

SERVICE MANUAL

W270D
W300D
Tier 2
Wheel Loader

Part number 48083746

English
July 2018





SERVICE MANUAL

**W270D ZBAR - EH, NEW CAB TIER2
W300D ZBAR - EH, NEW CAB TIER2**

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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.

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.

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

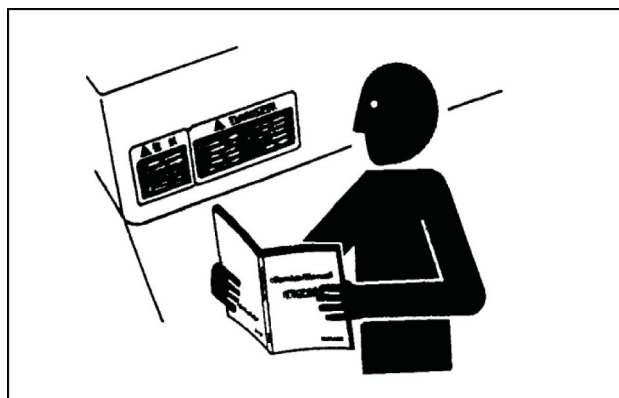
Unexpected movement!

Make sure parking brake is applied. Secure machine with wheel chocks.

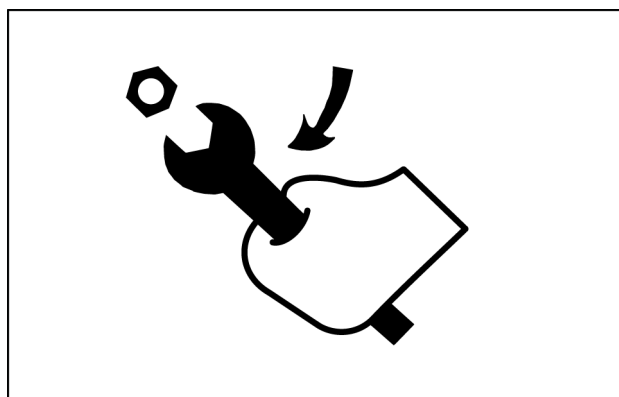
Failure to comply will result in death or serious injury.

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.



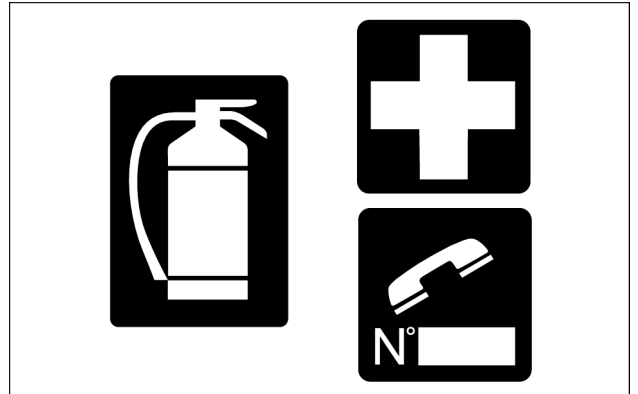
TULI12WEX2004AA 1



TULI12WEX2005AA 2

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

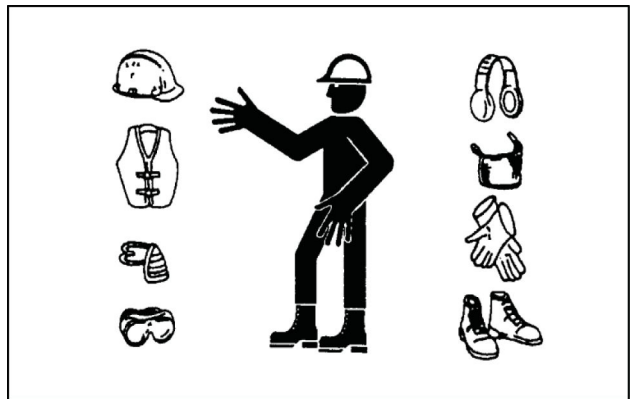
Wear close fitting clothing and safety equipment appropriate for the job:

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

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.



