

CX17C Mini Excavator

SERVICE MANUAL

Part number 48127425

English

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CASE
CONSTRUCTION



SERVICE MANUAL

CX17C Canopy - Tier 4A engine

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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 - General information

Cleaning

Clean the metal parts with cleaning solution that meets the standard and steam cleaning. (except for bearings)

After cleaning, dry well, and inject oil in all parts.

Also inject oil into the bearings after drying.

Inspection

When disassembling parts, check all the parts.

If there are any worn or damaged parts, replace them.

Inspect carefully to prevent initial breakdowns.

Bearing

Replace any loose bearings.

Air dry bearings before installing them.

Needle bearing

When inserting needle bearings, be very careful not to damage them.

Apply grease to the section where the needle bearing will be inserted.

Gear

Check that there is no wear and no damage.

Oil seal, O-ring, gasket

Always install new oil seals, O-rings, and gaskets.

Apply grease to sections where oil seals and O-rings will be inserted.

Shaft

Check that there is no wear and no damage.

Check the bearings and check for damaged oil seals on the shaft.

Service parts

Install CASE CONSTRUCTION genuine service parts.

When placing an order, check the parts catalog. It contains the CASE CONSTRUCTION genuine part numbers.

Any breakdowns arising from the installation of non-genuine parts are not covered by the warranty.

Lubricants (fuel, hydraulic oil)

Use the oil from the specified company or specified in the operator's manual or service Manual.

Any breakdowns arising from any fuel or hydraulic oil other than those specified are not covered by the warranty.



SERVICE MANUAL

Engine

CX17C Canopy - Tier 4A engine

Engine - General specification

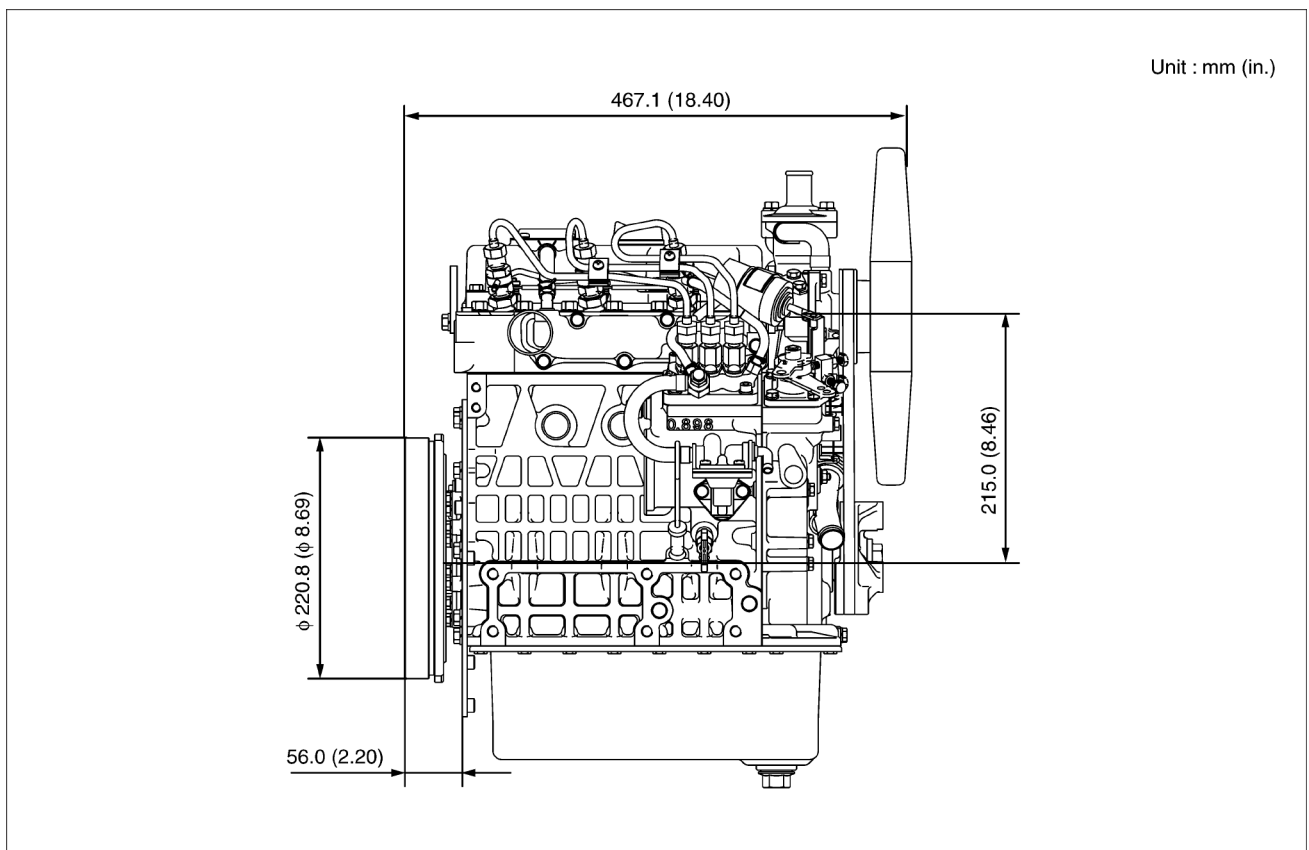
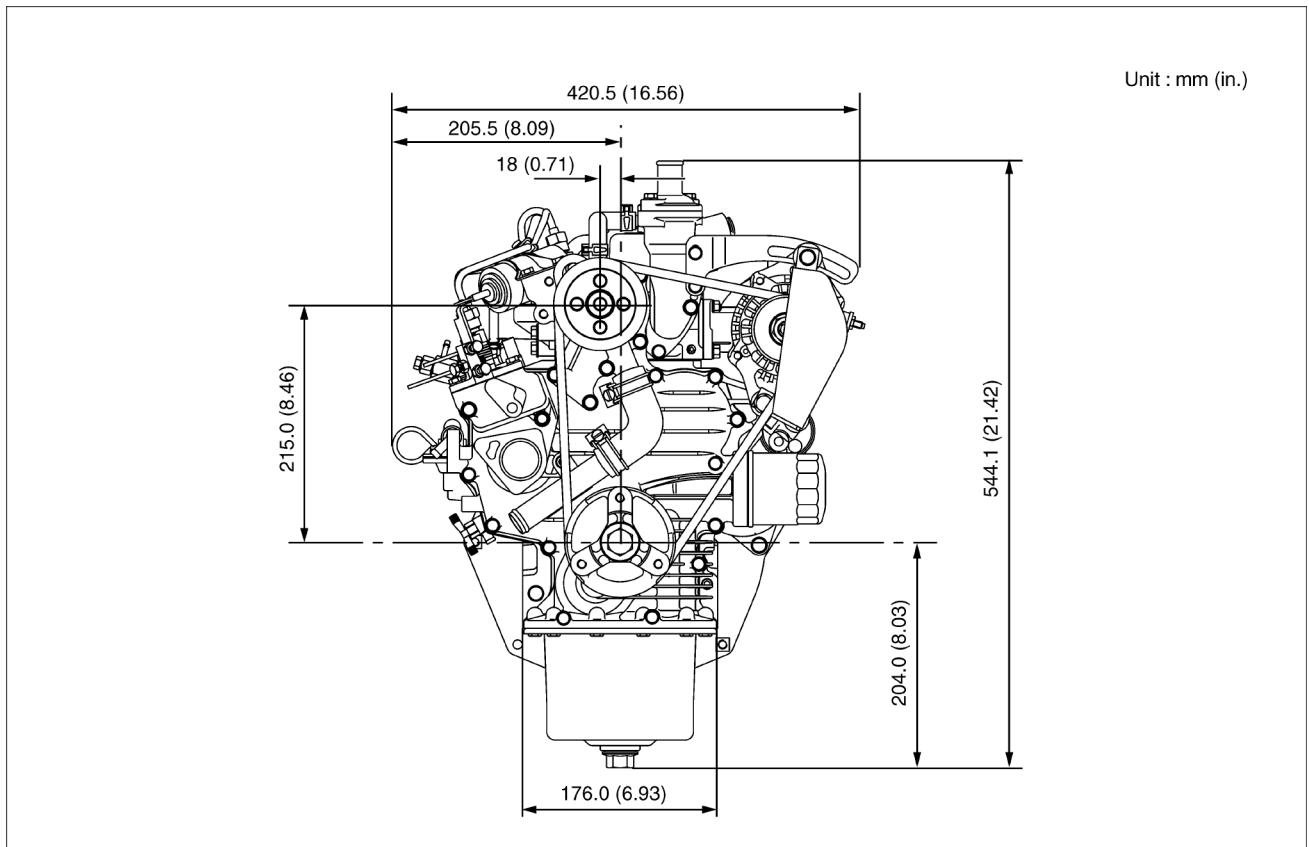
Engine main data

