

**586H**  
**588H**  
**Tier 4**  
Rough Terrain Forklift  
*from PIN NCC570000*

**SERVICE MANUAL**

**Part number 47421773**  
1<sup>st</sup> edition English  
August 2012



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Mechanically-adjusted operator seat ..... 90.120



## **INTRODUCTION**

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## Foreword - Ecology and the environment

Soil, air, and water are vital factors of agriculture and life in general. When legislation does not yet rule the treatment of some of the substances required by advanced technology, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

**NOTE:** *The following are recommendations that may be of assistance:*

- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use, and dispose of these substances.
- Agricultural consultants will, in many cases, be able to help you as well.

### Helpful hints

- Avoid filling tanks using cans or inappropriate pressurized fuel delivery systems that may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when draining off used engine coolant mixtures, engine, gearbox and hydraulic oils, brake fluids, etc. Do not mix drained brake fluids or fuels with lubricants. Store them safely until they can be disposed of in a proper way to comply with local legislation and available resources.
- Modern coolant mixtures, i.e. antifreeze and other additives, should be replaced every two years. They should not be allowed to get into the soil, but should be collected and disposed of properly.
- Do not open the air-conditioning system yourself. It contains gases that should not be released into the atmosphere. Your CASE CONSTRUCTION dealer or air conditioning specialist has a special extractor for this purpose and will have to recharge the system properly.
- Repair any leaks or defects in the engine cooling or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, allowing the loss of oils, coolant, etc.

## 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 and on machine safety signs, 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. The color associated with DANGER is RED.

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

**!** CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

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

### Machine safety

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

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine damage 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.

## Personal safety

### **▲ WARNING**

**Maintenance hazard!**

**Before you start servicing the machine, attach a DO NOT OPERATE warning tag to the machine in a visible area.**

**Failure to comply could result in death or serious injury.**

W0004A

Attach a DO NOT OPERATE (TAG) to the machine in an area that is clearly visible whenever the machine is not operating properly and/or requires service.

Complete the tag information for the "REASON" the tag is attached by describing the malfunction or service required. Validate the reason for attaching the tag by signing your name in the designated area on the tag.

The tag should only be removed by the person who signed and attached the tag, after validating the repairs or services have been completed.

(A)		(D)
(B)	<p>See Other Side</p>	(E)
(C)	<p>CNH Part Number 87358697</p> <p>Printed in U.S.A.</p>	(F)

87358697 1

### Tag Components

- A. DO NOT REMOVE THIS TAG! - (Warning) The tag should only be removed by the person who signed and attached the tag, after validating the repairs or services have been completed.
- B. See Other Side - (Reference to additional information on opposite side of the tag.)
- C. CNH Part Number - (Request this part number from you Service Parts Dealer to obtain this DO NOT OPERATE tag.)
- D. DO NOT OPERATE - (Warning!)
- E. REASON - (Area for describing malfunction or service required before operation.)
- F. Signed by - (Signature area - to be signed by the person validating the reason for installation of the tag.)



