

SECTION 22

SERVICE DATA

www.zukioffroad.com

CONTENTS

22-1. SPECIFICATIONS.....	22-1
22-2. SERVICE DATA	22-4

22-1. SPECIFICATIONS

	Models	Convertible/Hardtop
ENGINE		
Type	Four-stroke cycle, water cooled, OHC	
Number of cylinders	4	
Lubrication system	Wet sump	
Bore	74.0 mm (2.91 in.)	
Stroke	77.0 mm (3.03 in.)	
Piston displacement	1,324 cm ³ (1,324 cc, 80.8 cu. in.)	
Compression ratio	8.9 : 1	
Carburetor	HITACHI two-barrel down draft	
Air cleaner	Polyester fiber element (Dry type)	
ELECTRICAL		
Ignition timing	10° B.T.D.C. at 800 r/min (rpm)	
Standard spark plug	NGK BPR-5ES or NIPPON DENSO W16EXR-U	
Starter	Magnetic shift type	
Generator	Alternator	
Battery	12V, 137 kC (38 Ah)/5HR * 12V, 130 kC (36 Ah)/5HR	
Headlight	12V, 60/50W	
Turn signal light	12V, 32 cp	
Clearance light	12V, 4 cp	

* : For Canadian specification vehicle

ITEM	Models	Convertible/Hardtop
Tail/Brake light		12V, 3/32 cp
Side marker light		12V, 3.8W
License plate light		12V, 4 cp
Back-up light		12V 32 cp
Interior light		12V, 5w
Meter pilot light		12V, 1.4W
Main fuse		0.5 mm ² (fusible link)
Fuse box		10/10/1 0/10/10/15/15/15/15/15/10/5/5/5A
POWER TRANSMISSION		
Clutch type		Dry, single disc
Transmission type		5-forward all synchromesh, 1 reverse
Final reduction ratio		3.727
Gear ratios	low	3.652
	2nd	1.947
	3rd	1.423
	4th	1.000
	5th	0.864
	reverse	3.466
Transfer gear ratios	low range	2.268
	high range	1.409
Overall reduction ratios:		
Low range	low	30.869
	2nd	16.457
	3rd	12.028
	4th	8.452
	5th	7.303
	reverse	29.297
High range	low	19.177
	2nd	10.224
	3rd	7.472
	4th	5.251
	5th	4.537
	reverse	18.201

Item	Models	Convertible/Hard Top
WHEEL AND SUSPENSION		
Tire size: front and rear		P205/70 R 15
Tire pressure	front	140 kPa (1.40 kg/cm ² 20 psi)
	rear	140 kPa (1.40 kg/cm ² 20 psi)-unladen
		180 kPa (1.80 kg/cm ² 26 psi)-laden
Suspension type	front	Leaf spring
	rear	Leaf spring
STEERING		
Turning radius		5.1m (16.7 ft)
Steering gear box		Ball nut type
Toe-in		2 – 6 mm (0.08 – 0.24 in.)
Camber angle		1° 00'
Caster angle		3° 30'
King pin angle		9° 00'
BRAKE SYSTEM		
Type		4-wheel hydraulic
Wheel brake	front	Disc brake (floating caliper type)
	rear	Drum brake (leading and trailing)
Parking brake		Mechanical actuated on rear wheels
CAPACITIES		
Cooling solution		4.8 ℓ (10.1/8.4 US/Imp pt)
Fuel tank		40ℓ (10.6/8.8 US/Imp gal)
Engine oil		3.5 ℓ (7.4/6.2 US/Imp pt)
Transmission oil		1.3 ℓ (2.7/2.3 US/Imp pt)
Differential gear box oil	front	2.0 ℓ (4.2/3.5 US/Imp pt)
	rear	1.5 ℓ (3.2/2.6 US/Imp pt)
Transfer gear box oil		0.8 ℓ (1.7/1.4 US/Imp pt)

