

1. Engine

A: SPECIFICATIONS

Engine	Type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine	
	Valve arrangement		Belt driven, double over-head camshaft, 4-valve/cylinder	
	Bore × Stroke		mm (in) 99.5 × 79.0 (3.917 × 3.110)	
	Displacement		cm ³ (cu in) 2,457 (149.93)	
	Compression ratio		9.5	
	Compression pressure (at 200 — 300 rpm)	Standard	kPa (kg/cm ² , psi) – rpm	1,216 (12.4, 176) – 350
		Limit	kPa (kg/cm ² , psi) – rpm	941 (9.6, 137) – 350
	Number of piston rings		Pressure ring: 2, Oil ring: 1	
	Intake valve timing	Opening		6° BTDC
		Closing		50° ABDC
	Exhaust valve timing	Opening		Front: 54° BBDC, Rear: 30° BBDC (Position in degrees)
		Closing		Front: 10° ATDC, Rear: 10° ATDC (Position in degrees)
	Valve clearance	Intake	mm (in)	0.20±0.02 (0.0079±0.0008)
		Exhaust	mm (in)	0.25±0.02 (0.0098±0.0008)
Idling speed [At neutral position on MT, or “P” or “N” position on AT]		rpm	700±100 (No load) 850±50 (A/C switch ON)	
Firing order			1 → 3 → 2 → 4	
Ignition timing		BTDC/rpm	15°±8°/700 rpm	

B: SERVICE DATA

NOTE:

STD: Standard, I.D.: Inner Diameter, O.D.: Outer Diameter, OS: Oversize, US: Undersize

Belt tension adjuster	Protrusion of adjuster rod		15.4 — 16.4 mm	(0.606 — 0.646 in)	
Belt tensioner	Spacer O.D.		16 mm	(0.63 in)	
	Tensioner bush I.D.		16.16 mm	(0.6362 in)	
	Clearance between spacer and bush	STD	0.117 — 0.180 mm	(0.0046 — 0.0071 in)	
		Limit	0.230 mm	(0.0091 in)	
	Side clearance of spacer	STD	0.37 — 0.54 mm	(0.0146 — 0.0213 in)	
Limit		0.8 mm	(0.031 in)		
Camshaft	Bend limit		0.020 mm	(0.0008 in)	
	Thrust clearance	STD	0.040 — 0.080 mm	(0.0016 — 0.0031 in)	
		Limit	0.10 mm	(0.0039 in)	
	Cam lobe height	Intake	STD	42.20 — 42.30 mm	(1.6614 — 1.6654 in)
			Limit	42.04 mm	(1.6551 in)
		Exhaust	STD	Front: 42.50 — 42.60 mm Rear: 41.40 — 41.50 mm	(1.6732 — 1.6772 in) (1.6299 — 1.6339 in)
			Limit	Front: 42.34 mm Rear: 41.24 mm	(1.6669 in) (1.6236 in)
	Camshaft journal O.D.	Front	31.946 — 31.963 mm	(1.2577 — 1.2584 in)	
		Center	27.946 — 27.963 mm	(1.1002 — 1.1009 in)	
		Rear	27.946 — 27.963 mm	(1.1002 — 1.1009 in)	
	Camshaft journal hole I.D.	Front	32.000 — 32.018 mm	(1.2598 — 1.2605 in)	
		Center	28.000 — 28.018 mm	(1.1024 — 1.1031 in)	
		Rear	28.000 — 28.018 mm	(1.1024 — 1.1031 in)	
Oil clearance	STD	0.037 — 0.072 mm	(0.0015 — 0.0028 in)		
	Limit	0.10 mm	(0.0039 in)		
Cylinder head	Surface warpage limit		0.05 mm	(0.0020 in)	
	Surface grinding limit		0.3 mm	(0.012 in)	
	Standard height		127.5 mm	(5.02 in)	
Valve seat	Refacing angle		90°		
	Contacting width	Intake	STD	1.0 mm	(0.039 in)
			Limit	1.7 mm	(0.067 in)
		Exhaust	STD	1.5 mm	(0.059 in)
			Limit	2.2 mm	(0.087 in)
Valve guide	Inner diameter		6.000 — 6.015 mm	(0.2362 — 0.2368 in)	
	Protrusion above head		12.0 — 12.4 mm	(0.472 — 0.488 in)	
Valve	Head edge thickness	Intake	STD	1.2 mm	(0.047 in)
			Limit	0.8 mm	(0.031 in)
		Exhaust	STD	1.5 mm	(0.059 in)
			Limit	0.8 mm	(0.031 in)
	Stem diameter	Intake	5.950 — 5.965 mm	(0.2343 — 0.2348 in)	
		Exhaust	5.950 — 5.965 mm	(0.2343 — 0.2348 in)	
	Stem oil clearance	STD	Intake	0.035 — 0.062 mm	(0.0014 — 0.0024 in)
			Exhaust	0.040 — 0.067 mm	(0.0016 — 0.0026 in)
		Limit	—	0.15 mm	(0.0059 in)
Overall length	Intake	105.9 mm	(4.169 in)		
	Exhaust	106.2 mm	(4.181 in)		

