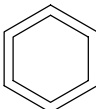
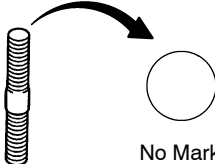
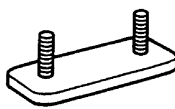
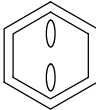
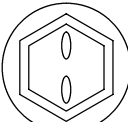
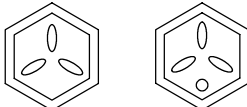
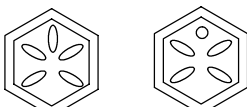
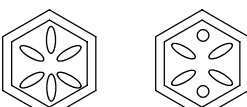


STANDARD BOLT

HOW TO DETERMINE BOLT STRENGTH

SS02S-01

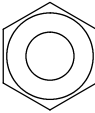
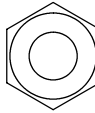
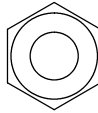
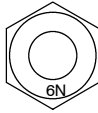
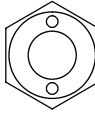
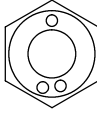
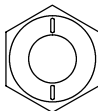
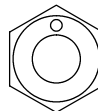
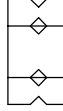
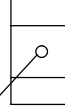
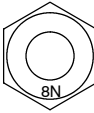
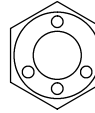
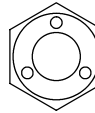
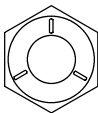
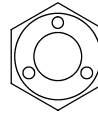
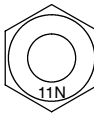
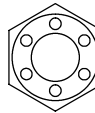
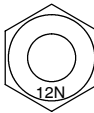
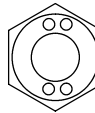
Bolt Type				Class
Hexagon Head Bolt		Stud Bolt	Weld Bolt	
Normal Recess Bolt	Deep Recess Bolt			
 No Mark	 No Mark	 No Mark		4T
 No Mark	 No Mark			5T
 w/ Washer	 w/ Washer			6T
 No Mark	 No Mark			7T
 No Mark	 No Mark	 		8T
 No Mark	 No Mark			9T
 No Mark	 No Mark			10T
 No Mark	 No Mark			11T

B06431

SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Diameter mm	Pitch mm	Specified torque					
			Hexagon head bolt			Hexagon flange bolt		
			N·m	kgf·cm	ft·lbf	N·m	kgf·cm	ft·lbf
4T	6	1	5	55	48 in.·lbf	6	60	52 in.·lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1,150	83	–	–	–
5T	6	1	6.5	65	56 in.·lbf	7.5	75	65 in.·lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1,050	76
	16	1.5	140	1,400	101	–	–	–
6T	6	1	8	80	69 in.·lbf	9	90	78 in.·lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1,100	80	125	1,250	90
	16	1.5	170	1,750	127	–	–	–
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1,050	76
	14	1.5	145	1,500	108	165	1,700	123
	16	1.5	230	2,300	166	–	–	–
8T	8	1.25	29	300	22	33	330	24
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1,100	80	120	1,250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1,300	94	140	1,450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1,450	105	155	1,600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1,600	116	175	1,800	130

HOW TO DETERMINE NUT STRENGTH

Nut Type			Class
Present Standard Hexagon Nut	Old Standard Hexagon Nut		
	Cold Forging Nut	Cutting Processed Nut	
 No Mark			4N
 No Mark (w/ Washer)	 No Mark (w/ Washer)	 No Mark	5N (4T)
  			6N
	 	 	7N (5T)
 			8N
 	 	 No Mark	10N (7T)
 			11N
 			12N

*: Nut with 1 or more marks on one side surface of the nut.

HINT:

Use the nut with the same number of the nut strength classification or the greater than the bolt strength classification number when tightening parts with a bolt and nut.

Example: Bolt = 4T

Nut = 4N or more

LEXUS IS200 (RM684E)

MAINTENANCE

SERVICE DATA

SS01E-01

Chassis	Front wheel alignment Side slip	3.0 mm/m (0.118 in./3.3 ft) or less
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ENGINE MECHANICAL

SERVICE DATA

SS00Q-05

CO/HC	Idle CO concentration	0 – 0.5 %
Compression pressure	at 250 rpm STD Minimum Difference of pressure between each cylinder	1,255 kPa (12.8 kgf/cm ² , 182 psi) or more 981 kPa (10.0 kgf/cm ² , 142 psi) 98 kPa (1.0 kgf/cm ² , 14 psi) or less
Valve clearance	at cold Intake Exhaust Valve lifter (for repair part) 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.) 0.25 – 0.35 mm (0.010 – 0.014 in.) 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	w/ Terminals TC and E1 connected of check connector	8 –12° BTDC @ idle
Idle speed	–	650 ± 50 rpm

Cylinder head	Warpage		
	Cylinder block side	Maximum	0.20 mm (0.0079 in.)
	Intake manifold side	Maximum	0.20 mm (0.0079 in.)
	Exhaust manifold side	Maximum	0.30 mm (0.0118 in.)
	Valve seat		
	Refacing angle	Intake	30°, 45°, 60°
		Exhaust	15°, 45°, 60°
	Contacting angle		45°
	Contacting width		1.0 – 1.4 mm (0.039 – 0.055 in.)
	Protrusion height		6.8 – 7.2 mm (0.268 – 0.3283 in.)
Valve guide bushing	Cylinder head bolt outside diameter	STD	8.7 – 8.8 mm (0.343 – 0.346 in.)
		Minimum	8.6 mm (0.339 in.)
Valve	Inside diameter		5.010 – 5.030 mm (0.1972 – 0.1980 in.)
	Outside diameter (for repair part)	STD	9.727 – 9.738 mm (0.3830 – 0.3834 in.)
		O/S 0.05	9.777 – 9.788 mm (0.3849 – 0.3854 in.)
	Valve overall length	STD Intake	91.75 mm (3.6122 in.)
		Exhaust	91.79 mm (3.6138 in.)
		Minimum Intake	91.25 mm (3.5925 in.)
		Exhaust	91.29 mm (3.5941 in.)
	Valve face angle		44.5°
	Stem diameter	Intake	4.970 – 4.985 mm (0.1957 – 0.1963 in.)
		Exhaust	4.965 – 4.980 mm (0.1955 – 0.1961 in.)
Valve spring	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 Intake	0.8 mm (0.315 in.)
		Exhaust	1.0 mm (0.394 in.)
		Minimum	0.5 mm (0.020 in.)
	Deviation	Maximum	2.0 mm (0.079 in.)
	Free length		47.3 mm (1.862 in.)
	Installed tension at 33.5 mm (1.319 in.)		188 – 204 N (19.2 – 20.8 kgf-cm, 42.3 – 45.9 lbf)
Valve lifter	Lifter diameter		30.966 – 30.976 mm (1.2191 – 2.2195 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	0.08 mm (0.0031 in.)
Camshaft	Thrust clearance	STD Intake	0.045 – 0.100 mm (0.0018 – 0.0039 in.)
		Exhaust	0.045 – 0.110 mm (0.0012 – 0.0043 in.)
	Journal oil clearance	STD	0.025 – 0.062 mm (0.0010 – 0.0024 in.)
		Maximum	0.08 mm (0.0031 in.)
	Journal diameter		26.959 – 26.975 mm (1.0614 – 1.0620 in.)
	Circle runout		0.06 mm (0.0024 in.)
	Cam lobe height	STD Intake	46.75 – 46.85 mm (1.8405 – 1.8445 in.)
		Exhaust	46.27 – 46.37 mm (1.8216 – 1.8256 in.)
		Minimum Intake	46.6 mm (1.8346 in.)
		Exhaust	46.1 mm (1.8150 in.)
Exhaust manifold	Camshaft gear backlash	STD	0.020 – 0.200 mm (0.0008 – 0.0079 in.)
		Maximum	0.30 mm (0.0188 in.)
	Camshaft gear spring end free distance		17.6 – 18.2 mm (0.693 – 0.717 in.)

