1021G
1121G
Tier 4B (final)
Wheel Loader

SERVICE MANUAL

Part number 51428268
2nd edition English
December 2017

CASE CONSTRUCTION

SERVICE MANUAL

1021G WHEEL LOADER XR-EH, NEW CAB TIER4B NA
1021G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA
1121G WHEEL LOADER XR-EH, NEW CAB TIER4B NA
1121G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA

Link Product / Engine

Product	Market Product	Engine
1021G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA	North America	F2CFE614H*B004
1021G WHEEL LOADER XR-EH, NEW CAB TIER4B NA	North America	F2CFE614H*B004

Contents

INTRODUCTION

Safety rules

Personal safety

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

⚠ DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

⚠ WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

⚠ CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: *Notice indicates a situation that, if not avoided, could result in machine or property damage.*

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

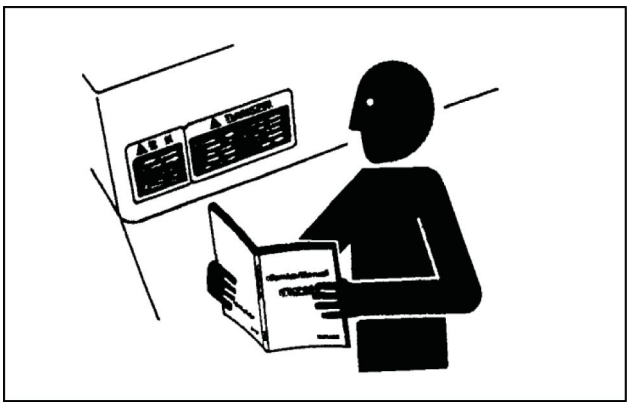
Information

NOTE: *Note indicates additional information that clarifies steps, procedures, or other information in this manual.*

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Personal safety

Carefully read this Manual before proceeding with maintenance, repairs, refuelling or other machine operations.



TULI12WEX2004AA 1

Repairs have to be carried out only by authorized and instructed staff; specific precautions have to be taken when grinding, welding or when using mallets or heavy hammers.

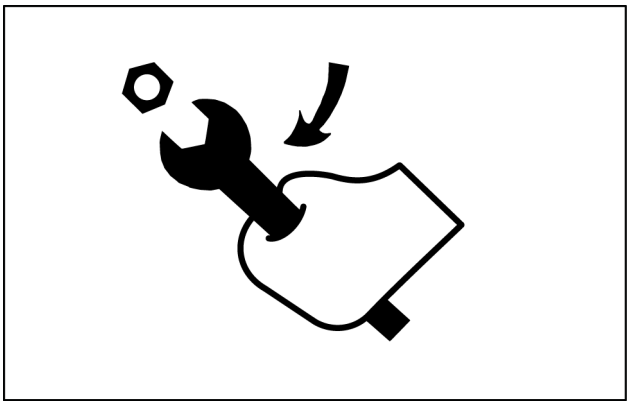
Non-authorized persons are not allowed to repair or carry out maintenance on this machine. Do not carry out any work on the equipment without prior authorization.

Ask your employer about the safety instructions in force and safety equipment.

Nobody should be allowed in the cab during machine maintenance unless he is a qualified operator helping with the maintenance work.

If it is necessary to move the equipment to carry out repairs or maintenance, do not lift or lower the equipment from any other position than the operator's seat.

Never carry out any operation on the machine when the engine is running, except when specifically indicated.



TULI12WEX2005AA 2

Stop the engine and ensure that all pressure is relieved from hydraulic circuits before removing caps, covers, valves, etc.

All repair and maintenance operations should be carried out with the greatest care and attention.

Service stairs and platforms used in a workshop or in the field should be built in compliance with the safety rules in force.

Any functional disorders, especially those affecting the safety of the machine, should therefore be rectified immediately.

⚠ DANGER

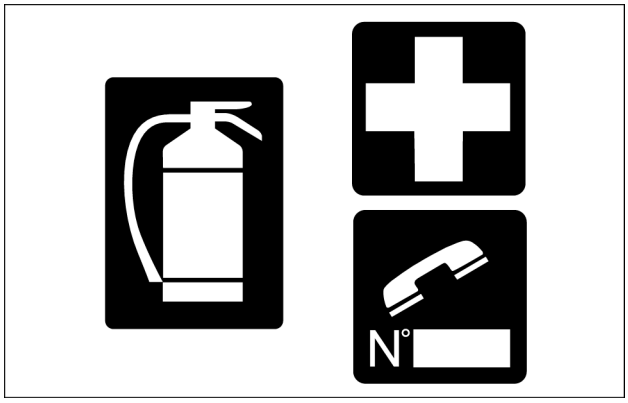
Unexpected movement!
Make sure parking brake is applied. Secure machine with wheel chocks.
Failure to comply will result in death or serious injury.

D0013A

Before performing any work on the machine, attach a maintenance in progress tag. This tag can be applied on the left-hand control lever, safety lever or cab door.

Emergency

Be prepared for emergencies. Always keep a fire extinguisher and first aid kit readily available. Ensure that the fire extinguisher is serviced in accordance with the manufacturer's instructions.

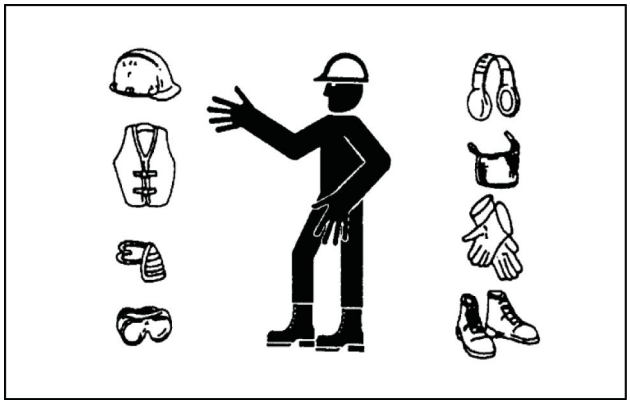


SMIL12WEX0174AA 3

Equipment

Wear close fitting clothing and safety equipment appropriate for the job:

- Safety helmet
- Safety shoes
- Heavy gloves
- Reflective clothing
- Wet weather clothing



TULI12WEX2008AA 4

If working conditions require, the following personal safety equipment should be on hand:

- Respirators (or dust proof masks)
- Ear plugs or acoustic ears protections
- Goggles with lateral shield or masks for eye protection

Do not wear rings, wristwatches, jewelry, unbuttoned or flapping clothing such as ties, torn clothes, scarves, open jackets or shirts with open zips which could get caught into moving parts.

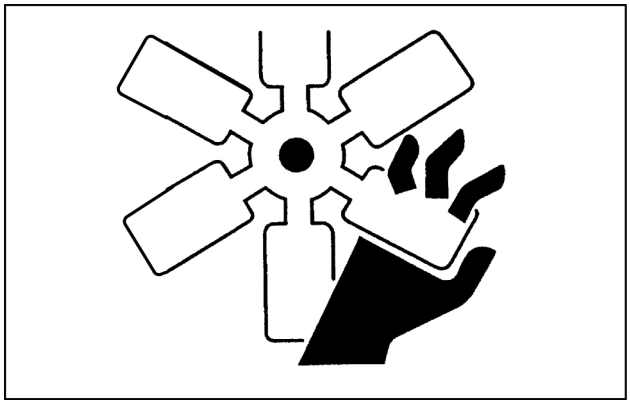
Engine - Radiator

Never leave the engine running in enclosed spaces without proper ventilation which is able to evacuate toxic exhaust gases- Keep the exhaust manifold and tube free from combustible materials.

Do not refuel with the engine running, especially if hot, as this increases fire hazard in case of fuel spillage.

Never attempt to check or adjust the belts when the engine is running.

Never lubricate the machine with the engine running.



TULI12WEX2009AA 5

Pay attention to rotating components and do not allow anyone to approach these areas to avoid becoming entangled.

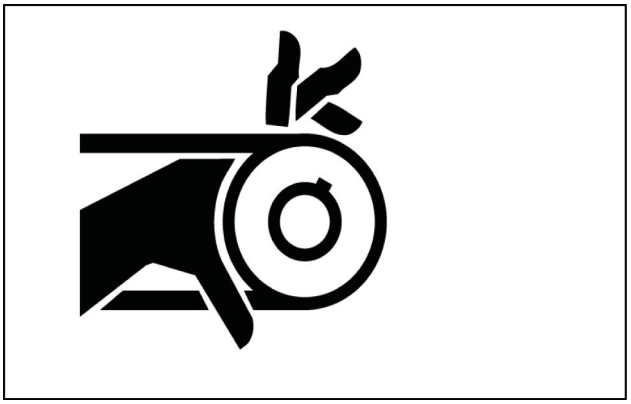
Hands, clothing or tools getting caught in the fan blades or engine belts, can cause amputations, violent hemorrages and generate conditions of grave danger. For this reason avoid touching or approaching all rotating or moving parts.

A surging spray of the coolant from the radiator can cause serious burns and scalds.

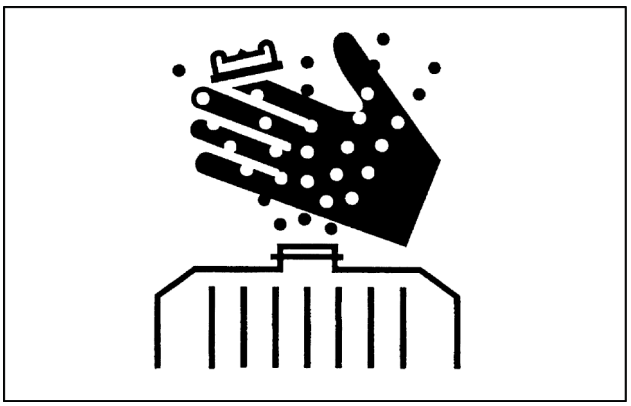
Before checking the coolant level, shut-off the engine and allow machine to cool down the radiator and hoses. Slowly unscrew the cap to release any residual pressure.

If it is necessary to remove the cap while engine is hot, wear safety clothes and equipment, then loosen the cap slowly to relieve the pressure gradually.

When checking the fuel, oil and coolant levels, use lights and lamps explicitly designated as explosion proof. If these types of lamps are not used, fires or explosions may occur.



TULI12WEX2010AA 6



TULI12WEX2011AA 7

Hydraulic systems

Jets of fluids under pressure can penetrate the skin causing serious injuries.

Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines.

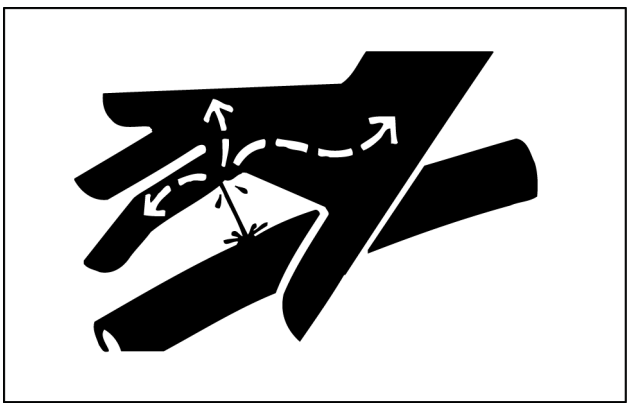
Relieve the residual pressure by moving the hydraulic control levers several times.

Tighten all connections before applying pressure.

To protect the eyes wear a facial shield or safety goggles.

Protect your hands and body from possible jets of fluids under pressure.

Swallowing hydraulic oil is a severe health hazard.



TULI12WEX2012AA 8

When hydraulic oil has been swallowed, avoid vomiting, but consult a doctor or go to a hospital.

If an accident occurs, see a doctor familiar with this type of injury immediately.

Any fluid penetrating the skin must be removed within a few hours to avoid serious infections.

Flammable splashes may originate because of heating near lines with fluids under pressure, resulting in serious burns. Do not weld or use torches near lines containing fluids or other flammable materials.

Lines under pressure can accidentally be pierced when the heat expands beyond the area immediately heated.

Arrange for temporary fire resistant shields to protect hoses or other components during welding or torch use.

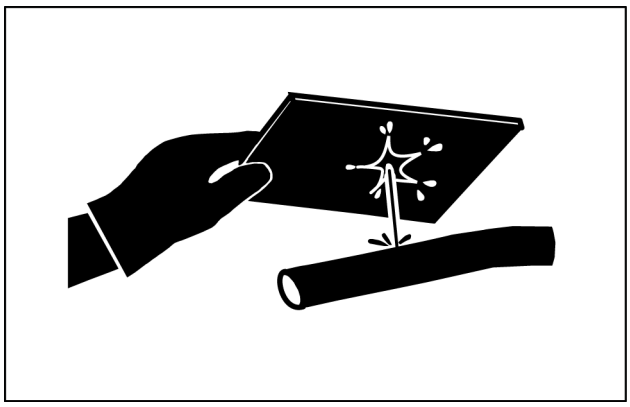
Have any visible leakage repaired immediately.

