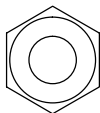
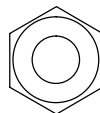
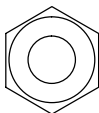
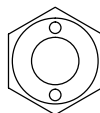
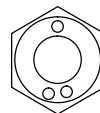
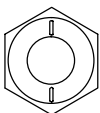
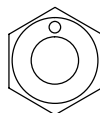
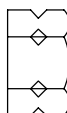
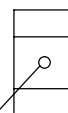
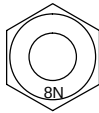
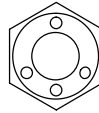
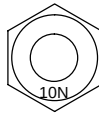
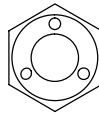
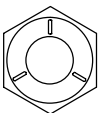
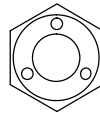
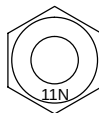
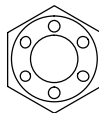
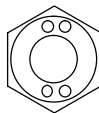


HOW TO DETERMINE BOLT STRENGTH

SS0ZS-01

B06431

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.

B06432

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

2001 SIENNA (RM787U)

AIR CONDITIONING

SERVICE DATA

SS0EV-02

Refrigerant charge volume		1,050 ± 50 g (37.03 ± 1.76 oz.)
Idle speed	Magnetic clutch not engaged	700 ± 50 rpm
	Magnetic clutch engaged	750 ± 50 rpm
Magnetic clutch clearance		0.5 ± 0.15 mm (0.020 ± 0.0059 in.)

AUTOMATIC TRANSAXLE

SERVICE DATA

SS0EB-10

Line pressure (Wheel locked)	Engine idling	
	D position	401 - 461 kPa (4.1 - 4.7 kgf/cm ² , 58 - 66 psi)
	R position	804 - 882 kPa (8.2 - 9.0 kgf/cm ² , 117 - 128 psi)
	AT stall (Throttle valve fully opened)	
	D position	1,138 - 1,236 kPa (11.6 - 12.6 kgf/cm ² , 165 - 179 psi)
	R position	1,716 - 1,854 kPa (17.5 - 18.9 kgf/cm ² , 249 - 269 psi)
Engine stall revolution	D position	2,350 - 2,800 rpm
Time lag	N → D position	Less than 1.2 seconds
	N → R position	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N position	700 ± 50 rpm
Throttle cable adjustment (Throttle valve fully opened)		Between boot end face and inner cable stopper 0 - 1 mm (0 - 0.04 in.)
Drive plate runout	Max.	0.20 mm (0.0079 in.)
Torque converter clutch runout	Max.	0.30 mm (0.0118 in.)
Torque converter clutch installation distance		More than 13.7 mm (0.539 in.)
Differential oil seal drive in depth	LH side	0 ± 0.5 mm (0 ± 0.020 in.)
	RH side	0 ± 0.5 mm (0 ± 0.020 in.)
Shift schedule		
D position (Throttle valve fully opened)	1 → 2	61 - 67 km/h (37 - 40 mph)
	2 → 3	114 - 125 km/h (68 - 78 mph)
	3 → 4	177 - 189 km/h (106 - 113 mph)
	4 → 3	170 - 182 km/h (106 - 109 mph)
	3 → 2	107 - 117 km/h (64 - 70 mph)
	2 → 1	50 - 56 km/h (31 - 34 mph)
(Throttle valve fully closed)	3 → 4	39 - 44 km/h (23 - 26 mph)
	4 → 3	21 - 26 km/h (13 - 16 mph)
2 position (Throttle valve fully opened)	1 → 2	61 - 67 km/h (37 - 40 mph)
	3 → 2	108 - 119 km/h (65 - 71 mph)
	2 → 1	51 - 56 km/h (31 - 34 mph)
L position (Throttle valve fully opened)	2 → 1	55 - 61 km/h (33 - 37 mph)
Lock-up point (Throttle valve opening 5 %)		
3rd gear	Lock-up ON	61 - 66 km/h (37 - 40 mph)
	Lock-up OFF	54 - 60 km/h (32 - 36 mph)
O/D gear	Lock-up ON	61 - 66 km/h (37 - 40 mph)
	Lock-up OFF	54 - 60 km/h (32 - 36 mph)

BODY ELECTRICAL

SERVICE DATA

SS080-04

SPEEDOMETER (ON-VEHICLE)	
USA:	
Standard indication (mph)	Allowable range (mph)
20	18 - 24
40	38 - 44
60	56 - 66
80	78 - 88
100	98 - 110
120	118 - 132
CANADA:	
Standard indication (km/h)	Allowable range (km/h)
20	17 - 24
40	38 - 46
60	57.5 - 67
80	77 - 88
100	96 - 109
120	115 - 130
140	134 - 151.5
160	153 - 173
TACHOMETER (ON-VEHICLE)/ DC 13.5 V 25 °C at (77 °F)	
Standard indication	Allowable range
700	630 - 770
1,000	900 - 1,100
2,000	1,850 - 2,150
3,000	2,800 - 3,200
4,000	3,800 - 4,200
5,000	4,800 - 5,200
6,000	5,750 - 6,250
7,000	6,700 - 7,300
ENGINE COOLANT TEMPERATURE SENDER GAUGE (Resistance)	
Temperature °C (°F)	Resistance (Ω)
50 (122.0)	160 - 240
120 (248.0)	17.1 - 21.2

STARTING

SERVICE DATA

SS03W-01

Starter	Rated voltage and output power		12 V 1.4 kW
	No-load characteristics	Current	90 A or less at 11.5 V
		rpm	3,000 rpm or more
	Brush length	STD	15.5 mm (0.610 in.)
		Minimum	10.0 mm (0.394 in.)
	Spring installed load	STD	17.6 - 23.5 N (1.8 - 2.4 kgf, 3.9 - 5.3 lbf)
		Minimum	11.8 N (1.2 kgf, 2.6 lbf)
	Commutator		
	Diameter	STD	30.0 mm (1.181 in.)
		Minimum	29.0 mm (1.142 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.)
	Magnetic switch		
	Contact plate for wear	Maximum	0.9 mm (0.035 in.)

