

**Magnum 235**  
**Magnum 260**  
**Magnum 290**  
**Magnum 315**  
**Magnum 340**  
Tractor

*PIN ZBRD07000 and after*

**SERVICE MANUAL**

Part number 47386174

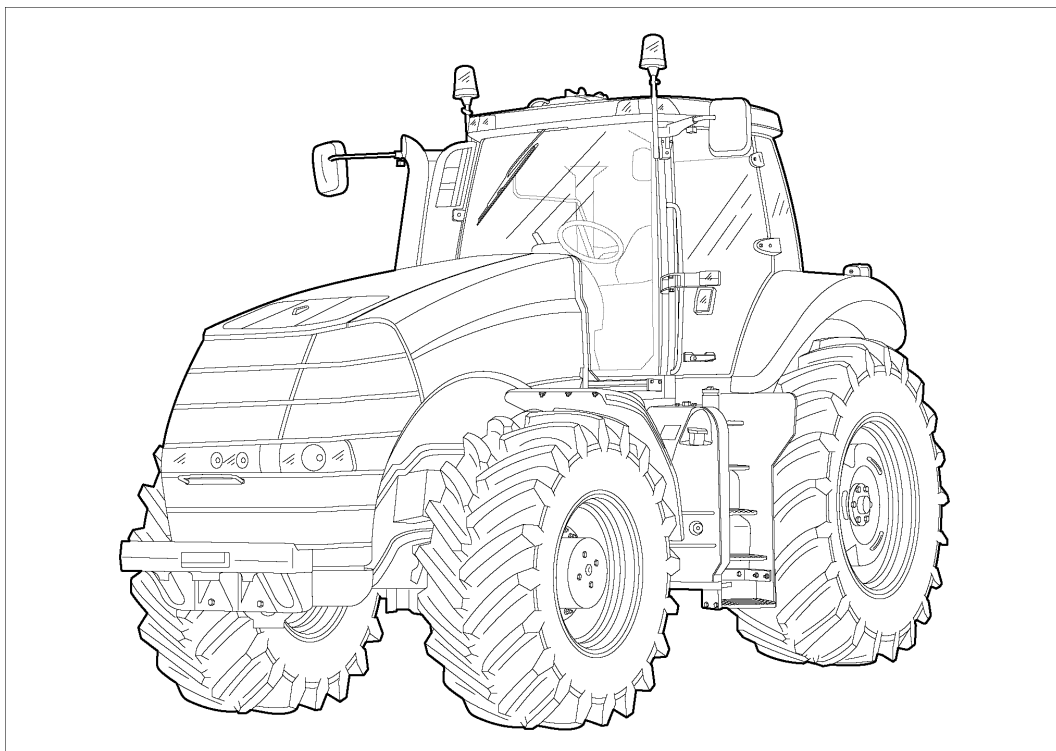
English

October 2012

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## **SERVICE MANUAL**



**Magnum 235 [ZBRD07000 - ] , Magnum 260 [ZBRD07000 - ]  
Magnum 290 [ZBRD07000 - ] , Magnum 315 [ZBRD07000 - ] ,  
Magnum 340 [ZBRD07000 - ]**

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# INTRODUCTION

## Safety rules

Magnum 235 WE, Magnum 260 WE, Magnum 290 WE, Magnum 315 WE, Magnum 340 WE


### 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 and on machine decals, 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 which, if not avoided, will result in death or serious injury. The color associated with DANGER is RED.

 WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury. The color associated with WARNING is ORANGE.

 CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

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

### Machine safety

**NOTICE:** Notice indicates a situation which, if not avoided, could result in machine or property damage. The color associated with Notice is BLUE.

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 which 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

Magnum 235, Magnum 260, Magnum 290, Magnum 315, Magnum 340

### Standard safety precautions

Be informed and notify personnel of the laws in force regulating safety, and provide documentation available for consultation.

- Keep working areas as clean as possible.
- Ensure that working areas are provided with emergency boxes. They must be clearly visible and always contain adequate sanitary equipment.
- Fire extinguishers must be properly identified and always be clear of obstructions. Their efficiency must be checked on a regular basis and personnel must be trained on proper interventions and priorities.
- Keep all emergency exits free of obstructions and clearly marked.
- Smoking in working areas subject to fire danger must be strictly prohibited.

### Prevention of injury

- Wear suitable work attire and safety glasses with no jewelry such as rings and chains when working close to engines and equipment in motion.
- Wear safety gloves and goggles when performing the following operations:
  - Topping off or changing lubrication oils.
  - Using compressed air or liquids at a pressure greater than **2 bar (29 psi)**.
- Wear a safety helmet when working close to hanging loads or equipment working at head level.
- Always wear safety shoes and fitting clothes.
- Use protection cream for hands.
- Change wet clothes as soon as possible.
- In the presence of voltages exceeding **48 - 60 V**, verify the efficiency of the ground and mass electrical connections. Ensure that hands and feet are dry and use isolating foot boards. Workers should be properly trained to work with electricity.
- Do not smoke or start an open flame close to batteries and any fuel material.
- Place soiled rags with oil, diesel fuel or solvents in specially provided anti-fire containers.
- Do not use any tool or equipment for any use other than what it was originally intended for. Serious injury may occur.
- If running an engine indoors, make sure there is a sufficient exhaust fan in use to eliminate exhaust fumes.

### During maintenance

- Never open the filler cap of the cooling system when the engine is hot. High temperature liquid at operating pressure could result in serious danger and risk of burn. Wait until the temperature decreases under **50 °C (122 °F)**.
- Never add coolant to an overheated engine and use only appropriate liquids.
- Always work when the engine is turned off. Certain circumstances require maintenance on a running engine. Be aware of all the risks involved with such an operation.
- Always use adequate and safe containers for engine fluids and used oil.
- Keep engine clean of any spilled fluids such as oil, diesel fuel, and or chemical solvents.
- Use of solvents or detergents during maintenance may emit toxic vapors. Always keep working areas aerated. Wear a safety mask if necessary.
- Do not leave soiled rags that may contain any flammable substances close to the engine.
- Always use caution when starting an engine after any work has been performed. Be prepared to cut off intake air in case of engine runaway.

- Never disconnect the batteries while the engine is running.
- Disconnect the batteries prior to performing any work on the equipment.
- Disconnect the batteries to place a load on them with a load tester.
- After any work is performed, verify that the battery clamp polarity is correct and that the clamps are tight and safe from accidental short circuit and oxidation.
- Before disconnecting any pipelines (pneumatic, hydraulic, fuel pipes, etc.), verify that all pressure has been released. Take all necessary precautions bleeding and draining residual pressure. Always wear the proper safety equipment.
- Do not alter the lengths of any wires.
- Do not connect any electronic service tool to the engine electrical equipment unless specifically approved by Iveco.
- Do not modify the fuel system or hydraulic system unless approved by Iveco, Any unauthorized modification will compromise warranty assistance and may affect engine operation and life span.

