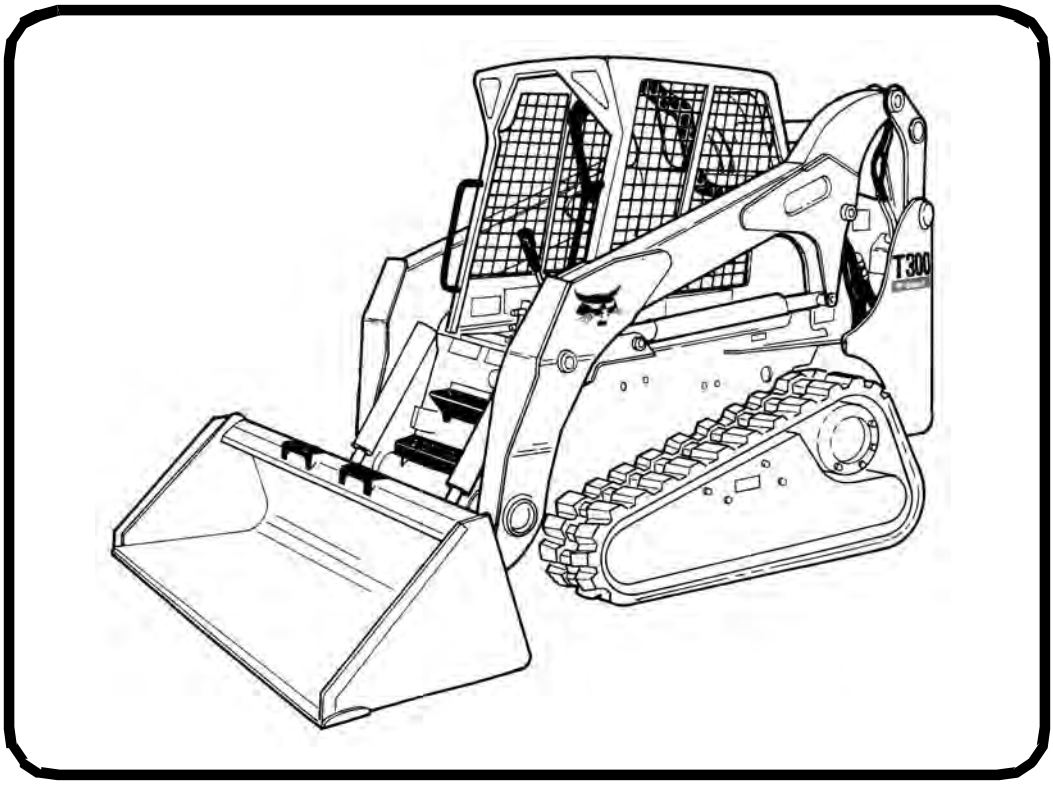
Bobcat®

Service Manual
T300 Compact Track Loader

S/N 532011001 & Above
S/N 532111001 & Above



EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS™)

6904168 (3-09)

Printed in U.S.A.

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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, SECTION SPEC-01) UNLESS OTHERWISE SPECIFIED.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE AND STANDARD ITEMS MAY VARY.

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. (See Performance on Page SPEC-10-2), for weight of loader.

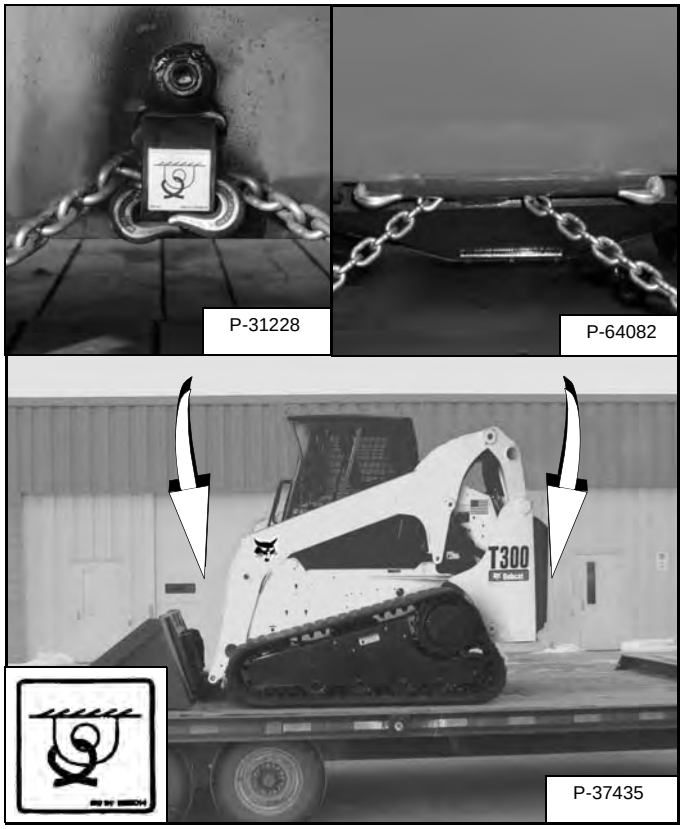
Figure 10-40-1

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 **[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.

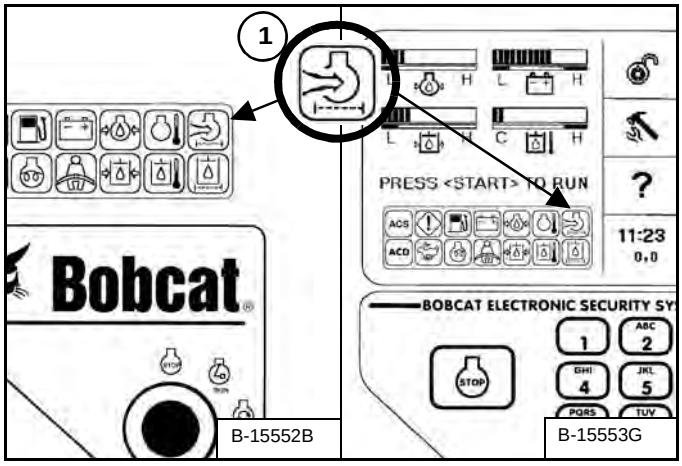
The Remote Start Tool (Service Tool) Kit, P/N 6689779, can be used to service newer loaders using the supplied harness P/N 6689747.

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

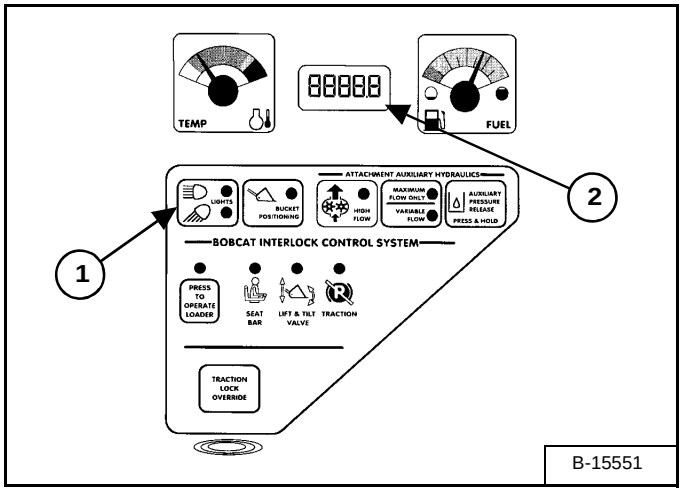
Figure 10-80-1



It is important to change the air filter element only when the Engine Air Filter icon in the right panel is ON (Item 1) **[Figure 10-80-1]** and you hear three beeps from the alarm.

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

Figure 10-80-2

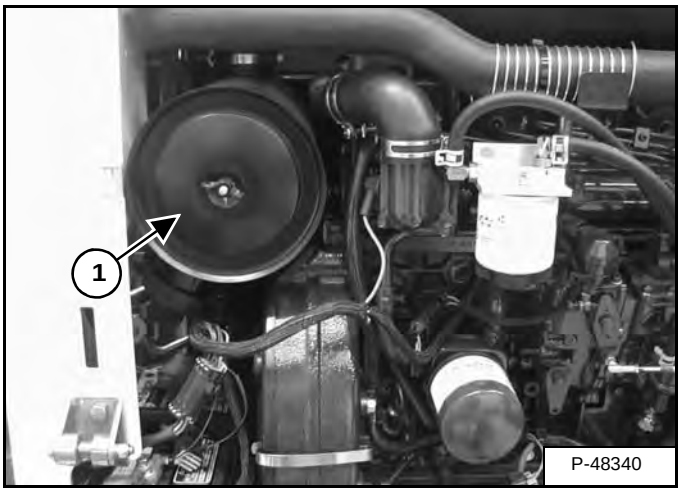


Press and hold the LIGHTS button (Item 1) **[Figure 10-80-2]** for two seconds.

If the filter element needs replacement, the CODE **[01-17]** (Air Filter Plugged) will show in the HOURMETER / CODE DISPLAY (Item 2) **[Figure 10-80-2]**.

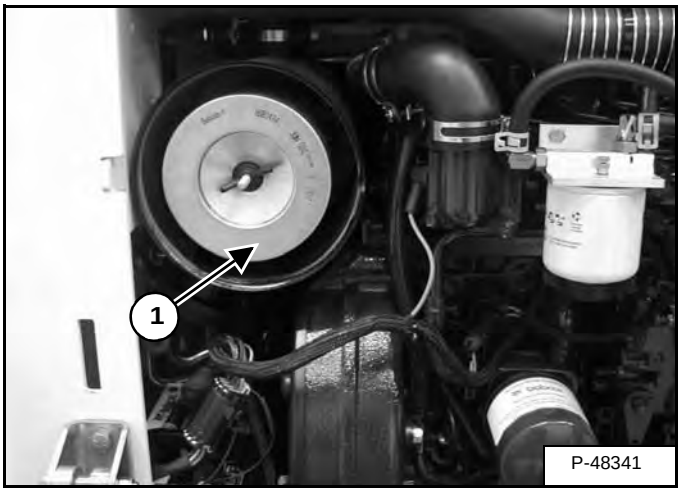
Outer Filter

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 (Item 1) **[Figure 10-80-3]**.

HYDRAULIC / HYDROSTATIC SYSTEM

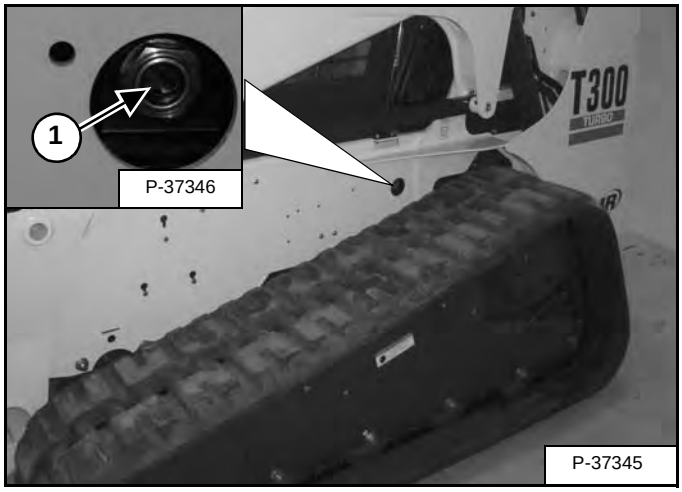
Checking And Adding Fluid

Use only recommended fluid in the hydraulic system. (See Hydraulic System on Page SPEC-10-3)

Put the loader on a level surface, lower the lift arms and tilt the Bob-Tach fully back.

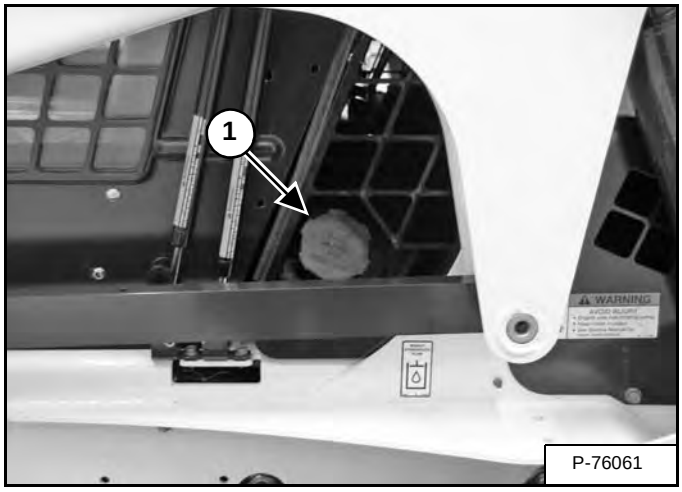
Stop the engine.

Figure 10-120-1



Check the fluid level in sight gauge (Item 1) **[Figure 10-120-1]**.

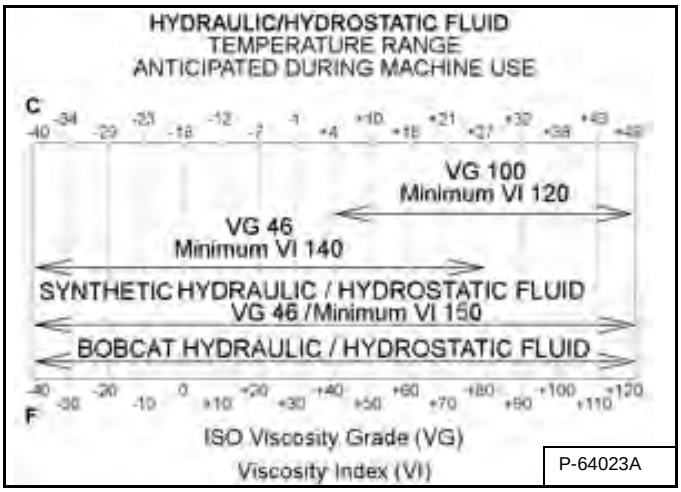
Figure 10-120-2



Remove the fill / breather cap (Item 1) **[Figure 10-120-2]**.

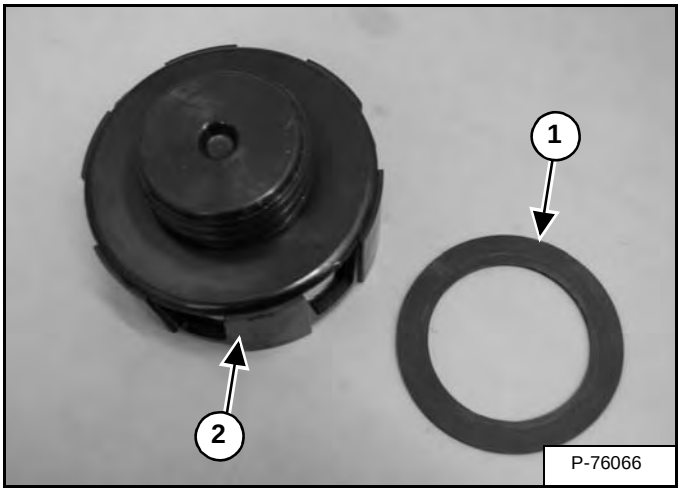
Hydraulic / Hydrostatic Fluid Chart

Figure 10-120-3



Add the correct hydraulic / hydrostatic fluid **[Figure 10-120-3]** as needed to bring the level to the center of the sight gauge.

Figure 10-120-4



Before installing the fill / breather cap, make sure the rubber gasket (item 1) is installed on the cap (Item 2) **[Figure 10-120-4]**.

Install the fill / breather cap (Item 1) **[Figure 10-120-2]**.

LUBRICATING THE LOADER

Lubrication Locations

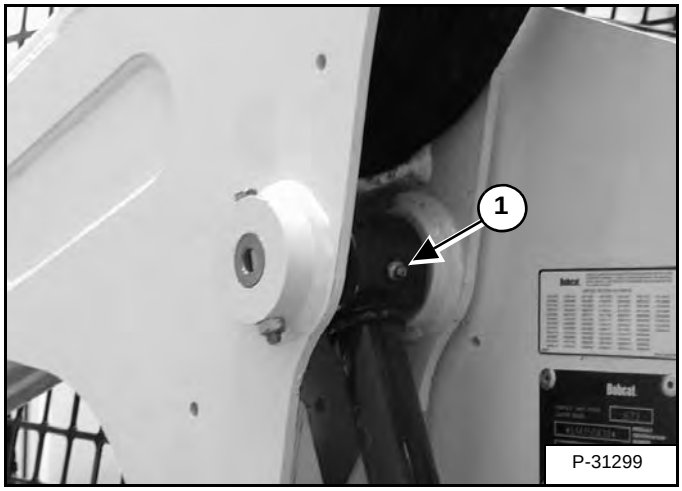
Lubricate the loader as specified for the best performance of the loader. (See SERVICE SCHEDULE on Page 10-70-1.)

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

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

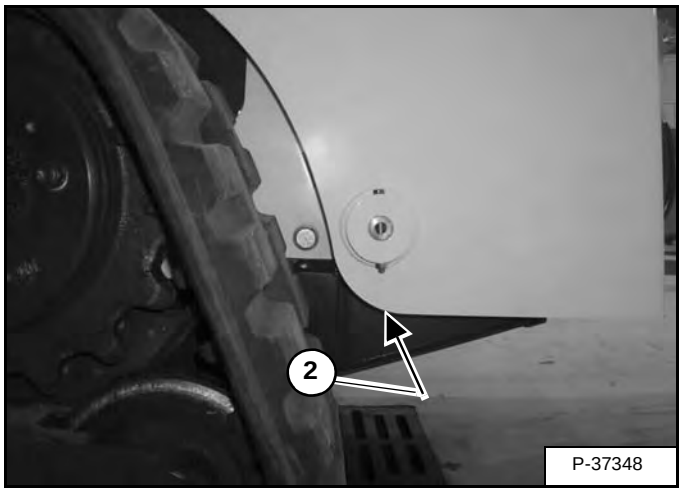
Lubricate the following:

Figure 10-140-1



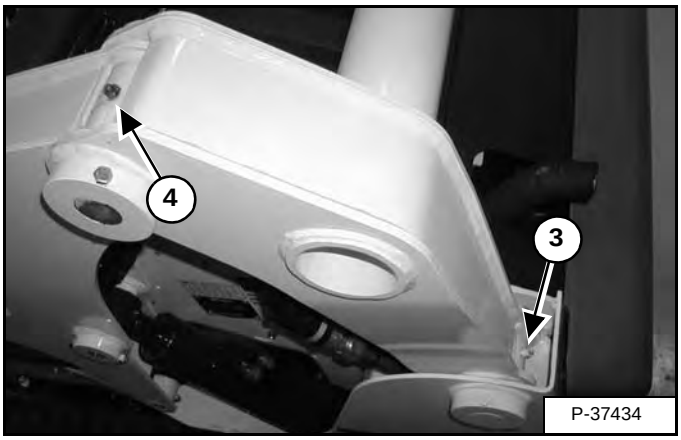
1. Rod End Lift Cylinder (Both Sides) **[Figure 10-140-1]**.

Figure 10-140-2



2. Base End Lift Cylinder (Both Sides) **[Figure 10-140-2]**.

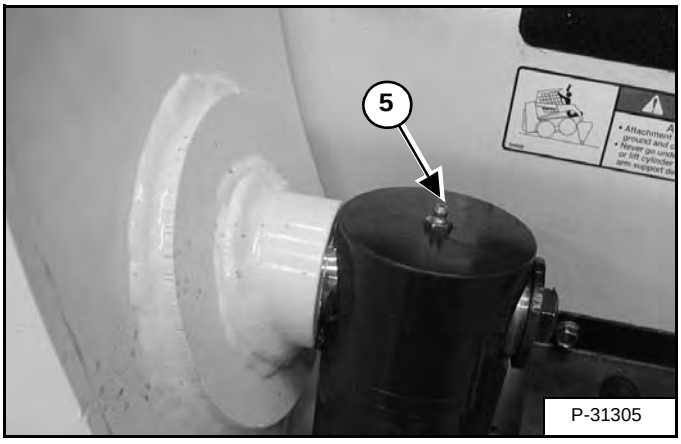
Figure 10-140-3



3. Lift Arm Pivot Pin (Both Sides) **[Figure 10-140-3]**.

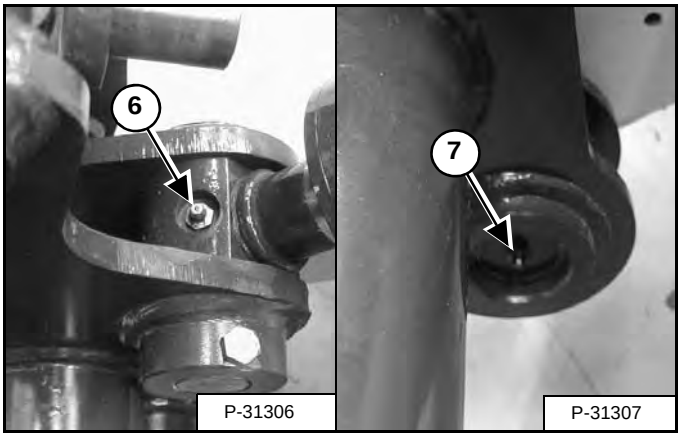
4. Lift Arm Link Pivot (Both Ends, Both Sides) **[Figure 10-140-3]**.

Figure 10-140-4



5. Base End Tilt Cylinder (Both Sides) **[Figure 10-140-4]**.

Figure 10-140-5



6. Rod End Tilt Cylinder (Both Sides) **[Figure 10-140-5]**.

7. Bob-Tach Pivot Pin (Both Sides) **[Figure 10-140-5]**.

HYDRAULIC SYSTEM

Continued On Next Page

HYDRAULIC/HYDROSTATIC SCHEMATIC
WITH SJC OPTION
T300 (S/N 532011001 - 532040000)
(S/N 532111001 - 532140000)

Printable Version Click Here

(PRINTED NOVEMBER 2007)
V-0747legend

LEGEND

1. RESERVOIR:
   Capacity . . . . . 18.8 qt. (17,8 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
   21.2 GPM (80,2 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
    4000 PSI (276 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 - 0.031 inch (0,8 mm)
29. RELIEF VALVE: 3300 PSI (228 bar)
30. HYDRAULIC BRAKE - SPRING APPLIED - PRESSURE RELEASE
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 -
    14.2 GPM (53,7 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. CHECK VALVE
60. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BRAKE

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

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HYDRAULIC/HYDROSTATIC SCHEMATIC
WITH SJC AND HIGH FLOW OPTION
T300 (S/N 532040001 & ABOVE)
(S/N 532140001 & ABOVE)

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(PRINTED NOVEMBER 2007)
V-0953legend

LEGEND

1. RESERVOIR:
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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
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   With 140 degrees F. (60 degrees C.) Fluid
7. FRONT AUXILIARY MANUAL PRESSURE BLEED-OFF VALVE
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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
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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 - 0.031 inch (0,8 mm)
29. RELIEF VALVE: 3300 PSI (228 bar)
30. HYDRAULIC BRAKE - SPRING APPLIED - PRESSURE RELEASE
31. FILTER - HYDRAULIC (CANISTER)
32. FILTER - CASE DRAIN (SINTERED BRONZE)
33. FILTER - BICS CONTROL VALVE (SCREEN)
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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. RELIEF VALVE - 3300 PSI (228 bar)
51. DUMP VALVE - (ON/OFF)
52. CHECK VALVE
53. AUXILIARY HYDRAULIC PUMP -
    15.8 GPM (59,9 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. CHARGE PUMP -
    14.2 GPM (53,7 L/min) at High Engine Idle
60. FIXED CAPACITY DISPLACEMENT HYDRAULIC MOTOR
61. ANTICAVITATION VALVE
62. PROPORTIONAL RELIEF VALVE –
    (Fan Speed Regulator):
    1566 - 1784 PSI (108 - 123 bar)
63. CHECK VALVE
64. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BRAKE
65. FILTER - HYDRAULIC
66. SPRING LOADED FILTER BY-PASS VALVE: 75-83 PSI (5,2-5,7 bar)

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

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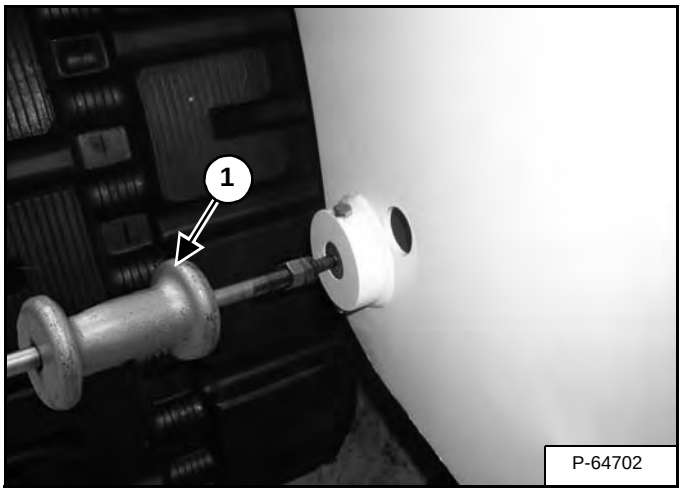
Removal And Installation (Cont'd)

Figure 20-20-7



Install a slide hammer (Item 1) **[Figure 20-20-7]** and remove the base end pivot pin.

Remove the lift cylinder.

⚠ WARNING

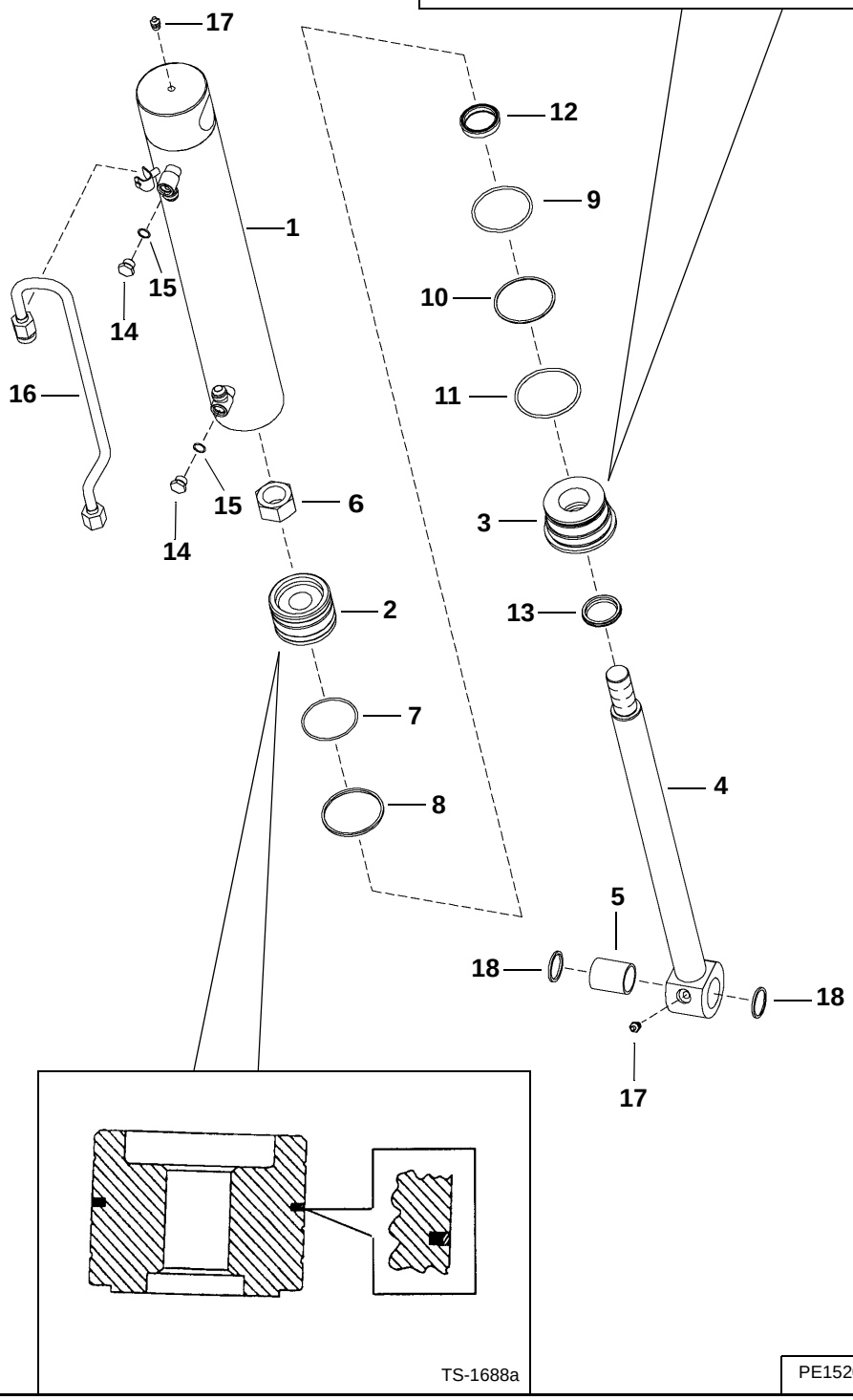
AVOID INJURY OR DEATH

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

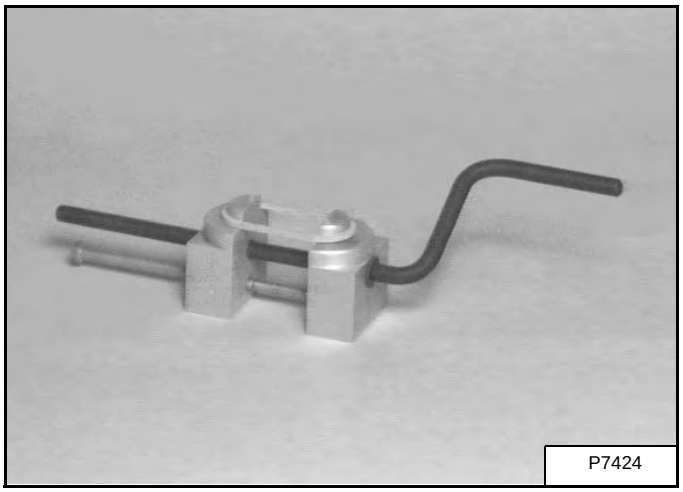
Parts Identification

1. Case
2. Piston
3. Head
4. Rod
5. Bushing
6. Nut
7. O-ring
8. Seal
9. O-ring
10. Washer
11. O-ring
12. Seal
13. Seal
14. Plug
15. O-ring
16. Tubeline
17. Grease Fitting
18. Oil Seal



Assembly

Figure 20-22-10



Use the following tools to assembly the cylinder:

MEL1396 - Seal Installation Tool
MEL1033 - Rod Seal Installation Tool
Piston Ring Compressor
Spanner Wrench

Wash the cylinder parts in solvent and air dry them.

Inspect the cylinder parts for nicks, scratches or other damage. Replace any damaged parts.

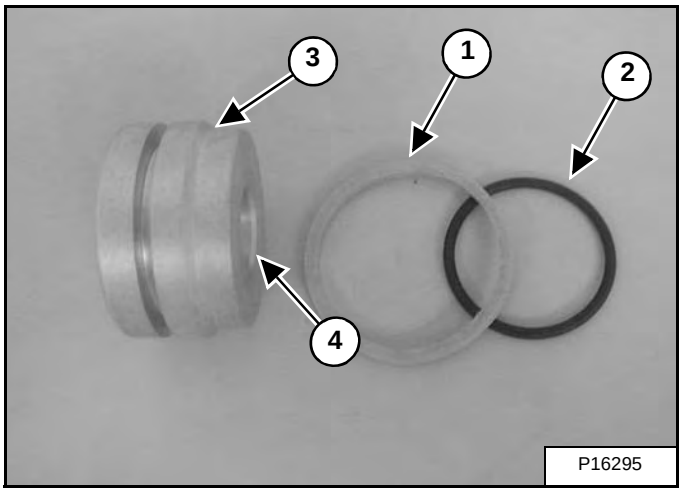
Always install new O-rings and seals during assembly.

Lubricate all O-rings and seals with hydraulic oil during installation.

Install the new seal on the tool and slowly stretch it until it fits the piston **[Figure 20-22-10]**.

Allow the seal to stretch for 30 seconds before installing it on the piston.

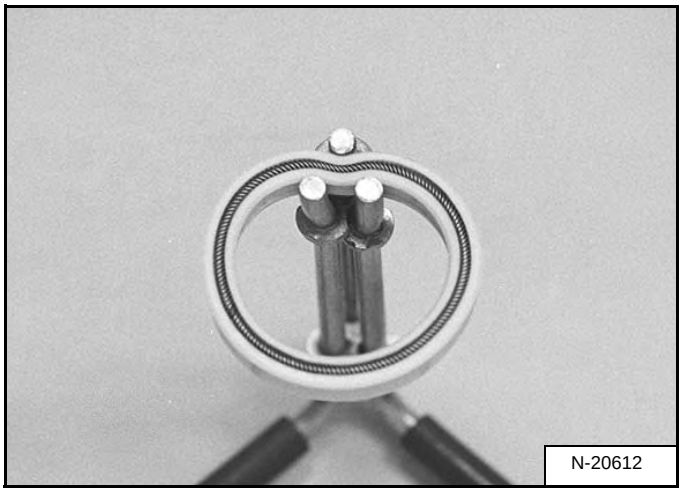
Figure 20-22-11



Piston: Install the O-ring (Item 1) and seal (Item 2) on the piston (Item 3) **[Figure 20-22-11]**.

NOTE: The piston center hole (Item 4) [Figure 20-22-11] has a bevel on one end. The bevel goes toward the rod.

Figure 20-22-12



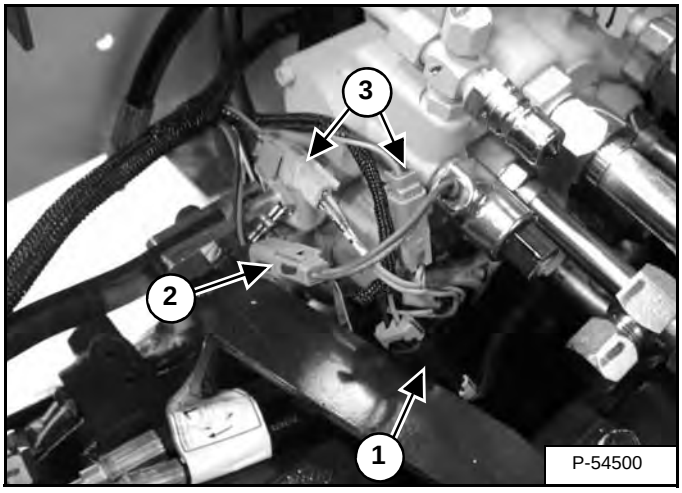
Install the rod seal on the rod seal tool **[Figure 20-22-12]**.

NOTE: During installation the O-ring side of the seal must be toward the inside of the cylinder.

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

Removal And Installation (Cont'd)

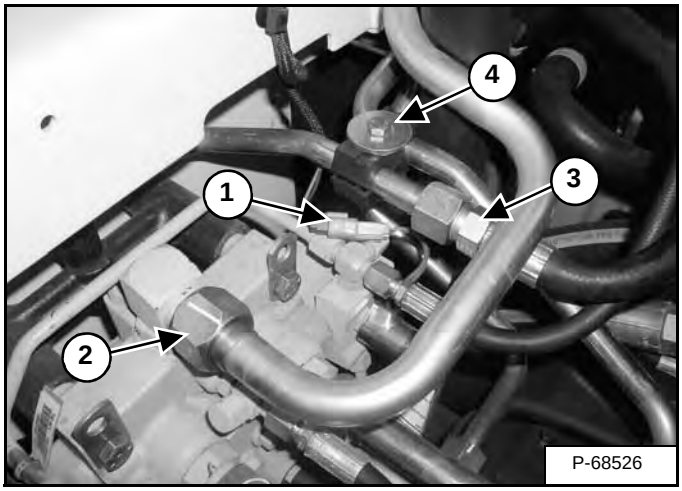
Figure 20-40-4



Mark the four wire connectors for proper installation.

Disconnect the wire harness connectors (Item 1) from the BICS valve solenoid, (Item 2) from auxiliary valve solenoid and (Item 3) from the lift and tilt lock solenoids **[Figure 20-40-4]**.

Figure 20-40-5



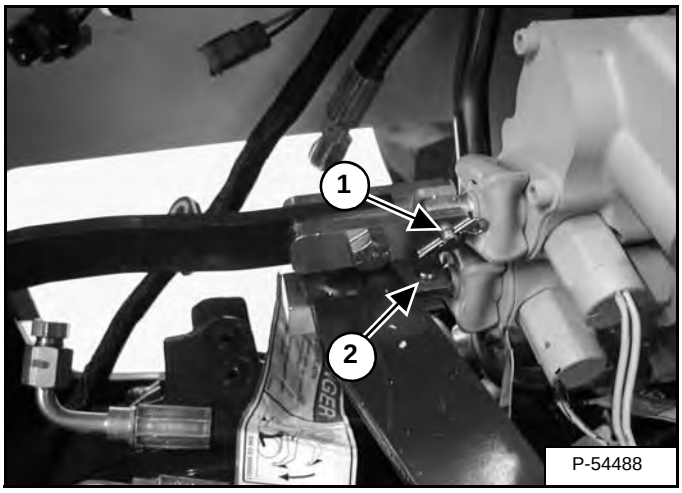
Disconnect the harness connector (Item 1) **[Figure 20-40-5]** from the auxiliary valve solenoid.

Disconnect the tubeline (Item 2) **[Figure 20-40-5]** that goes from the control valve to the hydraulic cooler.

Disconnect the hose (Item 3) **[Figure 20-40-5]** that goes from the gearpump to the control valve.

Remove the tubeline clamp (Item 4) **[Figure 20-40-5]**.

Figure 20-40-6

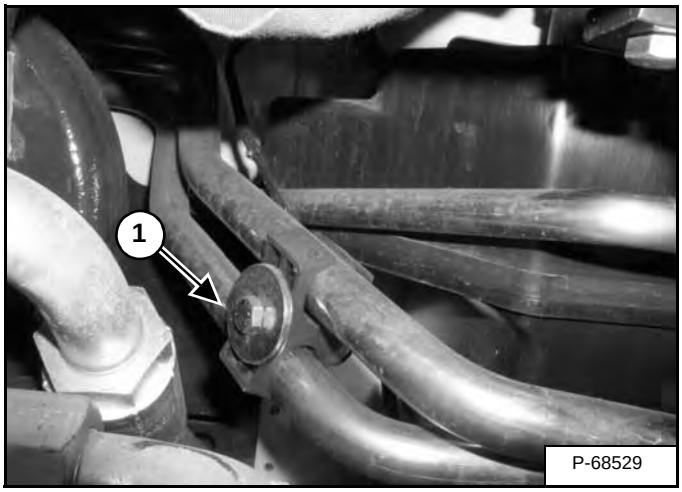


Disconnect foot control linkage (Item 1) **[Figure 20-40-6]** from the tilt spool on the control valve.

Disconnect foot control linkage (Item 2) **[Figure 20-40-6]** from the lift spool on the control valve.

Move the control linkages to allow clearance for the control valve removal.

