

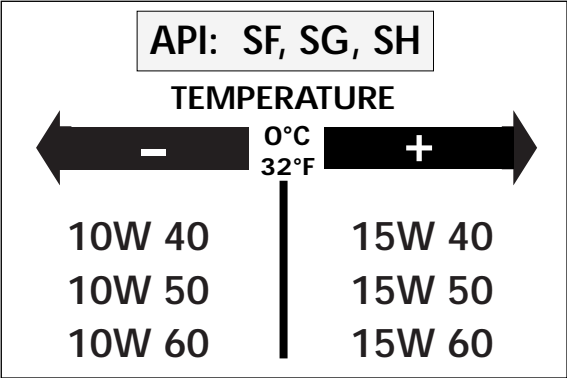
# TECHNICAL DATA – ENGINE 400 / 620 LC4-E '97 (without 400 R/XC e '97)

Engine	400 LC4-E	620 LC4-E
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft and electric starter	
Displacement	398 cm <sup>3</sup>	609 cm <sup>3</sup>
Bore / Stroke	89 / 64 mm	101 / 76 mm
Ratio	10,8 : 1	10,4 : 1
Fuel	unleaded premium gasoline with a least RON 95	
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain	
Camshaft	249° (249)	
Valve timing by 1 mm valve clearance	IO 22° BTDC EO 59° BBDC IC 47° ABDC EC 10° ATDC	IO 14° BTDC EO 56° BBDC IC 55° ABDC EC 13° ATDC
Valve diameter	Intake: 36 mm Exhaust: 30 mm	
Valve clearance cold	Intake: 0,20 mm Exhaust: 0,20 mm	0,15 mm Exhaust: 0,15 mm
Crank shaft bearing	2 cylinder roller bearing	
Connecting rod bearing	needle bearing	
Top end bearing	bronze bushing	
Piston	forged/cast aluminium alloy	
Piston rings	1 compression ring, 1 taper face ring, 1 oil scraper ring	
Engine lubrication	two Eaton-oilpumps	
Engine oil	see below #	
Engine oil quantity	appr. 2,1 liters including frame	
Primary ratio	straight geared spur wheels 30 : 81 teeth	
Clutch	multi disc clutch in oil bath	
Transmission	5-speed claw shifted	
Gear ratio	1st	14:35
	2nd	15:24
	3rd	18:21
	4th	20:19
	5th	22:18
Ignition system	contactless DC-CDI ignition with digital advanced system type KOKUSAN	
Ignition timing	adjustment to max. 38° BTDC at 6000 rpm	
Generator	12V 200W	
Spark plug	NGK DR8EA	
Spark plug gap	0,7 mm	
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanic driven water pump	
Cooling liquid	1 liter, 40% antifreeze, 60% water, at least -25 ° C (-13 ° F)	
Starting equipment	electric starter and kickstarter	

TOLERANCE, ASSEMBLY CLEARANCE	
Crank shaft	axial play .....0,03 - 0,12 mm (0,0012 - 0,0047 in)
	run out of crank stud.....max. 0,04 mm (0,0016 in)
Connecting rod bearing	radial play .....max. 0,05 mm (0,002 in)
	axial play .....max. 1,10 mm (0,043 in)
Cylinder 400	bore diameter.....max. 89,04 mm (3,5055 in)
Cylinder 620	bore diameter.....max. 101,04 mm (3,9779 in)
Piston	assembly clearance .....max. 0,12 mm (0,0047 in)
Piston rings end gap	compression rings.....max. 0,80 mm (0,0315 in)
	oil scraper ring .....max. 1,0 mm (0,0394 in)
Valves	seat sealing intake .....max. 1,50 mm (0,0591 in)
	seat sealing exhaust.....max. 2,00 mm (0,0788 in)
	run out of valve heads .....max. 0,03 mm (0,0012 in)
	valve guides diameter .....max. 7,05 mm (0,2778 in)
Oil pump	clearance outer rotor - housing .....max. 0,20 mm (0,0079 in)
	clearance outer rotor - inner rotor.....max. 0,20 mm (0,0079 in)
Bypass valve	minimum spring lenght.....25 mm (0,985 in)
Clutch	clutchspring lenght.....min. 34,5 mm (1,36 in), new 37 mm (1,458 in)
	Clutch disks organic.....min. 2,5 mm (0,0985 in)
Cam shaft	pin bearing diameter .....min. 19,97 mm (0,7868 in)
Transmission shafts	axial play .....0,1 – 0,4 mm (0,0039 – 0,0158 in)

