remove the hydrostatic motor. (See HYDROSTATIC MOTOR on Page 30-20-1.) or (See HYDROSTATIC MOTOR (TWO-SPEED) on Page 30-21-1.)

⚠ WARNING

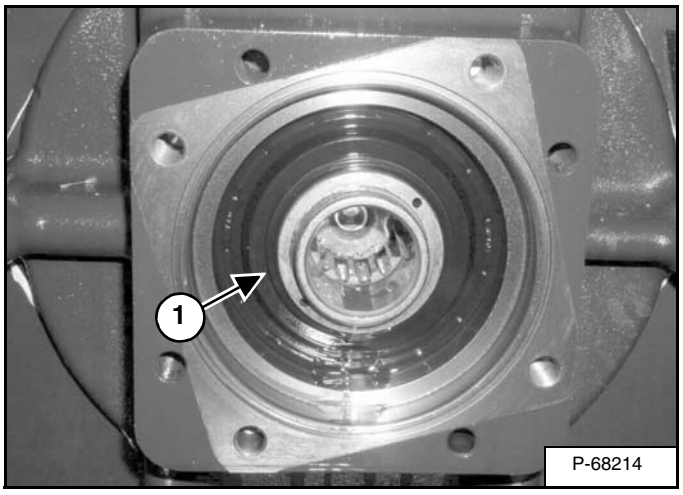
AVOID INJURY OR DEATH

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

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

W-2019-0907

Figure 30-21-1



The motor carrier seal (Item 1) **[Figure 30-21-1]** is located on the outside of the motor carrier shaft.

CHARGE PRESSURE

Description

Charge pressure is a supply of oil to the hydrostatic pumps. Charge pressure is regulated by a charge relief valve located inside the hydrostatic pump. Charge pressure is used to replenish hydrostatic fluid removed from the drive circuit, pump and motor “internal leakage” and from the hydrostatic motors shuttle (flushing) valve.

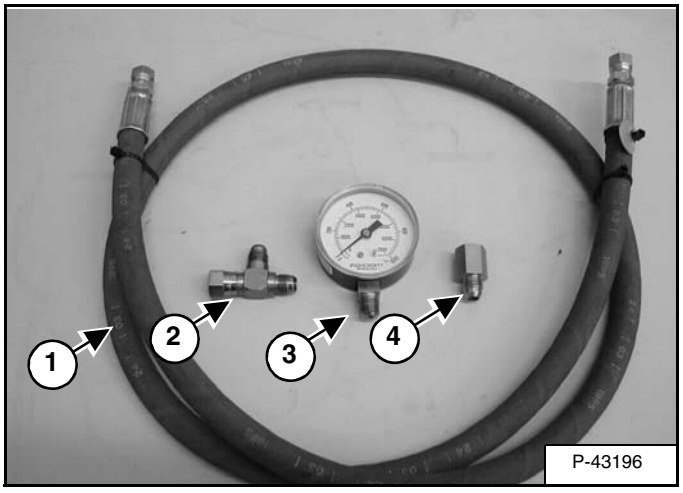
Charge pressure is obtained from the standard section on the hydraulic gear pump.

Charge pressure is also used to operate other hydraulic functions, such as shifting the auxiliary spool in the main hydraulic control valve.

The charge pressure sender is located on the charge filter housing mounted next to the blower housing. Charge pressure alarm settings are pre-programmed into the main controller and are based on loader type and options installed.

Testing

Figure 30-40-1



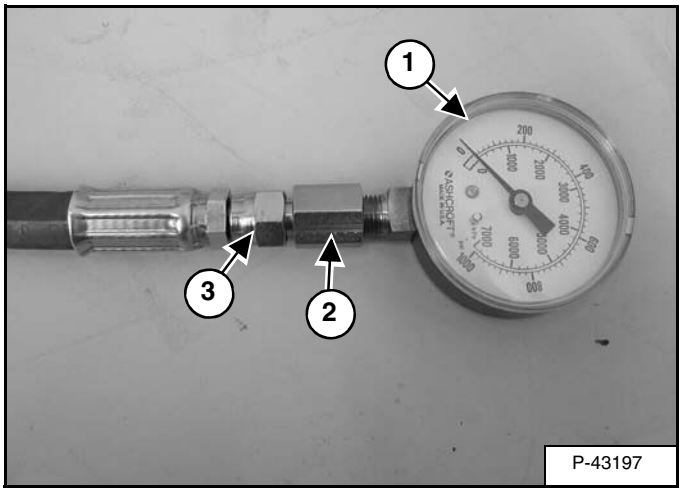
The tools needed to check charge pressure, hydraulic hose (Item 1), T fitting (P/N 13K-5) (Item 2), Hydraulic gauge (1000 PSI) (Item 3) and adapter fitting (P/N 93F-5) (Item 4) **[Figure 30-40-1]**.

⚠ 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

Figure 30-40-2



Connect the gauge (Item 1), to the adapter fitting (P/N 93F5) (Item 2) **[Figure 30-40-2]**.

Connect the hydraulic hose (Item 3) **[Figure 30-40-2]** to the adapter fitting. Tighten all connections.

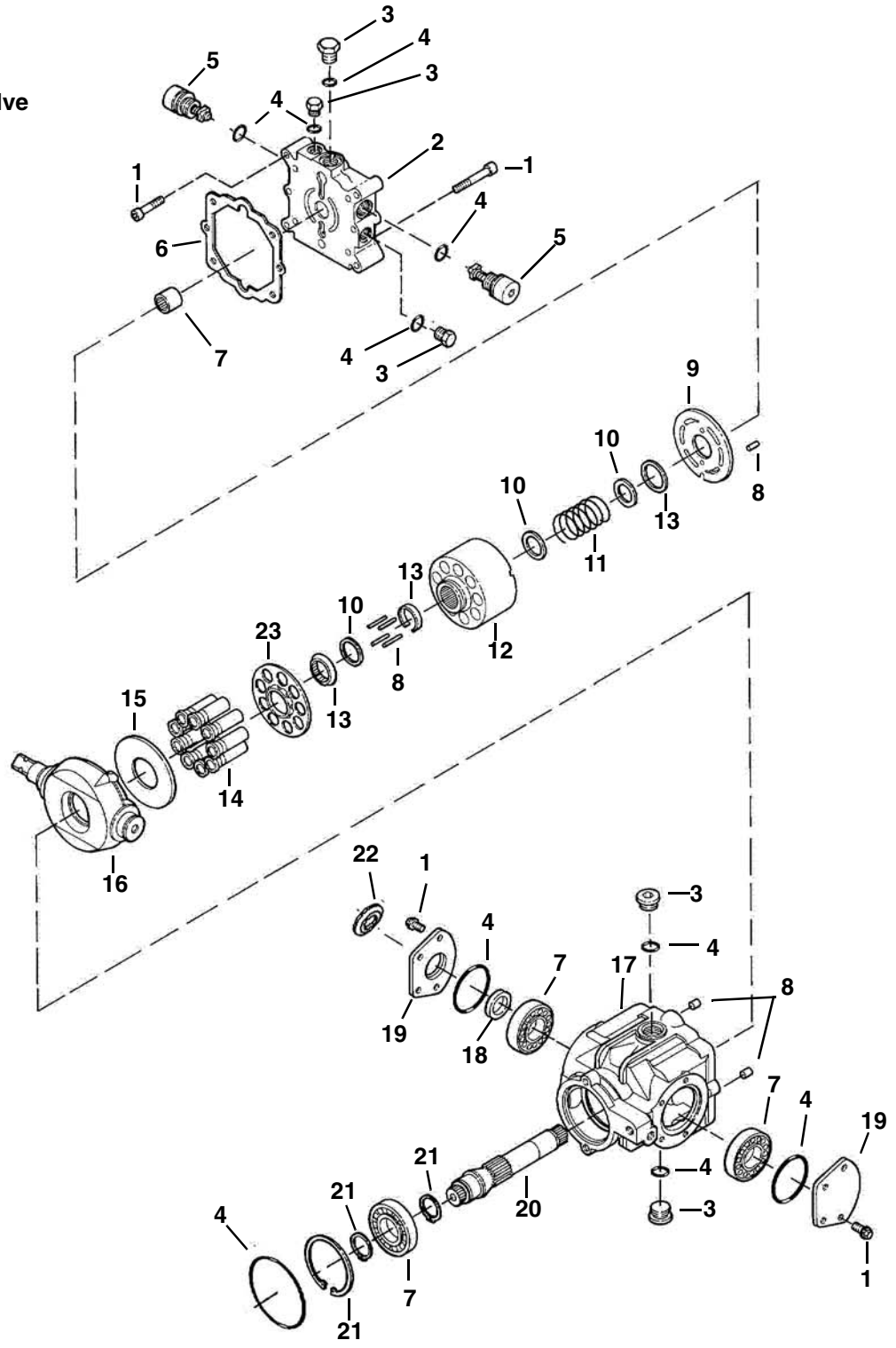
Raise the loader lift arms and install an approved lift arm support device. (See Installing on Page 10-20-1.)

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

Raise the operator cab. (See Raising on Page 10-30-2.)

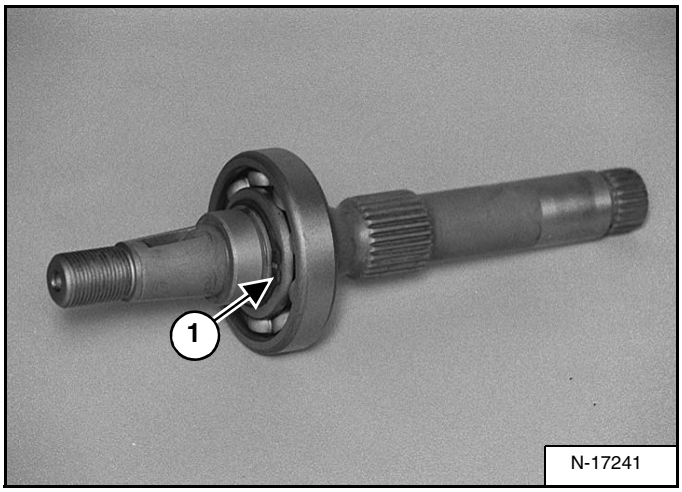
Parts Identification (Right Half)

Ref.	Description
1.	Bolt
2.	End Cap
3.	Plug
4.	O-ring
5.	Replenishing/High Pressure Relief Valve
6.	Gasket
7.	Bearing
8.	Pin
9.	Valve Plate
10.	Washer
11.	Spring
12.	Block
13.	Retainer
14.	Piston Assembly
15.	Wear Plate
16.	Swash Plate
17.	Housing
18.	Seal
19.	Cover
20.	Shaft
21.	Snap Ring
22.	Dust Seal
23.	Piston Retainer



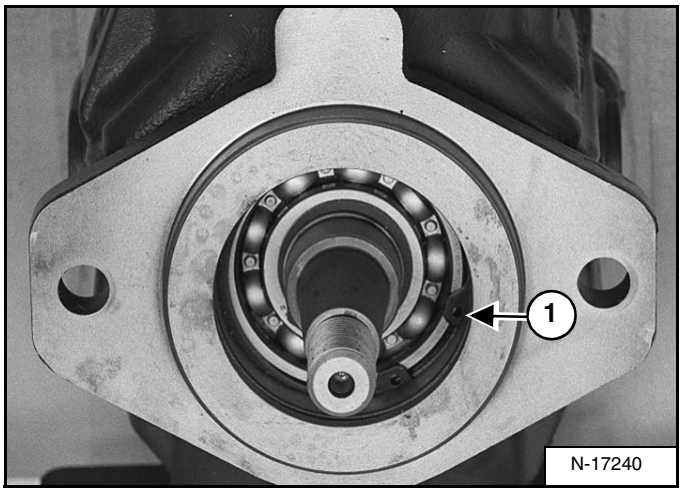
Assembly (Cont'd)

Figure 30-50-42



Install the bearing and snap ring (Item 1) **[Figure 30-50-42]** on the pump shaft.

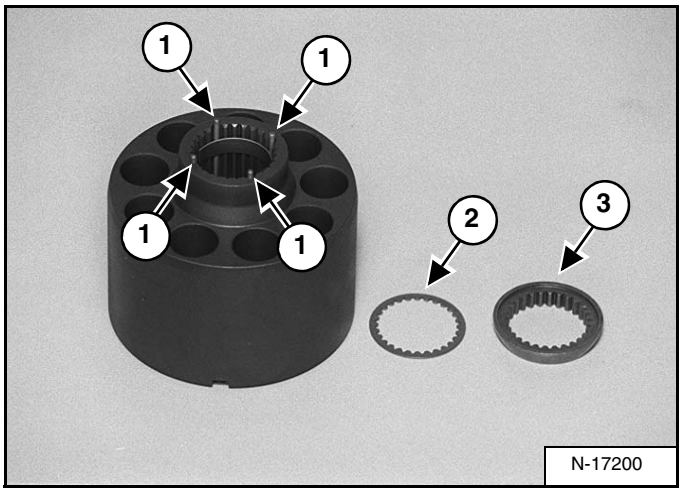
Figure 30-50-43



Install the pump shaft into the pump housing **[Figure 30-50-43]**.

Install the snap ring (Item 1) **[Figure 30-50-43]**.

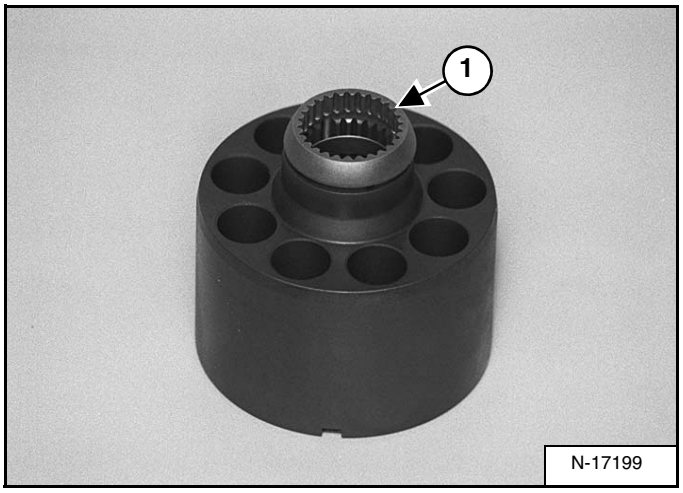
Figure 30-50-44



Install the four slipper pins (Item 1) **[Figure 30-50-44]** into the cylinder block.

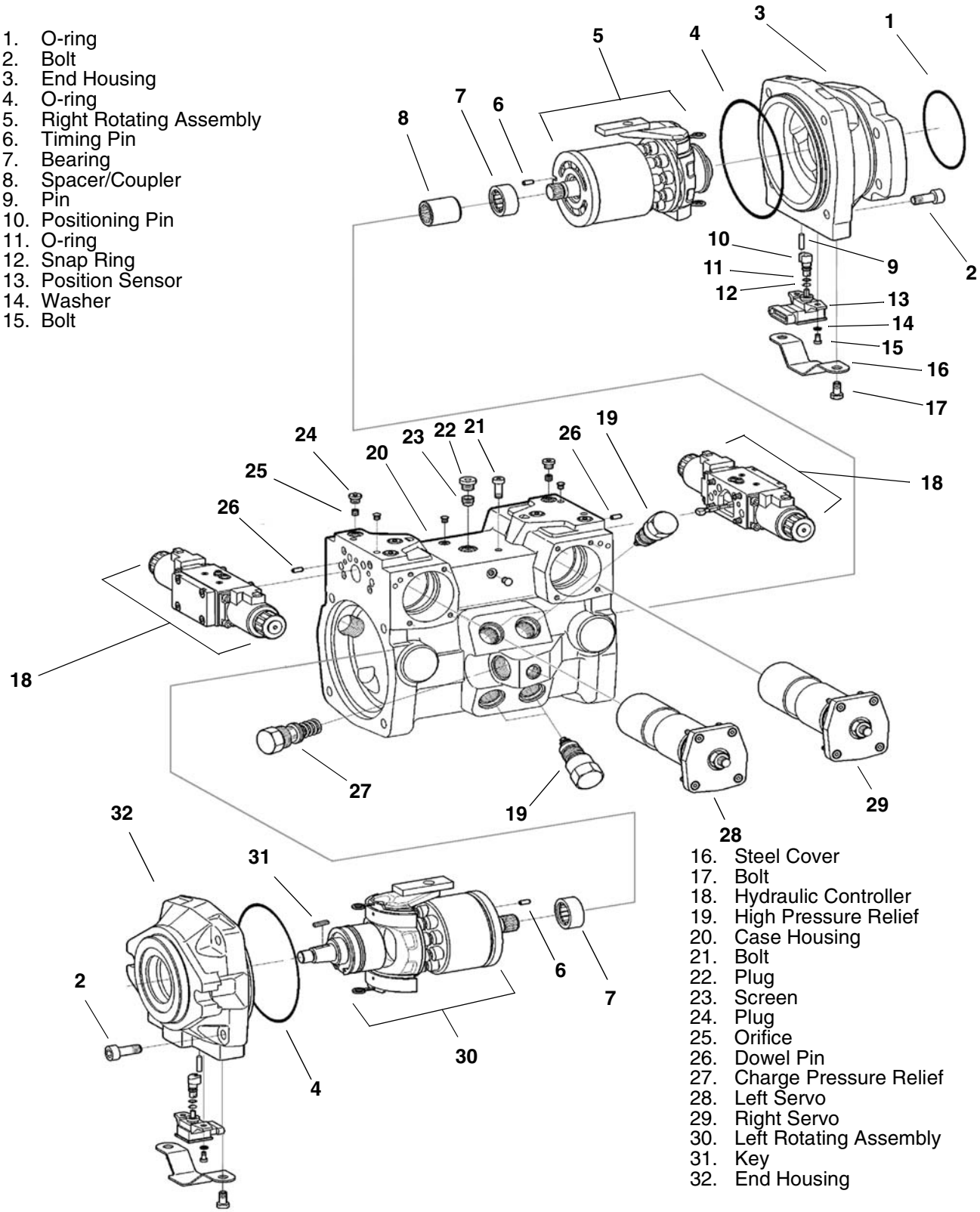
Apply a small amount of grease to the washer (Item 2) and install into the ball guide retainer (Item 3) **[Figure 30-50-44]**.

Figure 30-50-45



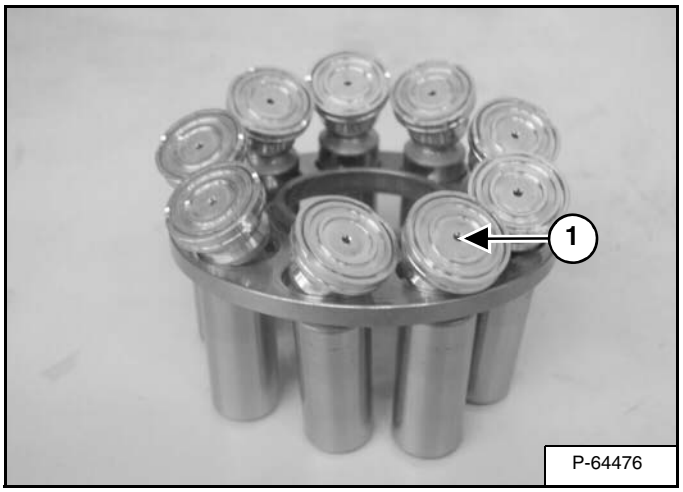
Install the ball guide retainer and washer (Item 1) **[Figure 30-50-45]** onto the slipper holddown pins.

Parts Identification



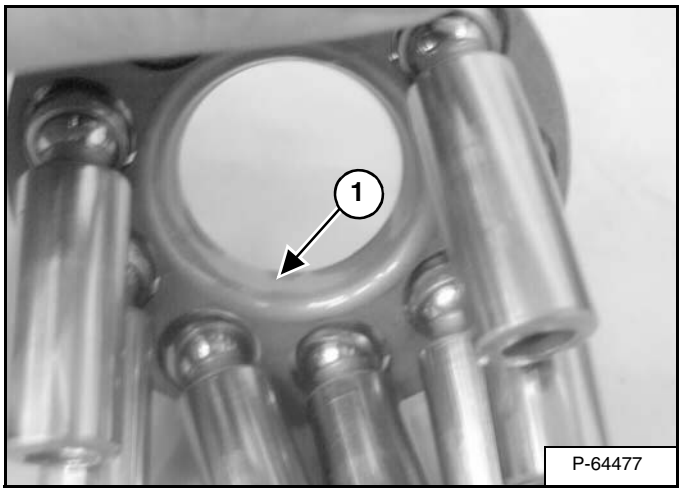
Disassembly And Assembly (Cont'd)

Figure 30-51-45



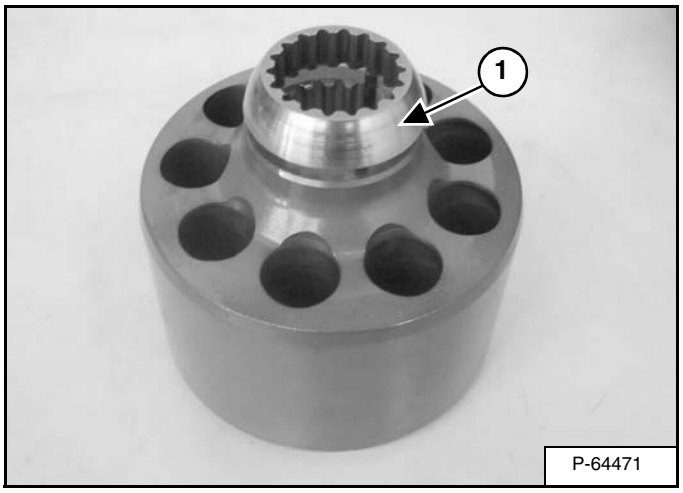
Inspect the pistons, look for scoring and scratches. Ensure the holes (Item 1) **[Figure 30-51-45]** in the slippers, are not plugged.

Figure 30-51-46



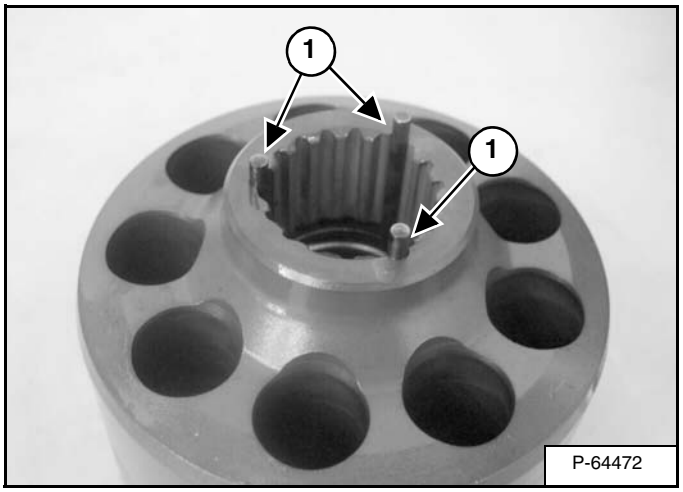
Inspect the mating surface of the spherical washer for scoring or scratches (Item 1) **[Figure 30-51-46]**.

Figure 30-51-47



Remove the spherical washer (Item 1) **[Figure 30-51-47]**.

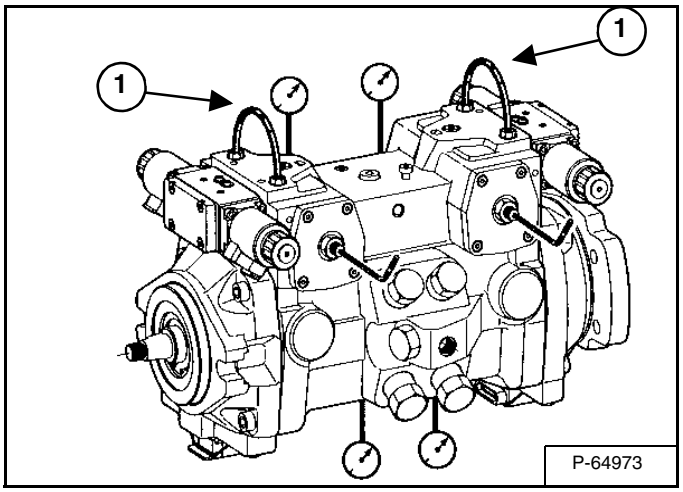
Figure 30-51-48



Inspect the pins (Item 1) **[Figure 30-51-48]**. They should be all the same length. Do not remove.

