

770 EX
770 EX MAGNUM
Tractor Loader

SERVICE MANUAL

Part number 48190544

English

September 2017

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CASE
CONSTRUCTION

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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.

D0010A

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.

W0132A

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.

D0148A

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
- 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.

Safety rules - Ductile iron



⚠ DANGER

Improper operation or service of this machine can result in an accident.

Any unauthorized modifications made to this machine can have serious consequences. Consult an authorized dealer on changes, additions, or modifications that may be required for this machine. Do not make any unauthorized modifications.

Failure to comply will result in death or serious injury.

D0030A

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 are cast ductile iron parts:

- two wheel drive steering link
- dump links
- front axle
- bucket linkage
- Air conditioning (A/C) compressor mounting bracket

Unauthorized modifications to cast ductile iron parts can cause injury or death. Welding, cutting, or drilling can cause cast ductile iron to break. Do not weld, cut, or drill to repair or to attach items to cast ductile iron parts on this machine.



SERVICE MANUAL

Engine

**770EX Magnum
770EX**

Engine - General specification

General specifications (For 770 EX/EX Magnum)

General specifications	770 EX	770 EX Magnum
Make	IVECO	
Type	4 stroke, diesel, turbocharged aftercooler, direct injection, water cooled	
Power	76 Hp	86 Hp
No of cylinders	4	
Bore	104 mm (4 in)	
Stroke	115 mm (5 in)	
Cubic capacity	3908 cm ³ (238 in ³)	
Compression ratio	18:01	
Firing order	1-3-4-2	
Idle speed	1000 RPM	
Maximum no load speed	2450 RPM	
Rated speed	2200 RPM	

Engine block (For 770 EX/EX Magnum)

Engine block	Dry type pre fitted liner with collar
Cylinder liner seat diameter in engine block	106.850 – 106.900 mm (4.207 – 4.209 in)
Cylinder sleeve O-D	107.020 – 107.050 mm (4.213 – 4.215 in)
Interference between liners and seats in block	0.12 – 0.20 mm (0.005 – 0.008 in)
Liner O-D oversize	0.200 mm (0.008 in)
Cylinder liner inner diameter	104.00 – 104.024 mm (4.09 – 4.095 in)
Maximum ovality and taper due to wear	0.120 mm (0.005 in)
Liner inner diameter oversize	0.400 – 0.800 mm (0.016 – 0.031 in)

Camshaft bush seat diameters (For 770 EX/EX Magnum)

• Front	54.780 – 54.805 mm (2.157 – 2.158 in)
• Intermediate C33	54.280 – 54.305 mm (2.137 – 2.138 in)
• Rear	53.780 – 53.805 mm (2.117 – 2.118 in)
Tappet seat bore diameter	15.000 – 15.018 mm (0.591 – 0.591 in)
Tappet oversize	0.100 mm (0.004 in) 0.200 mm (0.008 in) 0.300 mm (0.012 in)
Main bearing seat bore diameter	84.200 – 84.230 mm (3.315 – 3.316 in)

Cylinder head (For 770 EX/EX Magnum)

Valve guide seat bore diameter in head	13.950 – 13.983 mm (0.549 – 0.551 in)
Valve guide oversize	0.200 mm (0.008 in)
Valve stand-in	0.700 – 1.000 mm (0.028 – 0.039 in)
• Maximum stand-in permitted	1.300 mm (0.051 in)
Injector standout	0.050 – 0.700 mm (0.002 – 0.028 in)
• Max stand-out permitted	1.000 mm (0.039 in)
Original cylinder head height	92 mm (4 in)
Maximum head dressing allowed	0.500 mm (0.020 in)

Exhaust valves (For 770 EX/EX Magnum)

Valve head diameter	41.00 – 41.25 mm (1.61 – 1.62 in)
Valve stem diameter	7.985 – 8.000 mm (0.314 – 0.315 in)
Face angle	45° 30'±7'
Tappet clearance (Cold)	0.300 mm (0.012 in)
Cam lift	6.1277 mm (0.2412 in)
Valve lift	10.8679 mm (0.4279 in)

Intake valves (For 770 EX/EX Magnum)

Valve head diameter	43.300 – 45.500 mm (1.705 – 1.791 in)
Valve stem diameter	7.985 – 8.000 mm (0.314 – 0.315 in)
Face angle	60° 30'±7'
Tappet clearance (cold)	0.300 mm (0.012 in)
Cam lift	5.8885 mm (0.2318 in)
Valve lift	10.4437 mm (0.4112 in)

Valve springs (For 770 EX/EX Magnum)

Number per valve	1
Free length	44.600 mm (1.756 in)
Length loaded at 26.1 – 28.9 kg (57.5 – 63.7 lb)	34.000 mm (1.339 in)
Length loaded at 51.2 – 56.5 kg (112.9 – 124.6 lb)	23.800 mm (0.937 in)

Valve timing (For 770 EX/EX Magnum)

Intake opening (before top dead centre)	15°
Intake closing (after bottom dead centre)	45°
Exhaust opening (before bottom dead centre)	56°
Exhaust closing (after top dead centre)	26°

Valve inserts (For 770 EX/EX Magnum)

Valve guide OD	13.933 – 14.016 mm (0.549 – 0.552 in)
Valve guide oversize	0.200 mm (0.008 in)
Valve guide interference fit in housing cylinder head	0.0050 – 0.0500 mm (0.0002 – 0.0020 in)
Valve guide fitted ID after reaming	8.023 – 8.043 mm (0.316 – 0.317 in)
Valve stem clearance in guide	0.0230 – 0.0580 mm (0.0009 – 0.0023 in)
Maximum wear clearance	0.130 mm (0.005 in)
Maximum valve stem eccentricity over one revolution with stylus on sealing face	0.030 mm (0.001 in)

