

Magnum 235
Magnum 260
Magnum 290
Magnum 315
Magnum 340
Tractor

SERVICE MANUAL

Part number 84417606

English

March 2014

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Link Product / Engine

Product	Market Product	Engine
null 18x6, with cab [HC-CZM235TDCM00391 -]	Latin America	F2CFA613P*A010
null 18x6, with cab [ZBCM40980 -]	Latin America	F2CFA613P*A010
null 18x6, with cab [HC-CZM260TDCM00391 -]	Latin America	F2CFA613N*A010
null 18x6, with cab [ZBCM40980 -]	Latin America	F2CFA613N*A010
null 18x6, with cab [HC-CZM290TDCM00391 -]	Latin America	F2CFA613J*A010
null 18x6, with cab [ZBCM40980 -]	Latin America	F2CFA613J*A010
null 18x6, with cab [HC-CZM315TDCM00391 -]	Latin America	F2CFA613F*A010
null 18x6, with cab [ZBCM40980 -]	Latin America	F2CFA613F*A010
null 18x6, with cab [HC-CZM340TDCM00391 -]	Latin America	F2CFA613C*A010
null 18x6, with cab [ZBCM40980 -]	Latin America	F2CFA613C*A010

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INTRODUCTION

Safety rules

Magnum 235	LA
Magnum 260	LA
Magnum 290	LA
Magnum 315	LA
Magnum 340	LA

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 CASE IH.
- Do not modify the fuel system or hydraulic system unless approved by CASE IH. 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 18x6, with cab [HCCZM235TDCM00391 -] , Magnum 235 18x6, with cab [ZBCM40980 -] , Magnum 260 18x6, with cab [HCCZM260TDCM00391 -] , Magnum 260 18x6, with cab [ZBCM40980 -] , Magnum 290 18x6, with cab [HCCZM290TDCM00391 -] , Magnum 290 18x6, with cab [ZBCM40980 -] , Magnum 315 18x6, with cab [HCCZM315TDCM00391 -] , Magnum 315 18x6, with cab [ZBCM40980 -] , Magnum 340 18x6, with cab [HCCZM340TDCM00391 -] , Magnum 340 18x6, with cab [ZBCM40980 -]

Engine - Remove

Magnum 235	LA
Magnum 260	LA
Magnum 290	LA
Magnum 315	LA
Magnum 340	LA

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:

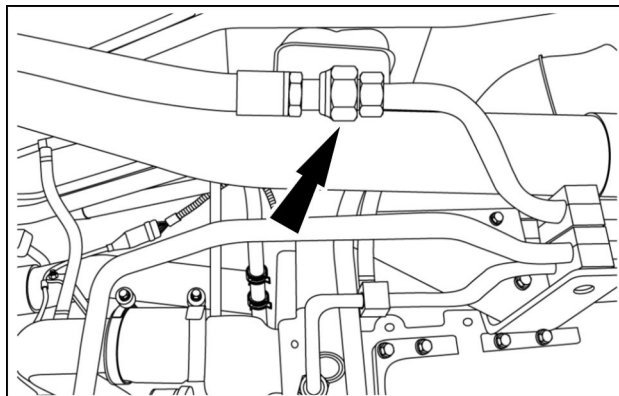
Air conditioning - Recover (50.200)

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.

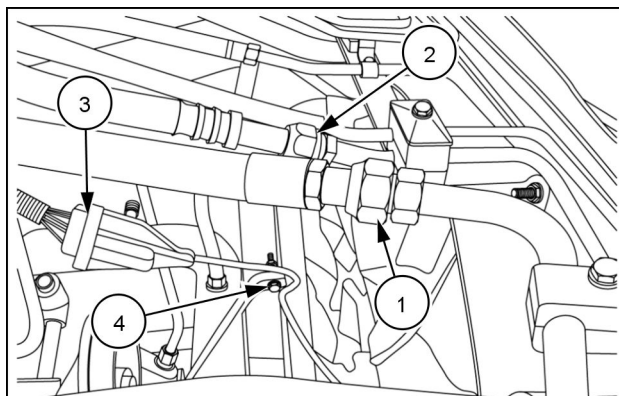
1. Disconnect the hydraulic cooling line connection on the right side (from oil cooler).

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



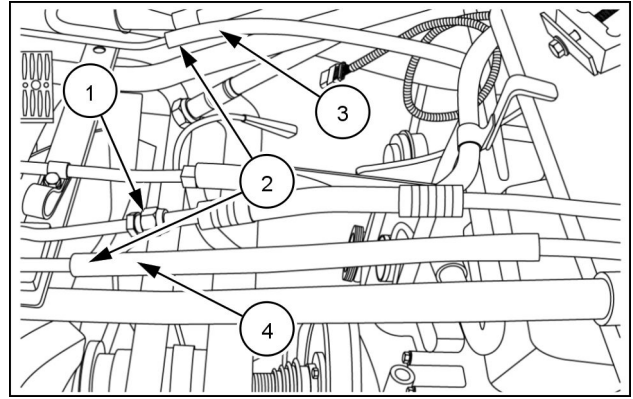
RCPH10CCH771AAB 1

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).



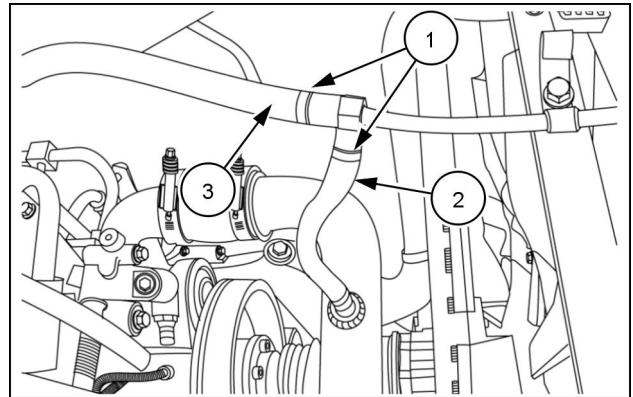
RCPH10CCH772AAB 2

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)**.



