

# ENGINE MECHANICAL

## SERVICE DATA

SS0NZ-01

Compression pressure	at 250 rpm	STD	1,275 kPa (13.0 kgf/cm <sup>2</sup> , 185 psi) or more
	Difference of pressure between each cylinder	Minimum	981 kPa (10.0 kgf/cm <sup>2</sup> , 142 psi) 100 kPa (1.0 kgf/cm <sup>2</sup> , 14 psi) or less
Valve clearance	Valve clearance at Cold	Intake	0.15 – 0.25 mm (0.006 – 0.010 in.)
	Adjusting shim (for repair part)	Exhaust	0.31 – 0.41 mm (0.012 – 0.016 in.)
		No.02	2.500 mm (0.0984 in.)
		No.04	2.550 mm (0.1004 in.)
		No.06	2.600 mm (0.1024 in.)
		No.08	2.650 mm (0.1043 in.)
		No.10	2.700 mm (0.1063 in.)
		No.12	2.750 mm (0.1083 in.)
		No.14	2.800 mm (0.1102 in.)
		No.16	2.850 mm (0.1122 in.)
		No.18	2.900 mm (0.1142 in.)
		No.20	2.950 mm (0.1161 in.)
		No.22	3.000 mm (0.1181 in.)
		No.24	3.050 mm (0.1201 in.)
		No.26	3.100 mm (0.1220 in.)
		No.28	3.150 mm (0.1240 in.)
		No.30	3.200 mm (0.1260 in.)
		No.32	3.250 mm (0.1280 in.)
		No.34	3.300 mm (0.1299 in.)
Ignition timing	w/ Terminals TE1 and E1 connected of DLC1		10° BTDC @ idle
Idle speed			750 ± 50 rpm
Idler pulley tension spring	Free length		38.4 mm (1.512 in.)
	Installed load at 47.4 mm (1.866 in.)		32 N (3.3 kgf, 7.3 lbf)
Cylinder head	Warpage		
	Cylinder block side	Maximum	0.05 mm (0.0020 in.)
	Manifold side	Maximum	0.05 mm (0.0020 in.)
	Valve guide bore diameter	STD	11.000 – 11.027 mm (0.4331 – 0.4342 in.)
		O/S 0.05	11.050 – 11.077 mm (0.4350 – 0.4361 in.)
	Valve seat		
	Refacing angle	Intake	30°, 45°, 60°, 75°
		Exhaust	30°, 45°, 75°
	Contacting angle		45°
	Contacting width		1.0 – 1.4 mm (0.039 – 0.055 in.)
Valve guide bushing	Inside diameter		6.010 – 6.030 mm (0.2366 – 0.2374 in.)
	Outside diameter (for repair part)	STD	11.048 – 11.059 mm (0.4350 – 0.4354 in.)
		O/S 0.05	11.098 – 11.109 mm (0.4369 – 0.4374 in.)
Valve	Valve overall length	STD (Intake)	93.45 mm (3.6791 in.)
		(Exhaust)	93.89 mm (3.6965 in.)
		Minimum (Intake)	92.95 mm (3.6594 in.)
		(Exhaust)	93.39 mm (3.6768 in.)
	Valve face angle		44.5°
	Stem diameter	Intake	5.970 – 5.985 mm (0.2350 – 0.2356 in.)
		Exhaust	5.965 – 5.980 mm (0.2348 – 0.2354 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	0.8 – 1.2 mm (0.031 – 0.047 in.)
		Minimum	0.5 mm (0.020 in.)

Valve spring	Deviation Free length Installed tension at 31.8 mm (1.252 in.)	Maximum	2.0 mm (0.079 in.) 53.58 mm (2.1094 in.) 148 – 164 N (15.1 – 16.7 kgf, 33.3 – 36.8 lbf)
Camshaft	Thrust clearance Cam lobe height Journal diameter Journal oil clearance Circle runout Camshaft gear backlash Camshaft gear spring end free distance	STD Maximum STD (Intake) (Exhaust) Maximum (Intake) (Exhaust) Exhaust No.1 Others STD Maximum STD Maximum STD Maximum	0.045 – 0.100 mm (0.0018 – 0.0039 in.) 0.12 mm (0.0047 in.) 41.514 – 41.614 mm (1.6344 – 1.6383 in.) 41.011 – 41.111 mm (1.6146 – 1.6185 in.) 41.35 mm (1.6279 in.) 40.85 mm (1.6083 in.) 24.949 – 24.965 mm (0.9822 – 0.9829 in.) 22.949 – 22.965 mm (0.9035 – 0.9041 in.) 0.035 – 0.072 mm (0.0014 – 0.0028 in.) 0.10 mm (0.0039 in.) 0.04 mm (0.0016 in.) 0.020 – 0.200 mm (0.0008 – 0.0079 in.) 0.30 mm (0.0118 in.) 22.5 – 22.9 mm (0.886 – 0.902 in.)
Valve lifter	Lifter diameter Lifter bore diameter Oil clearance	STD Maximum	27.975 – 27.985 mm (1.1014 – 1.1018 in.) 28.000 – 28.021 mm (1.1024 – 1.1032 in.) 0.015 – 0.046 mm (0.0006 – 0.0018 in.) 0.10 mm (0.0039 in.)
Manifold	Warpage	Maximum (Intake) (Exhaust)	0.1 mm (0.004 in.) 0.5 mm (0.020 in.)
Spark tube	Protrusion		47.5– 48.8 mm (1.870 – 1.909 in.)
Cylinder block	Cylinder head surface warpage Cylinder bore diameter Main journal bore diameter (Reference)	Maximum Mark "1" Mark "2" Mark "3" Maximum Mark 1 Mark 2 Mark 3	0.05 mm (0.0020 in.) 74.000 – 74.010 mm (2.9134 – 2.9138 in.) 74.011 – 74.020 mm (2.9138 – 2.9142 in.) 74.021 – 74.030 mm (2.9142 – 2.9146 in.) 74.23 mm (2.9244 in.) 54.018 – 54.024 mm (2.1267 – 2.1269 in.) 54.025 – 54.030 mm (2.1270 – 2.1272 in.) 54.031 – 54.036 mm (2.1272 – 2.1274 in.)
Piston and Piston ring	Piston diameter Piston oil clearance Piston ring groove clearance Piston ring end gap	Mark "1" Mark "2" Mark "3" STD Maximum No.1 No.2 STD (No.1) (No.2) (Oil) Maximum (No.1) (No.2) (Oil)	73.900 – 73.910 mm (2.9094 – 2.9098 in.) 73.910 – 73.920 mm (2.9098 – 2.9102 in.) 73.920 – 73.930 mm (2.9102 – 2.9106 in.) 0.09 – 0.11 mm (0.0035 – 0.0043 in.) 0.13 mm (0.0051 in.) 0.04 – 0.08 mm (0.0016 – 0.0031 in.) 0.03 – 0.07 mm (0.0012 – 0.0028 in.) 0.26 – 0.48 mm (0.0102 – 0.0189 in.) 0.36 – 0.57 mm (0.0142 – 0.0224 in.) 0.13 – 0.50 mm (0.0059 – 0.0197 in.) 1.07 mm (0.0421 in.) 1.02 mm (0.0354 in.) 1.10 mm (0.0433 in.)

