10 01 IN Tightening torques for Cayenne S (M48/00) and Cayenne Turbo (M48/50) - as of MY 2003, until MY 2006

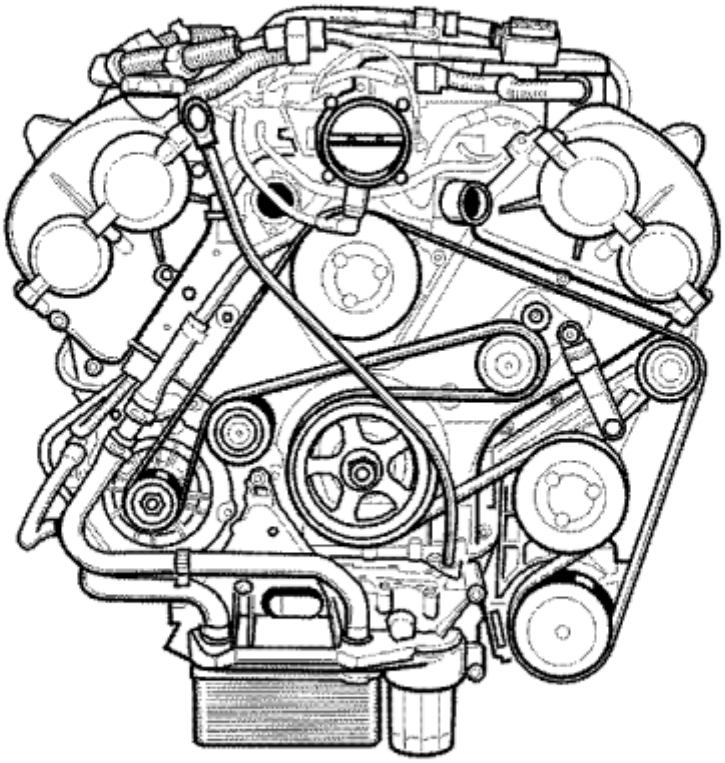
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V8 engine

Note

- *This torque list is organised according to component groups in the same way as service numbering.*
- *The torque for the coolant pump is provided in Chapter 19.*
- *The tightening sequences are indicated in the figures in the corresponding chapters, and it is essential to observe them.*
- *The most important torques are specified at the end of the respective chapters.*

The torques in the table below generally apply to screws which are not specifically listed.

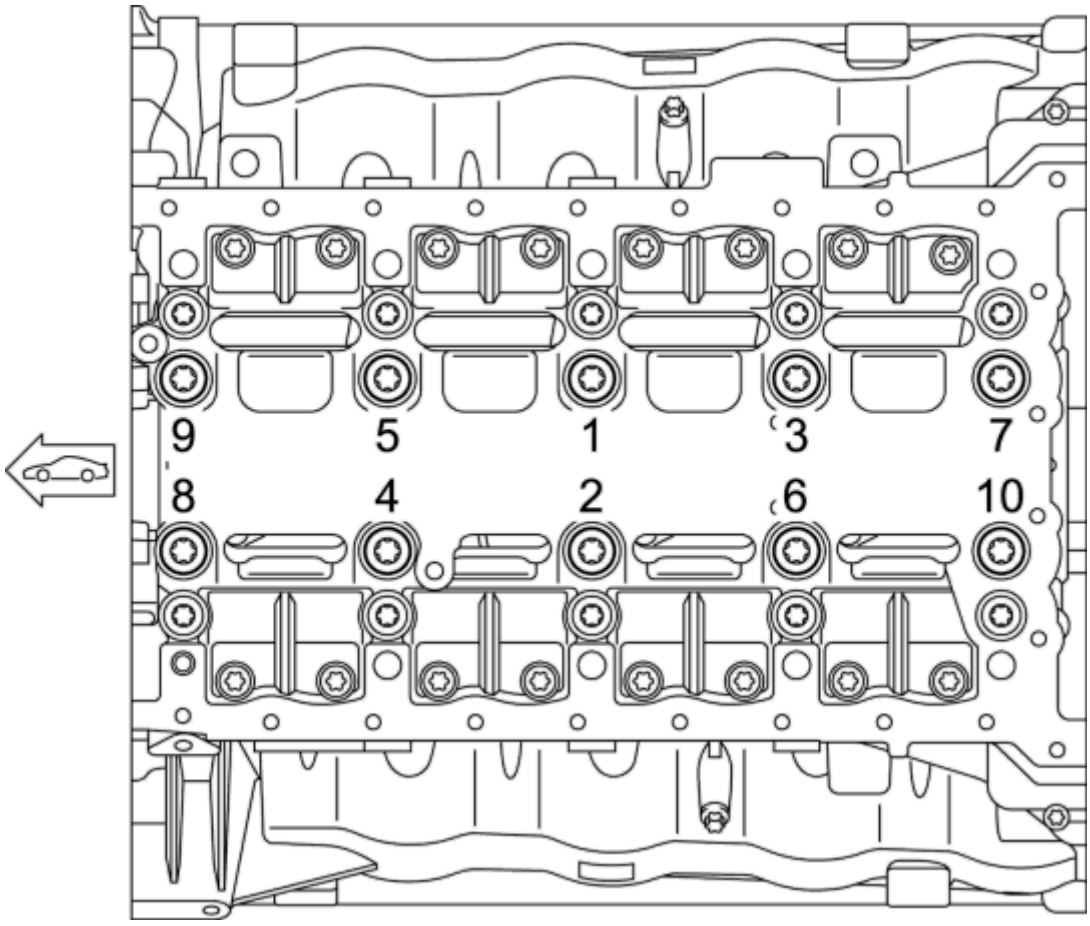
Bolt quality 8.8		Bolt quality 10.9	
Thread	**ftlb.**	**Thread**	**ftlb.**
M4	3	M4	4
M5	6	M5	8
M6	10	M6	13
M8	23	M8	33
M10	45	M10	65
M10 x 1.25	50	M10 x 1.25	70
M12	80	M12	115
M12 x 1.25	90	M12 x 1.25	125
M12 x 1.5	85	M12 x 1.5	120
M14	130	M14	180
M16	200	M16	280