For engine equipped with an electronic control unit

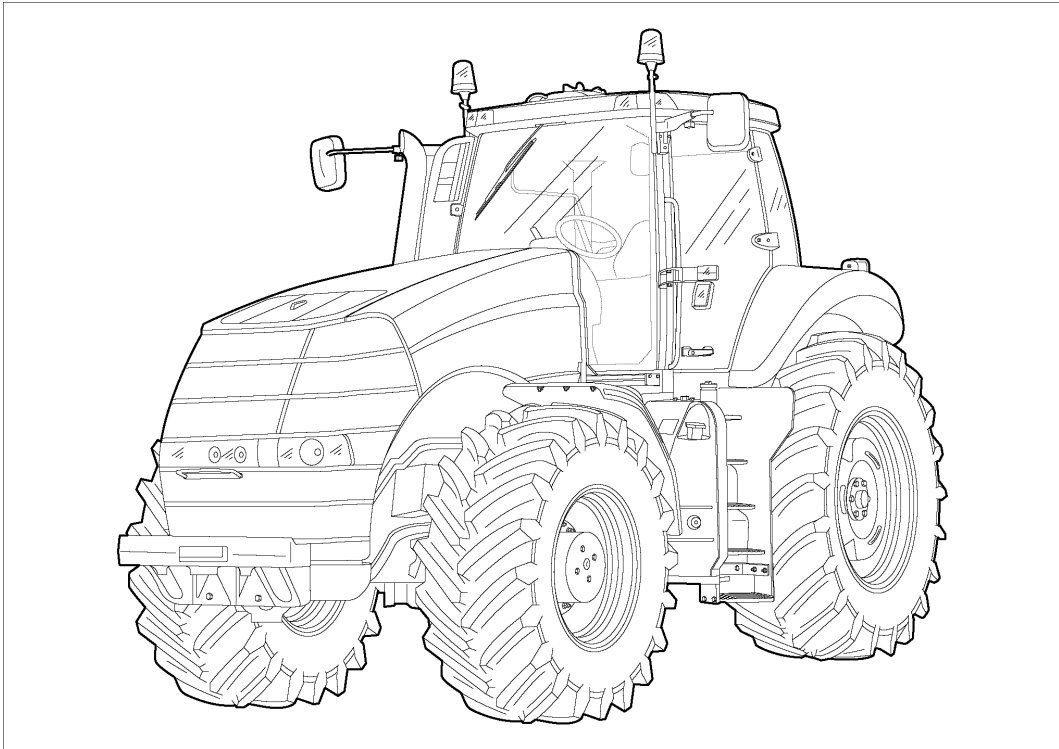
- Do not weld on any part of the equipment without removing the control unit.
- Remove the in case of work requiring heating over **80 °C (176 °F)**.
- Do not paint the components and the electronic connections.
- Do not alter any data filed in the electronic control unit driving the engine. Any manipulation or alteration of electronic components will void engine warranty assistance and may affect the correct working order and life span of the engine.

### **Respect of the Environment**

- Respect of the environment should be of primary importance. Take all necessary precautions to ensure personnel's safety and health.
- Inform the personnel of the laws regarding the dispensing of used engine fluids.
- Handle batteries with care, storing them in a well ventilated environment and within anti-acid container.

## SERVICE MANUAL

### Engine



**Magnum 235 WE**  
**Magnum 260 WE**  
**Magnum 290 WE**  
**Magnum 315 WE**  
**Magnum 340 WE**

## Engine - Remove

Magnum 235, Magnum 260, Magnum 290, Magnum 315, Magnum 340

**Prior operation:**

**Battery - Disconnect (55.302)**

**Prior operation:**

**Side shield - Remove (90.102)**

**Prior operation:**

**Hood - Remove (90.100)**

**Prior operation:**

**Engine cooling system - Emptying (10.400)**

**Prior operation:**

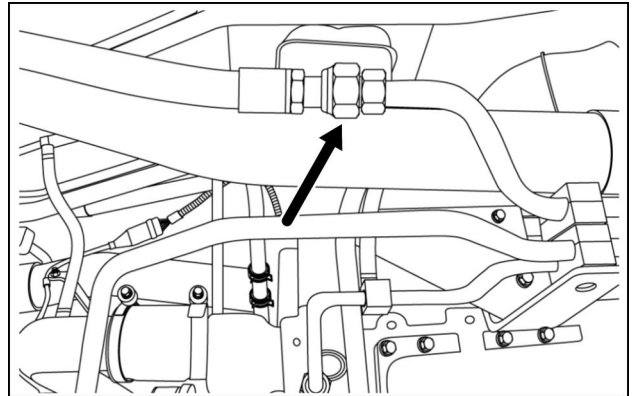
**Air conditioning - Recover (50.200)**

**NOTE:** During the disassembly of components with O-ring seals, the seals should be discarded and new seal installed during assembly.

**NOTE:** Cap all fittings and plug all lines/hoses as they are disconnected.

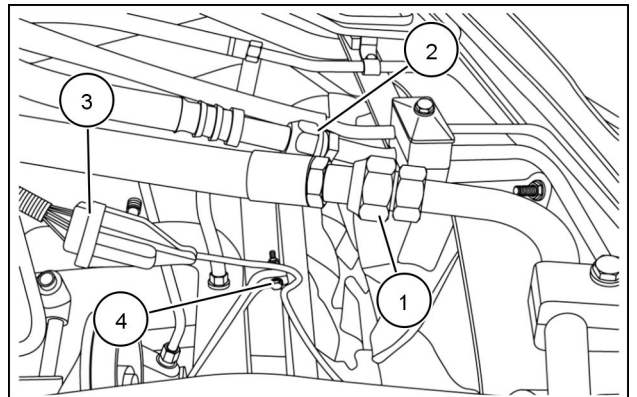
1. Disconnect the hydraulic cooling line connection on the right side (from oil cooler).

**NOTE:** Be prepared to collect some hydraulic oil by placing a pan under the fitting.



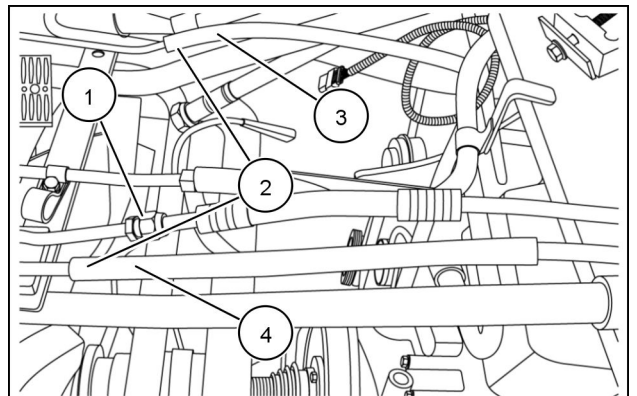
RCPH10CCH771AAB 1

2. Disconnect the hydraulic line (1) on the left side (to oil cooler). Disconnect the engine cooling fan drive harness connector (3).
3. Disconnect the air conditioning low pressure hose to line fitting (return from condenser) (2).
4. Remove the bolt securing the harness P-clamp (4).



