

SPARK

ENGINE				
Engine type			ROTAX® 900 ACE™ and 900 ACE HO	
			4-stroke, Double Over Head Camshaft (DOHC), dry sump, liquid cooled	
Number of cylinders			3	
Number of valves			12 valves (self adjusting hydraulic valve lifters)	
Bore			74 mm (2.91 in)	
Stroke			69.7 mm (2.74 in)	
Displacement			899.31 cm³ (54.88 in³)	
Compression ratio			11.0 : 1	
Decompressor type			N.A.	
Maximum HP RPM			8000 (± 100) RPM	
Lubrication	Type		Dry sump. Replaceable oil filter	
	Oil filter		BRP Rotax paper type, replaceable	
	Engine oil pressure at 100°C (212°F)	Minimum	80 kPa (11.6 PSI) @ 1400 RPM	
			350 kPa (51 PSI) @ 8000 RPM	
	Engine oil	Capacity (oil change with filter)	1.8 L (1.9 qt (U.S. liq.))	
		<u>Capacity (dry fill)</u>	<u>3.5 L (3.7 qt (U.S. liq.))</u>	
		Recommended	XPS 4-Stroke synthetic blend oil (Summer) (P/N 293 600 121) (if not available, use a SAE 5W 40 or 10W 40 API service SN synthetic oil)	
Oil pressure regulator spring free length		New	46 mm (1.811 in)	
		Service limit	45 mm (1.772 in)	
Oil pump radial clearance		Service limit	0.25 mm (.0098 in)	
Oil pump axial clearance		Service limit	0.15 mm (.0059 in)	
Intake valve opening			5° ATDC	
Intake valve closing			40° ABDC	
Exhaust valve opening			40° BBDC	
Exhaust valve closing			5° BTDC	
Valve stem diameter	Intake	New	4.958 mm to 4.972 mm (.1952 in to .1957 in)	
		Service limit	4.94 mm (.1945 in)	
	Exhaust	New	4.956 mm to 4.970 mm (.1951 in to .1957 in)	
		Service limit	4.94 mm (.194 in)	
Valve guide diameter		New	5.0 mm to 5.012 mm (.1969 in to .1973 in)	
		Service limit	5.05 mm (.1988 in)	
Valve out of round		New	0.005 mm (.0002 in)	
		Service limit	0.060 mm (.0024 in)	

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Valve spring free length		New	31.35 mm (1.2343 in)
		Service limit	29.50 mm (1.1614 in)
Valve seat contact width	Intake	New	1.05 mm to 1.35 mm (.0413 in to .0531 in)
		Service limit	1.7 mm (.0669 in)
	Exhaust	New	1.25 mm to 1.45 mm (.0492 in to .0571 in)
		Service limit	1.8 mm (.0709 in)
Cylinder head warpage		Service limit	0.15 mm (.0059 in)
Piston measurement		New	73.95 mm to 73.966 mm (2.9114 in to 2.912 in)
		Service limit	73.92 mm (2.91 in)
Piston/cylinder wall clearance		New	0.037 mm to 0.067 mm (.0015 in to .0026 in)
		Service limit	0.08 mm (.0031 in)
Piston ring type		1st	Upper compression ring, rectangular
		2nd	Lower compression ring, tapered face
		3rd	Oil scraper ring
Ring end gap	Rectangular	New	0.20 mm to 0.35 mm (.0079 in to .0138 in)
		Service limit	1.2 mm (.0472 in)
	Taper-face	New	0.30 mm to 0.50 mm (.0118 in to .0197 in)
		Service limit	1.2 mm (.0472 in)
	Oil scraper ring	New	0.20 mm to 0.70 mm (.0079 in to .0276 in)
		Service limit	1.2 mm (.0472 in)
Ring/piston groove clearance	Rectangular	New	0.030 mm to 0.066 mm (.0012 in to .0026 in)
		Service limit	0.12 mm (.0047 in)
	Taper-face	New	0.020 mm to 0.056 mm (.0008 in to .0022 in)
		Service limit	0.12 mm (.0047 in)
	Oil scraper ring	New	0.010 mm to 0.040 mm (.0004 in to .0016 in)
		Service limit	0.15 mm (.0059 in)
Cylinder bore		New	74.003 mm to 74.017 mm (2.9135 in to 2.9141 in)
Cylinder taper		Maximum New	0.030 mm (.0012 in)
		Service limit	0.050 mm (.002 in)
Cylinder out of round		Maximum New	0.008 mm (.0003 in)
		Service limit	0.030 mm (.0012 in)s
Camshaft bearing journal diameter	PTO	New	25.967 mm to 25.980 mm (1.0223 in to 1.0228 in)
		Service limit	25.940 mm (1.0213 in)
	MAG/Center	New	22.957 mm to 22.970 mm (.9038 in to .9043 in)
		Service limit	22.930 mm (.9028 in)