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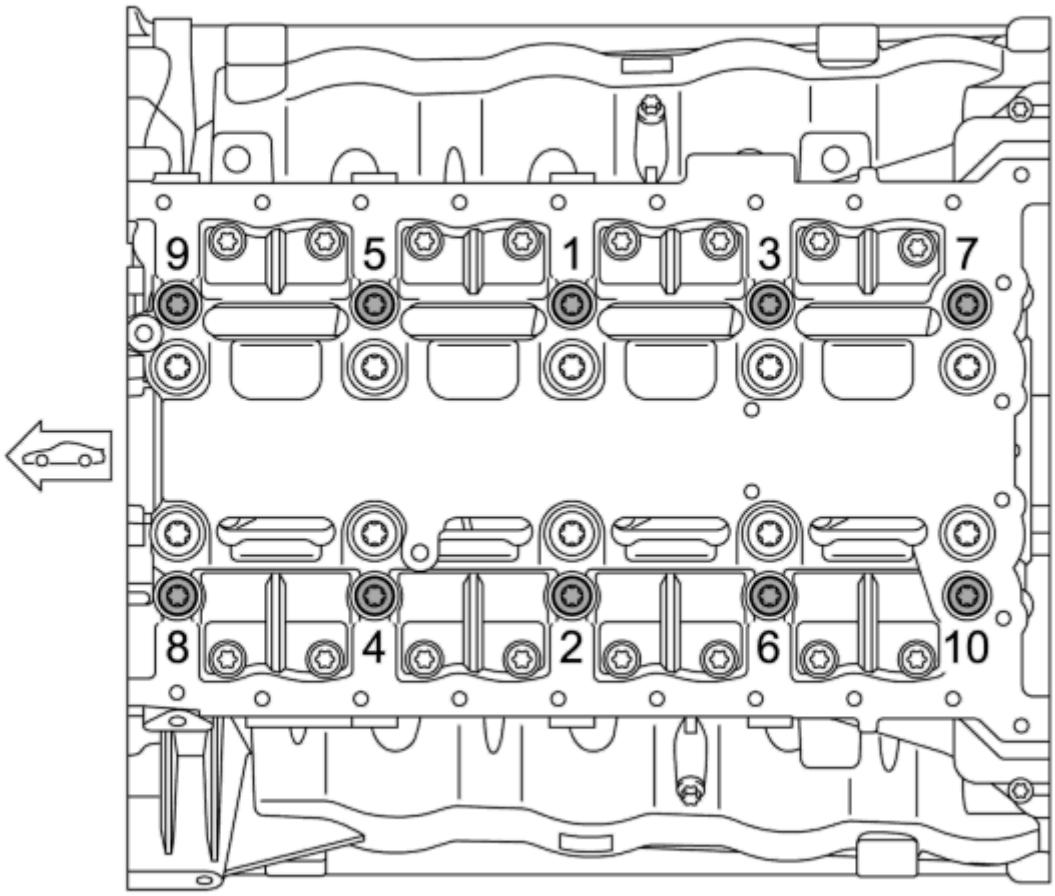
Group 10 - Crankcase, suspension

Location	Thread	Tightening torque [Nm] (ftlb.)
Thrust block screw fitting	M12 x 1.5 x 132	40 (30) + 75° (observe sequence!)
Thrust block screw fitting	M10 x 117	22 (16) + 60° (observe sequence!)
Oil spray valve on crankcase	M6 x 16	10
Crankcase top section with bottom section	M8	23
Bracket for auxiliary units	M10 x 45	65
Design cover	M5 x 16	5
Engine carrier, cylinder row 1 - 4	M10 x 45	65
Bracket for torque support	M6 x 40	13
Bracket for torque support	M8 x 45	23