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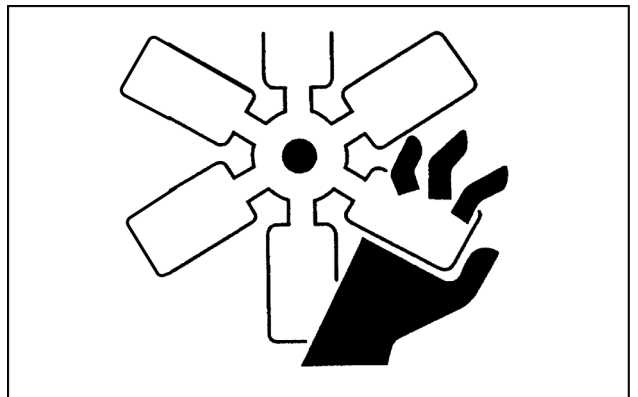
Engine - Radiator

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.



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SERVICE MANUAL

Engine

**W270D ZBAR - EH, NEW CAB TIER2
W300D ZBAR - EH, NEW CAB TIER2**

Engine - General specification

W270D ZBAR - EH, NEW CAB TIER2 | ANZ --- APAC --- LA --- MEA

Engine with 4 Speed Transmission	
A. Low idle	870-930 RPM
Alternate low idle	670-730 RPM
Alternate accelerated idle	1270-1330 RPM
Working idle (setting from factory)	1020-1080 RPM
B. Maximum No Load RPM	2162-2212 RPM
C. Converter Stall	1973-2123 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

W300D ZBAR - EH, NEW CAB TIER2 | ANZ --- APAC --- LA --- MEA

Engine with 4 Speed Transmission	
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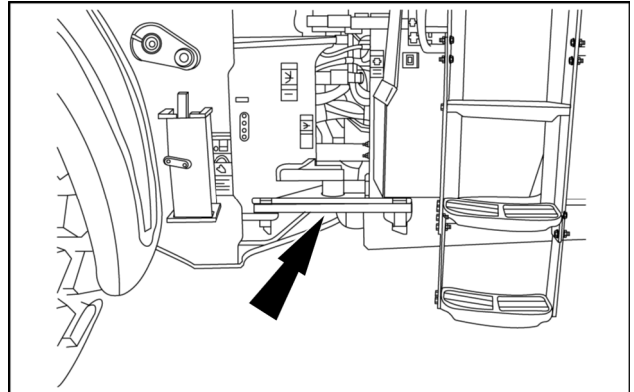
NOTE: hydraulic Stall and Converter & Hydraulic Stall RPM values are read while the lift arms are rising with the bucket held rolled back and the engine at Wide Open Throttle (WOT) in max power mode.

Engine - Remove

Prior operation:

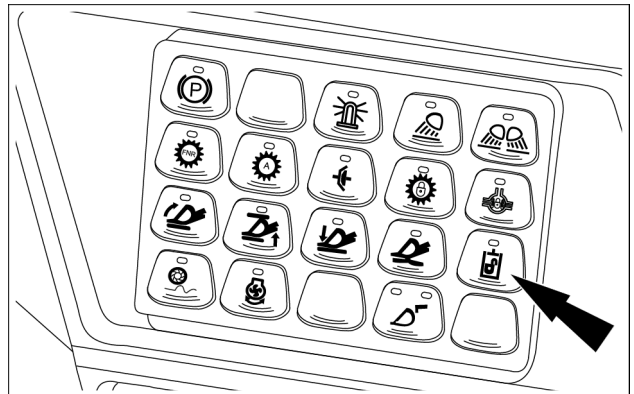
Engine hood - Remove (90.105)

