SERVICE MANUAL

B80B

Backhoe Loader

Part number 48143704
1st edition English
April 2017

NEW HOLLAND CONSTRUCTION

Contents

INTRODUCTION

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

⚠ DANGER

Improper operation or service of this machine can result in an accident.
Do not operate this machine or perform any lubrication, maintenance, or repair on it until you have read and understood the operation, lubrication, maintenance, and repair information.
Failure to comply will result in death or serious injury.

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⚠ WARNING

Maintenance hazard!
Always perform all service procedures punctually at the intervals stated in this manual. This ensures optimum performance levels and maximum safety during machine operation.
Failure to comply could result in death or serious injury.

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NOTICE: *Extreme working and environmental conditions require shortened service intervals.*

Use Case fluids, lubricants, and filters for the best protection and performance of your machine. All fluids, lubricants, and filters must be disposed of in compliance with environmental standards and regulations. Contact your Dealer with any questions regarding the service and maintenance of this machine.

Use this manual with the operator's manual to understand and perform the complete service procedures. Read the safety decals and information decals on the machine. Read the Operator’s Manual and safety manual. Understand the operation of the machine before you start any service.

Before you service the machine, put a “Do Not Operate” tag on the steering wheel or over the key switch. Ensure the tag is at a location where everyone who might operate or service the machine may see clearly.

Plastic and resin parts

- Avoid using gasoline, paint thinner, etc. when cleaning plastic parts, console, instrument cluster, etc.
- Use only water, mild soap, and a soft cloth when you clean these parts.
- Using gasoline, thinners, etc. can cause discoloration, cracking, or deformation of the part being cleaned.

Safety rules - Ductile iron

⚠ DANGER

Altering cast ductile iron can cause it to weaken or break.
Before you weld, cut, or drill holes on any part of this machine, make sure that the part is not cast ductile iron.
Failure to comply will result in death or serious injury.

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Altering cast ductile iron can cause it to weaken or break. Unauthorized modifications to cast ductile iron parts can cause death or serious injury. Do not weld, cut, drill, repair, or attach items to cast ductile iron parts on this machine.

Before you weld, cut, or drill holes on any part of this machine, make sure the part is not cast ductile iron. See your dealer if you do not know if a part is cast ductile iron.

The following items are examples of cast ductile iron parts. There may also be other parts made of cast ductile iron that are not on the list below.

- two-wheel drive steering link
- dump links
- front axle
- stabilizers
- extend-a-hoe
- swing tower
- bucket linkage
- Air-Conditioning (A/C) compressor mounting bracket

Do not make any unauthorized modifications. Consult an authorized dealer before making any changes, additions, or modifications to this machine.

SERVICE MANUAL

Engine

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Engine - Remove

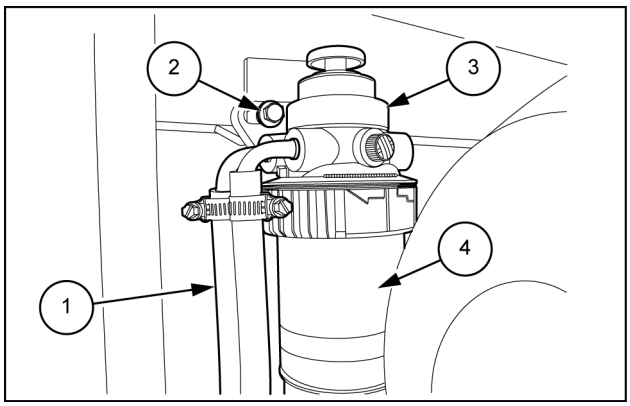
Prior operation:
Refer to **Basic instructions**
Prior operation:
Refer to **Hood - Remove (90.100)**
Prior operation:
Refer to **Radiator - Remove (10.400)**
Prior operation:
Refer to **Exhaust manifold - Remove (10.254)**

NOTE: *Put identification tags on all disconnected hoses and wires. Close all disconnected hoses and fittings with caps and plugs immediately.*

NOTE: *The images in this procedure may be different from your machine and are for reference only.*

ATTENTION: *Allow the engine to reach normal temperature before performing any service or maintenance procedure. Wear safety gloves and goggles for protection from hot components and fluids or severe burns could result.*

1. Drain engine oil by loosening the drain nut. Collect the oil in a clean container, cap it and keep it aside in a clean place.
2. Disconnect the fuel return and inlet lines **(1)** from the mud filter **(4)** and cap them immediately.
   Loosen the mounting bolts **(2)** and remove the assembly **(3)** from the machine.