Discharged oil pollutes the environment. Soak up any oil that has spilled with a proper binding agent. Sweep up binding agent and dispose of it separately from other waste.

Never search for leakages with fingers; instead, use a piece of cardboard and always wear goggles.

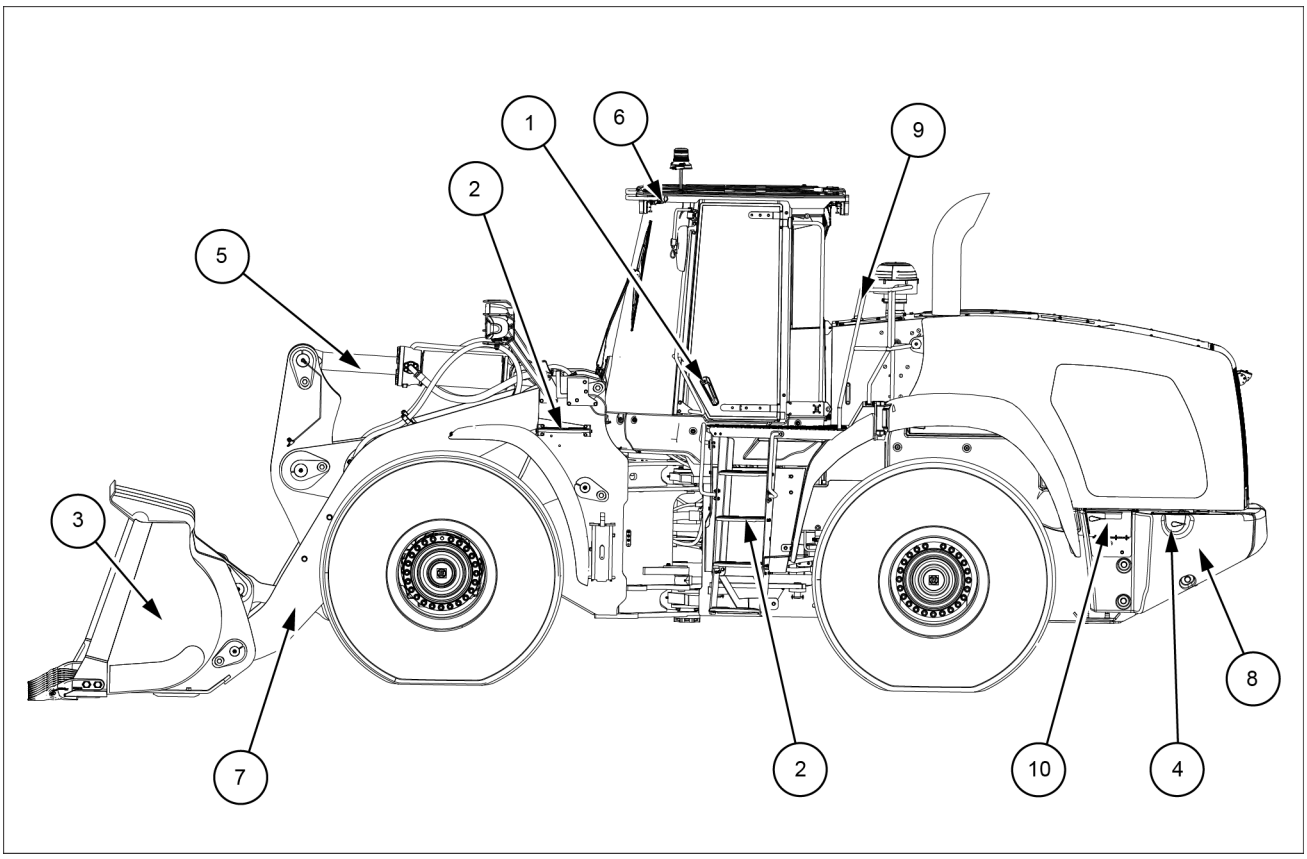
Never repair a damaged line; always replace it. Replace hydraulic hoses immediately on detecting any damaged or moist areas.

Always store hydraulic oil in the original containers.



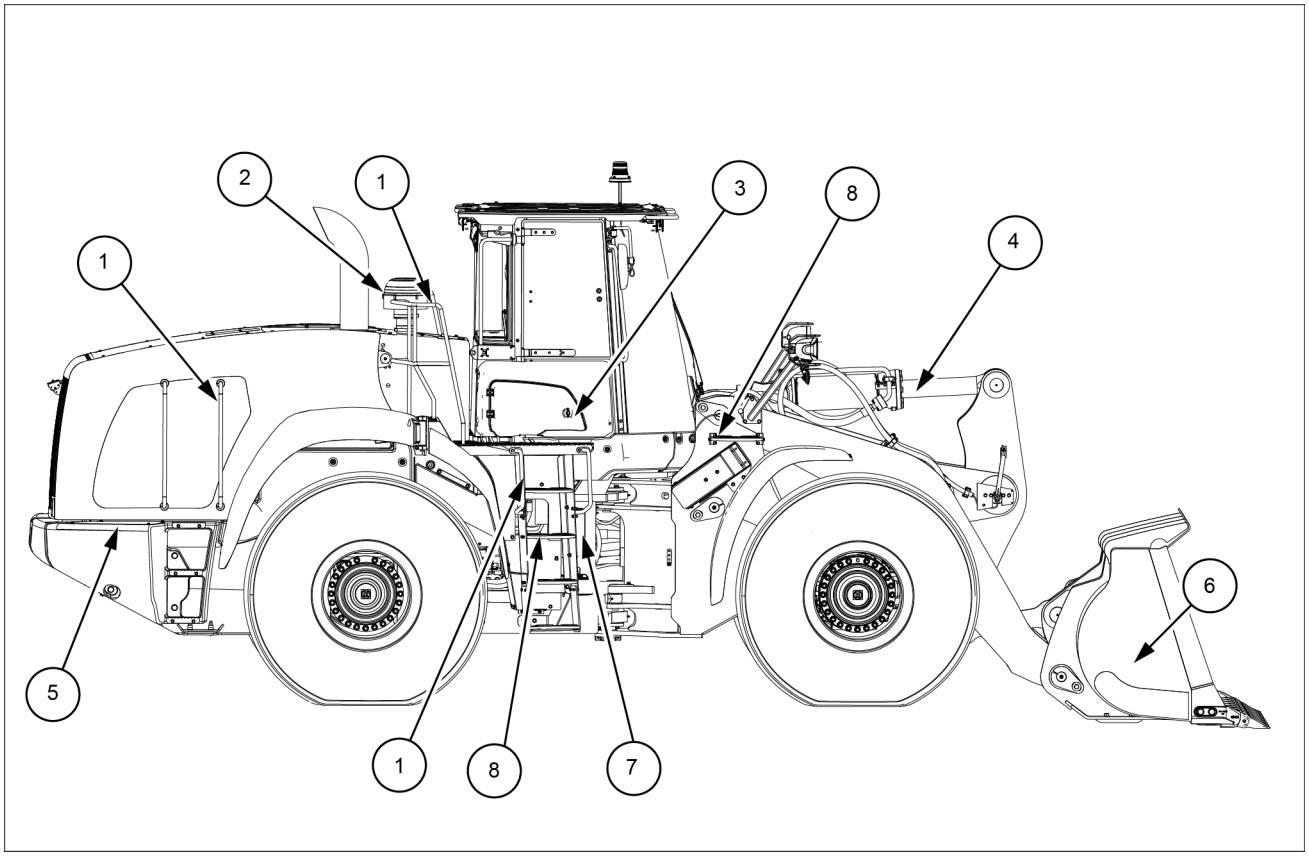
TULI12WEX2013AA 9

Product identification



LEIL17WHL1734FB 1

1. Cab door and hand holds
2. Steps
3. Bucket (Z-bar version)
4. Timed disconnect switch and battery jump post
5. Bucket cylinder
6. Roll Over Protection System (ROPS) cab
7. Loader lift arms
8. Battery access
9. Hand rails
10. Fuel/ **DEF/ADBLUE®** fill tanks



LEIL17WHL1733FB 2

1. Hand rails
2. Pre-cleaner
3. Cab air filter access
4. Bucket cylinder
5. Battery access
6. Bucket (Z-bar version)
7. Windshield washer reservoir
8. Steps

SERVICE MANUAL

Engine

1021G WHEEL LOADER XR-EH, NEW CAB TIER4B NA
1021G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA
1121G WHEEL LOADER XR-EH, NEW CAB TIER4B NA
1121G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA

Engine - General specification

1021G WHEEL LOADER XR-EH, NEW CAB TIER4B NA	NA
1021G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA	NA

Engine with 4 Speed Transmission	
A. Low idle	**870-930 RPM**
Alternate low idle	**670-730 RPM**
Alternate Accelerated Idle	**1270-1330 RPM**
B. Maximum No Load RPM	**2217-2267 RPM**
C. Converter Stall (manual 3 rd gear or higher)	**2000-2150 RPM**
D. Hydraulic Stall	**1885-2195 RPM**
E. Converter & Hydraulic Stall	**1487-1797 RPM**
Temperature of the torque converter oil	**82 – 104 °C** (**180 – 219 °F**)
Temperature of the hydraulic oil	**54 – 57 °C** (**129 – 135 °F**)

NOTE: *hydraulic Stall and Converter & Hydraulic Stall RPM values are read while the lift arms are rising with the bucket held rolled back and the engine at Wide Open Throttle (WOT) in max power mode.*

Engine - General specification

1121G WHEEL LOADER XR-EH, NEW CAB TIER4B NA	NA
1121G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA	NA

Engine with 4 Speed Transmission	
A. Low idle	**870-930 RPM**
Alternate low idle	**670-730 RPM**
Alternate Accelerated Idle	**1270-1330 RPM**
B. Maximum No Load RPM	**2256-2306 RPM**
C. Converter Stall	**1937-2087 RPM**
D. Hydraulic Stall	**1885-2195 RPM**
E. Converter & Hydraulic Stall	**1487-1797 RPM**
Temperature of the torque converter oil	**82 – 104 °C** (**180 – 219 °F**)
Temperature of the hydraulic oil	**54 – 57 °C** (**129 – 135 °F**)

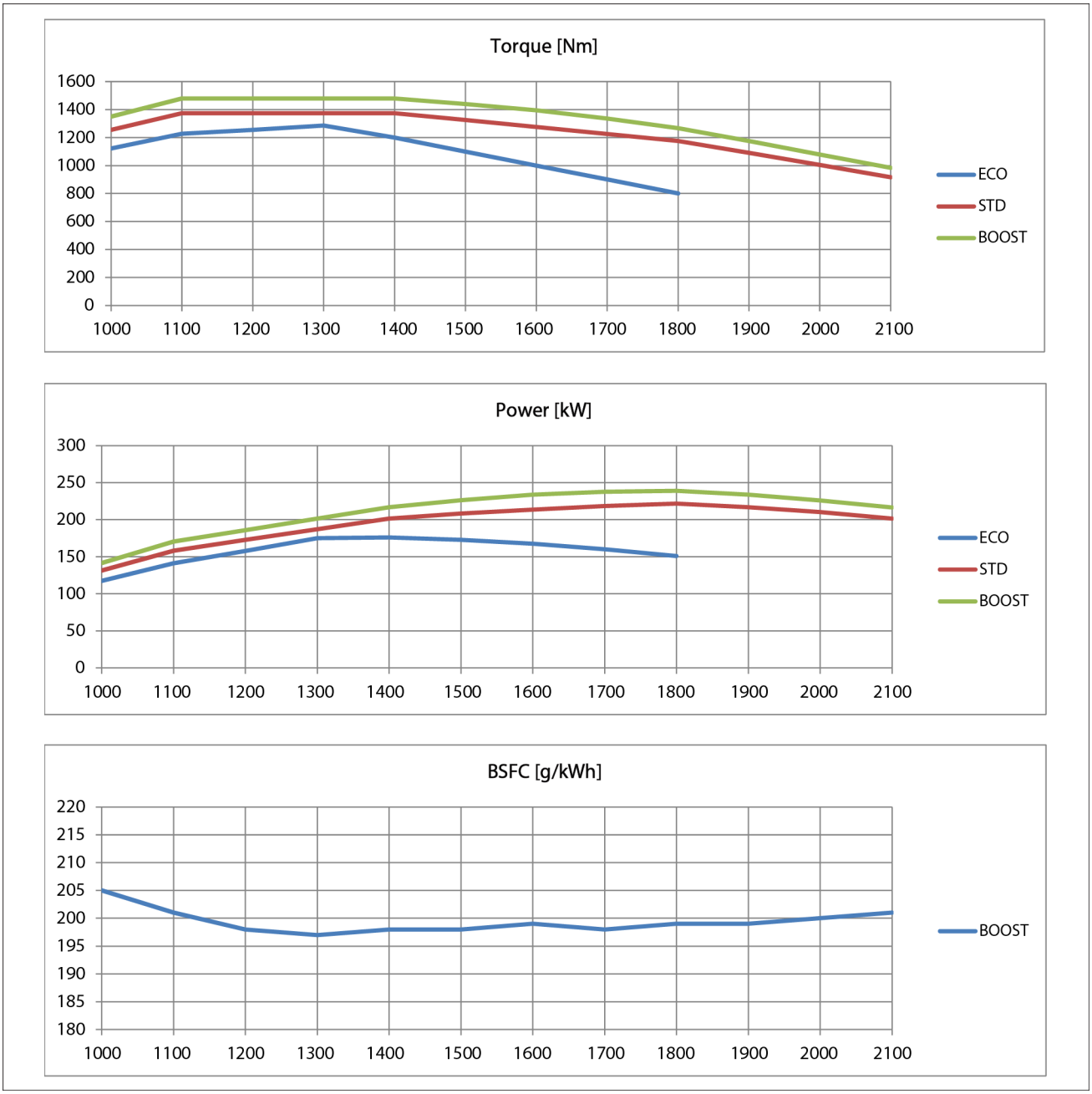
NOTE: *hydraulic Stall and Converter & Hydraulic Stall RPM values are read while the lift arms are rising with the bucket held rolled back and the engine at Wide Open Throttle (WOT) in max power mode.*

