

CX490C
CX500C
Crawler Excavator

SERVICE MANUAL

Part number 48098399

English

January 2017

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CASE
CONSTRUCTION

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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.

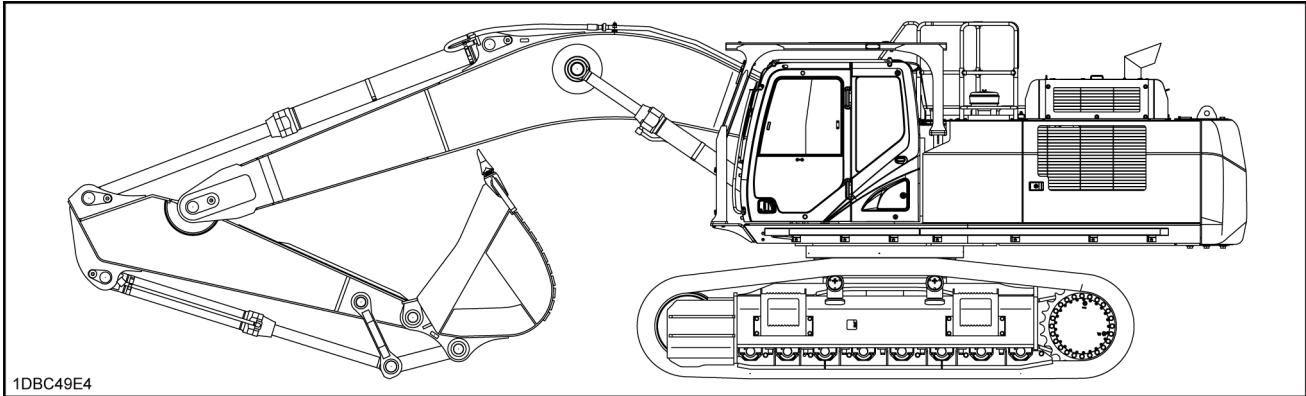
Lubricants (fuel, hydraulic oil)

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.

Product identification

The CX490C LC - CX500C LC is a totally hydraulic excavator. It consists of an undercarriage fitted with tracks and a turntable bearing which supports the upperstructure frame. The upperstructure frame supports the attachment, at the front end of the machine, plus the engine, hydraulics and cab. When the operator works the controls, the engine-driven pump delivers hydraulic fluid to the control valves. The control valves distribute the hydraulic fluid to the various cylinders and hydraulic motors employed. A cooling system maintains the hydraulic fluid at normal operating temperature.



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CX490C LC - CX500C LC

When ordering parts, obtaining information or assistance, always supply your CASE CONSTRUCTION Dealer with the type and serial number of your machine or accessories. Write the following in the spaces below: the type, serial number and year of manufacture of your machine, accessories and the serial numbers of the various hydraulic and mechanical components.

Machine

(1) Designation/Model
Hydraulic Excavator CX490C LC
Hydraulic Excavator CX500C LC

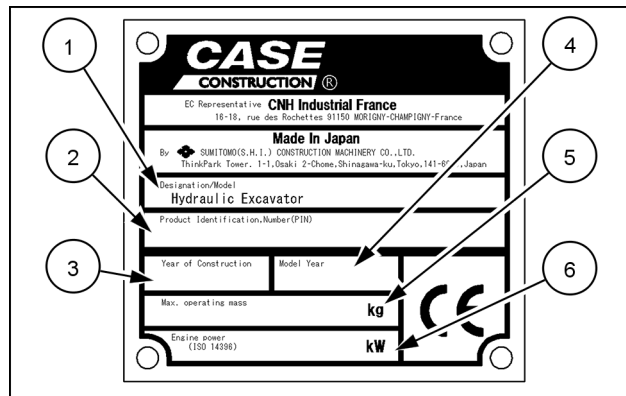
(2) Product Identification Number (PIN)

(3) Year of Construction

(4) Model Year

(5) Maximum operating mass
(the weight shown on the manufacturer's plate is the value using the heaviest configuration and that it does not always correspond to the transport configuration)

(6) Engine power ISO 14396

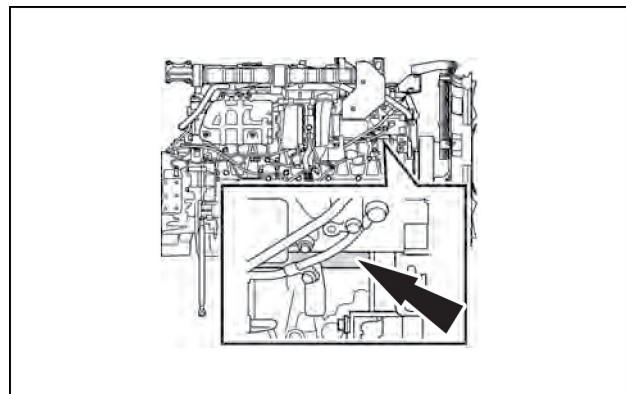


SMIL15CEX3307AA 2

Engine

Manufacturer and model: ISUZU GH - 6UZ1X

Serial number:



