

580N
580SN WT
580SN
590SN
Tier 4B (final)
Tractor Loader Backhoe

SERVICE MANUAL

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SERVICE MANUAL

580N FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL) , 580N TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL) , 580SN FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL) , 580SN TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL) , 580SN WT TIER 4B (FINAL) , 590SN FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL) , 590SN TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL)

Link Product / Engine

Product	Market Product	Engine
580N TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL)	North America	F5BFL413A*B007
580N FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL)	North America	F5BFL413A*B007
580SN TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL)	North America	F5BFL413A*B007
580SN FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL)	North America	F5BFL413A*B007
580SN WT TIER 4B (FINAL)	North America	F5BFL413A*B007
590SN TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL)	North America	F5BFL413A*B007
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INTRODUCTION

Foreword - Important notice regarding equipment servicing

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your CASE CONSTRUCTION Sales and Service Networks.

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.

Safety rules

Unless otherwise instructed, always perform these steps before you service the machine:

1. Park the machine on a flat, level surface.
2. Place the backhoe in the transport position with the swing lock pin installed for transport.
3. Place the loader bucket on the ground, with the bottom of the loader bucket parallel to the surface.
4. Place the direction control lever and the transmission in neutral.
5. If you need to open the hood to perform service, raise the loader arms and install the support strut.
6. Shut down the engine.
7. Place a 'Do Not Operate' tag on the key switch so that it is visible to other workers or remove the key.

Safety rules - Ductile iron



⚠ DANGER

Altering cast ductile iron can cause it to weaken or break.

Before you weld, cut, or drill holes on any part of this machine, make sure that the part is not cast ductile iron.

Failure to comply will result in death or serious injury.

D0148A

Altering cast ductile iron can cause it to weaken or break. Unauthorized modifications to cast ductile iron parts can cause death or serious injury. Do not weld, cut, drill, repair, or attach items to cast ductile iron parts on this machine.

Before you weld, cut, or drill holes on any part of this machine, make sure the part is not cast ductile iron. See your dealer if you do not know if a part is cast ductile iron.

The following items are examples of cast ductile iron parts. There may also be other parts made of cast ductile iron that are not on the list below.

- two-wheel drive steering link
- dump links
- front axle
- stabilizers
- extend-a-hoe
- swing tower
- bucket linkage
- Air-Conditioning (A/C) compressor mounting bracket

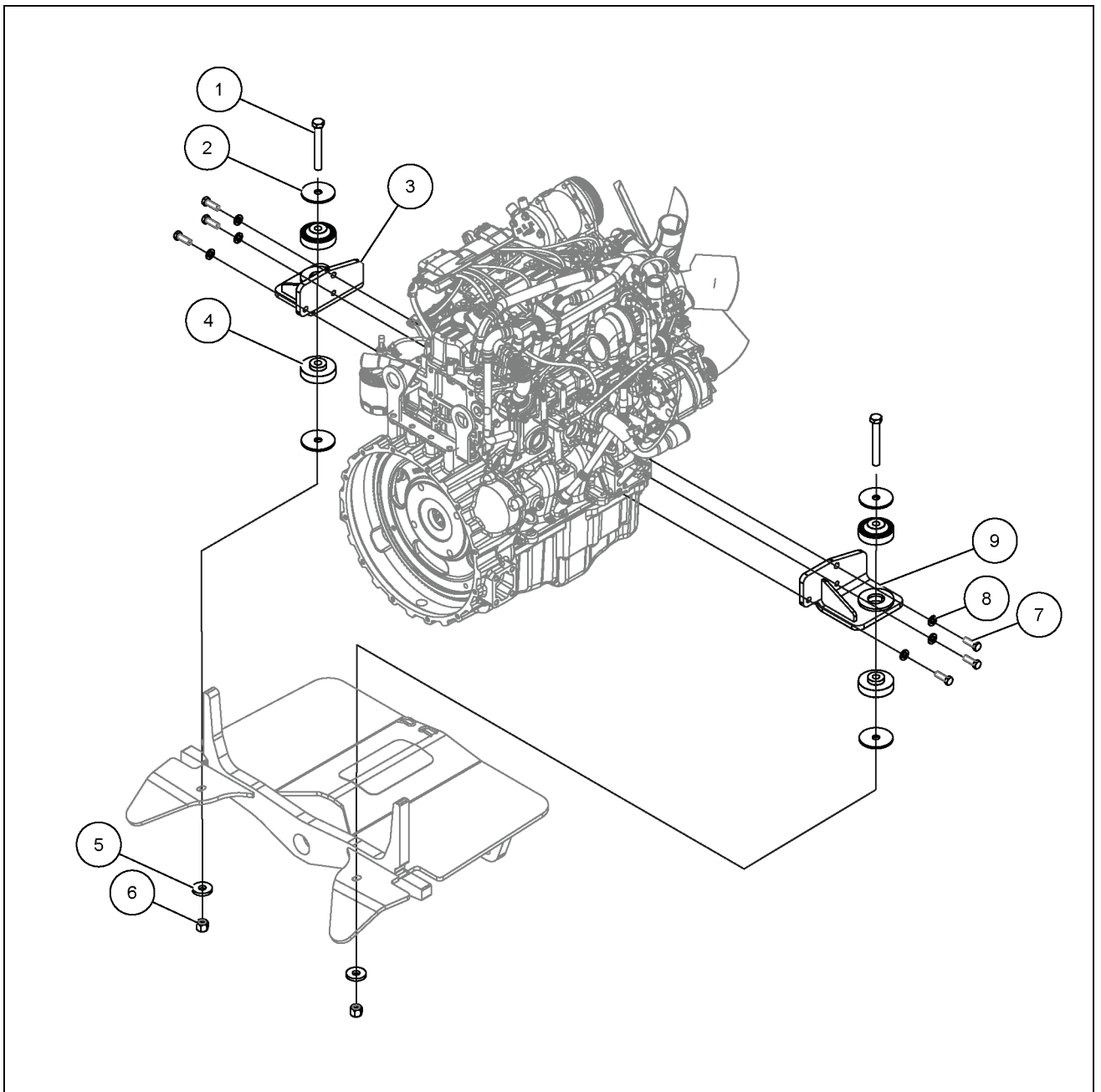
Do not make any unauthorized modifications. Consult an authorized dealer before making any changes, additions, or modifications to this machine.



