

ENGINE MECHANICAL

SERVICE DATA

031LO-02

New drive belt deflection Pressing force: 98 N (10 kgf, 22lbf)		9.0 to 12.0 mm (0.35 to 0.47 in.)
Used drive belt deflection Pressing force: 98 N (10 kgf, 22lbf)		11.0 to 15.0 mm (0.43 to 0.59 in.)
New drive belt tension		392 to 588 N (40 to 60 kgf, 88 to 132 lb)
Used drive belt tension		196 to 392 N (20 to 40 kgf, 44 to 88 lb)
Ignition timing		8 to 12 ° BTDC
Idle speed		950 ± 1050 rpm
Compression pressure		882 kPa (9.0 kgf/cm ² 128 psi)
Minimum pressure		686 kPa (7.0 kgf/cm ² 99 psi)
Difference between each cylinder		98 kPa (1.0kgf/cm ² 14 psi)
Valve clearance (cold)	Intake Exhaust	0.17 to 0.23 mm (0.007 to 0.009 in.) 0.27 to 0.33 mm (0.011 to 0.013 in.)
Chain elongation chain length at 16 links	Maximum	124.2 mm (4.890 in.)
Camshaft timing gear diameter (w / chain)	Minimum	96.2 mm (3.787 in.)
Camshaft timing sprocket diameter (w / chain)	Minimum	96.2 mm (3.787 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 bolt length	Standard Maximum	142.8 to 144.2 mm (5.622 to 5.677 in.) 147.1 mm (5.791 in.)
Cylinder head warpage	Maximum 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.)
Intake valve overall length	Standard Minimum	89.25 mm (3.5138 in.) 88.95 mm (3.5020 in.)
Intake valve stem diameter		4.970 to 4.985 mm (0.1957 to 0.1963 in.)
Intake valve margin thickness	Standard Minimum	1.0 mm (0.039 in.) 0.7 mm (0.028 in.)
Exhaust valve overall length	Standard Minimum	87.90 mm (3.4606 in.) 87.60 mm (3.4488 in.)
Exhaust valve stem diameter		4.965 to 4.980 mm (0.1955 to 0.1961 in.)
Exhaust valve margin thickness	Standard Minimum	1.15 mm (0.0453 in.) 0.85 mm (0.0335 in.)
Valve spring free length		59.77 mm (2.3531 in.)
Valve spring deviation	Maximum	1.6 mm (0.063 in.)
Valve spring angle (reference)	Maximum	2°
Valve spring installed tension at 32.5 mm (1.280 in.)		140 to 154 N (14.2 to 15.7 kgf, 31.5 to 34.6 lbf)
Valve spring working tension at 25.1 mm (0.988 in.)	Maximum	180 to 198 N (18.4 to 20.2 kgf, 40.5 to 44.5 lbf)
Bushing inside diameter		5.010 to 5.030 mm (0.1972 to 0.1980 in.)
Valve guide bushing 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 (0.0031 in.) 0.10 mm (0.0039 in.)
Valve guide bush diameter	Standard O/S	9.685 to 9.706 mm (0.3813 to 0.3821 in.) 9.735 to 9.755 mm (0.3833 to 0.3841 in.)
Bushing Protrusion height		9.0 to 9.4 mm (0.354 to 0.370 in.)
Lifter diameter		30.966 to 30.976 mm (1.2191 to 1.2195 in.)
Lifter bore diameter		31.009 to 31.025 mm (1.2208 to 1.2215 in.)
Oil clearance	Standard Maximum	0.033 to 0.059 mm (0.0013 to 0.0023 in.) 0.10 mm (0.0039 in.)

