

ENGINE MECHANICAL

SERVICE DATA

SS0MI-04

Compression pressure	STD Minimum Difference of pressure between each cylinder	1,270 kPa (13.0 kgf/cm ² , 184 psi) at 250 rpm 1,000 kPa (10.2 kgf/cm ² , 145 psi) at 250 rpm 100 kPa (1.0 kgf/cm ² , 15 psi) or less
Valve clearance	Intake Exhaust Valve clearance adjusting shim No. 06 No. 08 No. 10 No. 12 No. 14 No. 16 No. 18 No. 20 No. 22 No. 24 No. 26 No. 28 No. 30 No. 32 No. 34 No. 36 No. 38 No. 40 No. 42 No. 44 No. 46 No. 48 No. 50 No. 52 No. 54 No. 56 No. 58 No. 60 No. 62 No. 64 No. 66 No. 68 No. 70 No. 72 No. 74	0.15 – 0.25 mm (0.006 – 0.010 in.) at cold 0.25 – 0.35 mm (0.010 – 0.014 in.) at cold 5.060 mm (0.1992 in.) 5.080 mm (0.2000 in.) 5.100 mm (0.2008 in.) 5.120 mm (0.2016 in.) 5.140 mm (0.2024 in.) 5.160 mm (0.2031 in.) 5.180 mm (0.2039 in.) 5.200 mm (0.2047 in.) 5.220 mm (0.2055 in.) 5.240 mm (0.2063 in.) 5.260 mm (0.2071 in.) 5.280 mm (0.2079 in.) 5.300 mm (0.2087 in.) 5.320 mm (0.2094 in.) 5.340 mm (0.2102 in.) 5.360 mm (0.2110 in.) 5.380 mm (0.2118 in.) 5.400 mm (0.2126 in.) 5.420 mm (0.2134 in.) 5.440 mm (0.2142 in.) 5.460 mm (0.2150 in.) 5.480 mm (0.2157 in.) 5.500 mm (0.2165 in.) 5.520 mm (0.2173 in.) 5.540 mm (0.2181 in.) 5.560 mm (0.2189 in.) 5.580 mm (0.2197 in.) 5.600 mm (0.2205 in.) 5.620 mm (0.2213 in.) 5.640 mm (0.2220 in.) 5.660 mm (0.2228 in.) 5.680 mm (0.2236 in.) 5.700 mm (0.2244 in.) 5.720 mm (0.2252 in.) 5.740 mm (0.2260 in.)
Ignition timing		8 – 12° BTDC at idle
Further ignition timing		6 – 15° BTDC at idle
Idle speed		700 ± 50 rpm
Chain and timing sprocket	Chain length at 16 links Camshaft timing sprocket wear (w/ chain) Crankshaft timing sprocket wear (w/ chain)	Maximum Minimum Minimum 122.6 mm (4.827 in.) 97.3 mm (3.831 in.) 51.6 mm (2.031 in.)
Chain tensioner slipper and vibration damper	Wear	Maximum 1.0 mm (0.039 in.)