Engine - Engine horse power

1021G WHEEL LOADER XR-EH, NEW CAB TIER4B NA	NA
1021G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA	NA

Design characteristics	
Displacement	**8710 cm³** (**531.5 in³**)
Engine Configuration	6 cylinder in line, 4 stroke
Intake Air	Turbocharged, 4 valves/cyl
Fuel injection	High pressure common rail
EGR	No

Performance	
Altitude Capability	**3000 m** (**9842.5 ft**)
High Idle Speed	**2287 RPM**
Low Idle Speed	**700 RPM**
Rated Power	**216 kW** at **2100 RPM**
Peak Torque	**1479 N·m** at **1400 RPM**



LEIL17WHL0362GA 1

NOTE: *performances detected at engine test bench.*

NOTE: *BSFC indicates the Brake Specific Fuel Consumption.*

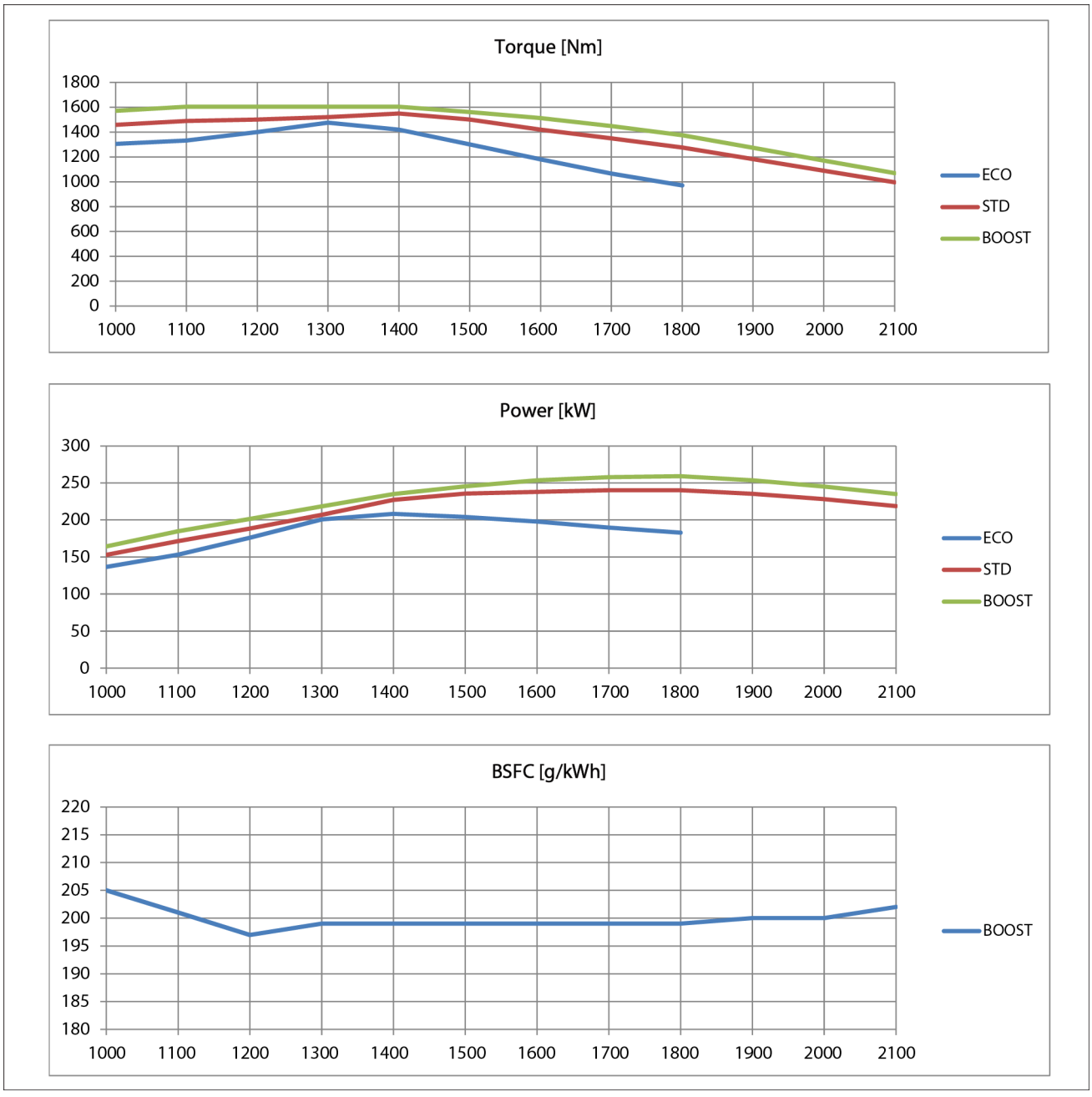
Engine - Engine horse power

1121G WHEEL LOADER XR-EH, NEW CAB TIER4B NA	NA
1121G WHEEL LOADER ZBAR-EH, NEW CAB TIER4B NA	NA

Design characteristics	
Displacement	**8710 cm³** (**531.5 in³**)
Engine Configuration	6 cylinder in line, 4 stroke
Intake Air	Turbocharged, 4 valves/cyl
Fuel injection	High pressure common rail
EGR	No

Performance	
Altitude Capability	**3000 m** (**9842.5 ft**)

High Idle Speed	**2287 RPM**
Low Idle Speed	**700 RPM**
Rated Power	**235 kW** at **2100 RPM**
Peak Torque	**1604 N·m** at **1400 RPM**



LEIL17WHL0363GA 1

NOTE: *performances detected at engine test bench.*

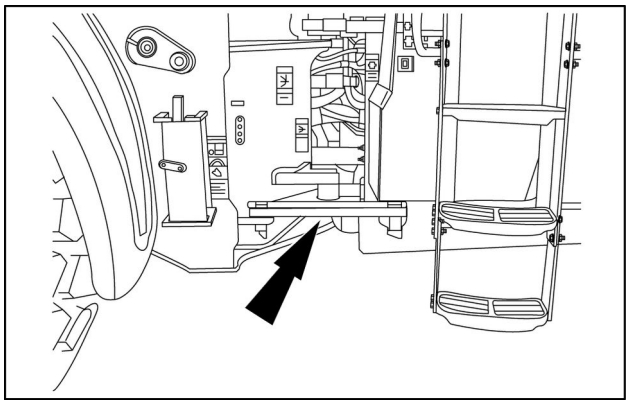
NOTE: *BSFC indicates the Brake Specific Fuel Consumption.*

Engine - Remove

Prior operation:
Engine hood - Remove (90.105)

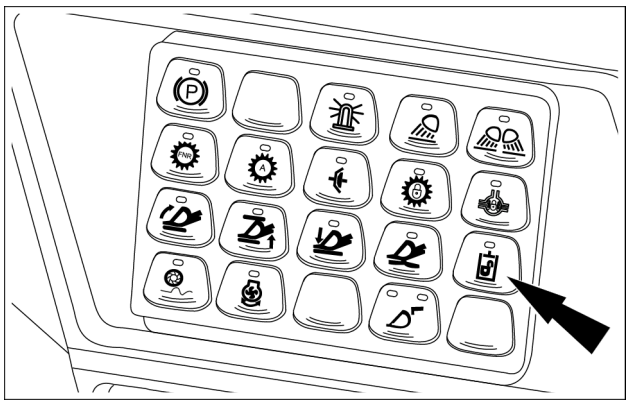
NOTE: *emissions sensors mounted in the exhaust stream are sensitive to extreme vibrations. Use of tools that generate extreme vibrations, such as impact wrenches and hammers, will result in damage to emission sensors. Avoid using these tools during any service procedure in close proximity of emission sensors. If the use of these tools cannot be avoided, remove the sensors using extreme caution prior to performing any service procedure.*

1. Park the machine on a level surface and lower the bucket to the ground. Put the articulation lock **(1)** in LOCKED position.



LEIL15WHL1782AA 1

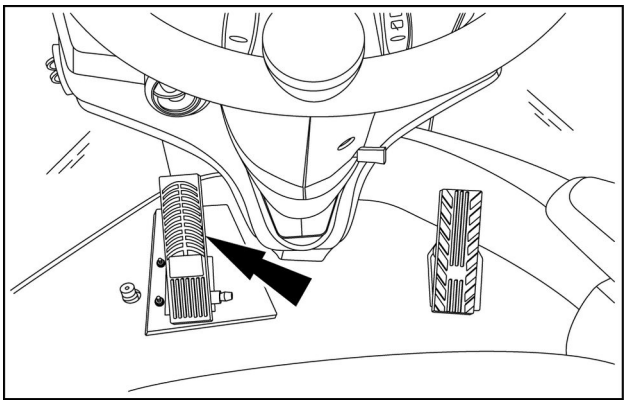
2. Push the hydraulic functions lock-out switch in the normal operation position.



LEIL16WHL1125AA 2

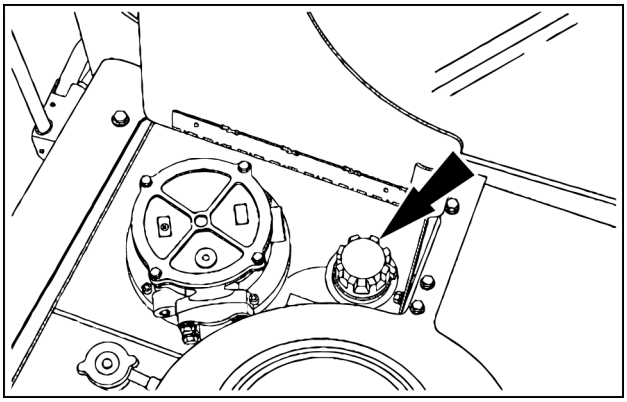
3. Move the loader hydraulic control handle to the raise and lower position in order to release any hydraulic pressure in the lift circuit.
4. Move the loader control handle in and out of the tilt position several times, this will relieve any pressure in the pilot accumulator.
5. Release the pressure in the ride control accumulator with the bleeder valve in the ride control valve load travel stabilizer.