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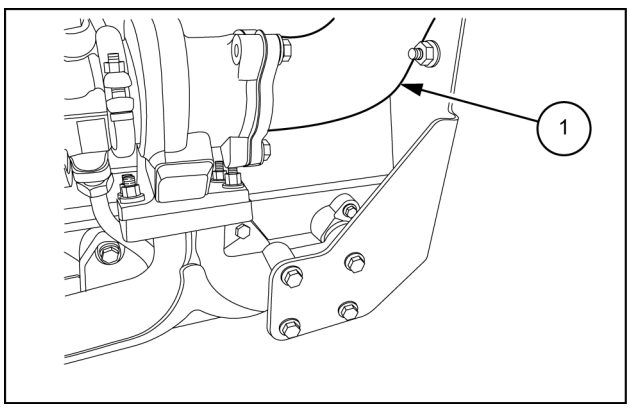
3. Remove the exhaust pipe **(1)** of the turbocharger and cap it.



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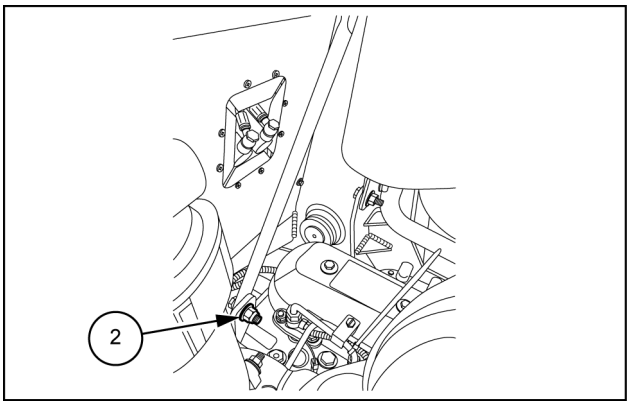
4. Remove the muffler support bracket bolt **(2)**.



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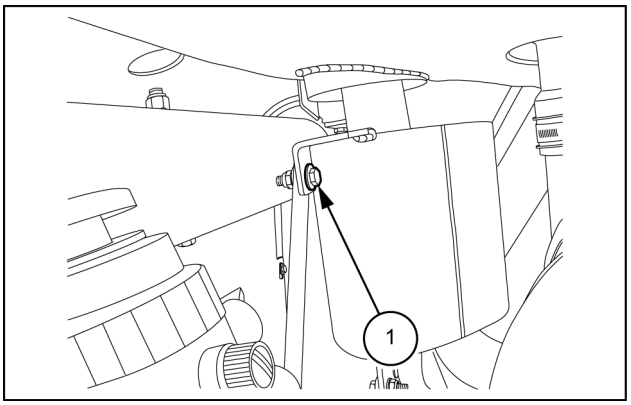
5. Remove the bolt **(1)** and the muffler assembly from the engine.



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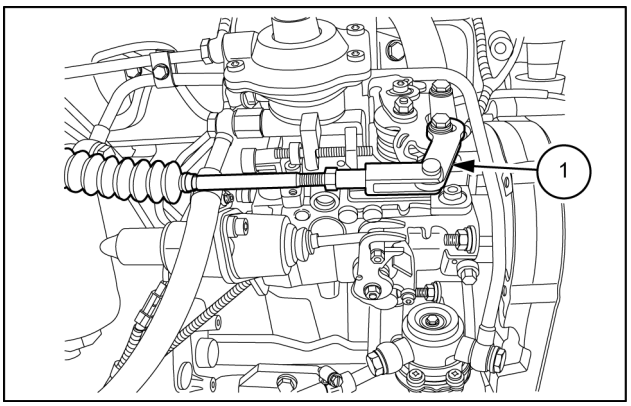
6. Disconnect the throttle linkage **(1)** from the pump and set it aside.