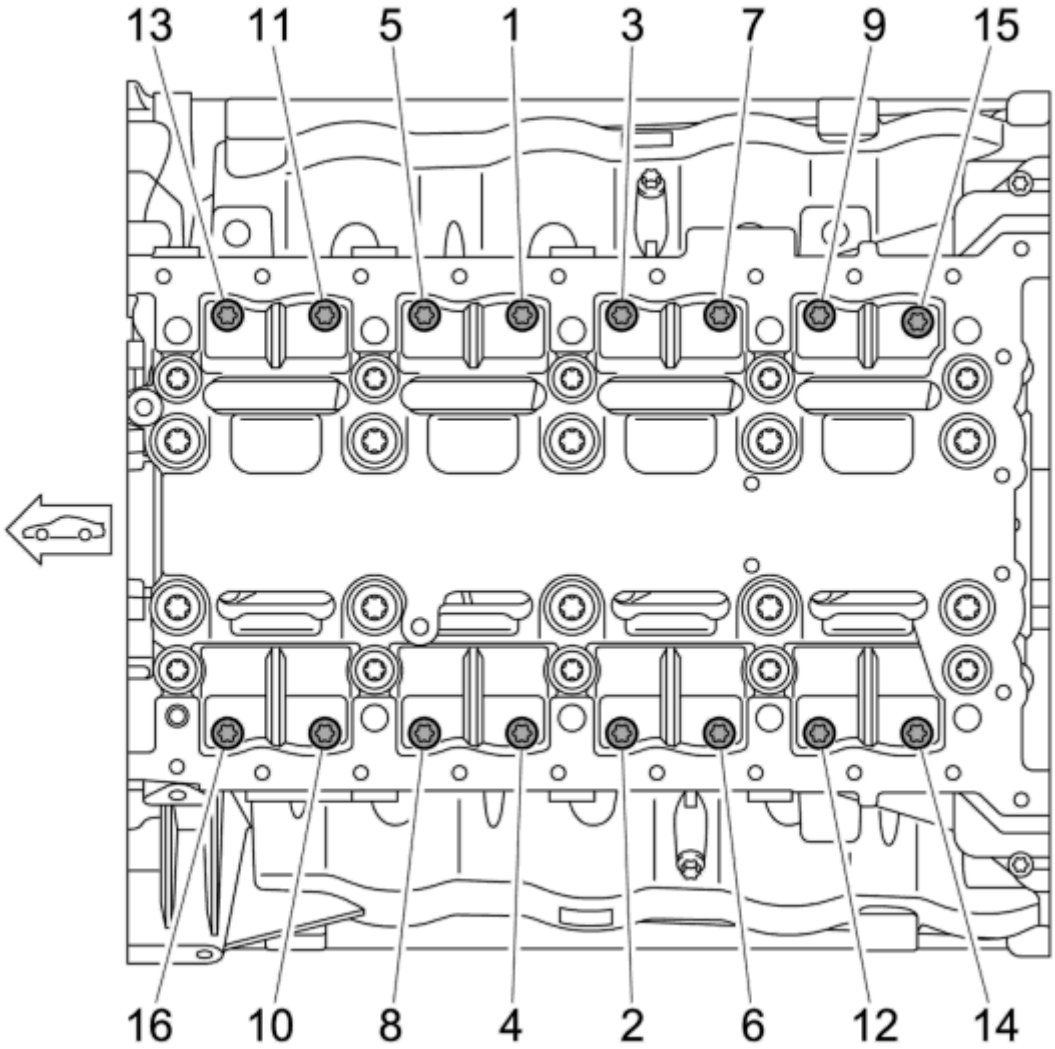
Tightening sequences



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Group 13 - Crank drive, pistons

Location	Thread	Tightening torque [Nm] (ftlb.)
Sealing flange on timing case cover	M6	10
Belt pulley on crankshaft	M16 x 1.5 x 77	250 (185), then 90° (always replace screw with new one!)
Deflection roller, left	M10 x 41	45
Deflection roller, right	M10 x 85	45
Belt tensioner on bracket	M8 x 33	23

Location	Thread	Tightening torque [Nm] (ftlb.)
Belt tensioner on timing case cover	M8 x 100	35
Tensioner roller on belt tensioner	M10	45
Connecting rod cap on connecting rod	M9 x 56	8 (6), then 40 (30), then 90° (always replace screws with new ones!)
Air-conditioning compressor on engine	M8 x 95	23
Air-conditioning compressor on engine	M10 x 90	46
Servo pump on engine	M8 x 35	23
Belt pulley on servo pump	M8 x 16	23
Drive plate to crankshaft	M10 x 22	60 (44) + 90° (always replace screws with new ones!)

