# TECHNICAL SPECIFICATIONS – ENGINE 950 ADVENTURE

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|---|---|
| Engine | 950 LC8 |
| Design | Liquid-cooled, 2-cylinder 4-stroke engine with 75° V arrangement with balancer shaft and electric starter |
| Displacement | 942 cm3 |
| Bore / Stroke | 100/60 mm |
| Compression ratio | 11.5:1 |
| Fuel | unleaded premium fuel with at least RON 95 (ROZ 80 - 94 for other ignition curve) |
| Valve timing | 4 valves controlled over bucket tappet and 2 camshafts, camshaft drive with gears/chain |
| Valve diameter | Intake: 38 mm Exhaust: 33 mm |
| Valve clearance, cold | Intake: 0,10 - 0,15 mm Exhaust: 0,25 - 0,30 mm |
| Crankcase bearing | Friction bearings (2 main bearings / 1 supporting bearing) |
| Conrod bearing | Friction bearing |
| Piston pin bearing | Dual-fuel bearing |
| Piston | Light alloy – forged |
| Piston rings | 1 compression ring, 1 taper face ring, 1 single-piece oil scraper ring with spiral-type expander |
| Engine lubrication | Dry sump with 2 trochoidal pumps (pressure pump and suction pump) |
| Engine oil | SAE 5W/40, 10W-50 (f.ex. Motorex Power Synt 4T) |
| Quantity of engine oil | approx. 3.0 liters during oil/filter change or approx. 3.3 liters for dry engine |
| Primary drive | Straight-toothed spur wheels 67 : 35 |
| Clutch | Multi-disc clutch in oil bath |
| Transmission | 6-speed claw shifted |
| Gear ratio | 1st gear 35:12<br>2nd gear 32:15<br>3rd gear 30:18<br>4th gear 27:20<br>5th gear 27:24<br>6th gear 26:27 |
| Ignition system | breakerless transistorized electronic ignition system with digital ignition advance |
| Ignition timing | 5° from TDC at 1200 rpm |
| Generator | 12V 450W at 6000 rpm |
| Spark plug | NGK CR 8 EK |
| Electrode distance | 0.7 mm |
| Cooling system | liquid cooled, permanent circulation of cooling liquid through water pump |
| Cooling liquid | 2.1 liters, 50% antifreeze, 50% destilled water, at least –25° C |
| Starting aid | 0.9 kW electric starter |

| BASIC CARBURETOR SETTING | |
|---|---|
| | **950 LC8 ADVENTURE** |
| Type of carburetor | CVRD 43 |
| Main jet | 155 (front) / 160 (rear) |
| Main air jet | 40 |
| Idling jet | 42 |
| Idle air jet | 50 |
| Idle air cutoff jet | 80 |
| Jet needle | NDFB |
| Needle position | 2nd from top |
| Mixture control screw open | 2 1/4 turns |
| Starting jet | 68 |

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## TOLERANCES AND FITTING CLEARANCES