Figure 20-40-7

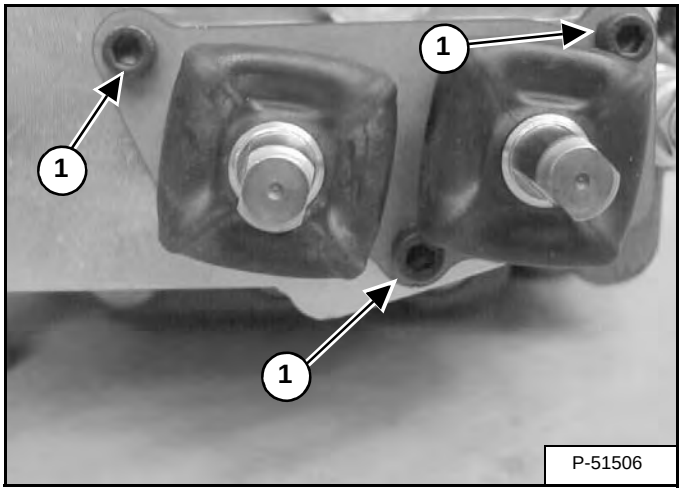


Remove the tubeline clamp (Item 1) **[Figure 20-40-7]** located on the auxiliary tubelines between the hydraulic reservoir and the hydrostatic pump.

Removing this clamp will allow more movement in the auxiliary tubelines for removing the control valve from the loader.

Rubber Boot Removal and Installation

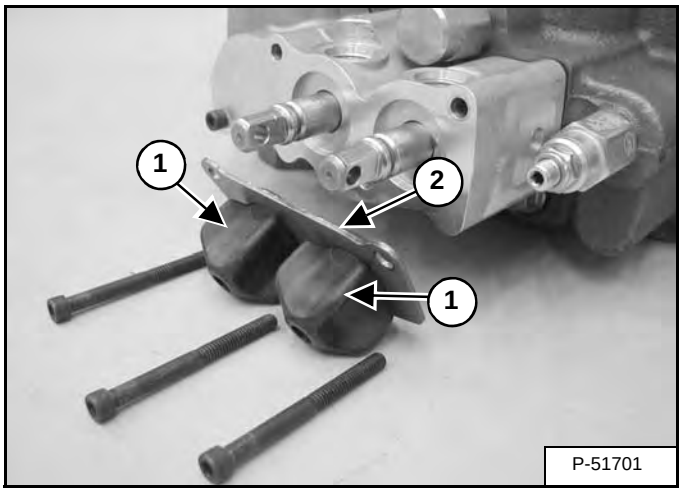
Figure 20-40-38



Remove the three screws (Item 1) **[Figure 20-40-38]** on the rubber boot retainer plate.

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

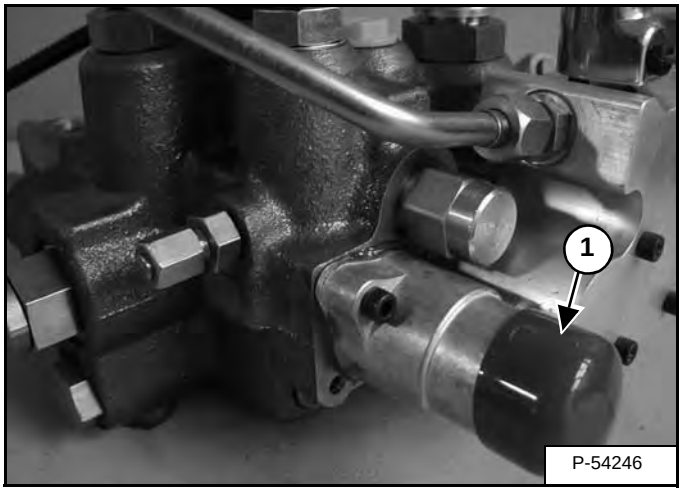
Figure 20-40-39



Remove the rubber boots (Item 1) from the retainer plate (Item 2) **[Figure 20-40-39]**.

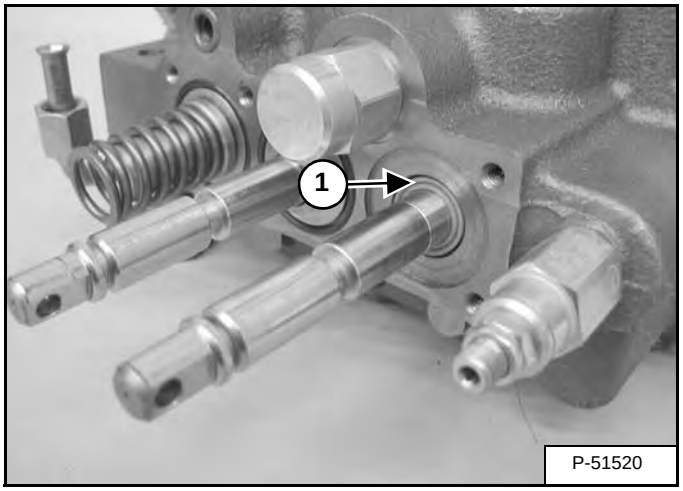
Lift Spool And Detent Removal And Installation (Cont'd)

Figure 20-40-75



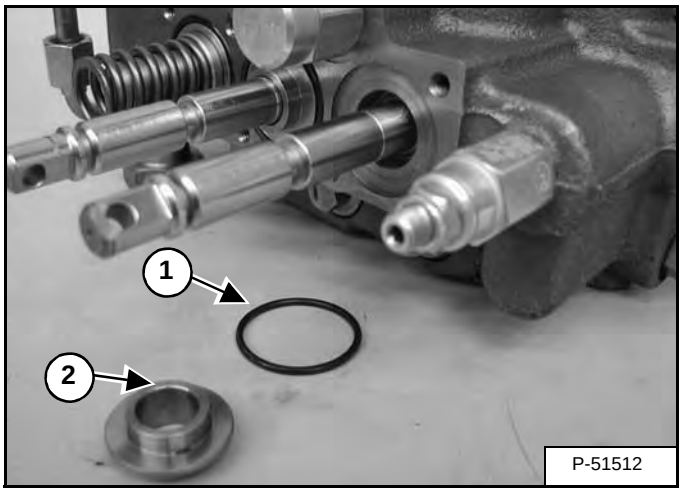
Install the end cap (Item 1) **[Figure 20-40-75]**.

Figure 20-40-76



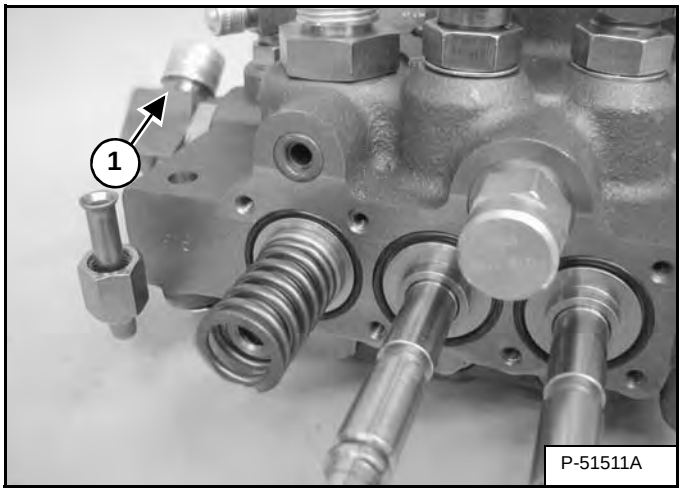
Install the spool seal (Item 1) **[Figure 20-40-76]** on the linkage end of the valve.

Figure 20-40-77



Install the O-ring (Item 1) and bushing (Item 2) **[Figure 20-40-77]** on the lift spool.

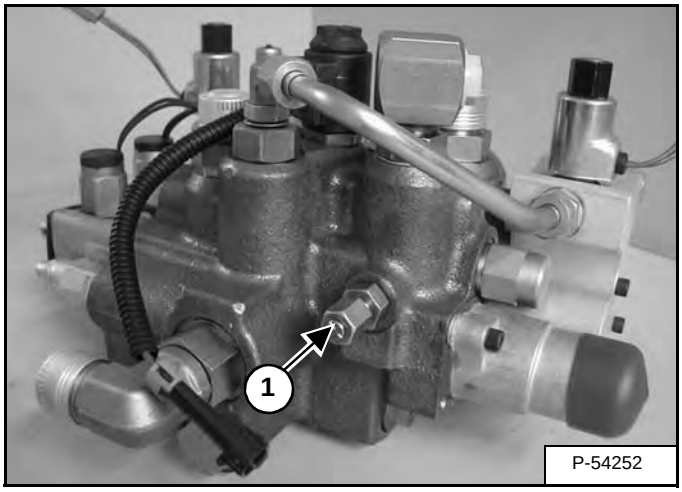
Figure 20-40-78



Install the O-ring (Item 1) **[Figure 20-40-78]** on the control valve.

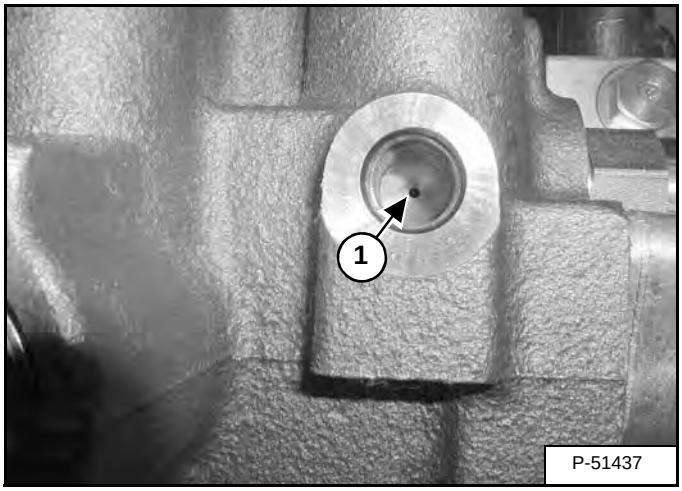
Lift Arm Bypass Orifice Removal And Installation

Figure 20-40-111



Remove the fitting (Item 1) **[Figure 20-40-111]** from the valve.

Figure 20-40-112

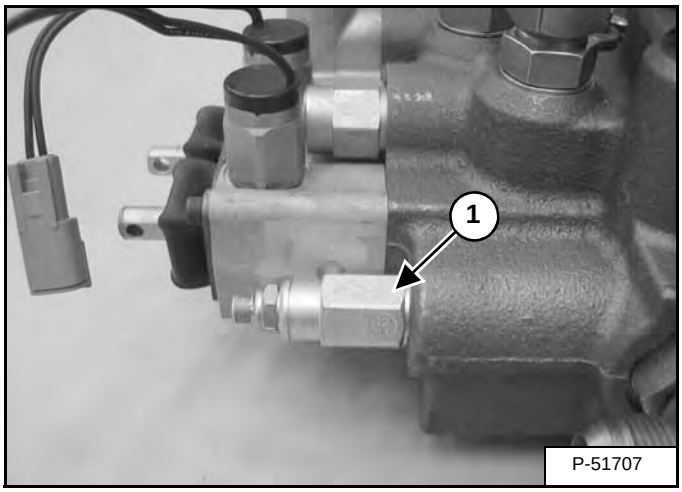


Check the lift arm bypass orifice (Item 1) **[Figure 20-40-112]**.

NOTE: This orifice is not removable from the valve casting.

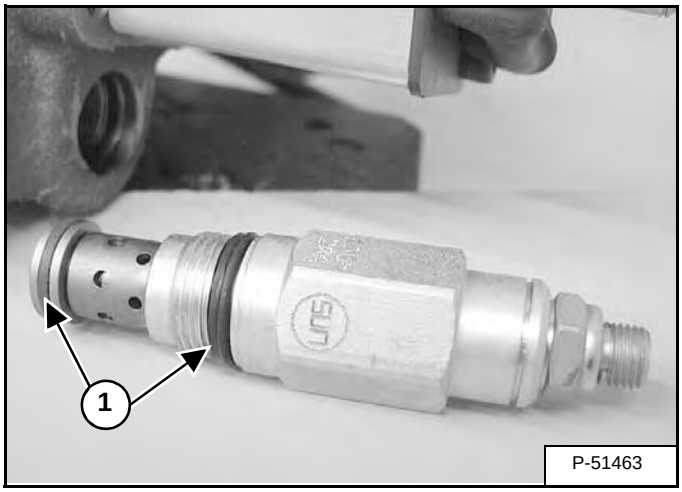
Main Relief Valve Removal And Installation

Figure 20-40-113



Remove the main relief valve (Item 1) **[Figure 20-40-113]**.

Figure 20-40-114

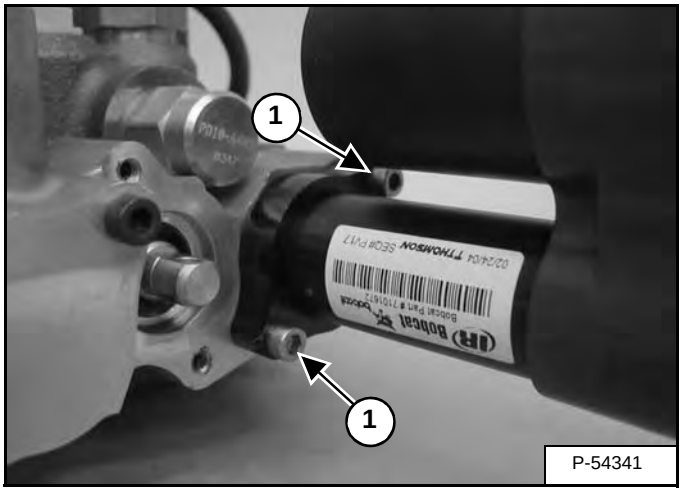


Remove the O-rings from the main relief valve (Item 1) **[Figure 20-40-114]**.

Installation: Always use new O-rings. Tighten to 38 - 45 ft.-lb. (52 - 61 N•m) torque.

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

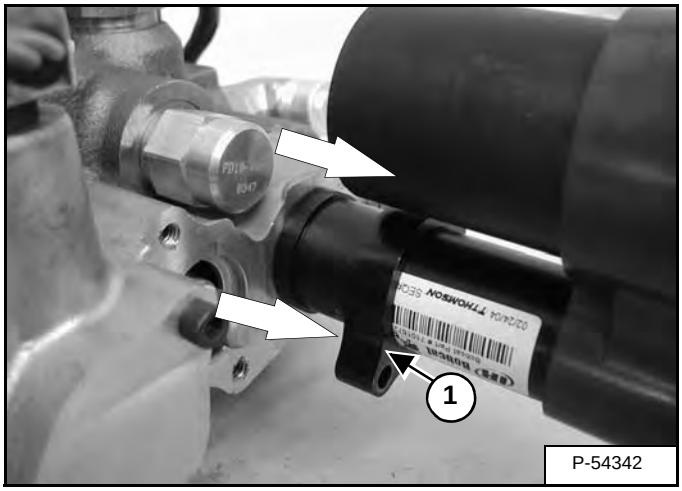
Figure 20-41-22



Remove the two mount bolts (Item 1) **[Figure 20-41-22]** from the lift actuator.

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

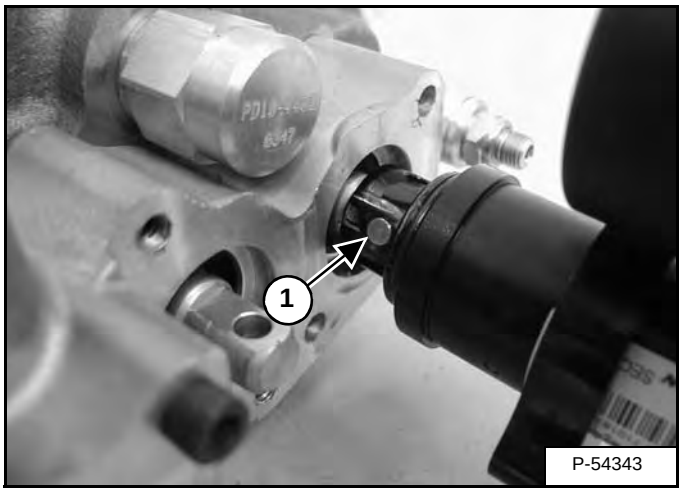
Figure 20-41-23



Slide the actuator mount bracket (Item 1) **[Figure 20-41-23]** away from the control valve.

Pull the actuator away from the control valve **[Figure 20-41-23]**.

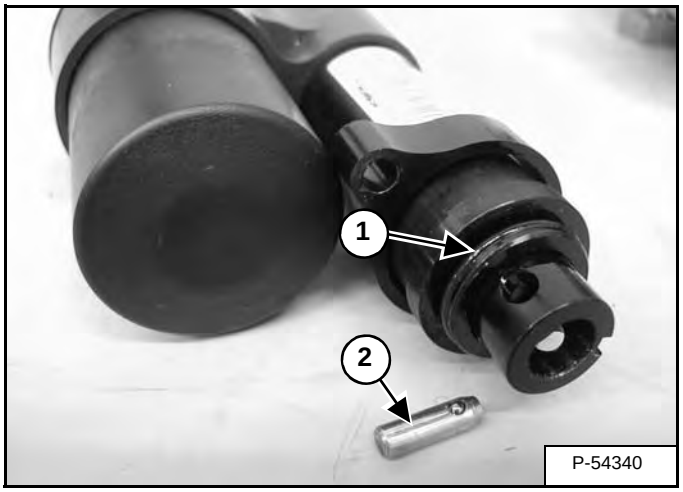
Figure 20-41-24



Using a drift pin and a hammer, remove the actuator linkage pin (Item 1) **[Figure 20-41-24]** from the actuator and the tilt spool.

Remove the actuator and linkage pin from the valve.

Figure 20-41-25



Inspect the O-ring (Item 1) **[Figure 20-41-25]** on the face of the actuator, and replace as needed.

Check the linkage pin (Item 2) **[Figure 20-41-25]** and replace as needed.

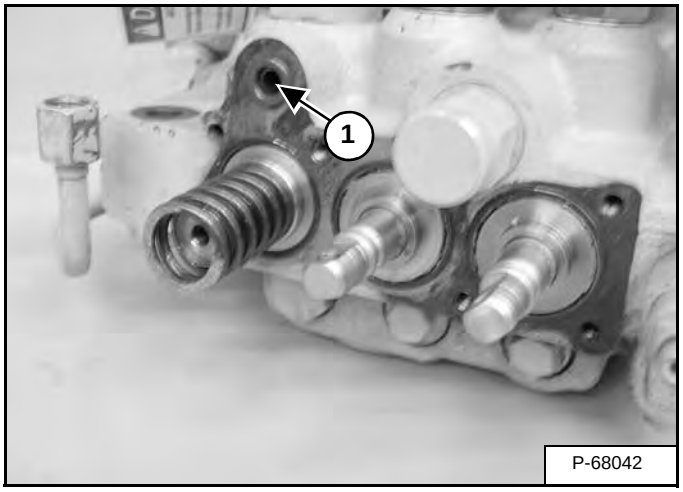
Lift Spool And Detent Removal And Installation

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

MEL 1285 - Spring Tool

Remove the end cap block from the control valve.

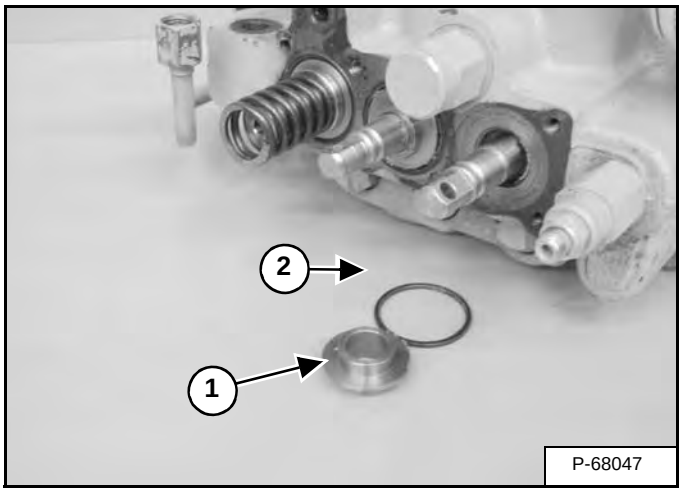
Figure 20-41-53



Remove the O-ring (Item 1) **[Figure 20-41-53]**.

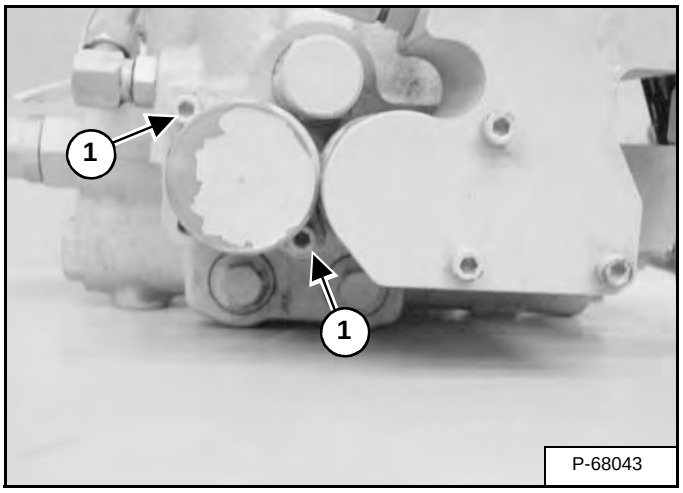
Installation: Replace the O-ring, and lubricate lightly with oil before installation of the end cap block.

Figure 20-41-54



Remove the spacer (Item 1) and O-ring (Item 2) **[Figure 20-41-54]** from the lift spool.

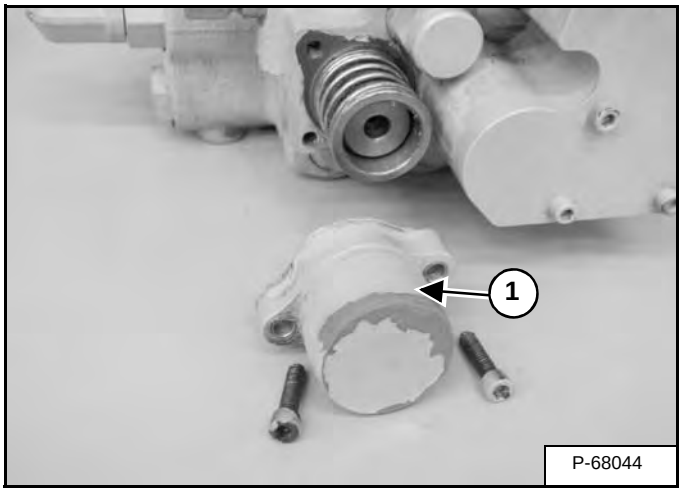
Figure 20-41-55



Remove the two screws (Item 1) **[Figure 20-41-55]** from the lift spool end cap.

Installation: Lubricate the screws and tighten to 90 - 100 in.-lb. (10,2 - 11,3 N•m) torque.

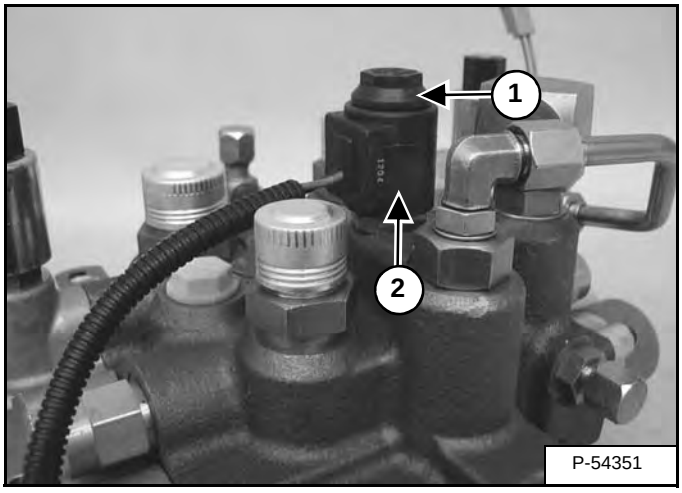
Figure 20-41-56



Remove the lift spool end cap (Item 1) **[Figure 20-41-56]** from the control valve.

Solenoid Removal And Installation

Figure 20-41-90

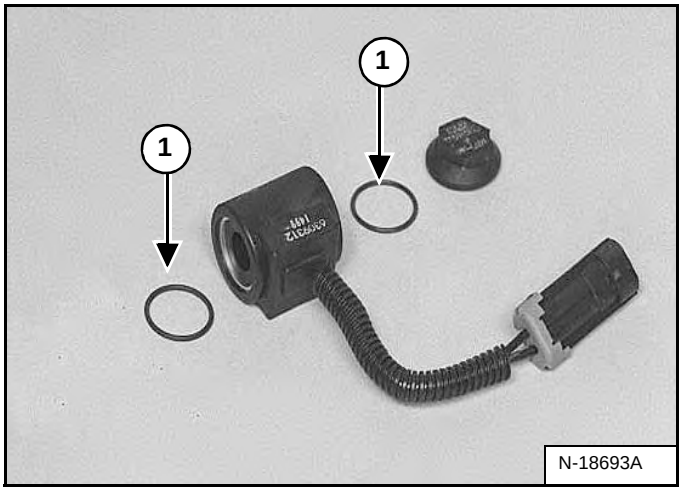


Remove the nut (Item 1) **[Figure 20-41-90]** from the solenoid stem.

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

Remove the solenoid coil (Item 2) **[Figure 20-41-90]**.

Figure 20-41-91

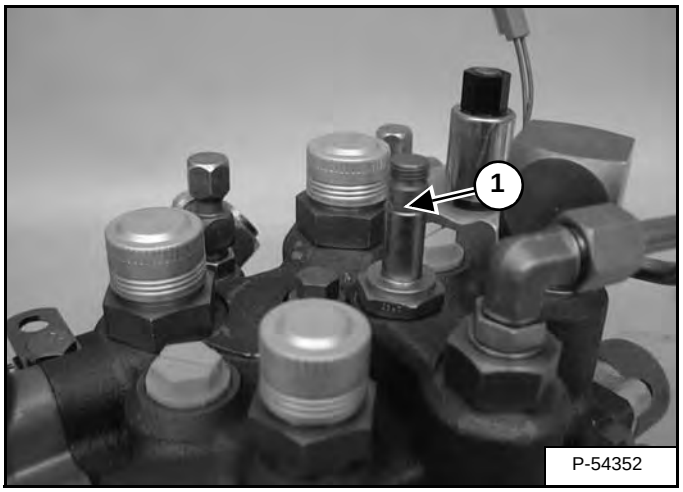


Remove the O-rings (Item 1) **[Figure 20-41-91]** from both ends of the solenoid coil.

Use an Ohmmeter to measure the solenoid coil resistance.

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

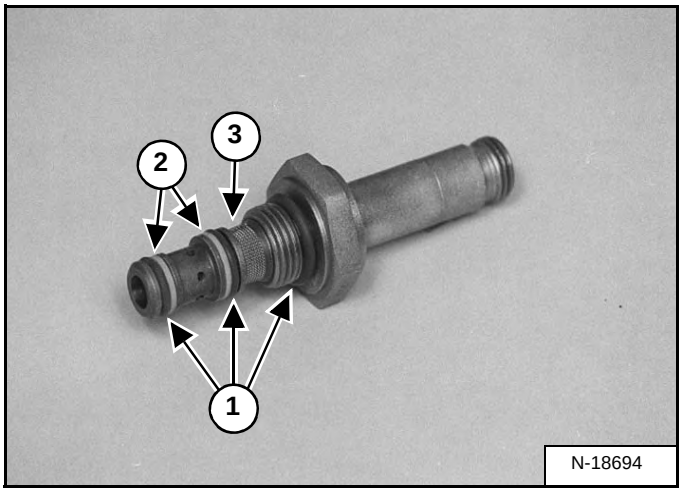
Figure 20-41-92



Remove the solenoid stem (Item 1) **[Figure 20-41-92]**.

Installation: Lubricate the O-rings and tighten the stem to 20 - 24 ft.-lb. (27 - 33 N•m) torque.

Figure 20-41-93



Remove the O-rings (Item 1) and back-up rings (Item 2) **[Figure 20-41-93]** from the stem.

Clean all parts in solvent and dry with compressed air.

Inspect all parts for wear and replace any showing excessive wear.

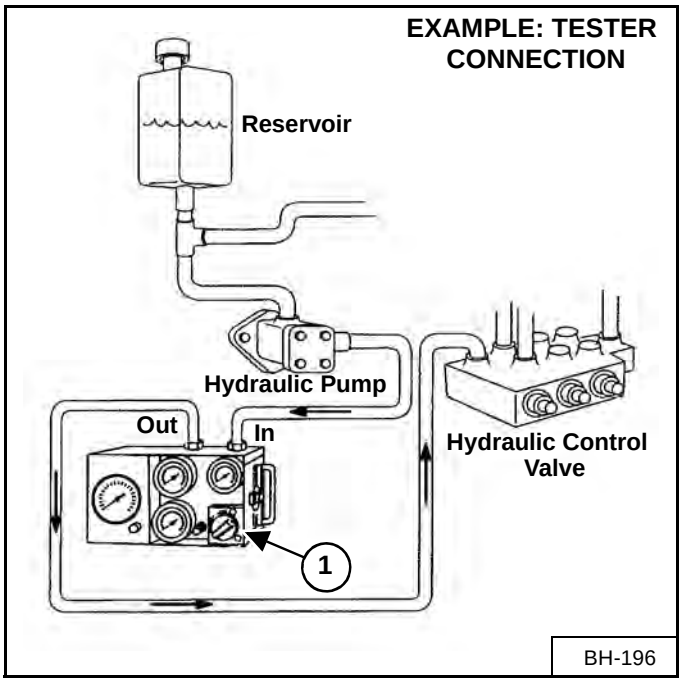
NOTE: The screen (Item 3) [Figure 20-41-93] may be cleaned with solvent. If it is torn or worn it needs to be replaced.

Use only new O-rings and apply oil to all O-rings and back-up rings before installation.

Install new O-rings (Item 1) **[Figure 20-41-91]** & **[Figure 20-41-93]** and new back-up rings (Item 2) **[Figure 20-41-93]** on the solenoid stem.

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

Figure 20-60-4



Sample tester connection shown **[Figure 20-60-4]**.

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 20-60-4]** 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.

Parts Identification (Cont'd)

The items listed below refer to Page 20-60-12 **[Figure 20-60-23]**.

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

Disassembly And Assembly

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

Mark the pump sections for correct assembly.

To disassemble and assemble the hydraulic pump, follow the Parts Identification page **[Figure 20-60-23]** for proper placement of components along with the information below.

NOTE: A seal kit is available through Bobcat Service Parts.

Assembly: Tighten the eight pump housing bolts (Item 19) **[Figure 20-60-23]** to 37 ft.-lb. (50 N•m) torque.

NOTE: Position the wear plate (Item 5) and (Item 10) [Figure 20-60-23] inlets and traps as shown with the bronze side toward the gears on all wear plates.

NOTE: Inspect all gears, shafts and pump end sections. If any of these components have excessive wear or damage is visible, the complete pump must be replaced.

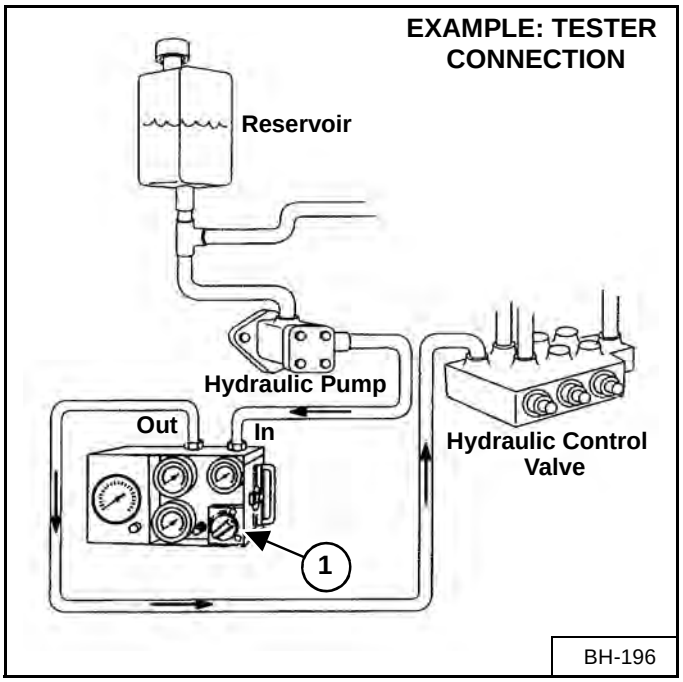
Direct Pump Test (High Flow Section) (Cont'd)

IMPORTANT

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

I-2024-0284

Figure 20-61-42



Sample tester connection shown **[Figure 20-61-42]**.

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. Press the High Flow 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 (Item 1) **[Figure 20-61-42]** clockwise on the tester to about 1000 PSI (69 bar).

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

Turn the restrictor control clockwise on the tester to 3300 PSI and the flow should go to zero GPM. If the pressure readings are not obtained. (See High Flow Relief Valve Adjustment on Page 20-61-10.). If the pressure readings are correct, continue on to the next paragraph.

Open the restrictor control and record the free flow (GPM) at full RPM.

Record the flow (GPM) at 2500 PSI, this is the high pressure flow. 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.

Parts Identification (Cont'd)

The items listed below refer to Page 20-61-18 **[Figure 20-61-62]**.

1. Pump End Section (Auxiliary Pump)
2. Section Seal
3. Pre-Load Seal
4. Load Seal
5. Wear Plate
6. Alignment Pins
7. Drive Gear (Auxiliary Pump)
8. Idler Gear (Auxiliary Pump)
9. Pump Center Section (Auxiliary Pump)
10. Pump End Section (Auxiliary Pump)
11. Spline Shaft
12. Drive Gear (Charge Pump)
13. Idler Gear (Charge Pump)
14. Pump Center Section (Charge Pump)
15. Pump End Section (Charge Pump)
16. Drive Gear (High Flow Pump)
17. Idler Gear (High Flow Pump)
18. Pump Center Section (High Flow Pump)
19. Pump End Section (High Flow Pump)
20. High Flow Solenoid Nut
21. High Flow Solenoid
22. High Flow Relief Valve
23. Bolts (4)
24. Bolts (4)
25. Shaft Seal

Disassembly And Assembly

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

Mark the pump sections for correct assembly.

To disassemble and assemble the hydraulic pump, follow the Parts Identification page **[Figure 20-61-62]** for proper placement of components along with the information below.

NOTE: A seal kit is available through Bobcat Service Parts.

Assembly: Tighten the eight pump housing bolts (Item 23) and (Item 24) **[Figure 20-61-62]** to 37 ft.-lb. (50 N•m) torque.

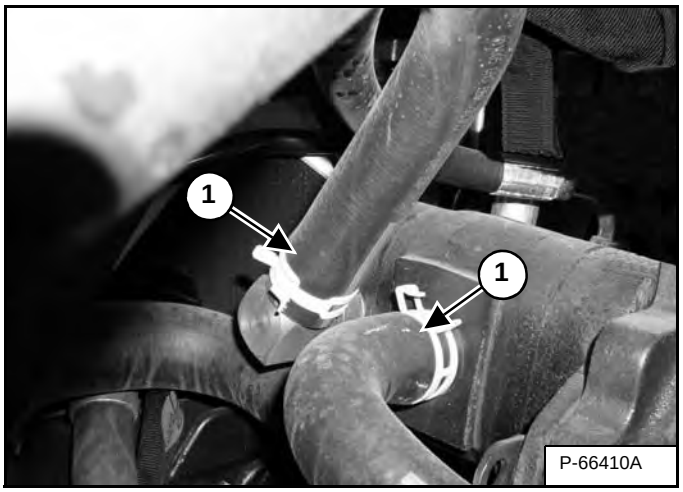
NOTE: Position the wear plate (Item 5) and (Item 10) [Figure 20-61-62] inlets and traps as shown with the bronze side toward the gears on all wear plates.

NOTE: Inspect all gears, shafts and pump end sections. If any of these components have excessive wear or damage is visible, the complete pump must be replaced.

NOTE: The relief valve and the solenoid can be replaced along with the o-rings and backup washers.

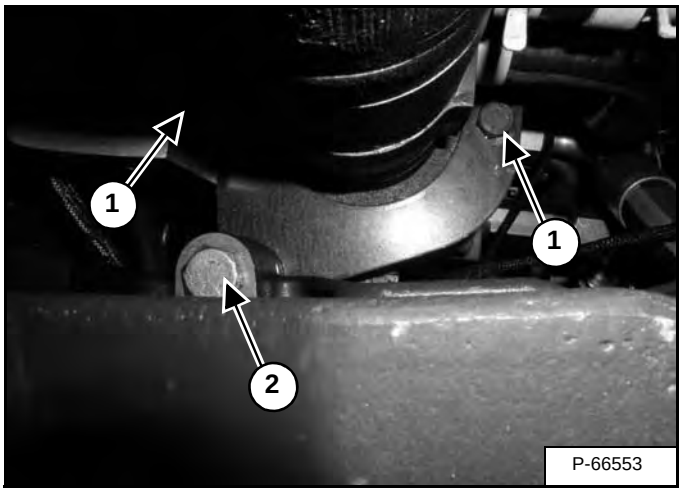
Removal And Installation (Cont'd)

Figure 20-70-80



Disconnect the two inlet hoses (Item 1) **[Figure 20-70-80]** from the front of the hydraulic pump.

Figure 20-70-81



Remove the two pump mounting bolts (Item 1) **[Figure 20-70-81]** from the hydraulic pump.

Installation: Tighten the mounting bolts to 65 - 70 ft.-lb. (88 - 95 N•m) torque.

At the bottom side of the gear pump, remove the pump bolt (Item 2) **[Figure 20-70-81]** from pump support bracket.

Installation: Tighten the pump support bracket bolt to 175 - 190 ft.-lb. (237 - 257 N•m) torque.

Remove the hydraulic pump from the hydrostatic pump **[Figure 20-70-81]**.

Remove the O-ring from the hydrostatic pump.

Installation: Use a new O-ring when installing the hydraulic pump.

For the proper Hydraulic Pump Disassembly And Assembly procedure. (See Disassembly And Assembly on Page 20-70-13.)

Direct Pump Test (Charge Section)

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

MEL1563 or 6689779 - Remote Start Tool
MEL10103 - Hydraulic Tester
MEL10106 - Hydraulic Test Kit
6661247 - Filter Assembly
17 KB 1212 - Elbow Fitting
15 KB 1212 - Straight Fitting
15 KB 0812 - Reducer Fitting

⚠ WARNING

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

W-2017-0286

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

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

⚠ WARNING

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

W-2059-0598

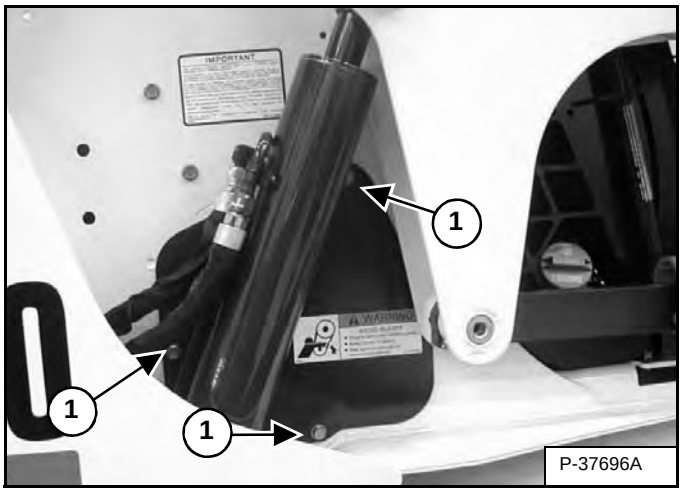
NOTE: The fluid from the charge pump must be filtered after it passes through the Hydraulic Tester, to prevent any contamination to the Hydrostatic Pumps.

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

Open the rear door of the loader.