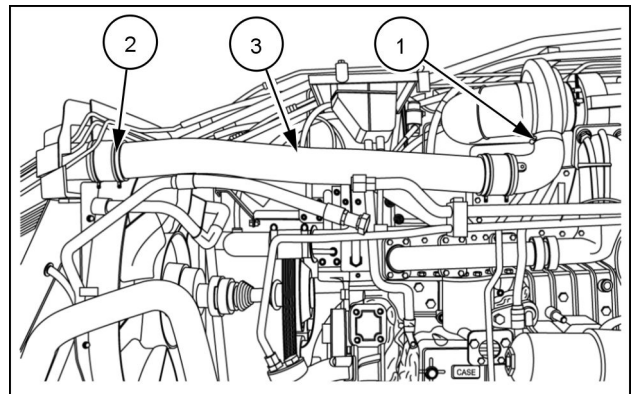
RCPH10CCH773AAB 3

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.



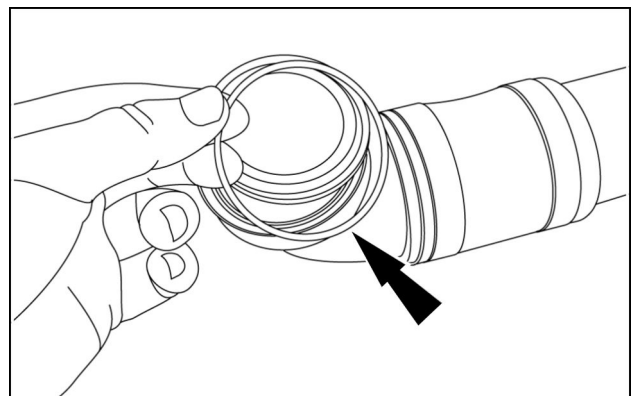
RCPH10CCH774AAB 4

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).



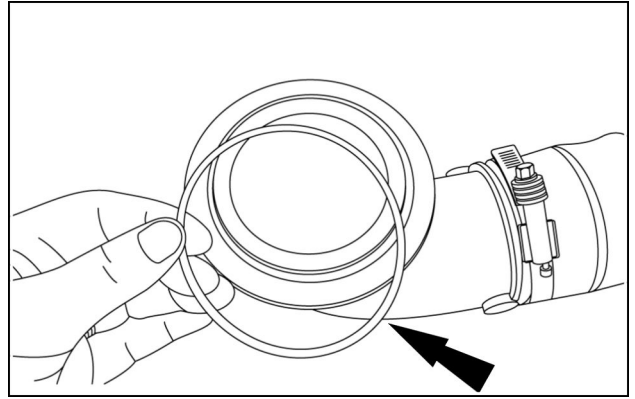
RCPH10CCH775AAB 5

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



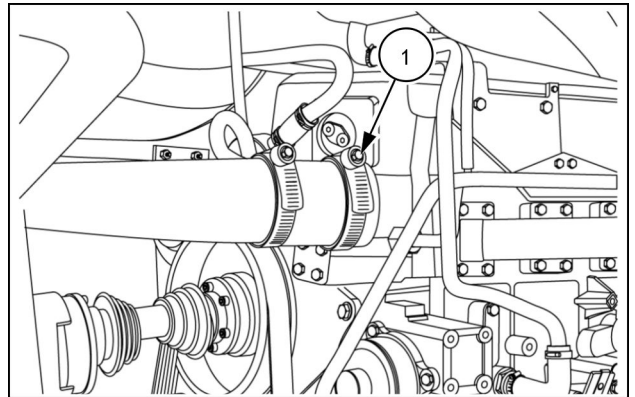
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13. Remove and discard the O-ring seal from the elbow.



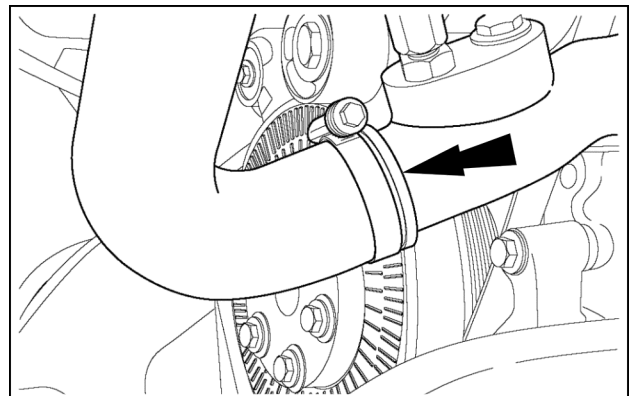
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14. Loosen the hose clamp **(1)** at the engine coolant outlet and disconnect the hose from the thermostat housing.



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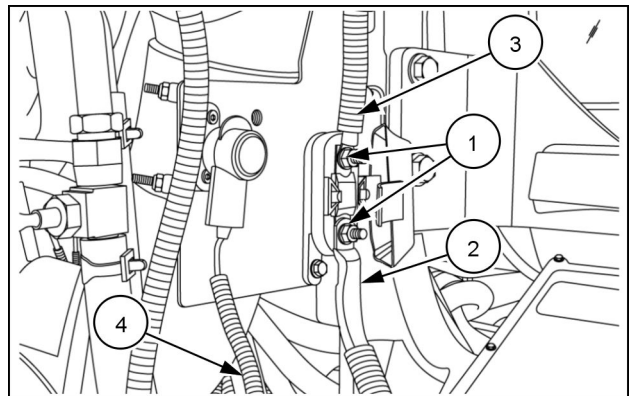
15. Loosen the hose clamp and disconnect the coolant line into the engine hose.



RCPH10CCH580AAB 9

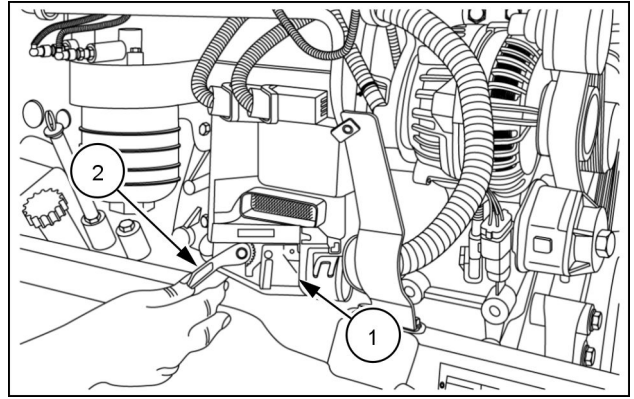
16. Remove the nuts **(1)** and disengage the engine heater grid cables **(2)** **(3)** to the fuse block.