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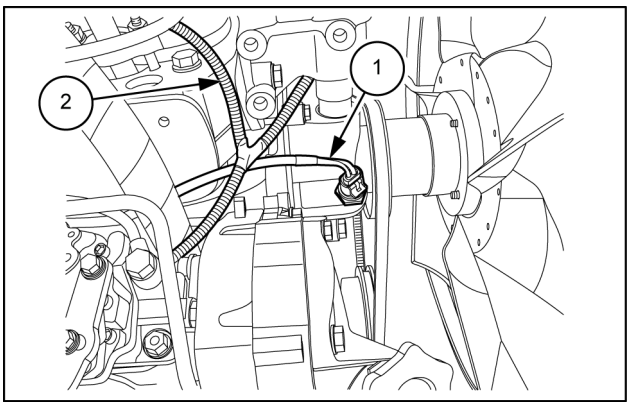
7. Disconnect the coolant temperature **(1)**, alternator, oil pressure **(2)** and starter connectors from engine. Remove the starter.
   Refer to **Engine starter - Remove (55.201)**.



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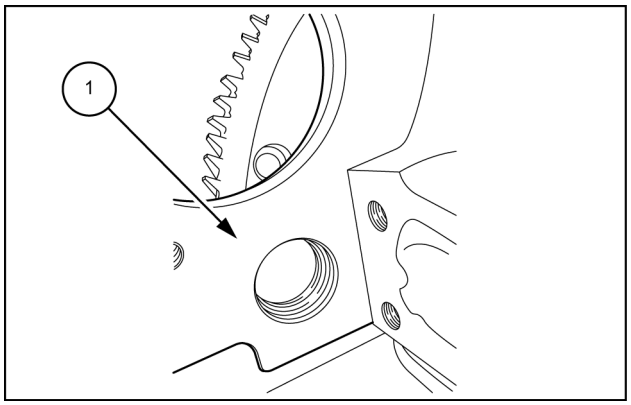
8. Remove the access cover from the flywheel housing **(1)**.
   Turn the flywheel for access to the cap screws.
   Remove the cap screws to disconnect the torque converter from the engine.
   Connect lifting equipment to the lifting eyes on the engine to hold the engine in place.



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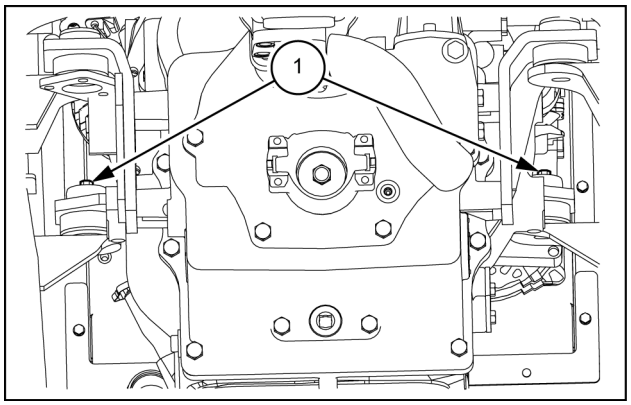
9. Remove the bolts **(1)**, flat washers, and nuts from the front engine mount.
   Loosen and remove the cap screws and flat washers that fasten the transmission to the engine.



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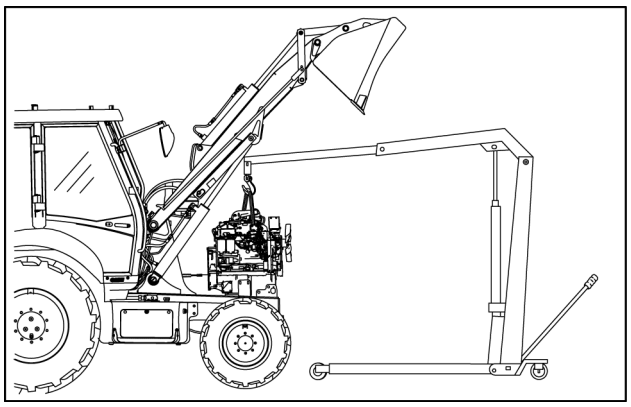
   Raise and remove the engine from the machine.