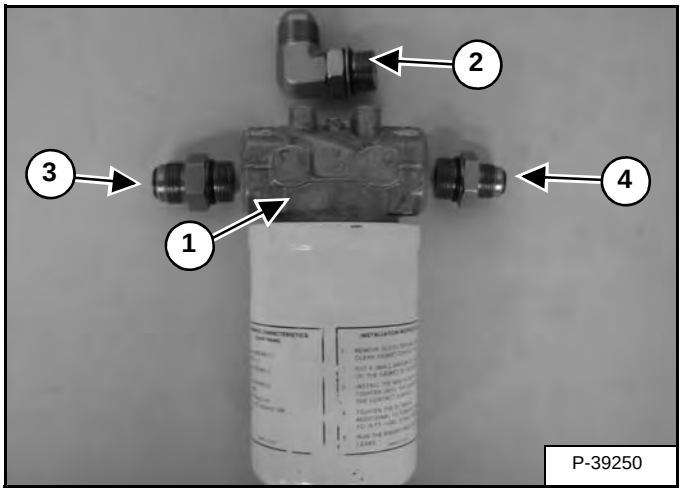
Connect the remote start tool. (See REMOTE START TOOL KIT-MEL1563 on Page 10-60-1.)

Figure 20-71-5



Remove the three mount bolts (Item 1) **[Figure 20-71-5]** from the right side access panel. Remove the panel.

Figure 20-71-6



Assemble the filter assembly (Item 1), elbow fitting (Item 2), straight fitting (Item 3) and the reducer fitting (Item 4) **[Figure 20-71-6]**.

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.

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

Stop the engine. Raise the seat bar.

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

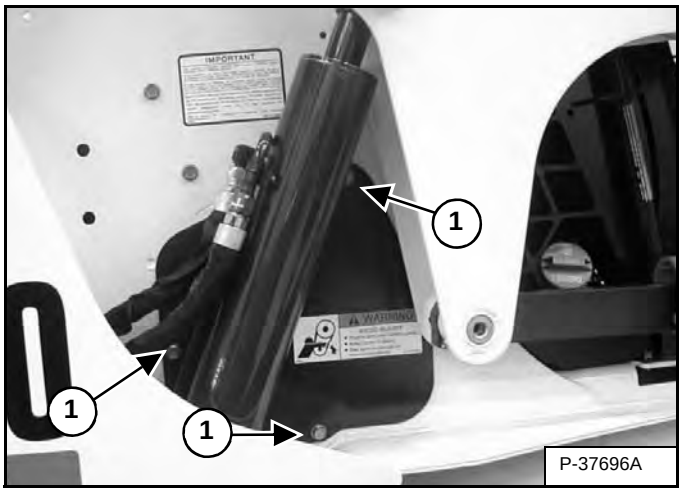
Raise the operator cab. (See Raising on Page 10-30-1.)

Drain the hydraulic fluid from the reservoir. (See HYDRAULIC / HYDROSTATIC SYSTEM on Page 10-120-1.)

Open the rear door of the loader.

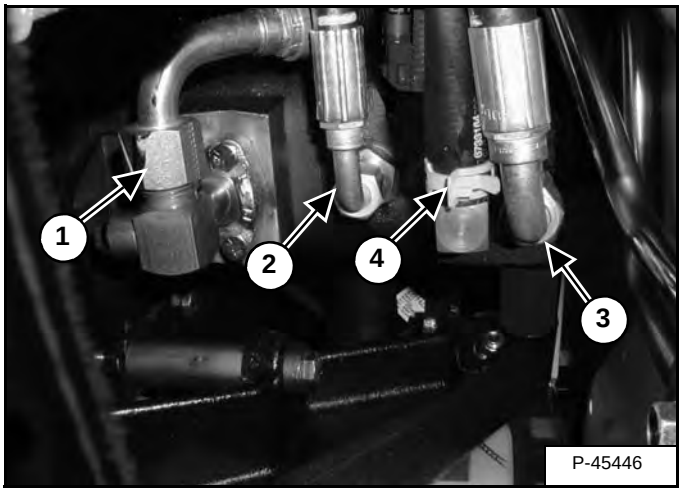
Remove the hoses from the Power Bob-Tach block. (If so equipped.) (See Removal And Installation on Page 20-130-1.)

Figure 20-71-32



Remove the three mount bolts (Item 1) **[Figure 20-71-32]** from the right side access panel. Remove the panel.

Figure 20-71-33



At the back side of the gear pump, disconnect and cap the hose from the outlet fitting (Item 1) of the standard flow pump. Disconnect and cap the hose (Item 2) from the charge pump. Disconnect and cap the hoses from the High Flow pump outlet fitting (Item 3) and the low pressure hose (Item 4) **[Figure 20-71-33]**.

HYDRAULIC FLUID RESERVOIR

Description

The hydraulic fluid reservoir is a storage container for the loaders hydraulic/hydrostatic fluid. The reservoir contains a vented fill cap with a fluid screen to prevent contaminants from entering the reservoir while adding fluid.

The hydraulic fluid reservoir is located below the operators cab on the left side of the loader.

Removal And Installation

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

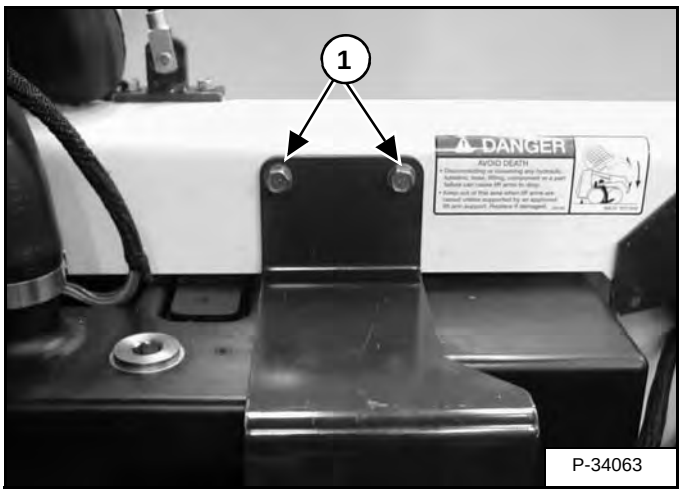
Raise the operator cab. (See Raising on Page 10-30-1.)

Remove the fluid from the reservoir. (See HYDRAULIC / HYDROSTATIC SYSTEM on Page 10-120-1.)

Remove the control panel. (See Removal And Installation on Page 50-100-2.)

Remove bucket position valve. (If so equipped.) (See Removal And Installation on Page 20-110-3.)

Figure 20-90-1



Remove the two mount bolts (Item 1) **[Figure 20-90-1]** from the bucket position valve mount plate. (If so equipped.)

Remove the mount plate from the loader. (If so equipped.)

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.

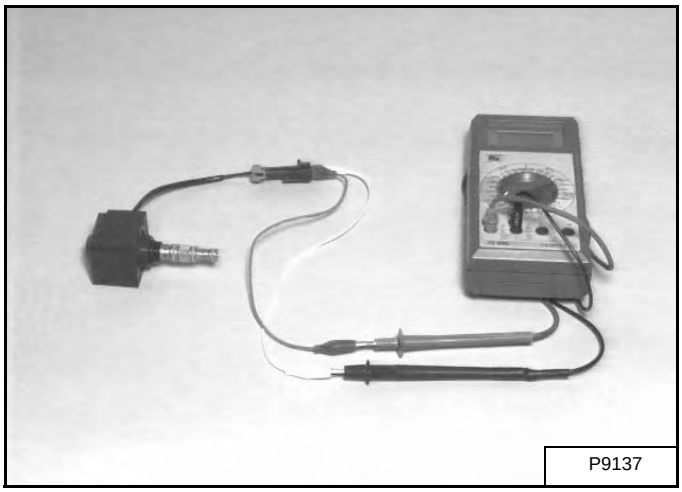
The right side auxiliaries are located on the inside of the right side lift arm at the front of the machine.

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 20-120-1



Use a test meter to measure coil resistance **[Figure 20-120-1]**. Coil wires do not have polarity. Correct resistance is 8.6-9.5 ohms.

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 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.

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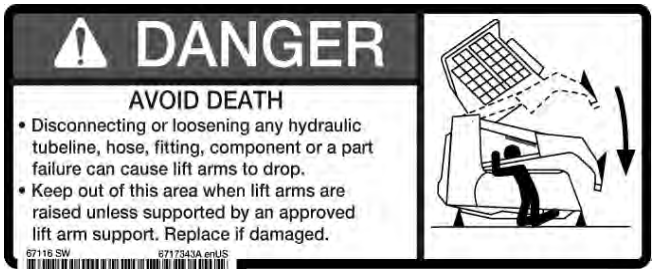


IMPORTANT

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.

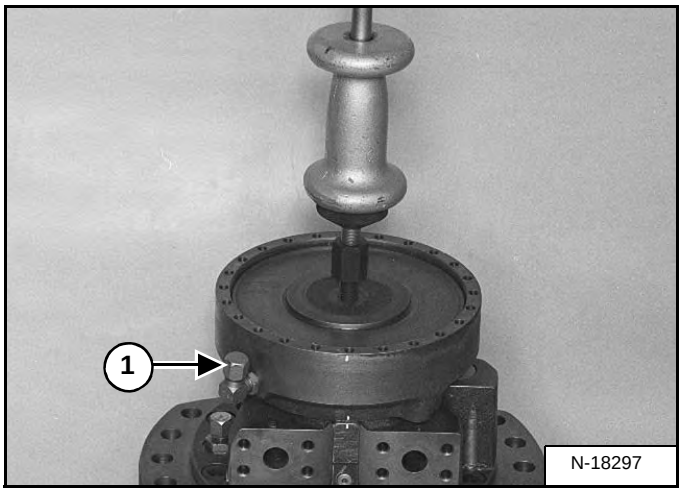
I-2003-0888

HYDROSTATIC SYSTEM

Continued On Next Page

Disassembly And Assembly (Cont'd)

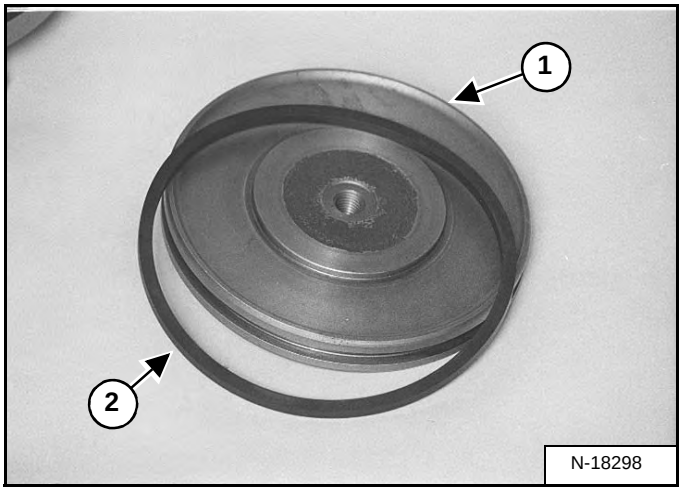
Figure 30-20-10



Remove the piston from the brake housing **[Figure 30-20-10]**.

NOTE: The use of air pressure through the brake line connection (Item 1) [Figure 30-20-10] will aid in piston removal.

Figure 30-20-11

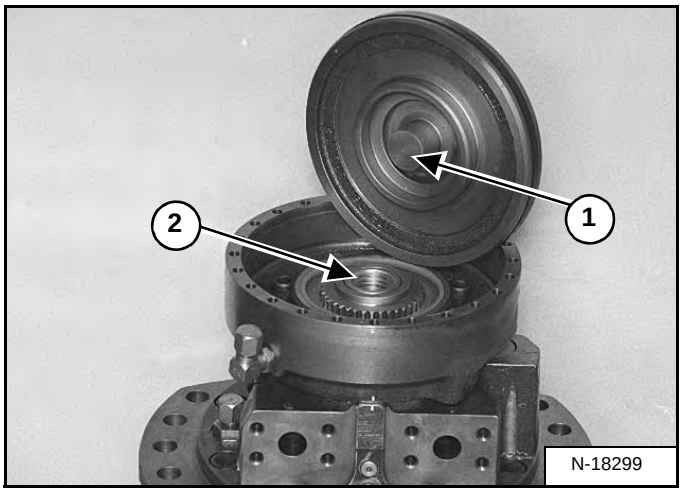


Check the brake piston (Item 1) **[Figure 30-20-11]** for damage including the surface that contacts the brake shaft.

Replace the seal (Item 2) **[Figure 30-20-11]**.

Assembly: Apply oil to the seal (Item 2) **[Figure 30-20-11]** for added protection when installing the brake piston.

Figure 30-20-12

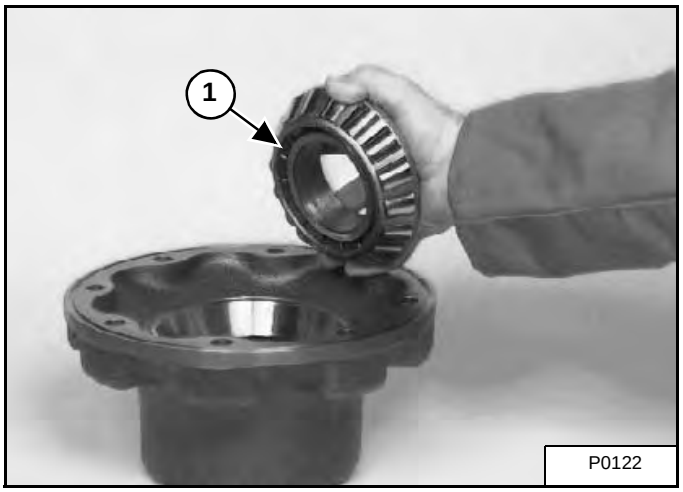


Check the piston surface (Item 1) and the bushing surface (Item 2) **[Figure 30-20-12]** in the brake shaft.

NOTE: The bushing (Item 2) [Figure 30-20-12] can be replaced in the brake shaft. When the bushing is replaced, install the bushing flush with the top of the brake shaft.

Disassembly And Assembly (Cont'd)

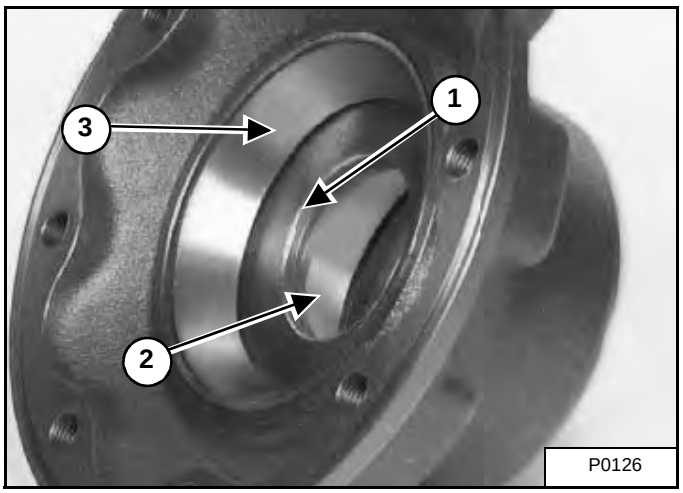
Figure 30-20-48



Remove and inspect the bearing (Item 1) **[Figure 30-20-48]** located in the front housing.

Replace the bearing if worn or damaged.

Figure 30-20-49

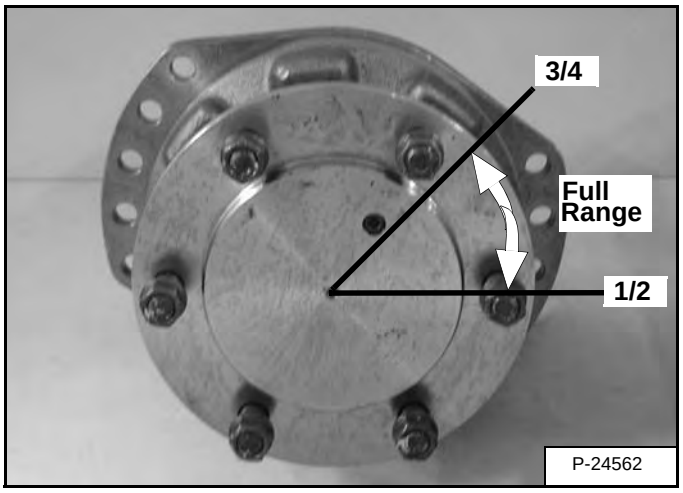


Remove the shaft seal (Item 1) **[Figure 30-20-49]**.

Replace the outer O-ring and inner shaft seal (Item 2) **[Figure 30-20-49]**.

Remove the bearing cup (Item 3) **[Figure 30-20-49]** if it needs replacement.

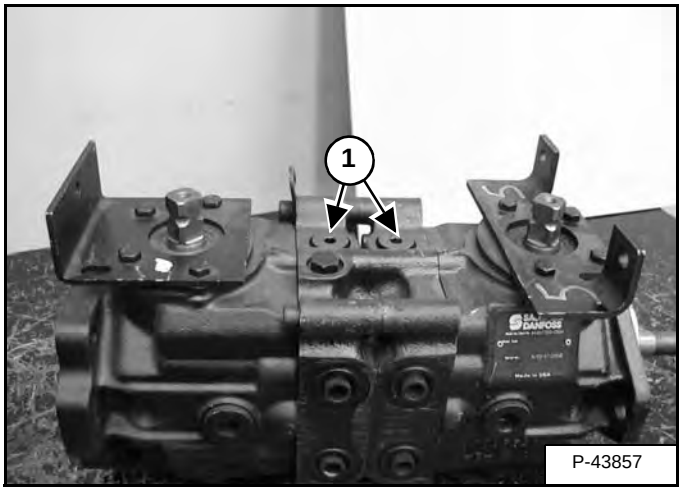
Figure 30-20-50



Fill housing with synthetic Mobilgear SHC XMP 150 to **[Figure 30-20-50]** 1/2 to 3/4 full.

Replenishing / High Pressure Relief Valve Removal And Installation

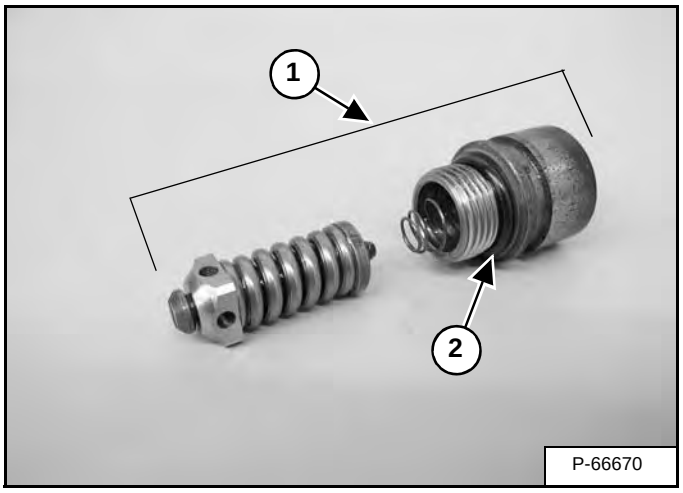
Figure 30-40-8



There are four replenishing/high pressure relief valves (Item 1) **[Figure 30-40-8]** in the hydrostatic pump assembly. Two are located at the top of the pumps and two at the bottom of the pumps for valve function.

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

Figure 30-40-9



Remove the high pressure relief valve (Item 1) **[Figure 30-40-8]** and **[Figure 30-40-9]** from the pump.

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

Check for damage and replace as needed.

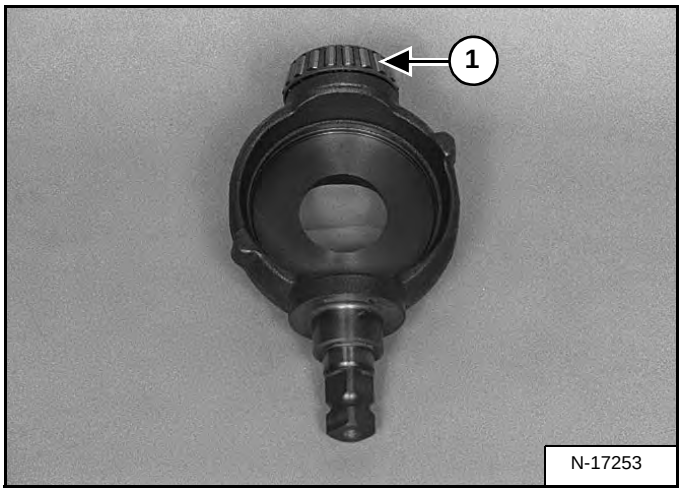
Check the O-ring (Item 2) **[Figure 30-40-9]** for damage and replace as needed.

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

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

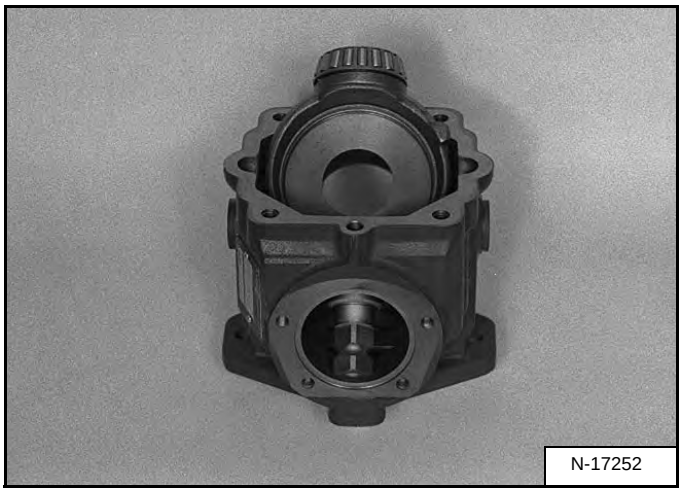
Assembly

Figure 30-40-37



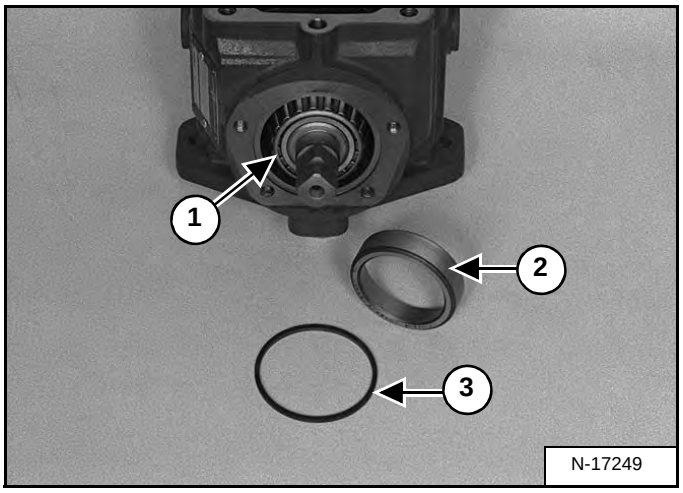
Install the lower bearing (Item 1) **[Figure 30-40-37]** on the swashplate.

Figure 30-40-38



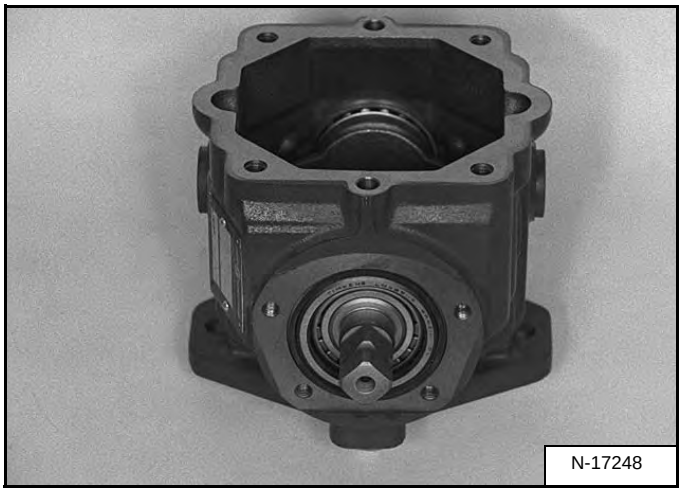
Install the swashplate and bearing into the pump housing **[Figure 30-40-38]**.

Figure 30-40-39



Install the tapered bearing (Item 1) **[Figure 30-40-39]** on the swashplate shaft.

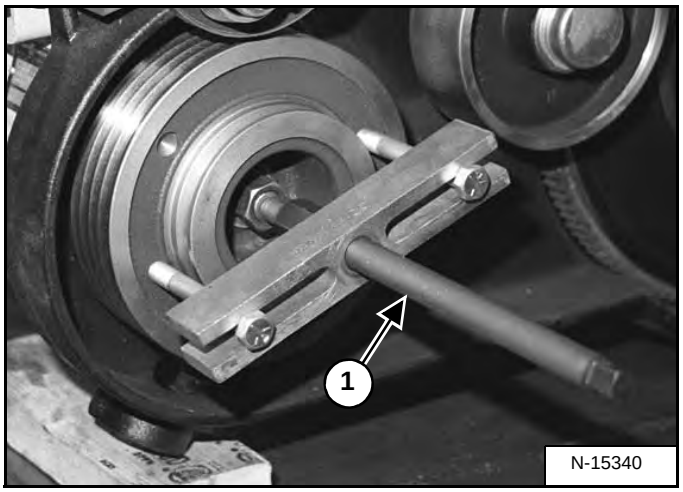
Figure 30-40-40



Install the bearing race (Item 2) **[Figure 30-40-39]** and O-ring (Item 3) **[Figure 30-40-39]** as shown in **[Figure 30-40-40]**.

Removal And Installation (Cont'd)

Figure 30-41-12



Install the nut on the end of the pump drive shaft (without washer).

Use a puller (Item 1) **[Figure 30-41-12]** to remove the pulley from the pump drive shaft.

NOTE: DO NOT strike puller or pump shaft with a hammer. Internal pump damage may result.

Remove the nut and washer from the pump drive shaft.

Remove the pump pulley from the pump drive shaft.

Figure 30-41-13

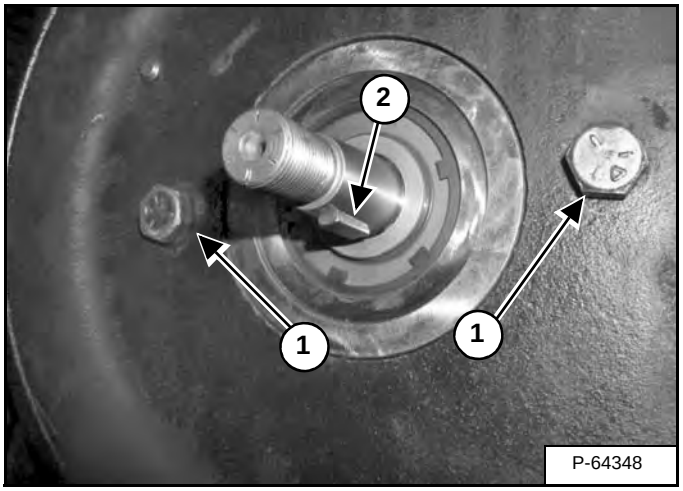
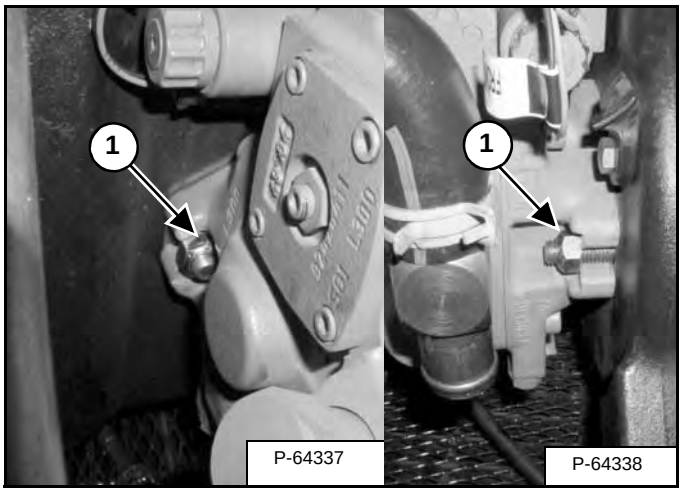


Figure 30-41-14



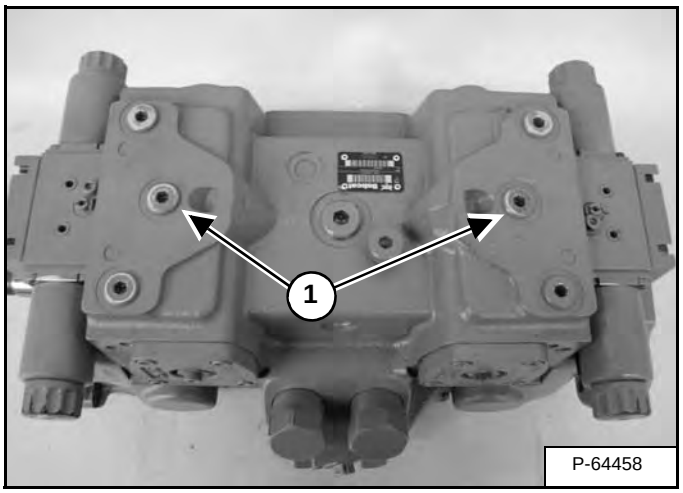
Remove the two mounting bolts (Item 1) **[Figure 30-41-13]** and nuts (Item 1) **[Figure 30-41-14]**.

Installation: Tighten the mounting bolts and nuts to 65 - 70 ft.-lb. (88 - 95 N•m) torque.

Make sure the key (Item 2) **[Figure 30-41-13]** is installed.

Remove the hydrostatic pump from the mounting bracket and drive belt housing.

Figure 30-41-15



Remove the air bleed plugs (Item 1) **[Figure 30-41-15]**.

BEFORE START UP: Fill one of the air bleed ports with new hydraulic oil until the hydraulic oil flows out of the other air bleed port. This will remove trapped air in the hydrostatic pumps before start up.

Assembly: Tighten plugs to 18 ft.-lb. (25 N•m) torque.

Disassembly And Assembly (Cont'd)

Figure 30-41-37

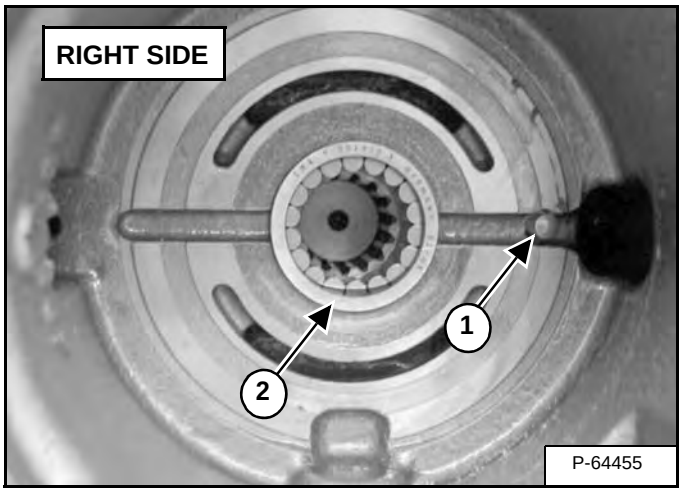


Figure 30-41-38

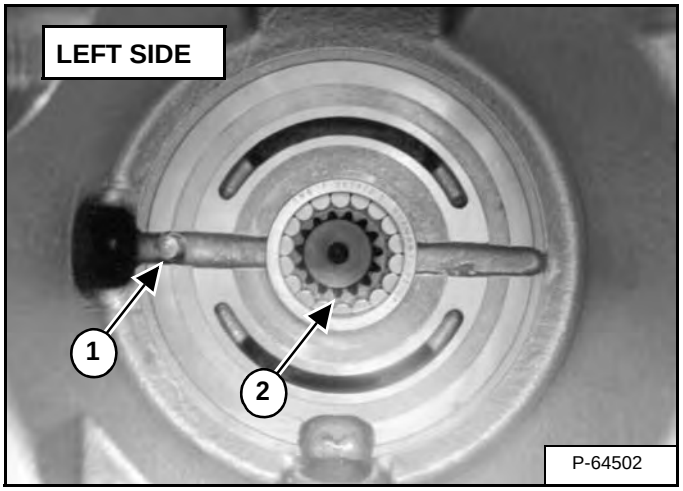


Figure 30-41-39

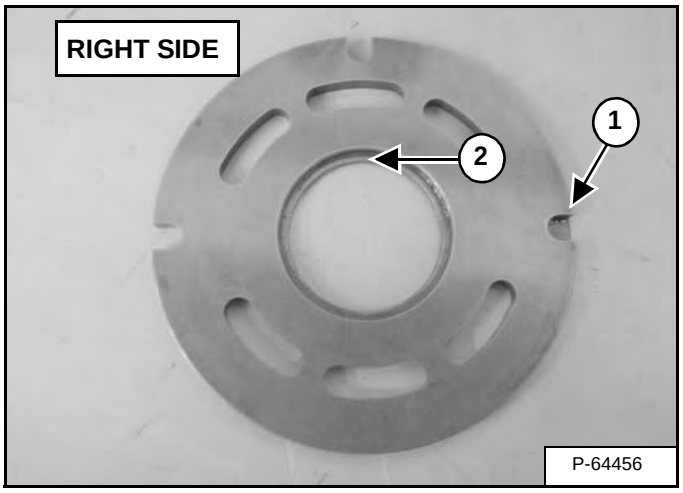
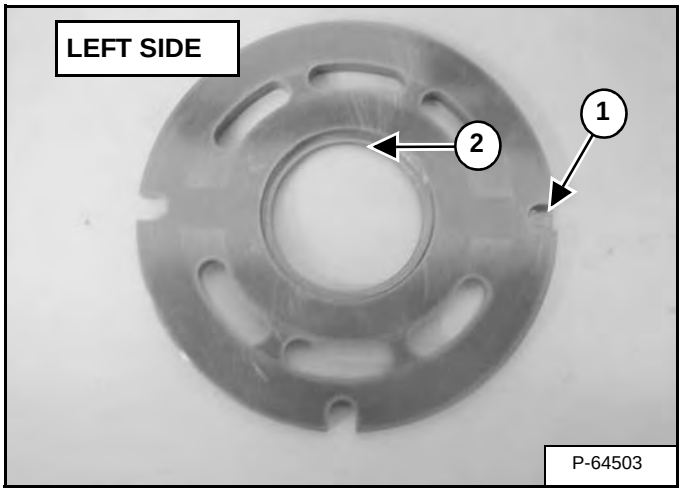


Figure 30-41-40



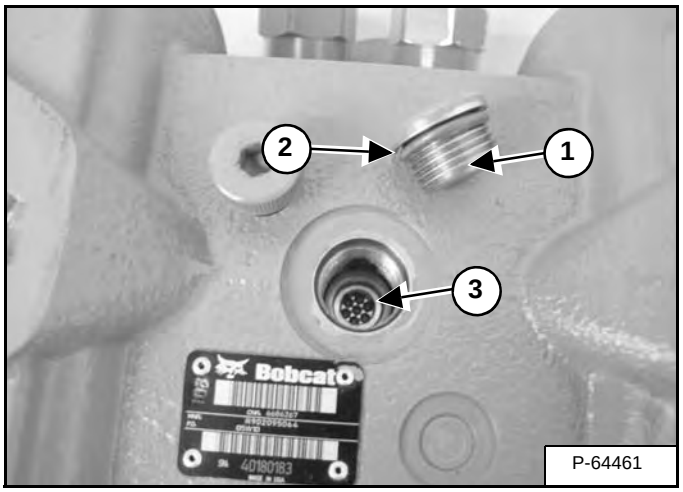
Assembly: Align the timing pin (Item 1) **[Figure 30-41-37]** and **[Figure 30-41-38]** in the case housing with the notch (Item 1) **[Figure 30-41-39]** and **[Figure 30-41-40]** that does not go through the valve plate.

Align the shoulder of the roller bearing (Item 2) **[Figure 30-41-37]** and **[Figure 30-41-38]** with the beveled edge on the valve plate (Item 2) **[Figure 30-41-39]** and **[Figure 30-41-40]**.

NOTE: Valve plate should sit FLUSH with the case housing when properly installed.

Disassembly And Assembly (Cont'd)

Figure 30-41-75



Remove the plug (Item 1) from the top center of the case housing. Replace O-ring (Item 2) **[Figure 30-41-75]**.

Assembly: Tighten plug to 45 ft.-lb. (10 N•m) torque.

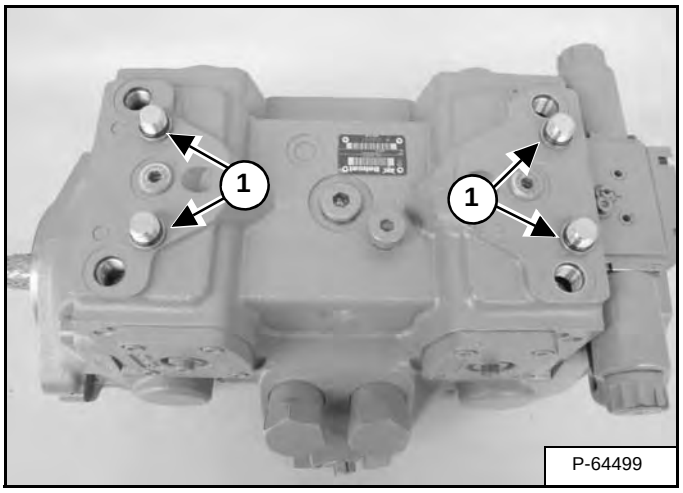
Remove internal screen (Item 3) **[Figure 30-41-75]**.

Assembly: Tighten internal screen to 7.4 ft.-lb. (62 N•m) torque.

Figure 30-41-76

Ensure screen is clean **[Figure 30-41-76]**.

Figure 30-41-77

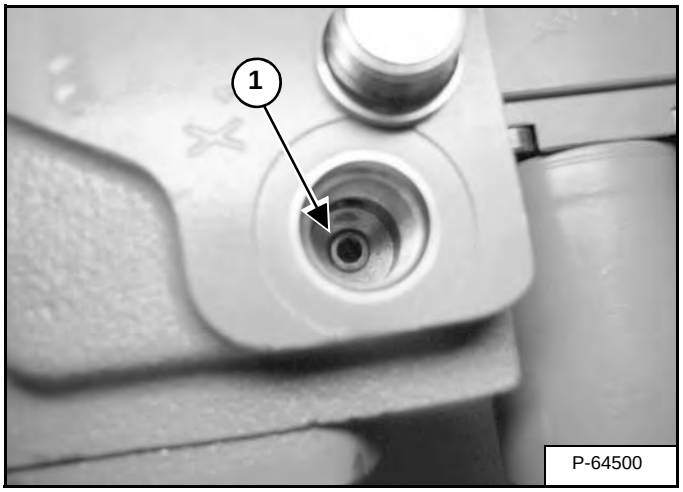


Remove the four control pressure plugs (Item 1) **[Figure 30-41-77]** at the top of the case housing to gain access to the four orifices (Item 1) **[Figure 30-41-78]**.

Replace O-rings on plugs.

Assembly: Tighten plugs to 18 ft.-lb. (25 N•m) torque.