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



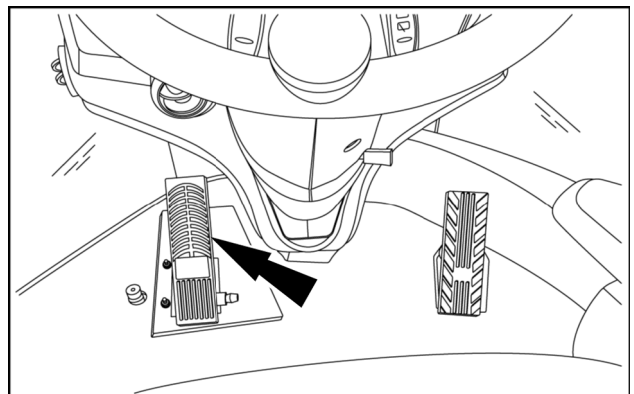
LEIL15WHL1782AA 1

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



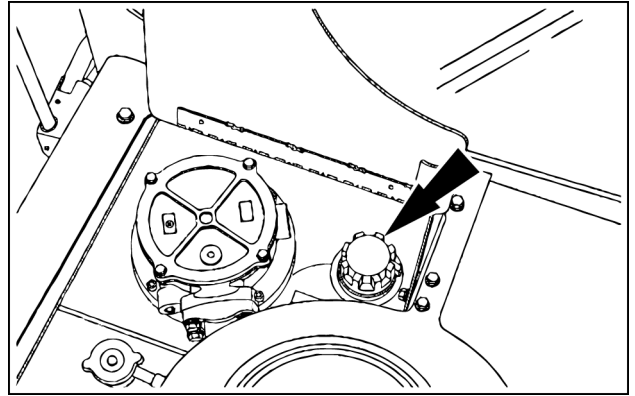
LEIL16WHL1125AA 2

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.



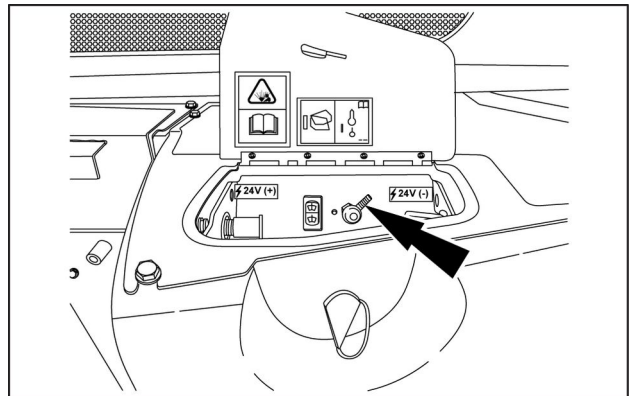
LEIL15WHL0564AA 3

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



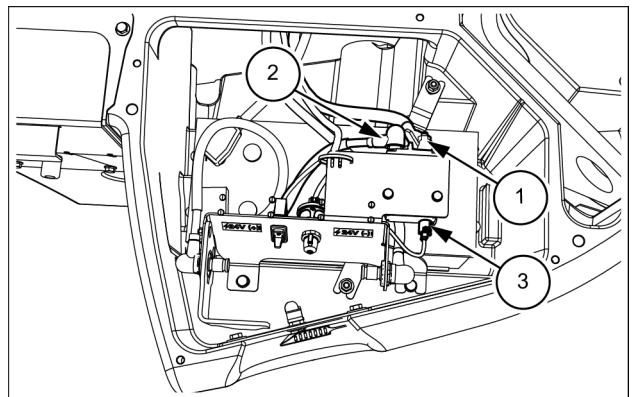
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8. Locate the timed disconnect switch in the battery box. Put the timed disconnect switch in the OFF position.



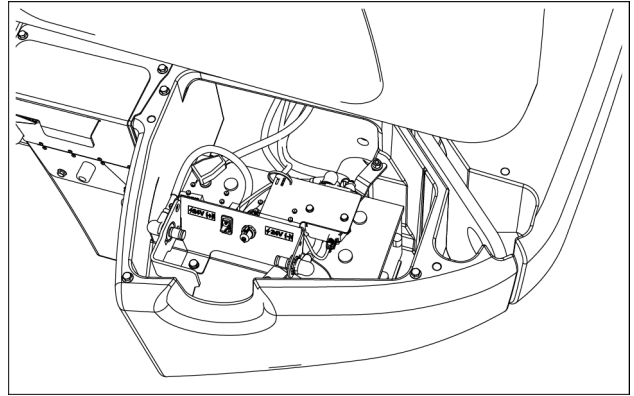
LEIL15WHL0663AA 5

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.