## SERVICE MANUAL

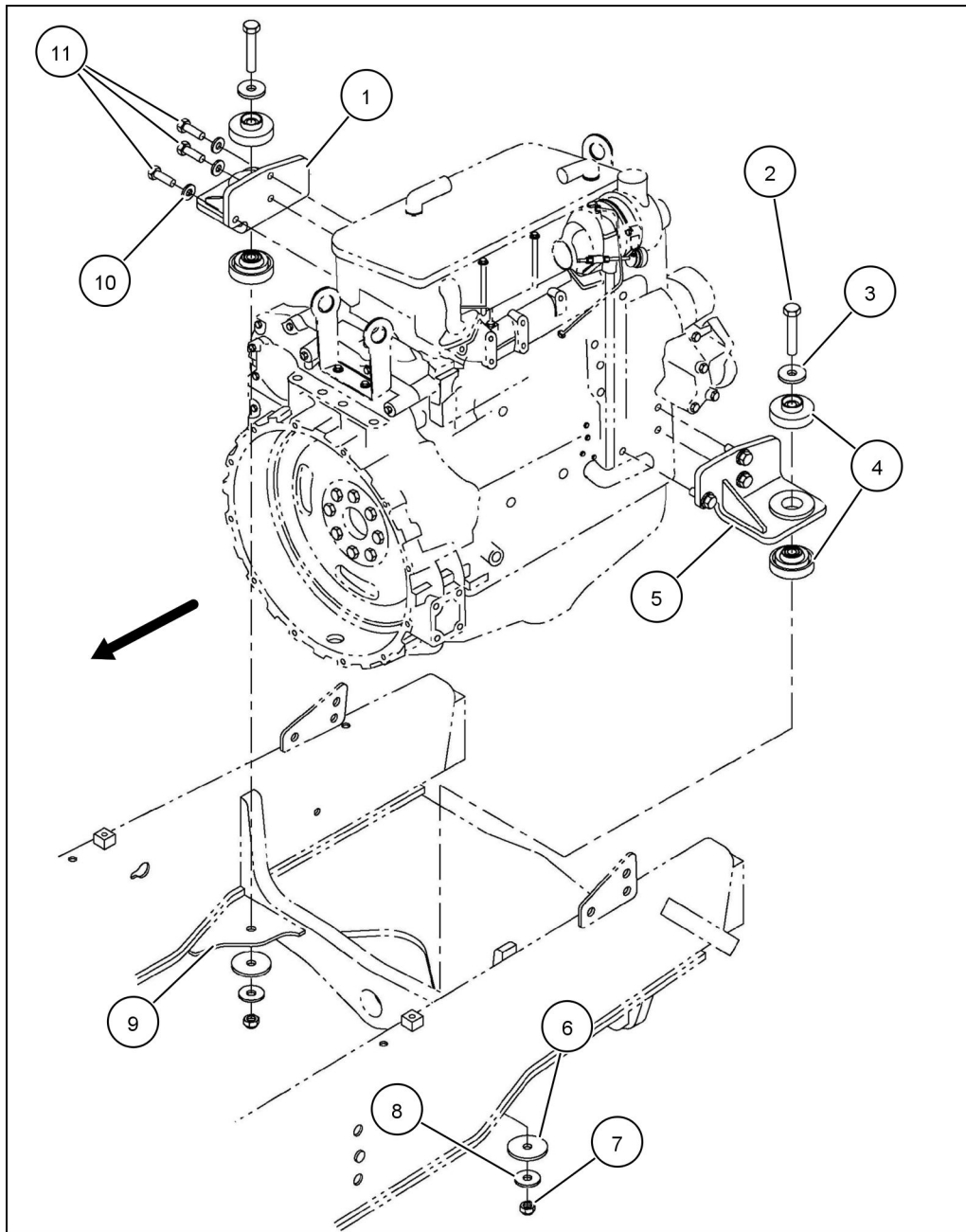
### Engine



**586H**  
**588H**

## Engine support and mounts - Overview

**NOTE:** The arrow in the image is pointing toward the front of the machine.



RAPH12FRK0651HA 1

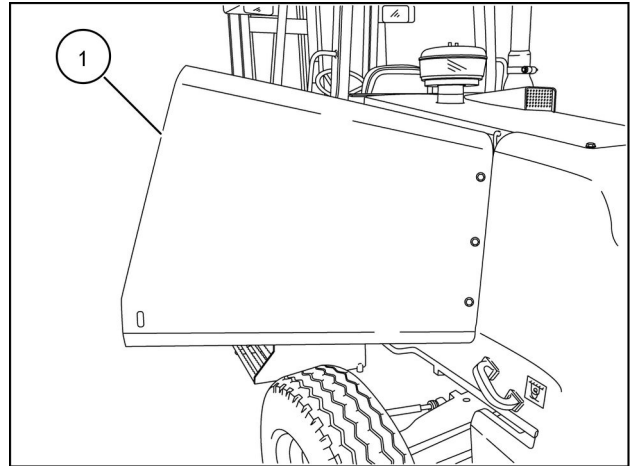
- 1-Right engine mount
- 2-Bolt
- 3-Washer
- 4-Rubber mount
- 5-Left engine mount
- 6-Large washer

- 7-Nut
- 8-Washer
- 9-Machine frame
- 10-Washer
- 11-Bolt

## Engine - Remove

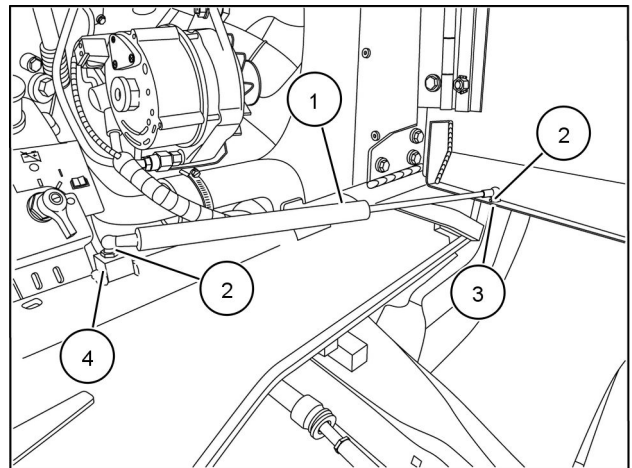
### Remove the engine side panels

1. Prepare the machine for service.
2. Open the side panel (1).



RAPH12FRK0026BA 1

3. Remove the nut (3) securing the first strut screw fitting (2) to the side panel.
4. Unscrew the second strut screw fitting from the welded block (4), and remove the hydraulic strut (1).



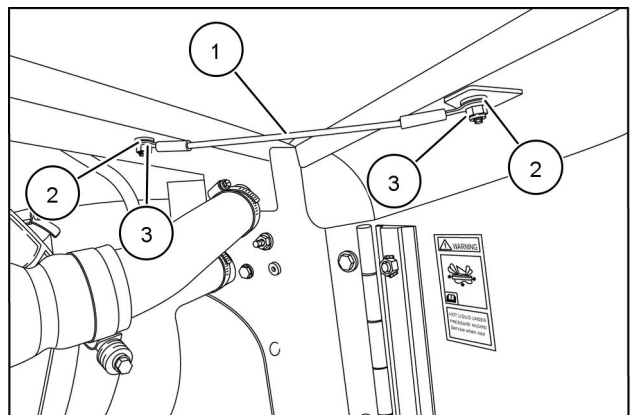
RAPH12FRK0027BA 2

5. Remove nuts (3) and washers (2), and remove the side panel strap (1).

### **⚠ WARNING**

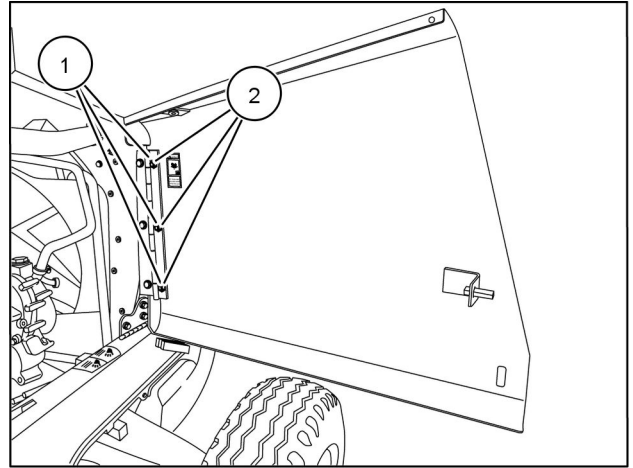
**Heavy objects!**  
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.  
Failure to comply could result in death or serious injury.