BRAKE

SS0E9-03

SERVICE DATA

Brake pedal height (from asphalt sheet)		159.5 - 169.5 mm (6.280 - 6.673 in.)
Brake pedal freeplay		1 - 6 mm (0.04 - 0.24 in.)
Brake pedal reserve distance at 490 N (50 kgf, 110.2 lbf)		More than 96 mm (3.78 in.)
Brake booster push rod to piston clearance (w/ SST)	w/o VSC w/ VSC	0.35 mm (0.014 in.) 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	28.0 mm (1.102 in.)
Front brake disc thickness	Minimum	26.0 mm (1.024 in.)
Front brake disc runout	Maximum	0.05 mm (0.0020 in.)
Rear brake drum inside diameter	STD	250.0 mm (9.843 in.)
Rear brake drum inside diameter	Maximum	252.0 mm (9.921 in.)
Rear brake shoe lining thickness	STD	6.0 mm (0.236 in.)
Rear brake shoe lining thickness	Minimum	1.0 mm (0.039 in.)
Rear brake drum to shoe clearance		0.5 mm (0.020 in.)
Parking brake pedal travel at 294 N (30 kgf, 66 lbf)		3 - 5 clicks

STEERING

SERVICE DATA

SS05R-02

DRIVE BELT		
Drive belt tension	New belt	150 - 185 lbf
Drive belt tension	Used belt	95 - 135 lbf
POWER STEERING FLUID		
Fluid level rise	Maximum	5 mm (0.20 in.)
Fluid pressure at idle speed with valve closed	Minimum	7,845 kPa (80 kgf/cm ² , 1,138 psi)
STEERING WHEEL		
Steering wheel freeplay	Maximum	30 mm (1.18 in.)
Steering effort at idle speed	Maximum	5.9 N·m (60 kgf·cm, 52 in.·lbf)
PS VANE PUMP		
Vane pump rotating torque	Maximum	0.3 N·m (2.8 kgf·cm, 2.4 in.·lbf)
Oil clearance between pump shaft and bushing	STD	0.03 - 0.05 mm (0.0012 - 0.0020 in.)
Oil clearance between pump shaft and bushing	Maximum	0.07 mm (0.0028 in.)
Vane plate height	Minimum	8.6 mm (0.339 in.)
Vane plate thickness	Minimum	1.397 mm (0.0550 in.)
Vane plate length	Minimum	14.991 mm (0.5902 in.)
Clearance between the rotor groove and plate	Maximum	0.035 mm (0.0014 in.)
Vane plate length	Pump rotor and cam ring mark	
	NONE	14.999 - 15.001 mm (0.59051 - 0.59059 in.)
	1	14.997 - 14.999 mm (0.59043 - 0.59051 in.)
	2	14.995 - 14.997 mm (0.59035 - 0.59043 in.)
	3	14.993 - 14.995 mm (0.59027 - 0.59035 in.)
	4	14.991 - 14.993 mm (0.59020 - 0.59027 in.)
Spring free length	Minimum	32.3 mm (1.272 in.)
PS GEAR		
Steering rack runout	Maximum	0.03 mm (0.0118 in.)
Total preload (Control valve rotating torque)		0.8 - 1.4 N·m (8 - 14 kgf·cm, 6.9 - 12.2 in.·lbf)

CHARGING

SERVICE DATA

SS03Y-02

Battery	Voltage at 20° C (68° F)	12.5 - 12.9 V
Drive belt	Tension New belt Used belt	175 ± 5 lbf 115 ± 20 lbf
Generator	Rated output Rotor coil resistance Slip ring diameter STD Limit Brush exposed length STD Limit	12 V 100 A 2.1 - 2.5 Ω 14.2 - 14.4 mm (0.559 - 0.567 in.) 12.8 mm (0.504 in.) 10.5 mm (0.413 in.) 1.5 mm (0.059 in.)
Voltage regulator	Regulating voltage	13.2 - 14.8 V

SFI

SS030-05

SERVICE DATA

Fuel pressure regulator	Fuel pressure at no vacuum	301 - 347 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 Injection volume Difference between each cylinder Fuel leakage	13.4 - 14.2 Ω 60 - 73 cm ³ (3.7 - 4.5 cu in.) per 15 sec. 13 cm ³ (0.8 cu in.) or less 1 drop or less per 12 minutes
MAF meter	Resistance (THA - E2) at -20°C (-4°F) at 20°C (68°F) at 60°C (140°F)	13.6 - 18.4 kΩ 2.21 - 2.69 kΩ 0.49 - 0.67 kΩ
Throttle body	Throttle opener setting speed	900 - 1,950 rpm
Throttle position sensor	Resistance Throttle valve fully closed Throttle valve fully open - VTA - E2 VTA - E2 VC - E2	0.2 - 6.3 kΩ 2.0 - 10.2 kΩ 2.5 - 5.9 kΩ
VSV for EVAP	Resistance at 20°C (68°F)	27 - 33 Ω
VSV for ACIS	Resistance at 20°C (68°F)	33 - 39 Ω
VSV for Canister Closed Valve (CCV)	Resistance at 20°C (68°F) at 120°C (248°F)	25 - 30 Ω 33 - 42 Ω
VSV for Pressure Switching Valve	Resistance at 20°C (68°F) at 120°C (248°F)	37 - 44 Ω 51 - 62 Ω
Vapor Pressure Sensor	Power source voltage	4.5 - 5.5 V
ECT sensor	Resistance at -20°C (-4°F) at 0°C (32°F) at 20°C (68°F) at 40°C (104°F) at 60°C (140°F) at 80°C (176°F)	10 - 20 kΩ 4 - 7 kΩ 2 - 3 kΩ 0.9 - 1.3 kΩ 0.4 - 0.7 kΩ 0.2 - 0.4 kΩ
Heated oxygen sensor	Heater coil resistance at 20°C (68°F)	11 - 16 Ω
Air-Fuel Ratio (A/F) Sensor	Resistance at 20°C (68°F) at 800°C (1,472°F)	0.8 - 1.4 Ω 1.8 - 3.2 Ω
Fuel cut rpm	Fuel return rpm	1,200 rpm

