1150L
Crawler Dozer

SERVICE MANUAL

Part number 47998874B
3rd edition English
May 2018

CASE CONSTRUCTION

61 - Metering system				X		
62 - Pressing - Bale formation			X			
63 - Chemical applicators				X		
64 - Chopping			X			
66 - Threshing			X			
68 - Tying/Wrapping/Twisting			X			
69 - Bale wagons						
70 - Ejection			X			
71 - Lubrication system	X	X	X	X	X	
72 - Separation			X			
73 - Residue handling			X			
74 - Cleaning			X			
75 - Soil preparation/Finishing						
76 - Secondary cleaning / Destemmer						
77 - Seeding				X		
78 - Spraying				X		
79 - Planting				X		
80 - Crop storage / Unloading			X			
82 - Front loader and bucket	X	X				
83 - Telescopic single arm	X	X				
84 - Booms, dippers and buckets	X	X				
86 - Dozer blade and arm	X	X				
88 - Accessories	X	X	X	X	X	
89 - Tools	X	X	X	X	X	
90 - Platform, cab, bodywork and decals	X	X	X	X		

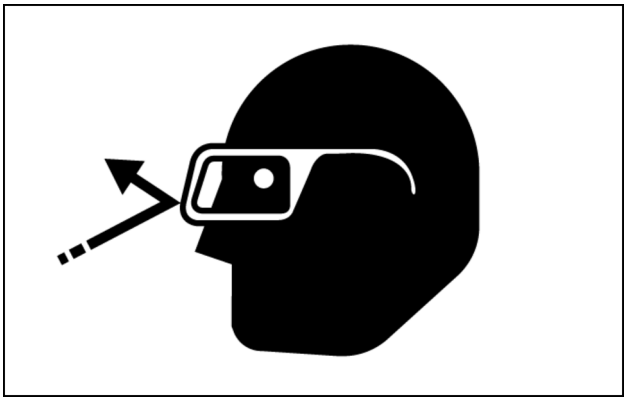
Safe storage of accessories

- Accessories such as buckets, hydraulic brakes and blades stored incorrectly can fall and cause serious injury or death.
- Store accessories and implements safely to prevent falling.
- Keep accessories and implements stored in safe locations without the circulation of people.

SP0054 7

Be careful with any debris that comes off

- Serious injury may occur if your eyes or any other part of the body are struck by flying debris.
- Protect yourself from injury caused by parts or debris that may be thrown; use protective goggles or a face shield.
- Keep people away from the work area before you perform any maintenance on the machine.

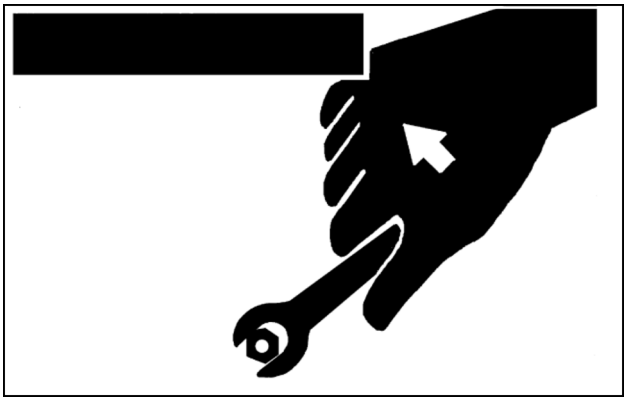


SP0056 8

Use appropriate tools

- Use tools appropriate for the work to be performed.
- Inappropriate tools, parts and procedures may create dangerous conditions.
- Use tools of correct dimensions in the fastening elements.

  NOTE: *Avoid injuries caused by an improper wrench.*
- Do not use tools sized in inches with metric bolts and nuts, or vice-versa.
- Only use genuine parts (See the Parts Catalog).



SP0063 9

Protecting the electronic and/or electrical systems during charging and welding

To avoid damage to the electronic and/or electrical systems, always observe the following practices:

1. Never make or break any of the charging circuit connections when the engine is running, including the battery connections.
2. Never short any of the charging components to ground.
3. Always disconnect the ground cable from the battery before arc welding on the machine or on any machine attachment.
   - Position the welder ground clamp as close to the welding area as possible.
   - If you weld in close proximity to a computer module, then you should remove the module from the machine.
   - Never allow welding cables to lie on, near, or across any electrical wiring or electronic component while you weld.
4. Always disconnect the negative cable from the battery when charging the battery in the machine with a battery charger.

   NOTICE: *If you must weld on the unit, you must disconnect the battery ground cable from the machine battery. The electronic monitoring system and charging system will be damaged if this is not done.*
5. Remove the battery ground cable. Reconnect the cable when you complete welding.

⚠ WARNING

Battery acid causes burns. Batteries contain sulfuric acid.
Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.
Failure to comply could result in death or serious injury.

W0111A

Special tools

The special tools that CASE CONSTRUCTION suggests and illustrate in this manual have been specifically researched and designed for use with CASE CONSTRUCTION machines. The special tools are essential for reliable repair operations. The special tools are accurately built and rigorously tested to offer efficient and long-lasting operation.

By using these tools, repair personnel will benefit from:

- Operating in optimal technical conditions
- Obtaining the best results
- Saving time and effort
- Working in safe conditions

Part identification - (Identification plates)

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	APAC --- LA

Model, serial number, and year of manufacture

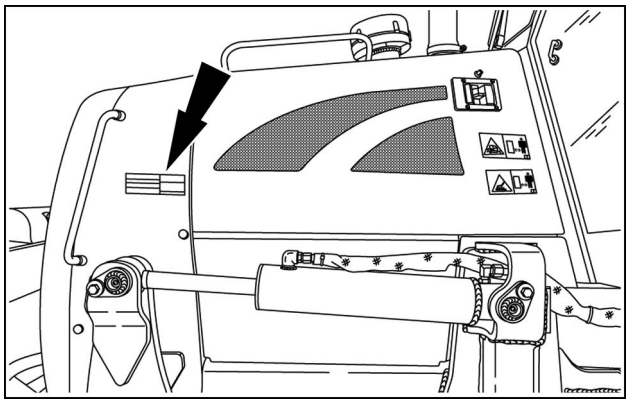
When you order parts or obtain information or technical assistance, tell your dealer the serial number and type of the machine or implements.

Write the following information in the spaces on the tag: the type, serial number and year of manufacture of your machine, implements, and the serial numbers of the different hydraulic and mechanical components.

48091239_B 1

Machine identification

This plate is located on the left-hand side of the machine, on the side frame of the engine hood.



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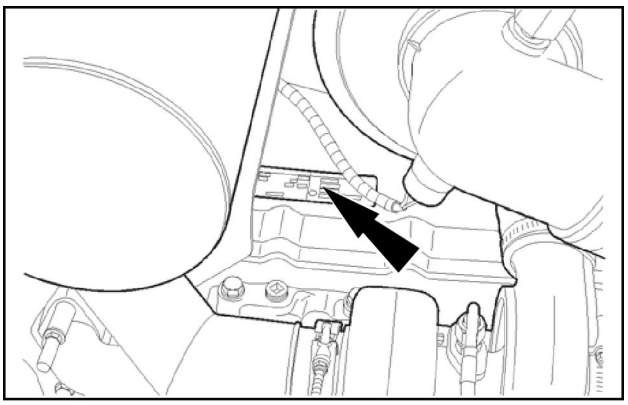
Motor

This plate is located on the motor valves cover.



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Engine - Special tools

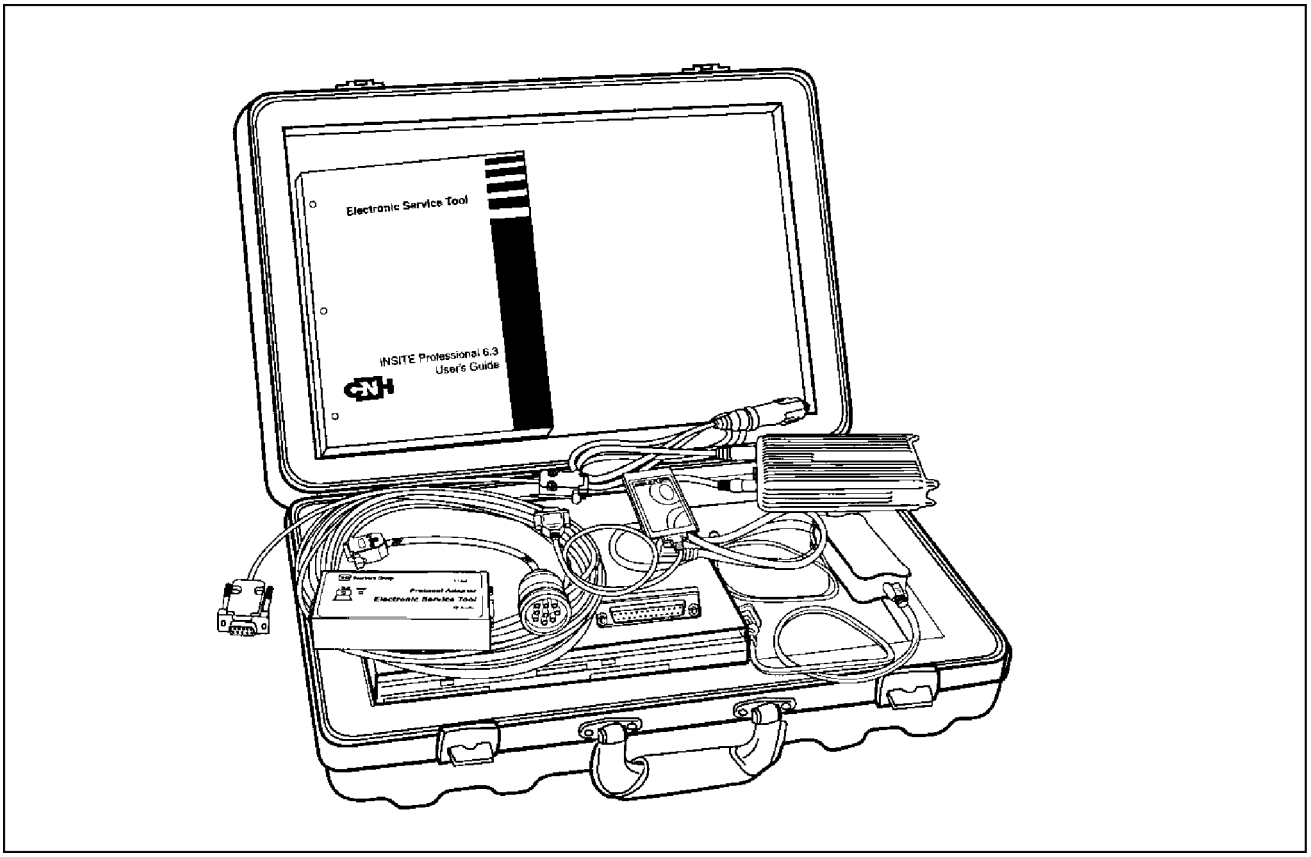
1150L	LA

380000158	**1 – 6 N·m** torque dynamometric screwdriver for calibration of the jam nut of the injector solenoid valve connector (Common Rail).
380000665	Tool for removal of the front crankshaft seal.
380000663	Tool for removal of the rear crankshaft seal.
380000671	Tool for removal of the injectors.
380000666	Coupler for installation of the front crankshaft seal.
380000664	Coupler for installation of the rear crankshaft seal.
380000988	Tool to rotate the engine flywheel.
380001099	Tool for removal of the injectors.

Engine - Special tools

1150L	LA

Diagnostic tool for CNH engines



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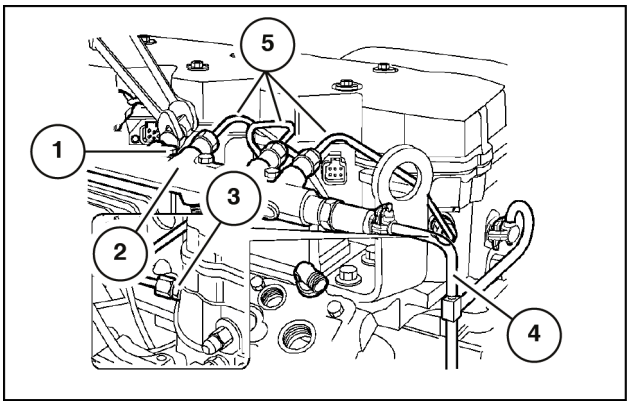
The Electronic Service Tool (EST) system allows you to perform diagnostics on the machine. You can check the parameters of the electronics (control units, sensors, etc.), flow rates, pressures, and temperatures. The system can also read fault codes to help diagnose the failure modes of the engine.

Engine - General specification

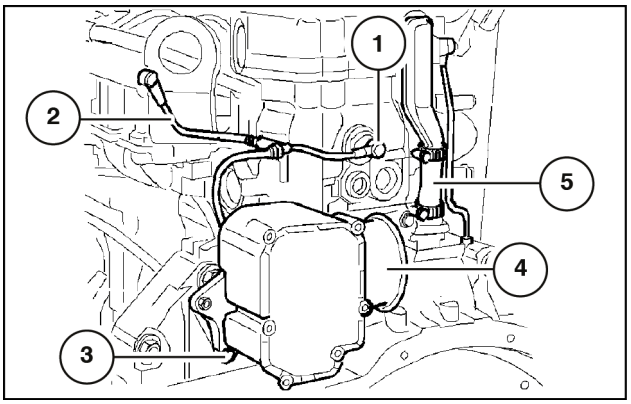
1150L	LA

6. Disconnect the battery cable. Disconnect the following connectors:
   - Connectors **(1)** of the injector wiring **(6)**.
   - Engine coolant temperature sensor on the thermostat **(2)**.
   - "Common rail" fuel pressure sensor **(3)**.
   - Crankshaft rotation sensor **(5)**.
   - Temperature/pressure sensor **(7)**.
   - Camshaft sensor **(8)**.
   - High pressure regulator **(10)**.
   - Control unit EDC7UC31 **(11)**.
7. Disconnect the “common rail” **(2)**:
   - Fuel line **(4)** according to the procedure in Step **3**.
   - Fuel lines **(5)**.
   - Injector manifolds **(3)**.
   - Remove the bolts **(1)**. Disconnect the "common rail" **(2)**.



LAIL11CD1411A0A 6

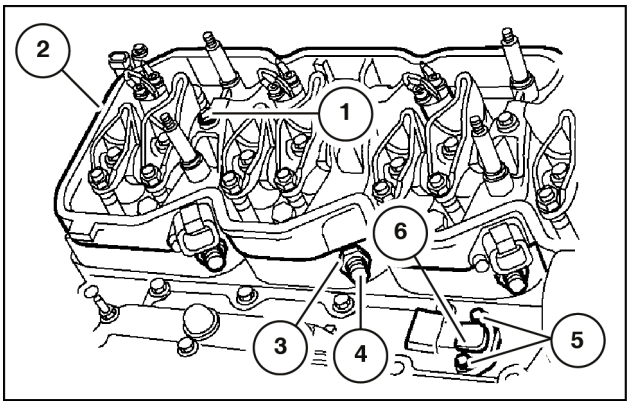
8. Disconnect the line **(2)** from the fuel return pressure limiter **(1)**, as shown in Step **3**.
   Remove the nut. Loosen the retaining collar. Disconnect the oil steam line **(5)**. Remove the bolts **(3)**. Remove the "blow-by" filter **(4)**.



LAIL11CD1412A0A 7

9. Remove the nuts and the cover of the valve tappets, including the gasket.
   Remove the bolts **(1)**. Disconnect the wiring housing of the injectors **(2)**, along with the gasket.
   Remove the bolts **(5)**. Shut down the pressure/temperature sensor **(6)**.
   Remove the nuts **(3)**. Remove the fuel inlet connectors **(4)**.

NOTICE: *The fuel inlet connectors **(4)** should not be re-used. The fuel inlet connectors should be replaced with new fuel inlet connectors.*



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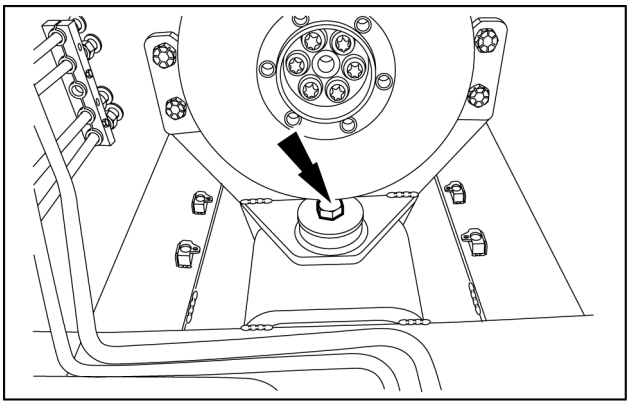
Engine - Install

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

1. Install appropriate lifting equipment on the engine lifting eyes. Lift the engine. Place the engine in position on the machine. Move the engine backward. Slide the drive shaft and connect it with the hydro pumps. Carefully lower the engine into the machine.
2. Install the mounting bolt and the nut at the front of the engine. Torque to **205 – 230 N·m** (**151 – 170 lb ft**).



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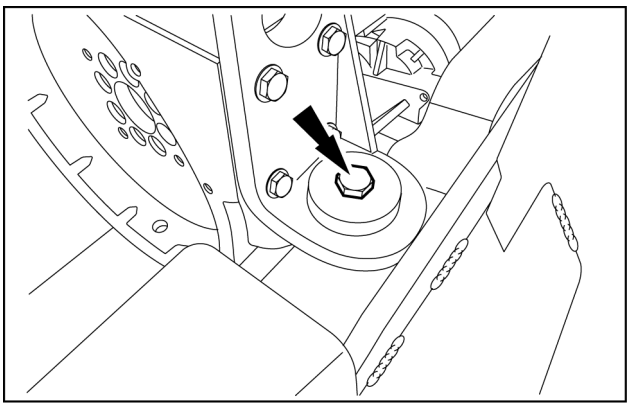
3. Install the mounting bolts and the nuts at the rear of the engine. Torque to **205 – 230 N·m** (**151 – 170 lb ft**). Remove the lifting equipment from the engine lifting eyes.



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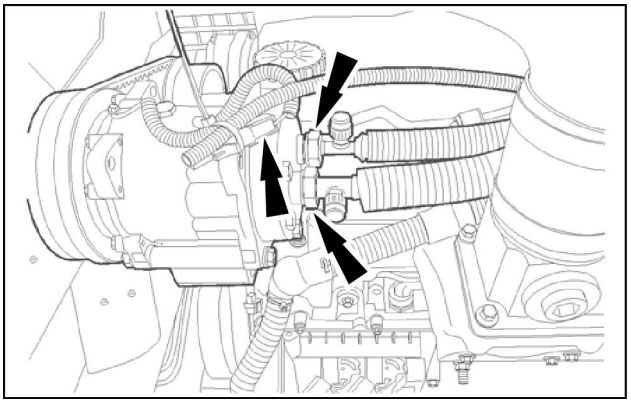
4. Install the ground cable to the extension housing.

NOTE: *Lower the cab or ROPS canopy. See* ***Roll Over Protective Structure (ROPS) frame - Tilt (90.114)****.*

5. Connect the compressor hoses. Connect the clutch electrical connector.



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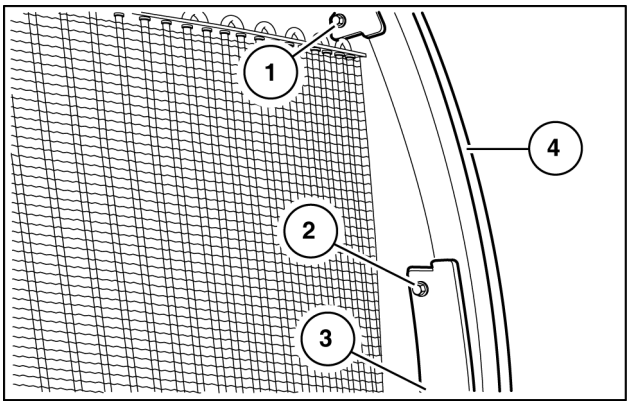
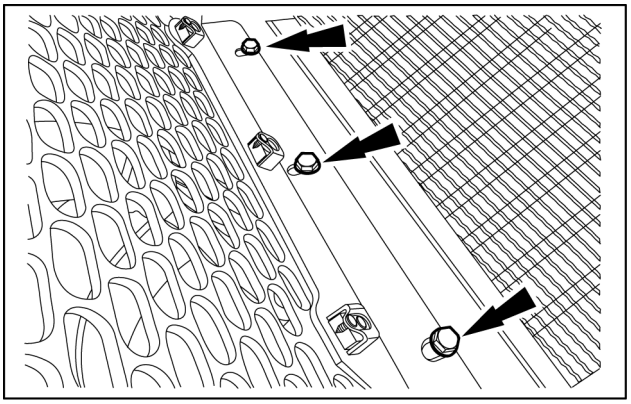
13. Hold the plate **(4)** in place. Install the bottom bolt, the nut, and the washer **(3)** (not shown). Do not tighten yet. Install the top bolt **(1)** through the plate, from the radiator strap and to the top of the lift lever on the side that you are working. Install the middle bolt. Repeat the procedure for the other side. Torque the screws.

NOTE: *Ask another person for assistance. The plates are heavy and do not have hoist points.*



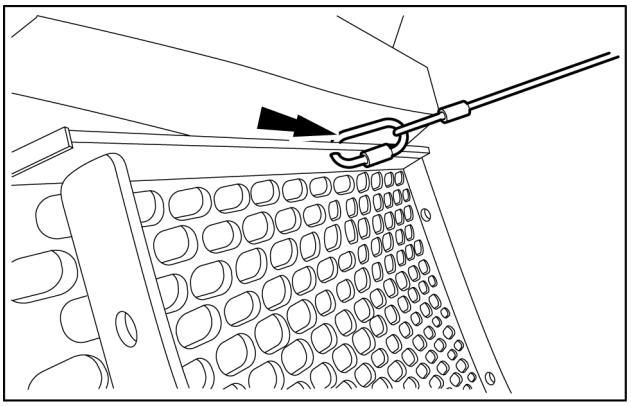
LAIL11CD1097A0A 6

14. Install the lifting equipment on the grate. Position the grate on the front of the machine. Lift the grate. Install the three bolts. Tighten the bolts by hand.
15. Lower the grate to access the three bolts. Tighten the three screws.