Figure 30-41-78



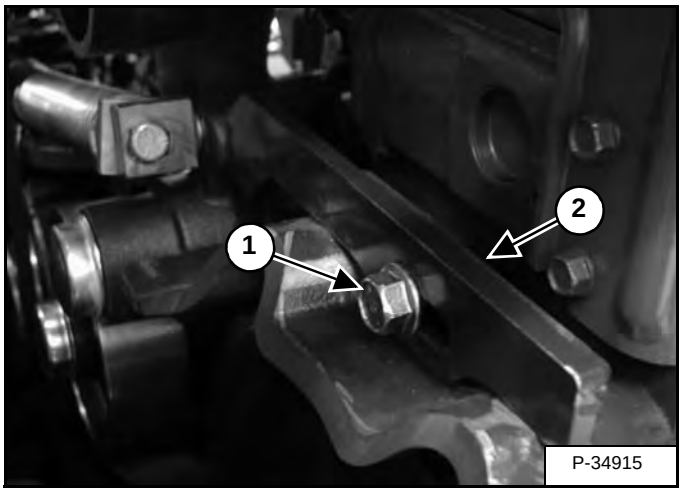
Ensure the four orifices (Item 1) **[Figure 30-41-78]** in case housing are clean and not plugged.

NOTE: The four orifices are no longer needed when software version 69 or above is installed on the loader.

DRIVE BELT (CONT'D)

Tensioner Pulley Removal And Installation

Figure 30-50-6



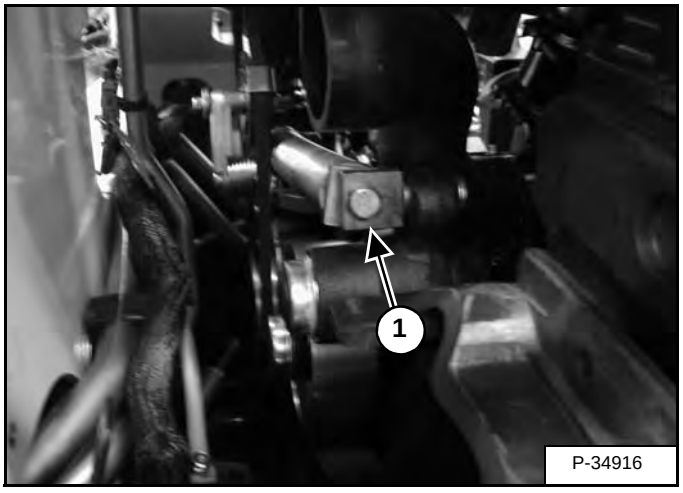
Remove the belt shield. (See Drive Belt Shield Removal And Installation on Page 30-50-1.)

Remove the engine air cleaner. (See Housing Removal And Installation on Page 70-40-1.)

Remove the stop mounting bolt (Item 1) **[Figure 30-50-6]**.

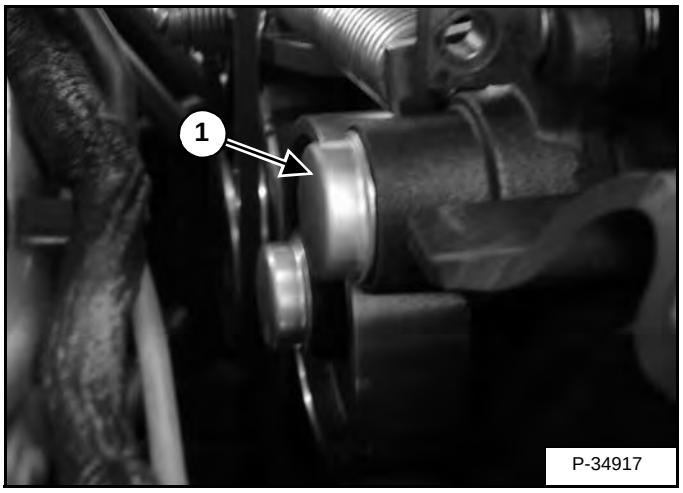
Remove the stop (Item 2) **[Figure 30-50-6]**.

Figure 30-50-7



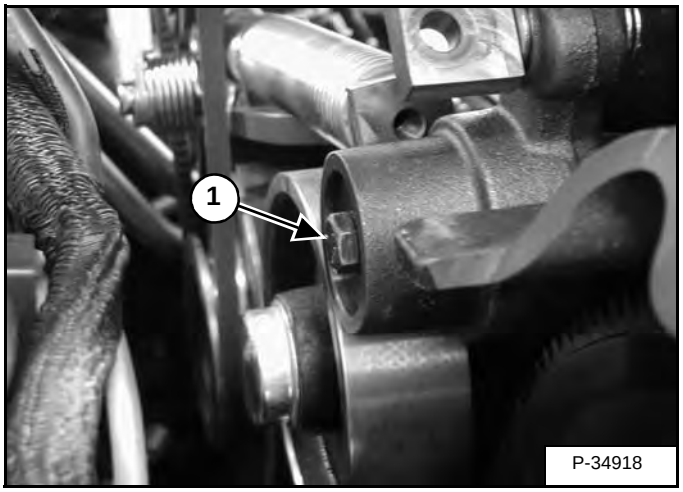
Remove the spring tension bolt (Item 1) **[Figure 30-50-7]**.

Figure 30-50-8



Remove the end cap (Item 1) **[Figure 30-50-8]** from the tension pulley arm.

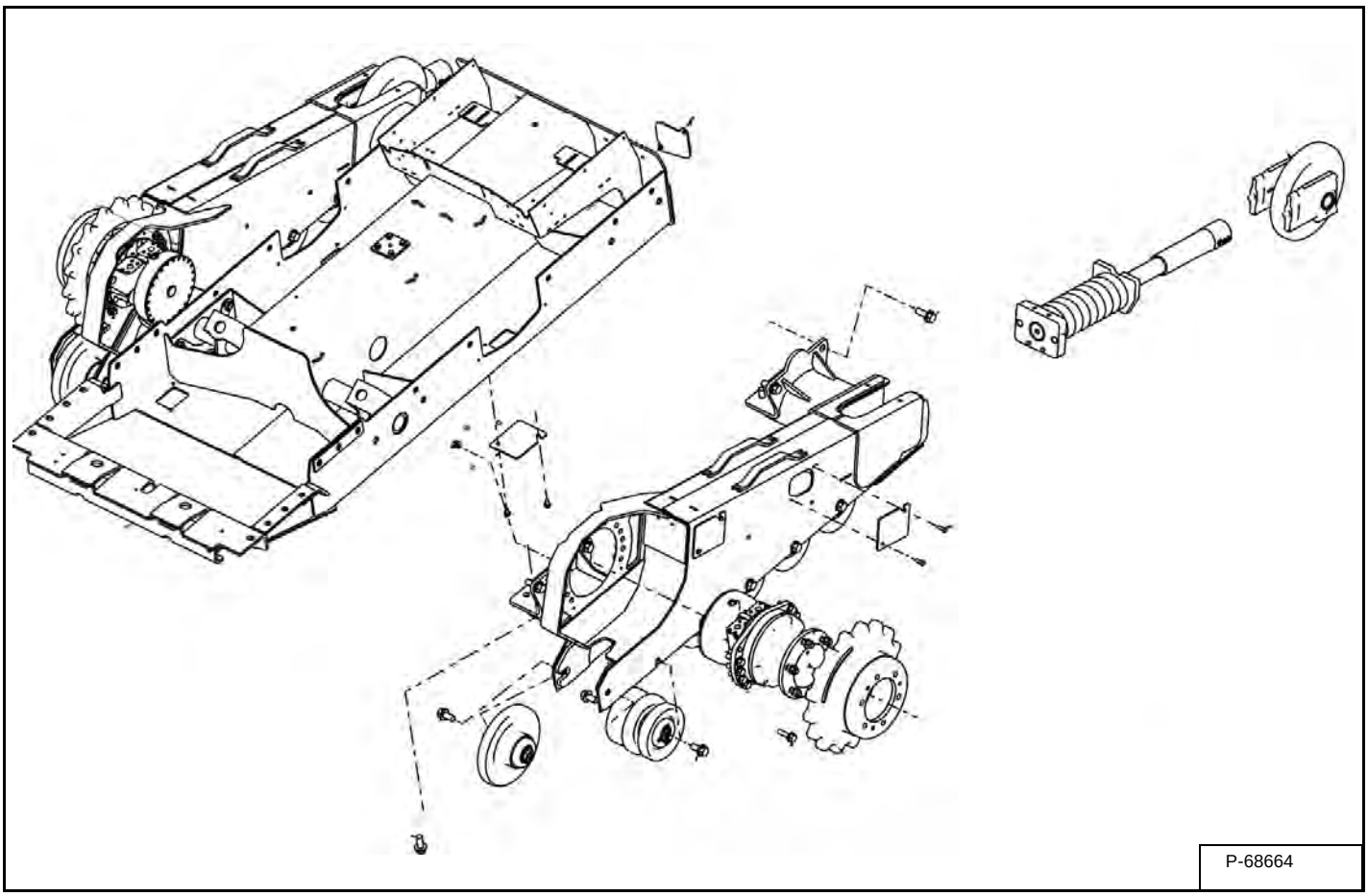
Figure 30-50-9



Remove the mounting bolt (Item 1) **[Figure 30-50-9]** from the tension pulley arm.

TRACK CARRIAGE COMPONENTS

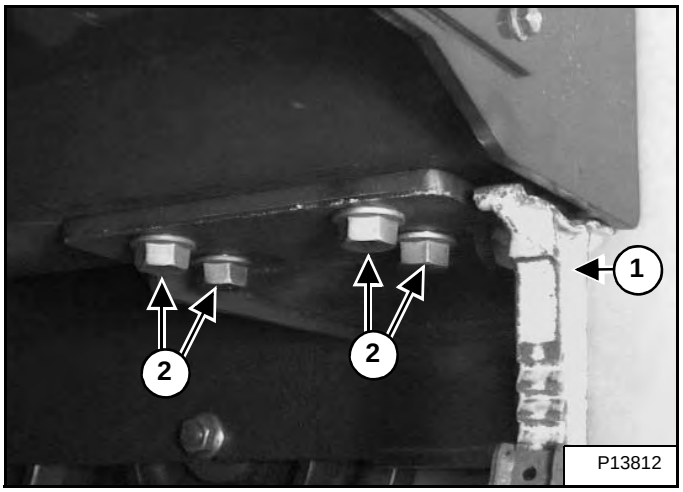
Description



The track carriage components consist of front and rear idlers, rollers, the track, track tensioner assembly, the drive sprocket and the track carriage.

Carriage Removal And Installation

Figure 40-20-27



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

NOTE: Position the jackstand (Item 1) [Figure 40-20-27] at the front of the loader to allow for track housing removal.

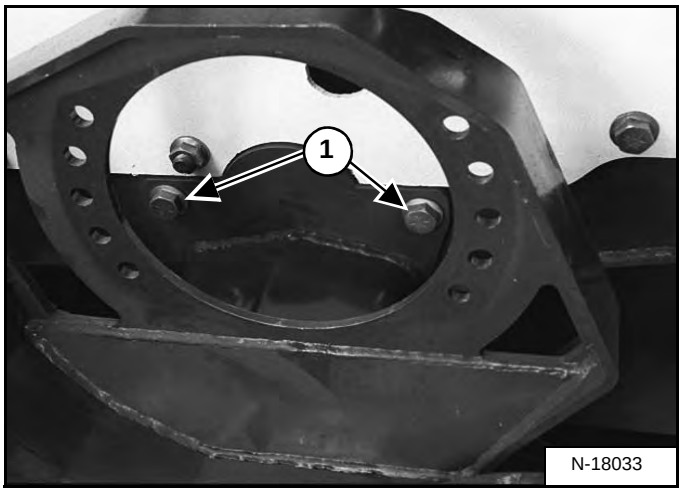
Remove the track from the loader. (See Track Removal And Installation on Page 40-20-4.)

Remove the hydrostatic motor from the track housing. (See Removal And Installation on Page 30-20-2.)

Support the track housing.

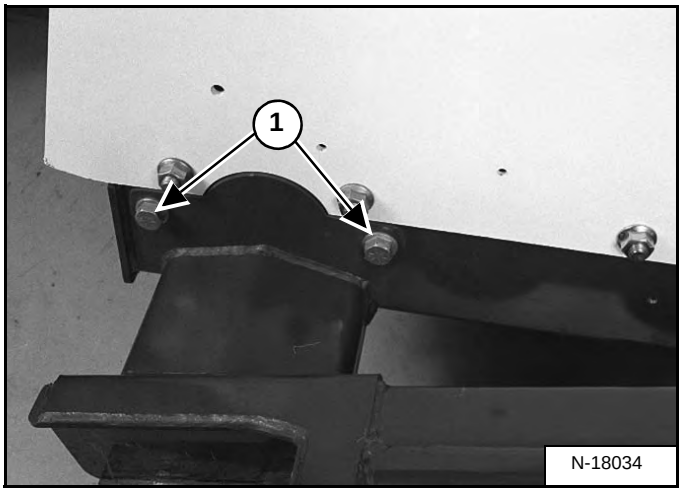
Remove the four mounting bolts (Item 2) **[Figure 40-20-27]** from the track housing mount plate. (At the front and rear of the loader.)

Figure 40-20-28



At the rear of the loader remove the two mount bolts (Item 1) **[Figure 40-20-28]**.

Figure 40-20-29



Remove the two mounting bolts (Item 1) **[Figure 40-20-29]**.

Remove the track housing from the loader.

Installation: Tighten the twelve mounting bolts to 330 ft.-lb. (447,5 N•m) torque.

Track Damage Identification (Cont'd)

Cuts On The Edges Of Track Roller Side

Figure 40-20-53

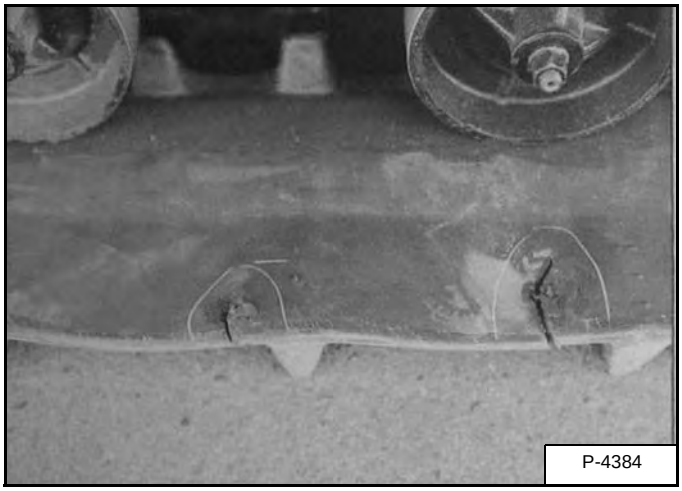
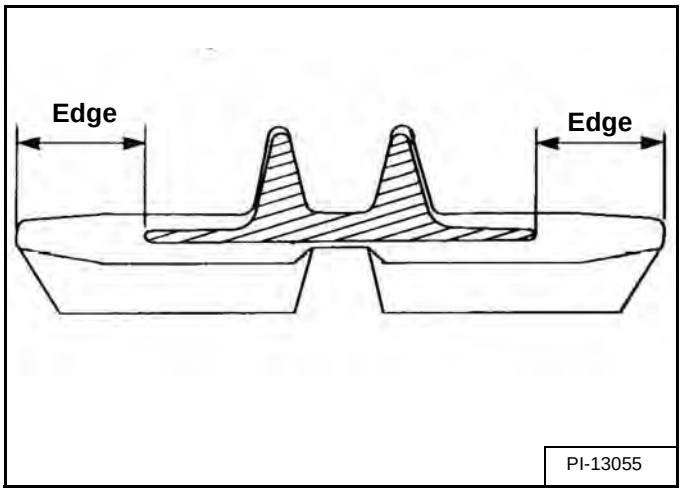


Figure 40-20-54



Damage:

Both edges of a rubber track have no special reinforcements. It sometimes occurs during operation that they are cut or torn off **[Figure 40-20-53]** & **[Figure 40-20-54]**.

Replacement:

In such case, the rubber track does not have to be replaced.

Causes of the damage:

This damage is caused by objects on the field or by interference with the machine frame.

OPERATOR CAB

Gas Cylinder Removal And Installation

NOTE: Pages 50-20-1 to 50-20-2 of this procedure is for loaders equipped with standard cab. These loaders only have one gas cylinder per cab side.

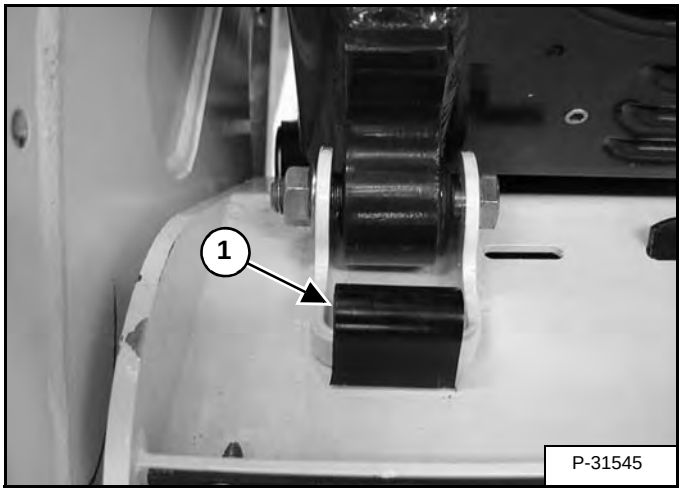
Page 50-20-3 shows the removal of the third gas cylinder which is usually found on loaders equipped with the optional cab enclosure, heat, A/C system and cab door.

⚠ 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

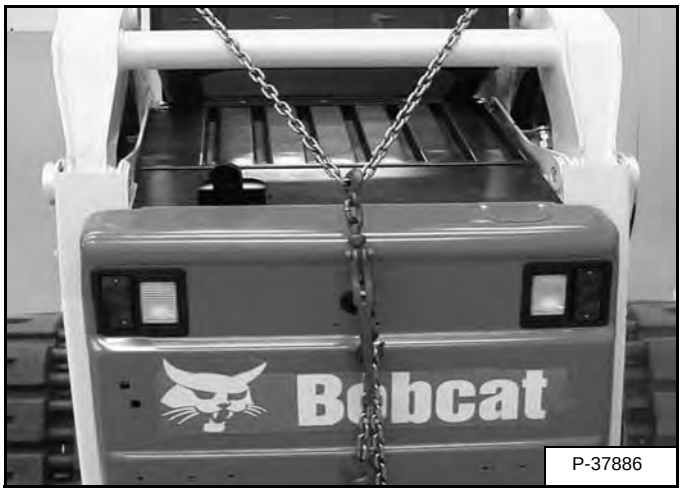


Remove the operator cab stop (Item 1) **[Figure 50-20-1]**. (Both sides.)

NOTE: Be careful not to break the rear window (if so equipped) when the cab is raised after the cab stops are removed.

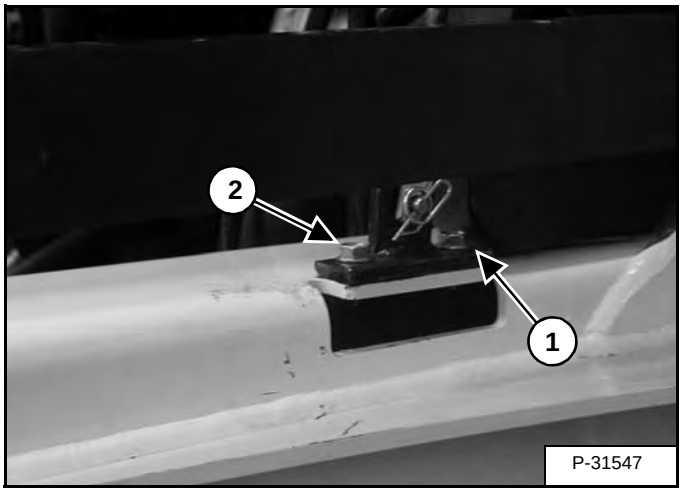
Raise the operator cab. (See Raising on Page 10-30-1.)

Figure 50-20-2



Install a chain (Item 1) **[Figure 50-20-2]** from the operator cab to the loader main frame to prevent the cab from tipping forward when the gas cylinder(s) are removed.

Figure 50-20-3



Remove the bolt (Item 1) **[Figure 50-20-3]** from the gas cylinder mounting bracket.

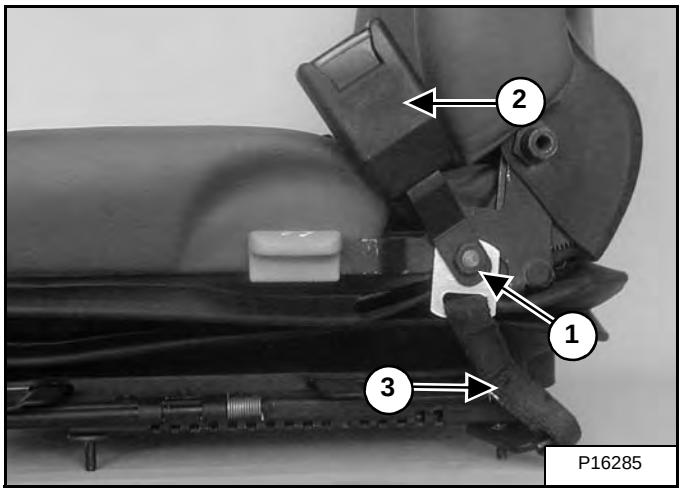
Loosen the mount bolt (Item 2) **[Figure 50-20-3]**.

3-Point Seat Belt Removal And Installation

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

Remove the operator seat. (See Removal And Installation on Page 50-30-1.)

Figure 50-30-13

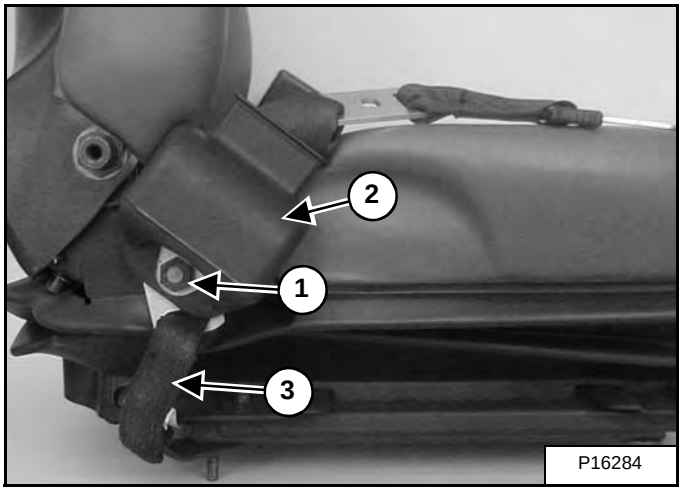


Remove the mounting nut (Item 1) **[Figure 50-30-13]**

Remove the end release buckle (Item 2) **[Figure 50-30-13]**

Installation: Be sure tether strap (Item 3) **[Figure 50-30-13]** is on the seat belt stud behind the end release buckle.

Figure 50-30-14

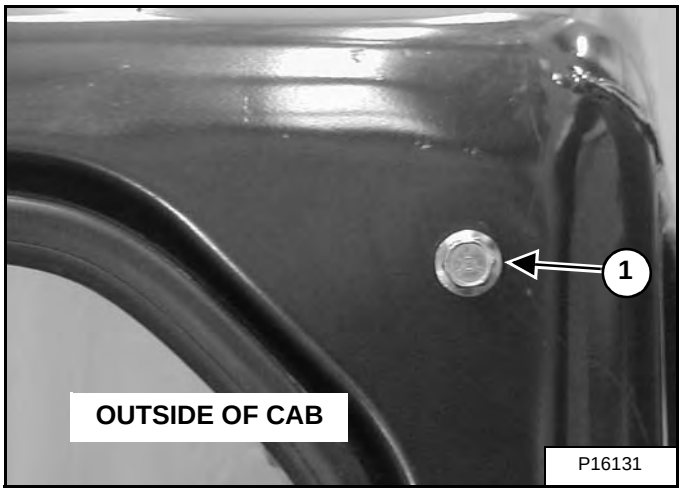


Remove the mounting nut (Item 1) **[Figure 50-30-14]**

Remove the seat belt retractor (Item 2) **[Figure 50-30-14]**

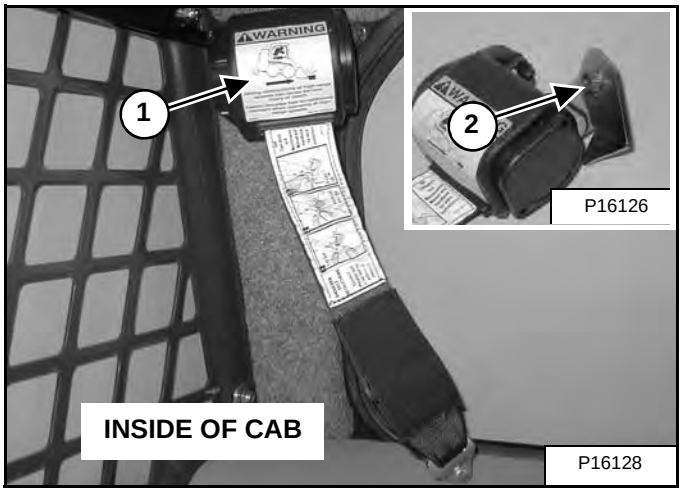
Installation: Be sure tether strap (Item 3) **[Figure 50-30-14]** is on the seat belt stud behind the seat belt retractor.

Figure 50-30-15



Remove the mounting bolt (Item 1) **[Figure 50-30-15]**

Figure 50-30-16

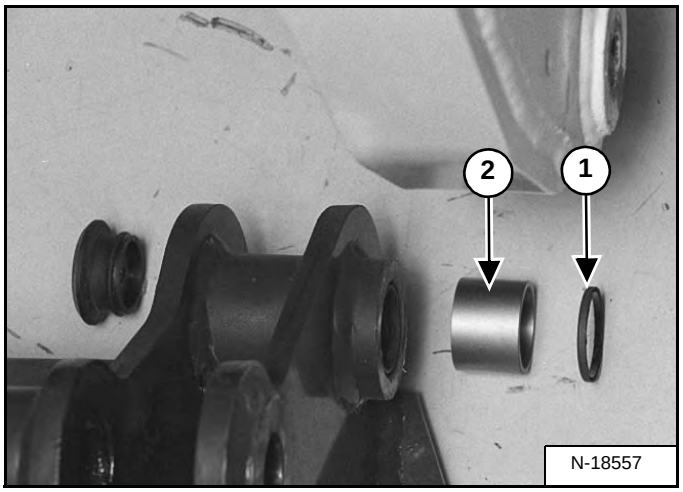


Remove the shoulder harness retractor (Item 1) **[Figure 50-30-16]**

Installation: Line up the bolt (Item 1) **[Figure 50-30-15]** with the mounting bracket (Item 2) **[Figure 50-30-16]** on the inside of the cab.

Pivot Pin Bushing And Seal Removal And Installation

Figure 50-41-16



Remove the Power Bob-Tach. (See Removal And Installation on Page 50-41-1.)

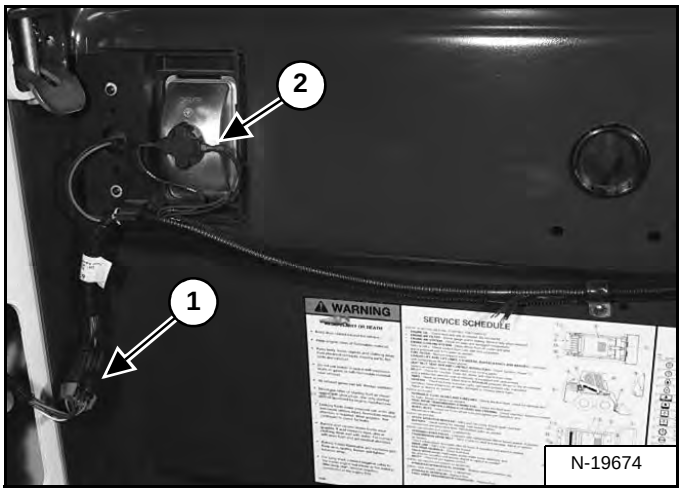
Use a seal pick to remove seal (Item 1) **[Figure 50-41-16]** on the Bob-Tach.

Remove and replace bushing (Item 2) **[Figure 50-41-16]** with a driver tool and hammer.

REAR DOOR

Removal And Installation

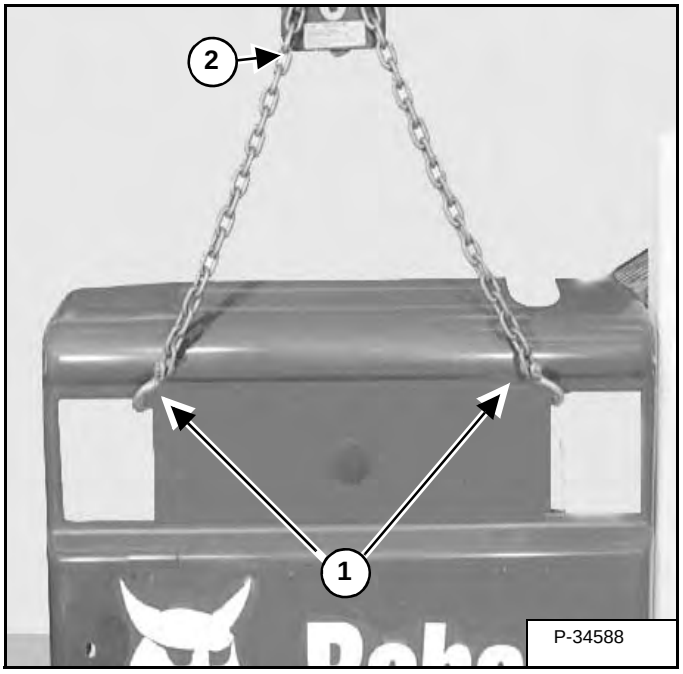
Figure 50-70-1



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.)

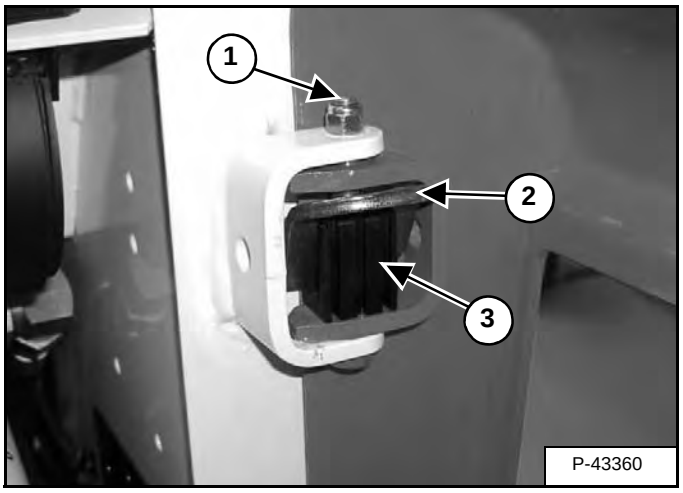
Figure 50-70-2



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) [Figure 50-70-3] in the top hinge as shown.

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.

Installation: Reverse the removal procedure to install the rear door.

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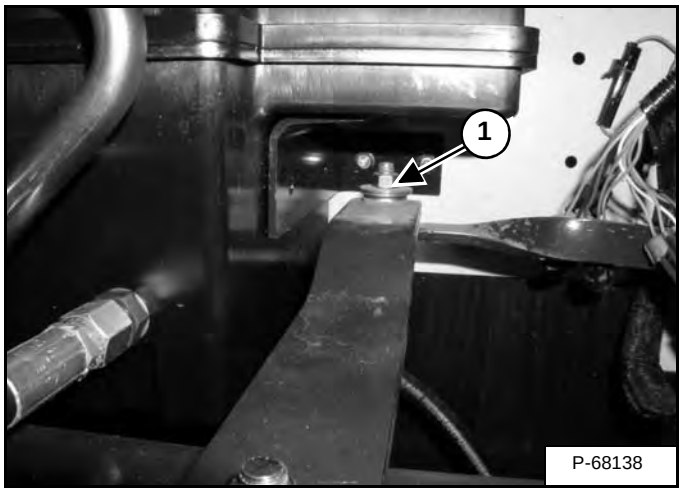
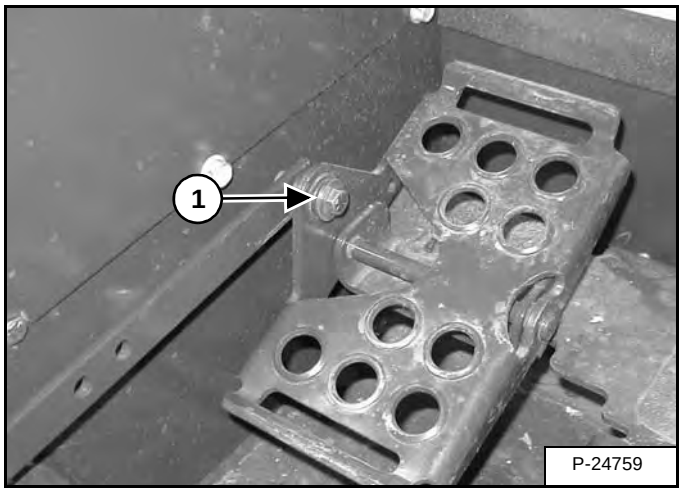
Linkage Removal And Installation

Figure 50-90-3



Remove the bolt and nut (Item 1) **[Figure 50-90-3]** to disconnect the lift pedal linkage from the crossbar.

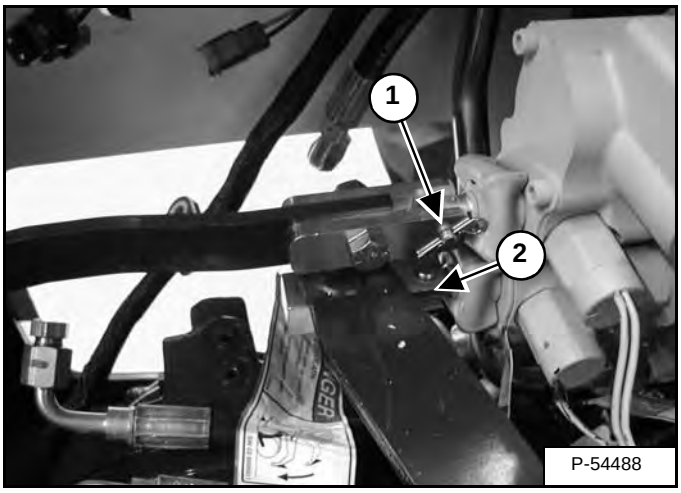
Figure 50-90-4



Remove the bolt and nut (Item 1) **[Figure 50-90-4]** to disconnect the lift foot pedal.

Remove and replace foot pedal linkage as needed.

Figure 50-90-5

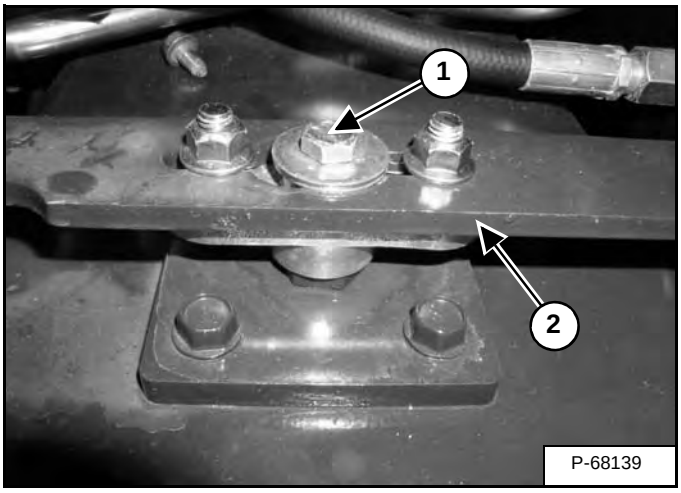


Remove the hairpin clip and cross-pin (Item 1) **[Figure 50-90-5]** from the control valve tilt spool.

Remove the hairpin clip and cross-pin (Item 2) **[Figure 50-90-5]** from the control valve lift spool.

Disconnect the crossbar from the control valve.

Figure 50-90-6



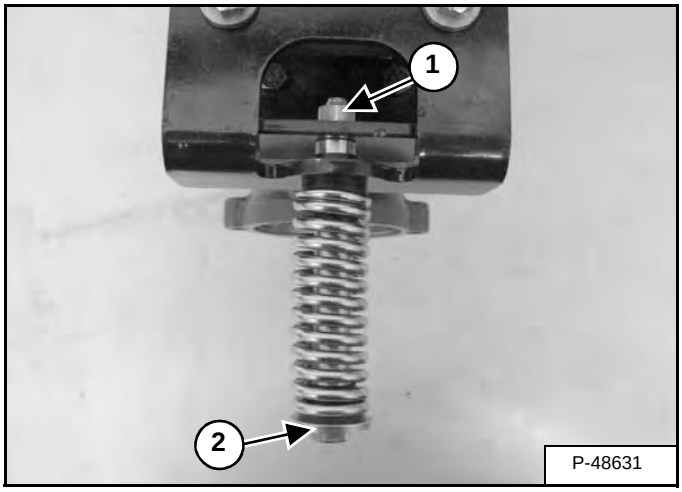
Remove the crossbar pivot bolt (Item 1) **[Figure 50-90-6]**.

Remove the crossbar from the pivot (Item 2) **[Figure 50-90-6]**.

Installation: Check the nylon bushing for wear and replace as needed. The nylon bushing is located between the crossbar mount and the crossbar.

Linkage Removal And Installation (Cont'd)

Figure 50-100-14

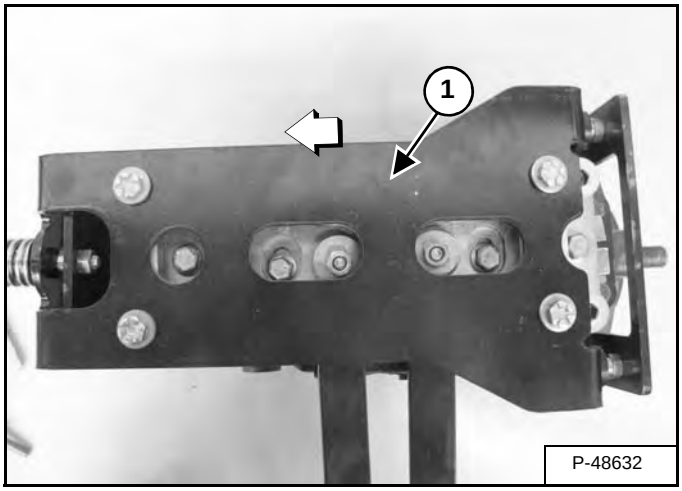


Remove the nut (Item 1) from the end of the centering spring shoulder bolt (Item 2) **[Figure 50-100-14]**.

Remove the bolt / spring assembly.

Installation: Tighten the centering spring bolt and a **NEW** lock nut to 25 - 28 ft.-lb. (34 - 38 N•m) torque.