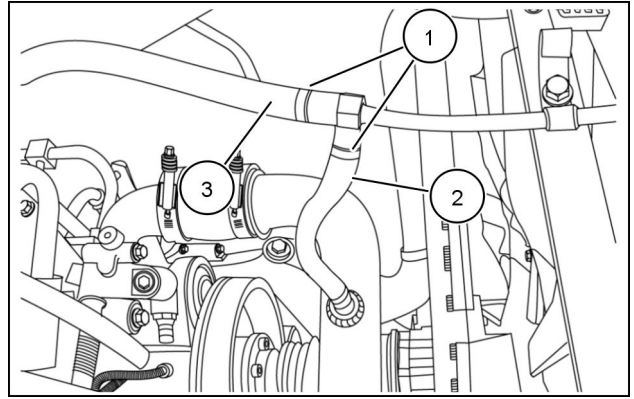
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5. Disconnect the air conditioning high pressure hose to tube fitting (1).
6. Disengage the hose clamps (2), and disconnect the cooler hoses (3) (4).



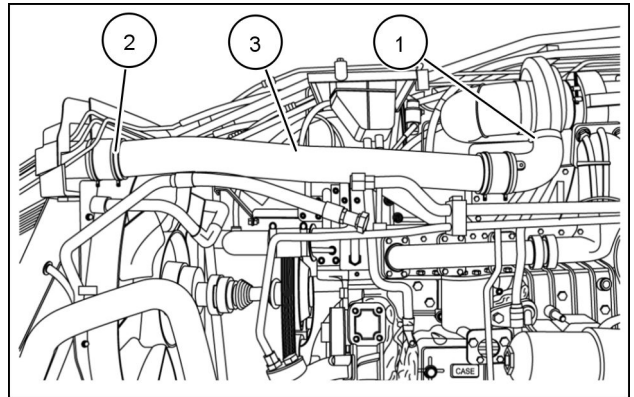
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7. Disengage the hose clamps **(1)** and disconnect the air vent hose **(2)** and the hose **(3)** from the deaeration tank to the recovery bottle.



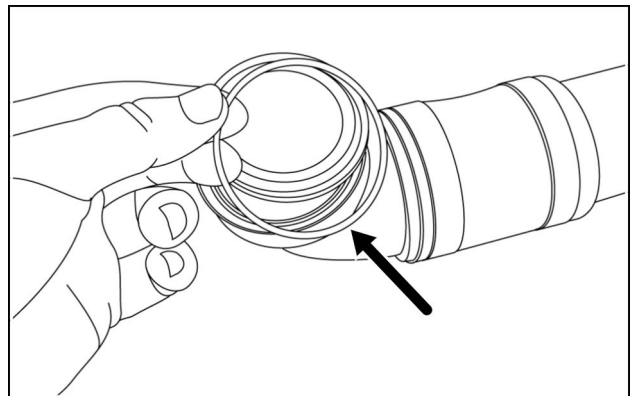
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8. Loosen the turbocharger clamp **(1)**.  
9. Loosen the air cooler inlet hose clamp **(2)**.  
10. Remove the pipe **(3)** and set aside.  
11. Repeat for the right side air to air tube from the cooler to the intake manifold (not shown).



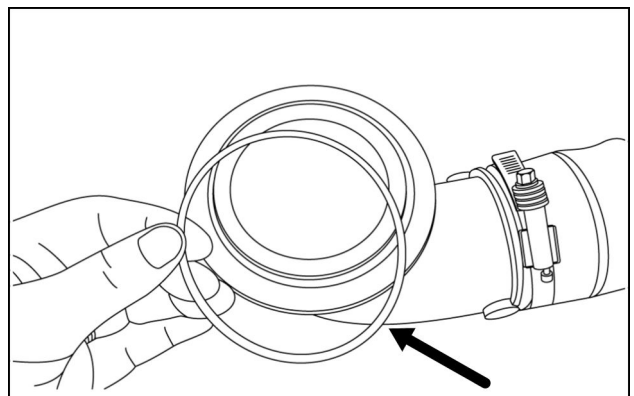
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12. Remove and discard the O-ring seal from the elbow.



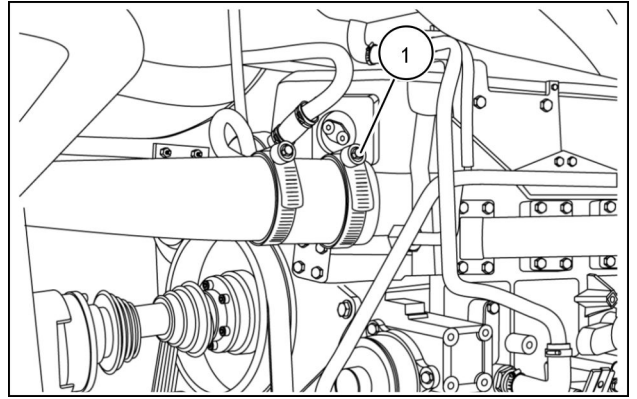
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13. Remove and discard the O-ring seal from the elbow.



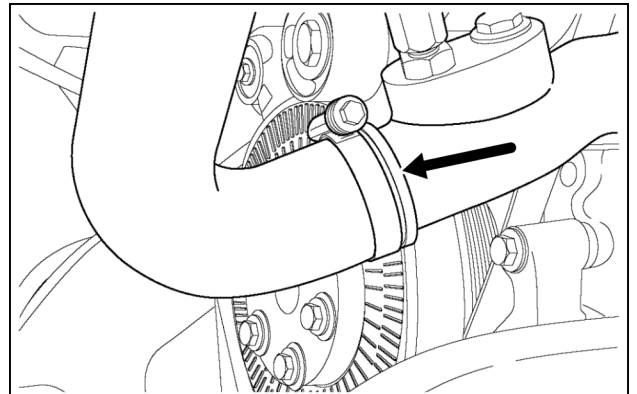
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14. Loosen the hose clamp **(1)** at the engine coolant outlet and disconnect the hose from the thermostat housing.



