ENGINE MECHANICAL

SERVICE DATA

SS0ZE–03

Compression pressure		STD	3,628 kPa (37.0 kgf/cm^2, 526 psi) or more
		Minimum	2,648 kPa (27.0 kgf/cm^2, 384 psi)
	Difference between each cylinder		490 kPa (5.0 kgf/cm^2, 71 psi) or less
Valve clearance		at cold Intake	0.15 – 0.25 mm (0.006 – 0.010 in.)
		Exhaust	0.35 – 0.45 mm (0.014 – 0.018 in.)
		Adjust shim thickness	
		No. 709	2.35mm (0.0925 in)
		No. 704	2.40 mm (0.0945 in.)
		No. 710	2.45 mm (0.0965 in.)
		No. 01	2.50 mm (0.0984 in.)
		No. 42	2.55 mm (0.1004 in.)
		No. 06	2.60 mm (0.1024 in.)
		No. 43	2.65 mm (0.1043 in.)
		No. 11	2.70 mm (0.1063 in.)
		No. 44	2.75 mm (0.1083 in.)
		No. 16	2.80 mm (0.1102 in.)
		No. 45	2.85 mm (0.1122 in.)
		No. 21	2.90 mm (0.1142 in.)
		No. 46	2.95 mm (0.1161 in.)
		No. 26	3.00 mm (0.1181 in.)
		No. 47	3.05 mm (0.1201 in.)
		No. 31	3.10 mm (0.1220 in.)
		No. 48	3.15 mm (0.1240 in.)
		No. 36	3.20 mm (0.1260 in.)
		No. 49	3.25 mm (0.1280 in.)
		No. 41	3.30 mm (0.1299 in.)
Injection timing	Plunger stroke	W/ACSD	0.65 – 0.71 mm (0.0256 – 0.0280 in.)
		L/ACSD	0.85 – 0.91 mm (0.0335 – 0.0358 in.)
Idle speed			650 ± 50 rpm
Maximum speed			4600 ± 100 rpm
A/C idle–up speed			775 – 875 rpm
Timing belt tensioner	Protrusion from housing end		8.0 – 8.8 mm (0.315 – 0.346 in.)
Timing gear	Idler gear thrust clearance	STD	0.05 – 0.15 mm (0.0020 – 0.0059 in.)
		Maximum	0.30 mm (0.0118 in.)
	Idler gear inside diameter		45.000 – 45.025 mm (1.7717 – 1.7726 in.)
	Idler gear shaft diameter		44.950 – 44.975 mm (1.7697 – 1.7707 in.)
	Idler gear oil clearance	STD	0.025 – 0.075 mm (0.0010 – 00.0030 in.)
		Maximum	0.20 mm (0.0079 in.)
	Gear backlash	STD	0.05 – 0.15 mm (0.0020 – 0.0059 in.)
		Maximum	0.30 mm (0.0118 in.)
Valve guide bushing	Inside diameter		8.010 – 8.030 mm (0.3154 – 0.3164 in.)
Cylinder head	Warpage	Maximum	0.20 mm (0.0079 in.)
	Valve seat		
	Refacing angle	Intake	25° 45° 70°
		Exhaust	25° 45° 60°
	Contacting angle		45°
	Contacting width	Intake	1.5 – 1.9 mm (0.059 – 0.075 in.)
		Exhaust	1.8 – 2.2 mm (0.071 – 0.087 in.)