LAIL11CD1096A0A 7

16. Lift the grate enough to connect the cable hook to the grate. Disconnect the lifting equipment from the grate.
17. Fill the radiator with a mixture of **50% CASE AKCELA PREMIUM ANTI-FREEZE** anti-freeze and **50%** water. Install the radiator cap. Fill the coolant overflow tank up to its FULL mark
18. Put the master key in the ON position.
19. Start up the engine. Let the engine run at idle speed. Check for leaks. When the coolant reaches its normal operating temperature, shut down the engine. After the engine has cooled, check the coolant level in the reservoir.
20. Install the engine side panels. Close and secure the grate.



LAIL11CD1095A0A 8

Index

Engine - 10

Aftercooler - 310

(*) See content for specific models

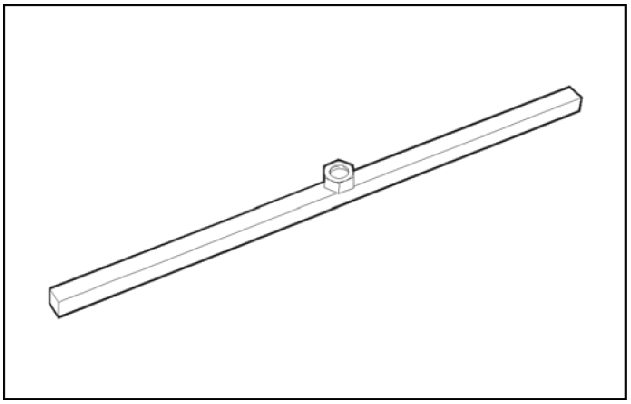
Wheel hub - Special tools

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Rotation torque check bar

This tool is used to check the rotation torque of the planetary housing.

- The bar is made of a **19 mm** (**0.75 in**) soft steel square and is **559 mm** (**22.01 in**) long. The nut is welded in the center of the bar. The size of the nut is optional.
- A mounting bolt is needed to remove the outer housing of the axle bearing coming from the gear housing. The mounting bolt is an M16-2 x **320 mm** (**12.60 in**).
- The bolt can be acquired through common parts. The part number is 627-16320.



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380002800

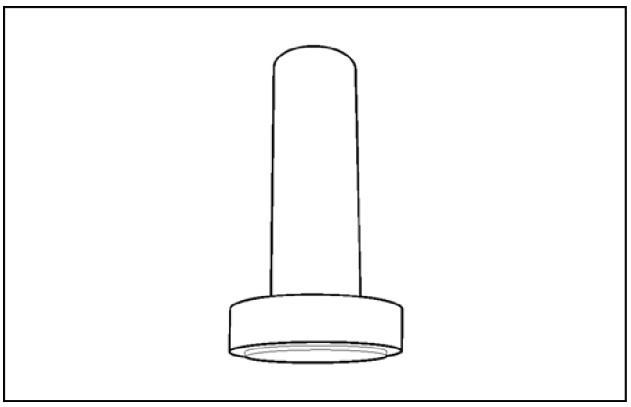
Expansion plug installation tool.

CAS19545

Conductors kit.

CAS-1955

Conductors kit.



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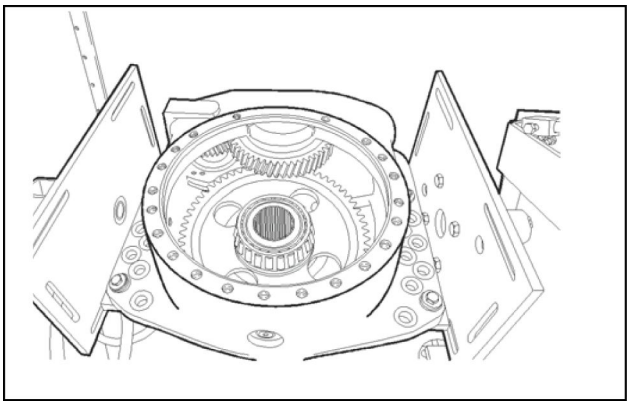
Wheel hub - General specification

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

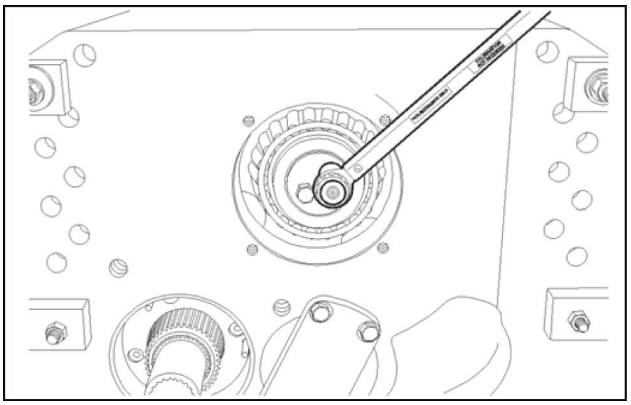
Oil Specification	**CASE AKCELA GEAR LUBE 135 H EP 85W-140**
Capacity (each)	**14.2 l** (**15 US qt**)

25. Remove the final drive spindle housing.



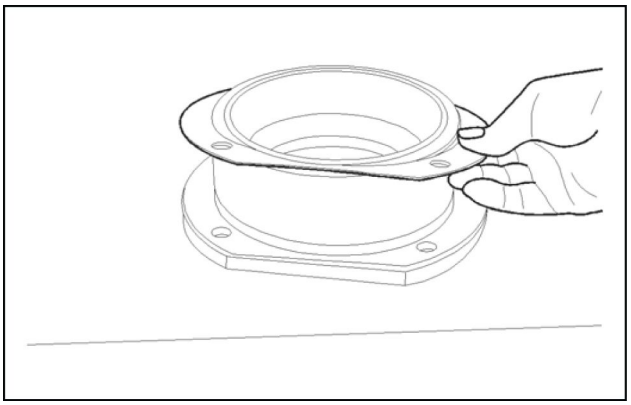
LAIL11CD0581A0A 24

52. Torque the fixing bolts to **125 – 150 N·m** (**92 – 111 lb ft**).



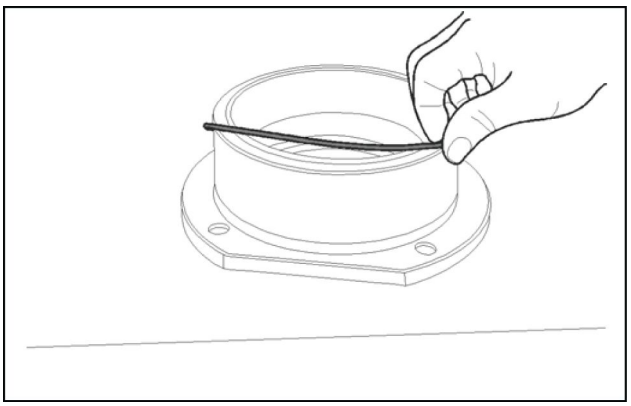
LAIL11CD0929A0A 42

53. Install the shims on the retainer.



LAIL11CD0930A0A 43

54. Install a new O-ring in the existing groove on the output gear retainer.



LAIL11CD0931A0A 44

55. Apply **LOCTITE® 242®** to the existing threads on the gear housing.
56. Lubricate the O-ring and the retainer hole with petroleum jelly.

Wheel hub - Inspect

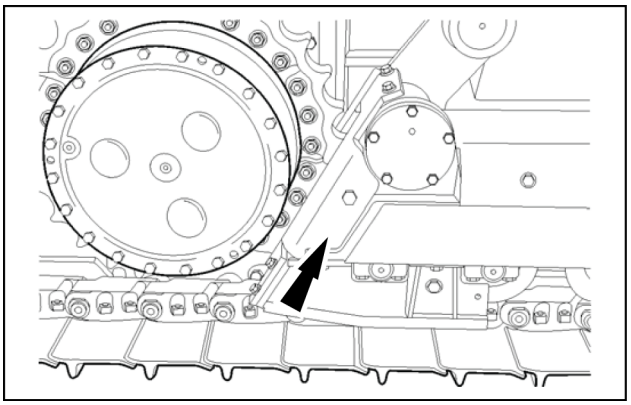
1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

1. Clean all parts with clean solvent.
2. Discard the face seal and install a new face seal during assembly.
3. Discard the self-locking nuts that hold the sprocket segments. Replace the nuts with new self-locking nuts during assembly.
4. Check for erosion, scratches, and other damage on the rollers on the bearings.

NOTE: *If a bearing or bearing housing needs to be replaced, both of the replacement parts must be new.*

5. Check for erosion, scratches, or other damage on the bearing housings.
6. Check for pitting, scratches, and other damage on the rollers used in the pinion gears.
7. Check for wear or damage on the gears. If a gear is worn or damaged, check the gear in conjunction with the worn or damaged gear.
8. Check for wear or damage on the notches.
9. Check for damage and cracks on the planetary housing and the gear housing.

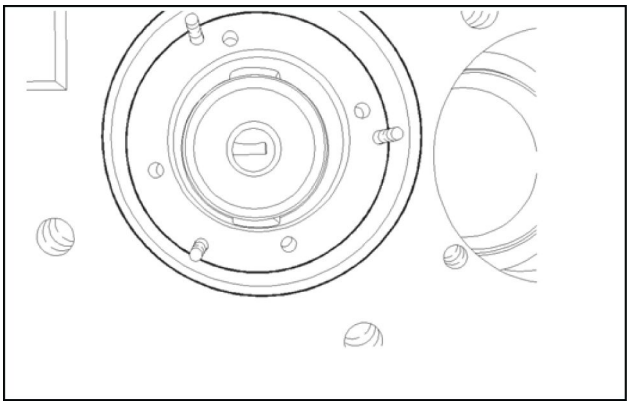
50. Install the rock shield and the mounting bolts. Tighten the mounting bolts.



LAIL11CD0701A0A 44

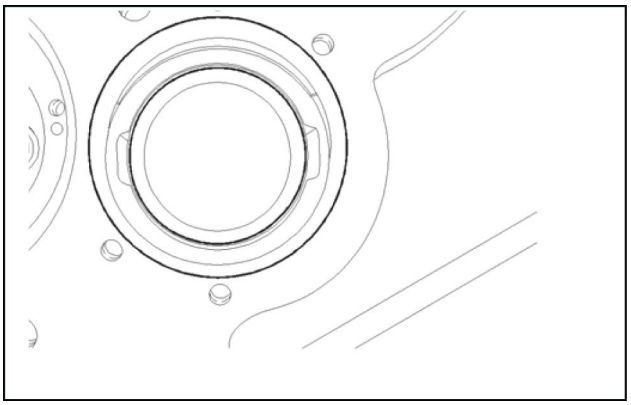
51. Install the track. See page **Track chain - Install (48.100)**.
52. Raise the machine. Remove the support from under the machine.
53. Adjust the track. See page **Tracks - Adjust (48.100)**.

13. Remove the input shaft bearing housing.



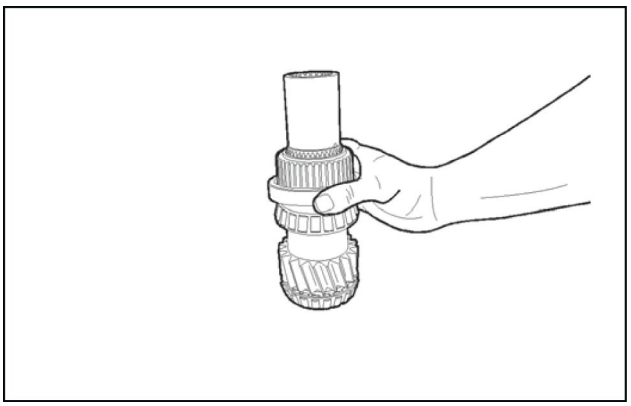
LAIL11CD0594A0A 13

14. Remove the idler gear bearing housing.



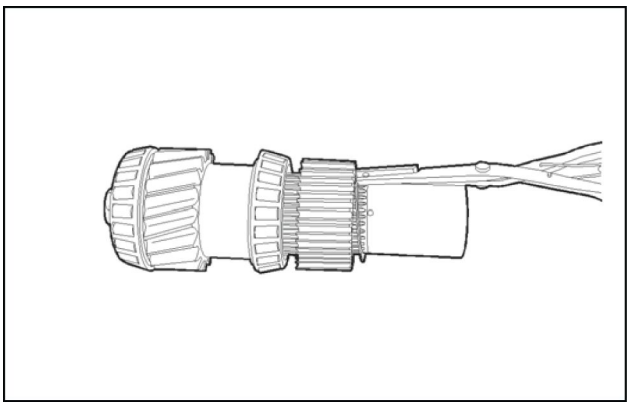
LAIL11CD0595A0A 14

15. Remove the external bearing housing input shaft .



LAIL11CD0596A0A 15

16. Remove the input shaft snap ring.



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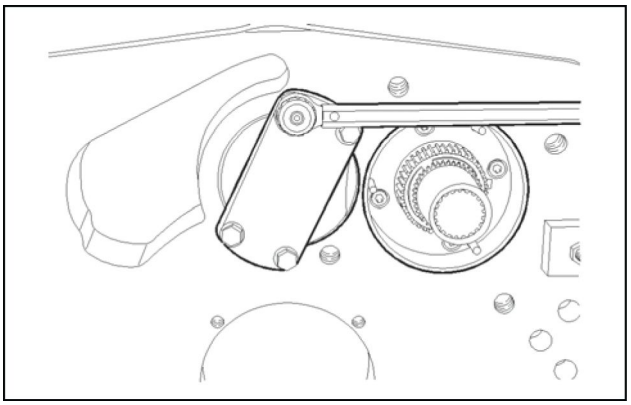
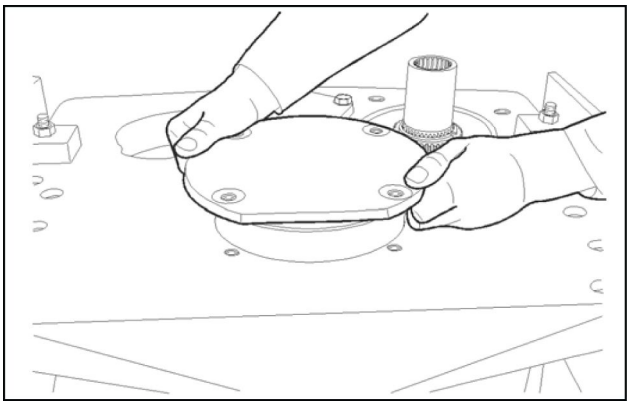
42. Torque the fixing bolts to **125 – 150 N·m** (**92 – 111 lb ft**).



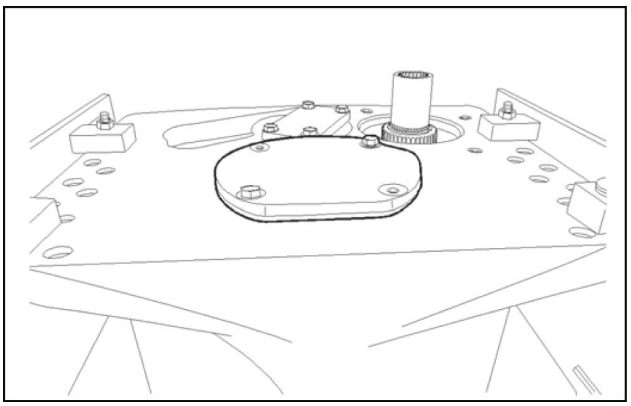
LAIL11CD0897A0A 41

43. Install the output gear retainer without the O-ring and without the shims.



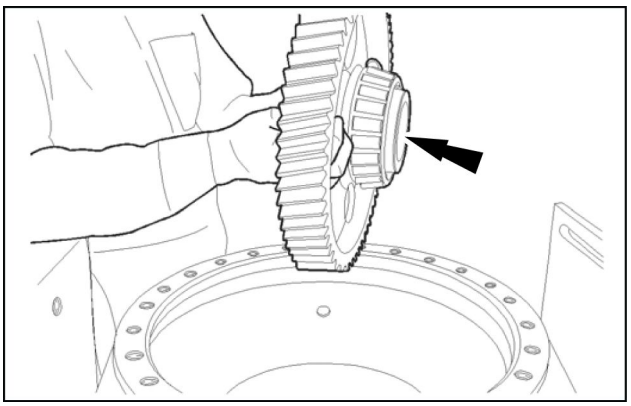
LAIL11CD0898A0A 42

44. Install two mounting bolts. Hand tighten the bolts. Leave a clearance of **6 mm** (**0.24 in**).



LAIL11CD0899A0A 43

45. Install the gear and the extended part facing down.



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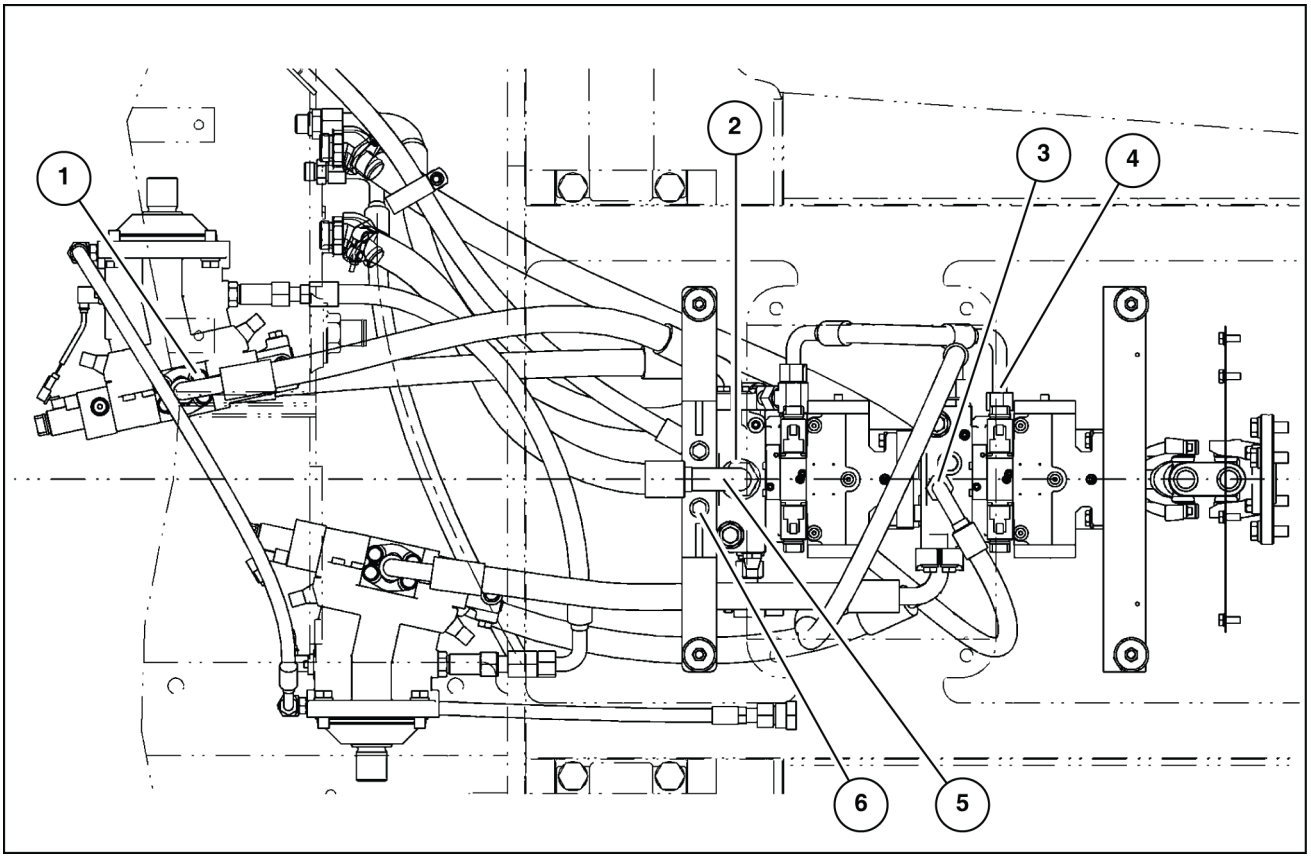