Engine - Torque

Tightening torques

Description	Thread size	Torque	Angle
Capscrew, cylinder head (C1)	M12 x 1.25	40 N·m (354 lb in)	130°±5 + 140°± 5
Capscrew, main bearing caps (C2)	M14 x 1.25	80 N·m (708 lb in)	90°
Capscrew, timing cover and case (C3)	M12 x 1.25	40 N·m (354 lb in)	-
Capscrew, connecting rod caps (C4)	M11 x 1.25	40 N·m (354 lb in)	60°
Capscrew, flywheel (C5)	M12 x 1.25	40 N·m (354 lb in)	60°

Description	Thread size	Torque	Angle
Capscrew, rocker shaft bracket (C6)	M8 x 1.25	25 N·m (221 lb in)	-
Nut, crankshaft pulley hub (C7)	M30 x 1.5	300 N·m (2655 lb in)	-
Capscrew, fan and alternator drive pulley (C8)	M12 x 1.25	49 N·m (434 lb in)	-
Nut, injection pump shaft gear (C9)	M12 x 1.25	64 N·m (566 lb in)	-
Nuts, injection pump to support (C10)	M12 x 1.25	23 N·m (204 lb in)	-
Retaining screws, additional weights (C11)	M12 x 1.25	110 N·m (974 lb in)	-
Injector clamp nut	M8	18 N·m (159 lb in)	-
Sheet metal oil pan	M10 x 1.25	35 N·m (310 lb in)	-

Engine - Sealing

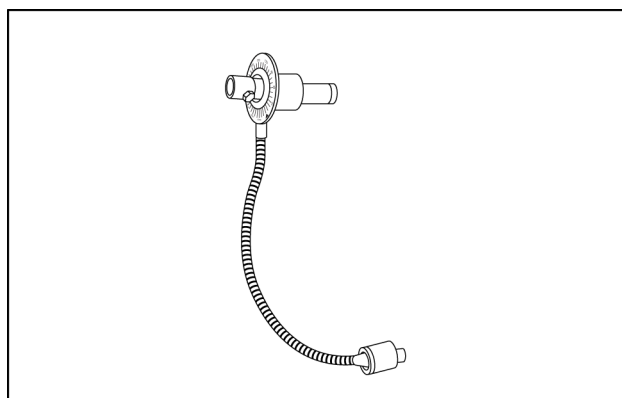
Sealants

Description	Specification
Adopter for oil filter (S1)	LOCTITE® 270
Adopter for tachometer cable (S2)	LOCTITE® 243™
Flywheel housing to engine block (S3)	LOCTITE® 510™
Timing gear case studs (S4)	LOCTITE® 270
Timing gear cover dowel pin (S5)	LOCTITE® 270
Starter motor to flywheel housing (S6)	LOCTITE® 510™
Allen plug in cylinder head thermostat housing (S7)	LOCTITE® 243™
Cylinder head exhaust manifold studs (s8)	LOCTITE® 270
Oil sump to engine block (S9)	Loctite - 5699
Silencer mounting studs on exhaust manifold (S10)	Loctite - 77164
Flywheel bolt (S11)	LOCTITE® 243™

Engine - Special tools

ATTENTION: Operations described in this section of the manual must be performed using the following tools to work safely and achieve the best technical results.

380000304 Angular torquing gauge



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Engine - Static description

The S8000 is a 4 cylinder turbo charged and after cool diesel engine.

It features a cross flow cylinder head, with the inlet and exhaust manifolds on opposite sides of the cylinder head.

The fuel and air combustion process, takes place in the specially designed bowl in the crown of the pistons.

Cylinder head assembly

The cylinder head incorporates valves and springs, with the valve rocker arm shaft assembly bolted to the cylinder block through the cylinder head.

Cylinder head retaining bolts are evenly spaced with a six-point pattern around each cylinder, this ensures an even clamping load across the cylinder head.

The intake and exhaust manifolds are bolted to the head, the intake manifold is mounted on the right side of the engine, with the diesel injectors mounted outside the rocker cover.

The exhaust manifold is mounted on the left side of the engine.

Water outlet connections and thermostat being attached to the front of the cylinder block directly behind the radiator valve guides are inserted into the cylinder head, and replaceable.

Special replaceable cast alloy valve seats are pressed into each valve port during manufacturing.

No oversize valve seats on guides are available. All valves are fitted with positive value rotators, valve clearance is maintained by adjustment of the self locking adjusting screw, mounted in each of the rocker arms.

Camshaft assembly

The camshaft runs in 3 replaceable bushes.

The camshaft drive gear is in mesh with and driven by the camshaft idler gear which is driven by the crankshaft timing gear.

Camshaft end thrust is controlled by a thrust plate bolted to the block, and located between the camshaft gear and the front camshaft journal.

Cylinder block assembly

The cylinder block is an alloy cast iron with deep cylinder skirts & water jackets for cooling the cylinders.

The cylinder bores are machined integral with the cylinder block, during the manufacturing process.

Cylinders are in line, vertical and numbered 1 to 4 from radiator to the engine rear.

The oil sump, which is attached to the bottom of the cylinder block, is the reservoir for the engine oil lubrication system.

A cast iron engine front cover and front plate is attached to the front of the engine and covers all of the timing gear assembly.

Crankshaft assembly

The crankshaft is supported in the cylinder block by 5 main bearings in **76 Hp/ 86 Hp** engines.

The crankshaft is manufactured from steel with machined finished crank webs. End thrust is controlled by a thrust bearing incorporated in the center main bearing of the crankshaft.

Connecting rods

Connecting rods "wedge" shaped at the small end has been designed to reduce the reciprocating weight at the piston end.

The connecting rods are heavy beam construction and are assembled as a matched set to each engine, attached to the crankshaft, by means of insert type bearings.