W0398A



RAPH12FRK0028BA 3

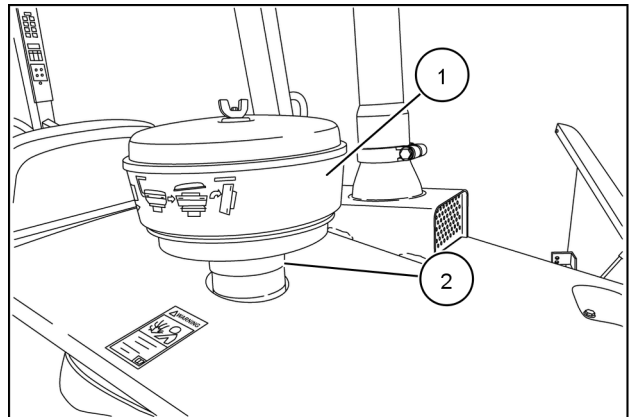
6. Remove cap screws **(1)** and washers **(2)**, and carefully remove the side panel.
7. Repeat the procedure on the other side engine panel.



RAPH12FRK0029BA 4

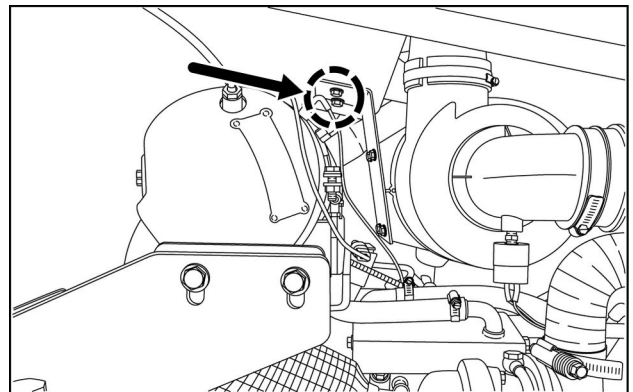
### Remove the engine hood

1. Loosen the clamp **(2)** and remove the pre-cleaner **(1)**.



RAPH12FRK0030BA 5

2. Remove the two bolts disconnecting the air filter bracket from the hood.



RAPH12FRK0057AA 6

- Remove the four hood mounting bolts.

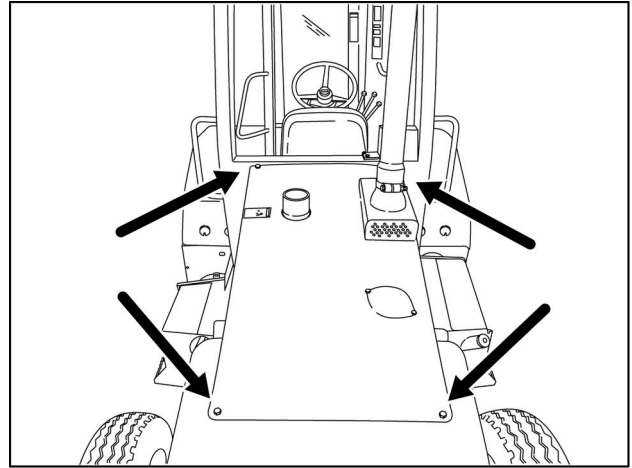
**⚠ WARNING**

**Avoid injury!**

**The component is heavy. Removal/installation requires two persons or a lifting device.**

**Failure to comply could result in death or serious injury.**

W1141A



RAPH12FRK0058BA 7

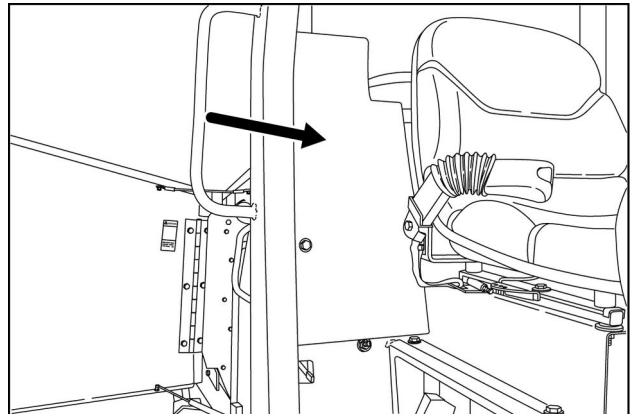
**Specification**

Hood weight (approximate)	<b>27.2 kg (60 lb)</b>
---------------------------	------------------------

- Using an appropriate lifting device or the aid of an assistant, remove the hood.

