

ENGINE MECHANICAL

SERVICE DATA

031H1-03

Valve clearance		
Intake	(cold)	0.20 to 0.30 mm (0.008 to 0.012 in.)
Exhaust		0.35 to 0.45 mm (0.014 to 0.018 in.)
Adjusting shim thickness	Mark 2.500	2.500 mm (0.0984 in.)
	Mark 2.550	2.550 mm (0.1004 in.)
	Mark 2.600	2.600 mm (0.1024 in.)
	Mark 2.650	2.650 mm (0.1043 in.)
	Mark 2.700	2.700 mm (0.1063 in.)
	Mark 2.750	2.750 mm (0.1083 in.)
	Mark 2.800	2.800 mm (0.1102 in.)
	Mark 2.850	2.850 mm (0.1122 in.)
	Mark 2.900	2.900 mm (0.1142 in.)
	Mark 2.950	2.950 mm (0.1161 in.)
	Mark 3.000	3.000 mm (0.1181 in.)
	Mark 3.050	3.050 mm (0.1201 in.)
	Mark 3.100	3.100 mm (0.1220 in.)
	Mark 3.150	3.150 mm (0.1240 in.)
	Mark 3.200	3.200 mm (0.1260 in.)
	Mark 3.250	3.250 mm (0.1280 in.)
	Mark 3.300	3.300 mm (0.1299 in.)
Cylinder head		
Warpage	Cylinder block side	0.08 mm (0.0031 in.)
	Intake manifold side	0.20 mm (0.0079 in.)
	Exhaust manifold side	0.20 mm (0.0079 in.)
Intake valve		
Overall length	Standard	102.53 mm (4.0366 in.)
	Minimum	102.10 mm (4.0197 in.)
Valve stem diameter		5.970 to 5.985 mm (0.2350 to 0.2356 in.)
Margin thickness	Standard	0.9 (0.035 in.)
	Minimum	0.6 mm (0.0236 in.)
Exhaust valve		
Overall length	Standard	101.97 mm (4.0146 in.)
	Minimum	101.55 mm (3.9980 in.)
Valve stem diameter		5.960 to 5.975 mm (0.2346 to 0.2352 in.)
Margin thickness	Standard	0.9 mm (0.035 in.)
	Minimum	0.6 mm (0.024 in.)
Inner compression spring		
Free length		40.45 mm (1.5925 in.)
Deviation	Maximum	2.0 mm (0.079 in.)
Installed tension	at 31.1 mm (1.224 in.)	177 to 195 N (18.0 to 19.9 kgf, 39.7 to 44.1 lbf)
Intake Valve guide bush		
Bushing inside diameter		6.010 to 6.030 mm (0.2366 to 0.2374 in.)
Oil clearance	Standard	0.025 to 0.060 mm (0.0010 to 0.0024 in.)
	Maximum	0.08 mm (0.0031 in.)
Diameter		10.985 to 11.006 mm (0.4325 to 0.4333 in.)
Protrusion height		10.05 to 10.45 mm (0.3957 to 0.4114 in.)
Exhaust valve guide bush		
Bushing inside diameter		6.010 to 6.030 mm (0.2366 to 0.2374 in.)
Oil clearance	Standard	0.035 to 0.070 mm (0.0014 to 0.0028 in.)
	Maximum	0.10 mm (0.0039 in.)
Diameter		10.985 to 11.006 mm (0.4325 to 0.4333 in.)
Protrusion height		9.65 to 10.05 mm (0.3799 to 0.3957 in.)
Valve lifter		
Lifter diameter		27.975 to 27.985 mm (1.1014 to 1.1018 in.)
Lifter bore diameter		28.010 to 28.031 mm (1.1028 to 1.1036 in.)
Oil clearance	Standard	0.025 to 0.080 mm (0.0010 to 0.0031 in.)

Camshaft		
Circle runout	Maximum	0.06 mm (0.0024 in.)
Cam lobe height (intake)	Standard	46.57 to 46.67 mm (1.8335 to 1.8374 in.)
	Minimum	46.10 mm (1.8150 in.)
Cam lobe height (exhaust)	Standard	47.52 to 47.62 mm (1.8709 to 1.8748 in.)
	Minimum	47.05 mm (1.8524 in.)
Journal diameter		26.969 to 26.985 mm (1.0618 to 1.0624 in.)
Thrust clearance		0.035 to 0.11 mm (0.0014 to 0.0043 in.)
Oil clearance	Standard	0.025 to 0.080 mm (0.0010 to 0.0031 in.)
Gear backlash	Standard	0.014 to 0.170 mm (0.0006 to 0.0067 in.)
Connecting rod		
Thrust clearance	Standard	0.08 to 0.40 mm (0.0031 to 0.0157 in.)
Oil clearance	Standard	0.038 to 0.056 mm (0.0015 to 0.0022 in.)
	Maximum	0.10 mm (0.0039 in.)
Cylinder block		
Warpage	Maximum	0.05 mm (0.0020 in.)
Bore diameter	Standard	82.200 to 82.400 mm (3.2362 to 3.2441 in.)
Piston		
Piston diameter		82.118 to 82.132 mm (3.2330 to 3.2335 in.)
Piston oil clearance	Standard	0.068 to 0.140 mm (0.0027 to 0.0055 in.)
Bushing inside diameter		31.015 to 31.027 mm (1.2211 to 1.2215 in.)
Piston pin		
Piston pin diameter		31.000 to 31.012 mm (1.2205 to 1.2209 in.)
Oil clearance	Standard	0.005 to 0.019 mm (0.0002 to 0.0007 in.)
Cylinder head set bolt		
Out side diameter	Standard	10.40 to 11.00 mm (0.4094 to 0.4331 in.)
Connecting rod bolt		
Diameter	Standard	8.0 to 8.3 mm (0.315 to 0.315 in.)
Connecting rod		
Out-of-alignment	Maximum per 100 mm (3.94 in.)	0.05 mm (0.0020 in.)
Rod twist	Maximum per 100 mm (3.94 in.)	0.15 mm (0.0059 in.)
Ring groove clearance	No. 1	0.11 to 0.15 mm (0.0043 to 0.0059 in.)
	No. 2	0.075 to 0.115 mm (0.0030 to 0.0045 in.)
	Oil	0.03 to 0.07 mm (0.0012 to 0.0028 in.)
Piston ring end gap		
Standard	No. 1	0.27 to 0.39 mm (0.0106 to 0.0514 in.)
	No. 2	0.39 to 0.54 mm (0.0154 to 0.0213 in.)
	Oil	0.20 to 0.40 mm (0.0079 to 0.0157 in.)
Maximum	No. 1	0.82 mm (0.0323 in.)
	No. 2	1.00 mm (0.0394 in.)
	Oil	0.90 mm (0.0354 in.)
Crankshaft		
Thrust clearance	Standard	0.040 to 0.300 mm (0.0016 to 0.0118 in.)
Circle runout	Maximum	0.025 mm (0.0010 in.)
Crank pin taper and out- of -round	Maximum	0.01 mm (0.0004 in.)
Crank pin diameter		50.482 to 50.500 mm (1.9875 to 1.9882 in.)
Main journal diameter		56.992 to 57.010 mm (2.2438 to 2.2445 in.)
Oil clearance	Standard	0.032 to 0.100 mm (0.0013 to 0.0039 in.)