They are retained in position by the connecting rod big end cap and secured by two bolts per rod.

The small end of the connecting rod is fitted with a replaceable bronze bushing, through which the free floating piston pin is fitted.

The steel pin being held in place within the piston by two snap rings.

Pistons

Pistons are constructed of an aluminum silicon alloy with notch type combustion chamber being recessed in the piston crowns.

Each piston has two compression rings and one oil control ring, to reduce the friction and increase positive seating. All rings are located above the piston pin.

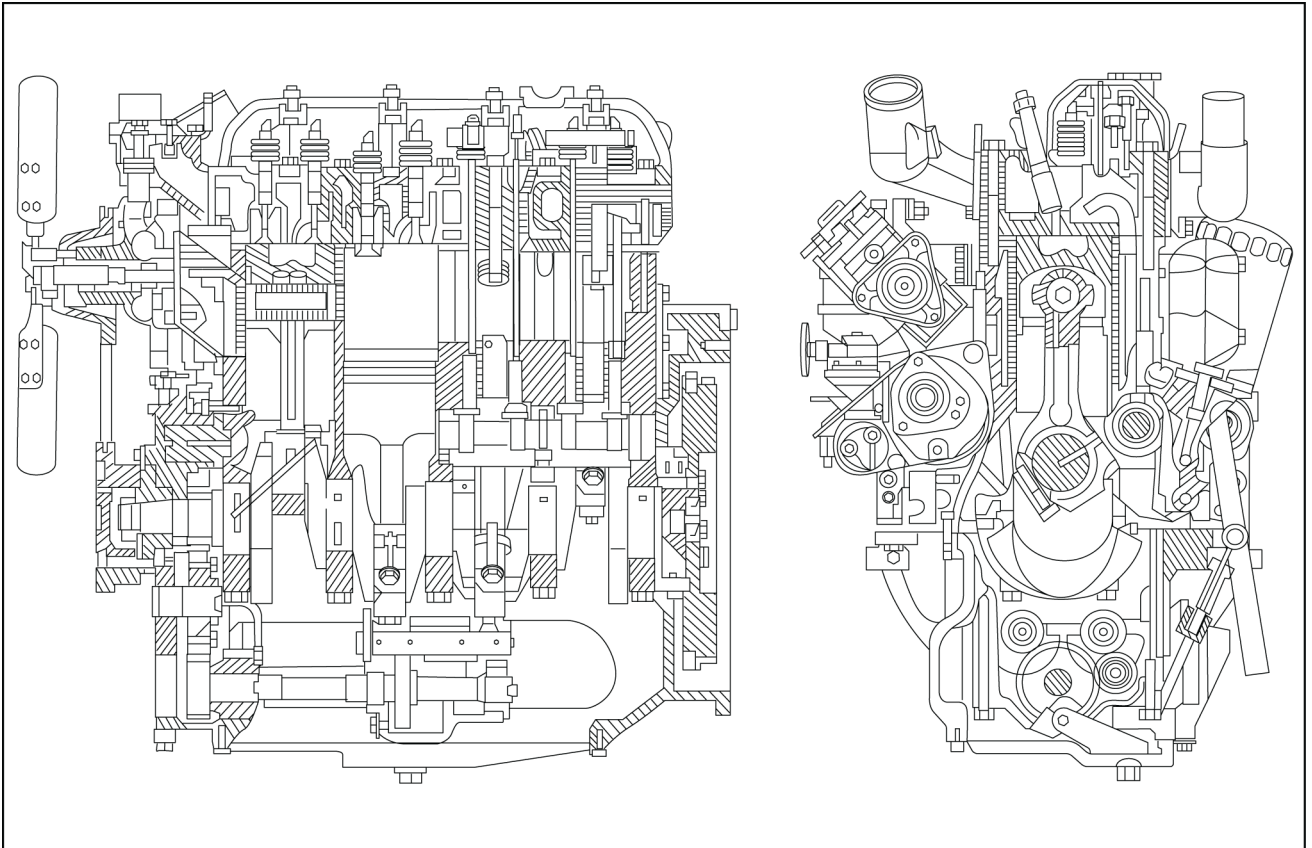
Manifolds

The cross flow design aluminum intake, and cast iron exhaust manifolds are on opposite sides of the cylinder head.

This is designed to maintain balanced heat distribution within the cylinder head.

The configuration of the manifolds also ensures minimum heat transfer to the intake manifold.

The intake manifold is connected through hose to air cleaner.



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Timing gears

The crankshaft timing gear is heated and press fitted on to the front of the crankshaft, to a high degree of accuracy during manufacturing.

This enables precise timing being maintained during the life of the engine.

The crankshaft gear drives the idler gear, which is attached to the front of cylinder block.

The idler gear then drives the camshaft and the injection pump via meshing helical gears.

The camshaft gear is bolted to the front of the shaft and is keyed to maintain position of the gear on the camshaft.

Lubrication system

Lubrication of the engine is maintained by a gear type oil pump mounted on the front end of the crank shaft.

The pump drains oil from the engine oil sump through a tube and screen assembly.

A spring loaded relief valve is integral with the oil filter and prevents over pressurization of the system.

A spin on type oil filter is mounted externally to its support housing on the left hand side of the engine.

Oil flows from the filter to the main oil gallery, which runs the length of the cylinder block, which also intersects the camshaft follower chamber.