NOTICE: *Make sure that the flex plate/converter assembly stays in place on the transmission. If the engine will be separated from the transmission for an extended period of time fasten the flex plate/converter assembly in place on the transmission.*



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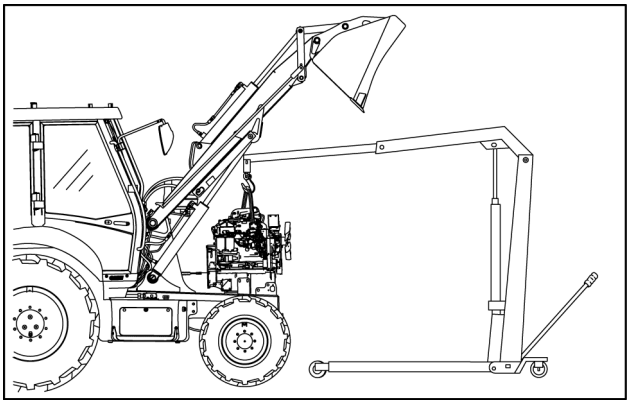
Engine - Install

If applicable, remove caps and plugs from previously disconnected hoses and fittings. Remove identification tags after making the hose and wire connections.

NOTE: *The photos in this procedure may be different from your machine and are for reference only.*

1. Position the engine in the machine.

NOTICE: *Make sure that the flex plate/converter assembly stays in place on the transmission.*



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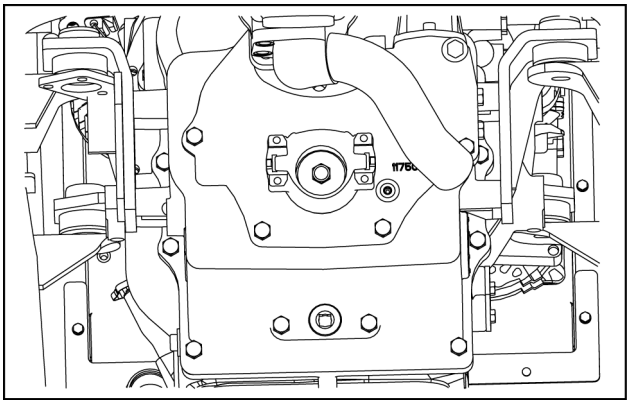
2. Install and tighten the flat washers and cap screws securing the transmission to the engine.

   Tighten cap screws to a torque of **52 – 57 N·m** (**38 – 42 lb ft**).

   Install and tighten the front engine mounting bolts, flat washers, and nuts.

   Tighten the self-locking nuts to a torque of **90 – 100 N·m** (**66 – 74 lb ft**).

3. Disconnect the lifting equipment from the lifting eyes on the engine.



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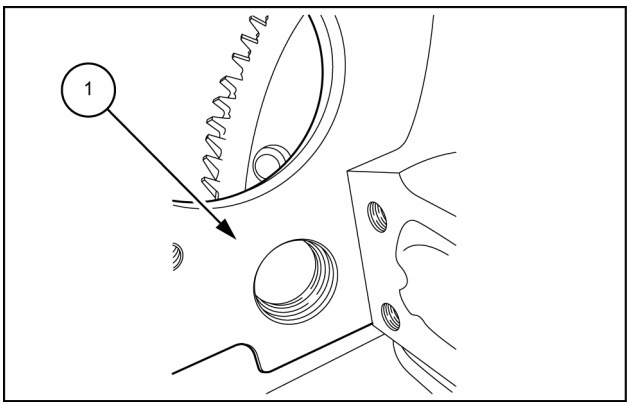
4. Tighten the cap screws through the access in the flywheel housing **(1)** and fasten the flywheel to the flex plate. Tighten cap screws to a torque of **52 – 57 N·m** (**38 – 42 lb ft**) when fixing the torque converter.
5. Install the access cover to the bell housing.

   Tighten it to a torque value of **52 – 57 N·m** (**38 – 42 lb ft**).