**Remove the Diesel Particulate Filter (DPF)**

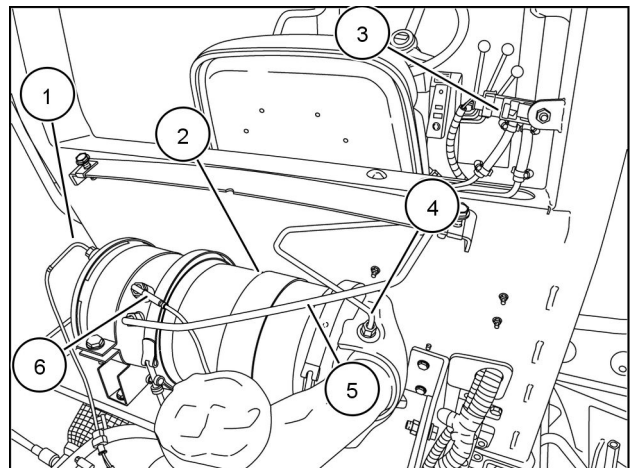
- Remove the Engine Control Unit (ECU) panel (1).



RAPH12FRK0059BA 8

**NOTE:** For assembly purposes, identify and label all electrical connectors.

- Remove the upstream exhaust pressure tube (4) and the downstream exhaust pressure tube (5) from the DPF (2) and from the pressure sensor (3).
- Disconnect the upstream exhaust temperature sensor (1) and the downstream exhaust temperature sensor (6) from the DPF.



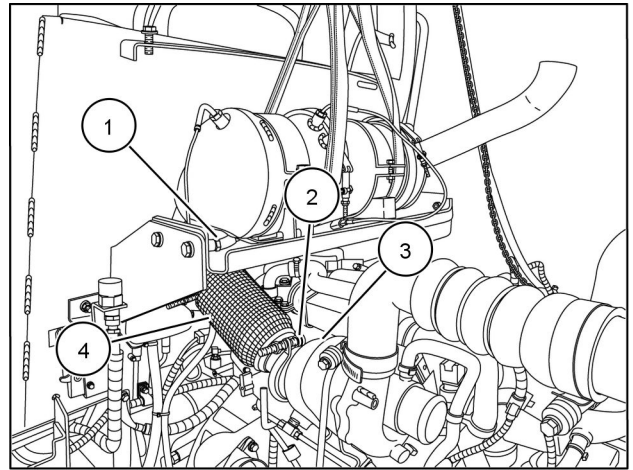
RAPH12FRK0720BA 9

4. Disconnect the oxygen sensor connector (1).
5. Remove the V-clamp (2). Disconnect the flex pipe (4) at the turbocharger (3). Close all openings.

**⚠ WARNING**

**Avoid injury!**  
**The component is heavy. Removal/installation requires two persons or a lifting device.**  
**Failure to comply could result in death or serious injury.**

W1141A

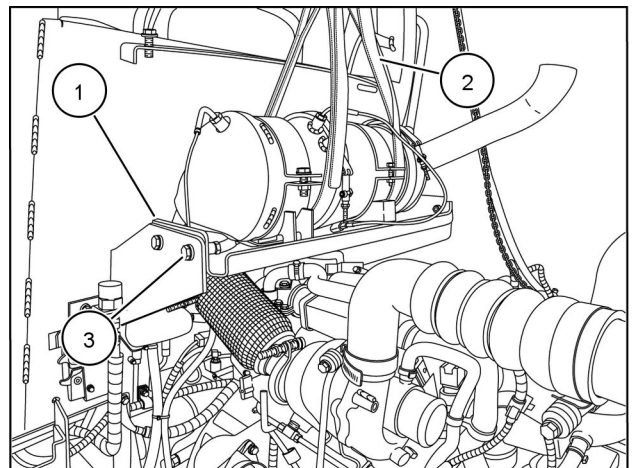


RAPH12FRK0721BA 10

**Specification**

Diesel Particulate Filter Assembly Weight (approximate)	<b>45.4 kg (100 lb)</b>
---	-------------------------

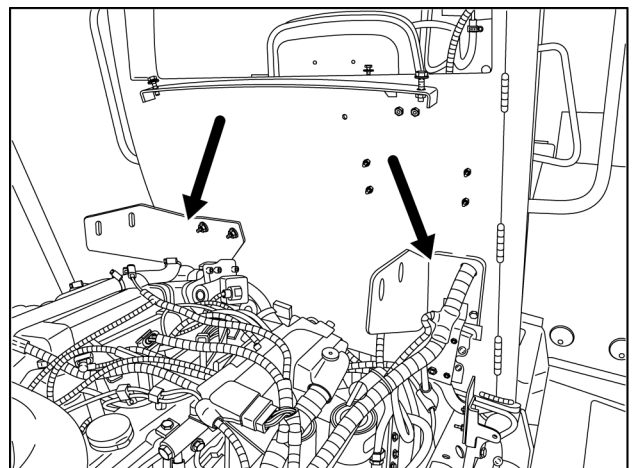
6. Support the diesel exhaust filter using an appropriate lifting device (2) as shown.
7. Remove bolts and nuts (3) from each end bracket (1).
8. Carefully remove the DPF assembly from the machine.



RAPH12FRK0721BA 11

**Remove the engine**

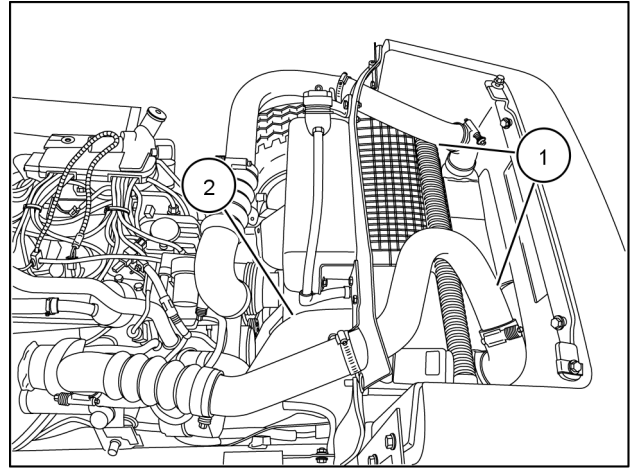
1. Drain the engine cooling system. Refer to **Engine cooling system - Drain fluid (10.400)**.
2. Remove two DPF support brackets from the ROPS rear bulkhead.