17. Disconnect the harness connector **(4)** for the **12 V** auxiliary power connection .



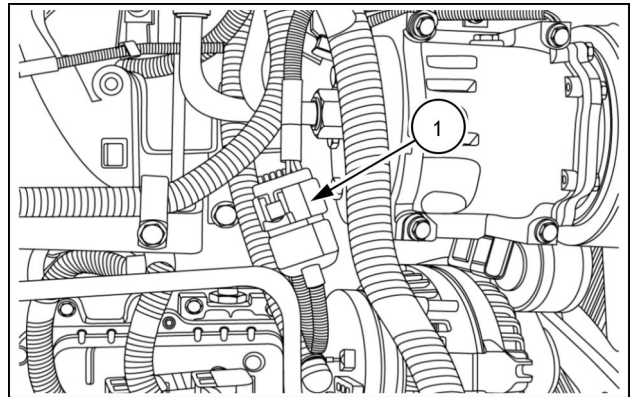
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18. Disconnect the ECM (engine control module) connector **(1)** by moving the locking handle **(2)** from the right (locked position) to the left (unlocked position).



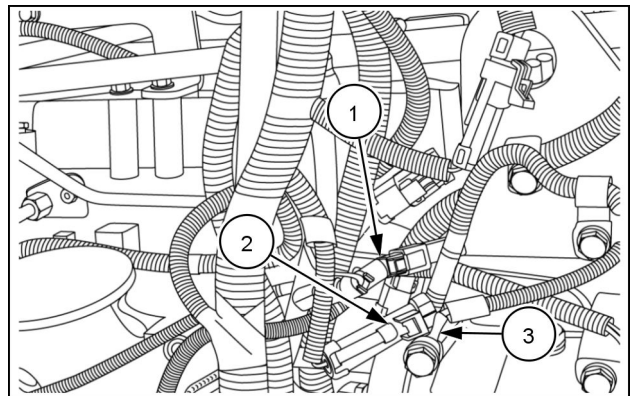
RCPH10CCH780AAB 11

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



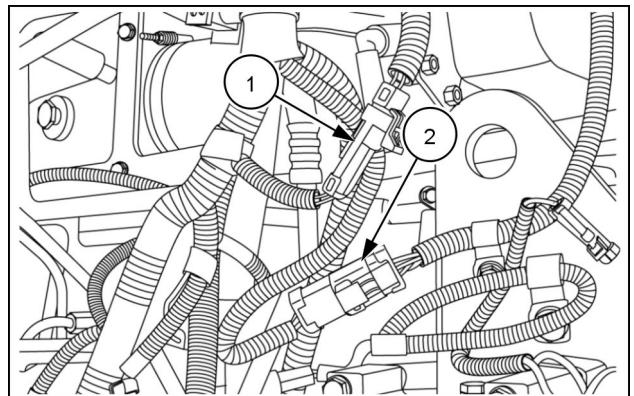
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20. Disconnect the harness connectors to the alternator **(1)** and the A/C compressor clutch **(2)**.
21. Remove the upper left A/C compressor bolt and remove the ground wire **(3)**.



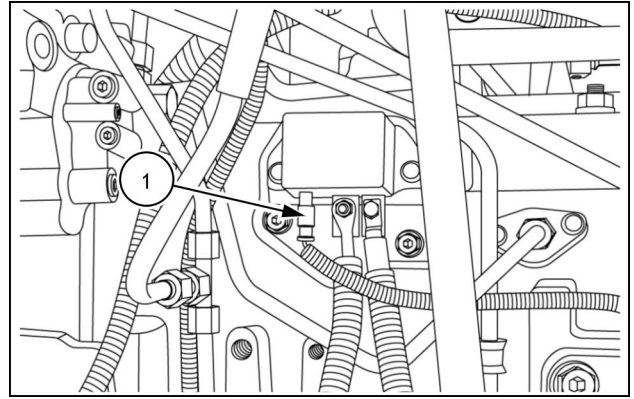
RCPH10CCH782AAB 13

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



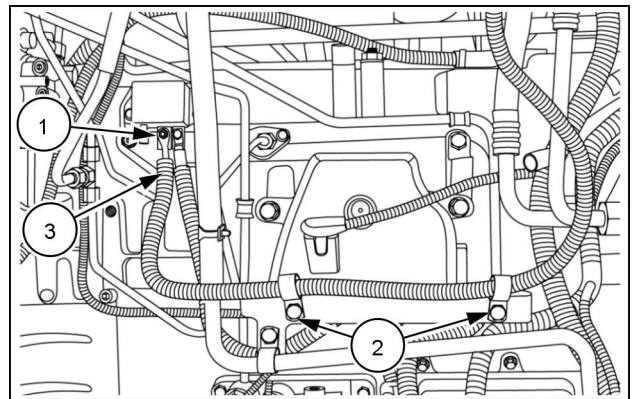
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23. Disconnect the harness connector **(1)** to the grid heater controller.