LAIL11CD0617F0A 3

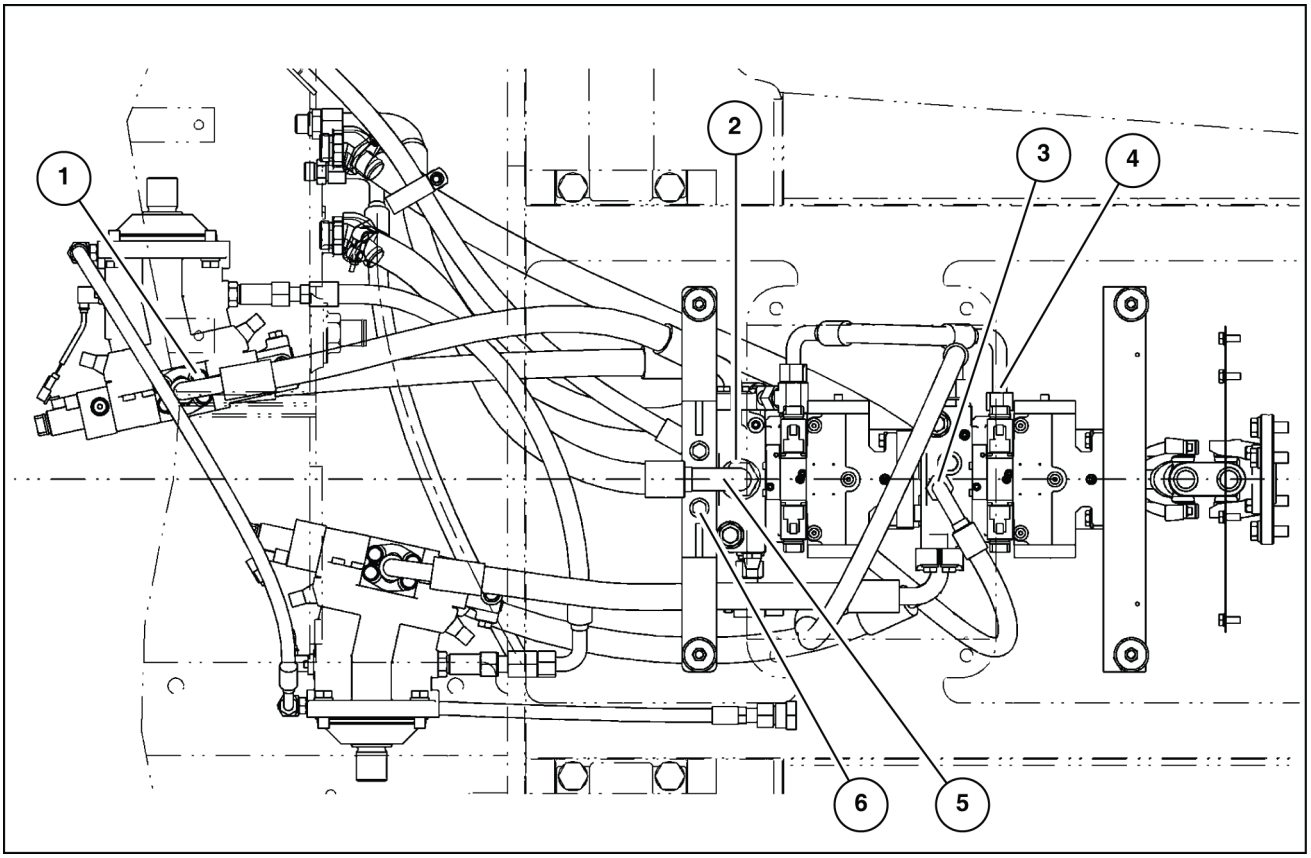
Bottom view

1. Bolt	**90 – 100 N·m** (**66 – 74 lb ft**)
2. Connector	**163 – 224 N·m** (**120 – 165 lb ft**)
3. Connector	**90 – 95 N·m** (**66 – 70 lb ft**)
4. Housing drain hose	**90 – 95 N·m** (**66 – 70 lb ft**)
5. Supply pump suction hose	**170 – 190 N·m** (**125 – 140 lb ft**)
6. Bolts (apply **LOCTITE® 243™**)	**118 – 132 N·m** (**87 – 97 lb ft**)

Hydraulic pump lines - General specification

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Manufacturing	Rexroth



LAIL11CD0617F0A 3

Bottom view

1. Bolt
2. Connector
3. Connector
4. Housing drain hose
5. Supply pump suction hose
6. Bolts (apply **LOCTITE® 243™**)

Adjustment of the charge pressure settings

ATTENTION: *Adjust both the front charge pump and the rear charge pump at the same time. Turn the adjustment screws an equal number of turns.*

19. Remove the breather **(1)** from the hydraulic reservoir. Connect a vacuum pump to the reservoir. Start the pump.
20. Disconnect the filter bypass return line **(2)**. Plug the line. Cap the fitting.
21. Shut down the vacuum pump. Repeat procedures **2** to **8**. Check the pressure

NOTE: *If the pressure increases, replace the filter head. If the pressure does not increase, reconnect the filter bypass line. Go to the next procedure.*

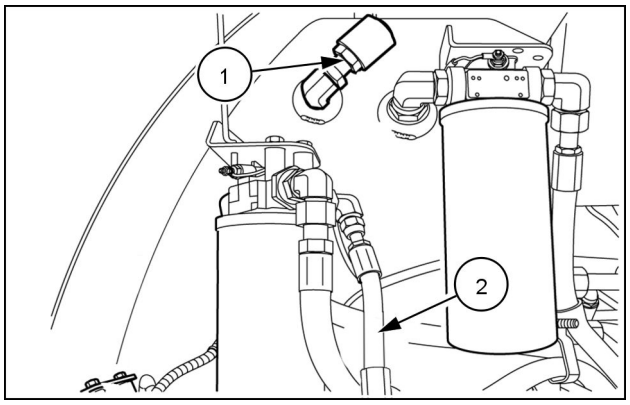
22. Use the following procedure to adjust the pressure settings of the charge pump relief valves:
    A. Tilt the cab/ ROPS canopy. See page **Roll Over Protective Structure (ROPS) frame - Tilt (90.114)**

    NOTE: *For relief valve locations, see page **Hydrostatic drive system valves Pressure release valve - External view (29.100)** about the pump pressure relief locations.*

    B. Remove the adjustment screw cover.
    C. Loosen the adjustment screw jam nut.
    D. Turn the adjustment screw clockwise to increase the pressure. Turn the adjustment screw counter-clockwise to decrease the pressure.

    NOTE: *One turn will result in a pressure change of approximately **3.8 bar** (**55.1 psi**).*

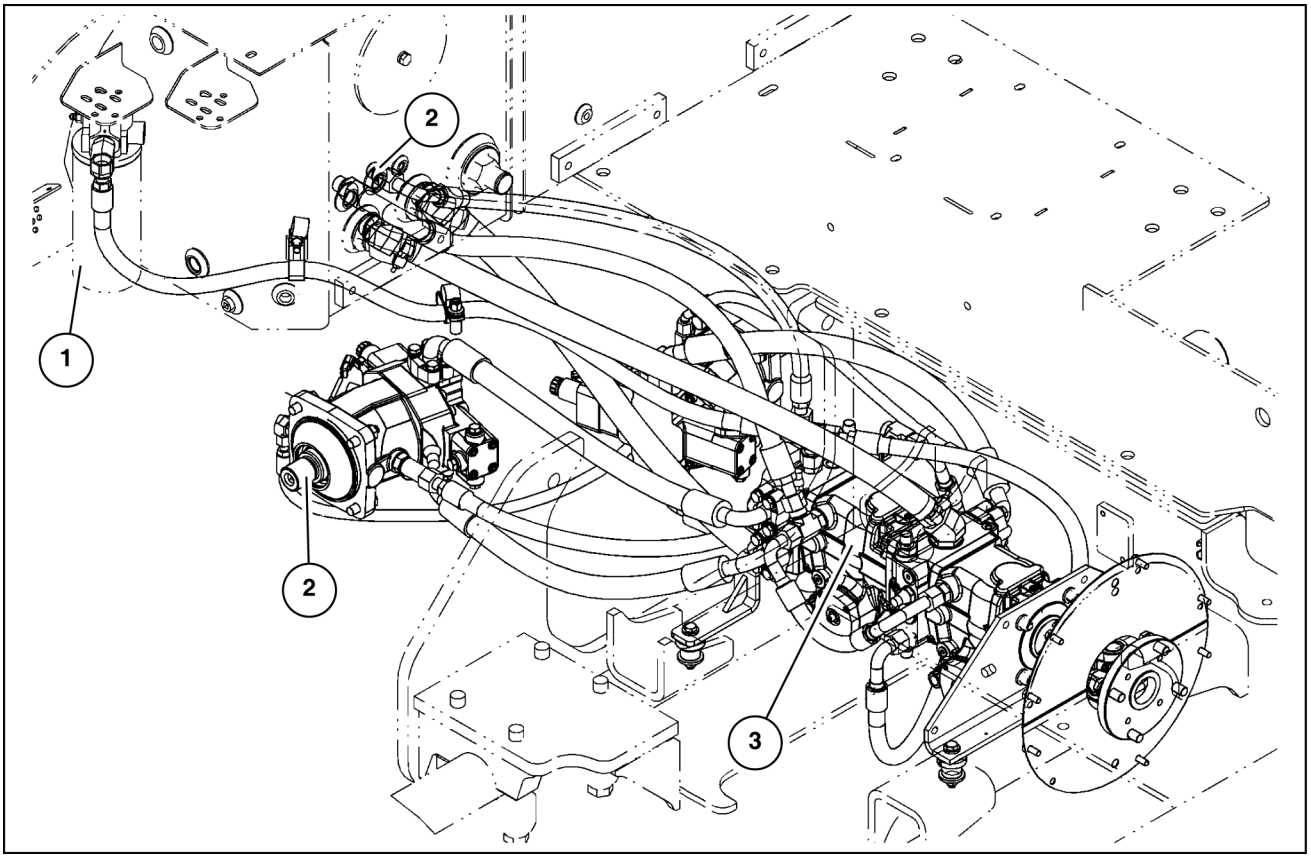
    E. Lower the cab/ ROPS canopy. See page **Roll Over Protective Structure (ROPS) frame - Tilt (90.114)**
    F. Shut down the vacuum pump. Repeat procedures **2** to **8** to check the pressure setting.
23. Adjust the charge pressure relief valves again, if necessary.



COIL14DOZ0096AB 3

Hydrostatic transmission - External view

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA



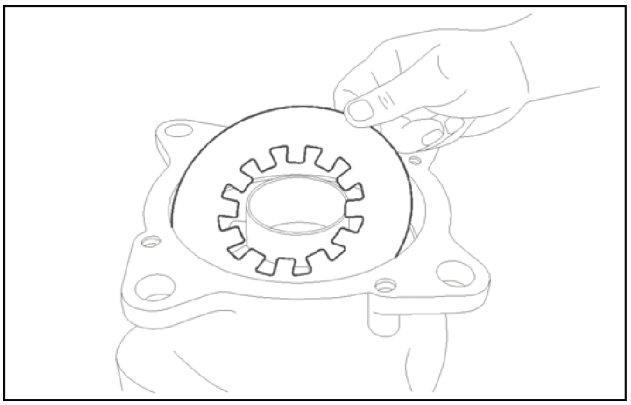
LAIL11CD0616F0A 1

1. Charge filter
2. Bent shaft motor
3. Tandem pump

Contents

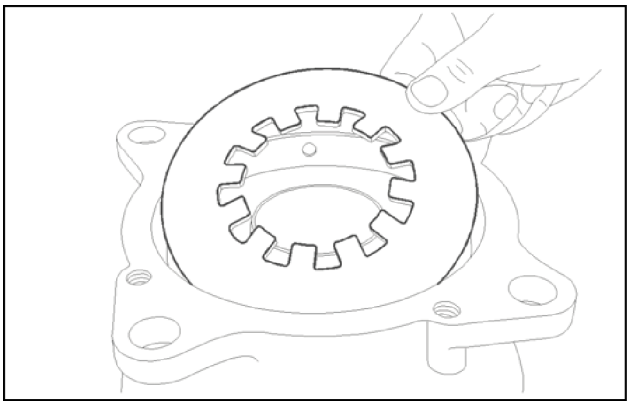
Brakes and controls - 33

4. Install the third bevel washer with the chamfer of the fingers facing down.



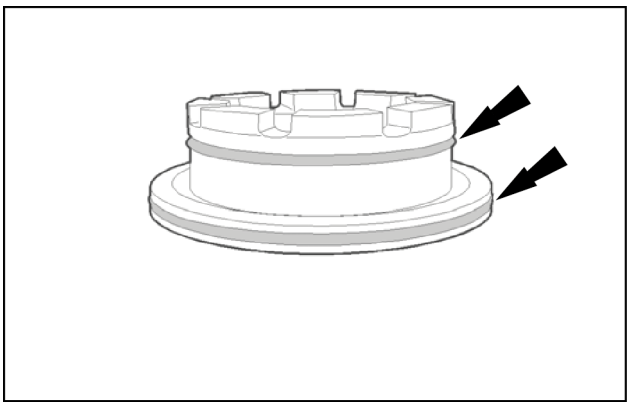
LAIL11CD0340A0A 4

5. Install the fourth bevel washer with the chamfer of the fingers facing up.



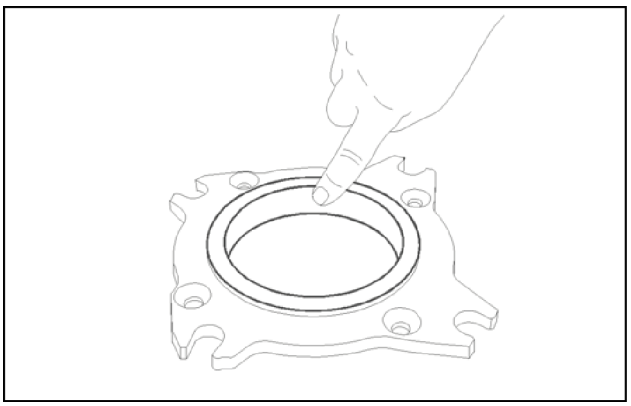
LAIL11CD0341A0A 5

6. Install new O-rings on the piston.



LAIL11CD0342A0A 6

7. Lubricate the hole of the cover with hydraulic oil.



LAIL11CD0343A0A 7

Contents

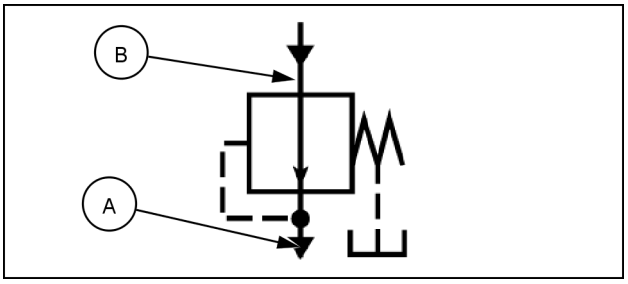
Hydraulic systems - 35

Hydraulic systems - 000

(*) See content for specific models

Pressure reducing valve

A pressure reducing valve is shown as a normally open symbol in a pressure line. This valve works opposite of a relief valve, since it senses outlet pressure **(A)** versus inlet pressure **(B)**. As the outlet pressure builds, it works against a predetermined spring force. As the spring force is overcome, flow through the valve is reduced or shut off.



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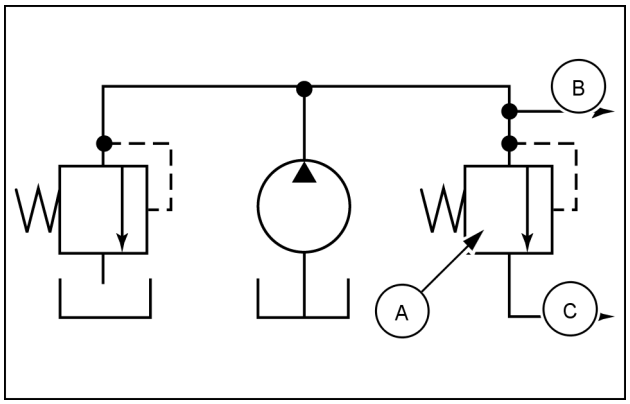
Sequence valve

The normally closed symbol is also used for a sequence valve **(A)**. The inlet port is connected to a primary cylinder **(B)** and the outlet port to the secondary cylinder line **(C)**. When the piston in the primary cylinder reaches the end of its stroke, the pressure in the supply line increases. The sequence valve is also connected to the supply line and also feels the increase in pressure. As pressure increases, the envelope and directional flow arrow move over, connecting the inlet and outlet ports allowing fluid to flow to the secondary cylinder.



RCIL07CCH062AAA 5

Reference:	**Hydraulic systems - Hydraulic symbol - Directional control (35.000)**
	Hydraulic systems - Hydraulic symbol - Composite (35.000)
	Hydraulic systems - Hydraulic symbol - Flow control (35.000)
	Hydraulic systems - Hydraulic symbol - Table of symbols (35.000)

Hydraulic systems - Hydraulic symbol

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Common symbols

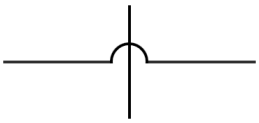
Line and line functions

Solid line
Main line

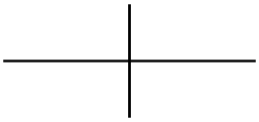
Dashed line
Pilot line

Dotted line
Exhaust or drain

Enclosure outline



Lines that do not cross



Lines that cross

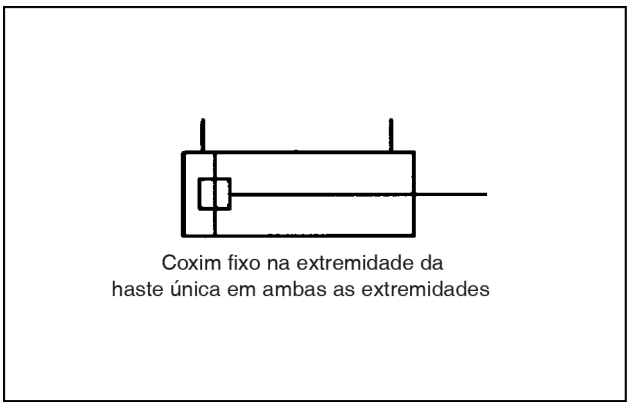
Lines that join

Direction of liquid flow

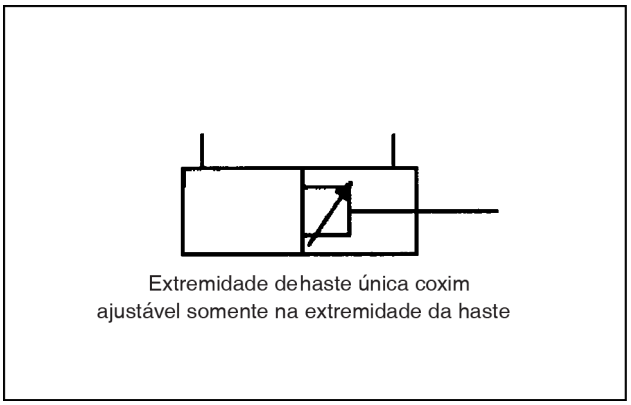
Direction of gas flow

Flexible line

Some cylinders have built-in pads. The pad reduces the speed of movement of the piston when the piston nears the end of its stroke. Cylinder pads are shown as a smaller rectangle on the piston. If the pad has an adjustable orifice, a slanted arrow is drawn at 45° across the cylinder.



LAIL11CD0958A0A 12



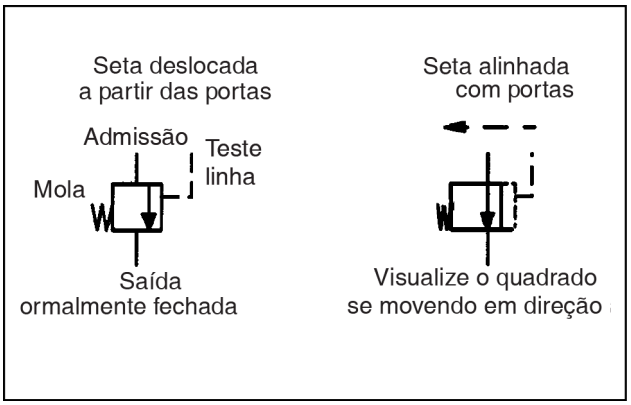
LAIL11CD0959A0A 13

Pressure control symbols

The basic symbol is a square (which is called an envelope) with external port connections and an arrow inside to show the oil passage and the direction of flow. Usually, this type of valve operates through the balance of the oil pressure against a spring. Therefore, a spring is shown on one side of the symbol, and a pilot pressure line is shown on the other side.

Normally closed

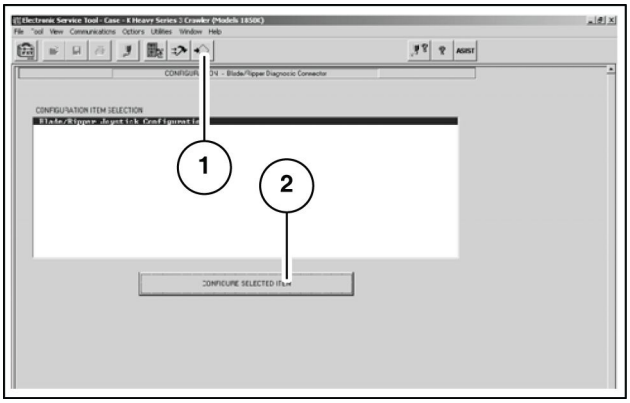
A normally closed valve, such as a relief or sequential valve, appears with the arrow offset from the ports and toward the pilot pressure line of the square. The spring holds the valve closed until the pilot line oil pressure is greater than the spring pressure. Mentally visualize a build-up of pressure in the pilot line. The square moves over and compresses the spring. The oil can now flow through the valve.



LAIL11CD0960A0A 14

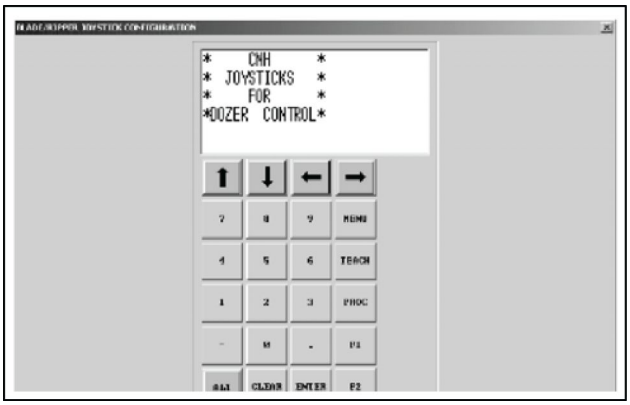
Recovery of failures from the EST for the electro-hydraulic system

1. Connect the EST to the diagnostic connector.
2. Start the EST software. Select the type of tractor on which you are currently working.
3. Select the ripper/blade joystick option.
4. Change to the settings page by pressing the push button **(1)**.



