

TECHNICAL SPECIFICATIONS – ENGINE 400/620 SX, Super Competition, EGS '97

Engine	400 LC4	620 LC4
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft	
Displacement	398 cm ³	609 cm ³
Bore / Stroke	89 / 64 mm	101 / 76 mm
Ratio	10,8 : 1	SX: 11,5 : 1 SC, EGS: 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	SX: Intake: 0,20 mm Exhaust: 0,20 mm SC, EGS: Intake: 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	forced-feed lubrication through Eaton-Oilpump with oil sump	
Engine oil	see below #	
Engine oil quantity	SX, SC: 1,6 liters / EGS: 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 thyristor ignition with electronic advanced system type SEM	
Ignition timing	adjustment to max. 38 ° BTDC at 6000 rpm	SX: adjustment to max. 38 ° BTDC at 6000 rpm SC, EGS: adjustment to max. 32 ° BTDC at 6000 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 automatic and hand actuated, cold and hot start knob on carburetor	

TOLERANCE, ASSEMBLY CLEARANCE

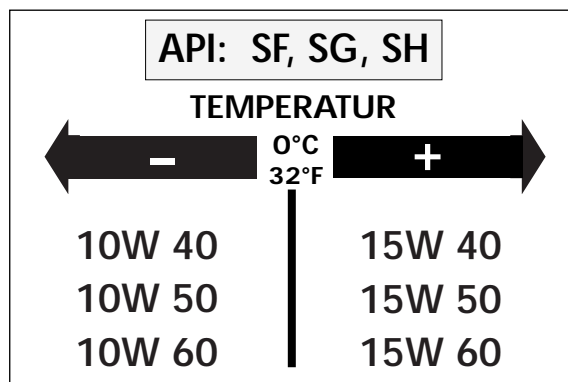
Crank shaft	axial play	0,03 - 0,12 mm	(0,001-0,005 in)
	run out of crank stud	max. 0,04 mm	(0,0016 in)
Connecting rod bearing	radial play	max. 0,05 mm	(0,0019 in)
	axial play	max. 1,00 mm	(0,04 in)
Piston	assembly clearance 400/620	max. 0,12 mm	(0,005 in)
Piston rings end gap	compression rings	max. 0,60 mm	(0,023 in)
	oil scraper ring	max. 0,80 mm	(0,031 in)
Valves	seat sealing intake	max. 1,50 mm	(0,059 in)
	seat sealing exhaust	max. 2,00 mm	(0,079 in)
	run out of valve heads	max. 0,03 mm	(0,001 in)
	valve guides diameter	max. 7,05 mm	(0,277 in)
Oil pump	clearance outer rotor - housing	max. 0,20 mm	(0,008 in)
	clearance outer rotor - inner rotor	max. 0,20 mm	(0,008 in)
Bypaß valve	minimum spring length	25 mm	(1 in)
Clutch discs	wear limit organic	2,5 mm	(0,1 in)
Transmission shafts	axial play	0,1 - 0,4 mm	(0,004 in)
Clutch	minimum clutchspring length	34,5 mm (new 37 mm)	(1,36 in - new 1,45 in)

TIGHTENING TORQUES - ENGINE

Hexagon nut at primary gear	M20x1,5	Loctite 242 + 170Nm	(125 ft.lb)
Collar nut flywheel	M12x1 LH thread	60 Nm	(44 ft.lb)
Hexagon nut for inner clutch hub	M18x1,5	Loctite 648 + 80 Nm	(59 ft.lb)
Kickstarter stop screw	M12x1,5	70 Nm	(52 ft.lb)
AH screws oil pump	M6	Loctite 242 + 8 Nm	(6 ft.lb)
Hexagon screw camshaft gear	M10	35 Nm	(26 ft.lb)
AH screw cylinder head top sect.	M6x25	8 Nm	(6 ft.lb)
AH screw cylinder head top sect.	M6x50/M6x55 (12.9)	20 Nm	(15 ft.lb)
AH screw cylinder head top sect.	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)
Banjo bolts oil lines	M8x1	10 Nm	(7 ft.lb)
Banjo bolt oil lines	M10x1	15 Nm	(11 ft.lb)
Jet screw clutch cover	M8x1	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)

BASIC CARBURETOR SETTING							
	400 SC (20 kW)	400 SC	400 EGS Classic	620 SC (20 kW)	620 SX 620 SC	620 EGS Classic with secondary air system	620 EGS Classic without secondary air system
Carburetor	PHM 38 SD	PHM 38 SD	PHM 38 SD	PHM 40 SD	PHM 40 SD	PHM 40 SD	PHM 40 SD
Carburetor setting number	300896	4894/6	300896	110996	4922	4922/2	110996
Main jet	150	190	150	155	195	170	155
Needle jet	DR 266	DR 270	DR 266	DR 268	DR 272	DR 268	DR 268
Idling jet	45	45	45	45	45	45	45
Jet needle	K 51	K 51	K 51	K 51	K 51	K 51	K 51
Needle position from top	3 rd	2 nd	3 rd	3 rd	2 nd	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	1,5 turn
Throttle valve	40	40	40	40	40	40	40
Starting jet	45	45	45	45	45	45	45
Performance restrictor	slide stop 22 mm	-	-	slide stop 26 mm	-	-	-

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Engine oil

Use only oil brands, which meet quality requirements of API-classes 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.