6. Install the starter onto the engine.

   Tighten it to a torque value of **40 N·m** (**29 lb ft**).
   Refer to **Engine starter - Install (55.201)**.



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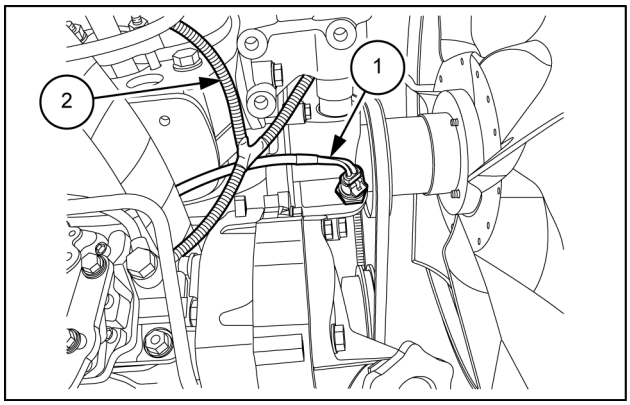
7. Connect the coolant temperature **(1)**, alternator, oil pressure **(2)** connectors.



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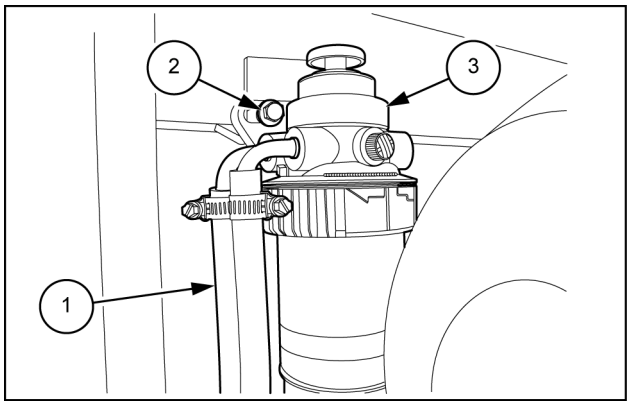
8. Connect the fuel return and inlet lines **(1)** and mount the fuel filter assembly **(3)** by tightening the mounting bolts **(2)**.



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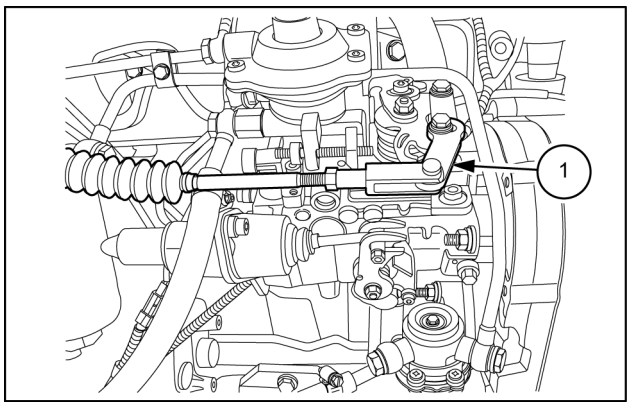
9. Connect the throttle rod **(1)**.
10. Connect the throttle cable from the mounting bracket.
11. Connect the electrical connector for the oil pressure switch.



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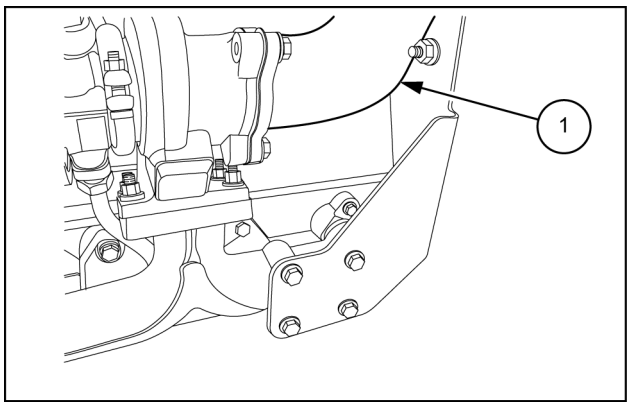
12. Install the exhaust pipe **(1)** of the turbocharger to the muffler end.

    Tighten it to a torque value of **6.5 – 7.5 N·m** (**4.8 – 5.5 lb ft**).