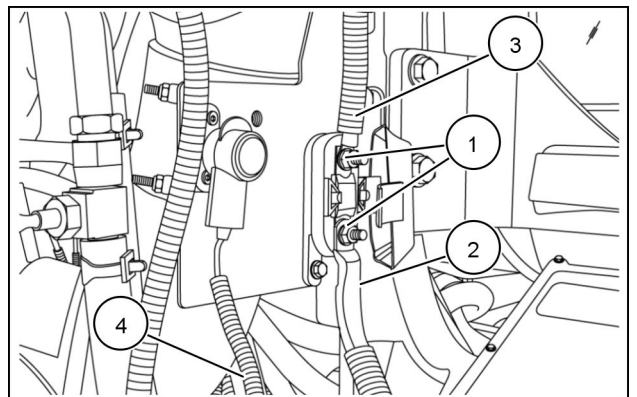
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15. Loosen the hose clamp and disconnect the coolant line into the engine hose.



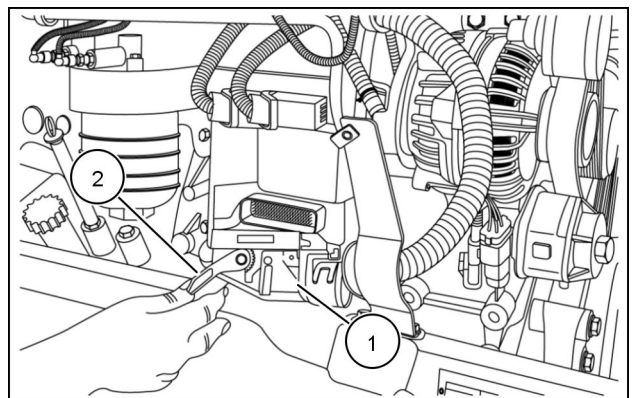
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16. Remove the nuts **(1)** and disengage the engine heater grid cables **(2)** **(3)** to the fuse block.  
 17. Disconnect the harness connector **(4)** for the **12 V** auxiliary power connection .



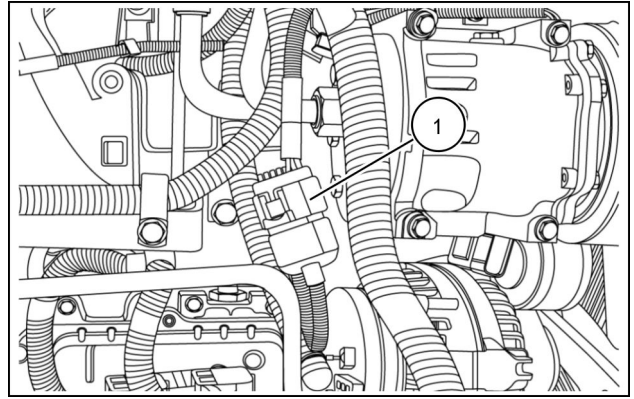
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18. Disconnect the ECM (engine control module) connector **(1)** by moving the locking handle **(2)** from the right (locked position) to the left (unlocked position).



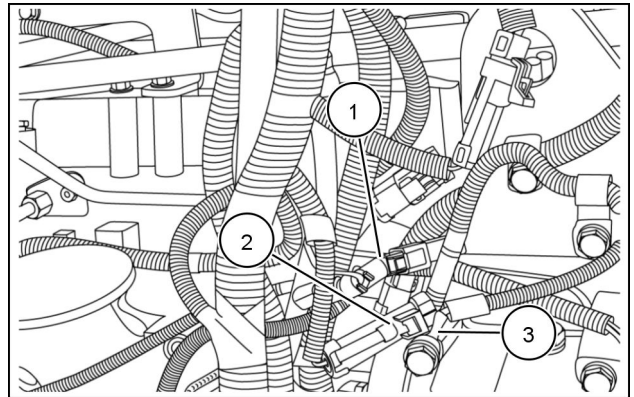
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19. Disconnect the tractor to engine harness connectors **(1)**.



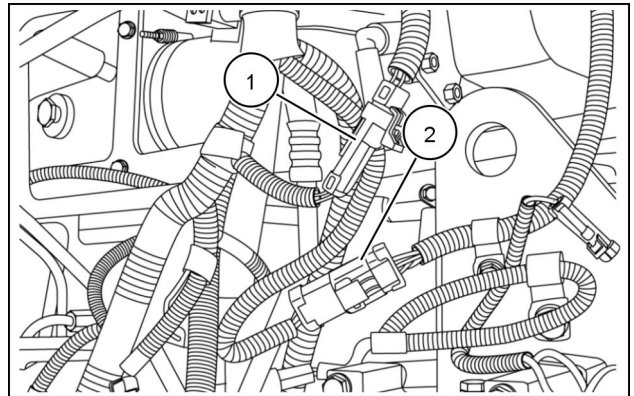
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20. Disconnect the harness connectors to the alternator **(1)** and the A/C compressor clutch **(2)**.
21. Remove the upper left A/C compressor bolt and remove the ground wire **(3)**.



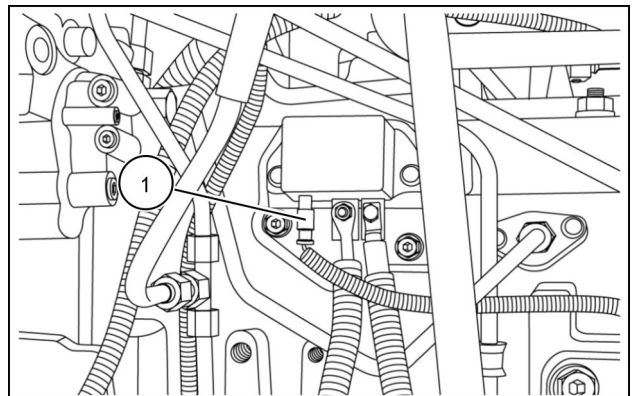
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22. Disconnect the harness connectors to the A/C high pressure switch **(1)** and the engine cooling fan drive **(2)**.



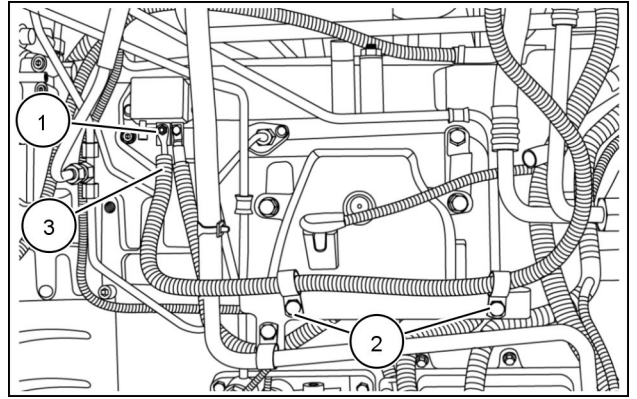
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23. Disconnect the harness connector **(1)** to the grid heater controller.



