TECHNICAL SPECIFICATIONS – ENGINE 660 SMC 2005

ENGINE	660 SMC
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft
Displacement	654 ccm
Bore / Stroke	102 / 80 mm
Ratio	11,7 : 1
Fuel	unleaded premium gasoline with a least RON 95 (USA = Premium RON 91)
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain
Camshaft	586V39
Valve diameter	Intake: 36 mm Exhaust: 32 mm
Valve clearence cold	0,12 - 0,15 mm
Crank shaft bearing	2 cylinder roller bearing
Connecting rod bearing	needle bearing
Top end bearing	bronze bushing
Piston	forged aluminium alloy
Piston rings	1 compression ring, 1 taper face ring, 1 oil scraper ring
Engine lubrication	two Eaton-oilpumps
Engine oil quantity	appr. 2.1 liters including frame (0.55 US gallons)
Primary ratio	straight geared spur wheels 31 : 79 teeth
Clutch	multi disc clutch in oil bath
Transmission	5-speed claw shifted
Gear ratio	1st gear 14:35 2nd gear 15:24 3rd gear 18:21 4th gear 20:19 5th gear 22:18
Ignition system	contactless DC-CDI ignition with digital advanced system type KOKUSAN
Ignition timing	adjustment to max. 34 ° BTDC at 6000 rpm
Generator	12V 110/40W
Spark plug	NGK DCPR 8 E
Spark plug gap	0,9 mm
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanic driven water pump
Cooling liquid	1 liter, 50% antifreeze, 50% destilled water, at least –25 ° C (–13 ° F)
Starting equipment	kickstarter

BASIC CARBURATOR SETTING	
	660 SMC
Type	Keihin FCR-MX 41
Carburator-setting number	4138A
Main jet	165
Jet needle	OBDVT (OBEKR)
Idling jet	42 (45)
Main air jet	200
Idling air jet	100
Needle position	5th from top (4th from top)
Starting jet	85
Mixture control screw open	2
Slide	15
Performance restrictor	Slide stop (–)
Stop pump membrane	858 / 2,15 mm
Hot start device	3,8 mm