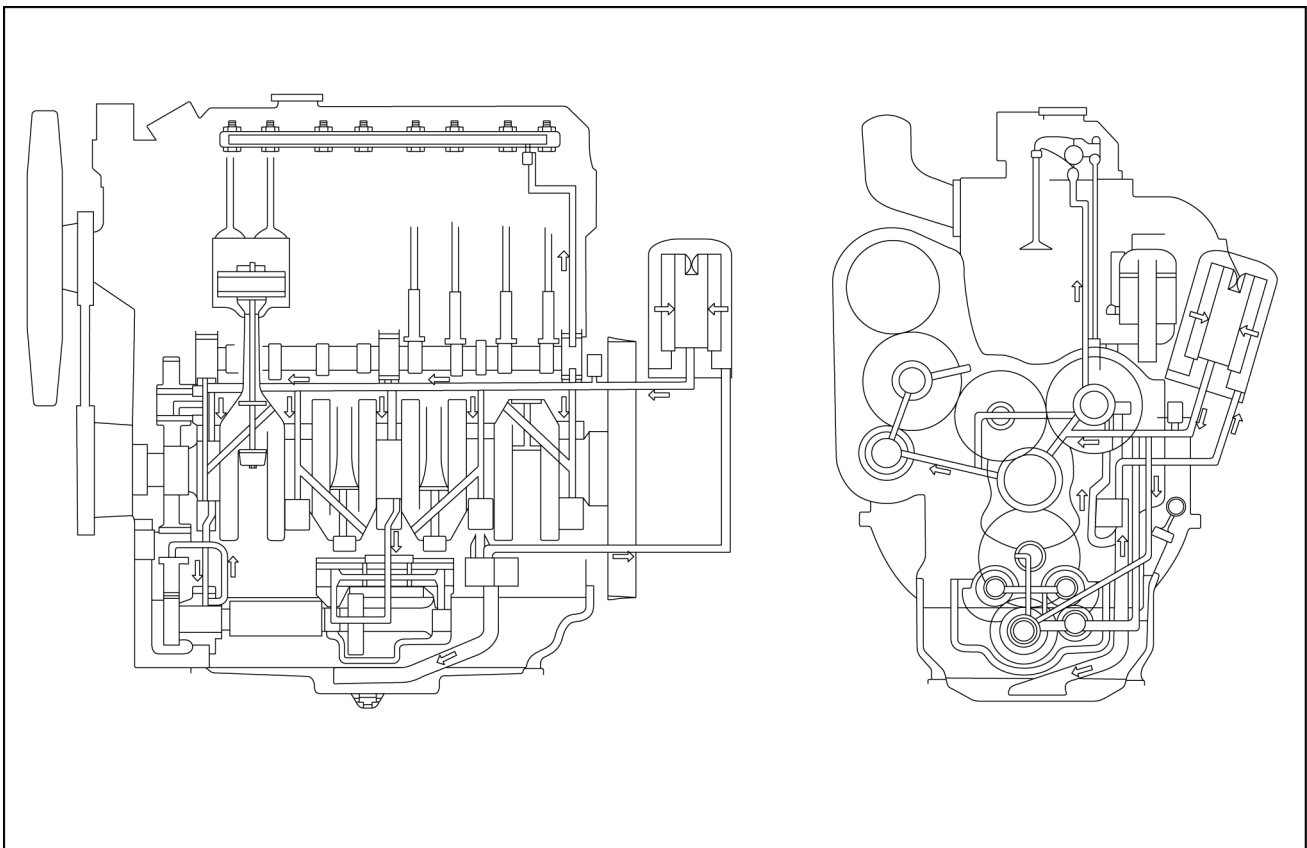
The main gallery also supplies oil to the crankshaft main bearings, connecting rods both big and small ends and timing gear bushes.

The inner side of the pistons and pins are lubricated by oil pressure jets (piston cooling nozzle).

Timing gears are lubricated by splashed oil from the cam follower chamber and the pressure lubricated camshaft drive gear bushing.

An intermittent flow of oil is directed to the valve rocker arm shaft assembly via a drilled passage in the cylinder block.

This is located vertically above No. 3 camshaft bearing and aligns to a hole in the cylinder head. The rotation of the camshaft allows a controlled intermediate flow of lubrication.



Cooling system

The function of the water pump mounted at the front of the engine, is to maintain a continuous flow of water around the cooling system inside the engine.

This is essential to ensure correct engine temperature, and performance, during vehicle operation.

The pump is driven by a 'V' belt from the crankshaft pulley, when the engine is running.

The cooling system for the new generation of engines, is of recirculating bypass type with full length water-jackets for the bottom tank of the radiator by the water pump, which passes the coolant to the cylinder block.

This coolant then flows through cored passages to cool the cylinder walls.

Passages in the cylinder head gasket allow coolant to flow from the cylinder block, into the cylinder head cored passages also conduct the coolant to the fuel injector nozzle locations before reentering the water pump below the thermostat.

The thermostat is located in the top of the water pump body, and controls the flow of the water as required by temperature changes.

NOTE: *A faulty thermostat may cause the engine to operate at too high (hot) or low (cold) on operating temperature. If not replaced this could result in a damaged engine or impaired engine performance.*

When the thermostat is closed a recirculating bypass is provided to allow the coolant to recirculate from block to the head for a faster warm-up.

