

CX470B
Crawler Excavator

SERVICE MANUAL

Part number 48004716

English

March 2016

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CASE
CONSTRUCTION

CRAWLER EXCAVATOR CX470B SERVICE MANUAL

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* Consult the Engine Service Manual

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* For electrical schematic option, see section 4020

NOTE: CNH Industrial reserves the right to make changes in the specification and design of the machine without prior notice and without incurring any obligation to modify units previously sold.

The description of the models shown in this manual has been made in accordance with the technical specifications known as of the date of design of this document.

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Hello dear friend!

Thank you very much for reading.

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The full manual is available for immediate download.

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Section 1001

**SAFETY, GENERAL INFORMATION
AND TORQUE SPECIFICATIONS**

GENERAL INFORMATION

Cleaning

Clean all metal parts except bearings, in a suitable cleaning solvent or by steam cleaning. Do not use caustic soda for steam cleaning. After cleaning, dry and put oil on all parts. Clean oil passages with compressed air. Clean bearings in a suitable cleaning solvent, dry the bearings completely and put oil on the bearings.

Inspection

Check all parts when the parts are disassembled. Replace all parts that have wear or damage. Small scoring or grooves can be removed with a hone or crocus cloth. Complete a visual inspection for indications of wear, pitting and the replacement of parts necessary to prevent early failures.

Bearings

Check bearings for easy action. If bearings have a loose fit or rough action replace the bearing. Wash bearings with a suitable cleaning solvent and permit to air dry. **DO NOT DRY BEARINGS WITH COMPRESSED AIR.**

Needle bearings

Before you press needle bearings in a bore always remove any metal protrusions in the bore or edge of the bore. Before you press bearings into position put petroleum jelly on the inside and outside diameter of the bearings.

Gears

Check all gears for wear and damage. Replace gears that have wear or damage.

Oil seals, O-rings and gasket

Always install new oil seals, O-rings and gaskets. Put petroleum jelly on seals and O-rings.

Shafts

Check all shafts that have wear or damage. Check the bearing and oil seal surfaces of the shafts for damage.

Service parts

Always install genuine Case service parts. When ordering refer to the Parts Catalog for the correct part number of the genuine Case replacement items. Failures due to the use of other than genuine Case replacement parts are not covered by warranty.

Lubrication

Only use the oils and lubricants specified in the Operator's or Service Manuals. Failures due to the use of non-specified oils and lubricants are not covered by warranty.

SAFETY



This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Put the warning tag shown below on the key for the key-switch when servicing or repairing the machine. One warning tag is supplied with each machine. Additional tags Part Number 331-4614 are available from your service parts supplier.



WARNING: *Read the operator's manual to familiarize yourself with the correct control functions.*



WARNING: *Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.*



WARNING: *This is a one man machine, no riders allowed.*



WARNING: *Before starting engine, study Operator's Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.*

It is your responsibility to understand and follow manufacturers instructions on machine operation, service and to observe pertinent laws and regulations. Operator's and Service Manuals may be obtained from your Case dealer.



WARNING: *If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.*



WARNING: *When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.*



WARNING: *When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.*



WARNING: *When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way.*



WARNING: Use insulated gloves or mittens when working with hot parts.



WARNING: Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service.



WARNING: Pin sized and smaller streams of hydraulic oil under pressure can penetrate the skin and result in serious infection. If hydraulic oil under pressure does penetrate the skin, seek medical treatment immediately. Maintain all hoses and tubes in good condition. Make sure all connections are tight. Make a replacement of any tube or hose that is damaged or thought to be damaged. **DO NOT** use your hand to check for leaks, use a piece of cardboard or wood.



WARNING: When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer.



WARNING: When using a hammer to remove and install pivot pins or separate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors).



WARNING: Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in place with suitable safety stands.



WARNING: When servicing or repairing the machine, keep the shop floor and operator's compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and/or shop cloths as required. Use safe practices at all times.



WARNING: Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this Service Manual.

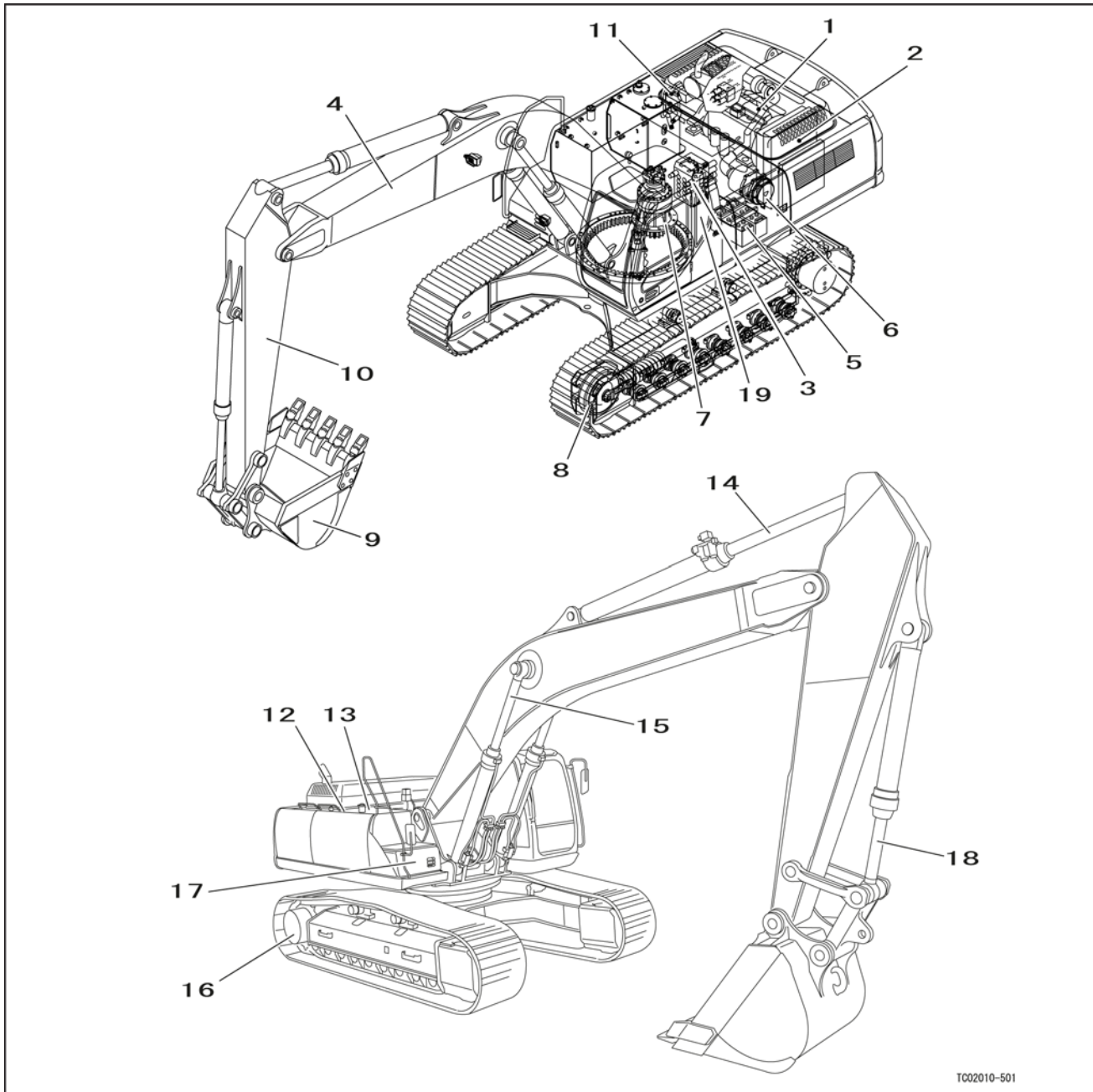


WARNING: Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. Open the doors and get outside air into the area.



WARNING: When the battery electrolyte is frozen, the battery can explode if (1), you try to charge the battery, or (2), you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.