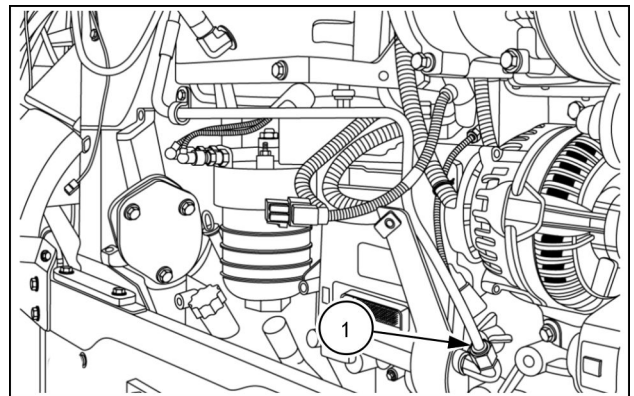
RCPH10CCH784AAB 15

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



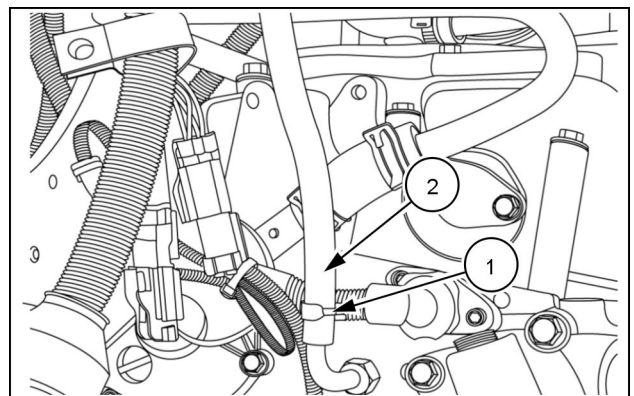
RCPH10CCH785AAB 16

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



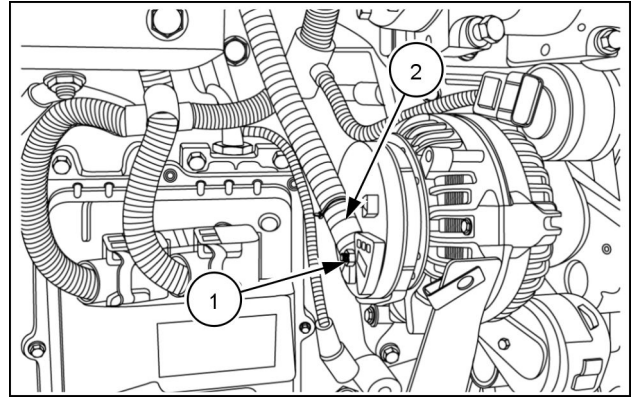
RCPH10CCH787AAB 17

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



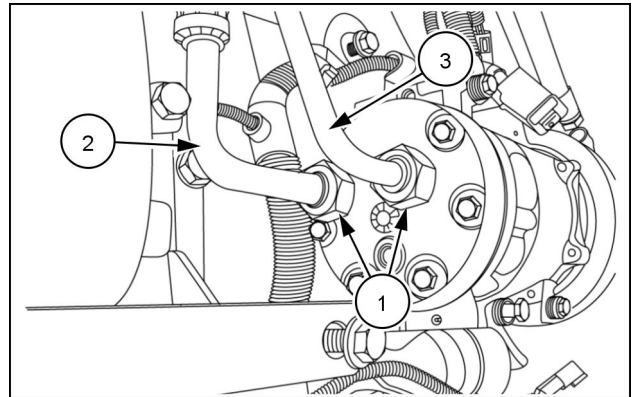
RCPH10CCH786AAB 18

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



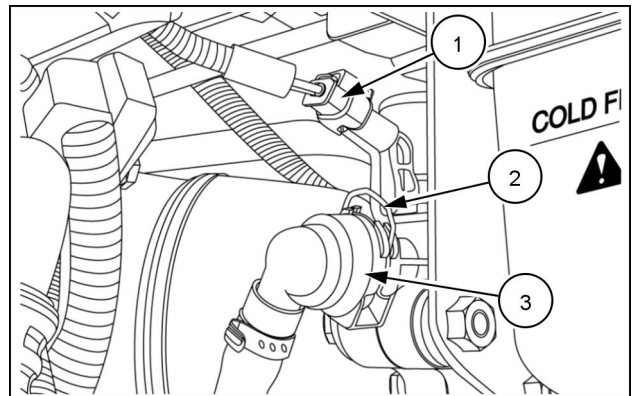
RCPH10CCH788AAB 19

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



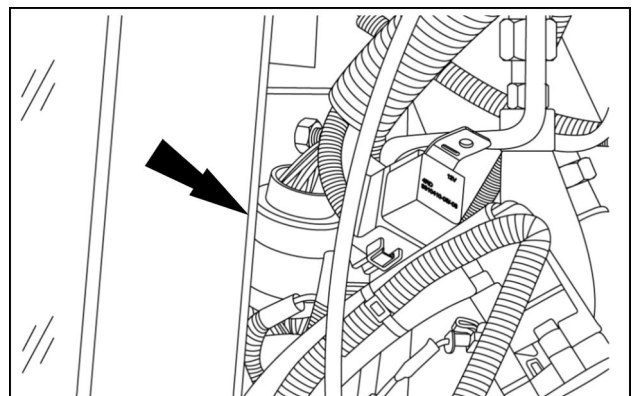
RCPH10CCH789AAB 20

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).