COOLING

SERVICE DATA

SS03Q-02

Thermostat	Valve opening pressure Valve lift at 95°C (203°F)	80 - 84°C (176 - 183°F) 10.0 mm (0.394 in.) or more
Radiator cap	Relief valve opening pressure STD Minimum	83 - 113 kPa (0.85 - 1.15 kgf/cm ² , 12.1 - 16.4 psi) 69 kPa (0.7 kgf/cm ² , 10.0 psi)
Cooling fan	Rotating amperage ID mark S1 ID mark S2 ID mark T1 ID mark T2 at 20°C (68°F) No.1 at 20°C (68°F) No.1 at 20°C (68°F) No.2 at 20°C (68°F) No.2	8.5 - 11.5 A 8.5 - 11.5 A 14.0 - 20.0 A 14.0 - 20.0 A

SUSPENSION AND AXLE

SERVICE DATA

SS0DG-01

Cold tire inflation pressure (Normal driving)	P205/70R15 95S	Front, Rear	240 kPa (2.4 kgf/cm ² , 35 bar or psi)
	P215/65R15 95S	Front, Rear	220 kPa (2.2 kgf/cm ² , 32 bar or psi)* ¹ 240 kPa (2.4 kgf/cm ² , 35 bar or psi)* ²
Cold tire inflation pressure (Trailer towing)	P205/70R15 95S	Front, Rear	240 kPa (2.4 kgf/cm ² , 35 bar or psi)
	P215/65R15 95S	Front, Rear	240 kPa (2.4 kgf/cm ² , 35 bar or psi)
Front wheel alignment	Vehicle height 205/70R15	Front* ³	230 mm (9.06 in.)
		Rear* ⁴	324 mm (12.76 in.)
	215/65R15	Front* ³	226 mm (8.90 in.)
		Rear* ⁴	320 mm (12.60 in.)
	Camber Left - right error	-0°32' ± 45' (-0.5° ± 0.75°) 45' (0.75°) or less	
		1°32' ± 45' (1.53° ± 0.75°) 45' (0.75°) or less	
	Caster Left - right error		12°35' ± 45' (12.58° ± 0.75°)
	Steering axis inclination		0°16' ± 12' (0.27° ± 0.2°) 2.6 ± 2 mm (0.10 ± 0.08 in.)
	Toe-in (Total) Rack end length difference		1.5 mm (0.059 in.) or less
	Wheel angle Inside wheel Outside wheel <Reference>	34°19' ± 1° (34.32° ± 1°)	
		30°19' (30.32°)	
Rear wheel alignment	Camber Left - right error	-0°55' ± 45' (-0.92° ± 0.75°) 45' (0.75°) or less	
		0°13' ± 18' (0.22° ± 0.30°) 2.2 ± 3 mm (0.09 ± 0.12 in.)	
Front axle	Axle bearing backlash Maximum	0.05 mm (0.0020 in.)	
	Axle hub deviation Maximum	0.05 mm (0.0020 in.)	
Front drive shaft	Drive shaft standard length	LH	586.0 ± 2.0 mm (23.071 ± 0.079 in.)
		RH	881.6 ± 2.0 mm (34.709 ± 0.079 in.)
Front suspension	Lower ball joint turning torque		1.0 - 3.4 N·m (10 - 35 kgf·cm, 8.7 - 30 in.·lbf)
	Stabilizer bar link turning torque		0.05 - 1.0 N·m (0.5 - 10 kgf·cm, 0.4 - 8.7 in.·lbf)
Rear axle	Axle bearing backlash Maximum	0.05 mm (0.0020 in.)	
	Axle hub deviation Maximum	0.07 mm (0.0028 in.)	

*1: Vehicle load up to 6 passengers.

*2: Up to vehicle capacity weight.

*3: Front measuring point

Measure from the ground to the center of the front side lower suspension arm mounting bolt.

*4: Rear measuring point

Measure from the ground to the center of the axle beam bushing.

MAINTENANCE

SERVICE DATA

SS03I-01

Front axle and suspension	
Ball joint vertical play	Maximum 0 mm (0 in.)

