

ENGINE MECHANICAL

SERVICE DATA

030P0-02

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| Ignition timing | w/ Terminal TC and CG of DLC3 connected w/ Terminal TC and CG of DLC3 disconnected | 8 to 12° BTDC 10 to 18° BTDC |
| Idle speed | | 650 to 750 rpm |
| Compression pressure | | 1,300 kPa (13.3 kgf·cm ² , 189 psi) |
| Minimum pressure | | 1,000 kPa (10.2 kgf·cm ² , 145 psi) |
| Difference between each cylinder | | 100 kPa (1.0 kgf·cm ² , 15 psi) |
| Valve clearance at cold | Intake Exhaust | 0.15 to 0.25 mm (0.0059 to 0.0098 in.) 0.25 to 0.35 mm (0.0098 to 0.0138 in.) |
| Chain elongation | Maximum | 122.6 mm (4.827 in.) |
| Camshaft timing gear diameter (w/ chain) | Minimum | 97.3 mm (3.831 in.) |
| Crankshaft timing gear diameter (w/ chain) | Minimum | 51.6 mm (2.031 in.) |
| Chain tensioner slipper wear | Maximum | 1.0 mm (0.039 in.) |
| Chain vibration damper wear | Maximum | 1.0 mm (0.039 in.) |
| Cylinder head set bolt length | Standard Maximum | 146.8 to 148.2 mm (5.780 to 5.835 in.) 148.5 mm (5.846 in.) |
| Camshaft Circle runout Cam lobe height | Maximum Standard Intake Exhaust Minimum Intake Exhaust | 0.03 mm (0.0012 in.) 44.333 to 44.433 mm (1.7454 to 1.7493 in.) 43.761 to 43.861 mm (1.7229 to 1.7268 in.) 44.18 mm (1.7394 in.) 43.61 mm (1.7169 in.) |
| Journal diameter | No. 1 Others | 34.449 to 34.465 mm (1.3563 to 1.3569 in.) 22.949 to 22.965 mm (0.9035 to 0.9041 in.) |
| Cylinder head warpage | Cylinder block side Intake manifold side Exhaust manifold side | 0.05 mm (0.0020 in.) 0.10 mm (0.0039 in.) 0.10 mm (0.0039 in.) |
| Camshaft thrust clearance | Standard Maximum | 0.040 to 0.095 mm (0.0016 to 0.0037 in.) 0.110 mm (0.0043 in.) |
| Camshaft oil clearance | Standard Maximum | 0.035 to 0.072 mm (0.0014 to 0.0028 in.) 0.10 mm (0.0039 in.) |
| Valve lifter diameter | | 30.966 to 30.976 mm (1.2191 to 1.2195 in.) |
| Valve lifter bore diameter | | 31.000 to 31.025 mm (1.2205 to 1.2215 in.) |
| Valve lifter oil clearance | Standard Maximum | 0.024 to 0.059 mm (0.0009 to 0.0023 in.) 0.079 mm (0.0031 in.) |
| Inner compression spring Free length Deviation Angle (reference) Installed tension Maximum working tension | Maximum Maximum at 33.6 mm (1.323 in.) at 24.1 mm (0.949 in.) | 43.40 mm (1.7087 in.) 1.6 mm (0.063 in.) 2° 158.6 to 175.4 N (16.2 to 17.9 kgf, 35.7 to 39.5 lbf) 335.3 to 370.7 N (34.2 to 37.8 kgf, 75.4 to 83.3 lbf) |
| Valve Overall length Valve stem diameter Margin thickness | Standard Intake Exhaust Minimum Intake Exhaust Intake Exhaust Standard Minimum | 88.65 mm (3.4902 in.) 88.69 mm (3.4917 in.) 88.35 mm (3.4784 in.) 88.39 mm (3.4799 in.) 5.470 to 5.485 mm (0.2154 to 0.2159 in.) 5.465 to 5.480 mm (0.2152 to 0.2158 in.) 1.0 mm (0.039 in.) 0.7 mm (0.028 in.) |
| Valve guide bush inside diameter | | 5.510 to 5.530 mm (0.2169 to 0.2177 in.) |
| Valve guide bush oil clearance | Standard Intake Exhaust Maximum Intake Exhaust | 0.025 to 0.060 mm (0.0010 to 0.0024 in.) 0.030 to 0.065 mm (0.0012 to 0.0026 in.) 0.08 mm (0.0032 in.) 0.10 mm (0.0039 in.) |