22-2. SERVICE DATA

ENGINE

Item		Standard		Service Limit		
COMPRESSION PRESSURE			14.0 kg/cm ² (199.0 psi)/400 r/min (rpm)		12.0 kg/cm ² (170.0 psi)/400 r/min (rpm)	
	Difference between cylinders		_____		1.0 kg/cm ² (14.2 psi)/400 r/min (rpm)	
Valve lash (clearance)	Cold (When coolant temperature is 15 ~ 25°C or 59 ~ 77°F)	Inlet	0.13 ~ 0.17 mm (0.0051 ~ 0.0067 in.)		_____	
		Exhaust	0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in.)		_____	
	Hot (When coolant temperature is 60 ~ 68°C or 140 ~ 154°F)	Inlet	0.23 ~ 0.27 mm (0.009 ~ 0.011 in.)		_____	
		Exhaust	0.26 ~ 0.30 mm (0.0102 ~ 0.0118 in.)		_____	
Cylinder head	Flatness of gasketed surface		_____		0.05 mm (0.002 in.)	
	Flatness of manifold seat	Inlet	_____		0.1 mm (0.004 in.)	
		Exhaust	_____		0.1 mm (0.004 in.)	
	Valve seat	Seating width	Inlet	1.3 ~ 1.5 mm (0.0512 ~ 0.0590 in.)		_____
			Exhaust	1.3 ~ 1.5 mm (0.0512 ~ 0.0590 in.)		_____
	Seating angle		45°		_____	
Valve guide hole diameter (In & Ex) (over size)		12.030 ~ 12.048 mm (0.4736 ~ 0.4743 in.)		_____		
Valve, valve spring & cam shaft	Camshaft/Journal clearance		0.050 ~ 0.091 mm (0.0020 ~ 0.0036 in.)		0.15 mm (0.0059 in.)	
	Camshaft thrust clearance		_____		0.75 mm (0.0295 in.)	
	Cam height (Base circle + lift)	Inlet	37.500 mm (1.4763 in.)		37.400 mm (1.4724 in.)	
		Exhaust	37.500 mm (1.4763 in.)		37.400 mm (1.4724 in.)	
		Fuel pump cam	40.000 mm (1.5748 in.)		39.600 mm (1.5590 in.)	
	Camshaft runout		_____		0.10 mm (0.0039 in.)	
	Valve stem diameter	Inlet	6.965 ~ 6.980 mm (0.2742 ~ 0.2748 in.)		_____	
		Exhaust	6.950 ~ 6.965 mm (0.2737 ~ 0.2742 in.)		_____	
	Valve guide I.D.	Inlet	7.000 ~ 7.015 mm (0.2756 ~ 0.2761 in.)		_____	
		Exhaust	7.000 ~ 7.015 mm (0.2756 ~ 0.2761 in.)		_____	
	Valve guide-to-valve stem clearance	Inlet	0.020 ~ 0.050 mm (0.0008 ~ 0.0019 in.)		0.07 mm (0.0027 in.)	
		Exhaust	0.035 ~ 0.065 mm (0.0014 ~ 0.0025 in.)		0.09 mm (0.0035 in.)	
	Thickness of valve head periphery	Inlet	1.0 mm (0.039 in.)		0.6 mm (0.0236 in.)	
		Exhaust	1.0 mm (0.039 in.)		0.7 mm (0.0275 in.)	
Contact width of valve and valve seat	Inlet	1.3 ~ 1.5 mm (0.0512 ~ 0.0590 in.)		_____		
	Exhaust	1.3 ~ 1.5 mm (0.0512 ~ 0.0590 in.)		_____		
Valve spring free length	Inlet	49.3 mm (1.9409 in.)		48.1 mm (1.8937 in.)		
	Exhaust	49.3 mm (1.9409 in.)		48.1 mm (1.8937 in.)		
Valve spring preload	Inlet	24.8 ~ 29.2 kg (54.7 ~ 64.3 lb) for fitting length 41.5 mm (1.63 in.)		22.8 kg (50.2 lb) for fitting length 41.5 mm (1.63 in.)		
	Exhaust	24.8 ~ 29.2 kg (54.7 ~ 64.3 lb) for fitting length 41.5 mm (1.63 in.)		22.8 kg (50.2 lb) for fitting length 41.5 mm (1.63 in.)		