SERVICE SPECIFICATIONS – ENGINE MECHANICAL

Cylinder block	Cylinder head surface warpage	Maximum	0.05 mm (0.0020 in.)
	Cylinder bore diameter	STD	75.010 – 75.023 mm (2.9531 – 2.9537 in.)
		Maximum	94.231 mm (3.7099 in.)
	Main journal bore diameter (Reference)	Mark 1	59.026 – 59.032 mm (2.3239 – 2.3241 in.)
		Mark 2	59.032 – 59.038 mm (2.3241 – 2.3243 in.)
		Mark 3	59.038 – 59.044 mm (2.3243 – 2.3246 in.)
Piston and piston ring	Piston diameter	STD	74.93 – 74.94 mm (2.9500 – 2.9504 in.)
		O/S 0.50	75.43 – 75.44 mm (2.9697 – 2.9701 in.)
	Piston oil clearance	STD	0.070 – 0.093 mm (0.0028 – 0.0037 in.)
		Maximum	0.11 mm (0.0043 in.)
	Piston ring groove clearance	No.1	0.030 – 0.080 mm (0.0012 – 0.0031 in.)
		No.2	0.030 – 0.070 mm (0.0012 – 0.0028 in.)
	Piston ring end gap	STD No.1	0.25 – 0.35 mm (0.0098 – 0.0138 in.)
		No.2	0.35 – 0.45 mm (0.0138 – 0.0178 in.)
		Oil	0.15 – 0.40 mm (0.0059 – 0.0157 in.)
		Maximum No.1	0.95 mm (0.0374 in.)
		No.2	1.05 mm (0.0413 in.)
		Oil	1.00 mm (0.0394 in.)
Connecting rod	Thrust clearance	STD	0.200 – 0.402 mm (0.0079 – 0.0158 in.)
		Maximum	0.45 mm (0.0188 in.)
	Connecting rod oil clearance	STD STD	0.016 – 0.047 mm (0.0006 – 0.0019 in.)
		Maximum	0.07 mm (0.0028 in.)
	Connecting rod bearing center wall thickness (Reference)	Mark 3	1.488 – 1.492 mm (0.0586 – 0.0587 in.)
		Mark 4	1.492 – 1.496 mm (0.0587 – 0.0589 in.)
		Mark 5	1.496 – 1.500 mm (0.0589 – 0.0591 in.)
	Rod out-of alignment	Maximum per 100 mm (3.94 in.)	0.05 mm (0.0020 in.)
Crankshaft	Thrust clearance	STD	0.020 – 0.221 mm (0.0008 – 0.0087 in.)
		Maximum	0.30 mm (0.0118 in.)
	Thrust washer thickness		1.940 – 1.990 mm (0.0764 – 0.0783 in.)
	Main journal oil clearance	STD No.4 STD	0.032 – 0.050 mm (0.0013 – 0.0020 in.)
		Others STD	0.020 – 0.038 mm (0.0008 – 0.0015 in.)
		Maximum	0.08 mm (0.0031 in.)
	Main journal diameter (Reference)	STD No.4 STD	54.970 – 54.988 mm (2.1641 2.1649 in.)
		Others STD	54.982 – 55.000 mm (2.1646 2.1654 in.)
		STD No.4 Mark 0	54.982 – 54.988 mm (2.1646 2.1649 in.)
		Mark 1	54.976 – 54.982 mm (2.1644 2.1646 in.)
		Mark 2	54.970 – 54.976 mm (2.1642 2.1644 in.)
		Others Mark 0	54.994 – 55.000 mm (2.1651 2.1654 in.)
		Mark 1	54.988 – 54.994 mm (2.1649 2.1651 in.)
		Mark 2	54.982 – 54.988 mm (2.1646 2.1649 in.)
	Main bearing center wall thickness (Reference)	Mark 1	2.000 – 2.003 mm (0.0787 – 0.0789 in.)
		Mark 2	2.003 – 2.006 mm (0.0789 – 0.0790 in.)
		Mark 3	2.006 – 2.009 mm (0.0790 – 0.0791 in.)
		Mark 4	2.009 – 2.012 mm (0.0791 – 0.0792 in.)
		Mark 5	2.012 – 2.015 mm (0.0792 – 0.0793 in.)
	Crank pin diameter	STD	43.985 – 44.000 mm (1.7317 – 1.7322 in.)
	Circle runout	Maximum	0.06 mm (0.0024 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.)

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
No.1 idler pulley (Timing belt tensioner) x Timing belt case	42.5	425	31
No.2 timing belt cover x No.1 camshaft bearing cap	6	60	52 in.·lbf
No.2 timing belt cover x Timing belt case	6	60	52 in.·lbf
Air cleaner inlet duct bracket x Cylinder head	18.5	190	14
No.3 water bypass pipe x Cylinder head	8.5	85	74 in.·lbf
No.2 cylinder head cover x Air cleaner inlet duct bracket	6.5	65	56 in.·lbf
No.2 cylinder head cover x No.1 camshaft bearing cap	8.5	85	74 in.·lbf
Fan pulley (spacer) x Water pump	18.5	185	13
Air cleaner assembly x Intake manifold	7.5	75	65 in.·lbf
Air cleaner assembly x Air cleaner inlet duct bracket	7.5	75	65 in.·lbf
Air cleaner inlet x Radiator fan shroud	5	50	43 in.·lbf
Fan shroud x Radiator assembly	5.5	50	43 in.·lbf
Oil pump pulley x Oil pump	27	270	20
Timing belt plate x Timing belt case	9	90	78 in.·lbf
No.2 idler pulley x Timing belt case	37	370	27
Camshaft timing pulley x Camshaft	1st 2nd	35 Turn 90°	350 Turn 90°
No.1 idler pulley (timing belt tensioner) x Timing belt case	42.5	425	31
Crankshaft pulley x Crankshaft	220	2,200	159
A/C compressor bracket x Cylinder block	46.5	475	34
A/C compressor bracket x Timing belt case	46.5	475	34
A/C compressor x A/C compressor bracket	24.5	250	18
Camshaft position sensor x Cylinder head	9	90	78 in.·lbf
Water temperature switch x Cylinder head	20	200	14
Water outlet x Cylinder head	29	290	21
Cylinder head x Cylinder block	1st 2nd	50 Turn 90°	500 Turn 90°
Water bypass outlet x Cylinder head	9	90	78 in.·lbf
Delivery pipe x Cylinder head	18.5	185	13
No.1 fuel pipe (Fuel pressure pulsation damper) x Delivery pipe	30	320	23
for SST	27	270	20
No.1 fuel pipe x Cylinder head	8.5	85	74 in.·lbf
No.1 fuel pipe x LH engine mounting bracket	35	350	25
Intake manifold x Cylinder head	28	280	20
No.1 intake chamber stay x Intake manifold	18.5	185	13
No.1 intake chamber stay x Cylinder block	18.5	185	13
No.2 intake chamber stay x Intake manifold	18.5	185	13
No.2 intake chamber stay x Engine mounting bracket	18.5	185	13
Camshaft bearing cap x Cylinder head	15	150	11
No.1 oil pipe x No.1 camshaft bearing cap	64.5	645	47
No.1 oil pipe x Cylinder block	64.5	645	47
No.1 oil pipe x Cylinder head	8.5	85	74 in.·lbf
Oil dipstick guide x Intake manifold	5.5	55	48 in.·lbf
Cylinder head cover x Cylinder head	15	150	11