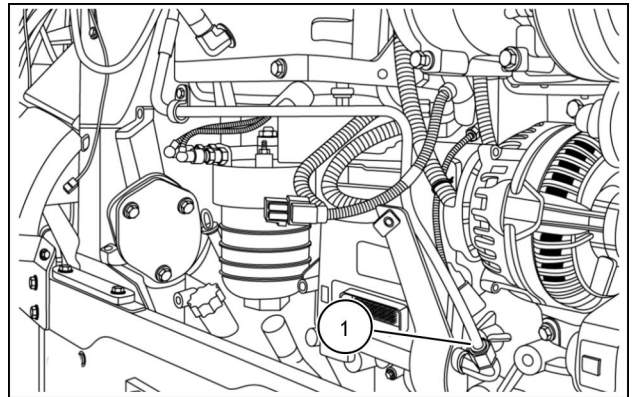
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24. Remove the nut **(1)** and the clamp bolts **(2)**. Disengage the power cable **(3)**.



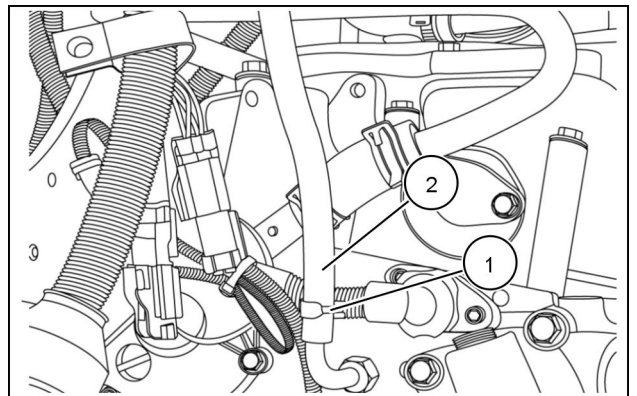
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25. Loosen the nut **(1)** and disconnect the fuel supply line to the EMC cooler



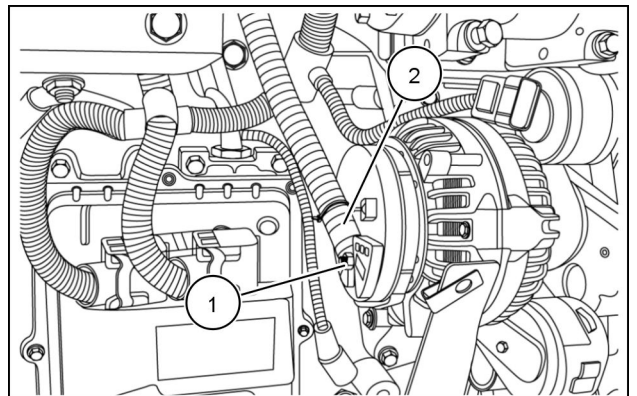
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26. Disengage the clamp **(1)** and disconnect the fuel return hose **(2)** from the pipe.



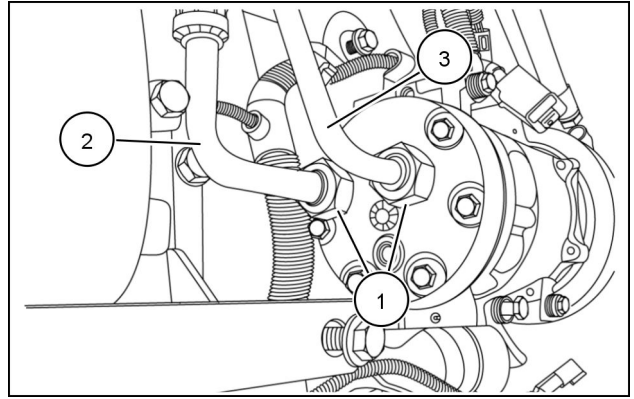
RCPH10CCH786AAB 18

27. Remove the nut **(1)** and disengage the alternator output cable **(2)**.



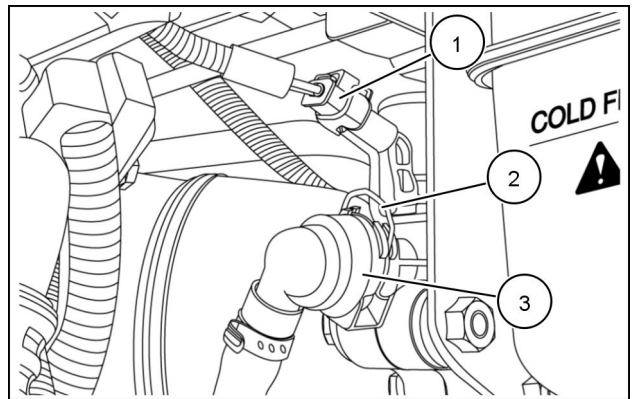
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28. Loosen the nuts **(1)** and disconnect the compressor inlet **(2)** and outlet **(3)** tubes.



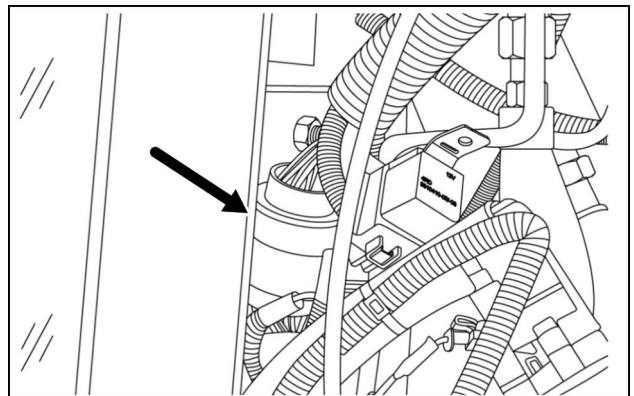
RCPH10CCH789AAB 20

29. Disconnect the harness connector to the SCR heater control valve solenoid **(1)**.
30. Raise the locking wire **(2)** and disconnect the heater supply connector **(3)** from the valve.
31. Repeat for the outlet hose connection (located on the right side of the valve).



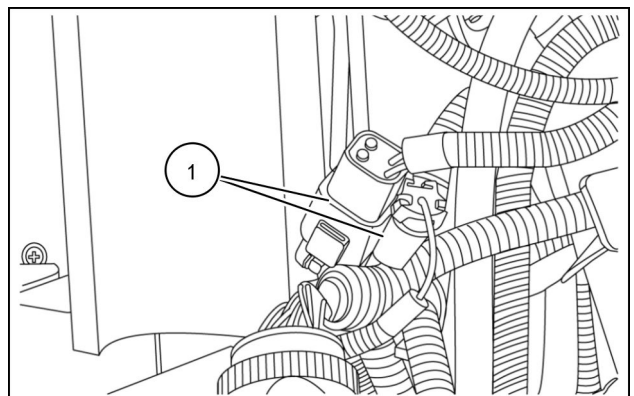
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32. Disconnect the main engine to chassis harness connector.