Item		Engine model D902-E4B
Number of cylinders		3
Engine type		Vertical, Water-cooled, 4 cycle IDI diesel engine
Bore × Stroke		72.0 – 73.6 mm (2.83 – 2.90 in)
Total displacement		898 cm³ (54.80 in³)
ISO power net continuous		15.2 kW (20.7 Hp) at 3600 RPM
ISO/SAE power net intermittent		17.5 kW (23.8 Hp) at 3600 RPM
SAE power gross intermittent		18.5 kW (25.2 Hp) at 3600 RPM
Maximum bare speed		3850 RPM
Minimum bare idling speed		900 – 1000 RPM
Combustion chamber		Spherical type (E-TVCS)
Fuel injection pump		Bosch MD type mini pump
Governor		All speed mechanical governor
Direction of rotation		Counterclockwise (viewed from flywheel side)
Injection nozzle		Bosch "Throttle" type
Injection timing		0.331 rad 19 °C before Top Dead Centre
Firing order		1-2-3
Injection pressure		13.73 MPa (1992 psi)
Compression ratio		24 : 1
Lubricating system		Forced lubrication by trochoid pump
Oil pressure indicating		Electrical type switch
Lubricating filter		Full flow paper filter (cartridge type)
Cooling system		Pressurized radiator, forced circulation with water pump (not included in the basic engine)
Starting system		Electric starting with starter
Starter motor		12 V, 1.2 kW (1.6 Hp)
Starting support device		By glow plug in combustion chamber
EGR		None
Battery		12 V, 52 A·h , equivalent
Charging alternator		12 V, 480 W
Lubricating Oil Capacity Class CF lubricating oil as per API classification is recommended.	Oil Pan Depth 101 mm (3.98 in)	3.7 L (0.98 US gal)
Weight (dry)		72.0 kg (209 lb)

NOTE: the specification described above is of the standard engine of each model.

Conversion Formula: **HP = 0.746 kW**, **PS = 0.7355 kW**

Engine - Dimension



Engine - Remove

WARNING

Avoid injury!

Shut off the engine, remove the key, and make sure all machine motion stops before you service the machine.

Failure to comply could result in death or serious injury.

W1128B

WARNING

Chemical hazard!

Use caution when opening the quick coupler cap from the load port. There may be product left in the port.

Failure to comply could result in death or serious injury.

W1039A

WARNING

Crushing hazard!

The lifting systems must be operated by qualified personnel who are aware of the correct procedures to follow. Make sure all lifting equipment is in good condition, and all hooks are equipped with safety latches.

Failure to comply could result in death or serious injury.

W0256A

WARNING

Heavy objects!

Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.

Failure to comply could result in death or serious injury.

W0398A

WARNING

Burn hazard!

Before performing any service on the hydraulic system, you must allow it to cool. Hydraulic fluid temperature should not exceed 40 °C (104 °F).

Failure to comply could result in death or serious injury.

W0241A

WARNING

Escaping fluid!

Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

Failure to comply could result in death or serious injury.

W0178A

WARNING

Chemical hazard!

When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.

Failure to comply could result in death or serious injury.

W0371A

Set the battery disconnect switch to O position (OFF position) to cut off any power supply in the electrical system of the machine (for details, see **Mechanical battery isolator - Dynamic description (55.302)**).

Remove the side panels (for details, see **Side panels - Remove (90.100)**).

Remove the engine access door (for details, see **Engine hood - Remove (90.105)**).

Remove the canopy (for details, see **Canopy assembly - Remove (90.114)**).

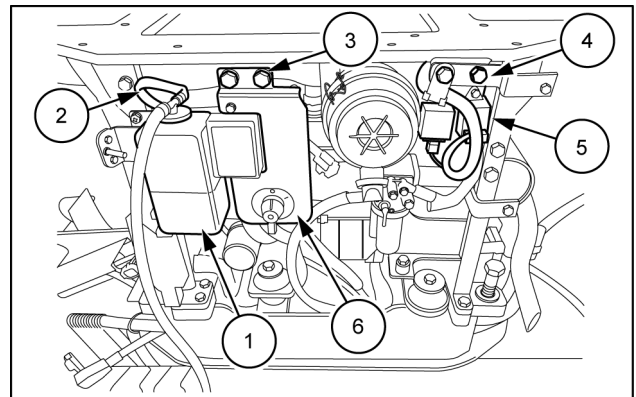
Remove the operator seat (for details, see **Operator seat - Remove (90.120)**).

Remove the operator seat base trim panel (for details, see **Operator seat base trim panel - Remove - Platform (90.160)**).

Remove the radiator (for details, see **Radiator - Remove (10.400)**).

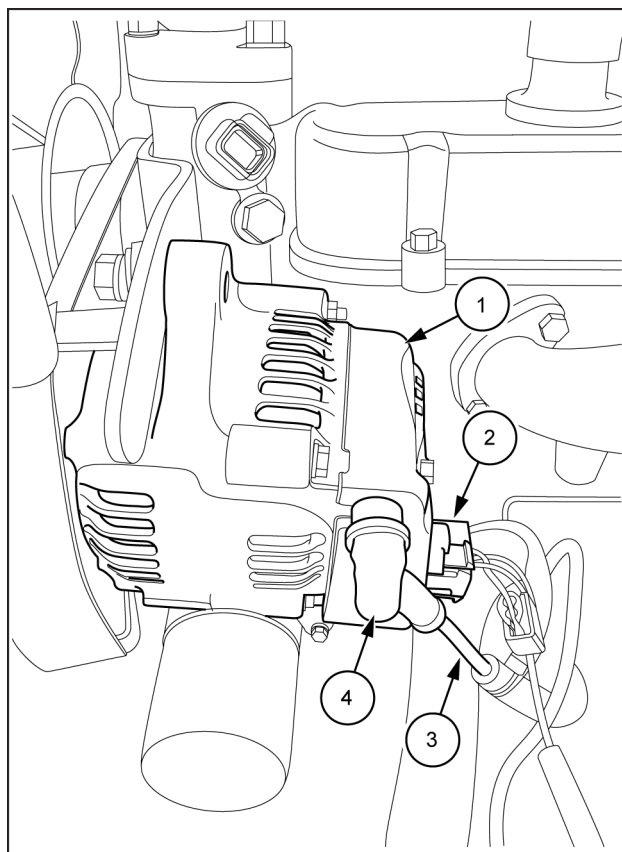
Remove the pump (for details, see **Pump - Remove (35.106)**).

1. Loosen the clamp and remove the hose (2) from the windshield washer reservoir (1).
2. Remove the windshield washer reservoir (1) from the bracket.
3. Use a wrench [17 mm] to remove the two bolts (3), and then remove the bracket with the fuses box and the battery disconnect switch (6).
4. Use a wrench [17 mm] to remove the two bolts (4), and then remove the bracket with the relays (5).