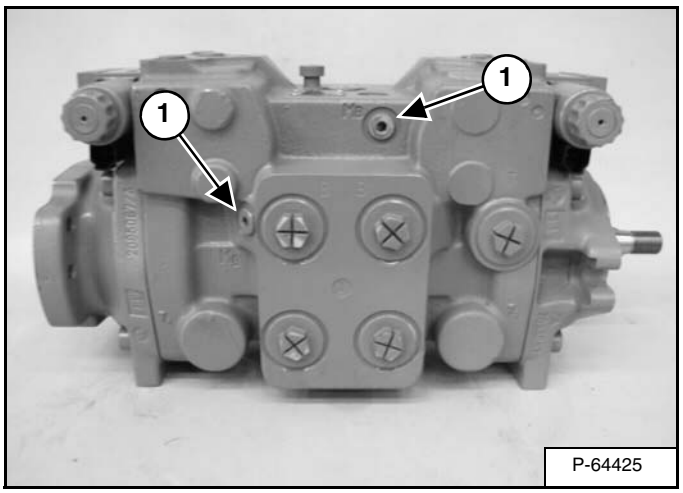
Mechanical Neutral Adjustment (Cont'd)

Figure 30-51-80



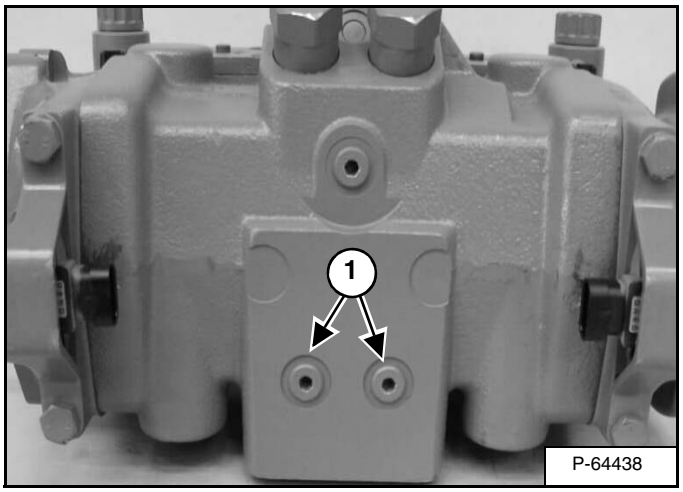
Connect a hydraulic hose (Item 1) **[Figure 30-51-80]** between port X1 and port X2 on each side of the hydrostatic pump, to equalize the pressures on both ends of the servo pistons.

Figure 30-51-81



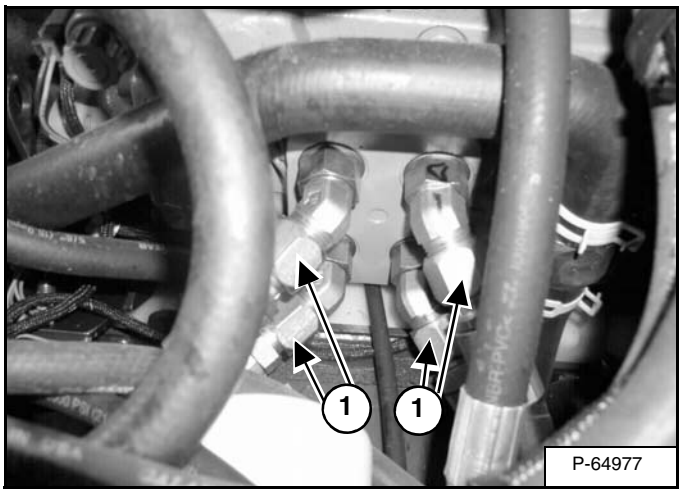
Remove the plugs (Item 1) **[Figure 30-51-81]** from the MB ports on the front side of the pump, and install 7500 PSI (241 bar) pressure gauges.

Figure 30-51-82



Remove the plugs (Item 1) **[Figure 30-51-82]** from the MA ports on the bottom of the pump, and install 7500 PSI pressure gauges.

Figure 30-51-83

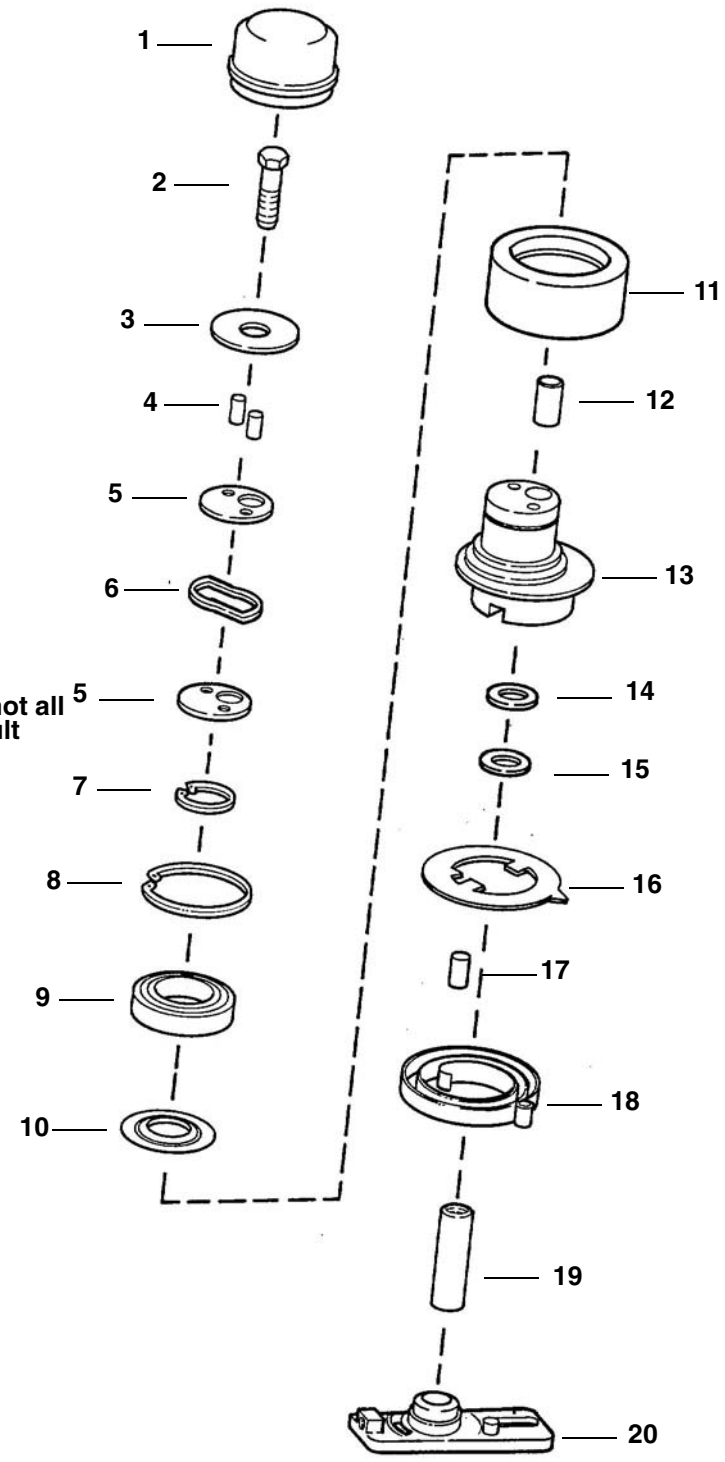


Remove drive hoses from the A and B ports (Item 1) **[Figure 30-51-83]**. Plug the ports with metal caps. The caps must be able to handle at least 7500 PSI. Plugging the A and B ports eliminates leakage at the drive motors from causing errors in the pump mechanical neutral setting.

Tensioner Pulley Parts Identification

1. Cover
2. Bolt
3. Washer
4. Pins
5. Washer
6. Spring
7. Snap Ring
8. Snap Ring
9. Bearing
10. Dust Shield
11. Pulley
12. Bushing
13. Hub
14. Washer
15. Seal
16. Arrow Indicator Plate
17. Locating Pin
18. Spring
19. Shaft
20. Bracket

NOTE: Tensioner pulley parts are not all available individually. Consult parts catalog for available sub-assemblies.



E-2296

CASE DRAIN FILTER

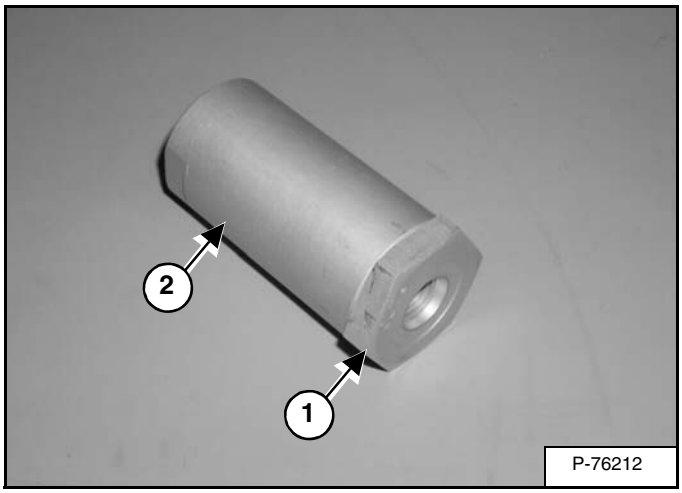
Description

The case drain filter is an external filter assembly in the case drain circuit that filters the case drain hydraulic oil. The case drain filter can be replaced as a complete assembly or disassembled to replace the element with an element kit and/or the spring kit purchased from Bobcat Parts.

Disassembly And Assembly

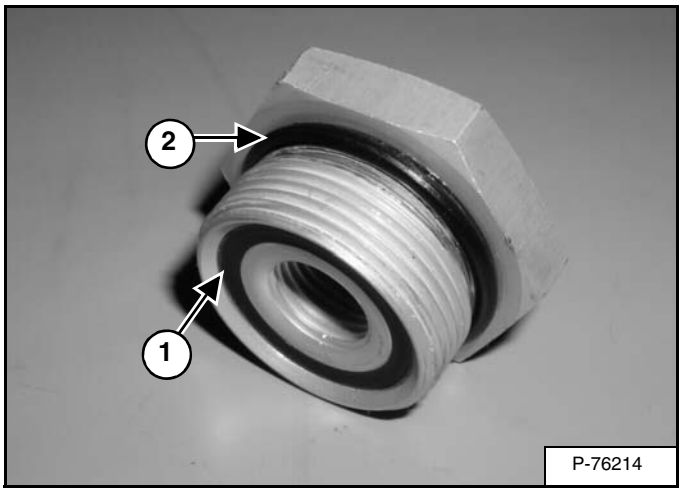
Remove the case drain filter(s) from the machine. (See Removing And Replacing Hydraulic Case Drain Filters (Single Speed Loaders) on Page 10-120-3.) or (See Removing And Replacing Hydraulic Case Drain Filters (Two-Speed Loaders) on Page 10-120-4.)

Figure 30-80-1



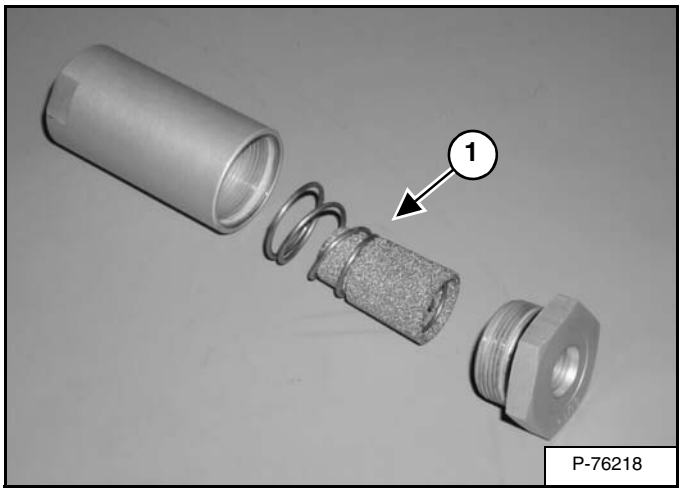
Remove the filter housing nut (Item 1) from the filter housing (Item 2) **[Figure 30-80-1]**.

Figure 30-80-2



Remove the packing (Item 1) and O-ring (Item 2) **[Figure 30-80-2]** from the filter housing nut.

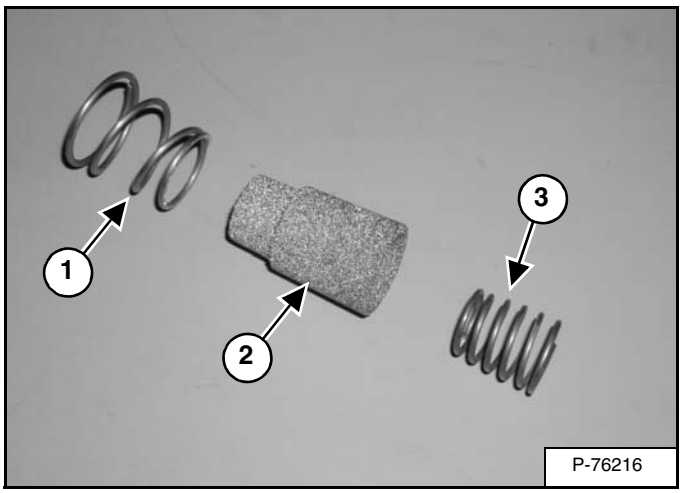
Figure 30-70-3



Remove the filter element and spring assembly (Item 1) **[Figure 30-70-3]**

NOTE: Remember the orientation of the filter element and spring assembly for correct assembly.

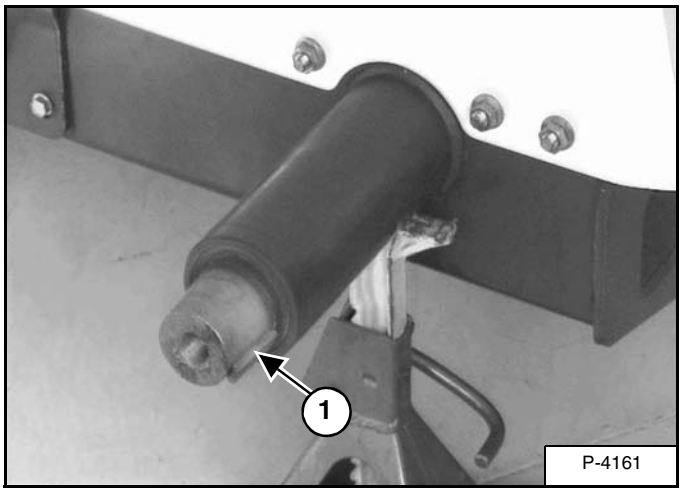
Figure 30-70-4



The larger taper spring (Item 1) slides over the end of the filter element (Item 2) and the smaller tapered spring (Item 3) **[Figure 30-70-4]** slides into the filter element.

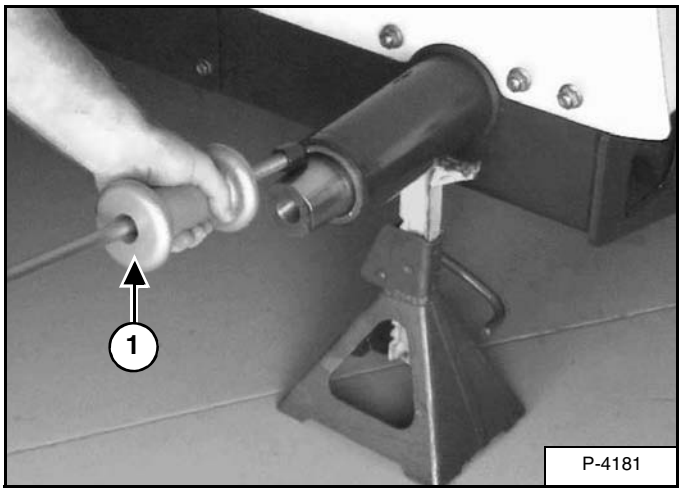
Axle Seal Removal And Installation (Cont'd)

Figure 40-20-3



Remove the key (Item 1) **[Figure 40-20-3]** from the axle.

Figure 40-20-4

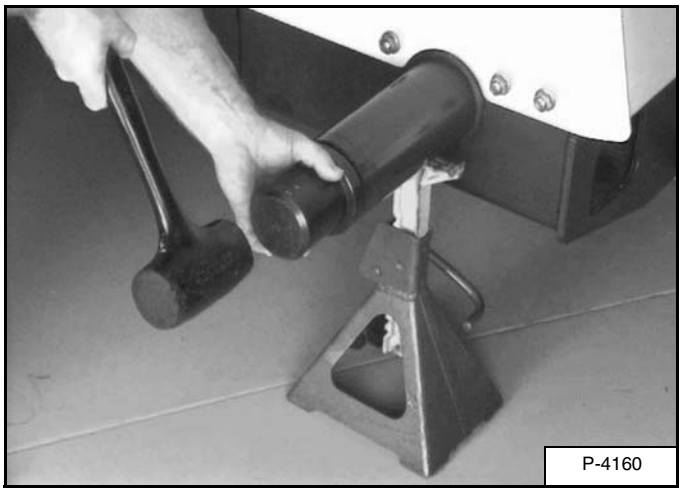


Drill a small hole in the axle seal.

Install a slide hammer (Item 1) **[Figure 40-20-4]** with a screw tip end in the axle seal.

Remove the axle seal.

Figure 40-20-5



Installation: MEL1399 seal driver tool is necessary for the following procedure:

Clean the seal area and inspect the shaft for wear.

NOTE: If the shaft is damaged or worn, an axle repair sleeve kit is available from Bobcat Parts.

Place the new axle seal over the axle and into the axle tube.

Install MEL1399 seal driver tool over the axle and put against the axle seal **[Figure 40-20-5]**.

Hit the seal driver tool with a hammer until the tool is flush with the edge of the axle tube **[Figure 40-20-5]**.

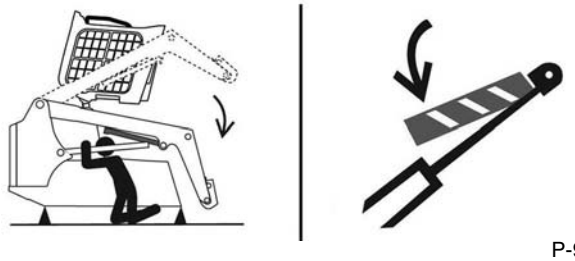
Reverse removal procedure to install the axle hub and wheel assembly.

Rear Cover Removal And Installation

Raise the loader lift arms and install an approved lift arm support device. (See Installing on Page 10-20-1.)

Raise the loader operator cab. (See Raising on Page 10-30-2.)

⚠ DANGER



P-90328

AVOID DEATH

- **Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.**
- **Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.**

D-1009-0409

⚠ 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.

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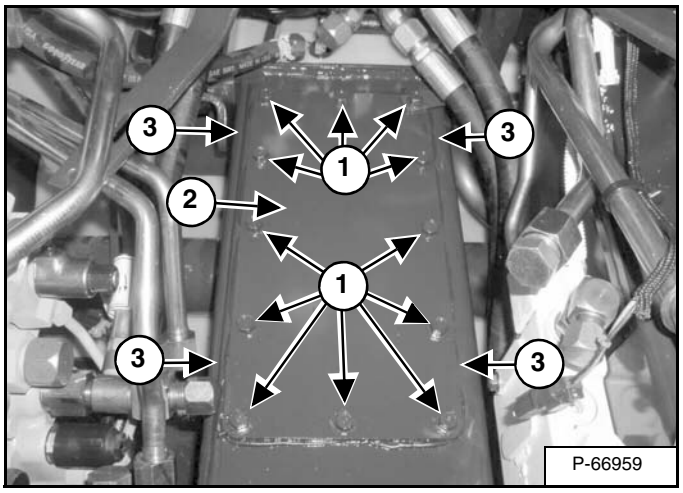
If loader is equipped with two-speed, remove the two-speed valve. (See Valve Removal And Installation on Page 30-70-2.)

If loader is equipped with high flow, remove the high flow valve. (See Removal And Installation on Page 20-150-4.)

Disconnect the front steering linkage bars from the rear linkage bars. (See Removal And Installation on Page 50-100-2.)

Move the linkage bars to allow adequate space to remove the rear chaincase cover.

Figure 40-30-4



Remove the rear chaincase cover mounting screws (Item 1) **[Figure 40-30-4]**.

Remove the rear chaincase cover (Item 2) **[Figure 40-30-4]**.

NOTE: There are machined recesses (Item 3) [Figure 40-30-4] on the bottom side of the cover to help pry the covers off.

Installation: Apply polyurethane sealer to mating surfaces. Polyurethane sealant should be applied to the screw threads to stop oil leakage. Tighten the mounting screws to 20 - 25 ft.-lb. (27 - 34 N•m) torque.

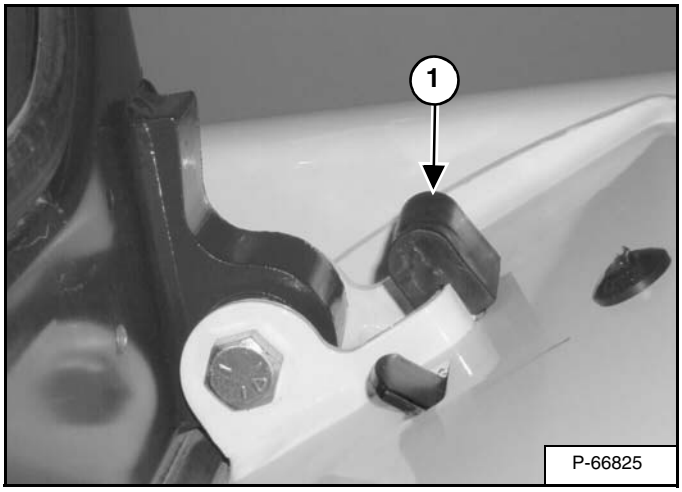
Gas Cylinder Removal And Installation

WARNING

Cylinder contains high pressure gas. Do not open. Opening cylinder can release rod and cause injury or death.

W-2113-0288

Figure 50-20-1



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

WARNING

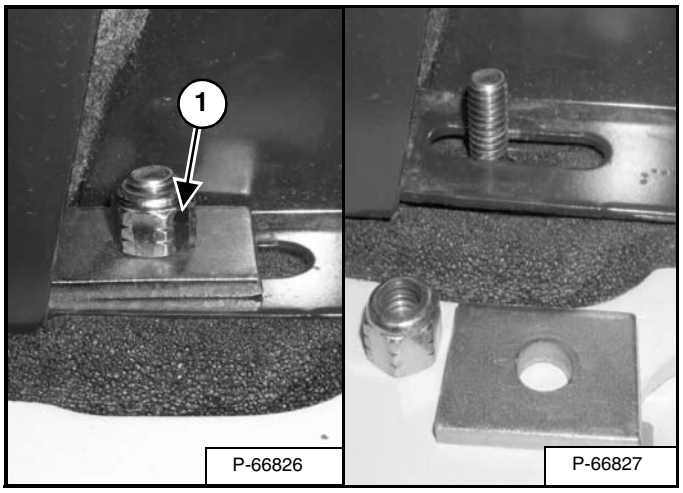
Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

W-2059-0598

Raise the lift arms.

Install an approved lift arm support device. (See Installing on Page 10-20-1.)

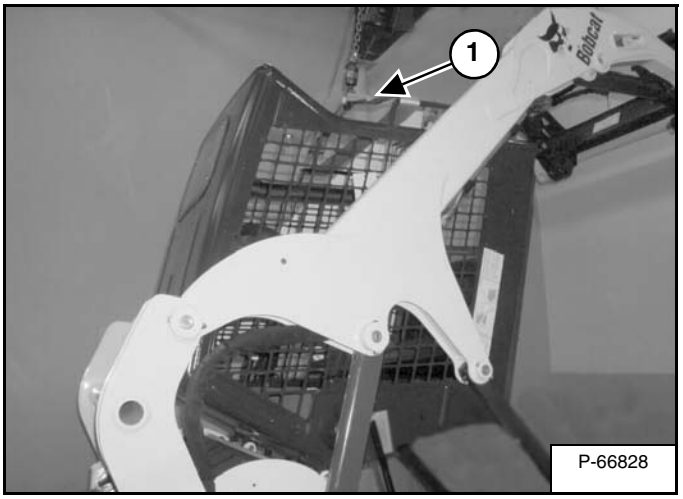
Figure 50-20-2



Remove the cab nut and holddown plate (Item 1) **[Figure 50-20-2]** (both sides).

Installation: Tighten the nut to 40 - 50 ft.-lb. (54 - 68 N•m) torque.

Figure 50-20-3



Raise the operator cab (See Raising on Page 10-30-2) to release the tension on the gas cylinder.

Install a strap (Item 1) **[Figure 50-20-3]** to the cab handles to prevent the cab from falling forward.