SERVICE MANUAL

Engine

580N FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL) , 580N TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL) , 580SN FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL) , 580SN TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL) , 580SN WT TIER 4B (FINAL) , 590SN FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL) , 590SN TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL)



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Engine - Prepare - Stall tests

Do the stall test to find the cause of poor performance.

The main relief valve must be set within specifications to achieve accurate readings when performing the following stall tests.

The engine is run at full throttle and the transmission and hydraulic systems are engaged separately, and then together.

Comparing the engine speeds from the stall test with the check sheets in this section will help to find the cause of the problem. It can be necessary to check a separate system to find the exact cause of the problem.

Use a photo tachometer or other tachometer of equal accuracy to get accurate results from the stall test.

The engine, transmission and hydraulic system must be at operating temperature before doing the stall test. Heat the oil according to instructions in this section.

Machines with standard transmission

1. Apply the parking brake.
2. Move the transmission gear selector into fourth gear.
3. Lock the brake pedals together. Put your foot on the service brakes and hold the machine with service brakes.
4. Release the parking brake.
5. With the engine running at low idle, move the direction control lever forward.
6. Slowly increase the engine speed to full throttle.
7. If the machine begins to move at any time, decrease the engine speed to low idle and stop the engine.

Machines with S-Type and H-Type transmissions

1. Apply the parking brake.
2. Place the automatic/manual switch in the manual position.
3. Select fourth gear on the range selector.
4. Lock the brake pedals together. Put your foot on the service brakes and hold the machine with service brakes.
5. Release the parking brake.
6. With the engine running at low idle, move the direction control lever forward.
7. Slowly increase the engine speed to full throttle.
8. If the machine begins to move at any time, decrease the engine speed to low idle and stop the engine. Refer to sections **Parking brake discs - Inspect (33.110)**, **Parking brake discs - Test (33.110)** and **Parking brake discs - Check (33.110)**.

Procedure to heat the torque converter and the hydraulic oil

1. Apply the parking brake.
2. Start and run the engine at low idle.
3. Run the engine at full throttle, hold the loader control lever in the rollback position for 15 seconds.
4. Return the loader control lever to neutral for 15 seconds.
5. Return the boom control lever to neutral for 15 seconds.
6. Repeat steps 3 and 4 until the temperature of the oil is **52 °C (126 °F)**. The side of the reservoir will be very warm at this temperature.
7. With the engine running at low idle, move the transmission control to fourth gear and the direction control lever to forward.
8. Run the engine at full throttle for 15 seconds.
9. Decrease the engine speed to low idle and move the direction control lever to neutral for 15 seconds.
10. Repeat steps 6 through 8 until the pointer in the gauge for transmission oil temperature is in the center of the green zone of the gauge for transmission oil temperature.

Stall test procedure

1. Prepare the machine for the stall test according to instructions in this section.
2. Heat the oil according to instructions in this section.
3. Apply the parking brake and start the engine.
4. With the engine running at full throttle, hold the loader control lever in the lift position and read the tachometer. Record the reading on line 1 of the check sheet.
5. With the engine running at full throttle and boom in travel lock, hold the dipper lever in the in position and read the tachometer. Record the reading on line 2 of the check sheet.
6. Decrease the engine speed to low idle.
7. Move the transmission control lever to fourth gear.

NOTE: For machines with S-Type and H-Type transmissions, place the automatic/manual switch in the manual position.

8. Lock the brake pedals together. Put your foot on the service brakes and hold the machine with service brakes.
9. Release the parking brake.
10. Move the direction control lever to forward.
11. Slowly increase the engine speed to full throttle and read the tachometer. Record the reading on line 3 on the check sheet.

12. With the transmission control lever in fourth gear, the direction control lever in forward, and the engine running at full throttle, hold the loader control lever in the lift position and read the tachometer. Record the reading on line 4 on the check sheet.
13. Decrease the engine speed to low idle, move the directional control lever to neutral.
14. Run the engine at low idle for two minutes and then stop the engine.
15. See the check sheet to understand the results of the stall test.

Engine - Remove

Prior operation:

Disconnect the batteries. See **Battery - Disconnect (55.302)**.

Prior operation:

Drain the hydraulic tank. See **Oil reservoir - Drain fluid (35.300)**.

Prior operation:

Remove the engine hood. See **Engine hood - Remove (90.105)**.

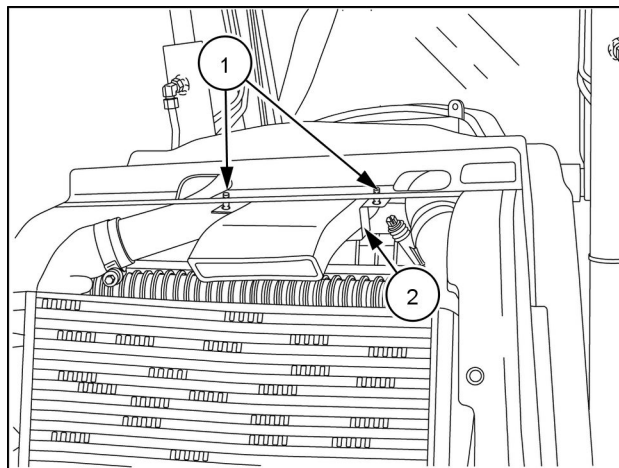
Prior operation:

Drain the cooling system. See **Radiator - Drain fluid (10.400)**.