SERVICE SPECIFICATIONS – ENGINE MECHANICAL

Exhaust manifold x Cylinder head	40	410	30
Heat insulator x Exhaust manifold	18.5	190	14
Front exhaust pipe x Exhaust manifold	43	440	32
Exhaust manifold stay x Transmission	40	410	30
No.1 engine hanger x Cylinder head	25	250	18
No.2 engine hanger x Cylinder head	25	250	18
Stiffener plate x Transmission	37	380	27
Stiffener plate x Cylinder block	37	380	27
Transmission x Cylinder block	14 mm head	37	27
	17 mm head	72	53
Starter x Transmission	37	380	27
Rear engine mounting member x Frame crossmember	25.5	260	19
Rear engine mounting member x Rear engine mount insulator	13.5	135	10
Front engine mounting insulator x Front suspension	53	540	39
Clutch release cylinder x Transmission	12	120	9
PS vane pump x PS vane pump bracket	Pivot bolt	58	43
	Adjusting bolt	39	29
Propeller shaft x Differential	74	750	54
Sliding yoke x Intermediate shaft	35	360	26
Sliding yoke x Control valve shaft	35	360	26
Fuel inlet hose x Fuel support	29	300	22
Main bearing cap x Cylinder block	60	600	43
Connecting rod cap x Connecting rod	50	500	36
Rear oil seal retainer x Cylinder block	8.5	85	74 in.·lbf
Timing belt case x Cylinder block	12 mm head	18.5	13
	14 mm head	37.5	27
PS vane pump bracket x Timing belt case	19	195	14
PS vane pump bracket x Cylinder block	39	400	29
Engine mounting bracket x Cylinder block	35	350	25
No.2 heater water outlet pipe x Cylinder block	9.5	95	82 in.·lbf
No.2 heater water outlet pipe x Timing belt case	9.5	95	82 in.·lbf
Engine coolant drain union x Cylinder block	25	250	18
Oil filter union x Cylinder block	30	300	22
Drive plat (A/T) x Cylinder block	75	750	54
Flywheel (M/T) x Cylinder block	75	750	54
Front exhaust pipe x Exhaust manifold	43	440	32
Center exhaust pipe x Front exhaust pipe	43	440	32
Tailpipe x Center exhaust pipe	43	440	32
Exhaust manifold stay x Transmission	40	410	30
Oxygen sensor (Bank 1 sensor 2) x Center exhaust pipe	44	450	32

EMISSION CONTROL

TORQUE SPECIFICATION

SS0FJ-04

Part tightened	N·m	kgf·cm	ft·lbf
RH/ rear drive shaft x Differential	83	850	61
Rear suspension member brace x Rear suspension member	50	510	37
Oxygen sensor x Exhaust manifold	45	450	33
Exhaust manifold x Cylinder head	40	408	30
Front exhaust pipe x Exhaust manifold	43	440	32
Pipe support bracket x Transmission	43	440	32

ELECTRONIC FUEL INJECTION

SERVICE DATA

SS0FK-06

Fuel pressure regulator	Fuel pressure	304 – 343 kPa (3.1 – 3.5 kgf/cm ² , 44 – 50 psi)
Fuel pump	Resistance at 20°C (68°F)	0.2 – 3.0 Ω
Injector	Resistance at 20°C (68°F)	13.4 – 14.2 Ω
	Injection volume	47 – 58 cm ³ (2.9 – 3.6 cu in.) per 15 sec.
	Difference between each cylinder	11 cm ³ (0.7 cu in.) or less
	Fuel leakage	1 drop or less per 27 minutes
Throttle body	Throttle body fully closed angle	4°
Throttle control motor	Motor (M+ – M–) at 20°C (68°F)	0.3 – 100 Ω
	Clutch (CL+ – CL–) at 20°C (68°F)	4.4 – 5.0 Ω
Throttle position sensor	Resistance (VC – E2) at 20°C (68°F)	1.2 – 3.2 kΩ
	Throttle valve opening percentage STD	15.2 ± 0.8 %
Accelerator pedal position sensor	Resistance (VC – E2) at 20°C (68°F)	1.2 – 3.2 kΩ
	Accelerator pedal position voltage STD	0.3 – 0.9 V
Camshaft timing oil control valve	Resistance at 20°C (68°F)	5.5 – 12 Ω
VSV for EVAP	Resistance at 20°C (68°F)	27 – 33 Ω
VSV for acoustic control induction system (ACIS)	Resistance at 20°C (68°F)	38.5 – 44.5 Ω
Water temperature sensor	Resistance at –20°C (–4°F)	10 – 20 kΩ
	0°C (32°F)	4 – 7 kΩ
	20°C (68°F)	2 – 3 kΩ
	40°C (104°F)	0.9 – 1.3 kΩ
	60°C (140°F)	0.4 – 0.7 kΩ
	80°C (176°F)	0.2 – 0.4 kΩ
Oxygen sensor	Heater coil resistance at 20°C (68°F)	11 – 16 Ω
	at 800°C (1472°F)	23 – 32 Ω
Fuel cut rpm	Fuel return rpm	1,000 rpm
Vacuum Sensor	Power source voltage	4.5 – 5.5 V

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Fuel line for union bolt for flare nut (for using SST)	29 38 (30)	300 387 (310)	22 28 (22)
Fuel tank vent tube set plate x Fuel tank	4.0	40	35 in.·lbf
Fuel inlet hose x Body	9.0	90	80 in.·lbf
Delivery pipe x Cylinder head	18.5	185	13
Air cleaner assembly x Intake manifold	7.5	75	65 in.·lbf
Air cleaner assembly x Air cleaner inlet duct bracket	7.5	75	65 in.·lbf
Air cleaner inlet x Radiator fan shroud	5	5.0	43 in.·lbf
Fuel pressure pulsation damper x No.1 fuel pipe (for using SST)	32 (27)	320 (270)	23 (20)
Throttle position sensor x Throttle body	2.0	20	17 in.·lbf
Throttle control motor x Throttle body	3.7	37.5	33 in.·lbf
Throttle body x Intake manifold	21	210	15
Throttle body x VSV and bracket assembly	7.5	75	66 in.·lbf
Intake manifold x VSV and bracket assembly	7.5	75	66 in.·lbf
Accelerator pedal position sensor x Throttle pedal position housing	2.0	20	17 in.·lbf
Accelerator pedal position housing x Throttle body	5.4	55	48 in.·lbf
Camshaft timing oil control valve x No.1 camshaft bearing cap	8.0	80	71 in.·lbf
No.2 cylinder head cover x Air cleaner inlet duct bracket	6.5	65	56 in.·lbf
No.2 cylinder head cover x No.1 camshaft bearing cap	8.5	85	74 in.·lbf
Water temperature sensor x Cylinder head	19.6	200	14
Knock sensor x Cylinder block	45	450	33
Oxygen sensor x Exhaust manifold	44	450	32
Oxygen sensor x Center exhaust pipe	44	450	32

COOLING

SERVICE DATA

SSoSD-02

Thermostat	Valve opening temperature	80 – 84°C (176 – 183°F)
	Valve lift at 95°C (203°F)	8 mm (0.31 in.) or more
Radiator cap	Relief valve opening pressure STD	93 – 123 kPa (0.95 – 1.25 kgf/cm ² , 13.5 – 17.8 psi)
	Minimum	78 kPa (0.8 kgf/cm ² , 11.4 psi)
Electric cooling fan	Rotating amperage at 20°C (68°F) No.1	7.8 – 11.8 A
	No.2	5.1 – 8.1 A

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Drain plug x Union on cylinder block	13	130	9
Water pump x Timing belt case	10 mm head 12 mm head	9.0 18.5	78 in.·lbf 13
PS vane pump bracket x Cylinder block	39	400	29
PS vane pump bracket x Timing belt case	19	195	14
PS vane pump bracket x Water pump	19	195	14
PS vane pump x PS vane pump bracket	Pivot bolt Adjusting bolt	58 39	43 29
Water inlet x Timing belt case	9.0	90	78 in.·lbf
Oil cooler x Radiator lower tank	8.3	85	74 in.·lbf
Oil cooler pipe x Oil cooler	14.7	150	11
Electric cooling fan x Radiator	5.0	50	44 in.·lbf
Upper radiator support Body	15.2	155	11

LUBRICATION

SERVICE DATA

SSoSF-02

Oil pressure		at idle speed at 3,000 rpm	49 kPa (0.5 kgf/cm ² , 7.3 psi) or more 284 – 441 kPa (2.9 – 4.5 kgf/cm ² , 46 – 64 psi)
Oil pump	Tip clearance	STD	0.04 – 0.16 mm (0.0016 – 0.0063 in.)
		Maximum	0.20 mm (0.0079 in.)
	Body clearance	STD	0.10 – 0.16 mm 0.0039 – 0.0063 in.)
		Maximum	0.20 mm (0.0079 in.)
	Side clearance	STD	0.03 – 0.09 mm (0.0012 – 0.0035 in.)
		Maximum	0.15 mm (0.0059 in.)