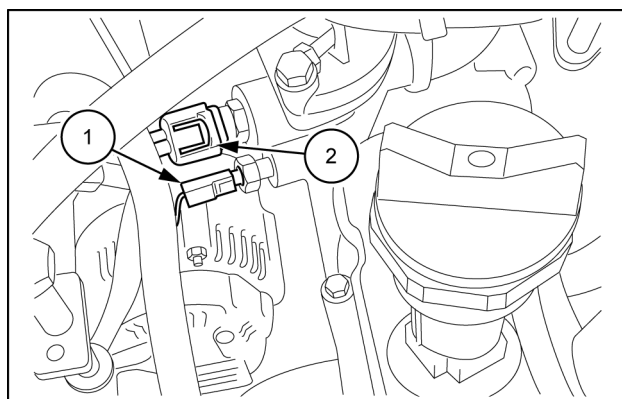
SMIL17MEX0260AB 1

5. Move the cap **(4)**.
6. Remove the nut and disconnect the wire **(3)**.
7. Disconnect the electrical connector **(2)** from the alternator **(1)**.



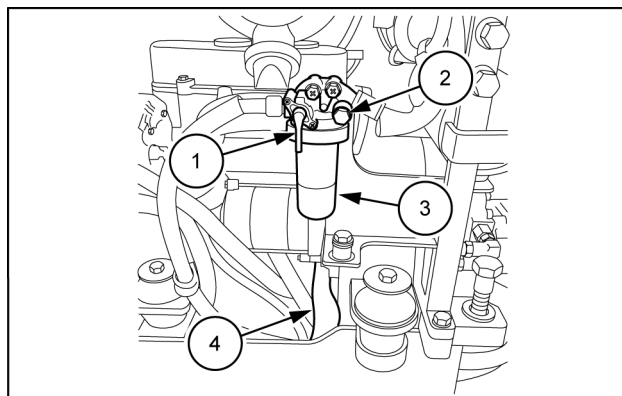
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8. Disconnect the electrical connector **CD-9 (1)** of the overheat switch.
9. Disconnect the electrical connector **CD-8 (2)** of the cooling temperature sensor.



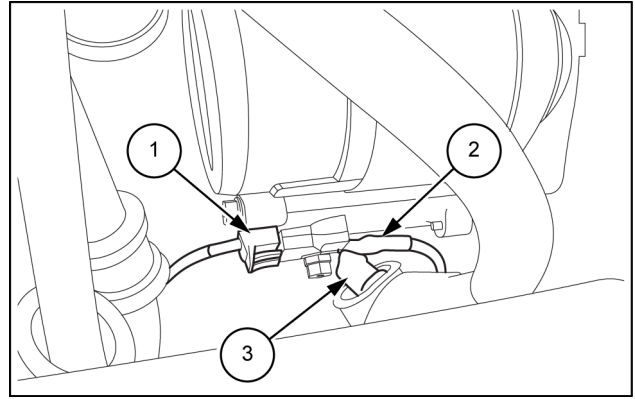
SMIL17MEX0262AB 3

10. Close the fuel pre-filter cock **(1)**.
11. Use a wrench [**13 mm**] to remove the bolt **(2)**, and then remove the fuel pre-filter **(3)**.
12. Use a wrench [**17 mm**] to remove the bolt and then disconnect the earth strap **(4)** from the engine.



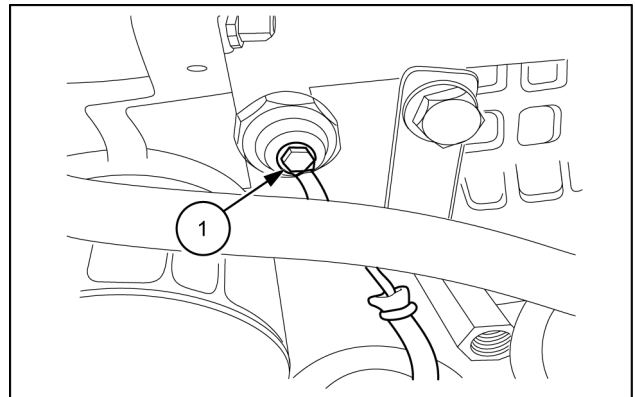
SMIL17MEX0263AB 4

13. Move the cap.
14. Remove the nut and disconnect the wires **(2)** and **(3)**.
15. Disconnect the electrical connector **(1)** from the engine starter.



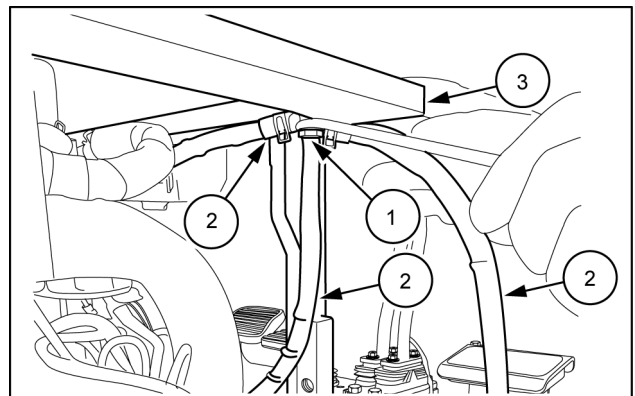
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16. Remove the nut and disconnect the electrical connector **CD-18** of the engine oil pressure switch.



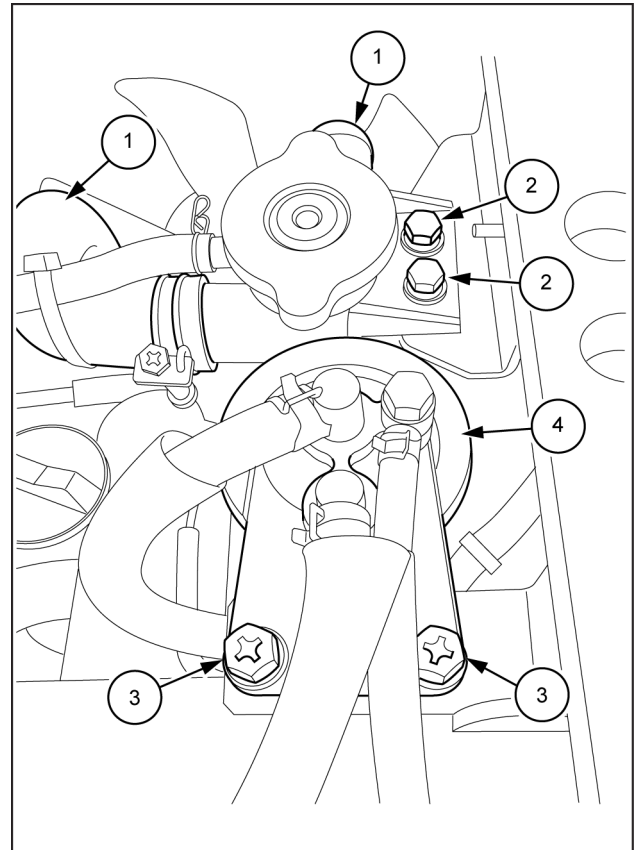
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17. Use a wrench [**13 mm**] to remove the bolt **(1)** and then remove the fuel hoses **(2)** from the support **(3)**.