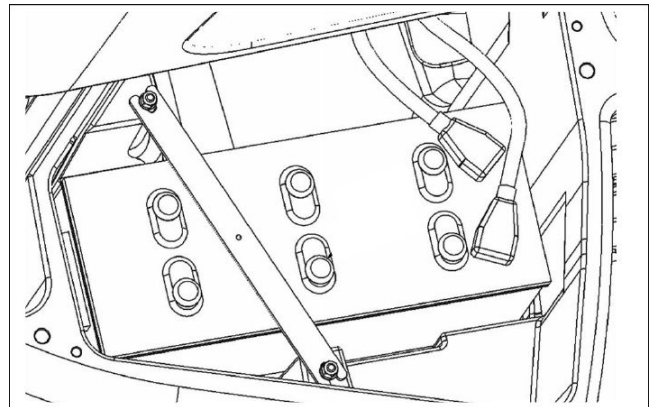


LEIL16WHL1528AB 6

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.



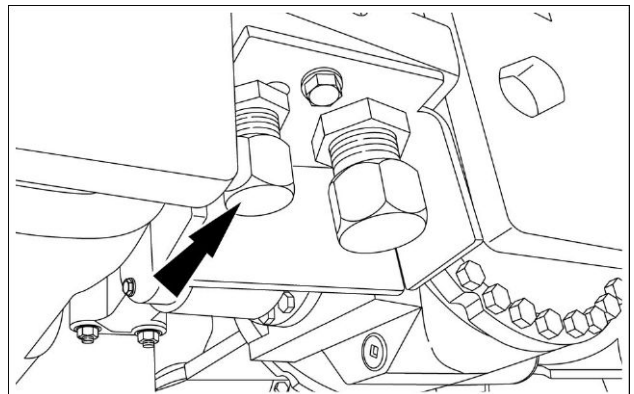
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LEIL15WHL1489AA 8

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.

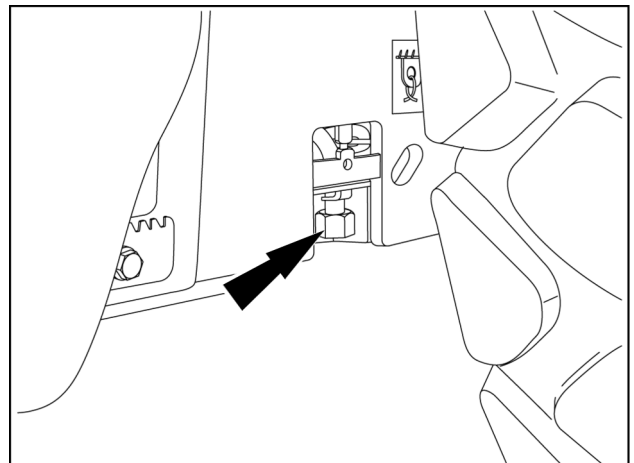
NOTE: see machine specifications for cooling system volume.



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.

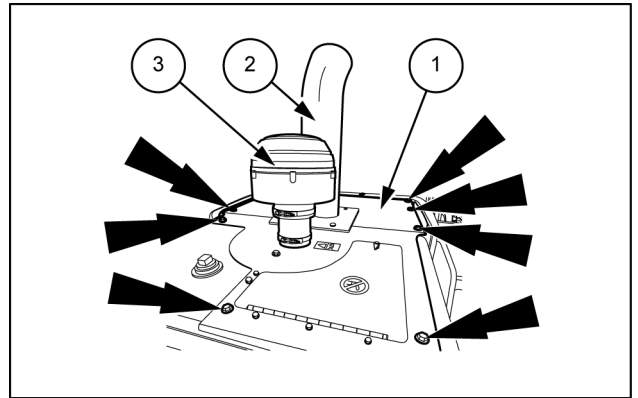
NOTE: see machine specifications for engine oil sump volume.