TORQUE SPECIFICATION

Part tightened		N·m	kgf·cm	ft·lbf
No.2 intake chamber stay x Intake manifold		18.5	185	13
No.2 intake chamber stay x Engine mounting bracket		18.5	185	13
Oil pan x Drain plug		37.5	375	27
Relief valve plug x Oil pump body		36.8	375	27
Oil strainer x Cylinder block,	for Bolt	8.5	85	74 in.·lbf
	for Nut	18.5	185	13
Oil pan x Cylinder block		5.5	55	48 in.·lbf
Oil pan x Timing belt case		5.5	55	48 in.·lbf
Oil pan x Rear oil seal retainer		5.5	55	48 in.·lbf
Stiffener plate x Cylinder block		37	380	27
Stiffener plate x Transmission		37	380	27
Oil level sensor x Oil pan		5.4	55	48 in.·lbf
Oil pump x Timing belt case	10 mm head	9	90	78 in.·lbf
	12 mm head	18.5	185	13
	14 mm head	37	375	27
Oil cooler x Cylinder block	Union bolt	80	800	58
No.1 intake chamber stay x Intake manifold		18.5	185	13
No.1 intake chamber stay x Cylinder block		18.5	185	13

IGNITION

SERVICE DATA

SS01M-02

Spark plug	Recommended spark plug	DENSO	SK20R11
		NGK	IFR6A11
	Correct electrode gap for new spark plug		1.1 mm (0.043 in.)
	Maximum electrode gap for used spark plug		1.2 mm (0.047 in.)
Camshaft position sensor	Resistance	Cold	835 – 1,400 Ω
		Hot	1,060 – 1,645 Ω
Crankshaft position sensor	Resistance	Cold	1,630 – 2,740 Ω
		Hot	2,065 – 3,225 Ω

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Spark plug x Cylinder head	17.5	180	13
Ignition coil with igniter x Cylinder head cover	7.5	80	66 in·lbf
Camshaft position sensor x Cylinder head	9.0	90	80 in·lbf
Crankshaft position sensor x Timing belt case	9.0	90	80 in·lbf

STARTING

SERVICE DATA

SS0FQ-07

Starter (Planetary type)	Rated voltage and output power		12 V 0.8 kW, 12 V 1.0 kW
	No-load characteristics	Current	90 A or less at 11.5 V
		rpm	3,000 rpm or more
	Center bearing oil clearance	STD	0.01 – 0.06 mm (0.0004 – 0.0024 in.)
		Maximum	0.2 mm (0.0078 in.)
	Brush length	STD	14.0 mm (0.551 in.)
		Minimum	9.0 mm (0.354 in.)
	Spring installed load	STD	13.7 – 17.6 N (1.4 – 1.8 kgf, 3.1 – 4.0 lbf)
		Minimum	8.8 N (0.9 kgf, 2.0 lbf)
	Commutator		
	Diameter	STD	28.0 mm (1.102 in.)
		Minimum	27.0 mm (1.063 in.)
	Undercut depth	STD	0.6 mm (0.024 in.)
		Minimum	0.2 mm (0.008 in.)
	Circle runout	Maximum	0.05 mm (0.0020 in.)

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Starter x Transmission	37	380	27
Commutator end frame x Brush holder	1.5	15	13 in·lbf
Lead wire x Terminal C of starter	9.8	100	87 in·lbf
Field frame x Armature assembly	5.9	60	52 in·lbf
Starter housing x Magnetic switch	8.3	85	73 in·lbf
End cover x Field frame	1.5	15	13 in·lbf
Terminal nut x Terminal 30 of starter	7.85 – 11.8	80 – 120	69 in·lbf – 8.7
Terminal nut x Terminal C of starter	9.8	100	87 in·lbf
Magnetic switch end cover x Magnetic switch	2.5	26	22 in·lbf

CHARGING

SERVICE DATA

SS0E6-05

Battery	Voltage (Maintenance-free battery) at 20°C (68°F)	12.5 – 12.9 V
	Specific gravity (Except maintenance-free battery) at 20°C (68°F)	1.25 – 1.29 V
Alternator	Rated output	12 V 100 A
	Rotor coil resistance at 20°C (68°C)	2.8 – 3.0 Ω
	Slip ring diameter STD	14.2 – 14.4 mm (0.559 – 0.567 in.)
	Minimum	12.8 mm (0.504 in.)
	Brush exposed length STD	9.5 – 11.5 mm (0.374 – 0.453 in.)
	Minimum	1.5 mm (0.059 in.)
IC regulator	Regulating voltage	13.2 – 14.8 V

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Alternator x Water pump	55	561	41
Alternator x Cylinder block	13	133	10
Bearing retainer x Drive end frame	3.0	31	27 in·lbf
Rectifier end frame x Drive end frame	4.5	46	40 in·lbf
Wire clip x Rectifier end frame	5.4	55	48 in·lbf
Alternator pulley x Rotor	110.5	1,125	81
Rectifier holder x Coil lead on rectifier end frame	2.9	30	26 in·lbf
IC regulator x Rectifier end frame	2.0	20	18 in·lbf
IC regulator x Rectifier holder	2.0	20	18 in·lbf
Brush holder x Rectifier holder	2.0	20	18 in·lbf
Brush holder x Voltage regulator	2.0	20	18 in·lbf
Rear end cover x Rectifier holder	4.4	45	39 in·lbf
Plate terminal x Rectifier holder	Nut	4.4	39 in·lbf
	Bolt	3.9	35 in·lbf
Terminal insulator x Rectifier holder	4.1	42	36 in·lbf

CLUTCH

SERVICE DATA

SS07M-02

Pedal height from asphalt sheet	RHD	161.0 – 171.0 mm (6.34 – 6.73 in.)
	LHD	154.0 – 164.0 mm (6.06 – 6.46 in.)
Pedal freeplay		5.0 – 15.0 mm (0.197 – 0.591 in.)
Push rod play at pedal top		1.0 – 5.0 mm (0.039 – 0.197 in.)
Clutch release point from pedal full stroke end position		25 mm (0.98 in.) or more
Slotted spring pin protrusion		1.5 – 3.5 mm (0.059 – 0.138 in.)
Disc rivet head depth	Min.	0.3 mm (0.012 in.)
Disc runout	Max.	0.8 mm (0.031 in.)
Flywheel runout	Max.	0.3 mm (0.012 in.)
Diaphragm spring finger wear	Max. depth	0.6 mm (0.024 in.)
Diaphragm spring finger wear	Max. width	5.0 mm (0.197 in.)
Diaphragm spring tip non-alignment	Max.	0.5 mm (0.020 in.)