Lower Cushion Removal And Installation (Cont'd)

Figure 50-31-8

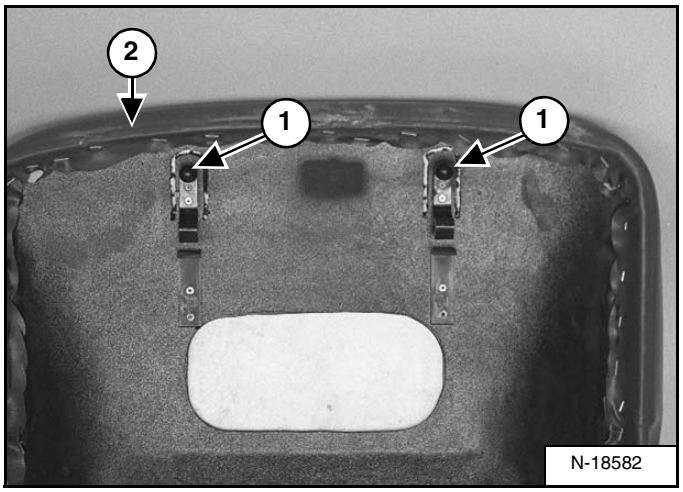
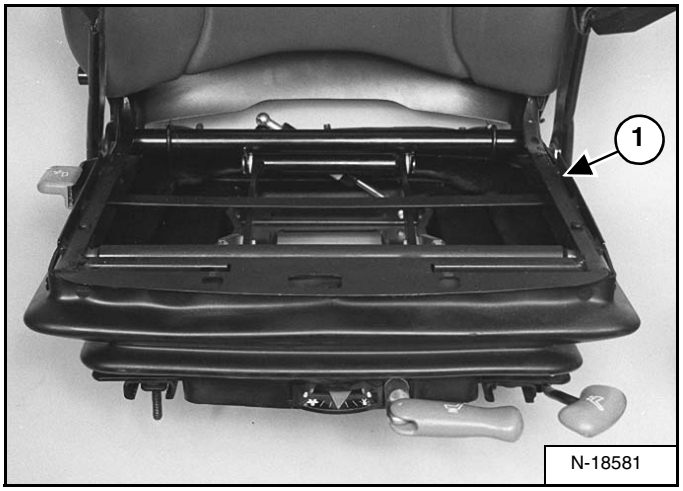
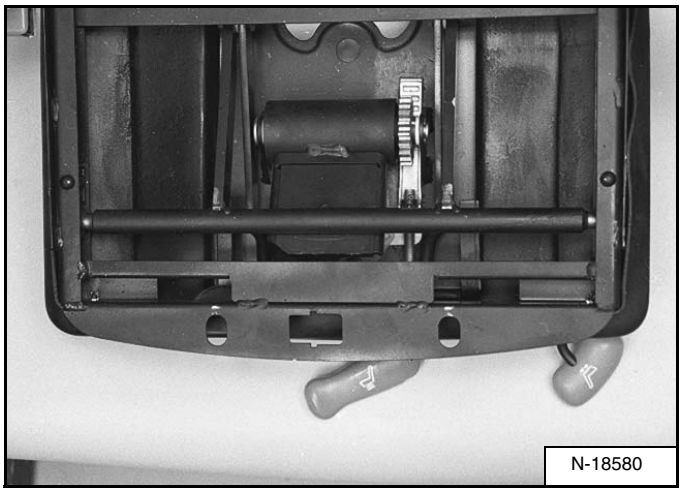


Figure 50-31-9



Remove the cushion (Item 2) **[Figure 50-31-8]** from the seat frame (Item 1) **[Figure 50-31-9]**.

Figure 50-31-10

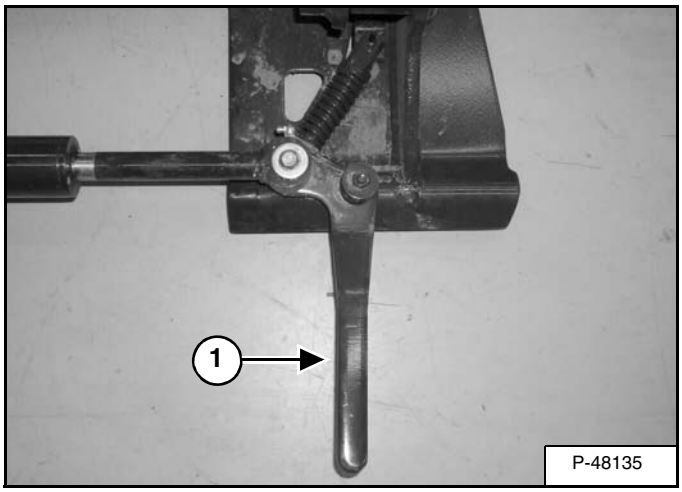


Inspect the seat ride adjustment **[Figure 50-31-10]**.

Reverse the removal procedure to install the operator seat back.

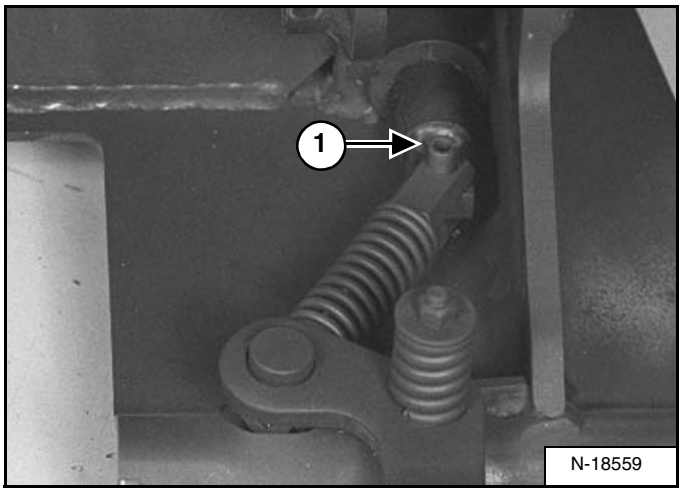
Lever And Wedge Disassembly And Assembly

Figure 50-41-5



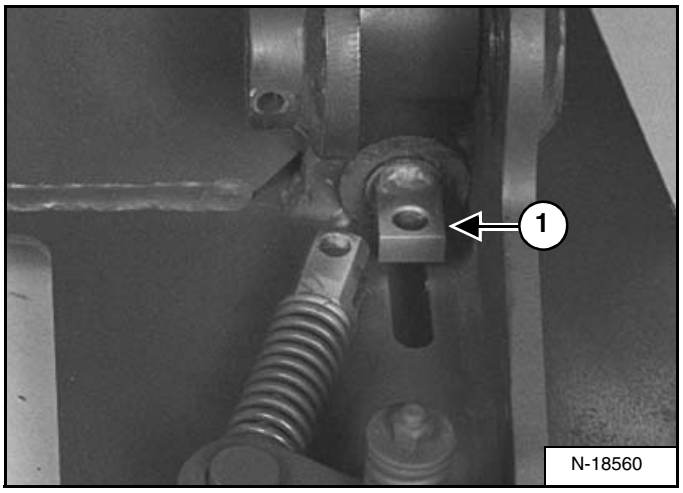
Use the following procedure to remove and install the Bob-Tach lever (Item 1) **[Figure 50-41-5]**, spring and wedge.

Figure 50-41-6



Use a punch and hammer, remove the roll pin (Item 1) **[Figure 50-41-6]** from the Bob-Tach Wedge and spring clevis.

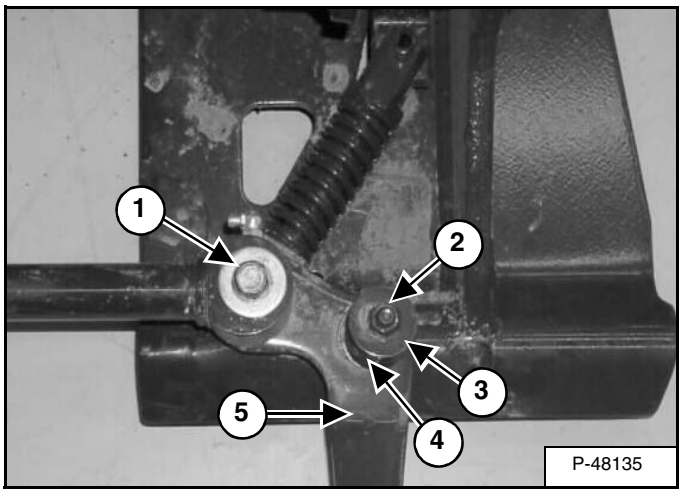
Figure 50-41-7



Remove the Wedge (Item 1) **[Figure 50-41-7]**.

Always replace bent or broken wedges.

Figure 50-41-8



Remove the washers and bolts (Item 1) **[Figure 50-41-8]**.

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

Remove the cylinder off the lever pivots. Position the rod end to the left with the grease fitting holes to the top **[Figure 50-41-8]**.

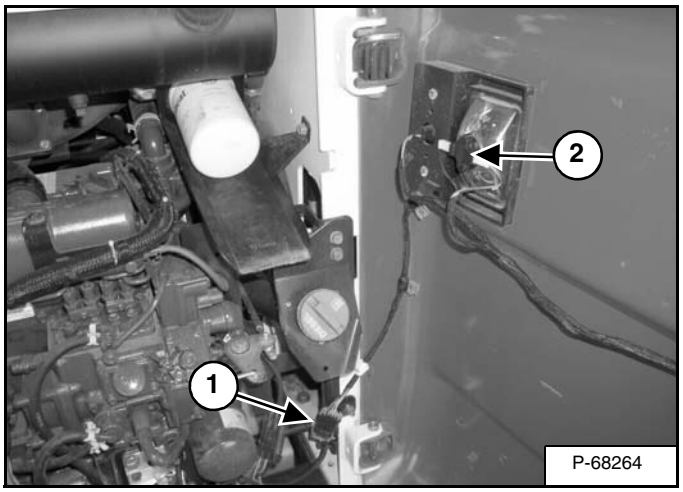
Remove the lever mounting nut (Item 2), washer (Item 3), spring (Item 4) and lever (Item 5) **[Figure 50-41-8]**.

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

REAR DOOR

Removal And Installation

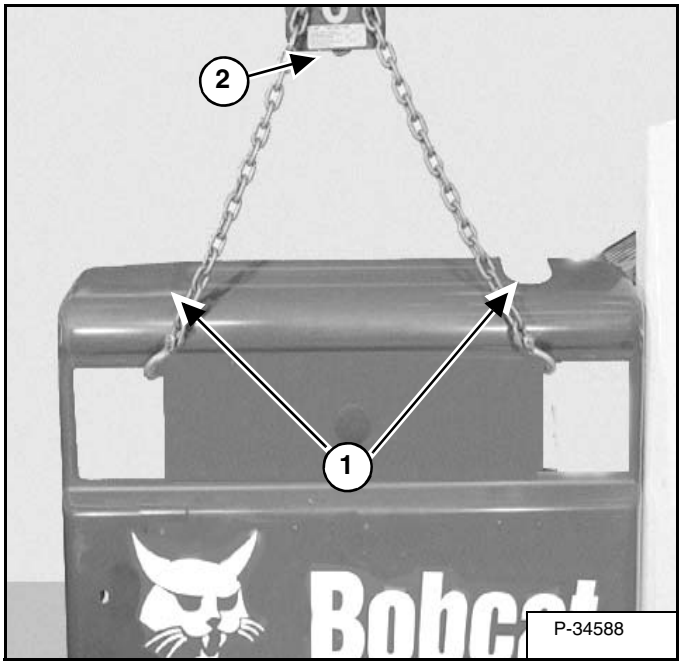
Figure 50-70-1



Disconnect the light harness connector **(Item 1) [Figure 50-70-1]** from the engine harness.

Remove both rear lights (Item 2) **[Figure 50-70-1]** from the door. (See Rear Removal And Installation on Page 60-60-2.)

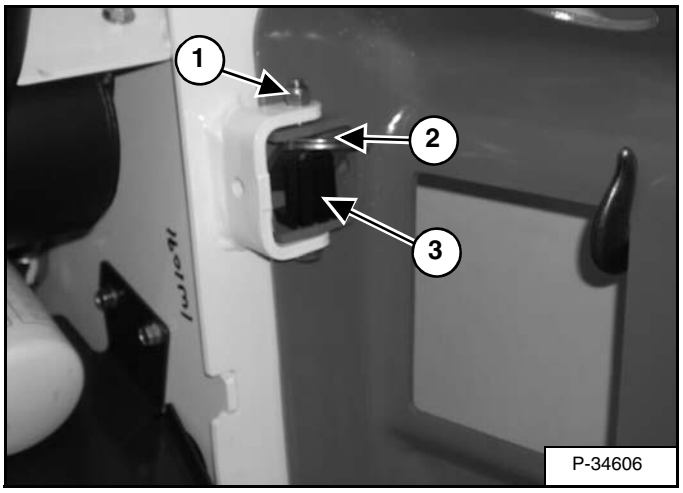
Figure 50-70-2



Secure the chain hooks (Item 1) **[Figure 50-70-2]** to the door as shown.

Connect a chain hoist (Item 2) **[Figure 50-70-2]** to the lifting chain.

Figure 50-70-3



Remove the top and bottom door hinge mounting bolts (Item 1) **[Figure 50-70-3]** and nuts.

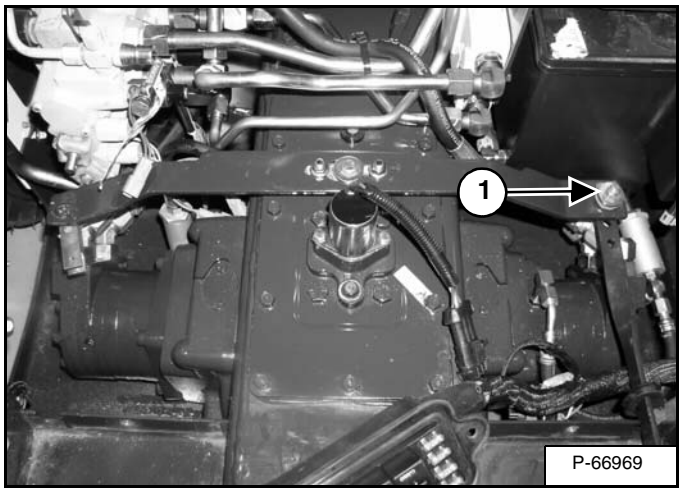
NOTE: Install the door stop (Item 2) and the door stop retainer (Item 3) in the top hinge as shown [Figure 50-70-3].

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

Lift the door away from the loader frame and put the door flat on the floor.

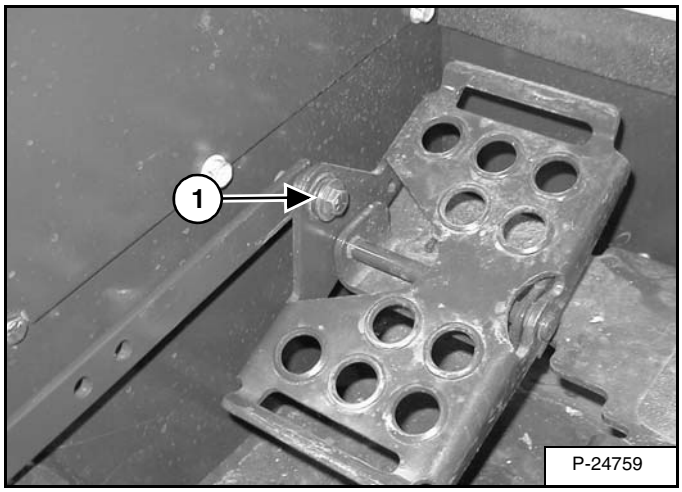
Linkage Removal And Installation (Cont'd)

Figure 50-90-6



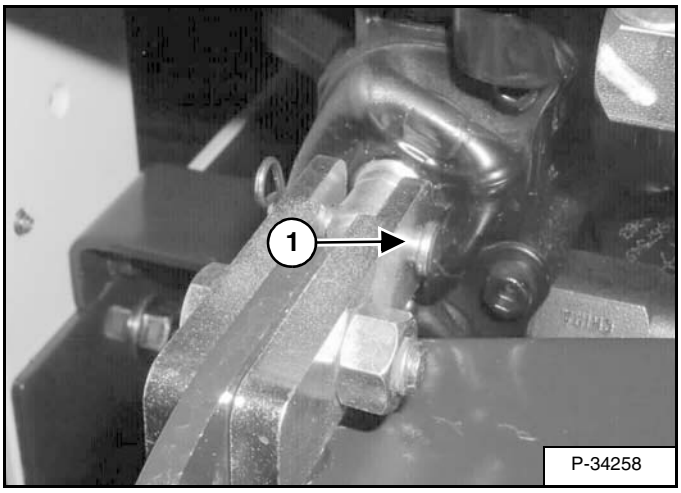
Remove the bolt and nut (Item 1) **[Figure 50-90-6]** to disconnect the lift foot pedal linkage from the crossbar linkage.

Figure 50-90-7



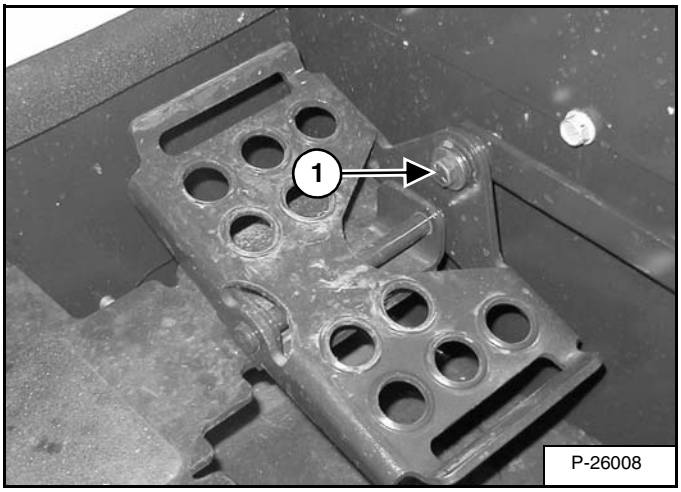
Remove the bolt and nut (Item 1) **[Figure 50-90-7]** to disconnect the lift foot pedal.

Figure 50-90-8



Remove the hairpin clip and cross-pin (Item 1) **[Figure 50-90-8]** from the control valve tilt spool.

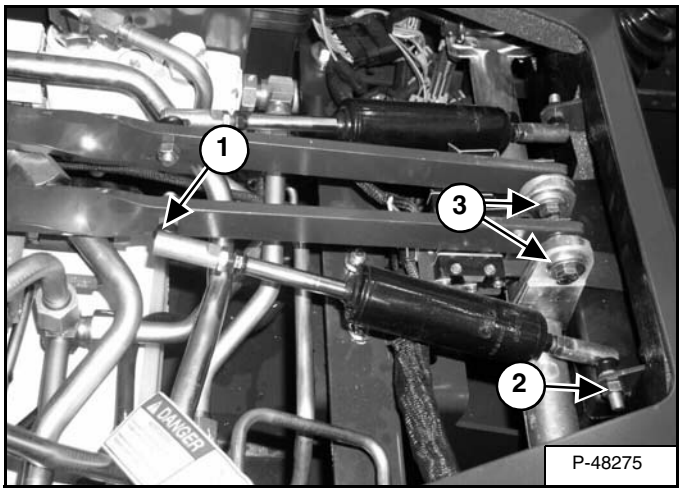
Figure 50-90-9



Remove the bolt and nut (Item 1) **[Figure 50-90-9]** to disconnect the lift foot pedal.

Shock Removal And Installation

Figure 50-100-10



Remove the mounting nut (Item 1) **[Figure 50-100-10]** from the end of the shock connected to the steering linkage.

Remove the mounting nut (Item 2) **[Figure 50-100-10]** 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.

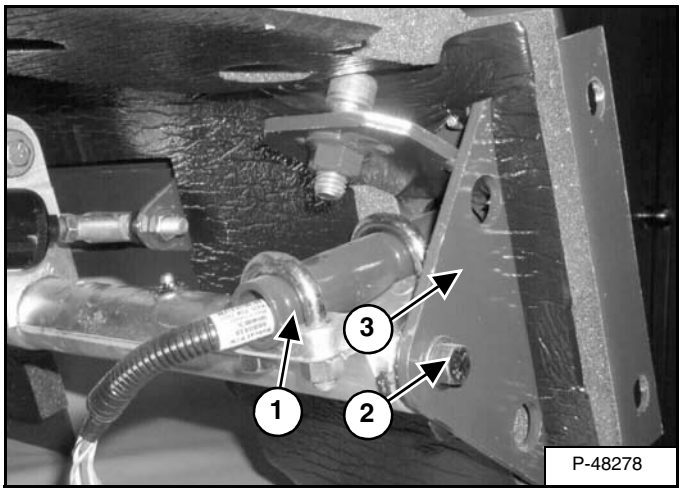
Shaft Removal And Installation

NOTE: The steering shaft can be removed without removing the control panel from the loader. Photo [Figure 50-100-11] shows the control panel removed for clarity purpose only.

Remove the steering linkage mounting bolts (Item 3) **[Figure 50-100-10]**.

Remove the steering shock mounting nuts (Item 2) **[Figure 50-100-10]**.

Figure 50-100-11



Remove Control Handle Lever (Item 1) **[Figure 50-100-11]**. (See Lever Removal And Installation on Page 50-110-1.)

Remove the steering shaft pivot bolt (Item 2) **[Figure 50-100-11]** from both sides of the control panel.

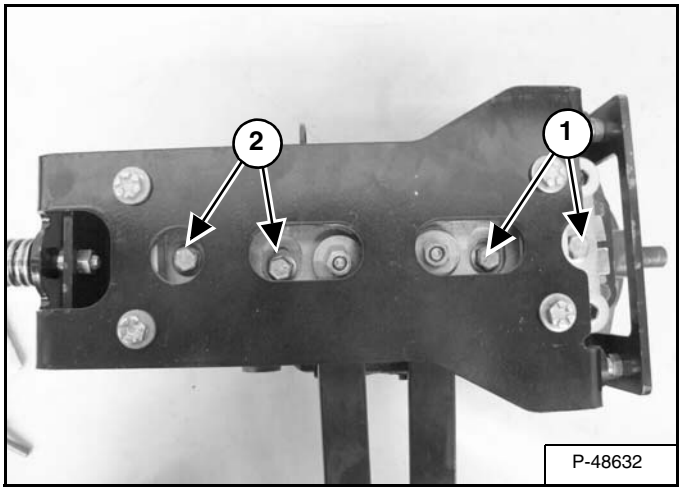
Installation: Tighten the pivot bolts to 25 - 28 ft.-lb. (34 - 38 N•m) torque.

Remove the steering shaft from the control panel.

Linkage Neutral (Adjusting) (Cont'd)

Start the neutral adjustment procedure with the left pump first and complete the neutral adjustment for the left pump before adjusting the right pump.

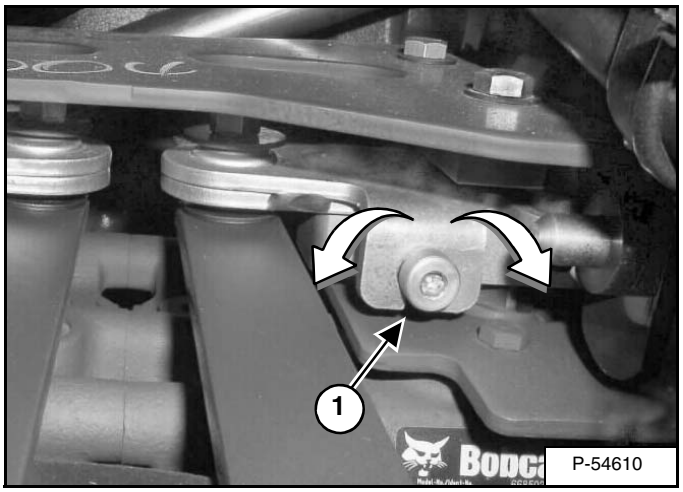
Figure 50-100-34



Loosen the left pump pintle adjustment lock bolts (Item 1). (The right pump pintle adjustment lock bolts are (Item 2) **[Figure 50-100-34]**.) Loosen the bolts enough to allow free movement between the pintle arm and the pintle base.

NOTE: If the bolts are too loose or too tight, the neutral adjustment may be affected.

Figure 50-100-35



Move the engine speed control to high idle.

NOTE: The neutral range (dead-band) will vary between the hydrostatic pumps.

NOTE: This procedure is shown for neutral adjustment on the left side of the loader. The procedure is the same for the right side neutral adjustment.

Turn the adjustment screw (Item 1) **[Figure 50-100-35]** counterclockwise until forward creep is seen.

Turn the adjustment screw (Item 1) **[Figure 50-100-35]** counterclockwise to a point between forward and reverse where there is **zero** creep.

Stroke the left steering lever to forward and allow the lever to return to neutral. Stroke the left steering lever to reverse and allow the lever to return to neutral. Check that there is zero creep when the lever returns from either direction, on the left side. Turn the adjustment screw (if necessary) until zero creep is obtained.

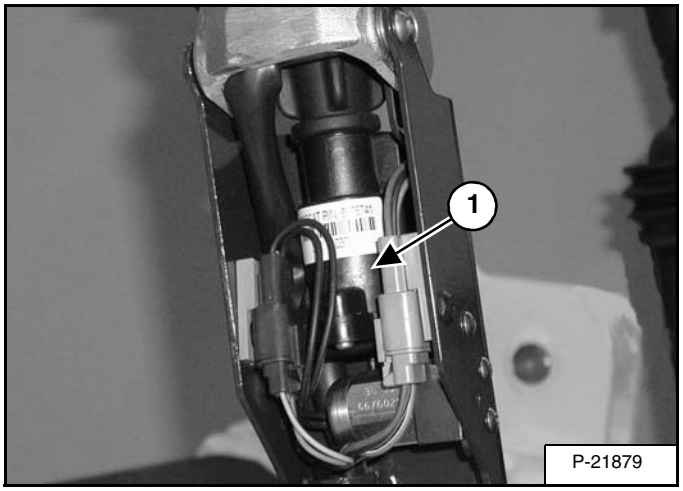
CONTROL HANDLE / LEVER (ACS)

Description

The control handles/levers are used to control the forward and reverse travel and the lift and tilt functions.The lift and tilt functions can be controlled by handle sensors (Item 1) **[Figure 50-111-1]** that are located in the base of the control handle/levers.

The control handles/levers are mounted to the control panel.