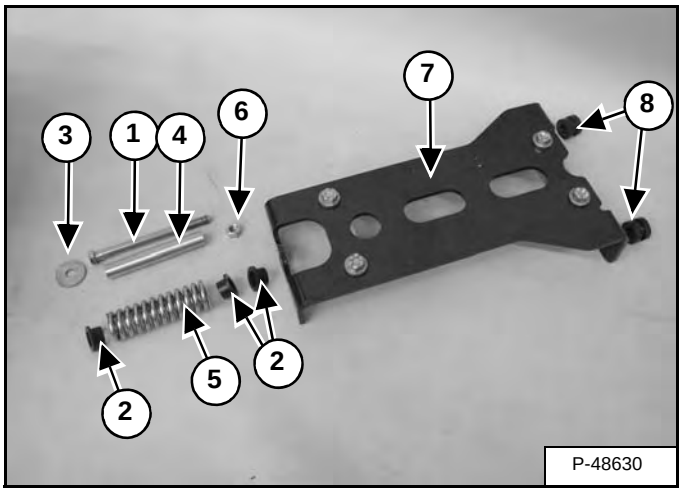
Figure 50-100-15



Slide the centering plate (Item 1) **[Figure 50-100-15]** to the right to remove it from the hydrostatic pumps.

NOTE: Directions are shown and stated as if you were sitting in the operator's seat.

Figure 50-100-16

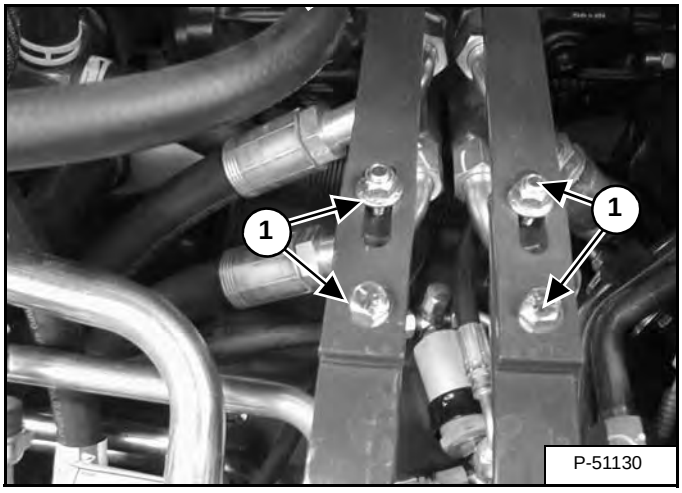


The centering plate / centering spring assembly consists of the following parts:

ITEM	DESCRIPTION
1	Bolt
2	Bushings
3	Washer
4	Bushing Spacer
5	Spring
6	Lock Nut
7	Centering Plate
8	Guide Bushings

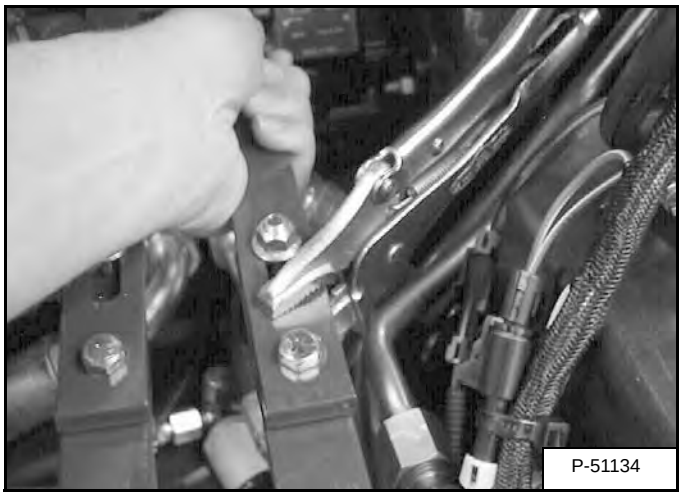
Linkage Travel (Adjusting) (Cont'd)

Figure 50-100-39



Loosen the two bolts and nuts (Item 1) **[Figure 50-100-39]** on each steering linkage bar.

Figure 50-100-40



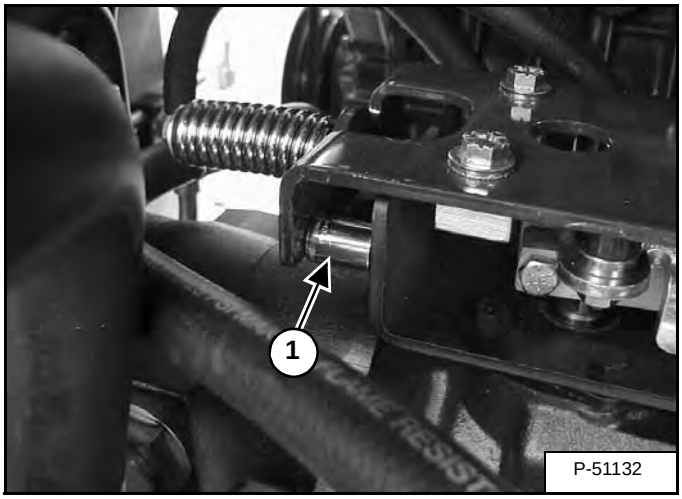
Move the left control lever to the full forward position, then pull forward on the left rear linkage bar until the pintle arm is rotated to the front as far as possible **[Figure 50-100-40]**. Use a locking plier, clamp the two linkage bars together.

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

Check the lever movement to make sure that the pintle arm and the control lever are both at full stroke at the same time. This will allow for maximum forward speed.

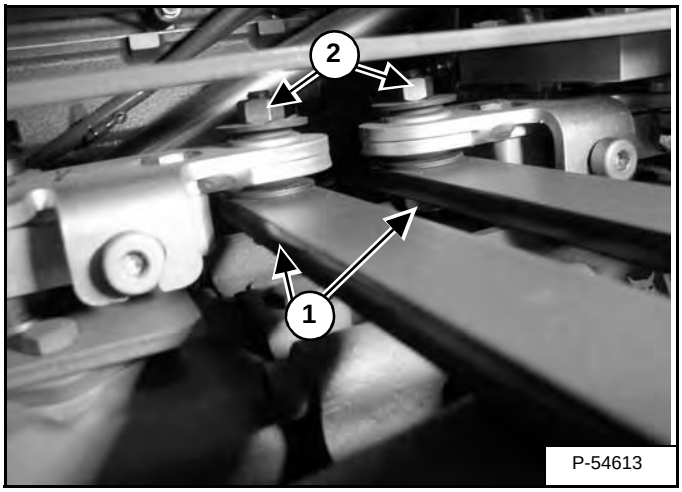
Repeat the linkage travel adjustment procedure for the right side linkage.

Figure 50-100-41



Remove the spacer (Item 1) **[Figure 50-100-41]**.

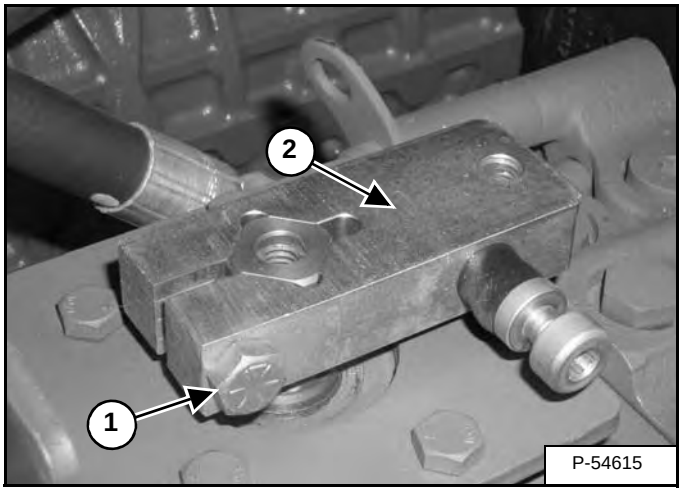
Figure 50-100-42



Tighten the two bolts (Item 1) and nuts (Item 2) to 35 - 40 ft.-lb. (47,5 - 54,2 N•m) **[Figure 50-100-42]**.

Linkage Removal And Installation (Cont'd)

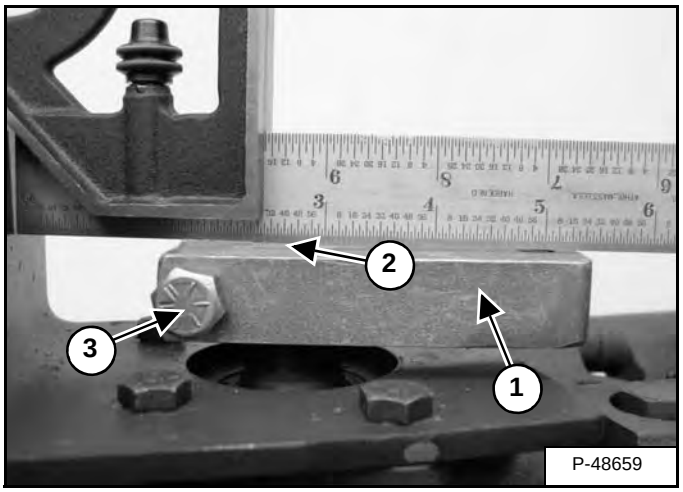
Figure 50-101-21



Loosen the bolt (Item 1) **[Figure 50-101-21]**.

Remove the pintle base (Item 2) **[Figure 50-101-21]**.

Figure 50-101-22



NOTE: When installing the pintle base (Item 1) onto the pump shaft, the cutouts on the pump shaft will not line up with the bolt (Item 3) [Figure 50-101-22].

Installation: Install the pintle base (Item 1) onto the pump shaft (Item 2) **[Figure 50-101-22]**. The top of the pintle base should be level with the top of the pump shaft. Tighten the bolts to 35 - 40 ft.-lb. (47,5 - 54,2 N•m) torque.

NOTE: After installing the linkage onto the hydrostatic pumps the linkage neutral adjusting procedure must be performed. (See Linkage Neutral (Adjusting) on Page 50-101-11.)

CONTROL PANEL (S/N 532016717 & BELOW AND 532111676 & BELOW) (SJC)

Description

The control panel has two electronic handles that control the steering, lift and tilt functions. There is no mechanical linkages connecting to the hydrostatic pumps or the control valve.

The control panel is connected to the lower main frame and wraps around the operator seat.

The control panel is now common between the large frame and the medium frame loaders.

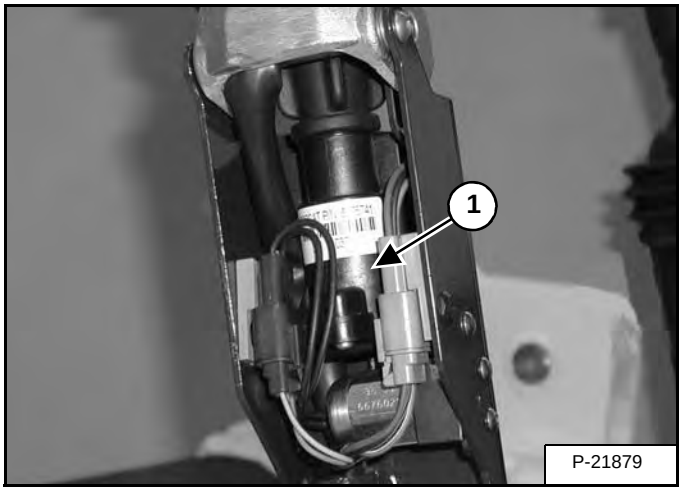
CONTROL HANDLE / LEVER (ACS)

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

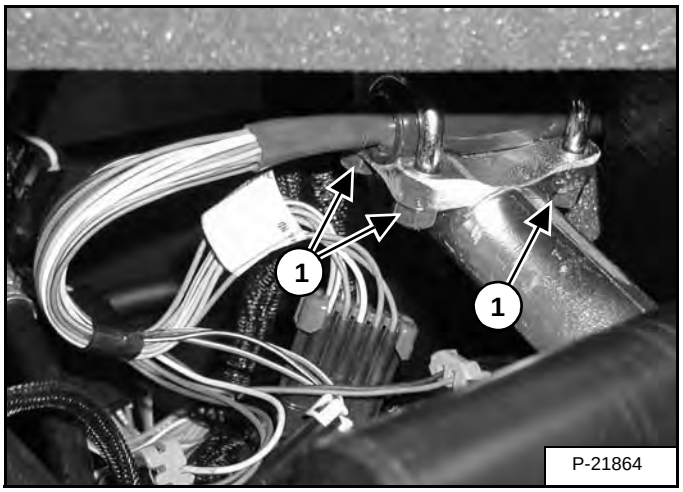


Handle Sensor (Item 1) **[Figure 50-111-1]**.

NOTE: The calibration procedure must be followed when replacing handle sensor, foot pedal sensor, actuator or ACS Controller. (See Lift And Tilt Calibration (ACS) on Page 60-160-3.)

Handle Sensor Removal And Installation

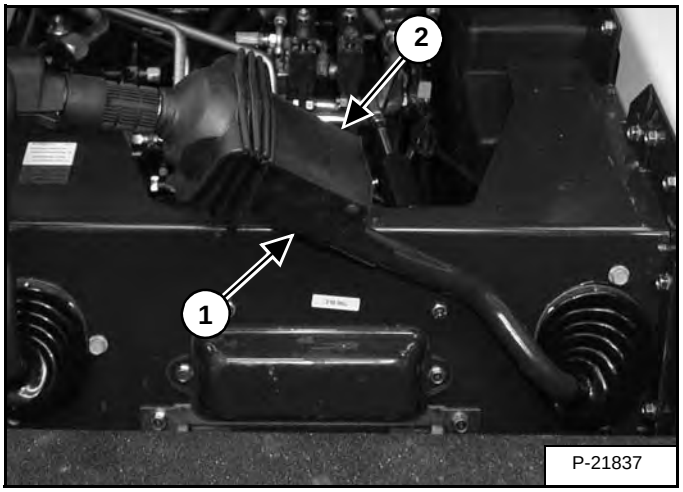
Figure 50-111-2



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]**.

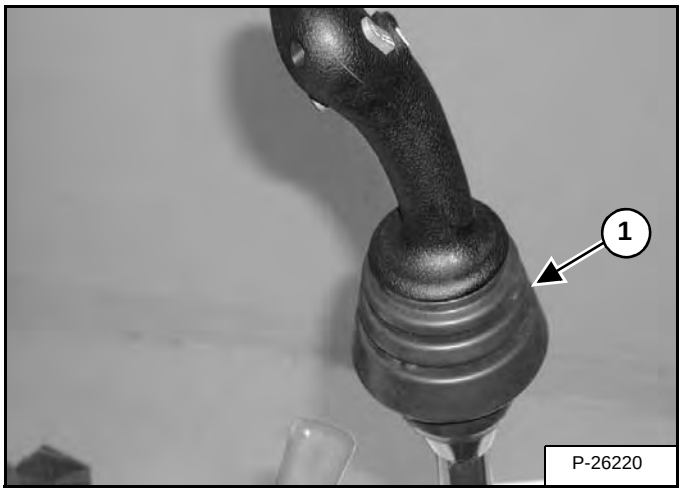
Removal And Installation (S/N 532011001-532013987, S/N 532111001 - 532111169)

When replacing the joystick assemblies, they are available as a complete assembly with the boot and lever already attached. This procedure us shown so the electrical connections can be checked at the bottom of the joystick, if suspected to be loose or disconnected

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

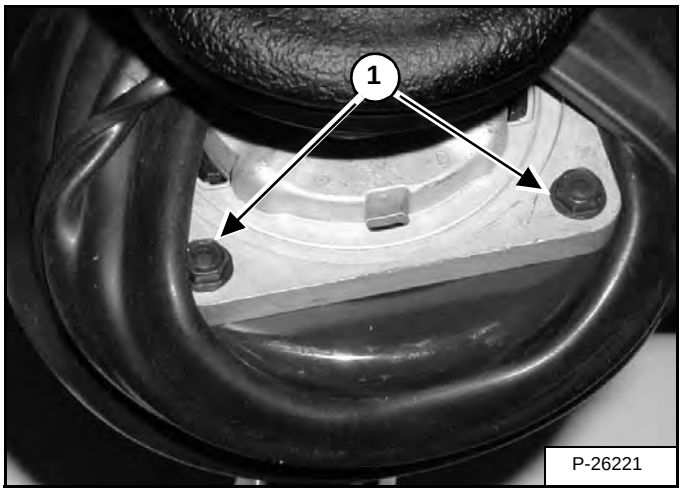
Raise the operator cab. (See Raising on Page 10-30-1.)

Figure 50-112-5



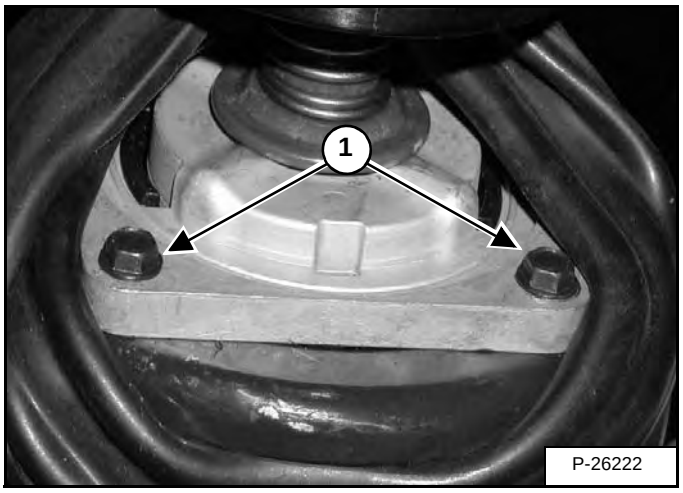
Roll the joystick rubber boot (Item 1) **[Figure 50-112-5]** down from the joystick handle.

Figure 50-112-6



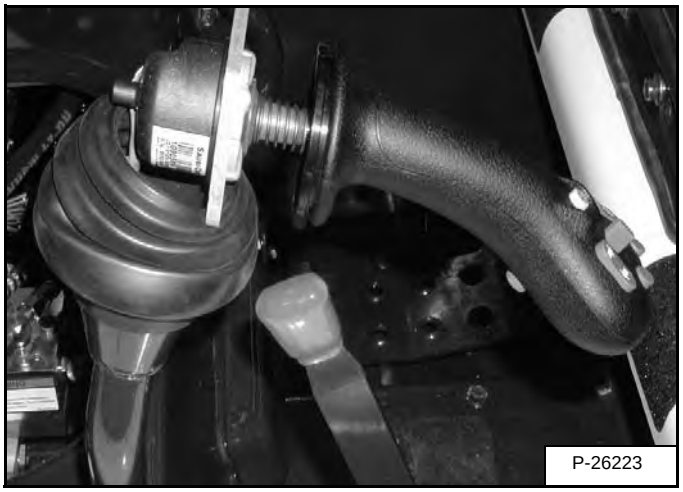
Remove the two inside joystick mount bolts (Item 1) **[Figure 50-112-6]**.

Figure 50-112-7



Remove the two outside joystick mount bolts (Item 1) **[Figure 50-112-7]**.

Figure 50-112-8

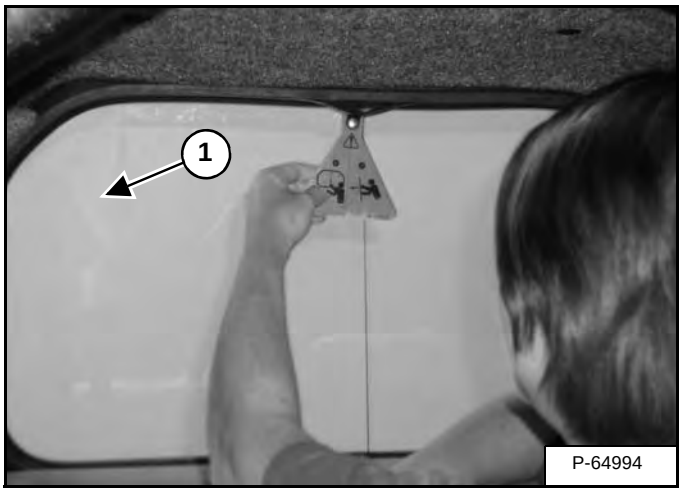


Remove the joystick from the rubber boot **[Figure 50-112-8]**.

WINDOW (REAR)

Removal

Figure 50-130-1



Pull on the tag (Item 1) **[Figure 50-130-1]** on the rear window to remove the rubber cord.

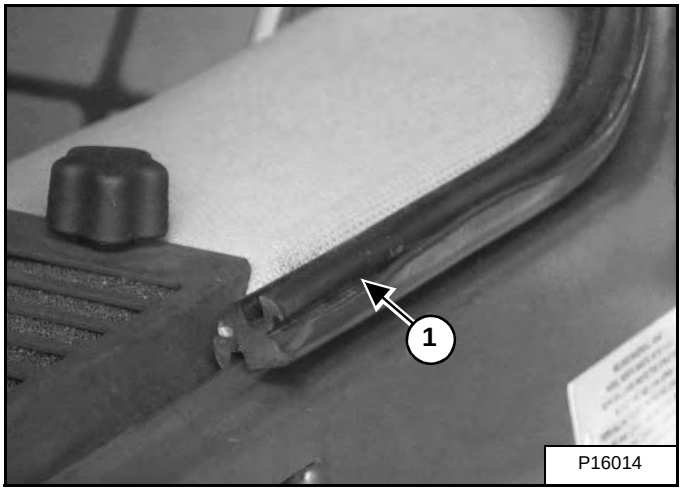
Using gloves, push the rear window out the rear of the operator cab.

NOTE: If rear window was broke, remove all glass fragments from the rubber molding before installing a new window.

Installation

Clean the area before installing the rubber molding.

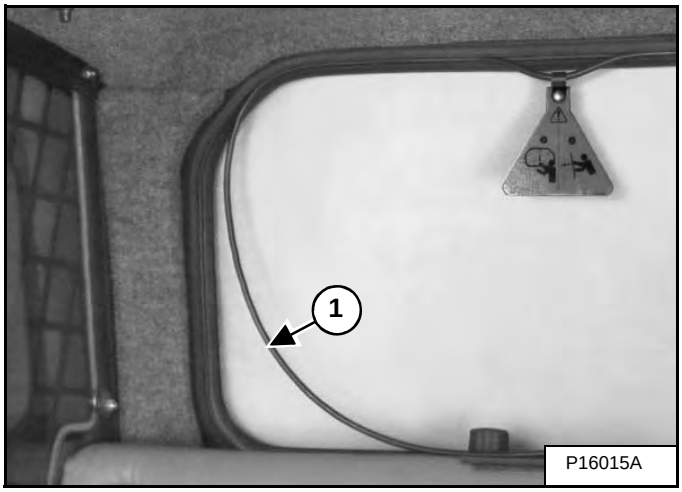
Figure 50-130-2



Install the rubber molding (Item 1) **[Figure 50-130-2]** around the edge of the rear opening in the operator cab.

If replacing the rubber molding (Item 1) **[Figure 50-130-2]** cut off the excess molding.

Figure 50-130-3



Apply liquid soap on the rubber cord to make installation easier. Install the rubber cord (Item 1) **[Figure 50-130-3]** into the molding on the inside of the operator cab.

Install the safety tag in the top center of the cord.

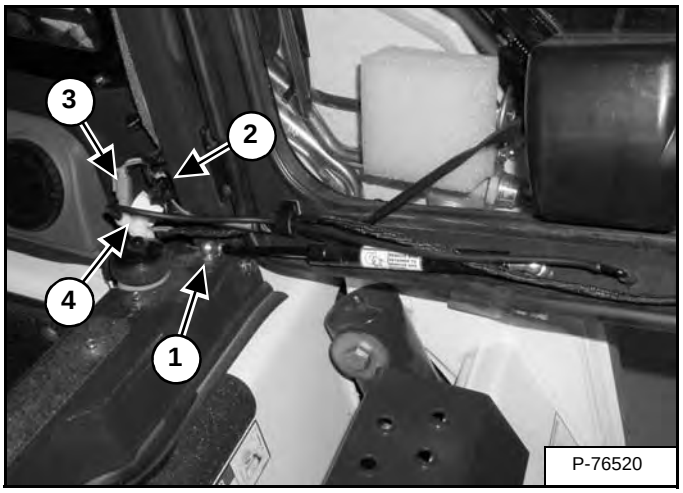
CAB DOOR

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



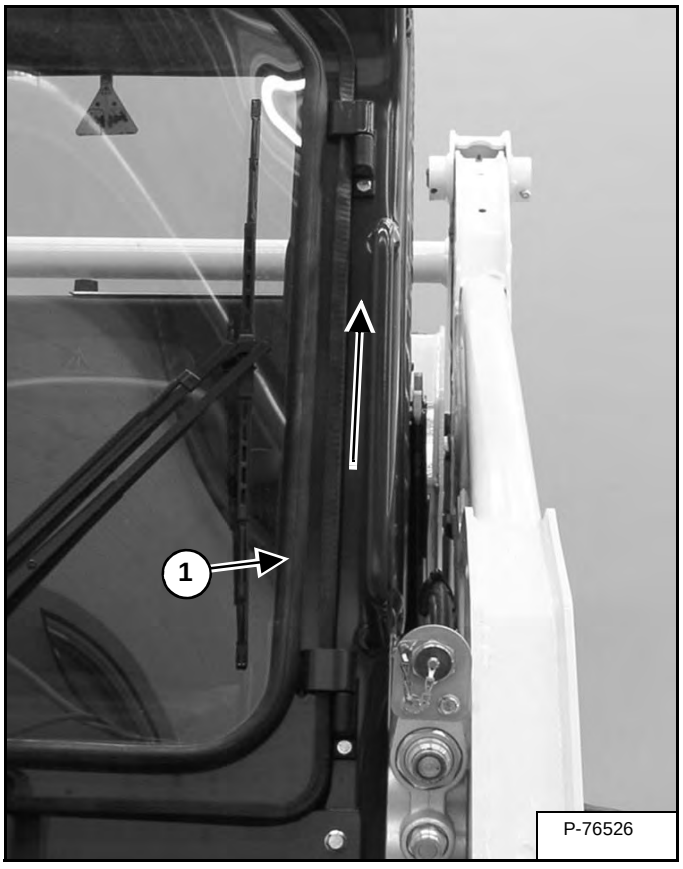
Open the cab door.

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
(MAINFRAME)
T300 (S/N 532013988 AND ABOVE)
(S/N 532111170 AND ABOVE)

(PRINTED MAY 2007)

7123800

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SEE OPTIONS SHEET

C350 FUEL HARNESS CONN

C362 TO REAR AUX HARNESS

LIFT SPOOL LOCK (NOT USED WITH ACS)

TILT SPOOL LOCK (NOT USED WITH ACS)

HYD LOCK 9.8 OHM 12 V

BUCKET POSITION 9.8 OHM 12 V

DIFF SWITCH HARNESS 6728626 — HYD FAN DIFF SWITCH

FRONT BASE 3.3 OHM PWM

FRONT ROD 3.3 OHM PWM

HYD TEMP SENDER 500-3000 OHM

AIR FILTER SWITCH

C106 ENGINE SPEED SENSOR

C104 ENG COOLANT SENSOR 500-3000 OHM

C109 STARTER

S/R ADAPTER HARNESS 6733370

C110 ALTERNATOR — EXCITATION

C408 CAB-MFR HARNESS CONN

J2

J1

C441 TWO SPEED CONN

C437 TWO SPEED MAKEUP CONN

C446 HYD FAN 7.2 OHM 12 V

C102 HYD CHARGE PRESSURE 0.5 - 7.5 V

HYD OIL FILTER SWITCH — C136 — DIFF SWITCH HARNESS 7115893

C107 ENGINE OIL PRESSURE 0.5 - 7.5 V

BRAKE SOLENOID 9.8 OHM 12 V — C308 — C425 — HARN BRAKE ADAPTER 6716789

FUEL SHUTOFF SOLENOID 24.5 OHM 0.33 OHM — C101 — PULL / HOLD / GND

C632 EVAPORATOR (AC PRESS SWITCH)

C411 LEFT HANDLE 5 WAY CONN — CONNECTS TO C407-1 (THIS PAGE)

C407-2 FRONT LIGHT POWER

(SEE ACS SCHEMATIC) (NOT USED WITH SJC OR AWS)

C410 LEFT HANDLE CONN

C409 RIGHT HANDLE CONN

(SEE ACS SCHEMATIC) (NOT USED WITH SJC OR AWS)

LEFT HANDLE

RIGHT HANDLE

TURN SIGNAL

HORN

SIDE SHIFT

CTR SKI

FLOAT SKI

JET FLOW TWO SPD

SR CTRL

PWM

C103 TAILGATE CONN

SEE OPTIONS SHEET

(USED FOR EUROPEAN ROADLIGHT KIT) (SEE OPTIONS SHEET)

C478 EURO LIGHT CONN

C404 BACKUP ALARM CONN

C412 TO OPTIONS (ACCESSORY CONNECTOR)

C489 ACCESSORY CONN

CONNECTS TO C407-2 (THIS PAGE)

C407-1 LIGHT PWR CONN

T3 PRE HEATER

MAINFRAME HARNESS 7123800

MAINFRAME GROUNDS

C437 C421 C446 C418 C422 — VIRT87 VIRT70 VIRT80 VIRT69 VIRT71 — 7 — T6 BATT GND

J1 J2 — VIRT74 — 8 — VIRT64

C493 C415 C413 C414 C416 C420 C419 C417 — VIRT79 VIRT78 VIRT77 VIRT76 VIRT56 VIRT55 VIRT63 — 12

C408 C408 C408 C408 C408 — VIRT81 VIRT67 VIRT92 VIRT82 VIRT83 — T8 BATT GND

C493 C103 C101 C423 C426 C350 C126 C409 C489 P7 C425 C410 C441 — VIRT88 VIRT94 VIRT73 VIRT91 VIRT90 VIRT85 VIRT93 VIRT65 VIRT60 VIRT61 VIRT62 VIRT66 VIRT86 — 10 — T1 BATT GND — 9

C104 C405 C355 C102 C350 C107 C106 — VIRT89 VIRT57 VIRT68 VIRT58 VIRT75 VIRT72 VIRT84 — VIRT59 — J1 BOB CONTROLLER GROUND PIN 23

FUSE RELAY CENTER

FUSE 4 25 A — GLOW PLUG — FUSE 6 30 A — FUEL PULL — FUSE 5 30 A — TRACTION LOCK — FUSE 7 15 A — STARTER — FUSE 1 25 A — HVAC — FUSE 12 25 A — SWITCHED POWER — FUSE 11 25 A — REAR LIGHT — FUSE 3 15 A — FRONT WORK LIGHT — FUSE 2 15 A

FUSE 8 5 A — FUSE 10 25 A — FUSE 9 25 A

C412 HANDLE CONN

C126 HORN CONN

BATTERY

MEGAFUSE 100 AMP

C426 CAN CONN

(REMOTE START TOOL / ACD CONNECTOR)

TO SJC / AWS / ACS HARNESS

C492

TO SJC / AWS / ACS HARNESS

C493

6718034 (2)

6702444 (6)

6679820 (8)

6654806 (3)

6663289

FUSE 5 TRACTION 30A	FUSE 1 HVAC 25A	HVAC	FRONT & MARKER LIGHT	REAR LIGHT	SWITCH POWER
FUSE 6 FUEL PULL 30A	FUSE 2 F.R & MK LT 15A				
FUSE 7 PWR PLUG 15A	FUSE 3 RR LT 15A	GLOW PLUG / PRE-HEATER	FUEL PULL	TRACTION PULL	STARTER
FUSE 8 SWITCHED PWR 5A	FUSE 4 COMPUTER 25A				

FUSE 9 SUBARTICULATE	25A	
FUSE 10 INSTRUMENTS & MISC	25A	
FUSE 11 ALT & MISC	25A	
FUSE 12 ATTCHMNT	25A	

WIRING SCHEMATIC

OPTIONS

T300 (S/N 532011001 AND ABOVE)
(S/N 532111001 AND ABOVE)

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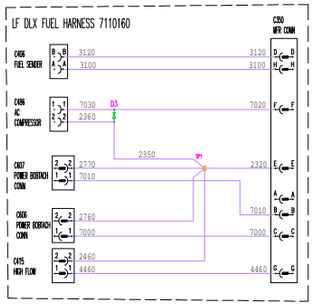
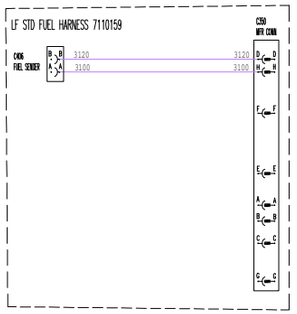
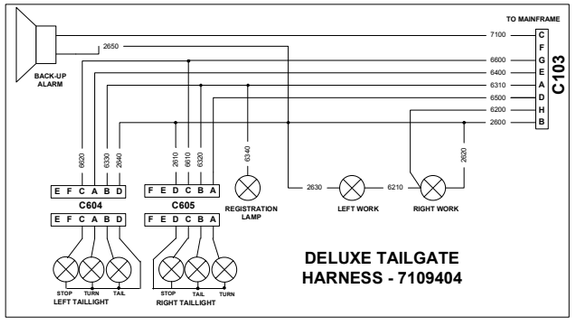
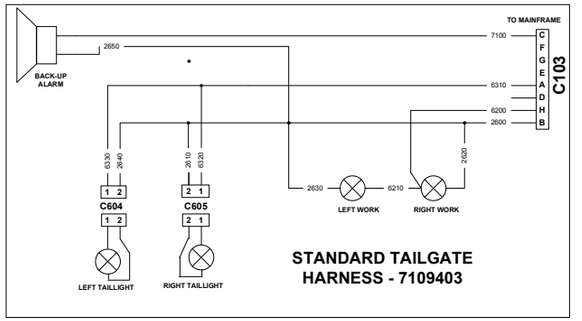
(PRINTED MAY 2007)
V-0761



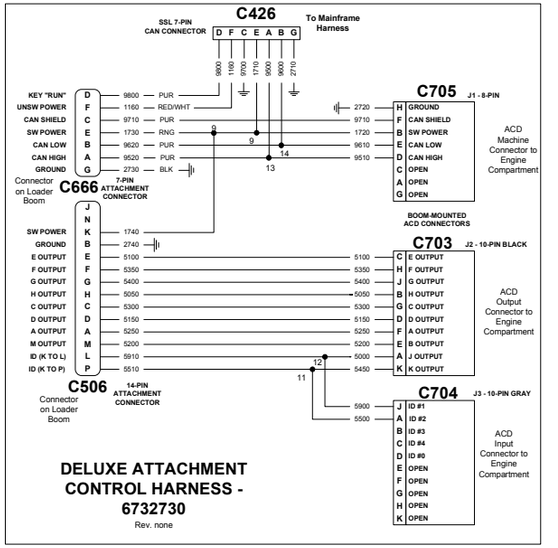




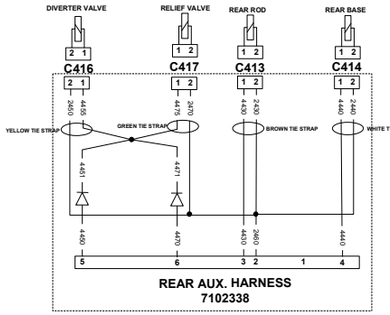
DELUXE TAILGATE HARNESS - 7109404



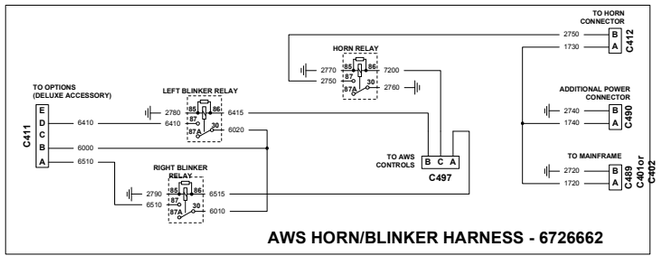
STANDARD TAILGATE HARNESS - 7109403



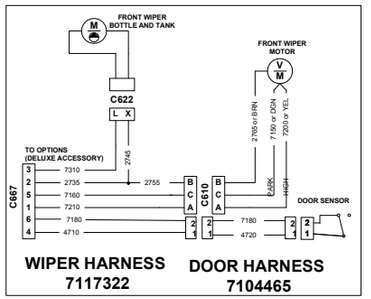
DELUXE ATTACHMENT CONTROL HARNESS - 6732730
Rev. none



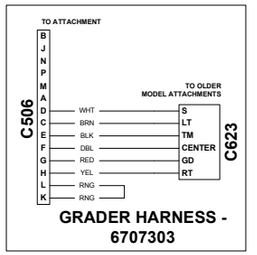
REAR AUX. HARNESS 7102338



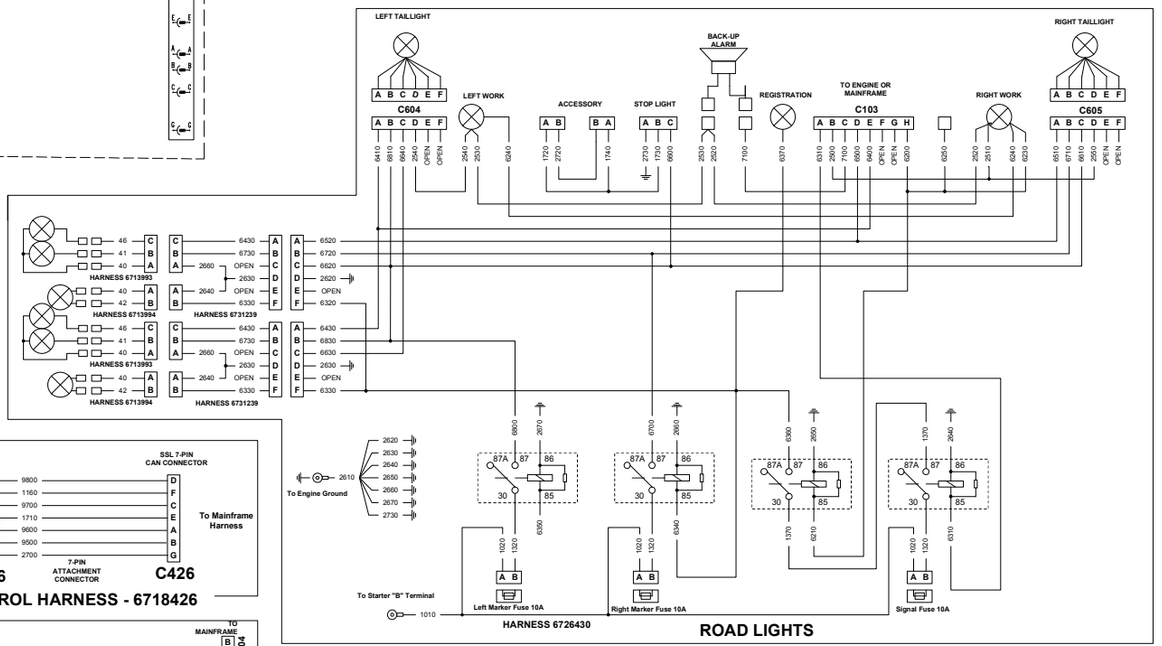
AWS HORN/BLINKER HARNESS - 6726662



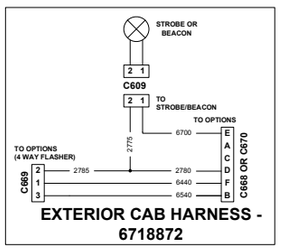
WIPER HARNESS 7117322
DOOR HARNESS 7104465



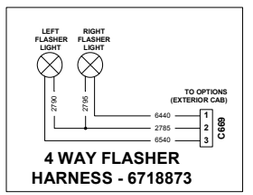
GRADER HARNESS - 6707303



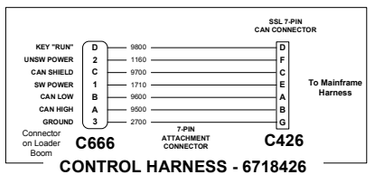
ROAD LIGHTS



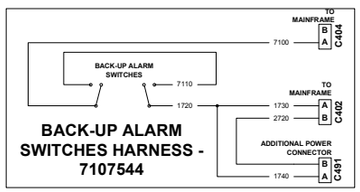
EXTERIOR CAB HARNESS - 6718872



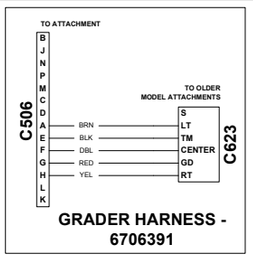
4 WAY FLASHER HARNESS - 6718873



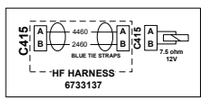
CONTROL HARNESS - 6718426



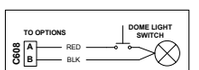
BACK-UP ALARM SWITCHES HARNESS - 7107544



GRADER HARNESS - 6706391



HF HARNESS 6733137



DOME LIGHT

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

WIRES CONNECT BY LETTER ACROSS CONNECTORS

SOME CONNECTOR BODIES NOT SHOWN FOR DRAWING CLARITY

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

Solenoid Testing

Figure 60-10-8

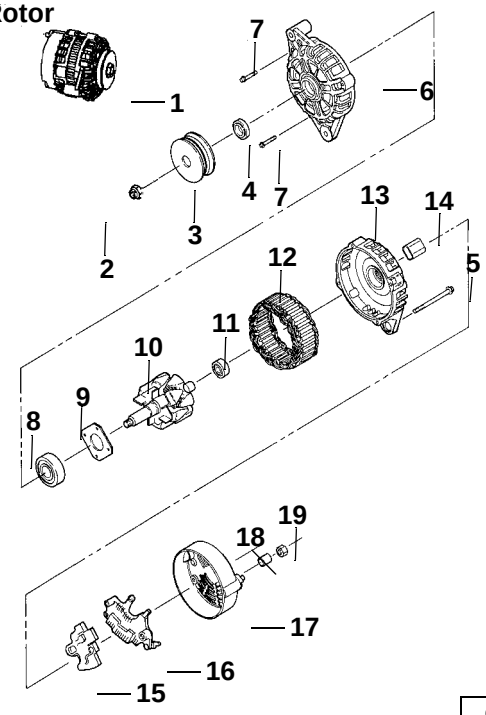
Use a test meter to measure coil resistance **[Figure 60-10-8]**. Coil wires do not have polarity. Correct resistance for the pressure relief (small) coil is 7-10 ohm and the other coils 5-8 ohms.