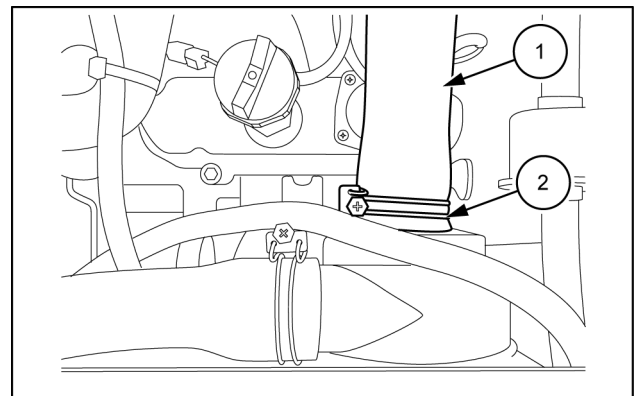
SMIL17MEX0266AB 7

18. Use a wrench [**13 mm**] to remove the two bolts **(2)** and then remove the filling hoses **(1)** of the radiator from the support.
19. Use a wrench [**13 mm**] to remove the two bolts **(3)** and then remove the fuel filter **(4)** from the support.



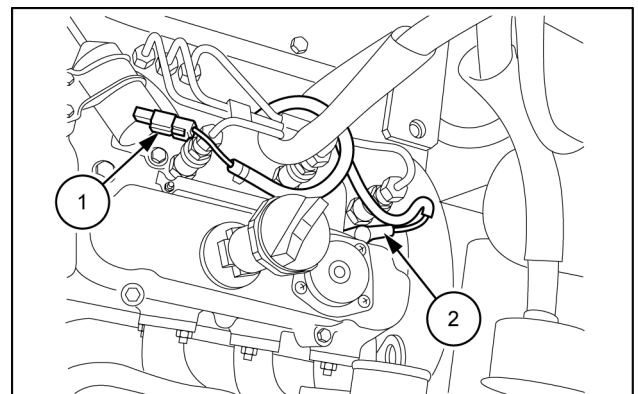
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20. Loosen the clamp **(2)** and remove the air hose **(1)** from the air cleaner.



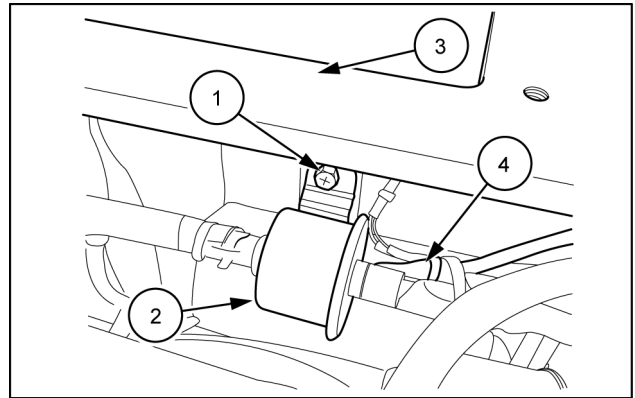
SMIL17MEX0268AB 9

21. Disconnect the electrical connector **CN-79 (1)** of the fuel solenoid.
22. Move the cap.
23. Remove the nut and disconnect the wire **CN-80 (2)** of the air-heater.



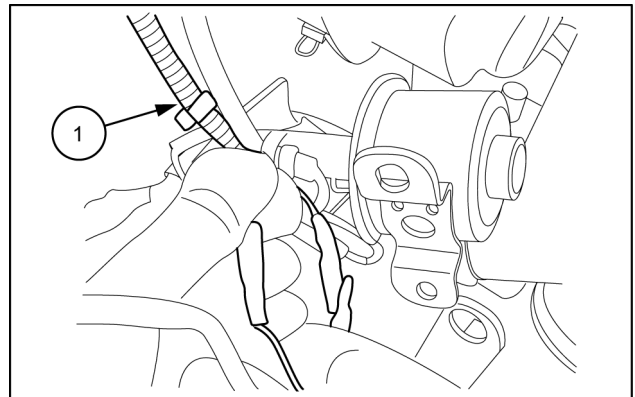
SMIL17MEX0269AB 10

24. Disconnect the electrical connector **CN-145 (4)** of the fuel feed pump (2).
25. Use a wrench [**10 mm**] to remove the bolt (1) and then remove the fuel feed pump (2) from the support (3).



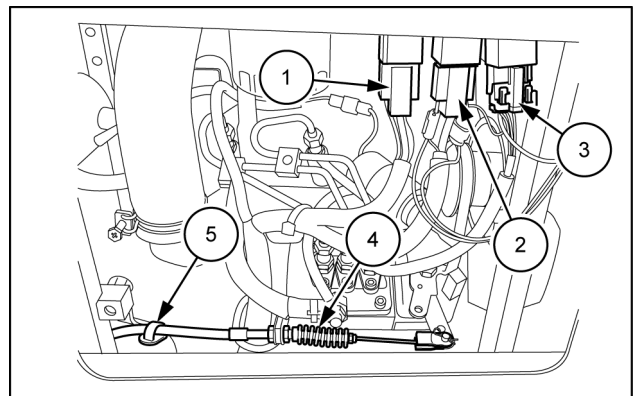
SMIL17MEX0270AB 11

26. Disconnect the electrical connector **CN-81 (1)** of the travel alarm buzzer.



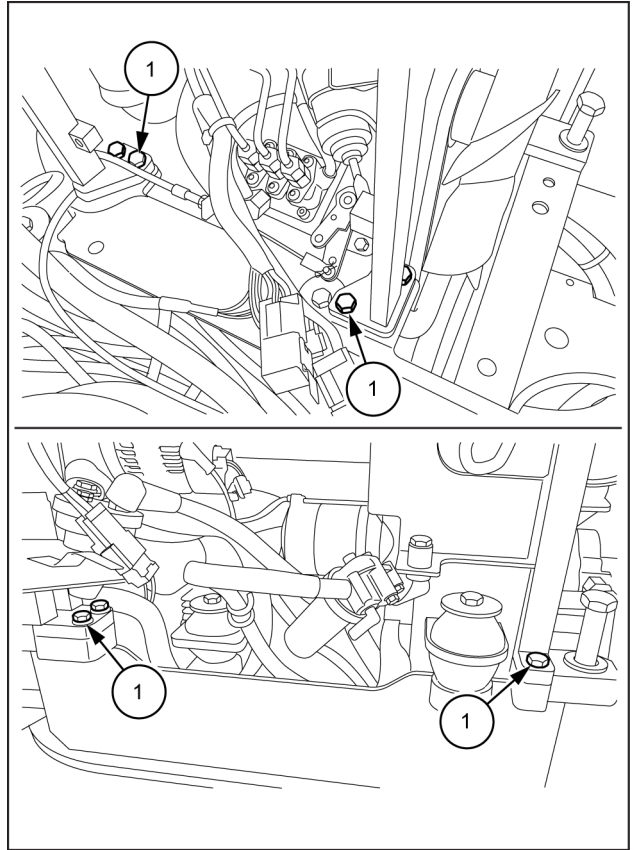
SMIL17MEX0271AB 12

27. Use a wrench [**10 mm**] to remove the three bolts and then remove the power relays **CR-23 (1)**, **CR-35 (2)**, and **CR-2 (3)**.
28. Loosen the clamp (5) and remove the accelerator rope (4) from the chassis.