SERVICE SPECIFICATIONS – ENGINE MECHANICAL

Cylinder head	Warpage	Maximum	0.05 mm (0.0020 in.)	
	Valve seat			
	Refacing angle		30°, 45°, 75°	
	Contacting angle		45°	
	Contacting width		1.0 – 1.4 mm (0.039 – 0.055 in.)	
	Residuary width	Minimum Intake	3.3 mm (0.130 in.)	
		Exhaust	3.2 mm (0.126 in.)	
	Valve guide busing bore diameter	STD	10.285 – 10.306 mm (0.4049 – 0.4057 in.)	
	O/S 0.05	10.335 – 10.356 mm (0.4068 – 0.4077 in.)		
Cylinder head bolt diameter	at tension portion STD		9.0 – 9.2 mm (0.354 – 0.362 in.)	
	Minimum		9.0 mm (0.354 in.)	
Valve guide bushing	Inside diameter		5.510 – 5.530 mm (0.2169 – 0.2177 in.)	
	Protrusion height		8.7 – 9.1 mm (0.342 – 0.358 in.)	
Valve	Valve overall length	STD Intake	88.65 mm (3.4902 in.)	
		Exhaust	88.69 mm (3.4917 in.)	
		Minimum Intake	88.35 mm (3.4783 in.)	
		Exhaust	88.39 mm (3.4799 in.)	
	Valve face angle		44.5°	
	Stem diameter	Intake	5.470 – 5.485 mm (0.2154 – 0.2159 in.)	
		Exhaust	5.465 – 5.480 mm (0.2152 – 0.2157 in.)	
	Stem oil clearance	STD Intake	0.025 – 0.060 mm (0.0010 – 0.0024 in.)	
		Exhaust	0.030 – 0.065 mm (0.0012 – 0.0026 in.)	
		Maximum Intake	0.08 mm (0.0031 in.)	
		Exhaust	0.10 mm (0.0039 in.)	
Margin thickness	STD	1.0 mm (0.039 in.)		
	Minimum	0.7 mm (0.028 in.)		
Valve spring	Deviation	Maximum	1.6 mm (0.063 in.)	
	Angle (Reference)	Maximum	2°	
	Free length		45.90 mm (1.807 in.)	
	Installed tension at 33.6 mm (1.323 in.)		139.6 – 154.4 N (14.2 – 15.8 kgf, 31.3 – 34.8 lbf)	
	Maximum working tension at 24.6 mm (0.969 in.)		244.9 – 276.1 N (25.5 – 28.1 kgf, 56.2 – 61.9 lbf)	
Valve lifter	Lifter diameter		30.966 – 30.976 mm (1.2191 – 1.2195 in.)	
	Lifter bore diameter		31.000 – 31.025 mm (1.2205 – 1.2215 in.)	
	Oil clearance	STD	0.024 – 0.059 mm (0.0009 – 0.0023 in.)	
	Maximum		0.079 mm (0.0031 in.)	
Camshaft	Thrust clearance	STD	0.040 – 0.095 mm (0.0016 – 0.0037 in.)	
		Maximum	0.11 mm (0.0043 in.)	
	Journal oil clearance	STD	0.035 – 0.072 mm (0.0014 – 0.0028 in.)	
		Maximum	0.10 mm (0.0039 in.)	
	Journal diameter	No. 1	34.449 – 34.465 mm (1.3563 – 1.3569 in.)	
		Others	22.949 – 22.965 mm (0.9035 – 0.9041 in.)	
	Circle runout	Maximum	0.03 mm (0.0012 in.)	
	Cam lobe height	STD Intake	44.578 – 44.678 mm (1.7550 – 1.7590 in.)	
		Exhaust	43.761 – 43.861 mm (1.7229 – 1.7268 in.)	
		Minimum Intake	44.43 mm (1.7492 in.)	
	Exhaust	43.61 mm (1.7169 in.)		
Intake manifold	Warpage	Maximum	0.10 mm (0.0039 in.)	
Exhaust manifold	Warpage	Maximum	0.70 mm (0.0276 in.)	
Cylinder block	Cylinder head surface warpage	Maximum	0.05 mm (0.0020 in.)	
	Cylinder bore diameter	STD	79.000 – 79.013 mm (3.1102 – 3.1107 in.)	
		Maximum	79.013 mm (3.1107 in.)	
	12 pointed head bearing cap sub-assembly bolt diameter at tension portion STD			7.3 – 7.5 mm (0.287 – 0.295 in.)
		Minimum		7.3 mm (0.287 in.)