ENGINE MECHANICAL

SERVICE DATA

SS03K-06

Compression pressure	at 250 rpm STD Minimum Difference of pressure between each cylinder	1,500 kPa (15.3 kgf/cm ² , 218 psi) 1,000 kPa (10.2 kgf/cm ² , 145 psi) 100 kPa (1.0 kgf/cm ² , 15 psi) or less
Valve clearance	at cold Intake Exhaust Adjusting shim for repair part Mark 2.500 Mark 2.550 Mark 2.600 Mark 2.650 Mark 2.700 Mark 2.750 Mark 2.800 Mark 2.850 Mark 2.900 Mark 2.950 Mark 3.000 Mark 3.050 Mark 3.100 Mark 3.150 Mark 3.200 Mark 3.250 Mark 3.300	0.15 - 0.25 mm (0.006 - 0.010 in.) 0.25 - 0.35 mm (0.010 - 0.014 in.) 2.500 mm (0.0984 in.) 2.550 mm (0.1004 in.) 2.600 mm (0.1024 in.) 2.650 mm (0.1043 in.) 2.700 mm (0.1063 in.) 2.750 mm (0.1083 in.) 2.800 mm (0.1102 in.) 2.850 mm (0.1122 in.) 2.900 mm (0.1142 in.) 2.950 mm (0.1161 in.) 3.000 mm (0.1181 in.) 3.050 mm (0.1201 in.) 3.100 mm (0.1220 in.) 3.150 mm (0.1240 in.) 3.200 mm (0.1260 in.) 3.250 mm (0.1280 in.) 3.300 mm (0.1299 in.)
Ignition timing	w/ Terminals TE1 and E1 connected of DLC1	8 - 12° BTDC @ idle
Idle speed	-	700 ± 50 rpm
Timing belt tensioner	Protrusion from housing side	10.0 - 10.8 mm (0.394 - 0.425 in.)
Cylinder head	Warpage Valve seat Refacing angle Contacting angle Contacting width Valve guide bushing bore diameter 12 pointed head cylinder head bolt diameter at tension portion STD Minimum	0.10 mm (0.039 in.) 30°, 45°, 75° 45° 1.0 - 1.4 mm (0.039 - 0.055 in.) 10.295 - 10.313 mm (0.4053 - 0.4080 in.) 10.345 - 10.363 mm (0.4073 - 0.4080 in.) 8.95 - 9.05 mm (0.3524 - 0.3563 in.) 8.75 mm (0.3445 in.)
Valve guide bushing	Inside diameter Outside diameter for repair part Protrusion height Intake Exhaust	5.510 - 5.530 mm (0.2169 - 0.2177 in.) 10.333 - 10.344 mm (0.4068 - 0.4072 in.) 10.383 - 10.394 mm (0.4088 - 0.4092 in.) 11.1 - 11.5 mm (0.437 - 0.453 in.) 8.9 - 9.3 mm (0.350 - 0.366 in.)
Valve spring	Deviation Free length Installed tension at 33.8 mm (1.331 in.)	2.0 mm (0.079 in.) 45.50 mm (1.7913 in.) 186 - 206 N (19.0 - 21.0 kgf, 41.9 - 46.3 lbf)
Valve lifter	Lifter diameter Lifter bore diameter Oil clearance STD Maximum	30.966 - 30.976 mm (1.2191 - 2.2195 in.) 31.000 - 31.018 mm (1.2205 - 1.2212 in.) 0.024 - 0.050 mm (0.0009 - 0.0020 in.) 0.07 mm (0.0028 in.)

SERVICE SPECIFICATIONS - ENGINE MECHANICAL

Valve	Valve overall length	STD Intake	95.45 mm (3.5779 in.)
		Exhaust	95.40 mm (3.7559 in.)
	Minimum	Intake	94.95 mm (3.7382 in.)
		Exhaust	94.90 mm (3.7362 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.)
Camshaft	Thrust clearance	STD	0.040 - 0.090 mm (0.0016 - 0.0035 in.)
		Maximum	0.12 mm (0.0047 in.)
	Journal oil clearance	STD Intake	0.035 - 0.072 mm (0.0014 - 0.0028 in.)
		Exhaust	0.025 - 0.062 mm (0.0010 - 0.0024 in.)
		Maximum Intake	0.10 mm (0.0039 in.)
		Exhaust	0.09 mm (0.0035 in.)
	Journal diameter		26.959 - 26.975 mm (1.0614 - 1.0620 in.)
	Circle runout	Maximum	0.06 mm (0.0024 in.)
	Cam lobe height	STD Intake	42.932 - 43.032 mm (1.6902 - 1.6942 in.)
		Exhaust	42.764 - 42.864 mm (1.6836 - 1.6876 in.)
		Minimum Intake	42.78 mm (1.6842 in.)
		Exhaust	42.61 mm (1.6776 in.)
	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		18.2 - 18.8 mm (0.712 - 0.740 in.)
Air intake chamber	Warpage	Maximum	0.10 mm (0.0039 in.)
Intake manifold	Warpage		
	Air intake chamber side	Maximum	0.15 mm (0.0059 in.)
	Cylinder head side	Maximum	0.08 mm (0.0031 in.)
Exhaust manifold	Warpage	Maximum	0.50 mm (0.0196 in.)
Cylinder block	Cylinder head surface warpage	Maximum	0.07 mm (0.0028 in.)
	Cylinder bore diameter		87.500 - 87.512 mm (3.4449 - 3.4453 in.)
		Maximum	87.52 mm (3.4457 in.)
	12 pointed head main bearing cap bolt diameter at tension portion	STD	7.500 - 7.600 mm (0.2953 - 0.2992 in.)
		Minimum	7.20 mm (0.2835 in.)

Piston and piston ring	Piston diameter		
	AISIN piston		
		at 23.2 mm (0.913 in.) from the piston head	87.406 - 87.416 mm (3.4412 - 3.4416 in.)
	MAHLE piston		
		at 41.2 mm (1.622 in.) from the piston head	87.453 - 87.467 mm (3.4430 - 3.4436 in.)
	Piston oil clearance		
	AISIN piston	STD	0.084 - 0.106 mm (0.0033 - 0.0042)
		Maximum	0.13 mm (0.0051 in.)
	MAHLE piston	STD	0.033 - 0.059 mm (0.0013 - 0.0023)
		Maximum	0.008 mm (0.0031 in.)
	Piston ring groove clearance	No.1	0.020 - 0.070 mm (0.0008 - 0.0028 in.)
		No.2	0.020 - 0.060 mm (0.0008 - 0.0024 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 - 0.0177 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.)