MAIN EQUIPMENT LAYOUT



TC02010-501

1	Engine	8	Front idler	15	Boom cylinder
2	Radiator	9	Bucket	16	Travel motor
3	Control valve	10	Arm	17	Tool box
4	Boom	11	Hydraulic pump	18	Bucket cylinder
5	Battery	12	Hydraulic oil tank	19	Air conditioner condenser
6	Air cleaner	13	Fuel tank		
7	Swing motor	14	Arm cylinder		

Section

2000

REMOVAL AND INSTALLATION OF THE ENGINE

REMOVAL AND INSTALLATION OF THE ENGINE ASSEMBLY

Warning:	<ul style="list-style-type: none"> • Keep away from fire. • Be sure to release hydraulic pressure before beginning work. • The air conditioner circuit is filled with high-pressure gas, so there is the danger of gas splaying out when loosening lines. • Do not use open flames and do not allow sparks near the battery.
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Caution:	<ul style="list-style-type: none"> • Be sure to stop the engine before beginning work. • Be sure to inspect the wire rope and other lifting equipment before beginning work. • Do not stand or pass under the suspended load.
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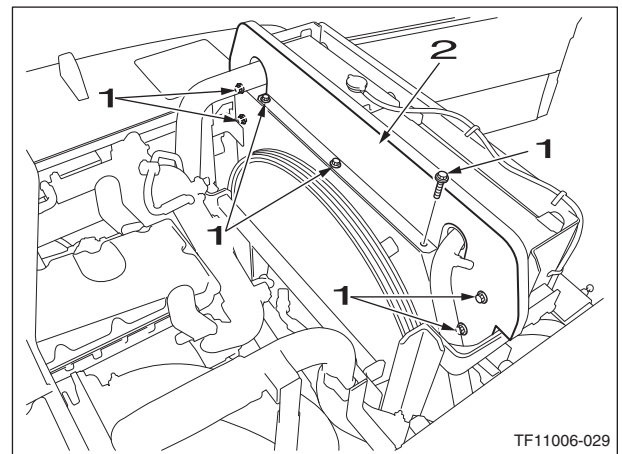
1 Removal of the engine

Items to prepare

- Wrench set
- Box wrench set
- Shackle (with the required lifting capacity) × 2
- Wire ropes (with the required breaking load)
- Liftcrane (with the required lifting capacity)
- Marking pen
- Caps
- Plugs
- Waste oil can
- Rag
- Cleaning fluid
- Wood planks, etc.

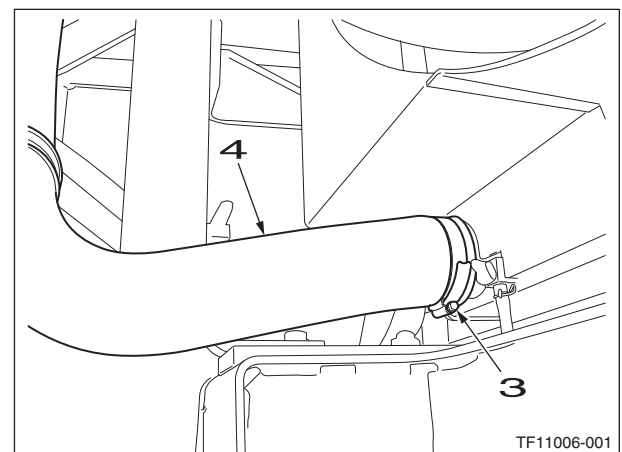
[1] Remove the hydraulic pump.
(For details, see "Removal and Installation of Hydraulic Pump".)

[2] Use a wrench (19 mm) to remove the 7 bolts (1), and then remove the radiator cover (2).

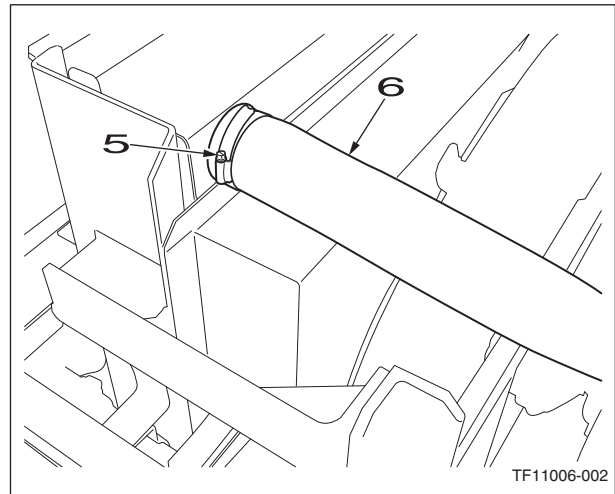


[3] Use a wrench (7 mm) to loosen the hose band (3) on the radiator, and then remove the lower hose (4).

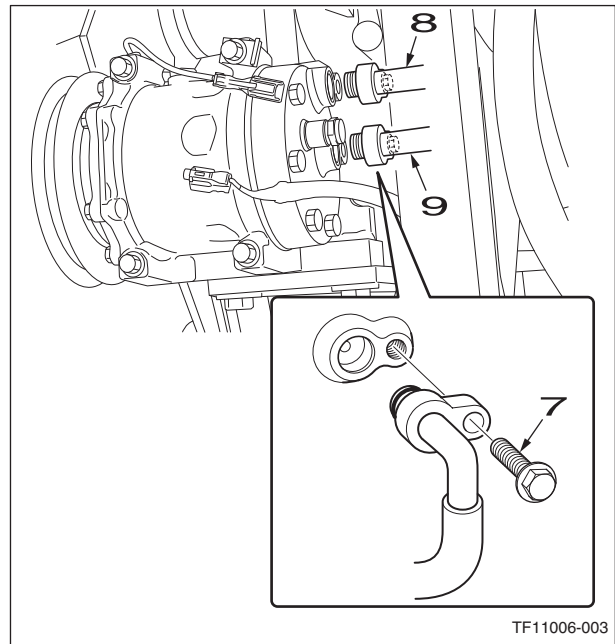
- Use caps to cover the radiator and hose to prevent the entry of water, dust or dirt.
- Before removing the radiator hose, completely drain the coolant.



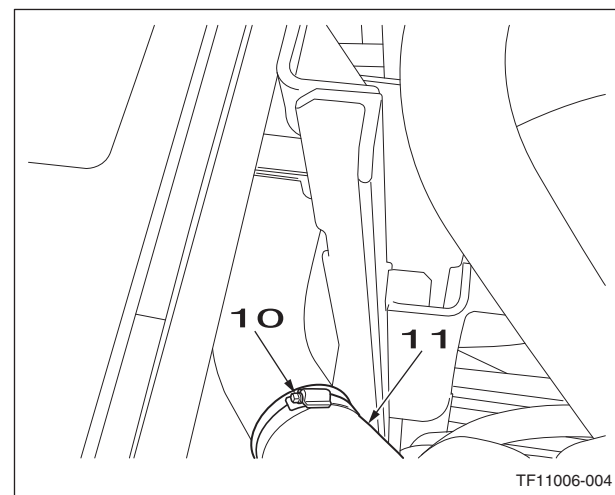
- [4] Use a wrench (7 mm) to loosen the hose band (5) on the radiator, and then remove the upper hose (6).



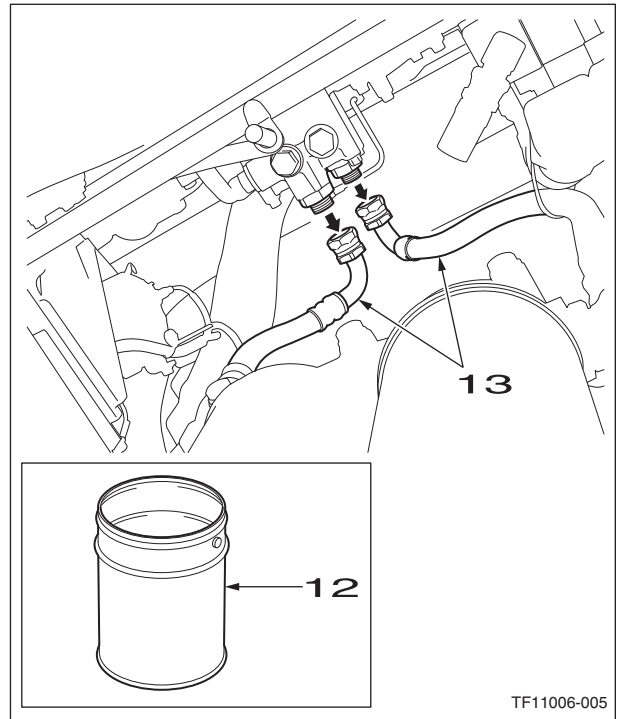
- [5] Use a wrench to loosen the 2 line bolts (7), and then remove the 2 compressor lines (8) and (9).
- Before removing the compressor lines, recover the air conditioner gas.
 - Always remove the low-pressure (suction side) line (8) first.
 - Attach caps or plugs to the compressor and lines to prevent any entry of water, dust or dirt.
 - The O-ring cannot be reused. Always replace it with a new one.



- [6] Use a wrench (8 mm) to loosen the hose band (10) on the inter cooler, and then remove the hose (11).
- Use caps to cover the line and hose to prevent the entry of water, dust or dirt.

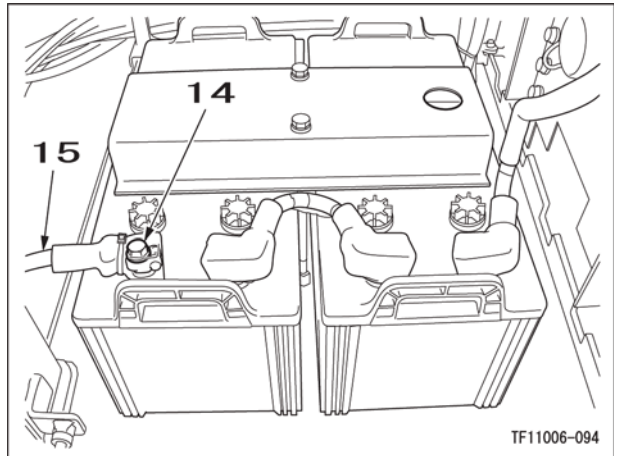


- [7] Prepare the waste oil can (12).
- Drain the engine oil before removing the engine oil hose.
- [8] Use a wrench to remove the 2 engine oil remote hoses (13).
- Mark the engine and hoses so that the connectors match at the time of assembly.
 - Attach caps or plugs to the engine and hoses to prevent any entry of water, dust or dirt.
 - Clean the engine and hoses by spraying them with a parts cleaner to prevent scratches and prevent dirt from accumulating on the connectors.



