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F3DFE613A*A001 / F3DFE613A*A002 /
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Tier 4a

Engine

SERVICE MANUAL

Part number 84474521
1st edition English
September 2011

CASE CONSTRUCTION

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Torque - Minimum tightening torques for normal assembly

METRIC NON-FLANGED HARDWARE

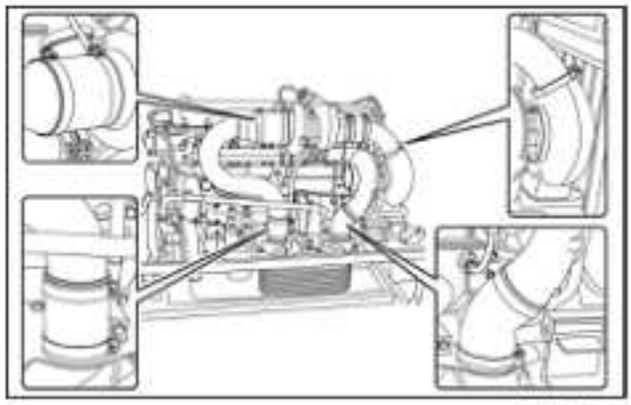
NOM. SIZE	CLASS 8.8 BOLT and CLASS 8 NUT		CLASS 10.9 BOLT and CLASS 10 NUT		LOCKNUT CL.8 W/CL8.8 BOLT	LOCKNUT CL.10 W/CL10.9 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr		
M4	2.2 N·m (19 lb in)	2.9 N·m (26 lb in)	3.2 N·m (28 lb in)	4.2 N·m (37 lb in)	2 N·m (18 lb in)	2.9 N·m (26 lb in)
M5	4.5 N·m (40 lb in)	5.9 N·m (52 lb in)	6.4 N·m (57 lb in)	8.5 N·m (75 lb in)	4 N·m (36 lb in)	5.8 N·m (51 lb in)
M6	7.5 N·m (66 lb in)	10 N·m (89 lb in)	11 N·m (96 lb in)	15 N·m (128 lb in)	6.8 N·m (60 lb in)	10 N·m (89 lb in)
M8	18 N·m (163 lb in)	25 N·m (217 lb in)	26 N·m (234 lb in)	35 N·m (311 lb in)	17 N·m (151 lb in)	24 N·m (212 lb in)
M10	37 N·m (27 lb ft)	49 N·m (36 lb ft)	52 N·m (38 lb ft)	70 N·m (51 lb ft)	33 N·m (25 lb ft)	48 N·m (35 lb ft)
M12	64 N·m (47 lb ft)	85 N·m (63 lb ft)	91 N·m (67 lb ft)	121 N·m (90 lb ft)	58 N·m (43 lb ft)	83 N·m (61 lb ft)
M16	158 N·m (116 lb ft)	210 N·m (155 lb ft)	225 N·m (166 lb ft)	301 N·m (222 lb ft)	143 N·m (106 lb ft)	205 N·m (151 lb ft)
M20	319 N·m (235 lb ft)	425 N·m (313 lb ft)	440 N·m (325 lb ft)	587 N·m (433 lb ft)	290 N·m (214 lb ft)	400 N·m (295 lb ft)
M24	551 N·m (410 lb ft)	735 N·m (500 lb ft)	762 N·m (560 lb ft)	1016 N·m (750 lb ft)	501 N·m (370 lb ft)	693 N·m (510 lb ft)

NOTE: *M4 through M8 hardware torque specifications are shown in pound-inches. M10 through M24 hardware torque specifications are shown in pound-feet.*

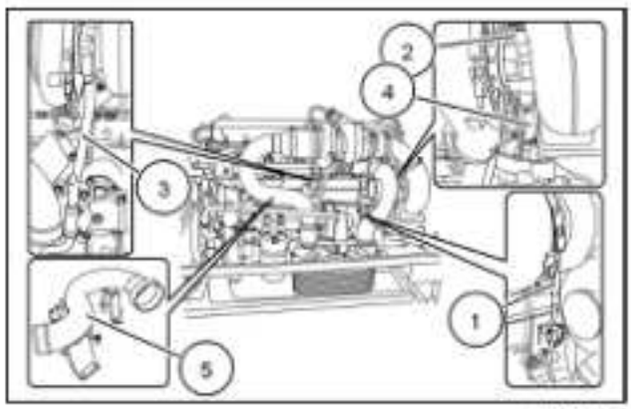
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Turbocharger - Remove

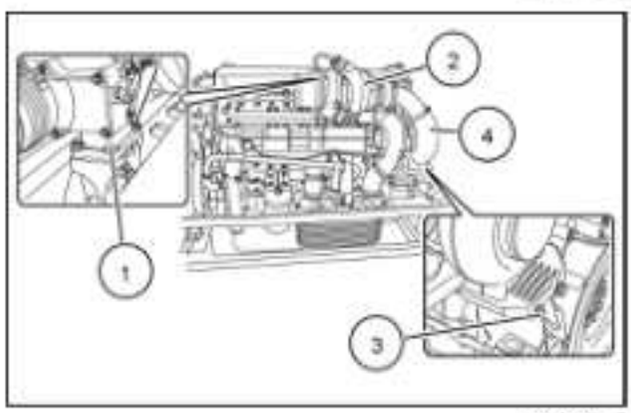
1. Remove the clamps.