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

Parts Identification

Figure 60-30-9

1. Alternator
2. Nut
3. Pulley
4. Spacer
5. Bolt
6. Bracket
7. Bolt
8. Bearing
9. Retainer
10. Rotor
11. Bearing
12. Stator
13. Bracket
14. Sleeve
15. Regulator
16. Rectifier
17. Cover
18. Spacer
19. Nut



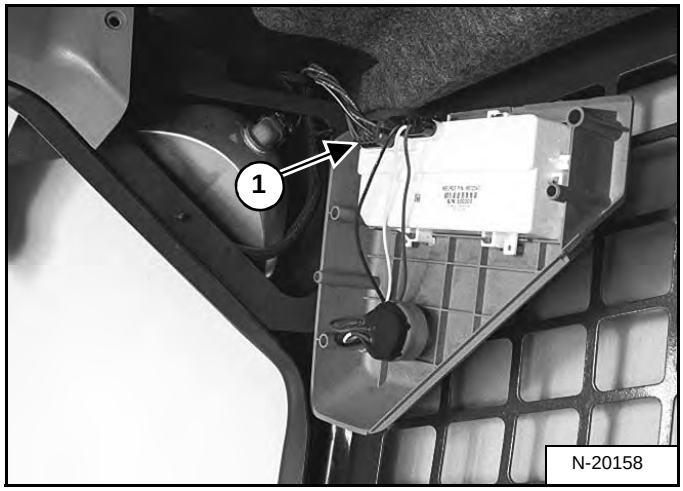
Removal And Installation (Left And Right)

Figure 60-50-8

Remove the three mounting bolts (Item 1) **[Figure 60-50-8]**.

Installation: Be careful to not overtighten the instrument panel mounting bolts to prevent stripping of the threaded holes in the panels.

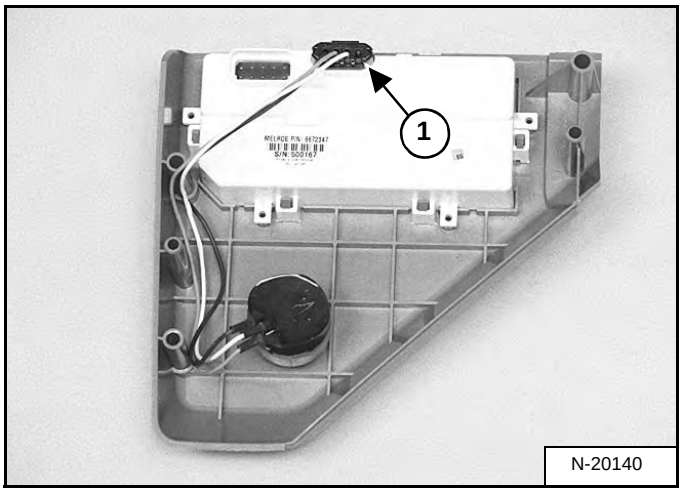
Figure 60-50-9



Pull the right instrument panel down and disconnect the wire harness connector (Item 1) **[Figure 60-50-9]** from the panel.

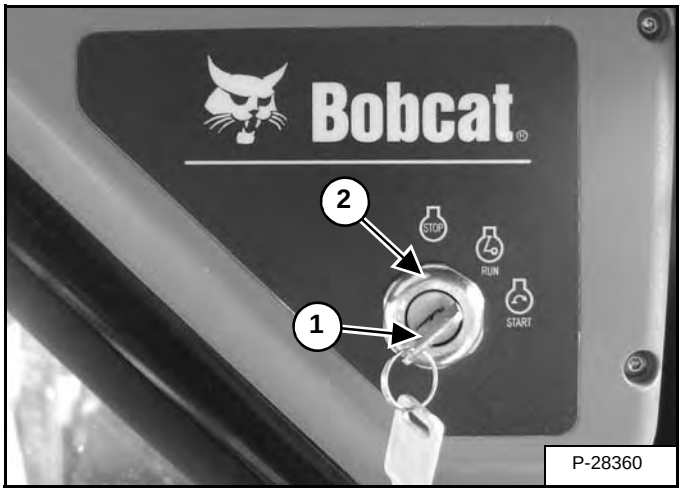
Remove the panel from the loader cab.

Figure 60-50-10



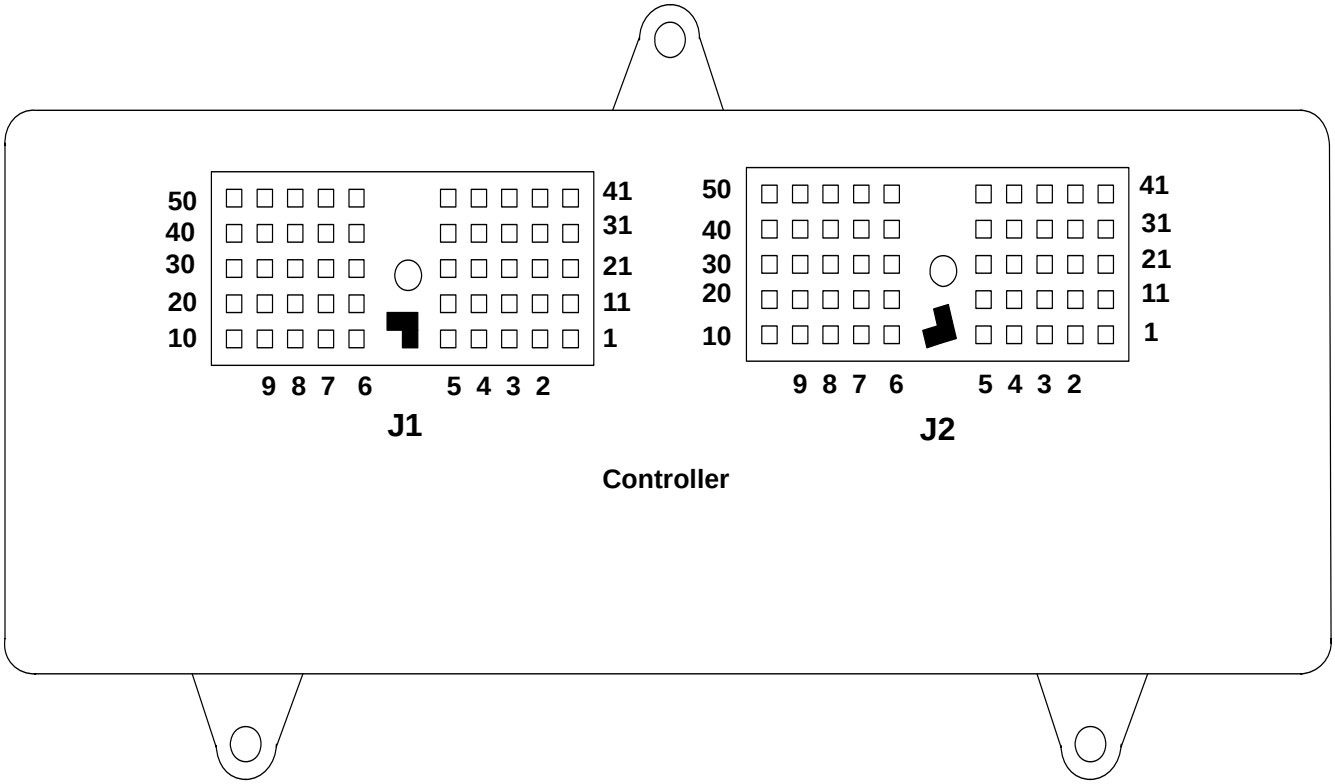
Disconnect the key switch wiring harness (Item 1) **[Figure 60-50-22]** from the back of the control panel.

Figure 60-50-11

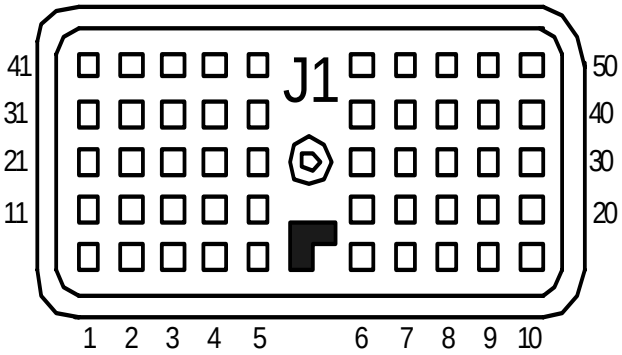


Remove the ignition key (Item 1) from the switch. Remove the ignition switch retaining nut (Item 2) **[Figure 60-50-23]** from the switch.

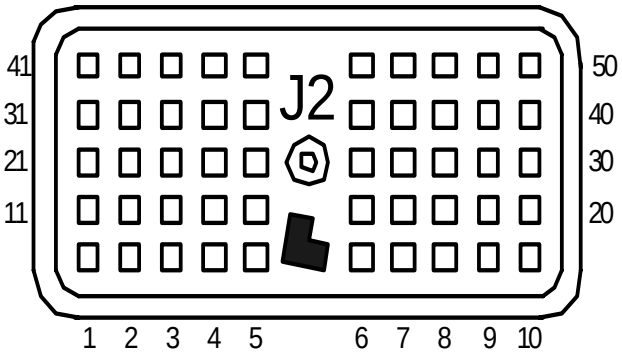
Connector Identification



Harness Connector View



Harness Connector View



V-171/V-17

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

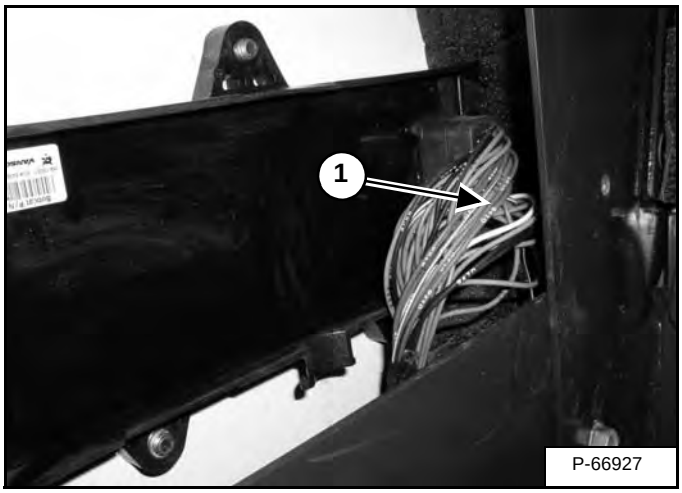
Raise the lift arms and install an approved lift arm support device. (See Installing on Page 10-20-1.)

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

Remove the engine speed control. (See Removal And Installation on Page 70-20-1.)

Remove the inside access panels (right side). (See Removal And Installation (Right) on Page 50-121-2.)

Figure 60-71-1



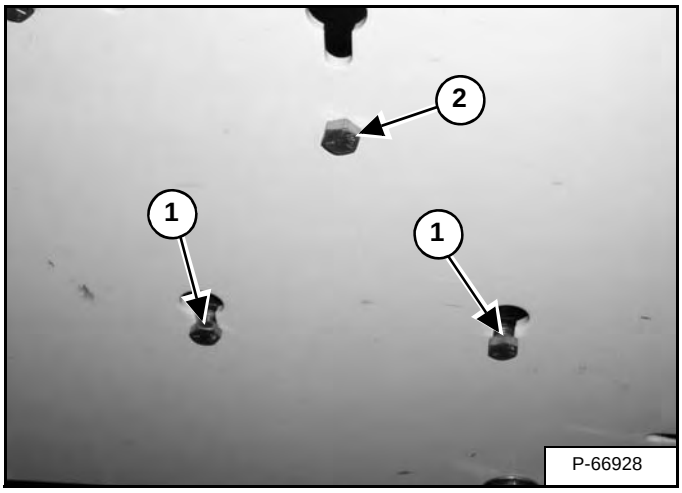
Remove the harness connector bolt (Item 1) **[Figure 60-71-1]**.

Installation: Tighten the connector mounting bolts to 30 - 35 in.-lb. (3,39 - 3,96 N•m) torque.

Unplug the harness connector from the controller.

NOTE: The connector is keyed and will only plug in one way.

Figure 60-72-2



Loosen the two controller mounting bolts (Item 1) **[Figure 60-72-2]** on the right side fender.

Remove the controller mounting bolt (Item 2) **[Figure 60-72-2]**.

Installation: Tighten the mounting bolts to 12 - 14 ft.-lb. (16 - 19 N•m) torque.

Lift and remove the system controller from the fender.

Service Codes List (Cont'd)

CODE		CODE	
65-02	Workgroup lockout error on	75-74	Left wheel speed uncommanded motion
65-03	Workgroup lockout error off	75-75	Right wheel speed uncommanded motion
65-05	Workgroup lockout short to battery	75-76	No communication from ACS Controller
65-06	Workgroup lockout short to ground	75-77	Left speed sensor out of range high
65-07	Workgroup lockout open circuit	75-78	Right speed sensor out of range high
		75-79	Left speed sensor out of range low
66-05	Pilot pressure short to battery	75-80	Right speed sensor out of range low
66-06	Pilot pressure short to ground	75-85	5 volt sensor supply 1 out of range high
		75-91	Left swash plate sensor reversed
74-72	Bobcat controller in boot code	75-92	Right swash plate sensor reversed
74-73	Left hand panel system RX error	75-93	Unresponsive right speed sensor
		75-94	Unresponsive left speed sensor
75-04	No communication from Drive Controller	75-95	Left speed sensor reversed direction
75-05	Left joystick X-Axis not in neutral	75-96	Left speed sensor reversed direction
75-07	Left joystick Y-Axis not in neutral	75-98	Controller in Calibration Mode
75-08	Right joystick Y-Axis not in neutral		
75-09	ISO/H pattern switch short to ground or battery	76-73	Left display panel RX error
75-17	Left swash plate not in neutral		
75-18	Right swash plate not in neutral	77-48	Key Switch - Multiple
75-19	Left joystick X-Axis out of range high		
75-21	Left joystick Y-Axis out of range high	78-74	Door/Transport Lock - Open/Active
75-22	Right joystick Y-Axis out of range high		
75-27	Left swash plate out of position		
75-28	Right swash plate out of position		
75-29	Left joystick X-Axis out of range low		
75-31	Left joystick Y-Axis out of range low		
75-32	Right joystick Y-Axis out of range low		
75-37	5 volt sensor supply 1 out of range low		
75-39	Left swash plate sensor out of range high		
75-40	Left swash plate sensor out of range low		
75-41	Right swash plate sensor out of range high		
75-42	Right swash plate sensor out of range low		
75-43	Left forward drive solenoid error ON		
75-44	Left reverse drive solenoid error ON		
75-45	Right forward drive solenoid error ON		
75-46	Right reverse drive solenoid error ON		
75-52	Backup alarm error ON		
75-53	Left forward drive solenoid error OFF		
75-54	Left reverse drive solenoid error OFF		
75-55	Right forward drive solenoid error OFF		
75-56	Right reverse drive solenoid error OFF		
75-66	Backup alarm error OFF		
75-67	No communication from Bobcat Controller		
75-69	Battery voltage out of range high		
75-70	Interrupted power (also occurs after software update)		
75-71	Battery voltage out of range low		
75-72	Drive pump not calibrated		
75-73	ISO/H pattern switch flipped while operating		

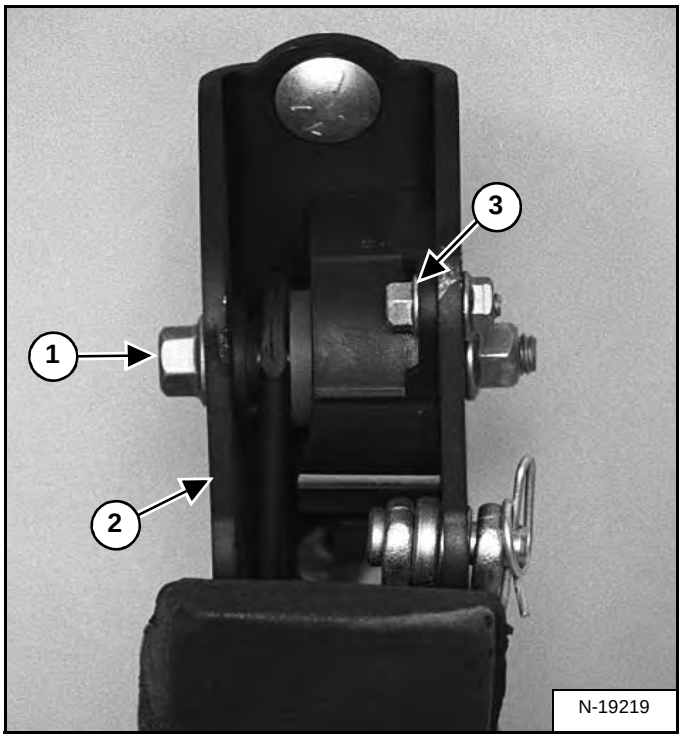
SEAT BAR SENSOR (CONT'D)

Removal And Installation

Figure 60-110-5

Remove the seat bar (Item 1) **[Figure 60-110-5]** from the loader. (See Removal And Installation on Page 50-10-1.)

Figure 60-110-6

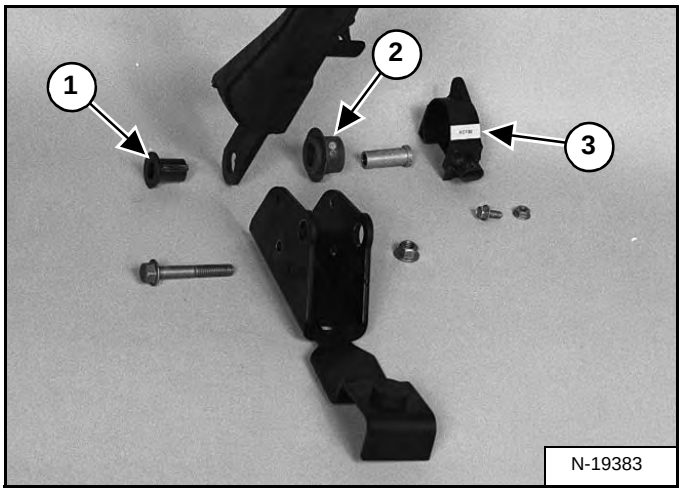


Remove the mounting bolt (Item 1) from the seat bar mount (Item 2) **[Figure 60-110-6]**.

Installation: Tighten the mounting bolt to 50 - 70 in.-lb. (5,6 - 7,9 N•m) torque.

Remove the sensor mounting bolt (Item 3) **[Figure 60-110-6]** and nut.

Figure 60-110-7



Remove the keyed plastic bushing (Item 1), magnetic bushing assembly (Item 2) and sensor bracket (Item 3) **[Figure 60-110-7]**.

IMPORTANT

Be careful to not overtighten the sensor mounting bolt and nut to prevent breakage of the sensor.

I-2088-1095

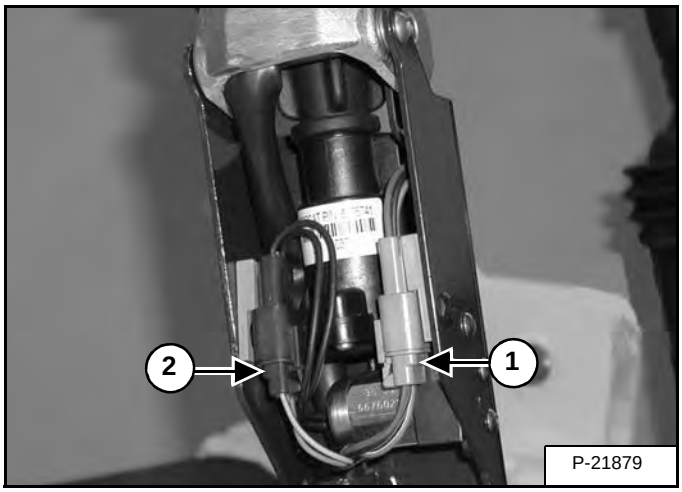
Installation: Be sure the tabs on the pivot bushing are positioned in the slotted hole (Item 1) **[Figure 60-110-7]** of the seat bar

Inspect all parts for damage and wear and replace if necessary.

Reverse the removal procedure to install the seat bar sensor.

Switch Handle Removal

Figure 60-130-4

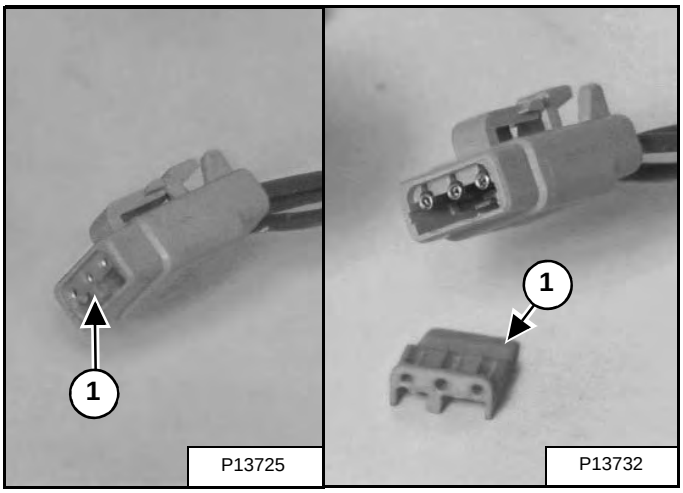


NOTE: Switch handle can be removed and installed while in loader.

Disconnect the harness connector (Item 1) **[Figure 60-130-4]** from the handle sensor connector.

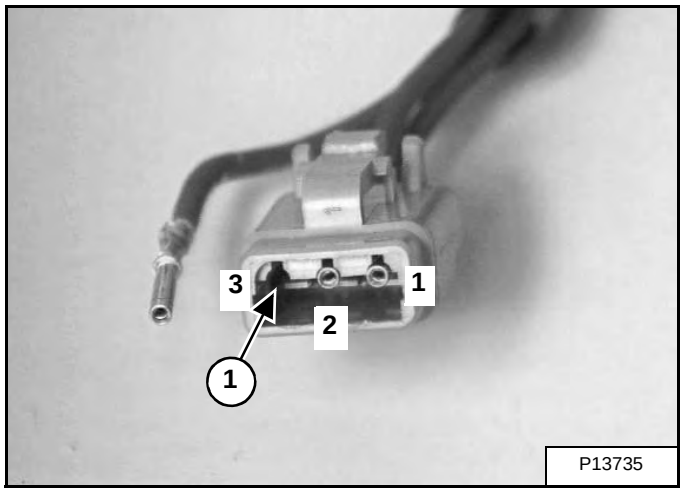
Disconnect the harness connector (Item 2) **[Figure 60-130-4]** from the handle lock solenoid connector.

Figure 60-130-5



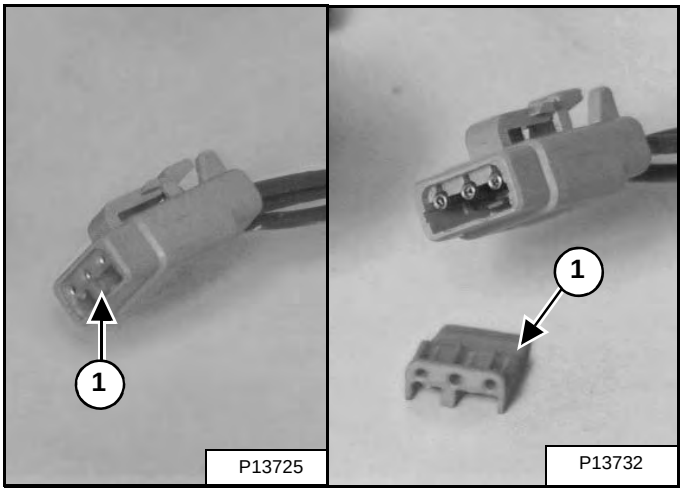
Remove the wedge (Item 1) **[Figure 60-130-5]** from the harness connector (Gray) that connects to the handle sensor connector.

Figure 60-130-6



Using a pointed tool, press down on the tab (Item 1) **[Figure 60-130-6]** and pull the wire from the connector.

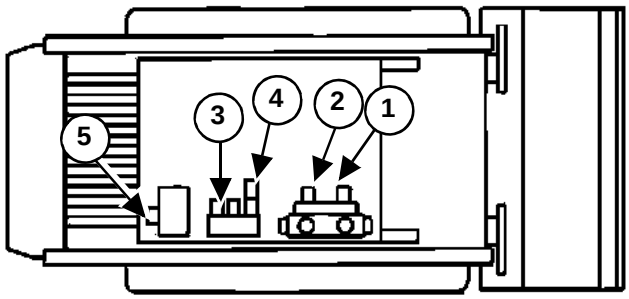
Figure 60-130-7



Remove the wedge (Item 1) **[Figure 60-130-7]** from the harness connector (Black) that connects to the handle lock solenoid connector.

Identification Chart (Cont'd)

T300



Solenoid Number	Hydraulic Coupler	Wiring Number
1	Front Female (Rod)	4330
2	Front Male (Base)	4340
3	Diverter & Bleed	4450/4480
4	Bleed - Rear Male & Female	4430/4440
5	High Flow on Pump	4460

NOTE: Front Auxiliary Pressure Release is accomplished by manually pushing the male and female couplers in at the front auxiliary block.

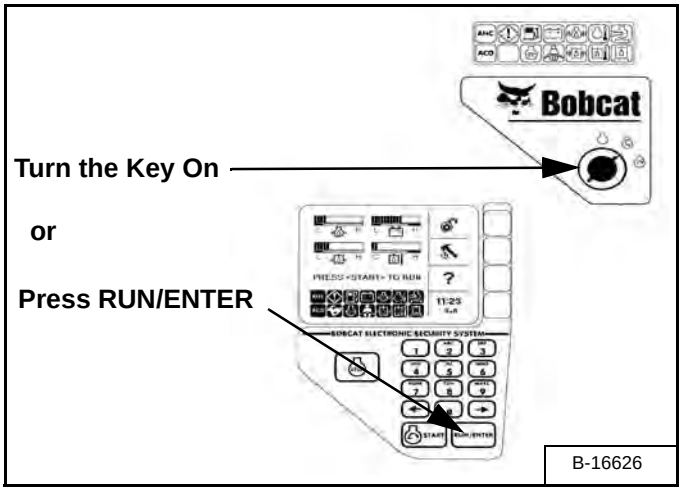
The Hydraulic Pressure Release Button will activate solenoid number 4 at the diverter valve, shut down the loader, and bleed the rear auxiliary (If so equipped.) and also the right side front auxiliary. (If so equipped.)

The High Flow Button in the left side instrument panel must be pushed ON to activate solenoid number 5 at the gear pump.

CALIBRATION (CONT'D)

Lift And Tilt Calibration (ACS) (Cont'd)

Figure 60-160-4

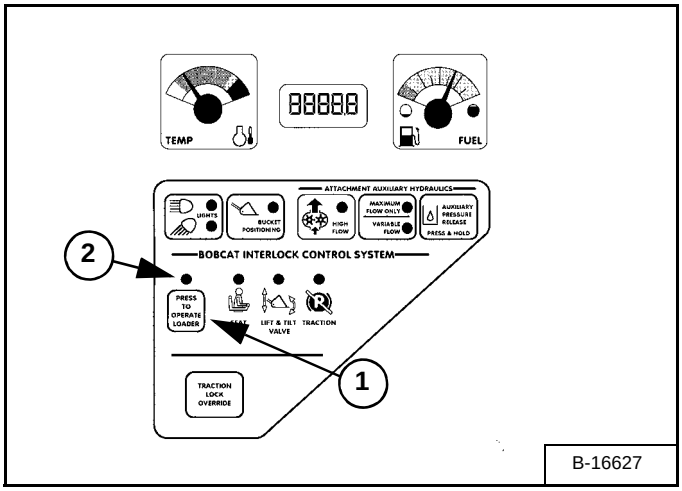


Close the cab door. (If loader is equipped.)

With the seat bar down, turn the ignition key ON (keyless panel press RUN/ENTER) **[Figure 60-160-4]**.

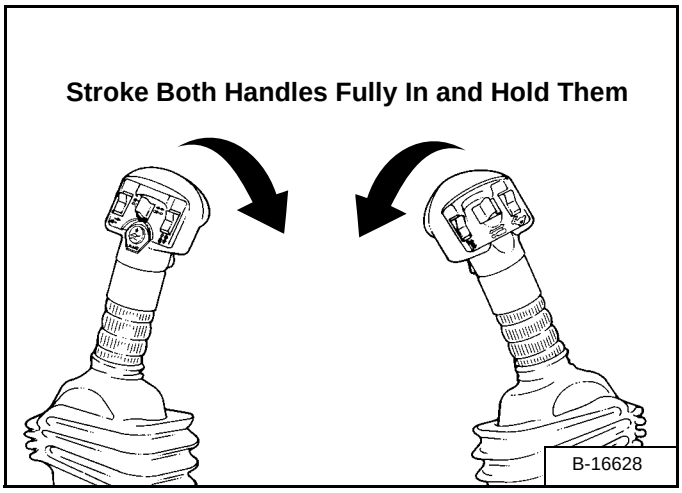
NOTE: Do not start the engine.

Figure 60-160-5



Push the PRESS TO OPERATE button (Item 1) **[Figure 60-160-5]** to unlock the hand controls.

Figure 60-160-6

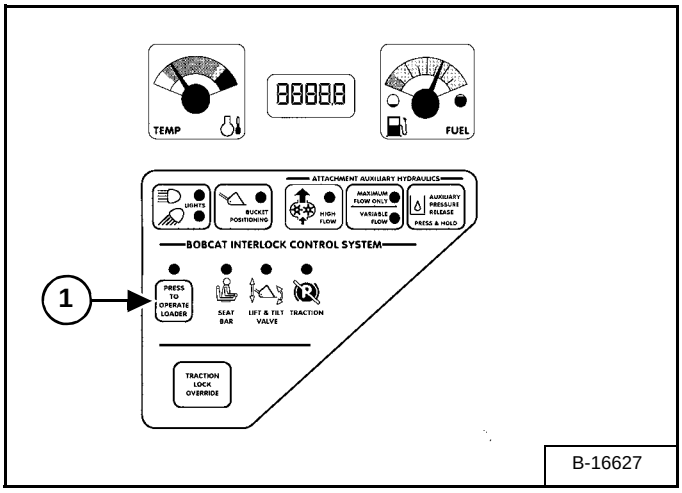


Fully stroke both control handles in toward the center of the cab and hold the handles **[Figure 60-160-6]**.

Lift the seat bar, high enough for the PRESS TO OPERATE light (Item 2) **[Figure 60-160-5]** to go **OFF**.

Lower the seat bar.

Figure 60-160-7



Push the PRESS TO OPERATE button (Item 1) **[Figure 60-160-7]** to begin calibration.

NOTE: The ACS icon will light up and if you listen closely the cycling of the actuators can be heard. The ACS icon will stay lit until the ignition key is cycled or the loader is started and a function is operated.

NOTE: During the calibration cycle, the system will beep three times. Once the calibration is complete code 32-24 (Calibration Performed) will be generated.

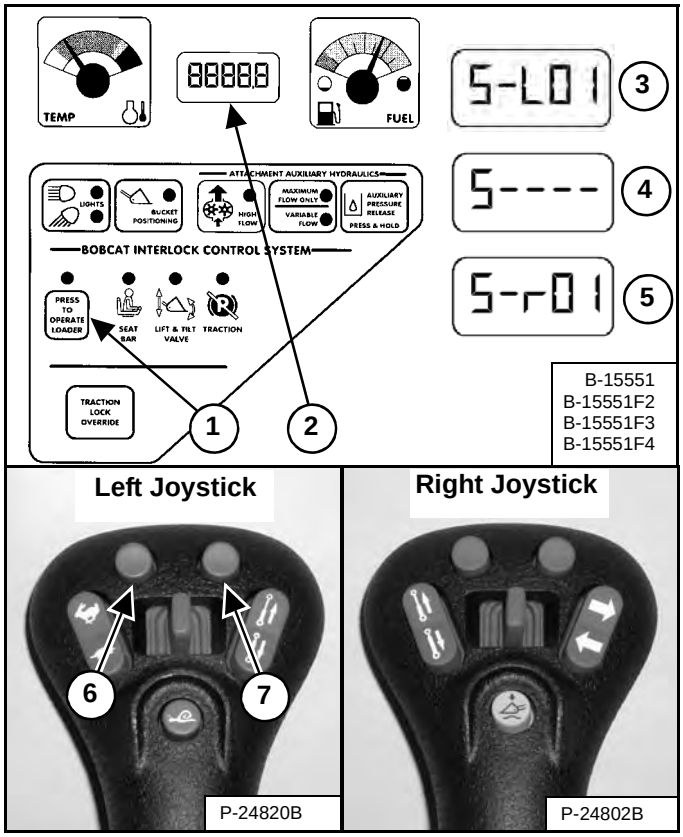
Release the control handles.

Calibration is complete.

STEERING DRIFT COMPENSATION (CONT'D)

Selecting And Adjusting (Cont'd)

Figure 60-160-2



Press and hold the PRESS TO OPERATE LOADER button (Item 1) for **three seconds**. The current steering drift compensation setting will appear in the HOURMETER / CODE display (Item 2) **[Figure 60-160-2]**.

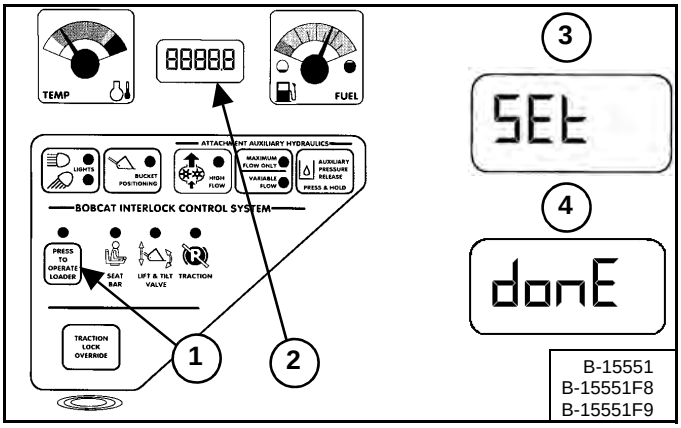
Press the upper left button (Item 6) on the left joystick to adjust the machine left. **[S-L01]** (Item 3) through a maximum of **[S-L10]** will appear in the display (Item 2) **[Figure 60-160-2]**. The number will increase by one each time you press the button. The higher the number, the greater the amount of steering drift compensation to the left. Adjustments to steering drift compensation will be effective immediately.

Press the upper right button (Item 7) on the left joystick to adjust back toward center. The display will decrease down to neutral displayed as **[S----]** (Item 4). Another press of the upper right button will cause **[S-r01]** (Item 5) to appear in the display (Item 2) **[Figure 60-160-2]**. The number will increase by one each time you press the button up to a maximum of **[S-r10]**. The higher the number, the greater the amount of steering drift compensation to the right. Adjustments to steering drift compensation will be effective immediately.

NOTE: The display will revert back to hourmeter after a brief period of time. The machine will remain in steering drift compensation and continue at the current setting. Pressing the upper left or upper right button on the left joystick will adjust steering drift compensation accordingly and cause the new setting to appear in the display.

Exiting And Saving

Figure 60-160-3



The current setting can be saved by pressing and holding the PRESS TO OPERATE LOADER button (Item 1) for **three seconds**. **[SEt]** (Item 3) will appear in the display (item 2) **[Figure 60-160-3]** and the machine will disengage from steering drift compensation.

OR

Press the PRESS TO OPERATE LOADER button to disengage from steering drift compensation without saving the current setting. **[donE]** (Item 4) will appear in the display (Item 2) **[Figure 60-160-3]** and the upper left and upper right buttons on the left joystick will no longer make changes to steering drift compensation. The current settings will remain in effect until the STOP button is pressed (Keyless Panel) or the key is turned OFF (Key Switch Panel). The machine will revert back to the last saved settings the next time it is started.

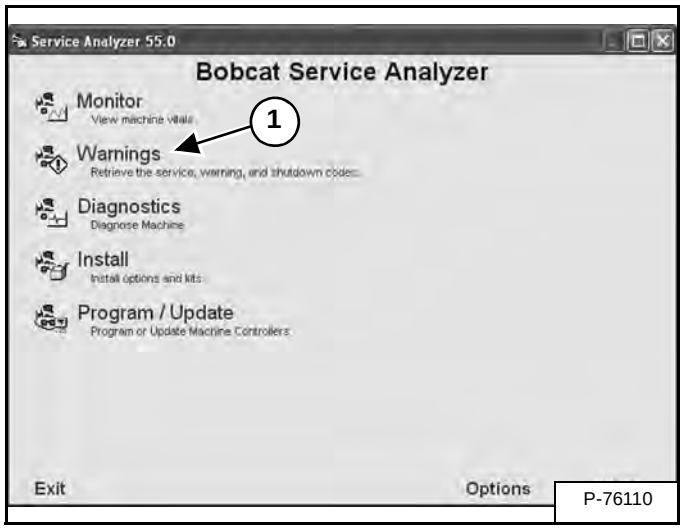
Setup (Cont'd)

Figure 60-200-11

A green **COMPLETE** (Item 1) **[Figure 60-200-11]** message will be displayed when the dealer information has been transferred to the machine controller.

