Bobcat®

Service Manual

S750

Skid-Steer Loader

S/N AT5211001 & Above

7252370enUS (10-18) (E)

Printed in U.S.A.

T4-B

The dealer and owner / operator review the recommended uses of the product when delivered. If the owner / operator will be using the machine for a different application(s) he or she must ask the dealer for recommendations on the new use.

Call Before You Dig

Dial 811 (USA Only)
1-888-258-0808 (USA & Canada)

When you call, you will be directed to a location in your state / province, or city for information about buried lines (telephone, cable TV, water, sewer, gas, etc.).

Cutting or drilling concrete containing sand or rock containing quartz may result in exposure to silica dust. Do not exceed Permissible Exposure Limits (PEL) to silica dust as determined by OSHA or other job site Rules and Regulations. Use a respirator, water spray or other means to control dust. Silica dust can cause lung disease and is known to the state of California to cause cancer.

SI SSL-1016SM

LIFTING AND BLOCKING THE LOADER

Procedure

Figure 10-10-1

⚠ WARNING

AVOID INJURY OR DEATH

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

W-2003-0807

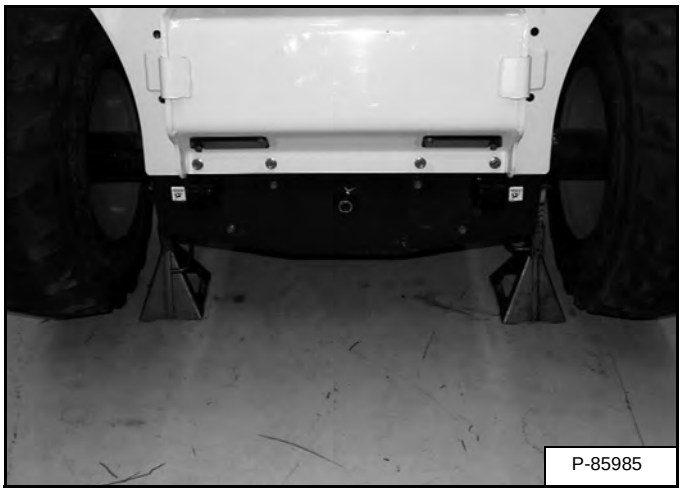
Always park the loader on a level surface.

⚠ WARNING

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

W-2017-0286

Figure 10-10-2



Lift the front of the loader and put jack stands under the axle tubes **[Figure 10-10-2]**.

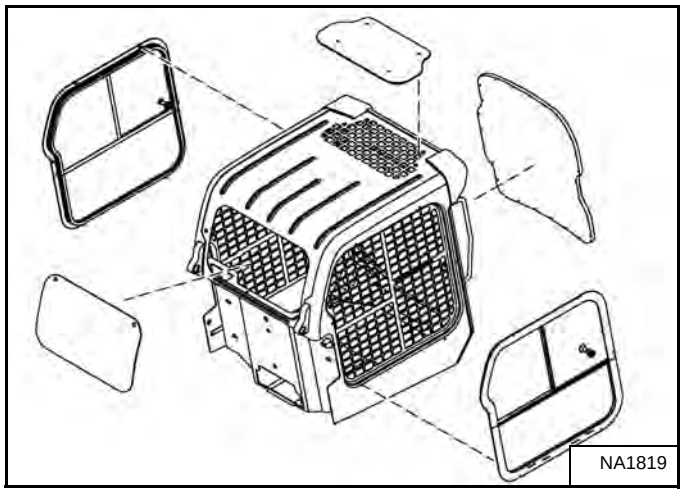
NOTE: Make sure the jack stands do not touch the tires. Make sure tires clear floor or any obstacles.

Figure 10-10-3

Lift the rear of the loader and install jack stands **[Figure 10-10-3]**.

Forestry Door And Window Kit

Figure 10-30-9



Must be used as part of the Forestry Applications Kit to prevent flying debris and objects from entering the loader. Kit includes 19,1 mm (0.75 in) thick laminated polycarbonate front door, polycarbonate side windows and polycarbonate rear window **[Figure 10-30-9]**.

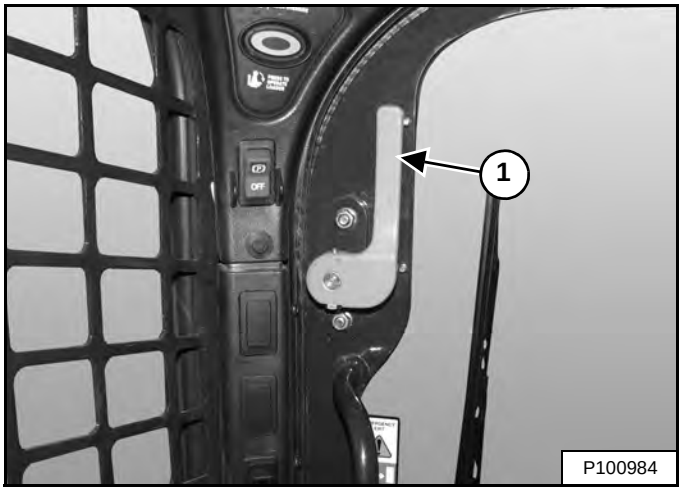
Polycarbonate top window (standard item) must be installed as part of the Forestry Applications Kit to restrict material from entering cab openings.

Forestry Door And Window Kit Inspection And Maintenance

- Inspect for cracks or damage. Replace if required.
- Order part number 7171104 if door frame is damaged and needs to be replaced.
- Order kit part number 7193293 if door polycarbonate is damaged and needs to be replaced.
- Prerinse with water to remove gritty materials.
- Wash with a mild household detergent and warm water.
- Use a sponge or soft cloth. Rinse well with water and dry with a clean soft cloth or rubber squeegee.
- Do not use abrasive or highly alkaline cleaners.
- Do not clean with metal blades or scrapers.

Forestry Door Emergency Exit

Figure 10-30-10



- Inspect both emergency exit levers (Item 1) **[Figure 10-30-10]**, linkages and hardware for loose or damaged parts.
- Repair or replace if necessary.

REMOTE START TOOL (SERVICE TOOL) KIT - 7217666

Description

The Remote Start Tool (Service Tool) Kit is a replacement tool for MEL1563 Remote Start Tool and MEL1400B - BOSS® Diagnostic Tool.

The Remote Start Tool (Service Tool) Kit, P/N 7217666, 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.

Replacing Filters (Cont'd)

Inner Filter

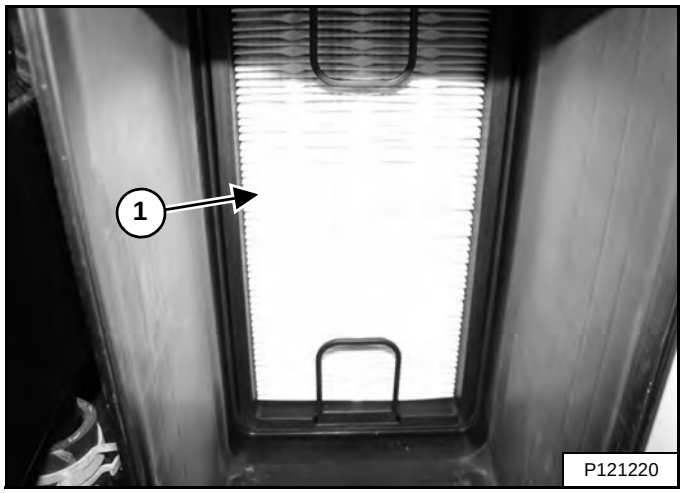
Replace the inner filter only under the following conditions:

- Replace the inner filter every *second* time the outer filter is replaced.
- After the outer filter has been replaced, start the engine and operate at full rpm. If service code **[M0117]** (Air Filter Plugged) is still displayed in the data display, replace the inner filter.

Stop the engine and remove the rear grille. (See Removing on Page 50-60-1.)

Remove the cover (Item 1)**[Figure 10-80-2]** and the outer filter (Item 1) **[Figure 10-80-3]**.

Figure 10-80-4



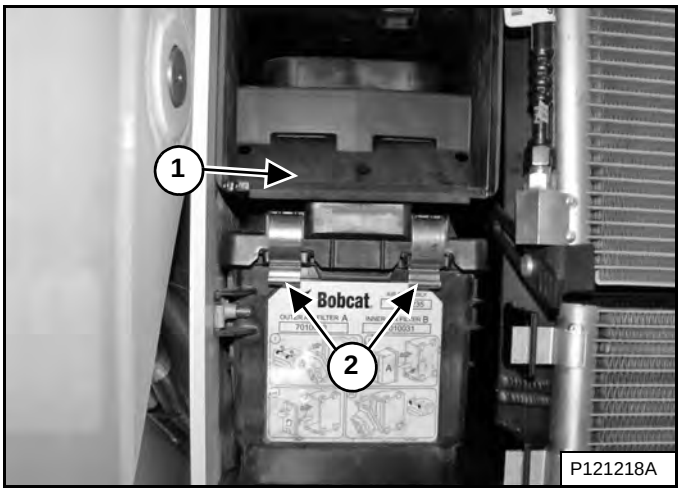
Remove the inner filter (Item 1) **[Figure 10-80-4]**.

NOTE: Make sure the filter housing is free of dirt and debris. Verify that sealing surfaces are clean. DO NOT use compressed air.

Install new inner filter. Push in until the filter contacts the base of the housing.

Install the outer filter (Item 1) **[Figure 10-80-3]**.

Figure 10-80-5



Install the cover (Item 1) and secure the latches (Item 2) **[Figure 10-80-5]**.

NOTE: The rubber boot attached to the air cleaner cover is an important part of the engine cooling system and must remain correctly installed on the air cleaner cover.

Install the rear grille.

DIESEL EXHAUST FLUID (DEF) / ADBLUE® SYSTEM

Description

The engine exhaust system is equipped with a selective catalytic reduction (SCR) system. The SCR is an emissions reduction system that removes nitrogen oxides from the exhaust gases.

The machine will periodically perform a process to clean sulfur oxides from the SCR system. This process is called DeSOX. (See DeSOX Process on Page 70-30-3.)

The SCR system requires Diesel Exhaust Fluid (DEF) / AdBlue® to function correctly.

NOTE: Diesel exhaust fluid (DEF) and AdBlue® are different names for the same fluid.

The SCR system will use one tankful of DEF / AdBlue® for approximately two to four tankfuls of diesel fuel.

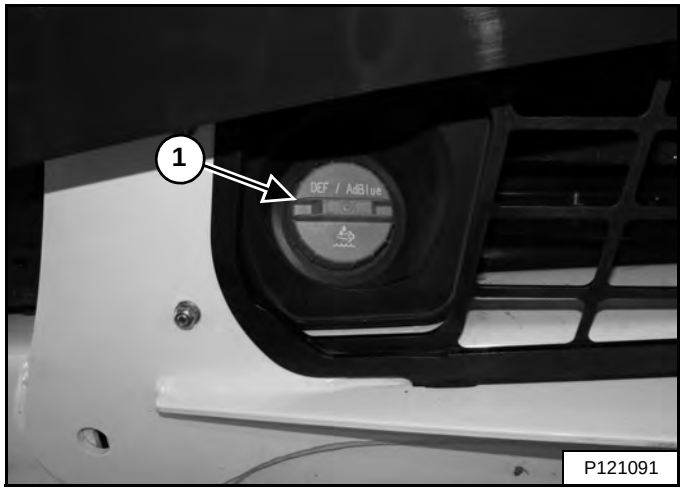
The DEF / AdBlue® level indicator is located on the left panel. (See Left Panel on Page 60-50-1.)

Filling The DEF / AdBlue® Tank

Stop the engine.

NOTE: The engine must be stopped with the key switch in the STOP position when filling the DEF / AdBlue® tank.

Figure 10-101-1



The DEF / AdBlue® fill cap is located on the left side of the machine. Remove the fill cap (Item 1) **[Figure 10-101-1]**.

Add only clean, unused DEF / AdBlue®. (See Capacities on Page SPEC-10-5.)

Install and tighten the fill cap (Item 1) **[Figure 10-101-1]**.

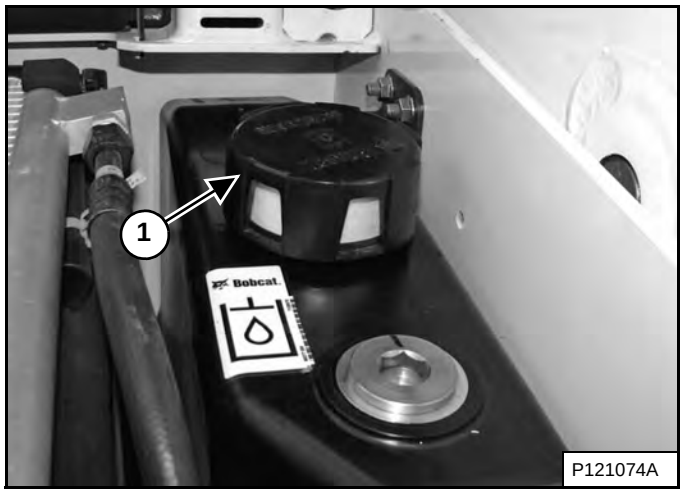
NOTE: The DEF / AdBlue® fill cap must be tightened until the cap clicks.

Replacing Reservoir Breather Cap

See the SERVICE SCHEDULE for the correct replacement interval. (See SERVICE SCHEDULE on Page 10-70-1.)

Stop the engine and remove the rear grille. (See Removing on Page 50-60-1.)

Figure 10-120-12



Remove the breather cap (Item 1) **[Figure 10-120-12]** and discard.

Install new breather cap.

Install the rear grille.

TIRE MAINTENANCE

Wheel Nuts

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

Figure 10-160-1

Follow the torques specified below for the wheel nuts **[Figure 10-160-1]**:

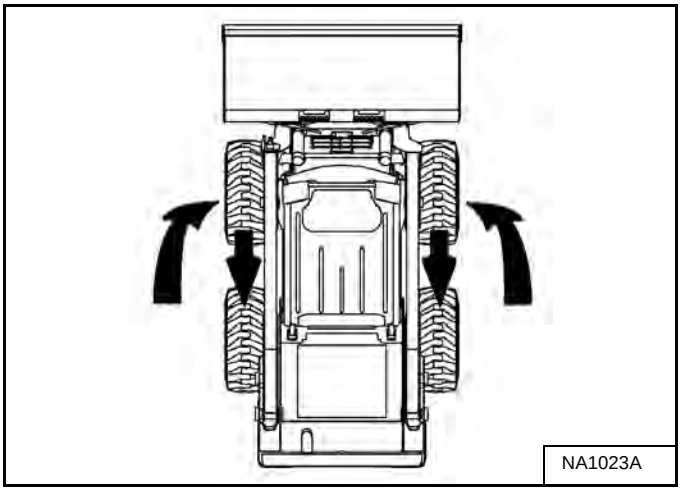
When installing wheel nuts, tighten to 278 N•m (205 ft-lb) torque.

When checking wheel nut torque, set the torque wrench to 251 N•m (185 ft-lb) to prevent over-tightening.

Rotating

Inspect the tires regularly for wear, damage and pressure.

Figure 10-160-2



Rear tires usually wear faster than front tires. To keep tire wear even, move the front tires to the rear and rear tires to the front **[Figure 10-160-2]**.

The same size tires must be used on each side of the loader. If different sizes are used, each tire will turn at a different rate and cause excessive wear. The tread bars of all the tires must face the same direction.

Recommended tire pressure must be maintained to avoid excessive tire wear and loss of stability and handling capability. Test for correct pressure before operating the loader.


Bobcat®

HYDRAULIC/HYDROSTATIC SCHEMATIC MANUAL WITH ALL OPTIONS

S750 (S/N AT5211001 AND ABOVE)

(PRINTED JUNE 2015)

V-1604legend Printable Version Click Here

LEGEND

1. RESERVOIR:
   Capacity at sight gauge . . 9,5 L (2.5 U.S. gal)
   System Capacity . . . . . 36 L (9.5 U.S. gal)
2. SIGHT GUAGE
3. DIFFERENTIAL PRESSURE SWITCH:
   103 kPa (1,03 bar) (15 psi)
   Normally Closed
4. FILTER - HYDRAULIC (CANISTER)
5. SPRING LOADED FILTER BY-PASS VALVE: 172 kPa (1,7 bar) (25 psi)
6. DIAGNOSTIC COUPLER
7. RELIEF VALVE - MAIN:
   23787 - 24476 kPa (238 - 245 bar)
   (3450 - 3550 psi) at Front Quick Couplers
   RELIEF VALVE – MAIN (OPTIONAL):
   25855 – 26545 kPa (259 - 265 bar)
   (3750 - 3850 psi) at Diagnostic Coupler 6

7A. RELIEF VALVE – AUXILIARY (OPTIONAL):
   23787 – 24476 kPa (238 - 245 bar)
   (3450 - 3550 psi) at Diagnostic Coupler 6

8. RELIEF/ANTICAVITATION VALVE - PORT: 27579 kPa (276 bar) (4000 psi)
9. RELIEF/ANTICAVITATION VALVE - PORT (OPTIONAL): 27579 kPa (276 bar) (4000 psi)
10. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - AUXILIARY
11. LOAD CHECK VALVE
12. ANTICAVITATION VALVE
13. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - TILT CONTROL
14. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT CONTROL
15. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BICS CONTROL
16. FILTER - BICS CONTROL VALVE (SCREEN)
17. CHECK VALVE - With 100 kPa (1,0 bar) (14.5 psi) Spring
18. RESTRICTION . . . . . 2,0 mm (0.079 in)
19. PULL BUTTON ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT ARM BY-PASS
20. LIFT CYLINDER SPOOL - MADE TO RESTRICT FLOW DURING BOOM DOWN BUT NOT DURING BOOM UP
21. ANTICAVITATION VALVE
22. PROPORTIONAL RELIEF VALVE – (Fan Speed Regulator): 10797 – 12300 kPa (108 - 123 bar) (1566 - 1784 psi)
23. SPRING LOADED FILTER BY-PASS VALVE: 517 – 572 kPa (5,2 - 5,7 bar) (75 - 83 psi)
24. FIXED CAPACITY DISPLACEMENT HYDRAULIC MOTOR
25. FILTER - HYDRAULIC (CANISTER)
26. SENSOR – CHARGE PRESSURE – Fan Filter
27. FRONT AUXILIARY MANUAL PRESSURE BLEED-OFF VALVE
28. SENSOR – HYD. TEMPERATURE
29. RESTRICTION - 1,5 mm (0.06 in)
30. CHECK VALVE - With 1379 kPa 13,8 bar (200 psi) Spring
31. DRIVE MOTOR SHUTTLE VALVE
32. FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC MOTOR
33. HYDRAULIC BRAKE – SPRING APPLIED – PRESSURE RELEASE (SAPR)
34. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE – 2 Speed
35. FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC MOTOR
36. CHARGE PUMP -
    51,1 L/min (13.5 U.S. gpm) at High Engine Idle
37. HYDRAULIC PUMP . . . . . Gear Type
    87,1 L/min (23.0 U.S. gpm) at High Engine Idle
38. VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC PUMP
39. RELIEF/REPLENISHING VALVE - HIGH PRESSURE: 36500 kPa (365 bar) (5294 psi)
40. RELIEF VALVE - CHARGE INLET:
    3447 kPa (34,5 bar) (500 psi)
    at High Engine Idle
    With 60 ° C (140 ° F) Fluid
41. CHECK VALVE – COLD WEATHER BY-PASS
    With 345 kPa (3,45 bar) (50 psi) Spring
42. FILL PORT – Factory hydraulic Oil
43. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE – HYDRAULIC POWERED BOB-TACH
    With Build-up Valve 275 kPa (2,75 bar) (40 psi)
44. FILTER - BOB-TACH VALVE
45. RESTRICTION - 1,17 mm (0.46 in)
46. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE (TWO COIL)
47. RELIEF VALVE - 24131 kPa (241 bar) (3500 psi)
48. CHECK VALVE
49. RESTRICTION - 0,25 mm (0.10 in)
50. NOT USED ON THIS MODEL
51. SOLENOID ACTIVATED DIRECECTIONAL CONTROL VALVE – BRAKE
52. FILTER – BRAKE VALVE
53. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE – 2 Speed Shift
54. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - REAR AUXILIARY
55. RELIEF VALVE: 22753 kPa (228 bar) (3300 psi)
56. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - TWO COIL
57. RESTRICTOR - 0,8 mm (0.031 in)
58. LOAD SHUTTLE VALVE - BLEED OFF
59. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Female
60. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - Male
61. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BUCKET POSITION VALVE (ON/OFF)
62. FLOW DIVIDER ADJUSTMENT VALVE
63. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - FLOW CONTROL SPOOL
64. CHECK VALVE - BUCKET POSITION VALVE
65. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - UNLOADING SPOOL
66. HIGH FLOW HYDRAULIC PUMP Gear Type
    51,1 L/min (13.5 U.S. gal) at High Engine Idle
67. RELIEF VALVE - 24132 kPa (241 bar) (3500 psi)
68. DUMP VALVE – ON / OFF
69. CHECK VALVE - With 34,5 kPa (0,34 bar) (5.0 psi) Spring
70. RIDE CONTROL VALVE
71. HIGH PRESSURE CHAMBER
72. LOW PRESSURE CHAMBER

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

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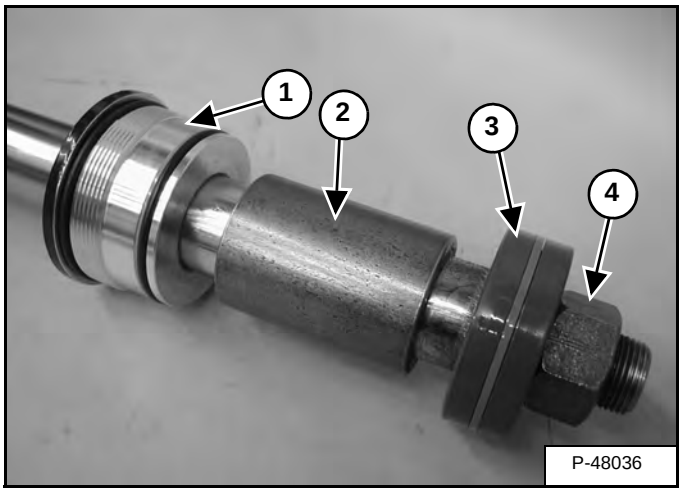
Assembly (Cont'd)

Figure 20-20-26

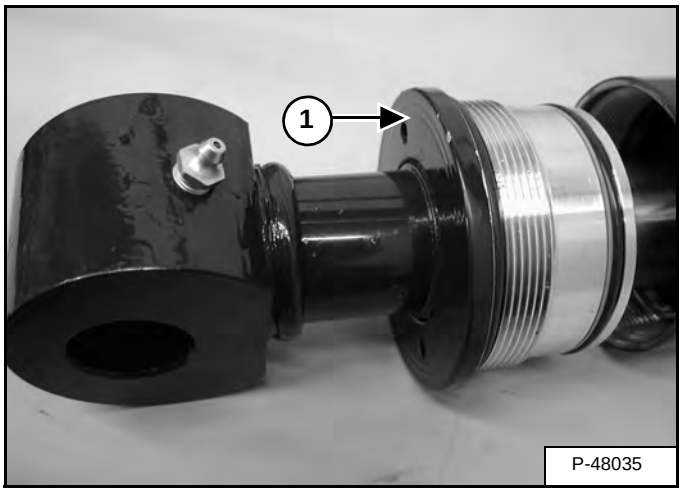


Install the head (Item 1), spacer (Item 2) piston (Item 3), and nut (Item 4) **[Figure 20-20-26]**.

NOTE: Clean and dry the rod threads. Install a NEW NUT with preapplied Loctite® included in the seal kit or if a new nut is not available use Loctite® #242 on threads.

Tighten the nut (Item 4) **[Figure 20-20-26]** to 1491 N•m (1100 ft-lb) torque.

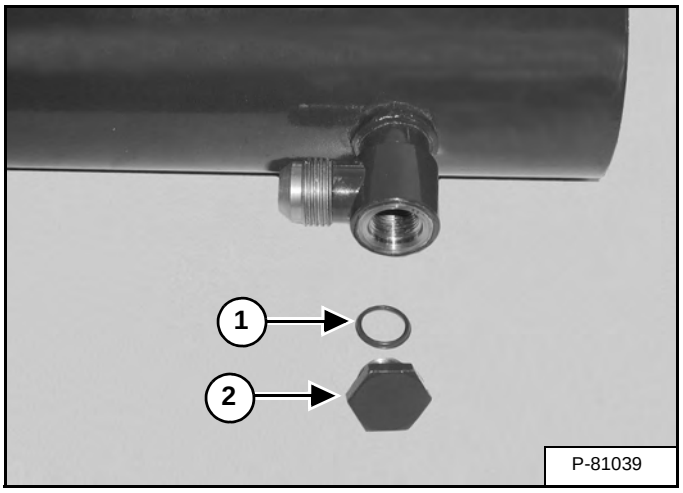
Figure 20-20-27



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

Using a spanner wrench tighten the head (Item 1) **[Figure 20-20-27]** to 373 N•m (275 ft-lb) torque.

Figure 20-20-28

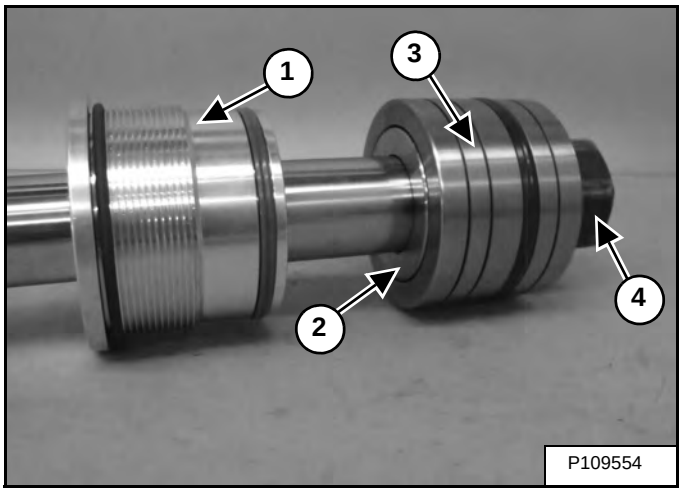


Install the O-ring (Item 1) and plug (Item 2) **[Figure 20-20-18]**.

Tighten the plug to 50 N•m (37 ft-lb) torque.

Assembly (Cont'd)

Figure 20-21-25



NOTE: Lube chamfer on shaft with oil or grease before installing the collar.

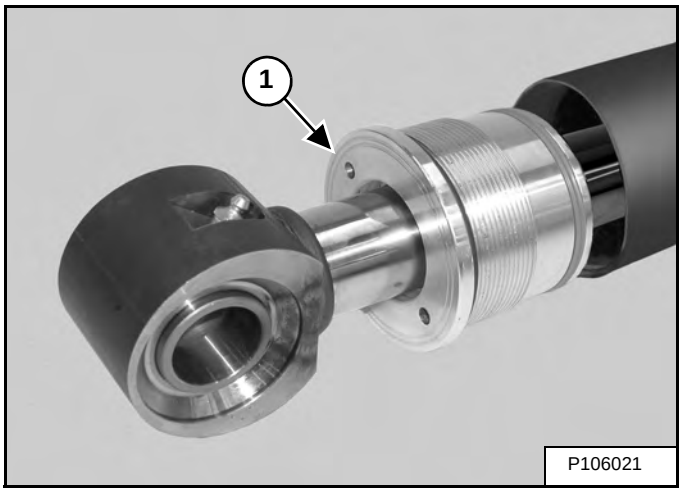
Install the head (Item 1), collar (Item 2), piston (Item 3) and nut (Item 4) **[Figure 20-21-25]**.

NOTE: Clean and dry the rod threads. Install a NEW NUT with preapplied Loctite® included in the seal kit or if a new nut is not available use Loctite® #242 on threads.

Tighten the nut (Item 4) **[Figure 20-21-25]** to 1491 N•m (1100 ft-lb) torque.

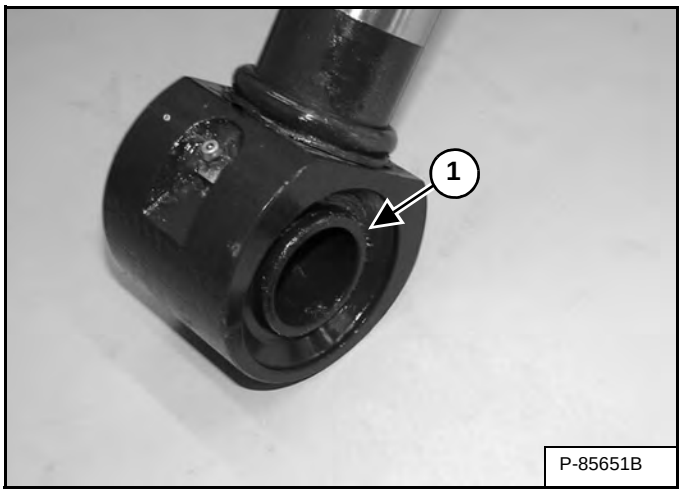
Put the base end of the hydraulic cylinder in a vise.

Figure 20-21-26



Using an Adjustable Gland Nut Wrench, lightly lubricate with grease and tighten the head (Item 1) **[Figure 20-21-26]** to 373 N•m (275 ft-lb) torque.

Figure 20-21-27



Install the bushing (Item 1) **[Figure 20-21-27]** using a driver tool and hammer.

Testing (Cont'd)

Route the test gauge so it can be used in the operator cab when lowered. Make sure the hose will not interfere with any moving parts.

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

NOTE: Do not have any attachment connected to the loader auxiliary quick couplers while testing.

Enter the loader and engage the parking brake. Start the engine.

Increase the engine speed to full rpm and make sure the hydraulic fluid is at 60°C (140°F).

Testing Main Relief Pressure Without Auxiliary Relief Valve

The main relief valve setting is 23,8 - 24,5 mPa (238 - 245 bar) (3450 - 3550 psi).

Power loader lift arms down on the stops and monitor the test gauge for the relief pressure setting.

If the relief pressure is not correct, stop the engine and adjust the relief valve. (See Main Relief Valve Adjustment on Page 20-30-4.)

Testing Main Relief Pressure If Equipped With Auxiliary Relief Valve

If equipped with the optional auxiliary relief valve, the main relief valve setting is 25,5 - 26,2 mPa (255 - 262 bar) (3700 - 3800 psi).

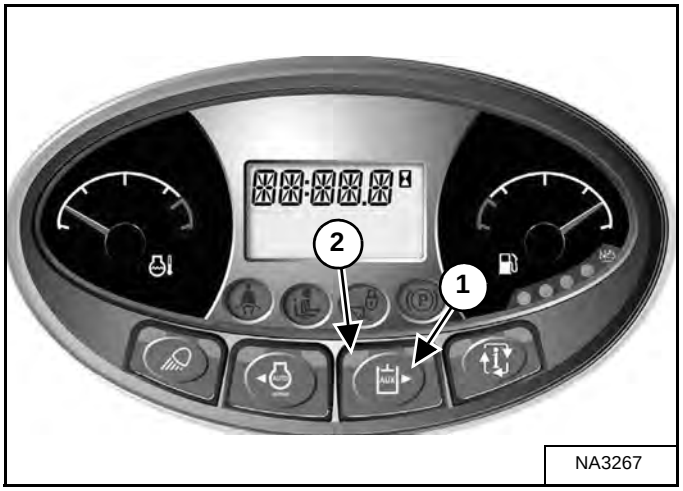
Power loader lift arms down on the stops and monitor the test gauge for the relief pressure setting.

If the relief pressure is not correct, stop the engine and adjust the relief valve. (See Main Relief Valve Adjustment on Page 20-30-4.)

Testing Auxiliary Relief Pressure

The auxiliary relief valve setting is 23787 - 24476 kPa (238 - 245 bar) (3450 - 3550 psi).

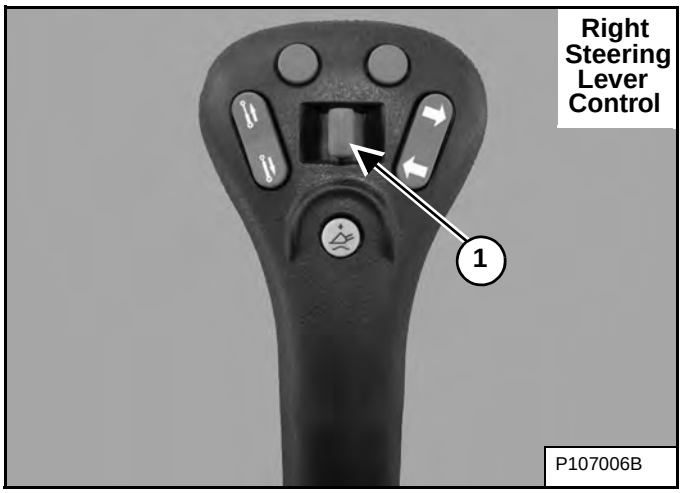
Figure 20-30-5



Press the auxiliary hydraulics button (Item 1) **[Figure 20-30-5]** to activate the auxiliary hydraulics.

NOTE: The auxiliary indicator (Item 2) [Figure 20-30-5] will illuminate when activated.

Figure 20-30-6



Move the front auxiliary hydraulic switch (Item 1) **[Figure 20-30-6]** to the left or right and monitor the test gauge for the relief pressure setting.

If the relief pressure is not correct, stop the engine and adjust the relief valve. (See Auxiliary Relief Valve Adjustment on Page 20-30-5.)

Stop the machine and exit the loader.

Lift Load Check Valve Removal And Installation

IMPORTANT

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

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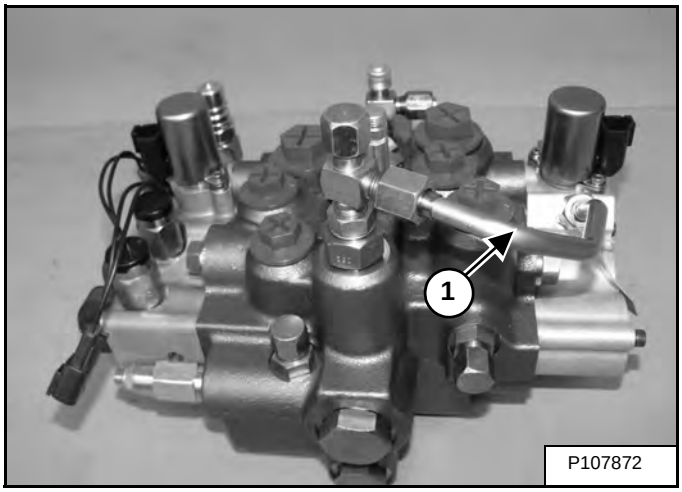
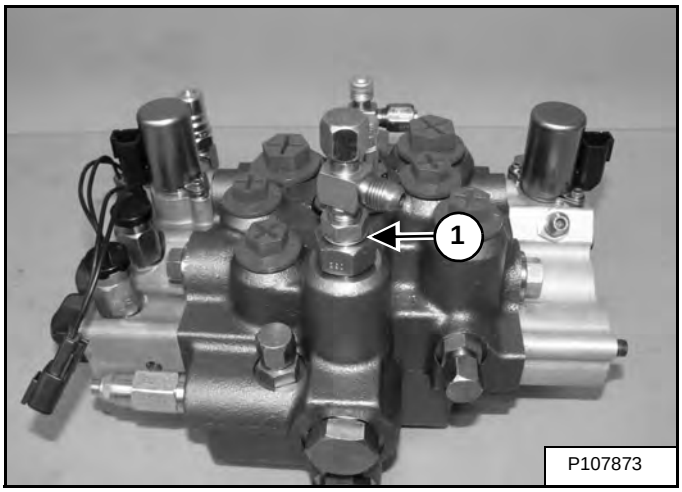
Figure 20-40-18



Remove the charge tubeline (Item 1) **[Figure 20-40-18]** from the BICS™ valve fitting on the top of the lift load check valve.

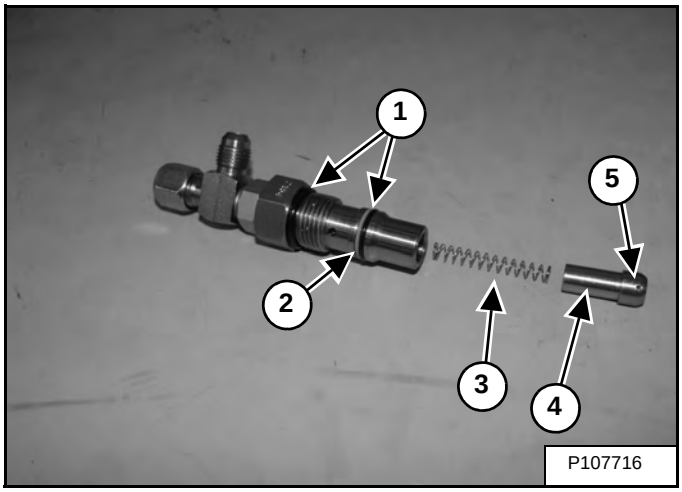
Figure 20-40-19



Remove the lift load check valve (Item 1) **[Figure 20-40-19]** and fitting from the top of the control valve.

Installation: Lubricate the O-ring and threads and tighten to 68 - 94 N•m (50 - 70 ft-lb) torque.

Figure 20-40-20



Remove the O-rings (Item 1) and back-up ring (Item 2) **[Figure 20-40-20]**.

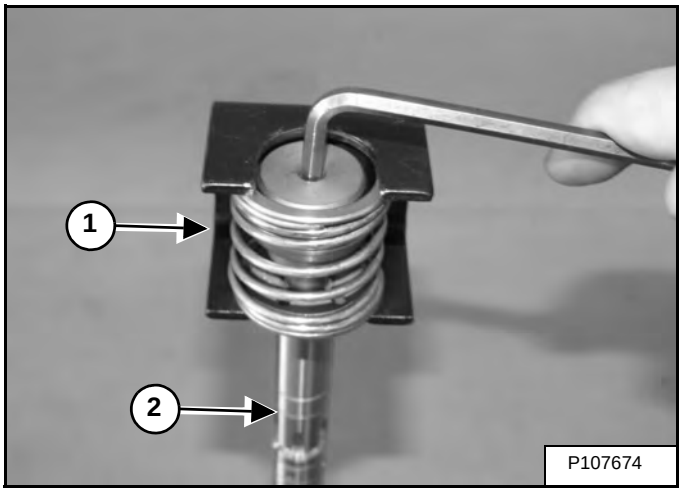
Inspect the spring (Item 3) and the free movement in the load check valve (Item 4) **[Figure 20-40-20]**.

Inspect the orifice to make sure it is not plugged (Item 5) **[Figure 20-40-20]**.

Lift Spool And Detent Disassembly (Cont'd)

NOTE: Be careful when removing the detent adapter (Item 2) [Figure 20-40-57] from the centering spring, as it is under spring pressure.

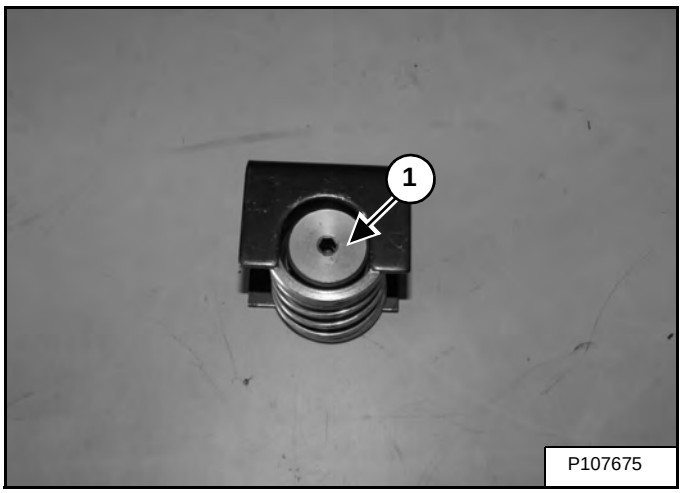
Figure 20-40-58



Remove the spring assembly / spring tool (Item 1) from the spool (Item 2) **[Figure 20-40-58]**.

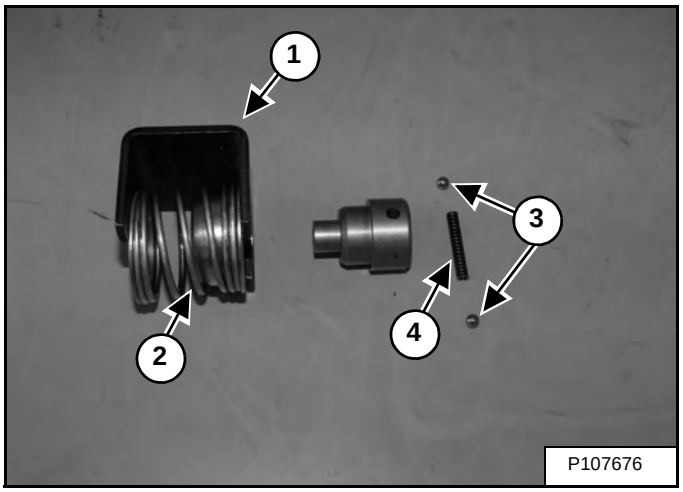
NOTE: The detent adapter has two detent balls (Item 3) held under pressure from a detent spring (Item 4) [Figure 20-40-60]. Use care when removing the detent adapter from the spring assembly so the detent balls are retained.

