ENGINE MECHANICAL

SERVICE DATA

SS16L–02

Compresion pressure		STD	3,040 kPa (31.0 kgf/cm^2, 441 psi) or more
		Minimium	1,961 kPa (20.0 kgf/cm^2, 284 psi)
	Difference between each cylinder		490 kPa (5.0 kgf/cm^2, 71 psi) or less
Valve clearance		at cold Intake	0.20 – 0.30 mm (0.008 – 0.012 in.)
		Exhaust	0.25 – 0.35 mm (0.010 – 0.014 in.)
		Adjust shim thickness	
		No. 01	2.50mm (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.)
Idle speed			650 – 750 rpm
Maximum speed			4,500 – 4,700 rpm
Timing belt tensioner	Protrusion from husing end		8.1 – 8.9 mm (0.319 – 0.350 in.)
Timing gear	Idler gear thrust clearance	STD	0.06 – 0.11 mm (0.0024 – 0.0043 in.)
		Maximum	0.30 mm (0.0118 in.)
	Idler gear inside diameter		44.000 – 44.025 mm (1.7323 – 1.7333 in.)
	Idler gear shaft diameter		43.955 – 43.990 mm (1.7305 – 1.7319 in.)
	Idler gear oil clearance	STD	0.010 – 0.070 mm (0.0004 – 0.0028 in.)
		Maximum	0.20 mm (0.0079 in.)
	Gear backlash	STD	0.02 – 0.15 mm (0.0008 – 0.0060 in.)
		Maximum	0.20 mm (0.0079 in.)
Cylinder head	Warpage	Maximum	0.15 mm (0.0059 in.)
	Valve seat		
	Refacing angle	Intake	30˚ 45˚ 60˚
		Exhaust	30˚ 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 bolt outer diameter	STD	11.8 – 12.0 mm (0.465 – 0.472 in.)
		Minimum	11.6 mm (0.457 in.)
	New cylinder head gasket thickness		
		Hole number ”1”	0.80 – 0.90 mm (0.0315 – 0.0354 in.)
		Hole number ”2”	0.90 – 1.00 mm (0.0354 – 0.0394 in.)
		Hole number ”3”	1.00 – 1.10 mm (0.0394 – 0.0433 in.)
Valve guige bushing	Inside diameter	Intake	7.975 – 7.990 mm (0.3140 – 0.3146 in.)
		Exhaust	7.960 – 7.975 mm (0.3134 – 0.3140 in.)

Valve	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	0.01 mm (0.0039 in.)
	Valve face angle		44.5°
	Margin thickness	STD Intake	1.6 mm (0.063 in.)
		Exhaust	1.7 mm (0.067 in.)
		Minimum Intake	1.1 mm (0.043 in.)
			1.2 mm (0.047 in.)
	Overall length	STD	103.29 – 103.69 mm (4.0665 – 4.08323 in.)
		Minimum	102.79 (4.0468 in.)
Valve spring	Deviation	Maximum	2.0 mm (0.079 in.)
	Free length		48.54 mm (1.9110 in.)
	Install tension	at 37.0 mm (1.457 in.)	301 – 322 N (30.7 – 33.9 kgf, 67.7 – 74.7 lbf)
Camshaft	Cam lobe height	STD Intake	54.810 – 54.910 mm (2.1579 – 2.1618 in.)
		Exhaust	56.140 – 56.240 mm (2.2102 – 2.2142 in.)
		Minimum Intake	54.39 mm (2.1413 in.)
		Exhaust	55.72 mm (2.1937 in.)
	Journal diameter		27.969 – 27.985 mm (1.1011 – 1.1018 in.)
	Oil clearance	STD	0.025 – 0.062 mm (0.0010 – 0.0024 in.)
		Maximum	0.10 mm (0.039 in.)
	Thrust clearance	STD	0.08 – 0.18 mm (0.0031 – 0.0071 in.)
		Maximum	0.25 mm (0.0098 in.)
Valve lifter	Lifter bore diameter		40.930 – 40.950 mm (1.6114 – 1.6122 in.)
	Lifter diameter		40.892 – 40.902 mm (1.6099 – 1.6103 in.)
	Oil clearance	STD	0.038 – 0.063 mm (0.0015 – 0.0025 in.)
		Maximum	0.08 mm (0.0031 in.)
Exhaust manifold	Warpage	Maximum	0.40 mm (0.0157 in.)
Combustion chamber	Protrusion		Minus 0.03 – Plus 0.02 mm (Minus 0.0012 – Plus 0.0008 in.)
	Shim thickness		0.05 mm (0.0020 in.) 0.10 mm (0.0039 in.)
Cylinder block	Cylinder head surface warpage	Warpage Maximum	0.10 mm (0.0039 in.)
	Cylinder bore diameter	STD Mark 1	96.000 – 96.010 mm (3.7795 – 3.7799 in.)
		Mark 2	96.010 – 96.020 mm (3.7799 – 3.7803 in.)
		Mark 3	96.020 – 96.030 mm (3.7803 – 3.7807 in.)
		Maximum	96.23 mm (3.7886 in.)
	Main journal bore diameter	STD Mark 1	75.000 – 75.006 mm (2.9528 – 2.9530 in.)
		Mark 2	75.006 – 75.012 mm (2.9530 – 2.9532 in.)
		Mark 3	75.012 – 75.018 mm (2.9532 – 2.9535 in.)