6. Actuate the brake pedal several times to discharge brake accumulators.



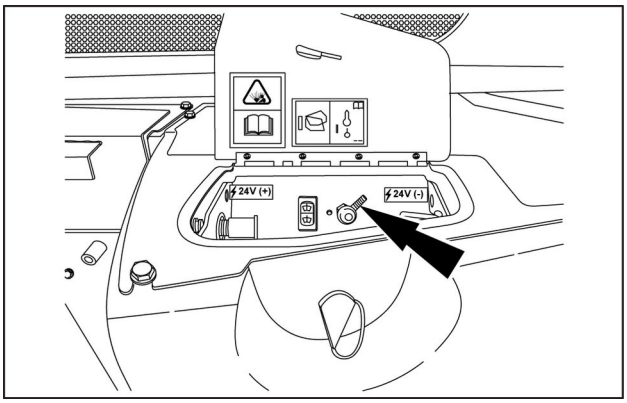
LEIL15WHL0564AA 3

7. Slowly loosen the filler cap on the hydraulic oil tank to release air pressure.



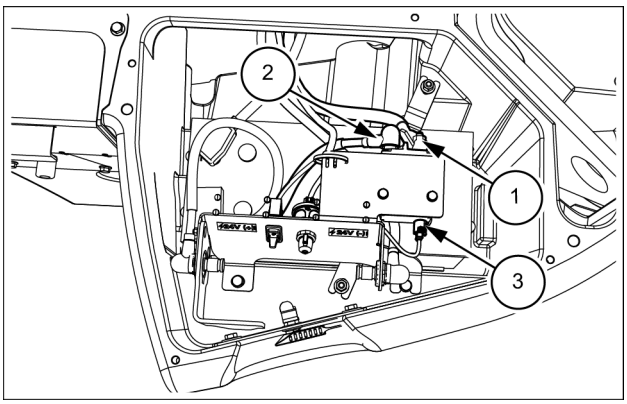
LEIL15WHL0825AA 4

8. Locate the timed disconnect switch in the battery box. Put the timed disconnect switch in the OFF position.



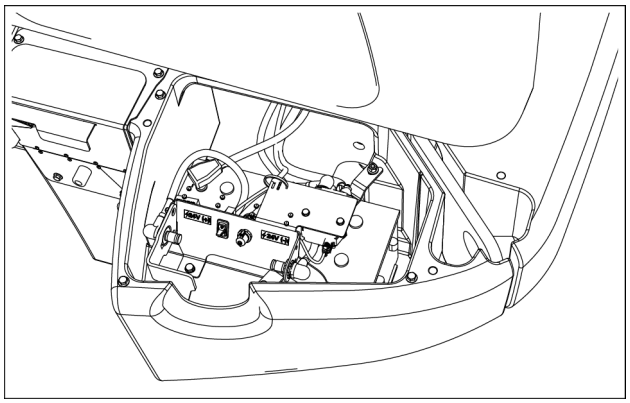
LEIL15WHL0663AA 5

9. Tag and disconnect the positive cable (battery to isolator) cable **(1)** and the positive cable (isolator to starter) **(2)** from the battery isolator.
Disconnect the connector **(3)** from the timed disconnect switch.

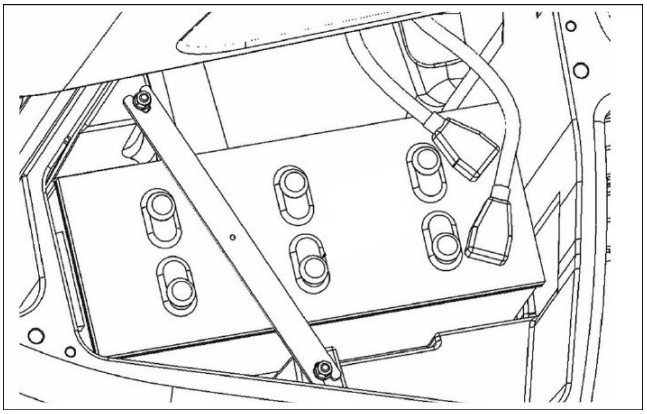


LEIL16WHL1528AB 6

10. Loosen and remove the bolts that hold the battery cover in place on both the left-hand and right-hand rear of the machine.
    Disconnect the battery cable from the battery.



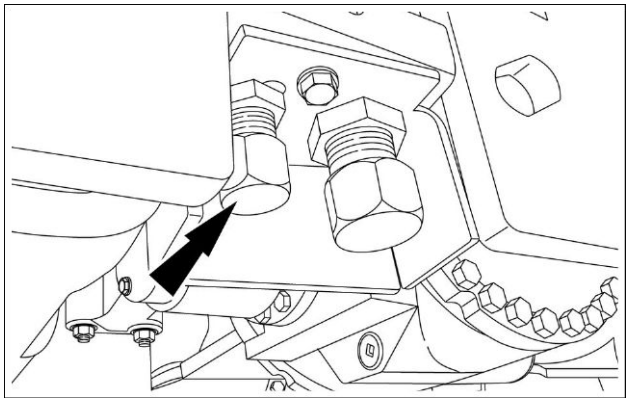
LEIL16WHL0891AB 7



LEIL15WHL1489AA 8

11. Open the access cover.
    Place a suitable container below radiator drain, remove the radiator cap and coolant drain plug (arrow) to drain the engine coolant. Reinstall the drain plug and radiator cap after the coolant has drained.

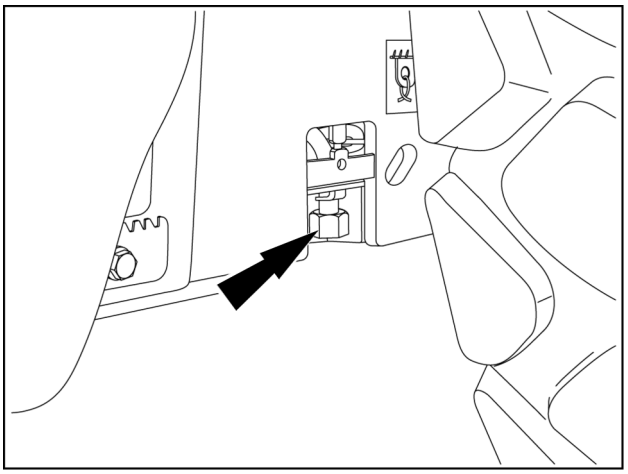
NOTE: *see machine specifications for cooling system volume.*



LEIL15WHL0719AB 9

12. Open the access cover.
    Place a suitable container below the engine oil drain. Remove the drain plug and drain the oil into the container. Reinstall drain plug.

NOTE: *see machine specifications for engine oil sump volume.*



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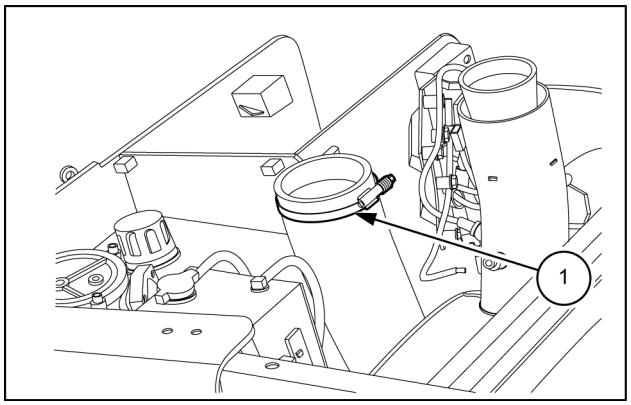
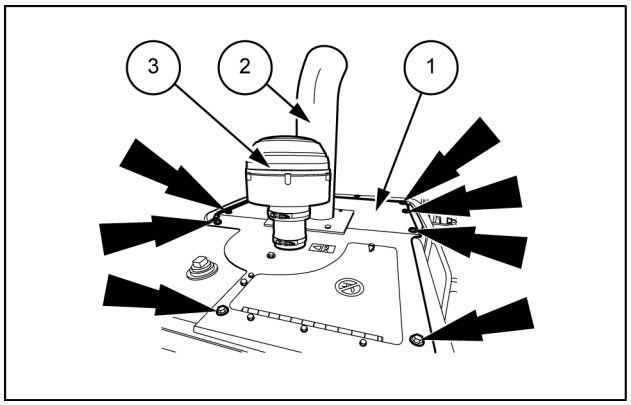
13. Loosen the hose clamp **(1)** on the air intake hose under the air inlet engine hood.

NOTICE: *for clarity the engine hood compartment top cover is not shown in the figure.*



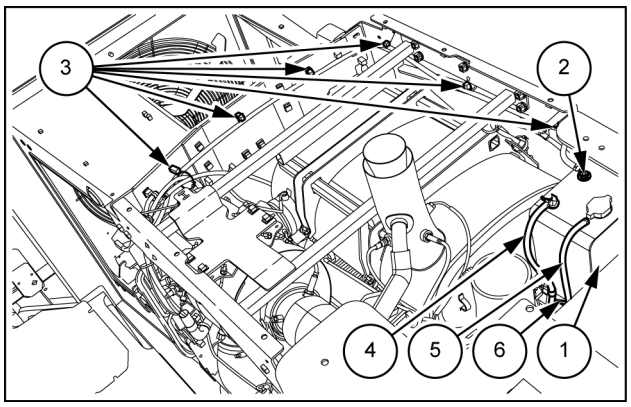
LEIL15WHL0673AB 11

14. Remove the mounting bolts (arrows) from engine compartment top cover **(1)**.
15. Attach a suitable lifting device and lift strap to the engine compartment cover and exhaust stack. Carefully remove the cover **(1)**, the exhaust stack **(2)** and the precleaner **(3)** as an assembly.



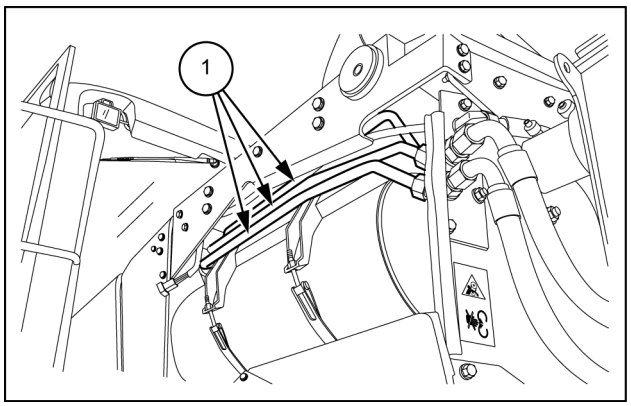
LEIL15WHL0679AB 12

16. Disconnect the dearation tank overflow hose **(2)** from the coolant tank **(1)**.
    Remove the P-clamps **(3)** that secure the overflow hose **(2)** to the wall and brackets.
    Tag and remove the overflow hose **(2)** from the engine and engine wall.
    Disconnect the hoses **(4)**, **(5)** and **(6)** from the coolant tank **(1)**.



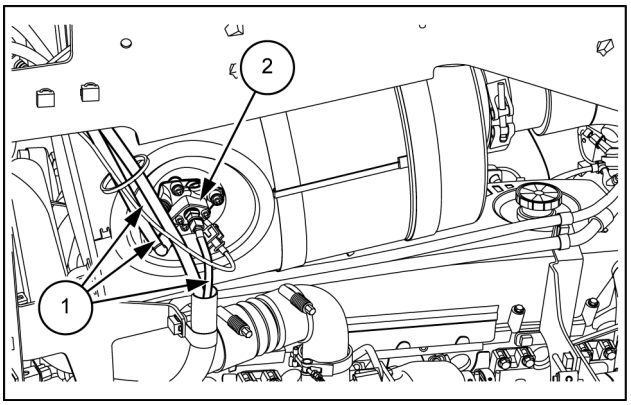
LEIL15WHL0667AB 13

17. Remove the hydraulic oil lines **(1)** and the related fittings.



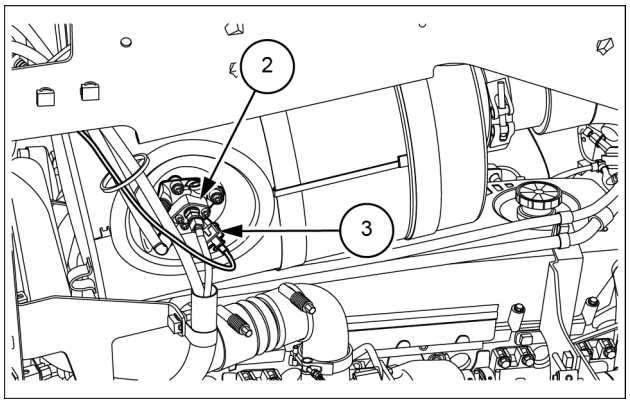
LEIL15WHL0682AB 14

18. Disconnect the hoses **(1)** from the Dosing Module **(2)**.



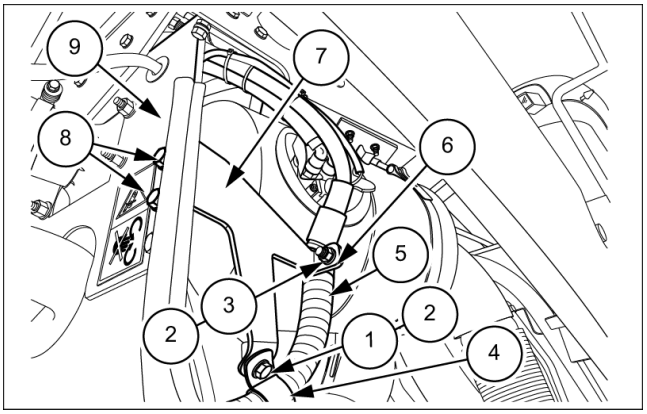
LEIL15WHL0675AB 15

19. Disconnect the electrical connector **(3)** from the Dosing Module **(2)**.



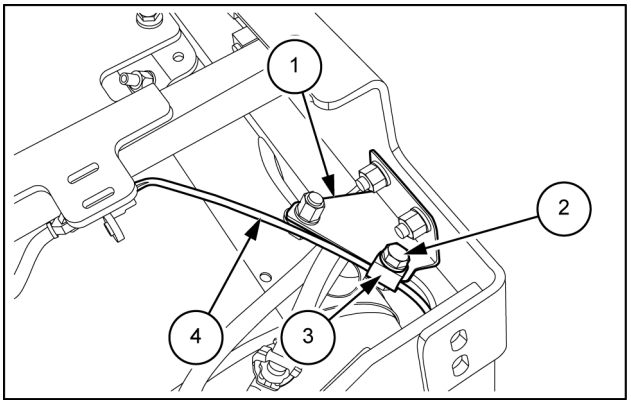
LEIL15WHL0821AB 16

20. Remove the two bolts **(1)**, the four washers **(2)**, and the two nuts **(3)** to separate the P-clamps **(4)** and **(6)** from the bracket **(8)**.
Remove the P-clamps **(4)** and **(6)** from the **DEF/ADBLUE®** bundle **(5)**.
21. Remove the two bolts **(8)** with related washers and the nuts to separate the bracket **(7)** from the engine wall **(9)**.