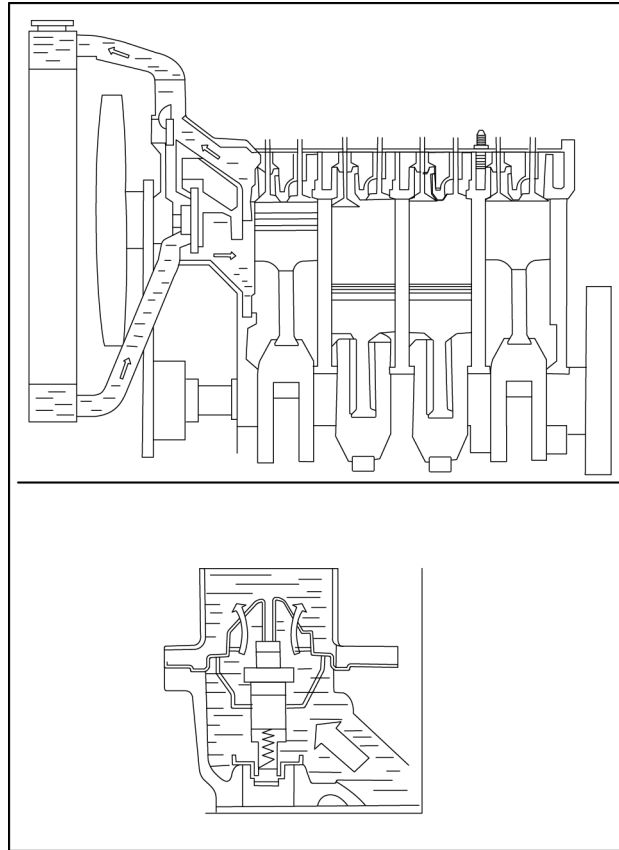
Once the engine has reached its normal operating temperature, the thermostat will open and allow water to be drawn through the radiator by the pump action.

Cooled water then returns to the engine system.

Cooling occurs as the coolant passes down through the radiator cores, which are exposed to the air as it is drawn through the radiator by the fan.

NOTE: *Do not operate an engine without a thermostat. The cooling system incorporates a drain plug, on the left hand side of the cylinder block. The cap on the radiator is a system pressure cap and should not be removed unless refilling the system from empty or for top up of coolant.*

The engine cooling fan is mounted on a pump pulley which is belt driven from the crankshaft.



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Fuel system

The diesel fuel system consists of fuel tank, water separator filter, lift pump, fuel filters, Bosch rotary type fuel injection pump, fuel injectors, and interconnecting tubes and lines.

The fuel injection pump is pressure fed from the lift pump.

Fuel flows from the fuel tank to the sediment separator (incorporated in lift pump), through the lift pump, then through the primary fuel filter and then to secondary fuel filter.

From the filter the fuel passes to the fuel injection pump to supply fuel at high pressure to each injector and also provides extra fuel which lubricates and cools the injection pump.

This extra fuel is recirculated to the fuel tank, by means of the injector leak-off line.

Fuel shutoff (Injection pump)

Fuel injection pump is equipped with an electrically operated fuel shutoff solenoid is energized by operation of the ignition switch mounted in the instrument panel.

With the ignition is switched "OFF" a spring loaded plunger in the solenoid (held in position by the spring), prevents fuel flowing into the pump from the main fuel feed port.

With the ignition switched "ON" the magnetized plunger is energized by an internal coil and is drawn up into the body of the solenoid.

Fuel is then allowed to flow through the open port and into the pump.

Lift pump

A diaphragm type fuel lift pump is located between tank and primary fuel filter.

The pump draws fuel from the tank via the sediments (incorporated in lift pump) and passes fuel under pressure to the primary and secondary fuel filter and onto the fuel injection pump.

Fuel filters

Spin-on type fuel filters situated to the right hand side of the engine, receives fuel from lift pump. From the filter head the fuel is diverted down through the filter element and into the base chamber. The filtered fuel then flows up the center tube of the element to the filter head outlet and into the injection pump.

Water separator filter

The filter is provided in the circuit to separate the water content from the fuel if any. Water normally mixes with the fuel due to condensation. The filter has to be periodically drained.

Engine and crankcase - Service instruction

Engine in the manual is shown removed from the machine.

However there are certain operations that can be performed with the engine still in the machine, or separated from the transmission housing.

The engine overhaul procedure initially describes the assembly process for rebuilding an engine using all new components.

Following this section are defined headings, which describe detailed repair specifications and procedures, where components are suitable for reuse.

Refer to **Engine - General specification (10.001)** to ensure components are serviceable.

Operations or repairs that can be performed with the engine still in the machine:

1. Cylinder head and associated inlet and exhaust components.
2. Fuel injection pump and related parts.
3. Water pump, thermostat, and associated components.
4. Front timing cover/timing gear removal.
5. Front pulley.

Operations or repairs that are performed with the engine separated from the transmission housing and with oil pan removed:

1. Crankshaft rear oil seal and carrier removal.

NOTE: *All gaskets, seals and O-rings must be replaced while reassembling. Where new sealant is to be applied refer to **Engine - General specification (10.001)**.*

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:

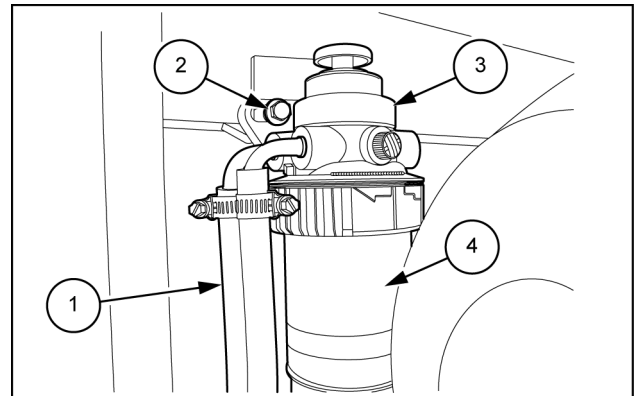
Refer to **Exhaust manifold - Remove (10.254)**

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.