SMIL15CEX1340AA 3



SERVICE MANUAL

Engine

Engine - General specification

Engine main specifications

Item		Engine model 6UZ1
Type		Diesel/4-cycle/water-cooled, inline 6 cylinder OHC
Cylinder bore x stroke		120 mm (4.72 in) x 145 mm (5.71 in)
Displacement		9.839 L (600.41 in³)
Compression ratio		17.5
Compression pressure		2746 kPa (398.3 psi) / 200 RPM
Combustion chamber shape		Direct injection type
Cylinder liner type		Dry liner, tight-fit type
Maximum output		270.0 kW (367.1 Hp) / 2000 RPM
Maximum torque		1435 N·m (1058.4 lb ft) / 1500 RPM
Dimensions: length x width x height		1235.0 mm (48.6 in) x 953 mm (37.520 in) x 1314 mm (51.7 in)
Dry weight (Excluding air cleaner)		840 kg (1851.883 lb)
Fuel injection timing		0° BTDC
Fuel injection order		1, 5, 3, 6, 2, 4
Idling speed		900 RPM
Valve clearance	Intake	0.2 mm (0.008 in) While cool
	Exhaust	0.5 mm (0.020 in) While cool
Opening/closing timing of intake valve	Open	22° BTDC
Opening/closing timing of intake valve	Close	30° ABDC
Opening/closing timing of exhaust valve	Open	48.5° ABDC
Opening/closing timing of exhaust valve	Close	23.5° BBDC
Ignition method		Compression ignition
Oil pump type		Gear type
Oil filter type		Full-flow bypass integrated type x 2
Engine oil level		30 L (7.93 US gal) to 41 L (10.8 US gal)
Oil pan capacity		25 L (6.60 US gal) to 36 L (9.51 US gal)
Oil cooling type		Water-cooled multiple-disc type (6 steps)
Cooling type		Water cooling
Coolant capacity in engine		22.5 L (5.944 US gal)
Water pump type		V-belt drive spiral type
Thermostat type		Wax type
Injection pump type		Electronic control common rail (fuel rail) type
Governor type		Electronic type
Timer type		Electronic type
Injection nozzle type		8 holes
Turbocharger type		RHG6 (IHI)

Cooling system main specifications

Item	Specifications
Open valve temperature	76.5 °C (169.70 °F)
Full open temperature	90 °C (194.0 °F) / 11 mm (0.433 in)

Lubrication system main specifications

Item	Specifications
Lubrication device	Forced circulation type
Oil pump	Discharge amount
	0.79 MPa (114.5895 psi) Outlet pressure 2460 RPM Pump rotation speed
	97.4 L/min (25.730 US gpm)
	Open valve pressure of the relief valve
	0.96 – 1.16 MPa (139.2480 – 168.2580 psi)
	Open valve pressure of the oil gallery relief valve
	540 kPa (78.32 psi)
	Oil thermostat open valve temperature
	101.5 – 104.5 °C (214.70 – 220.10 °F)

Electrical system main specifications

Generator	
Item	Specification
Manufacturer	Mitsubishi Electric Co.
Isuzu parts number	1-81200-603-7
Manufacturer model	A004TU6285
Nominal output	24 V — 50 A
Rated speed	5000 RPM
Regulator type	IC type
Regulated voltage	28 V to 29 V / 5000 RPM with a load 5 A or less, measured between L and E
Output characteristics (Voltage: 27 V)	more than 45 A 2500 RPM
	more than 50 A 5000 RPM
Mass	9.6 kg (21.1644 lb)

Starter	
Item	Specifications
Manufacturer	Mitsubishi Electric Co.
Isuzu parts number	8-9822-2203-2
Manufacturer code number	M009T62372
Output	24 V / 5.5 kW
Rating	30 s
Yoke outer diameter	85.0 mm (3.35 in)
Rotational direction	Right
Protection type	Dust proof/drip proof
Speed reducer	Inner contact gear
Weight	8.5 kg (18.7 lb)
Pinion	Module
	Pressure angle
	Gear teeth
	3.5
	14.5°
	11
No load	Voltage
	Current
	Rotational speed
	23 V
	less than 120 A
	more than 3100 RPM

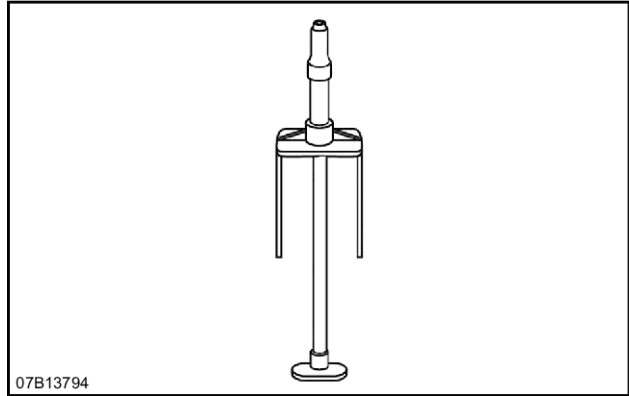
Engine - Engine and crankcase

Starter		
	Item	Specifications
Load	Voltage, current	17.8 V / 450 A or less
	Torque	more than 27 N·m (19.91 lb ft)
	Rotational speed	more than 1140 RPM
Restraint	Voltage	8 V
	Current	less than 1800 A
	Torque	more than 76 N·m (56.05 lb ft)
Pinion engaged voltage		16.0 V or less

Glow plug		
	Item	Type
	Preheat device model	Glow plug QOSII
	Glow plug rated voltage	23 V

Crankcase Liner - Special tools

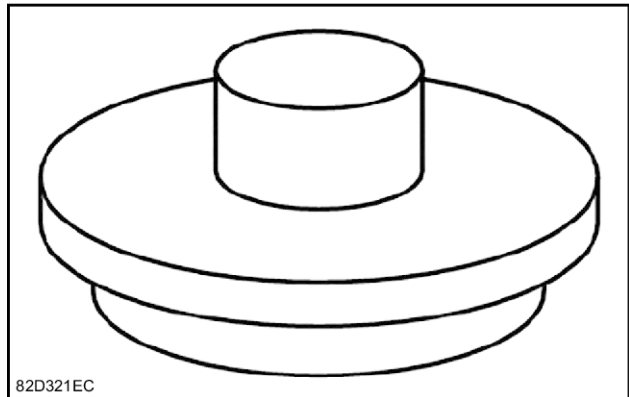
Isuzu reference	1-8523-1021-0
CASE CONSTRUCTION tool number	380300007
Description	Cylinder liner remover