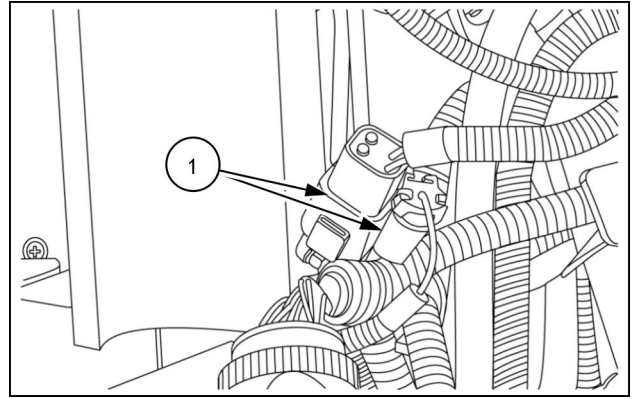
RCPH10CCH790AAB 21

32. Disconnect the main engine to chassis harness connector.



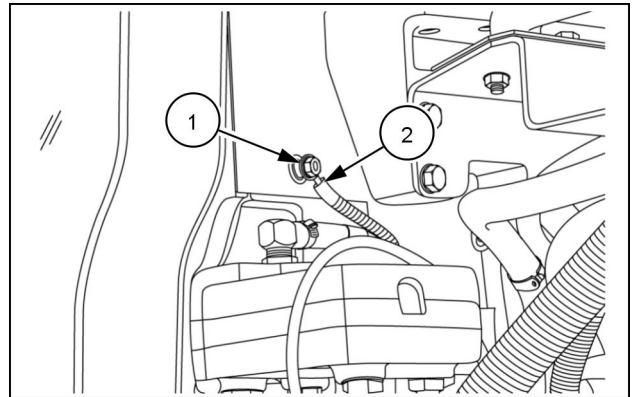
RCPH10CCH791AAB 22

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



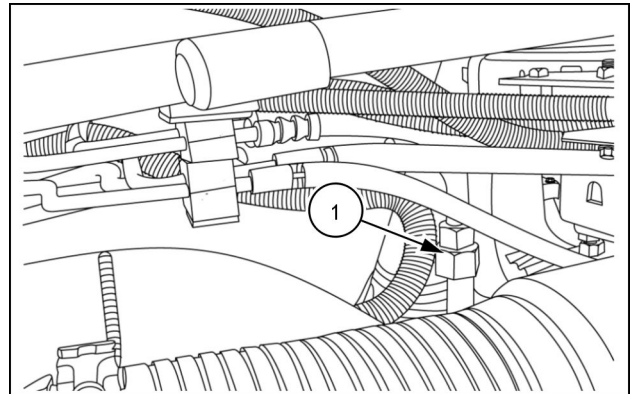
RCPH10CCH792AAB 23

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



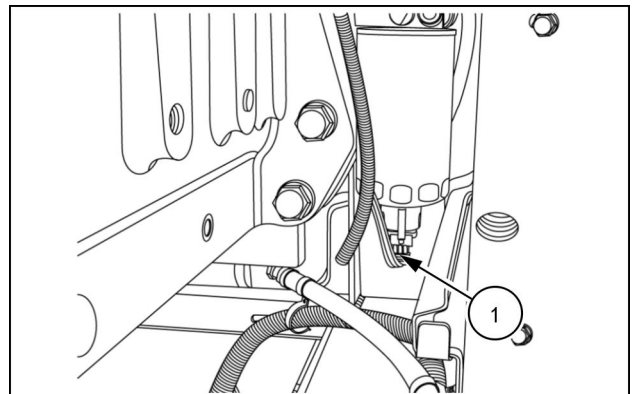
RCPH10CCH793AAB 24

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



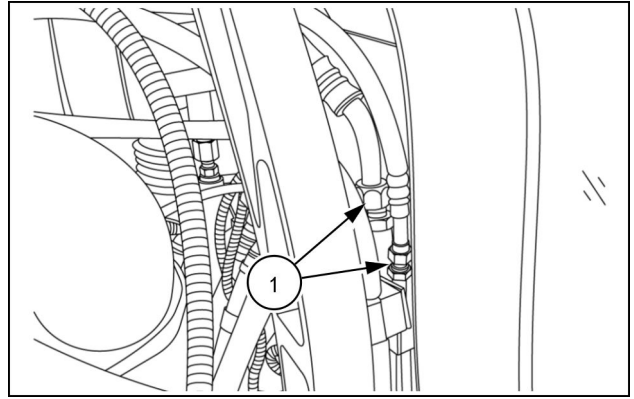
RCPH10CCH798AAB 25

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



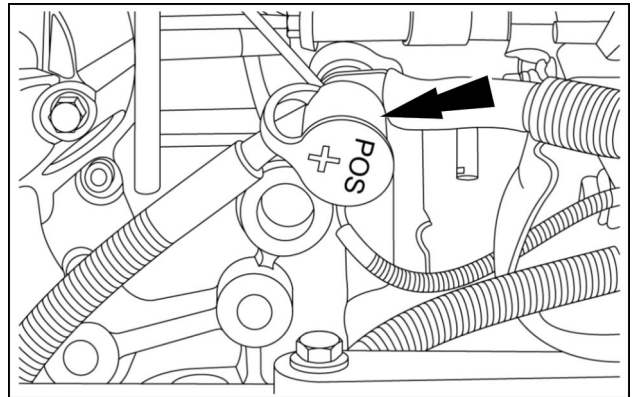
RCPH10CCH794AAB 26

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



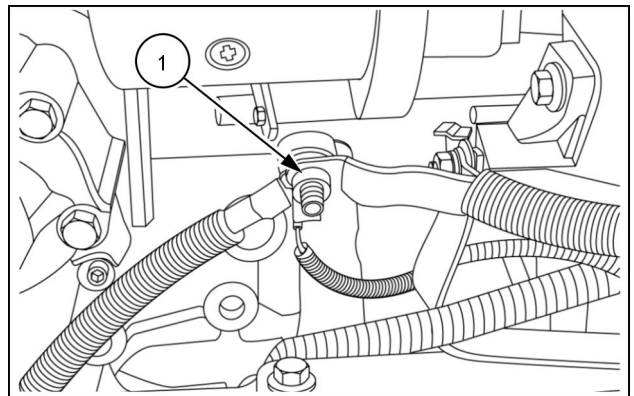
RCPH10CCH799AAB 27

38. Remove the jump start stud.



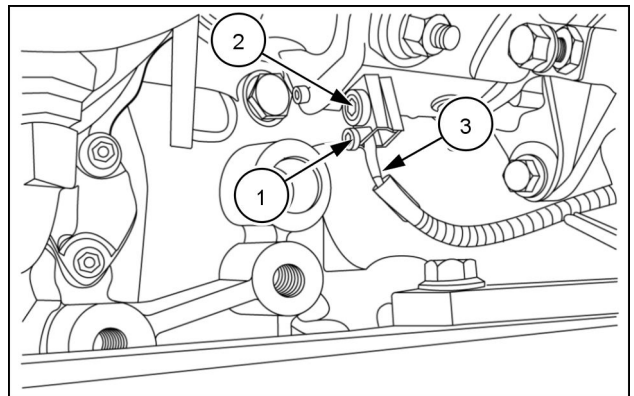
RCPH10CCH796AAB 28

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