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Group 15 - Cylinder head, pistons

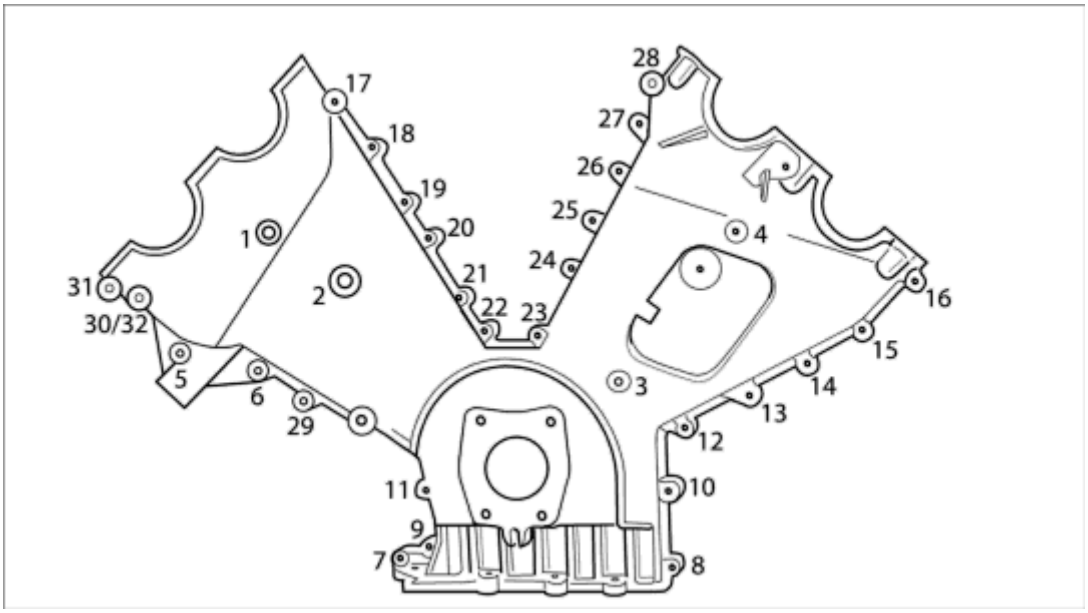
Location	Thread	Tightening torque [Nm] (ftlb.)
Timing case cover	M6	See Note
Timing case cover	M8 x 50	23
Tensioning rail bearing	M10/12 x 25	35
Chain tensioner	M24 x 1.5	60
Guide rail bearing on camshaft housing	M8 x 25	20
Guide rail	M8 x 25	20
Deflector rail	M8 x 35	32
Chain sprocket on exhaust camshaft	M12 x 1.5 x 140	10 (7.5), then 50 (37), then 90°
Camshaft adjuster on inlet camshaft	M12 x 1.5 x 140	10 (7.5), then 50 (37), then 135°
Camshaft housing lid	M6 x 30	13 (9.5) (observe sequence!)
Camshaft bearing saddles	M6 x 35	10 (7.5) (observe sequence!)
Thrust bearing cover on camshaft housing	M6 x 35	10
Hall sender on camshaft housing	M6 x 16	10
Camshaft housing on cylinder head	M8	23
Hydraulic valve for camshaft adjuster	M6 x 16	10
Adapter for torque support	M10 x 24	20
Cylinder head	M12 x 1.5 x 140	30 (22), then 50 (37), then loosen 30 (22), then 30 (22), then 90°
Ground point on camshaft housing	M6 x 12	10

Location	Thread	Tightening torque [Nm] (ftlb.)
Cable duct on timing case cover	M6 x 18	10
Cable duct on cylinder head 5 - 8	M6 x 12	10