RAPH12FRK0973BA 12

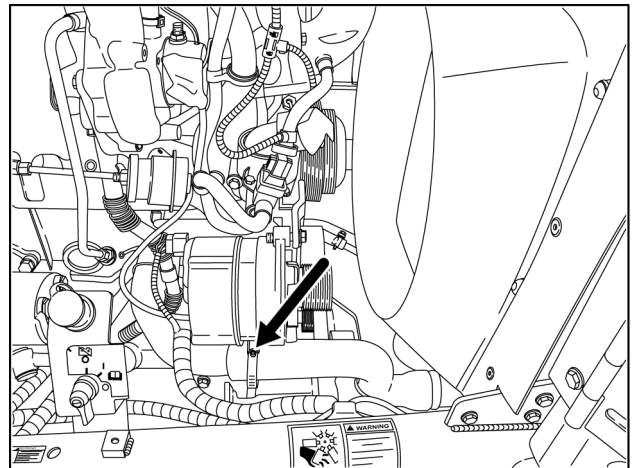
**NOTE:** Cap and plug all openings to avoid contamination.

3. Disconnect and remove the charge air cooler tubes **(1)**.
4. Remove the upper radiator hose **(2)** Close all openings.



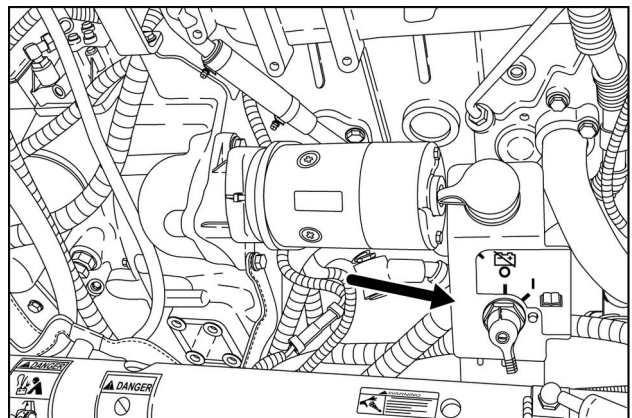
RAPH12FRK0974BA 13

5. Disconnect the lower radiator hose at the engine. Close all openings.



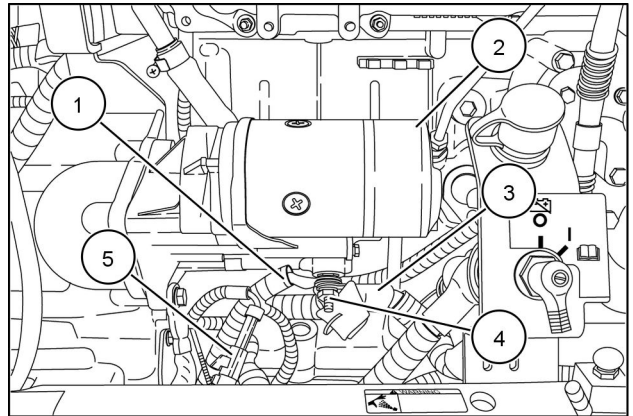
RAPH12FRK0975BA 14

6. Remove the fan shroud. Refer to **Fan Shroud - Remove (10.414)**.
7. Remove the alternator. Refer to **Alternator - Remove (55.301)**.
8. If equipped, remove the battery disconnect switch bracket from the frame and set aside.



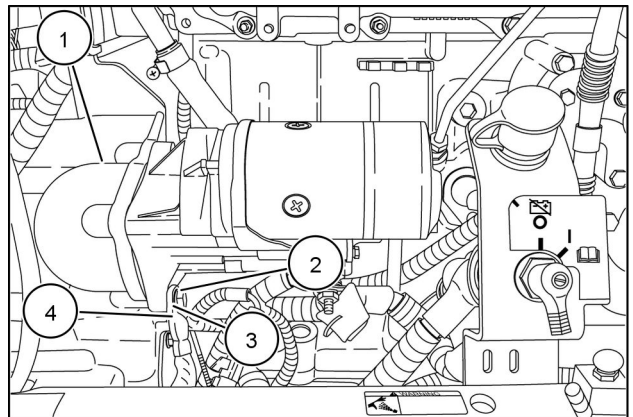
RAPH12FRK0976BA 15

9. Remove the nut **(4)**, and disconnect the wire harness **(1)** and positive battery cable **(3)** from the terminal on the starter **(2)**.
10. Disconnect the starter solenoid wire harness connector **(5)**.



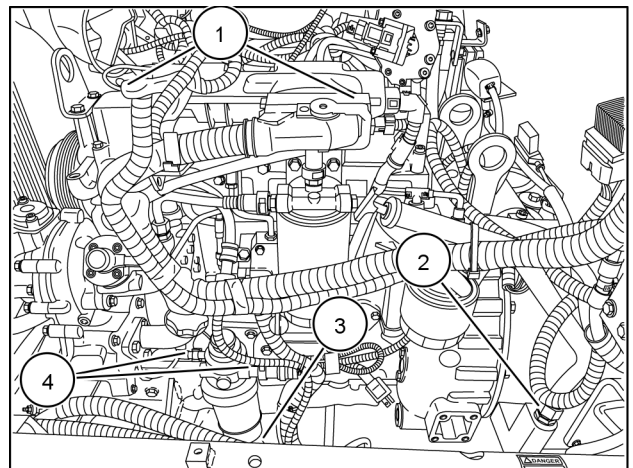
RAPH12FRK0719BA 16

11. Remove two starter bolts **(2)** and washers **(3)**, and remove the ground strap **(4)** securing the starter to the flywheel housing **(1)**.