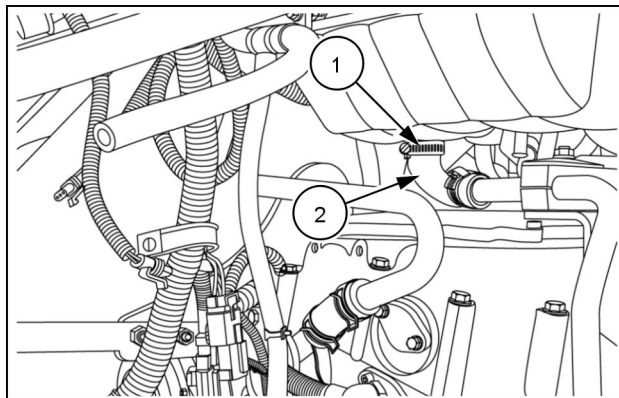
RCPH10CCH797AAB 29

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



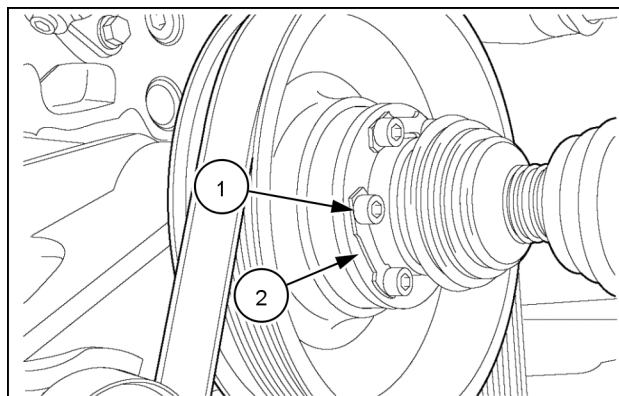
RCPH10CCH818AAB 30

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



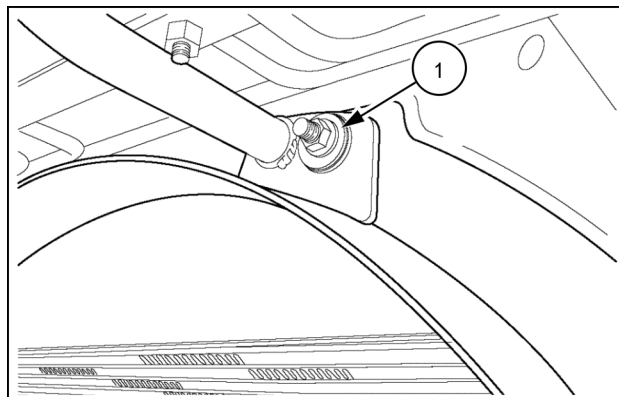
RCPH10CCH795AAB 31

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.



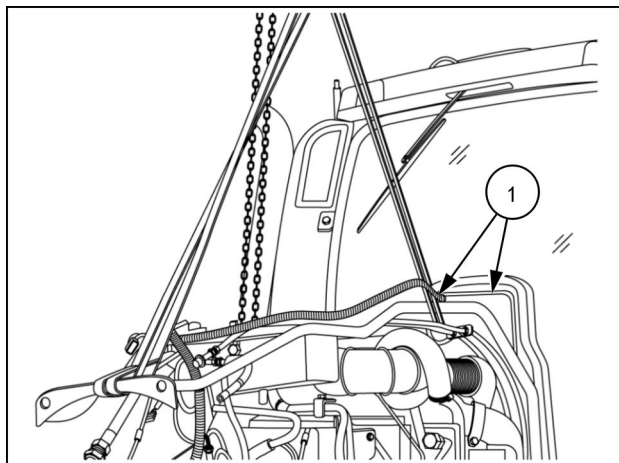
RCPH10CCH562AAB 32

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



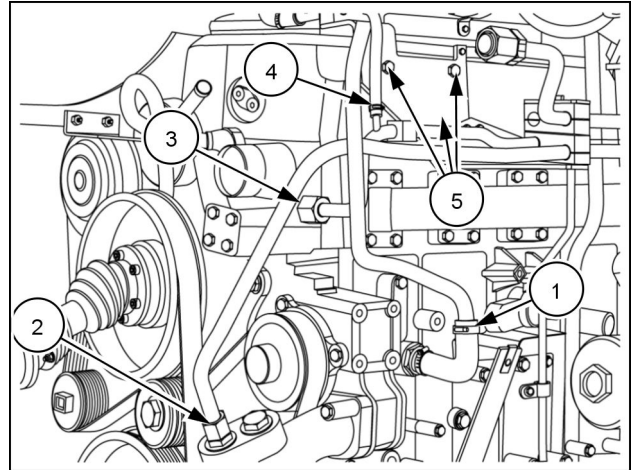
RCPH10CCH572AAB 33

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



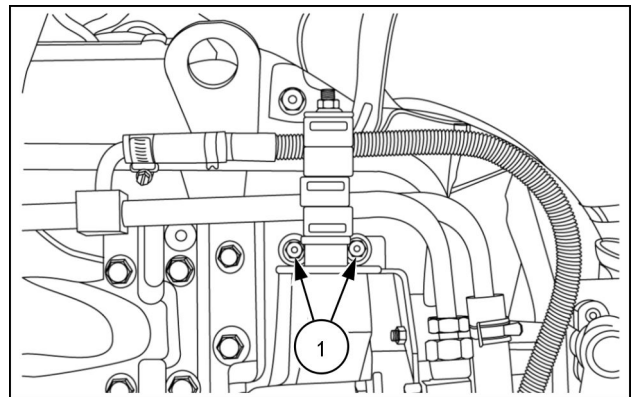
RCPH10CCH037BAB 34

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.



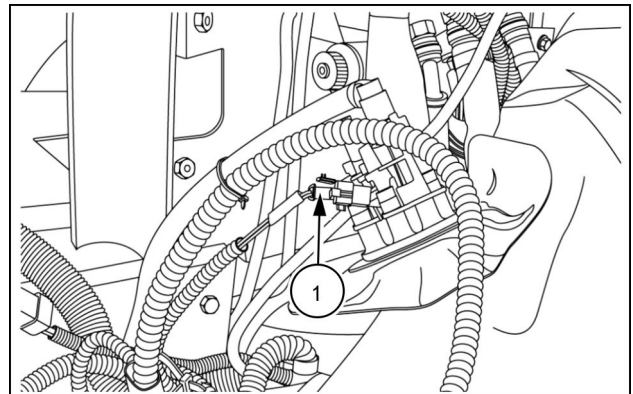
RCPH10CCH038BAB 35

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



RCPH10CCH800AAB 36

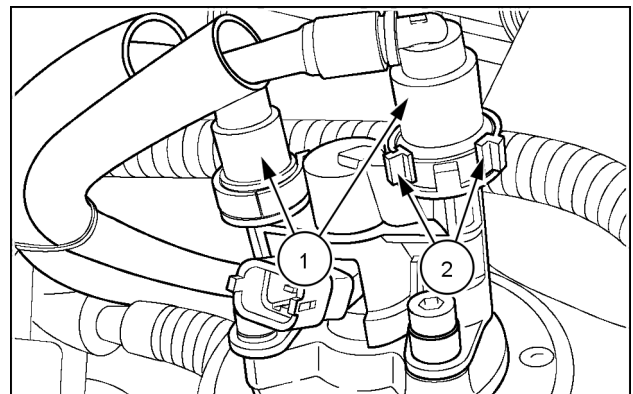
50. Disconnect the harness connector **(1)** to the dosing valve.