SMIL17MEX0272AB 13

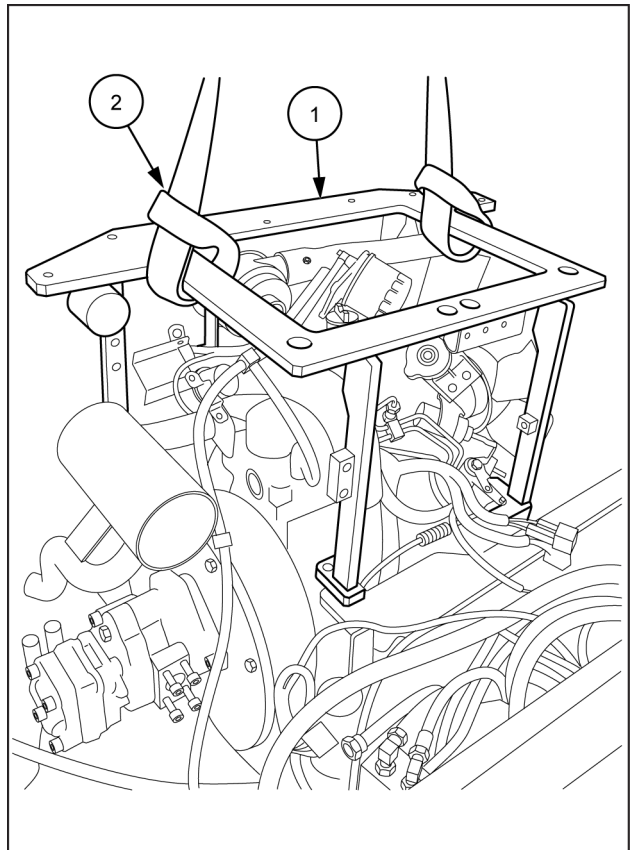
29. Use a wrench [**17 mm**] to remove the seven bolts **(1)**.



SMIL17MEX0273BB 14

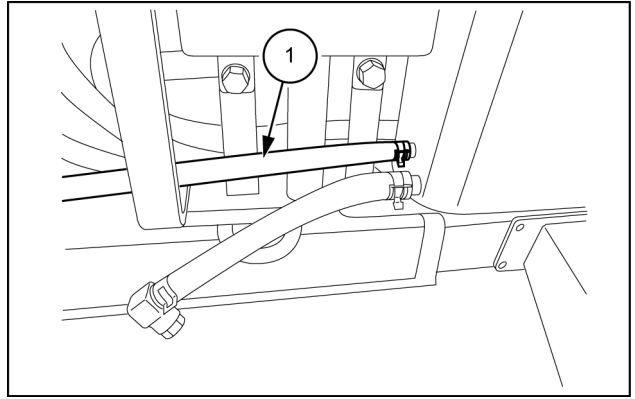
30. Use chains or nylon sling **(2)** and lift-crane to secure the support **(1)**.

31. Remove the support **(1)**.



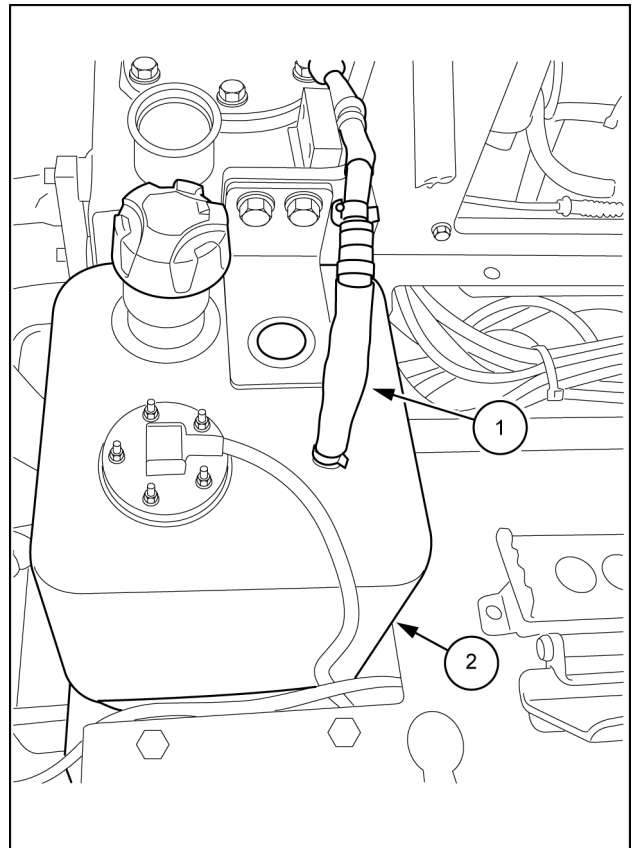
SMIL17MEX0274BB 15

32. Loosen the clamp to remove the fuel hose **(1)** from the tank.



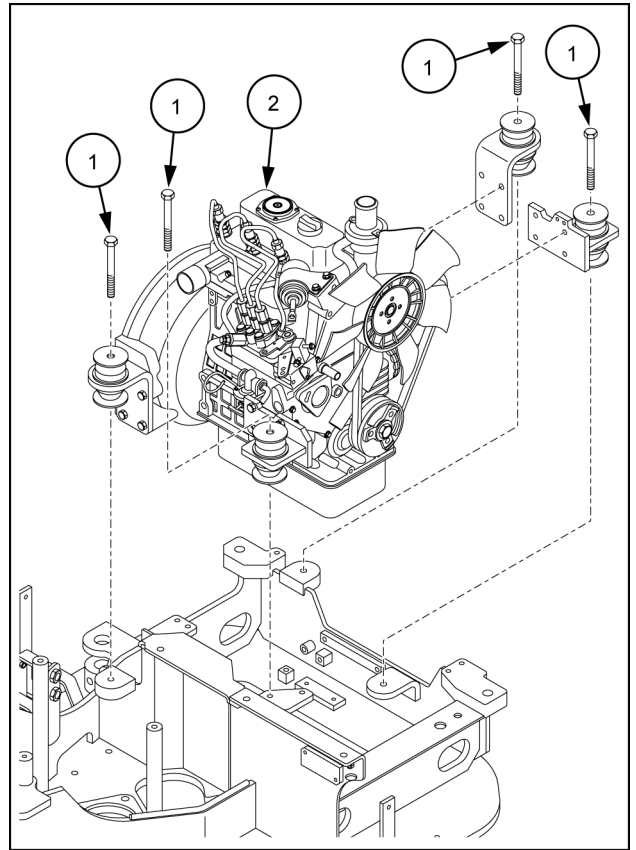
SMIL17MEX0275AB 16

33. Loosen the clamp to remove the fuel hose **(1)** from the fuel tank **(2)**.



SMIL17MEX0277BB 17

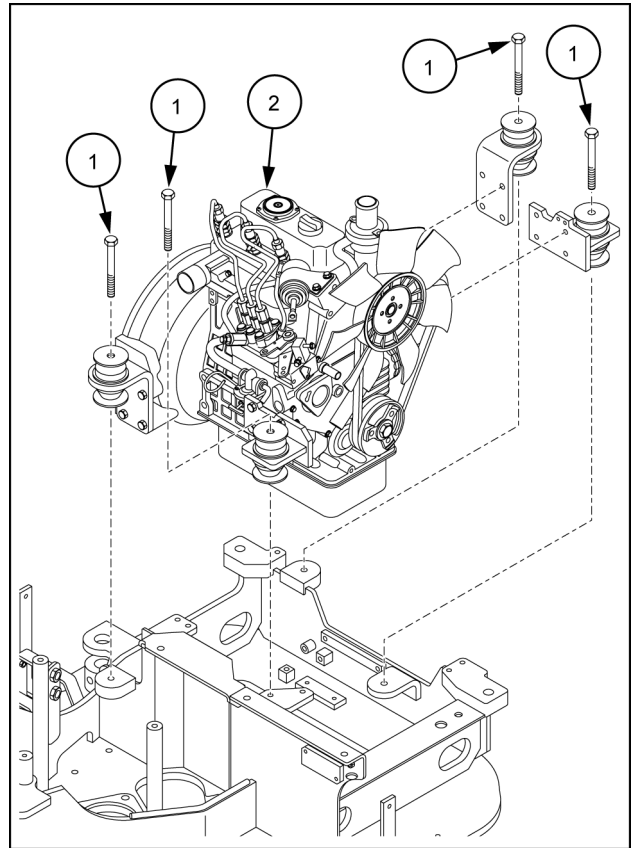
34. Install the two hooks into the engine lift bracket, and then use the wire rope or chain and lift-crane to secure the engine.
35. Use a box wrench [**19 mm**] to remove the four bolts (1).
36. Remove the engine (2).