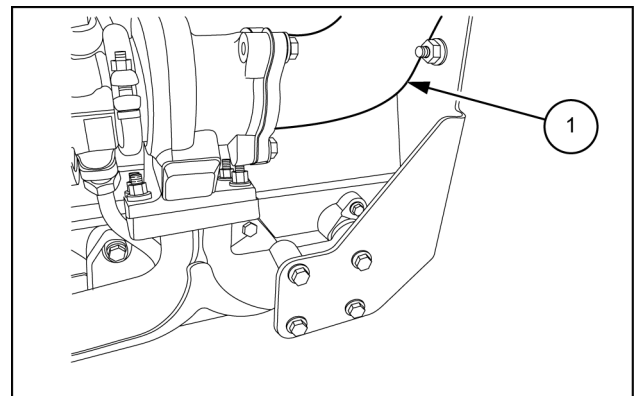
ATTENTION: Allow the engine to reach normal temperature before performing any service or maintenance procedure. Wear safety gloves and goggles for protection from hot components and fluids or severe burns could result.

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.



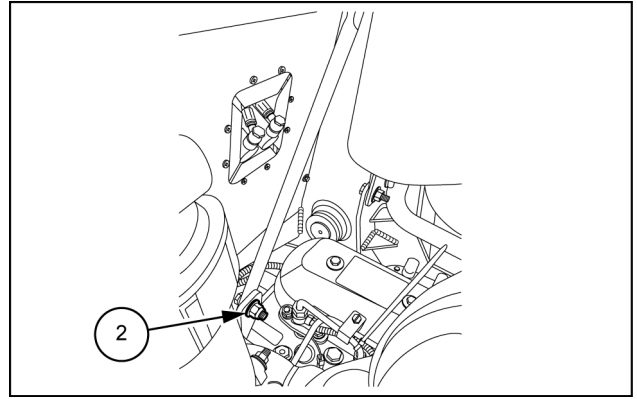
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3. Remove the exhaust pipe **(1)** of the turbocharger and cap it.



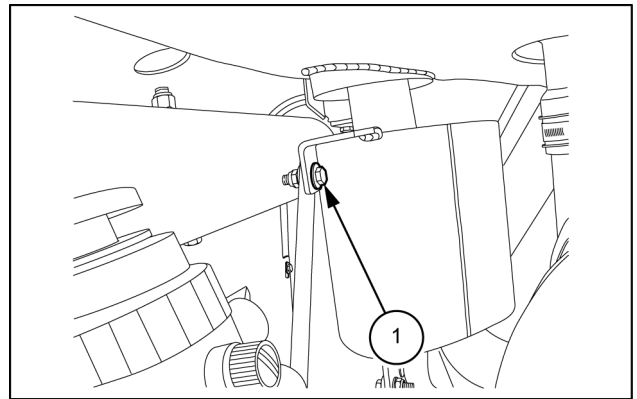
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4. Remove the muffler support bracket bolt (2).



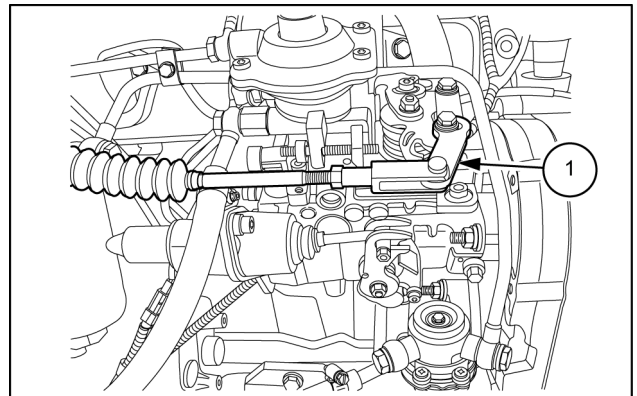
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5. Remove the bolt (1) and the muffler assembly from the engine.



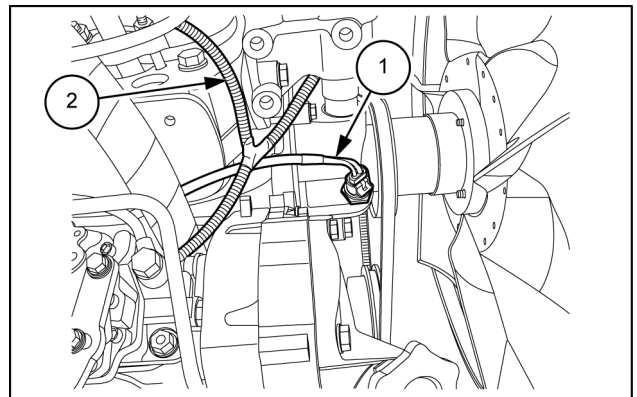
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6. Disconnect the throttle linkage (1) from the pump and set it aside.



PTIL13TLB0954AB 5

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)**.



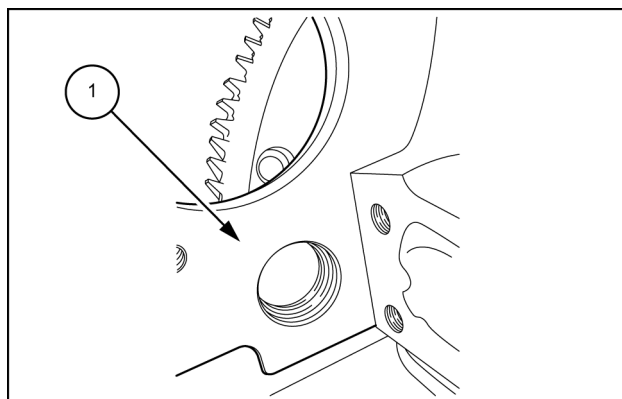
PTIL13TLB0955AB 6

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.

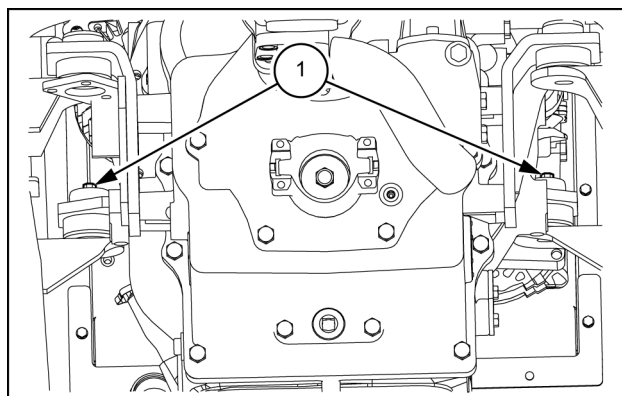
Connect lifting equipment to the lifting eyes on the engine to hold the engine in place.



