

1. Engine

A: SPECIFICATIONS

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| 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

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|-----------------------|-----------------------------------|------------------|----------------------|---|--|
| 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) | | |

1. Engine

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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 | Limit | 0.015 mm | (0.0006 in) |
| | | | Limit | 0.050 mm | (0.0020 in) |
| | Out-of-roundness | STD | Limit | 0.010 mm | (0.0004 in) |
| | | | Limit | 0.050 mm | (0.0020 in) |
| | Piston clearance | STD | Limit | 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) | |

SPECIFICATIONS AND SERVICE DATA

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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) |