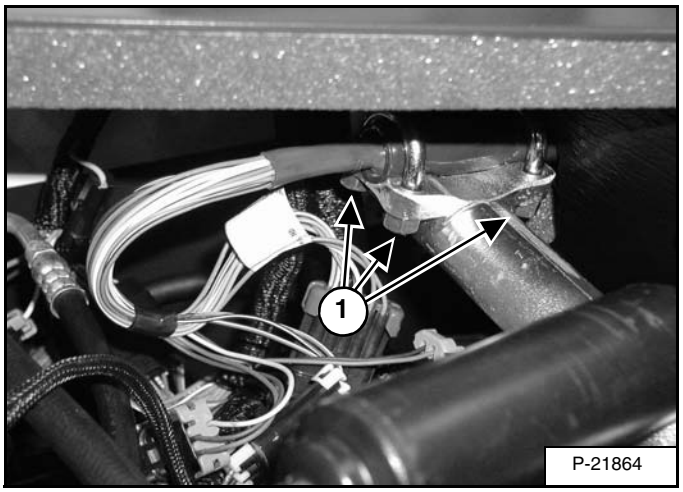
Figure 50-111-1



Handle Sensor (Item 1) **[Figure 50-111-1]**.

Handle Sensor Removal And Installation

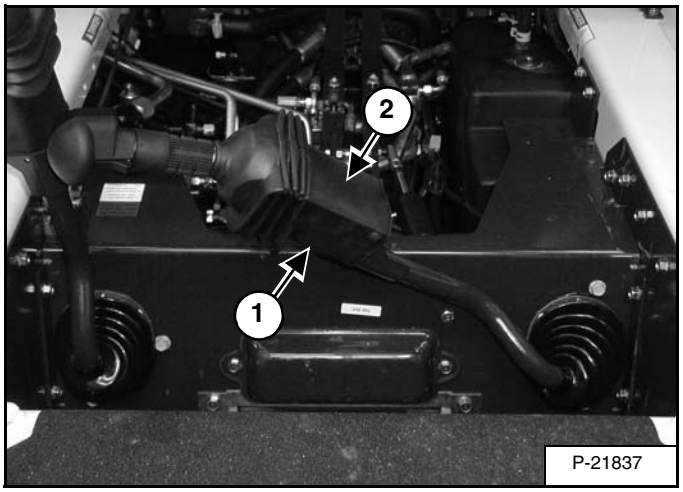
Figure 50-111-2



Loosen the nuts (Item 1) **[Figure 50-111-2]**.

Installation: Tighten the u-bolts so the lever can not be moved either right or left when seated in the operator seat. Be sure the control lever does not interfere with the operator cab when lowering or raising the cab.

Figure 50-111-3

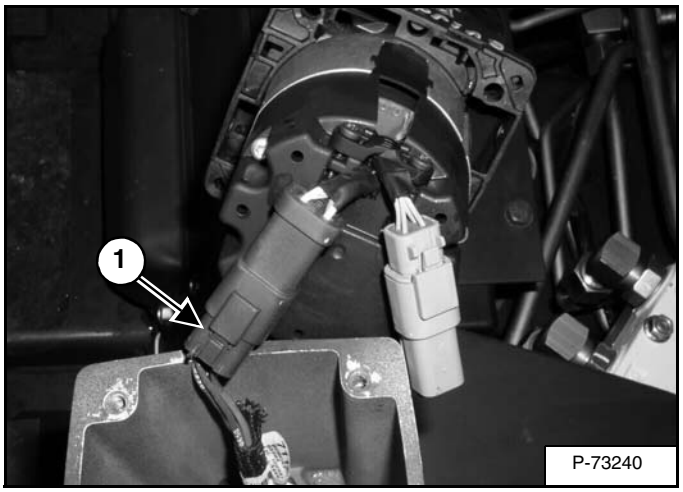


Tilt the control handle (Item 1) **[Figure 50-111-3]** to the center of the loader.

Lift the boot cover (Item 2) **[Figure 50-111-3]**.

Joystick Removal And Installation (Cont'd)

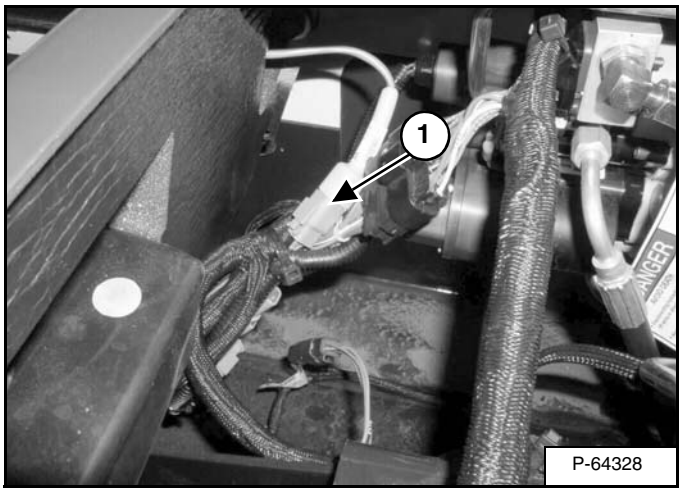
Figure 50-112-7



Disconnect the joystick connector (Item 1) **[Figure 50-112-7]** from the harness connector.

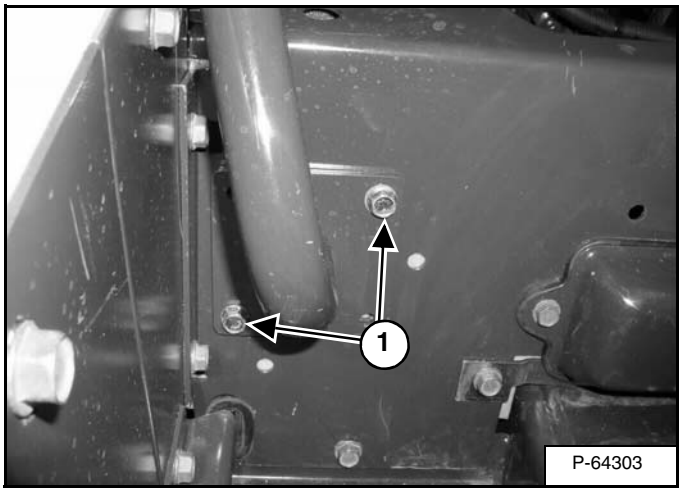
Joystick Mount Removal And Installation

Figure 50-112-8



Disconnect the joystick wiring harness connectors (Item 1) on both the right and left hand joysticks **[Figure 50-112-8]**.

Figure 50-112-9



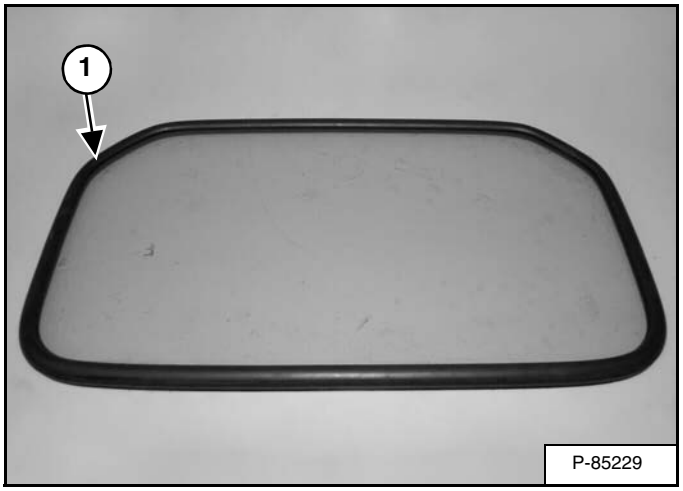
Remove the two control lever mounting bolts (Item 1) **[Figure 50-112-9]**.

The mounting bolts are secured with lock-nuts on the back of the control panel. Once removed, they need to be replaced with new.

Installation (Continuous Molding)

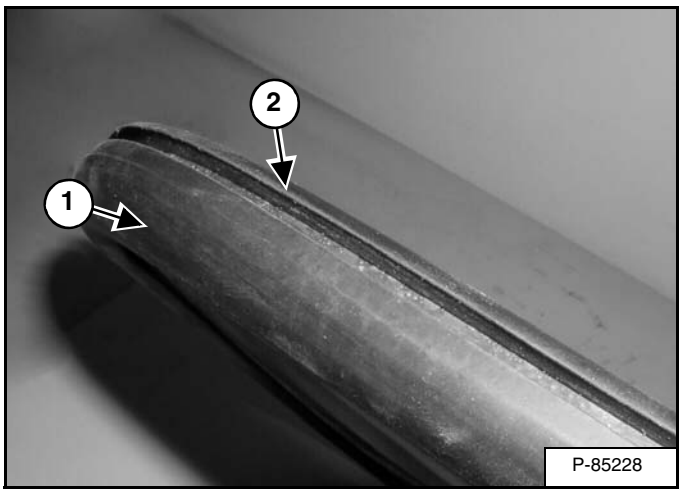
Clean the area before installing the rear window assembly.

Figure 50-130-7



Install the rubber molding (Item 1) **[Figure 50-130-7]** around the edge of the rear window.

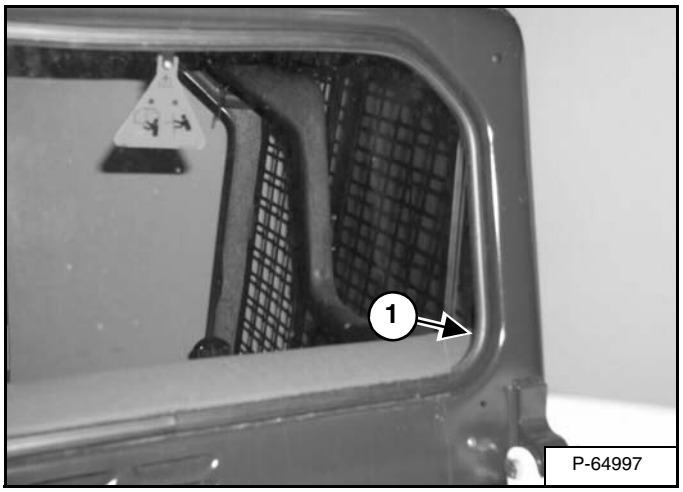
Figure 50-130-8



Apply liquid soap to the rubber molding (Item 1) **[Figure 50-130-8]** to make installation easier.

NOTE: Install the window assembly with the narrow edge (Item 2) [Figure 50-130-8] toward the inside of the loader.

Figure 50-130-9



Install the rear window assembly from the outside of the operator cab into the window frame.

Install a lower corner of the rear window assembly into the corner of the window frame (Item 1) **[Figure 50-130-9]**.

Work the window assembly downward until the window is fully seated in the lower portion of the window frame.

⚠ WARNING

AVOID INJURY OR DEATH

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

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

W-2019-0907

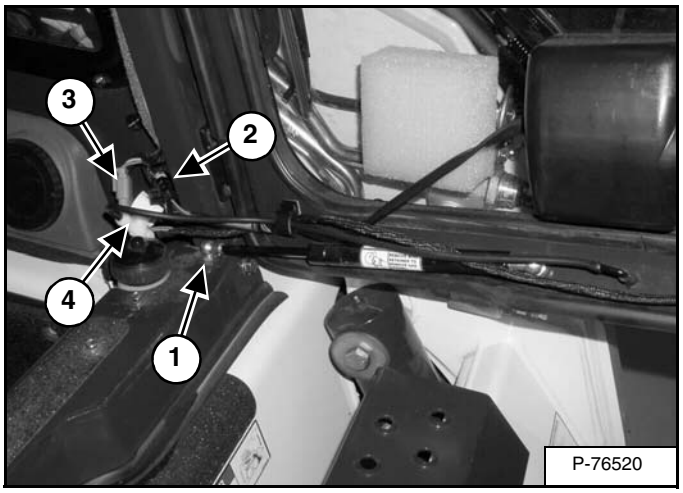
CAB DOOR

Description

The standard cab door is available as an option or dealer installed kit. The Special Application Kit Door or Forestry Door kit are available for use with certain attachments.

Removal And Installation

Figure 50-140-1



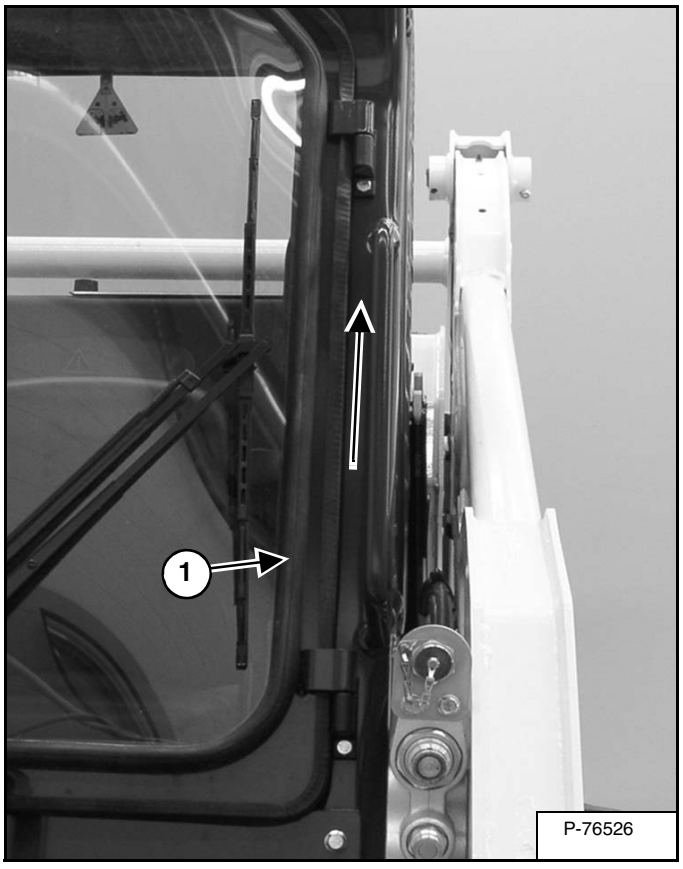
Open the cab door.

Remove the gas spring (Item 1) **[Figure 50-140-1]** from the threshold.

Disconnect the electrical harnesses (Items 2 and 3) **[Figure 50-140-1]**.

Disconnect the washer bottle hose (Item 4) **[Figure 50-140-1]**.

Figure 50-140-2



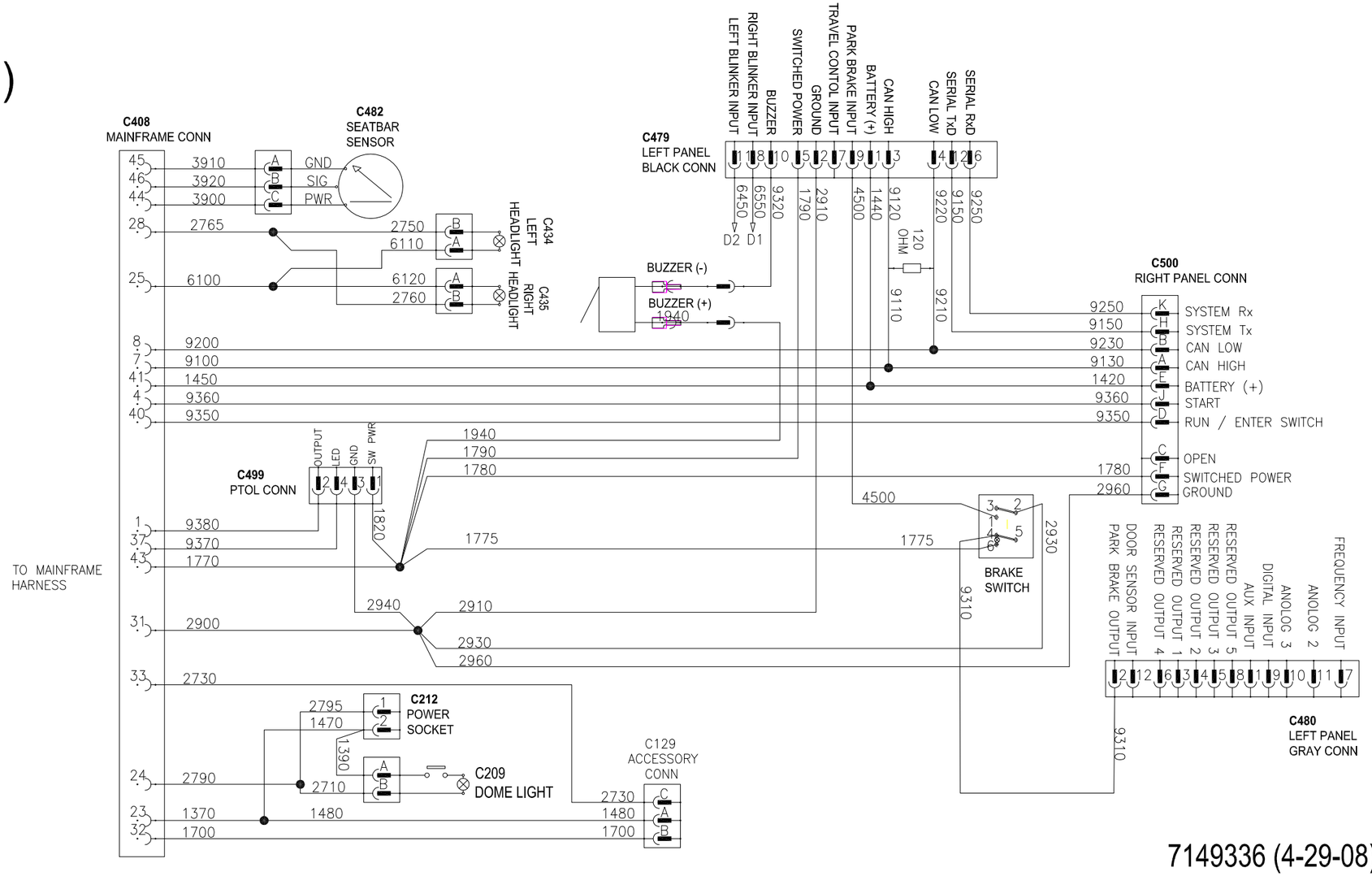
Lift the door (Item 1) **[Figure 50-140-2]** off the hinges.

WIRING SCHEMATIC
(STANDARD CAB)
S185 (S/N 530360001 AND ABOVE)
(S/N 530460001 AND ABOVE)
(S/N ABRT60001 AND ABOVE)

(PRINTED MAY 2008)

7149336

STD CAB HARNESS 7149336



Printed In U.S.A.

7149336 (4-29-08)

Troubleshooting

The following troubleshooting chart is provided for assistance in locating and correcting problems which are most common. Many of the recommended procedures must be done by authorized Bobcat Service Personnel only.

⚠ WARNING

AVOID INJURY OR DEATH

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.

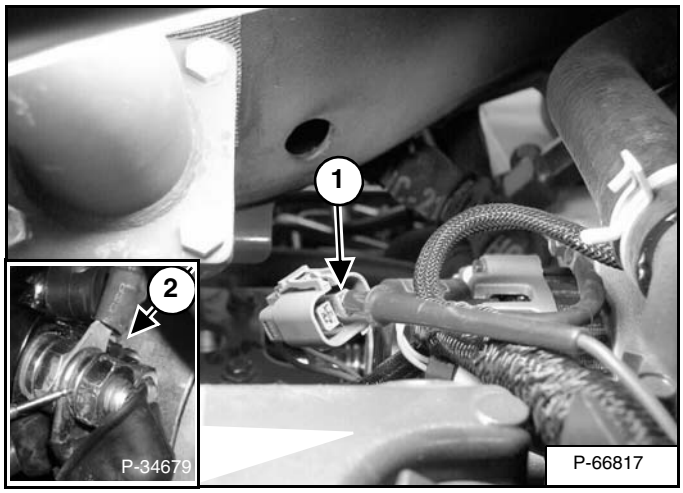
W-2003-0807

PROBLEM	CAUSE
Battery will not take a charge.	1, 2, 3, 4, 5
Alternator will not charge.	1, 2, 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 ground connection is not making a good contact.
5. The alternator is damaged.
6. The engine is locked.
7. The starter is damaged.
8. The wiring or solenoid is damaged.
9. Check the fuses.

High Voltage Testing

Figure 60-30-6



Turn engine OFF and remove the L & S Terminal connector (Item 1) **[Figure 60-30-4]** off the alternator.

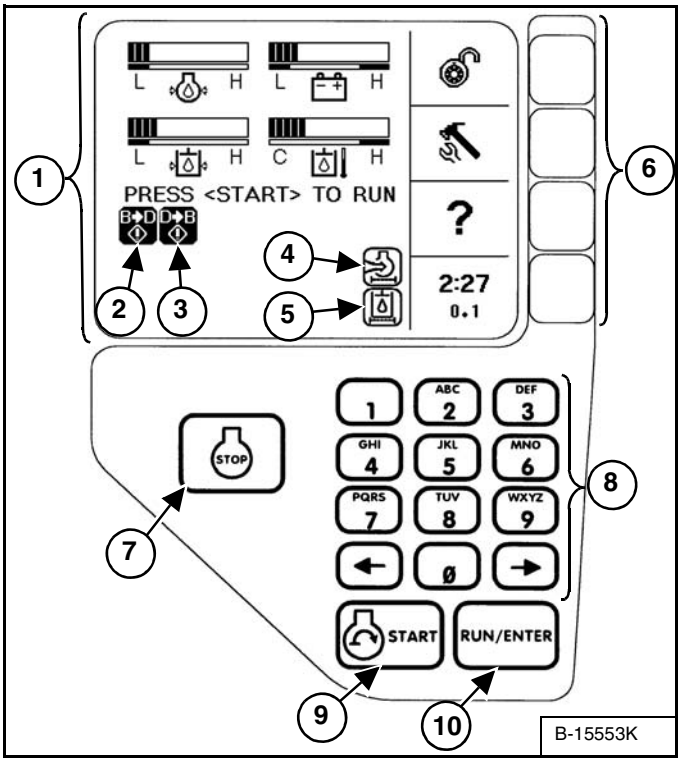
Check the continuity between the "S" terminal (Item 1) [Figure 60-30-6] and the positive (+) terminal on the battery or starter terminal (Item 2) [Figure 60-30-6]. There should be continuity. If no continuity, replace wire harness.

If voltage is still above 14.7 volts at 70° F (Alternator Temperature), then remove alternator for replacement or repair. To repair, (See Alternator Voltage Testing on Page 60-30-3.) for further component testing.

INSTRUMENT PANELS (CONT'D)

Deluxe Instrumentation Panel

Figure 60-50-3



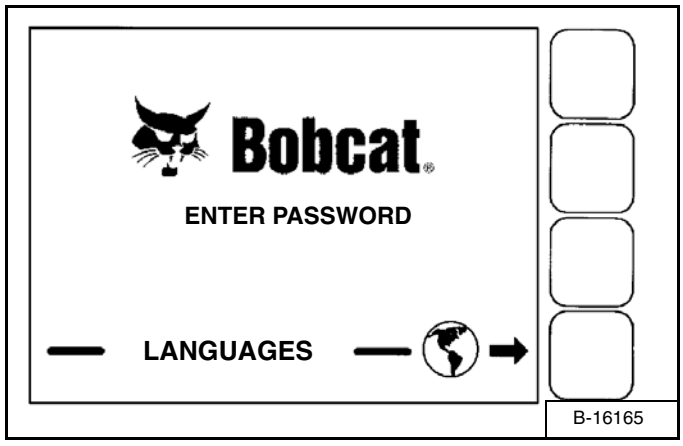
This machine may be equipped with a Deluxe Instrumentation Panel **[Figure 60-50-3]**.

1. **Display Screen:** The Display Screen is where all system setup, monitoring, troubleshooting and error conditions are displayed.
2. **Bobcat Main Controller Error:** Indicates communication error between Bobcat Main Controller and Deluxe Instrumentation Panel. (See DIAGNOSTIC SERVICE CODES on Page 60-90-1.)
3. **Display Error:** Indicates communication error between instrument panel and Bobcat controller. (See DIAGNOSTIC SERVICE CODES on Page 60-90-1.)
4. **Engine Air Filter Icon:** Indicates engine air filter requires service.
5. **Hydraulic Filter Icon:** Indicates hydraulic filter requires service.
6. **Selection Buttons:** The four Selection Buttons allow you to select items from the Display Screen and scroll through screens.
7. **Stop Button:** Used to stop the engine and shut down the loader's electrical system.
8. **Keypad:** The numeric keypad has two functions:

   - To enter a number code (password) to allow starting the engine.
   - To enter a number as directed for further use of the Display Screen.

9. **Start Button:** Used to start the engine.
10. **Run / Enter Button:** Used to turn on the loader's electrical system.

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 Screen setup features.

NOTE: Your new loader (with Deluxe Instrumentation Panel) will have an 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 Changing The User Password on Page 60-190-1.) Keep your password in a safe place for future needs.