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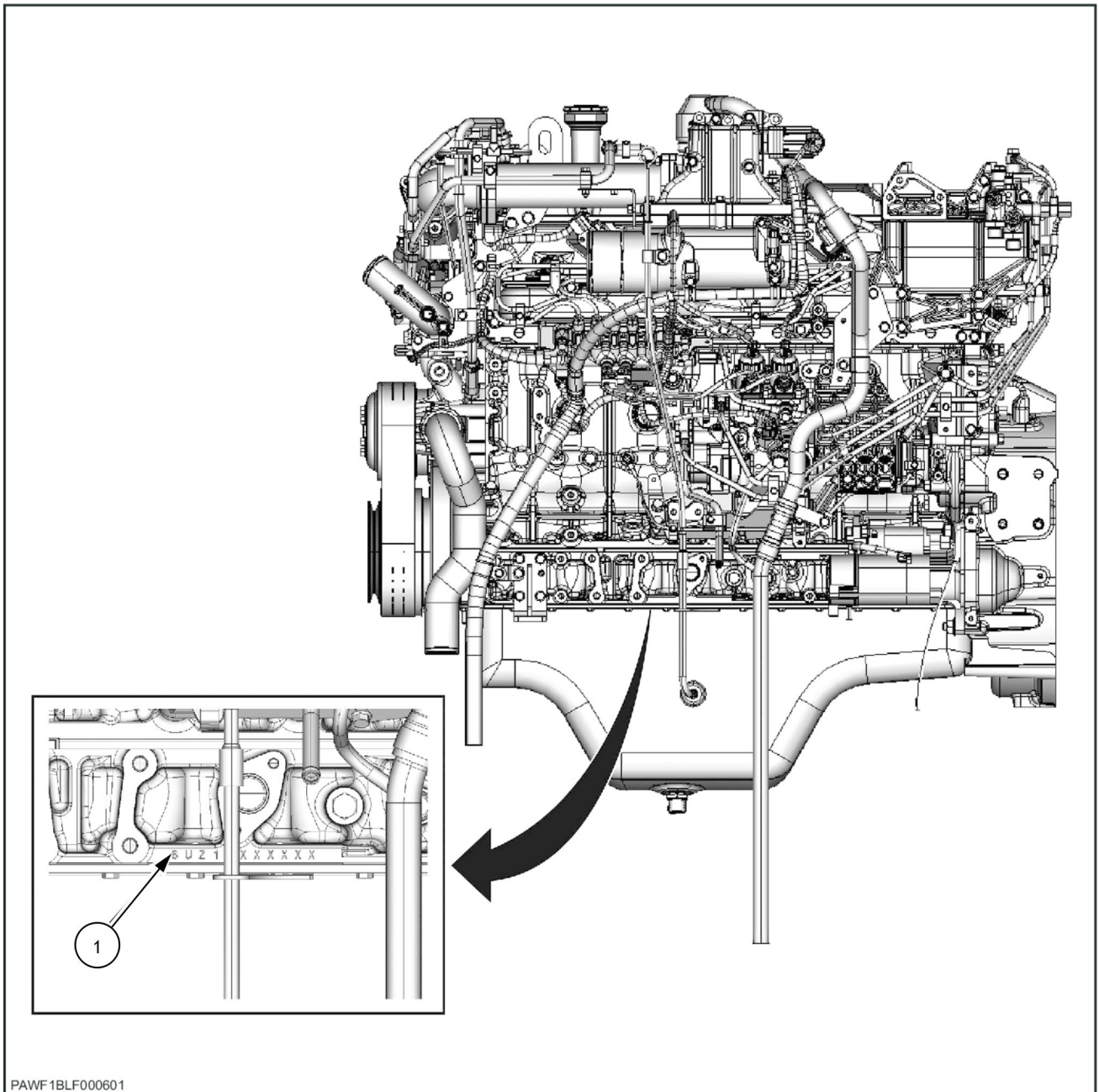
Isuzu reference	1-8522-1073-0
CASE CONSTRUCTION tool number	380300008
Description	Cylinder liner installer



82D321EC

82D321EC 2

Engine - Identification



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1. Engine number stamping

Engine - Prepare

⚠ 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

Avoid injury!

Shut off the engine, remove the key, and make sure all motion is stopped before servicing the machine.

Failure to comply could result in death or serious injury.

W1128A

⚠ 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

Explosion hazard!

Batteries emit explosive gases. Always ventilate when using in an enclosed area or when charging. Keep the battery away from sparks, open flames, and other ignition sources.

Failure to comply could result in death or serious injury.

W0369A

NOTICE: *Keep away from flames.*

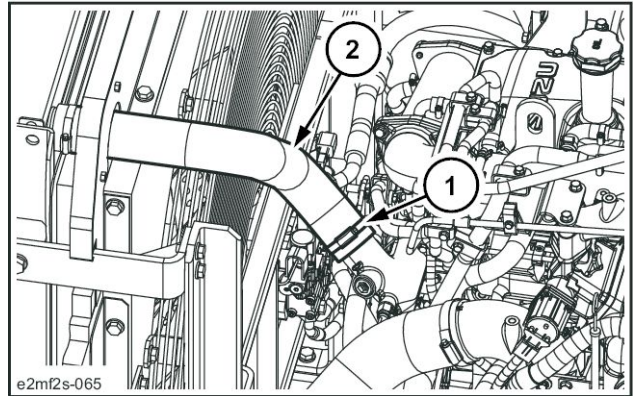
NOTICE: *The air conditioner circuit is filled with high pressure gas, gas may spray out dangerously when loosening lines.*

Items to prepare:

- Wrenches [**7 mm, 8 mm, 13 mm, 17 mm, 19 mm, 36 mm**]
- Box wrench [**41 mm**]
- Shackle (with the required lifting capacity) x 2
- Wire rope (with the required breaking load)
- Liftcrane (with the required lifting capacity)
- Marking pen
- Cap
- Plug
- Waste oil can
- Rag
- Cleaning fluid
- Wood plank, etc.