Tightening sequences

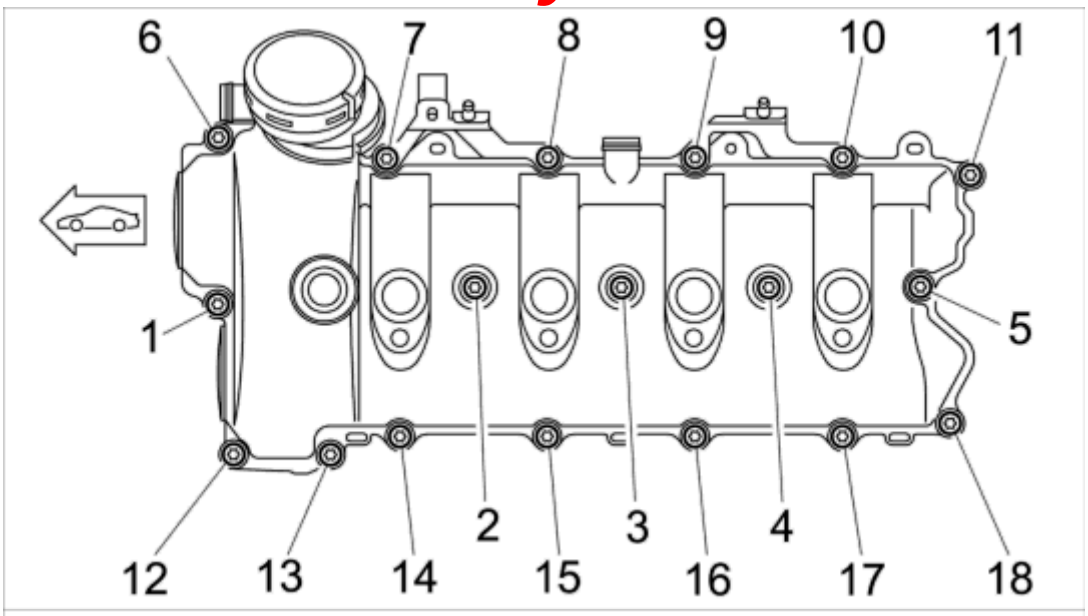
Note

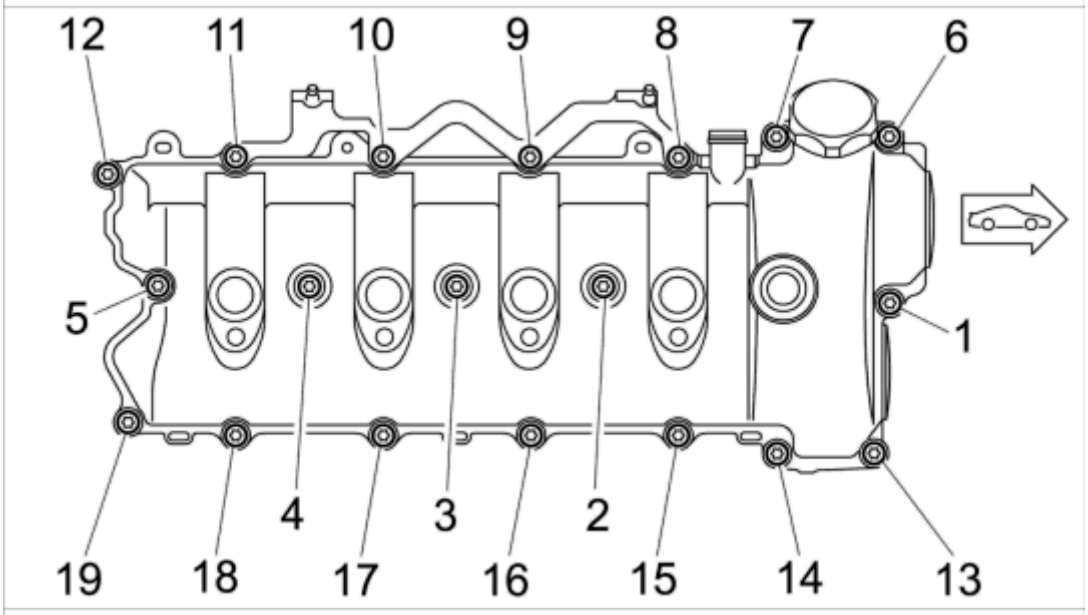
- *The exterior fastening screws must have a quality of 10.9.*
- *If the quality is 8.8, the screws must be replaced.*
- *Tighten screws 1 to 4 (M6 / 8.8) to 7.5 ftlb.*
- *Tighten screws 5 to 6 (M8 / 8.8) to 17 ftlb.*
- *Tighten screws 7 to 32 (M8 / 10.9) to 9.5 ftlb.*