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

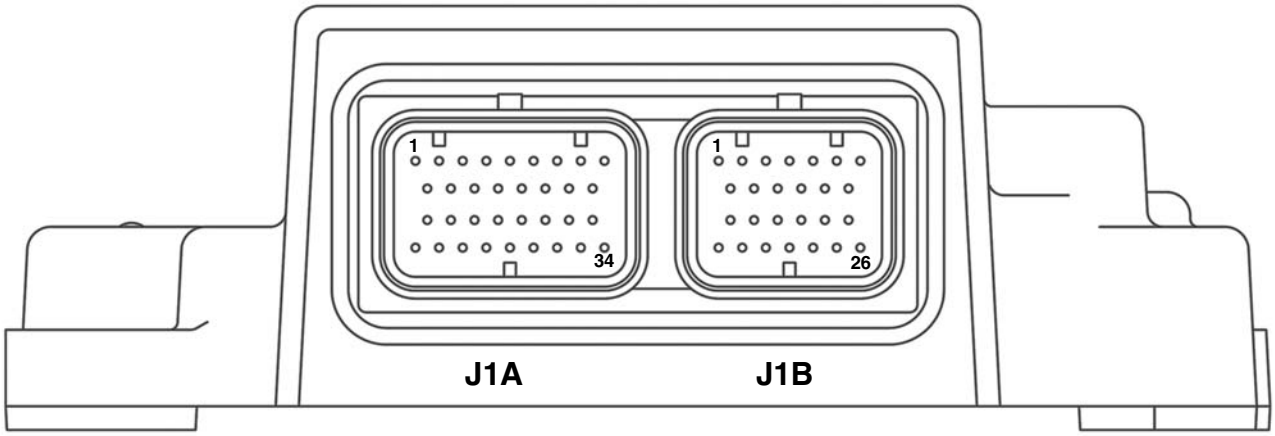
Press EXIT. The screen will return to **[Figure 60-50-4]**. You can then enter the password and start the engine.

See CONTROL PANEL SETUP for further description of screens to setup the system for your use. (See CONTROL PANEL SETUP on Page 60-180-1.)

NOTE: Pressing the EXIT key will go to the previous screen and you can continue pressing until you get to the initial (home) screen. SHORTCUT: Press the "0" (zero) key to get to the home screen immediately.

Connector Identification

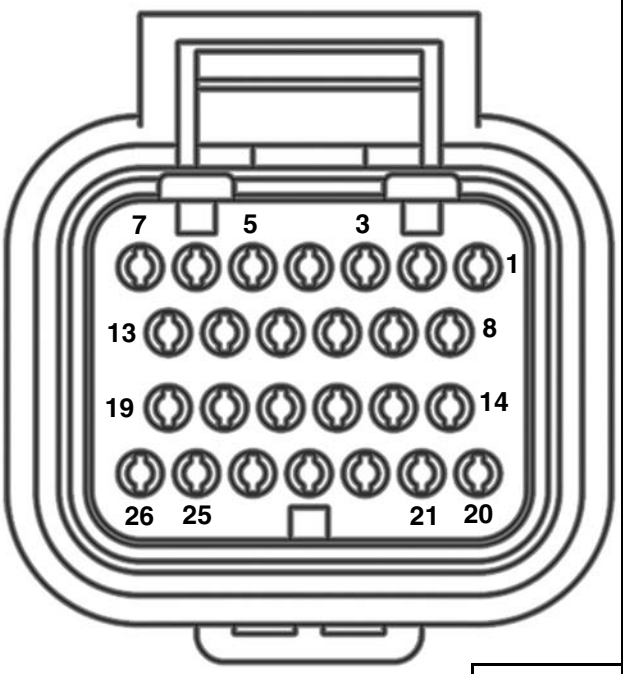
Gateway Controller



Harness Connector View

J1A

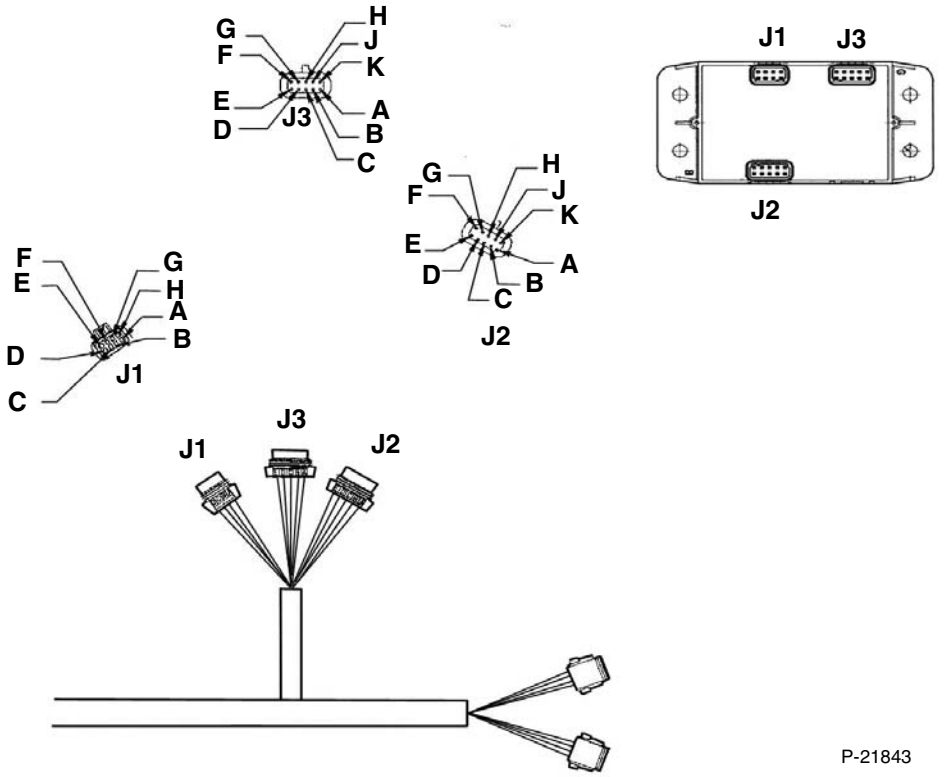
Harness Connector View



J1B

P-76622
P-76623
P-76624

Connector Identification

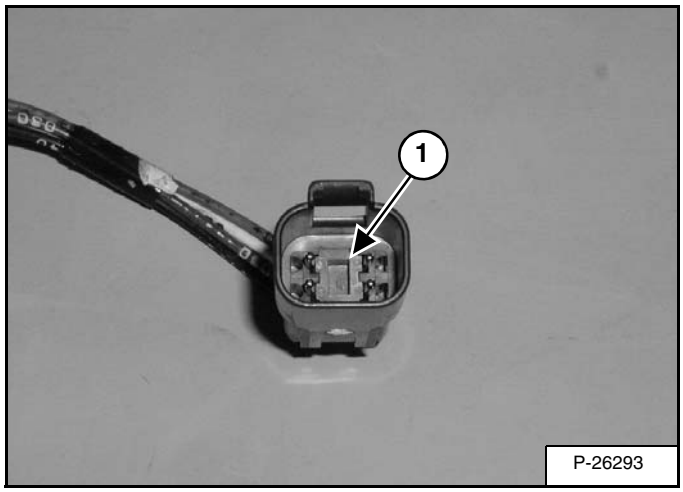


P/N	PIN	DESCRIPTION
J1		CONNECTOR, METRI-PACK
Orange	A	5V HALL EFFECT SUPPLY
Orange	B	SWITCHED ACS POWER
Green	C	HAND/FOOT INPUT
Purple	D	CAN SIGNAL HIGH ACS
Purple	E	CAN SIGNAL LOW ACS
Purple	F	CAN SHIELD ACS
Black	G	ACS GROUND
Black	H	ACS GROUND
J2		CONNECTOR, METRI-PACK
	A	OPEN
	B	OPEN
	C	OPEN
	D	OPEN
Green	E	TILT SPOOL SIGNAL
Green	F	LIFT HANDLE SIGNAL
Green	G	TILT HANDLE SIGNAL
Green	H	LIFT SPOOL SIGNAL
Green	J	LIFT PEDAL SIGNAL
Green	K	TILT PEDAL SIGNAL

P/N	PIN	DESCRIPTION
J3		CONNECTOR, METRI-PACK
Red	A	TILT ACTUATOR FORWARD
Red/White	B	UNSWITCHED ACS POWER
Red/White	C	UNSWITCHED ACS POWER
Black	D	LIFT ACTUATOR REVERSE
Green	E	HANDLE LOCK POWER
Red	F	LIFT ACTUATOR FORWARD
Green	G	PEDAL LOCK POWER
Black	H	ACS GROUND
Black	J	ACS GROUND
Black	K	TILT ACTUATOR REVERSE

Removal And Installation (Cont'd)

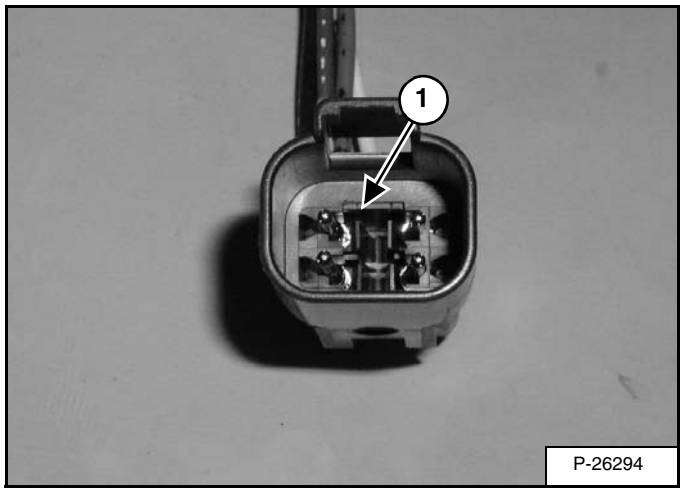
Figure 60-80-9



The electrical connector can be replaced.

Remove the connector wedge (Item 1) **[Figure 60-80-9]**.

Figure 60-80-10

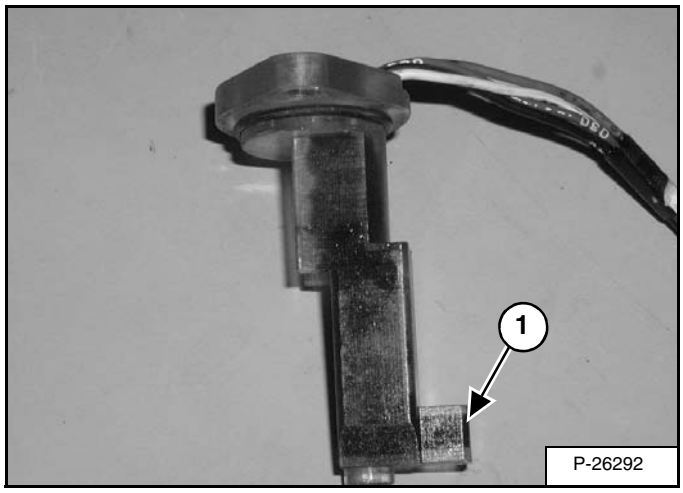


With a thin screwdriver lift the tabs and remove the wires from the connector (Item 1) **[Figure 60-80-10]**.

Wire Code

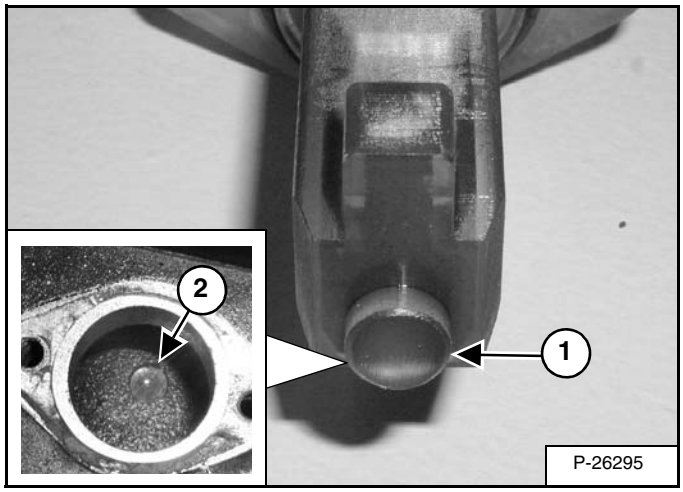
1 Red
2 White
3 Black
4 Blue

Figure 60-80-11



Installation: Be sure to install the speed sensor (Item 1) **[Figure 60-80-11]** pointing toward the transmission case.

Figure 60-80-12

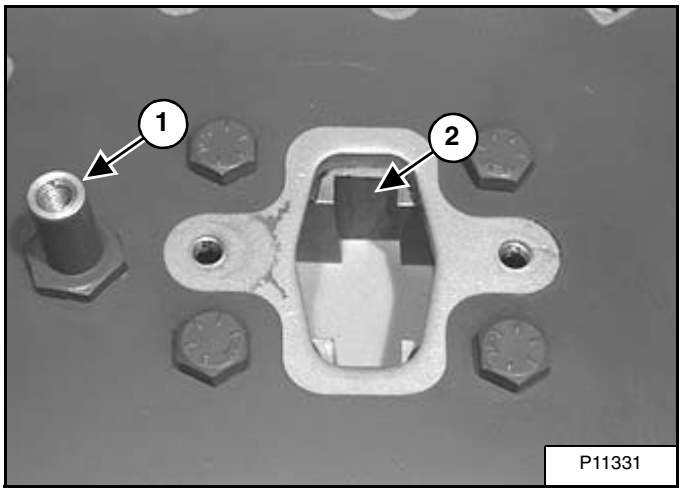


Installation: The alignment pin (Item 1) at the bottom of the speed sensor must be installed in the hole (Item 2) **[Figure 60-80-12]** in the motor carrier.


Bobcat®

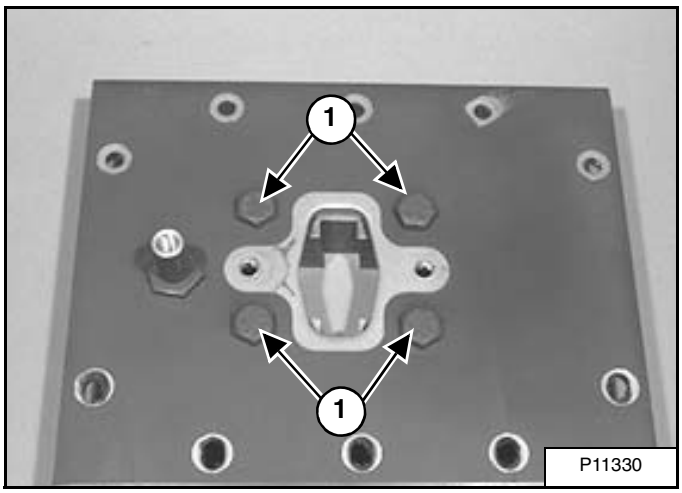
Removal And Installation (Cont'd)

Figure 60-120-7



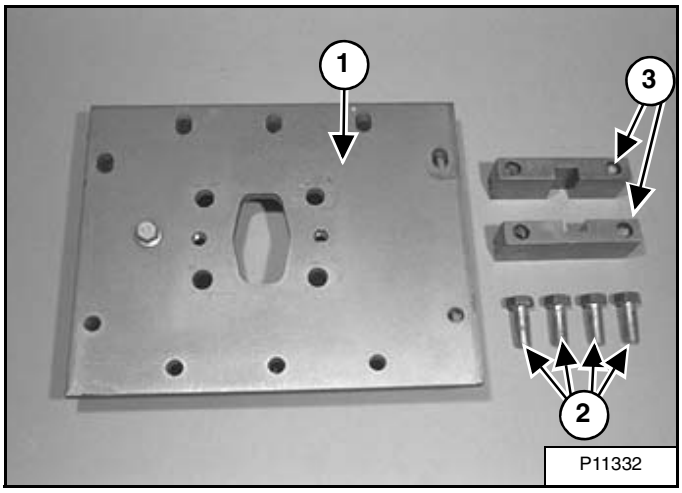
NOTE: Bolt (Item 1) is on the rear of the chaincase cover, notice the direction of the groove (Item 2) [Figure 60-120-7] in the traction lock guides.

Figure 60-120-8



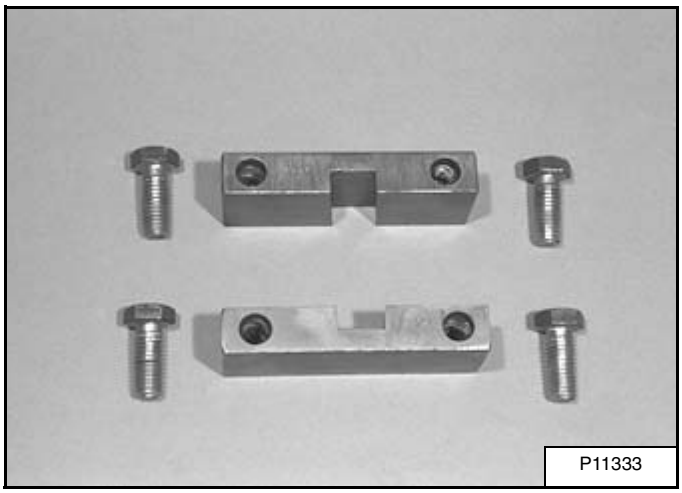
To remove the traction lock guides remove the four bolts (Item 1) **[Figure 60-120-8]**.

Figure 60-120-9



Installation: Thoroughly clean the polyurethane from the chaincase cover (Item 1), bolts (Item 2) and traction lock guides (Item 3) **[Figure 60-120-9]** and dry.

Figure 60-120-10



Installation: Apply a bead of polyurethane on the traction lock guides and bolts **[Figure 60-120-10]**.

Switch Handle Installation (Cont'd)

Figure 60-130-17

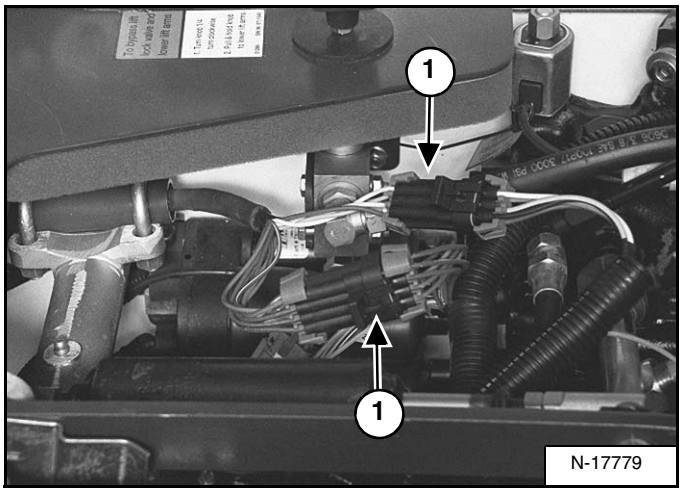
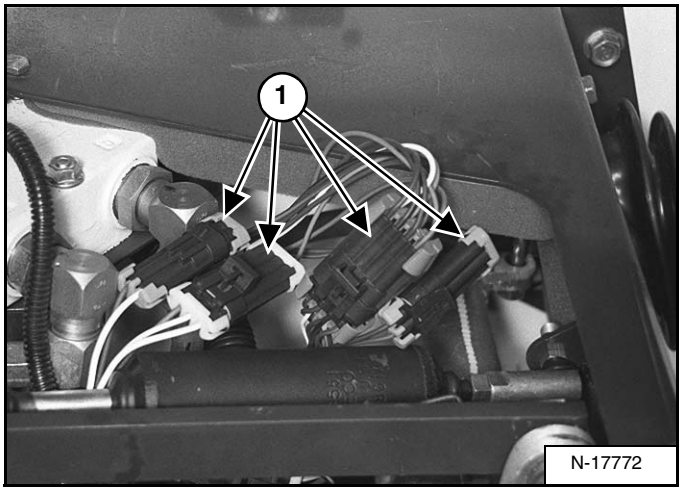
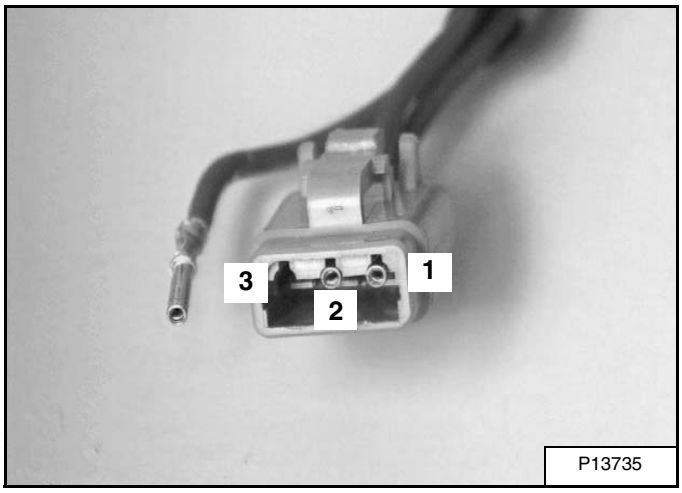


Figure 60-130-18



Connect the handle harness connectors (Item 1) **[Figure 60-130-17]** & **[Figure 60-130-18]** to the loader harness connectors.

Figure 60-130-19

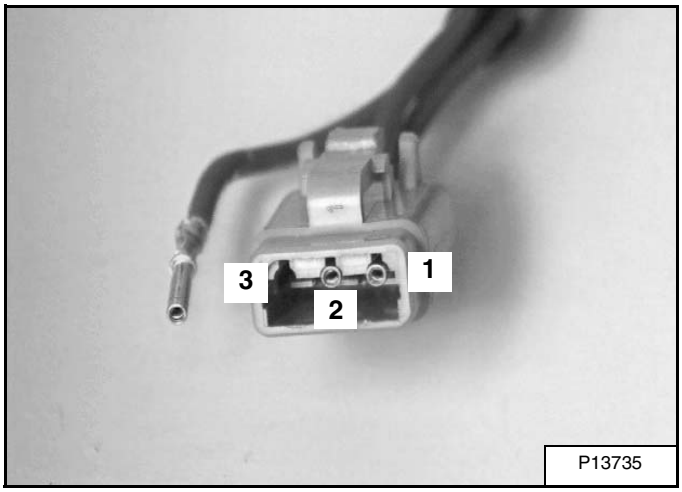


Install the wires into the connectors as listed below:

Left and Right Control Lever Switch Handle **[Figure 60-130-19]**

1-Terminal - Red/White
2-Terminal - Black/White
3-Terminal - Purple/White

Figure 60-130-20



Left and Right Control Lever Switch Handle **[Figure 60-130-20]**

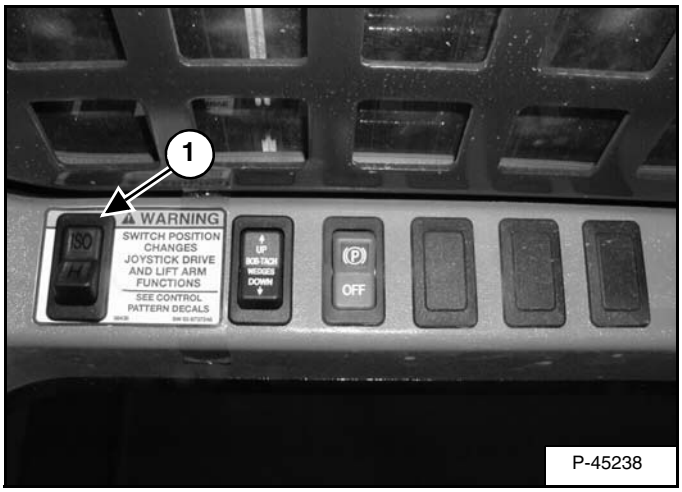
1-Terminal - Yellow/Red
2-Terminal - Open
3-Terminal - Orange/Black


Bobcat®

CALIBRATION (CONT'D)

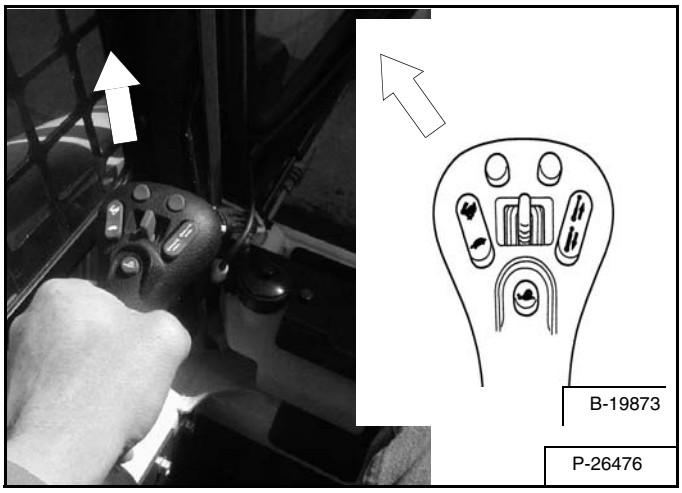
Hydrostatic Pump Calibration (SJC) (Cont'd)

Figure 60-160-14



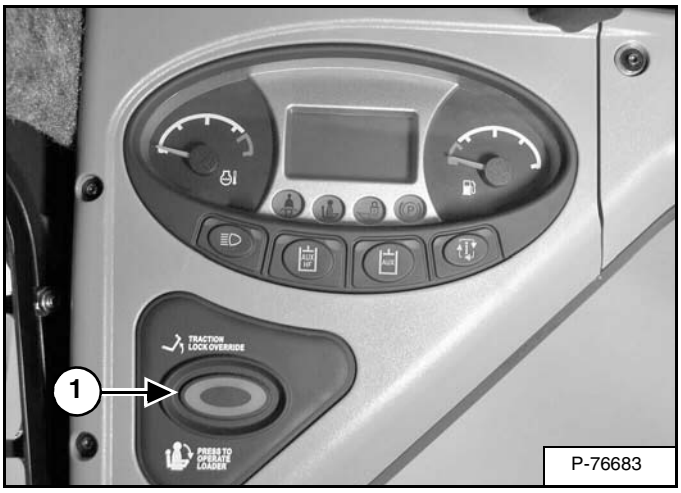
The Control Pattern **ISO** Switch (Item 1) **[Figure 60-160-14]** will start flashing.