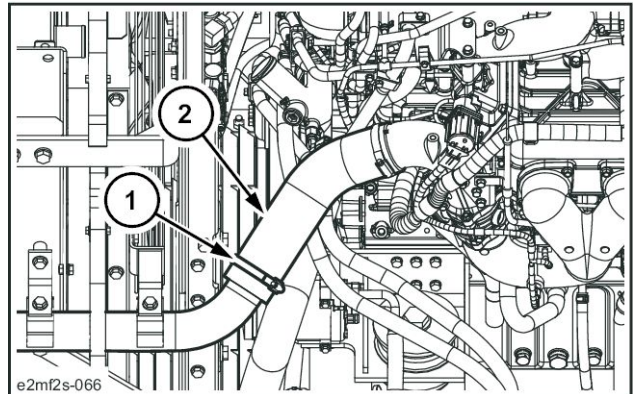
Engine - Remove

1. Drain the engine oil.
2. Drain the radiator coolant. (For details, see **Radiator - Remove (10.400)**)
3. Remove the engine hood. (For details, see **Hood - Remove (90.100)**)
4. Remove the muffler. (For details, see **Exhaust muffler - Remove (10.254)**)
5. Remove the hydraulic pump. (For details, see **Pump - Remove (35.106)**)
6. Use a wrench [**7 mm**] to loosen the hose band **(1)** on the radiator, and then remove the upper hose **(2)**.



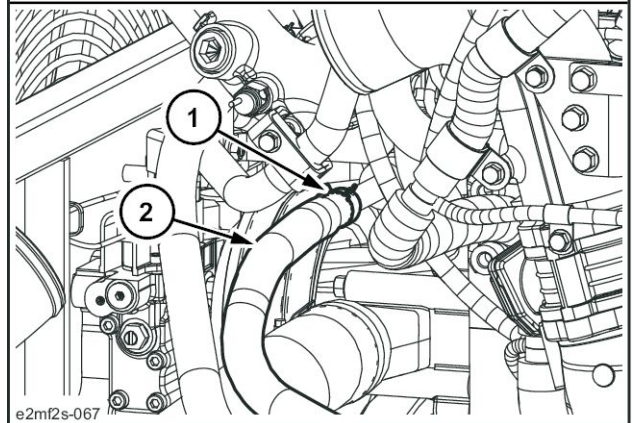
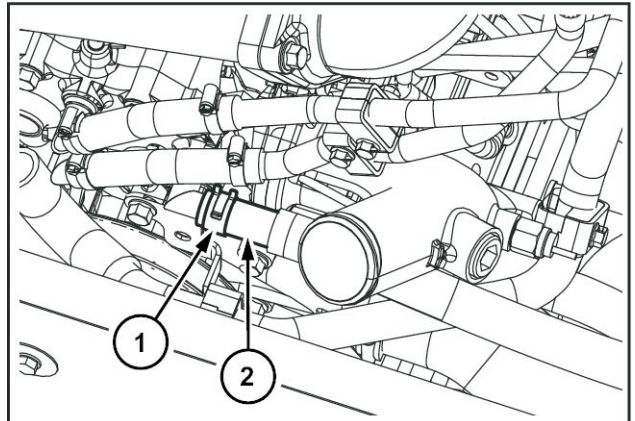
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7. Use a wrench [**8 mm**] to loosen the hose band **(1)** on the intercooler, and then remove the hose **(2)**.
 - Use caps to cover the lines and hoses to prevent any entry of water, dust or dirt.



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8. Remove the hose band (1), and then remove the heater hose (2). Install caps or plugs to the engine and hoses to prevent any entry of water, dust or dirt.



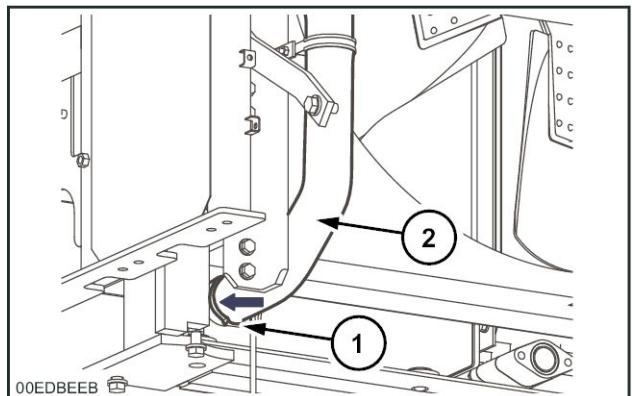
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9. Use a wrench [7 mm] to loosen the hose band (1) on the radiator, and then remove the lower hose (2).

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

Tightening torque for band installation: **4.9 – 5.9 N·m (3.614 – 4.352 lb ft)**



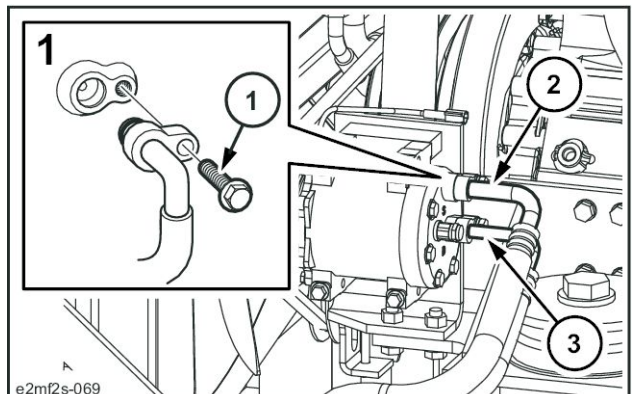
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10. Use a wrench [13 mm] to loosen the line bolts (1) at 2 locations, and then remove the 2 lines (2) and (3) from the compressor.

- Always remove the low-pressure (suction side) line (2) first.
- Install caps or plugs to the compressor and lines to prevent any entry of water, dust or dirt.