Figure 20-40-59



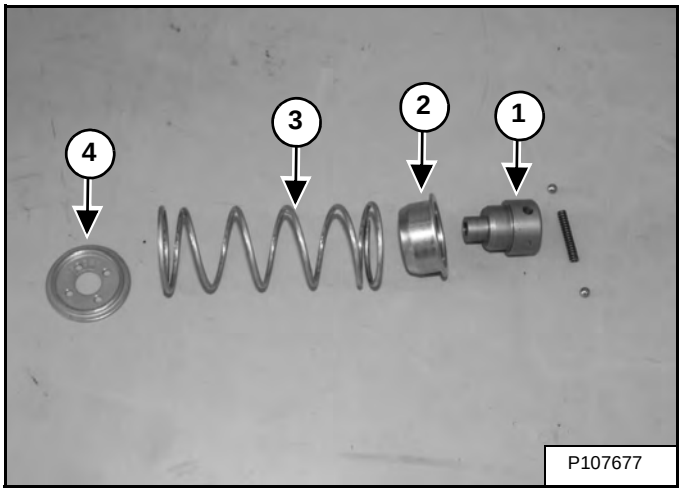
Remove the detent adapter (Item 1) **[Figure 20-40-59]** from the spring assembly.

Figure 20-40-60



Remove spring tool (Item 1) from the spring assembly (Item 2) **[Figure 20-40-60]**.

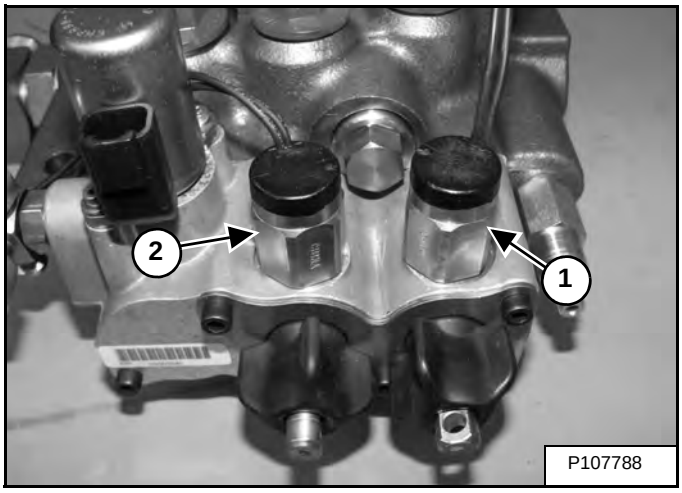
Figure 20-40-61



Inspect the adapter (Item 1), collar (Item 2), spring (Item 3) and washer (Item 4) **[Figure 20-40-61]**.

Lock Valve Removal And Installation (Cont'd)

Figure 20-40-98

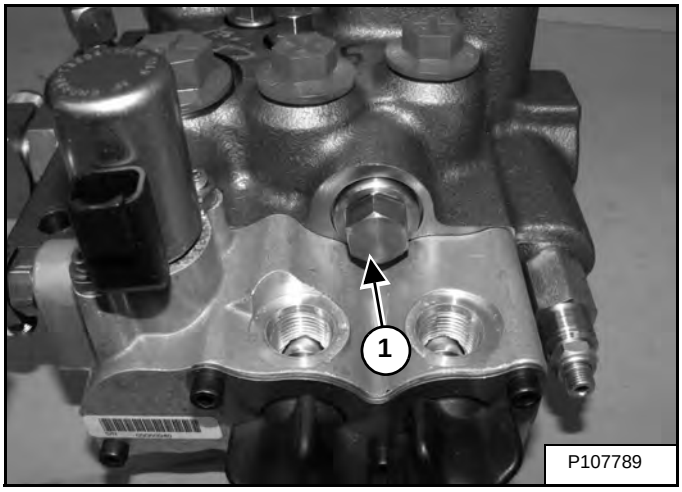


Remove the lift spool lock solenoid (Item 1) **[Figure 20-40-98]**.

Remove the tilt spool lock solenoid (Item 2) **[Figure 20-40-98]**.

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

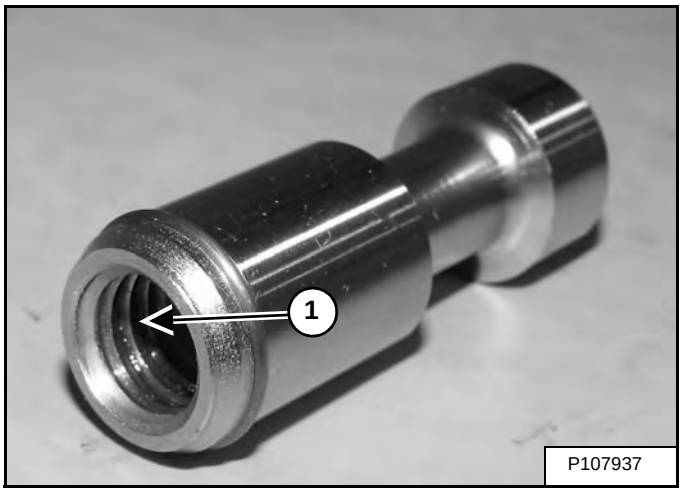
Figure 20-40-99



Remove the tilt lock valve (Item 1) **[Figure 20-40-99]** from the front of the control valve.

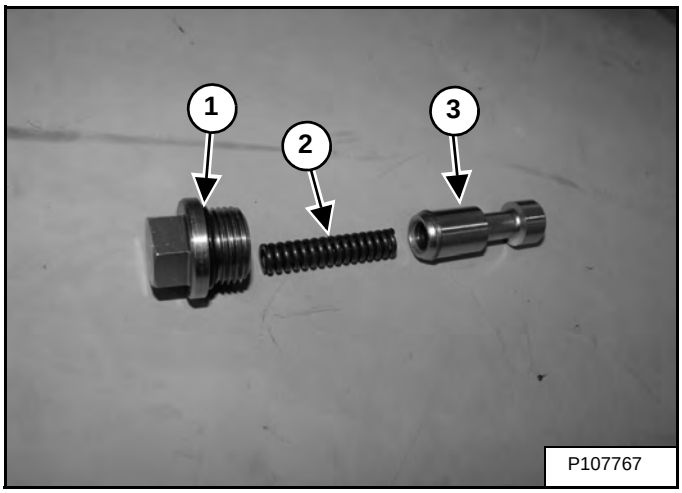
Installation: Lightly lubricate the lock valve retaining cap O-ring and tighten to 75 - 81 N•m (55 - 60 ft-lb) torque.

Figure 20-40-100



The inside diameter of the BICS™ valve (Item 1) **[Figure 20-40-100]** is threaded for easier removal and installation.

Figure 20-40-101

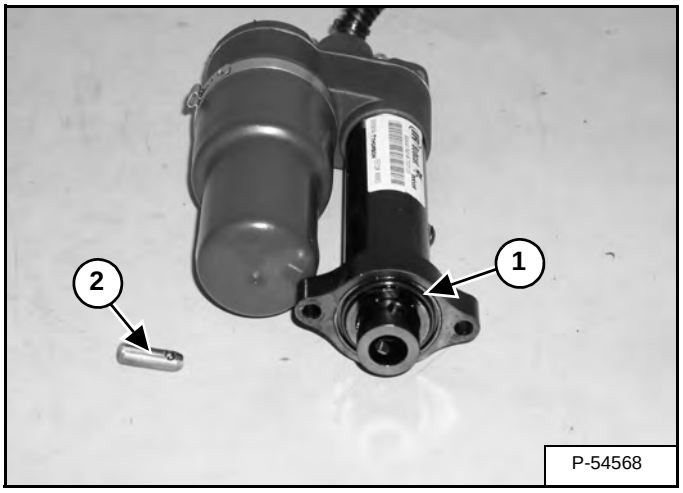


Remove the O-ring (Item 1) **[Figure 20-40-101]**.

Remove and inspect the spring (Item 2) and BICS™ valve (Item 3) **[Figure 20-40-101]**.

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

Figure 20-41-18



Remove the O-ring (Item 1) **[Figure 20-41-18]** on the face of the actuator.

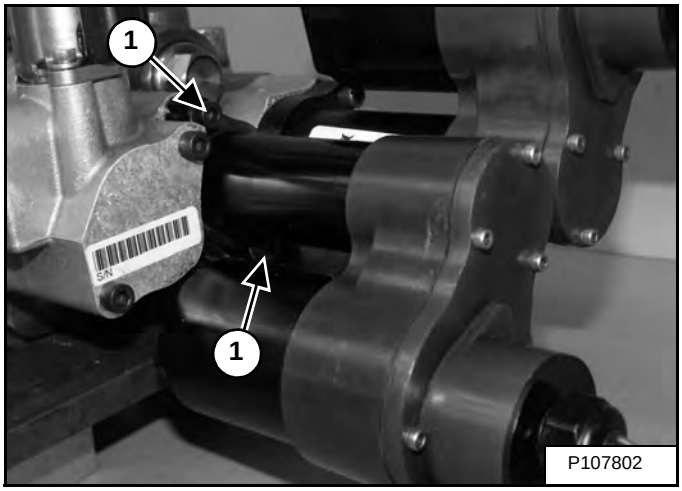
Inspect the linkage pin (Item 2) **[Figure 20-41-18]** and replace as needed.

NOTE: Repeat this procedure to remove the lift actuator.

Actuator Removal And Installation (Out Of Loader)

Remove the control valve from the loader.

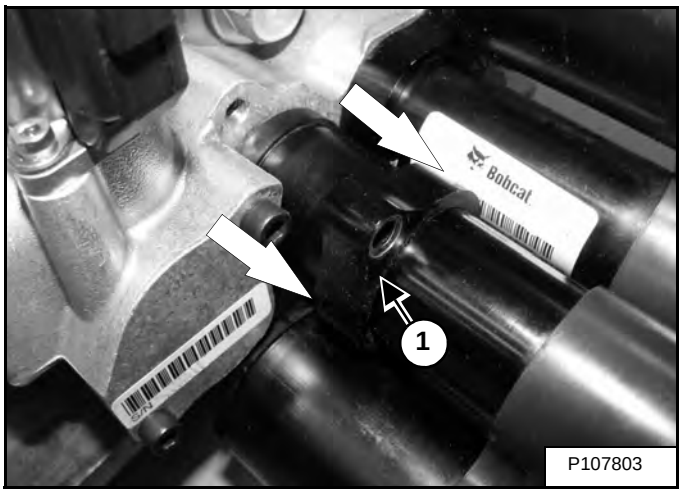
Figure 20-41-19



Remove the two mount bolts (Item 1) **[Figure 20-41-19]** from the tilt actuator.

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

Figure 20-41-20



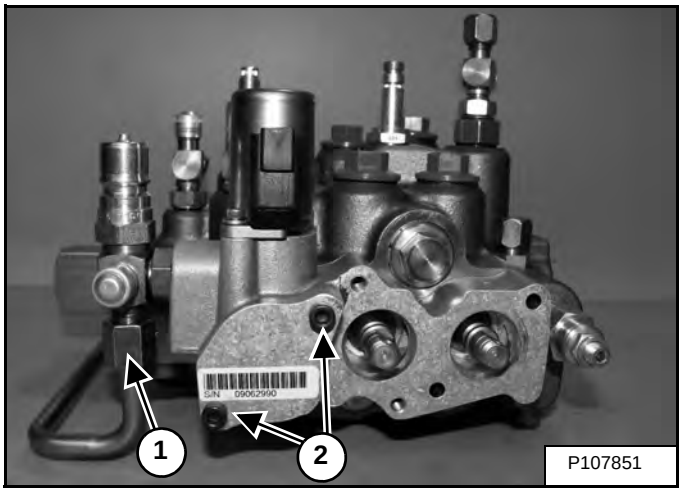
Slide the actuator mount bracket (Item 1) **[Figure 20-41-20]** away from the control valve.

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

End Cap Block Removal And Installation

Remove the lift and tilt actuators from the control valve. (See Actuator Removal And Installation (In Loader) on Page 20-41-6.)

Figure 20-41-56

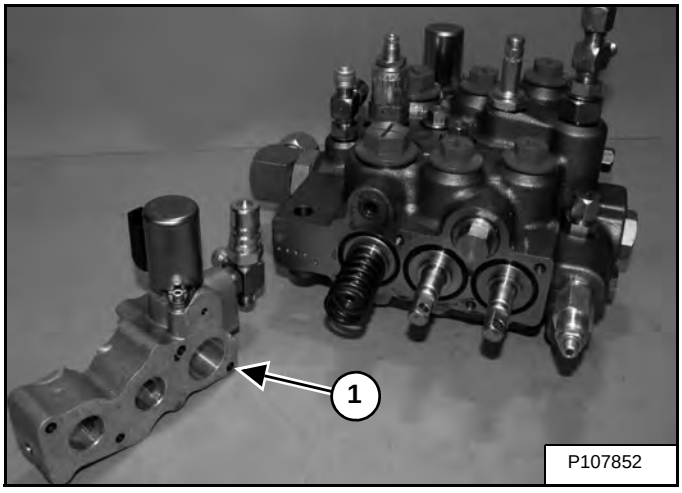


Disconnect the tubeline (Item 1) **[Figure 20-41-56]** from the end cap block.

Remove the two end cap block mount screws (Item 2) **[Figure 20-41-56]**.

Installation: Lubricate the screws and tighten to 10,4 - 11,6 N•m (95 - 105 in-lb) torque.

Figure 20-41-57



Remove the end cap block (Item 1) **[Figure 20-41-57]** from the control valve.

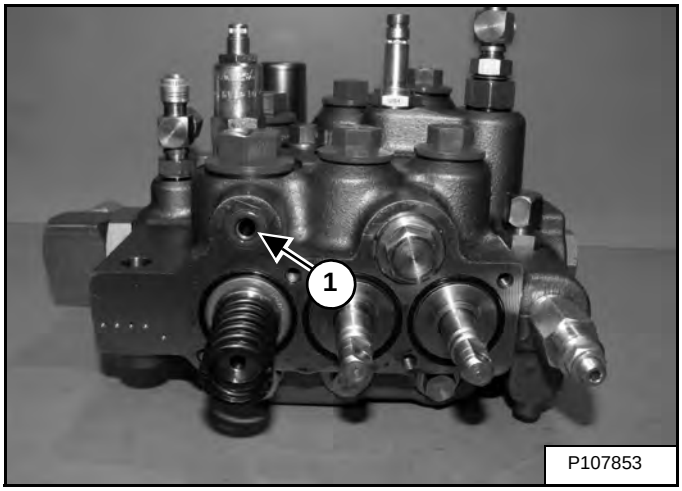
Lift Spool Removal And Installation

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

MEL1285 - Spring Tool

Remove the end cap block from the control valve **[Figure 20-41-56]**.

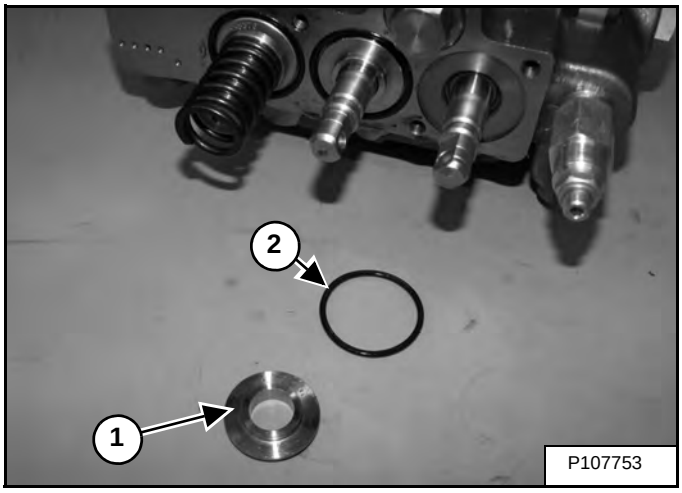
Figure 20-41-58



Remove the O-ring (Item 1) **[Figure 20-41-58]**.

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

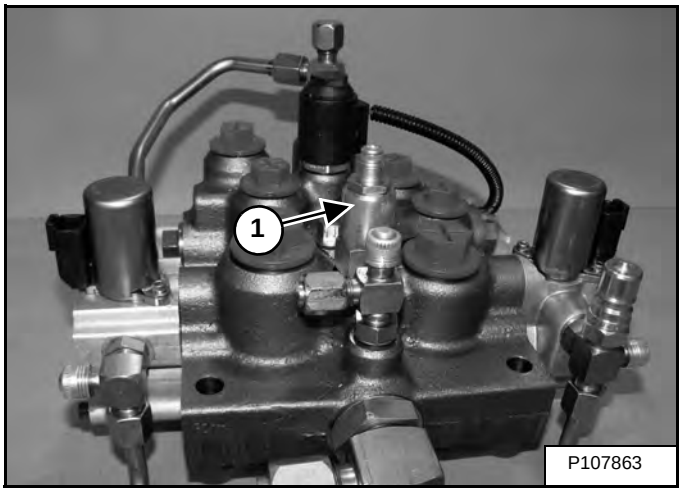
Figure 20-41-59



Remove the spacer (Item 1) and O-ring (Item 2) **[Figure 20-41-59]** from the lift spool.

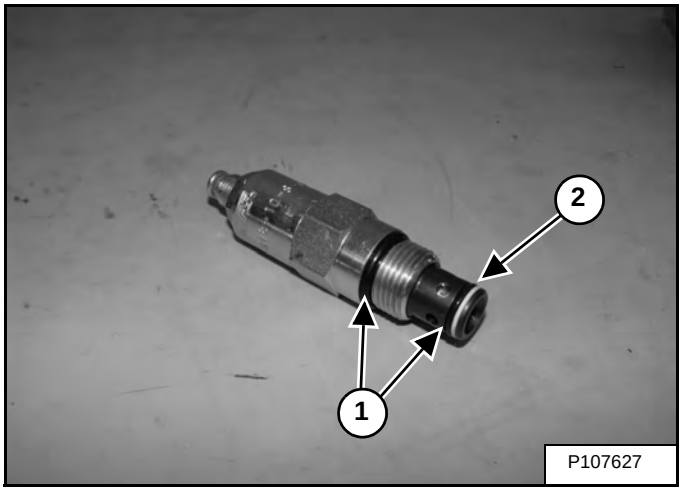
Auxiliary Relief Valve Removal And Installation

Figure 20-41-97



Remove the auxiliary relief valve (Item 1) **[Figure 20-41-97]**.

Figure 20-41-98

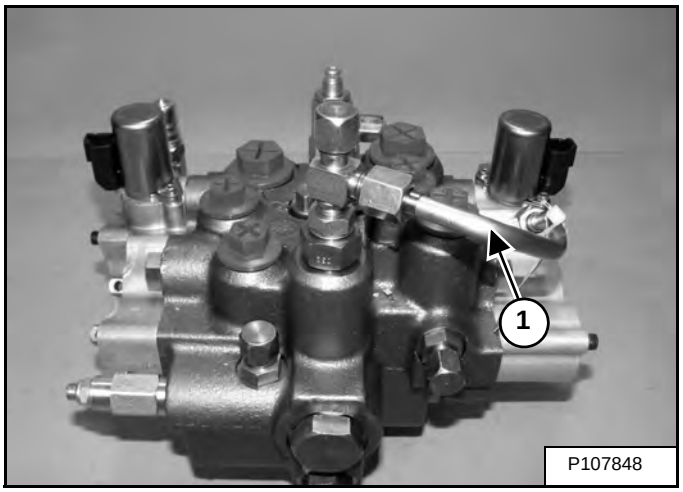


Remove the O-rings (Item 1) and back-up ring (Item 2) **[Figure 20-41-98]** from the auxiliary relief valve.

Installation: Tighten to 51 - 61 N•m (38 - 45 ft-lb) torque.

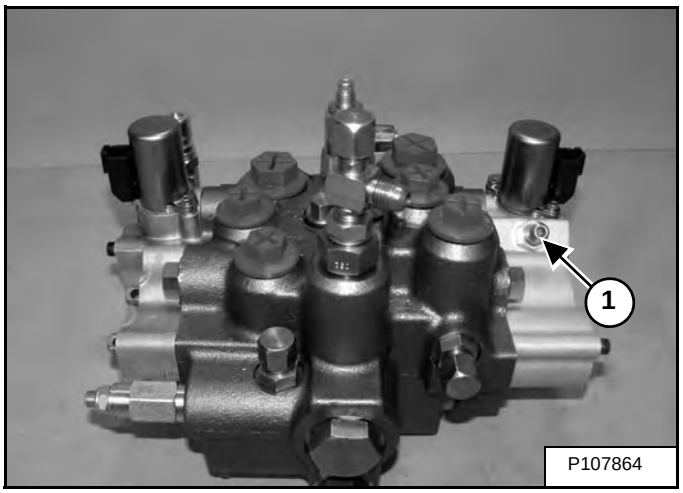
Check Valve Removal And Installation

Figure 20-41-99



Remove the tubeline (Item 1) **[Figure 20-41-99]**.

Figure 20-41-100



Remove the check valve fitting (Item 1) **[Figure 20-41-100]** from the hydraulic control valve.

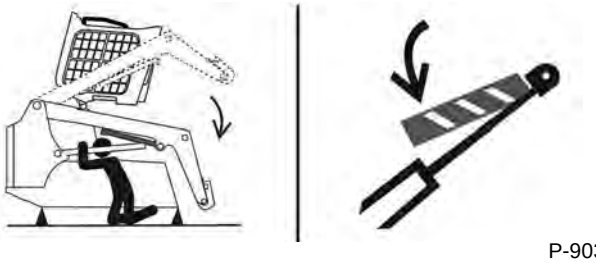
Removal And Installation

⚠ WARNING

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

W-2059-0598

⚠ DANGER



P-90328

AVOID DEATH

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

D-1009-0409

IMPORTANT

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

I-2003-0888

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

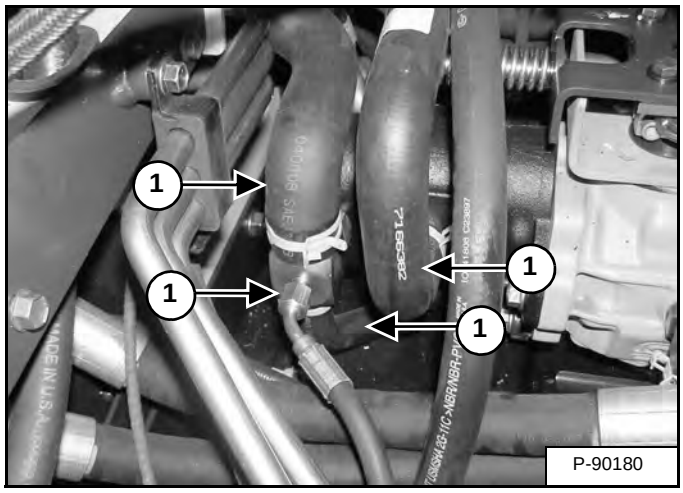
Raise the lift arms and install an approved lift arm support device. (See Installing on Page 10-20-2.)

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

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

Open the rear door.

Figure 20-60-6

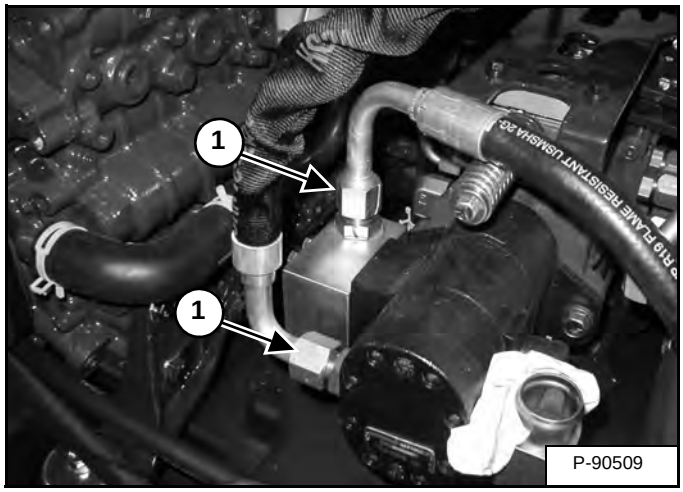


P-90180

Disconnect and cap the four hoses (Item 1) **[Figure 20-60-6]** from the hydraulic pump.

Remove the Power Bob-Tach block (if equipped). (See Removal And Installation on Page 20-120-4.)

Figure 20-60-7



P-90509

Disconnect and cap the outlet hoses (Item 1) **[Figure 20-60-7]** from the hydraulic pump.

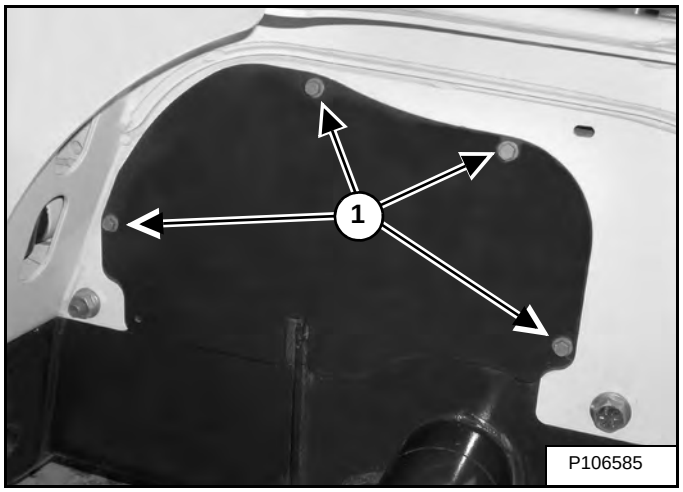
High Flow Relief Valve Adjustment

If the pump is unable to reach 24132 kPa (241,3 bar) (3500 psi) stop the engine. The relief screw (Item 1) **[Figure 20-61-11]** will need to be turned 90° clockwise and retested with the procedure above. (90° turn equals approximately 1379 kPa (13,8 bar) (200 psi).)

NOTE: If the relief screw has been turned in 1/4 turn and the pressure remains the same, go to the high flow relief valve removal and installation section. (See High Flow Relief Valve Removal And Installation on Page 20-61-8.) If relief valve has been tested and is OK, go to the high flow pump disassembly and assembly section. (See Disassembly And Assembly on Page 20-61-14.)

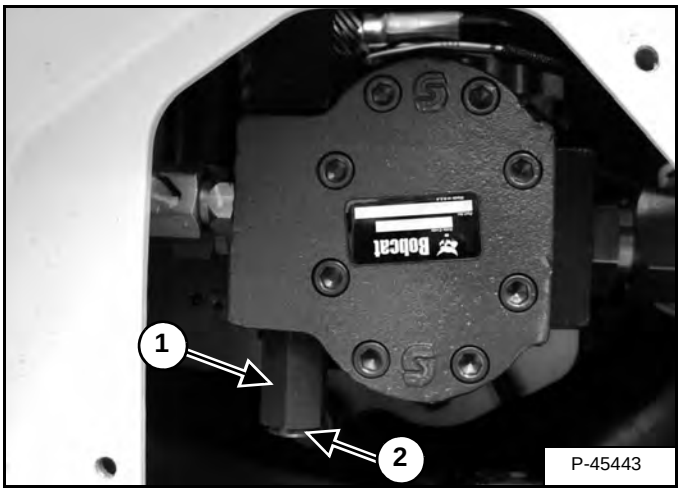
Remove right rear wheel. (See Wheel Nuts on Page 10-160-1.)

Figure 20-61-9



Remove the mounting bolts (Item 1) **[Figure 20-61-9]** from the access cover and remove the cover from the loader.

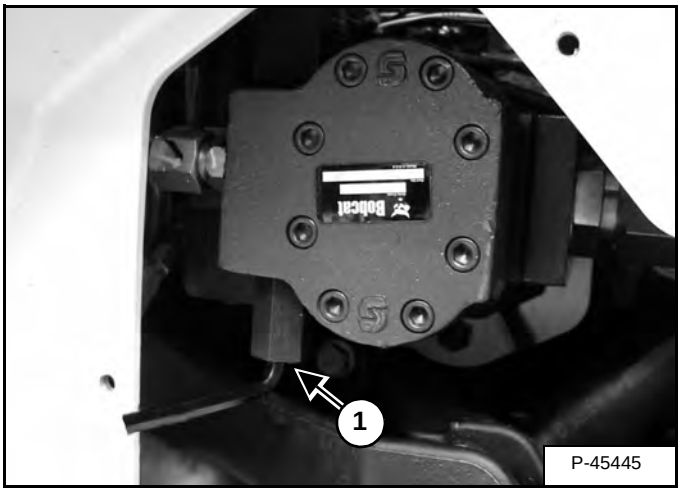
Figure 20-61-10



Locate the high flow relief valve (Item 1) **[Figure 20-61-10]** along the right side of the engine.

Remove the plug (Item 2) **[Figure 20-61-10]** located on the bottom of the high flow relief valve.

Figure 20-61-11



NOTE: [Figure 20-61-11] shows adjusting the relief valve.

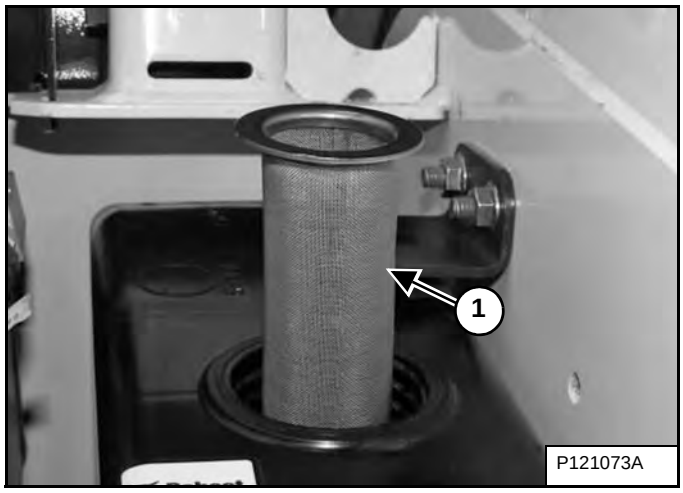
If the pump reaches 25511 kPa (255 bar) (3700 psi) and there is flow stop the engine. The relief screw must be turned 90° counterclockwise and retested with the procedure above.

Hydraulic Fluid Screen

Remove the rear grille. (See Removing on Page 50-60-1.)

Remove the hydraulic fluid reservoir breather cap from the reservoir.

Figure 20-80-3

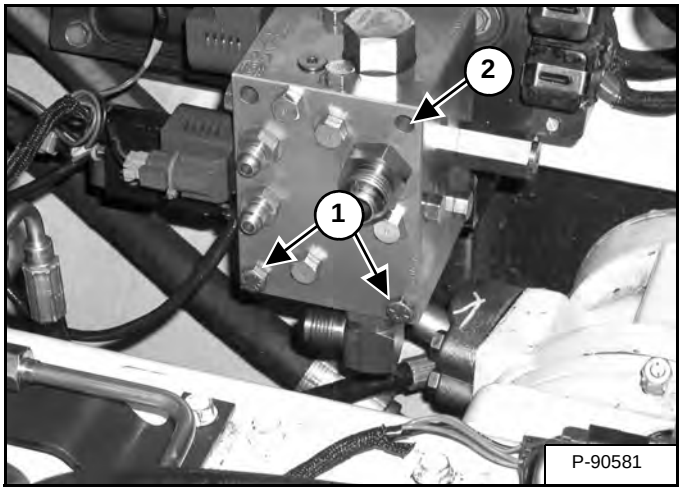


Remove the hydraulic fluid screen (Item 1) **[Figure 20-80-3]** from the reservoir.

Wash the screen in clean solvent and air dry, before replacing.

Removal And Installation (Cont'd)

Figure 20-110-7



Remove the two bolts (Item 1) and remove the valve (Item 2) **[Figure 20-110-7]**.

Disassembly And Assembly

Clean the diverter valve to remove dirt before disassembly. Valve ports are labeled for correct assembly.

Inspect cartridges, check valves, solenoid valves and sealing washers for contamination or damage. Wash all parts in clean solvent. Use air pressure to dry them. Install new O-rings and back-up rings.

Inspect diverter valve cavities for contamination. Wash valve in clean solvent. Use air pressure to dry.

Figure 20-110-8

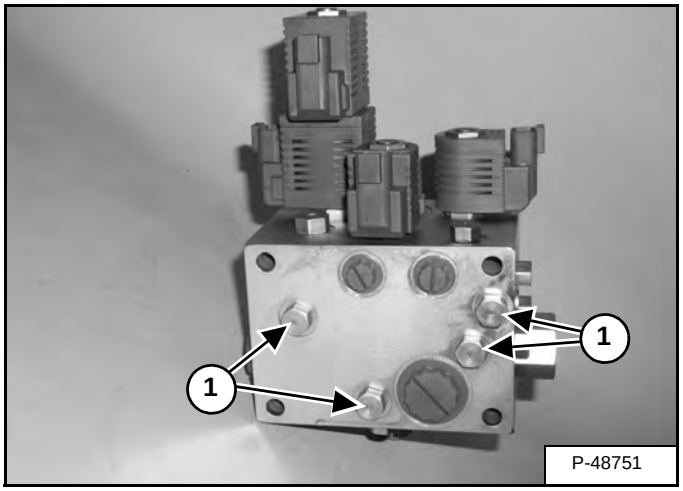
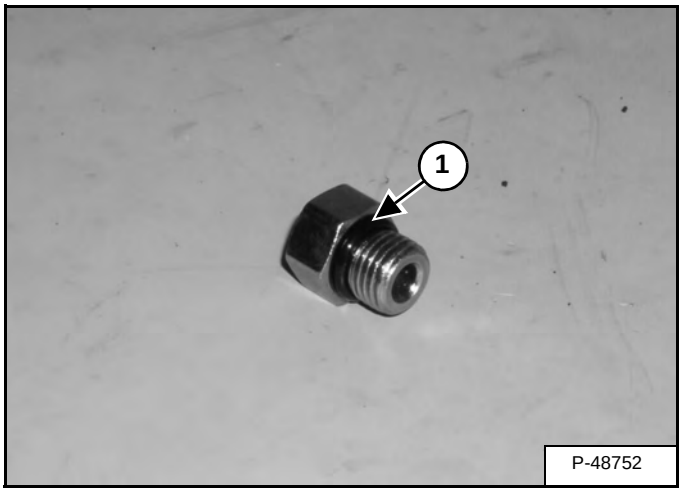


Figure 20-110-9



Several plugs (Item 1) **[Figure 20-110-8]** and **[Figure 20-110-9]** are located all over the diverter valve and can be removed for clean out purposes.

Assembly: Put oil on O-rings and back-up rings. Tighten to 13,6 N•m (10 ft-lb) torque.

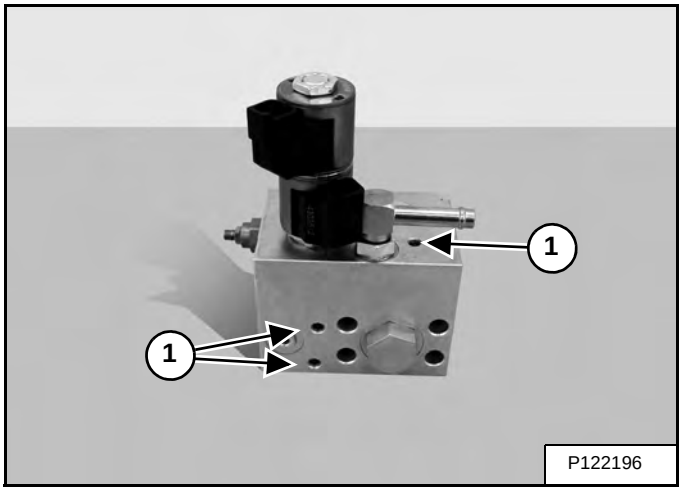
Disassembly And Assembly

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

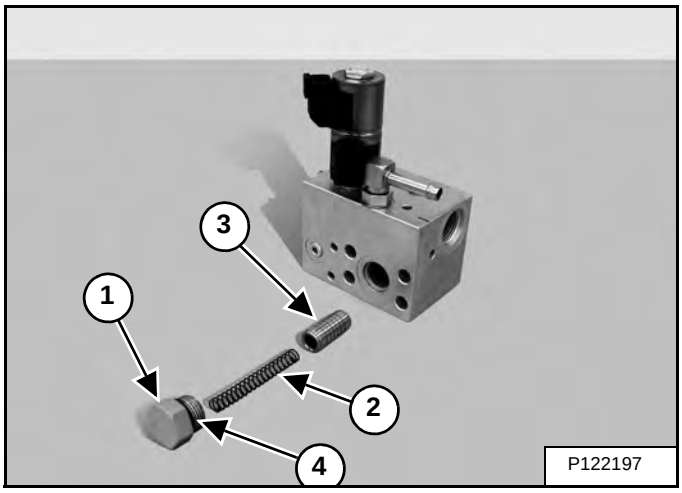
Figure 20-120-8



Do not remove these plugs (Item 1) **[Figure 20-120-8]**.

NOTE: Do not remove the expander plugs in block (total of 11). A new Power Bob-Tach valve will be required if tampered with. All other plugs can be removed.

Figure 20-120-9

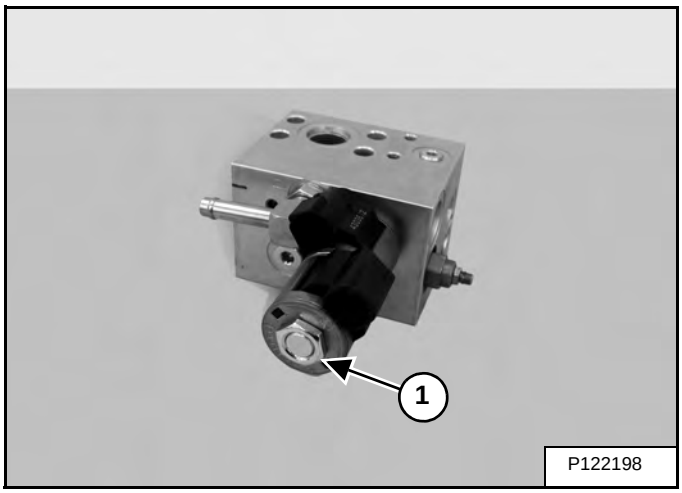


Remove plug (Item 1), spring (Item 2) and spool (Item 3) **[Figure 20-120-9]** and inspect. Replace damaged parts as needed.

Installation: Tighten the plug to 67,8 N•m (50 ft-lb) torque.

Replace the O-ring (Item 4) **[Figure 20-120-9]** on the plug.

Figure 20-120-10



NOTE: Mark the solenoid coil orientation for installation.

Remove the coil nut (Item 1) **[Figure 20-120-10]**.

Installation: Tighten the solenoid coil valve stem nut to 6,8 N•m (5 ft-lb) torque.

AUTOMATIC RIDE CONTROL

Description

The automatic ride control is an option that provides a smoother ride, reduced load spillage, and improved machine control when traveling over uneven ground with heavy loads or in heavy digging applications.

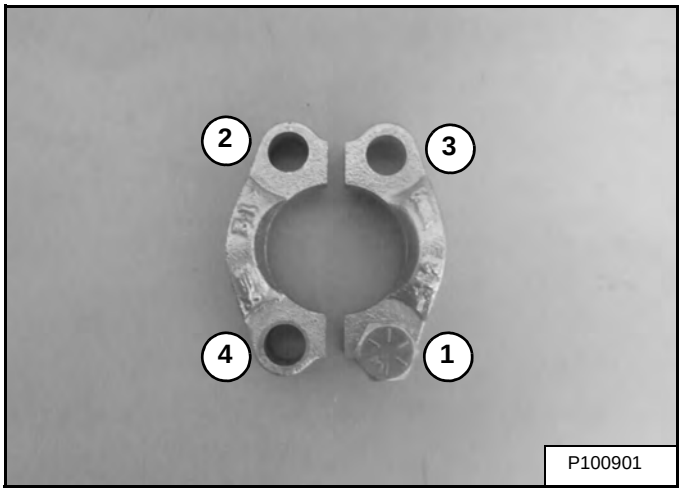
Description

The hydrostatic system consists of a tandem hydrostatic pump and two hydrostatic motors. The hydrostatic system allows forward and reverse motion of the loader.

The hydrostatic pump is connected to the engine by a drive belt and provides fluid to the hydrostatic motors. The charge pressure system assists in replenishing the fluid that is lost due to internal leakage in the components of the hydrostatic system.

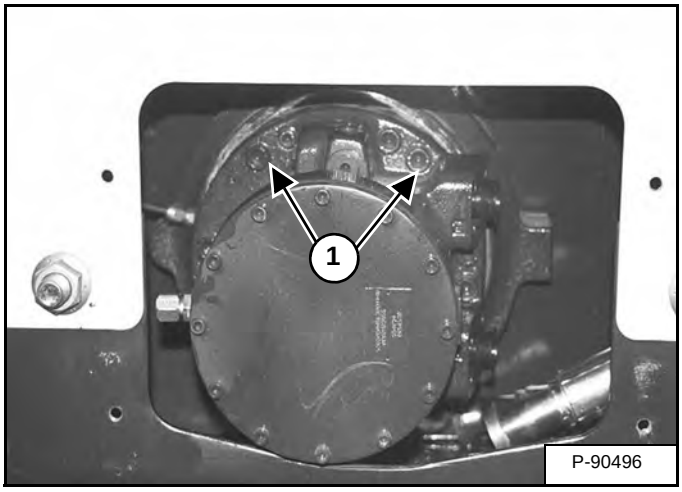
Removal And Installation (Cont'd)

Figure 30-21-5



Installation: Install both flanges and tighten the bolts to half of the required torque in the sequence shown in **[Figure 30-21-5]**. Tighten all bolts to 34 N•m (25 ft-lb) torque in the same sequence.