Item			Standard	Service Limit	
Valve, valve spring & cam shaft	Valve stem end deflection	Inlet	_____	0.14 mm	(0.005 in.)
		Exhaust	_____	0.18 mm	(0.007 in.)
	Stock allowance of valve stem end face		_____	0.5 mm	(0.019 in.)
	Valve head radial runout		_____	0.08 mm	(0.003 in.)
	Valve spring squareness		_____	2.0 mm	(0.079 in.)
	Valve guide protrusion (In. & Ex.)		14 mm (0.55 in.)	_____	
Rocker arm shaft and rocker arm	Rocker shaft O.D.		15.973 ~ 15.988 mm (0.628 ~ 0.629 in.)	_____	
	Rocker arm I.D.		16.000 ~ 16.018 mm (0.629 ~ 0.630 in.)	_____	
	Shaft-to-arm clearance	Inlet	0.012 ~ 0.045 mm (0.0005 ~ 0.0017 in.)	0.09 mm	(0.0035 in.)
		Exhaust	0.012 ~ 0.045 mm (0.0005 ~ 0.0017 in.)	0.09 mm	(0.0035 in.)
Rocker shaft runout		_____	0.12 mm	(0.004 in.)	
Cylinder	Flatness of gasketed surface		0.03 mm (0.0012 in.)	0.06 mm	(0.0024 in.)
	Cylinder bore (S.T.D.)		74.00 ~ 74.02 mm (2.9134 ~ 2.9142 in.)	74.15 mm	(2.9193 in.)
	Cylinder bore out-of-round and taper		_____	0.10 mm	(0.0039 in.)
	Cylinder-to-piston clearance		0.02 ~ 0.04 mm (0.0008 ~ 0.0015 in.)	_____	
Piston	Piston diameter	Standard	73.970 ~ 73.990 mm (2.9122 ~ 2.9129 in.)	_____	
		Oversize: 0.25 mm (0.0098 in.)	74.220 ~ 74.230 mm (2.9220 ~ 2.9224 in.)	_____	
		Over size: 0.50 mm (0.0196 in.)	74.470 ~ 74.480 mm (2.9319 ~ 2.9322 in.)	_____	
	Piston ring groove width	Top ring	1.22 ~ 1.24 mm (0.0480 ~ 0.0488 in.)	_____	
		2nd ring	1.51 ~ 1.53 mm (0.0594 ~ 0.0602 in.)	_____	
		Oil ring	2.81 ~ 2.83 mm (0.1106 ~ 0.1114 in.)	_____	
Piston pin diameter		16.995 ~ 17.000 mm (0.6691 ~ 0.6693 in.)	_____		
Piston ring	Piston ring thickness	Top ring	1.17 ~ 1.19 mm (0.0461 ~ 0.0468 in.)	_____	
		2nd ring	1.47 ~ 1.49 mm (0.0578 ~ 0.0586 in.)	_____	
		Oil ring	0.45 mm (0.0177 in.)	_____	
	Ring clearance in groove	Top ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0027 in.)	0.12 mm	(0.0047 in.)
		2nd ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0023 in.)	0.10 mm	(0.0039 in.)
	Piston ring end gap	Top ring	0.20 ~ 0.33 mm (0.0079 ~ 0.0129 in.)	0.7 mm	(0.0275 in.)
2nd ring		0.20 ~ 0.35 mm (0.0079 ~ 0.0137 in.)	0.7 mm	(0.0275 in.)	
Oil ring		0.20 ~ 0.70 mm (0.0079 ~ 0.0275 in.)	1.8 mm	(0.0708 in.)	
Crank shaft	Crankshaft runout (middle)		_____	0.06 mm	(0.0023 in.)
	Crank pin diameter		41.982 ~ 42.000 mm (1.6529 ~ 1.6535 in.)	_____	
	Crank pin clearance in con. rod		0.030 ~ 0.050 mm (0.0012 ~ 0.0019 in.)	0.08 mm	(0.0031 in.)
	Connecting rod small end bore		16.968 ~ 16.979 mm (0.6680 ~ 0.6684 in.)	_____	
	Crank journal diameter		44.982 ~ 45.000 mm (1.7710 ~ 1.7716 in.)	_____	
	Bearing-to-journal clearance		0.020 ~ 0.040 mm (0.0008 ~ 0.0016 in.)	0.06 mm	(0.0023 in.)
	Crank pin out-of-round and taper		_____	0.01 mm	(0.0004 in.)

