

Design	1-cylinder 4-stroke engine, water-cooled	
Displacement	654 cm <sup>3</sup> (39.91 cu in)	
Stroke	80 mm (3.15 in)	
Bore	102 mm (4.02 in)	
Compression ratio	11,8:1	
Idle speed	1,600... 1,700 rpm	
Control	OHC, 4 valves controlled via rocker arm, chain drive	
Valve diameter, intake	40 mm (1.57 in)	
Valve diameter, exhaust	34 mm (1.34 in)	
Valve play, cold	0.07... 0.13 mm (0.0028... 0.0051 in)	
Crankshaft bearing	2 roller bearings	
Engine lubrication	Semi-dry sump lubrication with two rotor pumps	
Primary transmission	36:79	
Clutch	Multidisc clutch in oil bath/hydraulically activated	
Transmission ratio		
1st gear	14:35	
2nd gear	16:28	
3rd gear	21:28	
4th gear	23:26	
5th gear	24:25	
6th gear	25:24	
Generator	12 V, 224 W	
Ignition	Contactless controlled fully electronic ignition with digital ignition adjustment	
Spark plug	NGK LKAR 8AI - 9	
Spark plug electrode gap	0.9 mm (0.035 in)	
Cooling	Water cooling, permanent circulation of coolant by water pump	

## Capacity- engine oil

Engine oil	2.20 l (2.32 qt.)	Engine oil (SAE 10W/60) (00062010035) (☛ p. 96)
		Engine oil (SAE 20W/60) (☛ p. 96)

## Capacity - coolant

Coolant	1.20 l (1.27 qt.)	Coolant (☛ p. 96)
		Coolant (mixed ready to use) (☛ p. 96)

Oil hole plug	self-tapping	9 Nm (6.6 lbf ft)	Loctite® 243™
Screw, membrane fixation	M3	2.5 Nm (1.84 lbf ft)	Loctite® 243™
Hose clamp, intake flange	M4	1.5 Nm (1.11 lbf ft)	–
Oil jet, conrod lubrication	M4	2 Nm (1.5 lbf ft)	Loctite® 243™
Locking screw for bearing	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
Screw, breather cover on valve cover	M5	3 Nm (2.2 lbf ft)	Loctite® 243™
Screw, cover plate for oil return line	M5	6 Nm (4.4 lbf ft)	–
Screw, gear sensor	M5	5 Nm (3.7 lbf ft)	Loctite® 243™
Screw, oil filter cover	M5	6 Nm (4.4 lbf ft)	–
Screw, oil pump cover	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
Plug, vacuum connection	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, Autodecompression	M6	3... 4 Nm (2.2... 3 lbf ft)	Loctite® 243™
Screw, axial lock of camshaft	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, clutch slave cylinder	M6x20	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, clutch slave cylinder	M6x35	10 Nm (7.4 lbf ft)	–
Screw, clutch spring	M6	10 Nm (7.4 lbf ft)	–
Screw, cylinder	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, cylinder head	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, engine housing	M6	10 Nm (7.4 lbf ft)	–
Screw, generator cover	M6	10 Nm (7.4 lbf ft)	–
Screw, generator cover (chain shaft through-hole)	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, ignition pulse generator	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, large clutch cover	M6	10 Nm (7.4 lbf ft)	–
Screw, locking lever	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, rocker arm shaft	M6	12 Nm (8.9 lbf ft)	–
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, shift lever	M6	10 Nm (7.4 lbf ft)	Loctite® 222
Screw, small clutch cover	M6	6 Nm (4.4 lbf ft)	–
Screw, starter motor	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, stator bracket	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, thermostat housing	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, timing chain guide rail	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, timing chain tensioning rail	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, valve cover	M6	10 Nm (7.4 lbf ft)	–
Screw, water pump wheel	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Oil jet, piston cooling	M6x0.75	4 Nm (3 lbf ft)	Loctite® 243™
Fixation of exhaust flange	M8	Tightening sequence: Replace the nuts. Tighten both nuts simultaneously. 20 Nm (14.8 lbf ft)	Copper paste
Plug, crankshaft location	M8	20 Nm (14.8 lbf ft)	–
Stud, exhaust flange	M8	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, cylinder head	M10	Tightening sequence: Tighten diagonally, beginning with the rear screw on the chain shaft. Step 1 15 Nm (11.1 lbf ft) Step 2 30 Nm (22.1 lbf ft) Step 3 45 Nm (33.2 lbf ft) Step 4 60 Nm (44.3 lbf ft)	lubricated with engine oil

Oil hole plug	M10x1	15 Nm (11.1 lbf ft)	<b>Loctite® 243™</b>
Oil pressure sensor in the oil filter cover	M10x1	5 Nm (3.7 lbf ft)	<b>Loctite® 243™</b>
Plug, drain hole of water pump	M10x1	15 Nm (11.1 lbf ft)	–
Plug, oil bore for oil radiator	M10x1	15 Nm (11.1 lbf ft)	–
Screw, unlocking of timing chain tensioner	M10x1	10 Nm (7.4 lbf ft)	–
Temperature switch VDO	M10x1	4 Nm (3 lbf ft)	<b>Loctite® 243™</b>
Spark plug	M12x1.25	17 Nm (12.5 lbf ft)	–
Adapter for temperature switch on cylinder head	M12x1.5	12 Nm (8.9 lbf ft)	<b>Loctite® 243™</b>
Oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)	–
Oil pressure regulator valve plug	M12x1.5	20 Nm (14.8 lbf ft)	–
Plug, oil bore	M14x1.5	15 Nm (11.1 lbf ft)	<b>Loctite® 243™</b>
Rotor nut	M18x1.5	100 Nm (73.8 lbf ft)	–
Nut, engine sprocket	M20x1.5	60 Nm (44.3 lbf ft)	<b>Loctite® 243™</b>
Nut, inner clutch hub	M20x1.5	100 Nm (73.8 lbf ft)	<b>Loctite® 243™</b>
Nut, primary gear	M20LHx1.5	90 Nm (66.4 lbf ft)	<b>Loctite® 243™</b>
Plug, oil screen	M20x1.5	15 Nm (11.1 lbf ft)	–
Plug, timing chain tensioner	M20x1.5	25 Nm (18.4 lbf ft)	–
Plug, oil thermostat	M24x1.5	15 Nm (11.1 lbf ft)	–
Screw in generator cover	M24x1.5	8 Nm (5.9 lbf ft)	–

## 690 Rally Factory Replica

Carburetor type	KEIHIN FCR-MX 41
Carburetor identification number	4100C
Needle position	5 th position from top
Idle mixture adjusting screw	
Open	2 turns
Main jet	160
Jet needle	OBDYU (OBEKR)
Idling jet	45
Idle air jet	100
Cold start jet	85