Tightening torque for bolt installation: **19.6 – 24.5 N·m (14.5 – 18.1 lb ft)**

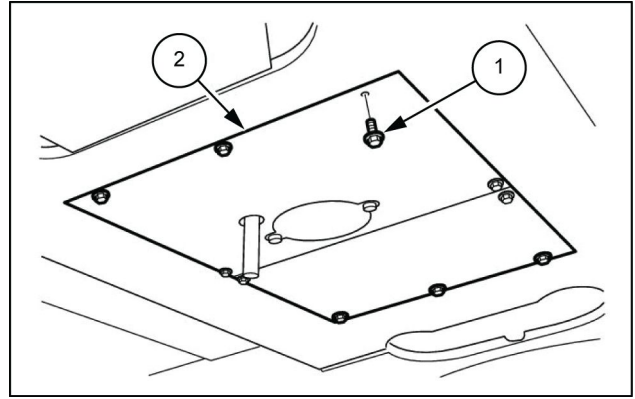


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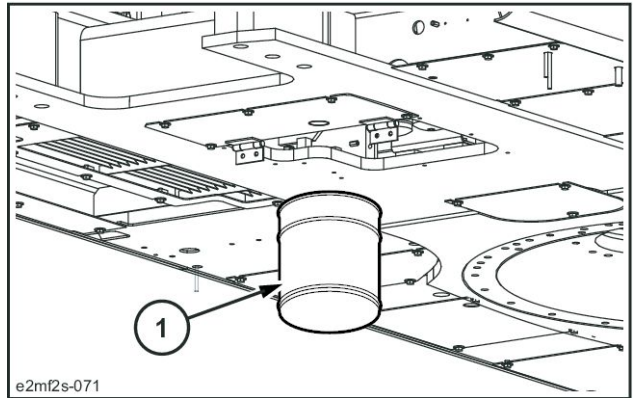
11. Use a wrench [**19 mm**] to remove the 11 bolts **(1)**, then remove the under cover **(2)**.

- Use caution when removing as the parts are heavy.
Tightening torque for bolt installation: **63.7 – 73.5 N·m (46.9 – 54.2 lb ft)**



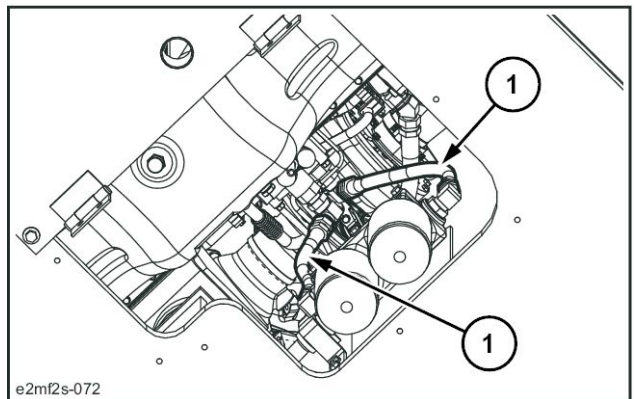
12. Prepare the waste oil can **(1)**.

- Drain the engine oil before removing the engine oil hose.



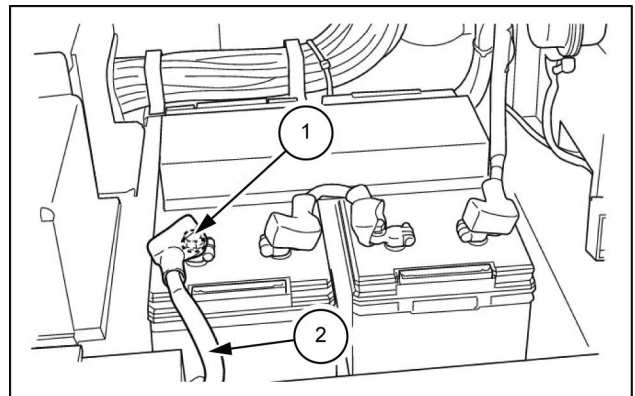
13. Use a wrench [**36 mm**] to remove the 2 engine oil remote hoses **(1)**.

- Mark the engine and hoses so that the connectors match at the time of installation.
- Install 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.



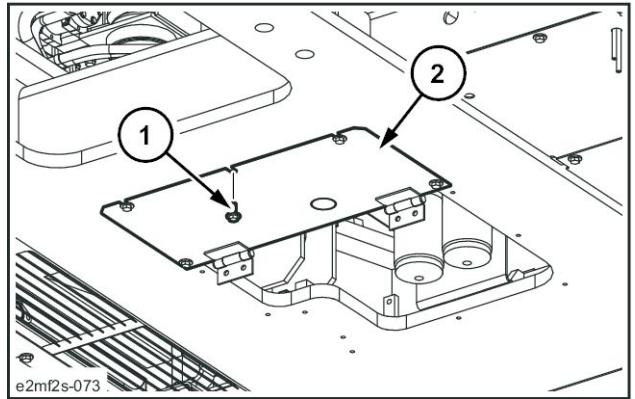
14. Use a wrench [**17 mm**] to remove the bolt **(1)**, and then remove the battery cable **(2)** on the negative side.

- After removing terminals or harnesses, fix them to the frame or a similar location so they do not interfere with the frame.
- Also, be sure to protect them with a rubber cap or other protective device, to prevent sparks.



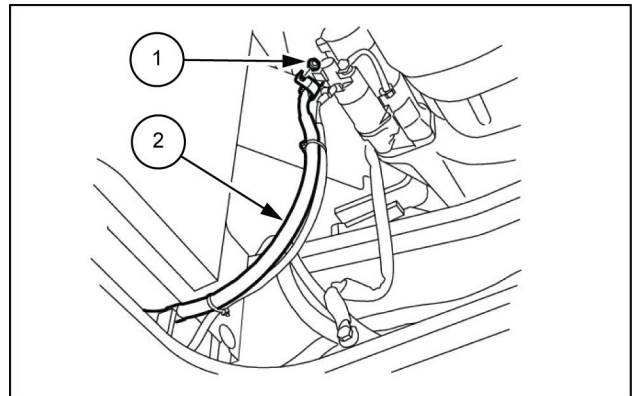
15. Use a wrench [**19 mm**] to remove the 5 bolts (1), then remove the under cover (2).