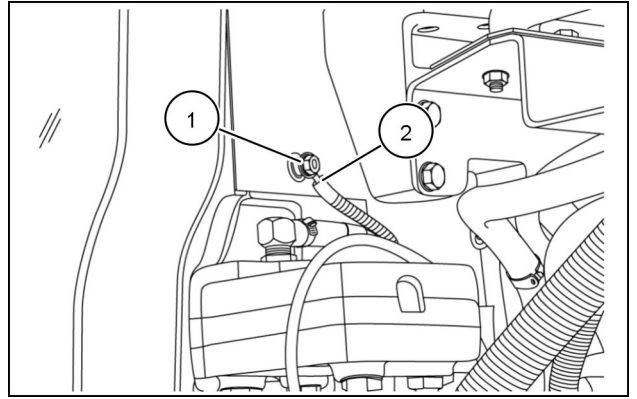
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33. Disconnect the auxiliary engine to chassis harness connectors **(1)**.



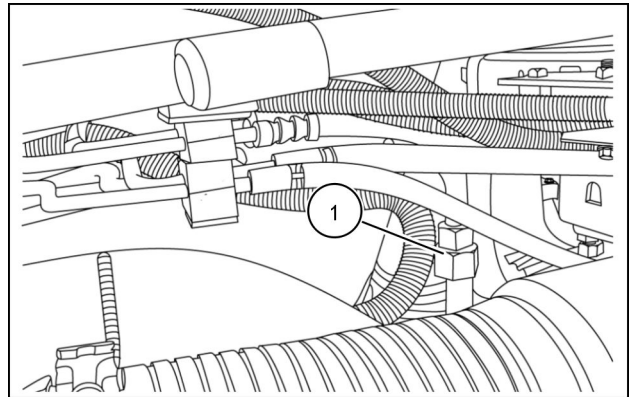
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34. Remove the holding nut (1) and disengage the ground wire (2).



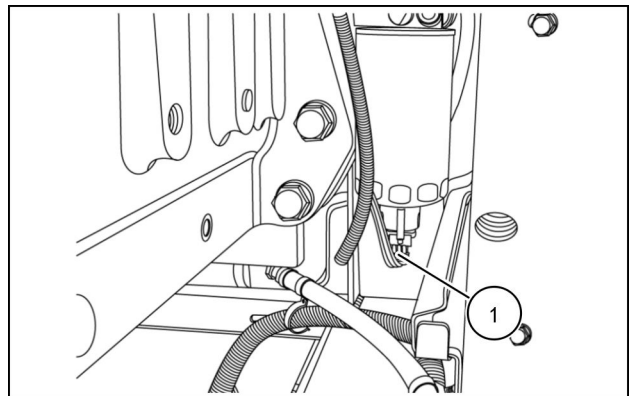
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35. Loosen the fitting and disconnect the hydraulic oil line (1) (right side of engine).



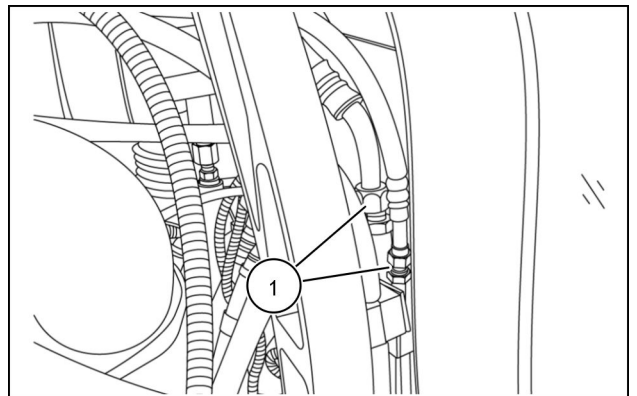
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36. Disconnect the water in fuel sensor connector (1) from the primary fuel filter.



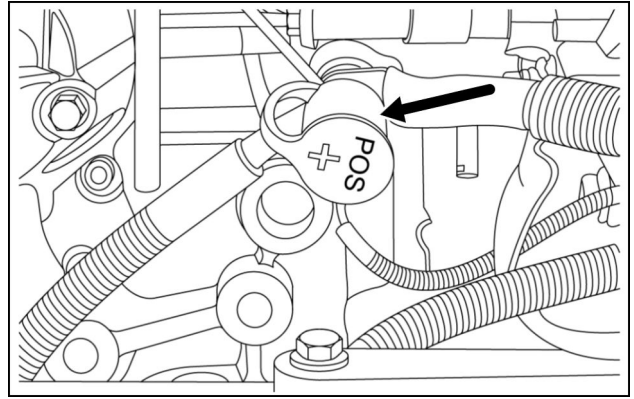
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37. Loosen the nuts (1) and disconnect the A/C lines located between the hood support and the cab.



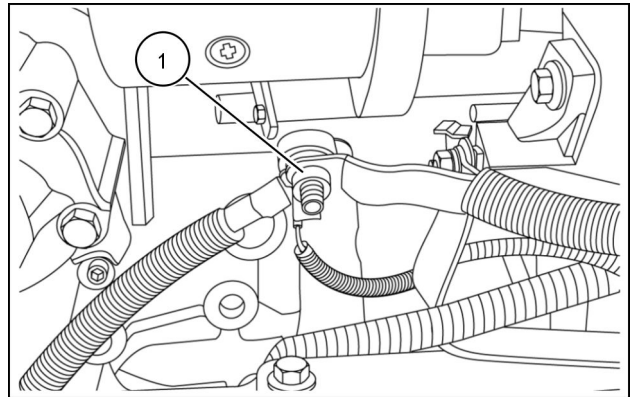
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38. Remove the jump start stud.



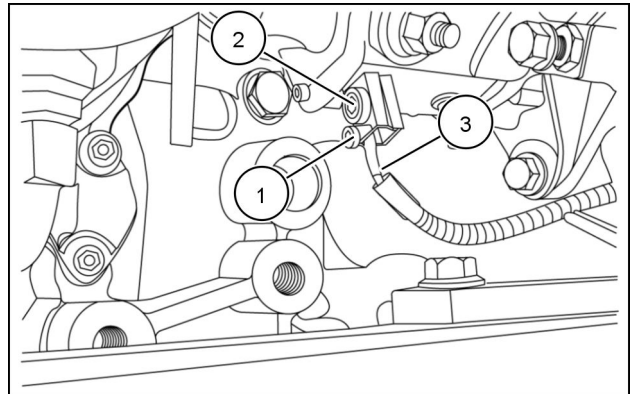
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39. Remove the nut (1) and disengage the cables from the starter.