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| Valve guide bush bore diameter | STD O/S 0.05 | 10.285 to 10.306 mm (0.4049 to 0.4058 in.) 10.335 to 10.356 mm (0.4069 to 0.4077 in.) |
| Valve guide bush protrusion height | | 8.7 to 9.1 mm (0.343 to 0.358 in.) |
| Straight pin protrusion height (cylinder head) | | 5 mm (0.197 in.) |
| Union protrusion height (See page 14-134) | A B C | 29 mm (1.142 in.) 66.5 mm (2.618 in.) 24 mm (0.945 in.) |
| Connecting rod thrust clearance | Standard Maximum | 0.160 to 0.342 mm (0.0063 to 0.0135 in.) 0.342 mm (0.0135 in.) |
| Connecting rod oil clearance | Standard Maximum | 0.028 to 0.060 mm (0.0011 to 0.0024 in.) 0.080 mm (0.0031 in.) |
| Connecting rod large end bore diameter | 1 2 3 | 47.000 to 47.008 mm (1.8504 to 1.8507 in.) 47.009 to 47.016 mm (1.8507 to 1.8510 in.) 47.017 to 47.024 mm (1.8511 to 1.8513 in.) |
| Connecting rod bearing thickness | 1 2 3 | 1.486 to 1.490 mm (0.0585 to 0.0587 in.) 1.491 to 1.494 mm (0.0587 to 0.0588 in.) 1.495 to 1.498 mm (0.0589 to 0.0590 in.) |
| Crankshaft pin outer diameter | | 43.992 to 44.000 mm (1.7320 to 1.7323 in.) |
| Crankshaft thrust clearance | Standard Maximum | 0.04 to 0.24 mm (0.0016 to 0.0094 in.) 0.30 mm (0.0118 in.) |
| Cylinder block warpage | Maximum | 0.05 mm (0.0020 in.) |
| Cylinder bore diameter | Standard Difference limit | 79.000 to 79.013 mm (3.1102 to 3.1107 in.) 0.10 mm (0.0039 in.) |
| Piston diameter | at 25.6 mm (1.008 in.) from piston head | 78.872 to 78.972 mm (3.1052 to 3.1091 in.) |
| Piston oil clearance | Standard Maximum | 0.065 to 0.088 mm (0.0026 to 0.0035 in.) 0.088 mm (0.0035 in.) |
| Piston pin bore diameter | A B C | 20.006 to 20.009 mm (0.7876 to 0.7878 in.) 20.010 to 20.012 mm (0.7878 to 0.7879 in.) 20.013 to 20.015 mm (0.7879 to 0.7880 in.) |
| Piston pin outer diameter | A B C | 20.004 to 20.007 mm (0.7876 to 0.7877 in.) 20.008 to 20.010 mm (0.7877 to 0.7878 in.) 20.011 to 20.013 mm (0.7878 to 0.7879 in.) |
| Connecting rod small end bore diameter | A B C | 20.012 to 20.015 mm (0.7879 to 0.7880 in.) 20.016 to 20.018 mm (0.7880 to 0.7881 in.) 20.019 to 20.021 mm (0.7881 to 0.7882 in.) |
| Piston pin oil clearance Piston pin x Piston Piston pin x Connecting rod | Standard Maximum Standard Maximum | 0.002 to 0.011 mm (0.0001 to 0.0004 in.) 0.011 mm (0.0004 in.) -0.001 to 0.017 mm (-0.00004 to 0.0007 in.) 0.017 mm (0.0007 in.) |
| Ring groove clearance | No. 1 No. 2 Oil | 0.02 to 0.07 mm (0.0008 to 0.0028 in.) 0.03 to 0.07 mm (0.0012 to 0.0028 in.) 0.03 to 0.11 mm (0.0012 to 0.0043 in.) |
| Piston ring end gap | Standard No. 1 No. 2 Oil Maximum No. 1 No. 2 | 0.25 to 0.35 mm (0.0098 to 0.0138 in.) 0.35 to 0.50 mm (0.0138 to 0.0197 in.) 0.15 to 0.40 mm (0.0059 to 0.157 in.) 1.05 mm (0.0413 in.) 1.20 mm (0.0472 in.) |
| Connecting rod Out-of-alignment Twist | Maximum Maximum | 0.05 mm (0.0020 in.) per 100 mm (3.94 in.) 0.05 mm (0.0020 in.) per 100 mm (3.94 in.) |
| Connecting rod bolt diameter | Standard Maximum | 6.6 to 6.7 mm (0.260 to 0.264 in.) 6.4 mm (0.252 in.) |
| Crankshaft Circle runout Main journal diameter Taper and out-of-round Crank pin diameter Taper and out-of-round | Maximum Maximum Maximum Maximum | 0.03 mm (0.0012 in.) 47.988 to 48.000 mm (1.8893 to 1.8898 in.) 0.02 mm (0.0008 in.) 43.992 to 44.000 mm (1.7320 to 1.7323 in.) 0.02 mm (0.0008 in.) |

