# ENGINE MECHANICAL

## SERVICE DATA

0315D–01

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| Cylinder block | | |
| Balanceshaft bearing inside diameter | No. 1 | 42.000 – 42.020 mm (1.6535 – 1.6543 in.) |
| | No. 2 | 41.000 – 41.020 mm (1.6142 – 1.6150 in.) |
| | No. 3 | 32.000 – 32.020 mm (1.2598 – 1.2606 in.) |
| Balanceshaft thrust clearance | STD | 0.065 – 0.140 mm (0.0026 – 0.0055 in.) |
| | Maximum | 0.25 mm (0.0098 in.) |
| Warpage | Maximum | 0.10 mm (0.0039 in.) |
| Cylinder bore diameter | STD Mark 1 | 96.000 – 96.010 mm (3.7795 – 3.7799 in.) |
| | STD Mark 2 | 96.010 – 96.020 mm (3.7799 – 3.7803 in.) |
| | STD Mark 3 | 96.020 – 96.030 mm (3.7803 – 3.7807 in.) |
| | Maximum | 96.23 mm (3.7886 in.) |
| Piston oil clearance | STD | 0.070 – 0.090 mm (0.0028 – 0.0035 in.) |
| | Maximum | 0.14 mm (0.0055 in.) |
| Cylinder head bolt | | |
| Cylinder head bolt out diameter | STD | 11.76 – 11.97 mm (0.4630 – 0.4713 in.) |
| | Minimum | 11.60 mm (0.457 in.) |
| Timing gear | | |
| Idle gear No. 1 thrust clearance | STD | 0.06 – 0.11 mm (0.0024 – 0.0043 in.) |
| | Maximum | 0.30 mm (0.0118 in.) |
| Idle gear No. 1 inside diameter | | 44.000 – 44.025 mm (1.7323 – 1.7333 in.) |
| Idle gear shaft diameter | | 43.955 – 43.990 mm (1.7305 – 1.7319 in.) |
| Idle gear shaft oil clearance | STD | 0.010 – 0.070 mm (0.0004 – 0.0028 in.) |
| | Maximum | 0.20 mm (0.0079 in.) |
| Gear backlash | STD | 0.02 – 0.15 mm (0.0008 – 0.0060 in.) |
| | Maximum | 0.20 mm (0.0079 in.) |
| Cylinder head gasket | | |
| New cylinder head gasket thickness | A | 0.80 – 0.90 mm (0.0315 – 0.0354 in.) |
| | B | 0.85 – 0.95 mm (0.0335 – 0.0374 in.) |
| | C | 0.90 – 1.00 mm (0.0354 – 0.0394 in.) |
| | D | 0.95 – 1.05 mm (0.0374 – 0.0413 in.) |
| | E | 1.00 – 1.10 mm (0.0394 – 0.0433 in.) |
| Valve clearance | Cold Intake | 0.20 – 0.30 mm (0.0079 – 0.0118 in.) |
| | Exhaust | 0.35 – 0.45 mm (0.0138 – 0.0177 in.) |
| Cylinder head | | |
| Warpage | Maximum | 0.15 mm (0.0059 in.) |
| Bush bore diameter | STD | 10.985 – 11.006 mm (0.4325 – 0.4333 in.) |
| | O/S 0.05 | 11.035 – 11.056 mm (0.4344 – 0.4353 in.) |
| Contact width | Intake | 1.2 – 1.6 mm (0.047 – 0.063 in.) |
| | Exhaust | 1.6 – 2.0 mm (0.063 – 0.079 in.) |
| Valve lifter bore diameter | | 31.000 – 31.021 mm (1.2205 – 1.2213 in.) |
| Valve lifter oil clearance | STD | 0.024 – 0.055 mm (0.0009 – 0.0022 in.) |
| | Maximum | 0.095 mm (0.0037 in.) |