Prior operation:

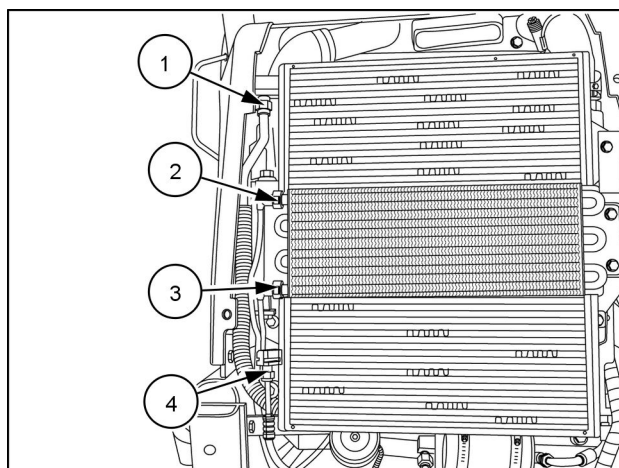
Remove the Diesel Oxidation Catalyst (DOC). See **Diesel Oxidation Catalyst (DOC) - Remove (10.500)**.

1. Remove the air intake tube support bracket bolts (1) and bracket (2).



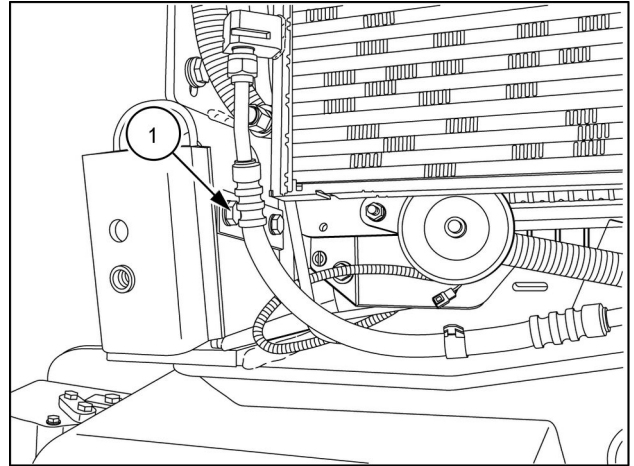
RAPH11TLB0030BA 1

2. Disconnect the A/C condenser inlet line (1).
3. Disconnect the inlet fuel cooler line (2).
4. Disconnect the outlet fuel cooler line (3).
5. Disconnect the A/C condenser outlet line (4).



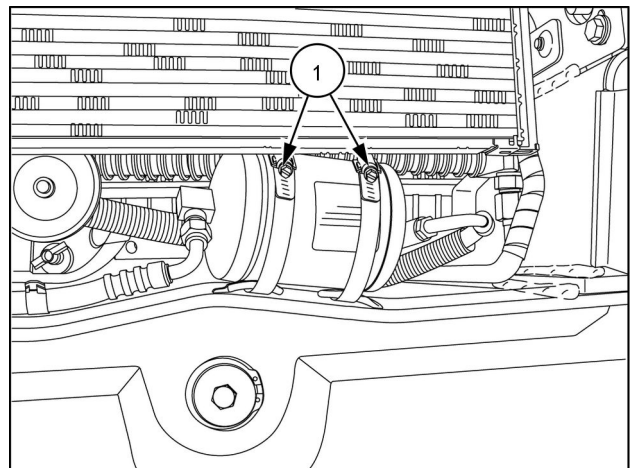
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6. Remove the horn bracket nut **(1)**. Place the horn and horn bracket away from the cooling package.



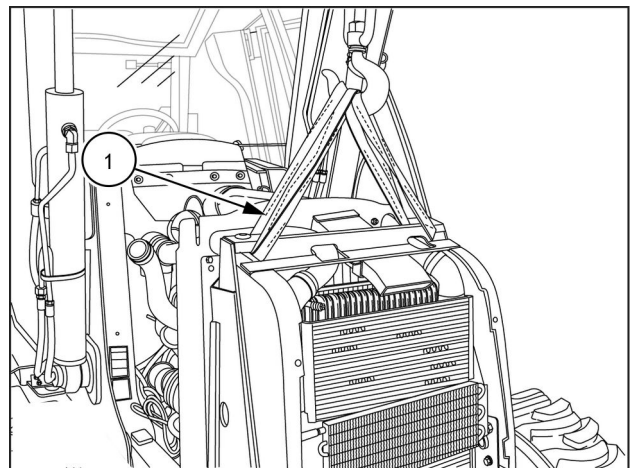
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7. Loosen and remove the receiver/dryer hold-down clamps **(1)**. Place the receiver/dryer away from the cooling package.



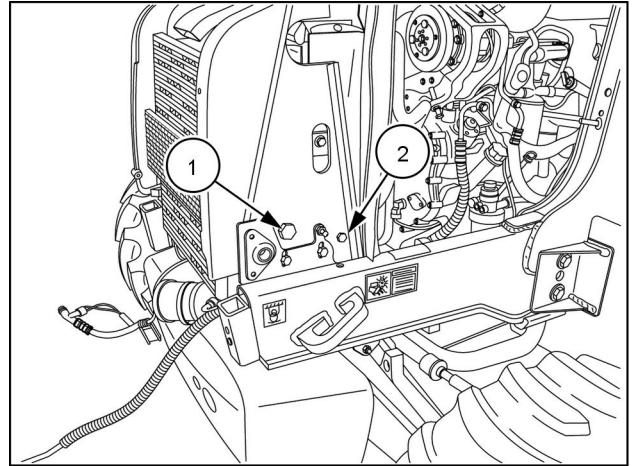
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8. Support the cooling package housing wrapper.