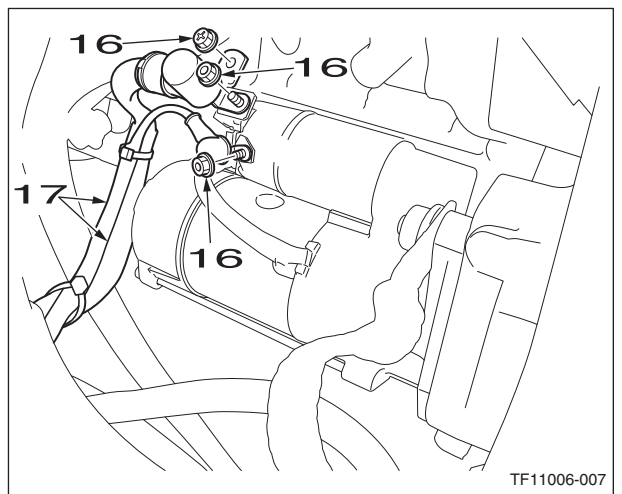
TF11006-005

- [9] Use a wrench (17 mm) to loosen the nut (14), and then remove the battery cable (15) on the negative side.
- When removing the terminal and harness, secure them so that they do not interfere with the frame. Also, cover with a rubber cap to protect against sparks.



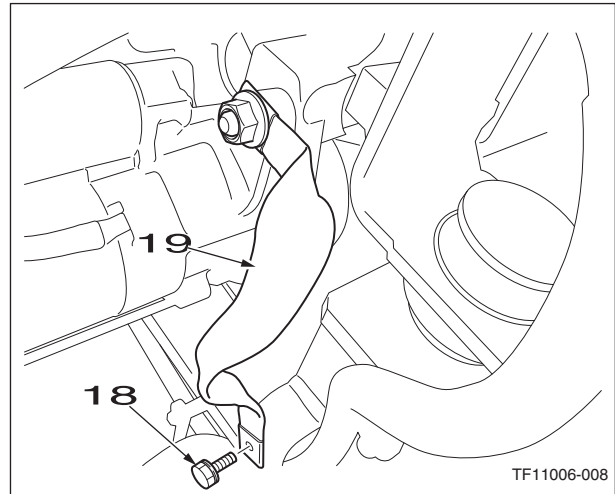
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- [10] Use a wrench to remove the 3 nuts (16), and then remove the starter motor wiring (17).



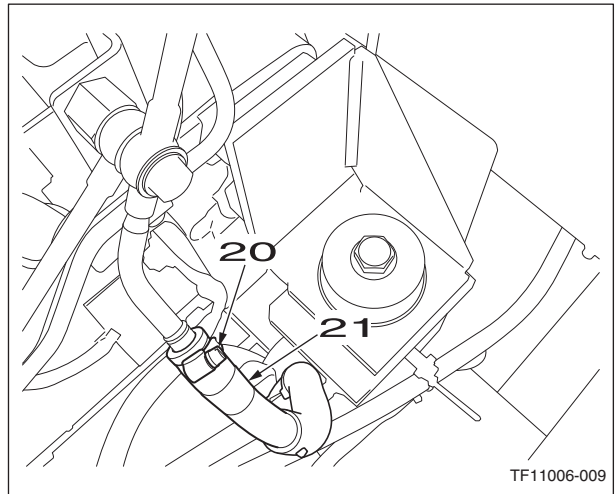
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[11] Use a wrench to remove the 1 bolt (18), and then remove the ground wiring (19).



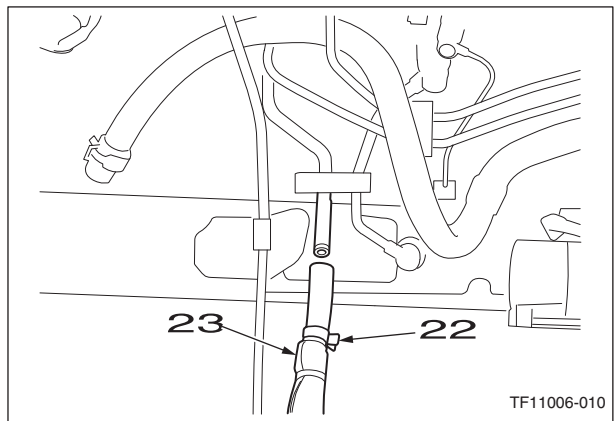
[12] Use a wrench to loosen the hose band (20), and then remove the fuel hose (21).

- Attach caps or plugs to the engine and hose to prevent any entry of water, dust or dirt.



[13] Use a wrench to loosen the hose band (22), and then remove the fuel hose (23).

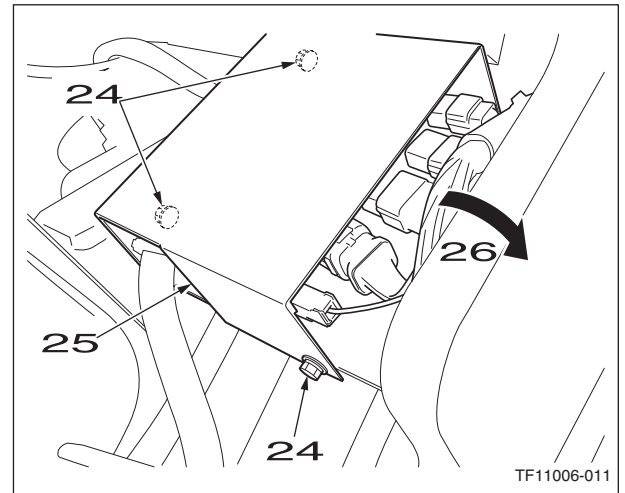
- Attach caps or plugs to the engine and hose to prevent any entry of water, dust or dirt.



[14] Use a wrench to remove the 4 bolts (24), and then remove the box cover (25).

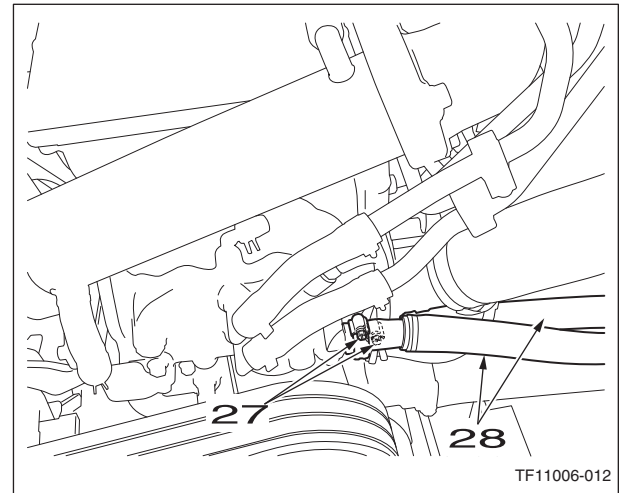
[15] Remove the connectors (26) in the box.

- Wrap the removed connectors in plastic after tying them together.



[16] Use a wrench (7 mm) to loosen the 2 hose bands (27), and then remove the 2 heater hoses (28).

- Attach caps or plugs to the engine and hose to prevent any entry of water, dust or dirt.



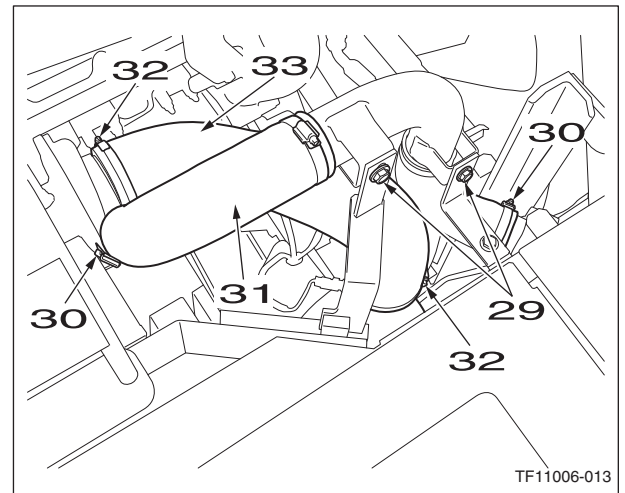
[17] Use a wrench to remove the 2 bolts (29).

[18] Use a wrench (7 mm) to loosen the 2 hose bands (30), and then remove the air hose (31).

- Use caps to cover the line and hose to prevent any entry of water, dust or dirt.

[19] Use a wrench (8 mm) to loosen the 2 hose bands (32), and then remove the air hose (33).