Tightening torque for bolt installation: **63.7 – 73.5 N·m (47.0 – 54.2 lb ft)**



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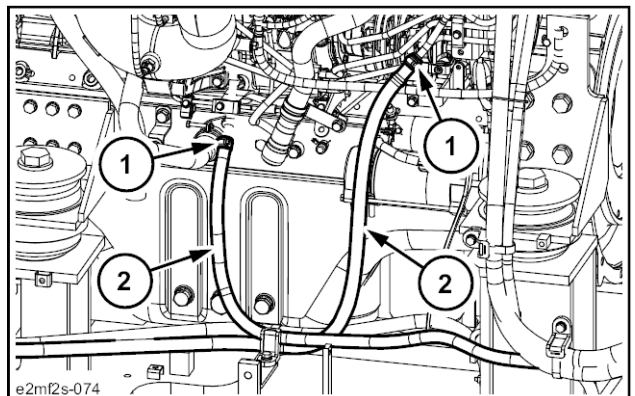
16. Use a wrench [**8 mm**] to remove the 2 nuts (1), and then remove the wiring (2) from the starter motor.



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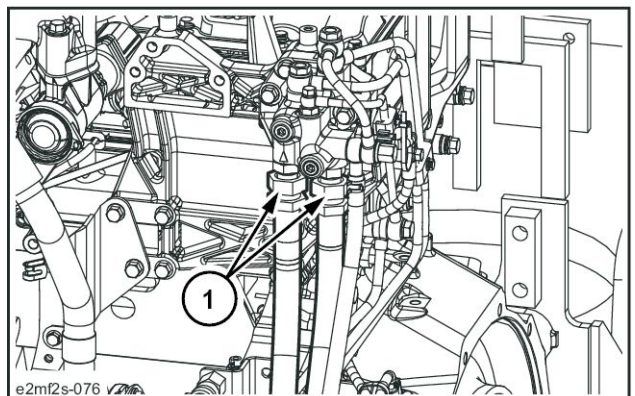
17. Remove the hose band (1), and then remove the fuel hose (2).

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



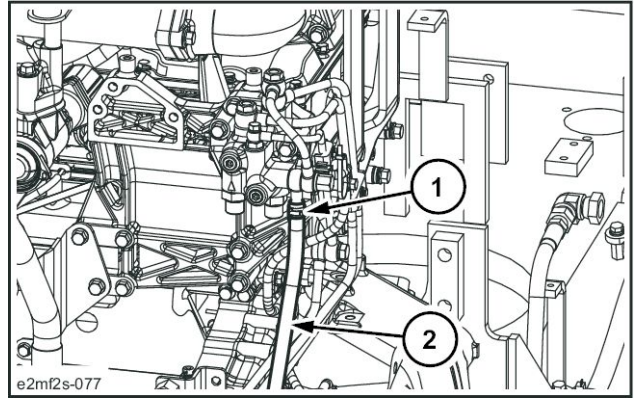
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18. Use a wrench [**36 mm**] to remove the 2 engine remote hoses (1).



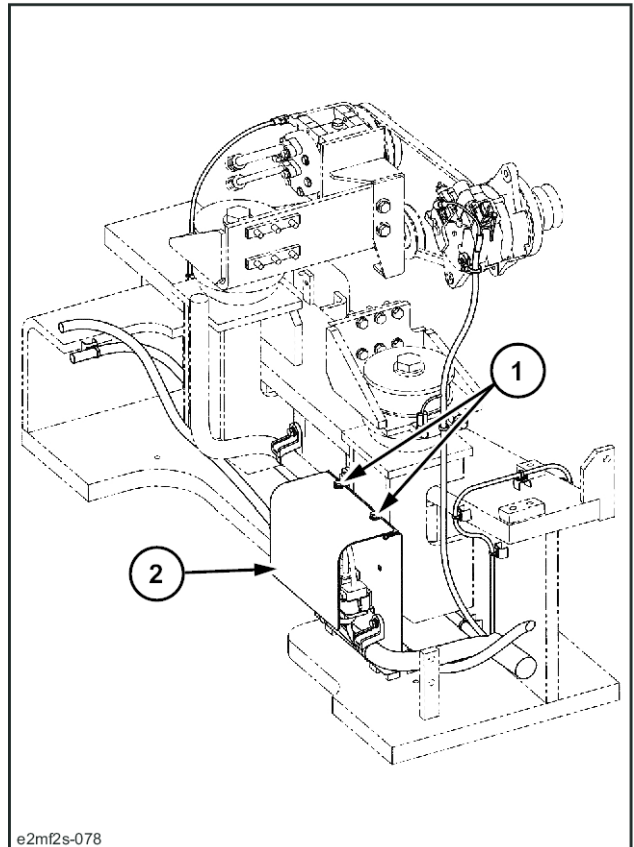
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19. Remove the hose band (1), and then remove the engine remote subhose (2).



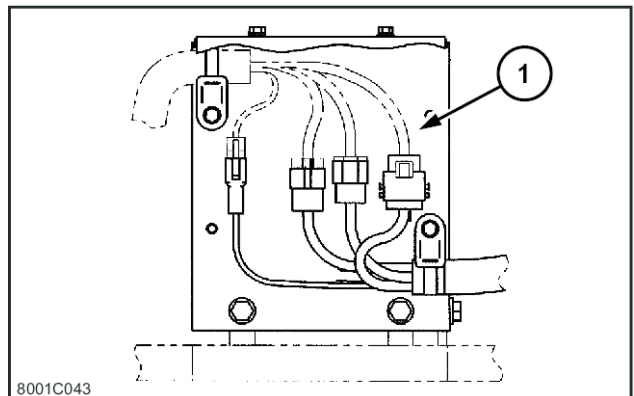
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20. Use a wrench [13 mm] to remove the 2 bolts (1), and then remove the box cover (2).