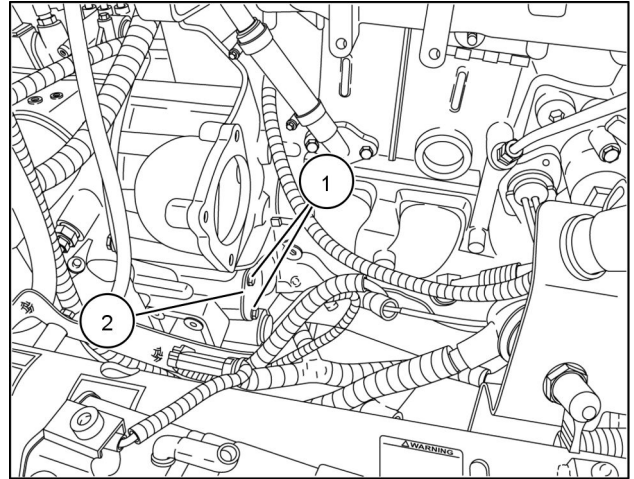
RAPH12FRK0719BA 17

12. Disconnect the main electrical harness **(1)** at the engine.
13. Disconnect the fuel lines **(4)** at the fuel filter. Close all openings.
14. Loosen the transmission dipstick at the base of the transmission **(3)** and rotate counter-clockwise for additional clearance.
15. Disconnect the electrical connector at the base of the fuel filter **(2)**.



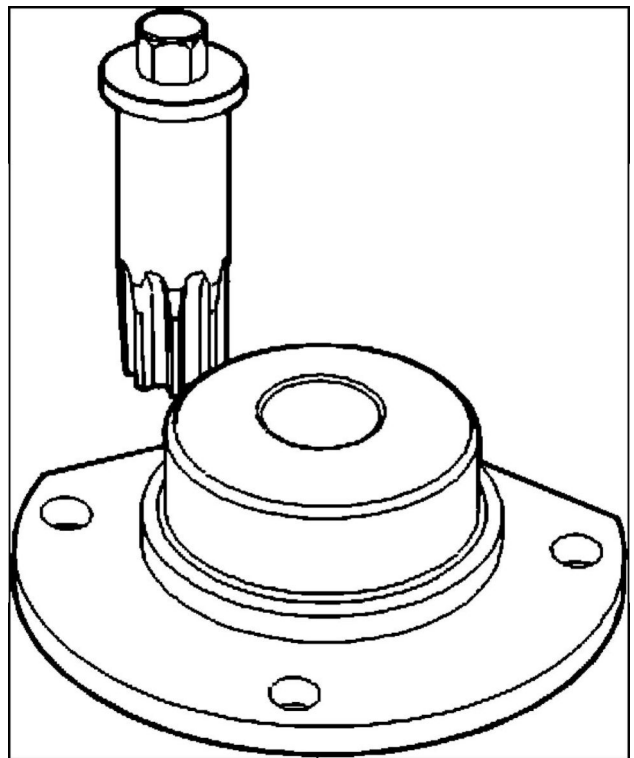
RAPH12FRK0977BA 18

16. Remove two bolts (1) and the cover plate (2) to access the flex plate bolts.



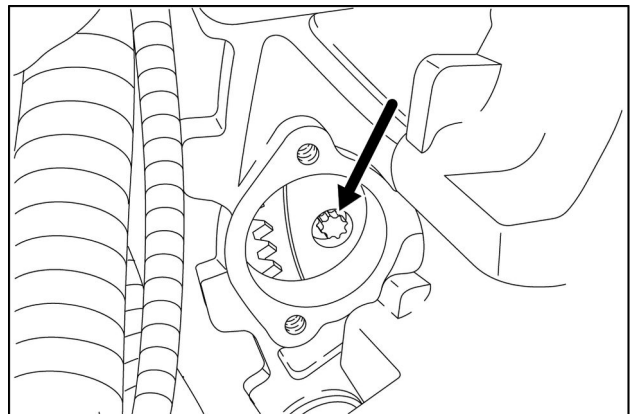
RAPH12FRK0929BA 19

17. Insert the engine turning tool 380000988 into the starter housing and rotate the engine until the flex plate bolt is visible in opening.