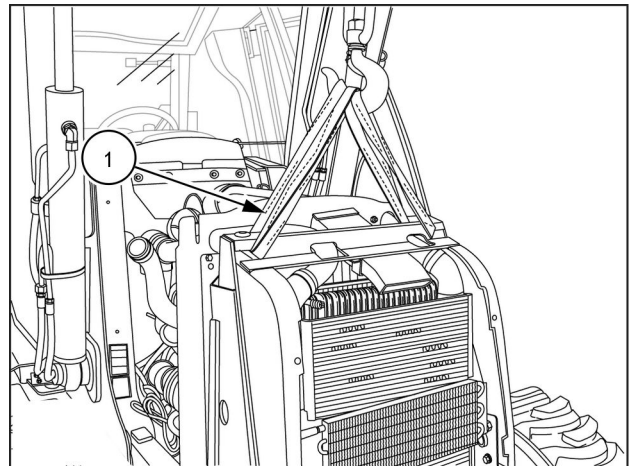
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9. Remove the cooling package housing wrapper bolts (1), (2).



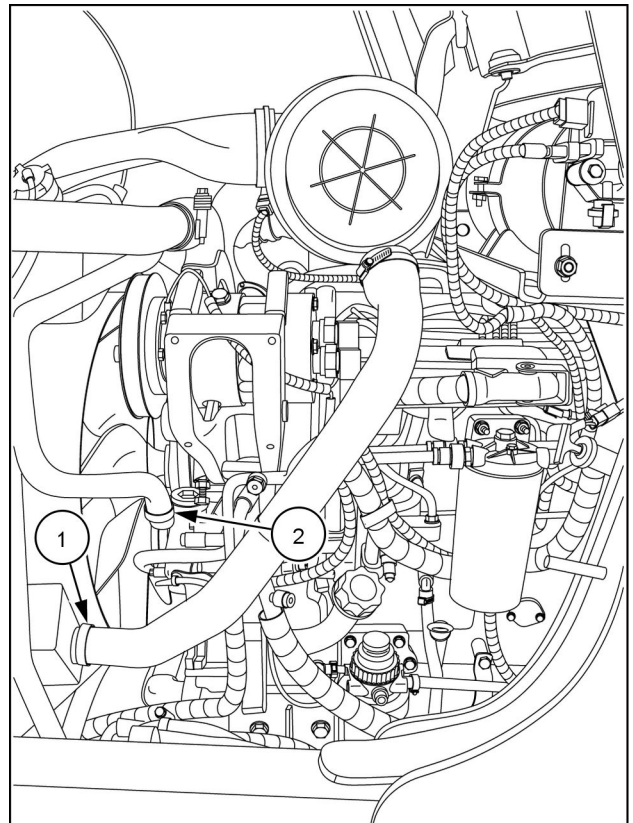
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10. Carefully lift and remove the cooling package housing wrapper.



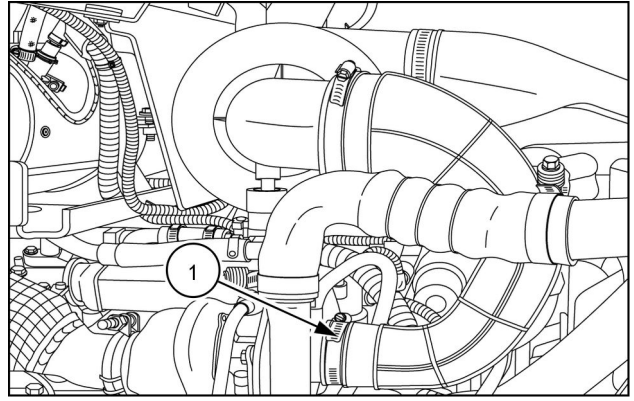
RAPH11TLB0038BA 7

11. Disengage the hose clamp on the air cleaner outlet hose (1) and disconnect the hose.
12. Disengage the hose clamp on the Closed Crankcase Ventilation (CCV) hose. Remove any tie wraps attached the CCV hose.



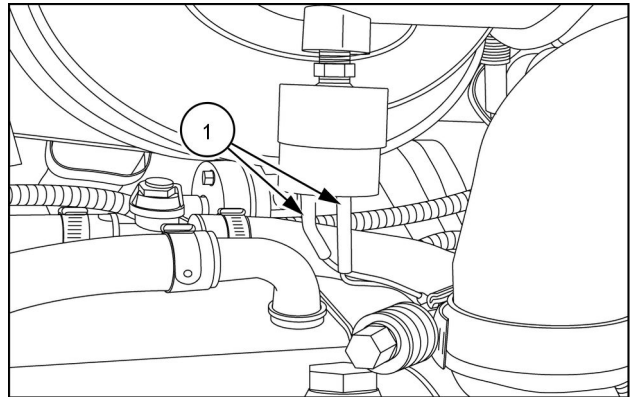
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13. Disengage the hose clamp on the air intake hose (1) and disconnect the hose.