Figure 30-21-6

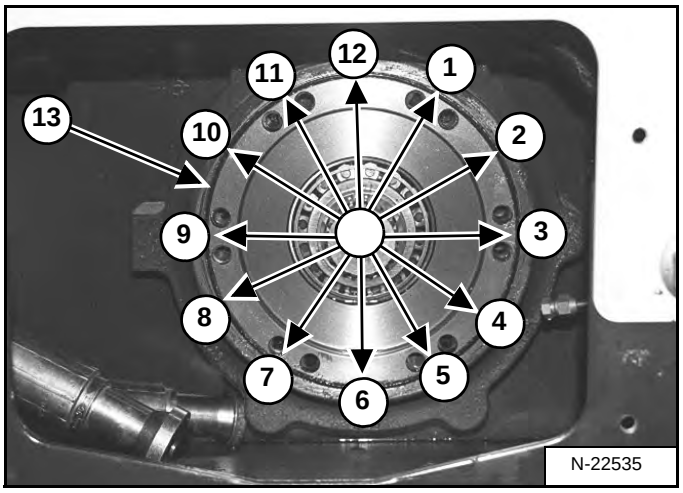


Remove the 10 (12 mm) mount bolts (Item 1) **[Figure 30-21-6]** from the motor.

NOTE: The two smaller diameter bolts (8 mm), hold the cam ring to the motor and do not have to be removed for motor removal.

Remove the motor from the loader.

Figure 30-21-7



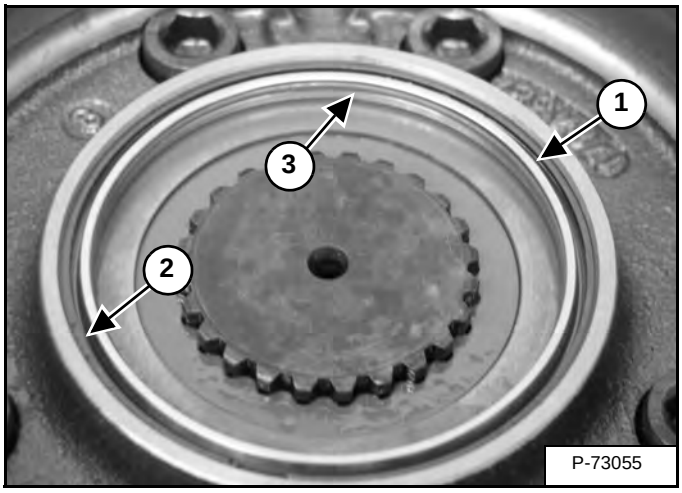
Remove and replace O-ring (Item 13) **[Figure 30-21-7]** with new O-ring.

Installation: Install the O-ring (Item 1) by pressing the O-ring into the groove starting at the 12 o'clock position then 6, 2, 10, 3, 9, 4, 8, 5, 7, 1 and 11 **[Figure 30-21-7]** until the O-ring is fully seated in the groove.

NOTE: Do not roll, kink or stretch O-ring in to groove and verify the O-ring is completely flush with no protrusions.

Assembly (Cont'd)

Figure 30-21-44



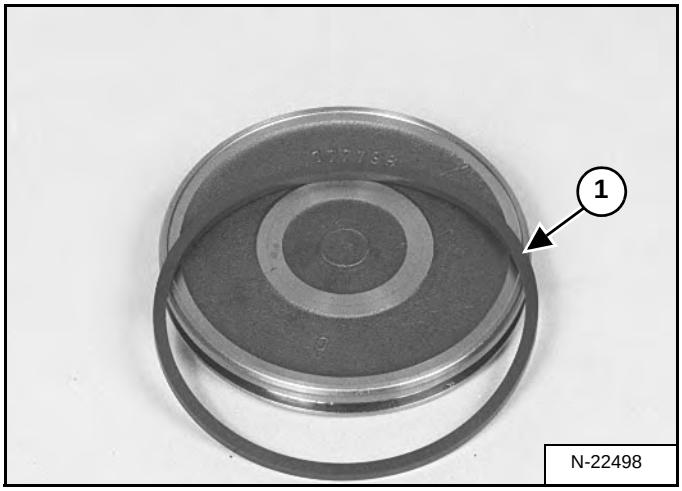
Install the brake seal (Item 1) **[Figure 30-21-44]**.

NOTE: Install the seal with the metal case end towards the brake pack.

Install the snap ring (Item 2) **[Figure 30-21-44]** to secure the seal in the brake housing.

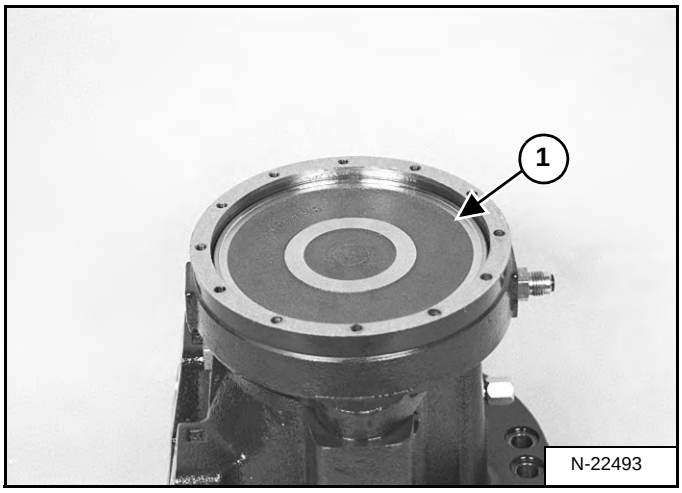
Install a new O-ring (Item 3) **[Figure 30-21-44]** in the seal.

Figure 30-21-45



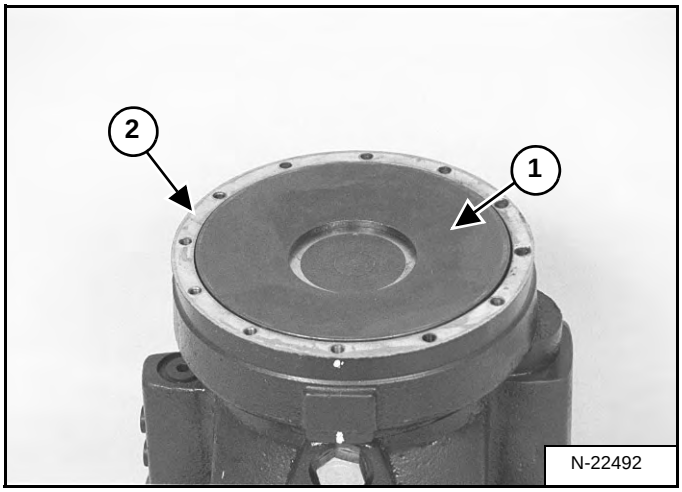
Lightly coat the piston with oil and install a new piston seal (Item 1) **[Figure 30-21-45]**.

Figure 30-21-46



Install the piston (Item 1) **[Figure 30-21-46]** in the brake housing.

Figure 30-21-47

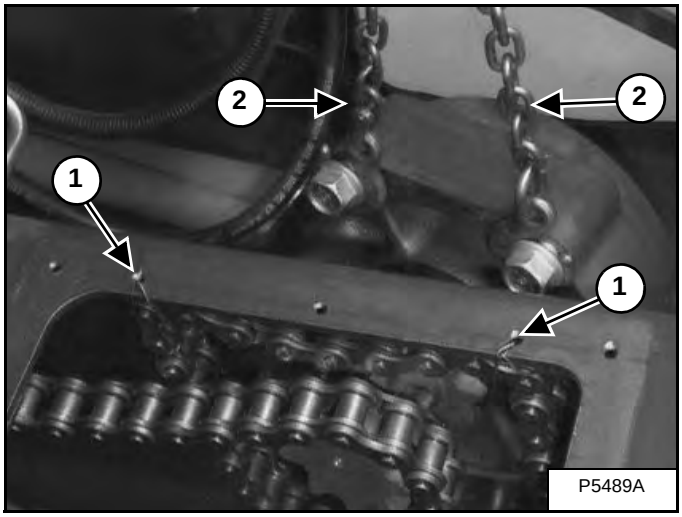


Install the brake spring (Item 1) **[Figure 30-21-47]**.

Install the end plate gasket (Item 2) **[Figure 30-21-47]**.

Removal And Installation (Cont'd)

Figure 30-31-2



Slide the motor carrier toward the rear and remove the rear drive chain from the sprocket.

NOTE: For removal and installation of the motor carrier secure the front drive chain to the chain case with a wire (Item 1) [Figure 30-31-2].

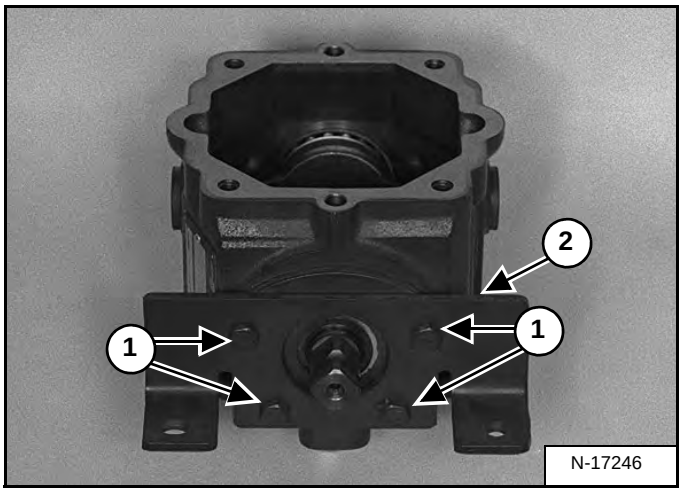
Slide the motor carrier out of the chain case far enough to install a chain (Item 2) **[Figure 30-31-2]** and chain hoist to the carrier.

Pull the motor carrier away from the chain case and out of the loader **[Figure 30-31-2]**.


Bobcat®

Disassembly (Cont'd)

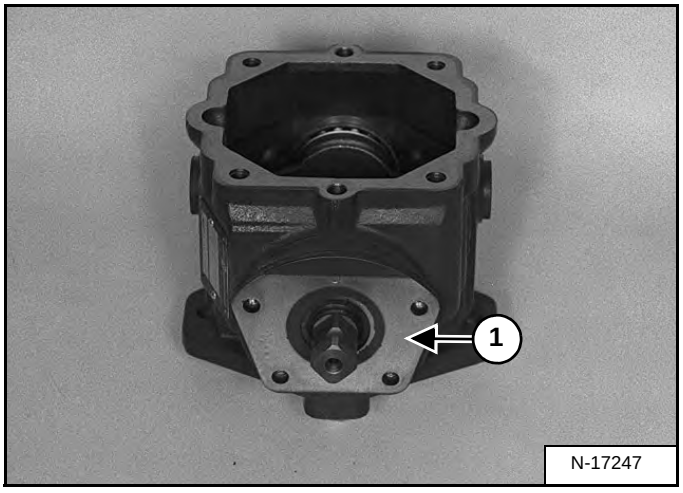
Figure 30-50-26



Inspect the dust seal on the pintle shaft.

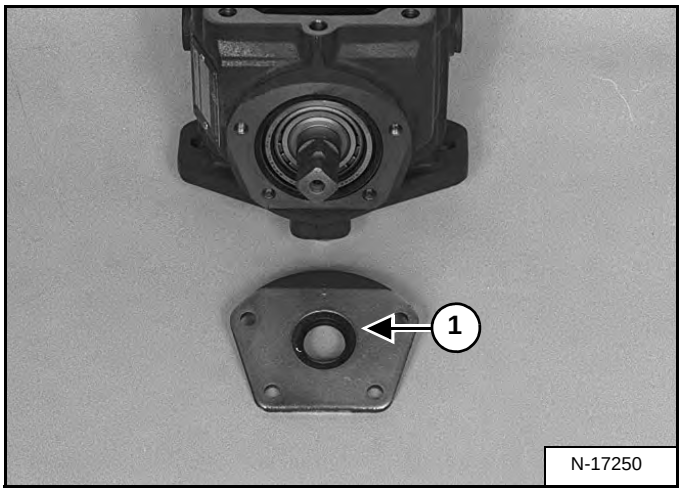
Remove the four 4 bolts (Item 1) from the pump housing and remove the linkage bracket (Item 2) **[Figure 30-50-26]**.

Figure 30-50-27



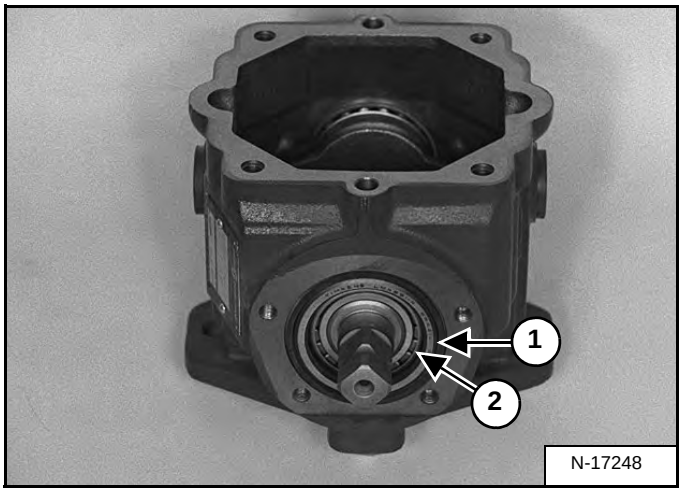
Remove the upper trunnion cover (Item 1) **[Figure 30-50-27]**.

Figure 30-50-28



Inspect the seal (Item 1) **[Figure 30-50-28]** in the upper trunnion cover and replace if needed.

Figure 30-50-29



Remove the O-ring (Item 1) and bearing race (Item 2) **[Figure 30-50-29]** from the pump housing.

HYDROSTATIC PUMP (SJC) (CONT'D)

Hydraulic Controller Removal And Installation

The loader's right hand side hydraulic controller can be removed with the hydrostatic pump still in the loader. The loader's left hand side hydraulic controller can only be removed when the hydrostatic pump is separated from the engine / hydrostatic pump cast mount.

Controller solenoids can be bled of trapped air in the controller. This should be performed when hydraulic controllers are replaced, removed or uncommanded oscillations in the controls are present.

Raise the lift arms and install an approved lift arm support device. (See Installing on Page 10-20-2.)

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

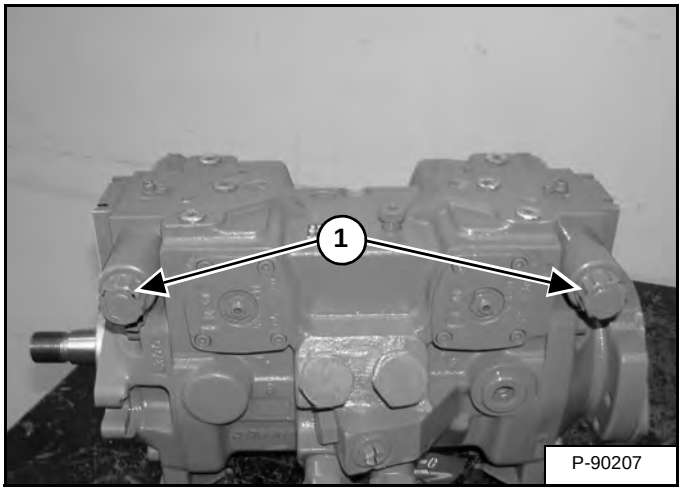
⚠ WARNING

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

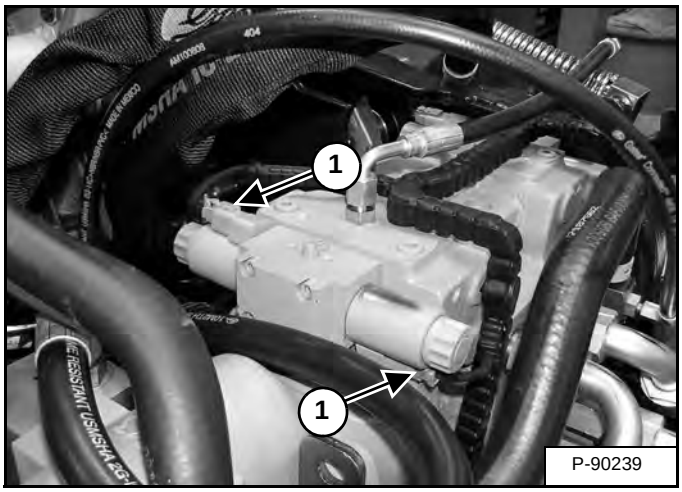
Raise the operator cab. (See Raising on Page 10-30-2.)

Figure 30-51-2



Locate the two hydraulic controllers (Item 1) **[Figure 30-51-2]** on the hydrostatic pumps.

Figure 30-51-3



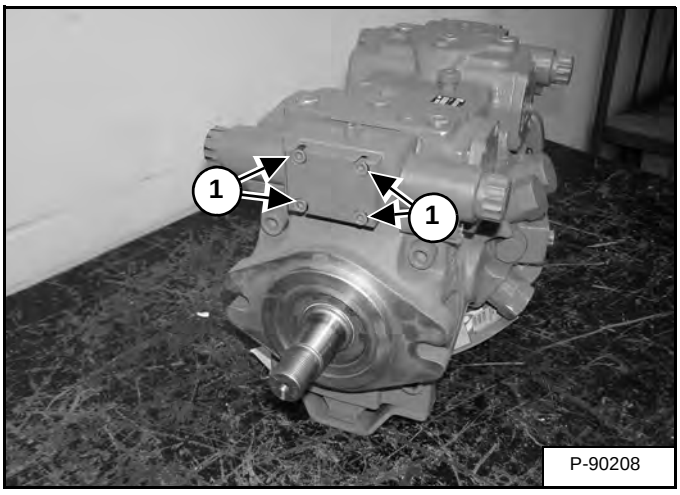
Disconnect the wire harness (Item 1) **[Figure 30-51-3]** from both sides of the hydrostatic pump.

IMPORTANT

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

I-2003-0888

Figure 30-51-4

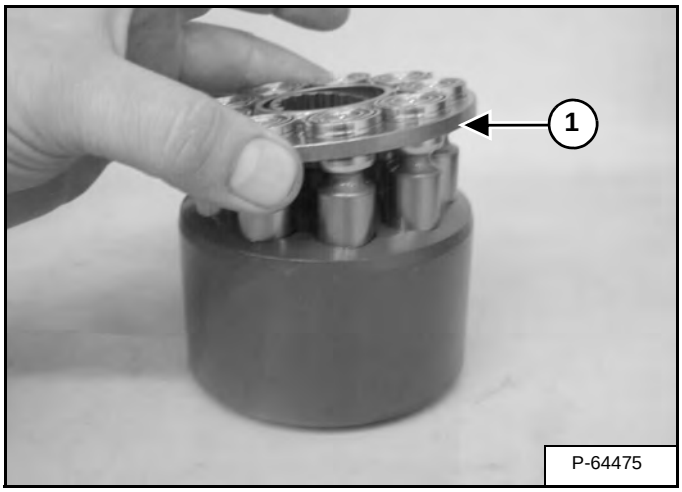


Remove the four bolts (Item 1) **[Figure 30-51-4]** from the hydraulic controller.

Installation: Tighten the bolts to 10,4 N•m (7.7 ft-lb).

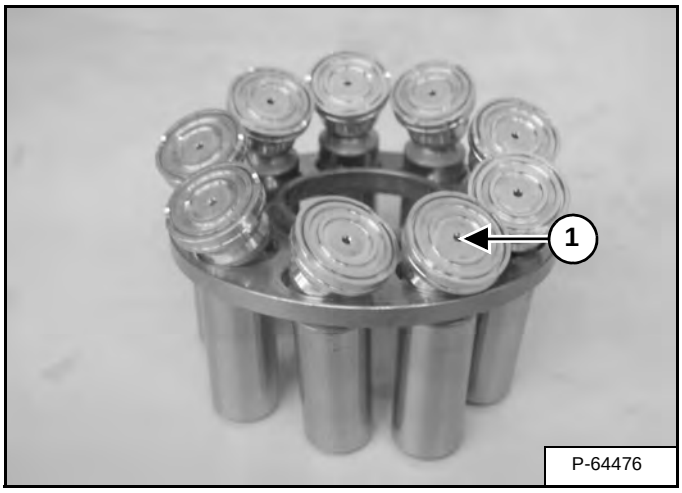
Disassembly (Cont'd)

Figure 30-51-28



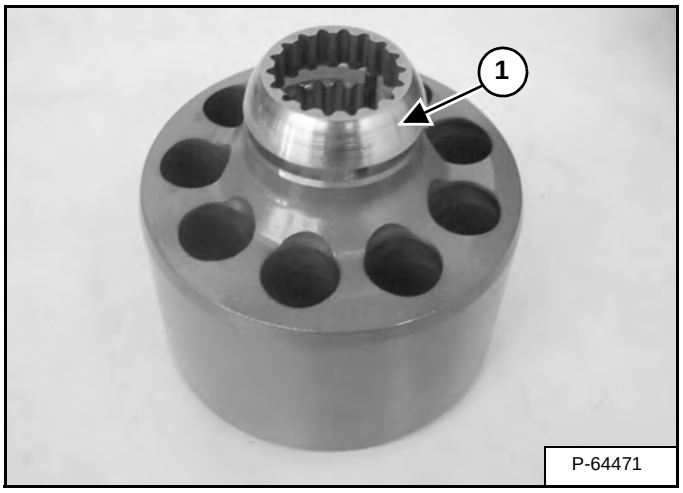
Remove the pistons (Item 1) **[Figure 30-51-28]** from the rotating block.

Figure 30-51-29



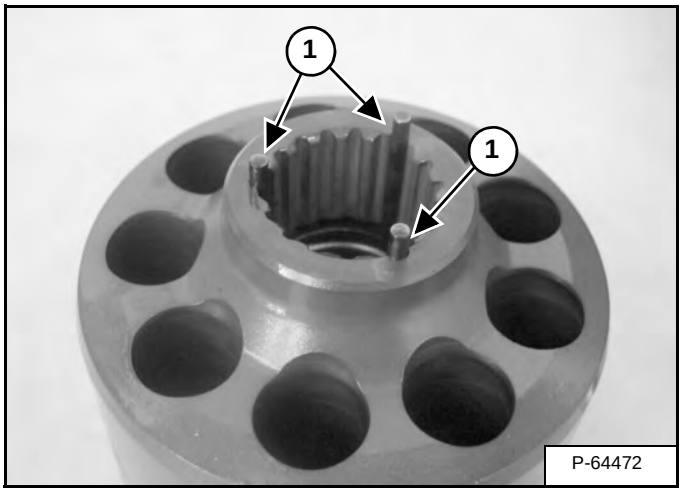
Remove the pistons (Item 1) **[Figure 30-51-29]** from the piston retainer.

Figure 30-51-30



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

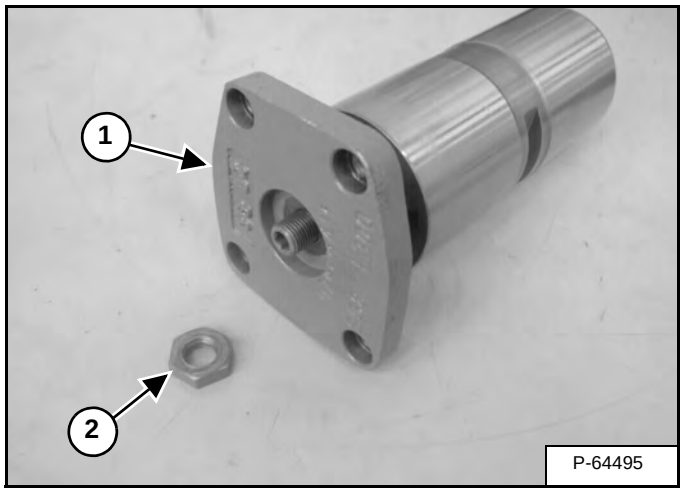
Figure 30-51-31



Do Not remove the pins (Item 1) **[Figure 30-51-31]** from the cylinder block.

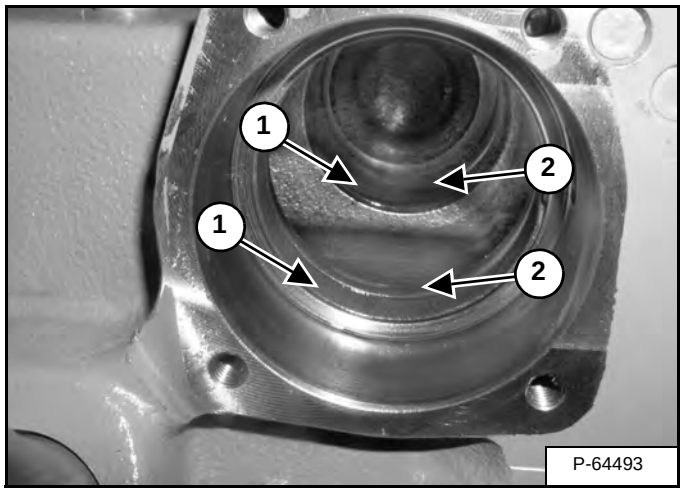
Assembly (Cont'd)

Figure 30-51-67



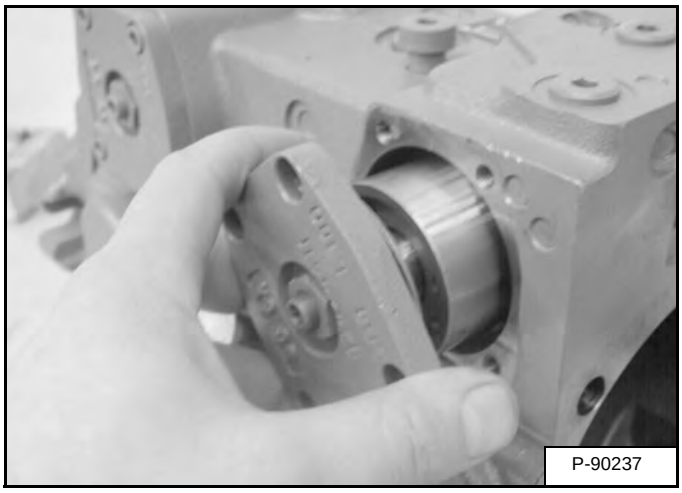
Install the servo cover (Item 1) on the servo piston to the dimension recorded earlier. Install the locknut (Item 2) **[Figure 30-51-67]**.

Figure 30-51-68



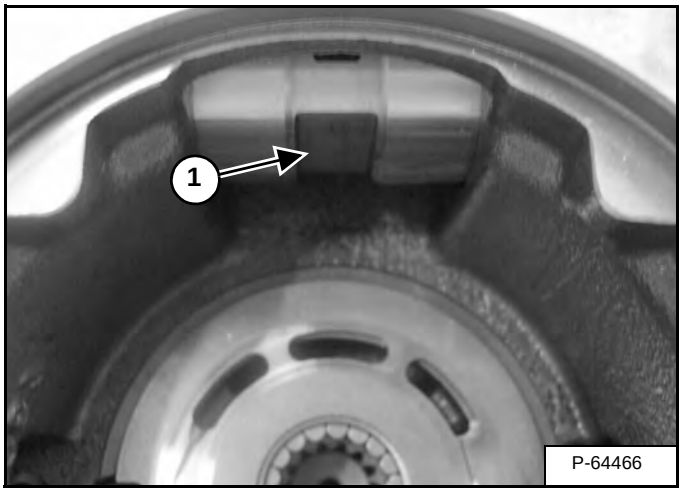
Install the bushings (Item 1), seals and O-rings (Item 2) **[Figure 30-51-68]** in the pump housing.

Figure 30-51-69



Install the servo piston assembly **[Figure 30-51-69]**.

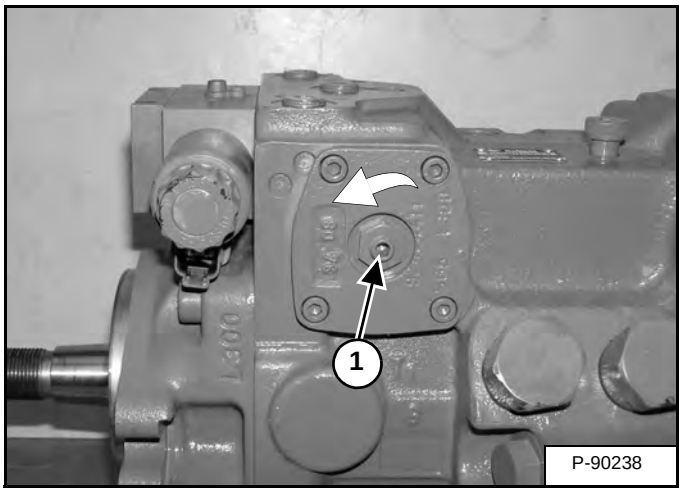
Figure 30-51-70



Align the servo piston with the guide slot (Item 1) **[Figure 30-51-70]** parallel to the drive shaft center line.

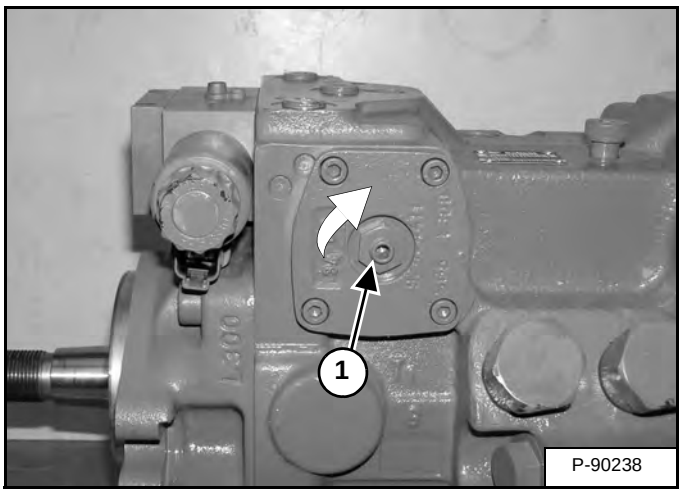
Mechanical NEUTRAL Adjustment (Cont'd)

Figure 30-51-103



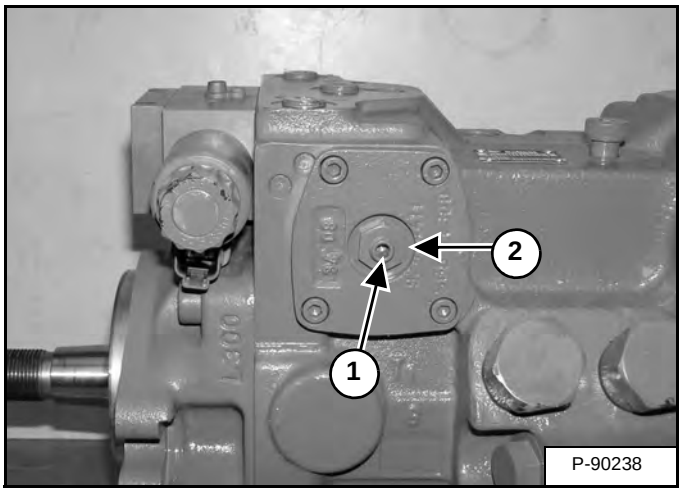
Turn the adjustment screw (Item 1) **[Figure 30-51-103]** counterclockwise, until the other gauge registers an increase in system pressure. Mark the position of the adjustment screw.

Figure 30-51-104



Turn the adjustment screw (Item 1) **[Figure 30-51-104]** clockwise, to a position halfway between the recorded positions. The pressure gauges should read equal pressures.

Figure 30-51-105



While holding the adjustment screw (Item 1) in position, tighten the locknut (Item 2) **[Figure 30-51-105]** to 30 N•m (22 ft-lb) torque.

Shut the loader OFF.

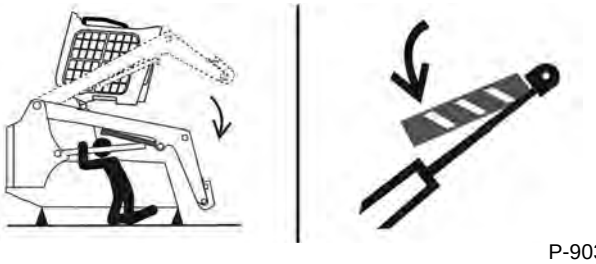
Remove the hydraulic hose from the X1 and X2 ports on the pump. Install the plugs and tighten to 25 N•m (18 ft-lb) torque.

Remove the pressure gauges from the MA and MB ports on the pump. Install the plugs and tighten to 25 N•m (18 ft-lb) torque.

NOTE: The Hydraulic Controller NEUTRAL Adjustment must be performed whenever the Mechanical NEUTRAL Adjustment is done. (See Hydraulic Controller NEUTRAL Adjustment on Page 30-50-36.)

Valve Block Removal And Installation

DANGER



P-90328

AVOID DEATH

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

D-1009-0409

WARNING

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

W-2059-0598

WARNING

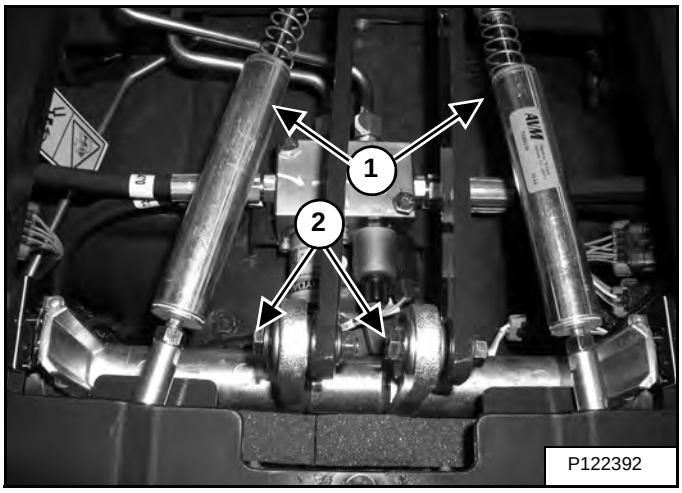
Put jackstands under the front axles and rear corners of the frame before running the engine for service. Failure to use jackstands can allow the machine to fall or move and cause injury or death.

W-2017-0286

Lift and block the loader. (See LIFTING AND BLOCKING THE LOADER on Page 10-10-1.)

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

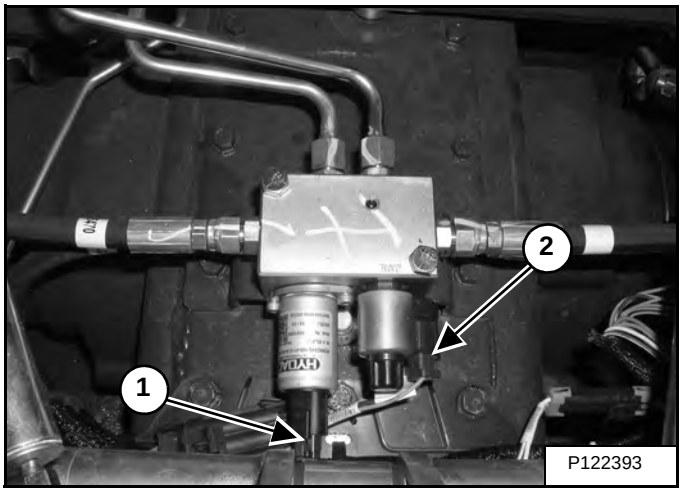
Figure 30-70-2



Remove the steering shocks (Item 1), the bolts (Item 2) **[Figure 30-70-2]** and set the steering levers to the side.

Mark all hydraulic hoses for proper installation.

Figure 30-70-3



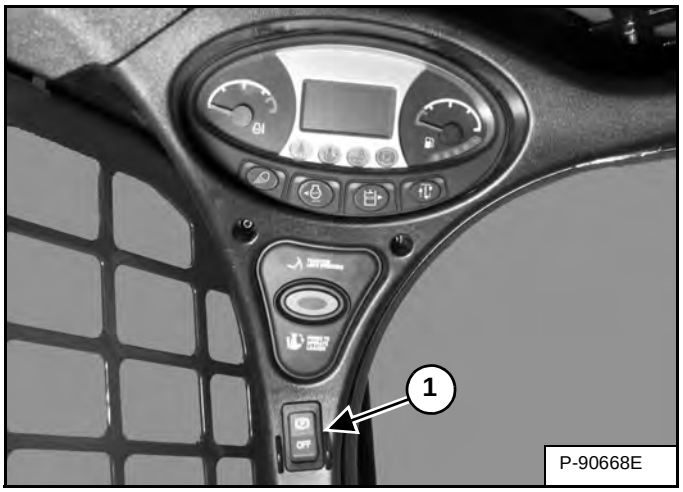
Disconnect the wire harness connector (Item 1) **[Figure 30-70-3]** from the two speed solenoid.

Disconnect the wire harness connector (Item 2) **[Figure 30-70-3]** from the brake solenoid.

BRAKE (TWO-SPEED)

Description

Figure 40-11-1



The brake is used to hold the machine in place. The brake is operated by a switch (Item 1) **[Figure 40-11-1]** located on the front accessory panel.

The brake is a spring applied pressure release system, which is self contained on the end of each drive motor.

The brake block solenoid is sent power from a relay to open the circuit which releases the charge pressure fluid to the brakes. The charge pressure fluid pushes the spring away from the brake discs allowing the drive motor to move.

A signal from the main Bobcat controller holds the brake solenoid open to allow constant flow of the charge pressure fluid to hold the spring away from the brake discs.

When the hold signal is interrupted the solenoid will close the circuit and the charge fluid will be shut off an the spring will apply the brakes. This will happen if the engine rpm drops below a set rpm, the seat bar sensor fails or if there is a break in the wires for the brake block solenoid.

For more information on the brake. (See TWO-SPEED / BRAKE VALVE on Page 30-70-1.)

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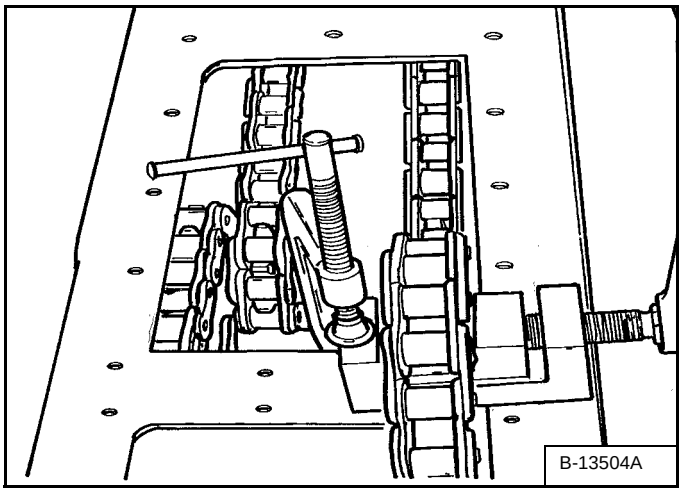
Chain Removal And Installation (Cont'd)

The tools listed are needed for the following procedure:

MEL1269 - Chain Breaker
MEL1246 - Chain Link Press Tool
MEL1364 - Chain Link Installation Tool

Figure 40-20-19



Use the chain breaker MEL1269 to separate the chain.

Installation: If a new chain is installed, a connector link must be used to connect the chain together.

Use the chain link installation tool MEL1364 to hold both ends of the chain.

Secure the tool MEL1246 and place the connector link in the tool as shown **[Figure 40-20-19]**.

Turn the threaded rod of the tool and press the connector link together on the chain **[Figure 40-20-19]**. Tighten the threaded rod of the chain link tool to 339 N•m (250 ft-lb) torque.

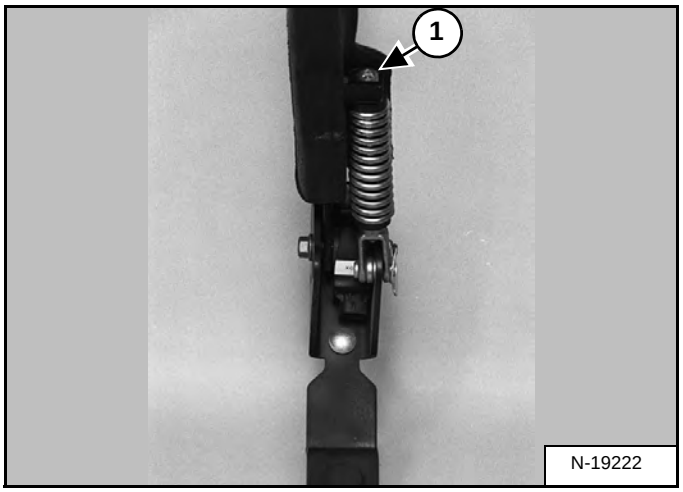
⚠ WARNING

DO NOT exceed the recommended torque. The tool may fail under too much torque. Put cloth around the tool to protect yourself from flying debris.

W-2233-0307

Compression Spring Disassembly And Assembly

Figure 50-10-8

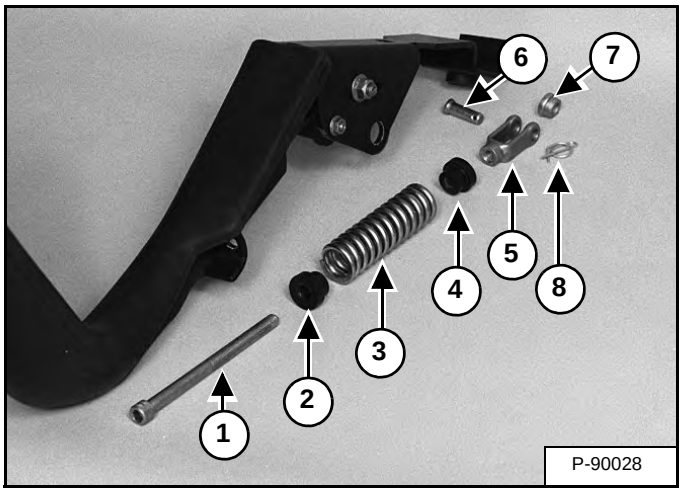


Turn the bolt (Item 1) **[Figure 50-10-8]** and **[Figure 50-10-9]** out of the clevis.