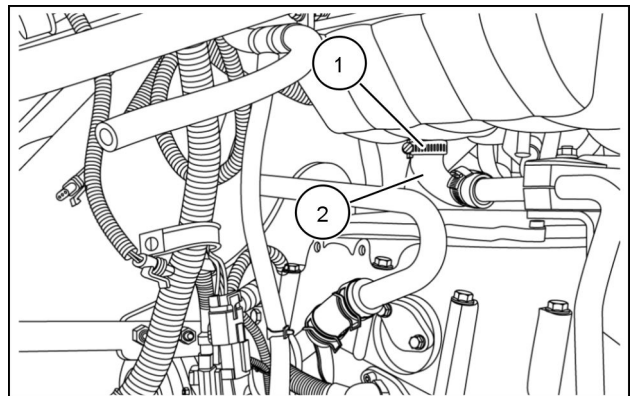
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40. Remove the plug (1), remove the attaching screw (2) and remove the starter solenoid wire (3).



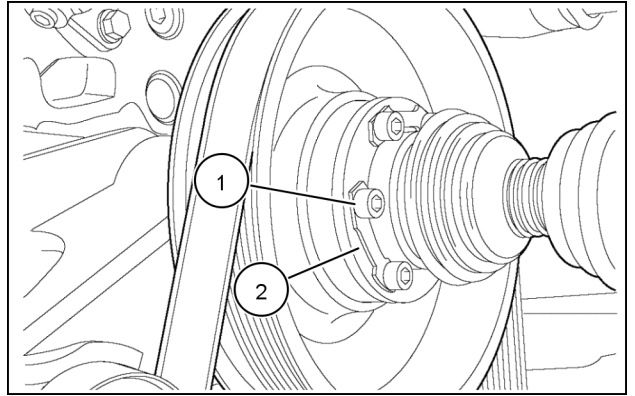
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41. Loosen the hose clamp (1) and disconnect the fill hose elbow (2).



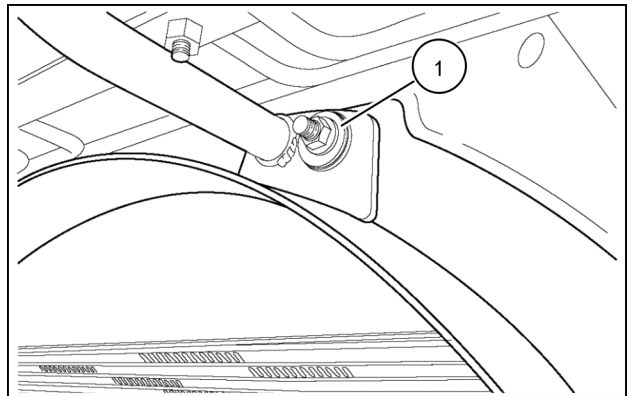
RCPH10CCH795AAB 31

42. Remove the six socket head bolts **(1)** and three backing plates **(2)** securing the drive shaft assembly to the engine drive pulley. Disengage the drive from the pulley.



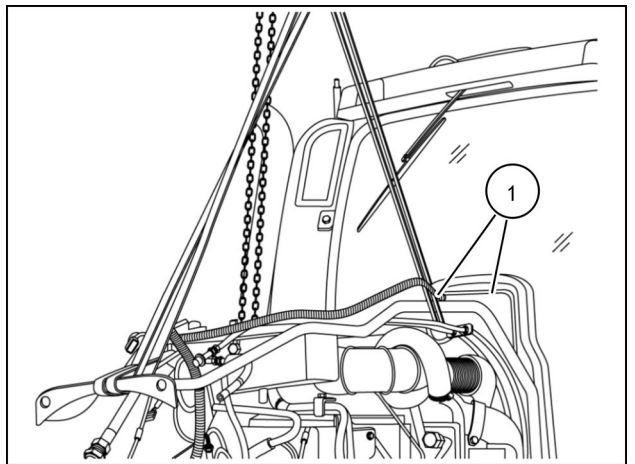
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43. Remove the nuts and washers **(1)** from the cooling assembly support bracket on the left and right sides.



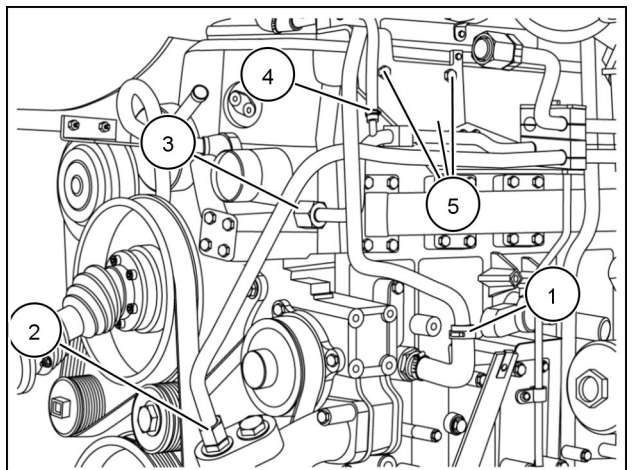
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44. Properly support the bracket, and remove the four bolts **(1)** securing the bracket to the hood support. Remove the assembly and set aside.



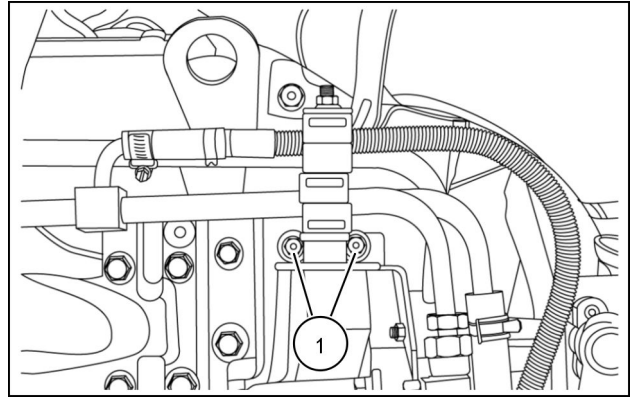
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45. Loosen the clamp **(1)** and disconnect the coolant fill line.
46. Loosen the nuts **(2)** and **(3)** and disconnect the cab heater supply and return lines.
47. Disengage the clamp **(4)** and remove the air bleed hose.
48. Remove the three bolts **(5)** securing the front support bracket.



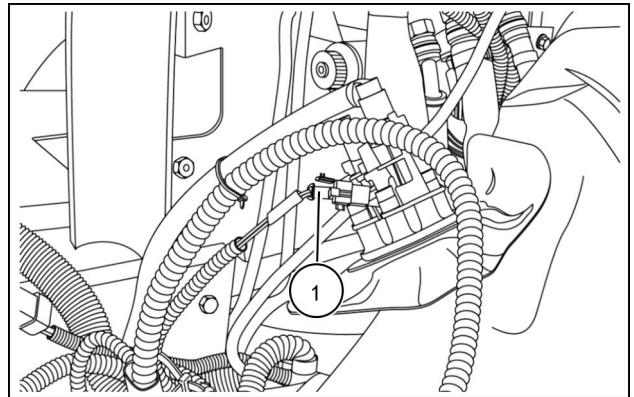
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49. Remove the two bolts (1) securing the rear support bracket.