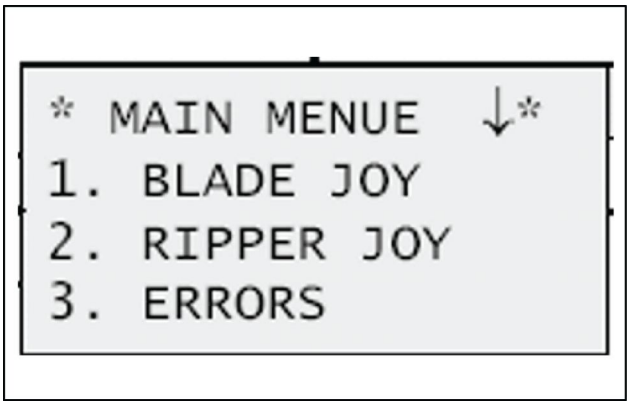
LAIL11CD1669A0A 1

5. After you enter the settings page, the joystick is shown in the items selection box. Select the joystick. Press "Configure selected item" **(2)**.
6. An emulation of the Rexroth BB3 will appear on the monitor.



LAIL11CD1670A0A 2

7. After 5 seconds, the main menu appears on the monitor as shown below.
8. Press 3 to go to the error menu.
9. In selection 1 of the error menu, STATUS, the status of the current error can be retrieved from the joysticks.
10. In selection 2 of the error menu, CLEAR, the errors can be cleared from the joysticks.
11. Press 1 for a complete list of errors. If a ripper joystick is connected, the blade joystick will now download the error recorded from the ripper joystick. This will take a few seconds.
12. If there is no ripper on the machine, the display will show the words RIPPER NOT FOUND (ripper not found). Press 0 to continue.
13. If a ripper is installed on the machine, the EST will automatically switch to the joystick.
14. An ERROR STATUS (error status) screen will be displayed.
15. There are two types of entries: ACTIVE ERRORS (active errors) and PASSIVE ERRORS (passive errors).
16. Active errors are faults that are not resolved in the system.
17. Passive errors are faults that are resolved in the system and have been stored for analysis.



LAIL11CD1671A0A 3

Test No. 1 – Equipment pump flow test

1. Park the machine on a level area.
2. Lower the leveler and the ripper to the ground.
3. Place the directional control in NEUTRAL. Apply the parking brakes. Turn the engine OFF.
4. Place the ignition key in the ON position. Place the parking brake lever in the operating position. Move the control levers in all directions to release any pressure in the hydraulic circuits. Place the right-hand parking brake lever in the applied position. Turn off the ignition key.
5. Tilt the cab/ ROPS canopy to access the equipment control valve. See **Roll Over Protective Structure (ROPS) frame - Tilt (90.114)**.
6. Remove the breather from the hydraulic reservoir. Connect a vacuum pump to the fitting. Turn on the vacuum pump.
7. Disconnect the hose from the fitting on the input port of the equipment control valve. Install a cap on the fitting.
8. Install a T on the end of the outlet hose coming from the hydraulic pump. Install a plug on the opposite end of the T fitting.
9. Connect a hose coming from the T on the hydraulic pump outlet hose to the inlet of the flowmeter.
10. Shut down the vacuum pump.
11. Lower and secure the cab/ ROPS canopy. See to **Roll Over Protective Structure (ROPS) frame - Tilt (90.114)**.
12. Attach a hose to the flowmeter outlet. Place the opposite end of the hose inside the filling port below the level of the oil in the reservoir. Secure the hose to the filling port to prevent the hose from falling during the test.
13. Fully open the pressure load valve on the flowmeter. Make sure that the flow switch is in the FLOW position. Move the range switch to the HI position.
14. Adjust the instrument cluster to read the engine speed .
15. Start the engine. Let the engine run at full throttle. Press the temperature switch on the flowmeter. Read the temperature gauge. The oil temperature must be less than **52 °C** (**125 °F**).
16. If the hydraulic oil temperature is not that specified, run the engine at full throttle. Close the pressure load valve on the flowmeter until the pressure gauge indicates **103 bar** (**1500 psi**). Let the engine continue to run until the oil temperature is that specified.
17. Fully open the pressure load valve.
18. Run the engine at **2000 RPM** . Make sure that the pressure load valve on the flowmeter is fully open. Read the flow gauge. Record the flow reading on the line **(1)** of the verification form for minimum pressure.

Contents

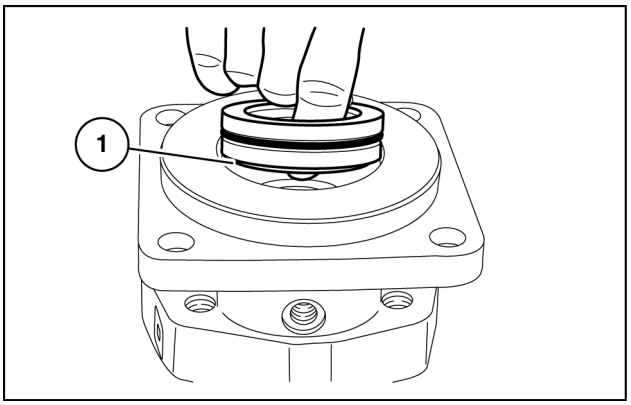
Hydraulic systems - 35

Fixed displacement pump - 104

(*) See content for specific models

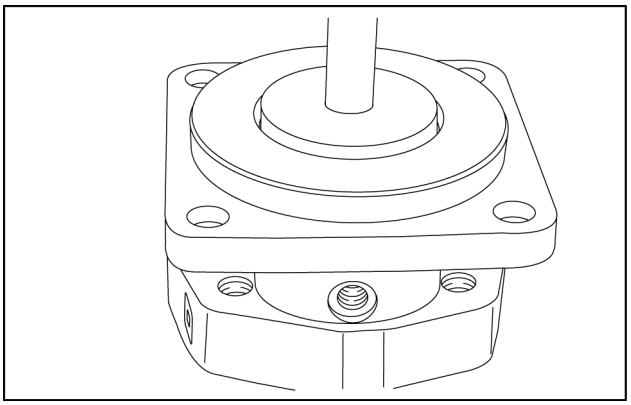
4. Use a light coat of grease to lubricate the O-ring and the seal. Install the seal retainer with the bevel side down.

   (1) Bevel side of the retainer



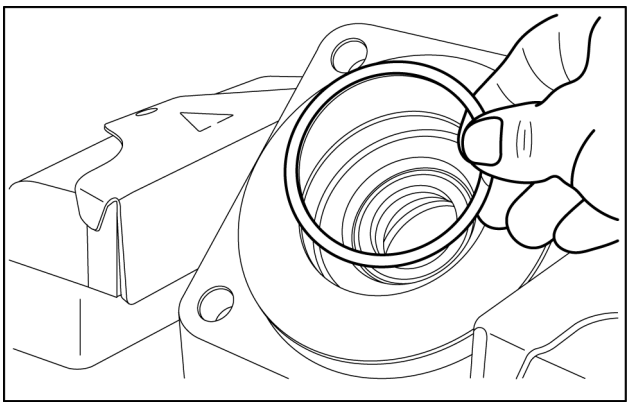
LAIL11CD1351A0A 4

5. Use a suitable conductor to seat the seal retainer.



LAIL11CD1352A0A 5

6. Install the retainer ring.

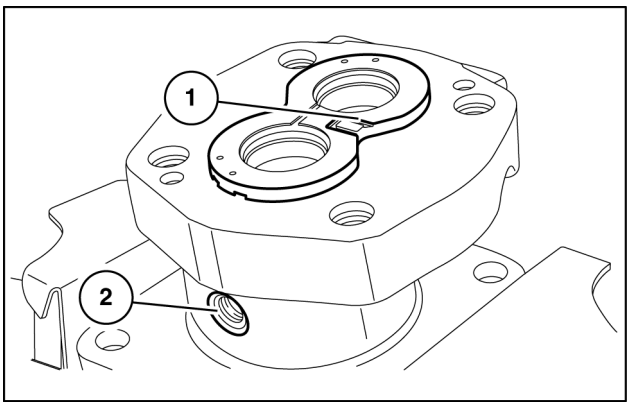


LAIL11CD1353A0A 6

7. Install a new wear plate with the bronze side up. Make sure that the oil grooves are facing the right-hand side, looking at the pump from the side of the drive cover breather.

   (1) Oil grooves

   (2) Vent orifice



LAIL11CD1354A0A 7

Fixed displacement pump - Prepare

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

1. Start the engine. Let the engine run at half throttle for **3 min**.
2. While the engine runs at half throttle, keep the blade control lever in the tilt position for **5 s**. Then, return the blade control lever to the neutral position for **5 s**.
3. Repeat procedure **2** for **3 min**.
4. While the engine runs at full throttle, repeat procedures **2** and **3**.
5. Stop the engine and check for leaks.
6. Inspect the hydraulic fluid filter.
7. Check the oil level in the reservoir. Add oil if necessary. See page **Capacities**.

1. Nut **M8**
2. Washer
3. Stud M8 x 120
4. End plate
5. Hydraulic valve FTDRE4
6. O-Ring
7. Circuit relief valve
8. Ripper section housing
9. Compensator coil
10. Plug **M22 x 1.5**
11. Angle section housing
12. Plug MHDB16
13. Load sensor regulator
14. Main relief valve
15. Plug **M33 x 1.5**
16. Sleeve
17. Spring
18. Unloading coil
19. Unloading orifice
20. Lift and tilt housing
21. Plug **M22 x 1.5**
22. Load sense relief
23. Check valve
24. Pre-charge valve
25. Cone
26. Spring
27. Plug **M18 x 1.5**
28. Of the ripper
29. Retainer
30. Spring
31. Retainer
32. Of Angle
33. Spring
34. Of lift
35. Of tilt
36. Hydraulic valve FTDRE4
37. Hydraulic valve FTDRE2
38. Screw M5 x 80
39. Block cover
40. Spring retainer
41. Setscrew
42. Cover
43. Bolt
44. Ring
45. Cover
46. Self-locking nut
47. Hexagonal nut

Control valve - Pressure setting

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Circuit relief adjustment

1. Loosen the jam nut. Turn the adjustment screw clockwise to increase the pressure. Turn the adjustment screw counter-clockwise to decrease the pressure.
2. Check the pressure again. Repeat the adjustment as necessary.

Dozer blade cylinders - Repair

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Replacement of the bushings in all cylinders, except the ripper cylinder

1. If the bushing is retained with a snap ring, remove the snap ring and the bushing.
2. If bushings are pressed, use a press and an acceptable guide. Press the bushing out of the hole.
3. Clean the orifice for the bushing.
4. If the bushings are retained with a snap ring, install the bushing and the snap ring.
5. If the bushing is pressed, insert the new bushing into the hole.
6. Use the press and an acceptable guide. Press the bushing into the hole until the bushing is flush with the outer side of the eye of the rod or tube.

NOTE: *When two bushings are used in the same hole, pressing too much on a bushing can close the passage to the grease fitting.*

Av. General David Sarnoff, 2237 - Inconfidentes, Contagem (MG) - Brasil, CEP:32210-900

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Availability of some models and equipment builds varies according to the country in which the equipment is being used. For exact information about any particular product, please consult your CASE CONSTRUCTION dealer.

Significant build-up of materials

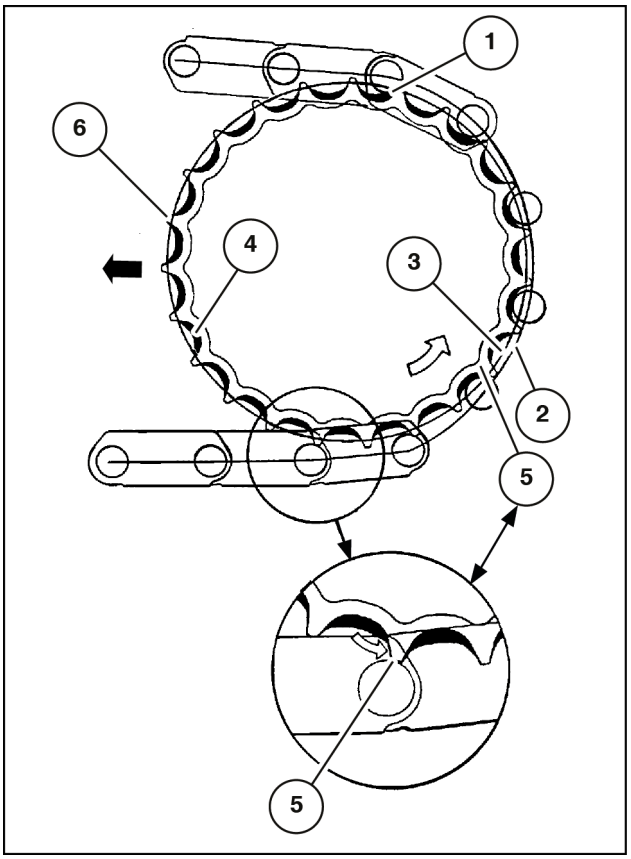
When there is a significant build-up of materials, the fitting from the bushings in the sprocket rotation starts much later, per turn of the **1 – 2 h** positions. The chain pitch increases to the maximum. As a result, **(1)** the chain is stretched, **(2)** the recoil damper spring is compressed and **(3)** the fitting of the bushing is moved out of the sprocket tooth tip. The driven bushing continues receiving full load until it leaves the sprocket tooth. At that time, the track chain seats again on the sprocket. At the same time, the recoil damper spring is released against the limiter and a loud noise is heard.

The significant build-up of materials can also cause the chain bushing to climb over the top of the sprocket teeth. This condition, called jumping, can also produce a loud noise.

The best action to take is to loosen the tracks to the correct tension. Or, you can install special relieved drive sprockets if the built-up material is extrudable. The special relieved drive sprockets will assist in cleaning the material from the base of the sprockets.

NOTE: *The special relieved drive sprockets can reduce the service life of the track chain bushings because there is less contact area on the sprockets.*

All tracks with sealed and lubricated chains use a "float tooth" type drive sprocket with an odd number of teeth. This type allows each tooth to be in contact in one revolution, and not in contact in the next. The same sprocket is used for tracks that are not lubricated and for lubricated tracks.



LAIL11CD0607B0A 3

1. The bushing and the drive tooth fitted (in **1 h**).
2. Pitch of the chain when the build-up of material is significant.
3. Original pitch of the chain.
4. Significant build-up of materials.
5. Tooth moving from the top of the bushing.
6. Left-hand drive sprocket.

INTERMITTENT BUILD-UP OF MATERIALS – Build-up can also occur between some of the sprocket teeth. When this happens, the track is stretched and quickly loosens, compressing and releasing the recoil damper spring. This will result in a loud "knocking" sound.

EXCESSIVE LOAD IN REVERSE – During this operation, the machine is moving up a ramp in reverse and the upper part of the track chains are tensioned. This compresses the recoil damper spring. The machine suddenly moves forward. The loud "knocking" sound that is heard can be from the release of one or both of the recoil damper springs.

Sprocket - Measure

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Sprocket wear measurement

The purpose of this section is to aid in more precise measurement of the wear to components of the lower frame.

If you measure the wear and use the tables available for your machine, you can also determine the remaining life of all components.

Sprocket wear

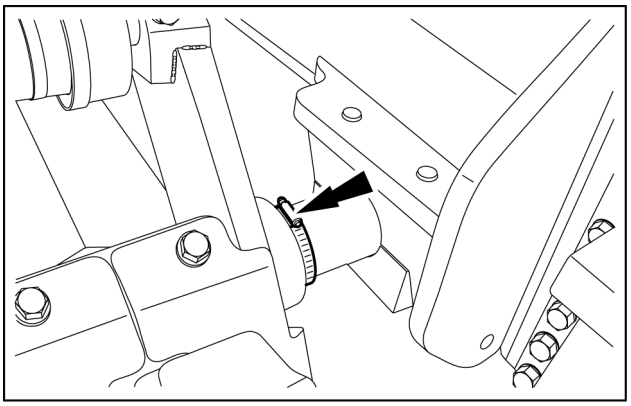
It is not possible to measure sprocket tooth wear. Sprocket teeth do not have a clear reference point from which it is possible to take a measurement. Sprocket tooth wear occurs because of (1) contact with the track chain bushings and (2) material trapped (accumulated) between the components. As the components wear, certain wear patterns develop on the sprockets.

A visual inspection of the sprocket teeth and measurements of the external diameters of the bushings will give you a good idea of the condition of the sprockets.

Always replace the sprockets or segments (sections) of the sprockets when you replace the track chains or turn the pins and the bushings. Never mix old components with new components.

9. Be careful when installing the track chassis **(9)** so as not to damage the pivot seal **(16)**.

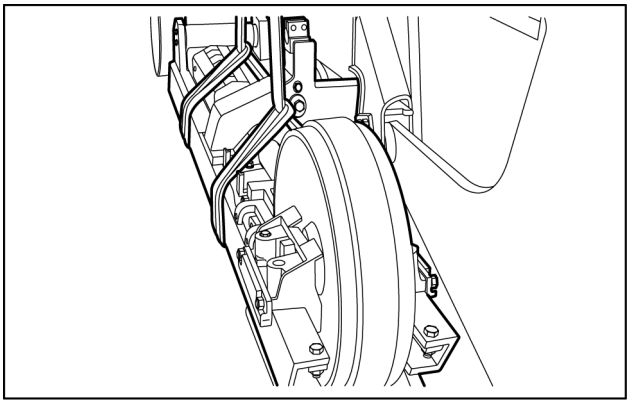
NOTE: *Apply a thin coat of grease on the pivot shaft **(11)** to help the pivot shaft seal **(16)** slide on the shaft **(11)**.*



LAIL11CD1150A0A 8

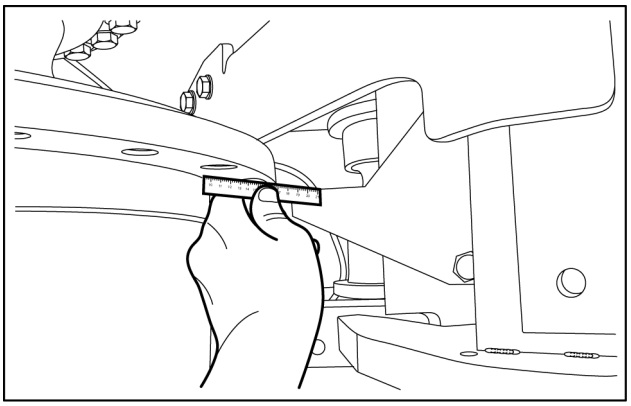
10. Carefully slide the track chassis assembly **(9)** onto the pivot shaft **(11)**.

NOTE: *When sliding the track chassis onto the pivot shaft, be careful not to damage the seal **(16)**.*



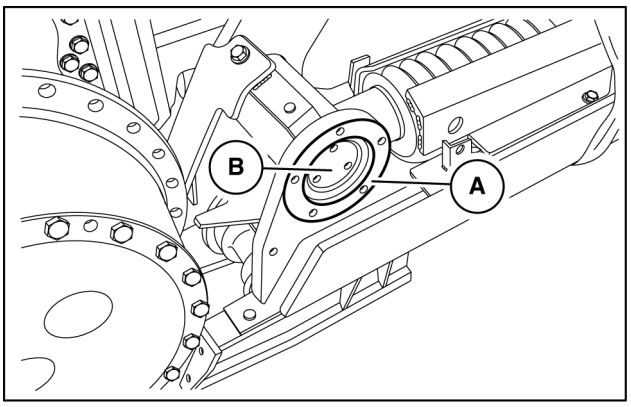
LAIL11CD1151A0A 9

11. Slide the track chassis onto the pivot shaft, so that the alignment gauge is flush with the mounting surface of the final drive of the drive wheel.



LAIL11CD1152A0A 10

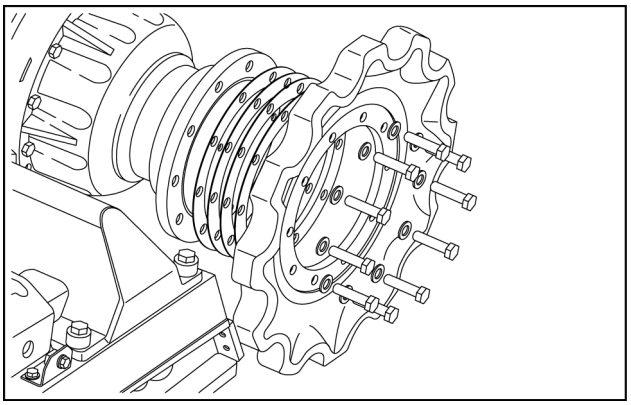
12. Measure the distance between the face of the retaining plate of the track chassis **(A)** and the end of the pivot shaft **(B)**.



LAIL11CD1153A0A 11

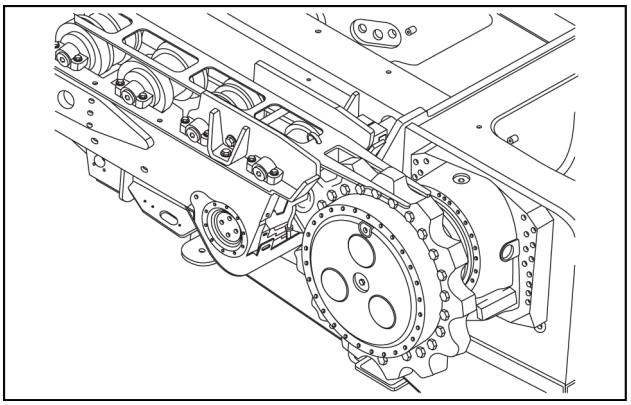
13. Install the shims **(17)** and retaining plate **(18)**.
14. Install the mounting bolts **(19)**. Torque to **146 – 180 N·m** (**108 – 133 lb ft**).