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Clutch line union	15	155	11
Clutch line clamp	4.9	50	43 in.·lbf
Master cylinder installation nut	13	130	9
Bleeder plug	12	120	8
Release cylinder installation bolt	13	130	9
Clutch cover x Flywheel	19	195	14
Release fork support	39	400	29
Flywheel set bolt	107	1,070	79

MANUAL TRANSMISSION

SERVICE DATA

SS134-01

Counter 6th gear thrust clearance	STD	0.10 – 0.40 mm (0.0039 – 0.0157 in.)
Counter 6th gear oil clearance	STD	0.015 – 0.068 mm (0.00059 – 0.0027 in.)
Synchronizer ring No. 3 to gear spine end clearance	MIn.	0.8 mm (0.031 in.)
Output shaft 1ST gear thrust clearance	STD	0.15 – 0.40 mm (0.0059 – 0.0157 in.)
Output shaft 2nd gear thrust clearance	STD	0.10 – 0.45 mm (0.0039 – 0.0177 in.)
Output shaft radial clearance	STD	0.015 – 0.066 mm (0.00059 – 0.00260 in.)
Synchronizer ring to 1ST and 2nd gear clearance	Inner STD Middle STD Outer STD	0.98 – 1.62 mm (0.039 – 0.064 in.) 0.068 – 1.92 mm (0.027 – 0.076 in.) 0.88 – 1.72 mm (0.035 – 0.068 in.)
Output shaft 1st gear journal outer diameter	MIn.	31.984 – 32.000 mm (1.259 – 1.260 in.)
Output shaft 2nd gear journal outer diameter	MIn.	42.984 – 43.000 mm (1.6922 – 1.693 in.)
Output shaft reverse gear journal outer diameter	MIn.	40.984 – 41.000 mm (1.6135 – 1.6141 in.)
Output shaft shaft runout	Max.	0.3 mm (0.0012 in.)
1st gear bearing inner race outer diameter	Max.	40.284 – 40.300 mm (1.586 – 1.587 in.)
Hub sleeve No. 1 and No. 3 clearance	STD Max.	7.9 – 8.0 mm (0.311 – 0.315 in.) 0.15 – 0.35 mm (0.311 – 0.315 in.)
3rd and 4th gear thrust clearance	STD	0.10 – 0.35 mm (0.0039 – 0.0138 in.)
3rd gear radial clearance	STD	0.015 – 0.068 mm (0.00059 – 0.00268 in.)
4th gear radial clearance	STD	0.065 – 0.115 mm (0.00256 – 0.00453 in.)
Hub sleeve No. 2 clearance	Max.	0.15 – 0.35 mm (0.0059 – 0.138 in.)
Synchronizer ring No. 1 to 3rd gear clearance	STD	0.9 – 1.7 mm (0.0354 – 0.0669 in.)
Counter 3rd gear journal outer diameter	STD	39.284 – 39.300 mm (1.5466 – 1.5472 in.)
Counter 4th gear journal outer diameter	STD	37.984 – 38.000 mm (1.495 – 1.496 in.)
Counter 6th gear journal outer diameter	STD	24.987 – 25.000 mm (0.9837 – 0.9842 in.)
Counter shaft runout	Max.	0.3 mm (0.0012 in.)
3rd gear inner diameter	STD	43.015 – 43.04 mm (1.6935 – 1.6945 in.)
4th gear inner diameter	STD	46.315 – 46.34 mm (1.8234 – 1.8244 in.)
4th gear bearing inner race outer diameter	STD	46.225 – 46.250 mm (1.8199 – 1.8207 in.)
Reverse idler gear radial clearance	STD	0.040 – 0.082 mm (0.00157 – 0.00232 in.)
Reverse idler gear shaft outer diameter	STD	0.04 – 0.082 mm (0.00157 – 0.00323 in.)
Output shaft snap ring thickness Clutch hub No. 4	Mark A Mark B Mark C Mark D Mark E Mark F	2.80 mm (0.1102 in.) 2.85 mm (0.1122 in.) 2.90 mm (0.1142 in.) 2.95 mm (0.1162 in.) 3.00 mm (0.1181 in.) 3.05 mm (0.1201 in.)
Input shaft snap ring thickness Front bearing	Mark 0 Mark 1 Mark 2 Mark 3 Mark 4 Mark 5	1.95 mm (0.077 in.) 2.00 mm (0.079 in.) 2.05 mm (0.081 in.) 2.10 mm (0.083 in.) 2.15 mm (0.085 in.) 2.20 mm (0.087 in.)

Output shaft snap ring thickness Clutch hub No. 3	Mark A Mark B Mark C Mark D Mark E Mark F	1.80 mm (0.0709 in.) 1.85 mm (0.0728 in.) 1.90 mm (0.0748 in.) 1.95 mm (0.0768 in.) 2.00 mm (0.0787 in.) 2.05 mm (0.0807 in.)
Output shaft snap ring thickness Clutch hub No. 3	Mark A Mark B Mark C Mark D Mark E Mark F Mark G Mark H Mark J Mark K Mark L	2.67 mm (0.1051 in.) 2.73 mm (0.1075 in.) 2.79 mm (0.1098 in.) 2.85 mm (0.1122 in.) 2.91 mm (0.1146 in.) 2.97 mm (0.1169 in.) 3.03 mm (0.1192 in.) 3.09 mm (0.1217 in.) 3.15 mm (0.1240 in.) 3.21 mm (0.1263 in.) 3.27 mm (0.1287 in.)
Counter shaft snap ring thickness 4th washer retainer	Mark A Mark B Mark C Mark D Mark E Mark F Mark G Mark H	3.75 mm (0.1476 in.) 3.80 mm (0.1496 in.) 3.85 mm (0.1516 in.) 3.90 mm (0.1535 in.) 3.95 mm (0.1555 in.) 4.00 mm (0.1575 in.) 4.05 mm (0.1594 in.) 4.10 mm (0.1614 in.)
Counter shaft snap ring thickness Clutch hub No. 3	Mark A Mark B Mark C Mark D Mark E Mark F	1.80 mm (0.0709 in.) 1.85 mm (0.0728 in.) 1.90 mm (0.0748 in.) 1.95 mm (0.0768 in.) 2.00 mm (0.0787 in.) 2.05 mm (0.0807 in.)
Counter shaft snap ring thickness Front bearing	Mark 1 Mark 2 Mark 3 Mark 4 Mark 5 Mark 6	2.05 mm (0.081 in.) 2.10 mm (0.083 in.) 2.15 mm (0.085 in.) 2.20 mm (0.087 in.) 2.25 mm (0.886 in.) 2.30 mm (0.0906 in.)
Front bearing retainer oil seal drive in depth		11.5 ± 0.4 mm (0.453 ± 0.016 in.)

TORQUE SPECIFICATION

Part tightened	kgf·cm	kgf·cm	ft·lbf
Engine rear mounting x Transmission	25	250	18
Rear engine mounting member x Body	25	250	18
Rear engine mounting member x Engine rear mounting	13	135	9
Starter x Transmission	42	420	30
Stiffener plate x Engine	37	380	27
Stiffener plate x Transmission	37	380	27
Clutch release cylinder x Transmission	12	120	9
Clutch line clamp x Transmission	4.9	50	43 in.·lbf
Exhaust manifold stay x Transmission	40	408	29
Exhaust front pipe x Exhaust rear pipe	43	440	32
Exhaust front pipe x Exhaust manifold	43	440	32
Transmission shift lever x Transmission	7.8	801	69 in.·lbf
Shift detente ball plug x Clutch housing	17	170	12
Idle gear shaft set bolt	28	290	21
Front bearing retainer x Clutch housing	29	290	21
5th shift arm pivot bolt	39	390	29
Transmission case x Clutch housing	29	290	21
Head straight screw plug No. 1	19	190	14
Select lever stopper bolt	14	145	10
Shift interlock plate bolt	31	320	23
Output shaft rear bearing retainer x Transmission	30	305	22
Shift lever housing set bolt	30	305	22
Extension housing oil receiver pipe No. 1 x Extension housing	8.5	85	74 in.·lbf
Oil protect plate x Extension housing	8.5	85	74 in.·lbf
Select stopper block x Extension housing	21	210	15
Reverse restrict pin	37	380	27
Extension housing x Transmission case	29	300	22
Head straight screw plug No. 2	25	250	18
Floor shift lever housing set bolt	38	390	28
Back-up switch x Transmission case	44	450	33
Control shift lever retainer x Extension housing	29	300	27
	19.5	195	14
Clutch release fork support	39	400	29
Vehicle speed sensor x Transmission case	14	140	10
Propeller shaft x Body	49	500	36
Propeller shaft x Differential	49	500	36