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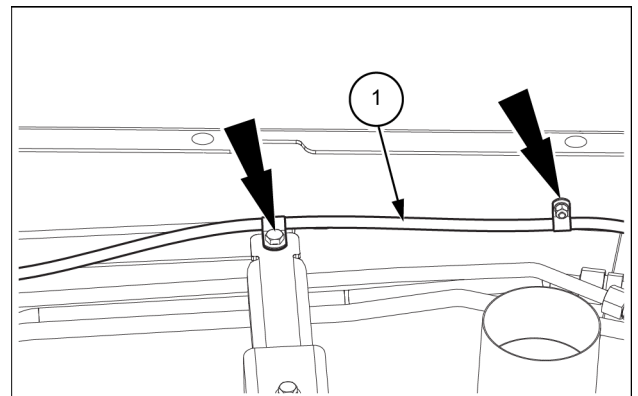
13. Loosen the clamp on the air intake hose under the air inlet engine hood.

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.



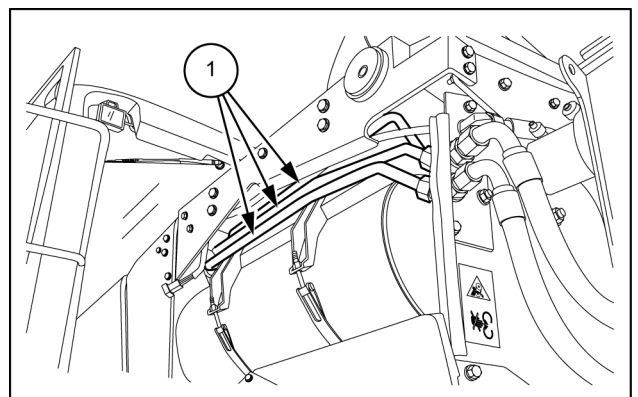
LEIL15WHL0679AB 11

16. Disconnect the radiator vent hose (1) from the radiator. Remove the P-clamps that secure the hose to the left-hand muffler support bracket. Tag and disconnect the ENG_H connector.



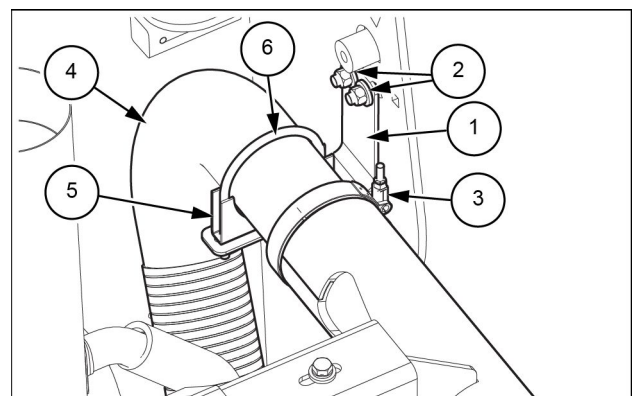
LEIL17WHL0307AB 12

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



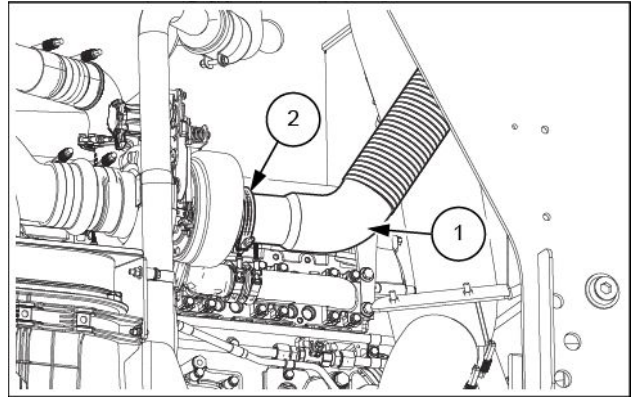
LEIL15WHL0682AB 13

18. Remove the two bolts, washers and nuts (2) to unfix the exhaust pipe support bracket (1) from the hydraulic tank. Remove the clamp saddle (5), U-bolt (6), washers and nuts to separate the exhaust system pipe (4) from the bracket (1).



