

TECHNICAL DATA – ENGINE

Engine	400 LC4	620 LC4
Design	Liquid-cooled single cylinder 4-stroke engine	
Displacement	398 cm ³	609 cm ³
Bore / Stroke	95 / 56,2 mm	101 / 76 mm
Ratio	10,0 : 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	Intake: 249° Exhaust: 225° (995)	249° (249)
Valve timing by 1 mm valve clearance	IO 17° BTDC EO 46° BBDC IC 52° ABDC EC 1° BTDC	IO 14° BTDC EO 56° BBDC IC 52° ABDC EC 12° ATDC
Valve diameter	Intake: 36 mm	Exhaust: 30 mm
Valve clearance cold	Intake: 0,10 mm	Exhaust: 0,10 mm
Crank shaft bearing	2 cylinder roller bearing	
Connecting rod bearing	needle bearing	
Top end bearing	bronze bushing	
Piston	forged aluminium-alloy	cast aluminium alloy
Piston rings	1 compression ring, 1 taper face ring, 1 oil scraper ring	
Engine lubrication	forced-feed lubrication through Eaton-Oilpump with oil sump	
Engine oil	fully synthetic recommended brand multi-grade engine oil for 4-stroke engine (after running in)	
Engine oil quantity	2,1 liters	
Primary ratio	straight geared spur wheels 30 : 81 teeth	
Clutch	multi disc clutch in oil bath	
Transmission	5-speed claw shifted	
Ignition system	contactless thyristor ignition with electronic advanced system type SEM	
Ignition timing	idling: 6° BTDC (1200 rpm) - adjustment from 1700 rpm to max. 38° BTDC at 5000 rpm	
Generator	12V 130W	
Spark plug	NGK D8EA	
Spark plug gap	0,6 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	decompressor hand actuated, cold and warm start knob on carburetor	

BASIC CARBURETOR SETTING

	Duke 400 20 kW A	Duke 400 Competition I, E, other	Duke 620 20 kW CH	Duke 620 37 kW D, A, other
Type	PHM 38 SD	PHM 38 SD	PHM 40 SD	PHM 40 SD
Carburetor setting number	4920	4894/6	4922/3	4922/2
Main jet	135	190	135	170
Needle jet	DR 266	DR 270	DR 268	DR 268
Idling jet	38	45	45	45
Jet needle	K 51	K 51	K 51	K 51
Needle clip position from top	2nd	2nd	3rd	3rd
Mixture adjusting screw open	2 turn	2 turn	1,5 turn	1,5 turn
Throttle valve	40	40	40	40
Starting jet	45	45	45	45

GEAR RATIOS

Primary ratio	Transmission	Original final drive ratio	Available chain drive sprockets	Available final drive sprockets
30:81	1st Gear	15:33	400 = 16 : 42 620 = 17 : 38	38 t
	2nd Gear	16:24		40 t
	3rd Gear	18:21		42 t for chain
	4th Gear	20:19		45 t ^{5/8} x ^{1/4} "
	5th Gear	22:18		48 t
			15 t ^{5/8} x ^{1/4} "	50 t
			16 t	52 t
			17 t	

TOLERANCE, ASSEMBLY CLEARANCE

Crank shaft	axial play0,1 - 0,2 mm run out of crank studmax. 0,04 mm
Connecting rod bearing	radial playmax. 0,05 mm axial playmax. 1,00 mm
Piston	assembly clearance 400/620max. 0,12 mm
Piston rings end gap	compression ringsmax. 0,60 mm oil scraper ringmax. 0,80 mm
Valves	seat sealing intakemax. 1,50 mm seat sealing exhaustmax. 2,00 mm run out of valve headsmax. 0,03 mm valve guides diametermax. 7,05 mm
Oil pump	clearance outer rotor - housingmax. 0,20 mm clearance outer rotor - inner rotormax. 0,20 mm
Bypass valve	minimum spring length25 mm
Clutch discs	wear limit organic2,5 mm
Transmission shafts	axial play0,1 - 0,3 mm

TIGHTENING TORQUES - ENGINE

Hexagon nut at primary gear	M20x1,5	Loctite 242 + 170Nm
Collar nut flywheel	M12x1 LH thread	60 Nm
Hexagon nut for inner clutch hub	M18x1,5	80 Nm
Kickstarter stop screw	M12x1,5	70 Nm
Allen head screws oil pump	M6	8 Nm
Hexagon screw camshaft gear	M10	50 Nm
Allen head screw cylinder head top sect.	M6	8 Nm
Cylinder head screws	M10	50 Nm
Collar nuts at cylinder base	M10	40 Nm
Hexagon screw chain sprocket	M10	Loctite 242 + 40 Nm
Oil drain plug	M22x1,5	50 Nm
Magnetic plug	M12x1,5	20 Nm
Plug bypass valve	M12x1,5	20 Nm
Hollow screws oil lines	M8	10 Nm
Hollow screws oil lines	M12	20 Nm
Screw plug timing-chain tensioner	M12x1,5	20 Nm
Counternuts valve adjusting screws	M7x0,75	20 Nm