

1. Engine

A: SPECIFICATIONS

| | | | | |
|---|---|--------------------------------|---|---------------------------|
| Engine | Model | | 2200 cc | |
| | Type | | Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine | |
| | Valve arrangement | | Belt driven, single over-head camshaft, 4-valve/cylinder | |
| | Bore × Stroke | mm (in) | 96.9 × 75.0 (3.815 × 2.953) | |
| | Displacement | cm ³ (cu in) | 2,212 (135.0) | |
| | Compression ratio | | 9.7 | |
| | Compression pressure (at 200 — 300 rpm) | kPa (kg/cm ² , psi) | 1,079 — 1,275 (11.0 — 13.0, 156 — 185) | |
| | Number of piston rings | | Pressure ring: 2, Oil ring: 1 | |
| | Intake valve timing | Opening | 4° BTDC | |
| | | Closing | 52° ABDC | |
| | Exhaust valve timing | Opening | 48° BBDC | |
| | | Closing | 12° ATDC | |
| | 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 | 14°±8°/700 (MT), 20°±8°/700 (AT) | |

B: SERVICE DATA

NOTE:

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

| | | | | |
|--------------------------|-----------------------------------|----------------|----------------------|----------------------|
| Belt tensioner 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) | |
| Valve rocker arm | Clearance between shaft and arm | STD | 0.020 — 0.054 mm | (0.0008 — 0.0021 in) |
| | | Limit | 0.10 mm | (0.0039 in) |

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| Camshaft | Bend limit | | | | 0.025 mm | (0.0010 in) |
| | Thrust clearance | | | STD | 0.030 — 0.260 mm | (0.0012 — 0.0102 in) |
| | | | | Limit | 0.35 mm | (0.0138 in) |
| | Cam lobe height | | | Intake | STD | 32.244 — 32.344 mm (1.2694 — 1.2734 in) |
| | | | | | Limit | 32.094 mm (1.2635 in) |
| | | | | Exhaust | STD | 31.964 — 32.064 mm (1.2584 — 1.2624 in) |
| | | | | | Limit | 31.814 mm (1.2525 in) |
| | Camshaft journal O.D. | | RH | LH | Rear | 31.935 — 31.950 mm (1.2573 — 1.2579 in) |
| | | | | | Center | 37.435 — 37.450 mm (1.4738 — 1.4744 in) |
| | | | | | Front | 37.935 — 37.950 mm (1.4935 — 1.4941 in) |
| | Camshaft journal hole I.D. | | RH | LH | Rear | 32.005 — 32.025 mm (1.2600 — 1.2608 in) |
| | | | | | Center | 37.505 — 37.525 mm (1.4766 — 1.4774 in) |
| Front | | | | | 38.005 — 38.025 mm (1.4963 — 1.4970 in) | |
| Oil clearance | | | STD | 0.055 — 0.090 mm | (0.0022 — 0.0035 in) | |
| | | | Limit | 0.10 mm | (0.0039 in) | |
| Cylinder head | Surface warpage limit | | | | 0.05 mm | (0.0020 in) |
| | Surface grinding limit | | | | 0.1 mm | (0.004 in) |
| | Standard height | | | | 98.3 mm | (3.870 in) |
| Valve set | Refacing angle | | | | 90° | |
| | Contacting width | | | Intake | STD | 0.7 mm (0.028 in) |
| | | | | | Limit | 1.4 mm (0.055 in) |
| | | | | Exhaust | STD | 1.4 mm (0.055 in) |
| Limit | | | | | 1.8 mm (0.071 in) | |
| Valve guide | Inner diameter | | | | 6.000 — 6.012 mm | (0.2362 — 0.2367 in) |
| | Protrusion above head | | | | 17.5 — 18.0 mm | (0.689 — 0.709 in) |
| Valve | Head edge thickness | | | Intake | STD | 1.0 mm (0.039 in) |
| | | | | | Limit | 0.8 mm (0.031 in) |
| | | | | Exhaust | STD | 1.2 mm (0.047 in) |
| | | | | | Limit | 0.8 mm (0.031 in) |
| | Stem diameter | | | Intake | 5.950 — 5.965 mm (0.2343 — 0.2348 in) | |
| | | | | Exhaust | 5.945 — 5.960 mm (0.2341 — 0.2346 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 | 101.0 mm (3.976 in) | | |
| | | | Exhaust | 101.2 mm (3.984 in) | | |
| Valve spring | Free length | | | | 44.05 mm | (1.7342 in) |
| | Squareness | | | | 2.5°, 1.9 mm | (0.075 in) |
| | Tension/spring height | | | | 174.6 — 200.1 N (17.8 — 20.4 kg, 39.2 — 45.0 lb)/36.0 mm (1.417 in) 405.0 — 458.0 N (41.3 — 46.7 kg, 91.1 — 103.0 lb)/28.2 mm (1.110 in) | |

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| 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 | 96.905 — 96.915 mm | (3.8151 — 3.8155 in) |
| | | | B | 96.895 — 96.905 mm | (3.8148 — 3.8151 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 | 96.885 — 96.895 mm | (3.8144 — 3.8148 in) |
| | | | B | 96.875 — 96.885 mm | (3.8140 — 3.8144 in) |
| | | 0.25 mm (0.0098 in) OS | | 97.115 — 97.145 mm | (3.8234 — 3.8246 in) |
| | | 0.50 mm (0.0197 in) OS | | 97.365 — 97.395 mm | (3.8333 — 3.8344 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 | 0.20 — 0.50 mm | (0.0079 — 0.0197 in) |
| | | | Limit | 1.0 mm | (0.039 in) |
| | Oil ring | STD | 0.20 — 0.70 mm | (0.0079 — 0.0276 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 | 0.015 — 0.045 mm | (0.0006 — 0.0018 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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| | | | | | | |
|----------------------------|------------------------------|--|------------------------|------------------------------|----------------------|----------------------|
| Crank- shaft | Bend limit | | 0.035 mm | (0.0014 in) | | |
| | Crankpin and crank journal | | Out-of-roundness | 0.030 mm (0.0012 in) or less | | |
| | | | Grinding limit | 0.250 mm | (0.0098 in) | |
| | Crankpin outer diameter | | STD | 51.984 — 52.000 mm | (2.0466 — 2.0472 in) | |
| | | | 0.03 mm (0.0012 in) US | 51.954 — 51.970 mm | (2.0454 — 2.0461 in) | |
| | | | 0.05 mm (0.0020 in) US | 51.934 — 51.950 mm | (2.0446 — 2.0453 in) | |
| | | | 0.25 mm (0.0098 in) US | 51.734 — 51.750 mm | (2.0368 — 2.0374 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 | 59.934 — 59.950 mm | (2.3596 — 2.3602 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 | 59.954 — 59.970 mm | (2.3604 — 2.3610 in) |
| | | | | 0.05 mm (0.0020 in) US | 59.934 — 59.950 mm | (2.3596 — 2.3602 in) |
| | | | | 0.25 mm (0.0098 in) US | 59.734 — 59.750 mm | (2.3517 — 2.3524 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 | 0.035 mm | (0.0014 in) | |
| Crank- shaft 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) |