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Camshaft holder bore diameter	PTO	New	26.00 mm to 26.021 mm (1.0236 in to 1.0244 in)
		Service limit	26.05 mm (1.0256 in)
	MAG/Center	New	23.00 mm to 23.021 mm (.9055 in to .9063 in)
		Service limit	23.05 mm (.9075 in)
Camshaft journal radial play	All	New	0.020 mm to 0.054 mm (.0008 in to .0021 in)
		Service limit	0.080 mm (.0031 in)
Camshaft lobe height	Intake	New	38.35 mm to 38.55 mm (1.51 in to 1.518 in)
		Service limit	38.33 mm (1.509 in)
	Exhaust	New	38.35 mm to 38.55 mm (1.51 in to 1.518 in)
		Service limit	38.33 mm (1.509 in)
Crankshaft bearing journal diameter		New	35.990 mm to 36.006 mm (1.4169 in to 1.4176 in)
		Service limit	35.960 mm (1.4157 in)
Crankshaft radial play		Service limit	0.08 mm (.003 in)
Crankshaft axial play		New	0.120 mm to 0.353 mm (.0047 in to .0139 in)
		Service limit	0.450 mm (.0177 in)
Crankshaft pin diameter		New	35.979 mm to 35.995 mm (1.416 in to 1.417 in)
		Service limit	35.969 mm (1.416 in)
Crankshaft deflection	MAG	Maximum	0.050 mm (.002 in)
	Center	Maximum	0.050 mm (.002 in)
	PTO	Maximum	0.080 mm (.003 in)
Crankshaft plain bearing inside diameter		Service limit	36.08 mm (1.4205 in)
Connecting rod big end diameter		Service limit	36.06 mm (1.4197 in)
Connecting rod big end radial play		Service limit	0.08 mm (.0031 in)
Connecting rod big end axial play		New	0.100 mm to 0.352 mm (.0039 in to .0139 in)
		Service limit	0.450 mm (.0177 in)
Connecting rod small end diameter		New	17.010 mm to 17.020 mm (.6697 in to .6701 in)
		Service limit	17.060 mm (.6717 in)

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Piston pin diameter	New	16.996 mm to 17.000 mm (.6691 in to .6693 in)
	Service limit	16.986 mm (.6687 in)
Connecting rod small end radial play	Service limit	0.04 mm (.0016 in)
Chain guide groove depth	Service limit	1 mm (.039 in)

AIR INTAKE SYSTEM	
Intake spark arrestor	Tubular, wire screen

COOLING SYSTEM	
Type	Closed loop cooling system
Coolant	Extended Life Coolant, Ethylene glycol and distilled water (50%/50%). Use BRP long life antifreeze (P/N 219 702 685) or coolant specifically formulated for aluminum engines
Cooling system capacity	3.0 L (3.2 qt (U.S. liq.))
Thermostat opening temperature	80°C (176°F)
Monitoring beeper setting	100°C (212°F)
Radiator cap opening pressure	110 kPa (16 PSI)

EXHAUST SYSTEM	
Type	D-Sea-Bel sound reduction system. Water cooled/water injected (open loop). Direct flow from jet pump
Water injection	4 x 3.5 mm (.138 in) on exhaust pipe