SERVICE SPECIFICATIONS - ENGINE MECHANICAL

Connecting rod	Thrust clearance	STD	0.15 - 0.30 mm (0.0059 - 0.0118 in.)
		Maximum	0.35 mm (0.0138 in.)
	Connecting rod thickness		20.80 - 20.85 mm (0.8189 - 0.8209 in.)
	Connecting rod bearing center wall thickness		
	Reference	Mark 1	1.484 - 1.487 mm (0.0584 - 0.0585 in.)
		Mark 2	1.487 - 1.490 mm (0.0585 - 0.0587 in.)
		Mark 3	1.490 - 1.493 mm (0.0587 - 0.0588 in.)
		Mark 4	1.493 - 1.496 mm (0.0588 - 0.0589 in.)
	Connecting rod oil clearance	STD	0.038 - 0.064 mm (0.0015 - 0.0025 in.)
		Maximum	0.08 mm (0.0031 in.)
	Rod out-of-alignment	Maximum per 100 mm (3.94 in.)	0.05 mm (0.0020 in.)
	Rod twist	Maximum per 100 mm (3.94 in.)	0.15 mm (0.0059 in.)
	Bushing inside diameter		22.005 - 22.014 mm (0.8663 - 0.8667 in.)
	Piston pin diameter		21.997 - 22.006 mm (0.8660 - 0.8664 in.)
Crankshaft	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	7.2 - 7.3 mm (0.284 - 0.287 in.)
		Minimum	7.0 mm (0.276 in.)
	Thrust clearance	STD	0.04 - 0.24 mm (0.0016 - 0.0095 in.)
		Maximum	0.30 mm (0.0118 in.)
	Thrust washer thickness		1.930 - 1.980 mm (0.0760 - 0.0780 in.)
	Main journal oil clearance	STD No.1 and No.4	0.014 - 0.034 mm (0.0006 - 0.0013 in.)
		No.2 and No.3	0.026 - 0.046 mm (0.0010 - 0.0018 in.)
		Maximum No.1 and No.4	0.05 mm (0.0020 in.)
		No.2 and No.3	0.06 mm (0.0024 in.)
	Main journal diameter		60.988 - 61.000 mm (2.4011 - 2.4016 in.)
	Main bearing center wall thickness		
	Reference (TMC made)	Mark 1	2.486 - 2.489 mm (0.0979 - 0.0980 in.)
		Mark 2	2.489 - 2.492 mm (0.0980 - 0.0981 in.)
		Mark 3	2.492 - 2.495 mm (0.0981 - 0.0982 in.)
		Mark 4	2.495 - 2.498 mm (0.0982 - 0.0983 in.)
		Mark 5	2.498 - 2.501 mm (0.0983 - 0.0985 in.)
		Mark 6	2.501 - 2.504 mm (0.0985 - 0.0986 in.)
		Mark 7	2.504 - 2.507 mm (0.0986 - 0.0987 in.)
	Reference (TMMK made)	Mark 1	2.485 - 2.488 mm (0.0978 - 0.0980 in.)
		Mark 2	2.488 - 2.491 mm (0.0980 - 0.0981 in.)
		Mark 3	2.491 - 2.494 mm (0.0981 - 0.0982 in.)
		Mark 4	2.494 - 2.497 mm (0.0982 - 0.0983 in.)
		Mark 5	2.497 - 2.500 mm (0.0983 - 0.0984 in.)
		Mark 6	2.500 - 2.503 mm (0.0984 - 0.0985 in.)
		Mark 7	2.503 - 2.506 mm (0.0985 - 0.0987 in.)
	Crank pin diameter		52.992 - 53.000 mm (2.0863 - 2.0866 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.)

LUBRICATION

SERVICE DATA

SS03S-01

Oil pressure		at idle speed at 3,000 rpm	29 kPa (0.3 kgf/cm ² , 43 psi) or more 294 - 539 kPa (3.0 - 5.5 kgf/cm ² , 43 - 78 psi)
Oil pump	Side clearance	STD	0.030 - 0.090 mm (0.0012 - 0.0035 in.)
		Maximum	0.15 mm (0.0059 in.)
	Body clearance	STD	0.100 - 0.175 mm (0.0039 - 0.0069 in.)
		Maximum	0.30 mm (0.0118 in.)
	Tip clearance	STD	0.110 - 0.240 mm (0.0043 - 0.0094 in.)
		Maximum	0.35 mm (0.0138 in.)

IGNITION

SS03U-10

SERVICE DATA

Firing order	-	1 - 2 - 3 - 4 - 5 - 6
Spark plug	Recommended spark plug Correct electrode gap for new plug Maximum electrode gap for used plug	DENSO SK20R11 NGK IFR6A11 1.2 mm (0.047 in.) 1.0 - 1.1 mm (0.039 - 0.043 in.)
Camshaft position sensor	Resistance at cold at hot	835 - 1,400 Ω 1,060 - 1,645 Ω
Crankshaft position sensor	Resistance at cold at hot	1,630 - 2,740 Ω 2,065 - 3,225 Ω

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

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf	
Timing belt plate x Oil pump	8.0	80	69 in·lbf	
No.1 idler pulley x Oil pump	34	350	25	
No.2 idler pulley x No.2 idler pulley bracket	43	440	32	
Camshaft timing pulley x Camshaft	125	1,300	94	
for SST	88	900	65	
Timing belt tensioner x Oil pump	27	280	20	
RH engine mounting bracket x Cylinder block	28	290	21	
No.2 timing belt cover x No.3 timing belt cover	8.5	85	74 in·lbf	
No.1 timing belt cover x Oil pump	8.5	85	74 in·lbf	
Crankshaft pulley x Crankshaft	215	2,200	159	
No.2 generator bracket x Engine RH mounting bracket	28	290	21	
Oil control valve filter plug x Cylinder head	45	460	33	
Cylinder head rear cover x Cylinder head	10	100	7	
Cylinder head x Cylinder block	12 pointed head 1st	54	550	40
2nd	Turn 90°	Turn 90°	Turn 90°	
Recessed head	18.5	185	13	
Camshaft bearing cap x Cylinder head	16	160	12	
Cylinder head cover x Cylinder head	8	80	69 in·lbf	
Exhaust manifold x Cylinder head	49	500	36	
Exhaust manifold stay x Exhaust manifold	20	200	14	
Exhaust manifold stay x Transmission housing	20	200	14	
PS pump bracket x RH cylinder head	43	440	32	
Oil dipstick guide x LH cylinder head	8	80	69 in·lbf	
Water inlet pipe x LH cylinder head	19.5	200	14	
Cylinder head rear plate x LH cylinder head	8	80	69 in·lbf	
No.3 timing belt cover x Cylinder head	8.5	85	74 in·lbf	
Water outlet x Intake manifold	15	150	11	
Intake manifold x Cylinder head	15	150	11	
Air intake chamber x Intake manifold	43	440	32	
No.1 engine hanger x Air intake chamber	39	400	29	
No.1 engine hanger x RH cylinder head	39	400	29	
Throttle body stay x Air intake chamber	19.5	200	14	
Throttle body stay x RH cylinder head	19.5	200	14	
Ground strap x Cylinder head	14.5	145	10	
Drive plate x Crankshaft	83	850	61	
Transaxle x Cylinder block	Lower side	48	490	35
Upper side	66	670	48	
No.1 oil pan x Transaxle	37	380	27	
Drive plate x Torque convertor clutch	41	420	30	
Flywheel housing under cover x Transaxle	7.8	80	69 in·lbf	
Rear engine mounting insulator x Cylinder block	64	650	47	
Front engine mounting insulator x Cylinder block	64	650	47	
Engine mounting absorber x Front suspension member	48	490	35	
Rear engine mounting insulator x Front suspension member	66	670	48	