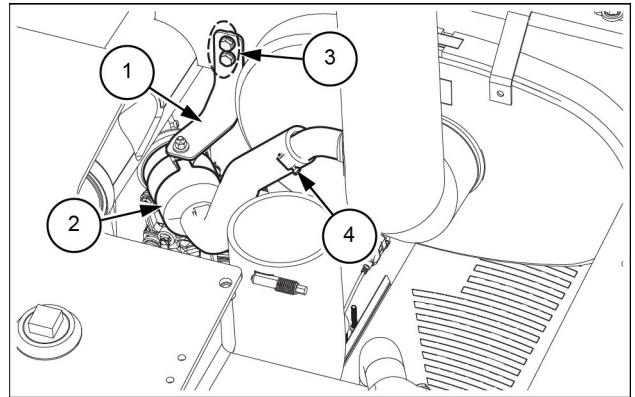
LEIL17WHL0302AB 14

19. Loosen the clamp (2) to disconnect the exhaust system pipe (1) from the engine.



LEIL17WHL0301AB 15

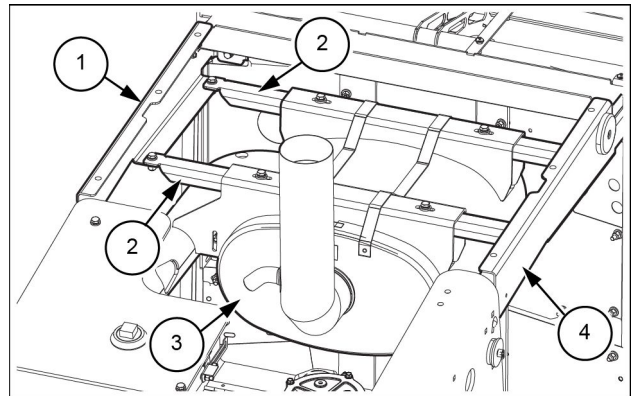
20. Remove the two bolts, washers and nuts (3) to unfix from the muffler the bracket (1) that supports the check valve (2). Loosen the clamp (4) to disconnect the aspirator engine hose from the muffler.



LEIL17WHL0300AB 16

21. Attach a suitable lift equipment to the left-hand and right-hand support brackets (1), (4). Remove the hardware to unfix the left-hand and right-hand support brackets (1), (4) from the hydraulic tank and engine wall. Move the exhaust system assembly (left-hand and right-hand support brackets (1), (4), muffler supports (2), muffler (3)) out of the machine.

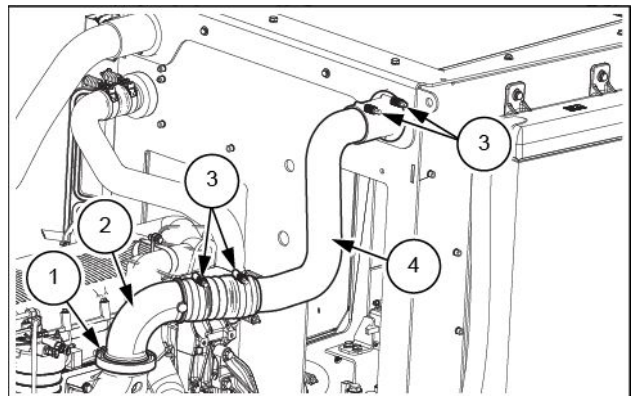
NOTE: be sure all wire harness connections and hoses are out of the way during removal.



LEIL17WHL0304AB 17

22. Loosen the V-band clamp (1) to disconnect the air intercooler inlet elbow (2). Discard the O-ring. Loosen the clamps (3) to disconnect the air intercooler inlet tube (4).