RCPH10CCH800AAB 36

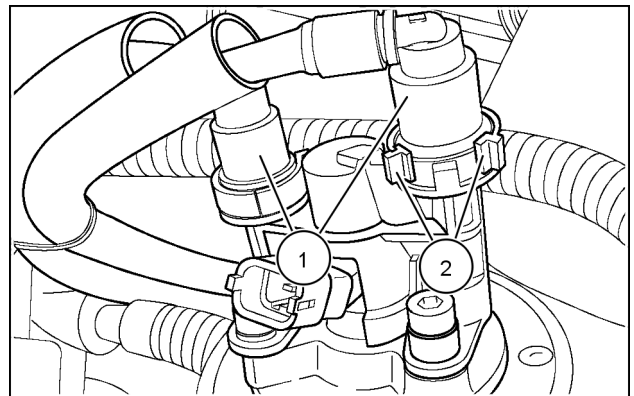
50. Disconnect the harness connector (1) to the dosing valve.



RCPH10CCH801AAB 37

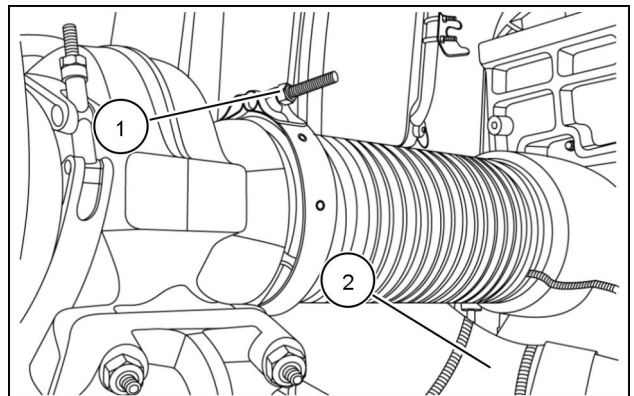
51. Disconnect the DEF supply and return hoses (1).

**NOTE:** Squeeze the locking tabs (2) together and pull straight upward on the elbow.



RCPH10CCH359AAB 38

52. Remove the clamp (1) at the turbocharger. Repeat for clamp at the other end of the pipe (2). Remove the pipe and set aside.



RCPH10CCH806AAB 39



**Suggest:**

**If the above button click is invalid.**

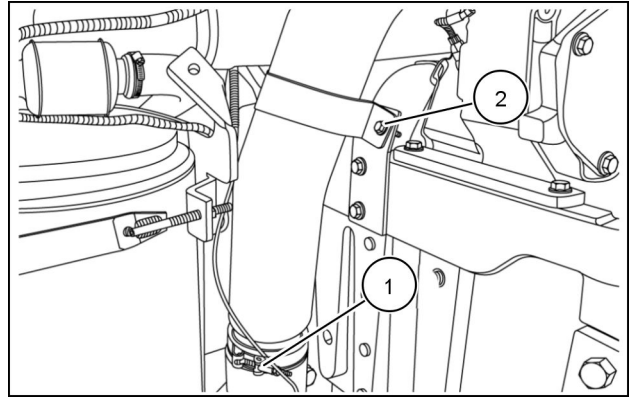
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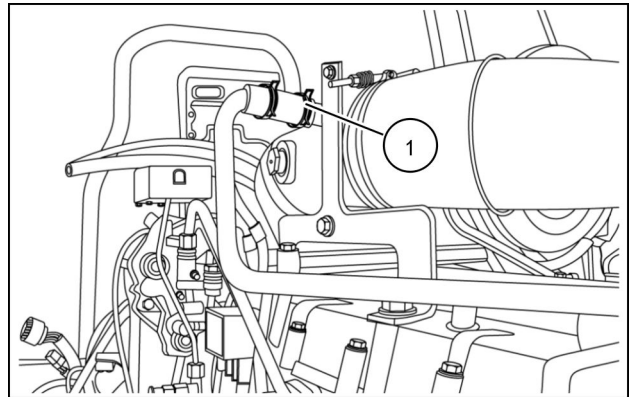
**Thank you so much for reading**

53. Remove the clamp **(1)** at the SCR muffler. Remove the attaching bolt **(2)** securing the support bracket. Remove the pipe and set aside.



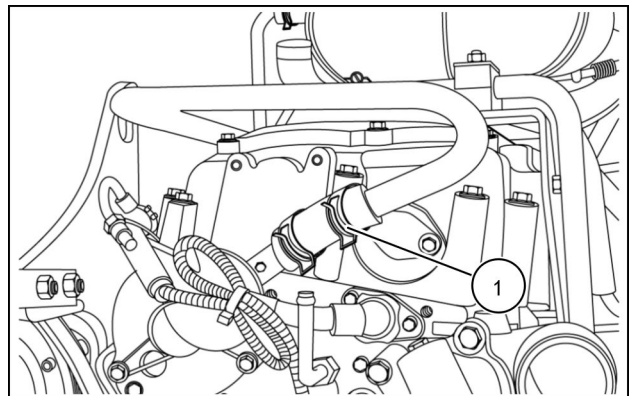
RCPH10CCH803AAB 40

54. Disengage the engine blow-by hose clamp **(1)** at the intake pipe. Disconnect from the intake pipe.



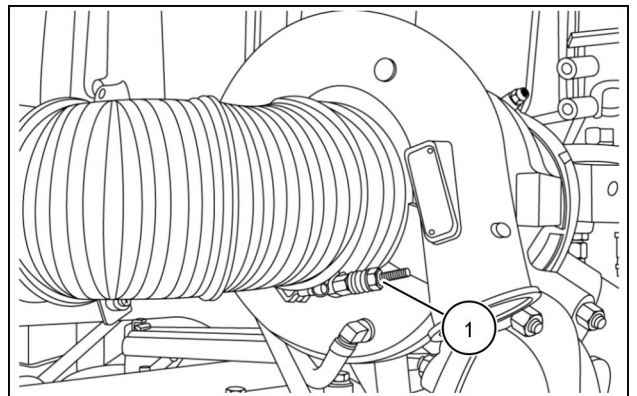
RCPH10CCH805AAB 41

55. Disengage the engine blow-by hose clamp **(1)** at the engine. Remove the pipe and set aside.



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56. Loosen the clamp **(1)** securing the intake pipe elbow to the turbocharger. Disconnect from the turbo.



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