

TORQUES

NOTE: Screws, bolts and nuts must be tightened to the specified torque using a torque wrench. Some screws, bolts and nuts such as those used on the cylinder head must be tightened in a certain sequence and at the proper torque.

Tightening Torques for Specific Engine Components

For "*" marked screws, bolts and nuts in the table, apply engine oil to their threads and seats before tightening.

COMPONENT	SIZE x PITCH	ft-lb	kg-m	Nm
* Cylinder head cover cap nuts	M7 x 1.0	5.1 – 6.5	0.7 – 0.9	6.9 – 8.8
* Cylinder head bolts	M10 x 1.25	47.0 – 50.6	6.5 – 7.0	63.7 – 68.6
* Main bearing case bolts 1	M8 x 1.25	21.7 – 25.3	3.0 – 3.5	29.4 – 34.3
* Main bearing case bolts 2	M9 x 1.25	36.2 – 39.8	5.0 – 5.5	49.0 – 53.9
* Flywheel bolts	M10 x 1.25	39.8 – 43.4	5.5 – 6.0	53.9 – 58.8
* Connecting rod bolts	M8 x 1.0	30.4 – 34.0	4.2 – 4.7	41.2 – 46.1
* Rocker arm bracket nuts	M7 x 1.0	15.9 – 19.5	2.2 – 2.7	21.6 – 26.5
* Idler gear shaft bolts	M6 x 1.0	7.2 – 8.3	1.00 – 1.15	9.8 – 11.3
* Crankshaft end bolt	M14 x 1.5	173.6 – 180.8	24.0 – 25.0	235.4 – 245.2
* Bearing case cover screws	M6 x 1.0	7.2 – 8.3	1.00 – 1.15	9.8 – 11.3
Glow plugs	M8 x 1.0	5.8 – 10.8	0.8 – 1.5	7.8 – 14.7
Nozzle holder assembly	M20 x 1.5	36.2 – 50.6	5.0 – 7.0	49.0 – 68.6
Oil switch taper screw	PT 1/8	10.8 – 14.5	1.5 – 2.0	14.7 – 19.6
Injection line retaining nuts	M12 x 1.5	18.1 – 25.3	2.5 – 3.5	24.5 – 34.3
Overflow line assembly retaining nuts	M12 x 1.5	14.5 – 18.1	2.0 – 2.5	19.6 – 24.5
Starter's terminal B mounting nut	M8	6.5 – 8.7	0.9 – 1.2	8.8 – 11.8

* Apply engine oil to threads and seats before tightening.

Tightening Torques for General Use Screws, Bolts and Nuts

When the tightening torques are not specified, tighten the screws, bolts and nuts according to the following table.

NOMINAL DIAMETER	STANDARD SCREW AND BOLT GRADE 4			SPECIAL SCREW AND BOLT GRADE 7		
	ft-lb	kg-m	Nm	ft-lb	kg-m	Nm
M6	5.8 – 6.9	0.8 – 0.95	7.9 – 9.3	7.23 – 8.32	1.0 – 1.15	9.8 – 11.3
M8	13.0 – 15.2	1.8 – 2.1	17.7 – 20.6	17.4 – 20.3	2.4 – 2.8	23.5 – 27.5
M10	28.9 – 33.3	4.0 – 4.6	39.2 – 45.1	35.4 – 41.2	4.9 – 5.7	48.1 – 55.9
M12	46.3 – 53.5	6.4 – 7.4	62.8 – 72.6	57.1 – 66.5	7.9 – 9.2	77.5 – 90.2

Screw and bolt material grades are shown by numbers punched on the screw and bolt heads. Prior to tightening, be sure to check the numbers as shown below.

Punched Number	Screw and Bolt Material Grade
None or 4	Standard screw and bolt SS41, S20C
7	Special screw and bolt S43C, S48C (refined)