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| Valve | | |
| Valve stem diameter | Intake | 5.970 – 5.985 mm (0.2350 – 0.2356 in.) |
| | Exhaust | 5.960 – 5.975 mm (0.2346 – 0.2352 in.) |
| Valve face angle | | 44.5° |
| Margin thickness | STD Intake | 1.1 mm (0.043 in.) |
| | Exhaust | 1.2 mm (0.047 in.) |
| | Minimum Intake | 0.8 mm (0.032 in.) |
| | Exhaust | 0.7 mm (0.028 in.) |
| Valve overall length | STD Intake | 105.15 – 105.75 mm (4.1398 – 4.1634 in.) |
| | Exhaust | 105.02 – 105.62 mm (4.1347 – 4.1583 in.) |
| | Minimum Intake | 104.65 mm (4.1201 in.) |
| | Exhaust | 104.52 mm (4.1150 in.) |
| Valve stem oil clearance | STD Intake | 0.025 – 0.060 mm (0.0010 – 0.0024 in.) |
| | Exhaust | 0.035 – 0.070 mm (0.0014 – 0.0028 in.) |
| | Maximum Intake | 0.08 mm (0.0031 in.) |
| | Exhaust | 0.10 mm (0.0039 in.) |
| Compression spring | | |
| Deviation | Maximum | 2.0 mm (0.079 in.) |
| Free length | | 46.5 mm (1.831 in.) |
| Install tension at 33.1 mm (1.303 in.) | | 150.2 – 165.8 N (15.3 – 16.9 kgf, 33.7 – 37.3 ibl) |
| Valve guide bush | | |
| Bush inside diameter | | 6.010 – 6.030 mm (0.2366 – 0.2374 in.) |
| Protrusion height | | 10.3 – 10.7 mm (0.406 – 0.421 in.) |
| Valve lifter | | |
| Lifter diameter | | 30.966 – 30.976 mm (1.2191 – 1.2195 in.) |
| Camshaft | | |
| Circle runout | Maximum | 0.03 mm (0.0012 in.) |
| Camshaft lobe height | STD Intake | 47.180 – 47.280 mm (1.8575 – 1.8614 in.) |
| | Exhaust | 48.070 – 48.170 mm (1.8925 – 1.8965 in.) |
| | Maximum Intake | 46.76 mm (1.8409 in.) |
| | Exhaust | 47.92 mm (1.8866 in.) |
| Journal diameter | | 27.969 – 27.985 mm (1.1011 – 1.1018 in.) |
| Oil clearance | STD | 0.025 – 0.062 mm (0.0010 – 0.0024 in.) |
| | Maximum | 0.10 mm (0.0039 in.) |
| Thrust clearance | STD | 0.035 – 0.185 mm (0.0014 – 0.0073 in.) |
| | Maximum | 0.25 mm (0.0098 in.) |
| Camshaft backlash | STD | 0.035 – 0.089 mm (0.0014 – 0.0035 in.) |
| | Maximum | 0.189 mm (0.0074 in.) |
| Connecting rod | | |
| Thrust clearance | STD | 0.100 – 0.300 mm (0.0039 – 0.0118 in.) |
| | Maximum | 0.40 mm (0.0157 in.) |
| Oil clearance | STD | 0.036 – 0.054 mm (0.0014 – 0.0021 in.) |
| | Maximum | 0.10 mm (0.0039 in.) |
| Connecting rod bend | Maximum per 100 mm (3.94 in.) | 0.03 mm (0.0012 in.) |
| Connecting rod twist | Maximum per 100 mm (3.94 in.) | 0.15 mm (0.0059 in.) |
| Bush inside diameter | Mark A | 34.012 – 34.016 mm (1.3391 – 1.3392 in.) |
| | Mark B | 34.016 – 34.020 mm (1.3392 – 1.3394 in.) |
| | Mark C | 34.020 – 34.024 mm (1.3394 – 1.3395 in.) |
| Crankshaft | | |
| Thrust clearance | STD | 0.040 – 0.240 mm (0.0016 – 0.0094 in.) |
| | Maximum | 0.30 mm (0.0118 in.) |
| Oil clearance | STD | 0.030 – 0.048 mm (0.0012 – 0.0019 in.) |
| | Maximum | 0.10 mm (0.0039 in.) |
| Circle runout | Maximum | 0.03 mm (0.0012 in.) |
| Main journal diameter | Mark 1 | 69.994 – 70.000 mm (2.75566 – 2.75590 in.) |
| | Mark 2 | 69.988 – 69.994 mm (2.75543 – 2.75566 in.) |
| | Mark 3 | 69.982 – 69.988 mm (2.75519 – 2.75543 in.) |
| Crank pin diameter | Mark 1 | 58.994 – 59.000 mm (2.32259 – 2.32283 in.) |
| | Mark 2 | 58.988 – 59.994 mm (2.32236 – 2.32259 in.) |
| | Mark 3 | 58.982 – 58.988 mm (2.32212 – 2.32239 in.) |
| Crank pin taper and out–of–round | Maximum | 0.020 mm (0.0008 in.) |