SERVICE SPECIFICATIONS - ENGINE MECHANICAL

Engine mounting absorber x Transaxle		48	490	35
Front engine mounting insulator x Front suspension member				
Green color bolt	66	670	48	
Silver color bolt	44	450	32	
LH engine mounting insulator x Transaxle	64	650	47	
PS pump x PS pump bracket	43	440	31	
Engine moving control rod x RH engine mounting bracket	64	650	47	
Engine moving control rod x RH fender apron	64	650	47	
RH engine mounting stay x Water outlet	32	320	23	
RH engine mounting stay x Engine moving control rod	32	320	23	
RH engine mounting stay x No.2 RH engine mounting bracket	32	320	23	
A/C compressor x Housing bracket	25	250	18	
A/C compressor x No.1 oil pan	25	250	18	
Front lower brace x Body	Bolt	181	1,850	134
	Nut	36	370	27
Rear lower brace x Body	19 mm head bolt	181	1,850	134
	14 mm head bolt	32	330	24
	Nut	36	370	27
Generator adjusting bar x Drive belt adjusting bar bracket		18	185	13
Main bearing cap x Cylinder block	12 pointed head 1st	22	225	16
	2nd	Turn 90°	Turn 90°	Turn 90°
	6 pointed head	27	275	20
Connecting rod cap x Connecting rod	1st	24.5	250	18
	2nd	Turn 90°	Turn 90°	Turn 90°
Rear oil seal retainer x Cylinder block		8	80	69 in.·lbf
Cylinder block side cover x Cylinder block		9	90	78 in.·lbf
Engine coolant drain union x Cylinder block		39	400	29
Water seal plate x Cylinder block		18	180	13
Oil filter union x Cylinder block		30	310	22
Water inlet housing x Cylinder block		8	80	69 in.·lbf
Knock sensor x Cylinder block		39	400	29
No.2 idler pulley bracket x Cylinder block		28	290	21
A/C compressor housing bracket x Cylinder block		25	250	18
Generator bracket x Cylinder block		43	440	32
Front exhaust pipe support bracket x No.1 oil pan		21	210	15
Front exhaust pipe x Exhaust manifold		62	630	46
Front exhaust pipe x Center exhaust pipe		43	440	32
Center exhaust pipe x Tailpipe		56	570	41
Front exhaust pipe bracket x Front suspension member		33	330	24
Front exhaust pipe support bracket x Front exhaust pipe stay		33	330	24

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Oil pressure switch x Cylinder block	13	130	9
No.2 oil pan x Drain plug	45	460	33
Oil pump x Relief valve plug	36.8	375	37
Oil pump x Cylinder block	10 mm head	8.0	69 in.·lbf
	12 mm head	19.5	14
Crankshaft position sensor x Oil pump	8.0	80	69 in.·lbf
Oil pan baffle plate x No.1 oil pan	8.0	80	69 in.·lbf
No.1 oil pan x Cylinder block	19.5	200	14
No.1 oil pan x Oil pump	10 mm head	8.0	69 in.·lbf
	12 mm head	19.5	14
No.1 oil pan x Rear oil seal retainer	8.0	80	69 in.·lbf
No.1 oil pan x Transaxle	37.2	380	27
Oil strainer x Main bearing cap	8.0	80	69 in.·lbf
Oil strainer x Oil pump	8.0	80	69 in.·lbf
No.2 oil pan x No.1 oil pan	8.0	80	69 in.·lbf
Flywheel housing under cover x Transaxle	7.8	80	69 in.·lbf
A/C compressor housing bracket x Cylinder block	25	250	18
PS pump x PS pump bracket	43.1	440	32
PS pump drive belt adjusting strut x PS pump	43.1	440	32
PS pump drive belt adjusting strut x Oil pump	43.1	440	32
Exhaust pipe bracket x No.1 oil pan	21	210	15

EMISSION CONTROL

TORQUE SPECIFICATION

SS03N-07

Part tightened	N·m	kgf·cm	ft·lbf
Charcoal canister x Body	19.5	195	14
Charcoal canister protector x Body	19.5	195	14
Exhaust manifold x Cylinder head	49	500	63
A/F sensor x LH exhaust manifold	44	450	33
Front exhaust pipe x Exhaust manifold	62	630	46
Front exhaust pipe x Center exhaust pipe	56	570	41
Center exhaust pipe x Tailpipe	56	571	43
Heated oxygen sensor x Center exhaust pipe	20	200	14
Front exhaust pipe bracket x Front suspension member	33	330	24
Front exhaust pipe support bracket x Front exhaust pipe stay	33	330	24

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Front seat mount bolts	37	375	27
Front suspension member x Body	181	1,850	134
Rear axle beam assembly x Body	88	900	65