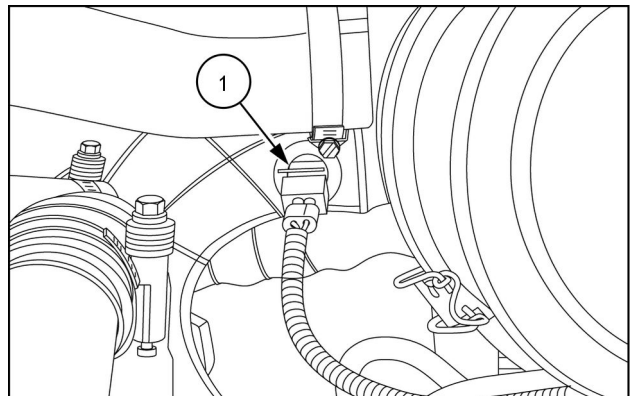
RAIL14TLB1151AA 9

14. Disconnect the air restriction sensor (1).



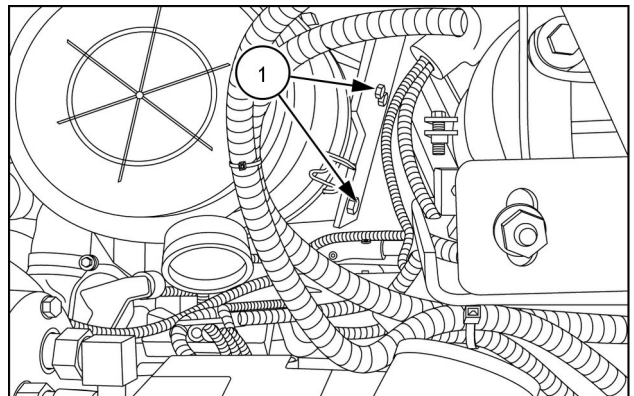
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15. Disconnect the humidity sensor (1).



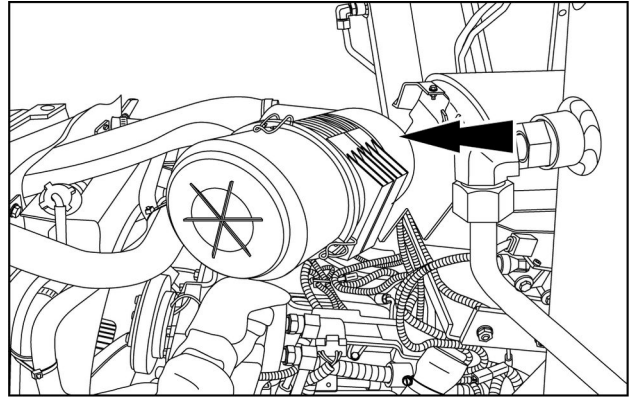
RAIL14TLB1153AA 11

16. Remove the air cleaner mounting bolts (1).



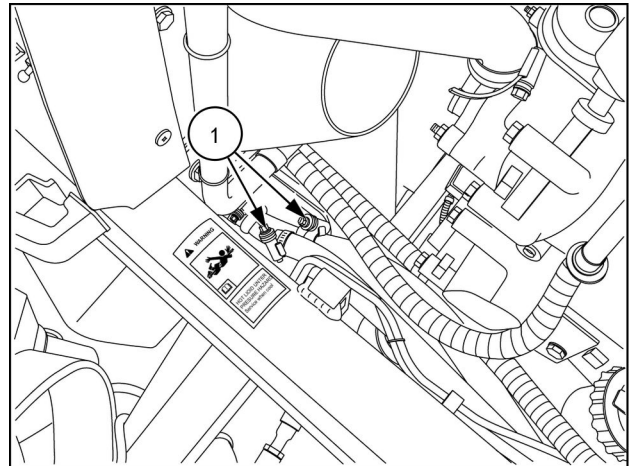
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17. Remove the air cleaner.



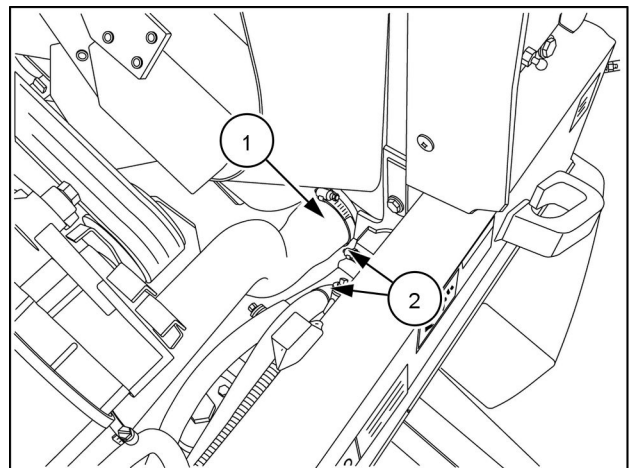
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18. Label and disconnect the hydraulic oil hoses **(1)** leading to the hydraulic oil cooler.



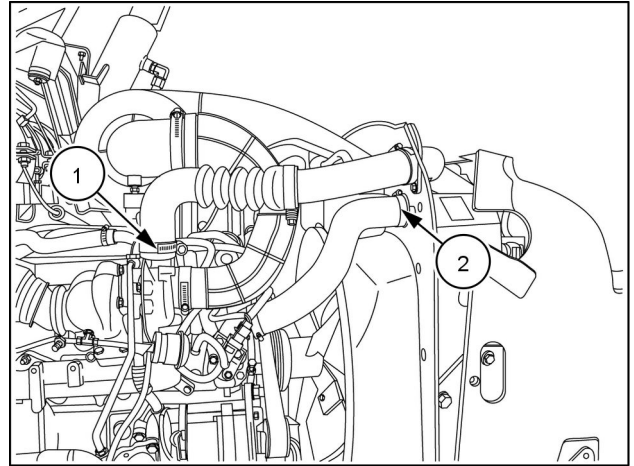
RAPH11TLB0034BA 14

19. Disconnect the lower radiator hose **(1)** from the radiator.
20. Label and disconnect the transmission oil cooler hoses **(2)** leading to the transmission oil cooler.