Figure 60-160-15



Move the left joystick to the forward-left corner position **[Figure 60-160-15]** and hold in position.

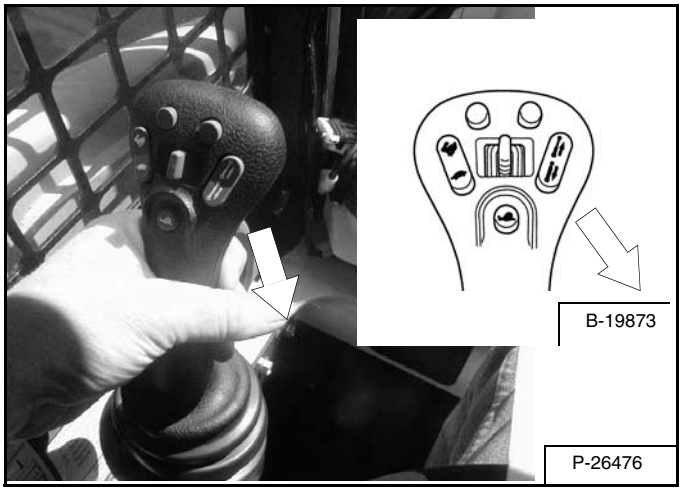
Figure 60-160-16



Press the *PRESS TO OPERATE LOADER* Button (Item 1) **[Figure 60-160-16]** while holding the left joystick in position.

Three audible beeps will sound.

Figure 60-160-17



Move the left joystick to the reverse-right corner position **[Figure 60-160-17]** and hold in position.

CONTROL PANEL SETUP (CONT'D)

Right Panel Setup (Deluxe Instrumentation Panel) (Cont'd)

More Examples

Clocks

Press . . .
TOOL / SETUP
LOADER FEATURES
DISPLAY OPTIONS
CLOCKS

SET CLOCK
Use the keypad to set time.
Press **RUN / ENTER** to set clock.
Press **EXIT** to return to previous level menu.

RESET JOB CLOCK (Password required)
(Job Clock keeps a running total for job hours)
Press **CLEAR** to reset Job Clock to zero.
Press **LOCK / UNLOCK** to unlock.
Enter Password and press **RUN / ENTER**.

Languages

Press . . .
TOOL / SETUP
LOADER FEATURES
DISPLAY OPTIONS

LANGUAGES
Select the language, press **RUN / ENTER**.
Press **EXIT** to return to previous level menu.

Vitals (Monitor the engine, hydraulic / hydrostatic, electrical functions when engine is running.)

Press . . .
TOOL / SETUP
LOADER FEATURES.

VITALS
Press **SELECTION ARROW** to select METRIC or ENGLISH **(M / E)** readouts

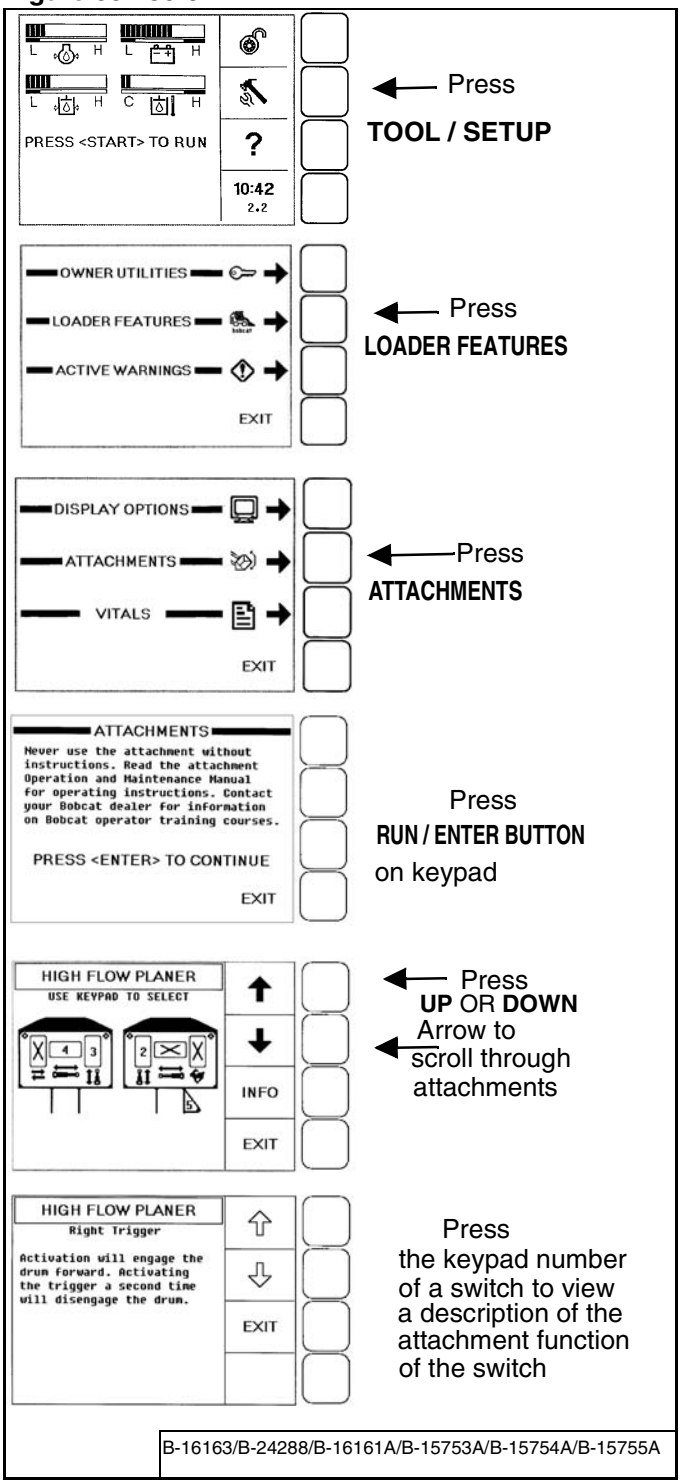
You can monitor real-time readouts of:
- **Engine Oil Pressure**
- **Engine Coolant Temperature**
- **Hydraulic Charge Pressure**
- **Hydraulic Oil Temperature**
- **System Voltage**
- **Engine Speed**

The Deluxe Instrumentation Panel is easy to use. Continue to set your own preferences for running / monitoring your Bobcat loader.

Attachment Control Information (Deluxe Instrumentation Panel)

The Deluxe Instrumentation Panel allows the user to view information concerning the operation of Bobcat attachments.

Figure 60-180-3



Attachments are listed alphabetically **[Figure 60-180-3]**. Press the exit button to return one screen or press the "0" (zero) key to return to the home screen immediately.

BACK-UP ALARM SYSTEM (CONT'D)

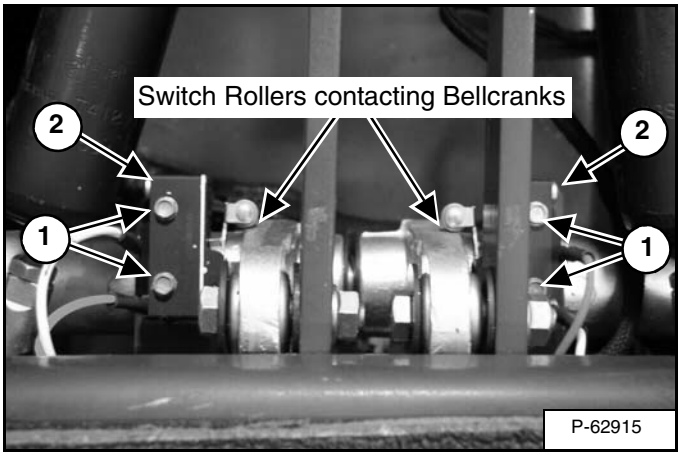
Adjusting Switch Position

NOTE: Joystick equipped machines do not have back-up alarm switches and cannot be adjusted. See your Bobcat dealer for service if your back-up alarm does not sound.

Standard Controls and ACS (If Equipped)

Stop the engine and raise the operator cab. (See Raising on Page 10-30-2.)

Figure 60-210-3



Place the steering levers in the neutral position.

Loosen the screws (Item 1) **[Figure 60-210-3]** securing the back-up alarm switches.

Position the back-up alarm switch rollers so that they just make contact with bellcranks without compressing the switch springs **[Figure 60-210-3]**. Torque the screws (Item 1) **[Figure 60-210-3]** securing the switches to the bracket to 14 - 19 in.-lb. (1,6 - 2,1 N•m).

Lower the operator cab (See Lowering on Page 10-30-3.) Inspect back-up alarm system for proper function. (See Inspecting on Page 60-210-1.)

Specifications (Kubota V2003-M-DI-T (Turbo))

All dimensions are given in inches. Respective metric dimensions are given in millimeters enclosed by parentheses.

Fuel Injection Nozzles

Opening Pressure	2702 - 2916 PSI (18600 - 20100 bar)
Fuel Tightness Nozzle Seat	Dry Nozzle at 2418 PSI (16672 bar) for 10 seconds

Fuel Injection Pump

Injection Timing	6.2 - 8.2 degrees B.T.D.C.
High Idle	2860 - 3000 RPM
Low Idle	1195 - 1245 RPM

Cylinder Head

Cylinder Head Surface Distortion	0.002 (0,05) Max.
Thickness of Gasket (Used)	0.0453 - 0.0492 (1,15 - 1,25)
(New)	0.0512 - 0.0551 (1,3 - 1,4)
Top Clearance (Piston to Head)	0.0236 - 0.0276 (0,60 - 0,70)
Compression	427 - 469 PSI (2940 - 3240 bar)
Allowable Limit	341 PSI (2350 bar)
Difference Between Cylinders	10%

Valves

Valve Seat Width (Intake & Exhaust)	0.084 (2,12)
Valve Seat Angle	Intake 60 degrees, Exhaust 45 degrees
O.D. of Valve Stems	0.3134 - 0.3140 (7,96 - 7,98)
I.D. of Valve Guides	0.3156 - 0.3161 (8,015 - 8,03)
Clearance Between Valve Stem & Guide	0.0016 - 0.0028 (0,04 - 0,07)
Allowable Limit	0.004 (0,1)
Valve Clearance (Cold)	0.0071 - 0.0087 (0,18 - 0,22)
Valve Recessing (Protrusion)	0.002 (0,05)
(Recess)	0.006 (0,15)

Valve Springs

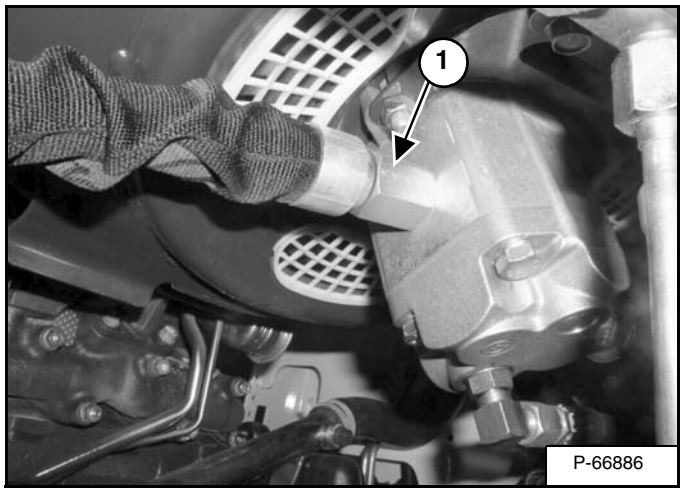
Free Length	1.6417 - 1.6614 (41,7 - 42,2)
Allowable Limit	1.622 (41,2)
Fitted Length	1.378 (35,0)
Compress to Fitted Length	26.4 lb. (117,6 N)
Allowable Limit	22.5 lb. (100,0 N)
Tilt Allowable Limit	0.039 (1,0)

Valve Timing

Intake Valve (Open)	9 degrees B.T.D.C.
(Close)	45 degrees A.B.D.C.
Exhaust Valve (Open)	50 degrees B.B.D.C.
(Close)	12 degrees A.T.D.C.

Engine Removal And Installation (Cont'd)

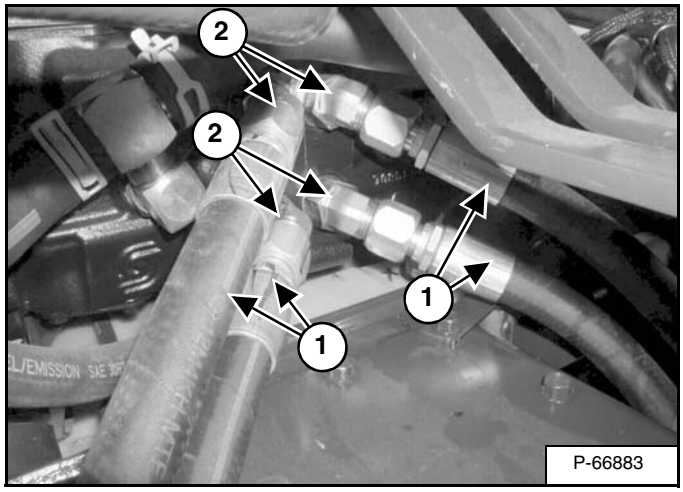
Figure 70-10-16



Mark and disconnect the hydraulic fan motor inlet hose (Item 1) **[Figure 70-10-16]**.

Cap or plug all hoses and fittings.

Figure 70-10-17



Mark and disconnect the drive motor hoses (Item 1) **[Figure 70-10-17]**.

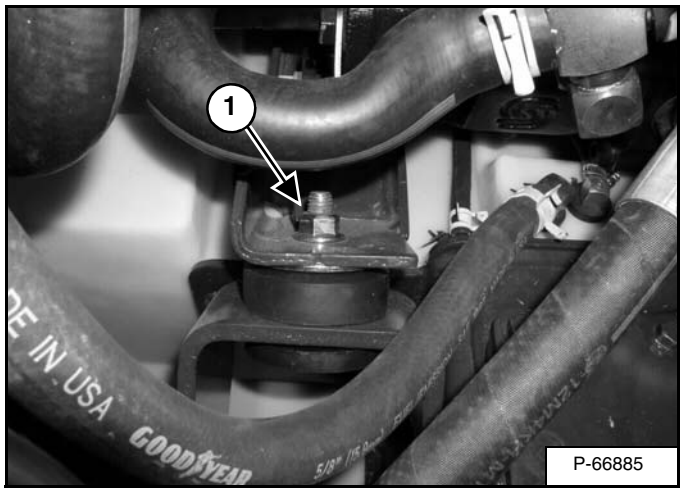
Cap or plug all hoses and fittings.

NOTE: Due to the left drive motor hoses orientation, hoses may not be completely removed from fittings until the engine and pump are partially removed.

Installation: Install the left drive motor hoses prior to alignment with engine mount bolts.

NOTE: The hydraulic fittings (Item 2) [Figure 70-10-17] on the hydrostatic pump must be tightened to 115 - 125 ft.-lb. (156 - 170 N•m) torque.

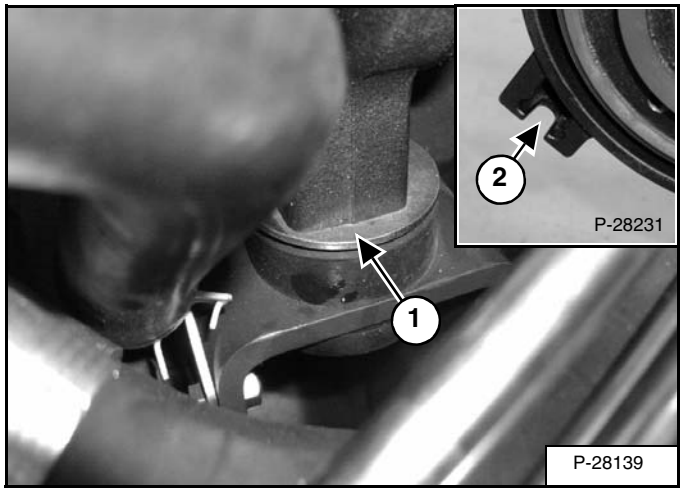
Figure 70-10-18



Remove the mounting bolt and nut (Item 1) **[Figure 70-10-18]** from the right front engine mount.

Installation: Tighten the mounting bolt to 70 ft.-lb. (95 N•m) torque.

Figure 70-10-19



Remove the mounting bolt (Item 1) **[Figure 70-10-19]** and nut from the left front engine mount.

Installation: Slide the engine mount slot (Item 2) **[Figure 70-10-19]** in between engine mount washer and nut. Tighten the mounting bolt to 70 ft.-lb. (95 N•m) torque.

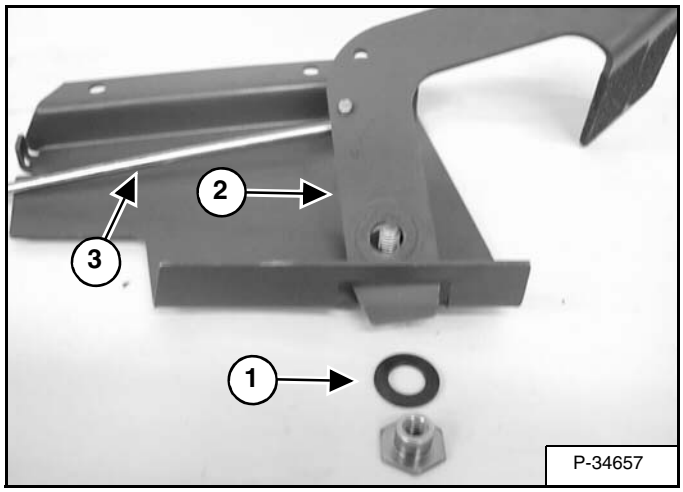
NOTE: To aid in the removal of the left front engine mount bolt, remove the control panel. (See Removal And Installation on Page 50-100-2.)

Use 1/2 in. drive impact wrench, with a 12 in. extension, on a 3/4 in. flex socket.

Removal will be accomplished by reaching under the hydraulic reservoir to the engine mount bolt.

Disassembly And Assembly (Cont'd)

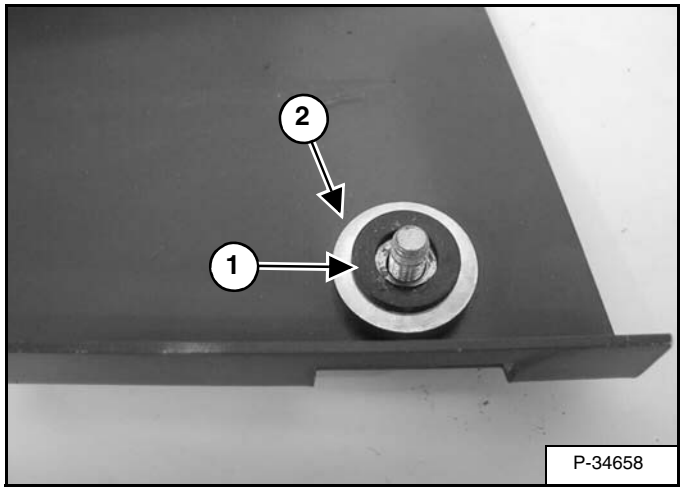
Figure 70-21-12



Remove the fiber washer (Item 1) **[Figure 70-21-12]** from the bushing/nut.

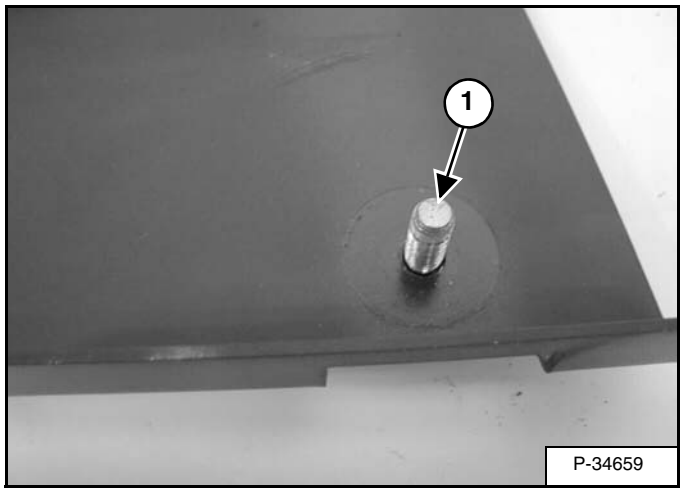
Remove the foot pedal lever (Item 2) and linkage rod (Item 3) **[Figure 70-21-12]**.

Figure 70-21-13



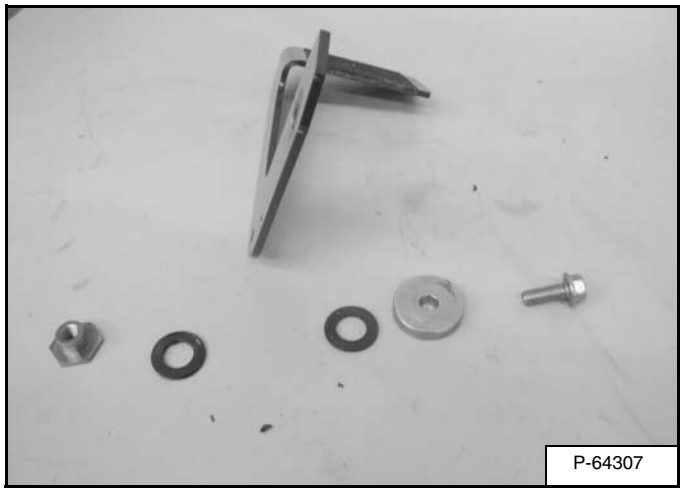
Remove the fiber washer (Item 1) and washer (Item 2) **[Figure 70-21-13]** from the pivot bolt.

Figure 70-21-14



Remove the pivot bolt (Item 1) **[Figure 70-21-14]** from the speed control.

Figure 70-21-15



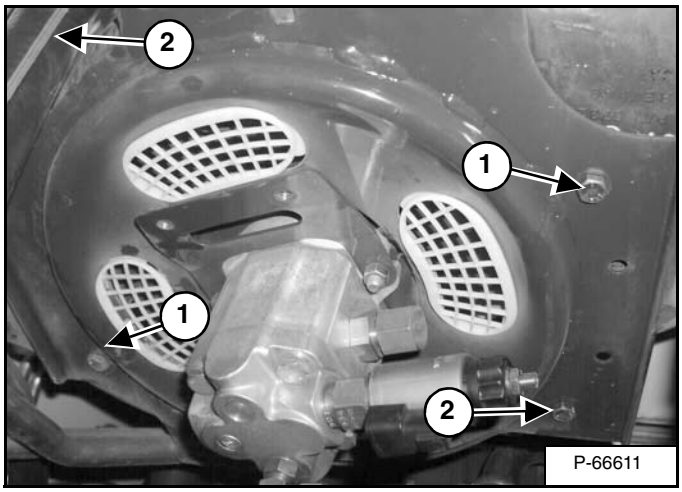
The pivot assembly shown disassembled **[Figure 70-21-15]**.

NOTE: No lubrication is necessary or recommended on the engine speed control.

Reverse the disassembly procedure to assemble the (SJC) speed control.

Blower Housing Removal And Installation (Cont'd)

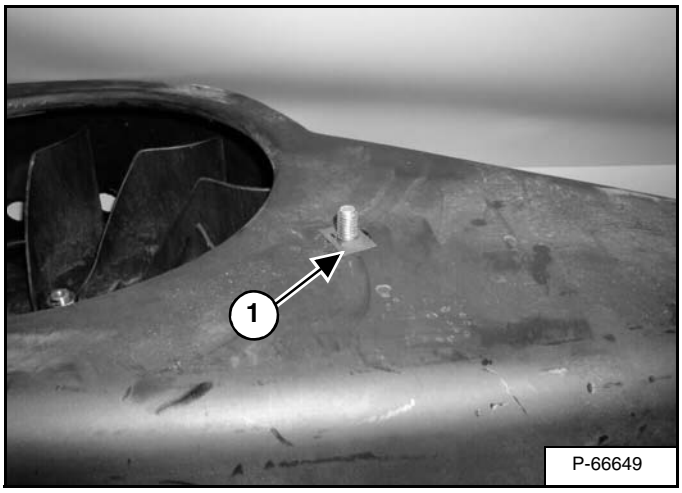
Figure 70-50-12



Remove the four mounting bolts (Item 1) and (Item 2) and spacer tubes. The only visible spacers are on the outside two mounting bolts (Item 2) **[Figure 70-50-12]**.

NOTE: Remove the two rear mounting bolts first.

Figure 70-50-13



NOTE: The picture shows the blower housing and fan assembly removed. Two of the mounting bolts (Item 2) [Figure 70-50-12] have clips (Item 1) [Figure 70-50-13] to hold the bolts from falling out during installation of the blower housing and fan together.