SUPPLEMENTAL RESTRAINT SYSTEM

TORQUE SPECIFICATION

SS0EX-02

Part tightened	N·m	kgf·cm	ft·lbf
Steering wheel	34	350	25
Steering wheel pad	8.8	90	78 in·lbf
Front passenger airbag assembly x Instrument panel	20	200	14
Airbag sensor assembly x Body	20	200	14
Front airbag sensor	20	200	14
Seatback assembly x Seat cushion assembly	18	185	13
Front seat x Body	37	375	27

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
RH engine drain plug x Cylinder block side cover	7.0	70	61 in.·lbf
LH engine drain plug x Union on cylinder block	13	130	9
Water pump x Cylinder block	8.0	80	69 in.·lbf
Water inlet x Water inlet housing	8.0	80	69 in.·lbf
Water inlet pipe x LH cylinder head	19.5	200	14
Radiator support x Body	13	130	9
No.1 cooling fan shroud x Radiator	5.0	50	44 in.·lbf
No.2 cooling fan shroud x Radiator	5.0	50	44 in.·lbf

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
FRONT:			
Hub nut	104	1,050	77
Tie rod end lock nut	74	750	55
Steering knuckle x Shock absorber	210	2,150	155
Steering knuckle x Brake caliper	107	1,090	79
Steering knuckle x Tie rod end	49	500	36
Axle hub x Drive shaft	294	3,000	217
Lower ball joint x Lower suspension arm	127	1,300	94
Lower ball joint x Steering knuckle	123	1,250	90
Steering knuckle x Dust cover	8.3	85	74 in.·lbf
Drive shaft center bearing lock bolt	32	330	24
Suspension support x Body	80	820	59
Suspension support x Piston rod	49	500	36
ABS speed sensor set bolt	7.8	80	69 in.·lbf
Flexible hose and ABS speed sensor wire harness x Shock absorber	29	300	22
Lower suspension arm set bolt	206	2,100	152
Stabilizer bar bracket x Suspension member	19	195	14
Stabilizer bar link set bolt	39	400	29
PS gear assembly set bolt	181	1,850	134
REAR:			
Hub nut	104	1,050	77
Axle hub set nuts	80	820	59
Shock absorber x Body	25	250	18
Shock absorber x Rear axle beam	37	380	27
Brake line union nut	15	155	11
ABS speed sensor wire harness clamp set bolt	18	185	13
Parking brake cable clamp set bolt	7.8	80	69 in.·lbf
Exhaust front pipe x Exhaust tail pipe	56	550	41
Axle beam x Body	88	900	65

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
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
Cord clip x Rectifier end frame	5.4	55	48 in·lbf
Generator pulley x Rotor	110.5	1,125	81
Rectifier holder x Coil lead on rectifier end frame	2.9	30	26 in·lbf
Voltage regulator and brush holder x Rectifier end frame	2.0	20	18 in·lbf
Plate terminal x Rectifier holder	Nut	4.4	39 in·lbf
	Screw	3.9	35 in·lbf
Rear end cover x Rectifier holder	4.4	45	39 in·lbf
Terminal insulator x Rectifier holder	4.1	42	36 in·lbf
Generator x Generator bracket	56	570	41
Generator x Adjusting bar	18	180	13

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Fuel line (Union bolt type)	29	300	21
Fuel line (Flare nut type) using SST	28	285	21
Fuel pump assembly x Fuel tank	4.0	40	35 in.·lbf
Fuel pressure regulator x Fuel pump bracket	2.0	20	17 in.·lbf
Delivery pipe x Intake manifold	10	100	7
No.1 fuel pipe x Intake manifold	19.5	200	14
Fuel tank band x Body	39	400	29
Throttle body x Air intake chamber	19.5	200	14
Intake air control valve x Air intake chamber	14.5	145	10
ECT sensor x Water outlet	20	200	14
Knock sensor x Cylinder block	39	400	29
Heated oxygen sensor (Bank 1, 2 sensor 1) x Exhaust manifold	44	440	31
Heated oxygen sensor (Bank 1 sensor 2) x Exhaust pipe	44	440	31

TORQUE SPECIFICATION

Part tightened		N·m	kgf·cm	ft·lbf
Parking brake equalizer lock nut		13	130	9
Parking brake pedal assembly x Body		39	400	29
Master cylinder x Piston stopper bolt	w/o VSC	10	102	7
Master cylinder x Brake booster		13	130	9
Master cylinder x Inlet union		1.8	18	16 in.·lbf
Bracket x Clamp		5.0	51	44 in.·lbf
Bracket x Body		8.0	82	71 in.·lbf
Reservoir x Bracket		5.5	56	49 in.·lbf
Brake line union nut	10 mm	15	155	11
Brake line union nut	12 mm	19.6	200	14.5
Brake booster clevis lock nut		25	260	19
Brake booster installation nut		13	130	9
Brake pedal assembly x Reinforcement		20	200	15
Brake pedal x Pedal bracket		35	360	26
Pedal bracket x Cruise control ECU		5.0	51	41 in.·lbf
Front disc brake caliper installation bolt		34	350	25
Front bleeder plug		8.3	85	74 in.·lbf
Front disc brake torque plate x Steering knuckle		107	1,090	79
Front disc brake caliper x Flexible hose		29	300	21
Front wheel hub nut		104	1,050	77
Rear bleeder plug		8.5	87	75 in.·lbf
Rear drum brake wheel cylinder x Backing plate		15	155	11
ABS actuator x Actuator bracket		14	140	10
ABS & VSC actuator x Actuator bracket		13	130	9
ABS & VSC actuator x Oil pressure sensor		20	200	15
Front speed sensor harness clamp x Absorber		29	300	21
Front speed sensor harness clamp x Body		5.4	55	48 in.·lbf
Front speed sensor installation bolt		7.8	80	69 in.·lbf
Rear axle hub installation bolt		80	820	59