Item		Standard		Service Limit	
Crankshaft	Crank journal out-of-round and taper		_____		0.01 mm (0.0004 in.)
	Flywheel runout		_____		0.2 mm (0.0078 in.)
	Crankshaft thrust play		0.11 – 0.31 mm (0.0044 ~ 0.0122 in.)	0.38 mm (0.0149 in.)	
	Connecting rod big end side clearance		0.10 ~ 0.20 mm (0.0039 ~ 0.0078 in.)	0.35 mm (0.0137 in.)	
	Connecting rod	Twist	_____		0.10 mm (0.0039 in.)
Bow		_____		0.05 mm (0.0020 in.)	

CLUTCH & TRANSMISSION

Item		Standard		Service Limit	
Clutch	Pedal free travel		20 ~ 30 mm (0.8 ~ 1.1 in.)	_____	
	Facing wear (Rivet head depth)		1.2 mm (0.05 in.)	0.5 mm (0.02 in.)	
	Facing-input shaft serration backlash		_____		0.8 mm (0.03 in.)
	Clutch release arm play		2 ~ 4 mm (0.08 ~ 0.16 in.)	_____	
Transmission	Clearance between gears and rings	Low & high	1.0 ~ 1.4 mm (0.039 ~ 0.055 in.)	0.5 mm (0.019 in.)	
		5th speed	1.2 ~ 1.6 mm (0.047 ~ 0.063 in.)	0.5 mm (0.019 in.)	
	Key slot width of synchronizer ring		10.1 mm (0.397 in.)	10.4 mm (0.409 in.)	
	Gear shift fork shaft spring free length		25.5 mm (1.004 in.)	21.0 mm (0.826 in.)	
	Gear backlash		0.06 ~ 0.15 mm (0.0024 ~ 0.0059 in.)	0.3 mm (0.0118 in.)	

LUBRICATION

Item		Standard		Service Limit	
Lubrication	Radial clearance between outer rotor and case		_____		0.310 mm (0.0122 in.)
	Oil pump side clearance (flatness)		_____		0.15 mm (0.0059 in.)
	Oil relief valve spring	Free length	45 mm (1.77 in.)	_____	
	Set pressure of oil pressure switch		0.2 ~ 0.4 kg/cm ² (2.84 ~ 5.68 psi)	_____	
	Engine oil pressure		3.0 ~ 4.2 kg/cm ² (42.7 ~ 59.7 psi) at 3,000 r/min (rpm)		_____

COOLING SYSTEM

Item		Standard		Service Limit
Cooling system	Fan belt tension as deflection under 10 kg (22 lb) push applied to middle point between pulleys	6 ~ 9 mm	(0.23 ~ 0.35 in.)	_____
	Thermostat start-to-open temperature	*82°C (179°F) or 88°C (190°F)		_____
	Thermostat full-open temperature	*95°C (203°F) or 100°C (212°F)		_____
	Valve lift	8 mm	(0.31 in.)	_____

* There are two types of thermostat depending on specifications.