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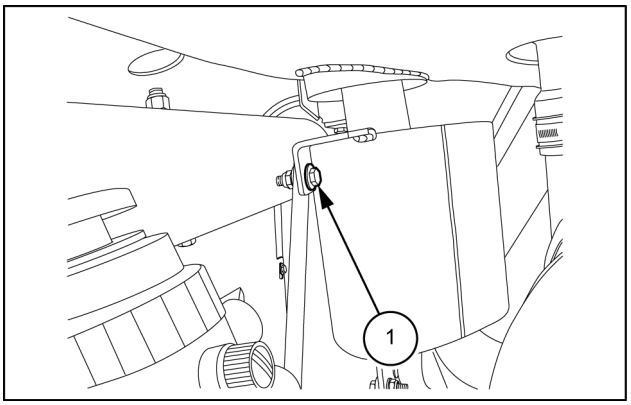
13. Attach the muffler and brackets **(1)** to the engine.

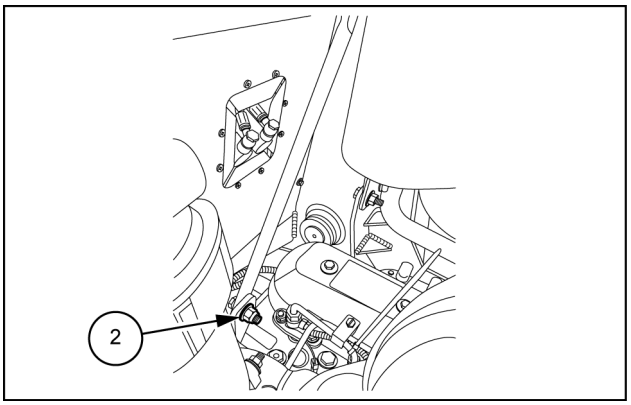
    Tighten it to a torque value of **32 – 38 N·m** (**24 – 28 lb ft**).



PTIL13TLB0958AB 8

14. Install the muffler support bracket bolt **(2)**.

    Tighten it to a torque value of **32 – 38 N·m** (**24 – 28 lb ft**).



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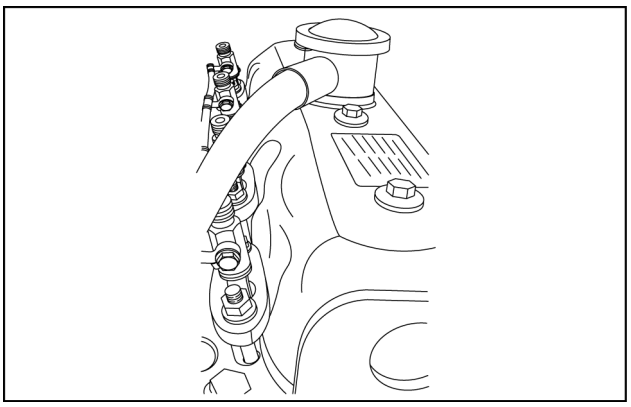
15. Attach the aspiration hose and the crank case ventilation hose.
16. Install the exhaust manifold. Refer to **Exhaust manifold - Install (10.254)**.
17. Install the cooling pack. Refer to **Radiator - Install (10.400)**.
18. Fill the engine oil and cooling system up to the prescribed level.
19. See capacities in **Capacities** for specifications.
20. Install air cleaner assembly.
21. Install the hood. Refer to **Hood - Install (90.100)**.
22. Connect the battery terminals. Refer to **Basic instructions**.
23. Start the engine and keep it in idling.
24. Unlock the support strut lock and lower the loader arm.



