

Design	2-cylinder 4-stroke Otto motor, 75° V arrangement, water-cooled
Displacement	999 cm <sup>3</sup> (60.96 cu in)
Stroke	62.4 mm (2.457 in)
Bore	101 mm (3.98 in)
Compression ratio	11.5:1
Control	DOHC, 4 valves per cylinder, chain-driven
Valve - diameter	
Exhaust	33 mm (1.3 in)
Intake	38 mm (1.5 in)
Valve clearance	
Exhaust at: 20 °C (68 °F)	0.25... 0.30 mm (0.0098... 0.0118 in)
Intake at: 20 °C (68 °F)	0.10... 0.15 mm (0.0039... 0.0059 in)
Crankshaft bearing	Sleeve bearing
Conrod bearing	Sleeve bearing
Piston	Forged light alloy
Piston ring	1 L-ring, 1 tapered compression piston ring, 1 oil scraper ring
Engine lubrication	Pressure circulation lubrication with 2 rotor pumps
Primary transmission	35:67
Clutch	Multidisc clutch in oil bath/hydraulically activated
Transmission	6-gears, claw-shifted
Transmission ratio	
1st gear	12:35
2nd gear	15:32
3rd gear	18:30
4th gear	20:27

5th gear	24:27
6th gear	27:26
Mixture preparation	Electronic fuel injection
Ignition system	Contactless controlled fully electronic ignition with digital ignition adjustment
Generator	12 V, 450 W
Spark plug	NGK DCPR8E
Spark plug electrode gap	0.8 mm (0.031 in)
Cooling	Water cooling, permanent circulation of coolant by water pump
Cold start device	Electric starter

## Capacity- engine oil

Engine oil	3.80 l (1.004 US gal)	External temperature: $\geq 0$ °C ( $\geq 32$ °F)	Engine oil (SAE 10W/50) (☛ p. 194)
		External temperature: $< 0$ °C ( $< 32$ °F)	Engine oil (SAE 5W/40) (☛ p. 194)

## Capacity - coolant

Coolant	2.30 l (2.43 qt.)	Coolant (☛ p. 193)
		Coolant (mixed ready to use) (☛ p. 193)

# TECHNICAL DATA - ENGINE TIGHTENING TORQUES

Hose clip, intake flange	M4	1.5 Nm (1.11 lbf ft)	–
Oil jet	M4	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Remaining engine screws	M5	6 Nm (4.4 lbf ft)	–
Screw, bearing retainer	M5	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Screw, connecting angle on valve cover	M5	3 Nm (2.2 lbf ft)	<b>Loctite® 243™</b>
Screw, gear sensor	M5	3 Nm (2.2 lbf ft)	<b>Loctite® 243™</b>
Screw, locking lever	M5	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Nut, cylinder head	M6	8 Nm (5.9 lbf ft)	–
Plug, vacuum connection	M6	5 Nm (3.7 lbf ft)	<b>Loctite® 243™</b>
Remaining engine screws	M6	10 Nm (7.4 lbf ft)	–
Screw, bearing bolt in generator cover	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, camshaft bearing support	M6	10 Nm (7.4 lbf ft)	–
Screw, clutch cover	M6	10 Nm (7.4 lbf ft)	–
Screw, clutch spring	M6	10 Nm (7.4 lbf ft)	–
Screw, engine case	M6	10 Nm (7.4 lbf ft)	–
Screw, freewheel holder	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, freewheel ring	M6	13 Nm (9.6 lbf ft)	<b>Loctite® 648™</b>
Screw, generator cover	M6	10 Nm (7.4 lbf ft)	–
Screw, oil pump housing	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, pulse generator	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, shift lever	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, starter motor	M6	10 Nm (7.4 lbf ft)	–
Screw, stator	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>