Cylinder head (Cont'd)	Cylinder head bolt outer diameter	STD	10.800 – 11.000 mm (0.4252 – 0.4331 in.)
		Minimum	10.55 mm (0.4154 in.)
	New cylinder head gasket thickness		
		Cut number "1"	1.15 – 1.25 mm (0.0453 – 0.0492 in.)
		Cut number "3"	1.25 – 1.35 mm (0.0492 – 0.0531 in.)
		Cut number "5"	1.35 – 1.45 mm (0.0531 – 0.0571 in.)
Valve	Valve overall length	STD Intake	103.49 mm (4.0744 in.)
		Exhaust	103.34 mm (4.0685 in.)
		Minimum Intake	102.79 mm (4.0468 in.)
		Exhaust	102.64 mm (4.0409 in.)
	Valve face angle		44.5°
	Stem diameter	Intake	7.975 – 7.990 mm (0.3140 – 0.3146 in.)
		Exhaust	7.960 – 7.975 mm (0.3134 – 0.3140 in.)
	Stem oil clearance	STD Intake	0.020 – 0.055 mm (0.0008 – 0.0022 in.)
		Exhaust	0.035 – 0.070 mm (0.0014 – 0.0028 in.)
		Maximum Intake	0.08 mm (0.0031 in.)
		Exhaust	0.10 mm (0.0394 in.)
	Margin thickness	STD Intake	1.60 mm (0.0630 in.)
		Exhaust	1.70 mm (0.0669 in.)
		Minimum Intake	1.10 mm (0.0433 in.)
		Exhaust	1.20 mm (0.0472 in.)
Valve spring	Free length		46.20 mm (1.8189 in.)
	Install tension	at 37.0 mm (1.457 in.)	301 – 322 N (30.7 – 33.9 kgf, 67.7 – 74.7 lbf)
	Deviation	Maximum	2.0 mm (0.079in.)
Camshaft	Thrust clearance	STD	0.10 – 0.20 mm (0.0039 – 0.0079 in.)
		Maximum	0.30 mm (0.0118 in.)
	Standard oil clearance	STD No.1	0.022 – 0.074 mm (0.0009 – 0.0029 in.)
		Other	0.030 – 0.066 mm (0.0012 – 0.0026 in.)
		Maximum	0.100 mm (0.0039 in.)
	Journal diameter	No.1	34.969 – 34.985 mm (1.3767 – 1.3774 in.)
		Other	27.986 – 28.002 mm (1.1018 – 1.1024 in.)
	Cam lobe height	STD Intake	55.090 – 55.110 mm (2.1689 – 2.1697 in.)
		Exhaust	55.940 – 55.960 mm (2.2024 – 2.2031 in.)
		Minimum Intake	54.59 mm (2.1492 in.)
		Exhaust	55.44 mm (2.1827 in.)
	Circle runout		0.10 mm (0.0039 in.)
Valve lifter	Lifter diameter		40.892 – 40.902 mm (1.6099 – 1.6103 in.)
	Cylinder head lifter bore diameter		40.960 – 40.980 mm (1.6126 – 1.6134 in.)
	Oil clearance	STD	0.058 – 0.083 mm (0.0023 – 0.0033 in.)
		Maximum	0.10 mm (0.0039 in.)
Manifold	Warpage	Maximum	0.40 mm (0.0157 in.)
Combustion chamber	Protrusion		Minus 0.04 – Plus 0.04 mm (Minus 0.0016 – Plus 0.0016 in.)
	Shim thickness		0.03 mm (0.0012 in.)
Cylinder block	Cylinder head surface warpage	Maximum	0.20 mm (0.0079 in.)
	Cylinder bore diameter	STD Mark "1"	94.000 – 94.010 mm (3.7001 – 3.7012 in.)
		Mark "2"	94.010 – 94.020 mm (3.7012 – 3.7016 in.)
		Mark "3"	94.020 – 94.030 mm (0.37016 – 3.7020 in.)
		Maximum STD	94.23 mm (3.7098 in.)
		O/S 0.50	94.73 mm (3.7295 in.)
	Main bearing cap bolt		
	Tension portion diameter	STD	11.80 – 12.00 mm (0.4646 – 0.4724 in.)
		Minimum	11.50 mm (0.4528 in.)