| COMPONENT | MEASUREMENT/TEST | SETPOINT VALUE | TOLERANCE LIMIT |
|---|---|---|---|
| Valves | Valve shaft runout | | max. 0.1mm |
| | Sealing seat width, intake | 1.2 mm – 1.8 mm | |
| | Sealing seat width, exhaust | 1.5 mm – 2.0 mm | |
| | Valve disk runout | | max. 0.03 mm |
| | Valve guide, inner diameter | 6.006 mm – 6.018 mm | max. 6.05 mm |
| | Valve shaft, outer diameter, intake | 5.967 mm – 5.980 mm | |
| | Valve shaft, outer diameter, exhaust | 5.973 mm – 5.987 mm | |
| Valve springs 950 Adventure | Inner length, unloaded | new 39.4 mm | min. 38.0 mm |
| | Outer length, unloaded | new 42.8 mm | min. 41.3 mm |
| Valve springs 990 Super Duke | Inner length, unloaded | new 37.8 mm | min.37.0 mm |
| | Outer length, unloaded | new 42.0 mm | min.41.2 mm |
| Camshafts/cylinder head 950 Adventure | Cam height, intake | 37.80 mm – 37.90 mm | |
| | Cam height, exhaust | 36.45 mm – 36.55 mm | |
| Camshafts/cylinder head 990 Super Duke | Cam height, intake | 38.75 mm - 38.85 mm | |
| | Cam height, exhaust | 38.15 mm - 38.25 mm | |
| | Camshaft bearing bore | 24.000 mm – 24.021 mm | |
| | Camshaft bearing journal | 23.960 mm 23.980 mm | |
| | Camshaft bearing clearance | 0.020 mm – 0.061 mm | max. 0.09 mm |
| | Cylinder head distortion | | max. 0.05 mm |
| Cylinder 950 Adventure | Size I | 100.000 mm – 100.012 mm | |
| | Size II | 100.013 mm – 100.025 mm | |
| | Cylinder distortion | | max. 0.05 mm |
| Cylinder 990 Super Duke | Size I | 101.000 mm – 101.012 mm | |
| | Size II | 101.012 mm – 101.025 mm | |
| | Cylinder distortion | | max. 0.05 mm |
| Piston 950 Adventure | Size I – 9 mm (from lower edge) | 99.953 mm – 99.967 mm | |
| | Size II – 9 mm (from lower edge) | 99.963 mm – 99.977 mm | 99.930 mm |
| | Mounting clearance | 0.04 mm – 0.06 mm | 0.10 mm |
| Piston 990 Super Duke | Size I – 9 mm (from lower edge) | 100.943 mm – 100.957 mm | |
| | Size II – 9 mm (from lower edge) | 100.953 mm – 100.967 mm | 100.930 mm |
| | Mounting clearance | 0.05 mm – 0.07 mm | 0.10 mm |
| Piston ring 950 Adventure | Gap | 0.15 mm – 0.35 mm | 0.5 mm |
| | Width of piston ring groove – 1st ring (L-ring) | 0.92 mm – 0.94 mm | |
| | Width of piston ring groove – 1st ring (L-ring) | 1.80 mm – 1.84 mm | |
| | Width of piston ring groove – 2nd ring | 1.27 mm – 1.29 mm | |
| | Width of piston ring groove – oil scraper ring | 2.51 mm – 2.53 mm | |
| | Thickness of 1st ring (L-ring) | 0.85 mm – 0.87 mm | |
| | Thickness of 1st ring (L-ring) | 1.20 mm – 1.22 mm | |
| | Thickness of 2nd ring | 1.22 mm – 1.24 mm | |
| | Thickness of oil scraper ring | 2.47 mm – 2.49 mm | |
| Piston ring 990 Super Duke | Gap | 0.15 mm – 0.35 mm | 0.5 mm |
| | Width of piston ring groove – 1st ring (L-ring) | 0.92 mm – 0.94 mm | |
| | Width of piston ring groove – 1st ring (L-ring) | 1.80 mm – 1.84 mm | |
| | Width of piston ring groove – 2nd ring | 1.25 mm – 1.29 mm | |
| | Width of piston ring groove – oil scraper ring | 2.50 mm – 2.53 mm | |
| | Thickness of 1st ring (L-ring) | 0.85 mm – 0.88 mm | |
| | Thickness of 1st ring (L-ring) | 1.20 mm – 1.27 mm | |
| | Thickness of 2nd ring | 1.22 mm – 1.24 mm | |
| | Thickness of oil scraper ring | 2.47 mm – 2.49 mm | |
| Piston pin / piston | Diameter of piston ring bore | 22.006 mm – 22.011 mm | 22.030 mm |
| | Diameter of piston pin | 21.996 mm – 22.000 mm | 21.980 mm |