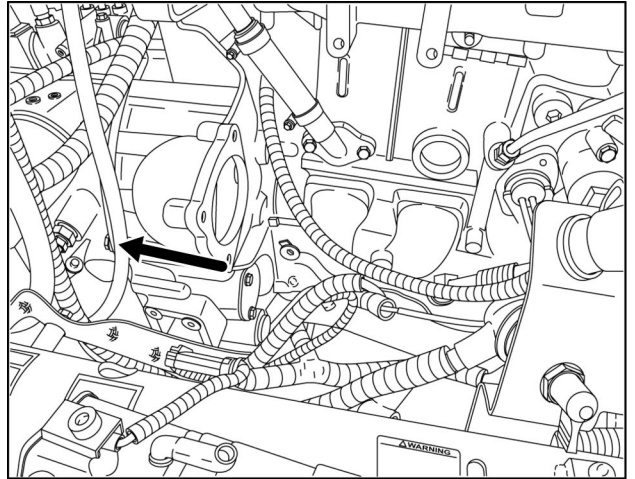
RAPH12FRK0979BA 20

18. Remove the four bolts that fasten the flywheel to the flex plate.



RAPH12FRK0095BA 21

19. Remove the 12 bolts and washers that fasten the transmission to the flywheel housing.



RAPH12FRK0929BA 22

**⚠ DANGER**

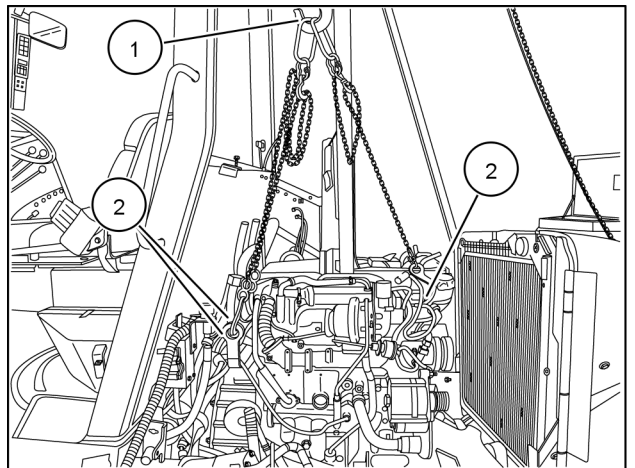
**Heavy parts!**  
**Support designated component(s) with adequate lifting equipment.**  
**Failure to comply will result in death or serious injury.**

D0018A

**Specification**

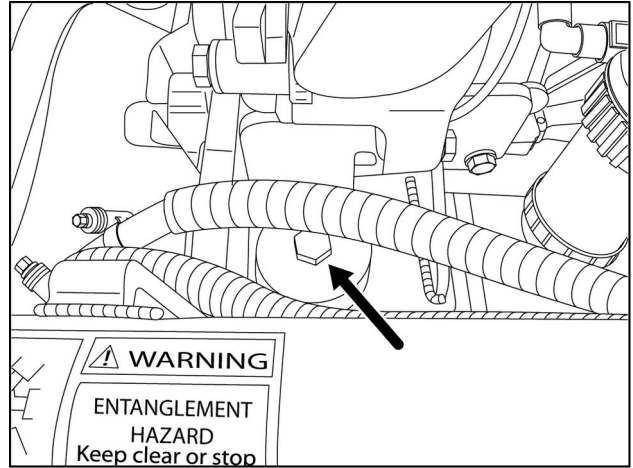
Engine weight (approximate)	<b>363 kg (800 lb)</b>
-----------------------------	------------------------

20. Attach an appropriate lifting device (1) to the three engine lift eyes (2) on the engine as shown.



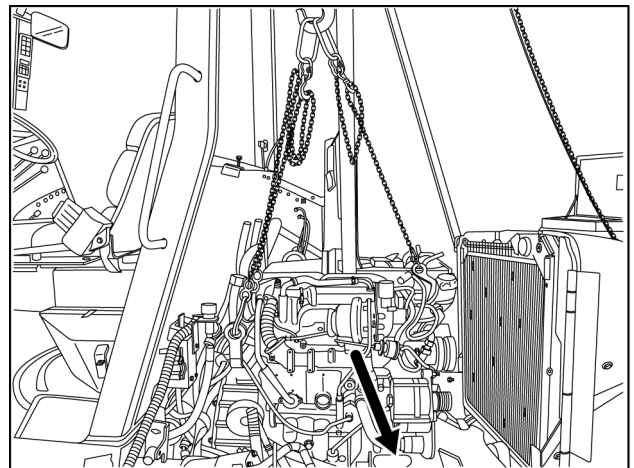
RAPH12FRK0978BA 23

21. Loosen all motor mount-to-frame bolts.



RAPH12FRK0103BA 24

22. Remove all motor mount-to-engine bolts.



RAPH12FRK0978BA 25

**NOTICE:** Avoid machine damage. Maintain adequate clearance between the engine and machine frame. Make sure the engine components **DO NOT** come in contact or hang up on the frame or frame components during engine removal.

23. Carefully raise and remove the engine from the machine.
24. Place the engine on the repair stand and repair or replace as necessary.