53. Fixed frame only: Shims of the drive wheel are installed behind the drive wheel to align the center line of the drive wheel to the center line of the rolling components of the frame. For SALT shims, use the torque specified for **D140B** of (**645 – 750 N·m**), or for **D150B** of (**645 – 750 N·m**).

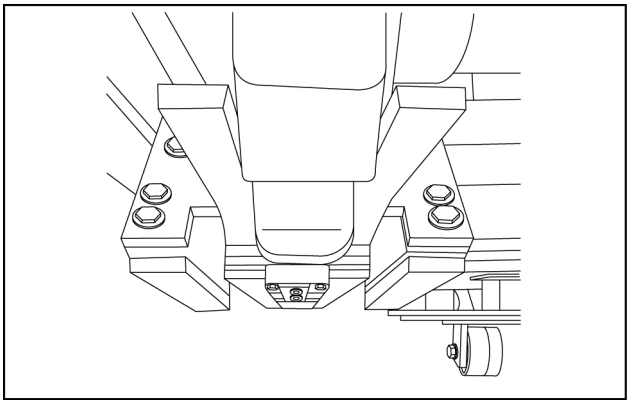


COIL17DOZ0032A 48

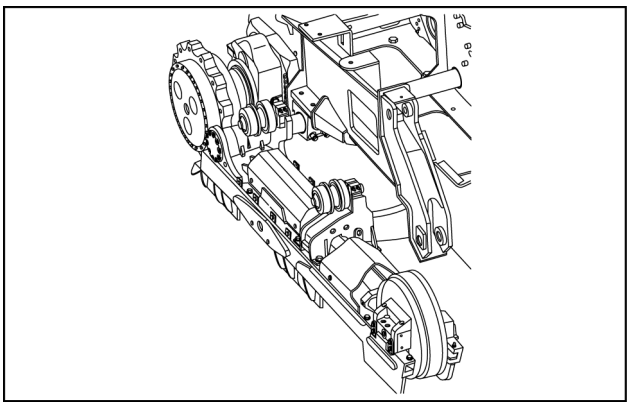
54. Measure to ensure that the rolling components of the track frame are aligned and operate in parallel with the center line of the drive wheel. You can project the planes with laser or use a special alignment tool to ensure proper alignment.



COIL17DOZ0033A 49



COIL17DOZ0034A 50



COIL17DOZ0035A 51

NOTE: *If hollow pins are used in a dry swing, the lubrication hole must be positioned vertically* ***–180°*** *from the mounting surface of the track shoe.*

NOTE: *A splice that has leaks can only be assembled as dry swing if new parts are not used.*

LOWER FRAME SIMULATOR – A learning tool that is used to demonstrate the concepts and causes of wear of the pins, bushings, and sprockets of the tracks.

WEAR RATE – A rate at which a component or system of components wears out. This wear rate is controlled directly by maintenance methods, the terrain conditions, and operating methods.

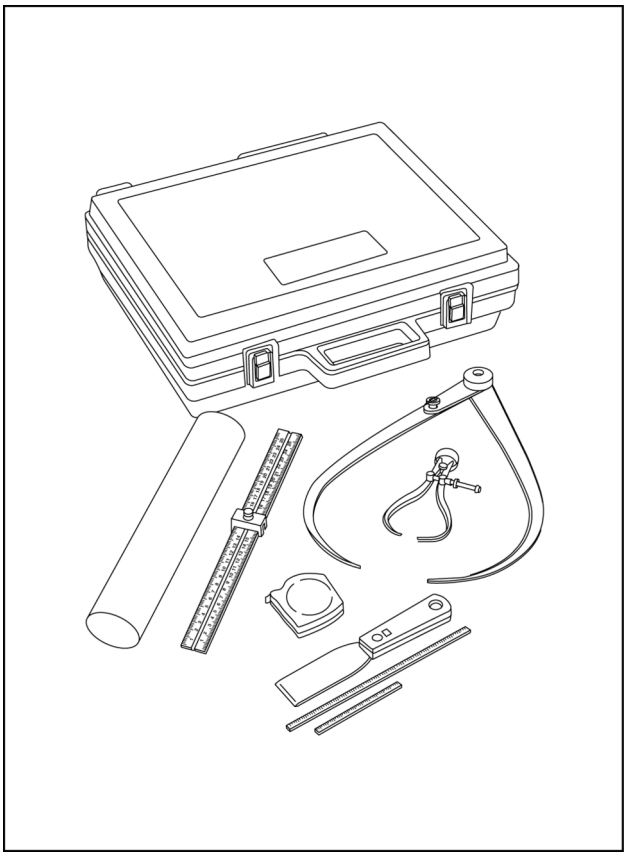
Tracks - Special tools

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

CAS1950-A

Measuring tool kit

The special tools shown are used for measuring the wear of track system components.



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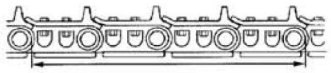
FORMULÁRIO DE AVALIAÇÃO DOS COMPONENTES DAS ESTEIRAS

Relatado Por:							Data:
Revendedor: Nome e Endereço							
Proprietário: Nome e Endereço							
Informações Sobre a Máquina	Localização da Unidade:						
	Modelo:		Número de Série:		Data de Entrega da Máquina:		
	Horímetro:		Horas da Máquina (Real):		Horas dos Componentes da Esteira:		
Equipamento Instalado	Dianteira:			Traseira:			
Sapatas das Esteiras	Largura:	☐ Aberta	☐ Fechada	☐ 1 Barra Serviço Pesado	☐ 2 Barras	☐ 3 Barras	☐ Fundido Auto-Limpeza
Guias / Protetores	☐ Guias dianteiras das esteiras		☐ Guias traseiras das esteiras		☐ Protetores de Rochas Centrais		
Correntes de Esteiras	☐ Esteira Selada		☐ Esteira Lubrificada New Holland		☐ Esteira de Vida Prolongada New Holland		
Componentes das Esteiras	A unidade tem outra estrutura inferior que não seja da New Holland ? ☐ Não ☐ Sim Se Sim, marque os componentes na linha seguinte.						
	☐ Correntes	☐ Rodas Tensoras	☐ Rodas Dentadas	☐ Sapatas das Esteiras	☐ Roletes Inferiores	☐ Roletes de Apoio	
Deflexão das Esteiras	Lado Esquerdo:		Lado Direito:		Medição: ☐ Padrão Americano	☐ Métrica	

	CONTEÚDO DE MATERIAL ☐ Úmido ☐ Seco					TEMPO DE APLICAÇÃO				
	Areia	Rocha	Argila	Barro		Repouso	Velocidade	Empurrando	Puxando	
25%	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
50%	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
75%	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
100%	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

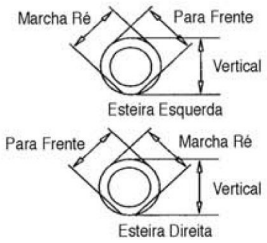
PASSO DA CORRENTE AO LONGO DE 5 PINOS



		Dimensão Nova	Dimensão Atual		Limite de Desgaste Recomendado	Porcentagem Restante de Desgaste	
			Esquerda	Direita		Esquerda	Direita
Altura das Garras							
Altura da Articulação							
Altura do Flange da Roda Tensora							
Diâmetro do Trilho do Rolete da Esteira	Dianteiro						
	Traseiro						
Diâmetro do Trilho do Rolete de Apoio	Dianteiro						
	Traseiro						

	Medição
Corrente Esquerda	
Corrente Esquerda	
Corrente Esquerda	
Média	
Corrente Direita	
Corrente Direita	
Corrente Direita	
Média	

DESGASTE NO DIÂMETRO EXTERNO DA BUCHA



	Dimensão Nova	Dimensão Atual			Limite de Desgaste Recomendado	Porcentagem Restante
		Para Frente	Vertical	Marcha Ré		
Bucha Esquerda # 1						
Bucha Esquerda # 2						
Bucha Esquerda # 3						
Média						
Bucha Direita # 1						
Bucha Direita # 2						
Bucha Direita # 3						
Média						

		Dimensão Nova	Média de Desgaste no Diâmetro Externo da Bucha			Limite de Desgaste Recomendado	Porcentagem Restante
Esteira de Vida Prolongada New Holland	Buchas Giratórias						

Recomendações:

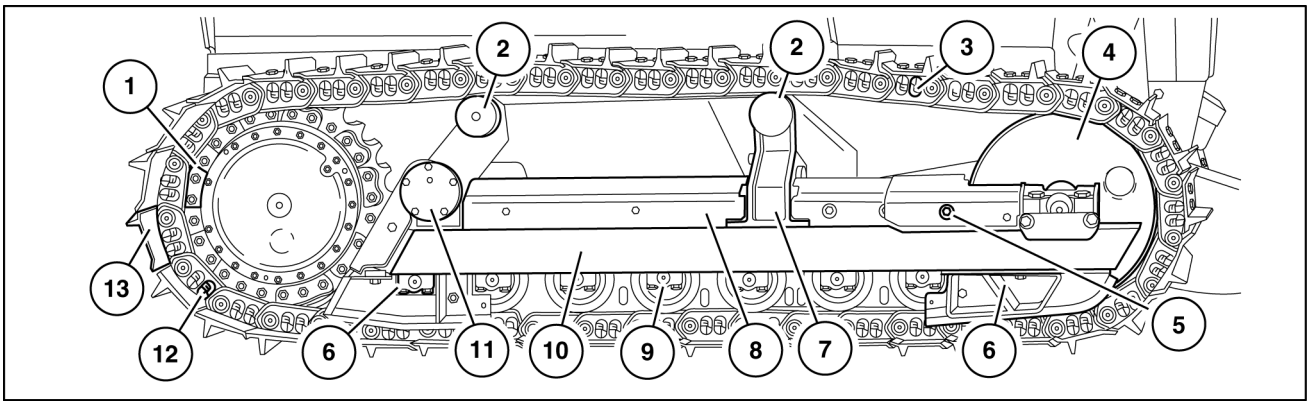
8-18791BPG

Track chain - Static description

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Lower frame components

To fully understand the lower frame, it is important to understand the purpose of each component. It is also very important to know how a certain component works with the other components in the system.



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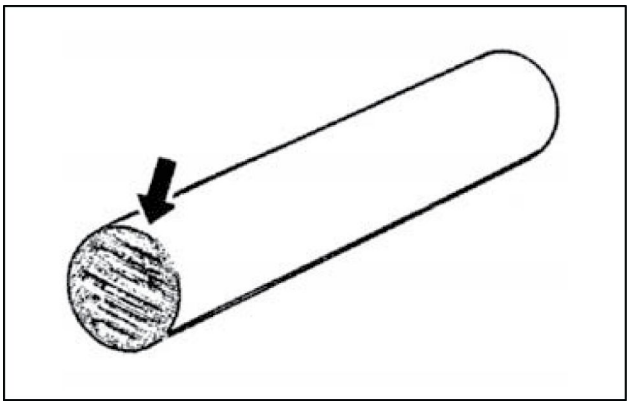
1. DRIVE SPROCKET – The sprockets transmit power from the engine to the tracks. The drive sprockets do not support the weight of the machine.
2. SUPPORT ROLLERS – Support rollers are installed on the top of the track frame to support the track chain between the drive sprocket and the idler wheel. These rollers also help to maintain alignment of the chain between the tensioner wheel and the drive sprocket.
3. TRACK CHAIN – The track chain consists of a number of linkages connected with each other to form a complete chain. The shoes are bolted to the track chain to provide traction for the machine. The drive sprocket rotates the track chain around the lower frame assembly.
4. TENSIONER WHEEL – The tensioner wheel carries the track chain around the front of the track frame. This assembly can slide forward or backward on the track frame against the recoil damper spring to absorb any impact loads. These impact loads can be caused by irregularities in the terrain or by temporary build-up of material on the track chain or in the sprockets.
5. TRACK ADJUSTER – The track adjuster is a grease-filled hydraulic cylinder that is used to maintain or adjust the track tension. To change the track tension, add or remove grease from the track adjuster.
6. TRACK GUIDES – The track guides help to maintain alignment of the track chain and protect the track.

Wear on the ends of the pins

Wear on the ends of the pins is caused by misalignment, track shoes that are too wide, or worn tensioner wheels or roller flanges. This condition may also result from operation on the side of a hill. The ends of the pins rub against the track guides/rock shields.



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Track chain - Service instruction

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Tracks with sealed and lubricated chains (CLT)

When you turn the bushings

As there is less inner wear of the bushings and less outer wear of the pins on tracks with sealed and lubricated chains (CLT), measurement of the increase of track pitch IS NOT the correct way to find out if the bushings need to be turned.

The correct way to find out if the bushings need to be turned is to measure the outer diameter of several bushings.

The bushings should be turned before the wear exceeds **100%**.

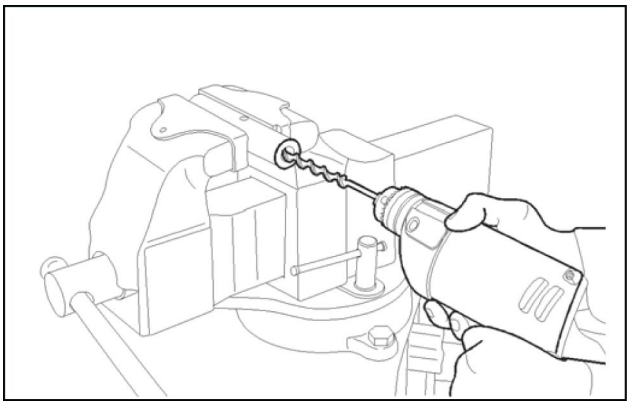
The outer diameter of a new bushing is **62.0 mm** (**2.44 in**). The minimum outer diameter (time to turn) is **55.88 mm** (**2.20 in**) for low impact applications. The minimum outer diameter is **57.15 mm** (**2.25 in**) for high impact applications.

Preparation for turning the bushings

1. A wet turn can be done when the pins, the bushings, and the seal are in a condition to be used to make a lubricated and sealed gasket.
2. A dry turn can be done when the pins, the bushings, and the seals are in a condition to be used again, but their condition is not good enough to make a sealed gasket. Lubricant is not added after assembly.
3. Check how many gaskets do not have leaks. A gasket that has a leak can be assembled only as a dry turn. New parts are not used.

Preparation of the track chain

1. Loosen and remove the bolts, the nuts, and the track shoes.
2. If you need to do a wet turn, use a **12.5 mm** (**0.50 in**) wood drill bit and a low-speed electric drill to remove the plugs from the pins. The plugs can also be removed as shown after the track has been disassembled.
3. Clean the track chain using water or steam under high pressure. If a wet turn is necessary, the track chain must be clean.
4. With the surface of the track shoe down, make a mark on the top of each bushing. This will help you turn the correct number of bushings when the track chain is disassembled.
5. With the shoe surface facing up, make a mark on the end of each pin at the top. This will help you install the pins correctly when the track is disassembled.



LAIL11CD0478A0A 1

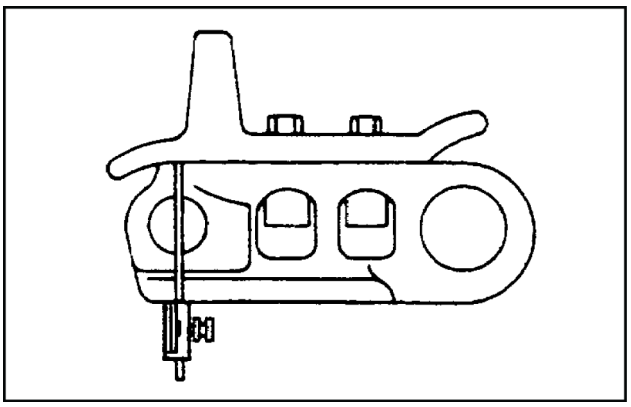
Track chain Chain - Check

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Wear on the track links

The only wear that can be measured is the wear of the rail (upper part) of the track links. This wear is caused by the rotating and sliding contact between the track, the upper rollers, and the tensioner wheel. Other causes of wear are speed, a tight track chain, track shoe width, the working environment, and an increase in the track pitch.

To measure the height of the track links (rail wear), assemble the straight edges in kit CAS1950-A. Make sure that the rail and the bottom of the track shoe are clean. Take the measurement in the areas shown in the illustration at the bottom of this column. Make sure that the vertical straight edge is at 90 degrees to the track shoe. Record the smallest measurement. Measure two more track links at intervals of **0.9 – 1.2 m** (**3 – 4 ft**). Record the measurements.



LAIL11CD0149A0A 1

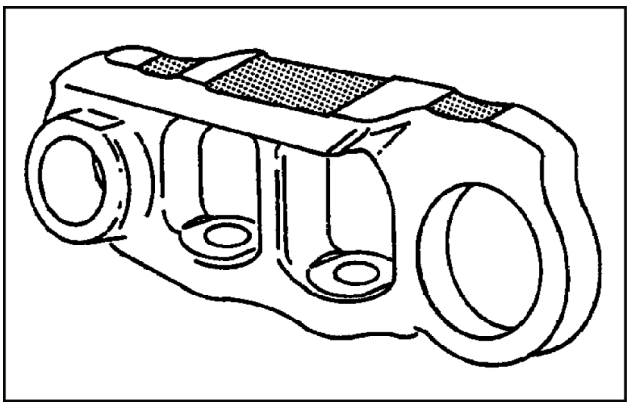
Irregular upper wear of the linkages

As the tracks turn, the surfaces of the rails come into contact with the tensioner wheels, rollers, and the support rollers. The wear pattern that eventually develops becomes "wavy" or "dented". These wear patterns are normal.

The front and rear surfaces wear faster because of the narrow overlap of the linkage. Skid wear occurs on the central wear surface due to a reduced contact area with the tensioner wheel.

The wear on the pins will occur faster due to the narrow width of the rail and the contact with the rollers. This wear can also be caused by working on an uneven surface (rocks) that may allow the track rail to reach the roller(s).

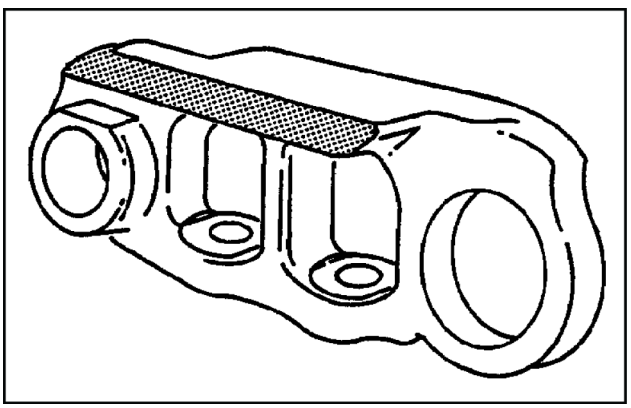
Wear at the center of the rail is caused by contact with the upper roller and the lower roller.



LAIL11CD0150A0A 2

Lateral wear of the linkage rail

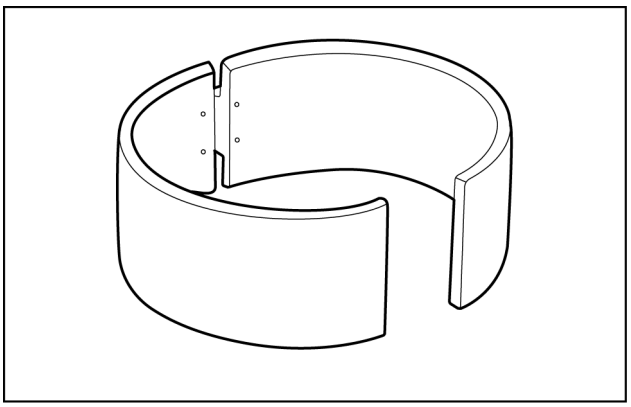
Lateral wear occurs because of the contact with rollers and the flanges of the tensioner wheels. This wear will occur faster during operation on slopes, change of direction, and with the increase of the track pitch, which makes the track flexible. Loosening due to the increase of the track pitch (wear of the bushing at the pin), allows the track chain to flex from one side to the other. This increases the lateral loads and lateral wear.



LAIL11CD0151A0A 3

CAS1755

Seal installation tool



LAIL11CD1163A0A 3

Manufactured by the dealer

Tool used to install the scraper on the track adjuster.

NOTE: *Manufacture the tool according to the dimensions shown in the illustration.*

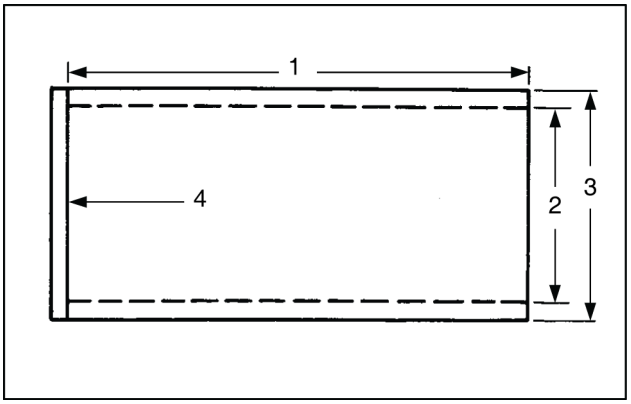
A longer sleeve can be used if the sleeve has correct exterior and interior diameters.