Assembly: Apply Loctite® #518 adhesive to the bolt threads. Adjust the compression spring by turning the bolt in past the end of the clevis three turns.

NOTE: For procedures requiring the use of Loctite® #518 adhesive, thoroughly clean and dry affected parts before the application of Loctite® #518.

Figure 50-10-9

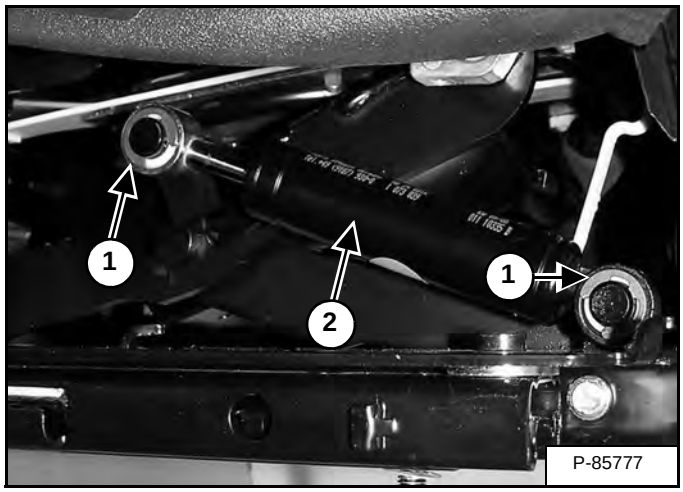


Disassemble and assemble the seat bar compression spring and parts as shown in **[Figure 50-10-9]**.

Bolt (Item 1)
Bushing (Item 2)
Spring (Item 3)
Bushing (Item 4)
Clevis (Item 5)
Pin (Item 6)
Bushing (Item 7)
Rue Ring (Item 8)

Shock Removal And Installation

Figure 50-31-10



Remove the operator seat. (See Removal And Installation on Page 50-31-1.)

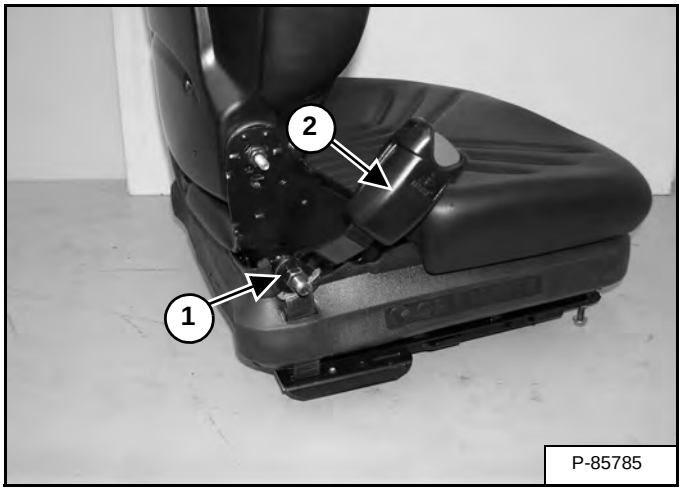
Remove the seat shock clips (Item 1) **[Figure 50-31-10]**. (Both ends.)

Remove the seat shock (Item 2) **[Figure 50-31-10]**.

3-Point Seat Belt Removal And Installation

Remove the operator seat. (See Removal And Installation on Page 50-31-1.)

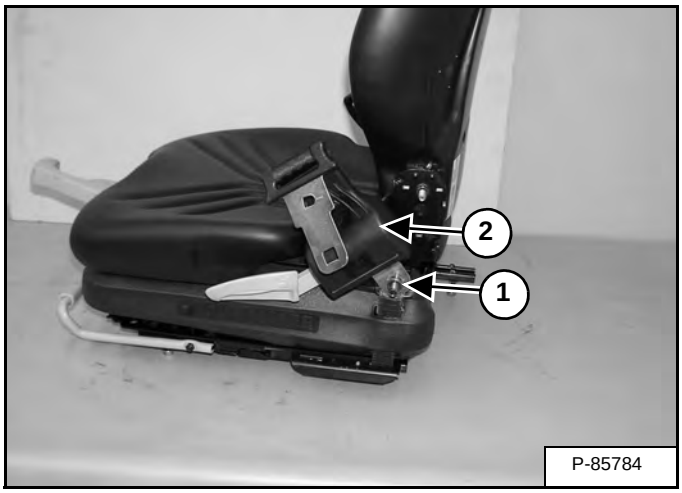
Figure 50-31-11



Remove the mounting nut (Item 1) **[Figure 50-31-11]**.

Remove the end release buckle (Item 2) **[Figure 50-31-11]**.

Figure 50-31-12

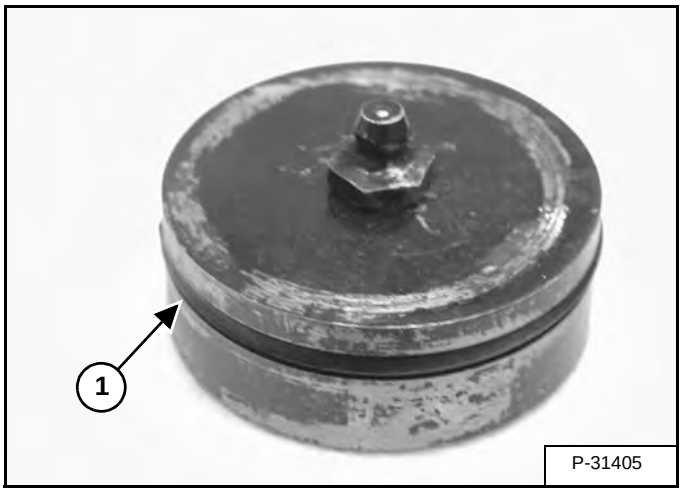


Remove the mounting nut (Item 1) **[Figure 50-31-12]**.

Remove the seat belt retractor (Item 2) **[Figure 50-31-12]**.

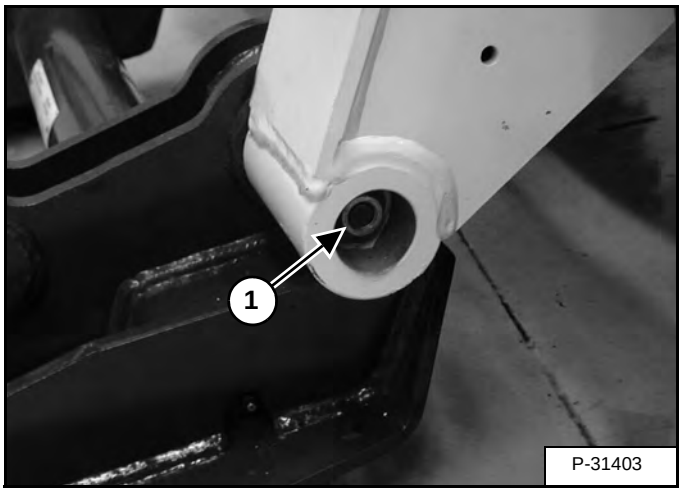
Removal And Installation (Cont'd)

Figure 50-41-6



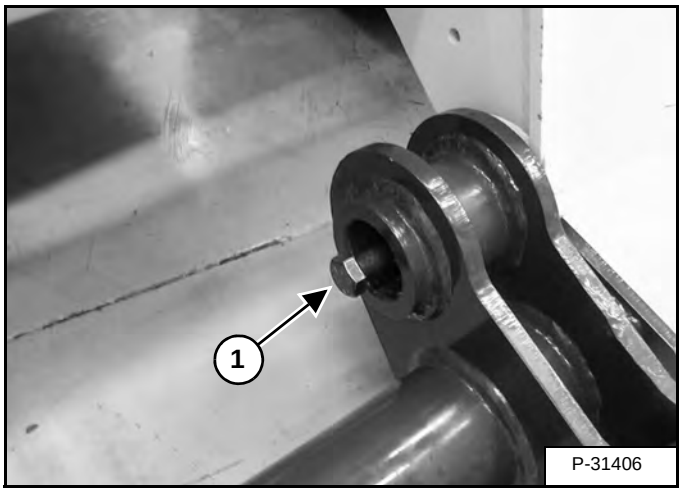
Replace the O-ring (Item 1) **[Figure 50-41-6]** on the grease plug.

Figure 50-41-7



Remove the nut (Item 1) **[Figure 50-41-7]** from the Bob-Tach pivot pin retaining bolt (both sides).

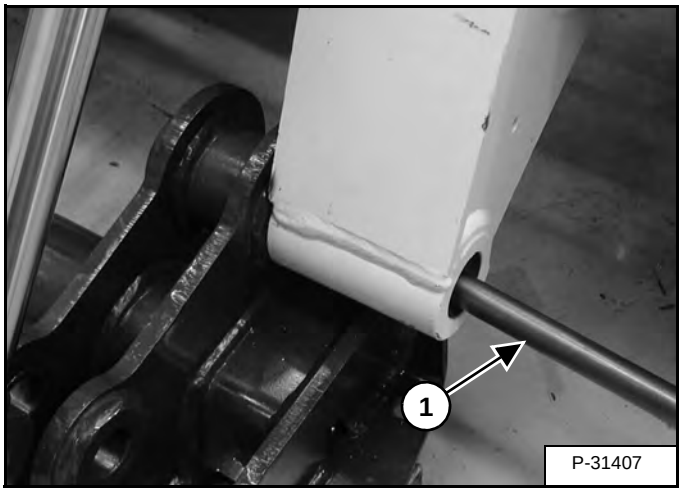
Figure 50-41-8



Remove the retainer bolt (Item 1) **[Figure 50-41-8]** from the Bob-Tach pivot pin (both sides).

Installation: Tighten the retainer nut and bolt (Item 1) **[Figure 50-41-7]** and **[Figure 50-41-8]** to 446 N•m (330 ft-lb) torque.

Figure 50-41-9



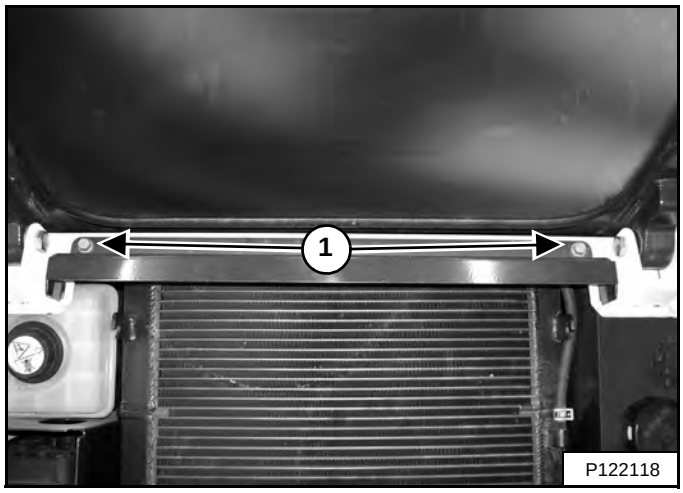
With a 22,2 mm (7/8 in) punch (Item 1) **[Figure 50-41-9]** and a hammer, drive the pivot pin out of the lift arm and Bob-Tach (both sides).

Remove the Bob-Tach from the loader.

NOTE: MEL1685 - Pivot Point Tapered Reamer is available to ream out tapered bore if necessary.

Shield Removal And Installation

Figure 50-60-5



Remove the two bolts (Item 1) **[Figure 50-60-5]** and remove the shield.

CONTROL PEDALS AND LINKAGES

Description

The control pedals and linkages are connected to the control valve. The control pedals will mechanically move the lift and tilt spools on the control valve.

The control pedals and linkages are located on the lower mainframe at the operator's feet.

Pedal Removal And Installation

⚠ WARNING

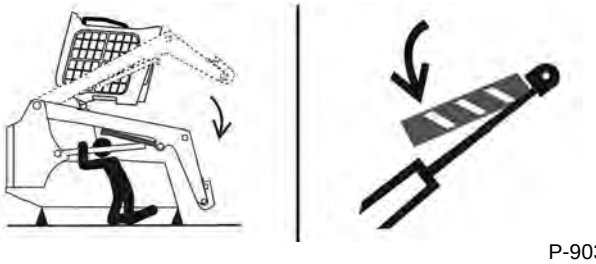
Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

W-2059-0598

Raise the lift arms and install an approved lift arm support device. (See Installing on Page 10-20-2.)

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

⚠ DANGER



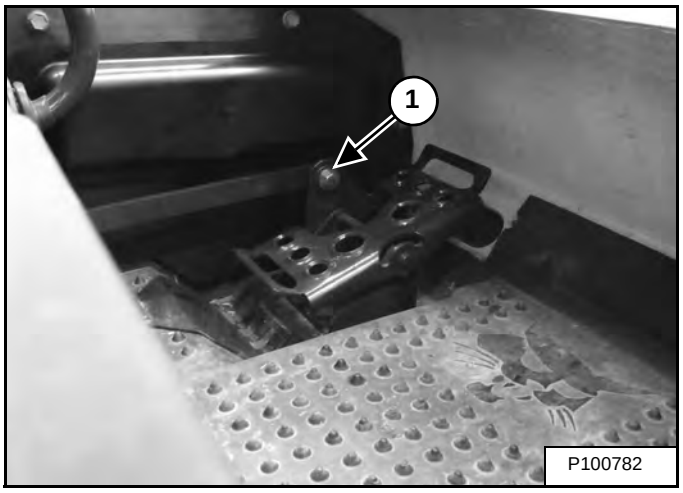
P-90328

AVOID DEATH

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

D-1009-0409

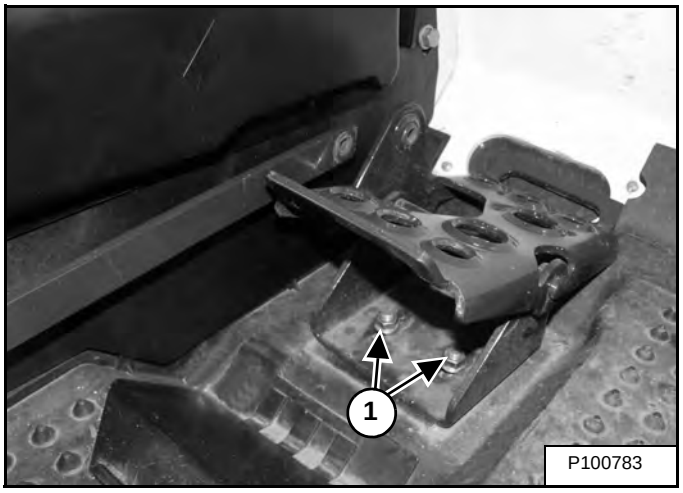
Figure 50-100-1



Remove the nut and bolt (Item 1) **[Figure 50-100-1]** from the pedal linkage.

Inspect the bushing in the pedal for wear and replace as needed.

Figure 50-100-2



Remove the two nuts (Item 1) **[Figure 50-100-2]** from the pedal mounting bracket.

Remove the pedal assembly from the loader.

Disassembly And Assembly (Cont'd)

Two Piece Shaft (Cont'd)

Figure 50-110-7

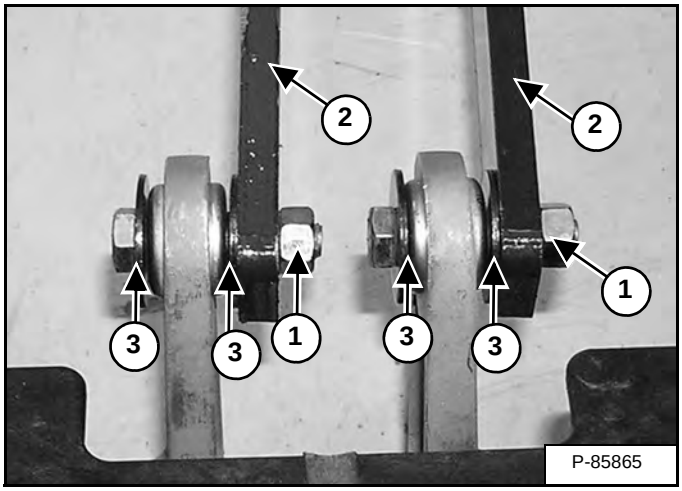
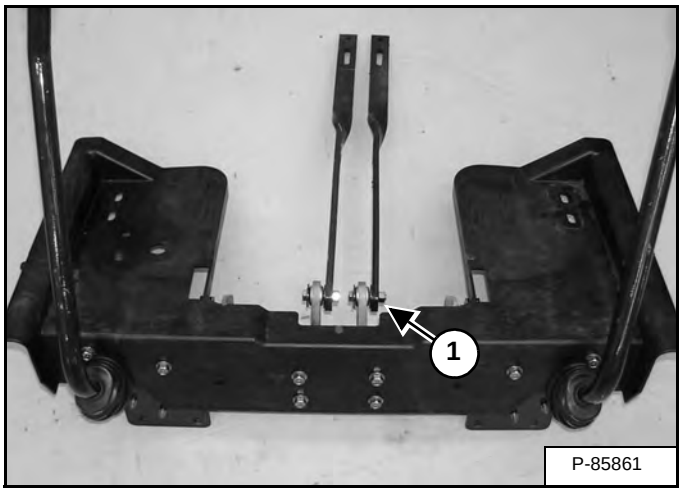


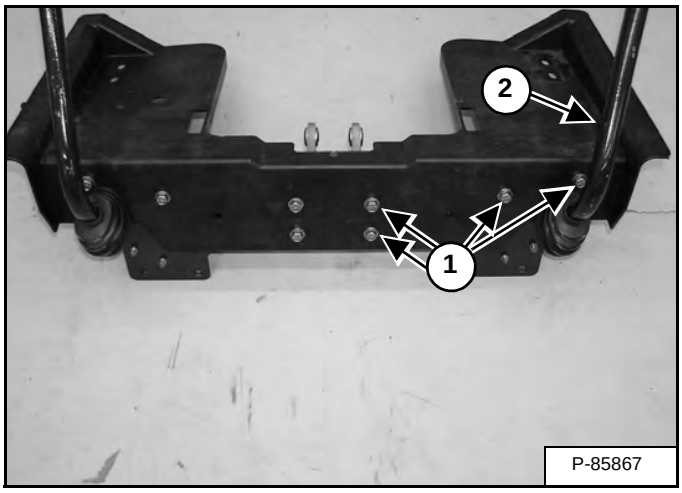
Figure 50-110-8



Remove the nut and bolt (Item 1), steering link, (Item 2), and washers (Item 3) **[Figure 50-110-7]** and **[Figure 50-110-8]**.

Installation: Verify correct orientation of components **[Figure 50-110-7]** and **[Figure 50-110-8]**.

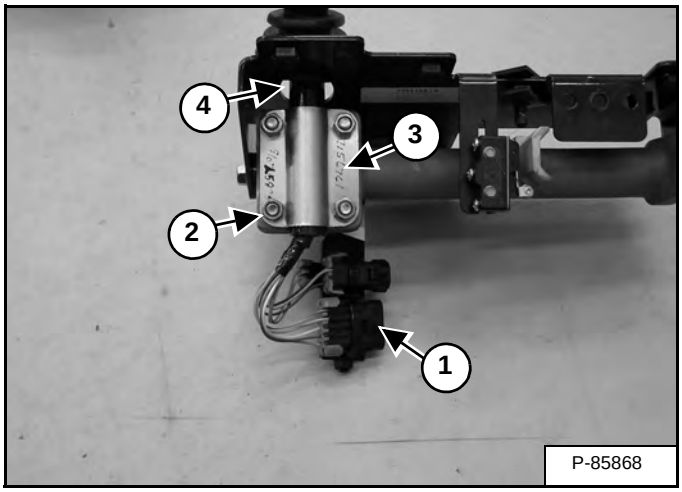
Figure 50-110-9



Remove the four bolts (Item 1) **[Figure 50-110-9]** from the control panel.

Remove the control handle assembly (Item 2) **[Figure 50-110-9]**.

Figure 50-110-10

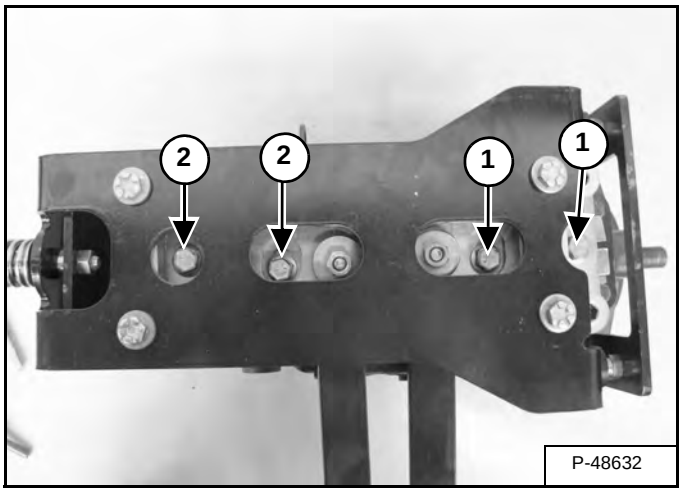


Remove the tie straps (Item 1), the four nuts (Item 2), and the plate (Item 3) **[Figure 50-110-10]**.

Remove the control handle (Item 4) **[Figure 50-110-10]**.

Linkage NEUTRAL (Adjusting) (Cont'd)

Figure 50-110-41



Torque the left pump pintle adjustment lock bolts (Item 1) **[Figure 50-110-41]** to 47,5 - 54,2 N•m (35 - 40 ft-lb).

Repeat the adjustment procedure for the right pump.

Torque the right pump pintle adjustment lock bolts (Item 2) **[Figure 50-110-41]** to 47,5 - 54,2 N•m (35 - 40 ft-lb).

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

If the levers do not return to NEUTRAL and the wheels / tracks do not come to a complete stop, repeat the adjustment procedure again.

Stop the engine.

Remove one pintle adjustment bolt (Item 1) **[Figure 50-110-41]** at a time and apply Loctite® #242 or equivalent thread locker to the bolt and reinstall the bolt. Torque the bolt to 47,5 - 54,2 N•m (35 - 40 ft-lb). Repeat for the three remaining pintle adjustment lock bolts.

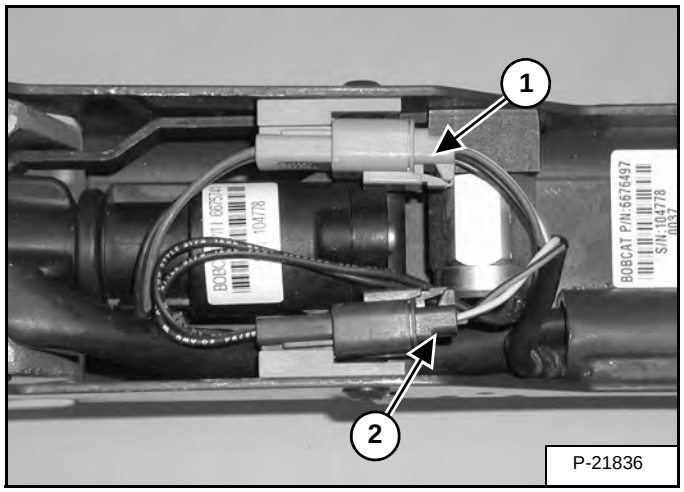
NOTE: To maintain proper adjustment setting, remove and reinstall only one bolt at a time. New bolts can be installed with preapplied Loctite®.

Remove the Remote Start Tool (Service Tool).

NOTE: After the NEUTRAL adjustment is completed on both pumps, the linkage travel adjustment MUST be completed. (See Linkage Travel (Adjusting) on Page 50-110-16.)

Handle Sensor Removal And Installation (Cont'd)

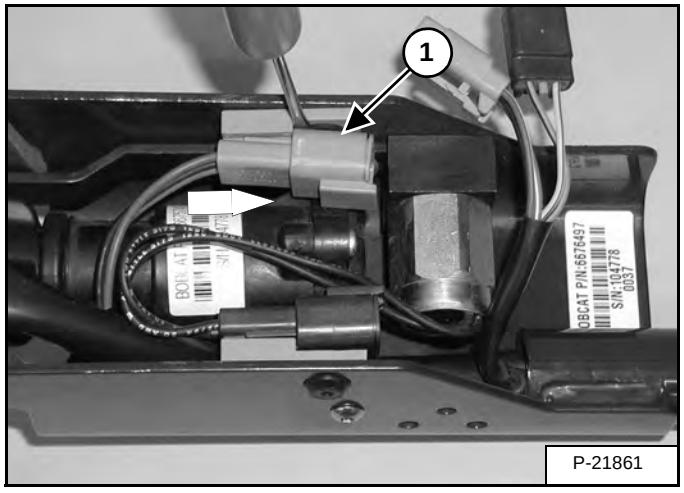
Figure 50-121-3



Disconnect the harness connector (Item 1) from the handle sensor connector **[Figure 50-121-3]**.

Disconnect the harness connector (Item 2) **[Figure 50-121-3]** from the handle lock solenoid connector.

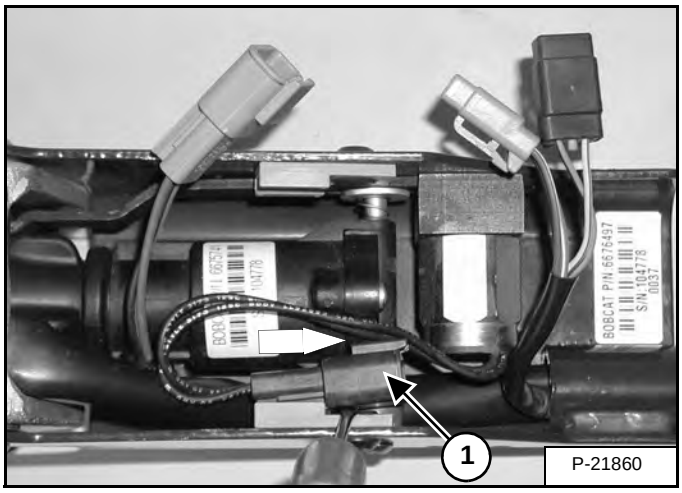
Figure 50-121-4



Remove the handle sensor connector (Item 1) **[Figure 50-121-4]** from the clip.

NOTE: Pry out with a small screwdriver and push the connector down.

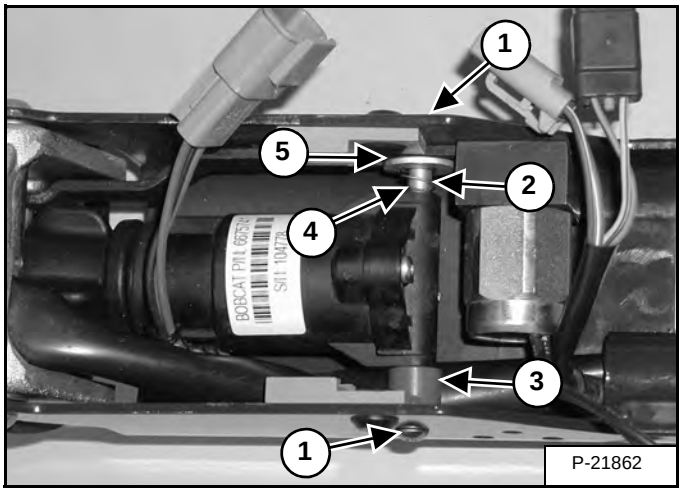
Figure 50-121-5



Remove the handle lock solenoid connector (Item 1) **[Figure 50-121-5]** from the clip.

NOTE: Pry out with a small screwdriver and push the connector down.

Figure 50-121-6



Remove one of the two mounting screws (Item 1) **[Figure 50-121-6]** from the handle sensor.

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

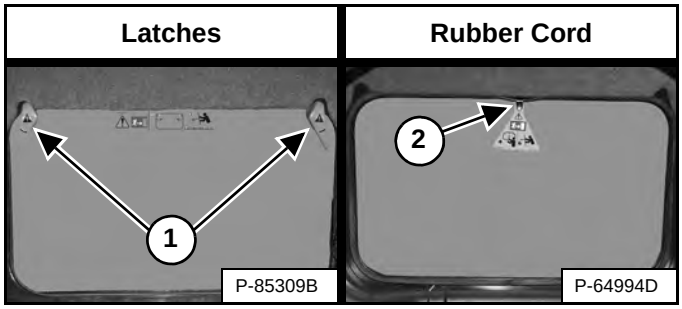
While removing the mounting pin (Item 2) from the handle sensor, remove the plastic spacer (Item 3), the spring (Item 4) and washer (Item 5) **[Figure 50-121-6]**.

WINDOW (REAR)

The front opening on the operator cab and rear window provide exits.

Rear Window Identification

Figure 50-140-1



There are two different procedures for removing the rear window from your machine:

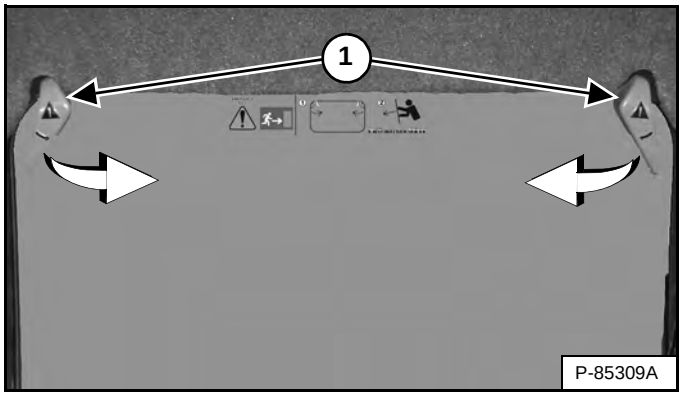
1. This window is equipped with latches **[Figure 50-140-1]**.

2. This window is equipped with a rubber cord and tag **[Figure 50-140-1]**.

NOTE: Use these procedures to remove the rear window only under emergency conditions. Damage to machine may occur.

Rear Window Removal (Latches)

Figure 50-140-2



Turn both latches (Item 1) **[Figure 50-140-2]** in until they disengage from the window frame.

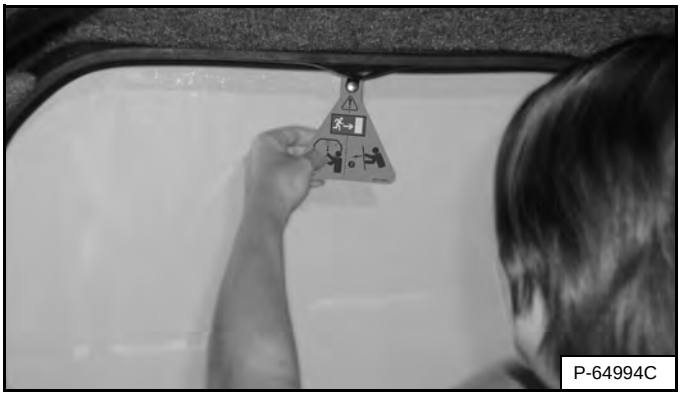
Push the rear window out of the rear of the operator cab.

Figure 50-140-3

Exit through the rear of the operator cab **[Figure 50-140-3]**.

Rear Window Removal (Rubber Cord)

Figure 50-140-4



Pull on the tag on the top of the rear window to remove the rubber cord **[Figure 50-140-4]**.

Push the rear window out of the rear of the operator cab.

Figure 50-140-5

Exit through the rear of the operator cab **[Figure 50-140-5]**.

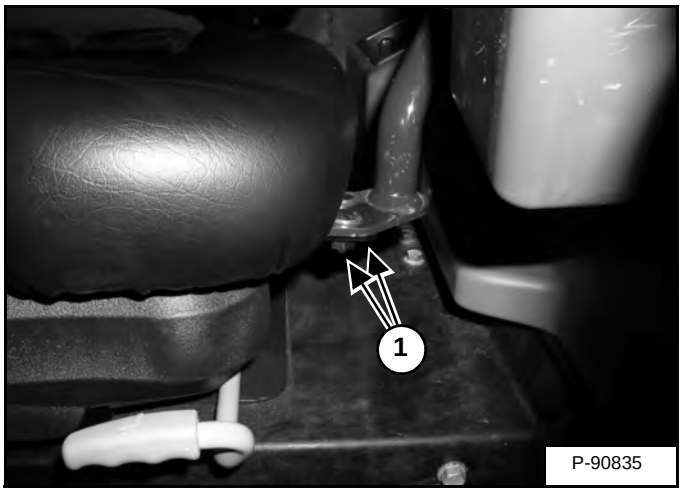
ARMREST (CONT'D)

Removal And Installation

Slide the seat and the backrest all the way forward.

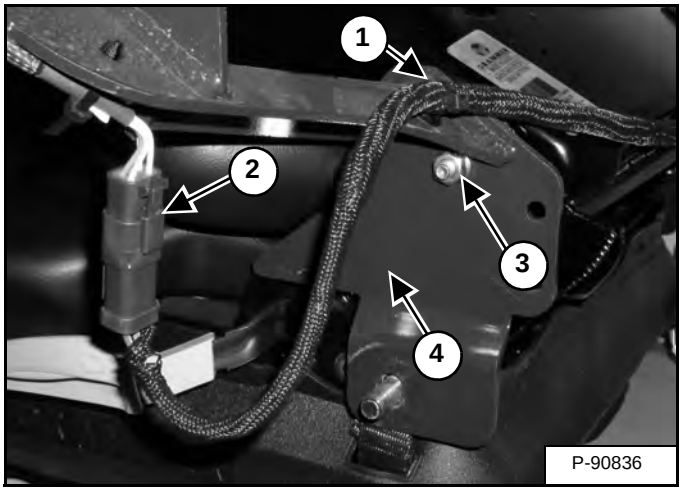
Remove the seat belt. (See Seat Belt Removal And Installation on Page 50-31-2.)

Figure 50-160-2



Remove the two nuts and bolts (Item 1) **[Figure 50-160-2]**.

Figure 50-160-3

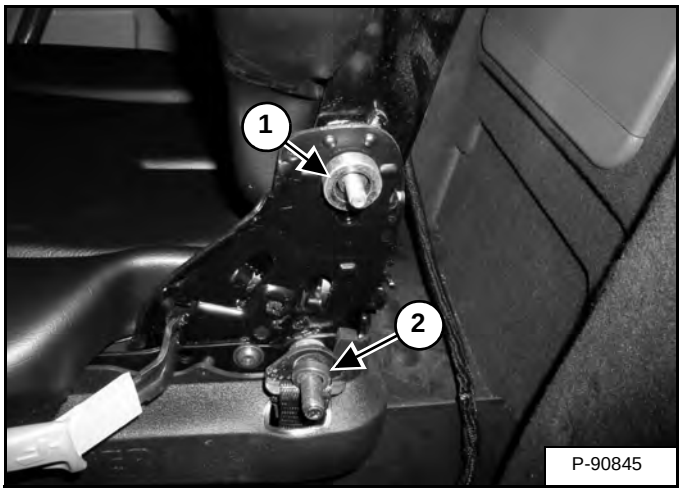


Remove the tie strap (Item 1) and disconnect the wire harness connector (Item 2) **[Figure 50-160-3]**.

Remove the nut (Item 3) **[Figure 50-160-3]**.

Remove the armrest (Item 4) **[Figure 50-160-3]** from the seat.

Figure 50-160-4



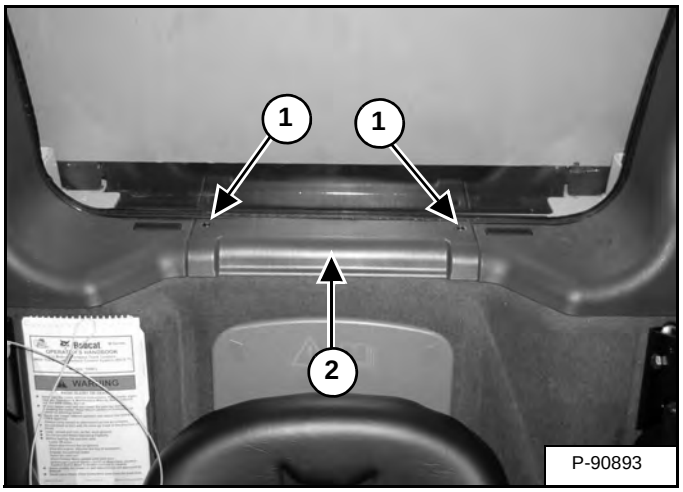
Remove the top spacer (Item 1) and the bottom spacer (Item 2) **[Figure 50-160-4]** from the seat.

Repeat for the other side.

HEADLINER

Removal And Installation

Figure 50-190-1

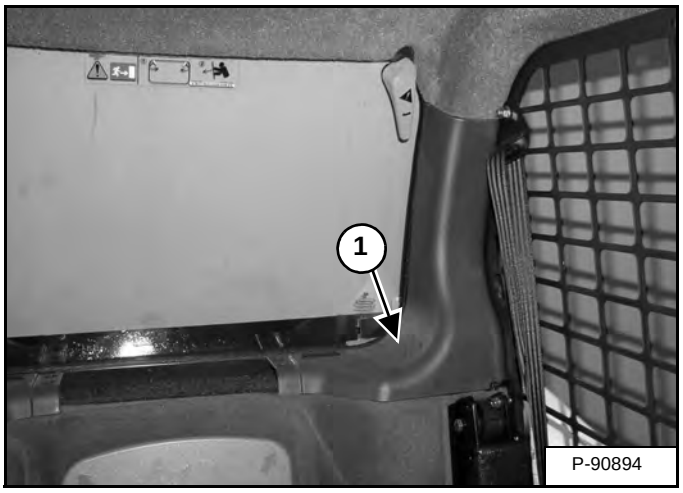


Remove the two screws (Item 1) and the rear shelf (Item 2) **[Figure 50-190-1]** (if equipped).

NOTE: The rear shelf has two panel clips on the underneath side, lift vertically to disengage.

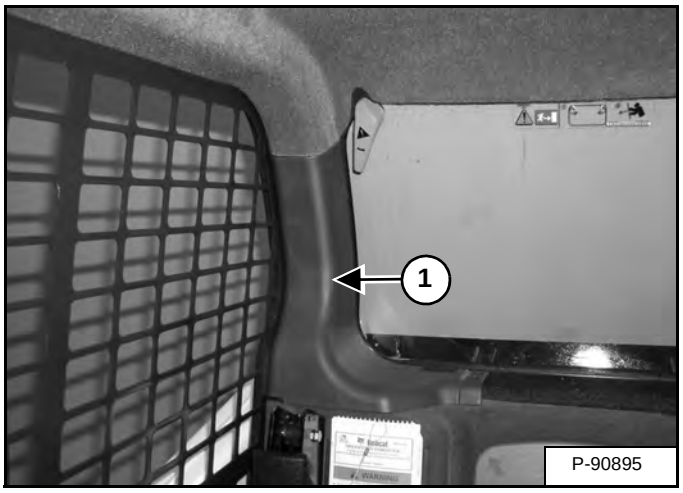
Installation: Tighten the screws to 2,3 N•m (20 in-lb) torque.

Figure 50-190-2



Remove the air duct (Item 1) **[Figure 50-190-2]** (if equipped).

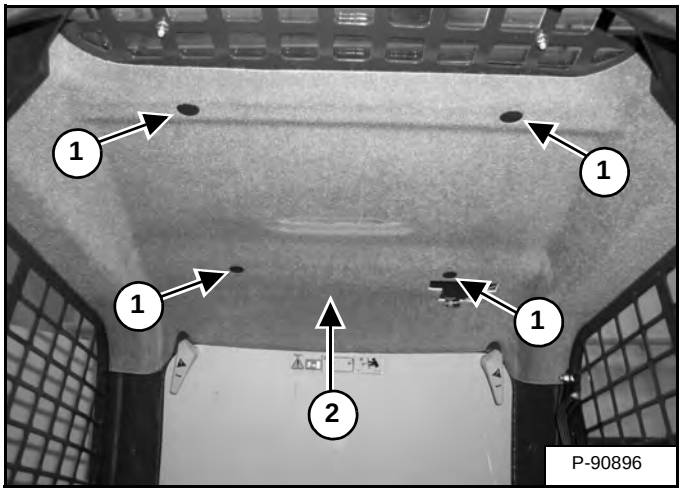
Figure 50-190-3



Remove the air duct (Item 1) **[Figure 50-190-3]** (if equipped).

Remove the cab light (if equipped). (See Cab Light Removal And Installation on Page 60-60-2.)

Figure 50-190-4



Remove the four retainers (Item 1) and remove the headliner (Item 2) **[Figure 50-190-4]**.

Installation: Route the cab light wire harness in the groove on the topside of the headliner (if equipped with HVAC).

NOTE: Replace the retainers if needed.