- Use caps to cover the line and hose to prevent any entry of water, dust or dirt.

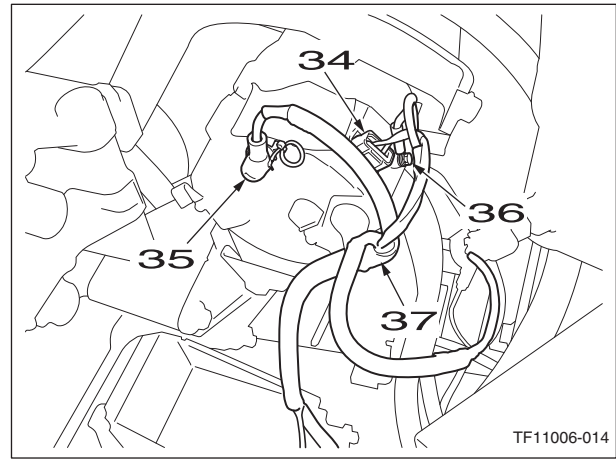


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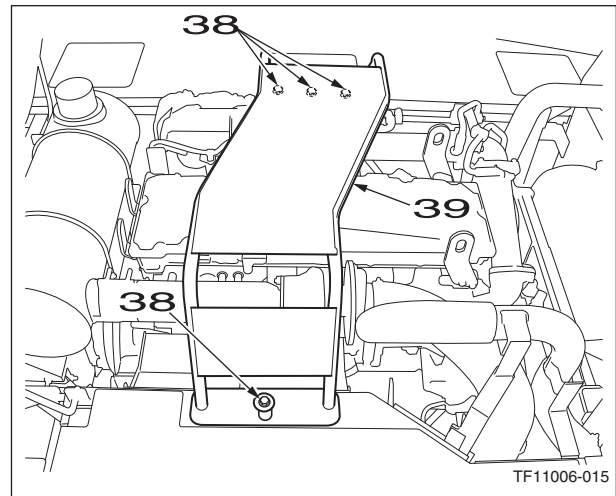
[20] Remove the connector (34) from the alternator.

[21] Use a wrench (10 mm) to remove the nut (35).

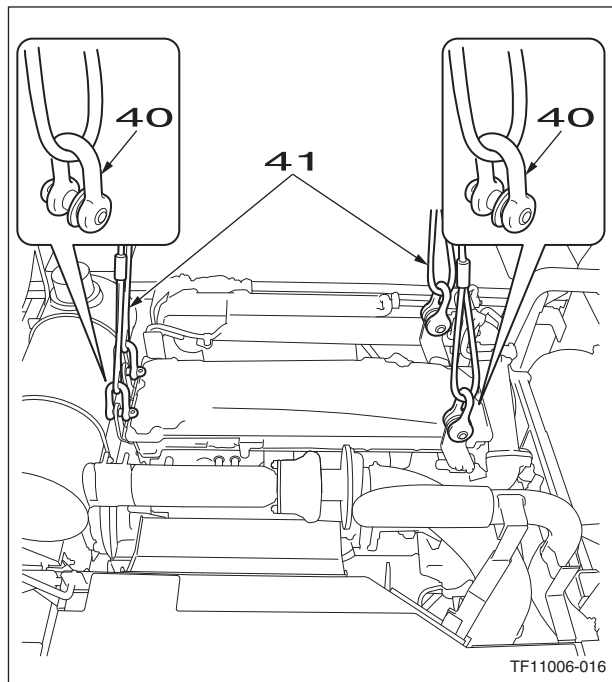
[22] Use a wrench to remove the bolt (36), and then remove the alternator wiring (37).



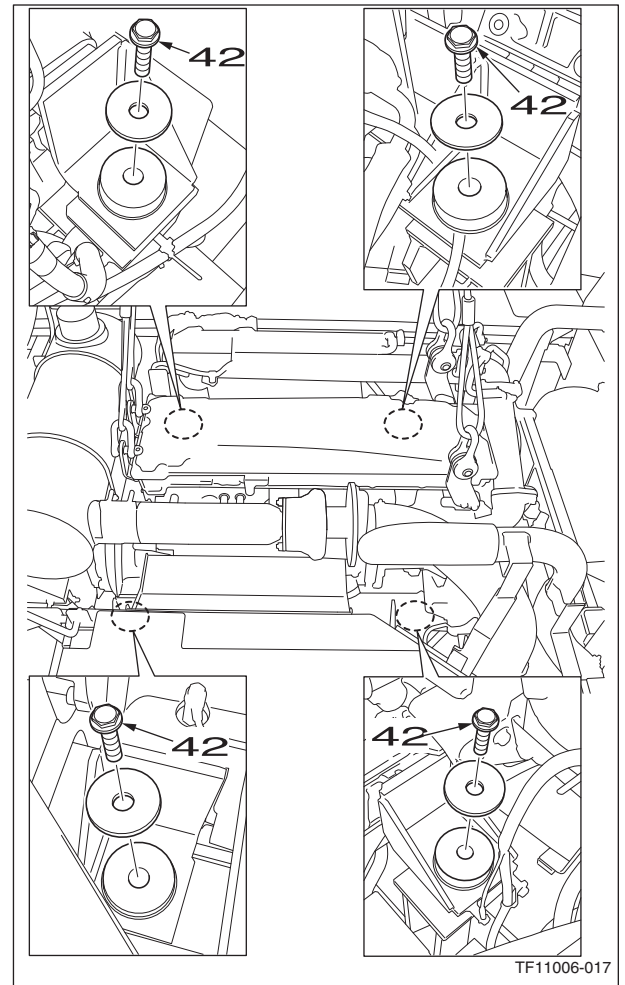
[23] Use a wrench to remove the 4 bolts (38), and then remove the step (39).



[24] Install the 4 shackles (40), and then use the wire ropes (41) and liftcrane to secure the engine main unit.

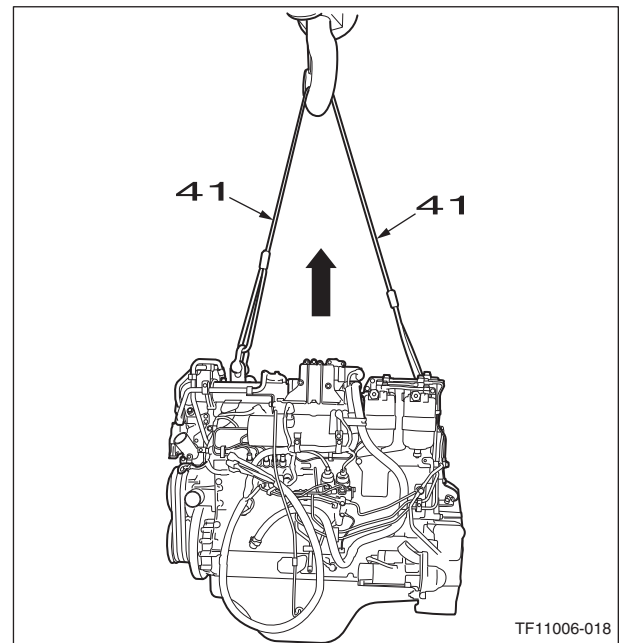


[25] Use a box wrench (30 mm) to remove the 4 bolts (42) from the mount.



[26] Use the wire ropes (41) and liftcrane to lift the engine main unit.

[27] Thoroughly check that the location is safe before lowering the engine on wood planks, etc.



2 Installation of the engine

[1] To install the engine, perform the reverse of the removal procedure.

After installing the engine, resupply coolant and engine oil, perform fuel line air bleeding, and perform filling for the air conditioner gas.

For details, see the individual explanations for each procedure.

[2] Run the engine at no-load idling and check for any water or oil leaks.

[3] Attach the hydraulic pump, covers, and counterweight.

For details, see the individual explanations for each procedure.

REMOVAL AND INSTALLATION OF FUEL COOLER

Caution:

- Be sure to stop the engine before beginning work.
- As the fuel hose will be removed, strictly prohibit open flames.