FUEL SYSTEM		
Fuel injection type		Multipoint fuel injection
Throttle body type		Dell'Orto 46mm with iTC (intelligent Throttle Control)
Fuel pressure		386 kPa to 414 kPa (56 PSI to 60 PSI)
Fuel injector	Quantity	3
Fuel type		Use regular unleaded gasoline with an AKI (R+M)/2 octane rating of 87, or an RON octane rating of 91. Do NOT use fuel from fuel pumps labeled E85.
Fuel tank capacity (including reserve)		30 L (8 U.S. gal.)
Fuel tank reserve (from low level signal)		12 L (3 U.S. gal.)
Idle speed (in water)		1400 ± 100 RPM

ELECTRICAL SYSTEM	
Magneto generator output	420 W @ 6000 RPM @ 14 V
Magneto stator resistance (between any pair of yellow wires)	0.1 to 1 Ω @ 20°C (68°F)
Battery	Sealed, 12 volt, 18 A.h. YTX20L-BS

ELECTRICAL SYSTEM		
Ignition system type		IDI (Inductive Digital Ignition)
Ignition timing		Variable (electronically control)
Spark plug	Make and type	NGK CR8EB
	Gap	0.70 mm to 0.80 mm (.028 in to .031 in)
Ignition coil	Primary	0.80 to 0.97 Ω
	Secondary	9.5 to 13.5 Ω
Engine speed limiter setting		8300 RPM
Fuses	F 1: Accessories	10 A
	F 2: Start/stop Switch	5 A
	F 3: Battery	15 A
	F 4: Charging	30 A

STEERING AND PROPULSION		
Steering		Fixed column
Steering nozzle pivoting angle		$\pm 27^\circ$
O.T.A.S. (Off-Throttle Assisted Steering)		Electronically-controlled
Jet pump	Type	Axial flow single stage
	Grease type	Jet pump bearing grease (P/N 293 550 032)
Impeller	Rotation (seen from rear)	Counterclockwise
	Pitch	$13^\circ/20^\circ$
	Outside diameter	140 mm (5-1/2 in)
Impeller/wear ring clearance	New	0.00 mm to 0.24 mm (0 in to .009 in)
	Wear limit	0.35 mm (.014 in)
Impeller shaft	End play (new)	0.0 mm (0 in)
	Side play	0.0 mm (0 in)
Drive shaft	Coupling type	Crowned splines, direct drive
	Deflection (max.)	0.5 mm (.02 in)
Minimum required water level for propulsion system		90 cm (3 ft) underneath the lowest rear portion of hull

WEIGHT AND LOADING CAPACITY		
Dry weight	2UP	177 kg (390 lb)
	3UP	185 kg (408 lb)
Number of passenger (driver incl.)	2UP	2
	3UP	3
Load limit (passenger and 10 kg (22 lb) luggage)	2UP	160 kg (352 lb)
	3UP	205 kg (450 lb)

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WEIGHT AND LOADING CAPACITY		
Storage capacity	Glove box	1.6 L (.42 U.S. gal.)
	Storage bin (Convenience Package)	2.5 kg (5 lb)
	Rear under-seat storage compartment (3UP models)	0.5 L (.13 U.S. gal.)

DIMENSIONS		
Overall length	2UP	279 cm (110 in)
	3UP	305 cm (120 in)
Overall width		118 cm (46 in)
Overall height		104 cm (41 in)

MATERIALS	
Hull	Fiberglass reinforced polypropylene
Deck (front, central and rear)	Fiberglass reinforced polypropylene
Inlet grate	Nylon
Steering cover	Thermoplastic
Impeller	Stainless steel
Impeller housing/stator	Acetal/aluminum
Venturi	Aluminum
Nozzle	Aluminum
Fuel tank	High-Density Polyethylene (HDPE)
Seat	Polyurethane/foam
Ride plate	Aluminum
Pump support	Aluminum