SMIL17MEX0276BB 18

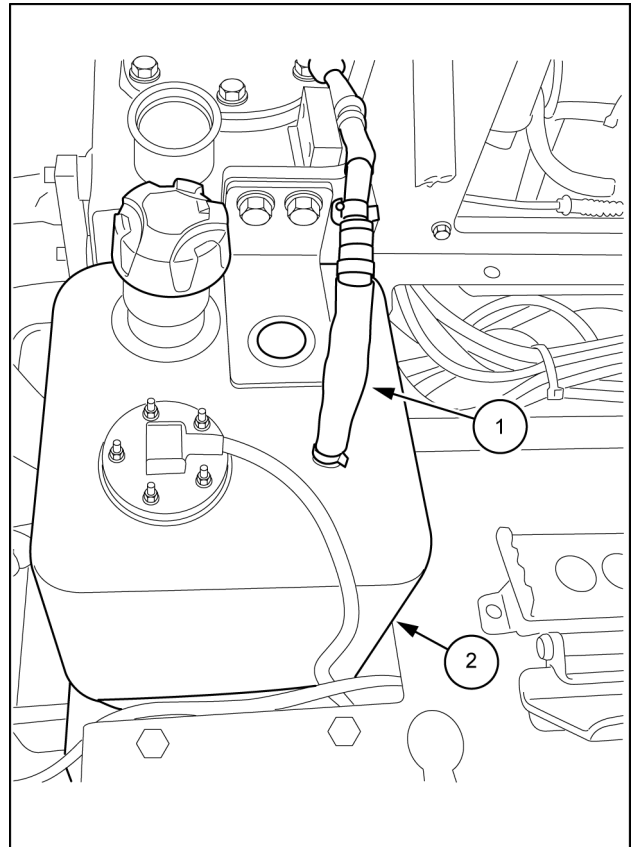
Engine - Install

1. Lift the engine and place it on the machine.
2. Use a box wrench [**19 mm**] to tighten the four bolts (1).
 - Tightening torque: **105.8 – 135.6 N·m (78.0 – 100.0 lb ft)**.



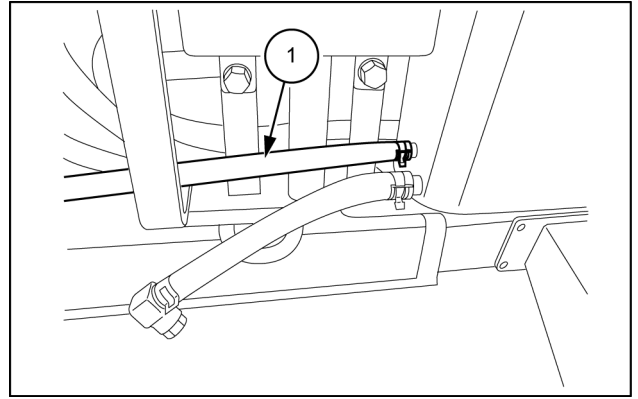
SMIL17MEX0276BB 1

3. Install the fuel hose (1) on the fuel tank (2) and close the clamp.



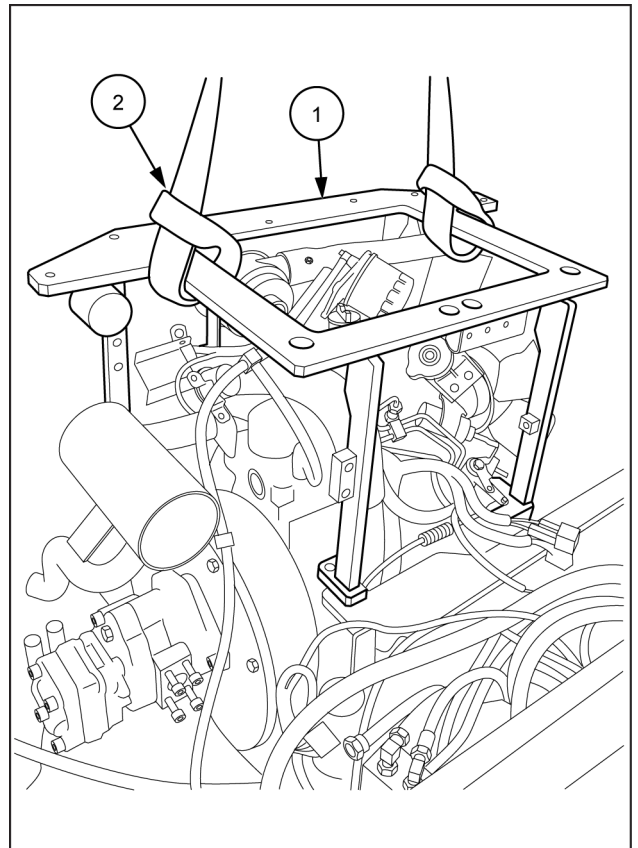
SMIL17MEX0277BB 2

4. Install the fuel hose **(1)** on the fuel tank and close the clamp.



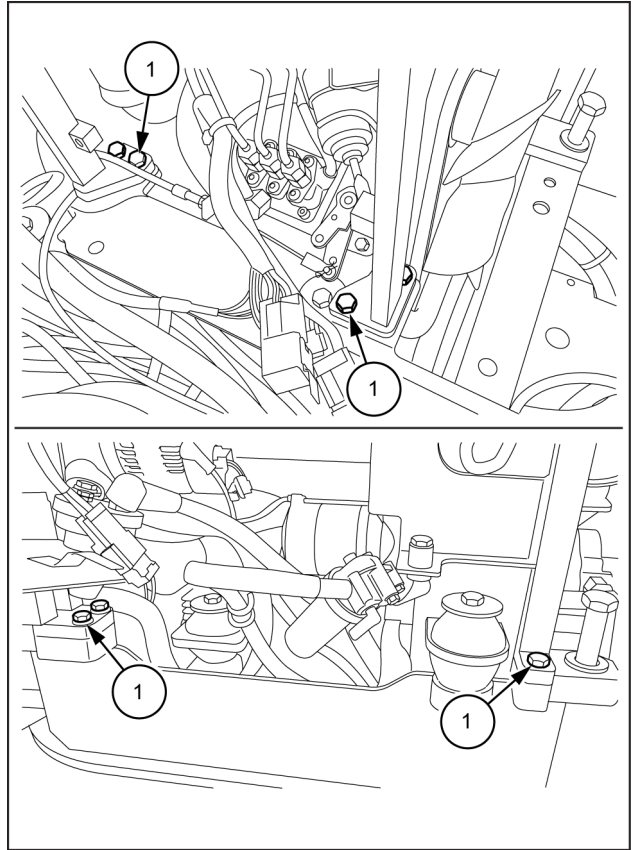
SMIL17MEX0275AB 3

5. Use chains or nylon sling **(2)** and a lift-crane to secure the support **(1)**.
6. Install the support **(1)** on the machine.