Piston and piston ring	Piston diameter	STD Mark 1	95.940 – 95.950 mm (3.7772 – 3.7776 in.)
		Mark 2	95.950 – 95.960 mm (3.7776 – 3.7779 in.)
		Mark 3	95.960 – 95.970 mm(3.7779 – 3.7783 in.)
		O/S 0.50	96.440 – 96.470 mm(3.7968 – 3.7980 in.)
		O/S 0.75	96.690 – 96.720 mm(3.8067 – 3.8079 in.)
		O/S 1.00	96.940 – 96.970 mm(3.8165 – 3.8177 in.)
	Piston oil clearance	STD	0.050 – 0.070 mm (0.0020 – 0.0028 in.)
		Maximum	0.14 mm (0.0055 in.)
	Piston ring grove clearance	No.1	0.060 – 0.110 mm (0.0024 – 0.0043 in.)
		No.2	0.060 – 0.100 mm (0.0024 – 0.0039 in.)
		Oil	0.020 – 0.060 mm (0.0009 – 0.0024 in.)
	Piston ring end gap	STD (No.1)	0.350 – 0.570 mm (0.0138 – 0.0224 in.)
		(No.2)	0.400 – 0.600 mm (0.0157 – 0.0236 in.)
		(Oil)	0.200 – 0.500 mm (0.0079 – 0.0197 in.)
		Limit (No.1)	1.03 mm (0.0406 in.)
		(No.2)	1.10 mm (0.0433 in.)
		(Oil)	0.87 mm (0.0343 in.)
Connecting rod	Thrust clearance	STD	0.10 – 0.30 mm (0.0039 – 0.0118 in.)
		Maximum	0.40 mm (0.0157 in.)
	Connecting rod bearing center wall thickness		
	(Referemce)	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.)
	Connecting rod oil clearance	STD (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 (0.0015 – 0.0030 in.)
		Maximum	0.10 mm (0.0039 in.)
	Rod bend	Limit per 100 mm (3.94 in.)	0.03 mm (0.0012 in.)
	Rod twist	Limit per 100 mm (3.94 in.)	0.15 mm (0.0059 in.)
	Connecting rod bolt outside diameter	STD	8.400 – 8.600 mm (0.3307 – 0.3385 in.)
		Maximum	8.20 mm (0.3228 in.)
	Busing inside diamater		34.012 – 34.024 mm (1.3391 – 1.3395 in.)
	Piston pin diameter		34.000 – 34.012 mm(1.3386 – 1.3391 in.)
	Piston pin oil clearance	STD	0.008 – 0.016 mm (0.0003 – 0.0006 in.)
		Maximum	0.03 mm (0.0012 in.)
	Big end inner diameter		
	(Reference)	STD Mark 1	62.014 – 62.020 mm (2.4415 – 2.4417 in.)
		Mark 2	62.020 – 62.026 mm (2.4417 – 2.4420 in.)
		Mark 3	62.026 – 62.032 mm (2.4420 – 2.4422 in.)