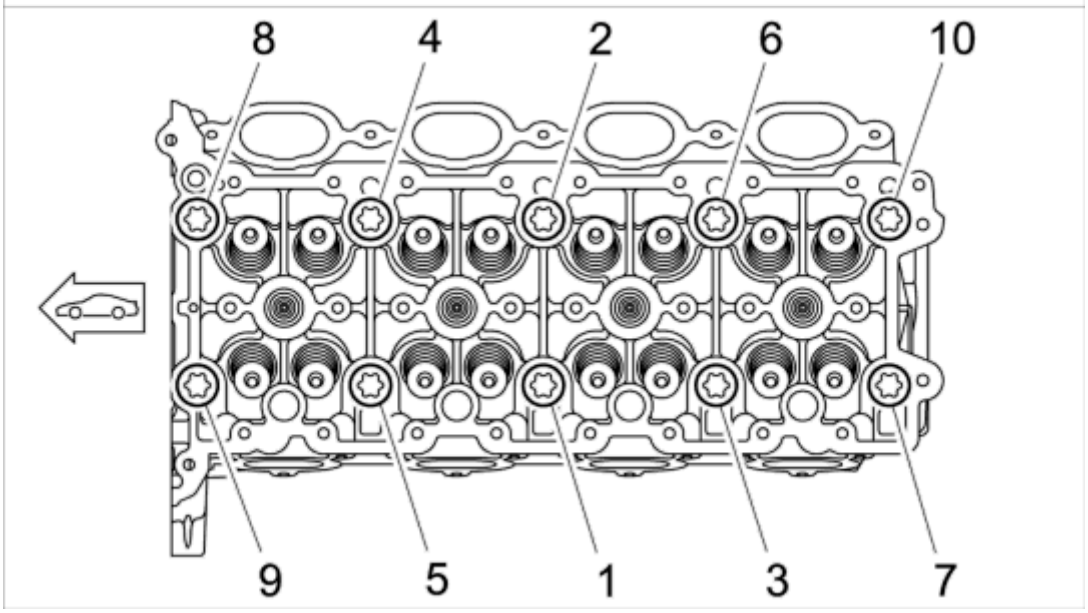


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Group 17 - Lubrication

Location	Thread	Tightening torque [Nm] (ftlb.)
Chain sprocket on oil pump	M10 x 1	45
Oil pump on crankcase	M8 x 50	23
Chain cover on oil pump	M5 x 20	6
Tensioning rail bearing for oil pump	M8 x 25	20
Short oil extraction pipe	M6 x 25	10
Oil extraction pipe	M6 x 25	10
Oil drain plug	M18 x 1.5	50
Oil return line into oil pan	M6 x 20	10
Oil pan on crankcase	M6 x 25	10
Oil level sender on oil pan	M6 x 25	10
Guide tube for oil dipstick	M6 x 16	10
Cover on oil filter bracket	M6 x 20	10
Oil filter bracket on oil pan	M8 x 70	23
Spacer sleeve for oil filter bracket	M16 x 1.5	2 (1.5) to 5 (3.5)
Oil filter bracket on connection piece	M8 x 50	23
Oil/water heat exchanger	M6 x 20	10
Oil filter housing	S80 x 3	25 (19) (sealing ring oiled)
Oil pressure switch on oil filter bracket	M10 x 1	20

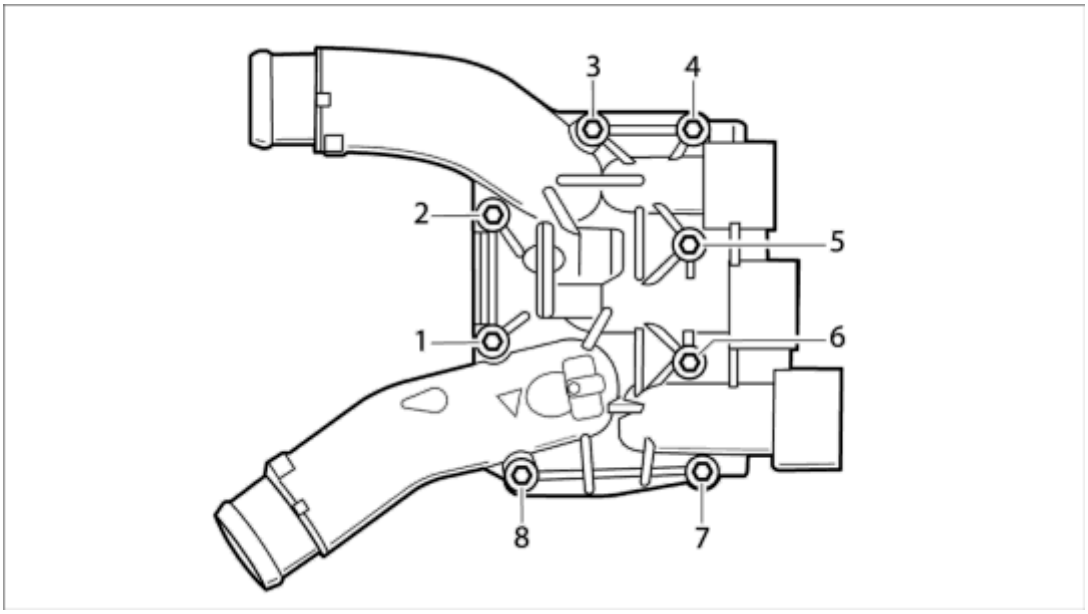
Group 19 - Cooling

Location	Thread	Tightening torque [Nm] (ftlb.)
Belt pulley on coolant pump	M8 x 16	23
Water pump on crankcase	M6 x 25	10 (7.5) (observe sequence!)
Thermostat housing cover	M6 x 25	10 (7.5) (observe sequence!)
Coolant distribution pipe	M6 x 25	10
Thermostat housing trough	M6 x 16	10
Coolant pipe on crankcase	M6 x 16	10