(1) 63.5 mm (**2.50 in**)

(2) 63.5 mm (**2.50 in**)

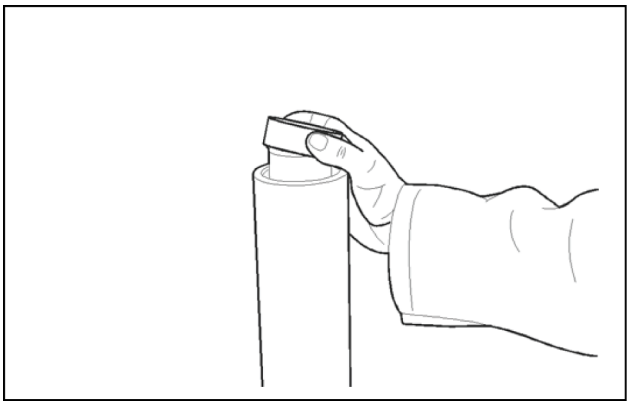
(3) Optional **6 mm** (**0.24 in**) plate welded on the sleeve with external diameter of **71 – 72 mm** (**2.80 – 2.83 in**)

(4) Optional **6 mm** (**0.24 in**) plate welded on the sleeve



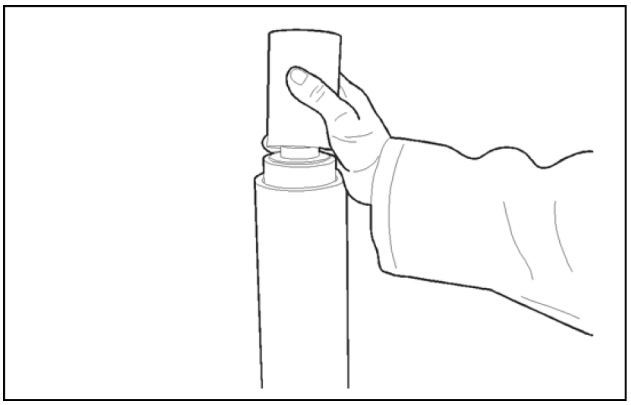
LAIL11CD0775A0A 4

7. Install the wear ring **(9)**.



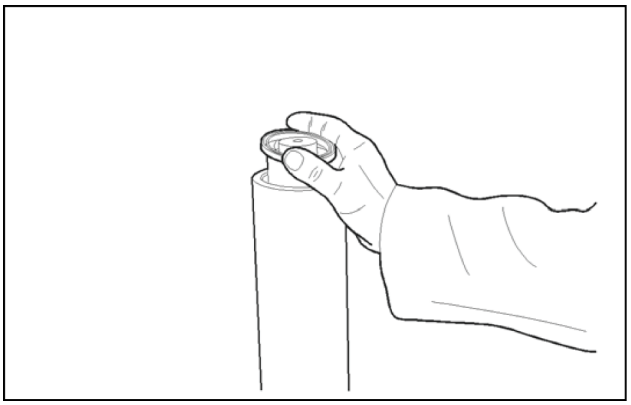
LAIL11CD0757A0A 8

8. Use a predictable conductor to drive the wear ring **(9)** into the cylinder until seated.



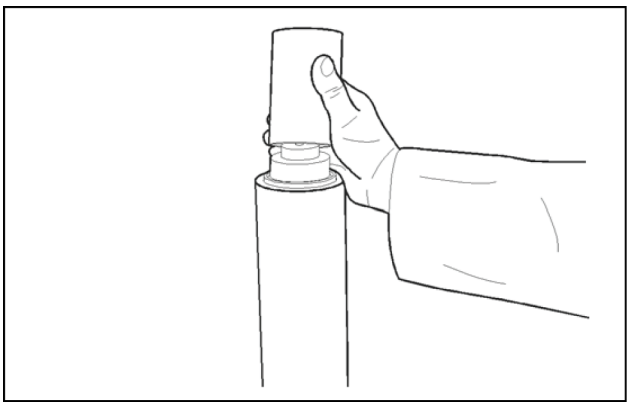
LAIL11CD0758A0A 9

9. Place **LOCTITE® 601** (green) over the external diameter of the compression ring **(10)**.
10. Place the compression ring **(10)** on the plunger **(8)**. Make sure that the metal part of the compression ring is toward the cylinder.



LAIL11CD0759A0A 10

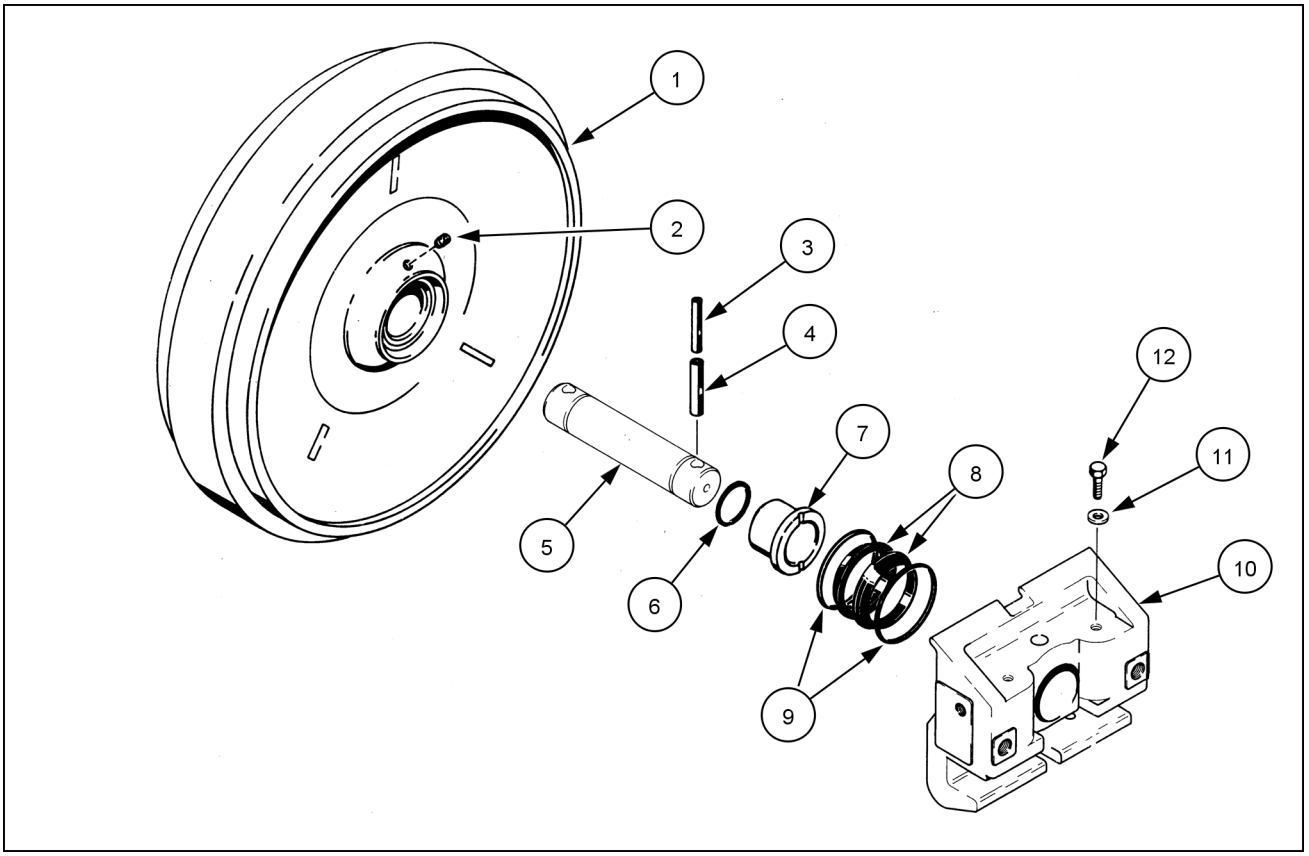
11. Use a predictable conductor to drive the compression ring **(10)** into the cylinder until seated.



LAIL11CD0760A0A 11

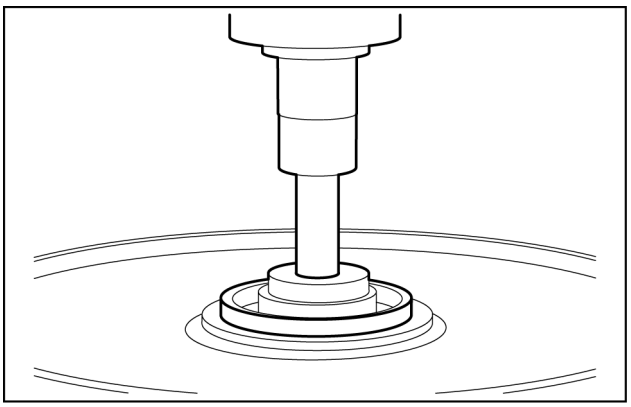
Idler wheel - Assemble

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA



COIL14DOZ0136EA 1

1. Apply **LOCTITE® 680™** on the outer surface of the bushing **(7)**. Place the tensioner wheel **(1)** on a press. Position the new bushing on the hub. Use an acceptable guide. Press the bushing into the hub until the bushing stops moving. Repeat for the other bushing.

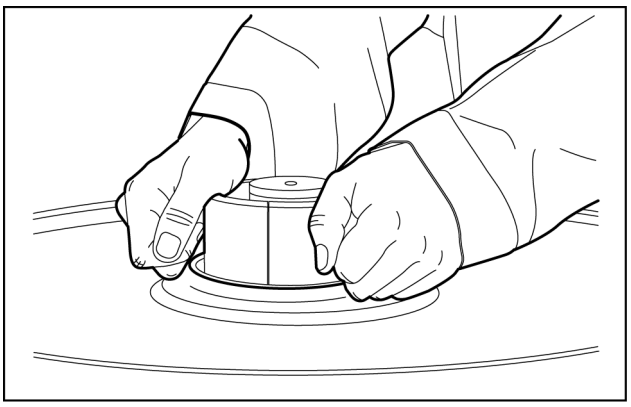


LAIL11CD1179A0A 2

2. Make sure that the seal area of the tensioner wheel **(1)** is clean and dry.
3. Use soap and water or a quick-drying, oil-free compound on the rubber rings **(9)**.

NOTE: *Do not twist the seal during installation.*

4. Use the tool **CAS1755** to install the metal rings **(8)** and the rubber rings **(9)** on each side of the tensioner wheel.



LAIL11CD1180A0A 3

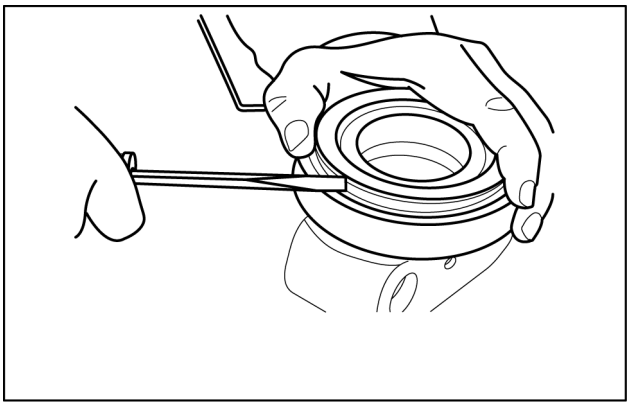
Index

Tracks and track suspension - 48

Track tension units - 134

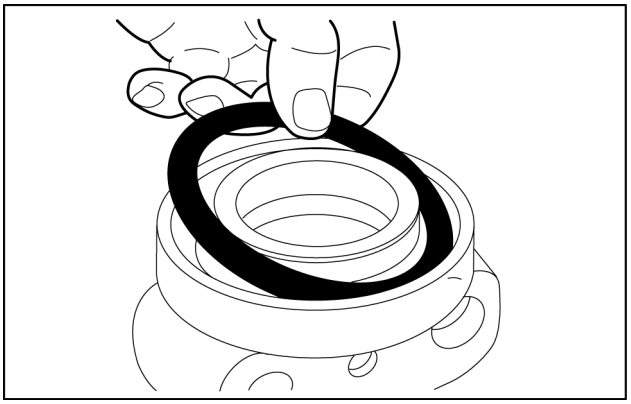
(*) See content for specific models

13. Remove the metal ring from the rubber ring of each end. Use a screwdriver, if necessary.



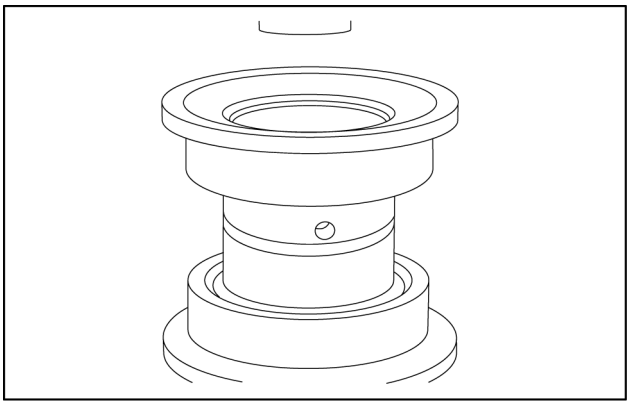
LAIL11CD1212A0A 12

14. Remove the rubber ring from each end cap.



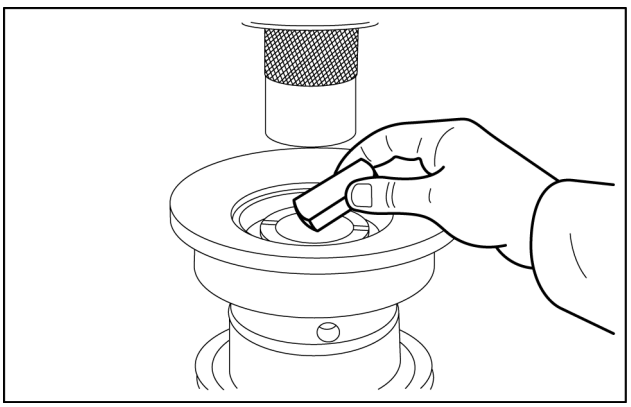
LAIL11CD1213A0A 13

15. Place the track roller in a press to remove the bushings.



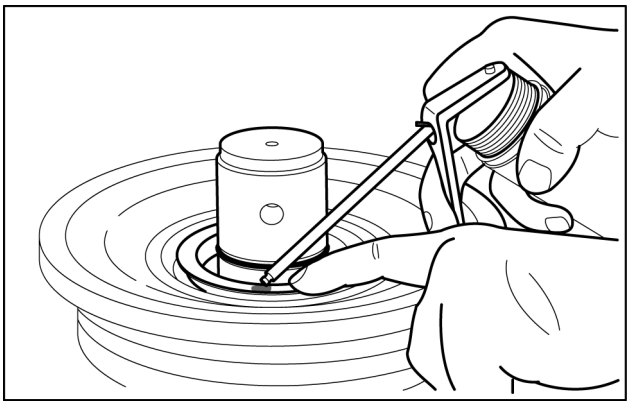
LAIL11CD1214A0A 14

16. Place the tool CAS-1313 on the top of the lower bushing as shown.



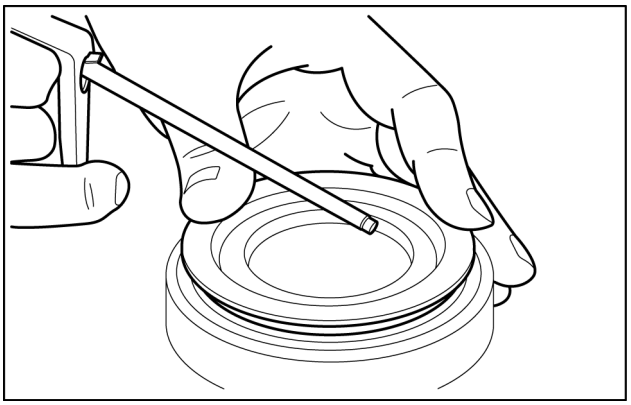
LAIL11CD1215A0A 15

26. Lubricate the face of the metal ring with clean oil.



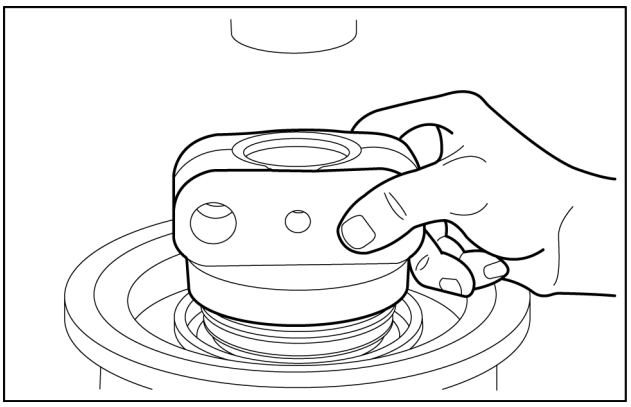
LAIL11CD1238A0A 24

27. Lubricate the hole of the other end cap with clean fluid.



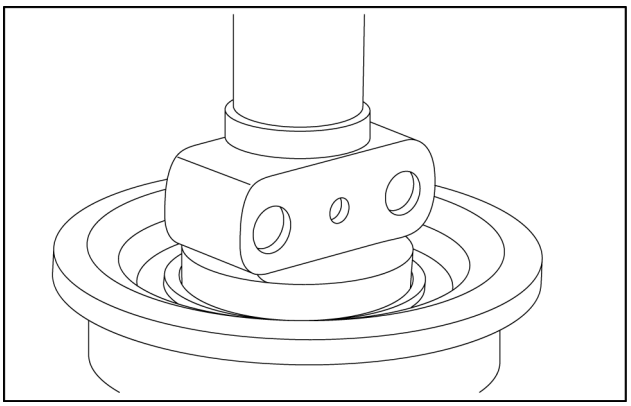
LAIL11CD1239A0A 25

28. Insert the end cap on the shaft so that the flat surface is aligned with the flat surface of the other end cap.



LAIL11CD1240A0A 26

29. Press the end cap over the shaft to align the holes.



LAIL11CD1241A0A 27

Index

Tracks and track suspension - 48

Track rollers - 138

(*) See content for specific models

Cab temperature check

Air vents

1. Make sure that the air vents and recirculation vents are fully open to get the most efficient air conditioning operation. The defrost vents should be closed.
2. Check the blower. The blower should be running.

AirCon

1. Touch the air conditioning hoses. The high pressure hoses (small line) should be warmer than the low pressure hoses (large line).
2. If there is no temperature difference, the system has low refrigerant or the compressor does not work correctly.

Duct temperature

1. Place a thermometer in the air duct behind the seat. Let the compressor run for five minutes to allow the temperature to stabilize.
2. The duct temperature must not be above the maximum air vent temperature for ambient temperature if the system is operating at maximum efficiency. See the table on page **Air conditioning - Pressure test (50.200)**.

   NOTE: *The ambient temperature should be* ***27 – 43 °C*** *(****80 – 110 °F****).*
3. If the duct temperature is above the maximum air vent temperature for ambient temperature (see the table on page **Air conditioning - Pressure test (50.200)**), the system has low refrigerant, there is a restriction in the system, the compressor does not work correctly, or the air ducts are not sealed correctly.

Checking the temperature sensing probe

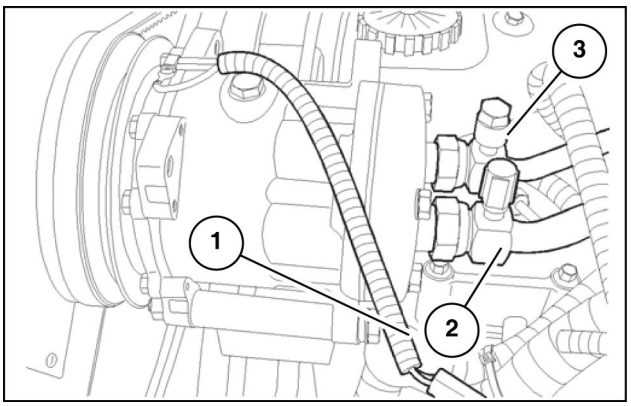
1. Shut down the engine. Put the ignition key in the ON position and the blower switch in the ON position. Turn the temperature control switch fully clockwise.
2. Remove the temperature sensing probe from the evaporator.
3. Place the end of the temperature sensing probe in a container with ice and water.
4. When the sensor line has cooled to the temperature of the ice and water mixture, the temperature control switch should interrupt the current flow to the compressor. Check for current at the terminals of the control switch, as on the previous page. If the current is not interrupted, replace the control switch.

Table 6 – Insufficient cooling	
Low pressure gauge: Too low High pressure gauge: Too low See the pressure-temperature table on page **Air conditioning - Pressure test (50.200)**.	
Condenser not working (Indications): A. Liquid line very hot. B. The evaporator discharges the hot air.	1. Check for slack or wear on the compressor belt. Check if the condenser fan is operating correctly 2. Check if the condenser is clean. Check if the fins are straight 3. Check if there is excess refrigerant in the system: A. Recover the refrigerant from the system until the pressure on the pressure gauge is below normal. See page **Air conditioning - Recover (50.200)**. B. Add refrigerant until the pressures of the pressure gauge are normal. See page **Air conditioning - Charging (50.200)** C. If there is still an issue, carry out the following procedure **(4)**. 4. Remove and inspect the condenser for restrictions caused by oil or reduced heat transfer: A. Recover the refrigerant from the system. See page **Air conditioning - Recover (50.200)**. B. Use compressed air to remove oil from the condenser. C. Replace the receiver-drier. See page **Receiver-dryer - Remove (50.200)**.
Air in system (Indications): A. The evaporator discharges the hot air.	1. Recover the refrigerant from the system. See page **Air conditioning - Recover (50.200)**. 2. Replace the receiver-drier. 3. Remove the air and moisture from the system. See page **Air conditioning - Charging (50.200)**. 4. Charge the system with new refrigerant. See page **Air conditioning - Charging (50.200)**.

Air-conditioning compressor - Remove

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

1. Park the machine on a level surface. Lower the blade to the ground. Set the park brake. Stop the engine. Shut down the master disconnect switch.
2. Make sure that the compressor and the engine are clean before you connect the refrigerant recovery system or disconnect any line.
3. Connect the OEM-1415 Coolant Recovery, Recycling and Charging Station to the High and Low charge ports on the hose fittings connected to the compressor. Evacuate the system to remove all of the coolant. See page **Air conditioning - Charging (50.200)** for the procedure.
4. Disconnect the compressor clutch wire **(1)** from the wiring harness connectors.
5. Disconnect the low pressure line **(2)** from the suction port and the high pressure line **(3)** from the discharge port on the compressor. Immediately install the protective covers on the open ports and lines.