J1 CONNECTOR ASSIGNMENTS(GATEWAY CONTROLLER)			
PIN	FUNCTION	PIN	FUNCTION
A-1	HYDRAULIC LOCK RETURN	B-1	HYD CHARGE PRESS
A-2	LIFT SPOOL LOCK RETURN	B-2	UNSW BATT
A-3	HVAC RELAY - B	B-3	UNSW BATT
A-4	SWITCHED PWR OUT RELAY - A	B-4	ENGINE RUN SIGNAL
A-5	FRONT LIGHT RELAY - J	B-5	LIFT SPOOL LOCK
A-6		B-6	TRACTION LOCK HOLD
A-7	STARTER RELAY - M	B-7	TILT SPOOL LOCK
A-8	TRACTION PULL RELAY - D	B-8	CAN LO 1
A-9	TAILGATE FANS OUT RELAY - C	B-9	CAN HI 1
A-10	TILT SPOOL LOCK RETURN	B-10	HAND THROTTLE
A-11	AC SENSE	B-11	SEAT BAR
A-12	LEFT FAN FDBK RELAY - C	B-12	FUEL LEVEL
A-13	TRACTION PULL FDBK RELAY- D	B-13	BICS HYD LOCK HOLD
A-14		B-14	CAN HI 2
A-15		B-15	GROUND P1
A-16	AIR FILTER SWITCH	B-16	GROUND P2
A-17	REAR LIGHT RELAY - E	B-17	GROUND P3, SENSOR
A-18	HYD FAN RETURN	B-18	ENGINE TEMP SENSOR
A-19	PTOL LED	B-19	HYD FAN OUTPUT
A-20	PTOL SWITCH	B-20	CAN LO 2
A-21	SWITCHED PWR FDBK RELAY - A	B-21	REMOTE RUN KEY
A-22	STATER FDBK RELAY - M	B-22	RUN/ENTER
A-23		B-23	SENSOR SUPPLY 8V
A-24	START ENGINE	B-24	SENSOR SUPPLY 5V
A-25	RIGHT FAN FDBK RELAY - C	B-25	TWO SPEED MAKEUP
A-26	TWO SPEED RETURN	B-26	TWO SPEED COIL
A-27	TWO SPEED MAKE-UP RETURN		
A-28	REAR LIGHT FDBK RELAY - E		
A-29			
A-30	HVAC FDBK RELAY - B		
A-31	FRONT LIGHTS FDBK RELAY - K		
A-32	HYD OIL TEMP (8 VOLT)		
A-33	FOOT THROTTLE		
A-34	HYD OIL FILTER SW1		

J2 CONNECTOR ASSIGNMENTS(AUXILLIARY CONTROLLER)			
PIN	FUNCTION	PIN	FUNCTION
A-1	FRONT AUX (F) RETURN (BASE)	B-1	
A-2		B-2	UNSW BATT
A-3	LEFT BLINKER RELAY	B-3	UNSW BATT
A-4	RIGHT BLINKER RELAY	B-4	
A-5	HORN RELAY	B-5	
A-6		B-6	
A-7		B-7	
A-8		B-8	CAN LO 1
A-9		B-9	CAN HI 1
A-10	REAR AUX (M) RETURN	B-10	
A-11	LH PADDLE RIGHT	B-11	
A-12	RH PADDLE LEFT	B-12	
A-13	RH RIGHT ROCKER UP	B-13	FRONT AUX (F) (BASE)
A-14		B-14	CAN HI 2
A-15		B-15	GROUND
A-16		B-16	GROUND
A-17		B-17	RH PWM LO
A-18	FRONT AUX (M) RETURN (ROD)	B-18	RH PWM SIG
A-19		B-19	FRONT AUX (M) (ROD)
A-20	FLOAT	B-20	CAN LO 2
A-21		B-21	RH TRIGGER RETURN
A-22	LH RIGHT ROCKER DOWN	B-22	SWITCHED PWR
A-23		B-23	RH PWM HI
A-24		B-24	
A-25		B-25	
A-26	HIGH FLOW RETURN	B-26	HIGH FLOW
A-27			
A-28	LH RIGHT ROCKER UP		
A-29			
A-30	RH LEFT ROCKER UP		
A-31	RH LEFT ROCKER DOWN		
A-32			
A-33			
A-34			

HARNESS PART NUMBER	
LF MFR MAN	7267010
DLX CAB	7253375
DLX FUEL	7266824
BCT ENG	7242470
TAILGATE DOM	7267103
SUSP JSTK	7163706
BRAKE ADAPTER	7234968
WHL 2 SPD ADP	7159366
TRK 2 SPD ADP	7243409

WIRING SCHEMATIC
(MANUAL MACHINE)
S750 (S/N AT5211001 - AT5211294)

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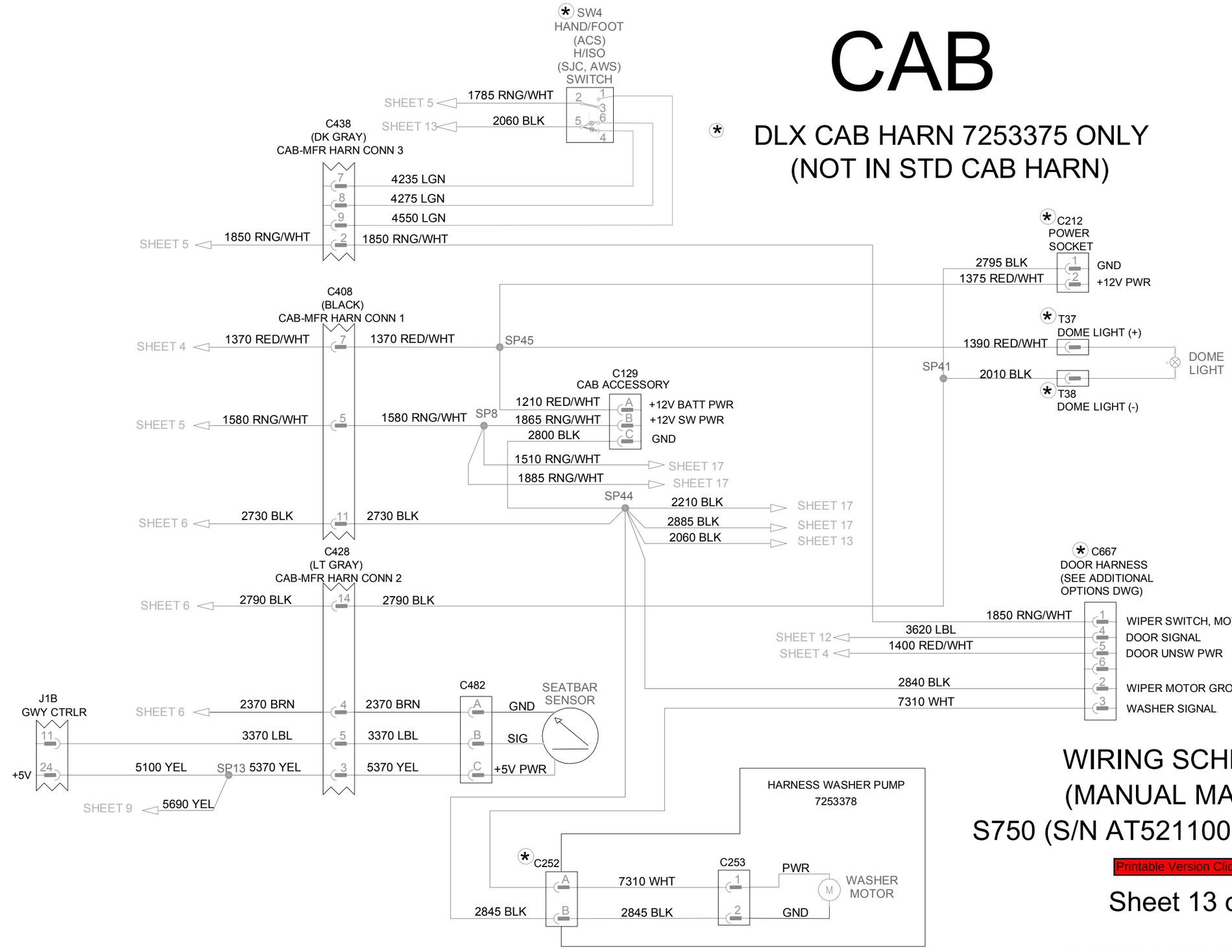
CAB

* DLX CAB HARN 7253375 ONLY (NOT IN STD CAB HARN)



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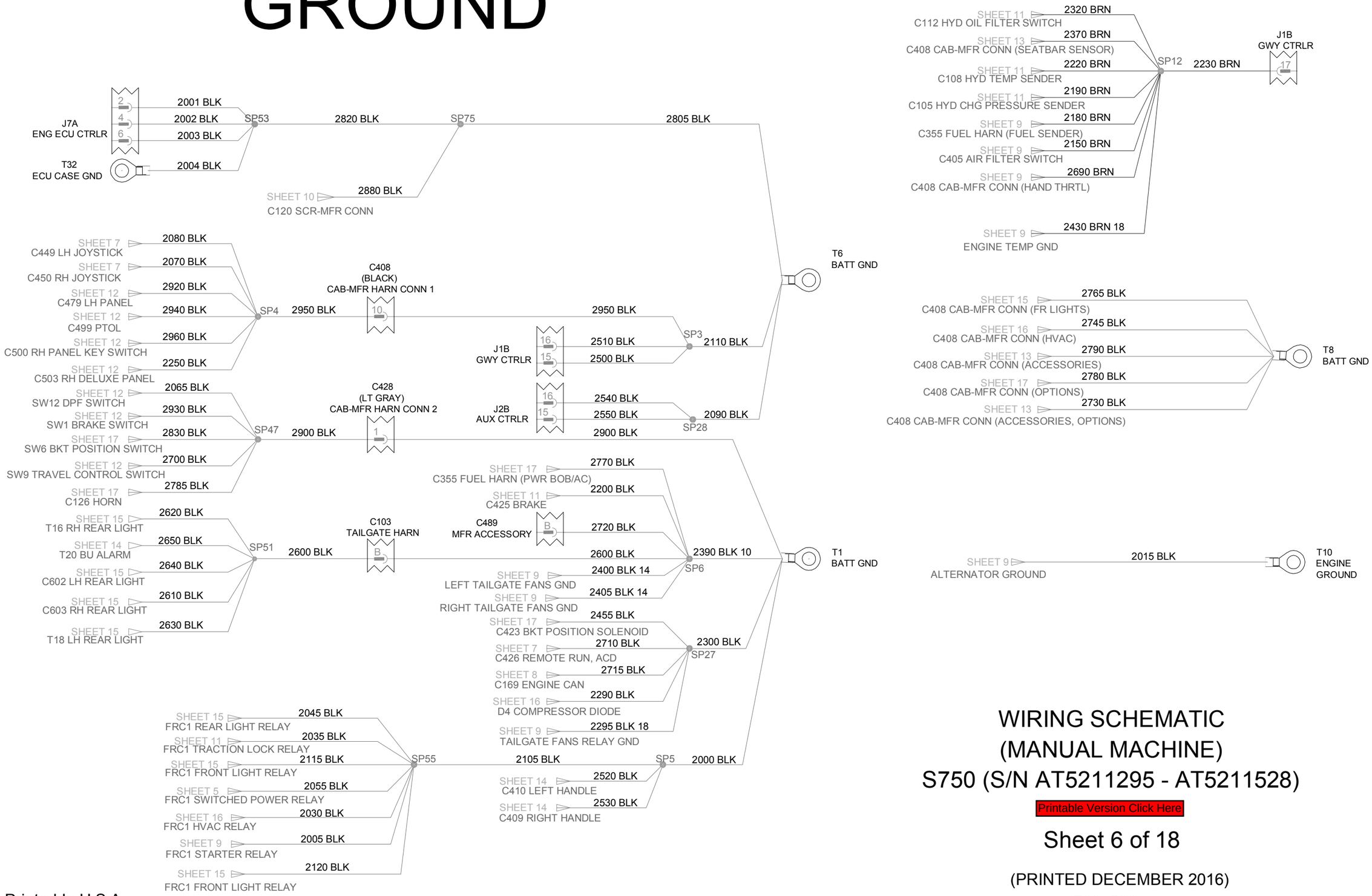
GROUND



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WIRING SCHEMATIC
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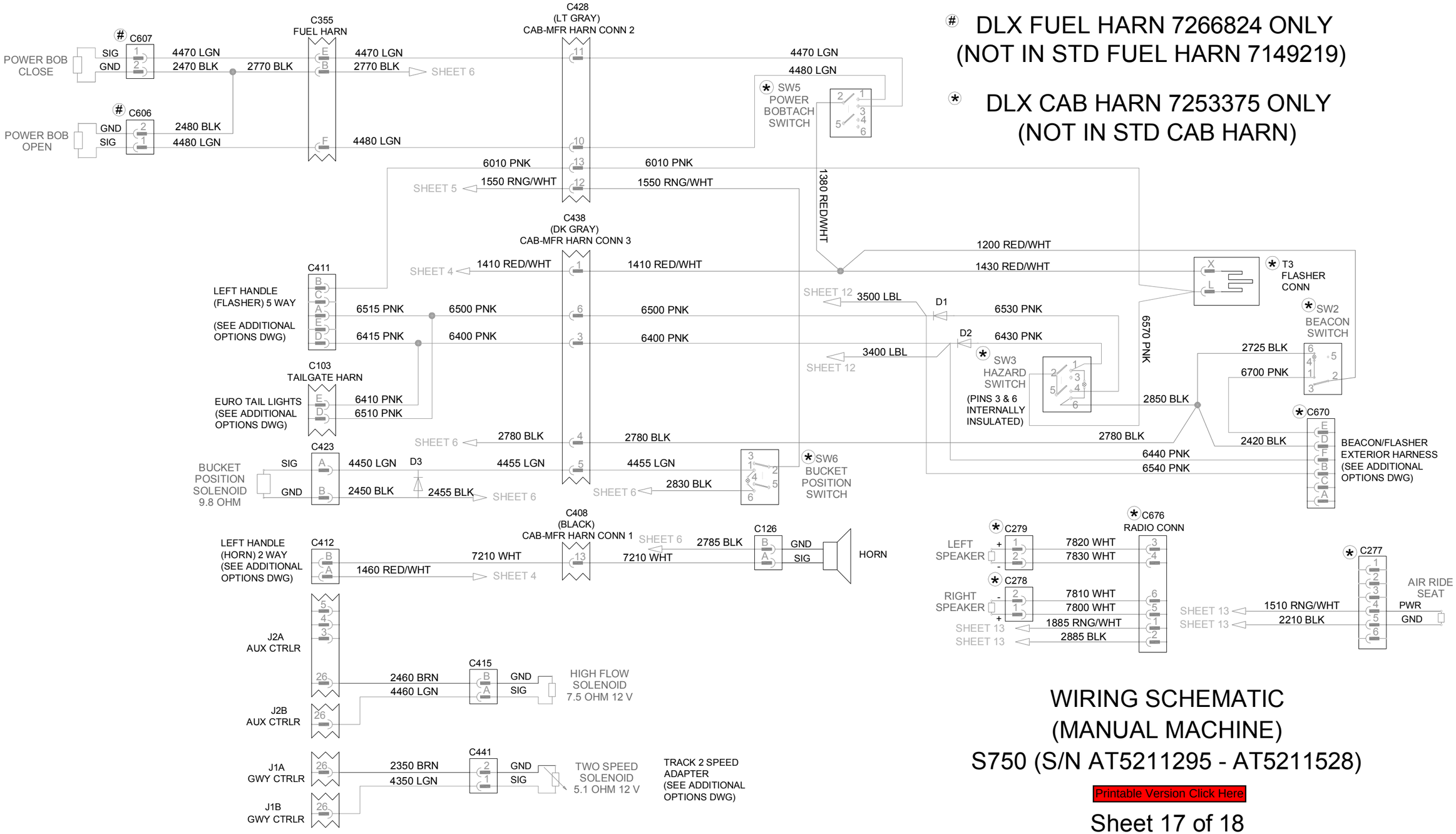
OPTIONS

DLX FUEL HARN 7266824 ONLY (NOT IN STD FUEL HARN 7149219)

* DLX CAB HARN 7253375 ONLY (NOT IN STD CAB HARN)



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HYDRAULICS

FRC1
TRACTION LOCK RELAY - D

SHT2/F1 » 1360 RED/WHT +12V PWR → D1
30 87 D4
85
D5 86 D2 GND
FRC1 FRC1

SHT4/B8 » 2035 BLK

GATEWAY CTRLR
TRACTION LOCK RELAY SIGNAL 8 — 4110 LGN
TRACTION LOCK RELAY FEEDBACK 13 — 3430 LBL
HYD TEMP SIGNAL 32
HYD FILTER DIFF PRESS 34
HYDRAULIC FAN GROUND 18
HYD LOCK VALVE SOL GROUND 1
J1A

SHT4/H3 » 2220 BRN GND → B
3220 LBL SIG → A
T
C108
HYDRAULIC TEMPERATURE SENDER
500 - 3000 OHM (8 VOLT)

3320 LBL SIG → A
SHT4/H3 » 2320 BRN GND → B
P
C112
HYDRAULIC OIL FILTER SWITCH
(NC)

4010 LGN SIG → 1
2910 BRN GND → 2
C446
HYDRAULIC FAN SOLENOID
7.2 OHM 12 V

2410 BRN GND → 2
4410 LGN SIG → 1
C420
HYDRAULIC LOCK SOLENOID
9.8 OHM 12 V

SHT4/G3 » 2190 BRN GND → B
3190 LBL SIG → C
5190 YEL +8 PWR → A
P
C105
HYDRAULIC CHARGE
PRESSURE 0.5-7.5V

4200 LGN

J1B
19 HYDRAULIC FAN SIGNAL
13 HYD LOCK SOLENOID SIGNAL
1 HYD CHARGE PRESS SENDER SIGNAL
23 HYD CHARGE PRESS SENDER POWER
6 TRACTION SOLENOID OUTPUT
GATEWAY CTRLR

4100 LGN
SHT4/D6 » 2200 BLK
C425 B A C
4200 LGN 2200 BLK
C308 A B
C308
BRAKE
SOLENOID 9.8
OHM 12 V

WHEEL 2 SPD ADP HARNESS 7159366
TRACK 2 SPD HARNESS 7243409
TRACK SINGLE SPD BRAKE ADP HARNESS 7234968

TRACK 2 SPEED ADAPTER
(SEE ADDITIONAL OPTIONS DWG)

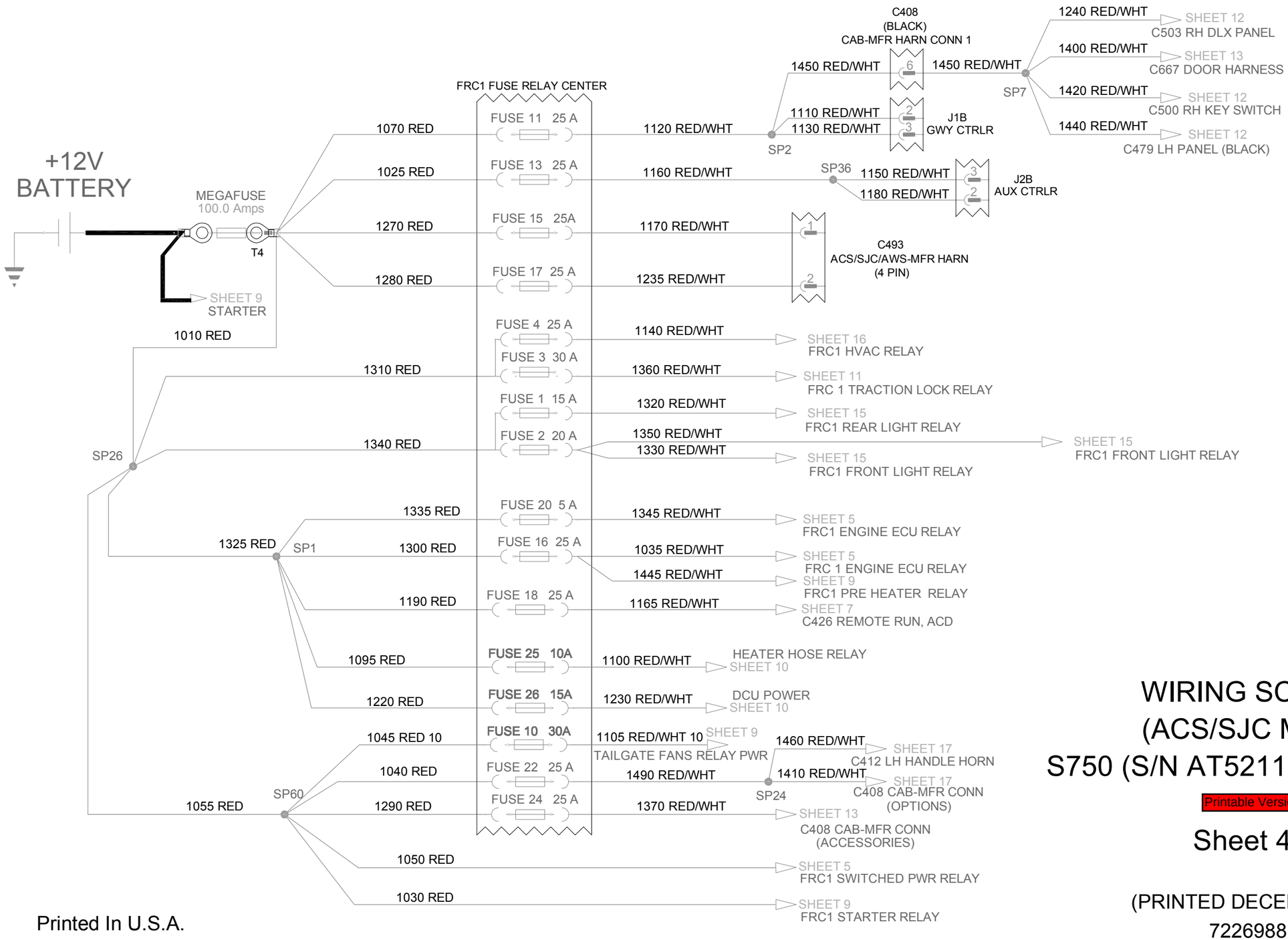
AUX CTRLR
FRONT ROD SOLENOID GROUND 18
FRONT BASE SOLENOID GROUND 1
J2A

4330 LGN GND → 1
2330 BRN SIG → 2
C418
FRONT ROD SOLENOID (MALE)
3.3 OHM PWM

4340 LGN GND → 1
2340 BRN SIG → 2
C419
FRONT BASE SOLENOID (FEMALE)
3.3 OHM PWM

J2B
19 FRONT ROD SOLENOID SIGNAL
13 FRONT BASE SOLENOID SIGNAL
AUX CTRLR

UNSWITCHED BATT POWER



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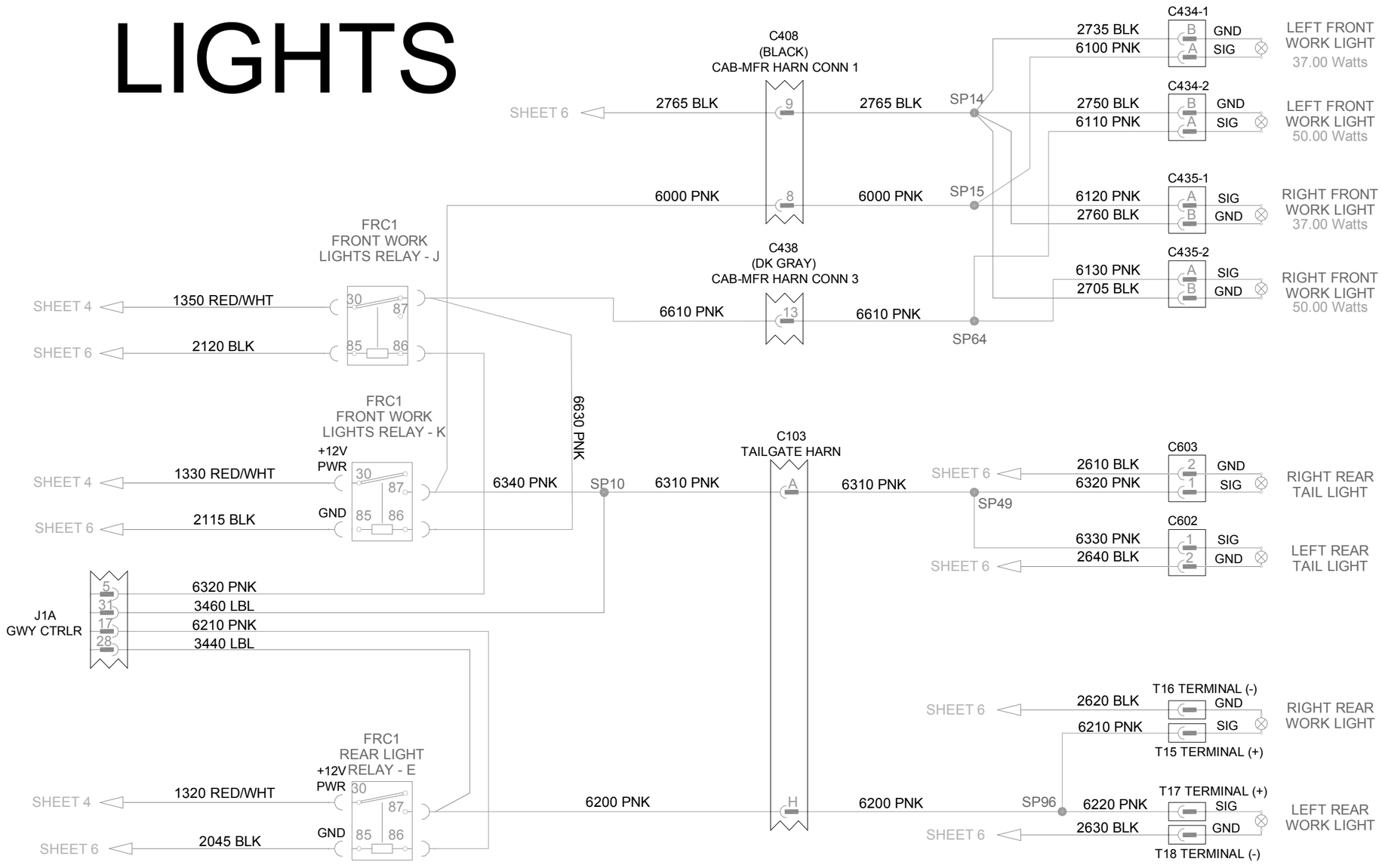
LIGHTS



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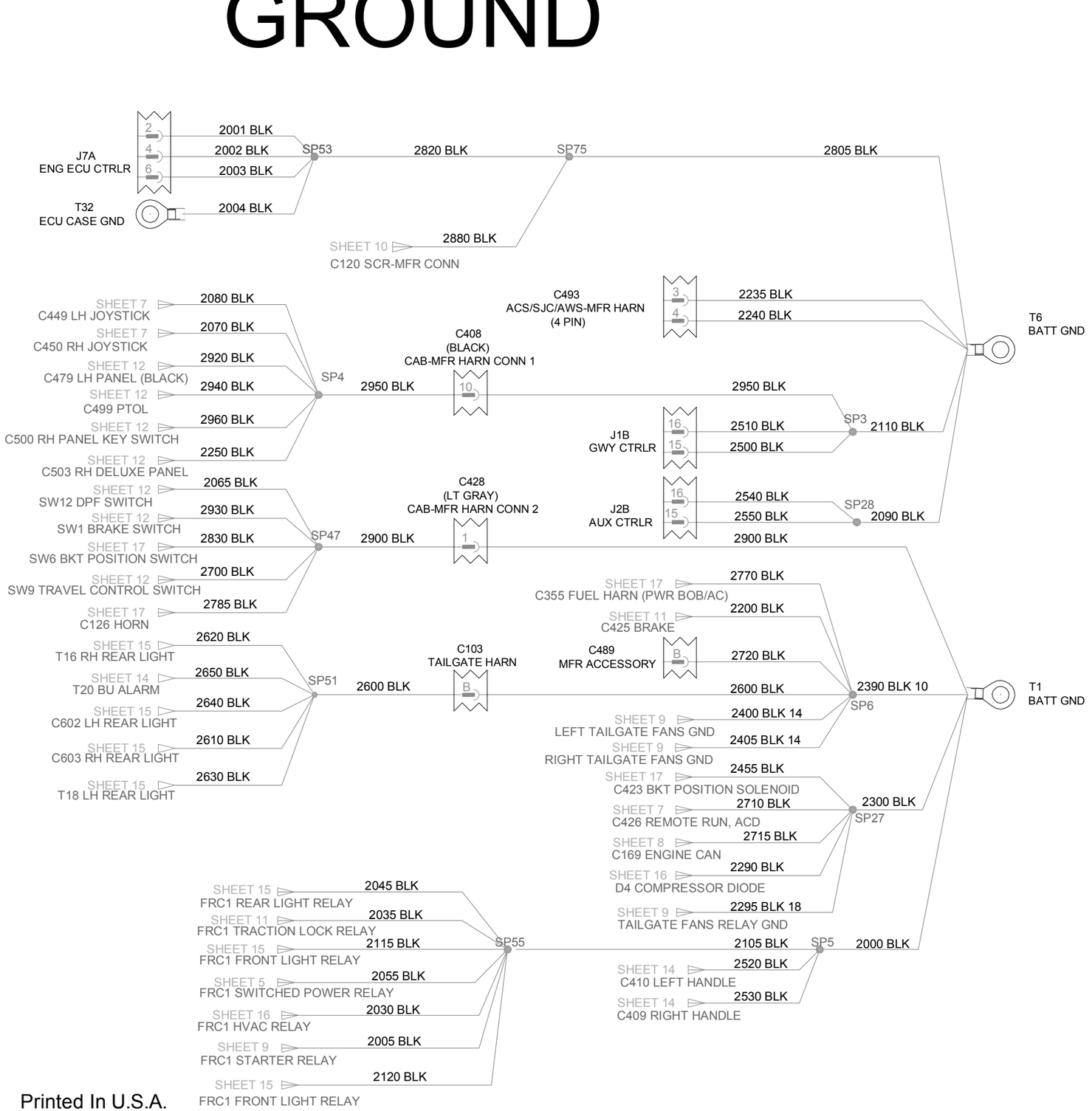
GROUND



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S750 (S/N AT5211295 - AT5211528)

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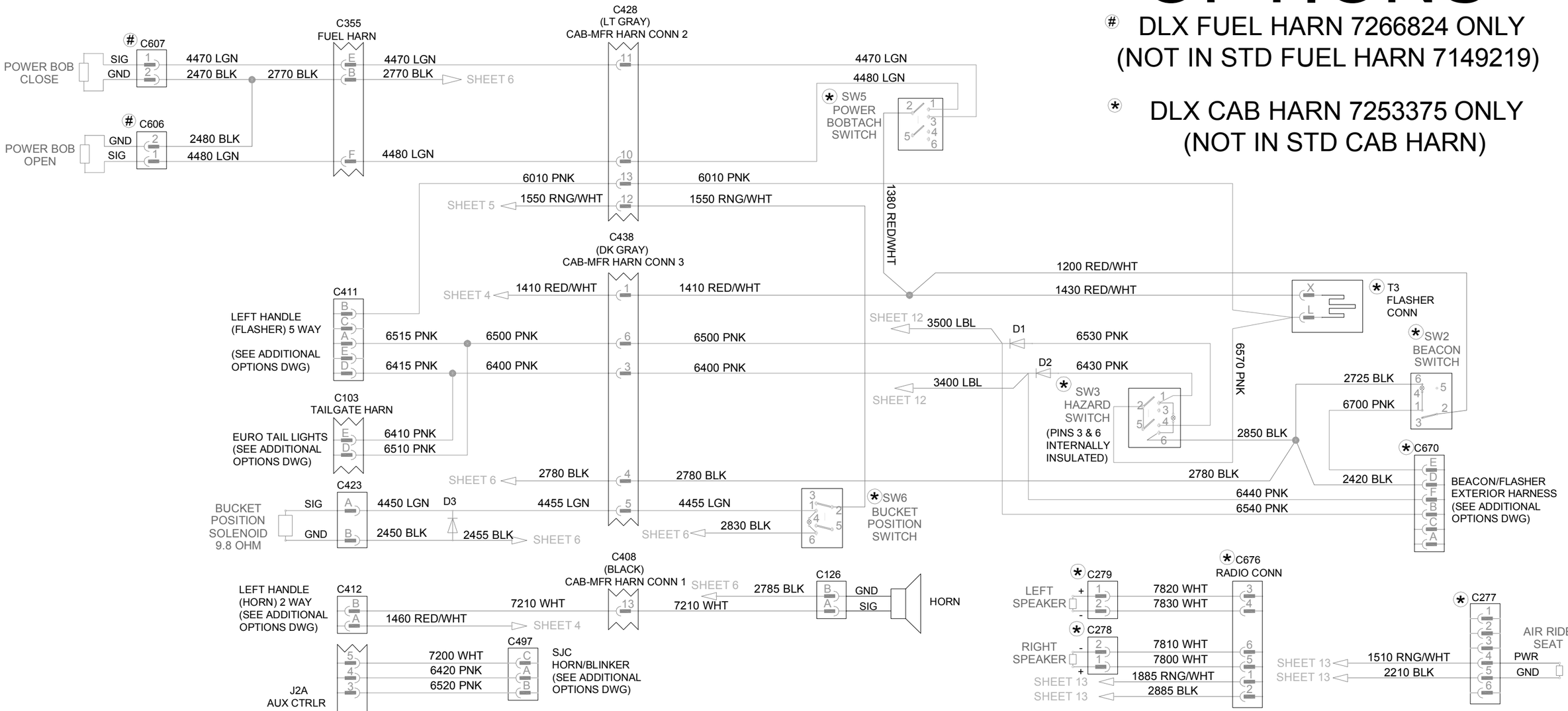
OPTIONS

(#) DLX FUEL HARN 7266824 ONLY
(NOT IN STD FUEL HARN 7149219)

(*) DLX CAB HARN 7253375 ONLY
(NOT IN STD CAB HARN)



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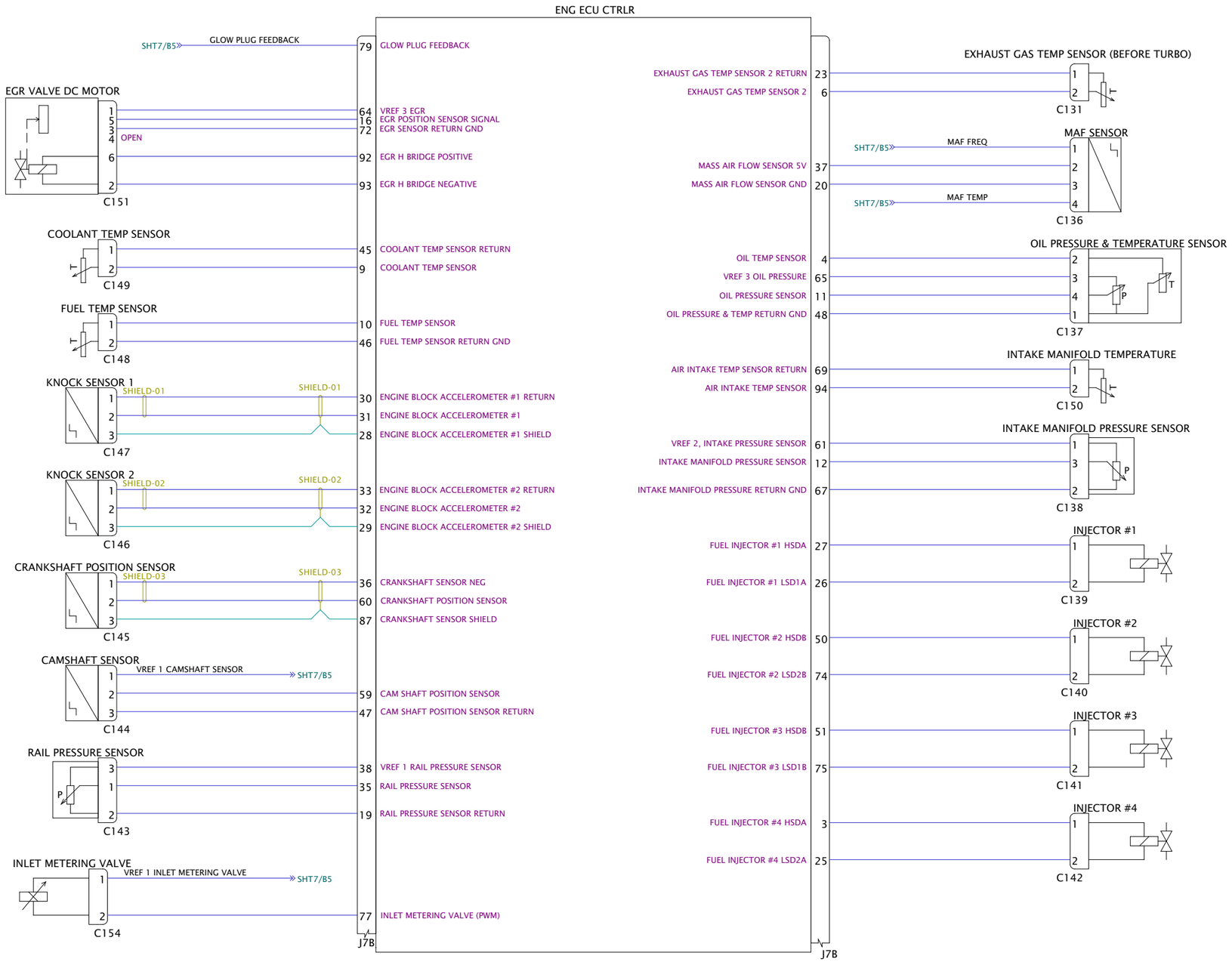
ENGINE CONTROL UNIT



Wiring Schematic
ACS / SJC Machine

S750 S/N AT5211529 & Above

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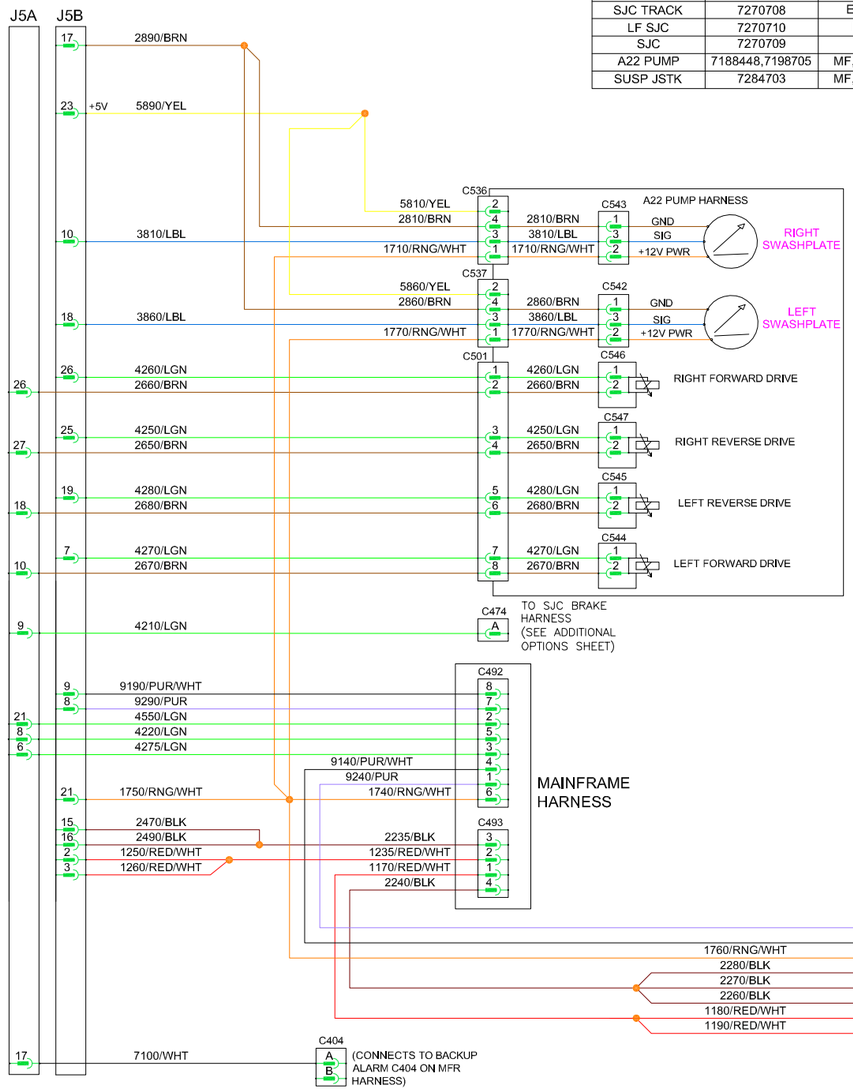
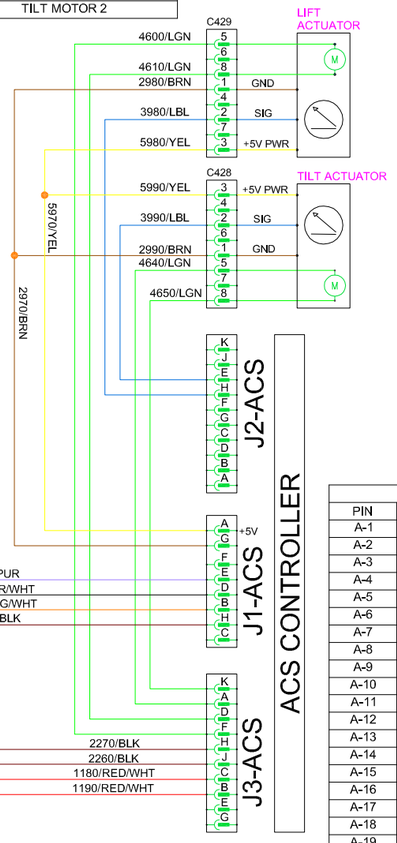
SJC CONTROLS