TIGHTENING TORQUES - ENGINE		
Hexagon nut at primary gear	M20x1,5	Loctite 242 + 170Nm (125 ft.lb)
Hexagon nut flywheel	M16x1,25 LH thread	150 Nm (110 ft.lb)
Hexagon nut for inner clutch hub	M18x1,5	Loctite 648 + 80 Nm (59 ft.lb)
Kickstarter stop screw	M12x1,5	50 Nm (37 ft.lb)
Allen head screws oil pump	M6	Loctite 242 + 8 Nm (6 ft.lb)
Hexagon screw camshaft gear	M10	35 Nm (26 ft.lb)
Allen head screws outer race	M6x12/M6x12,5	Loctite 648 + 18 Nm (13 ft.lb)
Allen head screw cylinder head top sect.	M6x50/M6x55 (12.9)	20 Nm (15 ft.lb)
Allen head screw cylinder head top sect.	M6x25/M6x65/M6x70 (8.8)	8 Nm (6 ft.lb)
Cylinder head screws	M10	50 Nm (37 ft.lb)
Collar nuts at cylinder base	M10	40 Nm (30 ft.lb)
Hexagon screw chain sprocket	M10	Loctite 242 + 40 Nm (30 ft.lb)
Oil drain plug	M22x1,5	30 Nm (22 ft.lb)
Magnetic plug	M12x1,5	20 Nm (15 ft.lb)
Plug bypass valve	M12x1,5	20 Nm (15 ft.lb)
Crankshaft locating bolt	M8	25 Nm (18 ft.lb)
Hollow screws oil lines	M8x1	10 Nm (7 ft.lb)
Hollow screws oil lines	M10x1	15 Nm (11 ft.lb)
Jet screw clutch cover	M8	10 Nm (7 ft.lb)
Screw plug timing-chain tensioner	M12x1,5	20 Nm (15 ft.lb)
Counternuts valve adjusting screws	M7x0,75	20 Nm (15 ft.lb)
Engine fastening screw	M8	40 Nm (30 ft.lb)
	M10	70 Nm (52 ft.lb)

#



**Engine oil**  
 Use only oil brands, which meet quality requirements of API-clas-  
 ses SF, SG or SH (informations on bottles) or higher. Both, mineral  
 and synthetic oils with above specifications can be used.

---

**! CAUTION !**

---

POOR OIL QUALITY OR MINOR QUANTITY EFFECT EARLY ENGINE-WEAR.

BASIC CARBURETOR SETTING						
	400 EGS-E 400 LSE 25 kW with and without KAT	400 EGS-E 400 LSE 31 kW with and without KAT	620 EGS-E 620 LSE 25 kW without KAT	620 EGS-E 620 LSE 37 kW without KAT	620 EGS-E 620 LSE 25 kW with KAT	620 EGS-E 620 LSE 37 kW with KAT
Carburetor	PHM 38 ND	PHM 38 ND	PHM 40 SD	PHM 40 SD	PHM 40 SD	PHM 40 SD
Carburetor setting number	100197	100197	090197	090197	080197	080197
Main jet	130	130	155	155	155	155
Needle jet	AR 265	AR 265	DR 270	DR 270	DR 270	DR 270
Idling jet	50	50	45	45	45	45
Jet needle	K 23	K 23	K 51	K 51	K 51	K 51
Needle position from top	2 nd	2 nd	3 rd	3 rd	3 rd	3 rd
Mixture.adju. screw open	1,5 turn	1,5 turn	1,5 turn	1,5 turn	1,5 turn	1,5 turn
Throttle valve	50/1	50/1	40	40	50	50
Starting jet	45 (50, 55)	45 (50, 55)	45 (50, 55)	45 (50, 55)	45 (50, 55)	45 (50, 55)
Performance restrictor	slide stop 51 mm	–	slide stop 28 mm	–	slide stop 28 mm	–