## Engine - Install

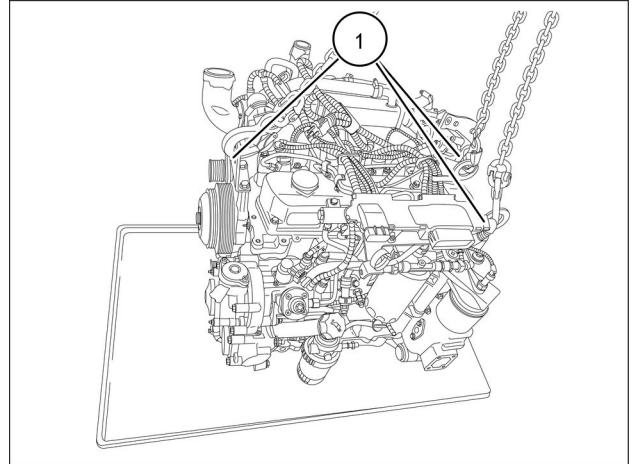
### **⚠ DANGER**

#### **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 will result in death or serious injury.**

D0076A

1. Attach an appropriate lifting device to the three engine lift eyes (1) on the engine as shown.



RAPH12FRK0643HA 1

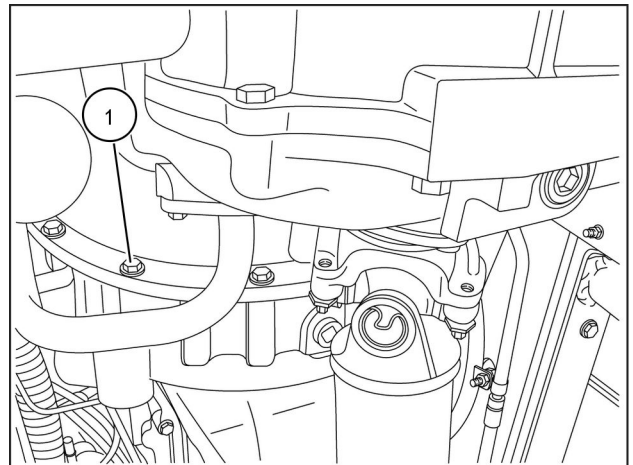
### Specification

Engine Weight (approximate)	<b>362.9 kg (800 lb)</b>
-----------------------------	--------------------------

**NOTICE:** Avoid machine damage. Maintain adequate clearance between the engine and the machine frame. Make sure engine components **DO NOT** come in contact or hang up on the frame or frame components when installing the engine.

2. Carefully lower the engine into the machine.
3. Carefully align the engine with the bell housing. Install 12 bolts and washers that fasten the bell housing to the engine. Do not tighten at this time.

**NOTE:** View is from underneath the machine.



RAPH11TLB0020BA 2



**Suggest:**

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

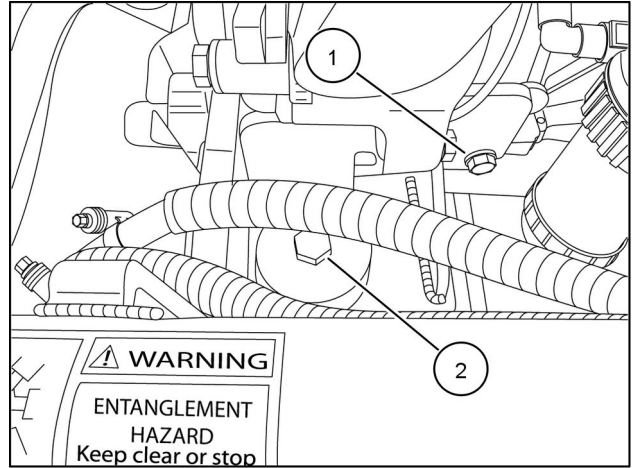
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4. Install the engine mounts **(1)** on both sides of the engine and tighten to specification.
5. Install and tighten the engine mount bolts **(2)** to the frame. Tighten to specification evenly on each side.

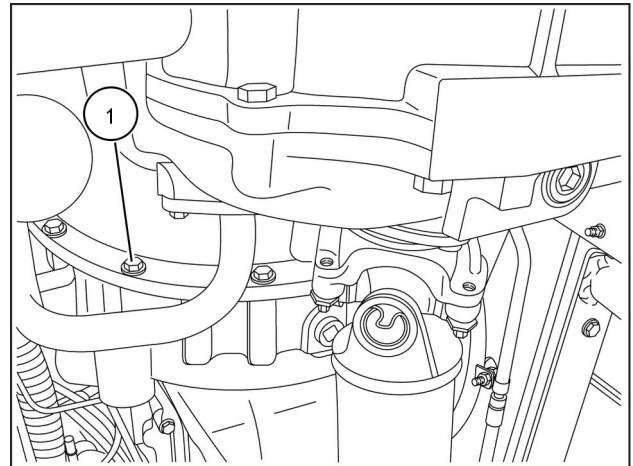


RAPH12FRK0103BA 3

**Specification**

Mount-to-Engine Bolt <b>(1)</b> Torque	<b>89 - 107 N·m (66 - 79 lb ft)</b>
Mount-to-Frame Bolt <b>(2)</b> Torque	<b>212 - 241 N·m (156 - 178 lb ft)</b>

6. Tighten the 12 bell housing bolts **(1)** to specification.  
**NOTE:** View is from underneath the machine.

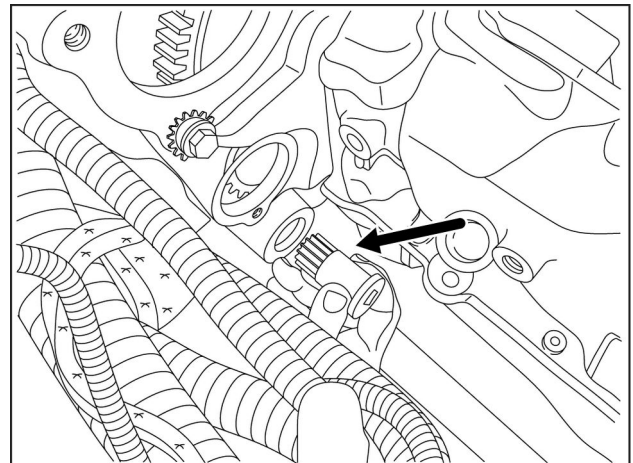


RAPH11TLB0020BA 4

**Specification**

Engine-to-Bell Housing Bolt Torque	<b>52 - 57 N·m (38.4 - 42.0 lb ft)</b>
------------------------------------	--

7. Remove the lifting device from the engine lift eyes.
8. Using the engine turning tool **380000988**, rotate the engine until the flex plate bolt hole is aligned with the opening.



RAPH11TLB0017BA 5

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