AUTOMATIC TRANSMISSION

SERVICE DATA

SS138-01

Line pressure (Wheel locked)	Engine idling	
	D range	392 – 461 kPa (4.0 – 4.7 kgf/cm ² , 57 – 67 psi)
at stall (Throttle valve fully opened)	R range	569 – 657 kPa (5.8 – 6.7 kgf/cm ² , 83 – 95 psi)
	D range	1,147 – 1,402 kPa (11.7 – 14.3 kgf/cm ² , 166 – 203 psi)
	R range	1,530 – 1,882 kPa (15.6 – 19.2 kgf/cm ² , 222 – 273 psi)
Engine stall revolution	D and R ranges	2,500 ± 150 rpm
Engine idle speed (A/C OFF)	N range	750 ± 50 rpm
Time lag	N → D range	Less than 1.2 seconds
	N → R range	Less than 1.5 seconds
Drive plate runout	Max.	0.20 mm (0.0079 in.)
Torque converter runout	Max.	0.30 mm (0.0118 in.)
Torque converter installation distance		
Shift schedule		
D range		
(Throttle valve fully opened)	1 → 2	57 – 64 km/h (35 – 40 mph)
	2 → 3	104 – 115 km/h (65 – 71 mph)
	3 → 4	156 – 169 km/h (97 – 105 mph)
	4 → 3	152 – 166 km/h (94 – 103 mph)
	3 → 2	98 – 109 km/h (61 – 68 mph)
	2 → 1	43 – 49 km/h (27 – 30 mph)
(Throttle valve fully closed)	3 → 4	42 – 48 km/h (26 – 30 mph)
	4 → 3	19 – 23 km/h (12 – 14 mph)
3 range		
(Throttle valve fully opened)	1 → 2	57 – 64 km/h (35 – 40 mph)
	2 → 3	104 – 115 km/h (65 – 71 mph)
	4 → 3	163 – 177 km/h (101 – 110 mph)
	3 → 2	98 – 109 km/h (61 – 68 mph)
	2 → 1	49 – 55 km/h (30 – 34 mph)
	4 → 3	163 – 177 km/h (101 – 110 mph)
(Throttle valve fully closed)		
2 range		
(Throttle valve fully opened)	1 → 2	57 – 64 km/h (35 – 40 mph)
	3 → 2	106 – 117 km/h (66 – 73 mph)
	2 → 1	49 – 55 km/h (30 – 34 mph)
L range		
(Throttle valve fully opened)	2 → 1	55 – 62 km/h (34 – 39 mph)

SERVICE SPECIFICATIONS – AUTOMATIC TRANSMISSION

Lock up point D or 3 range 3rd gear (3 range only) 4th gear	Throttle valve opening 5 % Lock-up ON Lock-up OFF Lock-up ON Lock-up OFF	 106 – 117 km/h (66 – 73 mph) 100 – 112 km/h (62 – 70 mph) 57 – 64 km/h (35 – 40 mph) 56 – 62 km/h (35 – 39 mph)
Flex lock-up point D or 3 range Throttle valve opening 3 % 3rd gear (Australia only) 4th gear Throttle valve fully closed (A/C OFF) 3 rd gear 4 th gear Throttle valve fully closed (A/C ON) 3rd gear 4th gear	 Lock-up ON Lock-up OFF Lock-up ON Lock-up OFF Lock-up ON Lock-up OFF Lock-up ON Lock-up OFF Lock-up ON Lock-up OFF Lock-up ON Lock-up OFF	 27 – 32 km/h (17 – 20 mph) 25 – 30 km/h (16 – 19 mph) 40 – 45 km/h (25 – 28 mph) 38 – 43 km/h (24 – 27 mph) 84 – 95 km/h (52 – 59 mph) 21 – 36 km/h (13 – 22 mph) 84 – 95 km/h (52 – 59 mph) 29 – 43 km/h (18 – 27 mph) 84 – 95 km/h (52 – 59 mph) 21 – 36 km/h (13 – 22 mph) 84 – 95 km/h (52 – 59 mph) 29 – 47 km/h (18 – 29 mph)

TORQUE SPECIFICATION

Part tightened		N·m	kgf·cm	ft·lbf
Extension housing x Transmission case		36	370	27
Transmission mounting bracket x Extension housing		12	120	9
Engine rear support member x Frame		25	260	19
Engine rear support member x Transmission mounting bracket		14	135	10
Transmission output speed sensor		5.4	55	48 in.·lbf
Transmission input speed sensor		5.4	55	48 in.·lbf
Solenoid connector		5.4	55	48 in.·lbf
Drain plug		20	205	15
Transmission control shaft lever		16	160	12
Neutral start switch x Transmission case	Bolt	5.4	55	48 in.·lbf
	Nut	6.9	70	60 in.·lbf
No. 1 and No. 2 solenoid valve set bolt		10	100	7
SLU and SLT solenoid valve set bolt		10	100	7
Valve body x Transmission case		10	100	7
ATF temp. sensor and solenoid wiring set bolt		10	100	7
Oil pan x Transmission case		4.4	45	39 in.·lbf
Oil strainer x Valve body		10	100	7
Parking lock pawl bracket x Transmission case		7.4	75	65 in.·lbf
No. 1 floor shift gear shifting rod x Shift lever		13	130	9
Shift lever set bolt		8.3	85	73 in.·lbf
Shift control lever		13	130	9
Shift lever guide housing x Shift lever plate		4.9	50	43 in.·lbf
Air cleaner inlet No. 1 set bolt		5.4	55	48 in.·lbf
Air cleaner assembly set bolt		7.5	75	66 in.·lbf
Oil cooler pipe clamp bolt		5.4	55	48 in.·lbf
Oil cooler pipe union nut		44	450	33
Transmission x Engine	14 mm head	37	380	27
	17 mm head	72	730	53
Stater x Transmission		39	400	29
Stater nut		10	100	7
Filler pipe set bolt		13	130	9
Exhaust pipe assembly x Exhaust manifold		43	440	32
Heated oxygen sensor x Exhaust pipe		44	450	33
Torque converter x Drive plate		41	420	30
Propeller shaft x Differential		74	750	54
Propeller shaft x Body		49	500	36

PROPELLER SHAFT

SERVICE DATA

SS132-01

Shaft runout	Max.	0.8 mm (0.031 in.)
Joint angle (No. 2 joint)		$- 1^{\circ} 21' \pm 30'$
Joint angle (No. 3 joint)		$2^{\circ} 18' \pm 30'$
Center support bearing adjusting washer thickness		2.0 mm (0.079 in.) 4.5 mm (0.177 in.) 6.5 mm (0.256 in.) 9.0 mm (0.354 in.) 11.0 mm (0.433 in.) 13.5 mm (0.531 in.)

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Propeller shaft x Differential	74	750	54
Propeller shaft x Intermediate shaft	74	750	54
Intermediate shaft x Center support bearing x Universal joint flange 1st	181	1,850	134
2nd	Loosen nut		
3rd	69	700	51
Center support bearing x Body	49	500	36
Exhaust pipe assembly x Exhaust manifold	43	440	32
Heated oxygen sensor x Exhaust pipe assembly	44	450	33

SUSPENSION AND AXLE

SERVICE DATA

SS0FD-03

Cold tire inflation pressure (Europe)	Up to 4 passengers		
	Tire size 215/45ZR17	Front*1	250 kPa (2.5 kgf/cm ² , 36 psi)
		Rear*1	260 kPa (2.6 kgf/cm ² , 38 psi)
		Front*2	240 kPa (2.4 kgf/cm ² , 35 psi)
		Rear*2	240 kPa (2.4 kgf/cm ² , 35 psi)
		Front*3	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear*3	230 kPa (2.3 kgf/cm ² , 33 psi)
	205/55R16 89V	Front*1	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear*1	240 kPa (2.4 kgf/cm ² , 35 psi)
		Front*2	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear*2	230 kPa (2.3 kgf/cm ² , 33 psi)
		Front*3	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear*3	230 kPa (2.3 kgf/cm ² , 33 psi)
Cold tire inflation pressure (Others)	5 passengers		
	Tire size 215/45ZR17	Front*1	260 kPa (2.6 kgf/cm ² , 38 psi)
		Rear*1	340 kPa (3.4 kgf/cm ² , 49 psi)
		Front*2	250 kPa (2.5 kgf/cm ² , 36 psi)
		Rear*2	280 kPa (2.8 kgf/cm ² , 41 psi)
		Front*3	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear*3	240 kPa (2.4 kgf/cm ² , 35 psi)
	205/55R16 89V	Front*1	240 kPa (2.4 kgf/cm ² , 35 psi)
		Rear*1	310 kPa (3.1 kgf/cm ² , 45 psi)
		Front*2	240 kPa (2.4 kgf/cm ² , 35 psi)
		Rear*2	270 kPa (2.7 kgf/cm ² , 39 psi)
		Front*3	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear*3	230 kPa (2.3 kgf/cm ² , 33 psi)
Cold tire inflation pressure (Others)	Up to 4 passengers		
	Tire size 215/45ZR17	Front*4	280 kPa (2.8 kgf/cm ² , 41 psi)
		Rear*4	280 kPa (2.8 kgf/cm ² , 41 psi)
		Front*5	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear*5	230 kPa (2.3 kgf/cm ² , 33 psi)
	205/55R16 89V	Front*4	270 kPa (2.7 kgf/cm ² , 39 psi)
		Rear*4	270 kPa (2.7 kgf/cm ² , 39 psi)
		Front*5	220 kPa (2.2 kgf/cm ² , 32 psi)
		Rear*5	220 kPa (2.2 kgf/cm ² , 32 psi)