RCPH10CCH801AAB 37

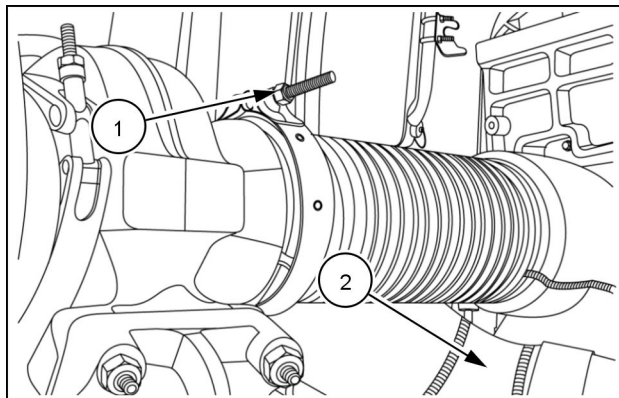
51. Disconnect the DEF supply and return hoses **(1)**.

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



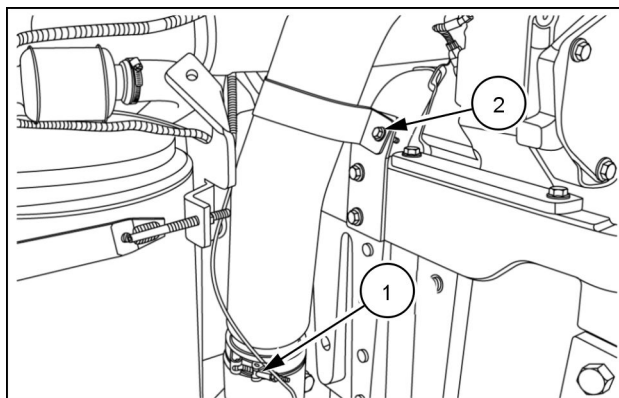
RCPH10CCH359AAB 38

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.



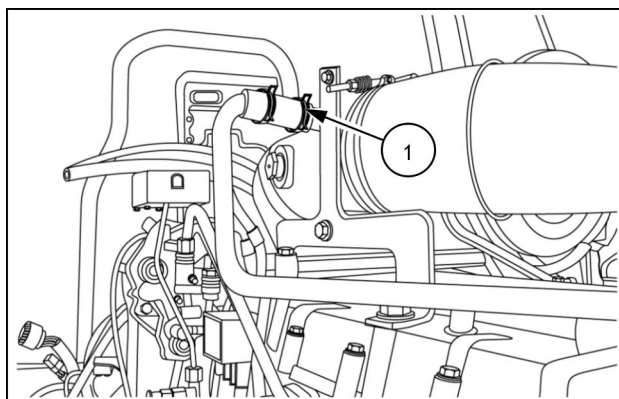
RCPH10CCH806AAB 39

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



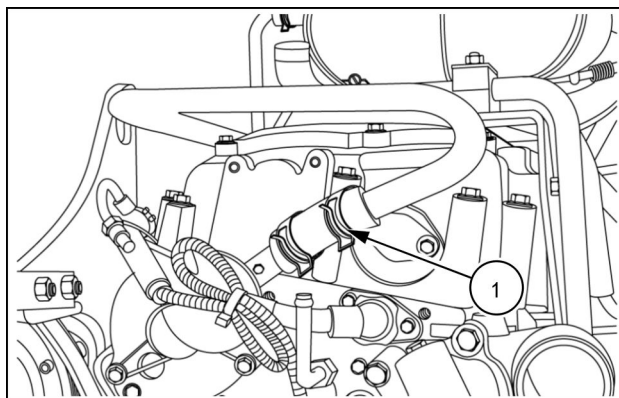
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54. Disengage the engine blow-by hose clamp **(1)** at the intake pipe. Disconnect from the intake pipe.



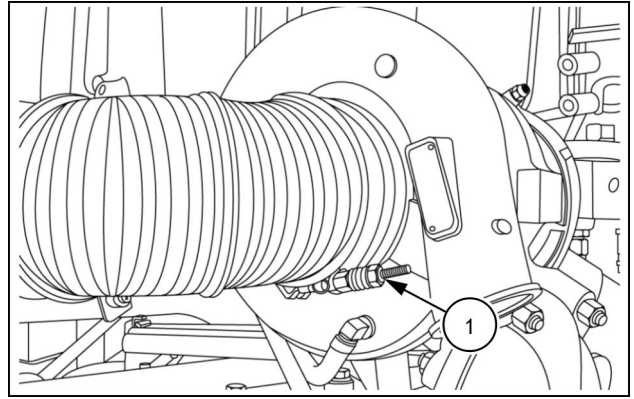
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55. Disengage the engine blow-by hose clamp **(1)** at the engine. Remove the pipe and set aside.



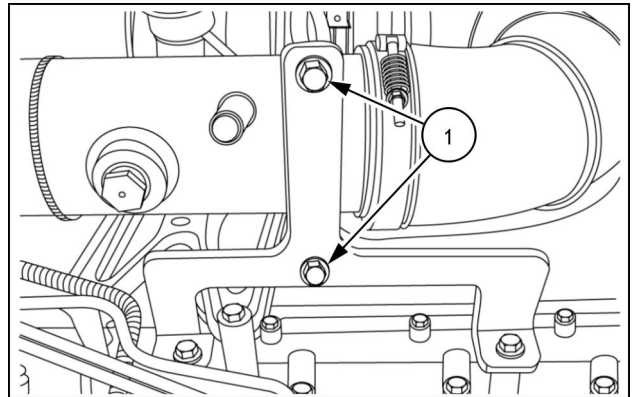
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56. Loosen the clamp **(1)** securing the intake pipe elbow to the turbocharger. Disconnect from the turbo.