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Valve spring	Free length		48.04 mm	(1.8913 in)	
	Squareness		2.5°, 2.1 mm	(0.083 in)	
	Tension/spring height		146.1 — 167.7 N (14.9 — 17.1 kg, 32.9 — 37.7 lb)/42.0 mm (1.654 in) 455.0 — 523.7 N (46.4 — 53.4 kg, 102.3 — 117.7 lb)/33.4 mm (1.315 in)		
Cylinder block	Surface warpage limit (mating with cylinder head)		0.05 mm	(0.0020 in)	
	Surface grinding limit		0.1 mm	(0.004 in)	
	Cylinder bore	STD	A	99.505 — 99.515 mm	(3.9175 — 3.9179 in)
			B	99.495 — 99.505 mm	(3.9171 — 3.9175 in)
	Taper	STD	0.015 mm	(0.0006 in)	
		Limit	0.050 mm	(0.0020 in)	
	Out-of-roundness	STD	0.010 mm	(0.0004 in)	
		Limit	0.050 mm	(0.0020 in)	
	Piston clearance	STD	0.010 — 0.030 mm	(0.0004 — 0.0012 in)	
Limit		0.050 mm	(0.0020 in)		
Enlarging (boring) limit		0.5 mm	(0.020 in)		
Piston	Outer diameter	STD	A	99.485 — 99.495 mm (3.9167 — 3.9171 in)	
			B	99.475 — 99.485 mm (3.9163 — 3.9167 in)	
		0.25 mm (0.0098 in) OS		99.725 — 99.735 mm (3.9262 — 3.9266 in)	
		0.50 mm (0.0197 in) OS		99.975 — 99.985 mm (3.9360 — 3.9364 in)	
Piston pin	Standard clearance between piston pin and hole in piston		STD	0.004 — 0.010 mm (0.0002 — 0.0004 in)	
			Limit	0.020 mm (0.0008 in)	
	Degree of fit		Piston pin must be fitted into position with thumb at 20°C (68°F).		
Piston ring	Piston ring gap	Top ring	STD	0.20 — 0.35 mm (0.0079 — 0.0138 in)	
			Limit	1.0 mm (0.039 in)	
		Second ring	STD	0.37 — 0.52 mm (0.0146 — 0.0205 in)	
			Limit	1.0 mm (0.039 in)	
		Oil ring	STD	0.20 — 0.60 mm (0.0079 — 0.0236 in)	
			Limit	1.5 mm (0.059 in)	
	Clearance between piston ring and piston ring groove	Top ring	STD	0.040 — 0.080 mm (0.0016 — 0.0031 in)	
			Limit	0.15 mm (0.0059 in)	
	Second ring	STD	0.030 — 0.070 mm (0.0012 — 0.0028 in)		
		Limit	0.15 mm (0.0059 in)		
Connecting rod	Bend twist per 100 mm (3.94 in) in length		Limit	0.10 mm (0.0039 in)	
	Side clearance	STD	0.070 — 0.330 mm (0.0028 — 0.0130 in)		
		Limit	0.4 mm (0.016 in)		
Connecting rod bearing	Oil clearance		STD	0.010 — 0.038 mm (0.0004 — 0.0015 in)	
			Limit	0.05 mm (0.0020 in)	
	Thickness at center portion		STD	1.492 — 1.501 mm (0.0587 — 0.0591 in)	
			0.03 mm (0.0012 in) US	1.510 — 1.513 mm (0.0594 — 0.0596 in)	
			0.05 mm (0.0020 in) US	1.520 — 1.523 mm (0.0598 — 0.0600 in)	
			0.25 mm (0.0098 in) US	1.620 — 1.623 mm (0.0638 — 0.0639 in)	
Connecting rod bushing	Clearance between piston pin and bushing		STD	0 — 0.022 mm (0 — 0.0009 in)	
			Limit	0.030 mm (0.0012 in)	