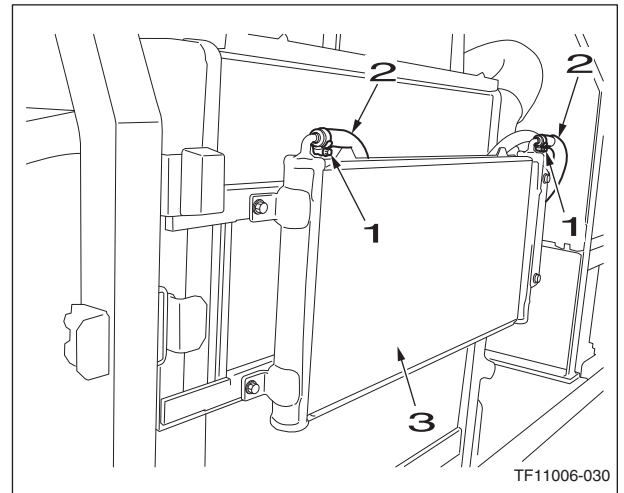
Items to prepare

- Wrenches (7 mm, 12 mm)
- Screwdriver
- Pliers
- Marking pen
- Caps
- Plugs
- Rag
- Cleaning fluid
- Drip pan

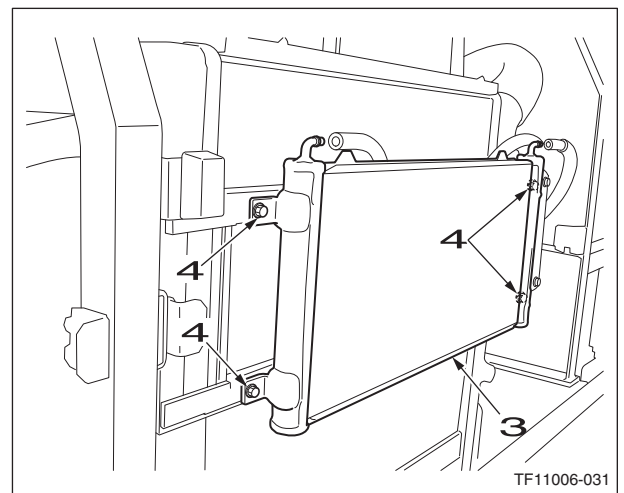
1 Removal of fuel cooler

[1] Use a wrench (7 mm) to loosen the 2 hose bands (1), and then remove the 2 hoses (2).

- Mark the fuel cooler (3) and hoses (2) so that the connectors match at the time of assembly.
- Fuel will spill out, so place a drip pan directly below the area.
- Attach caps or plugs to the fuel cooler and hoses to prevent any entry of water, dust or dirt.



[2] Use a wrench (12 mm) to remove the 4 bolts (4), and then remove the fuel cooler (3).



2 Installation the fuel cooler

Perform the reverse of the removal procedure.

[1] After connecting the hoses, carefully check for any fuel leaks.

REMOVAL AND INSTALLATION OF ENGINE INTER COOLER

Caution:

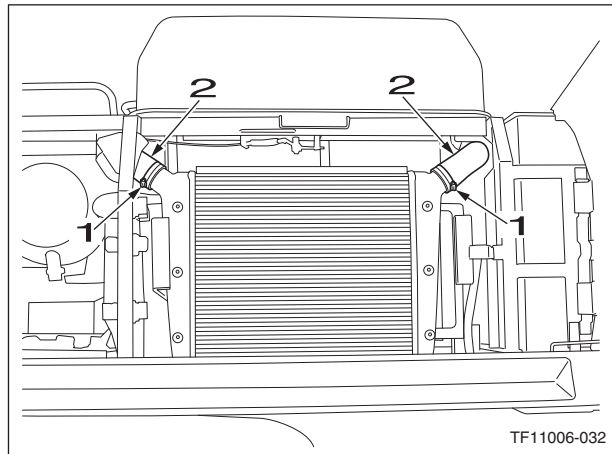
- Be sure to stop the engine before beginning work.
- As the fuel hose will be removed, strictly prohibit open flames.

Items to prepare

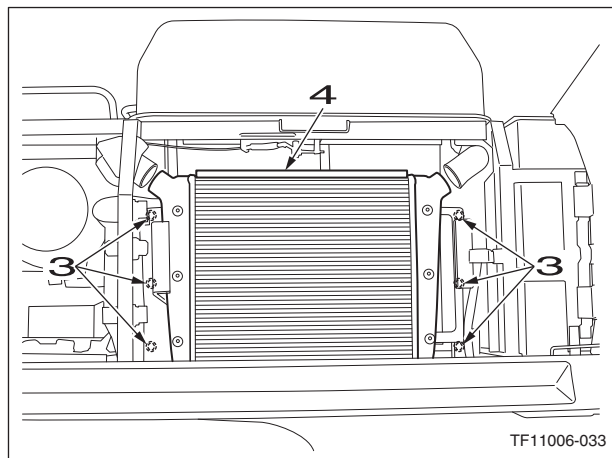
- Wrenches (8 mm, 14 mm)
- Flathead screwdriver
- Wire cutters
- Caps
- Rag
- Cleaning fluid

1 Removal of inter cooler

- [1] Remove the fuel cooler.
(For details, see "Removal and Installation of Fuel Cooler")
- [2] Use a wrench (8 mm) or flathead screwdriver to loosen the 2 hose bands (1), and then remove the 2 hoses (2).
- Use caps to cover the inter cooler and hoses to prevent the entry of water, dust or dirt.



- [3] Use a wrench (14 mm) to remove the 6 bolts (3), then remove the inter cooler (4).



2 Installation of inter cooler

- Perform the reverse of the removal procedure.
Check for any air leaks.

REMOVAL AND INSTALLATION OF RADIATOR

Warning:	<ul style="list-style-type: none"> Do not remove the radiator cap when the radiator coolant temperature is high. Hot liquid could spray out.
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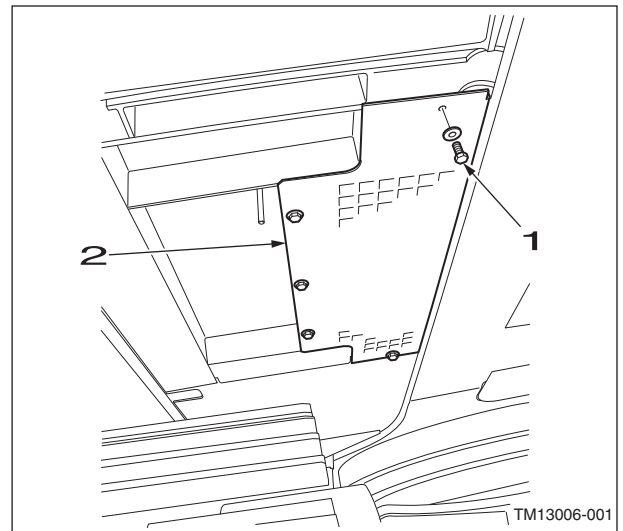
Caution:	<ul style="list-style-type: none"> Be sure to release hydraulic pressure before beginning work. Be sure to stop the engine before beginning work. Be sure to inspect the wire rope and other lifting equipment before beginning work. Do not stand or pass under the suspended load.
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Items to prepare

- Wrench set
- Box wrench set
- Hexagon wrench
- Pliers
- Shackle (with the required lifting capacity) x 2
- Wire rope (with the required breaking load)
- Liftcrane (with the required lifting capacity)
- Caps
- Plugs
- Drain tank
- Drain hose
- Rag
- Cleaning fluid
- Wood planks, etc.

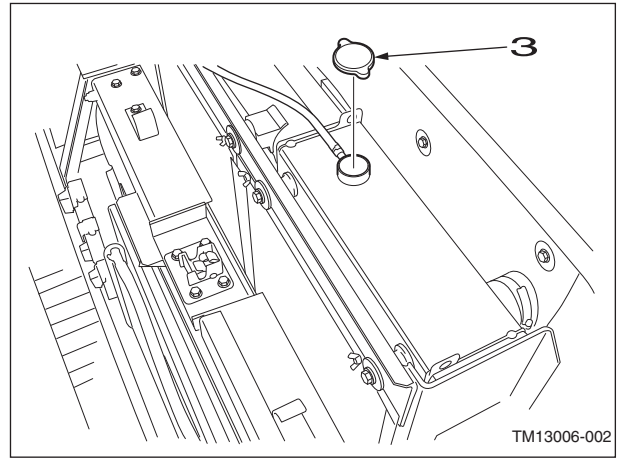
1 Removal of radiator

- [1] Open the engine hood.
- [2] Drain the hydraulic oil from the hydraulic oil tank.
(See Operator's Manual for details of this procedure).
- [3] Use a wrench (19 mm) to remove the 5 bolts (1),
and then remove the under cover (2).