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TIGHTENING TORQUE - ENGINE

Hexagon nut at primary gear	M20x1,5	Loctite 243 + 170 Nm
Collar nut flywheel (LC4, ADVENTURE, DUKE)	M16x1,25 links	150 Nm
Collar nut flywheel (SC, SXC)	M12x1 left	60 Nm
Hexagon nut for inner clutch hub	M18x1,5	Loctite 243 + 90 Nm
Collar bolt clutch springs	M6	10 Nm
Kickstarter stop bolt	M12x1,5	50 Nm
Allen head bolt freewheel hub (E-STARTER)	M6x12 12.9	Loctite 2701 + 16 Nm
Allen head bolt freewheel hub (E-STARTER)	M6x12.5 8.8	Loctite 2701 + 12 Nm
Allen head bolts oil pumps	M6	Loctite 243 + 8 Nm
Collar bolts oil pumps (from modell 2003 on)	M6	Loctite 243 + 10 Nm
Hexagon bolt camshaft gear	M10	Loctite 243 + 35 Nm
Allen head bolts cylinder head top section	M6x25/M6x35/M6x65/M6x70 (8.8)	8 Nm
Allen head bolts cylinder head top section	M6x50/M6x55 (12.9)	15 Nm
Bolts cylinder head top section (from model 2003 on)	M6 (8.8)	10 Nm
Bolts cylinder head top section (from model 2003 on)	M7 (12.9)	15 Nm
Cylinder head to cylinder	M8	25 Nm
Cylinder head to cylinder	M6	8 Nm
Cylinder head to cylinder (from model 2003 on)	M6	10 Nm
Cylinder head bolts	M10	50 Nm
Cylinder head bolts (from the 2004 model)	M10	10/53 Nm
Collar nuts at cylinder base	M10	50 Nm
Plug at cylinder head (SC)	M10	20 Nm
Hexagon bolt chain sprocket 8.8	M10	Loctite 243 + 40 Nm
Hexagon bolt chain sprocket 12.9	M10	Loctite 243 + 60 Nm
Nut chain sprocket	M20x1,5	Loctite 243 + 60 Nm
Oil drain plug	M22x1,5	30 Nm
Magnetic plug	M12x1,5	20 Nm
Plug Bypass valve	M12x1,5	20 Nm
Banjo bolts oil lines	M8x1	10 Nm
Banjo bolts oil lines	M10x1	15 Nm
Jet screw clutch cover	M8	10 Nm
Plug timing-chain tensioner	M12x1,5	20 Nm
Timing-chain tensioner to cylinder	M6	Loctite 243 + 8 Nm
Timing-chain tensioner to cylinder (from model 2003 on)	M6	10 Nm
Timing-chain guide to cylinder	M12x1,25	Loctite 243 + 8 Nm
Hexagon bolt timing-chain guide	M6	Loctite 243 + 10 Nm
Tension guide	M8	Loctite 243 + 15 Nm
Timing-chain securing guide	M6	8 Nm
Allen head bolt timing-chain securing guide (from model 2003 on)	M6	Loctite 243 + 10 Nm
Counternuts valve adjusting screws	M7x0,75	16 Nm
Crankshaft locking bolt	M8	20 Nm
Spark plug	M12x1,25	20 Nm
Engine mounting bolt	M8	40 Nm
Engine mounting bolt	M10	70 Nm
Retaining plate for main shaft bearing	M6	Loctite 648 + 8 Nm
Retaining plate for main shaft bearing (from model 2003 on)	M6	Loctite 648 + 10 Nm
Shift mechanism support, securing device for bearing	M5	Loctite 243 + 6 Nm
Shift mechanism support	M6	Loctite 243 + 8 Nm
Shift mechanism support (from model 2003 on)	M6	Loctite 243 + 10 Nm
Shift drum locating	M6	Loctite 243 + 8 Nm
Engine housing, clutch cover, ignition cover	M6	10 Nm
Water pump cover	M6	10 Nm
Bolts for pulse generator	M5	Loctite 243 + 6 Nm
Stator (SC)	M6	Loctite 243 + 8 Nm
Stator (E-Start)	M5	Loctite 243 + 6 Nm
Kick starter	M8	25 Nm
Shifting lever	M6	Loctite 222 + 10 Nm
Oil filter cover	M6	10 Nm
Microfilter cover (SC)	M5	6 Nm
Starter flange, starter cover	M6	10 Nm
AH bolt for slave cylinder	M6	Loctite 243 + 10 Nm
Starter	M6	10 Nm
Valve cover	M6	10 Nm
Exhaust flange	M6	10 Nm
AH screw for decompression shaft lever	M6	Loctite 243 + 10 Nm
Retaining shim for ignition (SC)	M5	Loctite 243 + 6 Nm
Contact screws	M10	15 Nm
Oil jet	M6x0,75	Loctite 648 + 10 Nm
Plug for gear detection sensor	M10	25 Nm
Water pump wheel	M5	Loctite 243 + 6 Nm
Thermostat case	M6	6 Nm
Closing panel for ignition (SC)	M5	Loctite 243 + 6 Nm
Pulse generator	M5	Loctite 243 + 6 Nm
Other bolts, engine	M5	6 Nm
	M6	10 Nm

ASSEMBLY CLEARANCE, WEAR LIMIT		
Crank shaft	axial play except Rally	.0.10 - 0.20 mm
	axial play Rally only	.0.15 - 0.25 mm
	run out of crank stud	.max. 0.08 mm
Connecting rod bearing	radial play	.max. 0.05 mm
	axial play	.max. 1.10 mm
Cylinder 400	bore	.max. 89.04 mm
Cylinder 640	bore	.max. 101.04 mm
Cylinder 660	bore	max. 102.04 mm
Piston forged	assembly clearance	.min. 0,06 - max. 0.12 mm
Piston cast	assembly clearance	.max. 0.05 mm
Piston rings end gap	compression rings	.max. 0.80 mm
	oil scraper ring	.max. 1.00 mm
Valves	seat sealing intake	.max. 1.50 mm
	seat sealing exhaust	.max. 2.00 mm
	run out of valve heads	.max. 0.05 mm
	valve guides diameter	.max. 7.05 mm
Oil pumps	clearance outer rotor - housing	.max. 0.20 mm
	clearance outer rotor - inner rotor	.max. 0.20 mm
Bypass valve	minimum spring length	.25.00 mm
Clutch	Length of springs	.min. 34.5 mm (new 37.00 mm)
	wear limit organic	.min. 2.50 mm
	Length of the clutch spring 660 SMC	min. 31.5 mm (new 33.5 mm)
Camshaft	diameter of bearing bolt (needle bearing)	.min. 19.97 mm
Transmission shafts	axial play	.0.10 - 0.40 mm
Crankshaft webs – outer dimension		.66 mm +/- 0.05 mm
Rocker arm	Axial clearance	0,2 - 0,3 mm
max. oil consumption	per 1000 kilometers	0.3 - 0.8 liters