Remove the blower housing from the loader.

Reverse the removal procedure to install the blower housing.

Fuel Injection Pump - Checking

The injection pump contains parts which have a very close tolerance and its operation has a direct effect on the performance of the engine.

⚠ WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. 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-2072-0807

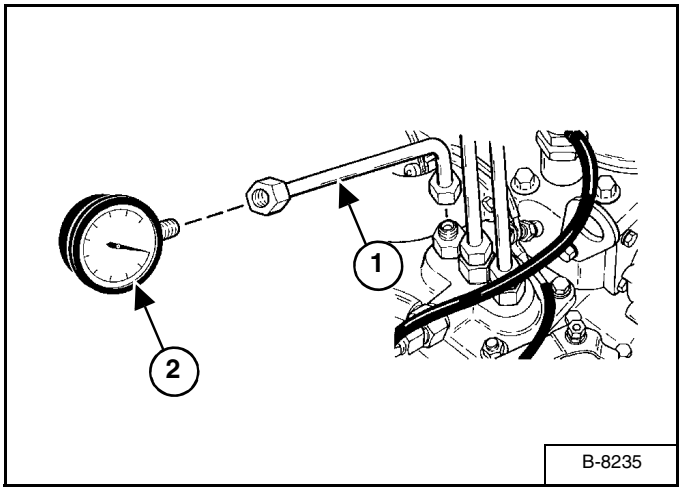
The tools listed will be needed to do the following procedure:

MEL 1237 - Adapter Fuel Line
MEL 1173-1 Pressure Gauge

To check the discharge pressure at the fuel injection pump, use the following procedure:

Disconnect a high pressure fuel line from the injection pump. Loosen the other end of the same fuel line so it can be turned away from the fitting.

Figure 70-70-5



Connect the adapter fuel line (Item 1) to the fitting and connect the pressure gauge (Item 2) **[Figure 70-70-5]**.

Move the speed control lever to the high engine idle position.

Turn the flywheel to increase the pressure. If the pressure can not reach the allowable limit, replace the injection pump assembly.

Fuel Tightness of Pump Element Allowable Limit	2702 - 2916 PSI (186 - 201 bar)

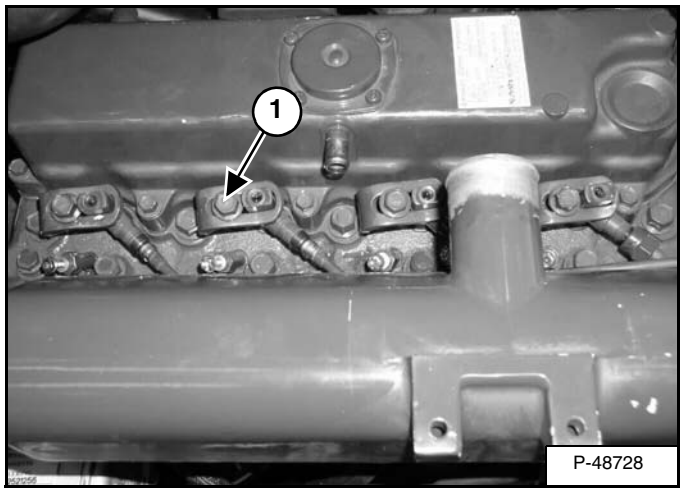
With the speed control lever at the low engine idle position, turn the flywheel until the pressure is at 2702 - 2916 PSI (186 - 201 bar).

Turn the flywheel back approximately one-half turn. Keep the flywheel at this position, and measure the time it takes the pressure to decrease from 1850 PSI (127.5 bar).

Fuel Tightness of Delivery Valve Allowable Limit	5 Seconds

Fuel Injector Removal And Installation (Cont'd)

Figure 70-70-27

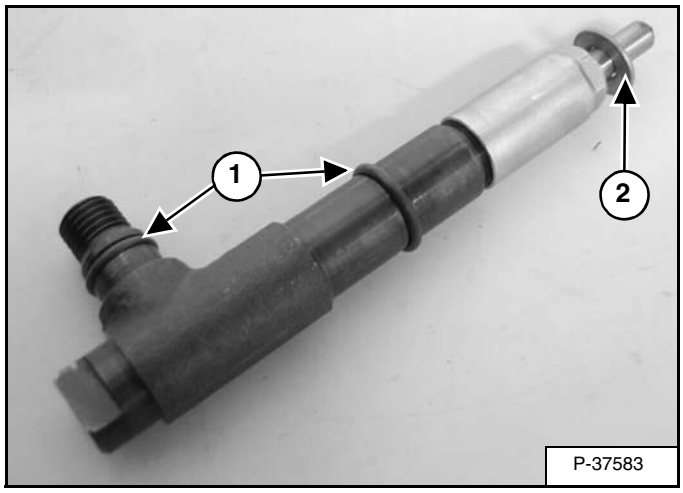


Remove the injector nozzle holder bolt (Item 1) **[Figure 70-70-27]** from the cylinder head.

Pull on the injector nozzle to remove the injector nozzle from the cylinder head.

Installation: Tighten the nozzle holder bolt to 18.8 - 21.7 ft.-lb. (25,5 - 29,4 N•m) torque.

Figure 70-70-28



[Figure 70-70-28] shows the injector nozzle removed from the cylinder. Inspect the injector and replace if necessary.

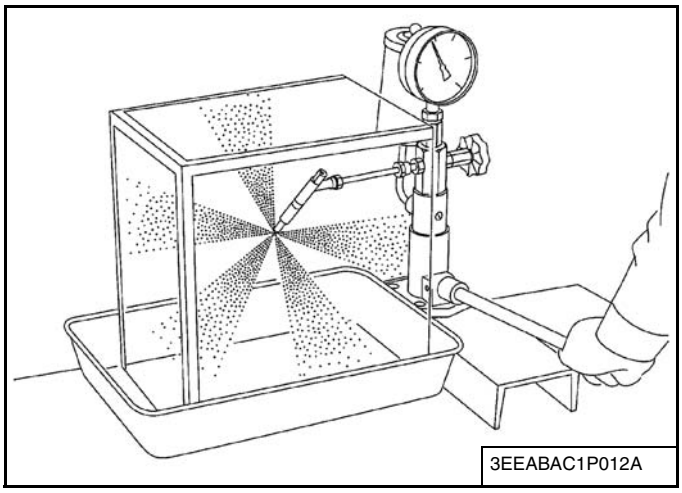
Check and replace the injector nozzle O-rings (Item 1) and the nozzle washer (Item 2) before installing new or used injectors. **[Figure 70-70-28]**.

Fuel Injector Nozzle Pressure - Checking

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

OEM1064 - Injector Nozzle Tester

Figure 70-70-29



Set the injection nozzle to the nozzle tester.

Slowly move the tester handle to measure the pressure at which fuel begins jetting out from the nozzle.

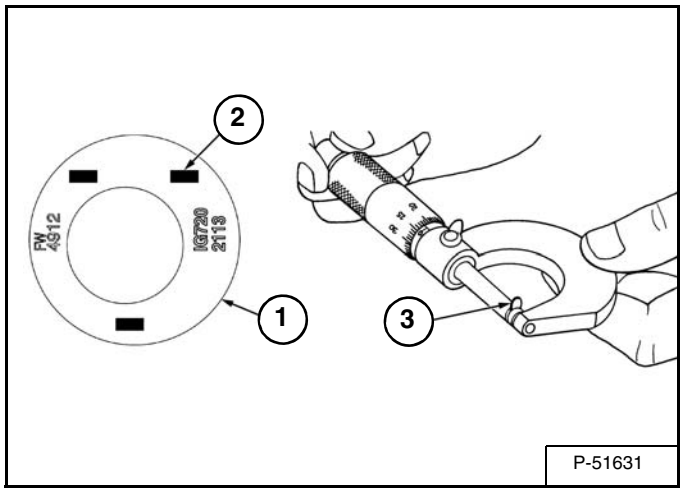
If the measurement is not within the factory specifications, replace the injection nozzle assembly.

NOTE: Injection nozzle gasket must be replaced when the injection nozzle is removed for checking.

Injection pressure	Factory spec.	18.6 - 20.1 MPa 190 - 205 kgf/cm² 2702 - 2916 PSI

Cylinder Head Top Clearance

Figure 70-80-25



Install the cylinder head gasket. Put the piston (Item 1) **[Figure 70-80-25]** being checked at T.D.C.

Put 3 pieces of 0.06 in. (1,5 mm) diameter solder (Item 2) **[Figure 70-80-25]** on the top of the piston. Use grease to hold them in position.

NOTE: Put the solder in position so they do not touch the valves.

Turn the piston to bottom dead center.

Install the cylinder head and tighten to the correct torque in the correct sequence. (See Cylinder Head Removal And Installation on Page 70-80-4.)

Turn the crankshaft until the piston exceeds T.D.C. Remove the cylinder head.

Remove the solder wire (Item 3) **[Figure 70-80-25]** and measure it.

If the measurement exceeds the specifications, check the oil clearance of the crank pin journal or the piston pin.

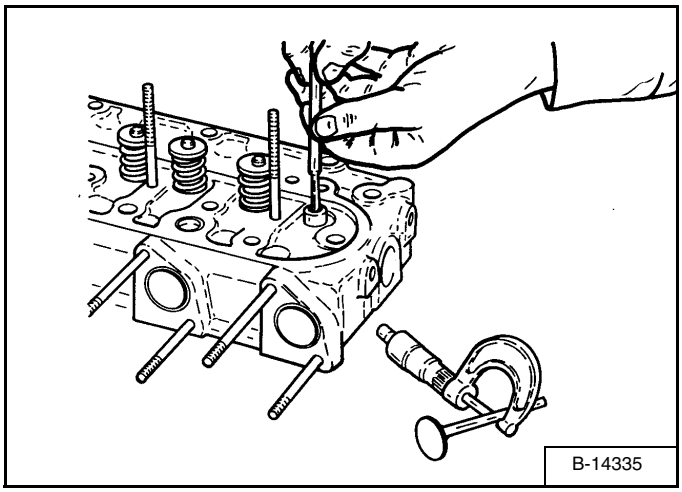
Top Clearance	0.0236 - 0.0276 in. (0,6 - 0,7 mm)

Valve Guide - Checking

Remove the valve and spring from the cylinder head. (See Cylinder Head Disassembly And Assembly on Page 70-80-7.)

Remove the carbon from the valve guide.

Figure 70-80-26



Measure the valve stem O.D. **[Figure 70-80-26]**.

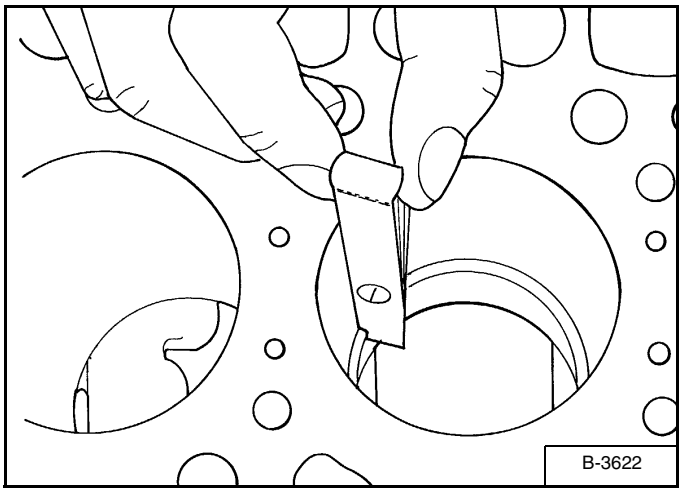
Measure the valve guide I.D. **[Figure 70-80-26]**.

Calculate the clearance. If the clearance exceeds the allowable limit, replace the valve and/or valve guide.

Valve Guide I.D.	0.3156 - 0.3161 in. (8,015 - 8,03 mm)
Valve Stem O.D.	0.3134 - 0.3140 in. (7,96 - 7,98 mm)
Clearance Between Valve Stem and Guide	0.0016 - 0.0028 in. (0,04 - 0,07 mm)
Allowable Limit	0.004 in. (0,1 mm)

Piston And Connecting Rod - Servicing (Cont'd)

Figure 70-90-11



Install a piston ring into the lower part of the cylinder bore. Measure the ring gap with a feeler gauge **[Figure 70-90-11]**.

If the gap exceeds the allowable limit, replace the ring.

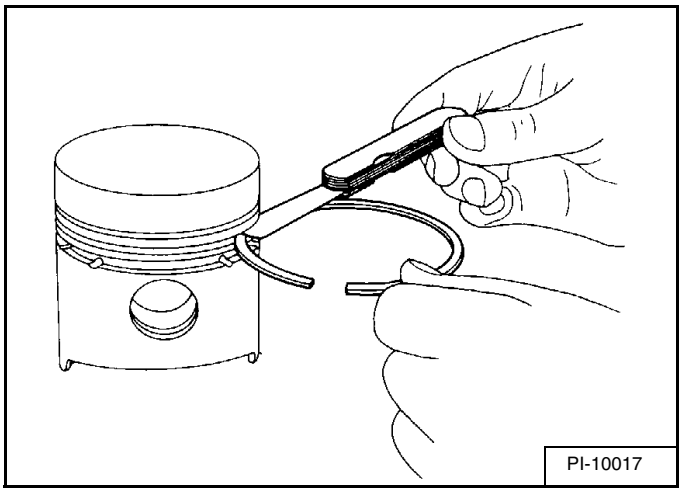
Kubota V2203-M-DI

Top Ring Gap	0.0079 - 0.0138 in. (0,2 - 0,35 mm)
Oil Ring Gap	0.0079 - 0.0157 in. (0,20 - 0,40 mm)
Allowable Limit	0.0492 in. (1,25 mm)
Second Ring Gap	0.0138 - 0.0197 in. (0.35 - 0,50 mm)

Kubota V2003-M-DI-T (Turbo)

Top Ring Gap	0.0079 - 0.0138 in. (0,2 - 0,35 mm)
Oil Ring Gap	0.0098 - 0.0177 in. (0,25 - 0,45 mm)
Allowable Limit	0.0492 in. (1,25 mm)
Second Ring Gap	0.0157 - 0.0217 in. (0.40 - 0,55 mm)

Figure 70-90-12



Remove the carbon from the ring grooves. Measure the clearance between the ring and groove with a feeler gauge **[Figure 70-90-12]**.

If the clearance exceeds the allowable limit, replace the ring. If the clearance still exceeds the allowable limit, replace the piston.

Kubota V2203-M-DI

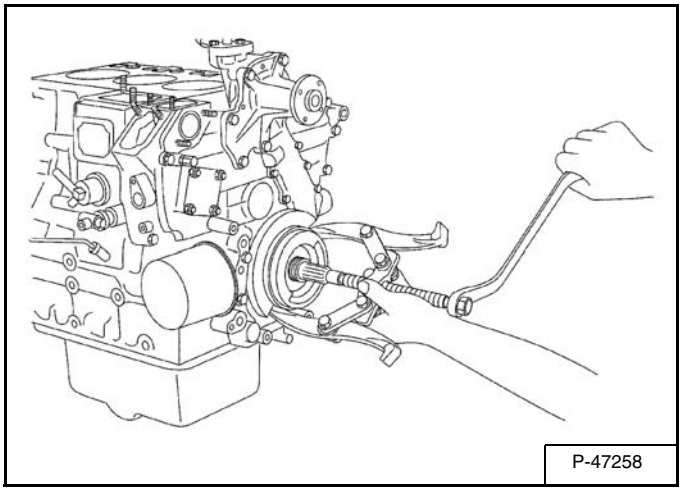
Compression Rings	0.0020 - 0.0035 in. (0,05 - 0,09 mm)
Allowable Limit	0.0079 in. (0,2 mm)
Oil Ring	0.0012 - 0.0028 in. (0,03 - 0,07 mm)
Allowable Limit	0.0059 in. (0,15 mm)

Kubota V2003-M-DI-T (Turbo)

Compression Rings	0.0037 - 0.0050 in. (0,093 - 0,128 mm)
Allowable Limit	0.0079 in. (0,2 mm)
Oil Ring	0.0008 - 0.0024 in. (0,02 - 0,06 mm)
Allowable Limit	0.0059 in. (0,15 mm)

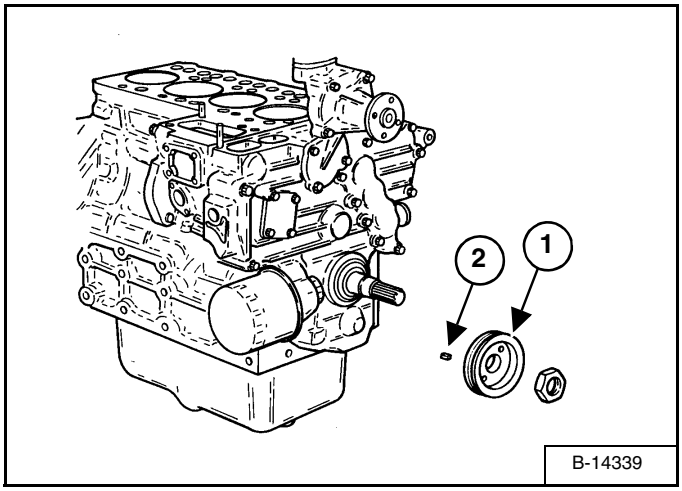
Timing Gearcase Cover Removal And Installation (Cont'd)

Figure 70-100-5



Use a puller and remove the crankshaft pulley. **[Figure 70-100-5]**.

Figure 70-100-6

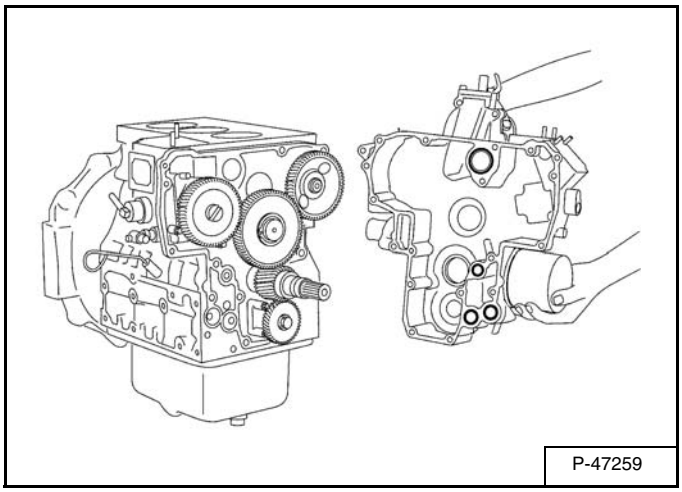


Remove the crankshaft pulley (Item 1) and key (Item 2) **[Figure 70-100-6]**.

Remove the bolts from the timing gearcase cover.

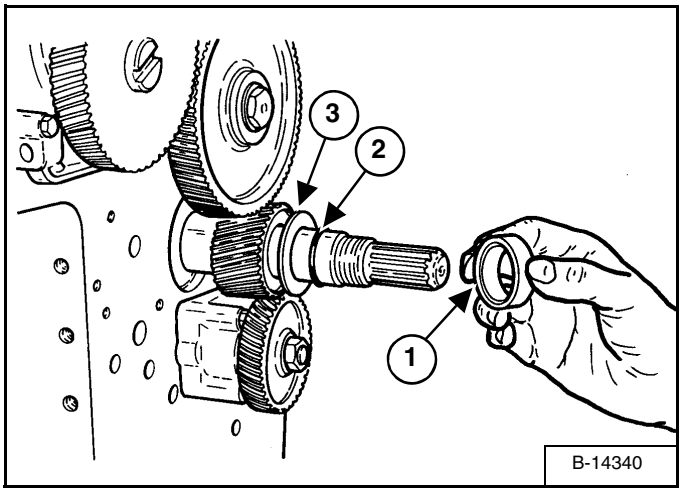
Installation: Tighten the bolts to 13 - 15 ft.-lb. (18 - 20 nm) torque.

Figure 70-100-7



Remove the timing gearcase cover **[Figure 70-100-7]**.

Figure 70-100-8



Remove the crankshaft collar (Item 1), O-ring (Item 2) and oil slinger (Item 3) **[Figure 70-100-8]**.

Housing Removal And Installation

Remove the drive belt shield. (See Shield Removal And Installation on Page 30-60-1.)

Remove the engine/hydrostatic pump package from the loader. (See Engine Removal And Installation on Page 70-10-8.)

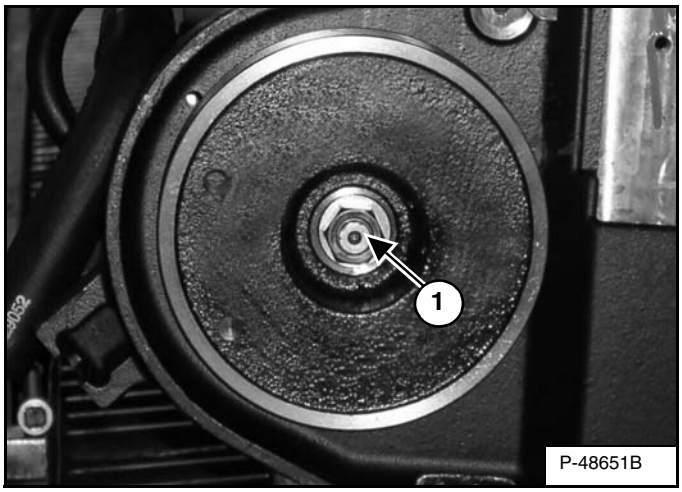
Remove the drive belt. (See Belt Removal And Installation on Page 30-60-3.)

Remove the drive belt tension pulley. (See Tensioner Pulley Removal And Installation on Page 30-60-4.)

Remove the starter. (See Removal And Installation on Page 60-40-2.)

Remove the flywheel. (See Flywheel Removal And Installation on Page 70-120-1.)

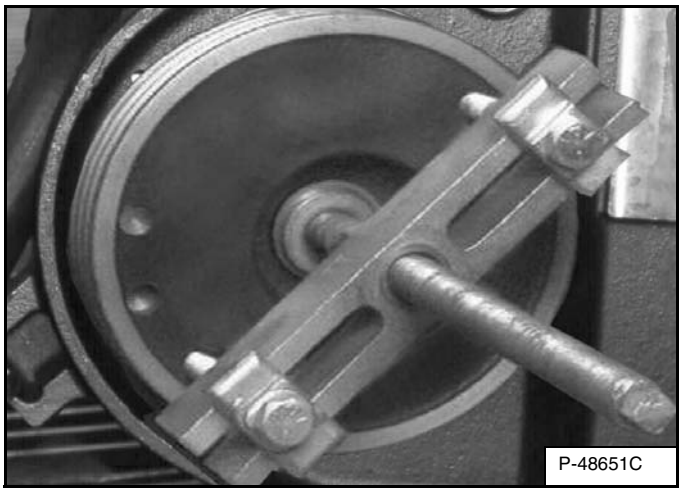
Figure 70-120-3



Remove the hydrostatic pump drive pulley mounting nut (Item 1) **[Figure 70-120-3]** and washer.

Installation: Tighten the mounting nut to 175 - 200 ft.-lb. (237 - 271 N•m) torque.

Figure 70-120-4

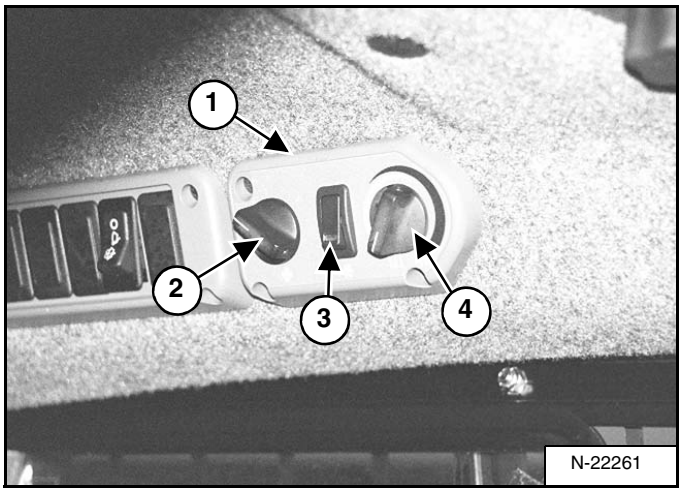


Install a puller in the drive pulley and remove the pulley from the hydrostatic pump shaft **[Figure 70-120-4]**.

Installation: Install the pulley key in the shaft before installing the drive pulley.

Components (Cont'd)

Figure 80-10-16



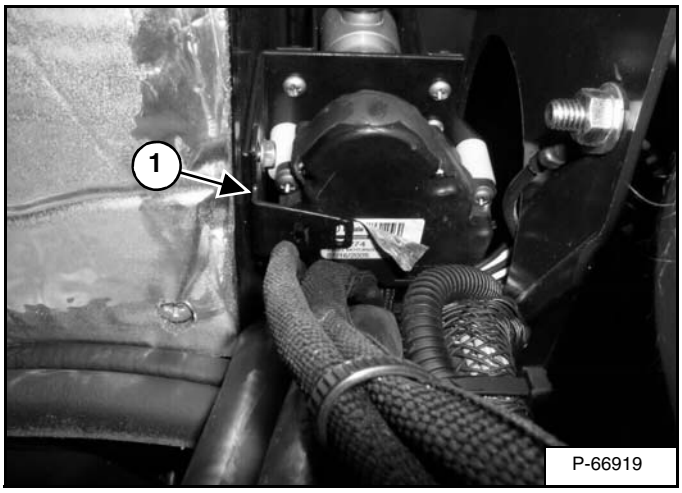
Control Panel: The panel (Item 1) **[Figure 80-10-16]** has three separate components.