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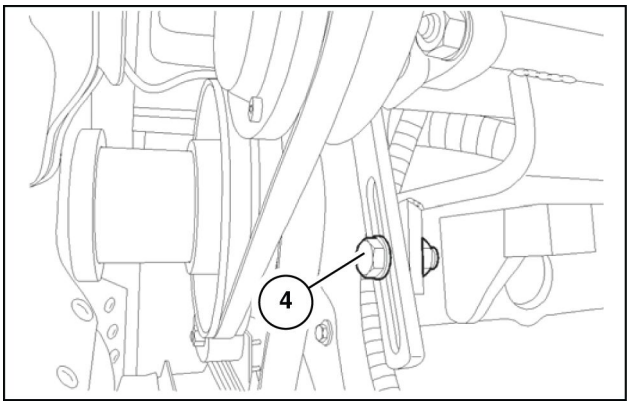
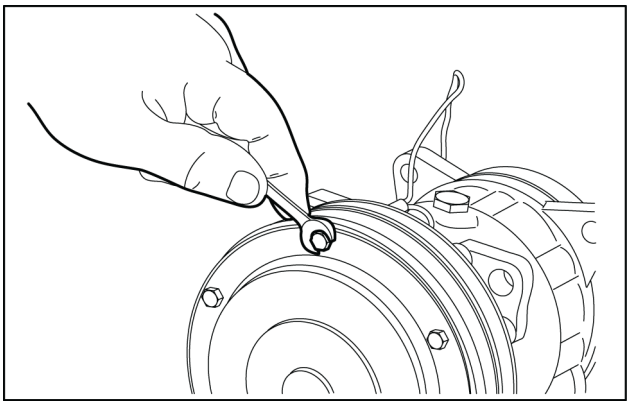
6. Remove the adjustment screw from the compressor **(4)** and the washer.



LAIL11CD0397A0A 2

17. Install the six bolts that hold the dust cover to the compressor. Torque the bolts to **7 – 11 N·m** (**5 – 8 lb ft**).

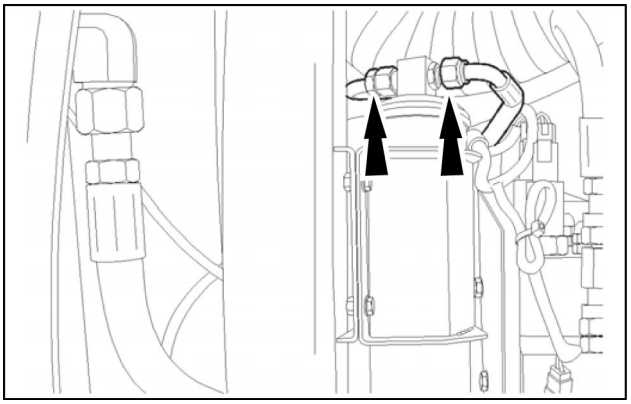


LAIL11CE1483A0A 17

Receiver-dryer - Remove

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

1. Park the machine on a level surface. Lower the blade to the ground. Set the park brake. Stop the engine. Shut down the master disconnect switch.
2. Connect the OEM-1415 Coolant Recovery, Recycling and Charging Station to the High and Low charge ports on the hose fittings on the compressor. Evacuate the system to remove all of the coolant. See page **Air conditioning - Charging (50.200)** for the procedure.
3. Open the right-hand side panel of the cab.
4. Attach ID tags to the receiver-drier lines. Disconnect the receiver-drier lines. Remove and discard the O-rings.
5. Install plugs on the lines. Install covers on the receiver-drier fittings.
6. Loosen and remove the two bolts that secure the receiver-drier mounting bracket.
7. Remove the receiver-drier.



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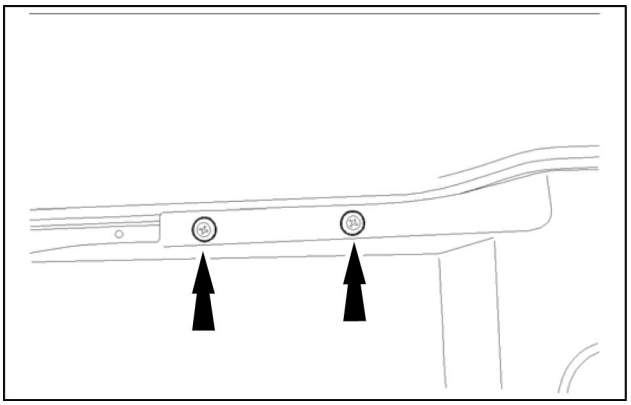
13. Install the left-hand console in the cab. Install and tighten the two mounting bolts at the rear of the left-hand console.



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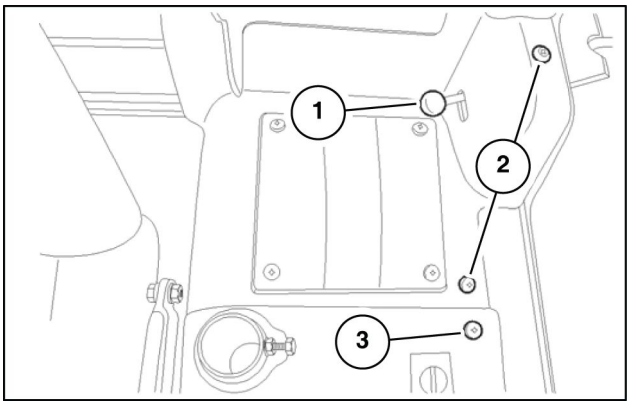
14. Install and tighten the two bolts **(2)** that secure the left-hand console. Install and tighten the door lock release button **(1)**. Install and tighten the console mounting bolt **(3)**.



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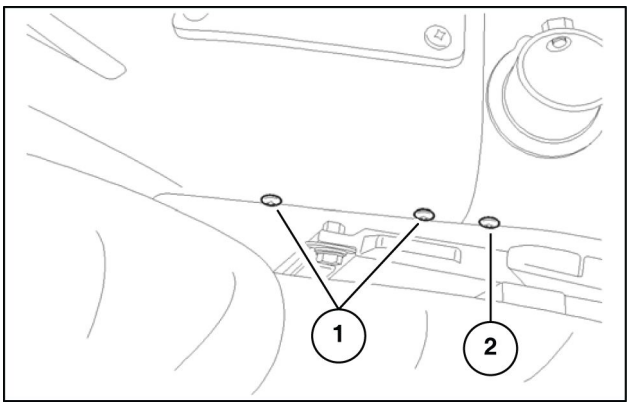
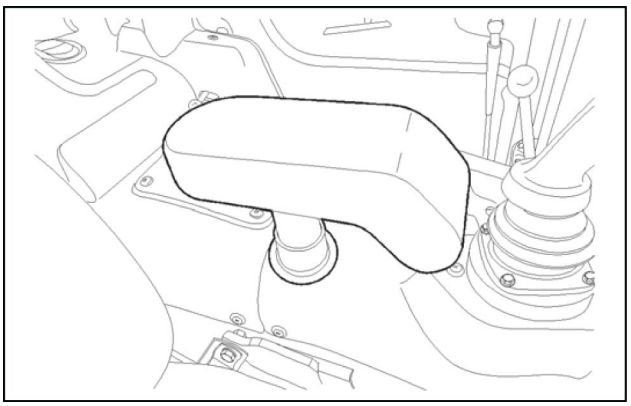
15. Install and tighten the bolts **(1)**. Tighten the bolt **(2)**.



LAIL11CD0128A0A 9

16. Install the left-hand armrest in the cab.



LAIL11CD0126A0A 10

Index

Electrical systems - 55

Engine oil system - 013

(*) See content for specific models

Electrical system - Fault code index

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Detection and troubleshooting the main electrical system

NOTE: *For the System Schematic and identification of components and symbols, see the Schematic Poster located at the back of this manual.*

NOTICE: *The batteries must be fully charged and all connections must be clean and tight before testing. Use a multimeter for the following tests.*

1. Batteries

ROPS left-hand access panel.

See page **Battery - Test (55.302)**. Check the battery.

2. Master disconnect switch

ROPS left-hand access panel.

Check points	Read out	Possible cause of incorrect reading
NOTE: *Put the master disconnect switch in the OFF (off) position.*		
Positive battery terminal to the connection of the negative terminal cable on the master disconnect switch.	**24 V**	Bad battery cable between the negative battery terminal and the master disconnect switch.
Positive battery terminal to ground.	**0 V**	Faulty master disconnect switch.
NOTE: *Put the master disconnect switch in the ON (on) position.*		
Positive battery terminal to ground.	**24 V**	Faulty master disconnect switch or faulty cable between the master disconnect switch and ground.

3. Alternator

Front right-hand side of the engine.

Check points	Read out	Possible cause of incorrect reading
NOTE: *Put the master disconnect switch in the ON (on) position.*		
B+ terminal of wire 1A to ground.	**24 V**	Faulty wire 1A between the alternator and the battery terminal of the starter **(5)**. Faulty cable between the battery terminal of the starter and the positive pole of the battery **(1)**.
NOTE: *Turn the ignition switch to the RUN position.*		
D+ terminal to ground.	**24 V**	Faulty wire from the instrument cluster to the alternator.

35. Hydraulic safety solenoid valve of the equipment valve

ROPS right-hand side panel, end plate equipment valve.

Check points	Read out	Possible cause of incorrect reading
NOTE: *Put the master disconnect switch in the ON (on) position. Disconnect the solenoid wiring harness connector from the hydraulic valve.*		
Terminal of wire 0 to ground.	Continuity	Bad ground circuit.
NOTE: *Have another person put the ignition key in the RUN position. Release the parking brake handles. DO NOT start the engine.*		
Terminal of wire LB (272) to ground.	**24 V**	Faulty drive train controller **(24)**, faulty wire between the solenoid and the drive train controller.
Check the resistance of the hydraulic control solenoid coil between the cavities of the connector of the solenoid connector.	**40 Ω** to **20 °C** (**68 °F**)	Faulty hydraulic control solenoid.

36. Blade control joystick valve

Right-hand console.

Check points	Read out	Possible cause of incorrect reading
NOTE: *Put the master disconnect switch in the ON (on) position. Disconnect the connector of wiring harness C17 from the control panel joystick.*		
Terminal of wire 0, pin 2, to ground.	Continuity	Bad ground circuit.
Terminal wire BL (V1ACC), pin 1, to ground.	**24 V**	Faulty fuse F2, faulty wire between the joystick and the fuse F2.
NOTE: *If the joystick still does not work, replace the joystick.*		

37. Blade lift solenoid valve

ROPS right-hand side panel.

Check points	Read out	Possible cause of incorrect reading
NOTE: *Disconnect the connector of the wiring harness from the blade lift solenoid.*		
Check the resistance of the solenoid coil between the cavities of the solenoid connector.	**12 Ω** to **20 °C** (**68 °F**)	Faulty solenoid.

38. Blade lower solenoid valve

ROPS right-hand side panel.

Check points	Read out	Possible cause of incorrect reading
NOTE: *Disconnect the connector of the wiring harness from the blade lower solenoid.*		
Check the resistance of the solenoid coil between the cavities of the solenoid connector.	**12 Ω** to **20 °C** (**68 °F**)	Faulty solenoid.

73. Cylinder number 5 injector

Located on the left-hand side of the engine. Open the engine compartment for access.

Check points	Read out Correct	Possible cause of incorrect reading
NOTE: *Disconnect the connector from the EDC-7 Controller Injector driver.*		
Between pins 16 and 1.	**0.56 – 0.57 Ω**	Faulty injector, faulty wiring of connector to injector.

74. Cylinder number 6 injector

Located on the left-hand side of the engine. Open the engine compartment for access.

Check points	Read out Correct	Possible cause of incorrect reading
NOTE: *Disconnect the connector from the EDC-7 Controller Injector driver.*		
Between pins 10 and 9.	**0.56 – 0.57 Ω**	Faulty injector, faulty wiring of connector to injector.

75. Engine sensors' connector

Located on the left-hand side of the engine. Open the engine compartment for access.

Check points	Read out Correct	Possible cause of incorrect reading
NOTE: *Disconnect the connector of the control unit EDC-7.*		
Check for the presence of moisture. Check for bent, corroded, or burned pins.		Repair if necessary.

76. Crankshaft rotation sensor

Located on the front of the engine.

Check points	Read out Correct	Possible cause of incorrect reading
NOTE: *Disconnect the connector from the EDC-7 controller motor sensors.*		
Between pins 19 and 23.	**900 Ω**	Faulty sensor, faulty wiring of connector to sensor.

77. Camshaft rotation sensor

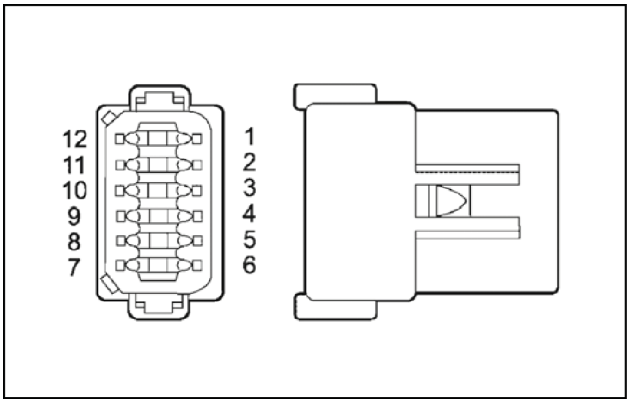
Located on the left-hand side, on the rear of the engine.

Check points	Read out Correct	Possible cause of incorrect reading
NOTE: *Disconnect the connector from the EDC-7 controller motor sensors.*		
Between pins 9 and 10.	**900 Ω**	Faulty sensor, faulty wiring of connector to sensor.

(*) See content for specific models

Connector C21 – Ripper controller

Cav	Circuit
1	451
2	452
3	453
4	Not used
5	Not used
6	Not used
7	Not used
8	Not used
9	Not used
10	Not used
11	Not used
12	Not used



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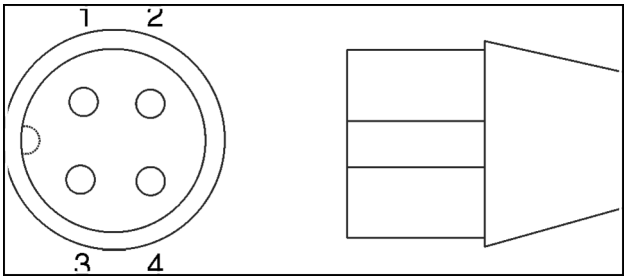
Connector C22 – Right-hand door window wiper

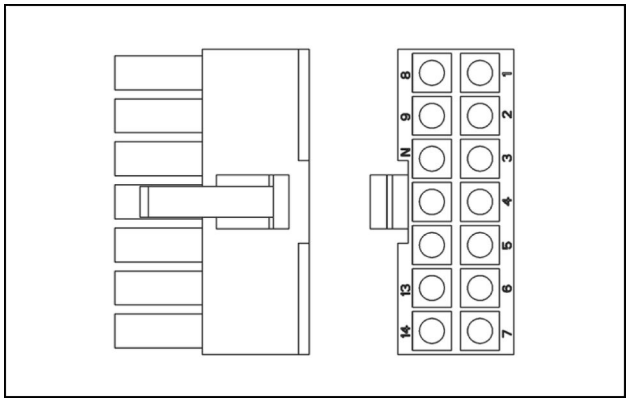
Cav	Circuit
1	0
2	953
3	954
4	955



C20, C22 25

Connector L15 – Radio

Cav	Circuit
1	Not used
2	Not used
3	Not used
4	Not used
5	Not used
6	Not used
7	505
8	Not used
9	Not used
10	Not used
11	Not used
12	504
13	Not used
14	Not used



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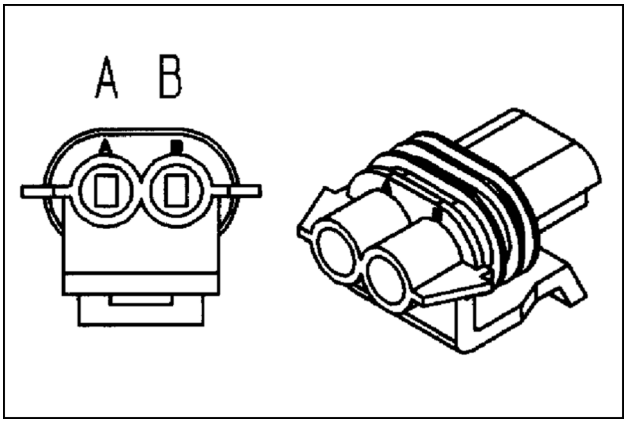
Connector P9 – Charge pressure sensor

Cav	Circuit
A	133
B	0



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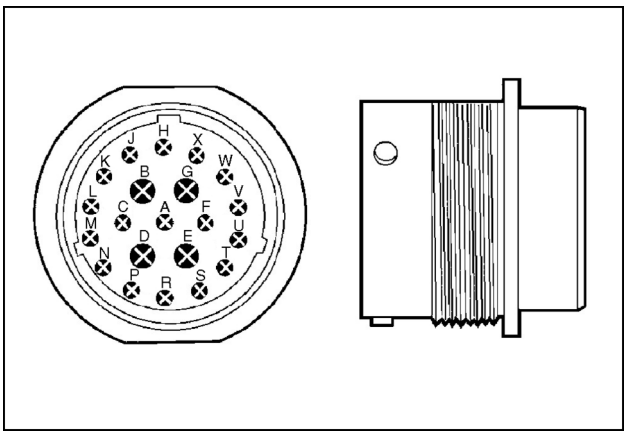
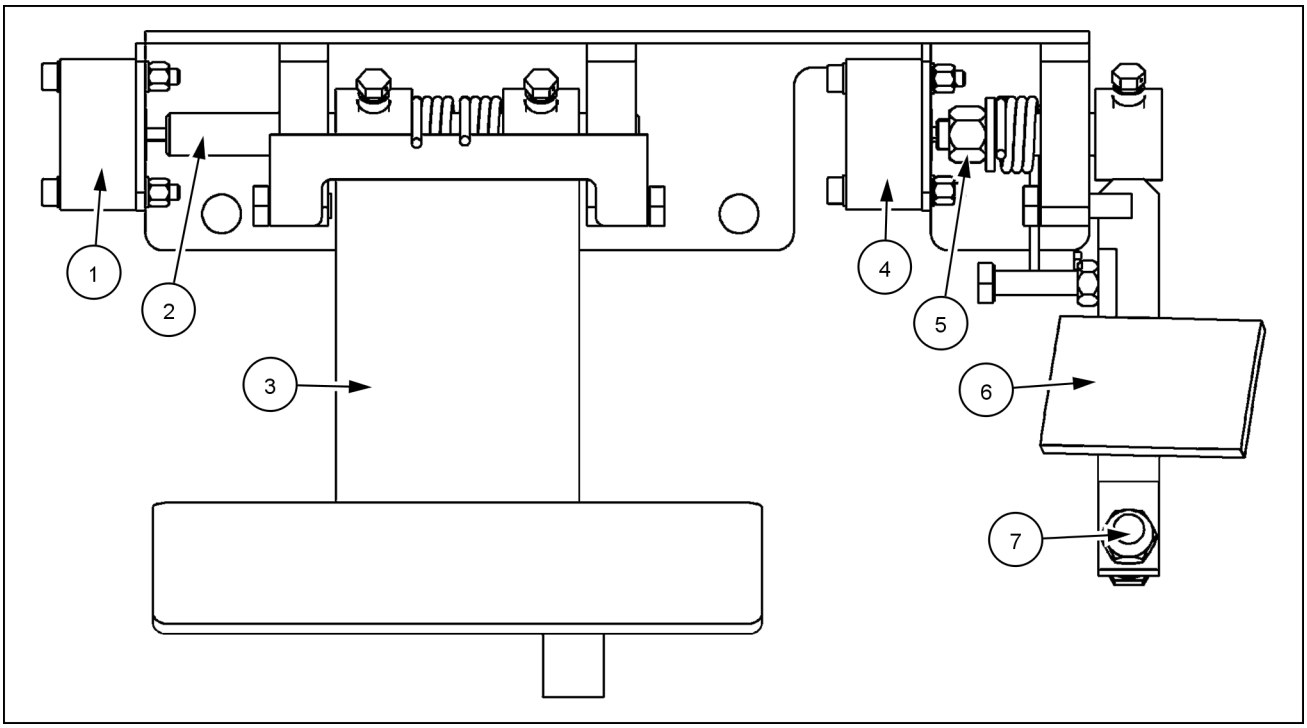
Connector P10 – From the pumps to the hydraulic valve

Cav	Circuit
A	V1acc
B	205
C	Not used
D	272
E	428
F	453
G	427
H	104
J	422
K	121
L	423
M	120
N	452
The	134
P	424
Q	425
R	429
S	426
T	451
U	215
V	248
W	421
X	0



P10 81

Decelerator and brake pedal



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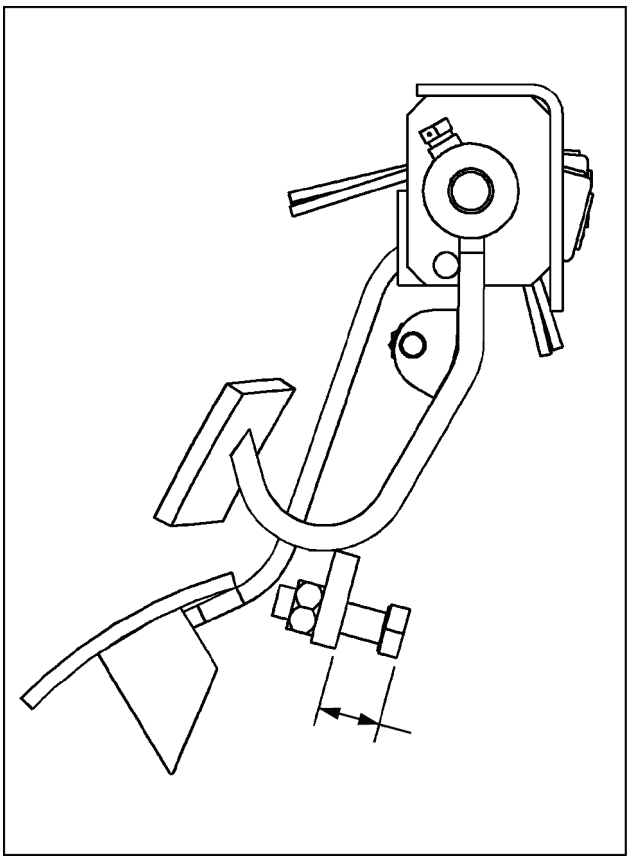
1. Brake potentiometer
2. Actuating rod
3. Brake pedal
4. Decelerator potentiometer
5. Return spring of the jam nut
6. Decelerator pedal
7. Jam nut for adjusting the decelerator pedal travel

Adjust the stop bolt of the decelerator pedal to **19.6 mm** (**0.77 in**).