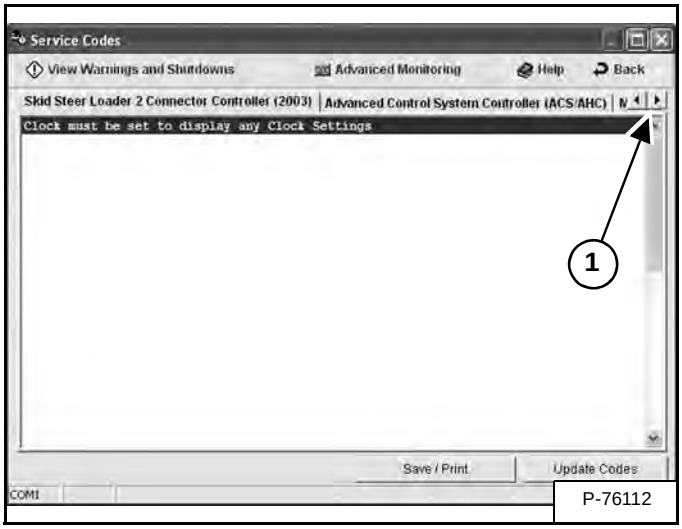
Click **Back** (Item 2) **[Figure 60-200-11]** to return to the Bobcat Service Analyzer screen.

Figure 60-200-12



Select **Warnings** (Item 1) **[Figure 60-200-12]**.

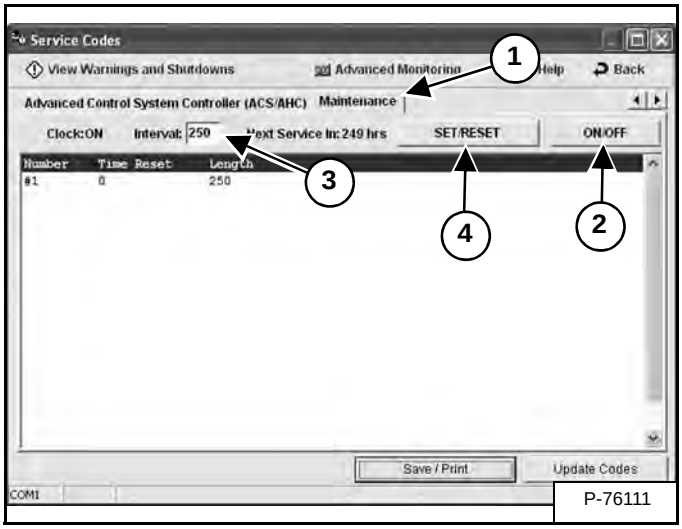
Figure 60-200-13



Click the right arrow (Item 1) **[Figure 60-200-13]** to scroll through the tabs.

NOTE: The Maintenance tab (Item 1) [Figure 60-200-14] will not appear when servicing loaders equipped with the older controller.

Figure 60-200-14



Click the **Maintenance** tab (Item 1) **[Figure 60-200-14]** to view the maintenance clock screen.

Click **ON/OFF** (Item 2) to turn the maintenance clock on or off **[Figure 60-200-14]**.

The default Interval (Item 3) is 250 hours, it can also be changed by placing the cursor in the box and typing the new interval. Click **SET/RESET** (Item 4) **[Figure 60-200-14]** to reset and set the maintenance clock.

ENGINE SERVICE (CONT'D)

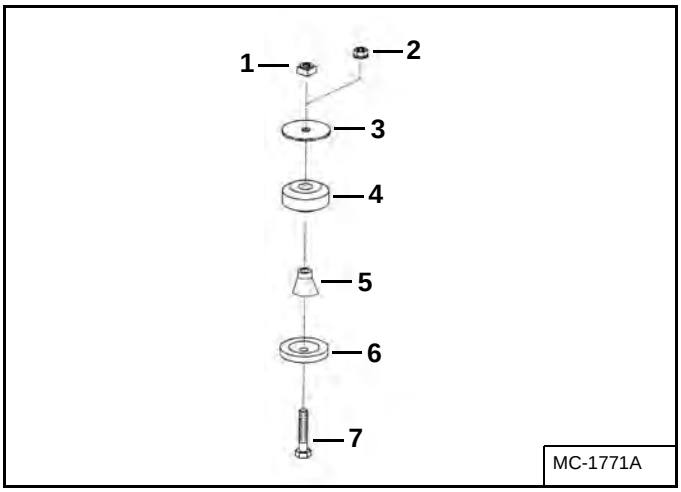
Continued On Next Page

Troubleshooting (Cont'd)

KEY TO CORRECT THE CAUSE	
1. Alternator belt is loose or damaged.	28. Worn valve and seats.
2. Bad electrical connections.	29. Broken or worn piston rings.
3. Faulty starter motor.	30. Worn valve stems or guides.
4. Incorrect grade of oil.	31. Worn or damaged bearings.
5. Low cranking speed.	32. Not enough oil in the crankcase.
6. Fuel tank empty.	33. Switch/sensor is defective.
7. Faulty stop control operation.	34. Oil pump worn.
8. Plugged fuel line.	35. Relief valve is sticking open.
9. Plugged fuel filter.	36. Relief valve is sticking closed.
10. Restriction in the air cleaner.	37. Broken relief valve spring.
11. Air in the fuel system.	38. Faulty suction pipe.
12. Faulty fuel injection pump.	39. Plugged oil filter.
13. Faulty fuel injectors.	40. Piston seizure.
14. Broken injection pump drive.	41. Incorrect piston height.
15. Incorrect injection pump timing.	42. Faulty engine mounting.
16. Incorrect valve timing.	43. Incorrect flywheel alignment.
17. Poor compression.	44. Faulty thermostat.
18. Plugged fuel tank vent.	45. Restriction in water jacket.
19. Incorrect grade of fuel.	46. Loose alternator belt.
20. Exhaust pipe restriction.	47. Plugged radiator.
21. Cylinder head gasket leaking.	48. Faulty water pump.
22. Overheating.	49. Plugged breather pipe.
23. Cold running.	50. Damaged valve stem deflectors.
24. Incorrect tappet adjustment.	51. Coolant level to low.
25. Sticking valves.	52. Plugged oil pump pipe strainer.
26. Incorrect fuel lines.	53. Broken valve spring.
27. Worn cylinder bores.	54. Damaged Battery

Engine Mount Replacement

Figure 70-10-34



Use the following procedure to install new engine mounts:

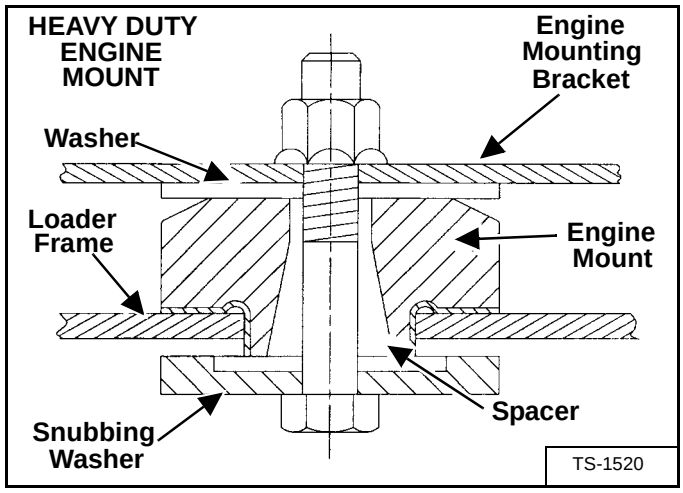
Remove the existing mount from the engine. Refer to engine removal and installation for engine mount locations.

Replace all four engine mounts (two front and two rear).

Use the parts shown to install the new engine mounts **[Figure 70-10-34]**.

Item 1 - Square Nut - Used on left side engine mounts
Item 2 - Hex Nut - Used on right side engine mounts
Item 3 - Mount Washer
Item 4 - Engine Mount
Item 5 - Tube Spacer
Item 6 - Snubbing Washer
Item 7 - Mounting Bolt

Figure 70-70-35



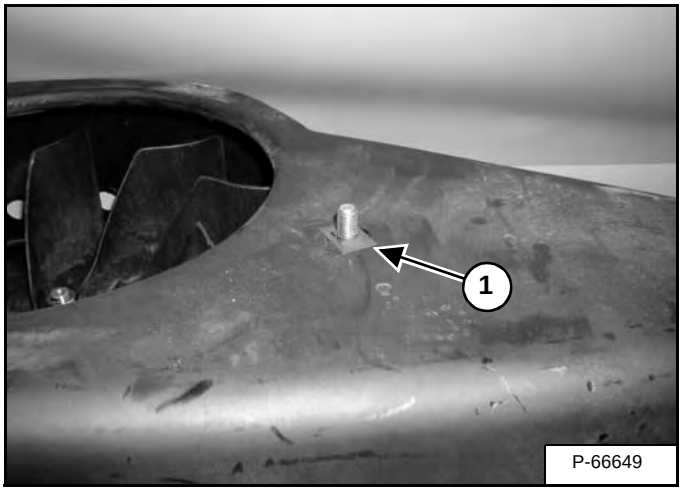
Install the new engine mount as shown in the cut away side view **[Figure 70-70-35]**.

Tighten the mounting bolts to 61 - 69 ft.-lb. (83 - 94 N•m) torque.


Bobcat®

Blower Housing Removal And Installation (S/N 532015065 & Below, 532111566 & Below) (Cont'd)

Figure 70-50-24

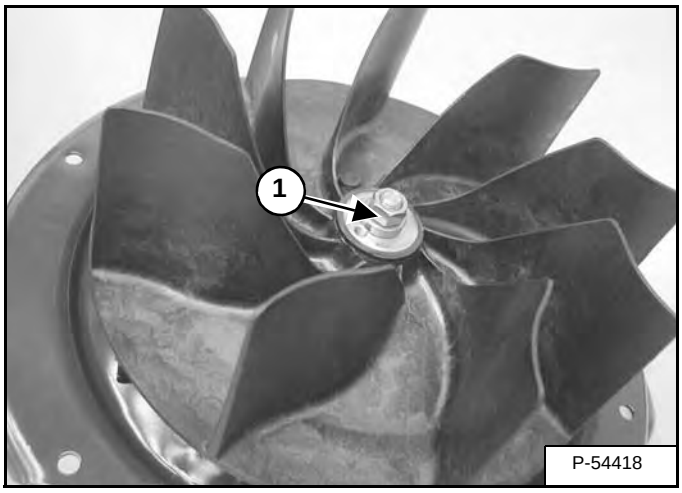


NOTE: The picture shows the blower housing and fan assembly removed from the loader. Two of the mounting bolts (Item 2) [Figure 70-50-23] have clips (Item 1) [Figure 70-50-24] to hold the bolts from falling out during installation of the blower housing and fan together.

Remove the blower housing from the loader.

Fan Removal And Installation (S/N 532015065 & Below, 532111566 & Below)

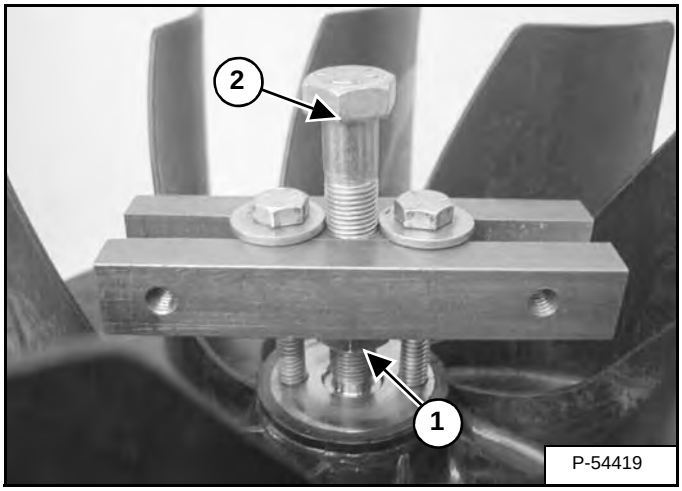
Figure 70-50-25



Remove the lock nut and spacer (Item 1) **[Figure 70-50-25]**.

Installation: Tighten the nut to 45 - 55 ft.-lb. (61 - 75 N•m) torque.

Figure 70-50-26



Use the following procedure to remove the fan from the shaft:

Install the nut (Item 1) **[Figure 70-50-26]** on the tapered shaft to protect the shaft and threads.

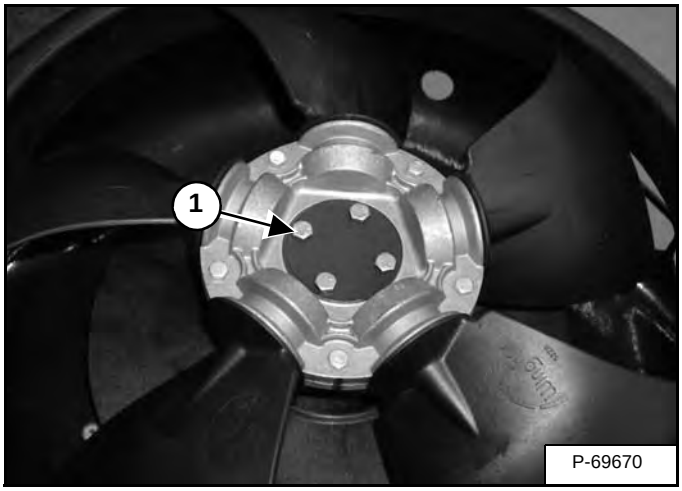
Install the puller on the fan as shown **[Figure 70-50-26]**.

As the center bolt (Item 2) **[Figure 70-50-26]** is tightened, periodically strike the bolt head to loosen the fan from the shaft.

Remove the fan from the tapered shaft **[Figure 70-50-26]**.

Axial Fan Removal And Installation (S/N 532040001 & Above, 532140001 & Above)

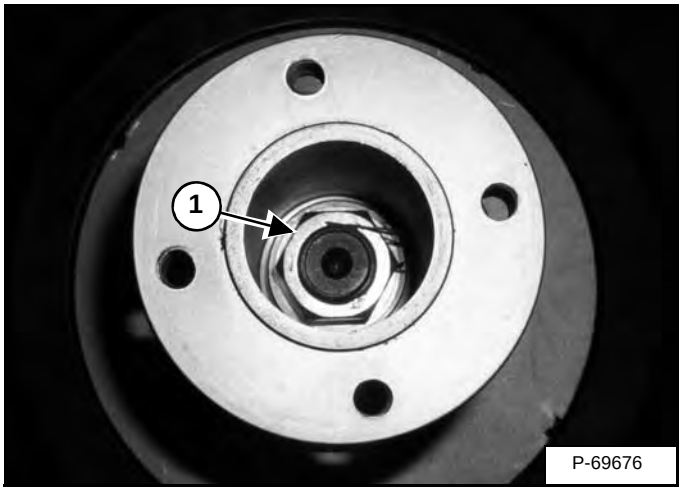
Figure 70-50-48



Remove the four bolts (Item 1) **[Figure 70-50-48]** to remove the plate and the upper fan.

Installation: Tighten the bolts to 140 in.-lb. (16 N•m) torque.

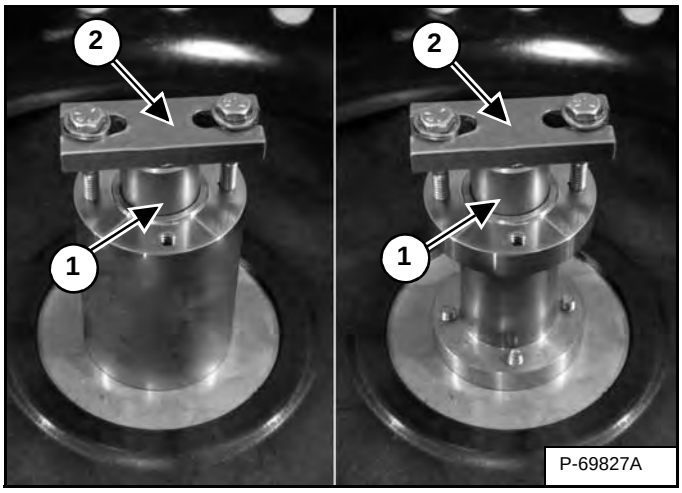
Figure 70-50-49



Remove the nut (Item 1) **[Figure 70-50-49]** and washer from the motor shaft.

Installation: Tighten the nut to 45 - 55 ft.-lb. (61 - 75 N•m) torque.

Figure 70-50-50



NOTE: Two different style couplers are used on the fan motor shaft. The removal and installation procedure is the same for both.

Use the following procedure to remove the lower fan from the fan motor shaft:

Install a bushing (Item 1) **[Figure 70-50-50]** in the coupler to protect the fan motor shaft and threads during removal.

Use two bolts to position a puller (Item 2) on the bushing (Item 1) as shown **[Figure 70-50-50]**.

NOTE: If a puller is not available one can be made if needed to remove the coupler from the shaft.

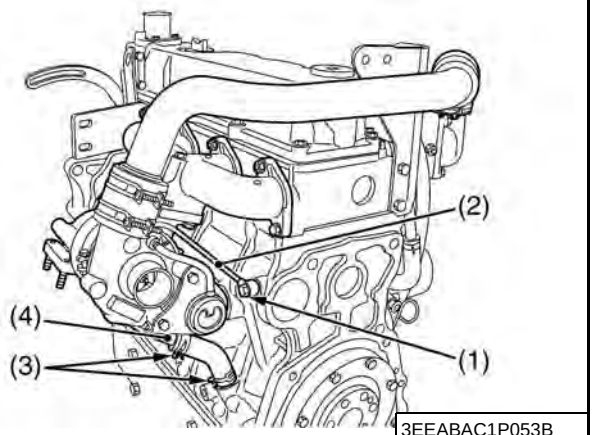
Tighten the bolts and strike the puller with a hammer to loosen the coupler from the motor shaft.

Remove the lower fan from the tapered shaft.

Oil Pump Inspection (Cont'd)

Oil Pipe

Figure 70-60-9



Remove the joint bolt (Item 1) and take off the pipe (Item 2) **[Figure 70-60-9]**.

Remove the bolts (Item 3) and release the clamp (Item 4) **[Figure 70-60-9]**.

Remove the oil pipe 2 (Item 5) **[Figure 70-60-9]**.

Before installation pour fresh engine oil through the oil supply port of the turbocharger.

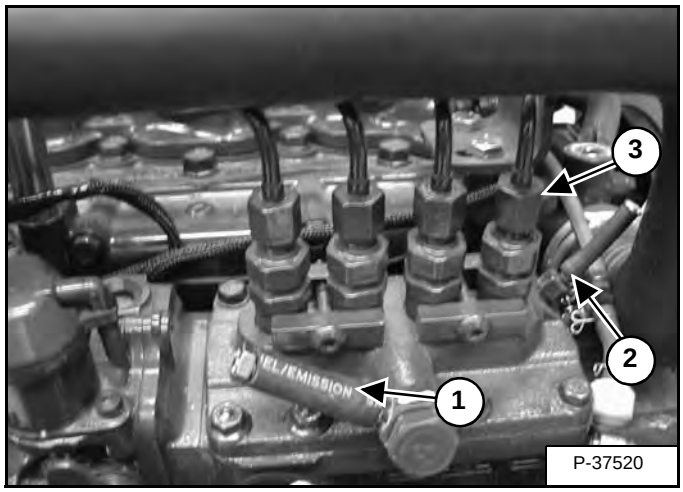
Replace the gasket with new one.

Be careful not to allow dust, dirt and other foreign matters in the oil pipes.

NOTE: Tape or plug all openings to prevent foreign matters from damaging the oil cavities in the turbocharger.

Fuel Injection Pump Removal And Installation

Figure 70-70-23



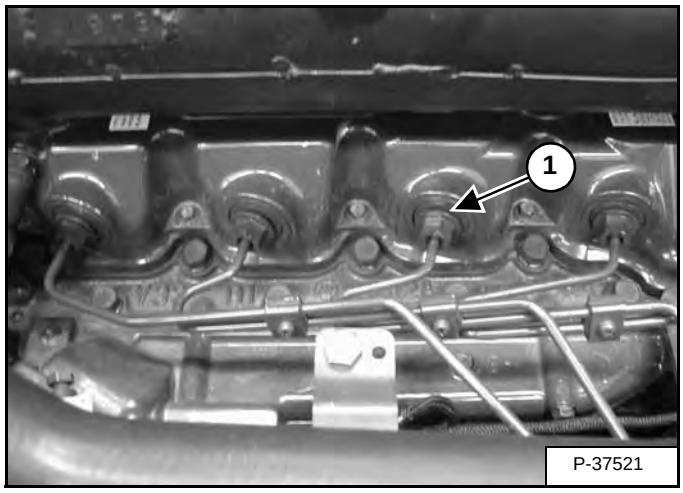
NOTE: The injection pump must be removed as a complete unit. Do Not remove individual pump barrels. If individual pump barrels are removed, the pump must be recalibrated in a certified injection shop.

NOTE: The injection pump can be replaced with the engine crankshaft in any position.

Disconnect and plug the fuel hose (Item 1) and fuel overflow hose (Item 2) **[Figure 70-70-23]**.

Disconnect the four injection lines (Item 3) **[Figure 70-70-23]** at the injection pump.

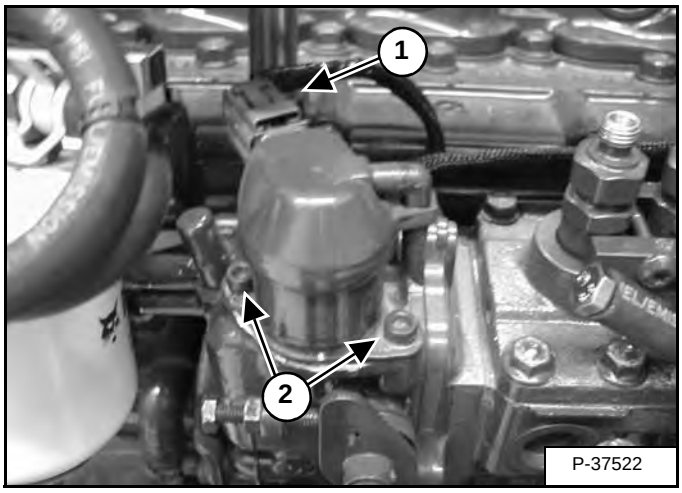
Figure 70-70-24



Disconnect the four injection lines (Item 1) **[Figure 70-70-24]** at the injectors.

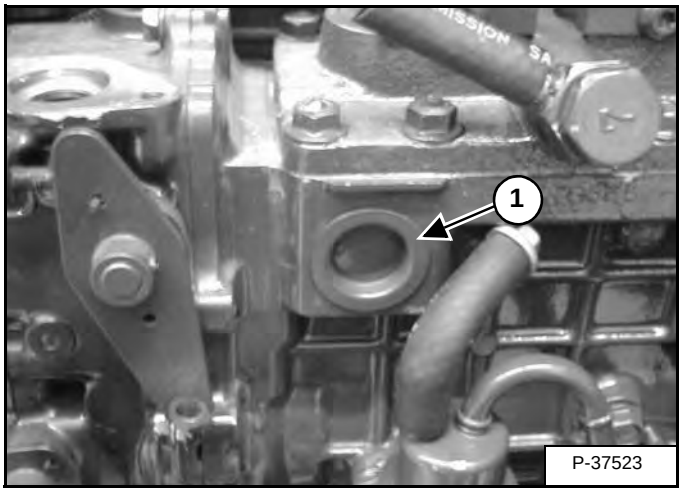
Remove the injection lines from the loader.

Figure 70-70-25



Disconnect the electrical connector (Item 1) from the fuel stop solenoid. Then remove the two mounting bolts (Item 2) **[Figure 70-70-25]** from the fuel stop solenoid. Remove the solenoid from the injection pump.

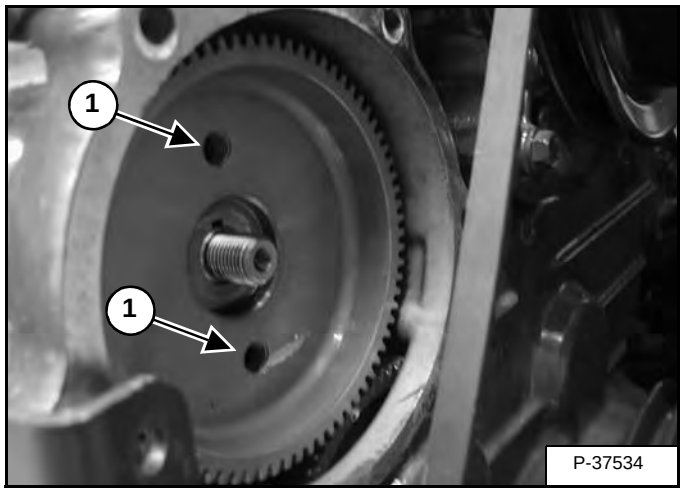
Figure 70-70-26



Remove the sight cover (Item 1) **[Figure 70-70-26]** from the injection pump unit.

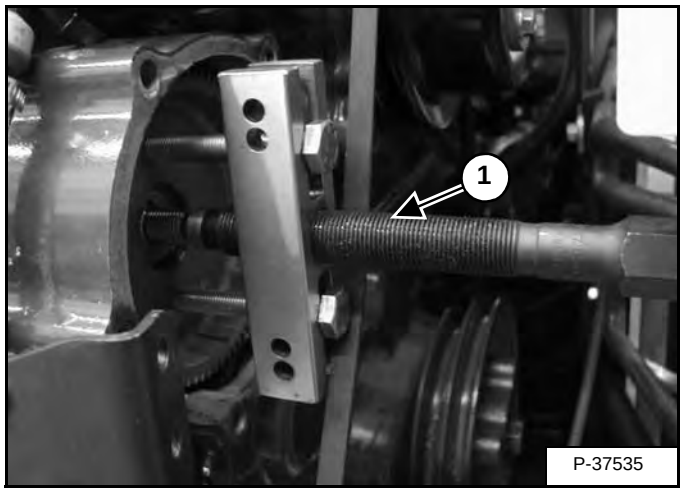
Fuel Injection Pump Housing Removal (Cont'd)

Figure 70-70-56



Install two bolts (M10 X P1.25 X L80 mm) into the two threaded holes (Item 1) **[Figure 70-70-56]** in the injection pump cam gear.

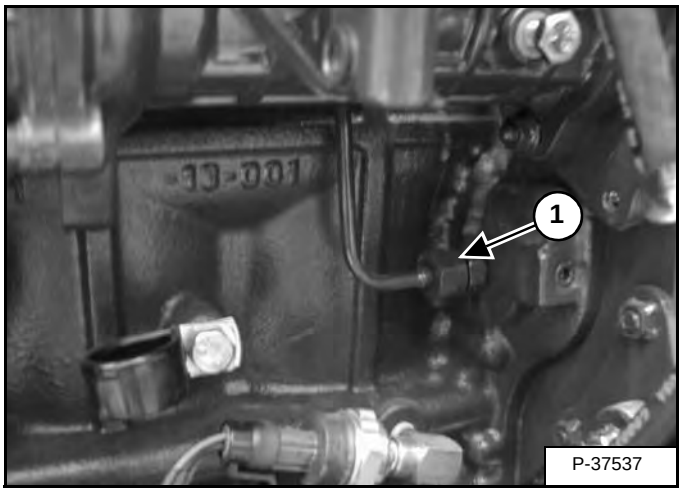
Figure 70-70-57



Install a gear puller (Item 1) **[Figure 70-70-57]** and remove the gear.

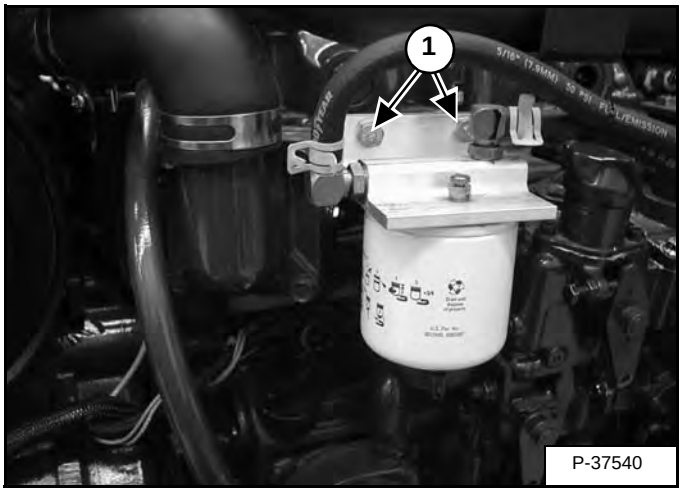
Remove the key from the key way on the injection pump shaft.

Figure 70-70-58



Disconnect the lubricating oil pipe (Item 1) **[Figure 70-70-58]**.

Figure 70-70-59

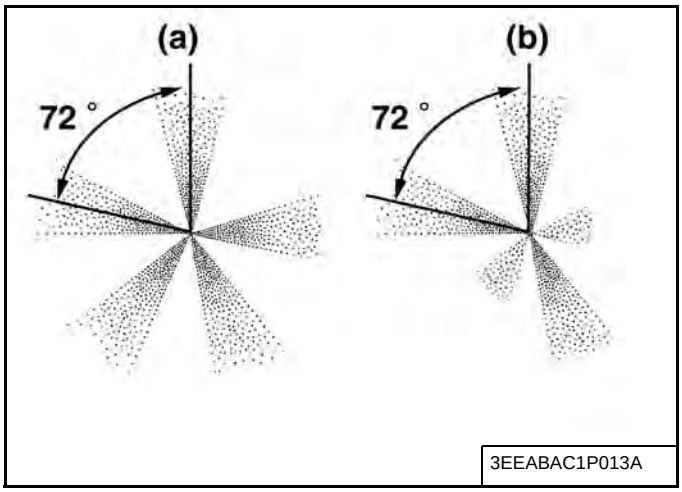


Remove the two mounting bolts (Item 1) **[Figure 70-70-59]** and move the fuel filter, to allow clearance for the injection pump assembly to be removed.

Disconnect the throttle linkage from the injection pump.

Nozzle Spraying Condition

Figure 70-70-91

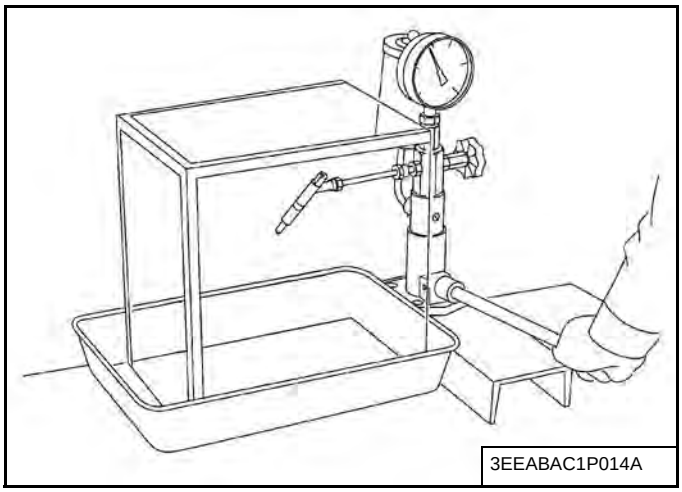


Set the injection nozzle to a nozzle tester (Code No. 07909-31361), and check the nozzle spraying condition.

If the spraying condition is defective, replace the injection nozzle assembly or repair at Denso service shop.

Valve Seat Tightness

Figure 70-70-92



Set the injection nozzle to a nozzle tester (Code No. 07909-31361).

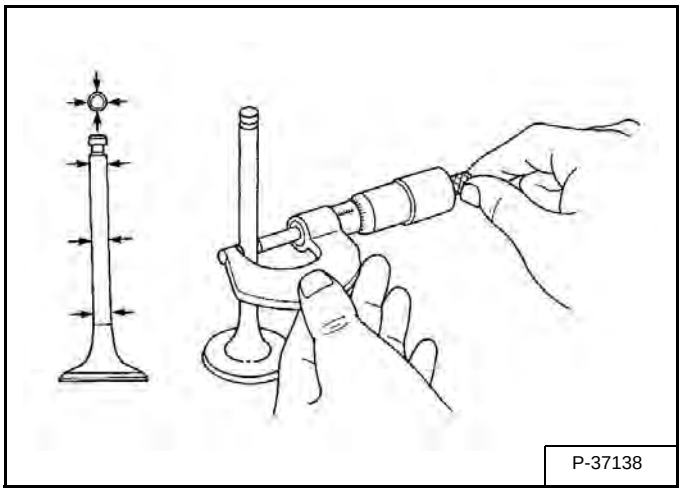
Raise the fuel pressure, and keep at 16.67 MPa (170 kgf/cm², 2418 PSI) for 10 seconds.

If any fuel leak is found, replace the injection nozzle assembly or repair at Denso service Shop.

Valve seat tightness	Factory spec.	No fuel leak at 16.67 MPa 170 kgf/cm² 2418 PSI

Valve Guide - Checking (Cont'd)

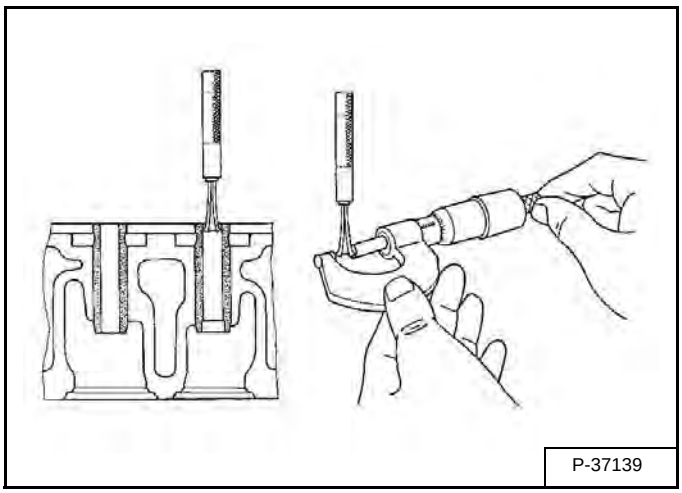
Figure 70-80-26



Remove carbon from the valve guide section.

Measure the valve stem O.D. with an outside micrometer **[Figure 70-80-26]**.

Figure 70-80-27



Measure the valve guide I.D. of the cylinder head at the most wear part as shown in **[Figure 70-80-27]** with a small hole gauge and calculate the clearance.

If the clearance exceeds the allowable limit, replace the valves. If it still exceeds the allowable limit, replace the valve guide.

Clearance between valve stem and guide	Factory spec.	Intake valve	0,055 - 0,085 mm 0.0022 - 0.0033 in.
		Exhaust valve	0,055 - 0,085 mm 0.0022 - 0.0033 in.
	Allowable limit	0,1 mm 0.0039 in.	

Valve stem O.D.	Factory spec.	Intake valve	6,960 - 6,975 mm 0.2740 - 0.2746 in.
		Exhaust valve	6,960 - 6,975 mm 0.2740 - 0.2746 in.

Valve guide I.D.	Factory spec.	Intake valve	7,030 - 7,045 mm 0.2768 - 0.2774 in.
		Exhaust valve	7,030 - 7,045 mm 0.2768 - 0.2774 in.

Piston And Connecting Rod - Servicing (Cont'd)

Figure 70-90-7

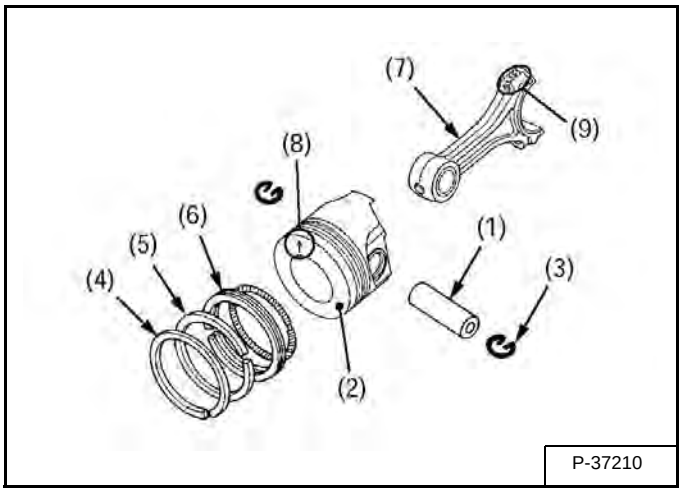
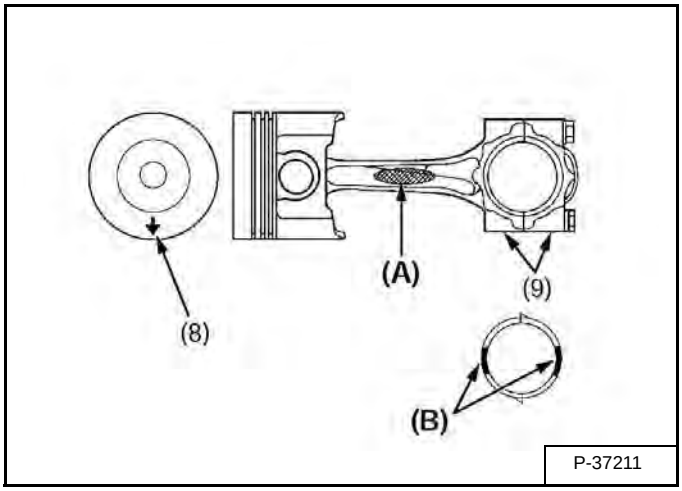


Figure 70-90-8



Remove the piston rings using a piston ring tool.

Remove the piston pin (Item 1), and separate the connecting rod (Item 7) from the piston (Item 2) **[Figure 70-90-7]**.

Be sure to fix the crank pin bearing and the connecting rod are same I.D. colors.

When installing the piston pin, immerse the piston in 80°C (176°F) oil for 10 to 15 minutes and insert the piston pin to the piston.

Figure 70-90-9

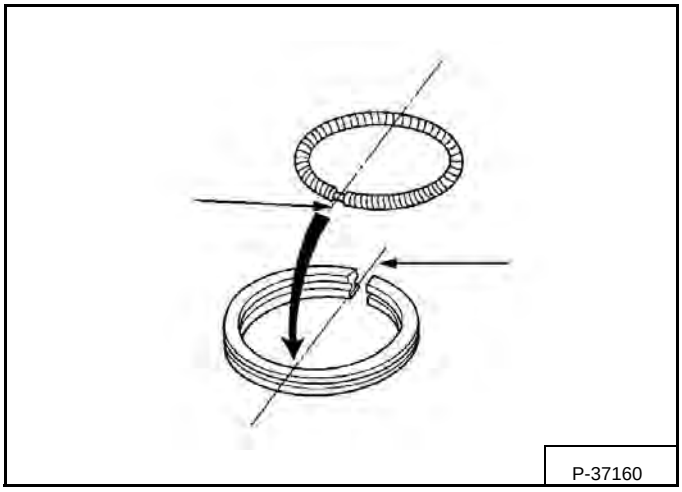
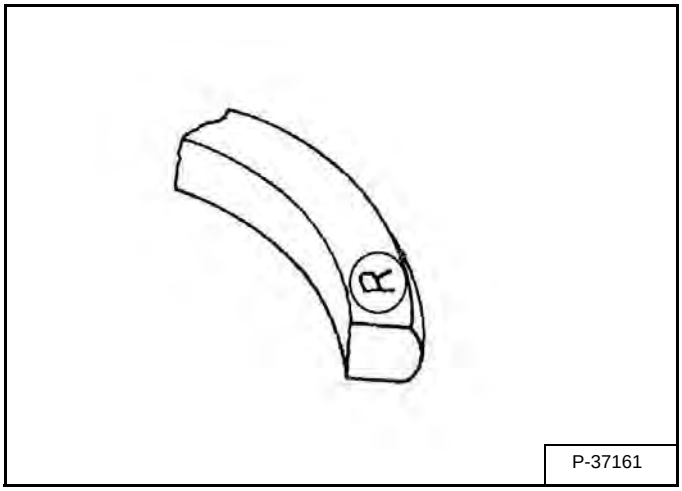


Figure 70-90-10



When installing the ring, assemble the rings so that the manufacture's mark (Item 12) **[Figure 70-90-10]** near the gap faces the top of the piston.