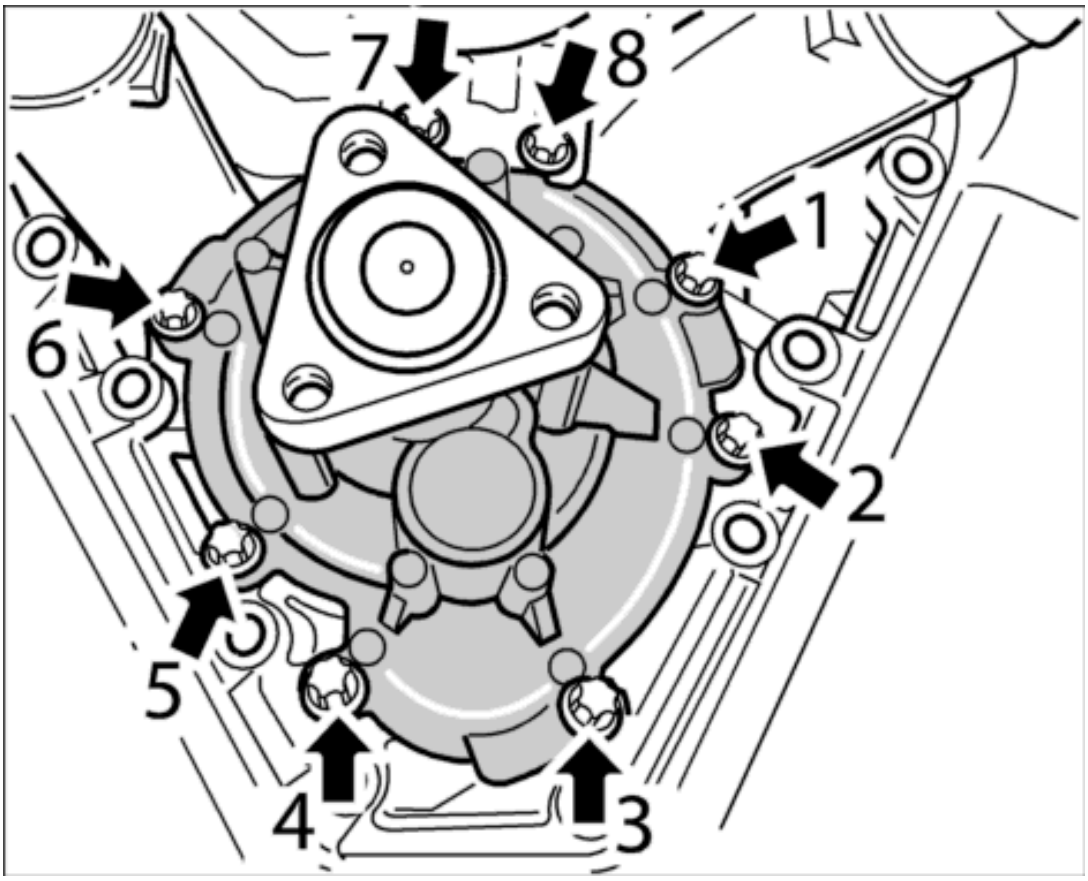
Location	Thread	Tightening torque [Nm] (ftlb.)
Coolant drain plug on distribution pipe	M16 x 1.5 x 6	35
T-piece on generator	M6 x 16	10
Supply connection fitting on generator	M6 x 16	10
Coolant pipe on thermostat housing	M6 x 12	10
Temperature sensor on coolant distribution pipe	M14 x 1.5	30

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Tightening sequences



Thermostat housing



Water pump

Group 20 - Fuel supply, control

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Location	Thread	Tightening torque [Nm] (ftlb.)
Fuel tank restraining strap	M8 x 25	23
Carbon canister and degassing tank	M6	10
Filler neck fastening screws	M6	10
Connection unit ring fastener		140
Filler neck fastening screws	M6 x 20	10
Cover plate under rear seat	M6	10

Group 21 - Exhaust system, turbocharging

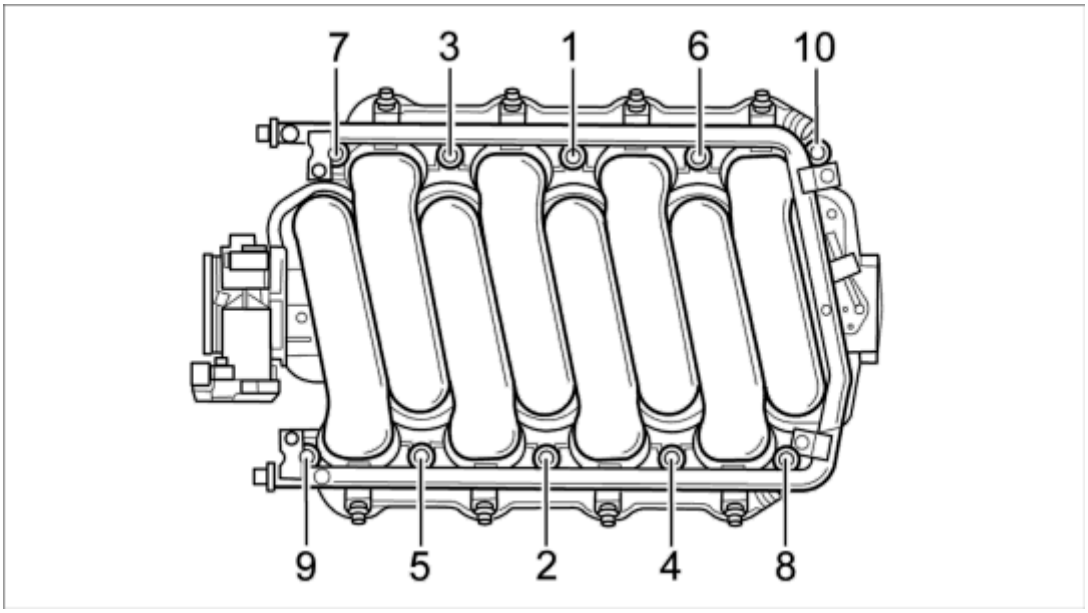
Location	Thread	Tightening torque [Nm] (ftlb.)
Turbocharger on manifold	M8 x 75	23 (17); then 30 (22)
Turbocharger support on camshaft housing	M8 x 20	23
Turbocharger support on charger	M8 x 40	30 (22); replace nut
Oil return line on oil filter bracket		35
Oil supply line on camshaft housing		35
Clip for oil supply line	M6 x 12	10
Coolant line on turbocharger		40 (30); replace seals
Lower coolant line on turbocharger		40 (30); replace seals
Coolant line on coolant distribution pipe		35
Vent line on turbocharger		35
Sheetmetal holder	M6	10