LAIL11CD0362B0A 2

Smoke control under acceleration

With heavy load demands, the control unit manages the pressure regulator and modulates the activation time of the electro-injectors to prevent the emission of smoke from the exhaust. The control unit carries out this process on the basis of signals received from the temperature pressure sensor and from the crankshaft sensor.

After engine shutdown

After you shut down the engine, the control unit microprocessor saves various parameters to the EEPROM memory. This includes the faults log so that the parameters can be available when you run the engine again.

Control of working speed in normal operating conditions

Each time the work load varies, the control unit adjusts torque to maintain the engine at maximum power. If the load causes a reduction in power, the control unit increases torque. In other words, the control unit increases the amount of fuel injected to return the engine to maximum power.

Recovery strategies

- Control of fuel leaks.

In the event of fuel supply issues, the system controls the engine with suitable constant power values with low speed and high torque, in order to inject the maximum quantity of fuel.

- Pressure control in the rail (distribution pipe).
- When the pressure in the rail exceeds the safety values, the engine reduces power.
- Timing issues.

In the event of timing issues or faulty rotation sensors, the system increases the rotation in order to improve interpretation of the signals and to control the engine.

- Power restrictions as the operating temperature increases.

When the supercharged air temperature increases above **88 °C** (**190 °F**), power reduction commences. When you reach an operating temperature of **120 °C** (**248 °F**), performance reduces further. In this case, performance is comparable to the performance of the same engine if it were aspirated.

- Power reduction is based on variations in the reference temperature.

Under normal operating conditions, the system recognizes the supercharged air, oil, and water temperatures.

If the temperature of the engine water is not available, the system takes the temperature of the oil as a reference. When this temperature reaches the threshold of **103 °C** (**217 °F**), the system starts to reduce the power available. When the temperature reaches **113 °C** (**235 °F**), the system reduces the power to 50%.

Battery - Check (Electrolyte level)

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

If the battery is a maintenance-free battery, check the electrolyte level every 1000 hours of operation or every six months, whichever occurs first. For other types of batteries, check the electrolyte level every 250 hours of operation.

NOTE: *Maintenance-free batteries will have the words Maintenance Free on the decal located at the top of the batteries. If the central part of the decal has been removed to gain access to the battery covers, the words Maintenance Free may have been deleted.*

Check the electrolyte level more often during periods of hot weather. The use of a large amount of water in the battery can be caused by a high battery temperature or a voltage regulator setting that is too high. Always keep the electrolyte level above the battery plates in order to prevent damage to the plates.

NOTE: *In maintenance-free batteries, it is necessary to remove the central part of the decal in order to gain access to the battery caps. Do not discard the center part of the decal. Put it back after re-installing the caps.*

If the electrolyte level is low, top up with distilled water or other clean water until the electrolyte level is just below the cell opening. Do not add more water than is needed. Excess water can damage performance, shorten the useful life of the battery, and cause corrosion around the battery.

NOTE: *Only add clean water, DO NOT add electrolyte.*

Index

Electrical systems - 55

Cold start aid - 202

(*) See content for specific models

Index

Electrical systems - 55

Engine cooling system - 012

(*) See content for specific models

Contents

Electrical systems - 55

Heating, Ventilation, and Air-Conditioning (HVAC) control system - 050

SERVICE

(*) See content for specific models

Contents

Electrical systems - 55

Warning indicators, alarms, and instruments - 408

(*) See content for specific models

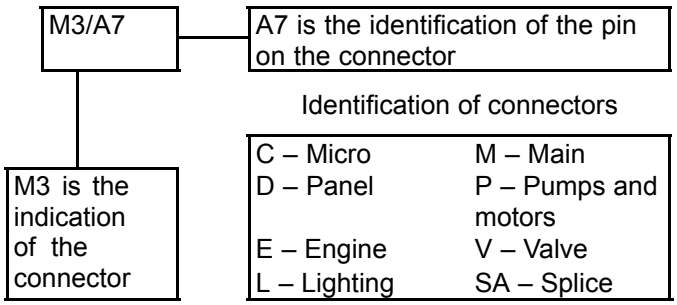
Index

Electrical systems - 55

Warning indicators, alarms, and instruments - 408

(*) See content for specific models

Identification codes of wires and connectors



Identification of wires

100 – Panel	500 - **12 V**
200 – Drive train	800 – A/C
300 – Engine	900 – Menu switch
400 – Joystick	

Identification of wires	From	To
452	C21/2	C5/29
452	P1/29	P10/N
452	V1/N	V20/1
453	C21/3	C5/30
453	P1/30	P10/F
453	V1/F	SA-4
453	SA-4	V19/2
453	SA-4	V20/2
501	M3/A6	M10/28
501	C4/28	SA-9
501	SA-9	C8/6
501	L1/6	L8
501	SA-9	C14/1
501	SA-9	C3A/B
504	C15	SA-12
504	SA-12	C8/8
504	L1/8	L15/17
504	SA-12	C14/4
505	C14/5	C8/9
505	L1/9	L15/12
800	L9	L13/10
800	L9	L1/5
800	C8/5	C4/23
800	M10/23	M2/A9
811	L10/B	L13/1
813	L12	L13/3
814	L12	L13/4
815	L12	L13/5
816	L12	L13/6
817	L11/3	SA-5
817	SA-5	L9
817	SA-5	L13/7
818A	L13/8	L1/4
818A	C8/4	C23/A
818B	E12/A	E1/12
818B	M11/12	M10/15

3491 (DTC F176) - Missing adjustment value programming for injector in cylinder 1

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	APAC --- LA

NOTE: *Injector Quantity Adaptation (IQA) Code is unique to each injector. The IQA Code must be uploaded and programmed anytime an injector is changed, replaced or re-positioned.*

Context:
The injectors are corrected individually (IQA Code) to guarantee exact fuel injection quantity of each injector from lowest to highest fuel quantity. The data is stored in the Engine Control Unit (ECU) A-9000 in Electrically Erasable Programmable Read Only Memory (EEPROM). The stored values in the EEPROM are protected with checksum parameters. At each Key "ON" the correction data is read from the EEPROM and checked. If the data is missing or not correct the injector will not be corrected and this failure will occur.

Cause:
The ECU A-9000 is reporting that the IQA code for this injector is missing or not correct.

Possible failure modes:

1. Missing IQA Code, re-program
2. Faulty ECU A-9000, software.

Solution:

1. Re-load IMA Code. Use the Electronic Service Tool (EST) to recover the IQA code. Check to see that the fault is resolved.

   A. If the fault is resolved, return the machine to service.

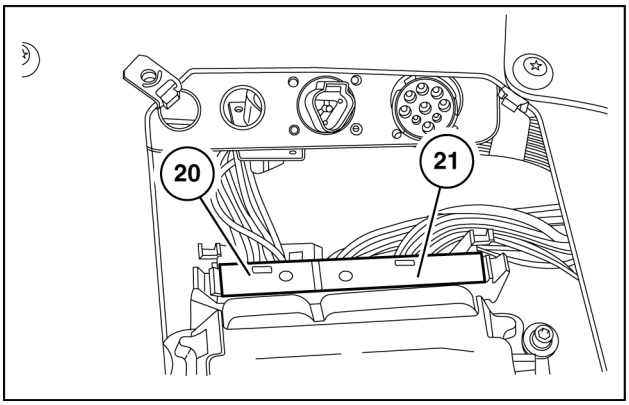
   B. If the fault is not resolved, check the ECU A-9000 for the appropriate software and re-flash, if necessary.

13. Visually inspect the relevant harnesses and connectors for damage, bent or dislocated pins, corroded terminals, or broken wires. Verify that the connectors are fully installed. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

    A. If you find damage or the display indicates other than normal display readings, Then, repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

    B. If you do not find damage and the display indicates only normal readings, Then, erase the fault code and continue operation.

5. Check if there is an open circuit in the control wire of the left-hand reverse pump solenoid between connectors C5 and C1.



LAIL11CD1285A0A 3

20.	Connector C2	21.	Connector C1

1. Disconnect the main drive train controller, connector C1.

2. Inspect pin 30 on connector C1. Clean connections.

3. Install the female pins. Then remove the female pins to clean them.

4. Check if there is an open circuit between pin 14 of connector C5 and pin 30 of the main drive train controller, connector C1.

A. NOT OK – Find the break between connectors C1 and C5. Repair the break. Return to Step **1** to confirm elimination of the fault.

B. OK - Go to Step **6**.

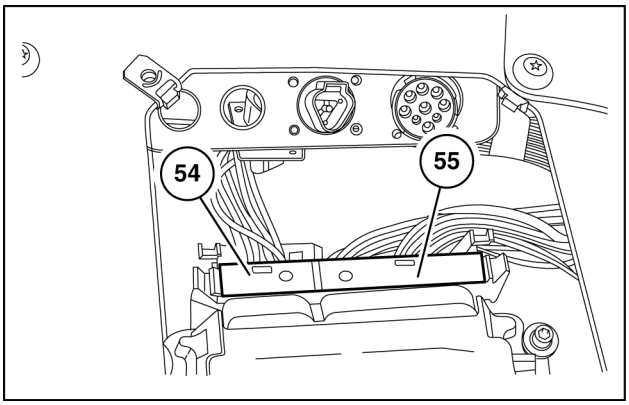
6. Replace the Drive Train Control Module.
Before replacing the Drive Train Control Module, contact Technical Services for further assistance.

1. Remove and replace the Drive Train Control Module.

2. Note down the symptom in the faulty Drive Train Control Module.

3. Install the program with the Electronic Service Tool (EST). Recalibrate the system.

4. Check if there is an open circuit in the left-hand speed sensor circuit between connectors C5 and C1.



LAIL11CD1297A0A 3

54.	Connector C2	55.	Connector C1

1. Disconnect the main drive train controller, connector C1.

2. Inspect pins 43 and 44 on the connector C1. Clean connections.

3. Install the female pins. Then remove the female pins to clean them.

4. Check if there is an open circuit between pin 7 of connector C5 and pin 44 of the main drive train controller, connector C1.

5. Check if there is an open circuit between pin 8 of connector C5 and pin 43 of the main drive train controller, connector C1.

A. NOT OK – Find the break between connectors C1 and C5. Repair the break. If you do not find any damage in Step **4** or **5**replace the sensor. Return to Step **1** to confirm elimination of the fault.

B. OK - Go to Step **5**.

5. Replace the Drive Train Control Module.
Before replacing the Drive Train Control Module, contact Technical Services for further assistance.

1. Remove and replace the Drive Train Control Module.

2. Note down the symptom in the faulty Drive Train Control Module.

3. Install the program with the Electronic Service Tool (EST). Recalibrate the system.

6. Install the rear cover. Torque the **30 mm** hex bolts to **430 – 485 N·m** (**317 – 358 lb ft**). Torque the **18 mm** hex bolts to **77 – 100 N·m** (**57 – 74 lb ft**).

4331 - Inching pedal potentiometer out of range

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Control Module: DTC

NOTICE: *Go to the electrical schematic for a full view of the controller circuit.*

Cause:
The crawler will not move. It is not possible to drive the crawler.

Possible failure modes:

1. The connectors are not fully compatible, the pins are not pushed fully inside the connector, bent pin or broken wire at the back of the connector.
2. Water in the connectors.
3. Adjust the sensor. Recalibrate the sensor.
4. Wiring circuits or sensor circuits open.
5. Wiring circuits or sensor circuits shorted.
6. Failure in the Drive Train Control Module.

Solution:

1. Check if the fault code is still active.
   Before clearing fault codes, write down all the codes, number of occurrences and engine hours at last occurrence.

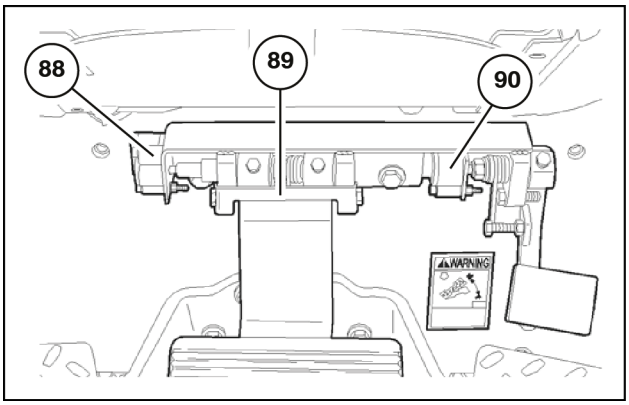
   1. Turn the ignition key to the RUN position to power the drive train controller.

   2. Clear all fault codes from the controller.

   3. To check the fault code: Move the directional control to neutral. Move the ignition key to RUN (the engine does not need to be running). Move both parking levers to the lowered position. Move the hand throttle to the high idle position. Push the directional control to the reverse position. Press the pedal fully down. Release the pedal.

   A. NOT OK – Fault code 4331 is recorded again. Go to Step **2**.

   B. OK – Fault is not recorded again. OK to return to service.
2. Inspect the potentiometer connection of the brake pedal.
   The brake potentiometer connector is on the front side of the fire wall.



LAIL11CD1043A0A 1

88.	Brake potentiometer	89.	Foot Brake Pedal	90.	Decelerator potentiometer

   1. Turn off the ignition key. Turn off the master key.

   2. Disconnect the brake pedal potentiometer, connector M6.

4522 - Bump down switch stuck on at power up

1150L XLT, With cab, Tier 3, Power Angle Tilt (PAT) Blade, Made in Brazil	LA

Control Module: DTC

NOTICE: *Go to the electrical schematic for a full view of the controller circuit.*

Cause:
The instrument cluster indicates that the maximum speed configuration is decreasing when the downshift switch is not activated.

Possible failure modes:

1. The connectors are not fully compatible, the pins are not pushed fully inside the connector, bent pin or broken wire at the back of the connector.
2. The push button is mechanically stuck.
3. Wiring circuits or switch circuits shorted.
4. Failure in the Drive Train Control Module.

Solution:

1. Check if the fault code is still active.
   Before clearing fault codes, write down all the codes, number of occurrences and engine hours at last occurrence.

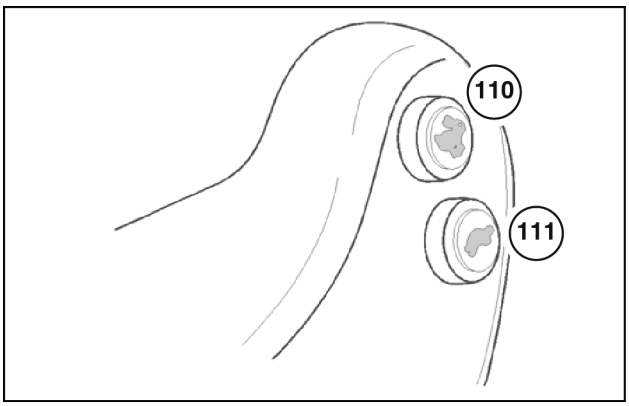
   1. Turn the ignition key to the RUN position to power the drive train controller.

   2. Clear all fault codes from the controller.

   3. To check the fault code: Move the directional control to neutral. Move the ignition key to RUN (the engine does not need to be running). Move both parking levers to the lowered position. Move the hand throttle to the high idle position. Push the directional control to the forward position.

   A. NOT OK – Fault code 4522 is recorded again. Go to Step **2**.

   B. OK – Fault is not recorded again. OK to return to service.
2. Inspect the downshift switch connection.



LAIL11CD1054A0A 1

110.	Upshift switch	111.	Downshift switch

1. Turn off the ignition key. Turn off the master key.

2. Check if the push button is mechanically stuck.

3. Remove any dirt from the push buttons.

A. NOT OK – Return to Step **1** to confirm elimination of the fault.

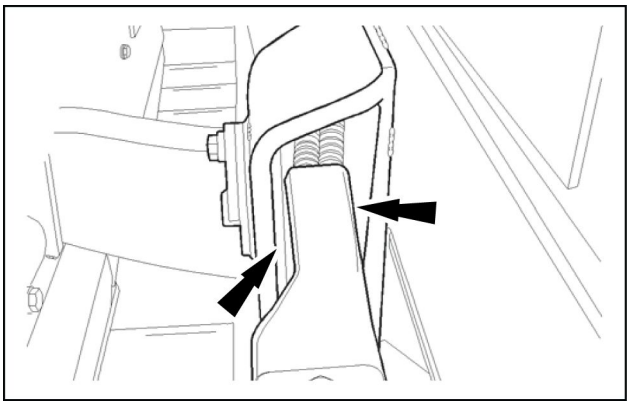
Index

Electrical systems - 55

FAULT CODES - DTC

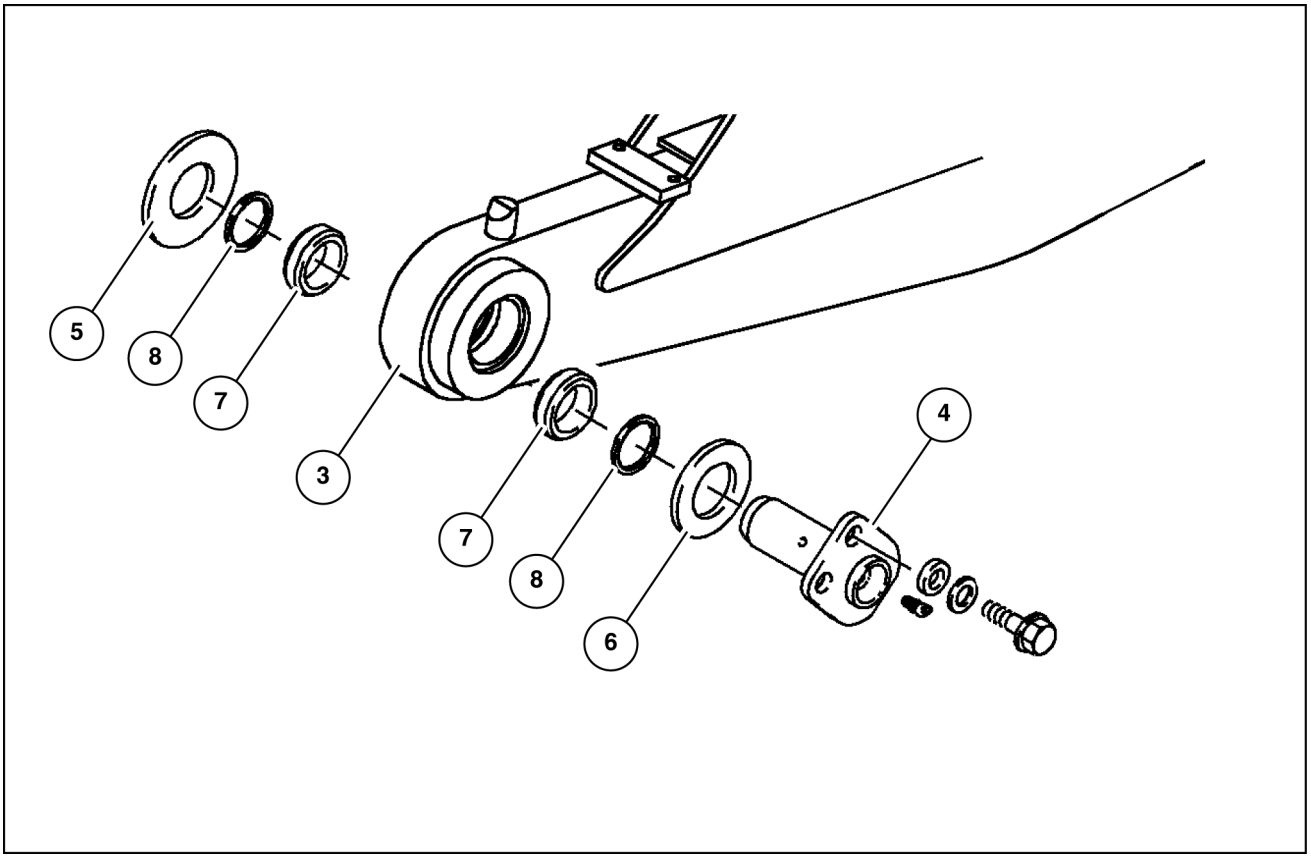
(*) See content for specific models

13. Use a pry bar to remove the pivot pins. Note the location and the number of shims.



LAIL11CD0415A0A 8

14. Carefully move the machine out of the power bar.



LAIL11CD0781F0A 2

3. C-frame
4. Pivot pin
5. Flat washer, **3.18 mm** (**0.125 in**)
6. Flat washer, **6.35 mm** (**0.250 in**)
7. Bushing
8. U-cup seal

Contents

Tools - 89

Ripper assembly - 128

(*) See content for specific models

Contents

Platform, cab, bodywork, and decals - 90

Cab - 150

SERVICE

(*) See content for specific models