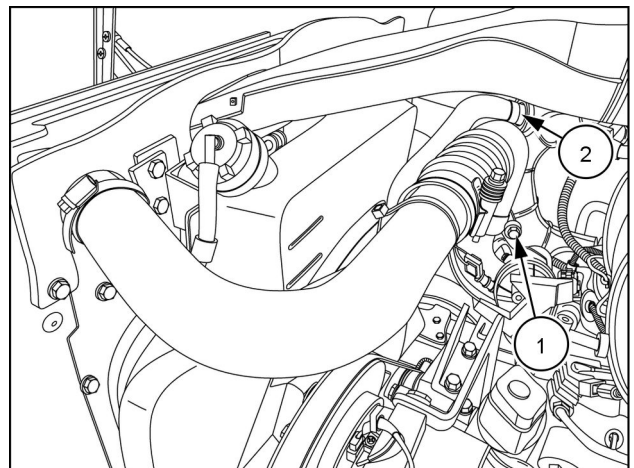
RAPH11TLB0033BA 15

21. Disconnect the charge air cooler tube **(1)** at the turbo.
22. Disconnect the upper radiator hose **(2)** from the radiator.



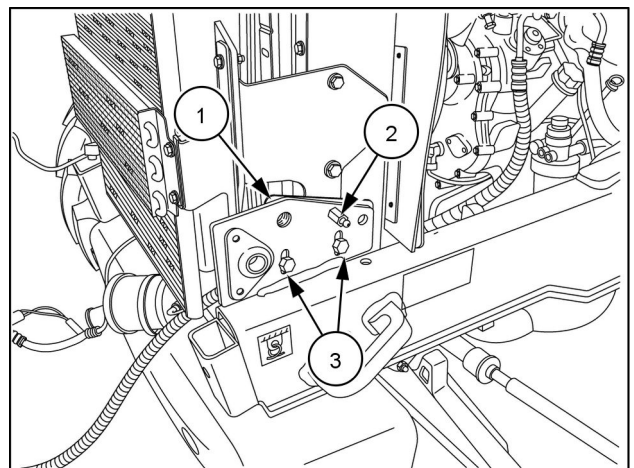
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23. Disconnect the charge air cooler tube **(1)**.
24. Disconnect the Closed Crankcase Ventilation (CCV) hose **(2)** at the engine air cleaner tube.



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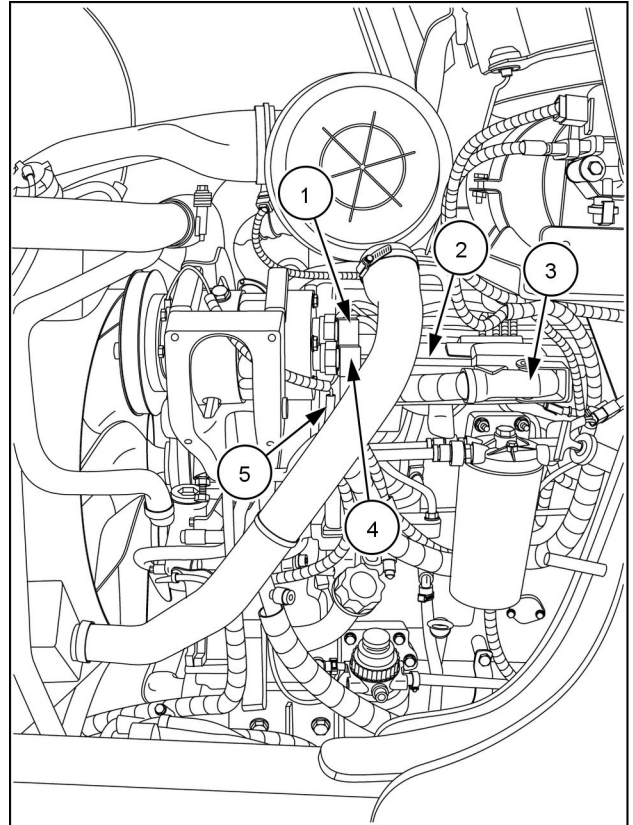
25. Support the cooling package using suitable lifting equipment.
26. Remove the hood strut post **(2)** and retainer **(1)**.



RAPH11TLB0028BA 18

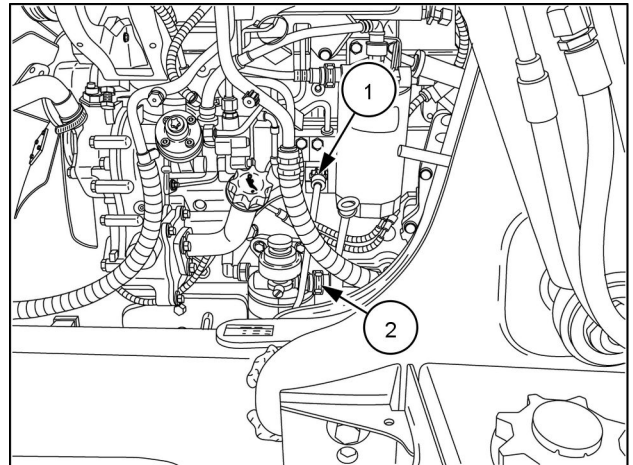
27. Remove the cooling package retaining bolts **(3)**. Carefully lift and remove the cooling package.