## SERVICE SPECIFICATIONS – ENGINE MECHANICAL

Connecting rod	Thrust clearance	STD	0.15 – 0.35 mm (0.0059 – 0.0138 in.)
		Maximum	0.45 mm (0.0177 in.)
	Connecting rod oil clearance	STD (STD)	0.016 – 0.048 mm (0.0006 – 0.0019 in.)
		(U/S 0.25)	0.015 – 0.058 mm (0.0006 – 0.0023 in.)
		Maximum	0.08 mm (0.0031 in.)
	Connecting rod big end inside diameter (Reference)	Mark 1	46.000 – 46.007 mm (1.8110 – 1.8113 in.)
		Mark 2	46.007 – 46.014 mm (1.8113 – 1.8116 in.)
		Mark 3	46.014 – 46.021 mm (1.6116 – 1.8118 in.)
	Connecting rod bearing center wall thickness (Reference)	STD (Mark 1)	1.487 – 1.491 mm (0.0585 – 0.0587 in.)
		(Mark 2)	1.491 – 1.495 mm (0.0587 – 0.0589 in.)
Crankshaft		(Mark 3)	1.495 – 1.499 mm (0.0589 – 0.0590 in.)
		U/S 0.25	1.609 – 1.615 mm (0.0633 – 0.0636 in.)
	Rod out-of-alignment per 100 mm (3.94 in.)		
		Maximum	0.03 mm (0.0012 in.)
	Rod twist per 100 mm (3.94 in.)	Maximum	0.05 mm (0.0020 in.)
	Thrust clearance	STD	0.020 – 0.200 mm (0.0008 – 0.0078 in.)
		Maximum	0.30 mm (0.0118 in.)
	Thrust washer thickness	STD	2.430 – 2.480 mm (0.0957 – 0.0976 in.)
		O/S 0.125	2.493 – 2.543 mm (0.0981 – 0.1001 in.)
	Main journal oil clearance	STD (STD)	0.016 – 0.035 mm (0.0006 – 0.0014 in.)
		(U/S 0.25)	0.015 – 0.055 mm (0.0006 – 0.0022 in.)
		Maximum	0.08 mm (0.0031 in.)
	Main journal diameter	STD	49.985 – 50.000 mm (1.9679 – 1.9685 in.)
		U/S 0.25	49.745 – 49.755 mm (1.9585 – 1.9589 in.)
	Main journal bore diameter (Reference)	Mark 1	54.018 – 54.024 mm (2.1267 – 2.1269 in.)
		Mark 2	54.025 – 54.030 mm (2.1270 – 2.1272 in.)
		Mark 3	54.031 – 54.036 mm (2.1272 – 2.1274 in.)
	Main journal diameter (Reference)	STD (Mark 0)	49.996 – 50.000 mm (1.9683 – 1.9685 in.)
		(Mark 1)	49.991 – 49.995 mm (1.9081 – 1.9683 in.)
		(Mark 2)	49.985 – 49.990 mm (1.9679 – 1.9681 in.)
	Main bearing center wall thickness (Reference)	STD (Mark 1)	1.997 – 2.000 mm (0.0786 – 0.0787 in.)
		(Mark 2)	2.001 – 2.003 mm (0.0788 – 0.0789 in.)
		(Mark 3)	2.004 – 2.006 mm (0.0789 – 0.0790 in.)
		(Mark 4)	2.007 – 2.009 mm (0.0790 – 0.0791 in.)
		(Mark 5)	2.010 – 2.012 mm (0.0791 – 0.0792 in.)
		U/S 0.25	2.118 – 2.124 mm (0.0834 – 0.0836 in.)
	Crank pin diameter	STD	42.985 – 43.000 mm (1.6923 – 1.6929 in.)
		U/S 0.25	42.745 – 42.755 mm (1.6829 – 1.6833 in.)
	Circle runout	Maximum	0.06 mm (0.0024 in.)
	Main journal taper and out-of-round	Maximum	0.08 mm (0.0031 in.)
	Crank pin taper and out-of-round	Maximum	0.07 mm (0.0028 in.)