# TECHNICAL DATA - ENGINE TIGHTENING TORQUES

Screw, valve cover	M6	10 Nm (7.4 lbf ft)	–
Screw, water pump cover	M6	10 Nm (7.4 lbf ft)	–
Screw, water pump wheel	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Stud, cylinder head in cylinder	M6		<b>Loctite® 243™</b>
Stud, cylinder head in engine case	M6	10 Nm (7.4 lbf ft)	–
Vacuum connection	M6	5 Nm (3.7 lbf ft)	<b>Loctite® 243™</b>
Oil jet	M6x0.75	4 Nm (3 lbf ft)	<b>Loctite® 243™</b>
Bearing bolt, timing chain guide rail	M8	15 Nm (11.1 lbf ft)	<b>Loctite® 243™</b>
Bearing bolt, timing chain tensioning rail	M8	20 Nm (14.8 lbf ft)	<b>Loctite® 243™</b>
Screw, camshaft bearing support	M8	Step 1 10 Nm (7.4 lbf ft) Step 2 18 Nm (13.3 lbf ft)	–
Screw, clutch cover	M8	15 Nm (11.1 lbf ft)	–
Screw, cylinder head	M8	Step 1 18 Nm (13.3 lbf ft) Step 2 23 Nm (17 lbf ft)	<b>Loctite® 243™</b>
Stud, exhaust flange	M8	15 Nm (11.1 lbf ft)	–
Bearing bolt, timing gears	M10	30 Nm (22.1 lbf ft)	–
Nut, cylinder head (exterior)	M10	Step 1 23 Nm (17 lbf ft) Step 2 34 Nm (25.1 lbf ft)	Only applies when using: Box wrench attachment 13mm (60029081000)
			lubricated with engine oil

# TECHNICAL DATA - ENGINE TIGHTENING TORQUES

Nut, cylinder head on chain shaft	M10	Step 1 25 Nm (18.4 lbf ft) Step 2 38 Nm (28 lbf ft)	lubricated with engine oil
Plug, clutch lubrication	M10	15 Nm (11.1 lbf ft)	–
Stud, cylinder head in engine case	M10	20 Nm (14.8 lbf ft)	–
Oil pressure sensor	M10x1	10 Nm (7.4 lbf ft)	–
Screw, conrod bearing	M10x1	Step 1 25 Nm (18.4 lbf ft) Step 2 30 Nm (22.1 lbf ft) Step 3 60°	–
Coolant temperature sensor	M12x1.5	12 Nm (8.9 lbf ft)	–
Plus, cylinder head (2nd cylinder)	M12x1.5	25 Nm (18.4 lbf ft)	–
Spark plug	M12x1.5	12 Nm (8.9 lbf ft)	–
Plug, oil filter housing	M14x1.5	15 Nm (11.1 lbf ft)	<b>Loctite® 243™</b>
Bleeder flange, generator cover	M16x1.5	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Plug, timing-chain tensioner	M16x1.5	20 Nm (14.8 lbf ft)	–
Rotor screw	M16x1.5	150 Nm (110.6 lbf ft)	<b>Loctite® 243™</b>
Nut, balancer shaft	M20x1.5	120 Nm (88.5 lbf ft)	<b>Loctite® 243™</b>
Nut, engine sprocket	M20x1.5	100 Nm (73.8 lbf ft)	<b>Loctite® 243™</b>
Screw-in fitting, cooling system	M20x1.5	10 Nm (7.4 lbf ft)	<b>Loctite® 577</b>
Nut, inner clutch hub	M22x1.5	130 Nm (95.9 lbf ft)	<b>Loctite® 243™</b>
Oil drain plug with magnet	M22x1.5	35 Nm (25.8 lbf ft)	–
Screw in generator cover	M24x1.5	8 Nm (5.9 lbf ft)	–

# TECHNICAL DATA - ENGINE TIGHTENING TORQUES

Nut, primary gear	M33LHx1.5	130 Nm (95.9 lbf ft)	<b>Loctite® 243™</b>
-------------------	-----------	----------------------	----------------------