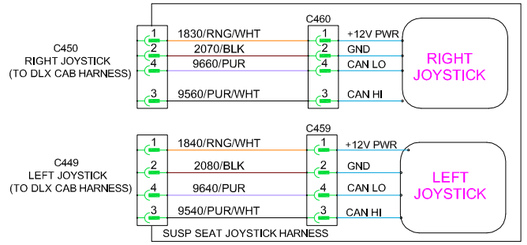
ACS CONTROLLER					
CONNECTOR J1-ACS		CONNECTOR J2-ACS		CONNECTOR J3-ACS	
PIN	FUNCTION	PIN	FUNCTION	PIN	FUNCTION
A	+5V TO SENSORS	A	LIFT CYLINDER SENSOR-SPARE	A	TILT MOTOR 1
B	SWITCHED POWER	B	FLOAT-SPARE	B	UNSWITCHED POWER
C	HAND/FOOT INPUT	C	RESPONSE SELECTOR-SPARE	C	UNSWITCHED POWER
D	CAN HIGH	D	TILT CYLINDER SENSOR-SPARE	D	LIFT MOTOR 2
E	CAN LOW	E	TILT ACTUATOR FEEDBACK	E	HANDLE ENABLE
F		F	LIFT HANDLE	F	LIFT MOTOR 1
G	GROUND	G	TILT HANDLE	G	PEDAL ENABLE
H	GROUND	H	LIFT ACTUATOR FEEDBACK	H	GROUND
		J	LIFT PEDAL	J	GROUND
		K	TILT PEDAL	K	TILT MOTOR 2

HARNESS PART NUMBER		
SJC WHEEL	7270707	EXMF, LF
SJC TRACK	7270708	EXMF, LF
LF SJC	7270710	LF, D34
SJC	7270709	MF
A22 PUMP	7188448,7198705	MF, EXMF, LF
SUSP JSTK	7284703	MF, EXMF, LF

SJC CONTROLLER







J5 CONNECTOR ASSIGNMENT (SJC CONTROLLER)			
PIN		PIN	
A-1		B-1	
A-2		B-2	UNSWITCHED BATTERY
A-3		B-3	UNSWITCHED BATTERY
A-4		B-4	
A-5		B-5	
A-6	H PATTTERN LITE	B-6	
A-7		B-7	LEFT FWD DRIVE SIGNAL
A-8	ISO LITE (ISO/H PATTERN SWITCH	B-8	CAN LOW
A-9	BRAKE LIGHT OUTPUT	B-9	CAN HIGH
A-10	LEFT FWD DRIVE RETURN	B-10	R SWASH PLATE ANGLE
A-11		B-11	
A-12		B-12	
A-13		B-13	
A-14		B-14	
A-15		B-15	GROUND
A-16		B-16	GROUND
A-17	BACKUP ALARM	B-17	SENSOR GROUND (SWASHPLATE)
A-18	LEFT REVERSE DRIVE RETURN	B-18	L SWASH PLATE ANGLE
A-19		B-19	LEFT REVERSE DRIVE SIGNAL
A-20		B-20	
A-21	H PATTERN SWITCH	B-21	SWITCHED BATTERY
A-22		B-22	
A-23		B-23	SENSOR SUPPLY 1 +5V
A-24		B-24	
A-25		B-25	RIGHT REVERSE DRIVE SIGNAL
A-26	RIGHT FORWARD DRIVE RETURN	B-26	RIGHT FORWARD DRIVE SIGNAL
A-27	RIGHT REVERSE DRIVE RETURN		
A-28			
A-29			
A-30			
A-31			
A-32			
A-33			
A-34			

Wiring Schematic
ACS / SJC Machine

S750 S/N AT5211529 & Above

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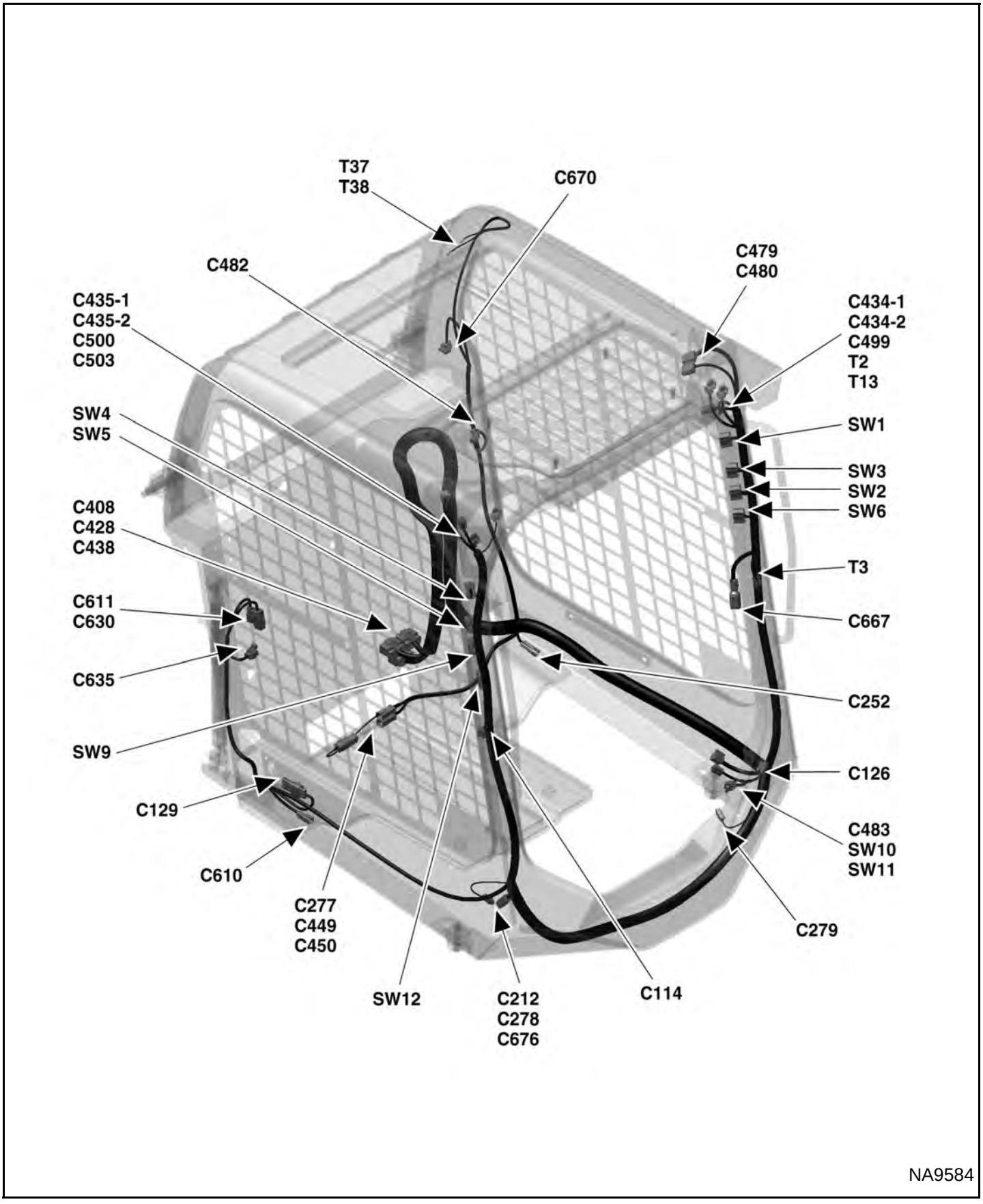
Sheet 19 of 19

Printable Version Click Here

Deluxe Cab Harness Connectors



Solenoid Testing

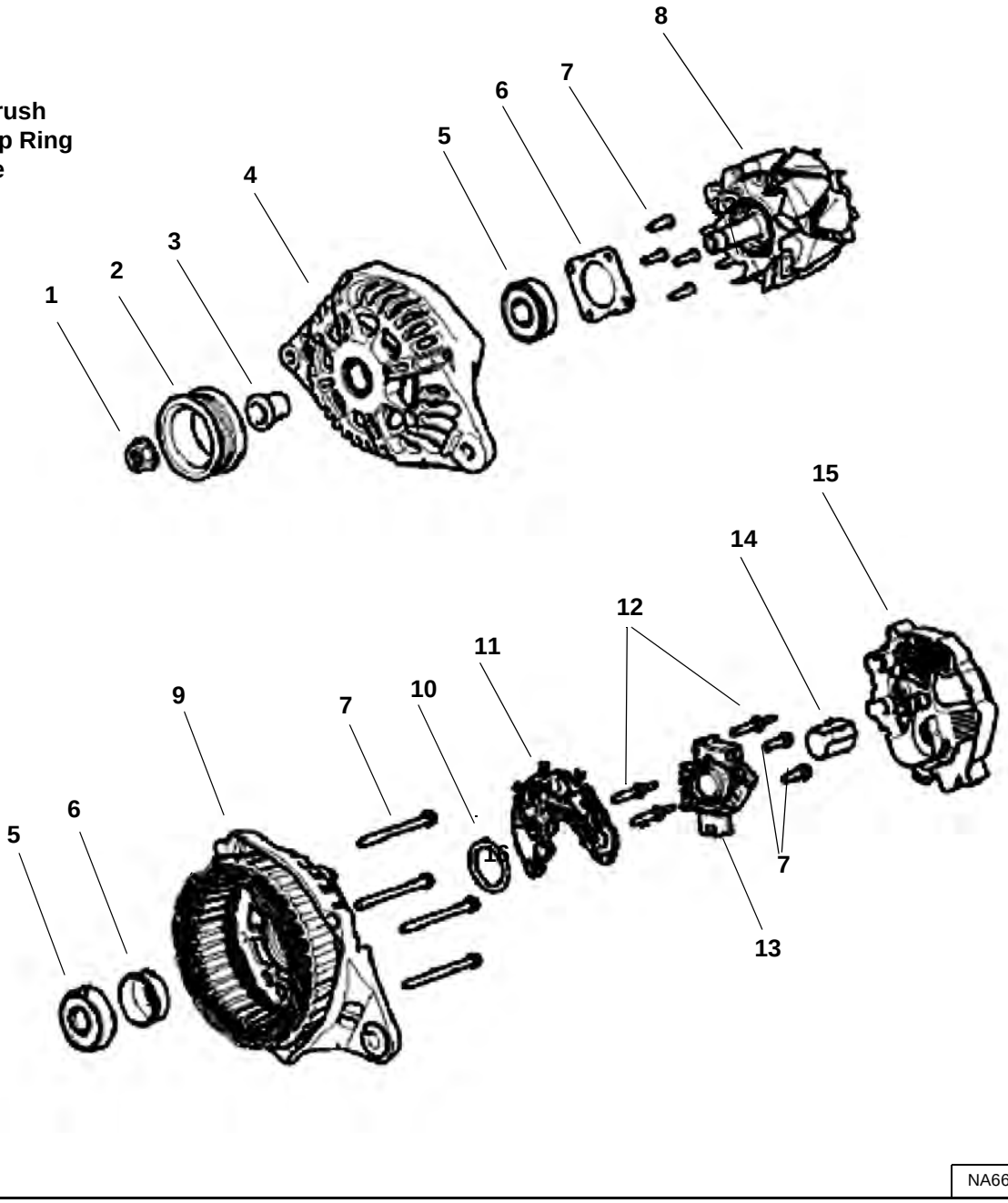
Figure 60-10-12

Use a test meter to measure coil resistance **[Figure 60-10-12]**. Coil wires do not have polarity. Correct resistance for the pressure relief (small) coil is 7 - 10 ohm and the other coils 5 - 8 ohm.

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

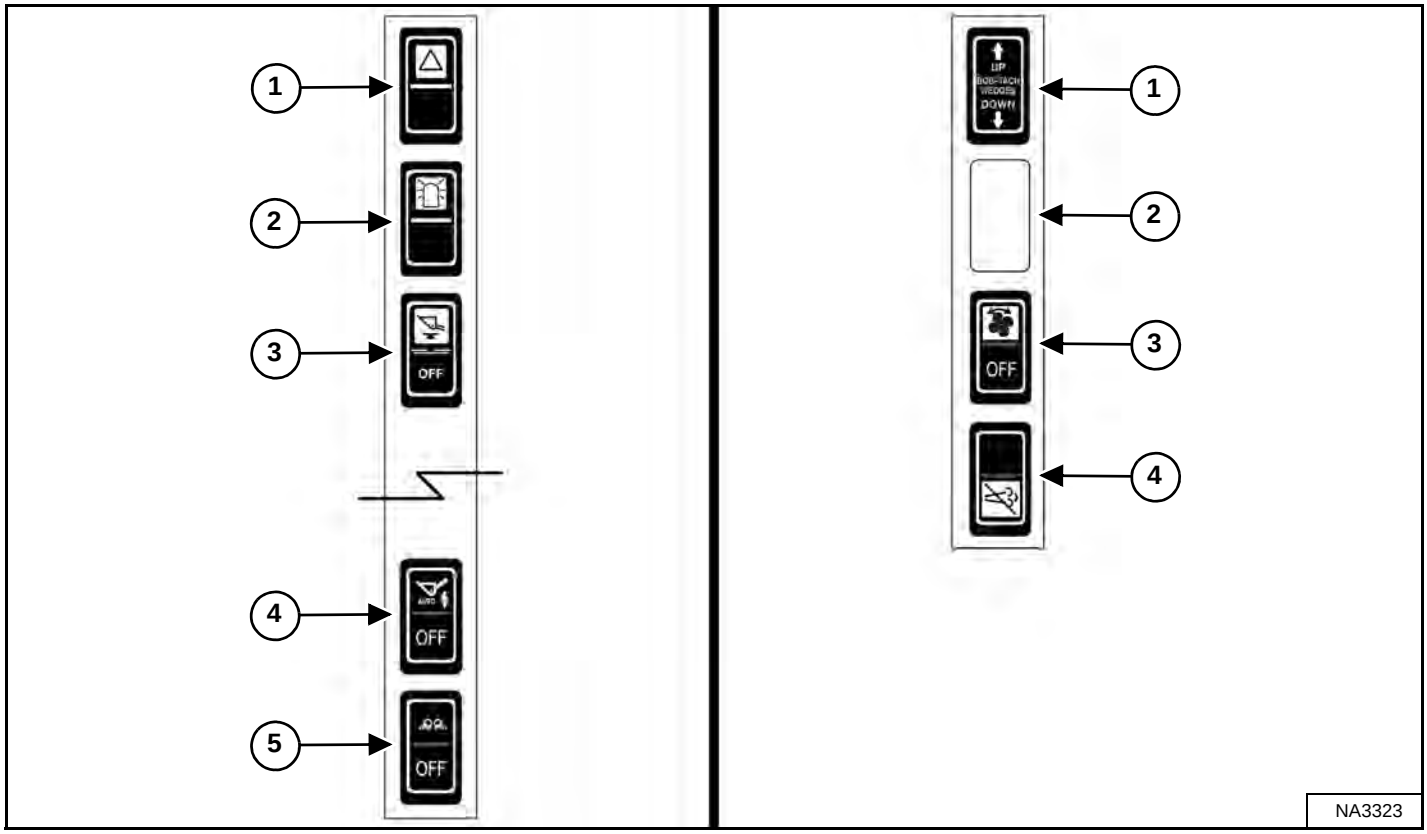
Parts Identification

1. Nut
2. Pulley
3. Spacer
4. Front Case
5. Bearing
6. Cover, Bearing
7. Bolt
8. Rotor
9. Stator
10. Seal
11. Rectifier
12. Stud
13. Holder, Brush
14. Guide, Slip Ring
15. Rear Case



Left Switch Panel **Right Switch Panel**

Figure 60-50-7



This machine may be equipped with a left switch panel **[Figure 60-50-7]**.

NOTE: Earlier models did not have switch locations four and five on the left switch panel.

ITEM	DESCRIPTION	FUNCTION / OPERATION
1	FOUR-WAY FLASHER LIGHTS (Option)	Press the top to turn lights ON; bottom to turn OFF.
2	ROTATING BEACON (Option) ***OR*** STROBE LIGHT (Option)	Press the top to turn light ON; bottom to turn OFF.
3	HYDRAULIC BUCKET POSITIONING (Option)	Press the top to engage Hydraulic Bucket Positioning; bottom to disengage.
4	AUTOMATIC RIDE CONTROL (Option)	Press the top to engage Automatic Ride Control; bottom to disengage.
5	SIDE LIGHTING (Option)	Press the top to turn lights ON; bottom to turn OFF.

ITEM	DESCRIPTION	FUNCTION / OPERATION
1	POWER BOB-TACH (Option)	Press and hold the up arrow to disengage the Bob-Tach wedges. Press and hold the down arrow to engage the Bob-Tach wedges into the attachment mounting frame holes.
2	NOT USED	– – –
3	REVERSING FAN (Option)	Automatic Operation - middle position; Manual Operation - press top momentarily; press bottom to disengage.
4	DESOX INHIBIT (Option)	Press the bottom to inhibit DeSOX. See SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM in this manual.

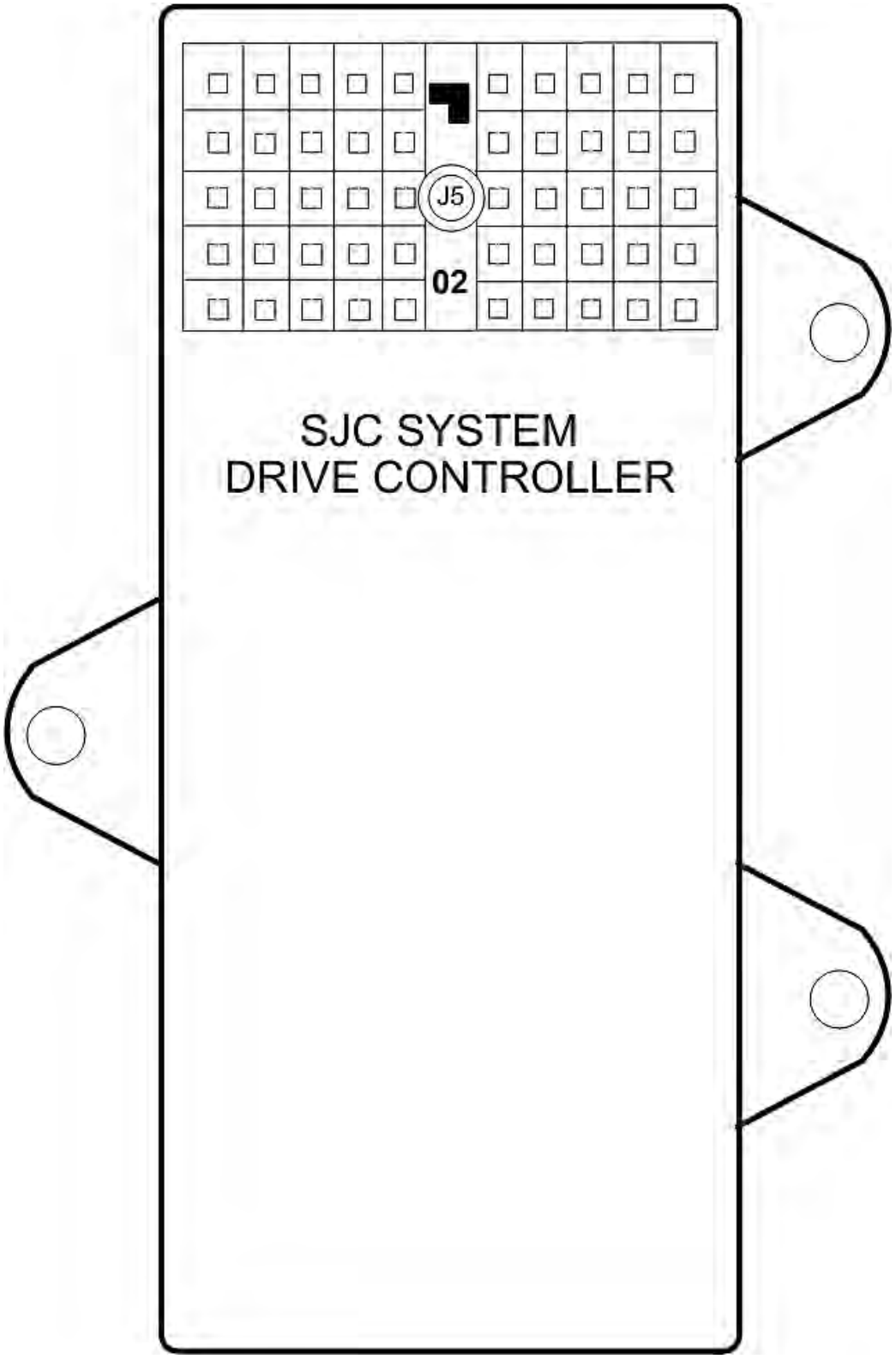
Connector Identification (Cont'd)

J1A

PIN	WIRE NUMBER	COLOR	DESCRIPTION
1	2410	BLACK	HYD LOCK VALVE SOLENOID GROUND
2	2680	BLACK	LIFT SPOOL SOLENOID GROUND
3	8110	TAN	FUEL PULL RELAY SIGNAL
4	3380	LBL	SWITCHED POWER RELAY SIGNAL
5	6320	PINK	MRKR LIGHT PWR RELAY SIGNAL
6	8510	TAN	GLOW PLUG RELAY SIGNAL
7	8210	TAN	STARTER RELAY SIGNAL
8	4110	LGN	TRACTION PULL RELAY SIGNAL
9	OPEN	NA	NA
10	2670	BLACK	TILT SPOOL LOCK SOLENOID GROUND
11	7021	WHITE	AC SIGNAL MONITOR
12	OPEN	NA	NA
13	3430	LBL	TRACTION PULL RELAY FEEDBACK
14	3420	LBL	GLOW PLUG RELAY FEEDBACK
15	3160	LBL	ENGINE SPEED SENSOR SIGNAL
16	3150	LBL	AIR FILTER SENDER SIGNAL
17	6210	PINK	REAR LIGHT RELAY SIGNAL
18	2910	BLACK	HYDRAULIC FAN GROUND
19	2380	BRN	PTOL LED
20	3030	LBL	PTOL SWITCH
21	3450	LBL	SWITCHED POWER RELAY FEEDBACK
22	3560	LBL	STARTER RELAY FEEDBACK
23	OPEN	NA	NA
24	8130	TAN	START ENGINE
25	3140	LBL	ENGINE OIL PRESS SENDER POWER
26	2350	BLACK	TWO SPEED GROUND
27	2360	BLACK	TWO SPEED MAKEUP GROUND
28	3440	LBL	REAR LIGHT RELAY FEEDBACK
29	OPEN	NA	NA
30	3410	LBL	FUEL RELAY FEEDBACK
31	3460	LBL	MRKR LIGHT PWR RELAY FEEDBACK
32	3220	LBL	HYD TEMP SIGNAL
33	OPEN	NA	NA
34	3220	LBL	HYD FILTER DIFF PRESS

BOBCAT CONTROLLER (SJC) (DRIVE) (CONT'D)

Connector Identification



P-64295

DIAGNOSTIC SERVICE CODES (CONT'D)

Service Codes List (Cont'd)

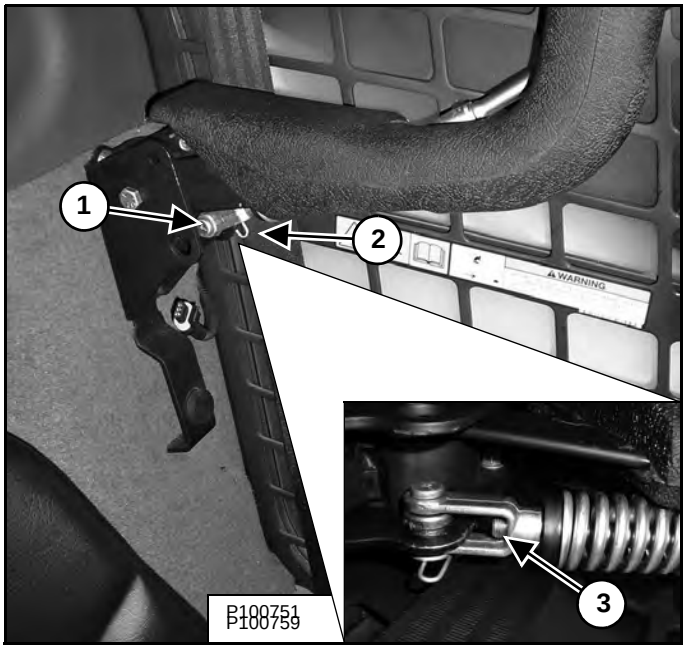
CODE	DESCRIPTION	CODE	DESCRIPTION
A8602	ACD output 'G' error ON	D7525	Drive right rear wheel angle sensor out of range high
A8603	ACD output 'G' error OFF	D7526	Drive left rear wheel angle sensor out of range high
A8605	ACD output 'G' short to battery	D7527	Drive left swash plate out of position
A8606	ACD output 'G' short to ground	D7528	Drive right swash plate out of position
A8607	ACD output 'G' open circuit	D7529	Drive left joystick X-axis out of range low
A8702	ACD output 'H' error ON	D7531	Drive left joystick Y-axis out of range low
A8703	ACD output 'H' error OFF	D7532	Drive right joystick Y-axis out of range low
A8705	ACD output 'H' short to battery	D7533	Drive right front wheel angle sensor out of range low
A8706	ACD output 'H' short to ground	D7534	Drive left front wheel angle sensor out of range low
A8707	ACD output 'H' open circuit	D7535	Drive right rear wheel angle sensor out of range low
A8802	Reversing solenoid error ON	D7536	Drive left rear wheel angle sensor out of range low
A8803	Reversing solenoid error OFF	D7537	Drive 5 volt sensor supply 1 out of range low
		D7538	Drive 5 volt sensor supply 2 out of range low
D3905	Left joystick X-axis not in NEUTRAL	D7539	Drive left swash plate sensor out of range high
D3907	Left joystick Y-axis not in NEUTRAL	D7540	Drive left swash plate sensor out of range low
D4007	Right joystick Y-axis not in NEUTRAL	D7541	Drive right swash plate sensor out of range high
D7501	Drive CAN joystick information error	D7542	Drive right swash plate sensor out of range low
D7504	Drive no communication from drive controller	D7543	Drive left forward drive solenoid error ON
D7505	Drive left joystick X-axis not in NEUTRAL	D7544	Drive left reverse drive solenoid error ON
D7507	Drive left joystick Y-axis not in NEUTRAL	D7545	Drive right forward drive solenoid error ON
D7508	Drive right joystick Y-axis not in NEUTRAL	D7546	Drive right reverse drive solenoid error ON
D7509	Drive operating mode switch short to ground or battery	D7547	Drive right front steer extend short to battery
D7510	Drive improper joysticks installed	D7548	Drive left front steer extend short to battery
D7511	Drive left speed sensor not connected	D7549	Drive right rear steer extend short to battery
D7512	Drive right speed sensor not connected	D7550	Drive left rear steer extend short to battery
D7513	Drive right front wheel angle sensor stuck	D7551	Drive steer pressure short to battery
D7514	Drive left front wheel angle sensor stuck	D7552	Drive back-up alarm error ON
D7515	Drive right rear wheel angle sensor stuck	D7553	Drive left forward drive solenoid error OFF
D7516	Drive left rear wheel angle sensor stuck	D7554	Drive left reverse drive solenoid error OFF
D7517	Drive left swash plate not in NEUTRAL	D7555	Drive right forward drive solenoid error OFF
D7518	Drive right swash plate not in NEUTRAL	D7556	Drive right reverse drive solenoid error OFF
D7519	Drive left joystick X-axis out of range high	D7557	Drive right front steer extend short to ground
D7521	Drive left joystick Y-axis out of range high	D7558	Drive right front steer retract short to ground
D7522	Drive right joystick Y-axis out of range high	D7559	Drive left front steer extend short to ground
D7523	Drive right front wheel angle sensor out of range high	D7560	Drive left front steer retract short to ground
D7524	Drive left front wheel angle sensor out of range high	D7561	Drive right rear steer extend short to ground

Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
U00436322	SCR post-treatment temperature fault	U00503519	NOX post-treatment CAN communication fault
U00436325	SCR downstream temperature sensor tampering	U00503619	NOX post-treatment CAN communication fault
U00436400	NOX pre-treatment fault	U00503719	NOX post-treatment CAN communication fault
U00436401	NOX pre-treatment fault	U00543510	Pressure stabilization fault
U00436416	SCR fault	U00543512	General pressure check fault
U00436418	SCR fault	U00543529	DEF pump motor fault
U00436420	SCR fault	U00570622	Supply module heater fault
U00436421	SCR fault	U00570623	Supply module heater fault
U00436422	SCR fault	U00570624	Supply module heater fault
U00436423	SCR fault	U00570626	Supply module heater temperature fault
U00436503	DEF temperature sensor open circuit	U00570627	Supply module heater temperature fault
U00436504	DEF temperature sensor short to ground	U00570703	Supply module heater short to battery
U00436511	DEF temperature sensor failure	U00570704	Supply module heater short to ground
U00437423	DEF pump motor speed fault	U00570705	Supply module heater open circuit
U00437424	DEF pump motor speed fault	U00570712	Supply module heater overtemperature
U00437428	DEF pump motor speed fault	U00570723	Supply module heater temperature duty high
U00437430	DEF pump motor speed fault	U00570724	Supply module heater temperature duty low
U00437503	DEF pump motor short to battery	U00570726	Supply module heater temperature fault
U00437504	DEF pump motor short to ground	U00570727	Supply module heater temperature fault
U00437505	DEF pump motor open circuit	U00571302	NOX sensor self diagnostics
U00437512	DEF pump motor overtemperature	U00571307	NOX sensor self diagnostics
U00437523	DEF pump motor fault	U00571319	NOX sensor self diagnostics
U00437524	DEF pump motor fault	U00571402	NOX sensor self diagnostics
U00437603	DEF backflow pump short to battery	U00571407	NOX sensor self diagnostics
U00437604	DEF backflow pump short to ground	U00571419	NOX sensor self diagnostics
U00437605	DEF backflow pump open circuit	U05990419	CAN communications fault
U00437612	DEF backflow pump overtemperature	U06016019	CAN communications fault
U00476500	DOC pre-treatment temperature too high	U06041619	CAN communications fault
U00476501	DOC pre-treatment temperature too low	U06144419	CAN communications fault
U00476503	DOC pre-treatment temperature sensor out of range high	U06145419	CAN communications fault
U00476504	DOC pre-treatment temperature sensor out of range low	U06145519	CAN communications fault
U00502419	NOX pre-treatment CAN communication fault	U06463919	Memory fault
U00502519	NOX pre-treatment CAN communication fault	U06463931	Memory fault
U00502619	NOX pre-treatment CAN communication fault	U06478219	CAN communications fault
U00502719	NOX pre-treatment CAN communication fault	U06478319	CAN communications fault
U00502819	NOX pre-treatment CAN communication fault	U06478419	CAN communications fault
U00502919	NOX pre-treatment CAN communication fault	U06478519	CAN communications fault
U00503019	NOX pre-treatment CAN communication fault	U06480019	CAN communications fault
U00503119	NOX post-treatment CAN communication fault	U06481719	CAN communications fault
U00503219	NOX post-treatment CAN communication fault	U06488919	CAN communications fault
U00503319	NOX post-treatment CAN communication fault	U06491619	CAN communications fault
U00503419	NOX post-treatment CAN communication fault	U06492319	CAN communications fault

Installation (Cont'd)

Figure 60-110-12



Reinstall the clevis pin (Item 1), and retaining pin (Item 2) **[Figure 60-110-12]**.

Loosen the clevis bolt (Item 3) until the end of the bolt is flush with the clevis, then tighten the clevis bolt three full turns to set proper tension of the compression spring.

Reconnect the sensor wiring connector (Item 2) **[Figure 60-110-5]**.

Reinstall the sensor mounting nut and bolt (Item 1) **[Figure 60-110-5]** and tighten to 6,8 N•m (60 in-lb) torque.

IMPORTANT

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

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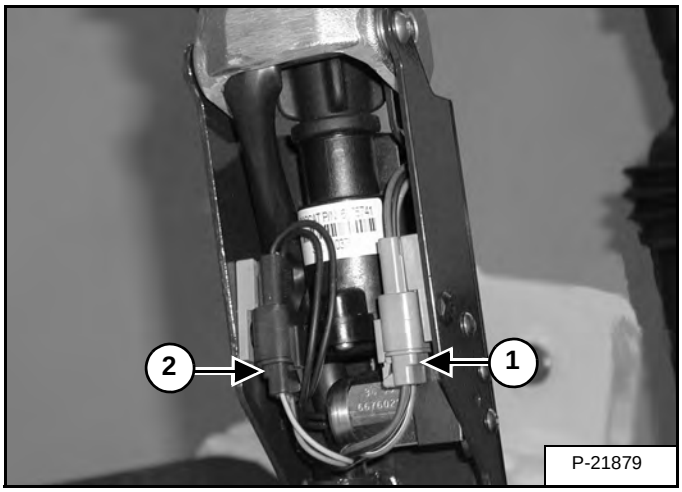
Verify correct seat bar sensor function by performing all of the steps in the Bobcat Interlock Control System (BICS™) inspection as described in the loader Operation & Maintenance Manual.

Switch Handle Removal

Figure 60-130-4

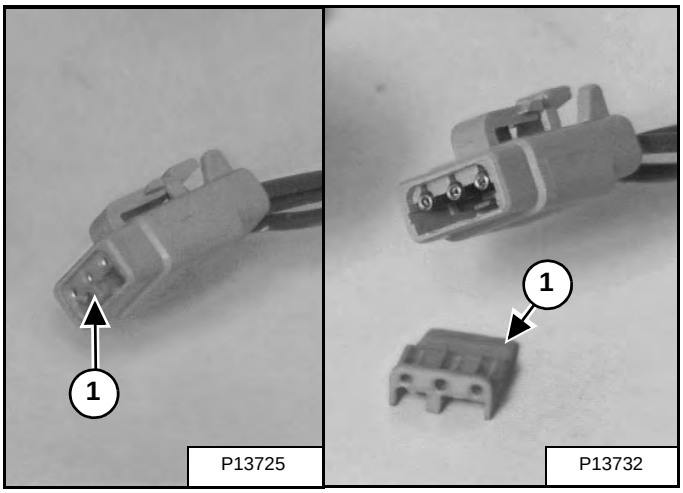


NOTE: Switch handle can be removed and installed while in loader.

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

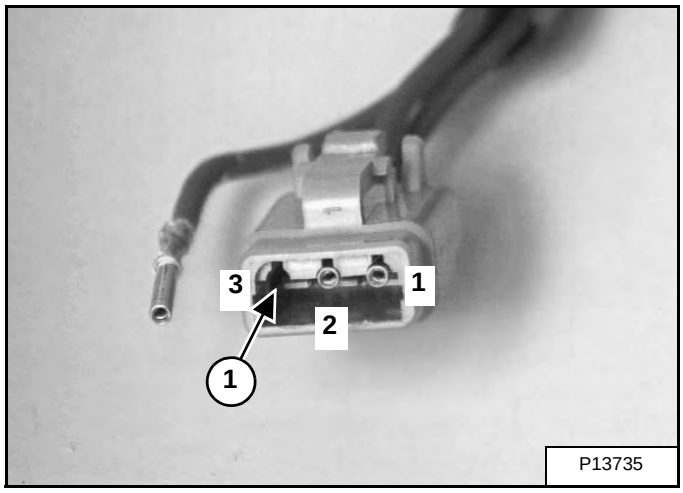
Disconnect the harness connector (Item 2) **[Figure 60-130-4]** from the handle lock solenoid connector.

Figure 60-130-5



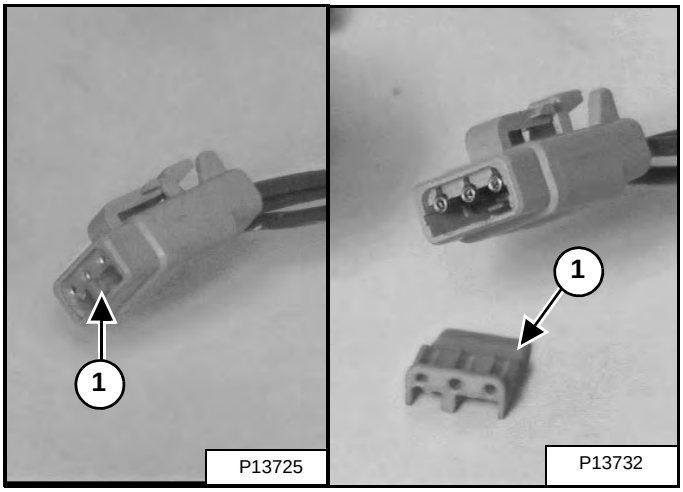
Remove the wedge (Item 1) **[Figure 60-130-5]** from the harness connector (Gray) that connects to the handle sensor connector.

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 ACD Group 0

Left side Control Handle Switches	Switch Number	Solenoid Number Activated				Attachment Harness Terminal Activated	Attachment Harness Connector	RIght Side Control Handle Switches
		STD	RH	HFH	RH / HFH		Fourteen Pin Connector Viewed from front (pin side of connector) of loader.	
	1	1	1	1, 7	1,7	K		
	2	2	2	2	2	K		
	3	1	1	1, 7	1,7	K		
	4	2	3,5,6	2	3,5,6	K,A,D		
	5	1	4,5,6	1	4,5,6	K,A,C		
	6	1	4,5,6	1	4,5,6	K,E		
	7	1	4,5,6	1	4,5,6	K,F		
	8	1	4,5,6	1	4,5,6	K,G		
	9	1	4,5,6	1	4,5,6	K,H		
B-16447	10, 11, 12, 13, 14	-	--	--		K	No Jumpers	B-16448

RH - Loaders with Rear Hydraulics Option.
HFH - Loaders with High Flow Hydraulics Option.
RH / HFH - Loaders with Rear Hydraulics and High Flow Hydraulics Option.
Terminal K is activated with Key switch ON.

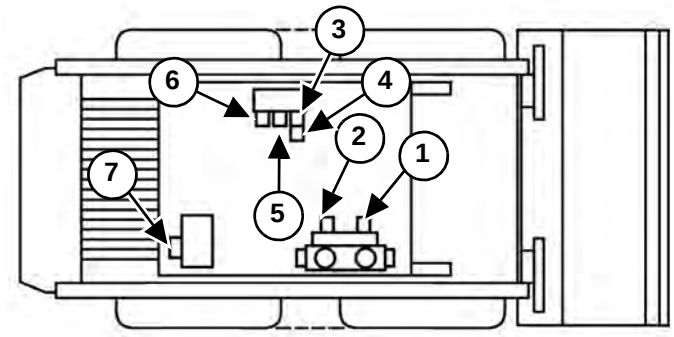
NOTE: For diagnostics and troubleshooting connect the Service PC. (See Connecting Remote Start Tool on Page 60-150-1.)

The ACD (Attachment Control Device) automatically recognizes the use of the seven or fourteen pin connector when connected.

Pressing the auxiliary hydraulics button and moving the rear auxiliary hydraulic switch to the right and left several times activates solenoid numbers 3, 4, 5, and 6 at the diverter valve.

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

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



NA1892

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

Description

The Attachment Control Device (ACD) uses a 7 or 14 pin connector to communicate between the loader and the attachment.

Attachments with a 14 pin connector use four different groups to control operations and hydraulic flow. Use service Analyzer to determine what group is being used and to troubleshoot the attachment / loader functions. If service analyzer is not available use a ohmmeter to test for jumpers on the attachment harness.

Group 0 = No Jumpers

Group 1 = Pins K, L

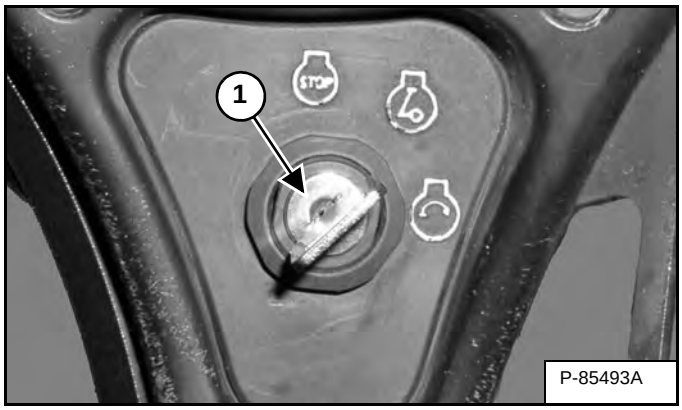
Group 2 = Pins K, P

Group 3 = Pins C, D

Refer to the Identification Chart ACD Group 0, 1, 2, or 3 for more detailed information.

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

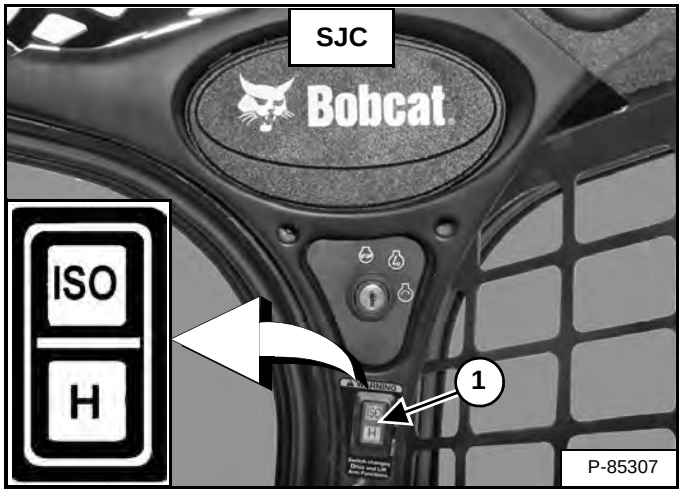
Figure 60-160-5



With the seat bar down, turn the key switch (Item 1) **[Figure 60-160-5]** to the RUN position. Machines equipped with the deluxe panel, press RUN / ENTER.