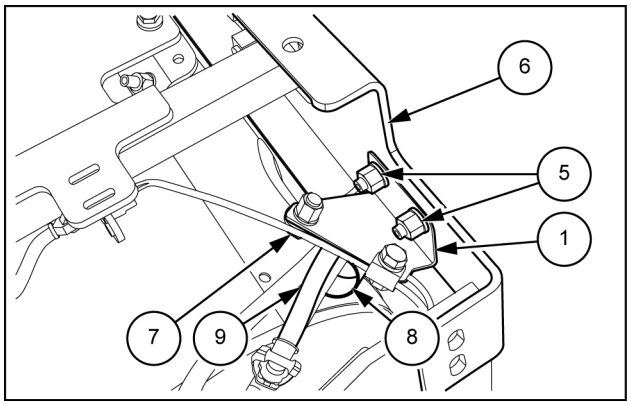
LEIL15WHL0812AB 17

22. Remove the bolt **(2)** and the related washers and nut to separate the P-clamp **(3)** from the bracket **(1)**.
Remove the P-clamp **(3)** from the sensors wiring harness **(4)**.



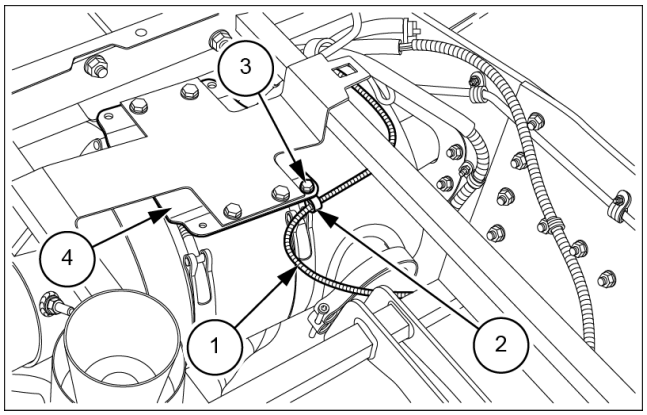
LEIL15WHL0822AB 18

23. Remove the two bolts **(5)** and the related washers and nuts to separate the bracket **(1)** from the support **(6)**.
24. Remove the bolt **(7)** and the related washers and nut to separate the P-clamp **(8)** from the **DEF/ADBLUE®** bundle **(9)**.



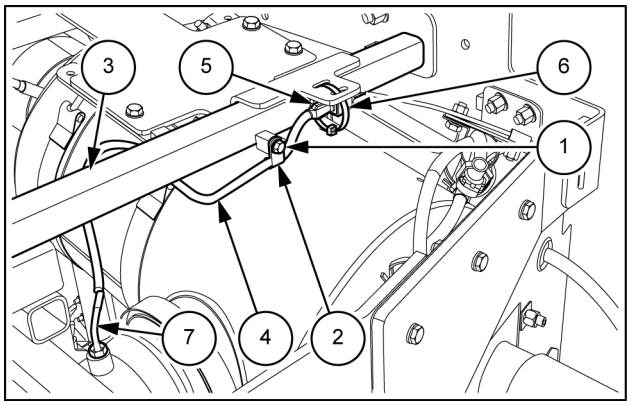
LEIL15WHL0823AB 19

25. Loosen the bolt **(3)**. Remove the P-clamp **(2)** that secure the sensor wiring harness **(1)** of the inlet temperature sensor to the DOC mounting plate **(4)**.



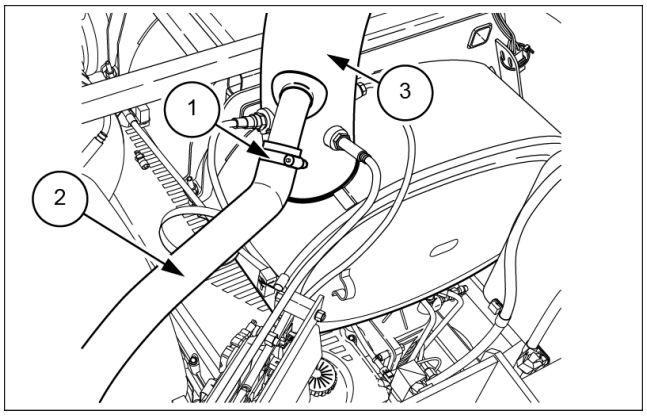
LEIL15WHL1312AB 20

26. Loosen the bolt **(1)** and remove the P-clamp **(2)** from the supply module support **(3)**.
27. Remove the P-clamp **(2)** from the temperature sensor (DOC to SCR) wire **(4)**.
    Cut the tie strap **(6)**.
28. Disconnect the sensor from the sensors wiring harness **(5)**. Loosen the hexagonal nut of the temperature sensor **(7)** (DOC to SCR).
    Remove the temperature sensor **(7)**



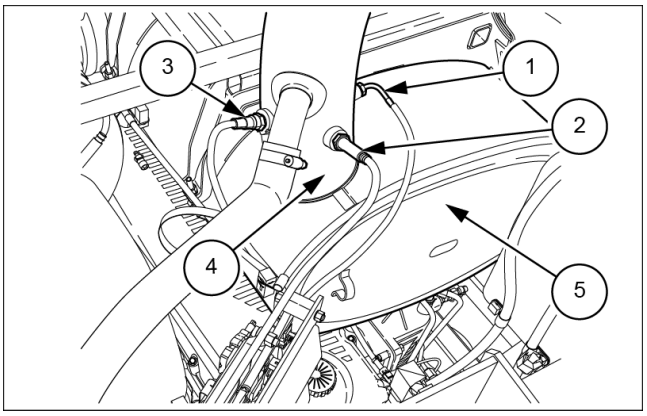
LEIL15WHL0824AB 21

29. Loosen the P-clamp **(1)** of the air intake aspirator engine hose **(2)**.
    Disconnect the air intake aspirator engine hose **(2)** from the outlet of the Selective Catalytic Reduction (SCR) **(3)**.



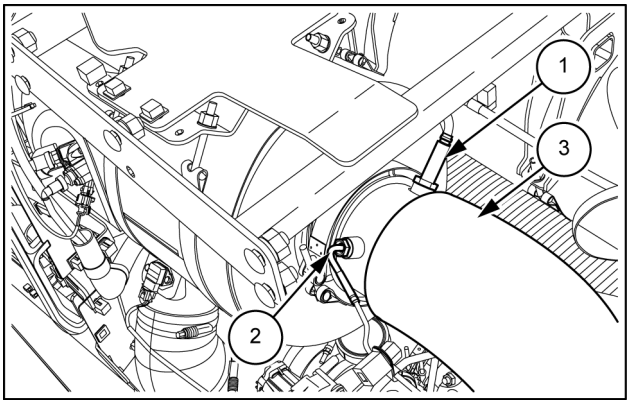
LEIL15WHL0811AB 22

30. Loosen the hexagonal nut of the outlet temperature sensor **(1)**.
Loosen the hexagonal nut of outlet the Nitrogen Oxides (NOx) sensor **(2)**.
Loosen the hexagonal nut of the ammonia (NH3) sensor **(3)**.
Remove any straps holding the sensor wiring harness to the others. Disconnect the temperature sensor **(1)**, NOx, sensor **(2)** and the NH3 **(3)** sensor from the outlet **(4)** of the Selective Catalytic Reduction (SCR) **(5)**.



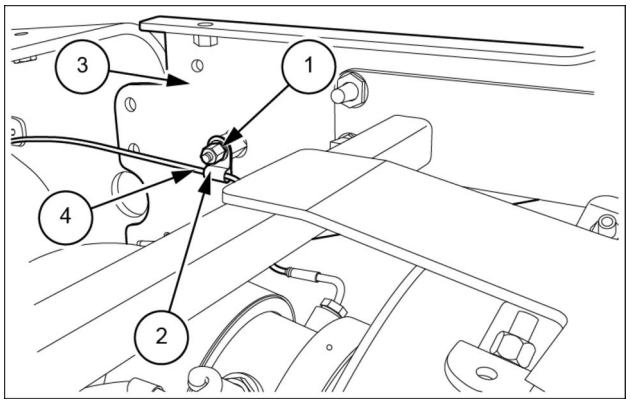
LEIL15WHL0672AB 23

31. Locate the inlet temperature sensor **(1)** and the inlet NOx sensor **(2)** on the inlet of the Diesel Oxidation Catalyst (DOC) **(3)**.
Loosen the hexagonal nut of the inlet temperature sensor **(1)** and the inlet NOx sensor **(2)**.
Disconnect the sensors **(1)** and **(2)** from the inlet of the Diesel Oxidation Catalyst (DOC) **(3)**.



LEIL15WHL0671AB 24

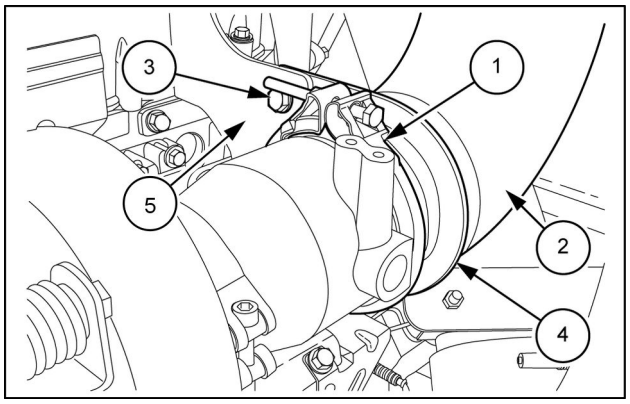
32. Loosen the hexagonal nut **(1)**, with related washer, spacer, and bolt. Separate the P-clamp **(2)** that secure the wiring harness **(4)** of the DOC inlet temperature sensor from the support bracket **(3)**.



LEIL15WHL1141AB 25

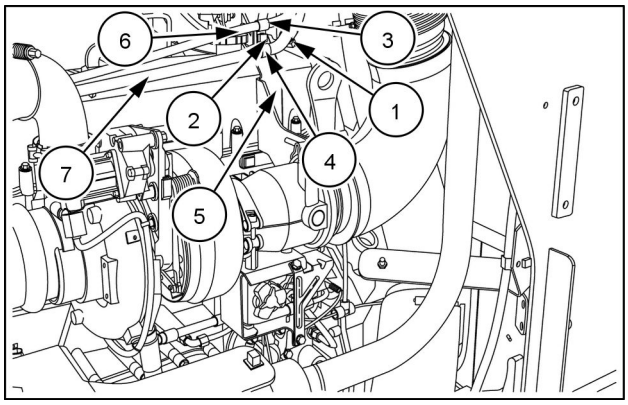
33. Remove the two bolts **(3)** and the related washers and nuts to separate the exhaust support bracket **(5)** from the U-clamp **(4)**.