DIFFERENTIAL

Item		Standard		Service Limit
Differ- ential	Bevel gear backlash	0.10 ~ 0.15 mm	(0.004 ~ 0.006 in.)	_____
	Side gear thrust play	0.12 ~ 0.37 mm	(0.005 ~ 0.014 in.)	_____
	Pinion bearing preload	1.8 ~ 3.4 kg	(4.0 ~ 7.5 lbs.)	_____

SUSPENSION

Item		Standard		Service Limit
Suspension	Front wheel bearing starting preload	1.0 ~ 3.0 kg	(2.2 ~ 6.6 lbs.)	_____
	Rear wheel bearing thrust play	_____		0.8 mm (0.03 in.)
	Axial play in barfield joint	0 mm (No play)		1.5 mm (0.06 in.)
	Knackle arm starting torque (without oil seal)	1.0 ~ 1.8 kg (2.20 ~ 3.96 lbs.)		_____

CARBURETOR

Item		Standard		Limit
Engine idle speed		800 ± 50 r/min (rpm)		_____
Engine idle speed when turning head light "ON"		950 ± 50 r/min (rpm)		_____
Float level	Float height	8 mm	(0.31 in.)	_____
Accelerator cable play	When engine is cold	10 – 15 mm	(0.4 ~ 0.6 in.)	_____
	When engine is hot	3 ~ 5 mm	(0.12 ~ 0.20 in.)	_____

STEERING SYSTEM

Item	Standard	Service Limit
Gear ratio	15.6 ~ 18.1	_____
Steering angle, inside	29°	_____
Steering angle, outside	26°	_____
Steering wheel play	10 ~ 30 mm (0.4 ~ 1.2 in.)	_____

BRAKE

Item	Standard	Service Limit
Front brake disc thickness	10 mm (0.394 in.)	8.5 mm (0.334 in.)
Front brake disc deflection	_____	0.15 mm (0.006 in.)
Front brake pad thickness (lining + pad rim)	15.0 mm (0.590 in.)	6.0 mm (0.236 in.)
Rear brake lining thickness (lining + shoe rim)	7.0 mm (0.28 in.)	3.0 mm (0.12 in.)
Rear brake drum inside diameter	220 mm (8.66 in.)	222 mm (8.74 in.)
Pedal-to-wall clearance: When pedal is depressed at 30 kg (66 lb)	75 mm (2.95 in.) minimum	_____

ELECTRICAL

	Item	Standard	Service Limit
Ignition system	Ignition order	1 - 3 - 4 - 2	_____
	Signal rotor air gap	0.2 ~ 0.4 mm (0.008 ~ 0.016 in.)	_____
	Generator resistance	130 ~ 190 ohms	_____
	High tension cord resistance	16 k Ω /3.3 ft (1 m)	20 k Ω /pc
	Ignition coil; Primary coil resistance (20°C)	1.35 ~ 1.65 ohms	_____
	Ignition coil; Secondary coil resistance (20°C)	11.0 ~ 14.5 kilohms	_____
	Spark plug gap	0.7 ~ 0.8 mm (0.027 ~ 0.031 in.)	_____

	Item	Standard	Service Limit
Starter motor	Voltage	12 Volts	_____
	Output	0.9 kw	_____
	Rating	30 seconds	_____
	Brush length	17 mm (0.67 in.)	11.5 mm (0.45 in.)
	Number of pinion teeth	8	_____
	Commutator diameter	32 mm (1.26 in.)	31 mm (1.22 in.)
	Mica depth	0.4 ~ 0.6 mm (0.015 ~ 0.023 in.)	0.2 mm (0.008 in.)
	Commutator out of round	0.05 mm (0.0019 in.) or less	0.4 mm (0.015 in.)
	Brush spring tension	1.6 kg (3.53 lb)	1.0 kg (2.20 lb)
Charging system	Nominal operating voltage	12 Volts	_____
	Maximum alternator output	45A	_____
	Maximum permissible alternator speed	15,000 r/min (rpm)	_____
	Working temperature range	-30 ~ 90°C (-22 ~ 194°F)	_____
	Rotor; Ring-to-ring circuit resistance	2.8 ~ 3.0 ohms	_____
	Brush length	11.0 mm (0.43 in.)	5.0 mm (0.20 in.)
	Standard output voltage and current	14.2 ~ 14.8 Volts, 10A maximum	_____
	Regulated voltage	14.2 ~ 14.8 Volts	_____