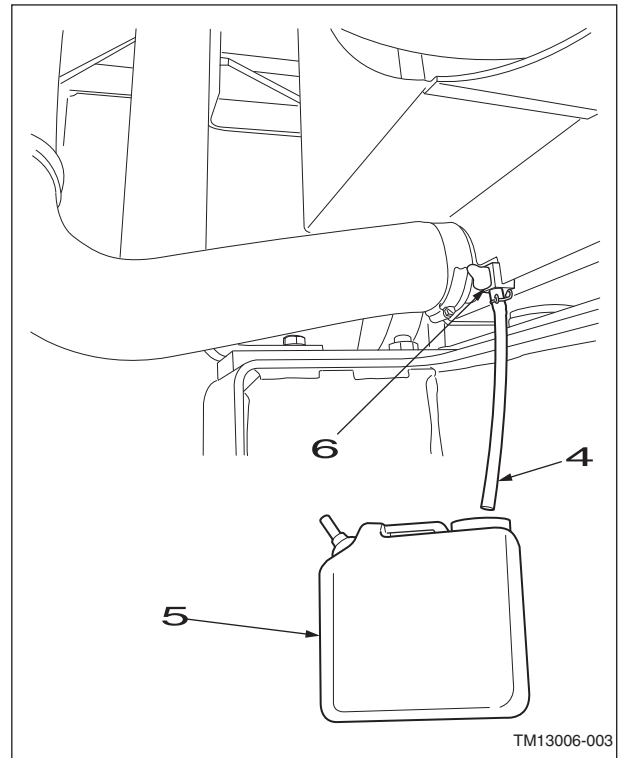


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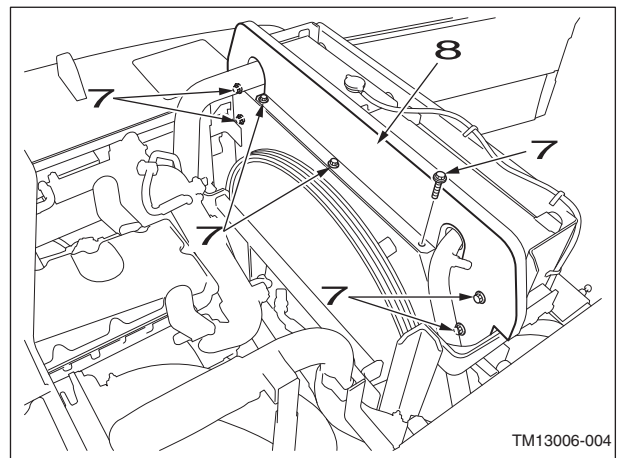
- [4] To make it easier to drain the coolant, remove the radiator cap (3).



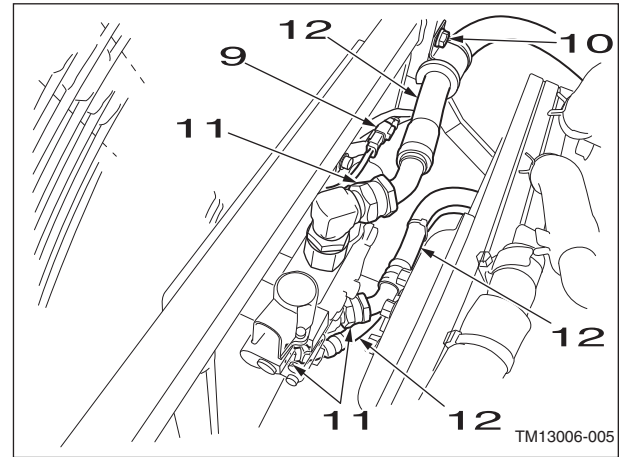
- [5] Install the drain hose (4), and then prepare the drain tank (5).
- [6] Loosen the drain plug (6), and then drain the coolant.



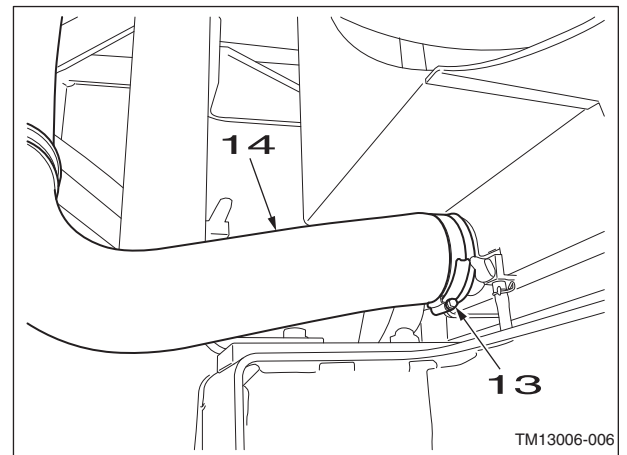
- [7] Use a wrench (19 mm) to remove the 7 bolts (7), and then remove the radiator cover (8).



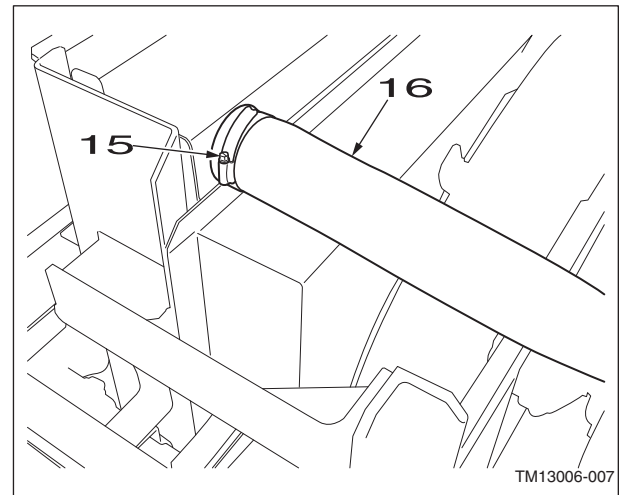
- [8] Remove the connector (9).
- [9] Use a wrench to remove the bolt (10).
- [10] Use a wrench to remove the 3 sleeve nuts (11), then remove the hose (12).
- Use caps to cover the hoses and fan motor to prevent any entry of water, dust or dirt.



- [11] Use a wrench (7 mm) to loosen the hose band (13) on the radiator, and then remove the lower hose (14).
- Use caps to cover the hose and radiator to prevent any entry of water, dust or dirt.



- [12] Use a wrench (7 mm) to loosen the hose band (15) on the radiator, and then remove the upper hose (16).
- Use caps to cover the hose and radiator to prevent any entry of water, dust or dirt.

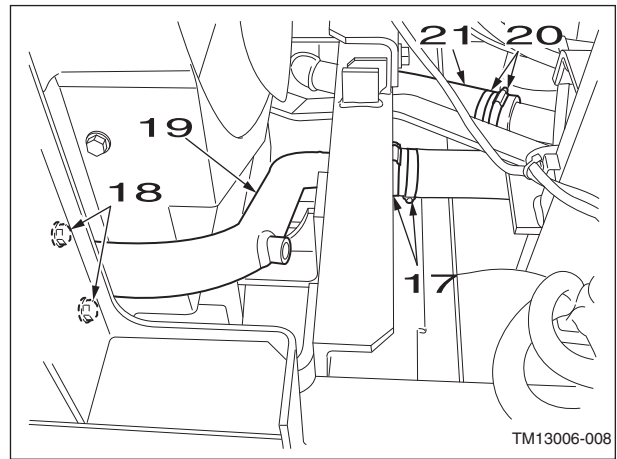


[13] Use a wrench (7 mm) to loosen the oil cooler hose bands (17) of the oil cooler. Use a hexagon wrench to remove the 2 bolts (18), then remove the oil cooler pipe (19).

- Use caps to cover the oil cooler and hose to prevent any entry of water, dust or dirt.

[14] Use a wrench (7 mm) to loosen the oil cooler hose bands (20), and then remove the hose (21).

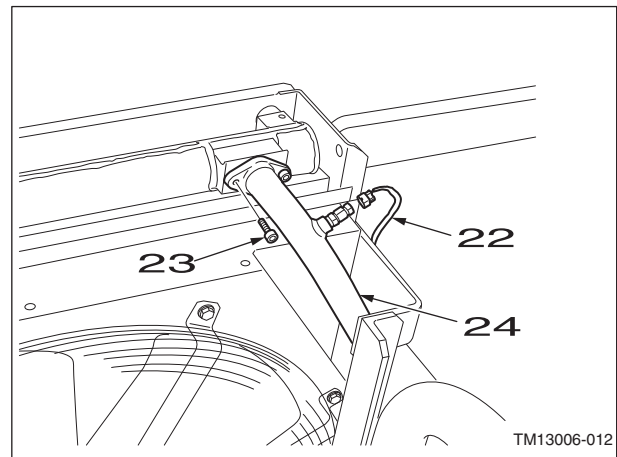
- Use caps to cover the line and hose to prevent any entry of water, dust or dirt.



[15] Remove the connector (22) from the sensor.

[16] Use a hexagon wrench to remove the 2 bolts (23), then remove the oil cooler pipe (24).

- Use caps to cover the oil cooler and line to prevent any entry of water, dust or dirt.

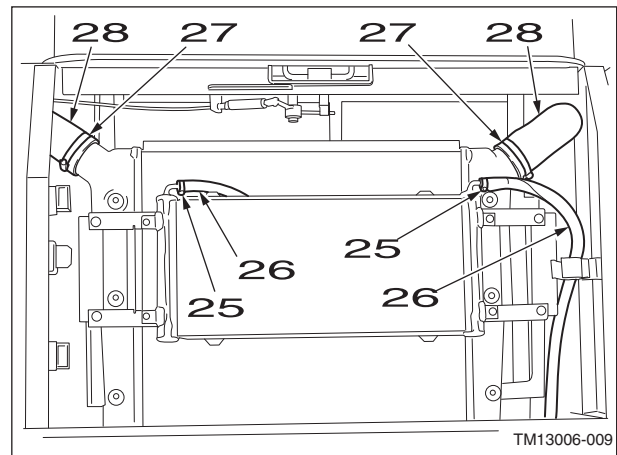


[17] Use a wrench (7 mm) to loosen the 2 hose bands (25), and then remove the 2 hoses (26).