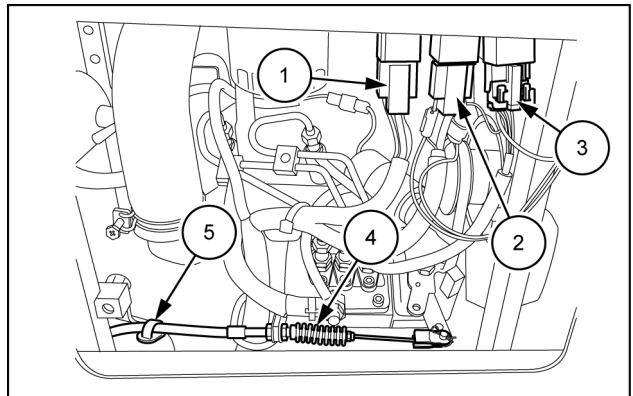
SMIL17MEX0274BB 4

7. Use a wrench [**17 mm**] to tighten the seven bolts **(1)**.



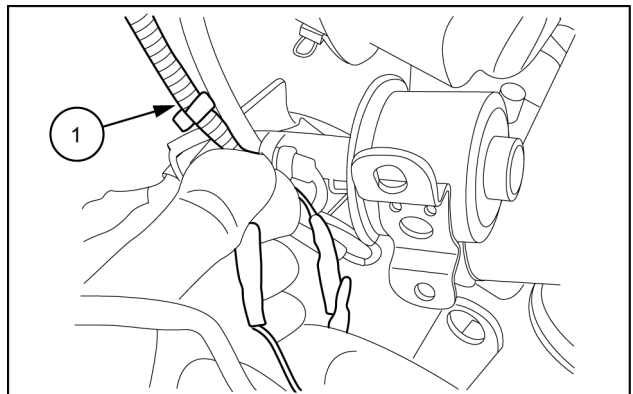
SMIL17MEX0273BB 5

8. Install the power relays **CR-23 (1)**, **CR-35 (2)** and **CR-2 (3)** and then use a wrench [**10 mm**] to tighten the three bolts.
9. Install the accelerator rope **(4)** on the chassis and close the clamp **(5)**.



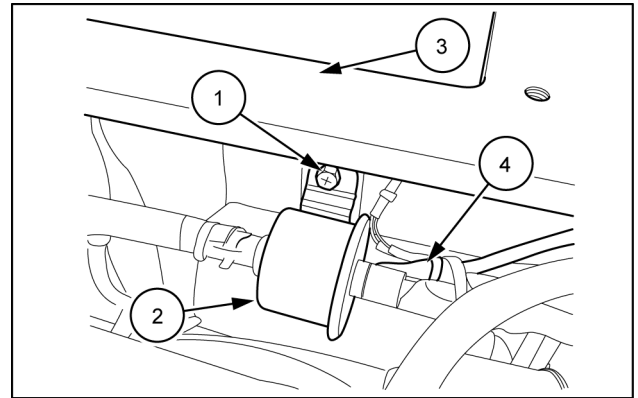
SMIL17MEX0272AB 6

10. Connect the electrical connector **CN-81 (1)** of the travel alarm buzzer.



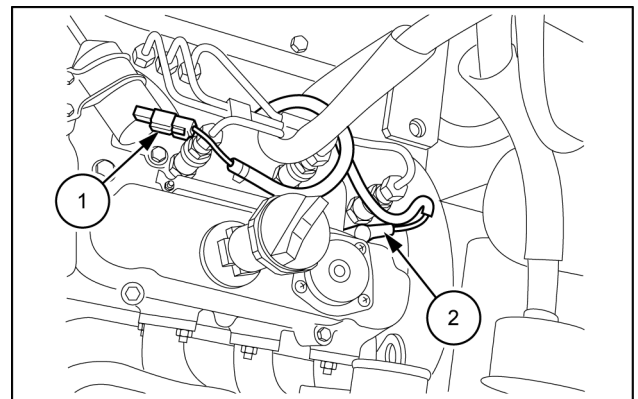
SMIL17MEX0271AB 7

11. Use and then Install the fuel feed pump (2) on the support (3) and then use a wrench [10 mm] to tighten the bolt (1).
12. Connect the electrical connector **CN-145** (4) of the fuel feed pump (2).



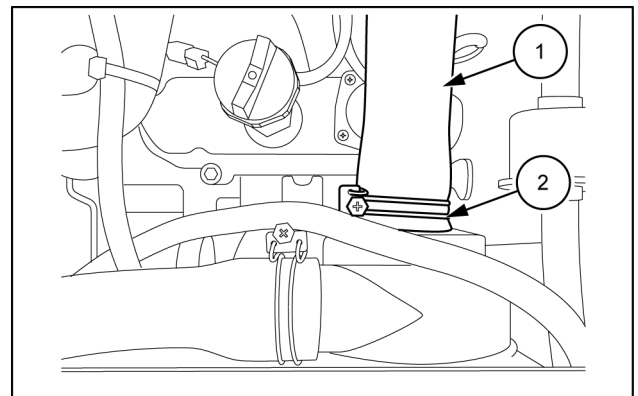
SMIL17MEX0270AB 8

13. Connect the electrical connector **CN-79** (1) of the fuel solenoid.
14. Connect the wire **CN-80** (2) of the air-heater and then tighten the nut.
15. Install the cap.



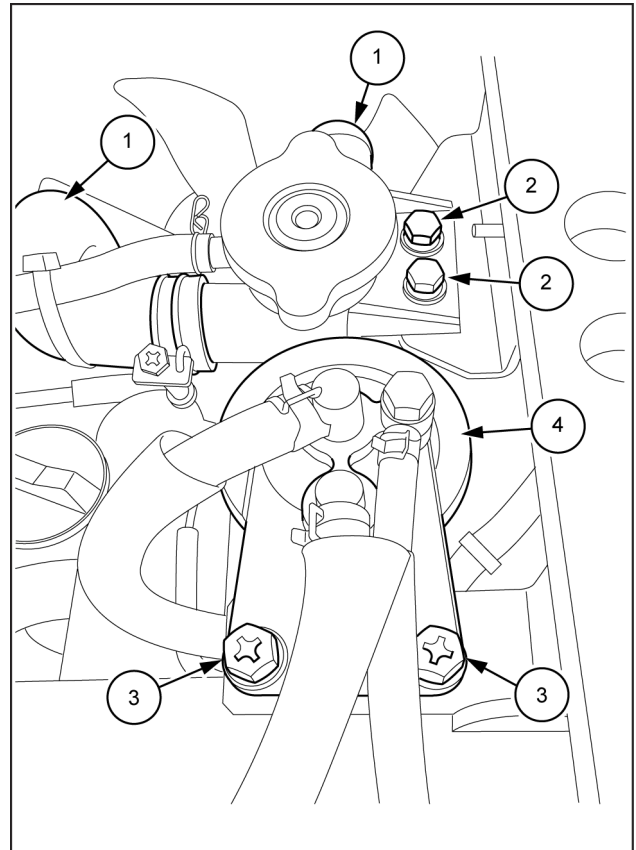
SMIL17MEX0269AB 9

16. Install the air hose (1) on the air cleaner and close the clamp (2).



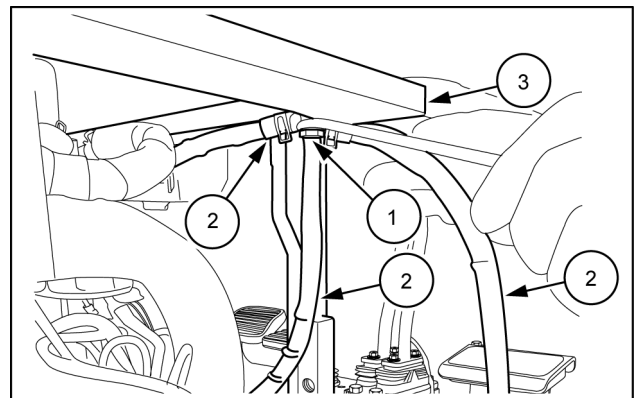
SMIL17MEX0268AB 10

17. Install the fuel filter **(4)** on the support and then use a wrench [**13 mm**] to tighten the two bolts **(3)**.
18. Install the filling hoses **(1)** of the radiator on the support and then use a wrench [**13 mm**] to tighten the two bolts **(2)**.