34. Remove the clamp **(1)** from the inlet Diesel Oxidation Catalyst (DOC) pipe **(2)**.
Discard the gasket.



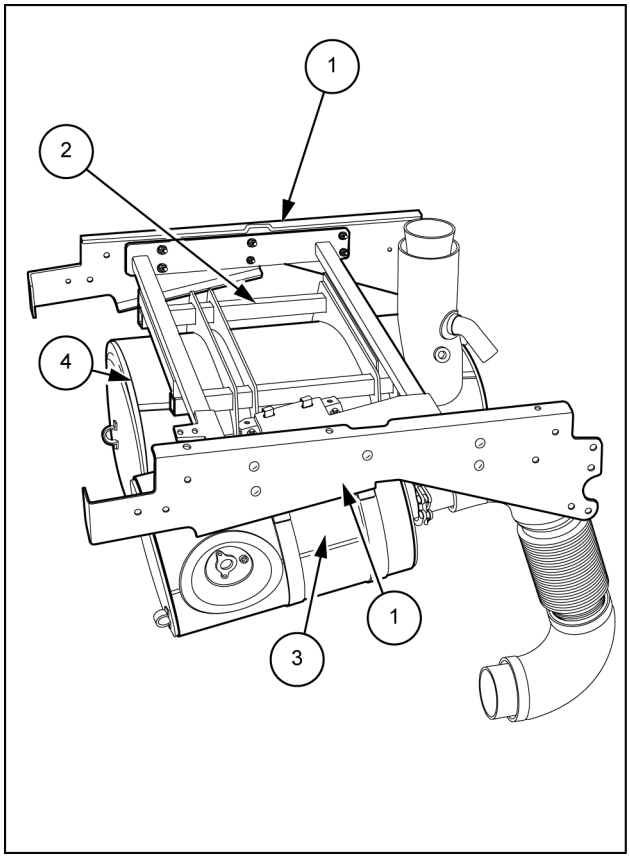
LEIL15WHL0826AB 26

35. Remove the P-clamp **(1)**.
    Loosen the bolt **(2)** to separate the P-clamps **(3)** and **(4)** from the exhaust support bracket **(5)**.
    Remove the P-clamps **(3)** and **(4)** from the hoses **(6)** and **(7)**.



LEIL15WHL0831AA 27

36. Attach a suitable lifting strap on the brackets (hydraulic to cooling) **(1)** to support the muffler frame **(2)** with the Diesel Oxidation Catalyst (DOC) **(3)** and the Selective Catalytic Reduction muffler (SCR) **(4)**.



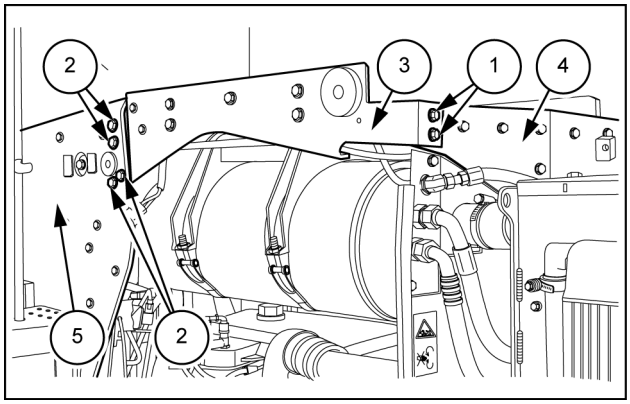
LEIL15WHL0836BB 28

37. Remove the two bolts **(1)** with related washers and nuts to separate the bracket (hydraulic to cooling) **(3)** from the engine wall **(4)**.
38. Remove the four bolts **(2)** with related washers and nuts to separate the bracket (hydraulic to cooling) **(3)** from the hydraulic tank **(5)**.

NOTE: *left-hand side of the machine is shown. The operations are similar for the right-hand side.*

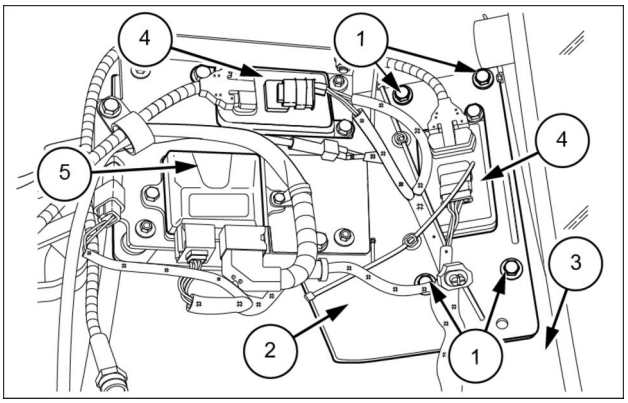
39. Remove the brackets **(3)**, the muffler frame, the DOC and the SCR as an assembly.

NOTE: *do not damage the muffler support during removal.*



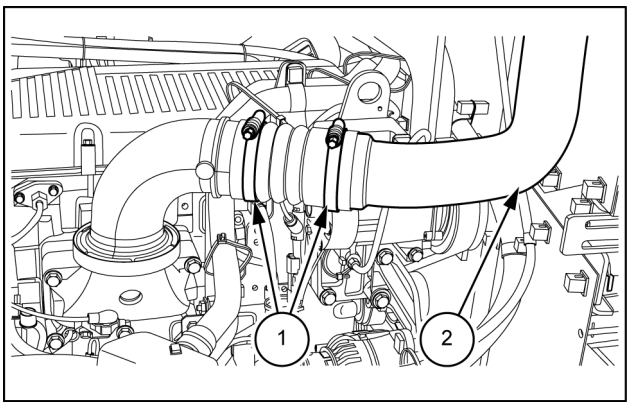
LEIL15WHL0837AB 29

40. Loosen the bolts **(1)** to remove the sensor mounting bracket **(2)** with the two the NOx sensor modules **(4)** and the NH3 Electronic Control Unit **(5)** from the hydraulic tank **(3)**.



LEIL15WHL1328AB 30

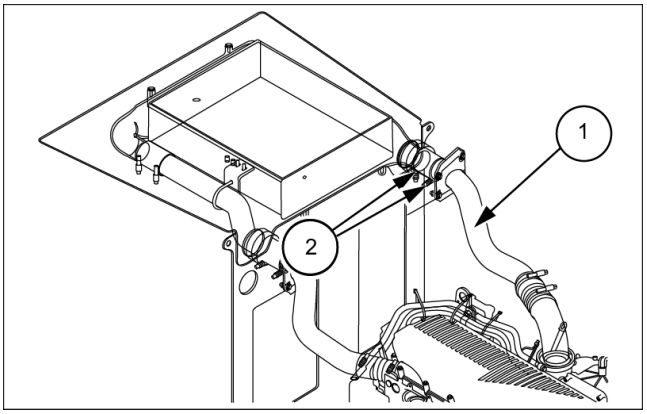
41. Loosen the two clamps **(1)** from the intercooler tube **(2)**.



LEIL15WHL0835AB 31

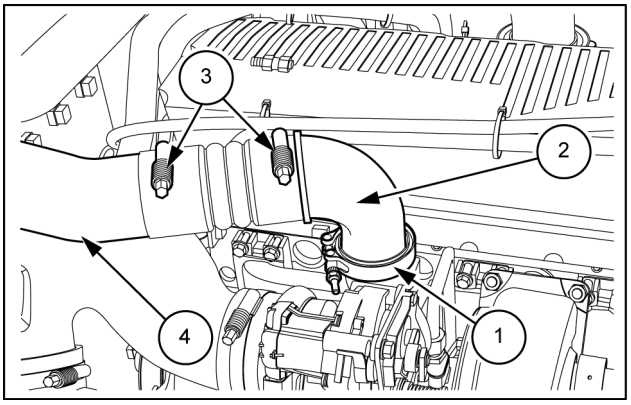
42. Loosen the clamps **(2)** from the intercooler tube **(1)**. Remove the intercooler tube **(1)** through the engine wall.

NOTE: *for clarity, the engine wall is not shown in the figure.*



LEIL15WHL1165AB 32

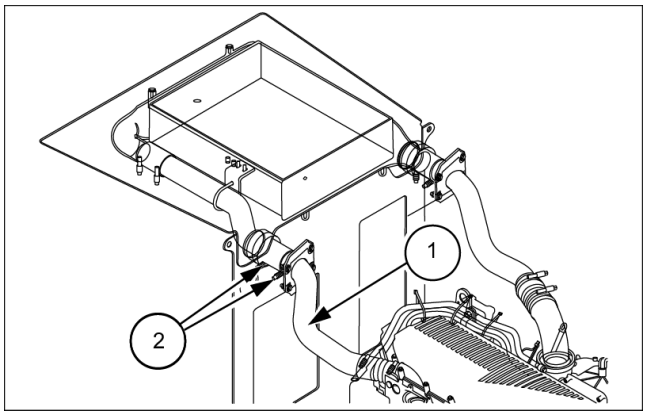
43. Loosen the V-band clamp **(1)**. Remove the O-ring and the air intake elbow **(2)** of the turbocharger.
Loosen the clamps **(3)**.
Remove the air intake tube **(4)** of the turbocharger.
Cover the turbocharger inlet to prevent debris entry.



LEIL15WHL0847AB 33

44. Loosen the clamps **(2)** from the air intake tube **(1)** and remove the tube through the engine wall.

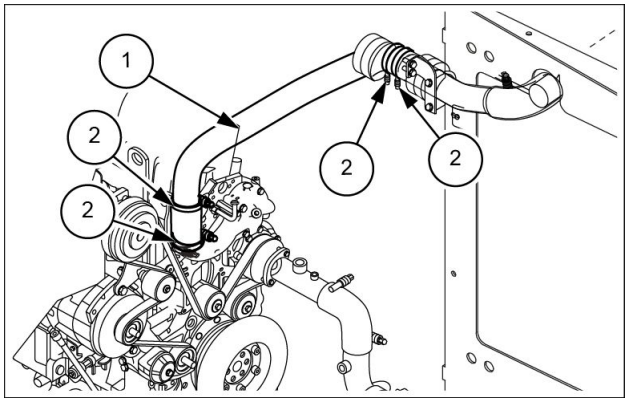
NOTE: *for clarity, the engine wall is not shown in the figure.*



LEIL15WHL1084AB 34

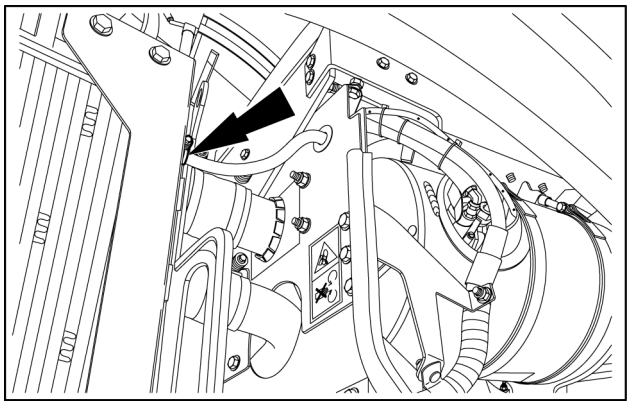
45. Loosen the clamps **(2)** to remove the upper radiator tube **(1)** through the engine wall.

NOTE: *for clarity, the engine wall is not shown in the figure.*



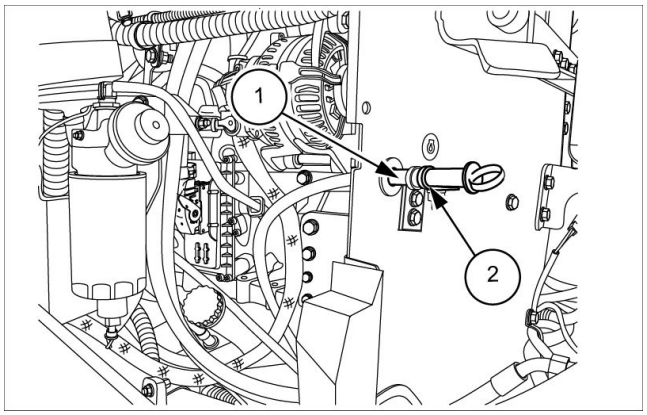
LEIL15WHL1147AB 35

46. Loosen the clamp of the overflow hose to the radiator.



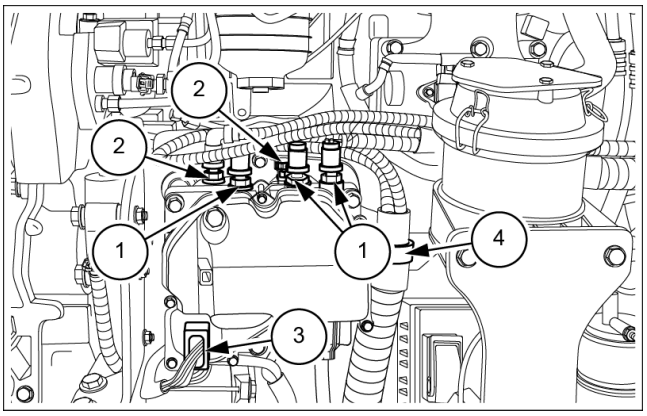
LEIL15WHL1288AB 36

47. Remove the oil dipstick P-clamp **(2)**.
Pull the oil dipstick tube **(1)** through the wall.



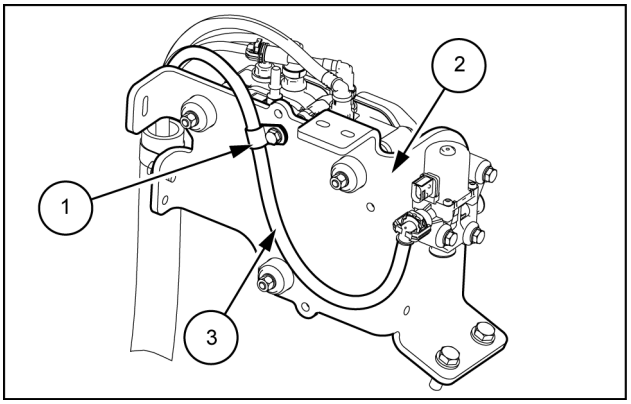
LEIL15WHL0819AB 37

48. Tag and disconnect the DEF/ADBLUE® supply and return lines **(1)** from the supply module. Tag and disconnect the coolant water supply and return lines **(2)** from the supply module. Tag and disconnect the wiring harness **(3)** from the supply module.
49. Remove the P-clamp **(4)** to separate the **DEF/ADBLUE®** bundle from the supply module.