Piston and piston ring	Piston diameter	STD Mark "1"	93.885 – 93.895 mm(3.69625 – 3.69665 in.)
		Mark "2"	93.896 – 93.905 mm (3.69665 – 3.69704 in.)
		Mark "3"	93.906 – 93.915 mm (3.69704 – 3.69743 in.)
		O/S 0.50	94.385 – 94.415 mm (3.71594 – 3.71712 in.)
	Piston oil clearance	STD	0.105 – 0.125 mm (0.0041 – 0.0049 in.)
		Maximum	0.125 mm (0.0049 in.)
	Piston ring grove clearance	No.1 STD	0.054 – 0.095 mm (0.0021 – 0.0037 in.)
		Maximum	0.20 mm (0.0079 in.)
		No.2 STD	0.060 – 0.100 mm (0.0024 – 0.0039 in.)
		Maximum	0.20 mm (0.0079 in.)
		Oil ring STD	0.030 – 0.070 mm (0.0012 – 0.0028 in.)
		Maximum	0.20 mm (0.0079 in.)
	Piston ring end gap	No.1 STD	0.270 – 0.370 mm (0.0106 – 0.0146 in.)
		Maximum	0.850 mm (0.0335 in.)
		No.2 STD	0.450 – 0.550 mm (0.0177 – 0.0217 in.)
		Maximum	0.900 mm (0.0354 in.)
		Oil ring STD	0.200 – 0.400 mm (0.0079 – 0.0157 in.)
		Maximum	0.880 mm (0.0346 in.)
Connecting rod	Thrust clearance	STD	0.100 – 0.200 mm (0.0039 – 0.0079 in.)
		Maximum	0.300 mm (0.0118 in.)
	Connecting rod oil clearance	STD	0.036 – 0 054 mm (0.0014 – 0.0021 in.)
		U/S 0.25 and U/S 0.50	0.037 – 0.077 mm (0.0014 – 0.0021 in.)
		Maximum	0.100 mm (0.0039 in.)
	Connecting rod bearing center wall thickness		
	(Reference)	STD Mark "2"	1.486 – 1.489 mm (0.0585 – 0.0586 in.)
		Mark"3"	1.489 – 1.492 mm (0.0586 – 0.0587 in.)
		Mark "4"	1.492 – 1.495 mm (0.0587 – 0.0589 in.)
		Mark "5"	1.495 – 1.498 mm (0.0589 – 0.0590 in.)
		Mark "6"	1.498 – 1.501 mm (0.0590 – 0.0591 in.)
	Rod bend maximum per 100 mm (3.94 in.)		0.03 mm (0.0012 in.)
	Rod twist maximum per 100 mm (3.94 in.)		0.15 mm (0.0059 in.)
	Busing inside diameter		29.008 – 29.020 mm (1.1420 – 1.1425 in.)
	Piston pin diameter		29.000 – 29.012 mm(1.1417 – 1.1422 in.)
	Bushing oil clearance	STD	0.004 – 0.012 mm (0.0002 – 0.0005 in.)
		Maximum	0.030 mm (0.0012 in.)
	Connecting rod bolt tension portion diameter	STD	8.300 – 8.400 mm (0.3268 – 0.3307 in.)
		Maximum	7.950 mm (0.3130 in.)
Crankshaft	Thrust clearance	STD	0.040 – 0.240 mm (0.0016 – 0.0094 in.)
		Maximum	0.300 mm (0.0118 in.)
	Thrust washer thickness		2.930 – 2.980 mm (0.1154 – 0.1173 in.)
	Main journal oil clearance	STD	0.030 – 0.042 mm (0.0012 – 0.0017 in.)
		U/S 0.25 and U/S 0.50	0.031 – 0.071 mm (0.0012 – 0.0027 in.)
		Maximum	0.100 mm (0.077 in.)
	Main journal diameter	STD	66.982 – 67.000 mm (2.6371 – 2.6378 in.)
		U/S 0.25	66.745 – 66.755 mm (2.6278 – 2.6281 in.)
		U/S 0.50	66.495 – 66.505 mm (2.6179 – 2.6183 in.)
	Main bearing center wall thickness		
	(Reference)	Mark "2"	1.982 – 1.985 mm (0.07803 – 0.07815 in.)
		Mark "3"	1.985 – 1.988 mm (0.07815 – 0.07827 in.)
		Mark "4"	1.988 – 1.991 mm (0.07827 – 0.07839 in.)
		Mark "5"	1.991 – 1.994 mm (0.07839 – 0.07850 in.)
		Mark "6"	1.994 – 1.997 mm (0.07850 – 0.07862 in.)
		Mark "7"	1.997 – 2.000 mm (0.07862 – 0.07874 in.)
	Crank pin diameter	STD	58.982 – 59.000 mm (2.3221 – 2.3228 in.)
		U/S 0.25	58.745 – 58.755 mm (2.3128 – 2.3132 in.)
		U/S 0.50	58.495 – 58.505 mm (2.3029 – 2.3033 in.)
	Circle runout		0.06 mm (0.0024 in.)
	Main journal taper and out–of–round		0.02 mm (0.0008 in.)