Fan Switch: This is a four position rotary switch (Item 2) **[Figure 80-10-16]**. When the fan switch is in the off position the A/C will not engage, but the heat valve will operate, as it is controlled by the ignition power.

A/C Switch: The rocker switch (Item 3) **[Figure 80-10-16]** will be illuminated when the A/C is engaged.

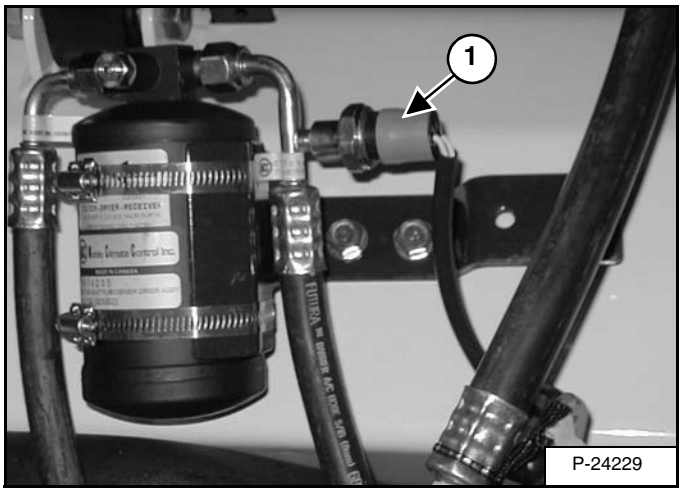
Potentiometer: The potentiometer (Item 4) **[Figure 80-10-16]** controls the Heat Valve from fully Off to fully On. This can be used in conjunction with the A/C for defrost of the windows and temperature control.

Figure 80-10-17



Heater Valve: The heater valve (Item 1) **[Figure 80-10-17]** is used to control the amount of engine coolant that flows to the heater coil.

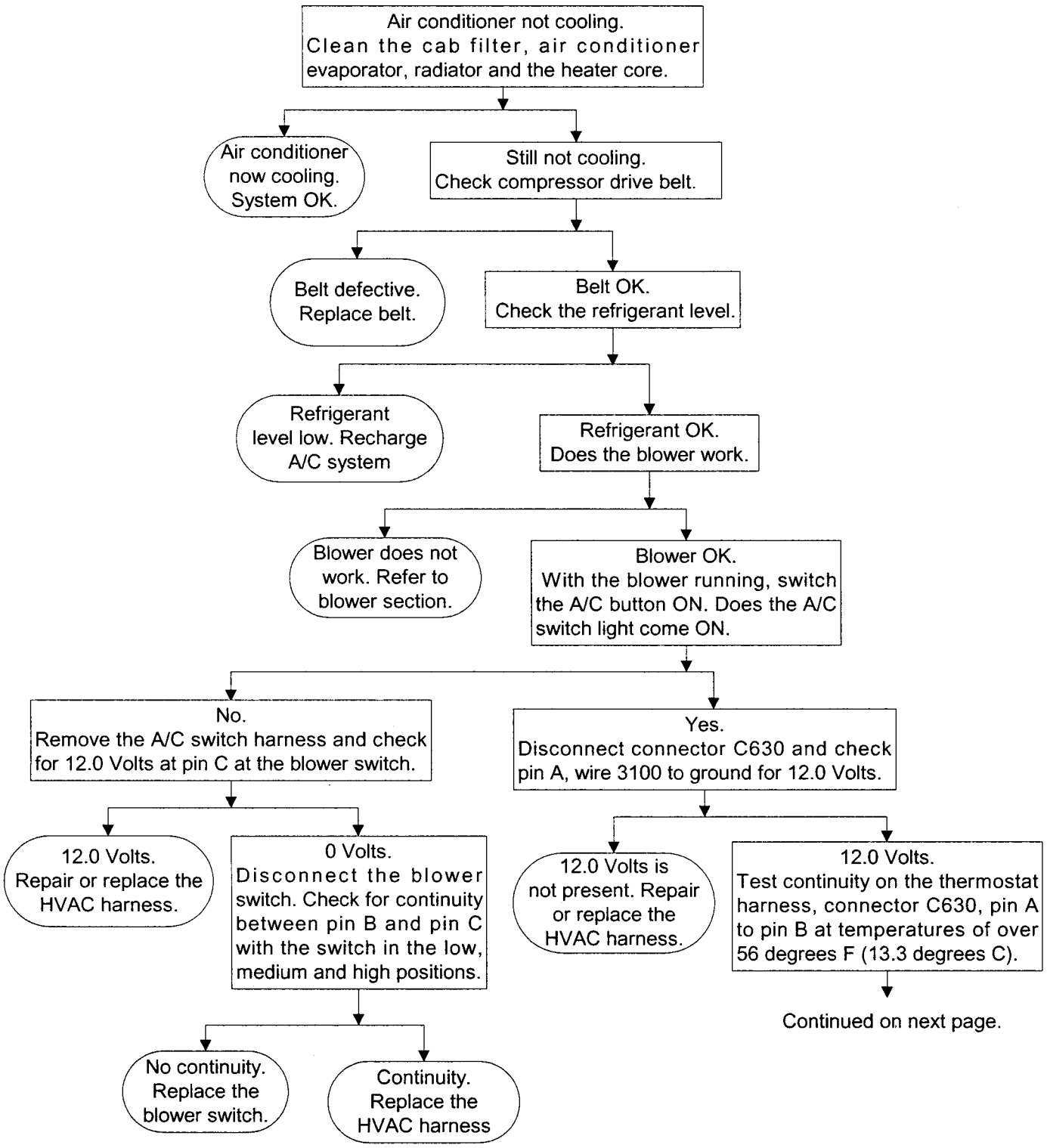
Figure 80-10-18



Pressure Switch: The pressure switch (Item 1) **[Figure 80-10-18]** will disengage the compressor clutch at high pressure readings over 384 PSI. (2647 bar) on the high side, or at very low pressure of 28 PSI (193 bar) or less on the high side, which indicates loss of refrigerant.

Troubleshooting Tree

Air Conditioning



Continued on next page.

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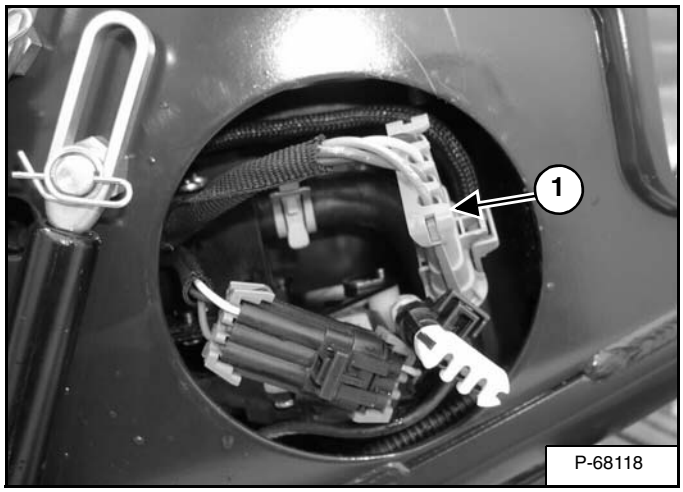
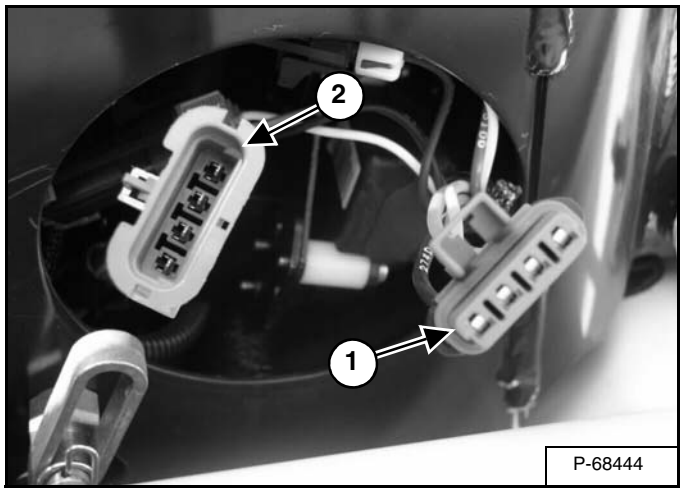
Electrical System (Cont'd)

Figure 80-30-15



Disconnect the blower wiring connector (Item 1) **[Figure 80-30-15]** from the loader wiring harness.

Figure 80-30-16



Check the loader harness (Item 1) **[Figure 80-30-16]** for voltage. The voltage should be 12 volts.

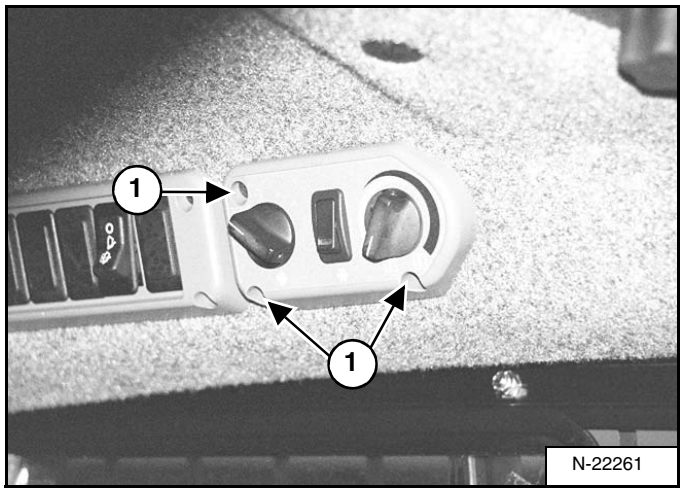
If there is no voltage at the wiring harness, check the harness for broken wires.

If there is voltage at the wiring harness, check the resistance to the blower at the blower wiring connector (Item 2) **[Figure 80-30-16]**.

If there is no resistance value replace the blower fan. (See Removal And Installation on Page 80-130-1.)

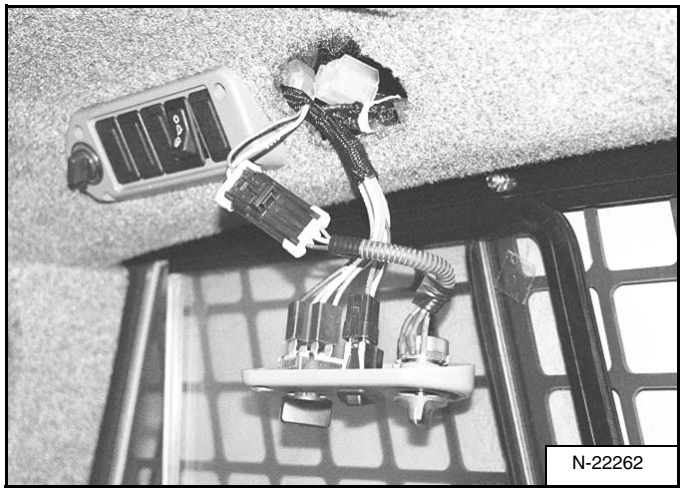
If there is a resistance value check the climate controls at the control panel inside the loader cab.

Figure 80-30-17



Remove the three mount bolts (Item 1) **[Figure 80-30-17]** from the cab control panel.

Figure 80-30-18



Remove the control panel and wiring harness from the cab **[Figure 80-30-18]**.

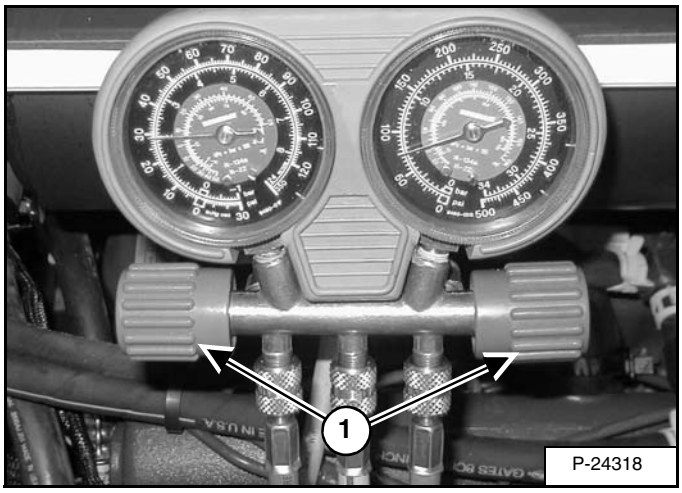
Charging With A Manifold Gauge Set

⚠ WARNING

In the event of a leak, wear safety goggles. Escaping refrigerant can cause severe injuries to eyes. In contact with a flame, R134a refrigerant gives a toxic gas.

W-2371-0500

Figure 80-40-9

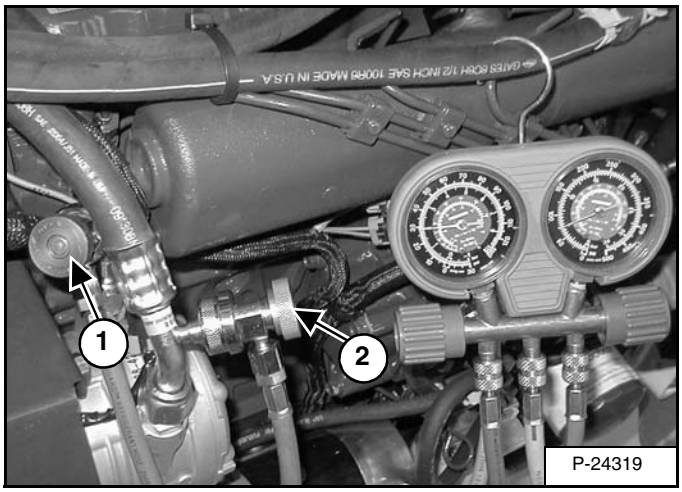


Open the rear door.

Check to see that the hand valves (Item 1) **[Figure 80-40-9]** are closed on the manifold gauge set.

If there is any refrigerant in the A/C system, it must be recovered by an approved A/C reclamation procedure. (See Reclamation And Charging With Recovery / Charging Unit on Page 80-40-2.)

Figure 80-40-10

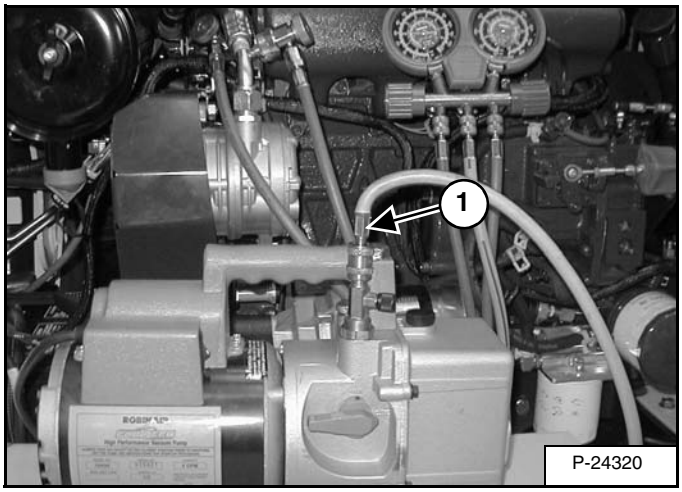


Connect the gauges to the loader A/C charge ports.

Connect the Red hose (Item 1) **[Figure 80-40-10]** to the high pressure port and open the valve.

Connect the Blue hose (Item 2) **[Figure 80-40-10]** to the low pressure port and open the valve.

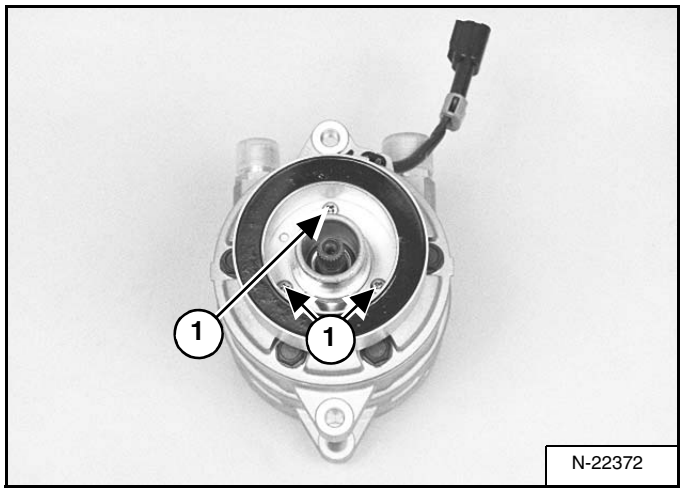
Figure 80-40-11



Connect the Yellow hose (Item 1) **[Figure 80-40-11]** to the vacuum pump.

Clutch Disassembly And Assembly (Cont'd)

Figure 80-50-38

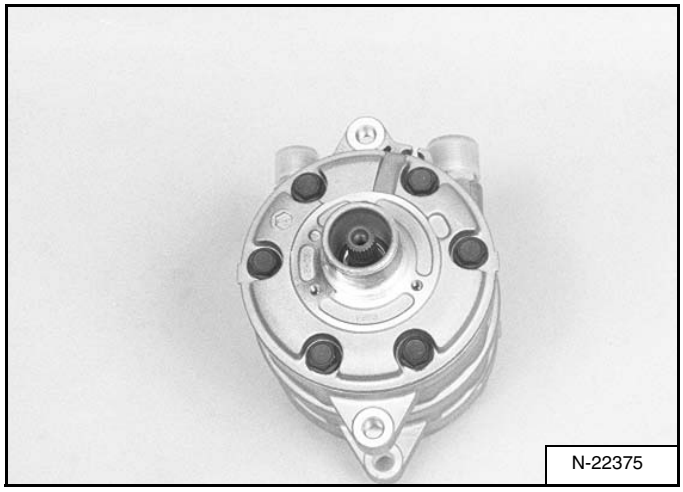


Remove the three coil mount bolts (Item 1) **[Figure 80-50-38]** from the compressor.

Installation: Tighten the mount bolts to 2.9 - 4.3 ft.-lb. (4 - 6 N•m) torque.

Remove the coil from the compressor.

Figure 80-50-39

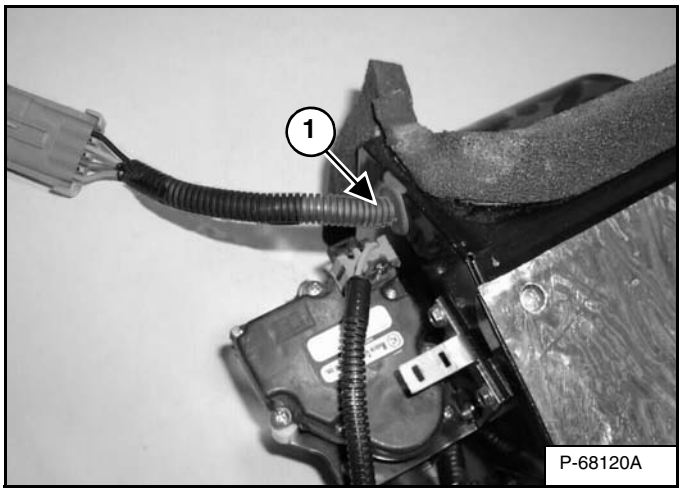


The compressor **[Figure 80-50-39]** must be replaced as a complete unit.


Bobcat®

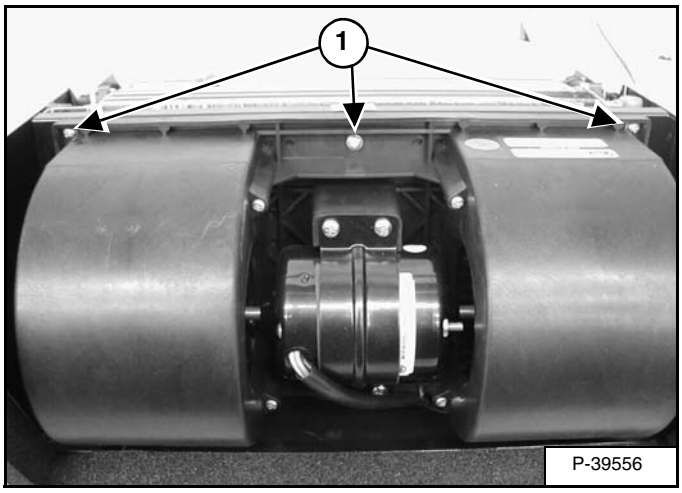
Removal And Installation (Cont'd)

Figure 80-130-5



Remove the blower fan wiring harness and grommet (Item 1) **[Figure 80-130-5]** from the unit.

Figure 80-130-6

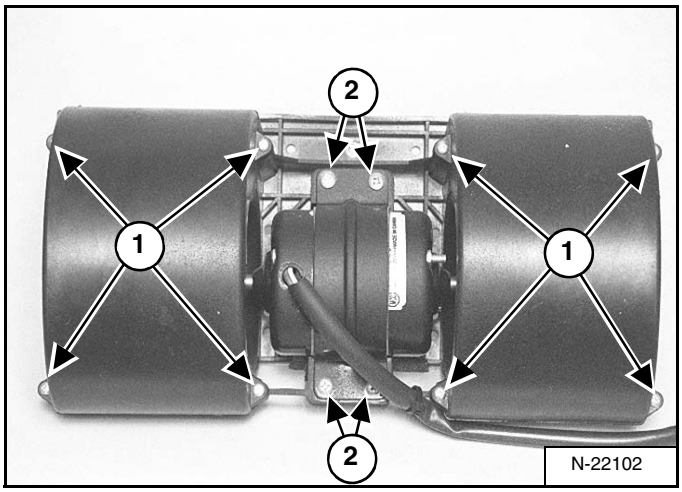


Remove the three mount bolts (Item 1) **[Figure 80-130-6]** from the blower fan housing.

Remove the blower fan housing from the evaporator/ heater unit.

Disassembly And Assembly

Figure 80-130-7



Remove the eight mount bolts (Item 1) **[Figure 80-130-7]** from the blower wheel cover.

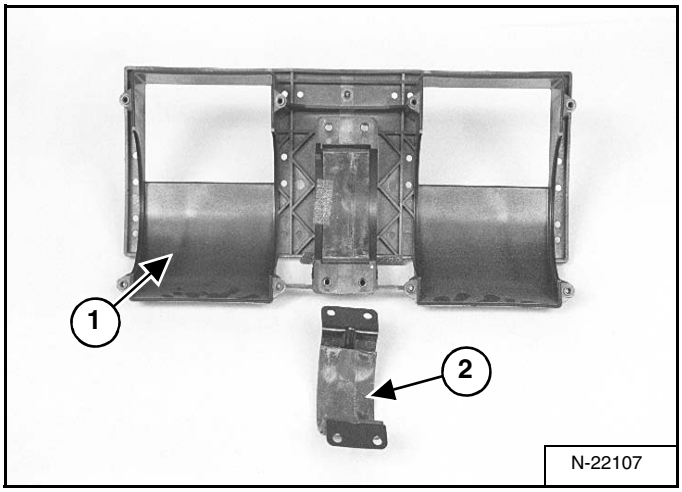
Remove the blower wheel cover from the housings.

Remove the four mount bolts (Item 2) **[Figure 80-130-7]** from the blower motor mount.

Remove the blower motor mount.

Remove the blower motor assembly from the housing.

Figure 80-130-8



Check the blower housing (Item 1) and blower motor mount (Item 2) **[Figure 80-130-8]** for wear and replace as needed.

Drive System

Main Drive	Hydrostatic 4-wheel drive
Transmission	Infinitely variable tandem hydrostatic piston pumps, driving two fully reversing hydrostatic motors.
Final Drive Chains	Prestressed #80 HSOC endless roller chain (no master link) and sprockets in sealed chaincase with oil lubrication (No adjustment need ed). Two chains per side with no idler sprocket.
Total Engine to Wheel Reduction	33:1
Axle Size	2.00 in. (50,8 mm), heat treated
Wheel Bolts	Eight 9/16" Wheel Bolts fixed to axle hubs

Capacities

Fuel Tank	24 Gal. (90,8 L)
Engine Oil with filter	9.2 qt. (8,7 L)
Engine Cooling System without heater with Heater	Propylene Glycol / water mixture (53% PG / 47% water) 10.8 qt. (10,2 L) 12 qt. (11,3 L)
Hydraulic/Hydrostatic Reservoir	4.8 Gal. (18,2 L)
Hydraulic/Hydrostatic System (including Reservoir)	9 Gal. (34,1 L)
Chaincase Reservoir	8 Gal. (30,3 L)

Tires

Bobcat Standard Duty	10-16.5 8 PR Bobcat Standard Duty
Bobcat Severe Duty	Bobcat Severe Duty 10 - 16.5 10 Ply Rating
Bulky Hulk	Bobcat Super Float 31.5 x 13 - 16.5
Recommended Pressure	Inflate tires to MAXIMUM pressure shown on the side wall of the tire. DO NOT mix brands of tires used on the same loader.