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Group 24 - Fuel system, electronic injection

Location	Thread	Tightening torque [Nm] (ftlb.)
Knock sensor on crankcase	M8 x 35	23
Intake distributor	M7 x 52	10 (7.5), then 15 (11) (observe sequence!)
Throttle adjuster	M6 x 45	8
Fuel distribution pipe on intake distributor	M6 x 10	8
T-piece on intake distributor		2,2

Tightening sequences



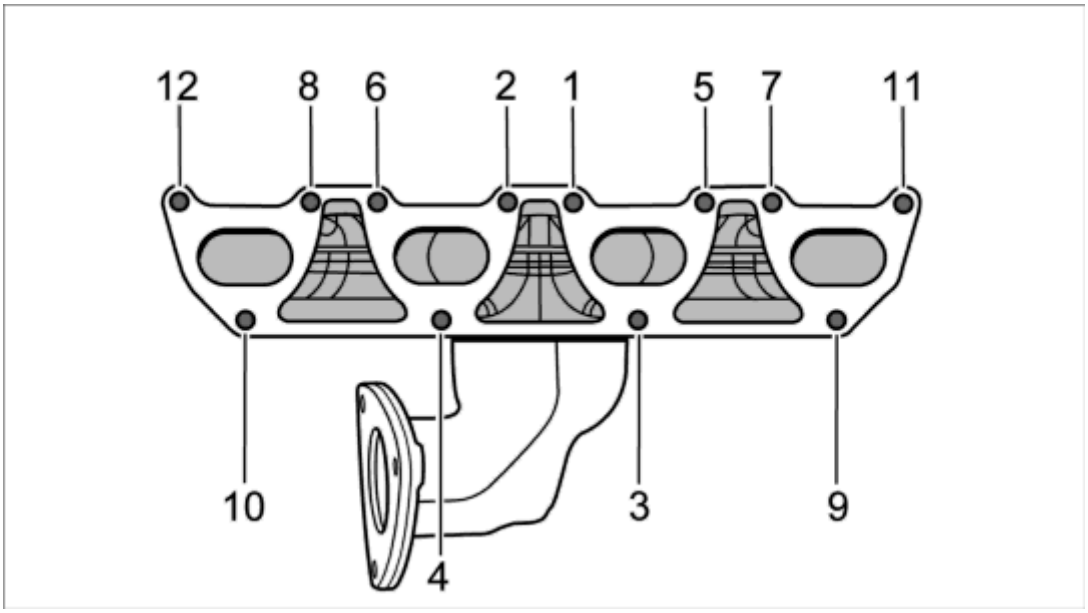
Suction module

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Group 26 - Exhaust system

Location	Thread	Tightening torque [Nm] (ftlb.)
Exhaust manifold on cylinder head	M8	25 (19), then 33 (24) (observe sequence!)
Oxygen sensors in exhaust manifold	M18 x 1.5	40 (30) to 50 (37)
Oxygen sensor holder on engine	M6 x 12	10
Secondary air pump on holder	M6 x 50	10
Secondary air pump holder	M6 x 50	10
Exhaust system fastening screws	M8 x 25	23
Exhaust clamps	M10	60 (44) (replace)
Fastening screw for catalytic converter holder	M8	23

Tightening sequences



Exhaust manifold

Group 27 - Starter, power supply

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Location	Thread	Tightening torque [Nm] (ftlb.)
Generator on crankcase	M8	23
B+ wire on generator	M8 plastic	15
Heat shield on generator	M6 x 12	10
Starter	M10 x 40	45 (33) to 53 (39)
B+ wire on starter	M8	15
Terminal 50 on starter	M6	9

Group 28 - Ignition system

Location	Thread	Tightening torque [Nm] (ftlb.)
New spark plug	M14 x 1.25	30
Spark plug reinstallation	M14 x 1.25	25
Ignition coils	M6 x 16.5/M5 x 9	10
Knock sensor	M8 x 35	23