TECHNICAL SPECIFICATIONS – ENGINE 400/540 SXC, 620 SX '99

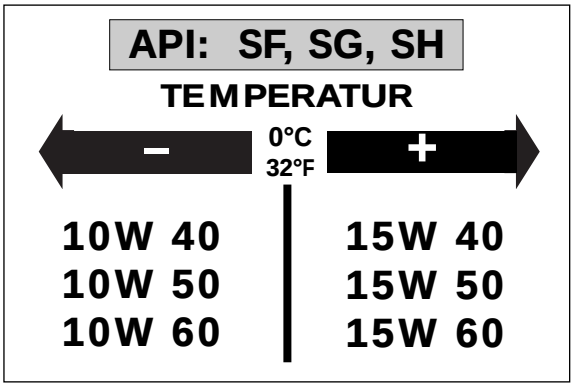
Engine	**400 SXC**	**540 SXC**	**620 SX**
Design	Liquid-cooled single cylinder 4-stroke engine		
Displacement	398 ccm	538,5 ccm	609 ccm
Bore / Stroke	89 / 64 mm		101 / 76 mm
Ratio	10,8 : 1	11,3 : 1	11,5 : 1
Fuel	unleaded premium gasoline with a least RON 95		
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain		
Camshaft	249/1		
Valve timing by 1 mm valve clearance	IO 22° BTDC EO 60° BBDC IC 42° ABDC EC 4° ATDC	IO 13° BTDC EO 53° BBDC IC 51° ABDC EC 11° ATDC	
Valve diameter	Intake: 36 mm Exhaust: 30 mm		
Valve clearence cold	Intake: 0,20 mm Exhaust: 0,20 mm	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 bellow #		
Engine oil quantity	1,45 liters (0,38 US gallons)		
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	400 SXC/620 SX: adjustment to max. 38 ° BTDC at 6000 rpm 540 SXC: 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		

BASIC CARBURETOR SETTING

	400 SXC	**400 SC (20 kW)**	**540 SXC**	**540 SXC (20 kW)**	**620 SX**
Carburetor	PHM 38 ND	PHM 38 ND	VHSB 38 QS	VHSB 38 QS	PHM 40 SD
Carburetor setting number	120198	120198	081297	091297	4922
Main jet	150 (155)	150 (155)	185	140 (185)	195
Needle jet	AB 265	AB 265	FN 260 (FN 258)	FN 260 (FN 258)	DR 272
Idling jet	52 (50)	52 (50)	33	33	45
Jet needle	K 11	K 11	K 35 (K 32)	K 35 (K32)	K 51
Needle position from top	I	I	II	II	II
Mixture.adju. screw open	1,5 turn	1,5 turn	1,5 turn	1,5 turn	1,5 turn
Throttle valve	50/1	50/1	50	50	40
Starting jet	45	45	40	40	45
Performance restrictor	–	slide stop 48mm	–	slide stop 36mm	–
Pump jet	33 (38)	33 (38)	–	–	–

ASSEMBLY CLEARANCE, WEAR LIMIT		
Crank shaft	axial play.....0,03 - 0,12 mm	(0,001-0,005 in)
	run out of crank stud.....max. 0,08 mm	(0,003 in)
Connecting rod bearing	radial play.....max. 0,05 mm	(0,002 in)
	axial play.....max. 1,00 mm	(0,04 in)
Piston forged	assembly clearance .....max. 0,12 mm	(0,005 in)
Piston cast	assembly clearance .....max. 0,05 mm	(0,002 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	(0,080 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 lenght.....25 mm	(1 in)
Clutch discs	wear limit organic.....2,5 mm	(0,1 in)
Clutch springs	minimum lenght.....34,5 mm (new 37 mm)	(1,36 in - new 1,45 in)
Transmission shafts	axial play.....0,1 - 0,4 mm	(0,004 - 0,016 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	50 Nm	(37 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)
Spark plug	M12x1,25	20 Nm	(15 ft.lb)
Crankshaft locking screw	M8	25 Nm	18 ft.lb)
Engine fastening screw	M8	40 Nm	(30 ft.lb)
	M10	70 Nm	(51 ft.lb)



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Engine oil

Use only oil brands,(Shell Advance Ultra 4) 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.