28. Disconnect the A/C high pressure line (1).
29. Disconnect the A/C low pressure line (4).
30. Disconnect the A/C condenser voltage wire (5).
31. Disconnect the electrical connectors (2) and (3).



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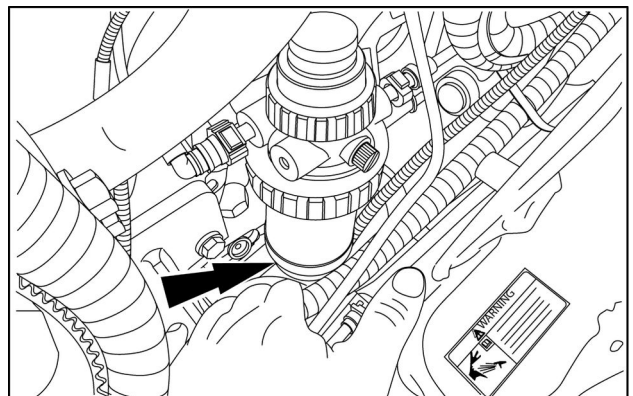
32. Disconnect fuel lines (1) and (2).



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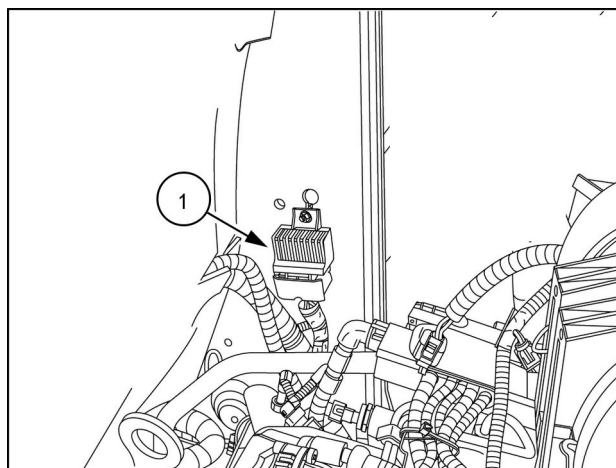
33. Disconnect the water sensor electrical connector.

NOTE: Water sensor is located at the bottom of the primary fuel filter.



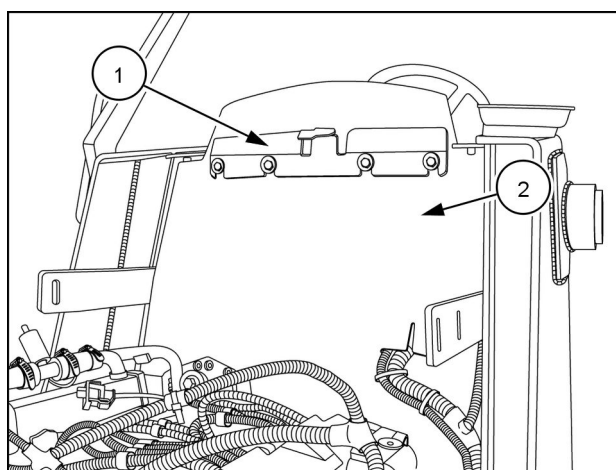
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34. Disconnect the glow plug control unit electrical connector (1).



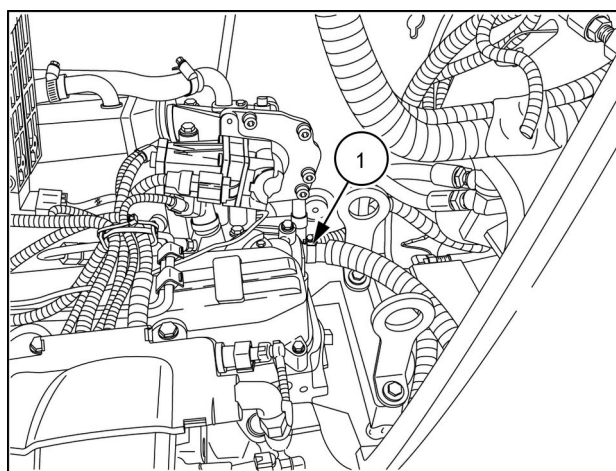
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35. Remove the supporting bracket (1) and hanging barrier curtain (2).



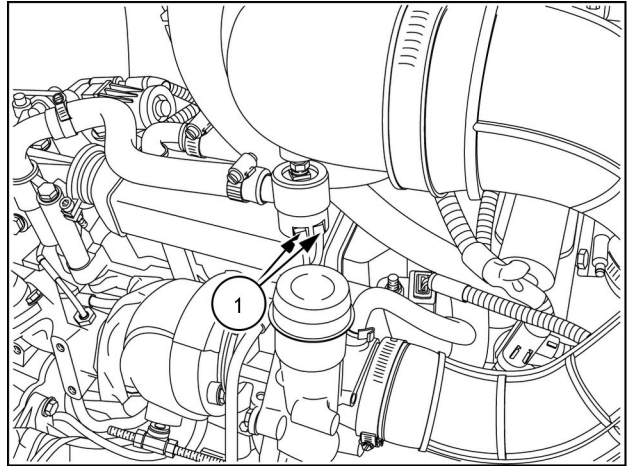
RAIL14UTL0095BA 23

36. Disconnect the heater hose (1).



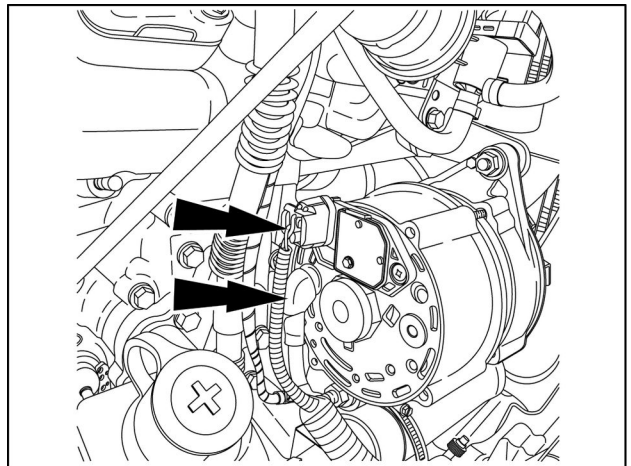
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37. Label and disconnect the air sensor wires **(1)**.