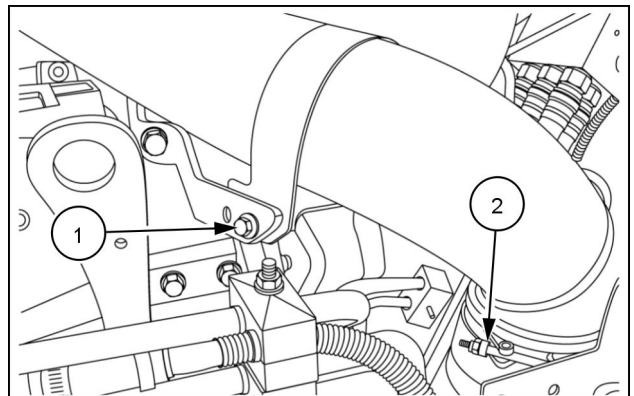
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57. Remove the two bolts **(1)** securing the support clamp to the intake pipe.



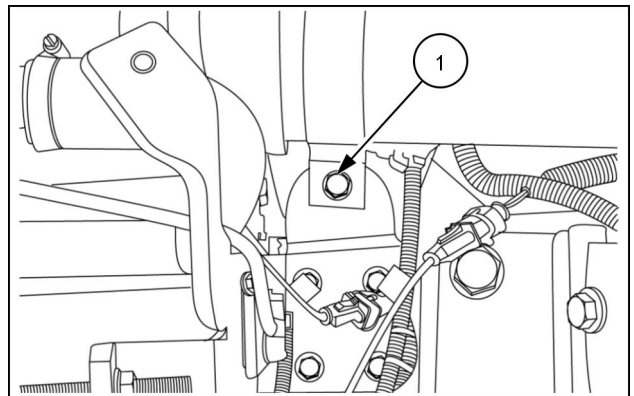
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58. Remove the bolt **(1)** securing the intake support clamp to the bracket. Loosen the clamp **(2)**. Remove the upper intake pipe and set aside.



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59. Remove the bolt **(1)** securing the intake pipe support clamp.



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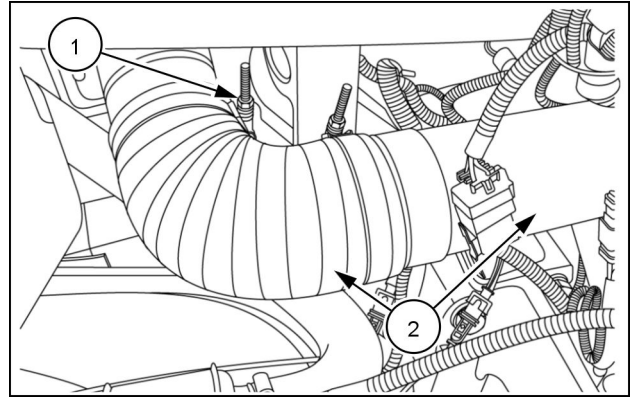
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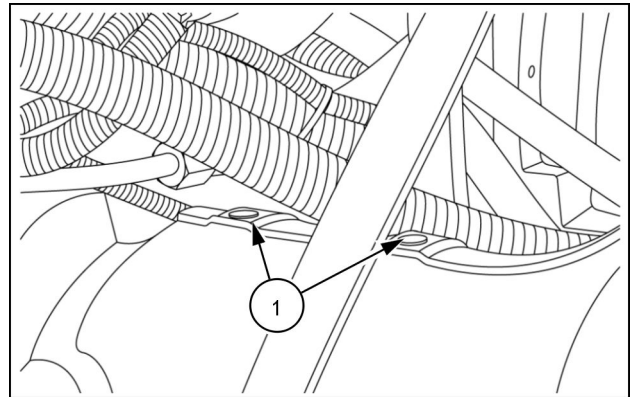
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60. Loosen the clamp **(1)** and remove the intake elbow and pipe assembly **(2)** from the air cleaner outlet.



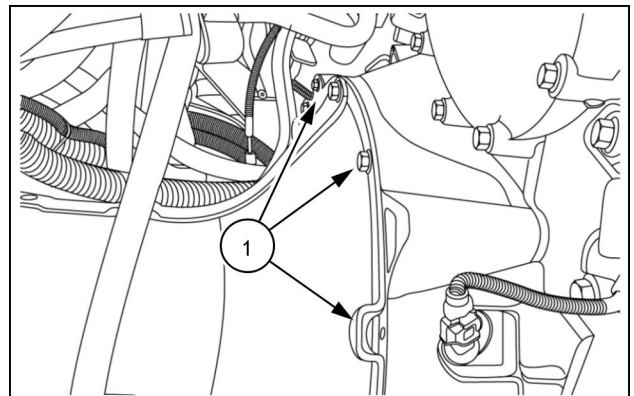
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61. Remove the two fasteners **(1)** securing the two halves of the engine drive shaft cover.



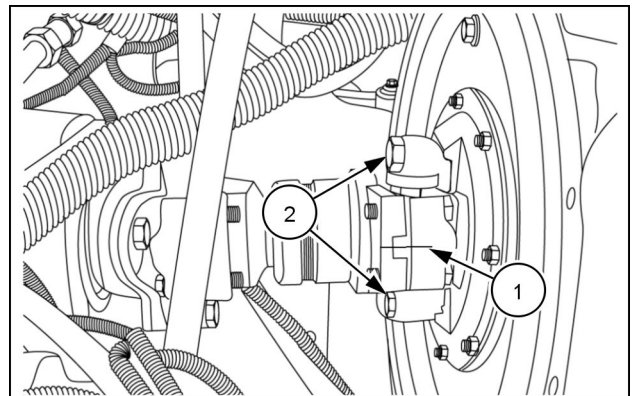
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62. Remove the cover bolts **(1)**. Remove the covers and set aside.



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63. Mark the drive shaft **(1)**. Remove the four bolts **(2)** and disengage the drive shaft from the flywheel.



RCPH10CCH817AAB 50

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