Cold tire inflation pressure (Others)	5 passengers	
	Tire size 215/45ZR17	Front*4 290 kPa (2.9 kgf/cm ² , 42 psi) Rear*4 320 kPa (3.2 kgf/cm ² , 46 psi) Front*5 230 kPa (2.3 kgf/cm ² , 33 psi) Rear*5 240 kPa (2.4 kgf/cm ² , 35 psi)
	205/55R16 89V	Front*4 280 kPa (2.8 kgf/cm ² , 41 psi) Rear*4 310 kPa (3.1 kgf/cm ² , 45 psi) Front*5 220 kPa (2.2 kgf/cm ² , 32 psi) Rear*5 220 kPa (2.2 kgf/cm ² , 32 psi)
Front wheel alignment	Vehicle height	Front: B*7 – A*6 66 mm (2.60 in.) Rear: C*8 – D*9 66 mm (2.60 in.)
	Camber	–0°21' ± 30' (–0.35° ± 0.5°) Right–left error 30' (0.5°) or less
	Caster	5°46' ± 30' (5.77° ± 0.5°) Right–left error 30' (0.5°) or less
	Steering axis inclination	9°16' ± 30' (9.27° ± 0.5°) Right–left error 30' (0.5°) or less
	Toe–in (total)	0°06' ± 12' (0.1° ± 0.2°, 1 ± 2 mm, 0.04 ± 0.08 in.) Rack end length difference 1.5 mm (0.059 in.) or less
	Wheel angle	Inside wheel 41°02' (39°02' – 42°02') 41.03° (39.03° – 42.03°) Outside wheel: Reference 33°30' 33.5°
Rear wheel alignment	Camber	–0°23' ± 30' (–0.38° ± 0.5°) Right–left error 30' (0.5°) or less
	Toe–in (total)	0°12' ± 12' (0.2° ± 0.2°, 2 ± 2 mm, 0.08 ± 0.08 in.) Right and left length difference 4.0 mm (0.157 in.) or less
Front axle	Wheel bearing backlash	Maximum 0.05 mm (0.0020 in.)
	Axle hub deviation	Maximum 0.05 mm (0.0020 in.)
Front suspension	Upper ball joint turning torque	1.0 – 3.4 N·m (10 – 35 kgf·cm, 9 – 30 in.·lbf)
	Lower ball joint excessive play	Maximum 0.9 mm (0.035 in.)
	Lower ball joint turning torque	0.5 – 3.0 N·m (5 – 30 kgf·cm, 0.4 – 26 in.·lbf)
	Stabilizer bar link ball joint turning torque	0.05 – 1.9 N·m (0.5 – 20 kgf·cm, 0.4 – 16 in.·lbf)
Rear axle	Wheel bearing backlash	Maximum 0.05 mm (0.0020 in.)
	Axle hub deviation	Maximum 0.07 mm (0.0028 in.)

*1: For driving at 210 km/h (131 mph) or over

*2: For driving at 160 km/h (100 mph) to 210 km/h (131 mph)

*3: For driving under 160 km/h (100 mph)

*4: For driving at 140 km/h (88 mph) or over

*5: For driving under 140 km/h (88 mph)

*6: Ground clearance of the front No. 1 lower suspension arm mounting bolt center.

*7: Ground clearance of the front wheel center.

*8: Ground clearance of the rear wheel center.

*9: Ground clearance of the No. 2 lower suspension arm mounting bolt (Suspension member side) tail center.

SERVICE SPECIFICATIONS – SUSPENSION AND AXLE

Rear drive shaft	Drive shaft standard length Europe, Taiwan, Australia (M/T), New Zealand (M/T) Hong Kong (M/T), Thai Land (M/T)	RH: 604.3 ± 5.0 mm (23.791 ± 0.197 in.) LH: 558.3 ± 5.0 mm (21.980 ± 0.197 in.)
	Drive shaft standard length Others	RH: 603.3 ± 5.0 mm (23.752 ± 0.197 in.) LH: 558.3 ± 5.0 mm (21.980 ± 0.197 in.)
Rear suspension	Upper ball joint turning torque	1.0 – 2.9 N·m (10 – 30 kgf·cm, 9 – 26 in.·lbf)
	Toe control link ball joint turning torque	1.0 – 2.5 N·m (10 – 25 kgf·cm, 9 – 22 in.·lbf)
	Stabilizer bar link ball joint turning torque	0.05 – 1.0 N·m (0.5 – 10 kgf·cm, 0.4 – 9.0 in.·lbf)
Rear differential	Companion flange vertical runout	Maximum 0.09 mm (0.0035 in.)
	Companion flange lateral runout	Maximum 0.09 mm (0.0035 in.)
	Ring gear runout	Maximum 0.07 mm (0.0028 in.)
	Ring gear backlash	Maximum 0.13 – 0.18 mm (0.0051 – 0.0071 in.)
	Drive pinion bearing (at starting)	New bearing 1.4 – 2.0 N·m (14 – 20 kgf·cm, 12.4 – 17.7 in.·lbf) Reused bearing 0.5 – 0.8 N·m (5 – 8 kgf·cm, 4.3 – 6.9 in.·lbf)
	Total preload (at starting)	Drive pinion preload plus 0.4 – 0.6 N·m (4 – 6 kgf·cm, 3.5 – 5.2 in.·lbf)
	Side gear backlash (2 pinion differential)	0.05 – 0.20 mm (0.0020 – 0.0079 in.)
	Differential case runout	Maximum 0.07 mm (0.0028 in.)
	Pinion gear backlash	0.05 – 0.20 mm (0.0020 ± 0.0079 in.)
	Side gear shaft oil seal drive in depth	0.50 ± 0.45 mm (0.0200 ± 0.0177 in.)
	Front oil seal drive in depth	2.00 ± 0.45 mm (0.0787 ± 0.0177 in.)
	Right and left side gear shafts standard distance Europe, Taiwan, Australia (M/T), New Zealand (M/T) Hong Kong (M/T), Thai Land (M/T)	2 pinion differential: 244.74 (9.6354 in.) or less LSD: 244.30 (9.6181 in.) or less
	Right and left side gear shafts standard distance Others	246.74 (9.1742 in.) or less
	Pinion gear backlash adjusting thrust washer	1.0 mm (0.039 in.) 1.1 mm (0.043 in.) 1.2 mm (0.047 in.) 1.3 mm (0.051 in.)