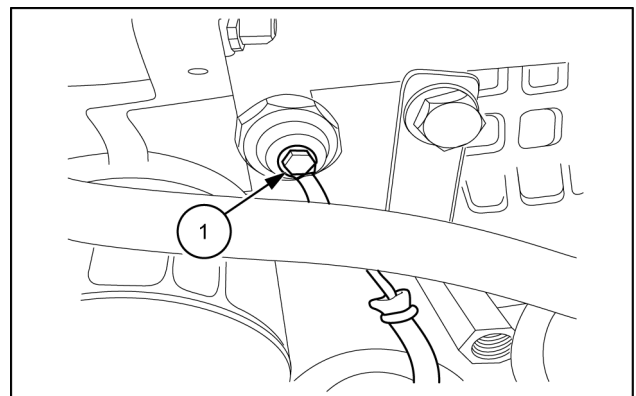
SMIL17MEX0267BB 11

19. Install the fuel hoses **(2)** on the support **(3)** and then use a wrench [**13 mm**] to tighten the bolt **(1)**.



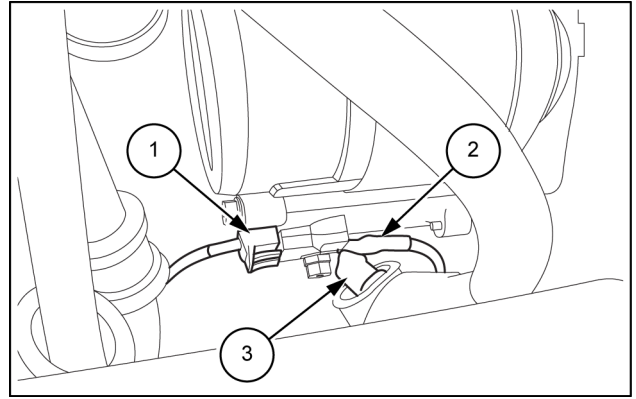
SMIL17MEX0266AB 12

20. Connect the electrical connector **CD-18** of the engine oil pressure switch and then tighten the nut.



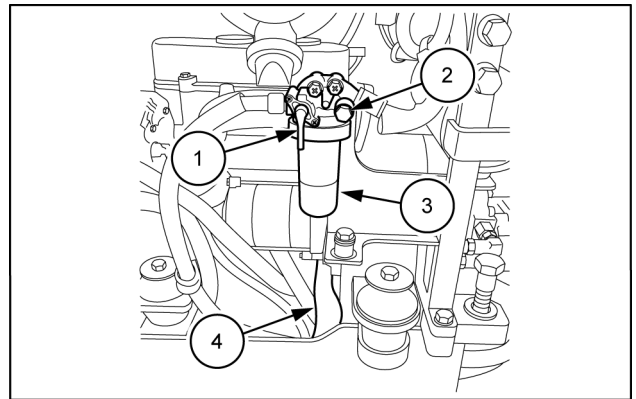
SMIL17MEX0265AB 13

21. Connect the wires **(2)** and **(3)** and then tighten the nut.
22. Install the cap.
23. Connect the electrical connector **(1)** on the engine starter.



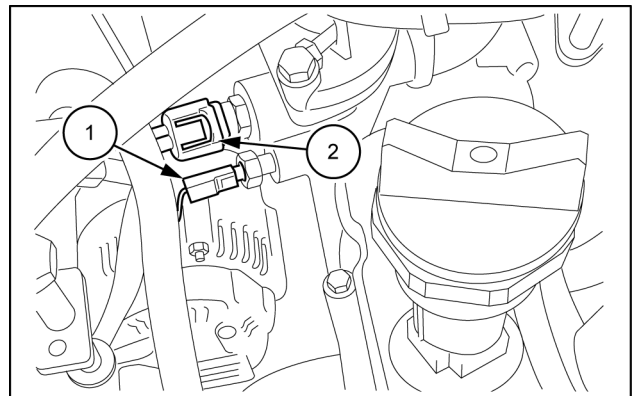
SMIL17MEX0264AB 14

24. Install the fuel pre-filter **(3)** and then use a wrench [**13 mm**] to tighten the bolt.
25. Install the earth strap **(4)** from the on the engine and then use a wrench [**17 mm**] to tighten the bolt.
26. Open the fuel pre-filter cock **(1)**.



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27. Connect the electrical connector **CD-9 (1)** of the over-heat switch.
28. Connect the electrical connector **CD-8 (2)** of the cooling temperature sensor.



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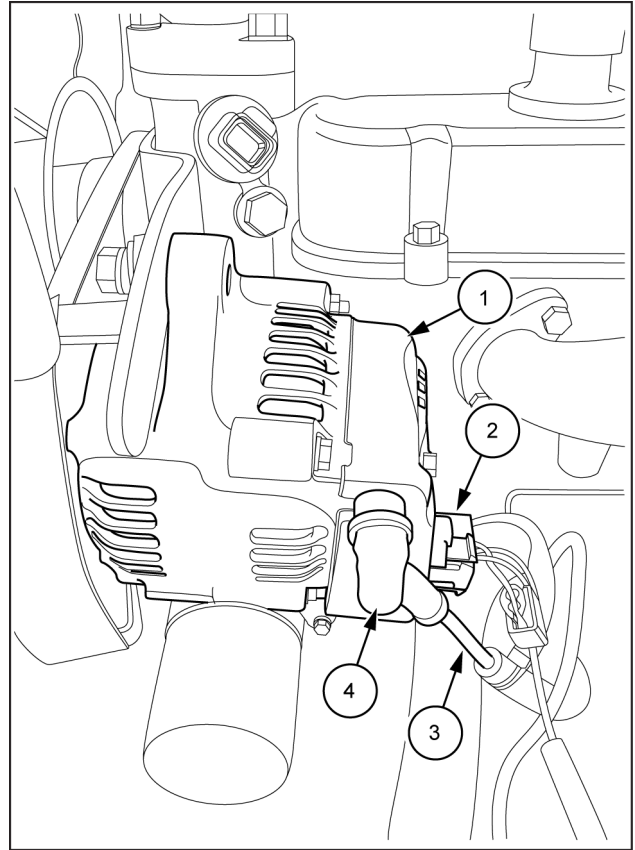
Suggest:

If the above button click is invalid.

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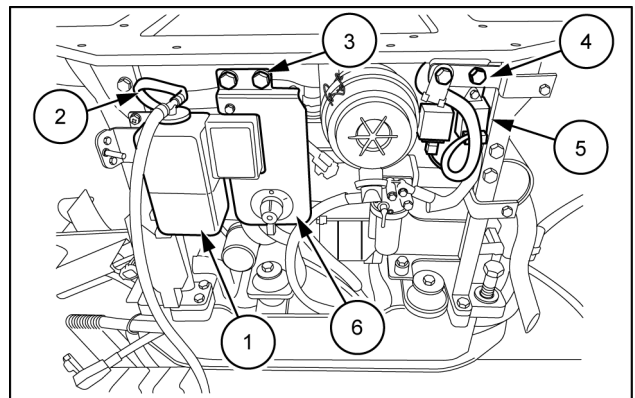
Thank you so much for reading

29. Connect the wire (3) and then tighten the nut.
30. Install the cap (4).
31. Connect the electrical connector (2) to the alternator (1).



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32. Install the hose (2) on the windshield washer reservoir (1) and close the clamp.
33. Install the windshield washer reservoir (1) on the bracket.
34. Install the bracket with the relays (5) and then use a wrench [17 mm] to tighten the two bolts (4).
35. Install the bracket with the fuses box and the battery disconnect switch (6) and then use a wrench [17 mm] to tighten the two bolts (3).



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Install the radiator (for details, see **Radiator - Install (10.400)**).

Install the pump (for details, see **Pump - Install (35.106)**).

Install the operator seat base trim panel (for details, see **Operator seat base trim panel - Install - Platform (90.160)**).

Install the operator seat (for details, see **Operator seat - Install (90.120)**).

Install the canopy (for details, see **Canopy assembly - Install (90.114)**).

Install the engine access door (for details, see **Engine hood - Install (90.105)**).

Install the side panels (for details, see **Side panels - Install (90.100)**).

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