ENGINE MECHANICAL

SERVICE DATA

031EB–07

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

Valve		
Valve stem diameter	Intake	5.970 to 5.985 mm (0.2350 to 0.2356 in.)
	Exhaust	5.960 to 5.975 mm (0.2346 to 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	0.6 mm (0.024 in.)
	Exhaust	0.7 mm (0.028 in.)
Valve overall length	STD Intake	105.15 to 105.75 mm (4.1398 to 4.1634 in.)
	Exhaust	105.02 to 105.62 mm (4.1347 to 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 to 0.060 mm (0.0010 to 0.0024 in.)
	Exhaust	0.035 to 0.070 mm (0.0014 to 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 to 166 N (14.7 to 16.2 kgf, 33.7 to 37.3 lbf)
Valve guide bush		
Bush inside diameter		6.010 to 6.030 mm (0.2366 to 0.2374 in.)
Protrusion height		10.3 to 10.7 mm (0.406 to 0.421 in.)
Valve lifter		
Lifter diameter		30.966 to 30.976 mm (1.2191 to 1.2195 in.)
Camshaft		
Circle runout	Maximum	0.03 mm (0.0012 in.)
Camshaft lobe height	STD Intake	47.180 to 47.280 mm (1.8575 to 1.8614 in.)
	Exhaust	48.070 to 48.170 mm (1.8925 to 1.8965 in.)
	Maximum Intake	46.76 mm (1.8409 in.)
	Exhaust	47.92 mm (1.8866 in.)
Journal diameter		27.969 to 27.985 mm (1.1011 to 1.1018 in.)
Oil clearance	STD	0.025 to 0.062 mm (0.0010 to 0.0024 in.)
	Maximum	0.10 mm (0.0039 in.)
Thrust clearance	STD	0.035 to 0.185 mm (0.0014 to 0.0073 in.)
	Maximum	0.25 mm (0.0098 in.)
Camshaft backlash	STD	0.035 to 0.089 mm (0.0014 to 0.0035 in.)
	Maximum	0.189 mm (0.0074 in.)
Connecting rod		
Thrust clearance	STD	0.100 to 0.300 mm (0.0039 to 0.0118 in.)
	Maximum	0.40 mm (0.0157 in.)
Oil clearance	STD	0.036 to 0.054 mm (0.0014 to 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 to 34.016 mm (1.3391 to 1.3392 in.)
	Mark B	34.016 to 34.020 mm (1.3392 to 1.3394 in.)
	Mark C	34.020 to 34.024 mm (1.3394 to 1.3395 in.)
Crankshaft		
Thrust clearance	STD	0.040 to 0.240 mm (0.0016 to 0.0094 in.)
	Maximum	0.30 mm (0.0118 in.)
Oil clearance	STD	0.030 to 0.048 mm (0.0012 to 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 to 70.000 mm (2.75566 to 2.75590 in.)
	Mark 2	69.988 to 69.994 mm (2.75543 to 2.75566 in.)
	Mark 3	69.982 to 69.988 mm (2.75519 to 2.75543 in.)
Crank pin diameter	Mark 1	58.994 to 59.000 mm (2.32259 to 2.32283 in.)
	Mark 2	58.988 to 58.994 mm (2.32236 to 2.32259 in.)
	Mark 3	58.982 to 58.988 mm (2.32212 to 2.32236 in.)
Crank pin taper and out–of–round	Maximum	0.020 mm (0.0008 in.)

Piston		
Piston diameter	STD Mark 1	95.920 to 95.930 mm (3.77637 to 3.77676 in.)
	STD Mark 2	95.930 to 95.940 mm (3.77676 to 3.77715 in.)
	STD Mark 3	95.940 to 95.950 mm (3.77716 to 3.77755 in.)
Piston pin		
Piston pin diameter	Mark A	33.996 to 34.000 mm (1.33842 to 1.33858 in.)
	Mark B	34.000 to 34.004 mm (1.33858 to 1.33874 in.)
	Mark C	34.004 to 34.008 mm (1.33874 to 1.33889 in.)
Piston ring		
Piston ring groove	No.1	0.091 to 0.135 mm (0.0036 to 0.0053 in.)
	No.2	0.090 to 0.135 mm (0.0036 to 0.0053 in.)
	Oil	0.030 to 0.075 mm (0.0012 to 0.003 in.)
Piston ring end gap	STD No.1	0.27 to 0.39 mm (0.0106 to 0.0154 in.)
	No.2	0.47 to 0.57 mm (0.0185 to 0.0224 in.)
	Oil	0.20 to 0.40 mm (0.0079 to 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 to 8.600 mm (0.3346 to 0.3385 in.)
	Minimum diameter	8.30 mm (0.3268 in.)
Balanceshaft		
Main journal diameter	No.1	41.941 to 41.960 mm (1.6512 to 1.6520 in.)
	No.2	40.931 to 40.950 mm (1.6115 to 1.6122 in.)
	No.3	31.941 to 31.960 mm (1.2575 to 1.2583 in.)
Oil clearance	Standard No.1	0.040 to 0.079 mm (0.0016 to 0.0031 in.)
	No.2	0.040 to 0.079 mm (0.0016 to 0.0031 in.)
	No.3	0.050 to 0.089 mm (0.0020 to 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 to 14.000 mm (0.5315 to 0.5512 in.)
	Minimum diameter	12.60 mm (0.4961 in.)