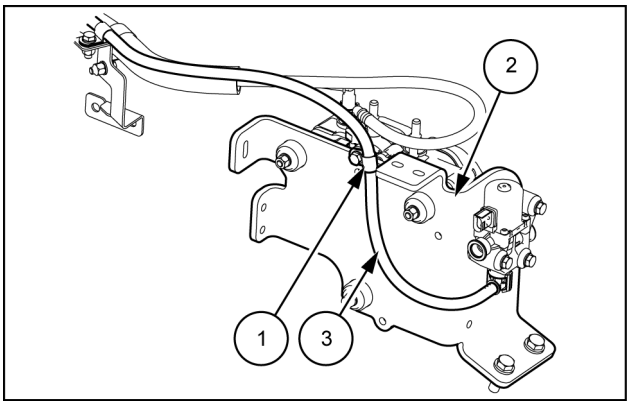
LEIL15WHL0813AB 38

50. Remove the P-clamp **(1)** to separate the coolant inlet hose **(3)** from the supply module bracket **(2)**.



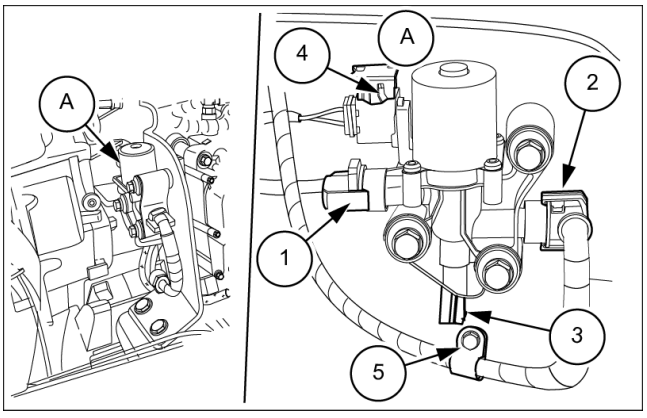
LEIL15WHL0843AB 39

51. Remove the P-clamp **(1)** the coolant by-pass line **(3)** from the supply module bracket **(2)**.



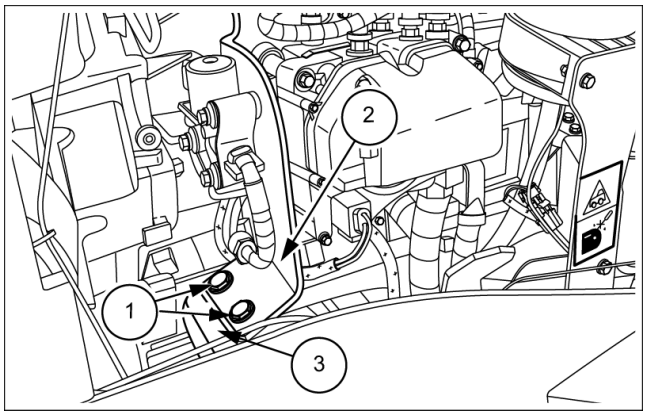
LEIL15WHL0844AB 40

52. Remove the P-clamp **(5)**.
Push inward on the fitting retaining clip and disconnect the coolant outlet **(2)**, the coolant inlet **(1)** and by-pass **(3)** lines from the heater control valve. Tag and disconnect the machine wiring harness **(4)** from the heater control valve.



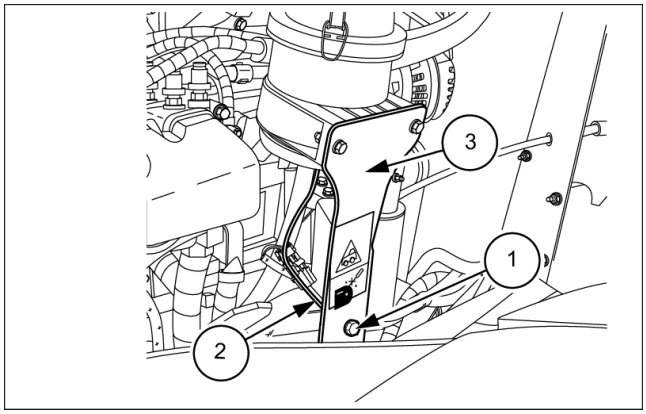
LEIL15WHL0816AB 41

53. Remove the two bolts **(1)**, with related washers and nut to separate the supply module bracket **(2)** from the left-hand side chassis **(3)**.



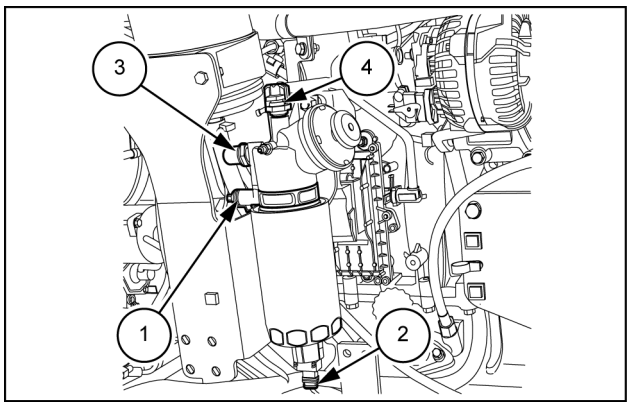
LEIL15WHL0841AB 42

54. Loosen the bolt **(1)** to disconnect the wire **(2)** and related P-clamp from the support bracket **(3)** of the crankcase vent filter.



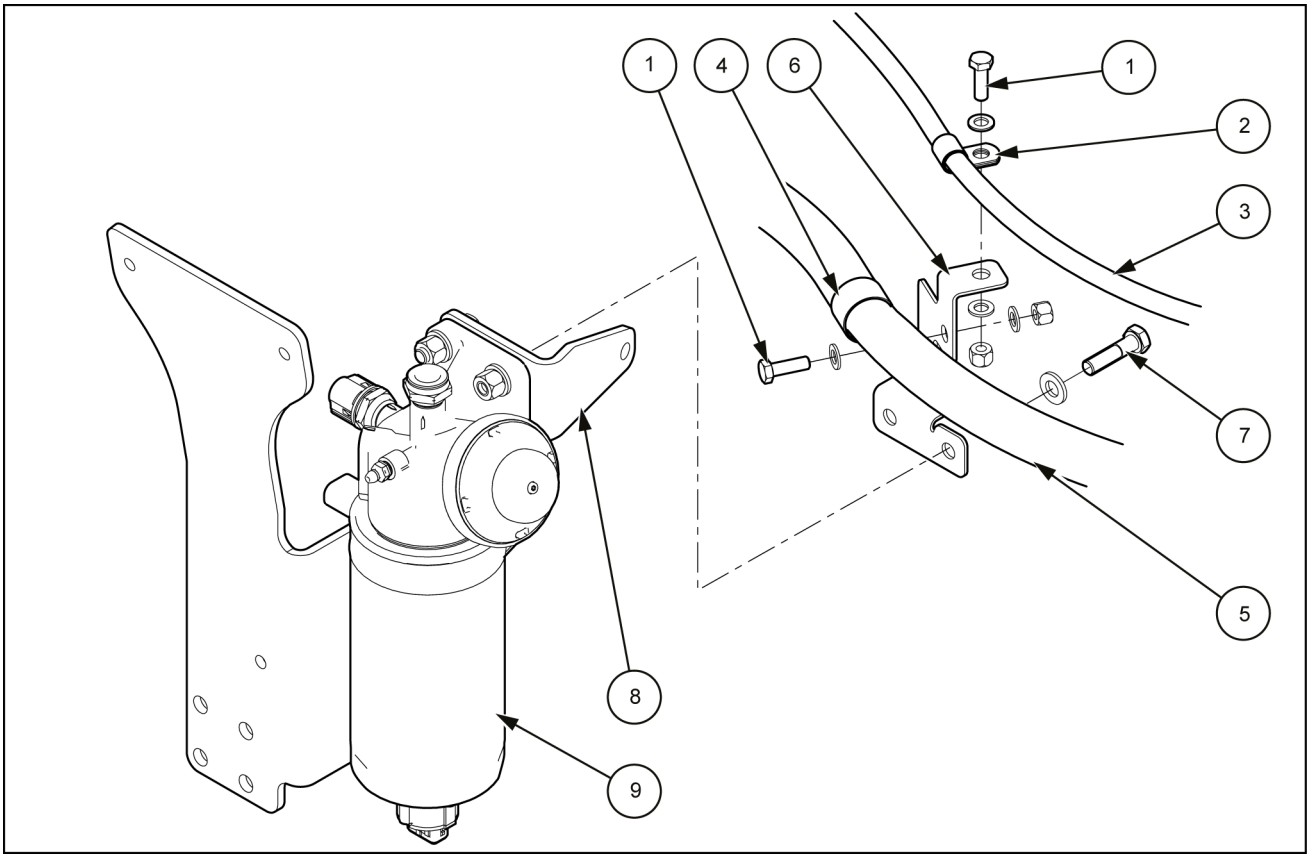
LEIL15WHL1139AB 43

55. Tag and disconnect the fuel filter heater wire **(1)** and the water sensor **(2)**.
Drain the fuel filter and disconnect the inlet fuel line **(3)** and outlet fuel line **(4)** from the fuel filter head. Plug the lines and cap the fittings.



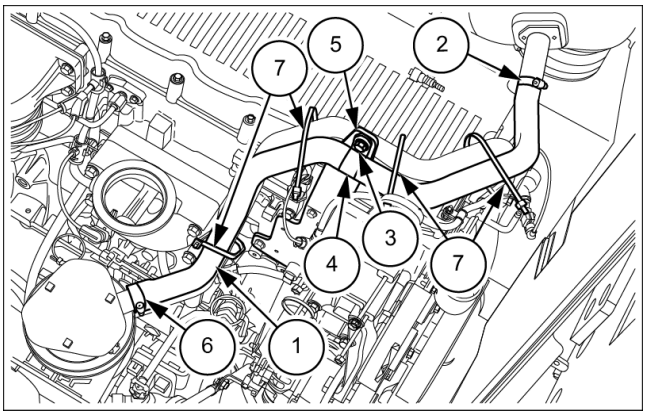
LEIL15WHL0846AB 44

56. Remove the bolts **(1)**, with related washers and nuts to separate the P-clamps **(2)** and **(4)** from the bracket **(6)**. Remove the P-clamp **(2)** from the coolant by-pass hose **(3)**. Remove the P-clamp **(4)** from the **DEF/ ADBLUE®** bundle hose **(5)**.
57. Remove the two bolts **(7)**, with related washers and nuts to separate the bracket **(6)** from the fuel filter / engine breather filter bracket **(8)** and from the fuel filter **(9)**. Remove the fuel filter **(9)**.



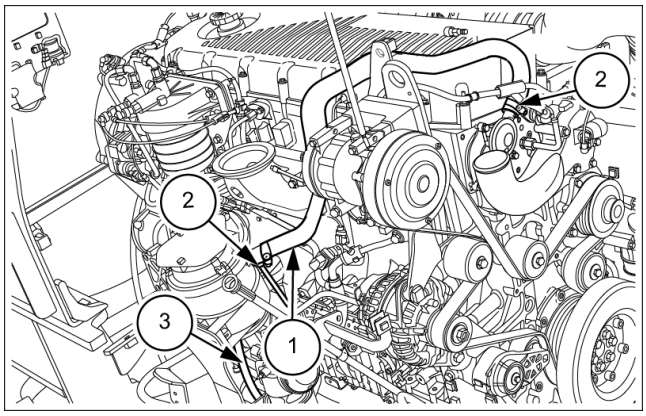
LEIL15WHL0845FB 45

58. Loosen the clamp **(2)** on the crankcase vent hose **(1)**.
59. Remove the bolt **(3)** with related washers and nut to separate the two clamps **(4)** from the hose support bracket **(5)**.
60. Loosen the clamp **(6)** on the crankcase vent hose **(1)**.
61. Cut the straps **(7)**.
62. Remove the crankcase vent hose **(1)**.