Rear differential	Side bearing adjusting washer thickness	2.58 mm (0.1016 in.)
		2.60 mm (0.1024 in.)
		2.62 mm (0.1031 in.)
		2.64 mm (0.1039 in.)
		2.66 mm (0.1047 in.)
		2.68 mm (0.1055 in.)
		2.70 mm (0.1063 in.)
		2.72 mm (0.1071 in.)
		2.74 mm (0.1079 in.)
		2.76 mm (0.1087 in.)
		2.78 mm (0.1094 in.)
		2.80 mm (0.1102 in.)
		2.82 mm (0.1110 in.)
		2.84 mm (0.1118 in.)
		2.86 mm (0.1126 in.)
		2.88 mm (0.1134 in.)
		2.90 mm (0.1142 in.)
		2.92 mm (0.1150 in.)
		2.94 mm (0.1157 in.)
		2.96 mm (0.1165 in.)
		2.98 mm (0.1173 in.)
		3.00 mm (0.1181 in.)
		3.02 mm (0.1189 in.)
		3.04 mm (0.1197 in.)
		3.06 mm (0.1205 in.)
		3.08 mm (0.1213 in.)
		3.10 mm (0.1220 in.)
		3.12 mm (0.1228 in.)
		3.14 mm (0.1236 in.)
		3.16 mm (0.1244 in.)
		3.18 mm (0.1252 in.)
		3.20 mm (0.1260 in.)
		3.22 mm (0.1268 in.)
		3.24 mm (0.1276 in.)
	Drive pinion bearing adjusting washer thickness	1.70 mm (0.0669 in.)
		1.73 mm (0.0681 in.)
		1.76 mm (0.0693 in.)
		1.79 mm (0.0704 in.)
		1.82 mm (0.0717 in.)
		1.85 mm (0.0729 in.)
		1.88 mm (0.0740 in.)
		1.91 mm (0.0752 in.)
		1.94 mm (0.0764 in.)
		1.97 mm (0.0776 in.)
		2.00 mm (0.0787 in.)
		2.03 mm (0.0799 in.)
		2.06 mm (0.0811 in.)
		2.09 mm (0.0822 in.)
		2.12 mm (0.0835 in.)
		2.15 mm (0.0847 in.)
		2.18 mm (0.0858 in.)
		2.21 mm (0.0870 in.)
		2.24 mm (0.0882 in.)
		2.27 mm (0.0894 in.)
		2.30 mm (0.0906 in.)
		2.33 mm (0.0918 in.)

TORQUE SPECIFICATION

Part tighten	N·m	kgf·cm	ft·lbf
FRONT AXLE			
Hub nut	103	1,050	76
Brake caliper x Steering knuckle	118	1,200	87
ABS speed sensor x Steering knuckle	8.0	82	71 in·lbf
Steering knuckle x Upper suspension arm	65	660	50
Steering knuckle x Lower ball joint	113	1,150	83
Brake dust cover x Steering knuckle	8.3	85	74 in·lbf
Tie rod end lock nut	56	570	41
Axle hub lock nut	147	1,500	108
FRONT SUSPENSION			
ABS speed sensor wire harness x Shock absorber	5.0	55	48 in·lbf
Stabilizer bar x Stabilizer bar link	49	500	36
Shock absorber x Shock absorber bracket	64	650	47
Piston rod x Suspension support	34	350	25
Suspension support x Body	35	360	26
Upper suspension arm x Body	59	600	44
No. 1 lower suspension arm x Front suspension member	184	1,880	136
Steering gear housing bracket x Front suspension member	74	750	55
Front suspension member brace x No. 2 lower suspension arm x Body	119	1,210	88
Front suspension member brace x Body	58	590	43
Front suspension member brace x Front suspension member	58	590	43
Stabilizer bar link x Shock absorber bracket	95	970	70
No. 1 lower suspension arm x No. 2 lower suspension arm	245	2,500	180
No. 1 lower suspension arm x Lower ball joint	123	1,250	91
Shock absorber bracket x No. 1 lower suspension arm	25	250	18
Tie rod end x Lower ball joint	54	550	40
Stabilizer bar bracket x Body	18	180	13

Part/Tighten	N·m	kgf·cm	ft·lbf
REAR AXLE			
Hub nut	103	1,050	76
Brake caliper x Axle carrier	104	1,065	77
Axle carrier x Upper suspension arm	108	1,100	80
Backing plate x Axle carrier	59	600	43
No. 2 lower suspension arm x Axle carrier	110	1,120	81
No. 1 lower suspension arm x Axle carrier	75	765	55
Toe control link x Axle carrier	49	500	36
ABS speed sensor x Axle carrier	8.0	82	71 in.·lbf
Parking brake cable x Backing plate	7.8	80	69 in.·lbf
REAR DRIVE SHAFT			
Drive shaft x Axle hub	289	2,950	213
Drive shaft x Differential side gear shaft	56	570	41
REAR DIFFERENTIAL			
Differential drain plug	49	500	39
Differential filler plug	49	500	39
Differential mounting bolt	Front	95	970
	Rear	142	1,450
Ring gear set bolt	97	985	71
Companion flange lock nut	See page SA-84		
Differential carrier cover set bolt	47	475	34
Breather plug	21	210	15
Rear suspension member brace set bolt	50	510	37
Center exhaust pipe x Tailpipe	43	440	32
Front exhaust pipe x Exhaust pipe assembly	43	440	32
Heated oxygen sensor	44	450	33
Propeller shaft center support bearing set bolt	49	500	36
Propeller shaft assembly x Rear differential	74	750	54
Differential carrier x Bearing cap	85	870	63
Oil deflector x Differential carrier cover	8.0	82	71 in.·lbf
Rear suspension member x Body	127	1,300	94
Rear suspension member stopper x Body	19	195	14
Rear suspension member lower brace x Body	19	195	14
Parking brake cable x Body	7.8	80	69 in.·lbf
REAR SUSPENSION			
Suspension support x Body	Upper side	64	650
	Lower side	18	185
Piston rod x Suspension support	28	280	21
Upper suspension arm x Body	Front side	88	900
	Rear side	74	755
No. 1 lower suspension arm x Body	75	765	55
No. 2 lower suspension arm x Stabilizer bar link	30	305	22
No. 2 lower suspension arm x Shock absorber	110	1,120	81
No. 2 lower suspension arm x Rear suspension member	110	1,120	81
ABS speed sensor wire harness x Toe control link	5.0	51	44 in.·lbf

SERVICE SPECIFICATIONS – SUSPENSION AND AXLE

Part tighten	N·m	kgf·cm	ft·lbf
Toe control link x Rear suspension member	49	500	36
Stabilizer bar x Stabilizer bar link	44	449	33
Stabilizer bar bracket x Suspension member	18	185	13

BRAKE

SERVICE DATA

SS062-10

Brake pedal height (from asphalt sheet)		154.0 – 164.0 mm (6.063 – 6.457 in.)
Brake pedal freeplay		2.0 – 4.5 mm (0.08 – 0.18 in.)
Brake pedal reserve distance at 490 N (50 kgf, 110.2 lbf)		More than 99 mm (3.90 in.)
Brake booster push rod to piston clearance (w/ SST)		0 mm (0 in.)
Front brake pad thickness	STD	11.0 mm (0.433 in.)
Front brake pad thickness	Minimum	1.0 mm (0.039 in.)
Front brake disc thickness	STD	32.0 mm (1.260 in.)
Front brake disc thickness	Minimum	30.0 mm (1.181 in.)
Front brake disc runout	Maximum	Europe: 0.035 mm (0.0014 in.) Other: 0.05 mm (0.0020 in.)
Rear brake pad thickness	STD	10.5 mm (0.413 in.)
Rear brake pad thickness	Minimum	1.0 mm (0.039 in.)
Rear brake disc thickness	STD	12.0 mm (0.472 in.)
Rear brake disc thickness	Minimum	10.5 mm (0.413 in.)
Rear brake disc runout	Maximum	0.05 mm (0.0020 in.)
Rear brake disc inside diameter	STD	190 mm (7.48 in.)
Rear brake disc inside diameter	Maximum	191 mm (7.52 in.)
Parking brake shoe lining thickness for rear disc brake	STD	2.5 mm (0.098 in.)
Parking brake shoe lining thickness for rear disc brake	Minimum	1.0 mm (0.039 in.)
Parking brake pedal lever at 196 N (20 kgf, 44.1 lbf)		5 – 8 clicks
Parking brake clearance between rear shoe and lever		Less than 0.35 mm (0.0138 in.)
Parking brake adjusting shim thickness for rear disc brake		0.3 mm (0.012 in.) 0.6 mm (0.024 in.) 0.9 mm (0.035 in.)