PTIL13TLB1470AA 7

9. Remove the bolts (1), flat washers, and nuts from the front engine mount.

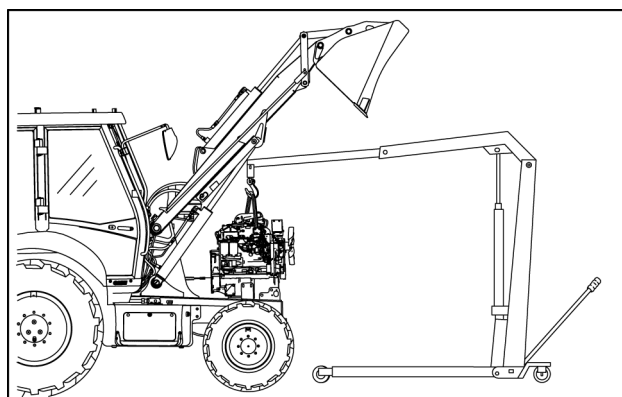
Loosen and remove the cap screws and flat washers that fasten the transmission to the engine.



PTIL13TLB0730AB 8

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.



PTIL13TLB0729AA 9

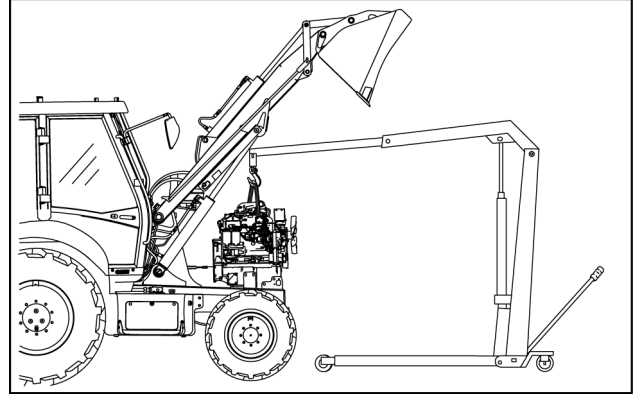
Engine - Install

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.



PTIL13TLB0729AA 1

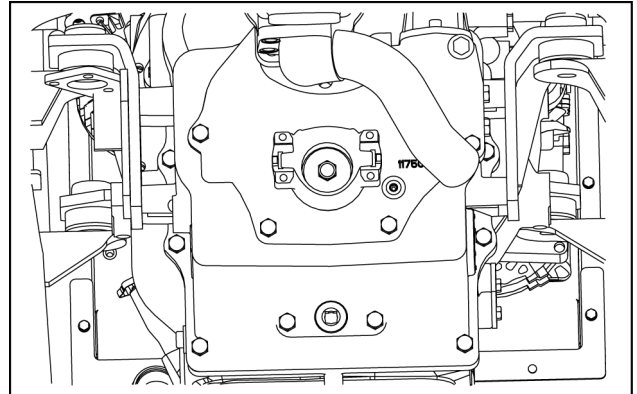
2. Install and tighten the flat washers and cap screws securing the transmission to the engine.

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.



PTIL13TLB0730AA 2

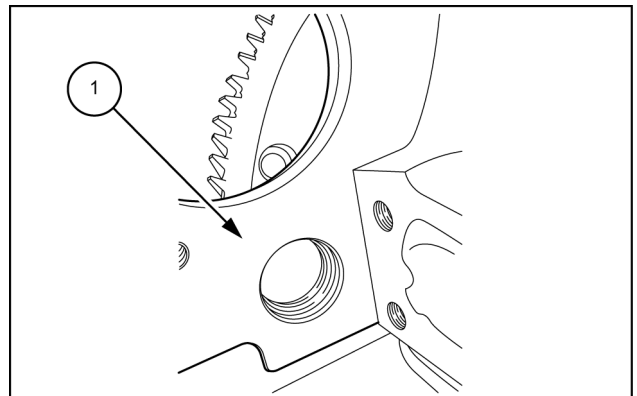
4. Tighten the cap screws through the access in the flywheel housing (1) and fasten the flywheel to the flex plate. Tighten cap screws to a torque of **52 – 57 N·m (38 – 42 lb ft)** when fixing the torque converter.

5. Install the access cover to the bell housing.

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

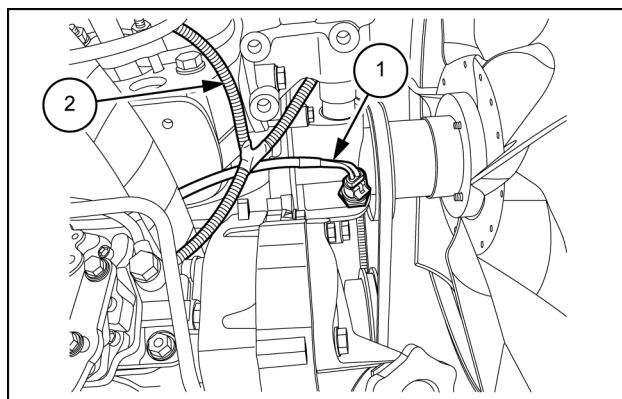
6. Install the starter onto the engine.