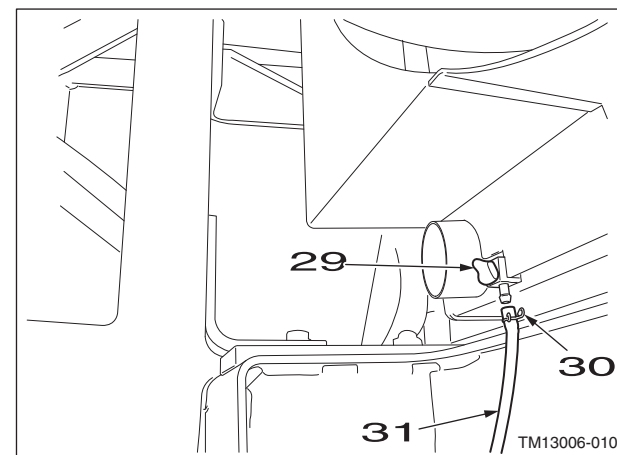
- Fuel will spill out, so place a drip pan directly below the area.
- Mark the fuel cooler and hoses so that the connectors match at the time of assembly.
- Use caps to cover the fuel cooler and hoses to prevent any entry of water, dust or dirt.

[18] Use a wrench (8 mm) to loosen the 2 hose bands (27), and then remove the 2 hoses (28).

- Use caps to cover the inter cooler and hoses to prevent any entry of water, dust or dirt.

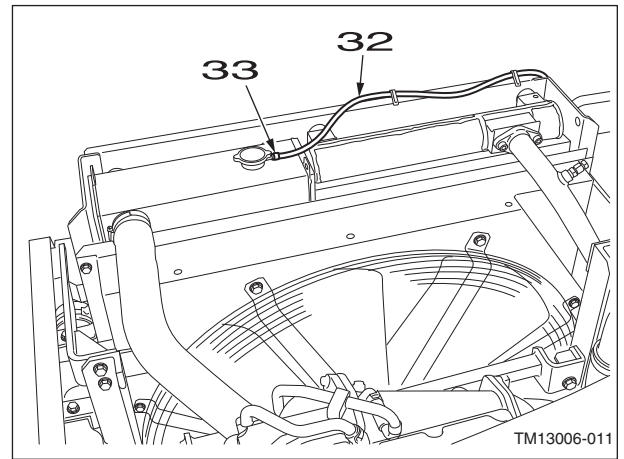


[19] Close the drain plug (29), loosen the hose band (30), and then remove the hose (31).

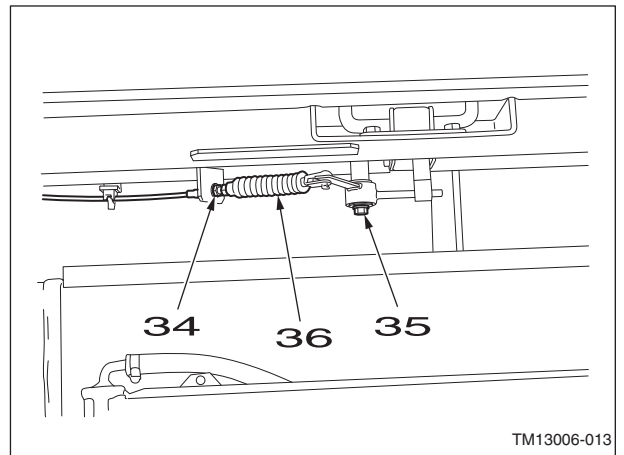


[20] Loosen the hose band (33), and then remove the hose (32) from the radiator cap.

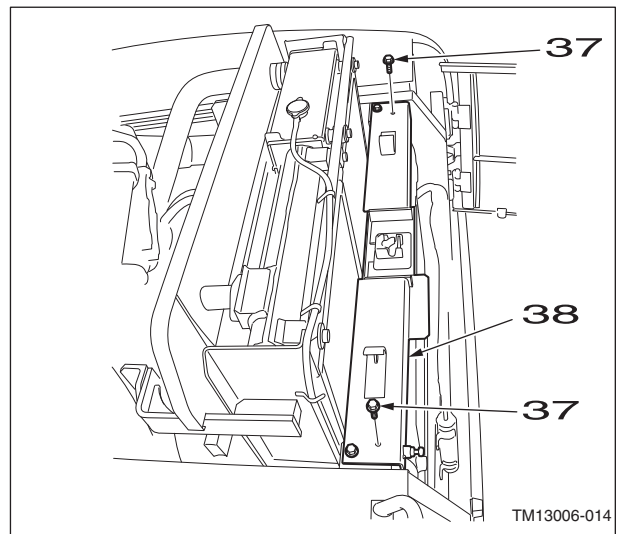
- Attach caps or plugs to the hose to prevent any entry of water, dust or dirt.



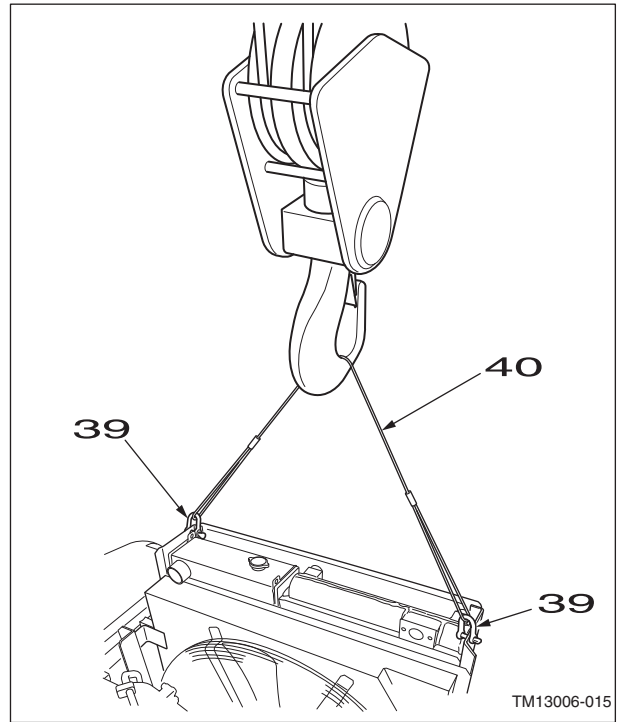
[21] Use a wrench to loosen the nut (34). Use a wrench to remove the bolt (35), and then remove the engine hood opener cable (36).



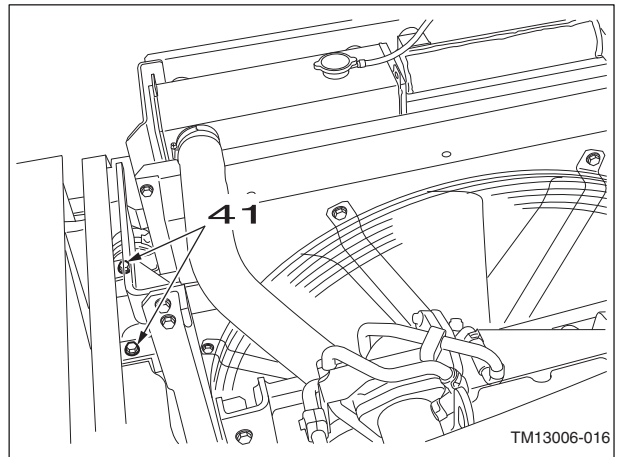
[22] Use a wrench to remove the 4 bolts (37), and then remove the frame (38).



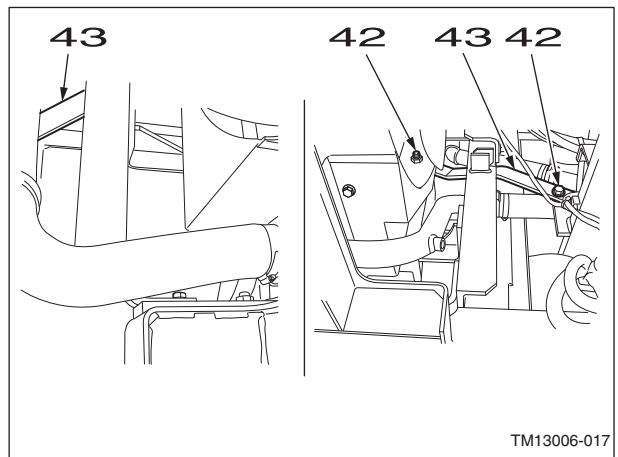
[23] Install the 2 shackles (39) on the top of the radiator cover, and then use the wire rope (40) and liftcrane to secure the radiator and oil cooler assembly.



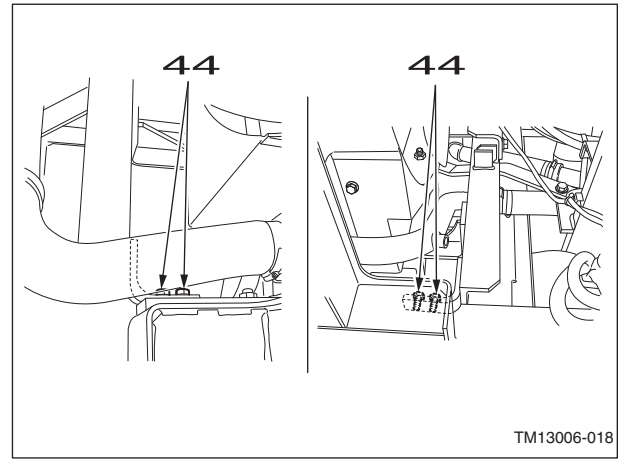
[24] Use a wrench (19 mm) to remove the 2 bolts (41).