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



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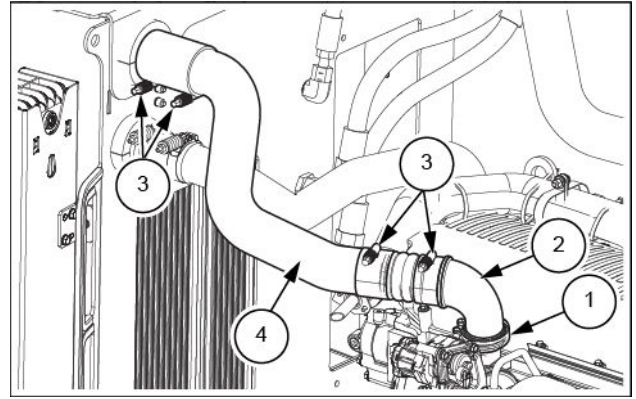
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23. Loosen the clamps (3) to disconnect the air intake tube (4).

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

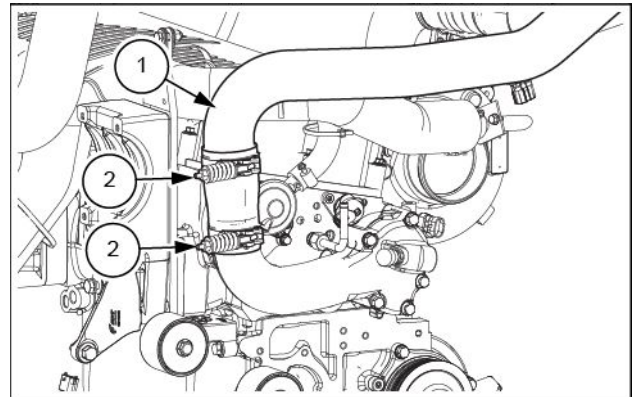


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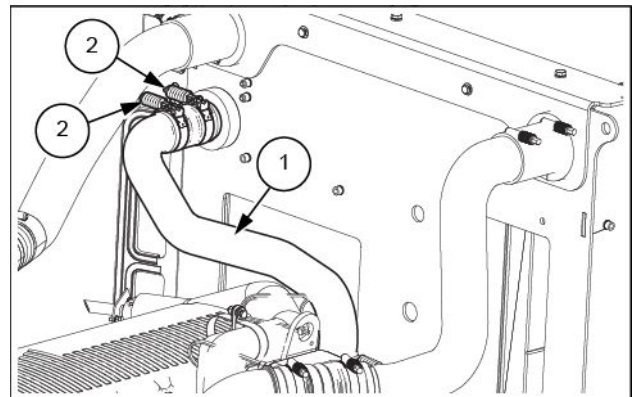
24. Loosen the clamps (2) to disconnect the upper radiator tube (1).

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

25. Remove the V-band clamp (1) to disconnect the air intake elbow (2) from the turbocharger. Discard the O-ring.

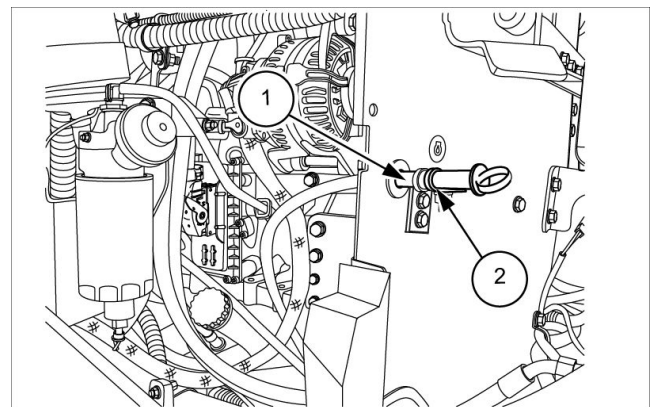


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LEIL17WHL0262AB 21

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



LEIL15WHL0819AB 22

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