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Engine - Troubleshooting

NOTE: *The following table lists problems and their possible causes with recommended remedial action.*

ATTENTION: *When attending a repair the cause of the problem must also be investigated and corrected to avoid repeat failures.*

Problem	Possible Cause	Correction
Engine does not develop full power	Clogged air cleaner	Clean or renew element
	Fuel line obstructed	Clean
	Faulty injectors	Clean and reset
	Incorrect valve clearance adjustment	Clean and reset
	Burnt, worn or sticking valves	Replace valves with new or oversize, and/or machine the valve guide bores
	Blown head gasket	Check head flatness and fit new gasket
	Incorrect fuel delivery	Check injectors and pump
	Low cylinder compression	Renew piston rings or re-bore/re-sleeve as necessary
Oil pressure warning light fails to operate	Bulb burnt out	Renew bulb
	Warning Light pressure switch faulty	Renew pressure switch
	Warning light circuit faulty	Check and renew wiring
Excessive exhaust smoke	Exhaust leak on exhaust manifold	Fit new gasket
	Air cleaner dirty or restricted	Clean
	Excessive fuel delivery	Overall injection pump and injectors
Engine knocks	Diluted or thin oil	Check crankshaft bearings for damage, change as required. Drain and refill with specified oil and renew filter. Ascertain cause of dilution
	Insufficient oil supply	Check oil level and top up as necessary. Overhaul or renew pump as necessary. Check oil filter is not clogged
	Low oil pressure	Overhaul pump or relief valve as necessary
	Excessive crankshaft end play	Replace thrust washer
	Excessive connecting rod or main	Install new bearing inserts and/or bearing clearance re-grind crankshaft
	Bent or twisted connecting rods	Renew connecting rods
	Crankshaft journals out of round	Re-grind crankshaft and fit undersize bearing inserts
	Excessive piston to cylinder	Re-bore/re-sleeve block and fit i bore clearance new pistons
	Excessive piston ring clearance	Fit new pistons and rings
	Broken rings	Fit new rings, check bore and pistons for damage
	Excessive piston pin clearance	Fit new piston or pin
	Piston pin retainer loose or missing	Install new retainer, and check bore/pistons for damage
	Excessive camshaft play	Install new thrust plate
	Imperfections on timing gear teeth	Renew timing gear
	Excessive timing gear backlash	Check and adjust backlash /renew, timing gear
Engine overheats	Coolant hose connection leaking or collapsed	Tighten hose connection, renew hose if damaged
	Radiator cap defective or not sealing	Renew radiator cap
	Radiator leakage	Repair/renew radiator
	Improper fan belt adjustment	Re-adjust fan belt
	Radiator fins restricted	Clean with compressed air
	Faulty thermostat	Renew thermostat
	Internal engine leakage	Check for source of leakage. Renew gasket or defective parts
	Water pump faulty	Overhaul water pump

Suggest:

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Problem	Possible Cause	Correction
	Exhaust gas leakage into cooling	Renew cylinder head gasket
	Coolant aeration	Tighten all connections and check coolant level is correct. Ensure cylinder head gasket has not blown
	Cylinder head gasket improperly installed	Renew cylinder head gasket installed
	Hot spot due to rust and scale or clogged water jackets	Reverse flush entire clogged water
	Obstruction to radiator air flow	Remove the obstruction
	Extended engine idling	Do not allow engine to idle for long periods
	Oil cooler tube blocked	Clean
	Radiator core tubes blocked	Check free flow
Water temperature gauge fails to reach normal operating temperature	Faulty temperature sender	Renew sender switch
	Incorrect or faulty thermostat	Renew thermostat
	Faulty water temperature gauge	Renew temperature gauge
Low oil pressure	Engine oil level low	Top up, as necessary
	Wrong grade of oil	Drain and refill with correct grade of oil
	Blocked oil pump sump screen	Clean pump screen
	Oil pressure relief valve faulty	Fit new relief valve
	Oil pump worn	Renew oil pump
	Excessive oil pump rotor and shaft assembly clearance	Overhaul pump
	Excessive main or connecting rod bearing clearance	Install new bearings inserts and bearing clearance or re-grind crankshaft if necessary
Excessive oil consumption	Engine oil level too high	Reduce oil level
	External oil leaks	Renew gaskets and seals, where necessary. Check mating surfaces for damage or distortion
	Worn valves, valve guides or bores	Renew
	Cylinder head gasket leaking	Renew gasket. Check head for damage or distortion
	Oil loss past the pistons and rings	Renew rings and/or re-bore/re-sleeve block as necessary
	Oil cooler leak	Repair/renew oil cooler assembly