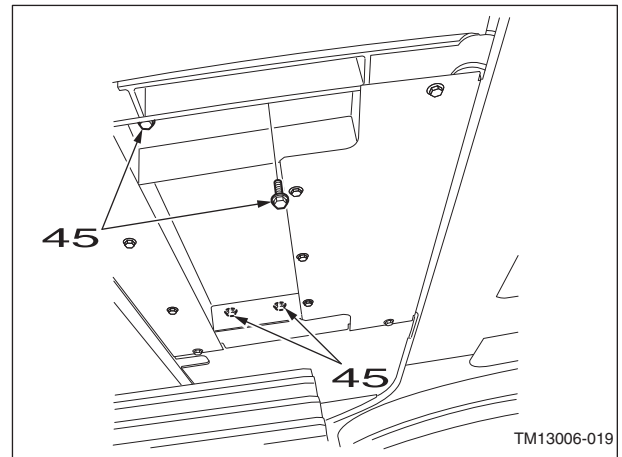
[25] Use a wrench (19 mm) to remove the 4 bolts (42), and then remove the 2 radiator stays (43).



[26] Use a wrench to remove the 4 bolts (44).

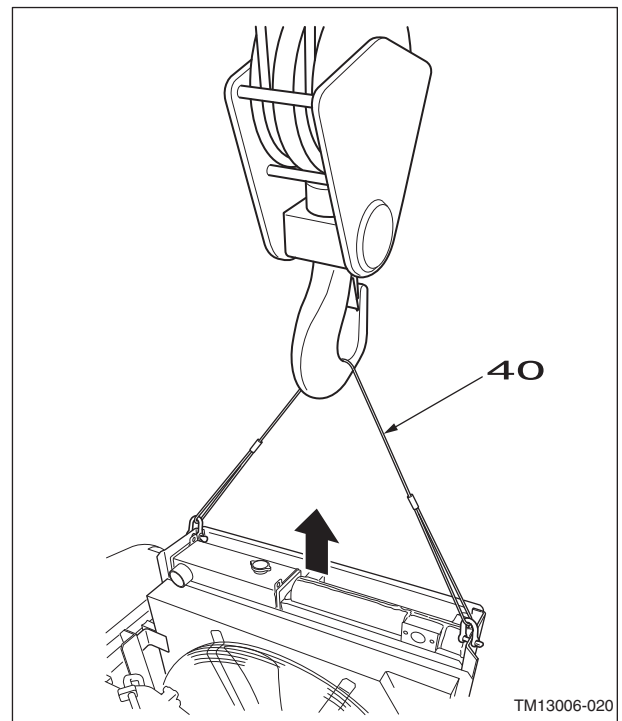


[27] Use a box wrench to remove the 4 bolts (45).

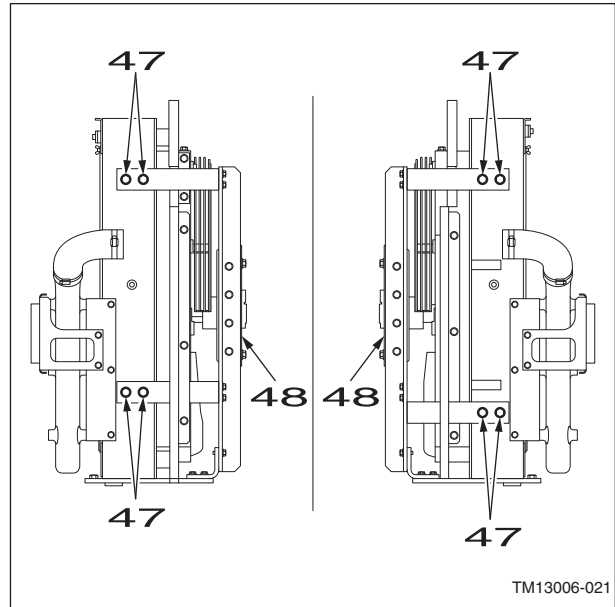


[28] Use the wire rope (40) and liftcrane to lift the radiator and oil cooler assembly.

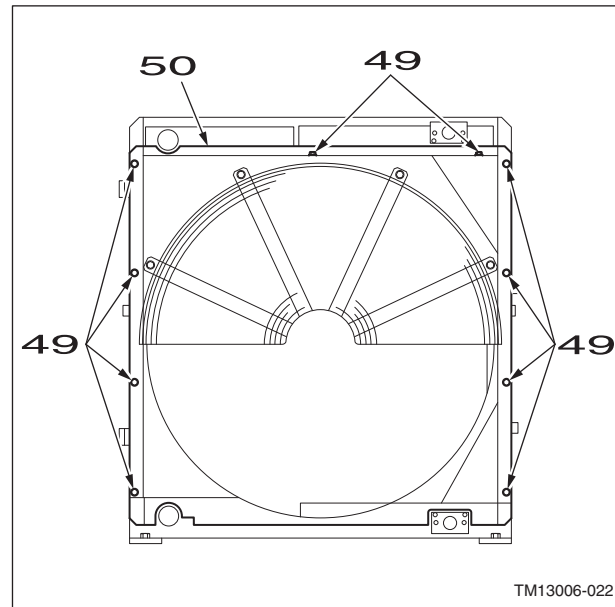
[29] Thoroughly check that the location is safe before lowering the radiator and oil cooler assembly on wood planks, etc.



[30] Use a wrench to remove the 8 bolts (47), and then remove the fan assemblies (48).



[31] Use a wrench to remove the 10 bolts (49), and then remove the shroud assembly (50).





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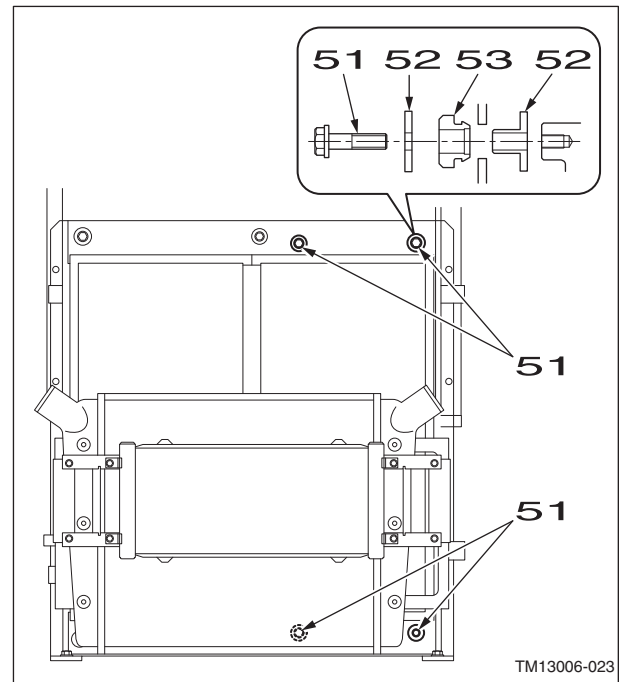
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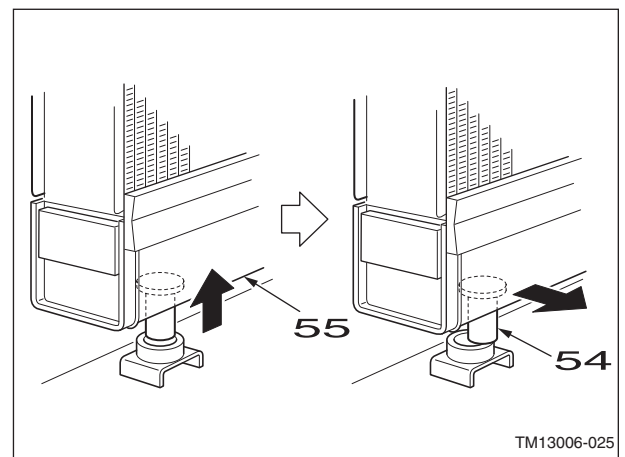
[32] Use a wrench (14 mm) to remove the 4 bolts (51), the 8 washers (52) and the 4 rubber cushions (53).

- Be careful not to drop the bottom side washers.



[33] Lift the radiator (55) until the fixtures (54) at the bottom of the radiator become disconnected.

[34] Thoroughly check that the location is safe before lowering the radiator on square wooden piece. When laying down the radiator, be careful not to bend or crush the bottom fixtures (54).



2 Installation of radiator

To install, perform the reverse of the removal procedure.

For details on the method for coolant filling, see the Operator's Manual.

Coolant capacity is 38 L.

Finally, check that the level of coolant is correct.

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