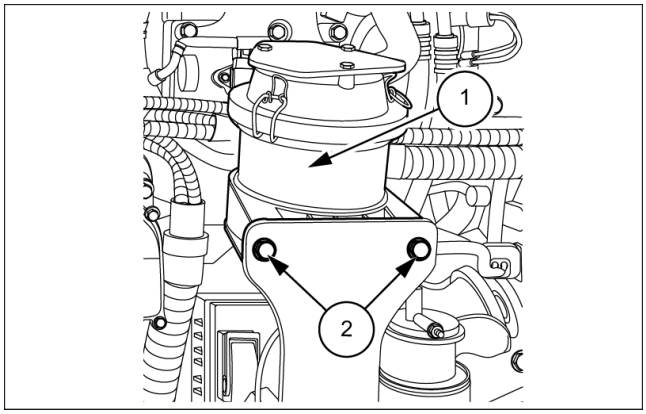
LEIL15WHL0669AB 46

63. Loosen the P-clamps **(2)** on the engine to crankcase vent filter hose **(1)**.
64. Remove the engine to the crankcase vent filter hose **(1)**.
65. Remove the drain hose filter **(3)** from the crankcase vent filter.



LEIL15WHL0670AB 47

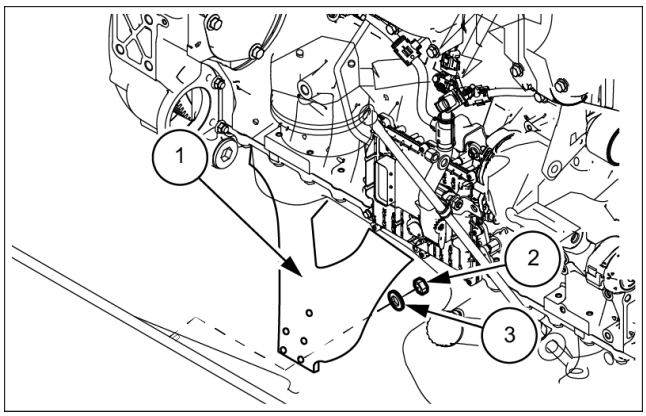
66. Loosen the bolts **(2)** to remove the crankcase vent filter **(1)** from the machine.



LEIL15WHL1138AB 48

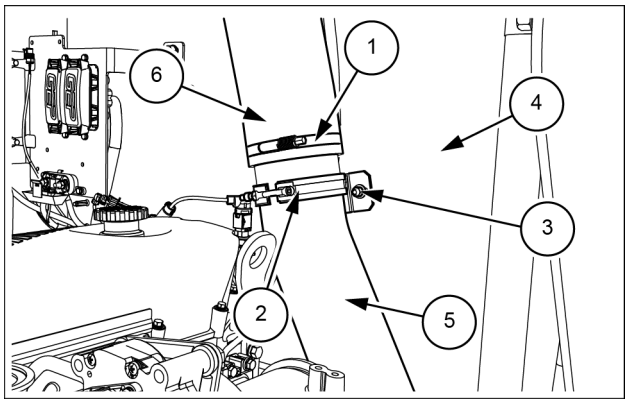
67. Loosen the four nuts **(2)** and related washers **(3)** that hold the support bracket **(1)** of the crankcase vent filter to the rear chassis.

NOTE: *one of these four nuts **(2)** is used to secure a P-clamp that hold the wiring harness to the support bracket **(1)**.*



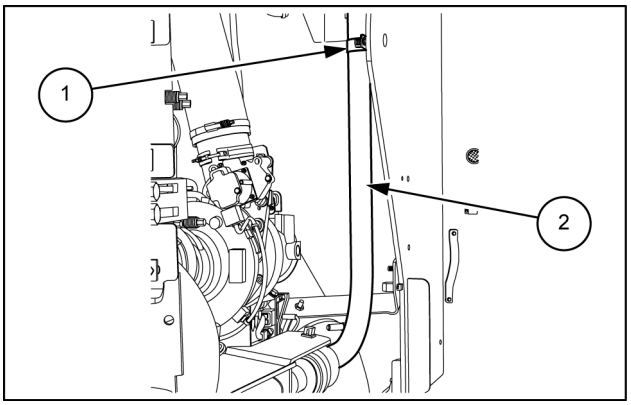
LEIL15WHL1140AB 49

68. Loosen the clamps **(1)** and **(2)**.
69. Separate the upper air intake hose **(6)** from the air intake pipe **(5)**. Remove the upper air intake hose **(6)**.
70. Loosen the two nuts **(3)** and related washer to remove the clamp **(2)** from the hydraulic tank **(4)**.



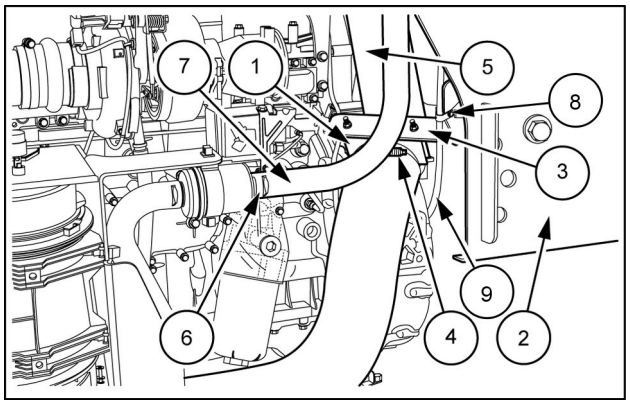
LEIL16WHL1526AB 50

71. Remove the P-clamp **(1)**.
Remove the air intake aspirator hose **(2)**.



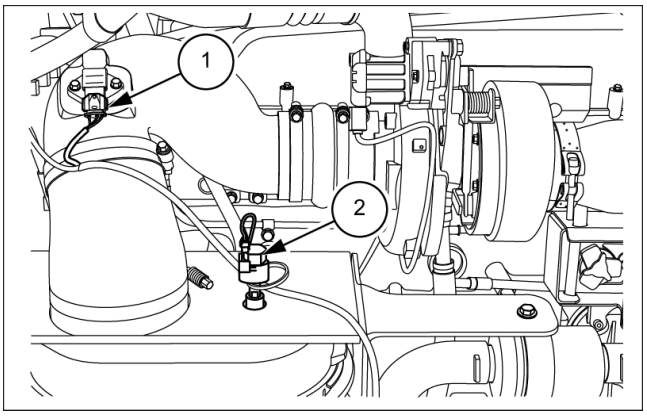
LEIL15WHL1059AB 51

72. Loosen the clamp **(6)** to separate the air intake aspirator hose **(7)** from the check valve.
73. Remove the P-clamp **(8)** to separate the rear chassis harness **(9)** from the air intake bracket **(3)**.
74. Remove the U-bolt **(1)** from the air intake bracket **(3)**.
75. Remove the air intake bracket **(3)** from the hydraulic tank **(3)**.
Loosen the clamp **(4)**. Remove the air intake pipe **(5)**.



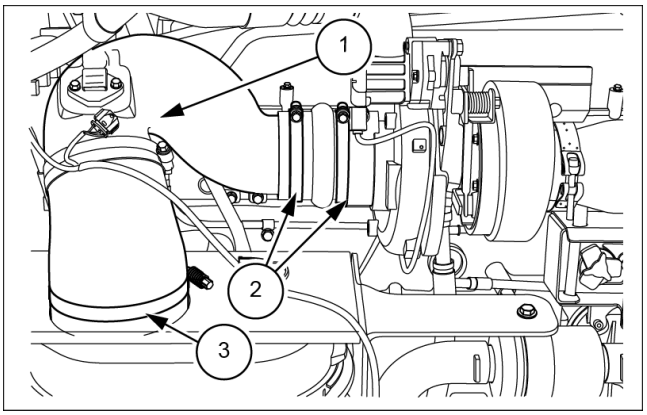
LEIL15WHL1060AB 52

76. Tag and disconnect the engine wiring harness connector from the air filter sensor **(2)**.
77. Tag and disconnect the engine wiring harness connector from the air inlet humidity sensor **(1)**.



LEIL15WHL0848AB 53

78. Loosen the clamps **(2)** on the turbocharger.
79. Loosen the clamp **(3)** on the air filter housing.
80. Remove the air intake hose **(1)**.
Cover the turbocharger inlet to prevent debris entry.



LEIL15WHL0849AB 54

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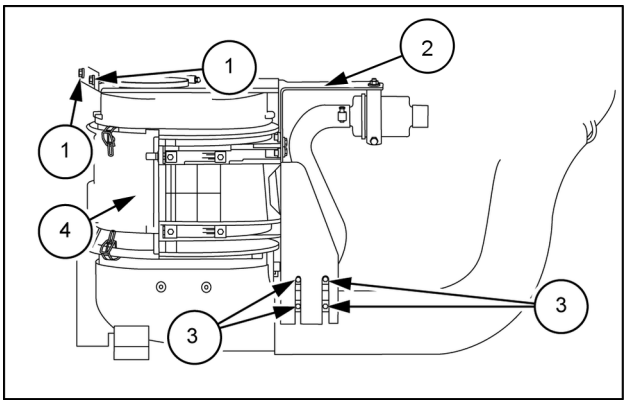
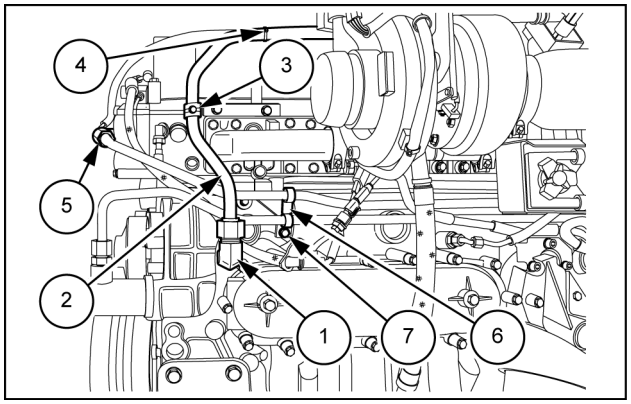
81. Remove the bolts **(1)** with related washers and nuts to separate the air cleaner bracket **(2)** engine wall.
82. Remove the four nuts and washers **(3)**.
Estract the air cleaner **(4)** as an assembly.



LEIL15WHL1057AB 55

83. Disconnect the elbow **(1)**. Remove the P-clamp **(3)**. Cut the straps **(4)**. Remove the hose fill **(2)**.
84. Remove the P-clamps **(7)** and **(6)**.
85. Disconnect the tube **(5)**.



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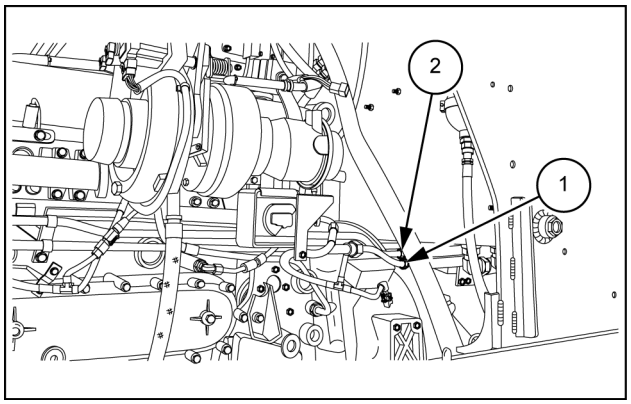
86. Disconnect and remove the tubes **(1)** and **(2)**.



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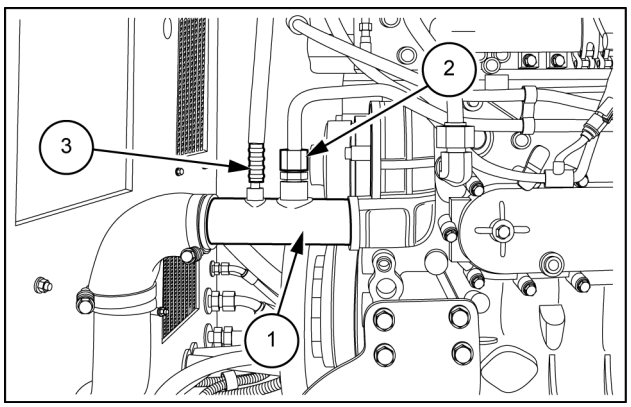
87. Disconnect the engine coolant line **(2)** from the zinc lower radiator tube **(1)**.
Disconnect the dosing module coolant line **(3)** from the lower radiator tube **(1)**.



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