SERVICE SPECIFICATIONS – ENGINE MECHANICAL

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| Crankshaft bearing cap set bolt diameter | Standard Minimum | 7.3 to 7.5 mm (0.287 to 0.295 in.) 7.3 mm (0.287 in.) |
| Crankshaft oil clearance | Standard Minimum | 0.015 to 0.032 mm (0.0006 to 0.0013 in.) 0.05 mm (0.0020 in.) |
| Cylinder block journal bore diameter | 0 1 2 3 4 5 6 | 52.000 to 52.002 mm (2.0472 to 2.0473 in.) 52.003 to 52.004 mm (2.0474 to 2.0474 in.) 52.005 to 52.006 mm (2.0474 to 2.0475 in.) 52.007 to 52.009 mm (2.0475 to 2.0476 in.) 52.010 to 52.011 mm (2.0476 to 2.0477 in.) 52.012 to 52.013 mm (2.0477 to 2.0478 in.) 52.014 to 52.015 mm (2.0478 to 2.0478 in.) |
| Crankshaft journal diameter | 0 1 2 3 4 5 | 47.999 to 48.000 mm (1.8897 to 1.8898 in.) 47.997 to 47.998 mm (1.8896 to 1.8897 in.) 47.995 to 47.996 mm (1.8896 to 1.8896 in.) 47.993 to 47.994 mm (1.8895 to 1.8895 in.) 47.991 to 47.992 mm (1.8894 to 1.8894 in.) 47.988 to 47.990 mm (1.8893 to 1.8894 in.) |
| Standard bearing center wall thickness | 1 2 3 4 | 1.994 to 1.997 mm (0.0785 to 0.0786 in.) 1.998 to 2.000 mm (0.0787 to 0.0787 in.) 2.001 to 2.003 mm (0.0788 to 0.0789 in.) 2.004 to 2.006 mm (0.0789 to 0.0790 in.) |
| Straight pin (cylinder block) (See page 14-147) | A B C D | 5 mm (0.197 in.) 7.5 mm (0.295 in.) 12 mm (0.472 in.) 8 mm (0.315 in.) |
| Ring pin (cylinder block) (See page 14-147) | A B C | 6 mm (0.236 in.) 7 mm (0.276 in.) 10 mm (0.394 in.) |