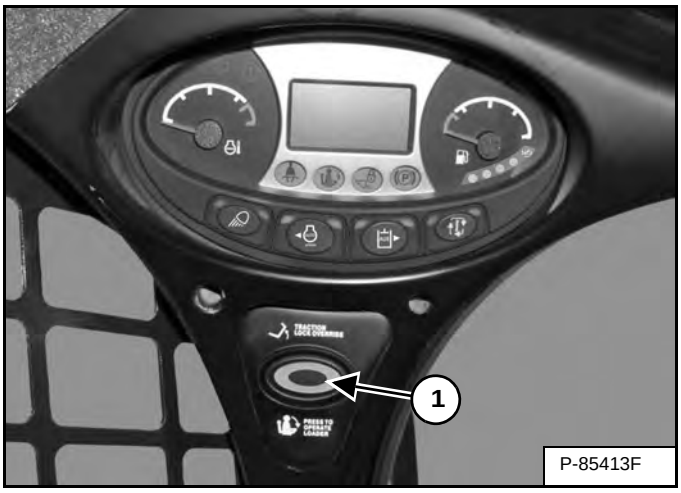
NOTE: Do not start the engine.

Figure 60-160-6



The loader Control Pattern Switch (Item 1) **[Figure 60-160-6]** will start flashing and will continue to flash until the calibration procedure is completed.

Figure 60-160-7



At the left panel, press the PRESS TO OPERATE Button (Item 1) **[Figure 60-160-7]** while holding the right joystick in position.

Release the joystick.

NOTE: During the calibration cycle, the system will beep. Once the calibration is complete, code W3224 (Calibration Successful) or W3225 (Calibration Failure) will be generated.

The *ACS* controller will cycle the actuators.

The lift and tilt calibration is complete.

STEERING DRIFT COMPENSATION (SERVICE MODE) (CONT'D)

Operation (Cont'd)

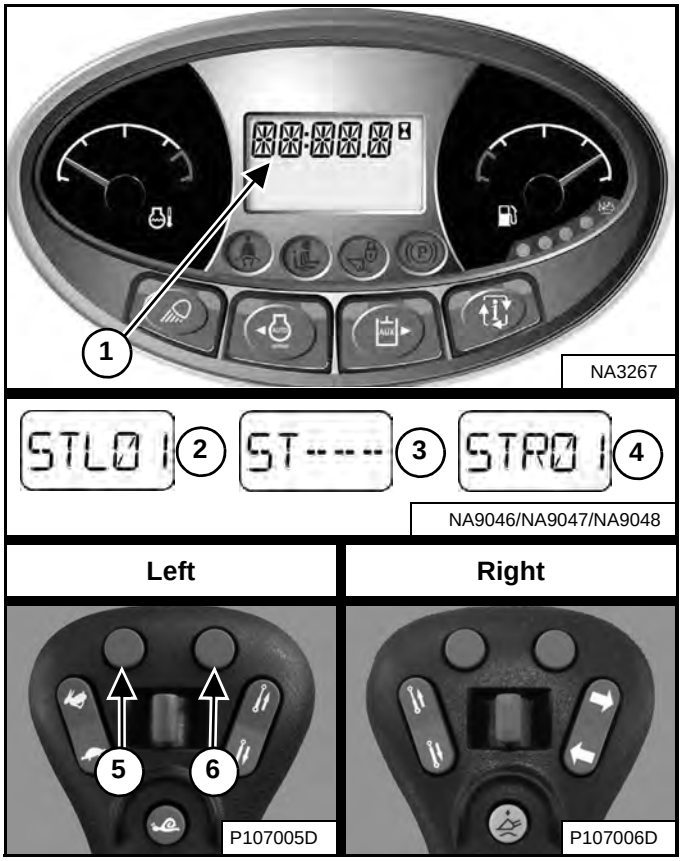
Perform PRE-STARTING PROCEDURE and STARTING THE ENGINE procedures:

1. Close door.
2. Fasten seat belt.
3. Lower seat bar.
4. Put controls in NEUTRAL position.
5. Start the engine.
6. Press the PRESS TO OPERATE LOADER button.
7. Current drive response setting is displayed briefly in the data display. Wait for machine to cycle to machine hours.

NOTE: (SJC) Raising the seat bar or changing control mode (ISO / H) will cause the machine to disengage from steering drift compensation. The last displayed setting will remain in effect until the machine is turned OFF.

8. Press and hold the PRESS TO OPERATE LOADER button for three seconds to enter drive response menu.
9. Press the PRESS TO OPERATE LOADER button to enter steering drift compensation adjustment.
10. Current setting will appear.

Figure 60-171-3



Press the buttons on the left joystick (Item 5 and 6) **[Figure 60-171-3]** to adjust. The number will change by one each time the button is pressed. Use the left button to increase machine left or the right button to increase machine right.

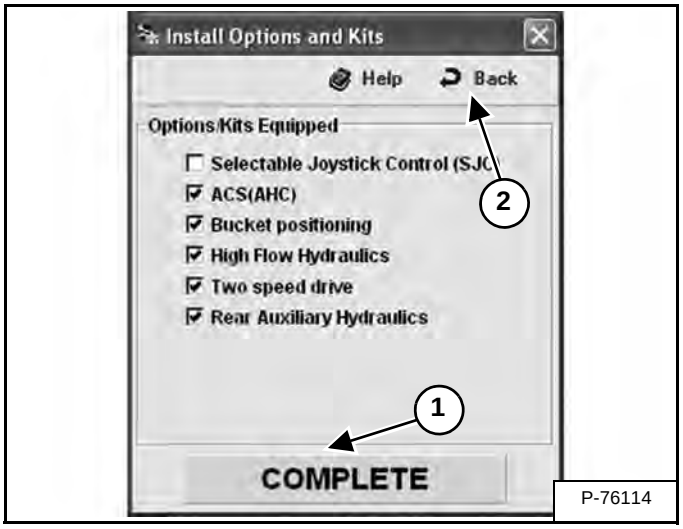
Forward adjustment is performed with left joystick in NEUTRAL or during forward travel. Reverse adjustment is performed during reverse travel. Adjustments are effective immediately.

NOTE: Using a high throttle setting will make the machine response to adjustment more obvious.

To save a desired setting, press and hold the PRESS TO OPERATE LOADER button for three seconds. [SET] will appear in the left panel (Item 1) **[Figure 60-171-3]** and the machine will exit from the adjustment menu.

Setup (Cont'd)

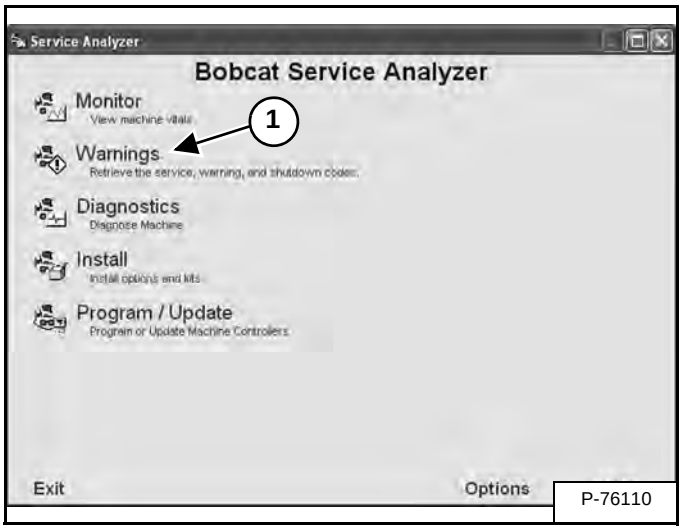
Figure 60-200-8



A green COMPLETE (Item 1) **[Figure 60-200-8]** message will be displayed when the dealer information has been transferred to the machine controller.

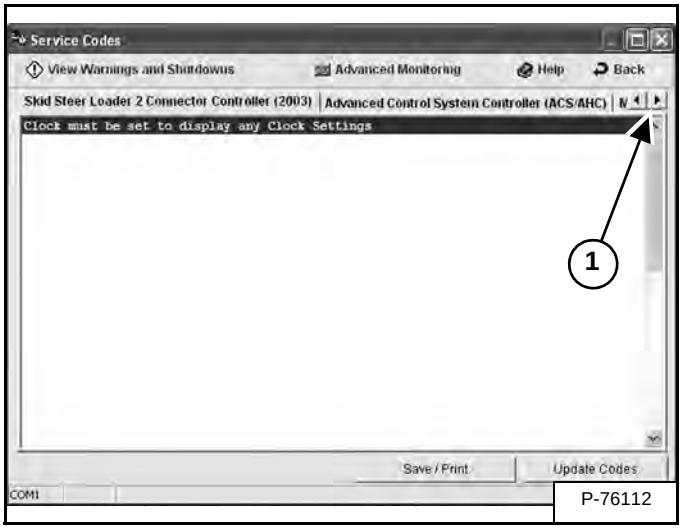
Click Back (Item 2) **[Figure 60-200-8]** to return to the Bobcat Service Analyzer screen.

Figure 60-200-9



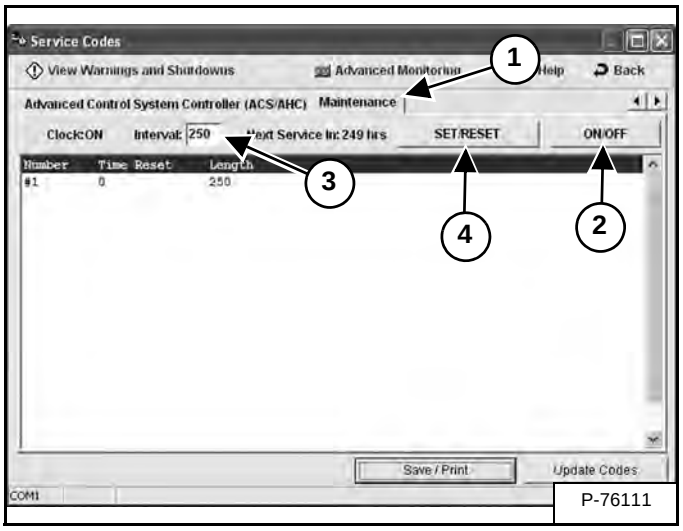
Select Warnings (Item 1) **[Figure 60-200-9]**.

Figure 60-200-10



Click the right arrow (Item 1) **[Figure 60-200-10]** to scroll through the tabs.

Figure 60-200-11



Click the Maintenance tab (Item 1) **[Figure 60-200-11]** to view the maintenance clock screen.

Click ON / OFF (Item 2) to turn the maintenance clock on or off **[Figure 60-200-11]**.

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 60-200-11]** to reset and set the maintenance clock.

Troubleshooting

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

⚠ WARNING

AVOID INJURY OR DEATH

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

W-2003-0807

PROBLEM	CAUSE
Front horn will not sound when the operator presses the front horn button	1, 2, 3, 4, 5, 6, 7

KEY TO CORRECT THE CAUSE
1. The ground connection is not making a good contact.
2. The front horn switch is damaged.
3. The front horn is damaged.
4. The front horn or switch wires are disconnected.
5. Inspect the fuses.
6. The wiring is damaged.
7. The joystick controller is not working correctly. (SJC Equipped Machines)

ENGINE INFORMATION

Description

Figure 70-10-1

The loader is equipped with a Bobcat direct injected D34P turbocharged and inter-cooled diesel engine with a displacement of 3,4 L (208 in^3). The engine is rated at an SAE J gross 69,6 kW (93.3 hp) @ 2400 rpm and has a closed breather system **[Figure 70-10-1]**.

The engine has 4 cylinders and the rotation is counter-clockwise (viewed from the flywheel side). It is equipped with an air intake heater and electronic timer with cold start advance function for assisting in cold starts.

To meet emission regulations it is also equipped with a Selective Catalytic Reduction (SCR) system and an Exhaust Gas Recirculation (EGR) system to reduce Nitrogen Oxide (NOx).

The engine serial number is stamped on the engine and is located near the high pressure pump. The model number is located on the valve cover. Use these numbers to obtain the correct service parts.

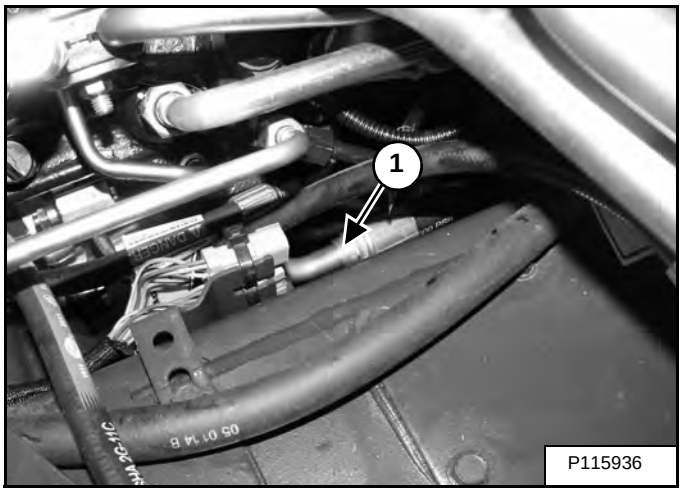
The engine is liquid cooled with a propylene glycol / water mixture in a radiator. Coolant flow is controlled by a thermostat. The cooling fan is driven by a hydraulic motor. The speed of the fan is determined by the engine coolant temperature sensor, the hydraulic / hydrostatic fluid temperature sensor, fuel temperature and the HVAC system.

Torque Values (Cont'd)

Component	Thread Size (Diameter X Pitch)	Strength Class	Tightening Torque
Main Bearing Cap Bolt	M12x1.5x133	12.9	54 N•m (40 ft-lb) initial torque Plus 90° second torque Plus 90° third torque
Cylinder Head Bolt	M12x1.25x29	9.8	44 N•m (33 ft-lb) initial torque Plus 90° second torque Plus 90° third torque
Connecting Rod Bolt	M9x1.0x66	10.9	29,4 N•m (21.7 ft-lb) initial torque Plus 90° second torque
Crankshaft Pulley Bolt	M14x1.5	10.9	245 - 265 N•m (181 - 195 ft-lb)
Cylinder Head Cover Bolt	M6x1.0	8.8	7,8 N•m (5.8 ft-lb)
Injector Bracket Bolt	M8x1.25	12.9	39 - 46 N•m (29 - 34 ft-lb)
Thermostat Bolt	M8x1.25	8.8	22 N•m (16 ft-lb)
Turbocharger Hollow Screw	M10x1.0		19,6 N•m (14.5 ft-lb)
Turbocharger Nut	M8x1.25		22 N•m (16 ft-lb)
Water Pump Nut and Bolt	M8x1.25		22 N•m (16 ft-lb)
Rocker Arm Adjust Nut	M8x1.0		14,7 N•m (10.8 ft-lb)
High Pressure Pump Drive Gear Nut	M14x1.5		58,8 - 68,6 N•m (43.4 - 50.6 ft-lb)
High Pressure Pump Fuel Line Nut	M8x1.25		22 N•m (16 ft-lb)
Turbocharger Oil Delivery Tube Line Nut	Nut		19,6 N•m (14.5 ft-lb)
High Pressure Fuel Line Nut - High Pressure Pump	Nut		27,5 - 31,4 N•m (20.3 - 23.1 ft-lb)
High Pressure Fuel Line Nut - Common Rail	Nut		27,5 - 31,4 N•m (20.3 - 23.1 ft-lb)
High Pressure Fuel Line Nut - Injector	Nut		27,5 - 31,4 N•m (20.3 - 23.1 ft-lb)

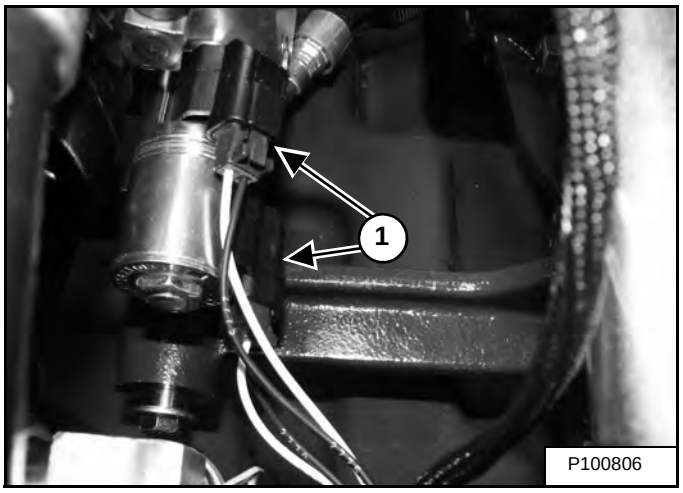
Engine Removal And Installation (Cont'd)

Figure 70-10-50



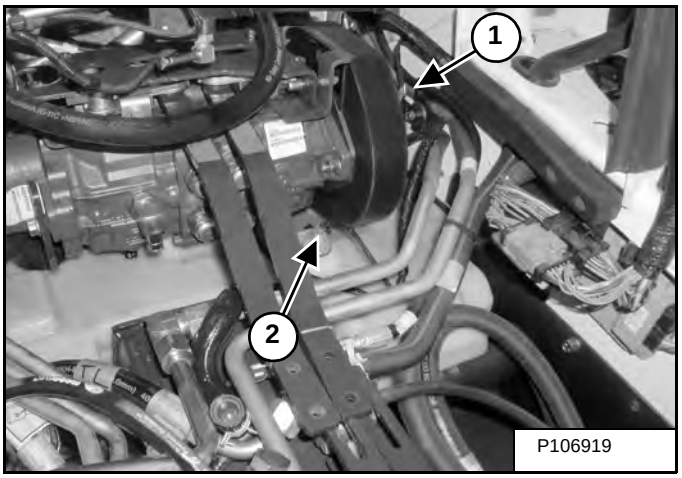
Remove the inlet hose (Item 1) **[Figure 70-10-50]** from the bottom of the hydraulic control valve.

Figure 70-10-51



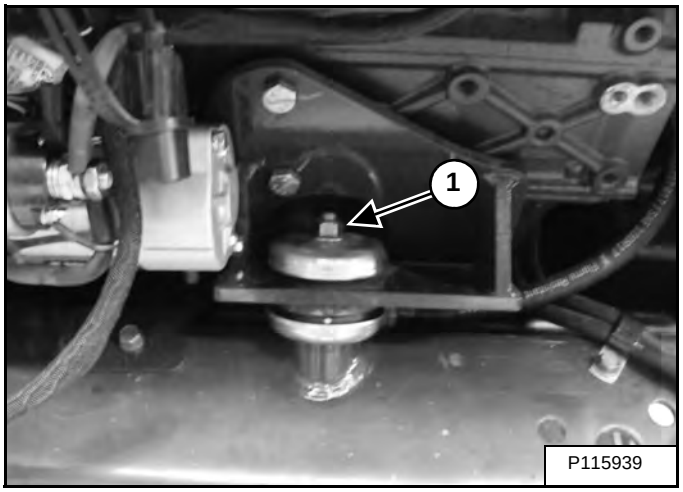
Disconnect the two Bob-Tach electrical solenoid coil connectors (Item 1) **[Figure 70-10-51]** from the loader electrical harness (if equipped).

Figure 70-10-52



Disconnect the wire harness (Item 1) from the main frame wire harness. Disconnect the harness (Item 2) **[Figure 70-10-52]** from the fuel level sending unit.

Figure 70-10-53



Remove rear engine mounting bolt (Item 1) **[Figure 70-10-53]**.

Installation: Tighten the mounting bolt to 122 - 135 N•m (90 - 100 ft-lb) torque.

Oil Pressure Testing (At Oil Sensor On Block)

Prior to performing an engine oil pressure gauge test, it is recommended to monitor oil pressure using Bobcat Service Analyzer software to determine if a potential oil pressure issue exists.

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

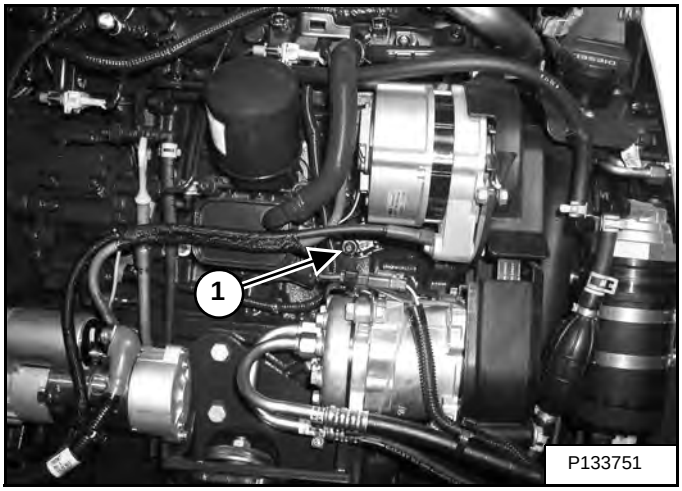
7332314 - Oil sensor block adapter kit

Hydraulic hose, approximately 1,0 m (3.0 ft), purchased locally. Must be rated for pressures above 689 kPa (100 psi).

Pressure gauge rated for 689 kPa (100 psi).

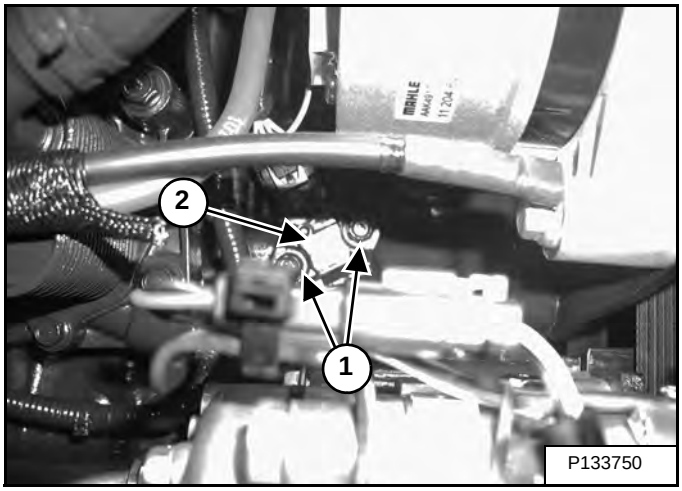
Open the rear door.

Figure 70-10-77



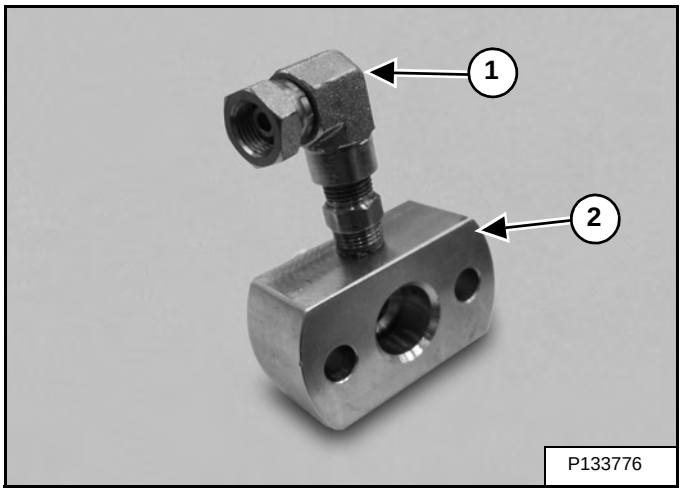
Locate the oil pressure / temperature sensor (Item 1) **[Figure 70-10-77]**.

Figure 70-10-78



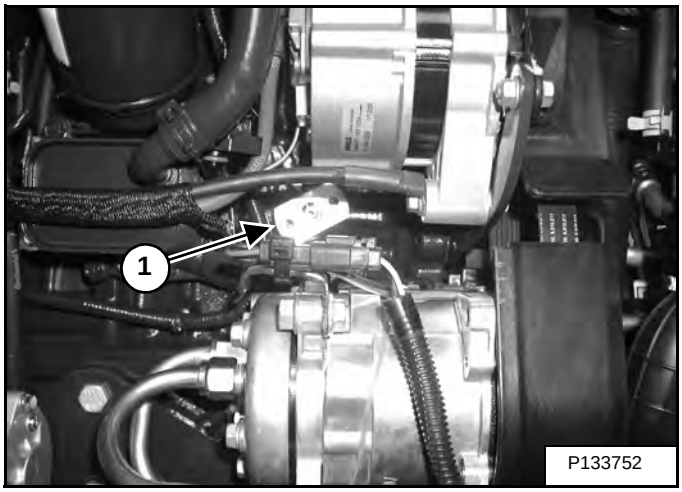
Remove the bolts (Item 1) and the sensor (Item 2) **[Figure 70-10-78]**.

Figure 70-10-79



Install the fitting (Item 1) into the adapter (Item 2) **[Figure 70-10-79]**.

Figure 70-10-80



Install the adapter (Item 1) **[Figure 70-10-80]** in the engine block.

Foot Throttle Calibration (Cont'd)

Figure 70-21-15

The display screen will change to the hourmeter after approximately five seconds **[Figure 70-21-15]**.

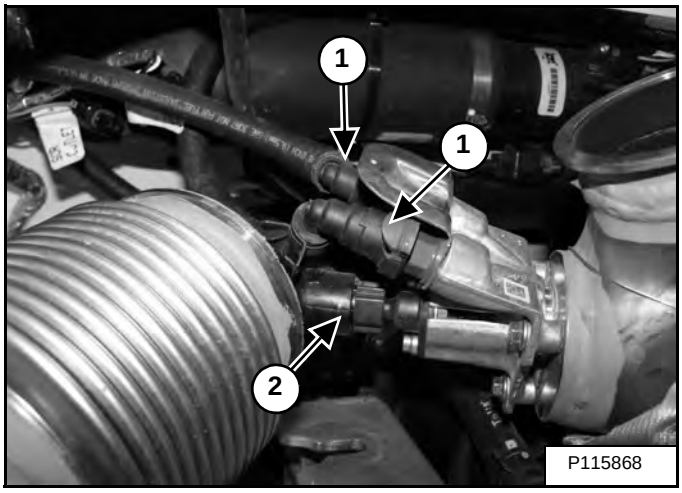
NOTE: Do not attempt to start the engine or press the foot operated engine speed control pedal again until [FOOT] clears from the display screen and the hourmeter appears. The calibration procedure will fail and must be repeated.

The calibration procedure is now complete. The loader can be started or turn the key switch OFF.

The calibration can be repeated if necessary.

SCR Removal And Installation (Cont'd)

Figure 70-30-17

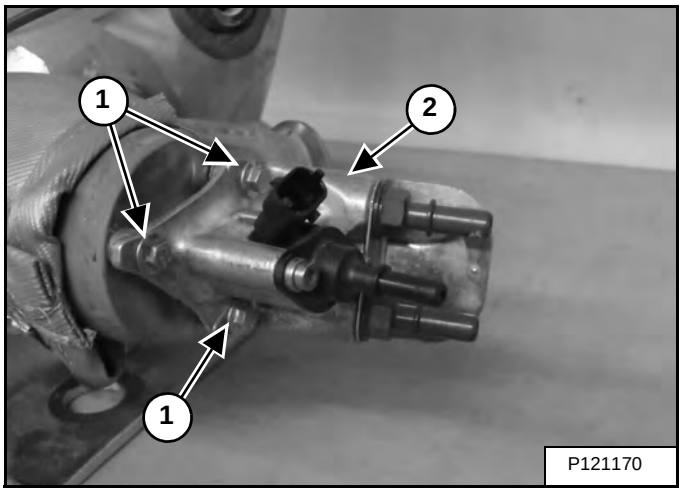


Remove the two coolant lines (Item 1) and remove the DEF / AdBlue® line (Item 2) **[Figure 70-30-17]**.

Remove the SCR from the engine.

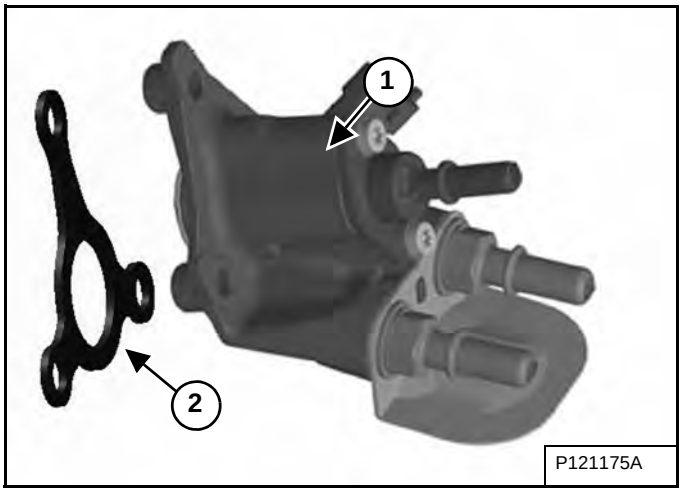
Dosing Module Removal And Installation

Figure 70-30-18



Remove the three bolts (Item 1) and the dosing module (Item 2) **[Figure 70-30-18]**.

Figure 70-30-19

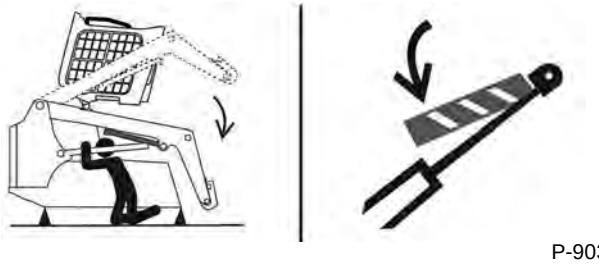


Inspect the dosing module for damage and replace if necessary (Item 1) **[Figure 70-30-19]**.

Replace the gasket (Item 2) **[Figure 70-30-19]**.

Diesel Exhaust Fluid (DEF) / AdBlue® Coolant Valve Removal And Installation

DANGER



P-90328

AVOID DEATH

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

D-1009-0409

WARNING

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

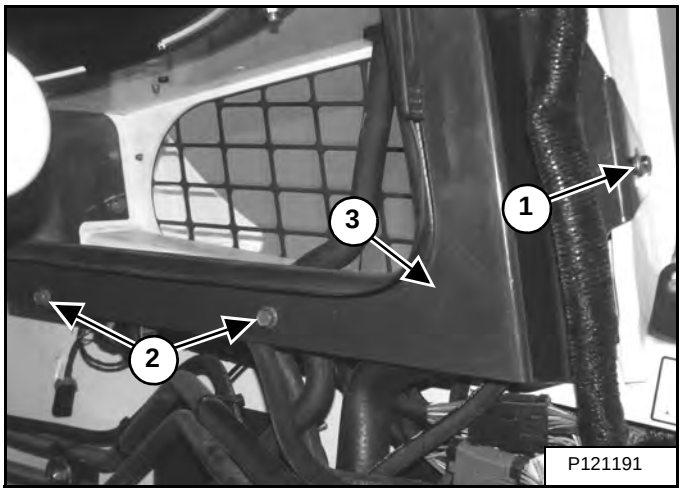
W-2059-0598

Raise the lift arms and install an approved lift arm support device. (See Installing on Page 10-20-2.)

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

Drain the engine coolant from the cooling system. (See Removing And Replacing Coolant on Page 10-90-5.)

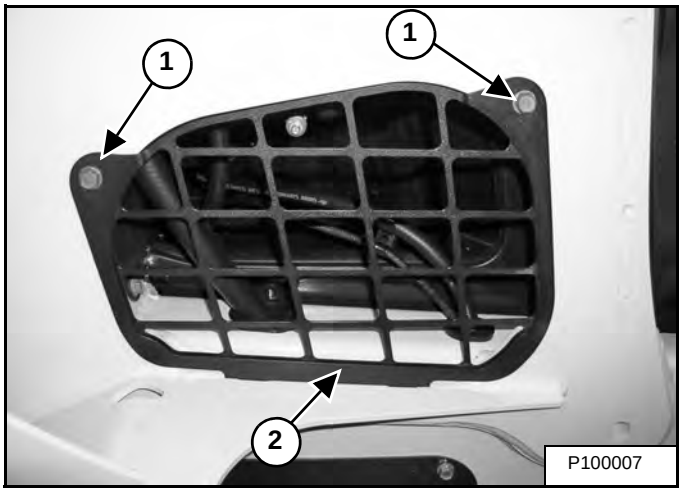
Figure 70-30-46



Remove the nut and bolt (Item 1) **[Figure 70-30-46]**.

Remove the two bolts (Item 2) and the duct panel (Item 3) **[Figure 70-30-46]**.

Figure 70-30-47

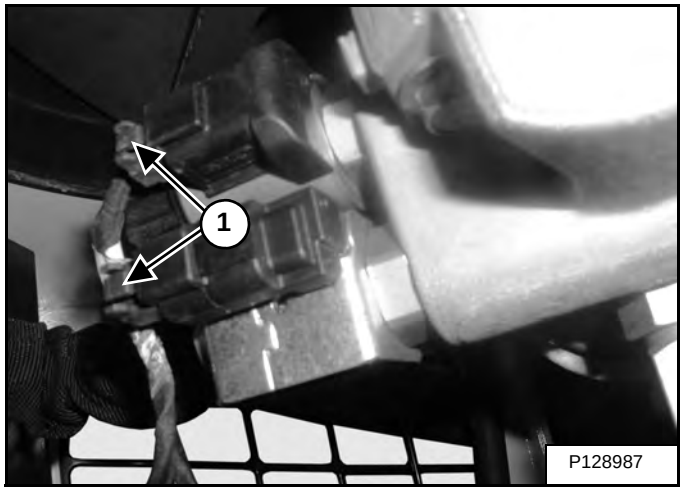


Remove the bolts (Item 1) and the outlet screen (Item 2) **[Figure 70-30-47]**.

Hydraulic Fan Motor Assembly Removal And Installation (Cont'd)

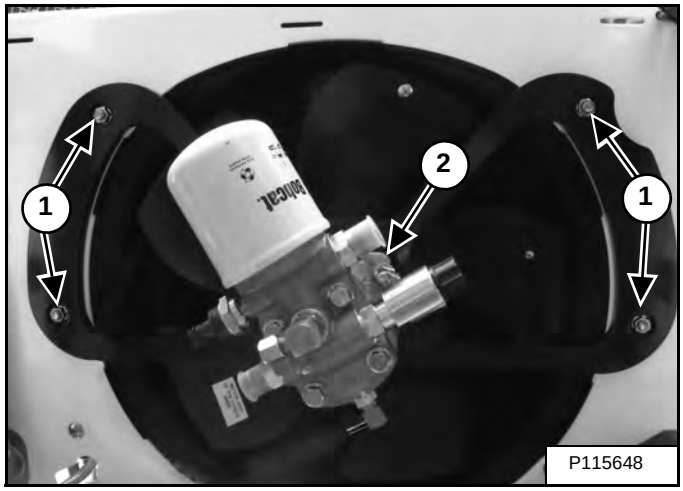
Reversing Models (Cont'd)

Figure 70-60-17



Disconnect both electrical connectors (Item 1) **[Figure 70-60-17]**.

Figure 70-60-18



Remove the four nuts (Item 1) **[Figure 70-60-18]**.

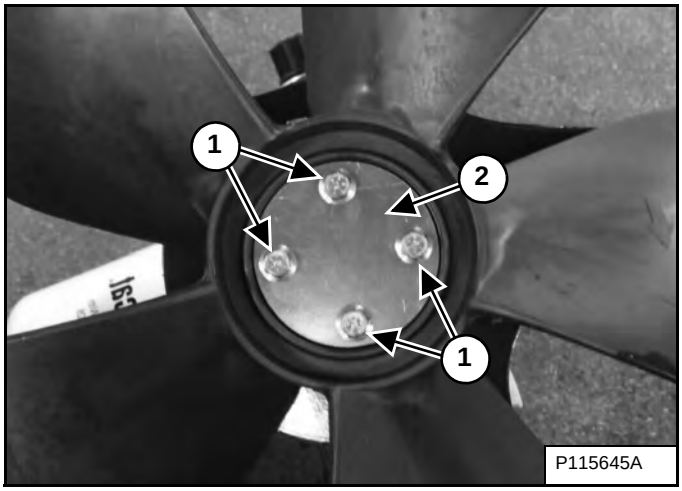
Remove the hydraulic fan motor assembly (Item 2) **[Figure 70-60-18]**.

NOTE: The fan mounting nuts are a single use part and should be replaced whenever they are removed.

Hydraulic Fan Motor Removal And Installation

All Models

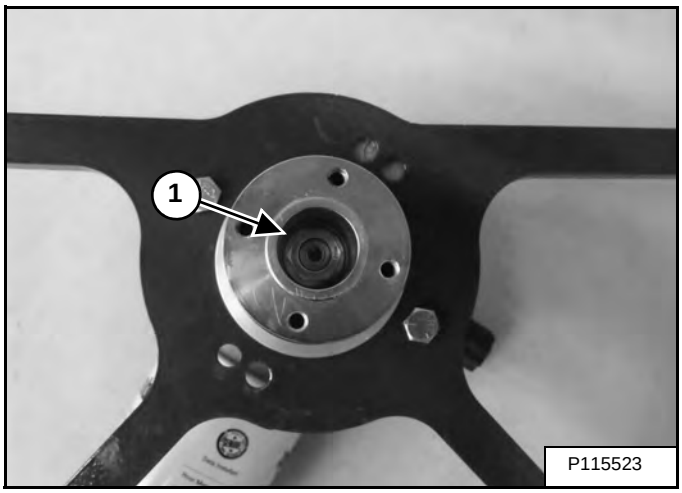
Figure 70-60-19



Remove the four bolts (Item 1) and the cover plate (Item 2) **[Figure 70-60-19]**.

Installation: Tighten the bolts to 10,2 N•m (7.5 ft-lb) torque.

Figure 70-60-20



Remove the nut (Item 1) **[Figure 70-60-20]** from the motor shaft.

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

Blower Housing Removal And Installation

IMPORTANT

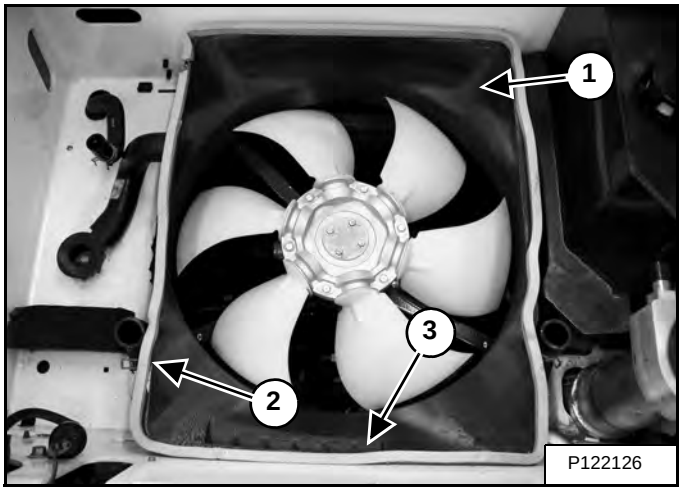
When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

I-2003-0888

Remove the air conditioning condenser (if equipped). (See Removal And Installation on Page 80-60-1.)

Remove the radiator. (See Radiator Removal And Installation on Page 70-60-1.)

Figure 70-60-57



Pull up and remove the blower housing (Item 1) **[Figure 70-60-57]** from the loader.

NOTE: A seal (Item 2) [Figure 70-60-57] has been installed between the radiator and the radiator mount to improve debris control in the cooling package area.

NOTE: Locate seal ends along rear edge of shroud above vent (Item 3) [Figure 70-60-57].

High Pressure Pump Removal And Installation

⚠ WARNING

AVOID INJURY OR DEATH

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

W-2072-0807

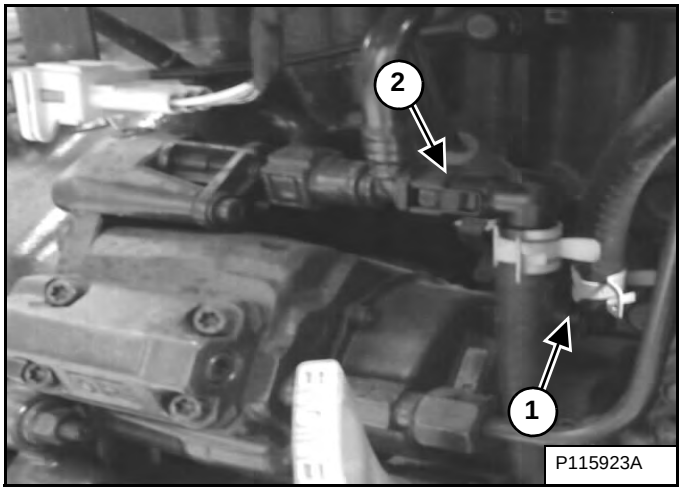
NOTE: Allow 5 minutes after the engine is shut down for the fuel pressure to bleed down.

Remove the oil filter head. (See Oil Filter Head Removal And Installation on Page 70-70-5.)

Remove the intake air heater. (See Intake Air Heater Removal And Installation on Page 70-90-1.)