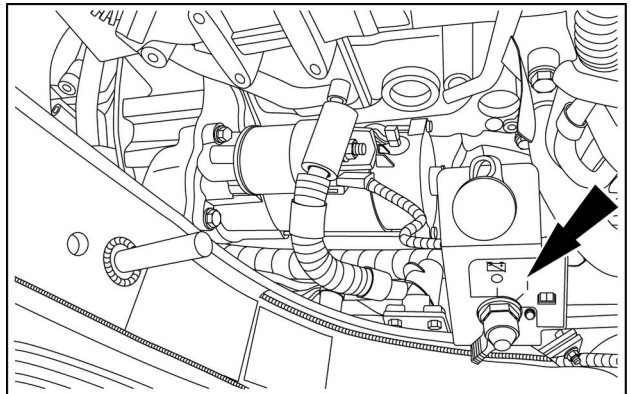
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38. Label and disconnect the alternator electrical connector **(1)** and the alternator battery wire **(2)**.



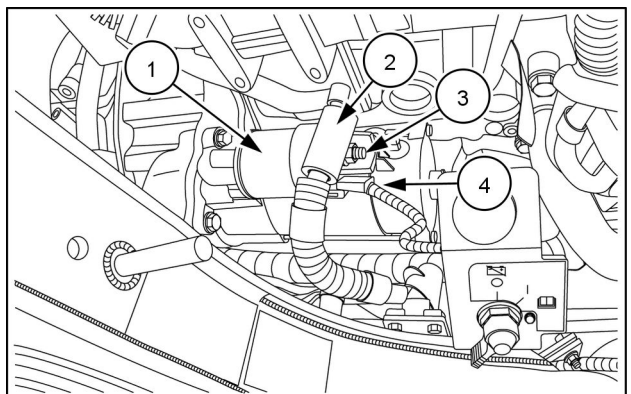
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39. If equipped, remove the battery disconnect switch bracket from the frame and set aside.



RAIL14TLB0403AA 27

40. Remove the nut **(3)**, disconnect the wire harness **(4)** and positive battery cable **(2)** from the terminal on the starter **(1)**.



RAIL14TLB0403AA 28



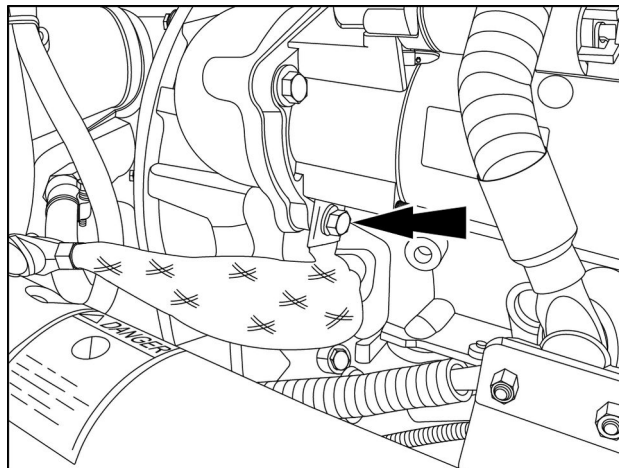
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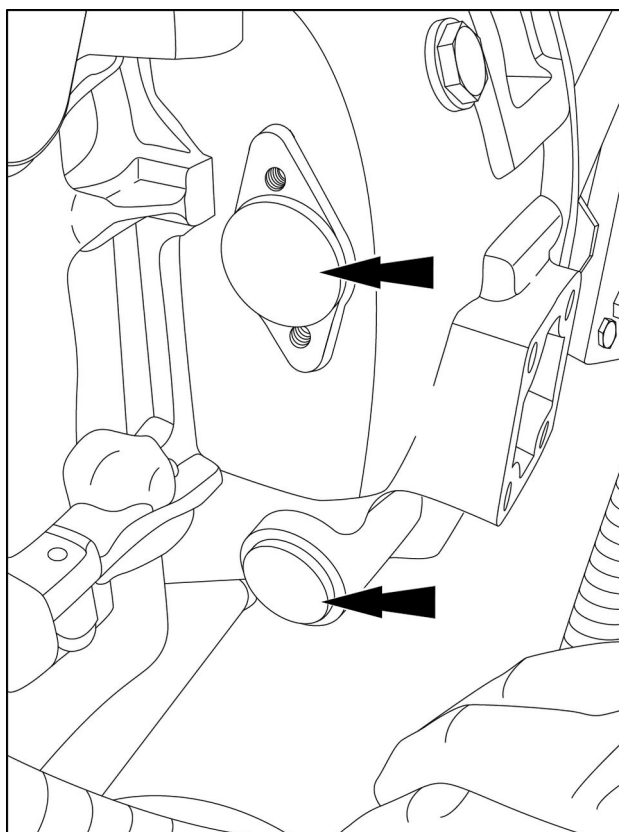
Thank you so much for reading

41. Disconnect the ground strap.



RAIL14FRK0129BA 29

42. On the left-hand side of the engine remove both caps to access the flex plate bolts.



RAIL14FRK0141BA 30

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