When installing the oil ring onto the piston, place the expander joint (Item 10) on the opposite side of the oil ring gap (Item 11) **[Figure 70-90-9]**.

Apply engine oil to the piston pin (Item 1) **[Figure 70-90-7]**.

Assemble the piston to the connecting rod with the ↑ mark (Item 8) and the connecting rod numbering mark (Item 9) **[Figure 70-90-8]** facing same side.

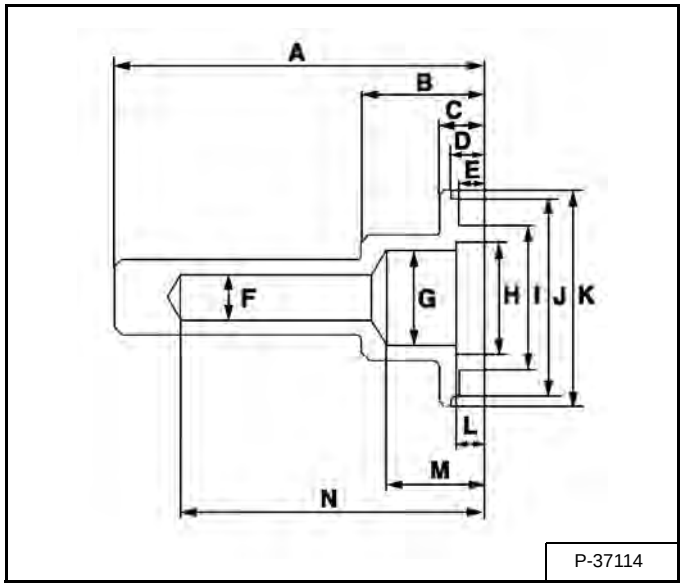
The end faces of the oil ring are plated with hard chrome. In putting the piston into the cylinder, be careful not to get the oil ring scratched by the cylinder. Use the piston ring fitter to tighten up the oil ring. If the ring's planted is scratched, it may get stuck on the cylinder wall, causing a serious trouble.

NOTE: Mark the same number on the connecting rod and the piston so as not to change the combination.

Crankshaft And Bearings - Servicing

The following special tools are not provided, so make them referring to **[Figure 70-90-34]**, **[Figure 70-90-35]** & **[Figure 70-90-36]**.

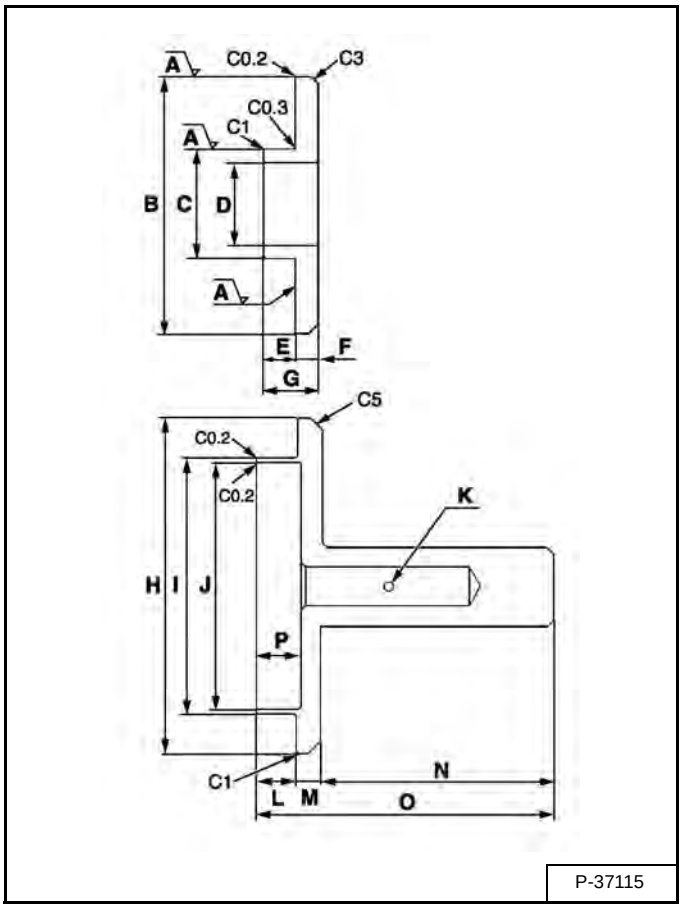
Figure 70-90-34



Gearcase Oil Seal Replacing Tool
Application: Use to press fit the oil seal.

A	148,8 mm (5.8582 in.)
B	50 mm (1.9685 in.)
C	18,8 mm (0.7401 in.)
D	13,7 - 13,9 mm (0.5394 - 0.5472 in.)
E	11 mm (0.433 in.)
F	18 mm dia. (0.7087 in. dia.)
G	38 mm dia. (1.4961 in. dia.)
H	45 mm dia. (1.7716 in. dia.)
I	57,9 - 58,1 mm (2.2795 - 2.2874 in.)
J	79,5 mm dia. (3.1299 in. dia.)
K	87 mm (3.452 in.)
L	12 mm (0.4724 in.)
M	40 mm (1.5748 in.)
N	120 mm (4.7244 in.)

Figure 70-90-35

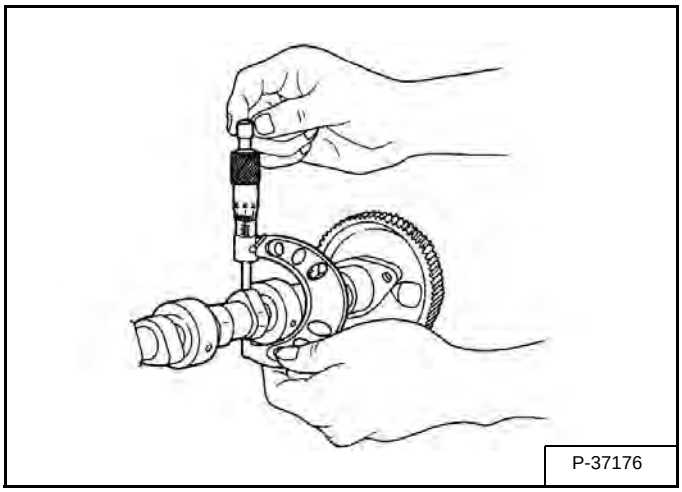


Auxiliary Socket For Fixing Crankshaft Sleeve
Application: Use to fix the crankshaft sleeve of the diesel engine.

A	Rmax = 12.5 S
B	94,5 - 95,0 mm (3.7205 - 3.7402 in.)
C	40 mm (1.5748 in.)
D	30 mm (1.1811 in.)
E	12 mm (0.4724 in.)
F	7,9 - 8,1 mm (0.3110 - 0.3189 in.)
G	20 mm (0.0787 in.)
H	130 mm (5.1181 in.)
I	99,4 - 99,6 mm (3.9134 - 3.9213 in.)
J	95,05 - 95,20 mm (3.7421 - 3.7480 in.)
K	3 mm dia. (0.1181 in. dia.)
L	15 mm (0.5905 in.)
M	10 mm (0.3937 in.)
N	90 mm (3.5433 in.)
O	115 mm (4.5275 in.)
P	16,9 - 17,1 mm (0.6654 - 0.6732 in.)
C1	Chamfer 1,0 mm (0.039 in.)
C3	Chamfer 3,0 mm (0.1181 in.)
C5	Chamfer 5,0 mm (0.1969 in.)
C0.2	Chamfer 0,2 mm (0.0079 in.)
C0.3	Chamfer 0,3 mm (0.0118 in.

Camshaft - Servicing (Cont'd)

Figure 70-100-7

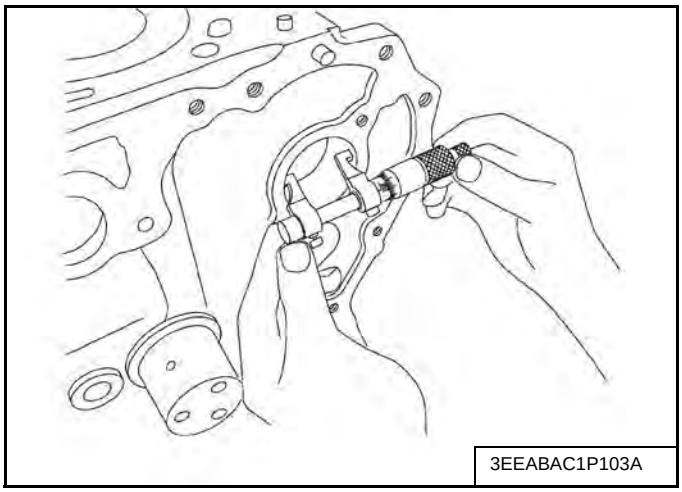


Measure the height of the cam at its highest point with an outside micrometer **[Figure 70-100-7]**.

If the measurement is less than the allowable limit, replace the camshaft.

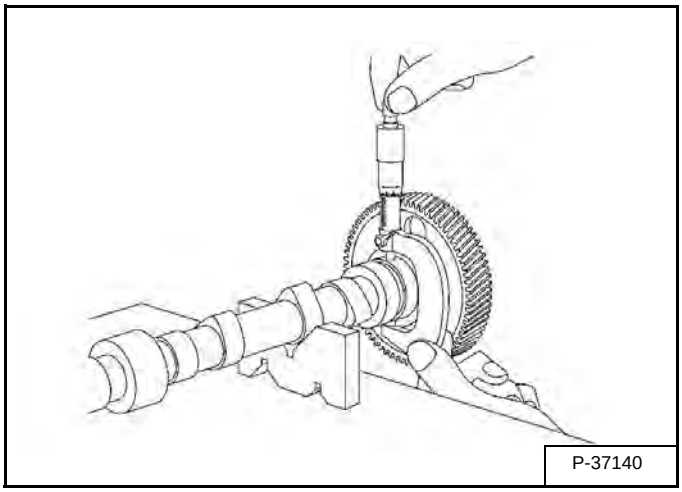
Intake and exhaust cam height	Factory spec.	Intake valve	37,63 mm 1.4815 in.
		Exhaust valve	38,96 mm 1.5338 in.
	Allowable limit	Intake valve	37,13 mm 1.4618 in.
		Exhaust valve	38,46 mm 1.5141 in.

Figure 70-100-8



Measure the cylinder block bore I.D. for camshaft with an inside micrometer **[Figure 70-100-8]**.

Figure 70-100-9



Measure the camshaft journal O.D. with an outside micrometer **[Figure 70-100-9]**.

If the clearance exceeds the allowable limit, replace the camshaft.

Oil clearance of camshaft journal	Factory spec.	0,050 - 0,091 mm 0.0020 - 0.0035 in.
	Allowable limit	0,15 mm 0.0059 in.

Camshaft journal O.D.	Factory spec.	45,934 - 45,950 mm 1.8084 - 1.8091 in.
Camshaft journal I.D.	Factory spec.	46,000 - 46,025 mm 1.8110 - 1.8120 in.

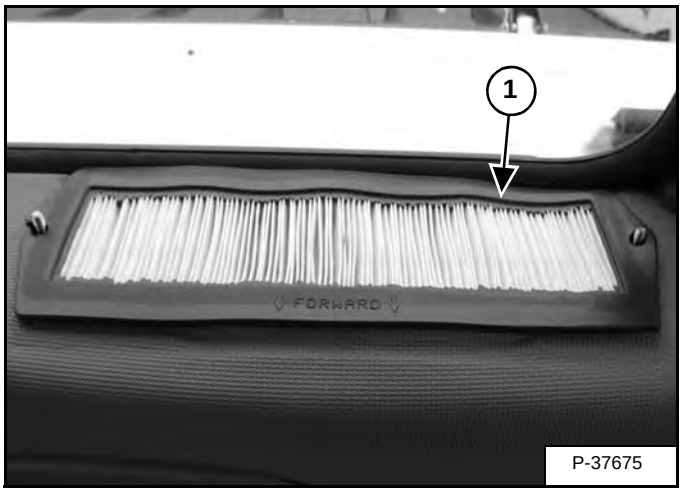
HEATING, VENTILATION, AIR CONDITIONING (CONT'D)

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

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE AND STANDARD ITEMS MAY VARY.

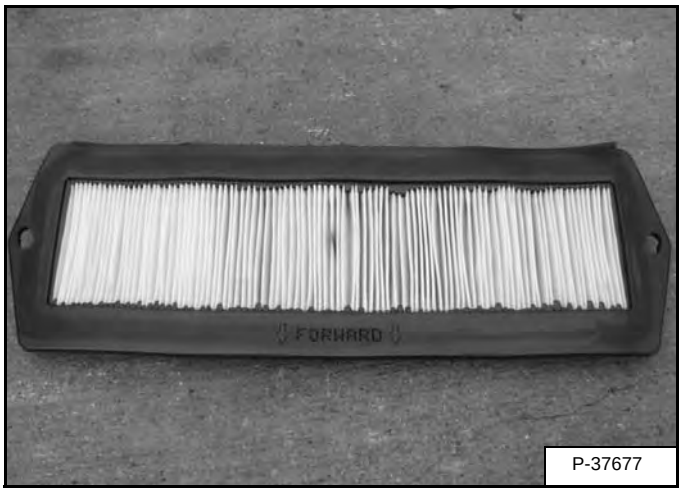
Filter Elements Removal And Installation (Cont'd)

Figure 80-20-5



Remove the recirculating air filter (Item 1) **[Figure 80-20-5]** from the rear of the cab.

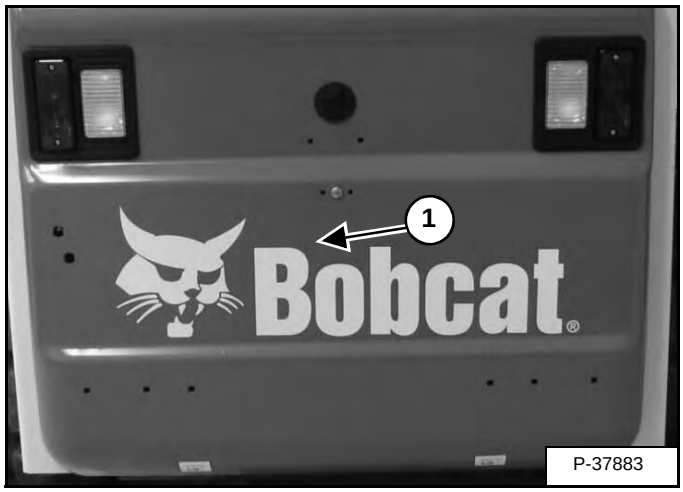
Figure 80-20-6



The recirculating air filter **[Figure 80-20-6]** may be cleaned using low air pressure.

Compressor Drive Belt Inspection

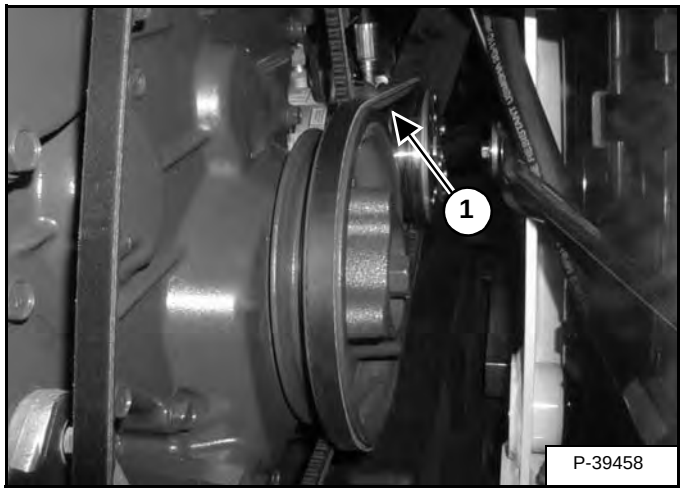
Figure 80-20-7



It is a good rule to regularly inspect (weekly) the compressor drive belt for tension and wear.

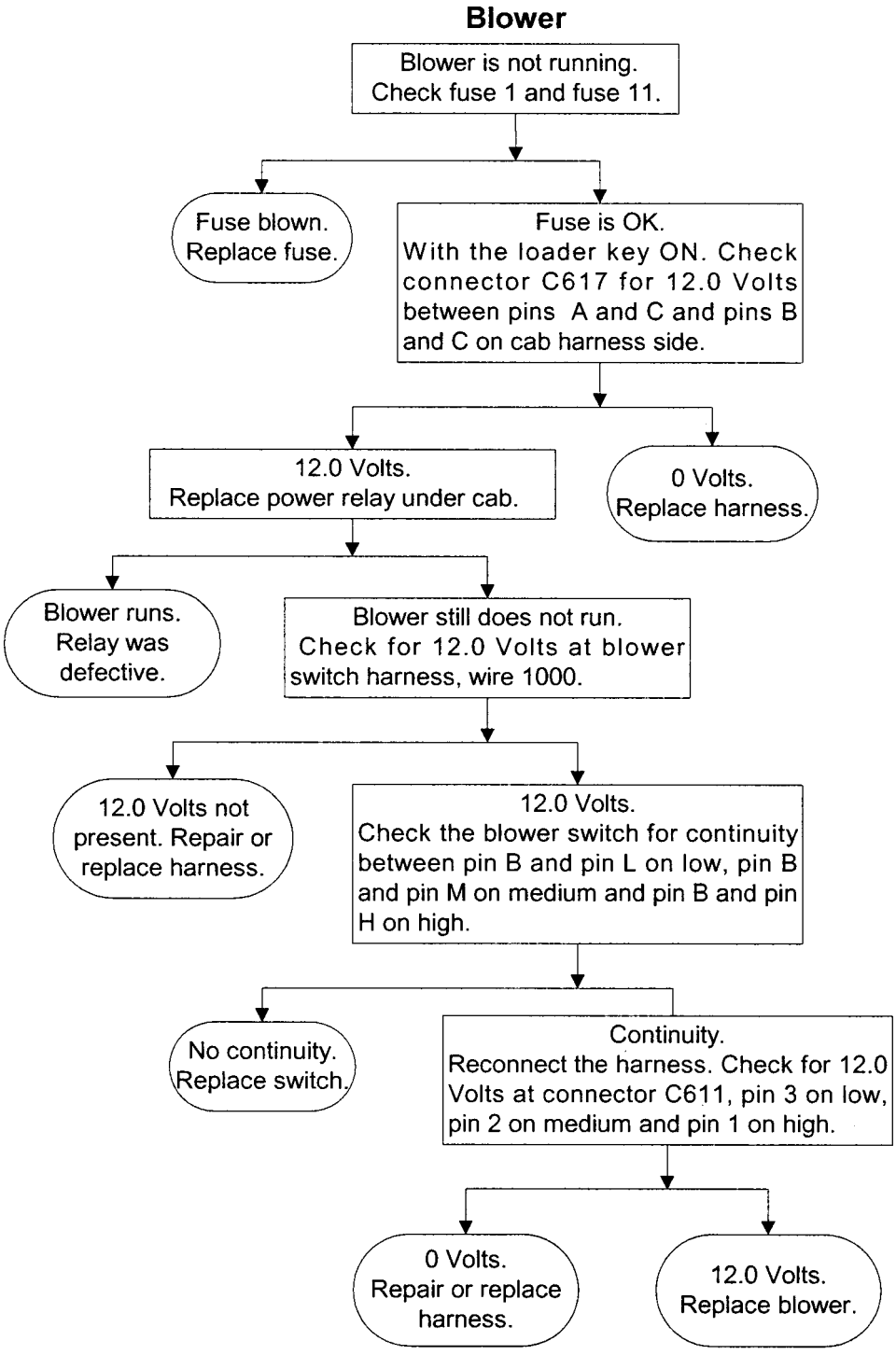
Open the rear door (Item 1) **[Figure 80-20-7]**.

Figure 80-20-8



At the lower right side of the engine, check the tension on the compressor belt (Item 1) **[Figure 80-20-8]**.

Troubleshooting Tree (Cont'd)



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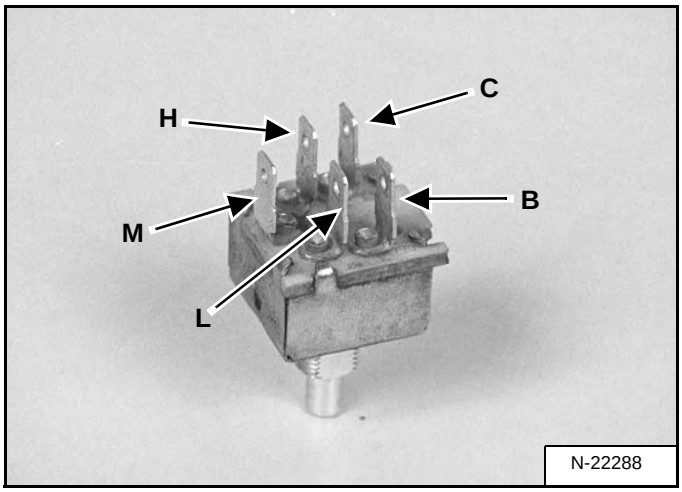
Electrical System (Cont'd)

Figure 80-30-20



If there is voltage at the wiring harness, check the blower switch **[Figure 80-30-20]** for resistance.

With the switch in the **OFF** position, there should be zero resistance between all terminals.

With the switch in the **1** position, there should be resistance between **C** terminal and the **B** terminal. And also between the **C** terminal and the **L** terminal frame **[Figure 80-30-20]**.

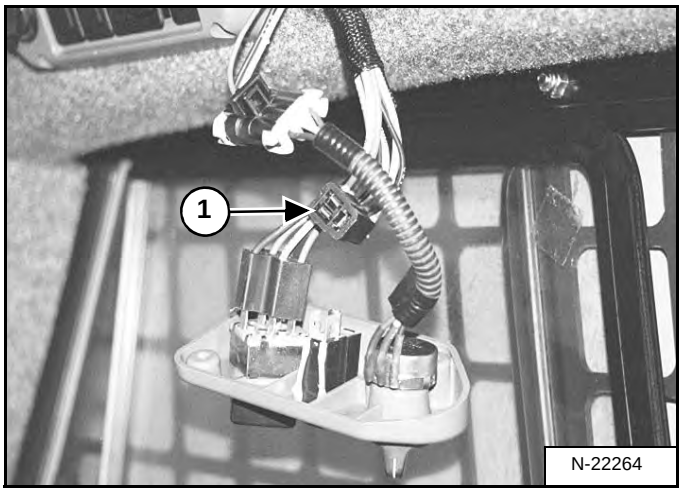
With the switch in the **2** position, there should be resistance between **C** terminal and the **B** terminal. And also between the **C** terminal and the M terminal frame **[Figure 80-30-20]**.

With the switch in the **3** position, there should be resistance between **C** terminal and the **B** terminal. And also between the **C** terminal and the **H** terminal frame **[Figure 80-30-20]**.

If any of the above resistance tests fail, replace the blower switch.

If the above resistance tests are good, check the A/C switch.

Figure 80-30-21



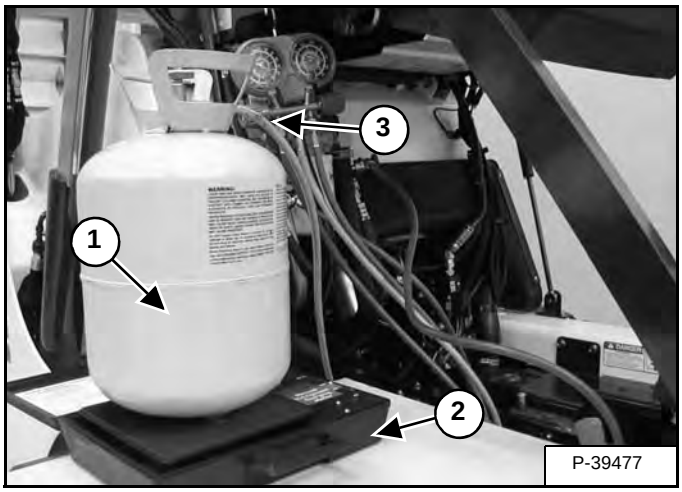
At the loader cab, disconnect the loader harness (Item 1) **[Figure 80-30-21]** from the A/C switch.

Check the harness for voltage. The voltage should be 12 volts.

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

Charging With A Manifold Gauge Set (Cont'd)

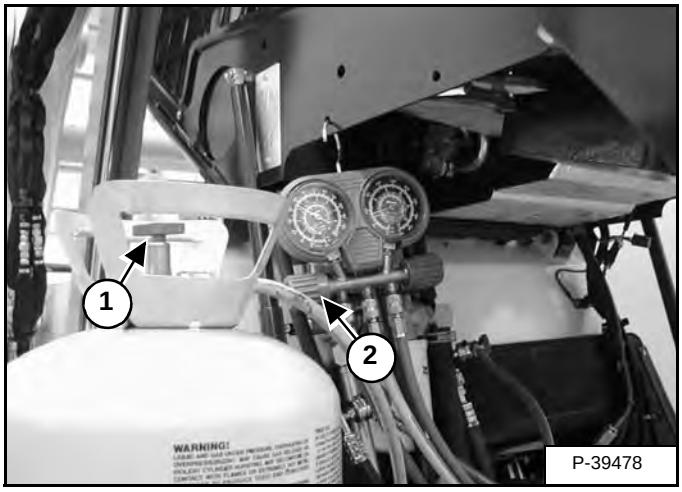
Figure 80-40-14



Place a refrigerant container with R134a (Item 1) on a charging scale (Item 2) **[Figure 80-40-14]** and zero out the scale.

Connect the yellow hose (Item 3) **[Figure 80-40-14]** from the manifold gauge set to the valve on the refrigerant tank.

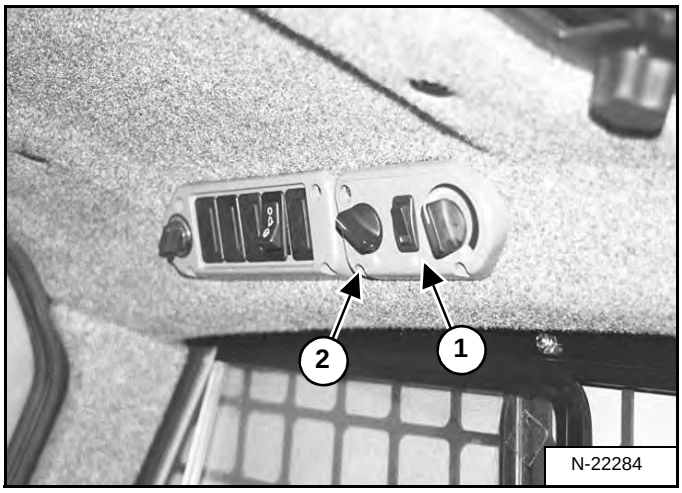
Figure 80-40-15



Open the valve on the refrigerant container (Item 1) and open the low pressure hand valve (Blue) (Item 2) **[Figure 80-40-15]** on the manifold gauge set. Allow the vacuum to pull in the refrigerant until the pressure stabilizes.

Connect the remote start tool to the loader. (See REMOTE START TOOL KIT-MEL1563 on Page 10-60-1.)

Figure 80-40-16



Press the A/C (Item 1) **[Figure 80-40-16]** switch to ON position.

Turn blower switch (Item 2) **[Figure 80-40-16]** to HIGH position.

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

Start loader engine, with the remote start switch, and run at medium speed.

Watch the scale and run system until the predetermined amount of refrigerant is added to the A/C system.

The A/C system holds 2.0 lb. (0,91 kg) of refrigerant.

Turn OFF the valve on the refrigerant container, and hand valves on the manifold gauge set.

Turn OFF the engine, and remove the A/C charging equipment from the loader.

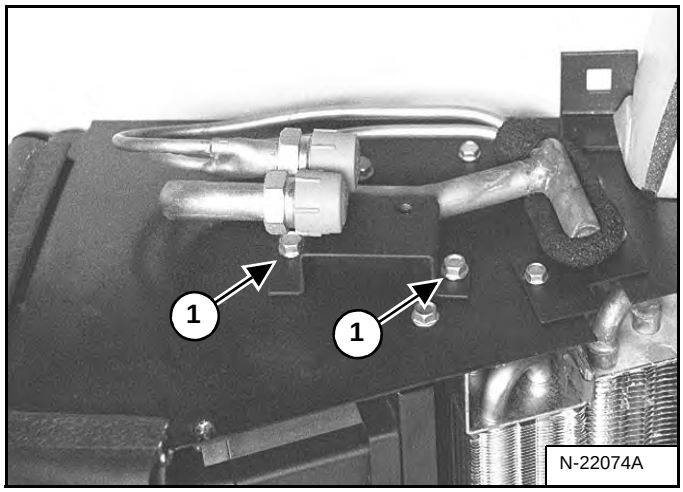
Lower the operator cab. (See Lowering on Page 10-30-3.)


Bobcat®

EXPANSION VALVE (CONT'D)

Removal And Installation (Cont'd)

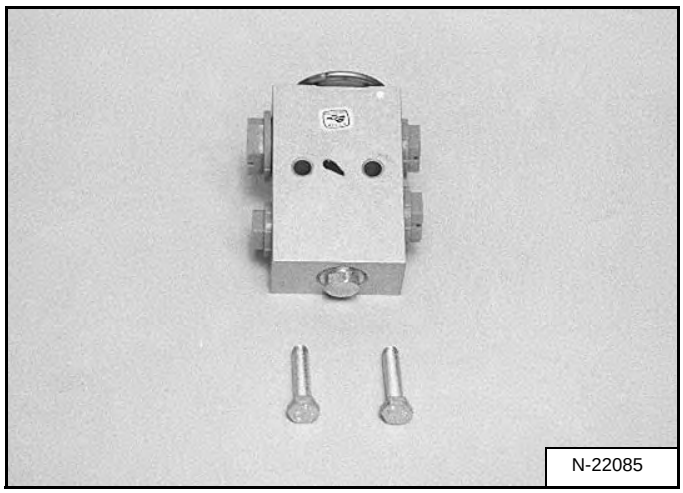
Figure 80-100-4



Remove the two mount bolts (Item 1) **[Figure 80-100-4]** from the expansion valve mount.

Remove the expansion valve mount from the unit.

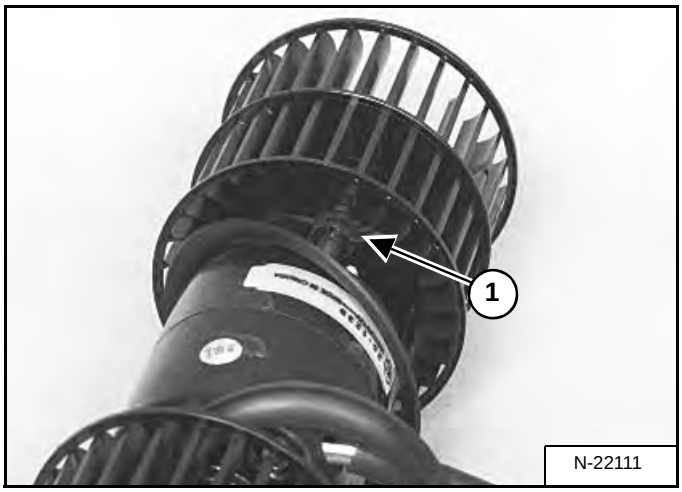
Figure 80-100-5



The expansion valve **[Figure 80-100-5]** is replaced as a complete unit.

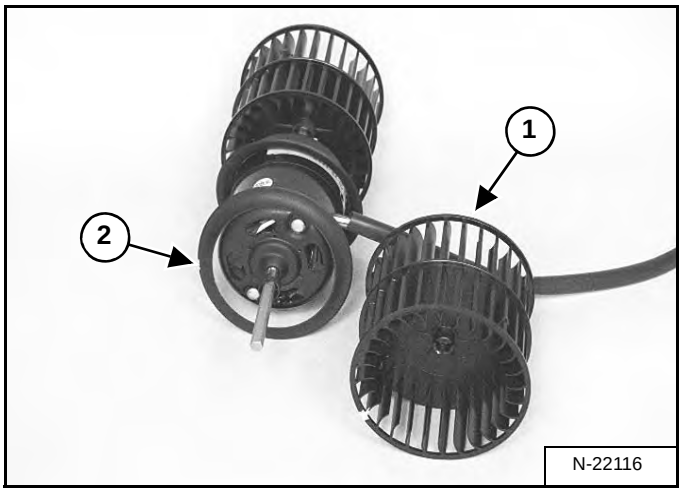
Disassembly And Assembly (Cont'd)

Figure 80-130-13



Remove the inside blower wheel clamp (Item 1) **[Figure 80-130-13]** from the blower wheel.

Figure 80-130-14

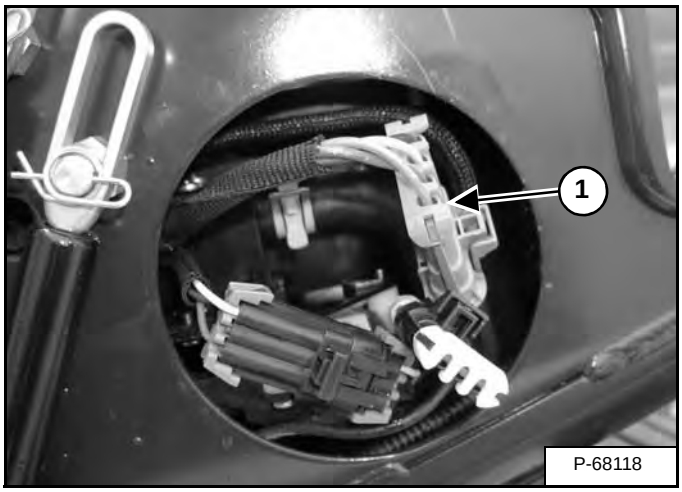


Remove the blower wheel (Item 1) and inside ring (Item 2) **[Figure 80-130-14]** from the blower motor shaft.

Repeat the procedure for the other blower wheel.

Connector Identification

Figure 80-130-15



The wiring code for the blower fan connector (Item 1) **[Figure 80-130-15]** is:

Number on Connector	Wire Color
A	Orange
B	Red
C	Yellow
D	Black

TORQUE SPECIFICATIONS FOR BOLTS (CONT'D)

Torque For General Metric Bolts

Thread Size (Dia.)	Material		
	8.8	10.9	12.9
M4	2.0 - 2.5 ft.-lb. (2,5 - 3,5 N•m)	2.8 - 3.1 ft.-lb. (3,8 - 4,2 N•m)	3.5 - 3.9 ft.-lb. (4,7 - 5,3 N•m)
M5	4.0 - 5.0 ft.-lb. (5,5 - 6,5 N•m)	5.6 - 6.2 ft.-lb. (8,4 - 7,6 N•m)	6.2 - 7.0 ft.-lb. (8,5 - 9,5 N•m)
M6	7.0 - 7.5 ft.-lb. (9,5 - 10,5 N•m)	9.1 - 10.1 ft.-lb. (12,2 - 13,7 N•m)	10.4 - 11.6 ft.-lb. (14,2 - 15,8 N•m)
M7	11.0 - 12.5 ft.-lb. (15 - 17 N•m)	16.2 - 14.7 ft.-lb. (20 - 22 N•m)	17.5 - 19.5 ft.-lb. (23,7 - 26,3 N•m)
M8	18 - 19 ft.-lb. (24 - 26 N•m)	21.7 - 24.0 ft.-lb. (29,4 - 32,6 N•m)	25.5 - 28.5 ft.-lb. (35 - 39 N•m)
M10	32 - 35 ft.-lb. (43 - 47 N•m)	42.0 - 46.5 ft.-lb. (57 - 63 N•m)	52.5 - 58.5 ft.-lb. (71 - 79 N•m)
M12	55 - 60 ft.-lb. (75 - 85 N•m)	78 - 85 ft.-lb. (105 - 115 N•m)	91 - 110 ft.-lb. (91 - 110 N•m)
M14	100 - 90 ft.-lb. (125 - 140 N•m)	118 - 133 ft.-lb. (118 - 133 N•m)	140 - 155 ft.-lb. (140 - 155 N•m)
M16	140 - 155 ft.-lb. (190 - 210 N•m)	188 - 210 ft.-lb. (255 - 285 N•m)	225 - 245 ft.-lb. (300 - 330 N•m)
M18	190 - 215 ft.-lb. (260 - 290 N•m)	255 - 285 ft.-lb. (345 - 385 N•m)	210 - 340 ft.-lb. (420 - 460 N•m)
M20	275 - 300 ft.-lb. (370 - 410 N•m)	360 - 405 ft.-lb. (490 - 550 N•m)	440 - 490 ft.-lb. (590 - 650 N•m)
M22	370 - 400 ft.-lb. (500 - 550 N•m)	554 - 560 ft.-lb. (740 - 760 N•m)	590 - 650 ft.-lb. (800 - 880 N•m)
M24	470 - 520 ft.-lb. (640 - 700 N•m)	625 - 700 ft.-lb. (850 - 950 N•m)	730 - 830 ft.-lb. (1000 - 1120 N•m)
M27	680 - 760 ft.-lb. (930 - 1030 N•m)	900 - 1000 ft.-lb. (1230 - 1370 N•m)	1100 - 1200 ft.-lb. (1470 - 1630 N•m)
M30	930 - 1030 ft.-lb. (1260 - 1400 N•m)	1250 - 1400 ft.-lb. (1700 - 1900 N•m)	1500 - 1600 ft.-lb. (2000 - 2200 N•m)
M33	1270 - 1400 ft.-lb. (1720 - 1900 N•m)	2300 - 2500 ft.-lb. (2300 - 2500 N•m)	2000 - 2300 ft.-lb. (2700 - 3100 N•m)
M36	1620 - 1800 ft.-lb. (200 - 2450 N•m)	2200 - 2400 ft.-lb. (2900 - 3200 N•m)	2600 - 2900 ft.-lb. (3500 - 3900 N•m)

TAKE OUT	PUT IN	REVISION DESCRIPTION
50-70	50-70	Revised Text
ELECTRICAL SCHEMATICS (Printed October 2005)	ELECTRICAL SCHEMATICS (Printed February 2006)	Revised & Added Charts
60-50	60-50	Revised Text
60-90	60-90	Revised Text
60-140	60-140	Revised Text
60-141	60-141	Revised Text
60-160	60-160	Revised Text
70-01	70-01	Revised Text
70-21	70-21	Revised Text
70-50	70-50	Revised Text
70-70	70-70	Revised Text
80-10	80-10	Revised Text
80-30	80-30	Revised Text
80-40	80-40	Revised Text
80-120	80-120	Revised Text
SPEC-01	SPEC-01	Revised Text
SPEC-10	SPEC-10	Revised Text
SPEC-30	SPEC-30	Revised Text
SPEC-40	SPEC-40	Revised Text

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