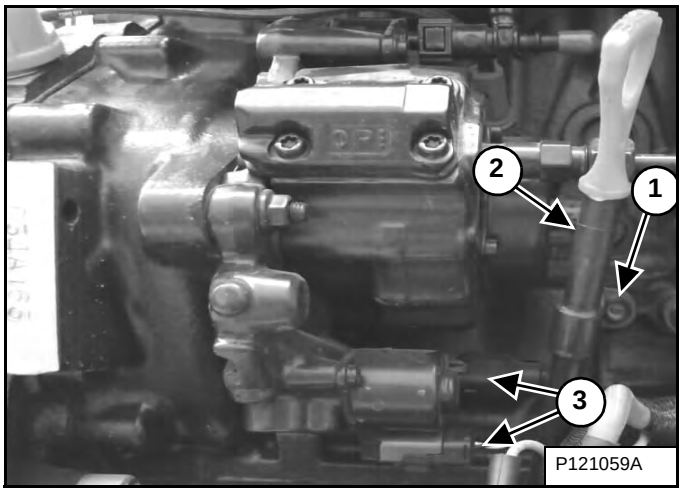
Remove the intake air heater tube. (See Intake Air Heater Tube Removal And Installation on Page 70-90-2.)

Figure 70-80-2



Remove the fuel inlet line (Item 1) and the fuel return line (Item 2) **[Figure 70-80-2]** from the high pressure pump. Install caps and plugs.

Figure 70-80-3

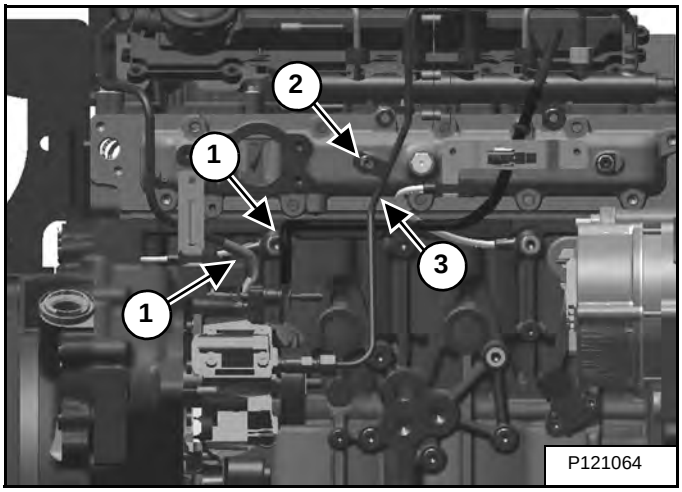


Remove the bolt (Item 1), the dipstick and dipstick tube (Item 2) **[Figure 70-80-3]**.

Disconnect the wire harness connectors (Item 3) **[Figure 70-80-3]**.

Installation: Replace the O-ring on the dipstick tube and tighten the bolt to 9,8 N•m (7.2 ft-lb) torque.

Figure 70-80-4



Remove the two fuel return lines (Item 1) **[Figure 70-80-4]**.

Remove the bolt (Item 2) and the fuel injection line (Item 3) **[Figure 70-80-4]**.

Installation: Tighten the bolt to 22 N•m (16 ft-lb) torque.

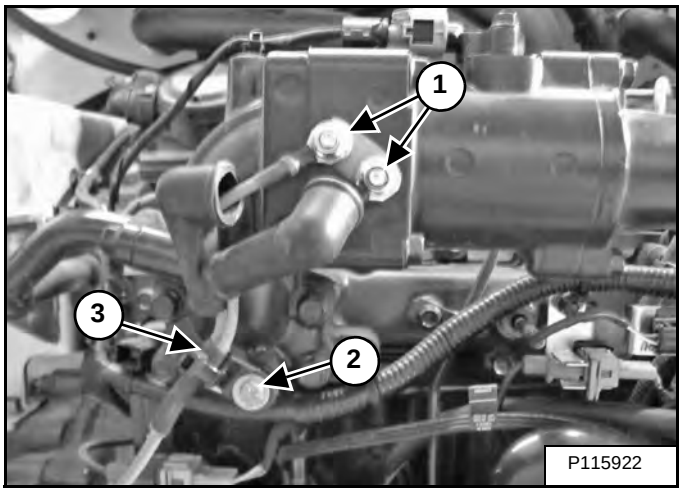
Installation: Tighten the fuel injection line nuts to 29,4 N•m (21.7 ft-lb) torque.

NOTE: Both the high pressure fuel lines and return fuel line are a one time use line. Replace the fuel lines with new fuel lines after removal.

CYLINDER HEAD

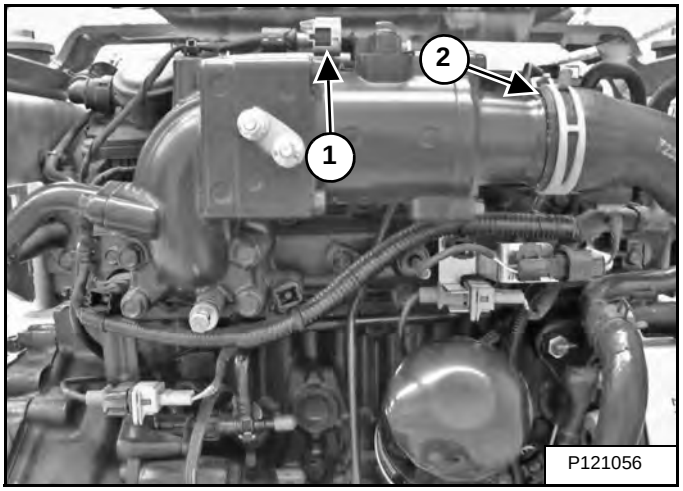
Intake Air Heater Removal And Installation

Figure 70-90-1



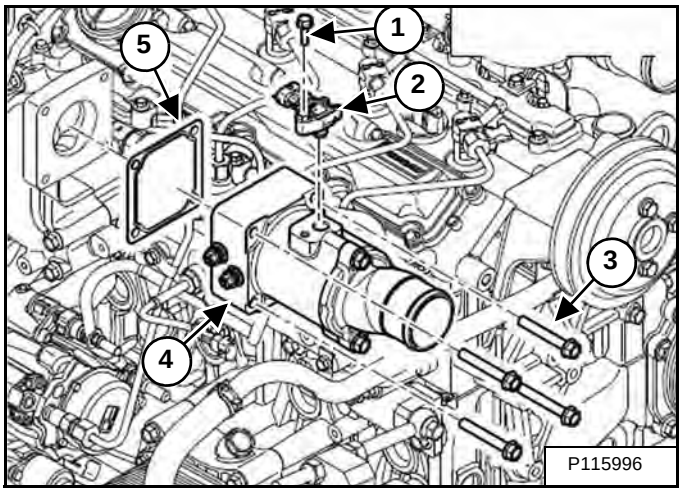
Disconnect the two wires (Item 1), remove the wire mount bolt (Item 2) and reposition the air heater wire (Item 3) **[Figure 70-90-1]**.

Figure 70-90-2



Disconnect the boost pressure sensor connector (Item 1) and remove the clamp / hose (Item 2) **[Figure 70-90-2]**.

Figure 70-90-3



Remove the bolt (Item 1) and the boost pressure sensor (Item 2), **[Figure 70-90-3]**.

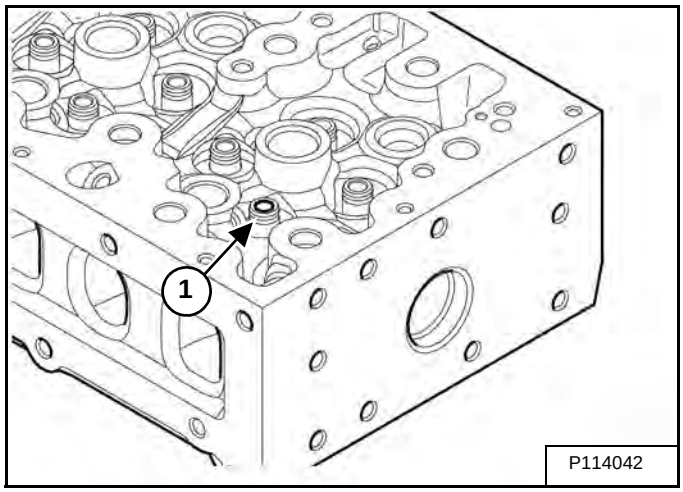
Remove the four retaining bolts (Item 3) and the air heater (Item 4) and gasket (Item 5) **[Figure 70-90-3]**.

Installation: Tighten the retaining bolts to 22 N•m (16 ft-lb) torque.

Installation: Tighten the boost pressure sensor bolt to 9,8 N•m (7.2 ft-lb) torque.

Valve Guide

Figure 70-90-32



Measure the valve guide (Item 1) **[Figure 70-90-32]** inside diameter at three different depths.

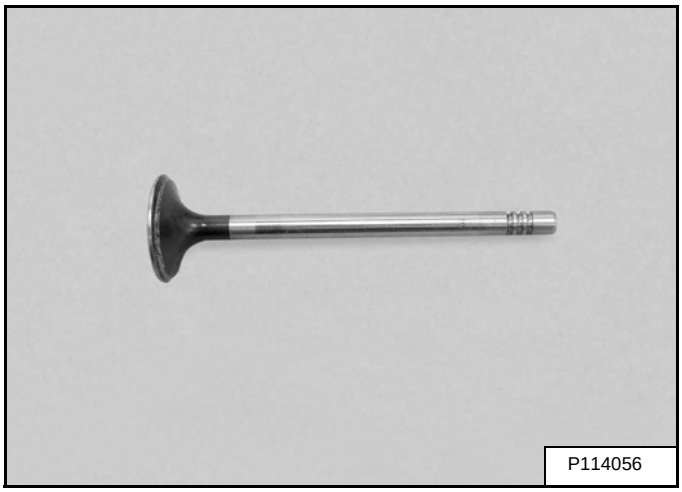
Valve Guide ID	7,0 - 7,015 mm (0.2756 - 0.2762 in)

Measure the valve guide length.

Valve Guide Length	43,4 - 43,6 mm (1,7087 - 1,7165 in)

Valve

Figure 70-90-33



Measure the overall length of the valve **[Figure 70-90-33]**.

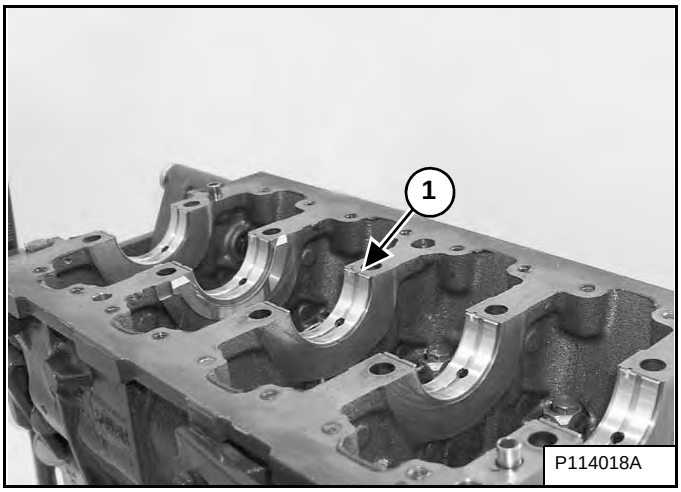
Valve Length	
Intake Valve	108,3 mm (4.2638 in)
Exhaust Valve	110,3 mm (4.3425 in)

Measure the outside diameter of the valve stem **[Figure 70-90-33]**.

Valve Stem O.D.	6,97 ± 0,007 mm (0.2744 ± 0.0003 in)

Crankshaft Removal And Installation (Cont'd)

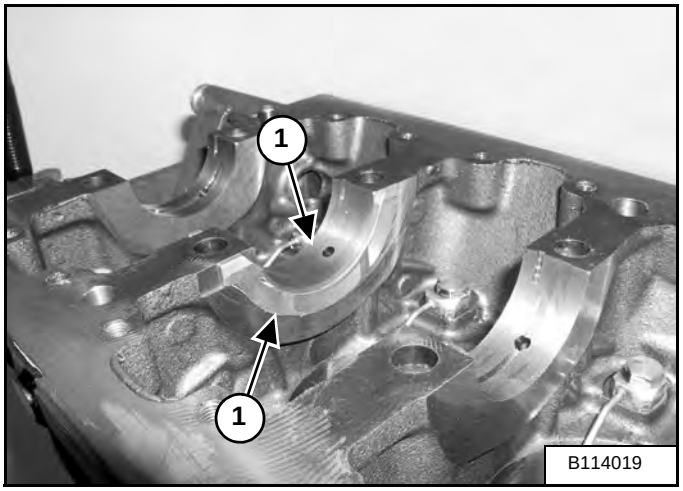
Figure 70-100-21



Remove the crankshaft bearings (Item 1) **[Figure 70-100-21]**.

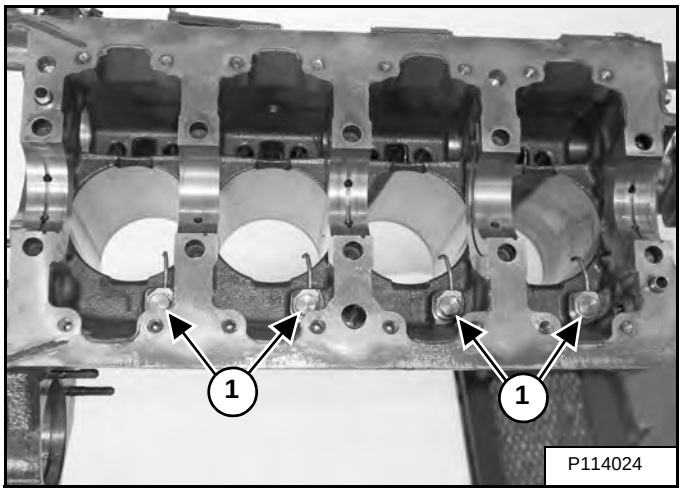
Installation: Install the bearing with the groove in the cylinder block. The non-grooved bearing is installed in the crankcase.

Figure 70-100-22



Remove the thrust bearings (Item 1) **[Figure 70-100-22]**.

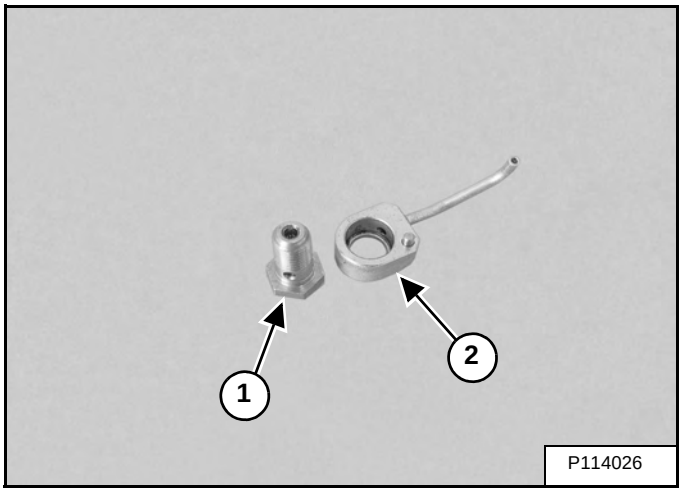
Figure 70-100-23



Remove the bolts / check valves (Item 1) **[Figure 70-100-23]** and remove the oilers.

Installation: Tighten the bolts to 20 N•m (14 ft-lb) torque.

Figure 70-100-24

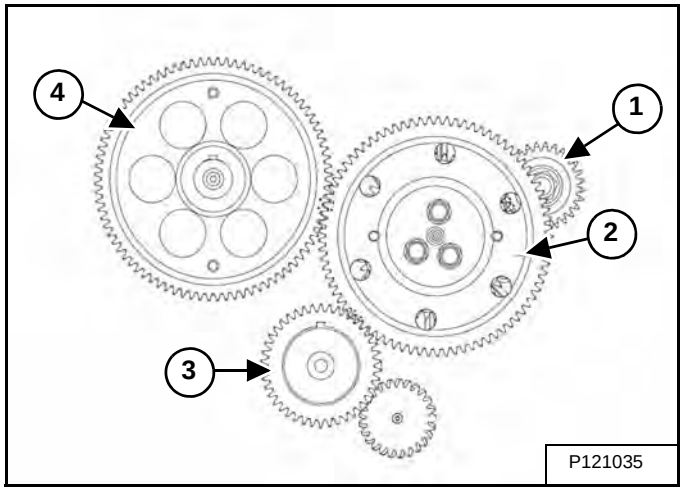


Remove the bolt / check valve assembly (Item 1) from the oiler (Item 2) **[Figure 70-100-24]**.

Gear Timing

Remove the flywheel housing. (See Housing Removal And Installation on Page 70-140-2.)

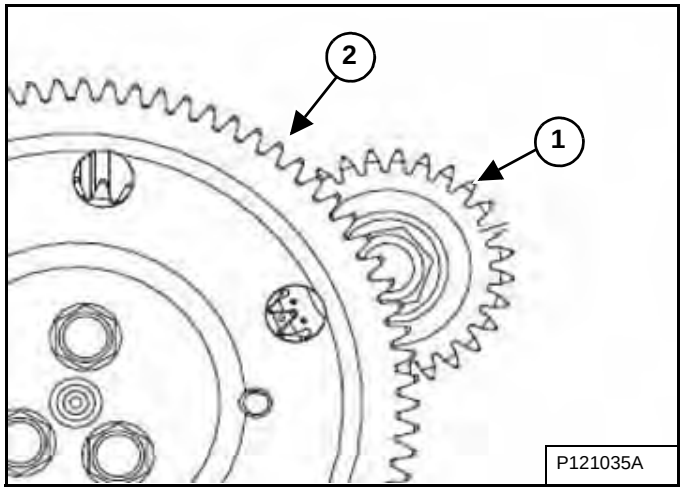
Figure 70-120-3



The fuel injection pump gear (Item 1), idle gear (Item 2), crankshaft gear (Item 3), and camshaft gear (Item 4) **[Figure 70-120-3]** have timing marks. Align the marks when assembling the gears.

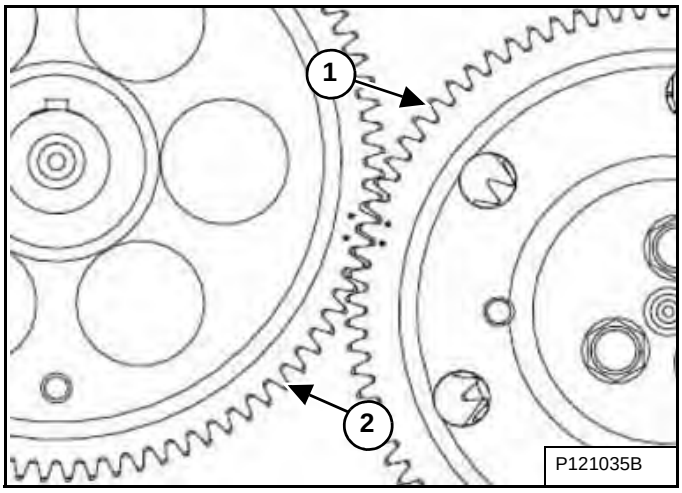
NOTE: The fuel injection pump timing is not critical, and if replacing the pump without removing the timing cover, the marks do not need to be aligned.

Figure 70-120-4



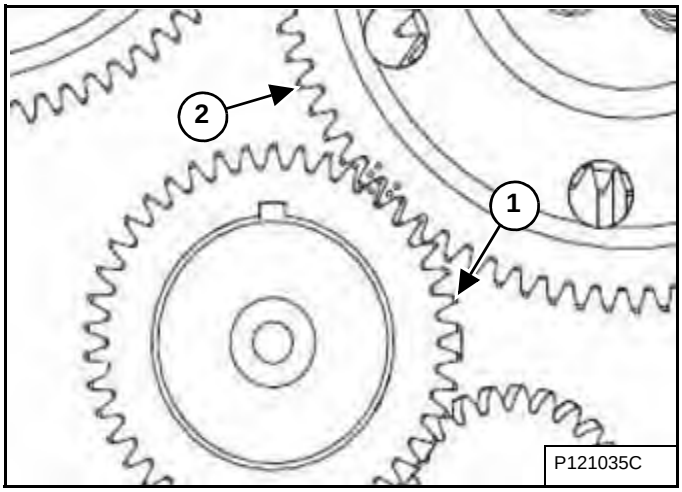
Fuel injection pump (Item 1) to idle gear (Item 2) **[Figure 70-120-4]**.

Figure 70-120-5



Idle gear (Item 1) to camshaft gear (Item 2) **[Figure 70-120-5]**.

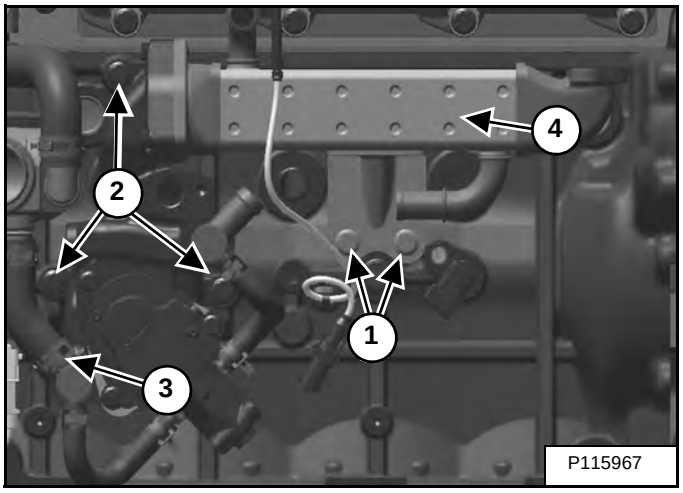
Figure 70-120-6



Idle gear (Item 1) to crankshaft gear (Item 2) **[Figure 70-120-6]**.

Removal And Installation (Cont'd)

Figure 70-150-5



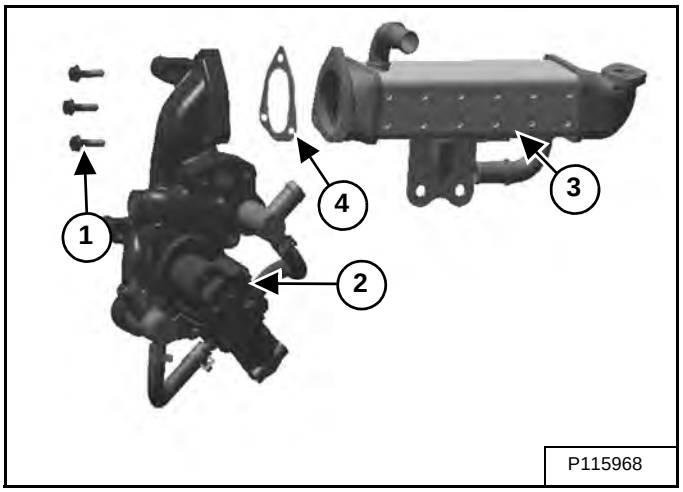
Remove the two retaining bolts (Item 1) **[Figure 70-150-5]** from the EGR mount.

Remove the three retaining bolts (Item 2) **[Figure 70-150-5]**.

Remove the coolant hose (Item 3) and the EGR valve assembly (Item 4) **[Figure 70-150-5]**.

Installation: Tighten the bolts to 22 N•m (16 ft-lb) torque.

Figure 70-150-6



Remove the retaining bolts (Item 1) **[Figure 70-150-6]**.

Remove the EGR valve (Item 2), the EGR cooler (Item 3) and the gasket (Item 4) **[Figure 70-150-6]**.

Installation: When reassembling replace with new gaskets. Torque the bolts to 9,8 N•m (7.2 ft-lb).

REGULAR MAINTENANCE (CONT'D)

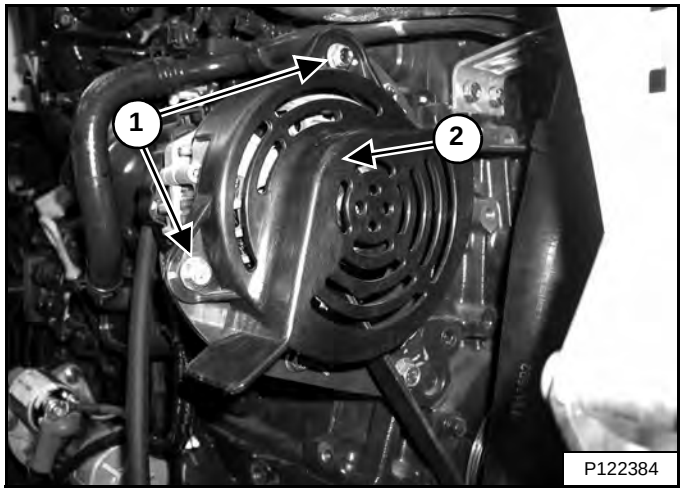
Belt Adjustment

The air conditioning belt has a spring loaded idler that constantly maintains the correct belt tension.This belt does not require periodic adjustment.

Belt Replacement

Stop the engine and open the rear door.

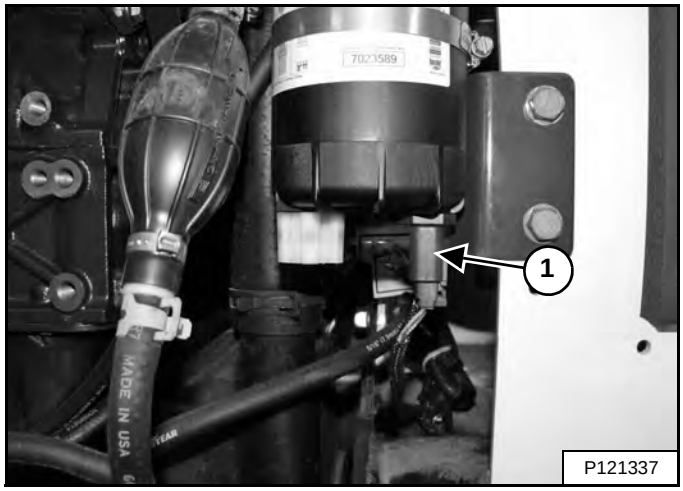
Figure 80-20-3



Remove the alternator belt shield mounting nuts and bolts (Item 1) **[Figure 80-20-3]**.

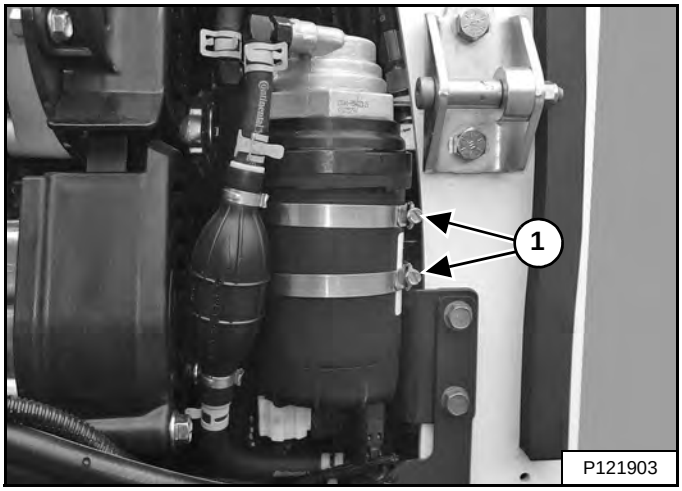
Remove the alternator belt shield (Item 2) **[Figure 80-20-3]**.

Figure 80-20-4



Disconnect the electrical connector (Item 1) **[Figure 80-20-4]** from the fuel filter.

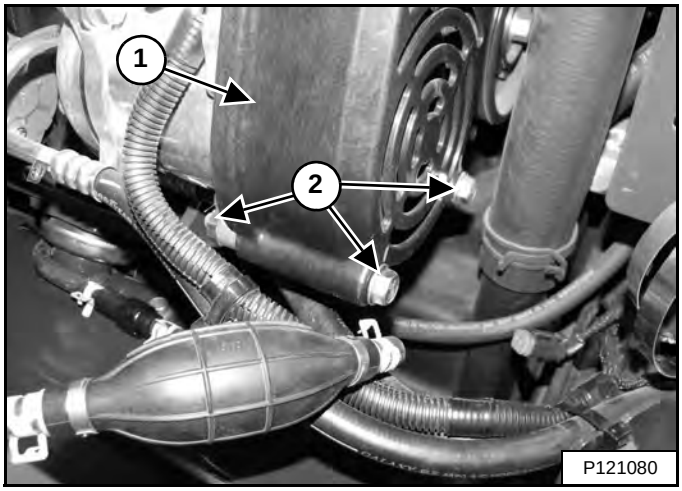
Figure 80-20-5



Loosen the fuel filter clamps (Item 1) **[Figure 80-20-5]**.

Remove the fuel filter assembly from the clamps and move clear of the air conditioning compressor belt shield.

Figure 80-20-6



Remove the air conditioning compressor belt shield mounting nuts and bolts (Item 2) **[Figure 80-20-6]**.

Remove the air conditioning compressor belt shield (Item 1) **[Figure 80-20-6]**.

Temperature / Pressure Chart

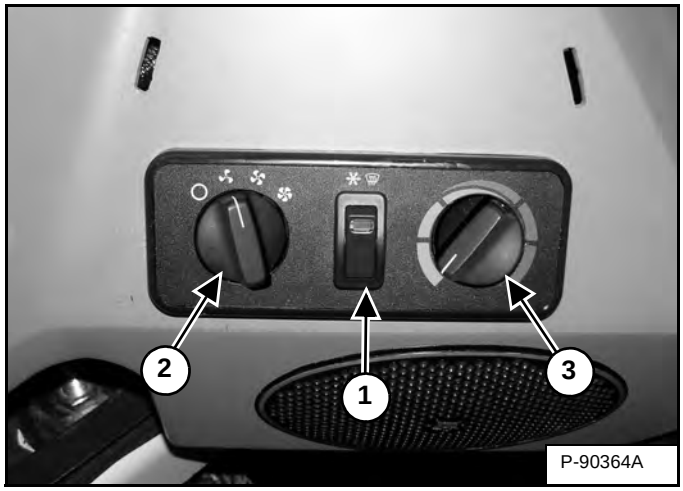
NORMAL EVAPORATOR RANGE				
TEMP °C	TEMP °F	kPa	BAR	PSIG
-8,8	16	108,2	1,08	15.69
-7,8	18	117,5	1,17	17.04
-6,7	20	127,1	1,27	18.43
-5,6	22	137	1,37	19.87
-4,4	24	147,2	1,47	21.35
-3,3	26	157,8	1,58	22.88
-2,2	28	168,7	1,69	24.47
-1,1	30	180	1,80	26.10
0	32	191,6	1,92	27.79
1,1	34	203,5	2,04	29.52
2,2	36	216	2,16	31.32
3,3	38	228,7	2,29	33.17
4,4	40	241,8	2,42	35.07
5,6	42	255,3	2,55	37.03
6,7	44	269,3	2,69	39.05
7,2	45	276,4	2,76	40.09
10	50	313,6	3,14	45.48
12,8	55	353,5	3,54	51.27
15,6	60	396,3	3,96	57.47
18,3	65	442	4,42	64.10
21,1	70	490,8	4,91	71.19
23,9	75	543	5,43	78.75
26,7	80	598,5	5,99	86.80
29,4	85	657,8	6,58	95.40
32,2	90	719,8	7,20	104.40
32,8	91	733	7,33	106.30
33,3	92	746,1	7,46	108.20

NORMAL CONDENSER RANGE				
TEMP °C	TEMP °F	kPa	BAR	PSIG
33,9	93	759,8	7,60	110.20
34,4	94	773	7,73	112.10
35	95	786,7	7,87	114.10
37,8	100	857,1	8,57	124.30
38,9	102	886	8,86	128.50
40	104	916,3	9,16	132.90
41,1	106	946,7	9,47	137.30
42,2	108	978,4	9,78	141.90
43,3	110	1010.1	10,10	146.50
44,4	112	1043,2	10,43	151.30
45,6	114	1076,3	10,76	156.10
46,7	116	1110,7	11,11	161.10
47,8	118	1145,2	11,45	166.10
48,9	120	1181,1	11,81	171.30
50	122	1217,6	12,18	176.60
51,1	124	1254,8	12,55	182.00
52,2	126	1292,8	12,93	187.50
53,3	128	1331,4	13,31	193.10
54,4	130	1371,4	13,71	198.90
57,2	135	1473,4	14,73	213.70
60	140	1581,7	15,82	229.40
62,8	145	1694,7	16,95	245.80
65,6	150	1813,3	18,13	263.00
68,3	155	1938,1	19,38	281.10
71,1	160	2069,1	20,69	300.10
73,9	165	2207,1	22,07	320.10
76,7	170	2349,7	23,50	340.80

Heater Valve Not Opening Or Closing

Raise the lift arms and install an approved lift arm support device. (See Installing on Page 10-20-2.)

Figure 80-30-29

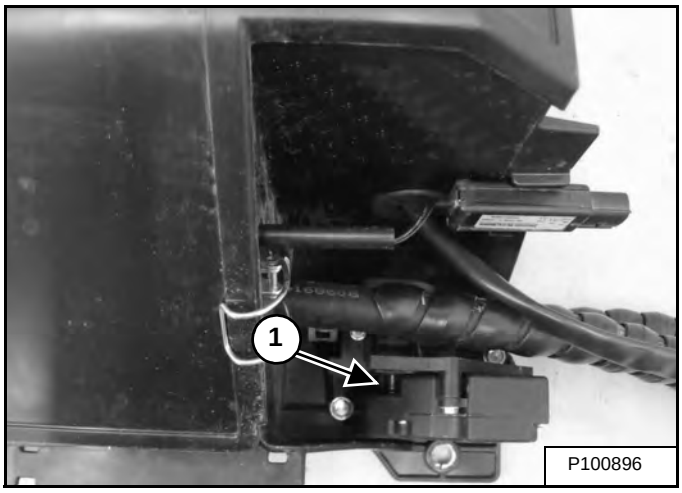


Push the A/C switch (Item 1) to the OFF position, turn the blower switch (Item 2) to position **1** and turn the temperature control (Item 3) **[Figure 80-30-29]** to the High A/C position, with the loader key switch OFF.

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

Connect the Remote Start Tool. (See REMOTE START TOOL KIT - MEL1563 on Page 10-60-1.) or (See REMOTE START TOOL (SERVICE TOOL) KIT - 7217666 on Page 10-61-1.)

Figure 80-30-30



NOTE: The HVAC assembly is removed for photo clarity.

Place the Remote Start Tool on the left fender of the loader, so the heater valve can be clearly seen. Watch the valve shaft (Item 1) **[Figure 80-30-30]**, as the key of the remote start is turned to the ON position without starting the loader. The heater valve should rotate. Place a mark on the loader shaft.

Turn the remote start key to the OFF position and remove the Remote Start Tool from fender.

Lower operator cab.

Turn the temperature control (Item 3) **[Figure 80-30-29]** to the High Heater position, with the loader key switch OFF.

Raise the operator cab.

Place the Remote Start Tool on the left fender of the loader, so the heater valve can be clearly seen. Watch the valve shaft (Item 1) **[Figure 80-30-30]**, as the key of the remote start is turned to the ON position without starting the loader. The heater valve should rotate.

If it does not rotate, test the potentiometer for proper function. (See Electrical System on Page 80-30-11.)

Replace the heater valve. (See Removal And Installation on Page 80-140-1.)

RECEIVER / DRIER

Receiver / Drier 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

Remove the rear grille. (See Removing on Page 50-60-1.)

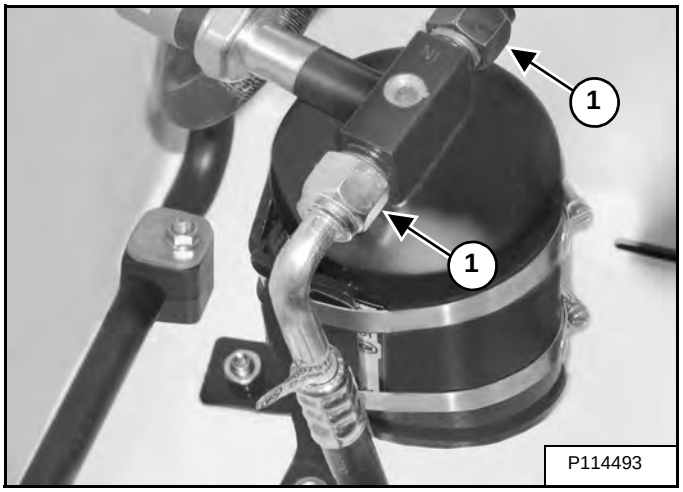
Remove the refrigerant from the A/C system. (See Reclamation And Charging With Recovery / Charging Unit on Page 80-40-2.)

⚠ WARNING

In the event of a leak, wear safety goggles. Escaping refrigerant can cause severe injuries to eyes. In contact with a flame, R-134a refrigerant gives a toxic gas.

W-2371-0611

Figure 80-70-1



NOTE: Mark the A/C hoses (Item 1) [Figure 80-70-1] for proper installation.

Remove the two A/C hoses (Item 1) **[Figure 80-70-1]** from the receiver / drier.

Both fittings on the drier are the same size, so the hoses can be hooked up incorrectly.

Cap and plug the hoses and the receiver / drier fittings with the proper A/C caps and plugs.

NOTE: Always replace O-rings and lube with compressor oil. Care must be taken not to damage O-rings when installing the hose fittings.

Installation: Tighten the A/C hoses (Item 1) to 41 - 48 N•m (30 - 35 ft-lb) torque.

NOTE: When replacing a receiver / drier in an A/C system 30 cc of PAG 46 oil must be added to the system when recharging.

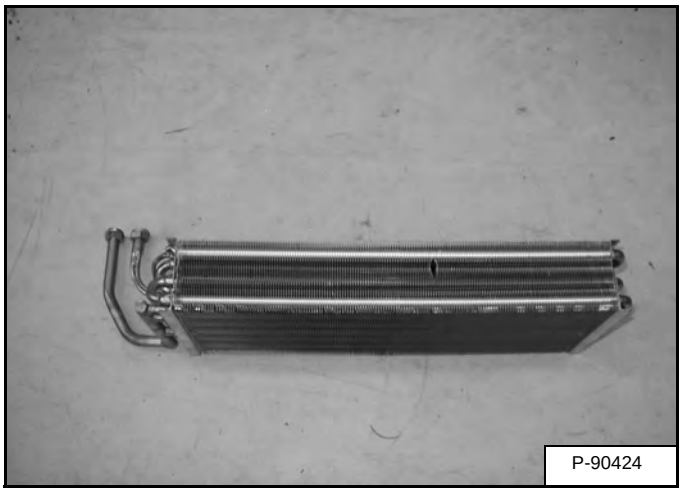
Figure 80-70-2

Note the flow direction on the receiver / drier (Item 1) **[Figure 80-70-2]** for proper installation.

EVAPORATOR COIL (CONT'D)

Removal And Installation (Cont'd)

Figure 80-110-4



Inspect the evaporator coil **[Figure 80-110-4]** for leaks, and replace as needed.

Clean with low pressure water or air.

SPECIFICATIONS

Certain specification(s) are based on engineering calculations and are not actual measurements. Specification(s) are provided for comparison purposes only and are subject to change without notice. Specification(s) for your individual Bobcat equipment will vary based on normal variations in design, manufacturing, operating conditions, and other factors.

TORQUE SPECIFICATIONS FOR BOLTS (CONT'D)

Torque For General Metric Bolts

The following table shows standard torque specifications for bolts with zinc phosphate coating. Bolts purchased from Bobcat that have zinc phosphate coating are specified by the letter H following the part number.

THREAD NOM. DIA	PROPERTY CLASS					
	8.8		10.9		12.9	
-	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb
M4	3,5 - 2,5	2.5 - 2.0	4,2 - 3,8	3.1 - 2.8	5,3 - 4,7	3.9 - 3.5
M5	6,5 - 5,5	5.0 - 4.0	8,4 - 7,6	6.2 - 5.6	9,5 - 8,5	7.0 - 6.2
M6	10,5 - 9,5	7.5 - 7.0	13,7 - 12,3	10.1 - 9.1	15,8 - 14,2	11.6 - 10.4
M7	17 - 15	12.5 - 11.0	22 - 20	16.2 - 14.7	26,3 - 23,7	19.5 - 17.5
M8	26 - 24	19 - 18	32,6 - 29,4	24.0 - 21.7	39 - 35	28.5 - 25.5
M10	47 - 43	35 - 32	63 - 57	46.5 - 42.0	79 - 71	58.5 - 52.5
M12	85 - 75	60 - 55	115 - 105	85 - 78	137 - 123	110 - 91
M14	140 - 125	100 - 90	180 - 160	133 - 118	210 - 190	155 - 140
M16	210 - 190	155 - 140	285 - 255	210 - 188	330 - 300	245 - 225
M18	290 - 260	215 - 190	385 - 345	285 - 255	460 - 420	340 - 310
M20	410 - 370	300 - 275	550 - 490	405 - 360	650 - 590	490 - 440
M22	550 - 500	400 - 370	740 - 760	545 - 560	880 - 800	650 - 590
M24	700 - 640	520 - 470	950 - 850	700 - 625	1120 - 1000	830 - 730
M27	1030 - 930	760 - 680	1370 - 1230	1000 - 900	1630 - 1470	1200 - 1100
M30	1400 - 1260	1030 - 930	1900 - 1700	1400 - 1250	2200 - 2000	1600 - 1500
M33	1900 - 1720	1400 - 1270	2500 - 2300	1850 - 1700	3100 - 2700	2300 - 2000
M36	2450 - 2200	1800 - 1620	3200 - 2900	2400 - 2200	3900 - 3500	2900 - 2600

NOTE: Use the torque value for the part having the lesser property class when a fastener and nut are used together but have a different property class.