SERVICE SPECIFICATIONS – ENGINE MECHANICAL

Camshaft circle runout	Maximum	0.03 mm (0.0012 in.)
Camshaft cam lobe height	Standard	42.310 to 42.410 mm (1.6657 to 1.6697 in.)
	Minimum	42.16 mm (1.6598 in.)
Camshaft No. 1 journal diameter		34.449 to 34.465 mm (1.3563 to 1.3569 in.)
Camshaft other journals diameter		22.949 to 22.965 mm (0.9035 to 0.9041 in.)
No. 2 camshaft circle runout	Maximum	0.03 mm (0.0012 in.)
No. 2 camshaft cam lobe height	Standard	44.046 to 44.146 mm (1.7341 to 1.7380 in.)
	Minimum	43.90 mm (1.7283 in.)
No. 2 camshaft No. 1 journal diameter		34.449 to 34.465 mm (1.3563 to 1.3569 in.)
No. 2 camshaft other journals diameter		22.949 to 22.965 mm (0.9035 to 0.9041 in.)
Camshaft thrust clearance	Standard	0.040 to 0.095 mm (0.0016 to 0.0037 in.)
	Maximum	0.11 mm (0.0043 in.)
Camshaft oil clearance	Standard	0.040 to 0.095 mm (0.0016 to 0.0037 in.)
	Maximum	0.115 mm (0.0045 in.)
Camshaft bearing cap setting ring pin protrusion height		8.5 to 9.5 mm (0.335 to 0.374 in.)
Connecting rod thrust clearance	Standard	0.16 to 0.36 mm (0.0063 to 0.0142 in.)
	Maximum	0.36 mm (0.0142 in.)
Connecting rod oil clearance	Standard	0.016 to 0.040 mm (0.0006 to 0.0016 in.)
	Maximum	0.06 mm (0.0024 in.)
Crankshaft thrust clearance	Standard	0.09 to 0.19 mm (0.0035 to 0.0075 in.)
	Maximum	0.30 mm (0.0118 in.)
Cylinder block warpage	Maximum	0.05 mm (0.0020 in.)
Cylinder bore diameter	Standard	75.000 to 75.133 mm (2.9528 to 2.9580 in.)
Connecting rod out-of alignment	Maximum	0.05 mm (0.0020 in.) per 100 mm (3.94 in.)
Connecting rod twist	Maximum	0.05 mm (0.0020 in.) per 100 mm (3.94 in.)
Piston diameter		74.941 to 74.979 mm (2.9504 to 2.9519 in.)
Piston pin hole diameter at 20°C (68°F)		18.013 to 18.016 mm (0.7092 to 0.7093 in.)
Piston pin diameter		18.001 to 18.004 mm (0.7087 to 0.7088 in.)
Oil clearance	Standard	0.009 to 0.015 mm (0.0004 to 0.0006 in.)
	Maximum	0.050 mm (0.0020 in.)
Piston clearance	Standard	0.045 to 0.068 mm (0.0018 to 0.0027 in.)
	Maximum	0.08 mm (0.0032 in.)
Connecting rod inside diameter		17.965 to 17.985 mm (0.7073 to 0.7081 in.)
Piston ring groove clearance	No. 1	0.02 to 0.07 mm (0.0008 to 0.0028 in.)
	No. 2	0.02 to 0.06 mm (0.0008 to 0.0024 in.)
	Oil	0.02 to 0.06 mm (0.0008 to 0.0024 in.)
Piston ring end gap	Standard No. 1	0.20 to 0.30 mm (0.0079 to 0.0118 in.)
	No. 2	0.30 to 0.45 mm (0.0118 to 0.0177 in.)
	Oil	0.10 to 0.40 mm (0.0039 to 0.0158 in.)
	Maximum No. 1	0.61 mm (0.0240 in.)
	No. 2	1.20 mm (0.0472 in.)
	Oil	1.15 mm (0.0453 in.)
Connecting rod bolt diameter	Standard	6.6 to 6.7 mm (0.260 to 0.264 in.)
	Maximum	6.4 mm (0.252 in.)
Crankshaft circle runout	Maximum	0.03 mm (0.0012 in.)
Main journal diameter		45.988 to 46.000 mm (1.8106 to 1.8110 in.)
Main journal taper and out-of-round	Maximum	0.02 mm (0.0008 in.)
Crank pin diameter		39.992 to 40.000 mm (1.5745 to 1.5748 in.)
Crank pin taper and out-of-round	Maximum	0.02 mm (0.0008 in.)
Crankshaft timing sprocket diameter (w/ chain)	Standard	51.72 mm (2.0362 in.)
	Maximum	50.5 mm (1.988 in.)
Crankshaft bearing cap set bolt diameter	Standard	7.3 to 7.5 mm (0.287 to 0.295 in.)
	Minimum	7.3 mm (0.287 in.)
Crankshaft oil clearance	Standard	0.01 to 0.023 mm (0.0004 to 0.0009 in.)
	Maximum	0.07 mm (0.0028 in.)
End plate straight pin protrusion		11.5 to 12.5 mm (0.453 to 0.492 in.)
Oil pan straight pin protrusion		8.5 to 9.5 mm (0.335 to 0.374 in.)
Cylinder head set straight pin protrusion		8.5 to 9.5 mm (0.335 to 0.374 in.)

Chain tensioner straight pin protrusion	18.5 to 19.5 mm (0.728 to 0.768 in.)
Oil pump set ring pin protrusion	3.5 to 4.5 mm (0.138 to 0.177 in.)