## TOLERANCES AND FITTING CLEARANCE

| COMPONENT | MEASUREMENT/TEST . . . . . .SETPOINT VALUE . .TOLERANCE LIMIT |
|---|---|
| Crankshaft/conrod | Diameter of crankshaft journal . . . . . .49.975 mm – 49.985 mm (blue) |
| | Diameter of crankshaft journal . . . . . .49.986 mm – 49.995 mm (red) |
| | Mounting clearance of crankshaft journal . . . . . .0.025 mm – 0.055 mm . . . . . .0.08 mm |
| | Diameter of support bearing journal . . . . . .27.985 mm – 28.000 mm |
| | Mounting clearance of support bearing . . . . . .0.030 mm – 0.070 mm . . . . . .0.09 mm |
| | Axial clearance of crankshaft . . . . . .0.1 mm – 1.3 mm . . . . . .2.0 mm |
| | Diameter of conrod eye . . . . . .22.010 mm – 22.020 mm . . . .22.040 mm |
| | Diameter of conrod journal . . . . . .41.990 mm – 42.000 mm (blue) |
| | Diameter of conrod journal . . . . . .42.001 mm – 42.011 mm (red) |
| | Mounting clearance of conrod bearing . . . . . .0.030 mm – 0.060 mm . . . . . .0.080 mm |
| | Axial clearance of conrod eye on conrod journal . . .0.30 mm – 0.45 mm . . . . . .0.60 mm |
| | Width of conrod bottom . . . . . .21.948 mm – 22.000 mm |
| | Width of conrod journal . . . . . .44.30 mm – 44.35 mm |
| Oil pressure | Oil pressure of engine at operating temperature (at least 60° C) . . . . . .min. 1.5 bar at 1500 rpm |
| | . . . . . .min. 3.0 bar – max. 4.0 bar at 6000 rpm |
| Oil consumption | . . . . . .max. 0.6 liter /1000 km |
| Pressure pump | Clearance between inner and outer rotor . . . . . .0.1 mm . . . . . .0.25 mm |
| | Clearance between outer rotor and case . . . . . .0.2 mm . . . . . .0.4 mm |
| | Axial clearance . . . . . .0.04 mm – 0.09 mm . . . . . .0.25 mm |
| Suction pump | Clearance between inner and outer rotor . . . . . .0.1 mm . . . . . .0.25 mm |
| | Clearance between outer rotor and housing . . . . . .0.2 mm . . . . . .0.40 mm |
| | Axial clearance . . . . . .0.04 mm – 0.09 mm . . . . . .0.25 mm |
| Bypass valve | Length of spring, unloaded . . . . . .min. 42.0 mm |
| | Spring tension . . . . . .27 mm at a load of at least 3.5 kg |
| Clutch | Total height of disk package . . . . . .50.20 mm – 51.20 mm . . . .min. 48.0 mm |
| | Thickness of lining disks . . . . . .2.72 mm – 2.88 mm . . . . . .2.65 mm |
| | Thickness of steel disks . . . . . .1.95 – 2.05 mm . . . . . .1.85 mm |
| | Length of clutch springs, unloaded . . . . . .30.77 mm . . . . . .29.0 mm |
| | Spring tension . . . . . .19.0 at a load of at least 20 kg – 24 kg |
| Thermostat/radiator | Opening temperature of thermostat . . . . . .73° C – 77° C |
| | Opening stroke of thermostat . . . . . .over 7 mm at 100° C |
| | Discharge pressure of radiator cap . . . . . .1.4 bar |
| | Switch-on temperature of radiator fan switch . . . . . .102° C |
| Transmission | Clearance between shift fork and groove . . . . . .0.1 mm – 0.25 mm . . . . . .0.4 mm |
| | Width of shift fork groove . . . . . .5.02 mm – 5.12 mm |
| | Thickness of shift fork . . . . . .4.85 mm – 4.95 mm |