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| Piston | | |
| Piston diameter | STD Mark 1 | 95.920 – 95.930 mm (3.77637 – 3.77676 in.) |
| | STD Mark 2 | 95.930 – 95.940 mm (3.77676 – 3.77715 in.) |
| | STD Mark 3 | 95.940 – 95.950 mm (3.77716 – 3.77755 in.) |
| Piston pin | | |
| Piston pin diameter | Mark A | 33.996 – 34.000 mm (1.33842 – 1.33858 in.) |
| | Mark B | 34.000 – 34.004 mm (1.33858 – 1.33874 in.) |
| | Mark C | 34.004 – 34.008 mm (1.33874 – 1.33889 in.) |
| Piston ring | | |
| Piston ring groove | No. 1 | 0.091 – 0.135 mm (0.0036 – 0.0053 in.) |
| | No. 2 | 0.090 – 0.130 mm (0.0036 – 0.0051 in.) |
| | Oil | 0.030 – 0.070 mm (0.0012 – 0.0028 in.) |
| Piston ring end gap | STD No. 1 | 0.27 – 0.39 mm (0.0106 – 0.0154 in.) |
| | No. 2 | 0.47 – 0.57 mm (0.0185 – 0.0224 in.) |
| | Oil | 0.20 – 0.40 mm (0.0079 – 0.0157 in.) |
| | Maximum No. 1 | 0.85 mm (0.0335 in.) |
| | No. 2 | 1.07 mm (0.0421 in.) |
| | Oil | 0.77 mm (0.0303 in.) |
| Connecting rod bolt | | |
| | STD | 8.500 – 8.600 mm (0.3346 – 0.3385 in.) |
| | Minimum diameter | 8.30 mm (0.3268 in.) |
| Balanceshaft | | |
| Main journal diameter | No. 1 | 41.941 – 41.960 mm (1.6512 – 1.6520 in.) |
| | No. 2 | 40.931 – 40.950 mm (1.6115 – 1.6122 in.) |
| | No. 3 | 31.941 – 31.960 mm (1.2575 – 1.2583 in.) |
| Oil clearance | Standard No. 1 | 0.040 – 0.079 mm (0.0016 – 0.0031 in.) |
| | No. 2 | 0.040 – 0.079 mm (0.0016 – 0.0031 in.) |
| | No. 3 | 0.050 – 0.089 mm (0.0020 – 0.0035 in.) |
| | Maximum No. 1 | 0.18 mm (0.0071 in.) |
| | No. 2 | 0.19 mm (0.0075 in.) |
| | No. 3 | 0.18 mm (0.0071 in.) |
| Crankshaft bearing cap bolt | | |
| | STD | 13.500 – 14.000 mm (0.5315 – 0.5512 in.) |
| | Minimum diameter | 12.60 mm (0.4961 in.) |