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



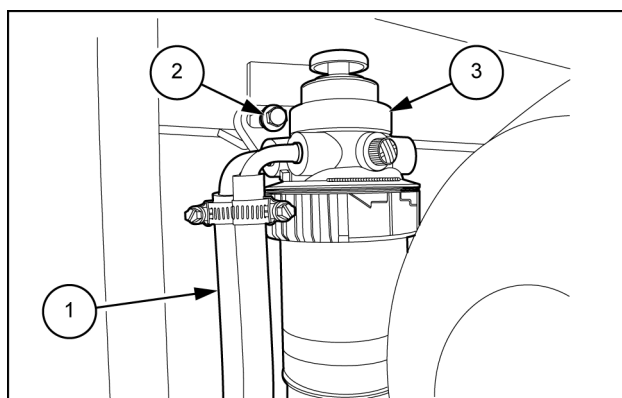
PTIL13TLB1470AA 3

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



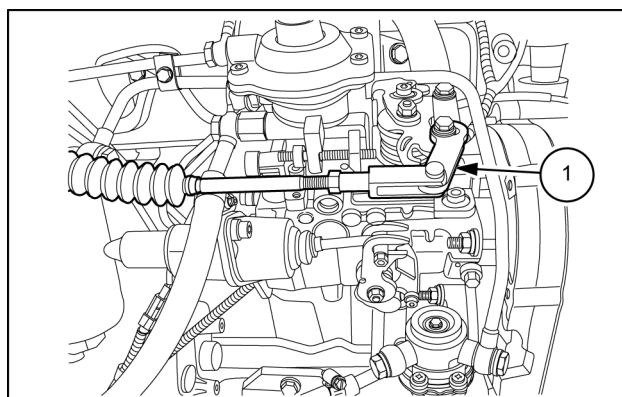
PTIL13TLB0955AB 4

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



PTIL13TLB0953AB 5

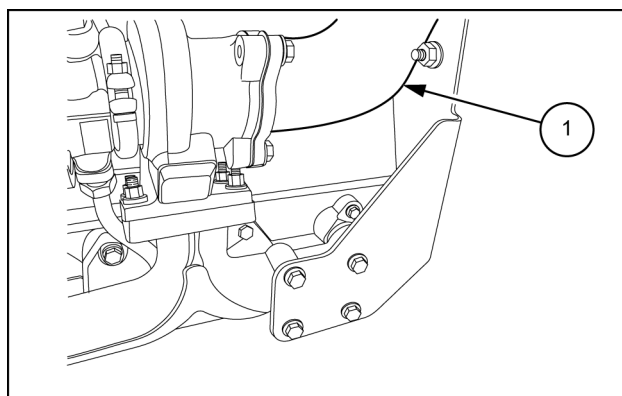
9. Connect the throttle rod **(1)**.
 10. Connect the throttle cable from the mounting bracket.
 11. Connect the electrical connector for the oil pressure switch.



PTIL13TLB0954AB 6

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)**.



PTIL13TLB0956AB 7



Suggest:

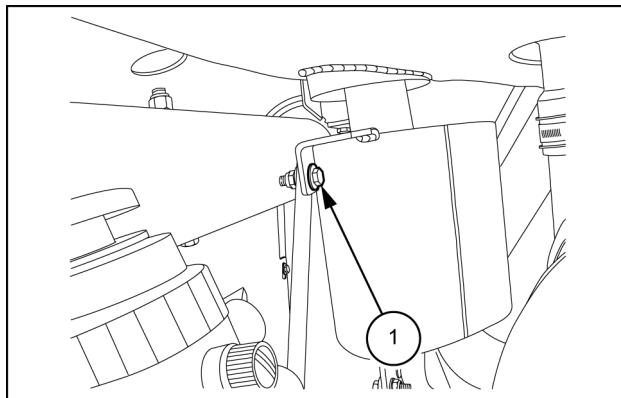
If the above button click is invalid.

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Thank you so much for reading

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

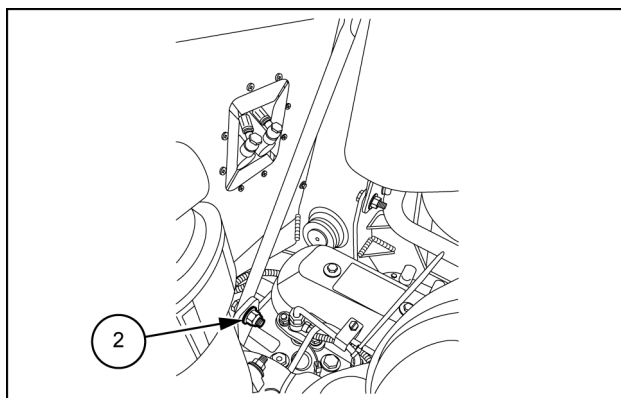
Tighten it to a torque value of **32 – 38 N·m (24 – 28 lb ft)**.



PTIL13TLB0958AB 8

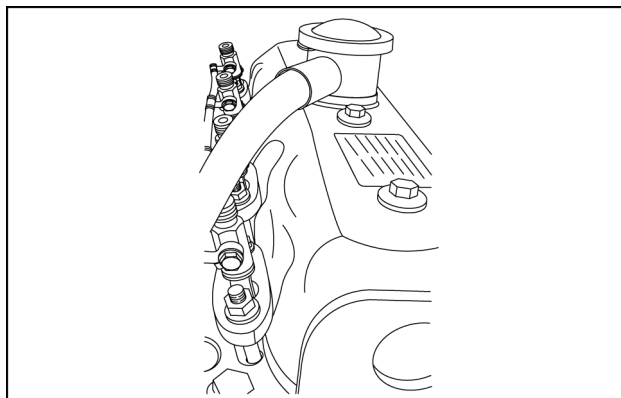
14. Install the muffler support bracket bolt **(2)**.

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



PTIL13TLB0957AB 9

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.



PTIL13TLB1467AB 10

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