Piston and piston ring	Piston diameter		78.925 – 78.935 mm (3.1073 – 3.1077 in.)	
	Piston oil clearance	at 25.6 mm (1.008 in.) from the piston head		
		STD	0.065 – 0.088 mm (0.0026 – 0.0035 in.)	
	Piston ring groove clearance	Maximum	0.10 mm (0.0039 in.)	
			0.020 – 0.070 mm (0.0008 – 0.0028 in.)	
	Piston ring end gap	STD No. 1	0.25 – 0.35 mm (0.0098 – 0.0138 in.)	
		No. 2	0.35 – 0.50 mm (0.0138 – 0.0197 in.)	
		Oil (Side rail)	0.15 – 0.40 mm (0.0059 – 0.0157 in.)	
Maximum No. 1		1.05 mm (0.0413 in.)		
	No. 2	1.20 mm (0.0472 in.)		
	Oil (side rail)	1.05 mm (0.0413 in.)		
Connecting rod	Thrust clearance	STD	0.160 – 0.342 mm (0.0063 – 0.0135 in.)	
		Maximum	0.342 mm (0.0135 in.)	
	Connecting rod thickness		19.788 – 19.840 mm (0.7791 – 0.7811 in.)	
	Connecting rod bearing center wall thickness	Reference	Mark 1	1.486 – 1.490 mm (0.0585 – 0.0587 in.)
			Mark 2	1.490 – 1.494 mm (0.0587 – 0.0588 in.)
			Mark 3	1.494 – 1.498 mm (0.0588 – 0.0590 in.)
	Connecting rod oil clearance	STD	0.028 – 0.060 mm (0.0011 – 0.0024 in.)	
		Maximum	0.08 mm (0.0031 in.)	
	Rodout-of-alignment	Maximum per/100 mm (3.94 in.)	0.05 mm (0.0020 in.)	
	Rod twist	Maximum per/100 mm (3.94 in.)	0.05 mm (0.0020 in.)	
	Bushing inside diameter		20.012 – 20.021 mm (0.7879 – 0.7882 in.)	
	Piston pin diameter		20.004 – 20.013 mm (0.7876 – 0.7879 in.)	
	Bushing oil clearance	STD	0.005 – 0.011 mm (0.0002 – 0.0004 in.)	
		Maximum	0.05 mm (0.0020 in.)	
	Connecting rod bolt diameter	at tension portion	STD	6.6 – 6.7 mm (0.260 – 0.264 in.)
		Minimum	6.4 mm (0.252 in.)	
Crankshaft	Thrust clearance	STD	0.04 – 0.24 mm (0.0016 – 0.0094 in.)	
		Maximum	0.30 mm (0.0118 in.)	
	Thrust washer thickness		2.430 – 2.480 mm (0.0957 – 0.0976 in.)	
	Main journal oil clearance	STD	0.015 – 0.032 mm (0.0006 – 0.0013 in.)	
		Maximum	0.050 mm (0.0020 in.)	
	Main journal diameter	Mark 0	47.998 – 48.000 mm (1.8897 – 1.8898 in.)	
		Mark 1	47.996 – 47.998 mm (1.8896 – 1.8897 in.)	
		Mark 2	47.994 – 47.996 mm (1.8895 – 1.8896 in.)	
		Mark 3	47.992 – 47.994 mm (1.8894 – 1.8895 in.)	
		Mark 4	47.990 – 47.992 mm (1.8893 – 1.8894 in.)	
		Mark 5	47.988 – 47.990 mm (1.8892 – 1.8893 in.)	
	Main bearing center wall thickness	Reference	Mark 1	1.993 – 1.996 mm (0.0785 – 0.0786 in.)
			Mark 2	1.996 – 1.999 mm (0.0786 – 0.0787 in.)
			Mark 3	1.999 – 2.002 mm (0.0787 – 0.0788 in.)
			Mark 4	2.002 – 2.005 mm (0.0788 – 0.0789 in.)
Crank pin diameter		43.992 – 44.000 mm (1.7320 – 1.7323 in.)		
Circle runout	Maximum	0.03 mm (0.0012 in.)		
Main journal taper and out-of round	Maximum	0.02 mm (0.0008 in.)		
Crank pin taper and out-of round	Maximum	0.02 mm (0.0008 in.)		