Crankshaft	Thrust clearance	STD	0.040 – 0.240 mm (0.0016 – 0.0094 in.)
		Maximum	0.30 mm (0.0118 in.)
	Thrust washer thickness		
		STD (STD)	2.430 – 2.480 mm (0.0957 – 0.0976 in.)
		(U/S 0.25)	2.555 – 2.605 mm (0.1006 – 0.1026 in.)
		(U/S 1.125)	2.493 – 2.543 mm (0.0981 – 0.1001 in.)
	Main journal oil clearance	STD (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 (0.0015 – 0.0030 in.)
		Maximum	0.10 mm (0.0039 in.)
	Main journal diameter	STD Mark 1	69.994 – 70.000 mm (2.7557 – 2.7559 in.)
		Mark 2	69.988 – 69.994 mm (2.7554 – 2.7557 in.)
		Mark 3	69.982 – 69.988 mm (2.7552 – 2.7554 in.)
		U/S 0.25	69.745 – 69.755 mm (2.7459 – 2.7463 in.)
		U/S 0.50	69.495 – 69.505 mm (2.7360 – 2.7364 in.)
	Main bearing center wall thickness (Reference)		
		STD Mark 2	2.479 – 2.482 mm (0.0976 – 0.0977 in.)
		Mark 3	2.482 – 2.485 mm (0.0977 – 0.0978 in.)
		Mark 4	2.485 – 2.488 mm (0.0978 – 0.0980 in.)
		Mark 5	2.488 – 2.491 mm (0.0980 – 0.0981 in.)
		Mark 6	2.491 – 2.494 mm (0.0981 – 0.0982 in.)
	Crank pin dimeter	STD Mark 1	58.994 – 59.000 mm (2.3226 – 2.3228 in.)
		Mark 2	58.988 – 58.994 mm (2.3224 – 2.3226 in.)
		Mark 3	58.982 – 58.988 mm (2.3221 – 2.3224 in.)
		U/S 0.25	58.745 – 58.755 mm (2.3128 – 2.3132 in.)
		U/S 0.50	58.495 – 58.505 mm (2.3028 – 2.3132 in.)
	Circle runouit	Maximum	0.06 mm (0.0024 in.)
	Main journal taper and out–of–round	Maximum	0.002 mm (0.0008 in.)
	Crank pin taper and out–of–round	Maximum	0.002 mm (0.0008 in.)
	Main bearing cap bolt outer diameter	STD	13.500 – 14.000 mm (0.5315 – 0.5512 in.)
		Maximu	12.60 mm (0.4961 in.)
Balance shaft	Thrust clearance	STD	0.065 – 0.140 mm (0.0026 – 0.0055 in.)
		Maximum	0.25 mm (0.0098 in.)
	No.1 journal oil clearance	STD	0.040 – 0.079 mm (0.0957 – 0.0976 in.)
		Maximum	0.180 mm (0.0071 in.)
	No.2 journal oil clearance	STD	0.040 – 0.079 mm (0.0957 – 0.0976 in.)
		Maximum	0.190 mm (0.0075 in.)
	No.3 journal oil clearance	STD	0.050 – 0.089 mm (0.0020 – 0.0035 in.)
		Maximum	0.180 mm (0.0071 in.)
	No.1 Bearing inside diameter		42.000 – 42.020 mm (1.6535 – 1.6543 in.)
	No.2 Bearing inside diameter		41.000 – 41.020 mm (1.6142 – 1.6150 in.)
	No.3 Bearing inside diameter		32.000 – 31.020 mm (1.2598 – 1.2606 in.)
	No.1 journal diameter		41.941 – 41.960 mm (1.6512 – 1.6520 in.)
	No.2 journal diameter		40.931 – 40.950 mm (1.6115 – 1.6122 in.)
	No.3 journal diameter		31.941 – 31.960 mm (1.2575 – 1.2583 in.)