2. Remove the oil supply lines **(1)** and **(2)**.
3. Remove the oil return lines **(3)** and **(4)**.
4. Remove the pipe **(5)** from the turbocharger to the air to water cooler.



5. Remove the nuts **(1)** from the mounting flange on the exhaust manifold.
6. Remove the turbocharger **(2)**.
7. Remove the through bolts **(3)**.
8. Remove the turbocharger **(4)**.



Next operation:
Turbocharger - Install (B.30.A)

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ENGINE COOLANT SYSTEM - Overview

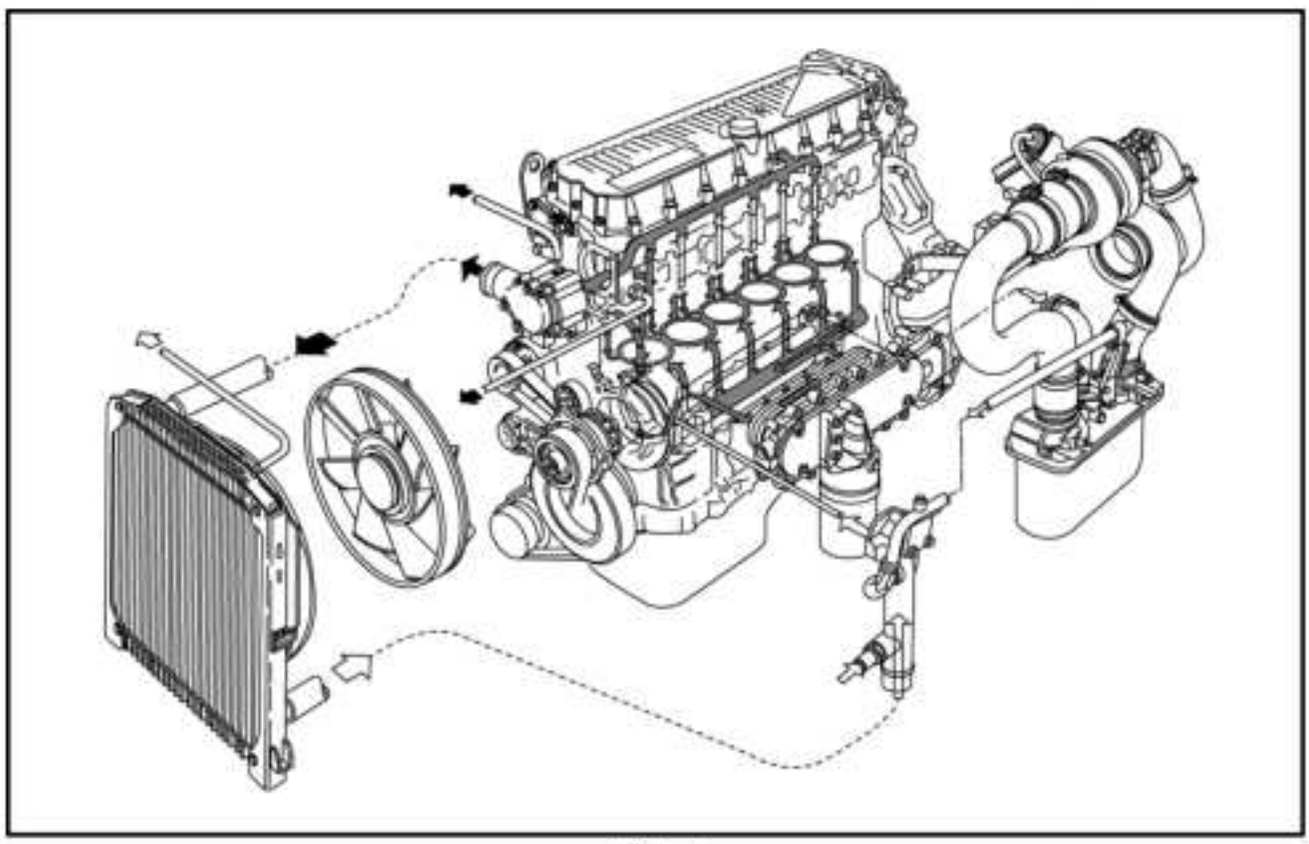
The engine cooling system is a closed-circuit, forced circulation system.

It consists mainly of the following components:

- an expansion tank
- a heat exchanger to cool down lubricating oil
- a coolant pump with centrifugal system incorporated in the cylinder block
- a fan
- a thermostat controlling coolant circulation

Operation

The coolant pump is actuated by the crankshaft through a poly-V belt and sends coolant to the cylinder block, particularly to the cylinder head (bigger quantity). When the coolant temperature reaches and exceeds operating temperature, the thermostat opens and coolant flows from here into the radiator and is cooled down by the fan.



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