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Crankshaft	Bend limit		0.035 mm	(0.0014 in)		
	Crank pin and crank journal	Out-of-roundness	0.020 mm (0.0008 in) or less			
		Grinding limit	0.25 mm	(0.0098 in)		
	Crank pin outer diameter		STD	47.984 — 48.000 mm	(1.8891 — 1.8898 in)	
			0.03 mm (0.0012 in) US	47.954 — 47.970 mm	(1.8879 — 1.8886 in)	
			0.05 mm (0.0020 in) US	47.934 — 47.950 mm	(1.8872 — 1.8878 in)	
			0.25 mm (0.0098 in) US	47.734 — 47.750 mm	(1.8793 — 1.8799 in)	
	Crank journal outer diameter		#1, #5	STD	59.992 — 60.008 mm	(2.3619 — 2.3625 in)
				0.03 mm (0.0012 in) US	59.962 — 59.978 mm	(2.3607 — 2.3613 in)
				0.05 mm (0.0020 in) US	59.942 — 59.958 mm	(2.3599 — 2.3605 in)
				0.25 mm (0.0098 in) US	59.742 — 59.758 mm	(2.3520 — 2.3527 in)
			#2, #3, #4	STD	59.992 — 60.008 mm	(2.3619 — 2.3625 in)
				0.03 mm (0.0012 in) US	59.962 — 59.978 mm	(2.3607 — 2.3613 in)
				0.05 mm (0.0020 in) US	59.942 — 59.958 mm	(2.3599 — 2.3605 in)
				0.25 mm (0.0098 in) US	59.742 — 59.758 mm	(2.3520 — 2.3527 in)
	Thrust clearance		STD	0.030 — 0.115 mm	(0.0012 — 0.0045 in)	
Limit			0.25 mm	(0.0098 in)		
Oil clearance		#1, #5	STD	0.003 — 0.030 mm	(0.0001 — 0.0012 in)	
		#2, #3, #4	STD	0.010 — 0.033 mm	(0.0004 — 0.0013 in)	
		#1, #3, #5	Limit	0.040 mm	(0.0016 in)	
		#2, #4	Limit	0.045 mm	(0.0018 in)	

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Crankshaft bearing	Crankshaft bearing thickness	#1, #5	STD	1.998 — 2.011 mm	(0.0787 — 0.0792 in)
			0.03 mm (0.0012 in) US	2.017 — 2.020 mm	(0.0794 — 0.0795 in)
			0.05 mm (0.0020 in) US	2.027 — 2.030 mm	(0.0798 — 0.0799 in)
			0.25 mm (0.0098 in) US	2.127 — 2.130 mm	(0.0837 — 0.0839 in)
		#2, #3, #4	STD	2.000 — 2.013 mm	(0.0787 — 0.0793 in)
			0.03 mm (0.0012 in) US	2.019 — 2.022 mm	(0.0795 — 0.0796 in)
			0.05 mm (0.0020 in) US	2.029 — 2.032 mm	(0.0799 — 0.0800 in)
			0.25 mm (0.0098 in) US	2.129 — 2.132 mm	(0.0838 — 0.0839 in)