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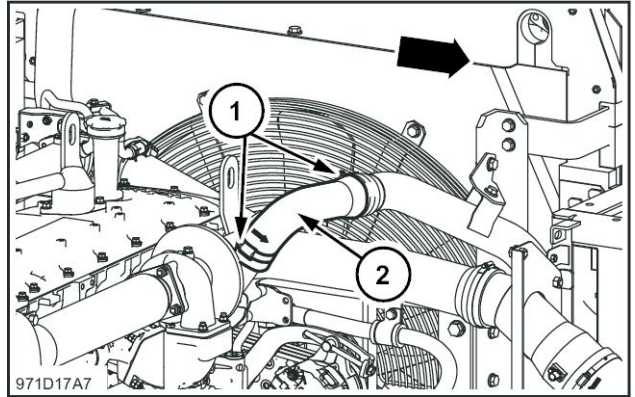
21. Remove the connectors (1) in the box.
- Wrap the removed connectors in plastic after tying them together to prevent any entry of water, dust or dirt.



8001C043 16

22. Use a wrench [**8 mm**] to loosen the hose band (1), and then remove the heater hose (2).

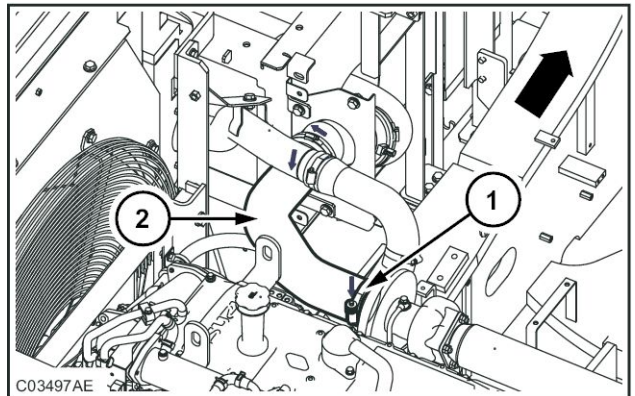
- Use caps to cover the lines and hoses to prevent any entry of water, dust or dirt.
Tightening torque for bolt installation: **8.8 – 9.8 N·m**
(**6.491 – 7.228 lb ft**)



971D17A7 17

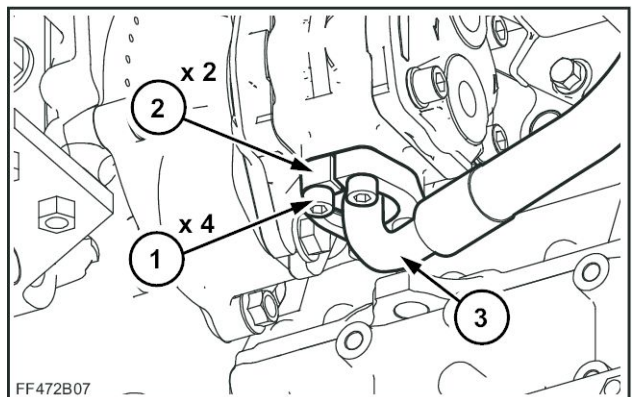
23. Use a wrench [**8 mm**] to loosen the hose band (1), and then remove the air hose (2).

- Use caps to cover the lines and hoses to prevent any entry of water, dust or dirt.
Tightening torque for bolt installation: **8.8 – 9.8 N·m**
(**6.491 – 7.228 lb ft**)



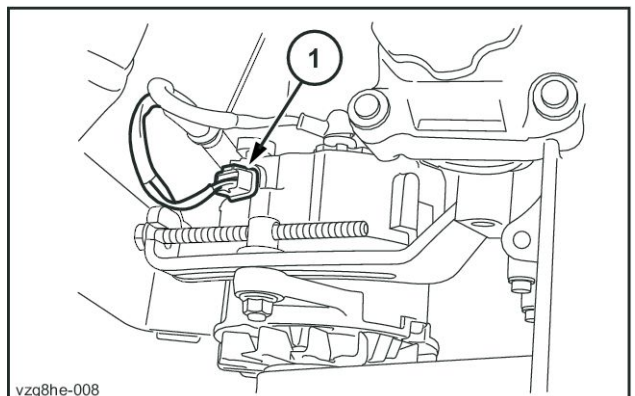
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24. Use a hexagon wrench [**8 mm**] to remove the 4 hexagon bolts (1) and 2 split flanges (2), and then remove the hydraulic hose (3).



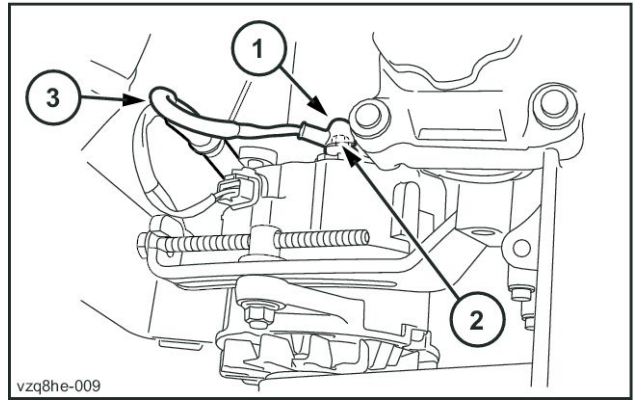
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25. Remove the connector (1) from the alternator.