| TIGHTENING TORQUES – ENGINE | | |
|---|---|---|
| Hexagon nut on primary gear | M33x1.5 left | Loctite 243 + 130 Nm |
| Multipoint head bolt on conrod caps | M10x1 | 25 Nm/30Nm/60° |
| Hexagon nut on balancer shaft | M20x1.5 | Loctite 243 + 150 Nm |
| Hexagon nut on balancer shaft preloaded | M20x1.5 | Loctite 243 + 120 Nm |
| Hexagon nut on cylinder head | M10 | lubricated, 25 Nm /38 Nm |
| AH bolts on cylinder head | M8 | 18 Nm/23 Nm |
| Hexagon nut on cylinder head | M6 | 8 Nm |
| Studs in engine case | M6 | 10 Nm |
| Studs in engine case | M10 | 20 Nm |
| Stud on exhaust flange | M8 | 15 Nm |
| Plug on front cylinder head | M12x1.5 | 25 Nm |
| Bolts to attach bearings | M5 | Loctite 243 + 6 Nm |
| Crankshaft locking bolt | M8 | 10 Nm |
| Bearing bolts on tensioning rail | M8 | Loctite 243 + 20 Nm |
| Bearing bolts on guide rail | M8 | Loctite 243 + 15 Nm |
| Bearing bolts on double timing gear | M10 | 30 Nm |
| Bolt on chain tensioner | M16x1.5 | 20 Nm |
| AH bolts on camshaft bearing bridges | M8 10.9 | 10 Nm/18 Nm |
| AH bolts on camshaft bearing bridges | M6 10.9 | 10 Nm |
| HH bolts on valve covers | M6 | 10 Nm |
| HH bolts on engine case halves | M6 | 10 Nm |
| HH bolts on engine case halves | M8 | 20 Nm |
| AH bolts on freewheel support | M6 10.9 | Loctite 648 + 15 Nm |
| HH bolts on freewheel holder | M6 | Loctite 243 + 10 Nm |
| Oil plug (clutch lubrication) | M10 | 15 Nm |
| Oil drain plug | M22x1.5 | 20 Nm |
| Oil line screw connections | M6 | 10 Nm |
| HH bolts on oil pump cover | M6 | Loctite 243 + 10 Nm |
| Plug on oil filter housing | M14x1.5 | Loctite 243 + 15 Nm |
| Oil jets | M6x0.75 | Loctite 243 + 4 Nm |
| Oil jets bended | M4 | Loctite 243 + 6 Nm |
| Oil pressure switch | M10x1 | 10 Nm |
| AH bolt on shift locating drum | M6 | Loctite 243 + 10 Nm |
| HH bolt on shift locking lever | M5 | Loctite 243 + 6 Nm |
| HH bolt on the shift lever (950 Adventure) | M6 | Loctite 243 + 10 Nm |
| Hexagon nut on clutch clutch hub | M22x1.5 | Loctite 243 + 130 Nm |
| HH bolts on clutch pressure cap | M6 | 10 Nm |
| HH bolt on clutch cover | M6 | 10 Nm |
| HH bolt on clutch cover | M8 | 15 Nm |
| HH bolt on outer clutch cover | M6 | 10 Nm |
| AH bolt on ignition rotor | M16 | Loctite 243 + 180 Nm |
| AH bolt on ignition rotor | M16x1.5 | Loctite 243 + 150 Nm |
| HH bolt on generator cover | M6 | 10 Nm |
| Fixing bolts on the stator | M6 | Loctite 243 + 10 Nm |
| Plug on generator cover | M24x1.5 | 8 Nm |
| Bleeder flange on generator cover | M16x1.5 | Loctite 243 + 10 Nm |
| Bearing bolt on generator cover | M6 | Loctite 243 + 10 Nm |
| Fixing bolts on ignition pickup | M6 | Loctite 243 + 10 Nm |
| HH bolts on gear sensor | M5 | 4 Nm |
| Spark plugs | M10x1.0/M12x1.5 | 12 Nm |
| Collar bolt on water pump wheel | M6 | Loctite 243 + 10 Nm |
| HH bolt on water pump cover | M6 | 10 Nm |
| Water temperature sensor | M12x1.5 | 12 Nm |
| Water connections for cylinder head | M20x1.5 | Loctite 577 + 10 Nm |
| HH bolt on the starter motor | M6 | 10 Nm |
| Vacuum connections for intake port | M6 | Loctite 243 + 8 Nm |
| Hexagon nut on chain sprocket | M20x1.5 | sheet retainer + 100 Nm |
| AH screw for carburetor trumpet fixture | M4 | 4 Nm |
| Hose clamps for intake rubber | M4 | 1,5 Nm |
| Collar screws for bearing shell retaining brackets | M5 | Loctite 243 + 6 Nm |
| Lambda probe | M18x1,5 | 45 Nm |
| Other engine bolts | M5 | 6 Nm |
| | M6 | 10 Nm |