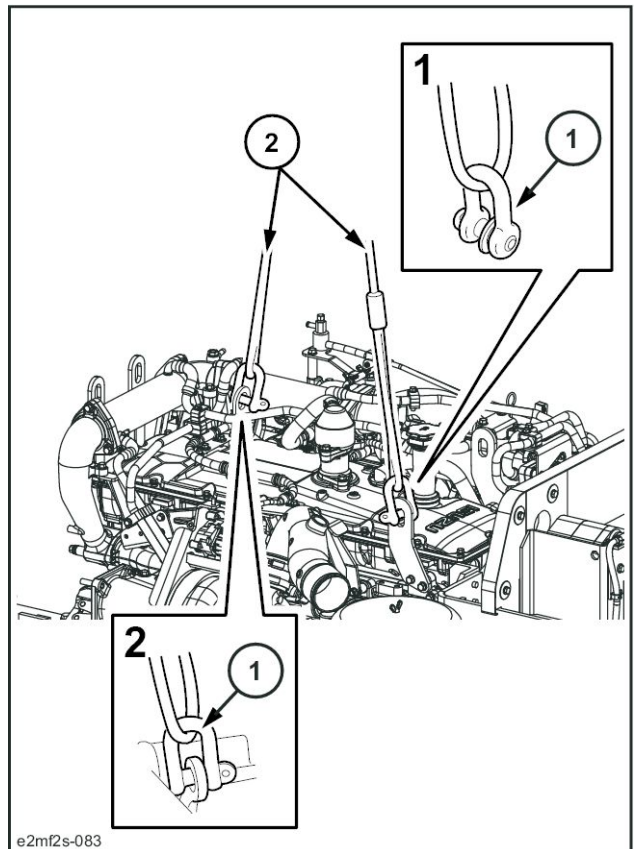
VZQ8HE-008 20

26. Remove the cap (1), use a wrench [10 mm] to remove the nut (2), and then remove the alternator wiring (3).



VZQ8HE-009 21

27. Install the 2 shackles (1), and then use the wire rope (2) and lifcrane to secure the engine main unit.



E2MF2S-083 22



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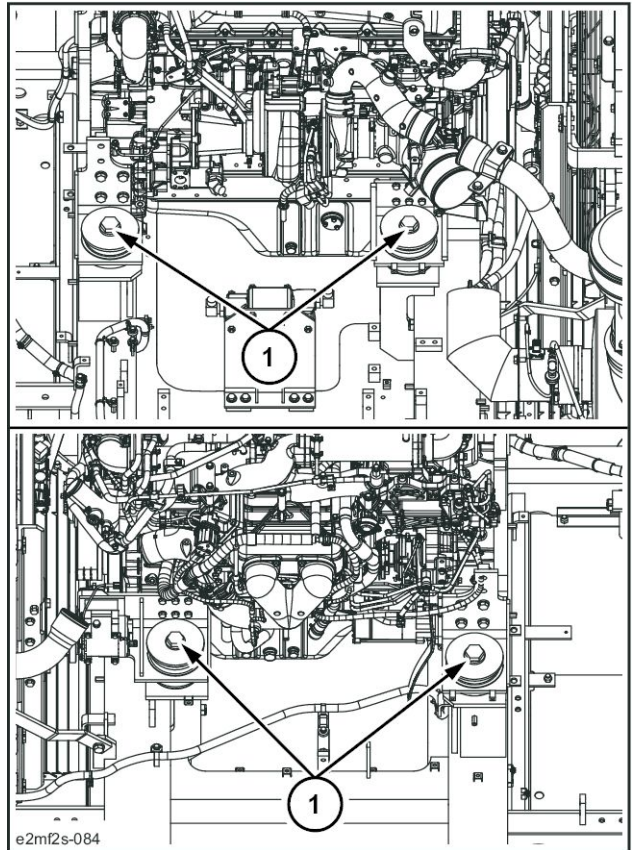
first, and then click the above link

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Thank you so much for reading

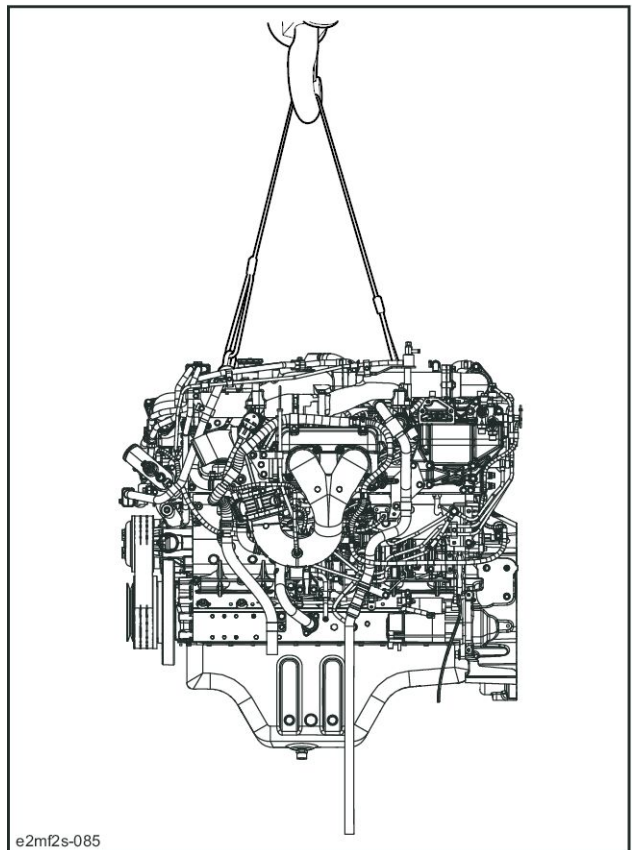
28. Use a box wrench [**41 mm**] to remove the 4 bolts (1) from the mount.

Tightening torque for bolt installation: **843.4 – 980.7 N·m (622.060 – 723.327 lb ft)**



E2MF2S-084 23

29. Use the wire rope (1) and liftcrane to lift the engine main unit.
Thoroughly check that the location is safe before lowering the engine on wood planks, etc.



E2MF2S-085 24

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