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
STEERING COLUMN			
Steering wheel pad set screw (Torx screw)	8.8	90	78 in.·lbf
Steering wheel set nut	50	510	37
Intermediate shaft assembly x Control valve shaft	35	360	26
Intermediate shaft assembly x Main shaft assembly	35	360	26
Steering column assembly set nut	25	260	19
Shift lever set bolt	12	120	9
Shift lever housing x Column housing support	12	120	9
Turn signal bracket x Steering column housing	7.5	75	65 in.·lbf
Column housing support x Column tube assembly	19	190	14
PS VANE PUMP			
Pressure feed tube x Control valve housing	27 (25)	280 (250)	20 (18)
Clamp plate set nut	7.8	80	69 in.·lbf
Pump assembly set bolt A bolt	29 (43)	300 (440)	22 (32)
Pump assembly set bolt B bolt	43	440	32
Oil pressure switch x Union bolt	21	210	15
Union bolt x Pressure feed tube	52	530	38
Vane pump pulley set nut	43	440	32
Front bracket x Rear bracket	43	440	32
Suction port union set bolt	13	130	9
Pressure port union	83	850	62
Rear housing set bolt	17	170	12
PS GEAR			
Pressure feed tube clamp plate set nut	10	100	7
Pressure feed and return tubes x Control valve housing	27 (25)	280 (250)	20 (18)
Stabilizer bar set bolt	19	190	14
PS gear assembly set bolt and nut	181	1,850	134
Turn pressure tube union nut	12 (13)	120 (130)	9 (9)
Tie rod end lock nut	74	750	54
Rack x Rack end	60 (83)	610 (850)	44 (61)
Rack guide spring cap lock nut	50 (69)	510 (700)	37 (51)
Rack housing cap	59	600	43
Selt-locking nut	25	250	18
Control valve housing set bolt	18	180	13

(): For use without SST

BODY

TORQUE SPECIFICATION

SS0EY-04

Part tighten	N·m	kgf·cm	ft·lbf
FRONT BUMPER	-	-	-
Front bumper cover x Body	7.6	78	68 in.·lbf
Center stay x Body	5.4	55	48 in.·lbf
Front bumper reinforcement x Body	31	320	23
Side mounting bracket x Body	5.4	55	48 in.·lbf
REAR BUMPER	-	-	-
Rear bumper cover x Body	6.8	70	61 in.·lbf
Rear bumper reinforcement x Rear bumper arm	31	320	23
Rear bumper arm x Body	31	320	23
HOOD	-	-	-
Hood x Hood hinge	13	130	9
Hood lock x Body	7.8	80	69 in.·lbf
FRONT DOOR	-	-	-
Outside rear view mirror x Door panel	7.8	80	69 in.·lbf
Door glass x Window regulator	5.4	55	48 in.·lbf
Window regulator x Door panel	5.4	55	48 in.·lbf
Door lock x Door panel	4.9	50	43 in.·lbf
Door hinge x Door panel	25	260	19
Door hinge x Body	25	260	19
Outside handle x Door panel	5.5	56	49 in.·lbf
Door lock cylinder x Door panel	5.5	56	49 in.·lbf
Door check x Door panel	5.5	56	49 in.·lbf
Door check x Body	30	306	22
Door lock striker x Body	23	230	17
SLIDE DOOR	-	-	-
Center rail protector x Body	9.8	100	7
Center rail x Body	9.8	100	7
Slide door lock x Door panel	4.9	50	43 in.·lbf
Slide door front lock x Door panel	4.9	50	43 in.·lbf
Center hinge x Door panel	30	310	22
Lower roller x Door panel	30	310	22
Upper roller x Door panel	30	310	22
Front lock striker x Body	23	230	17
Rear lock striker x Body	23	230	17
Open striker x Body	7.0	71	62 in.·lbf
Outside handle x Door panel	5.5	56	49 in.·lbf
Slide door full open stop lock x Lower roller	8.0	82	71 in.·lbf
Adjusting bolt	18	185	13
BACK DOOR	-	-	-
Back door lock x Door panel	7.8	80	69 in.·lbf
Back door hinge x Door panel	19	195	14

Back door hinge x Body	19	195	14
Door lock striker x Body	11	115	8
BACK DOOR STAY	-	-	-
Back door stay x Body	17	175	13
Back door stay x Door panel	22	2025	16
FRONT WIPER AND WASHER	-	-	-
Wiper motor and link assembly x Outer front cowl to panel	7.4	75	65 in.·lbf
Outer front cowl top panel x Body	7.8	80	69 in.·lbf
Wiper arm x Wiper link	20	205	15
Wiper motor x Wiper link	5.5	56	49 in.·lbf
REAR WIPER AND WASHER	-	-	-
Wiper motor and link assembly x Door panel	5.4	55	48 in.·lbf
Rear wiper arm x Wiper link	5.4	55	48 in.·lbf
SLIDING ROOF	-	-	-
Drive cable x Sliding roof glass	4.0	41	36 in.·lbf
Mounting bracket x Body	5.5	56	49 in.·lbf
Mounting bracket x Sliding roof rail	5.5	56	49 in.·lbf
INSTRUMENT PANEL	-	-	-
Front passenger airbag assembly x Reinforcement	20	205	15
Front passenger airbag assembly x Instrument panel	5.0	51	44
No.2 cowl bracket x Body	20	205	15
No.2 cowl bracket x Reinforcement	20	205	15
Steering wheel set nut	50	510	37
FRONT SEAT	-	-	-
Seat adjuster x Body	37	380	27
Center armrest x Seatback frame	37	380	27
Seatback assembly x Seat adjuster	18	185	13
Seat cushion assembly x Seat adjuster	18	185	13
Front seat inner belt x Seat	43	440	32
REAR NO.1 SEAT (Separate Type)	-	-	-
Seat leg x Seat lock	41	420	30
Seat adjuster x Seat leg	10	105	8
Seat cushion assembly x Seat adjuster	18	185	13
Reclining connecting pipe x Seat hinge	18	185	13
Seat hinge x Seatback assembly	18	185	13
Center armrest x Seatback frame	37	380	27
Rear No. 1 seat inner belt x Seat	43	440	32
LH: Front connecting pipe x Seat adjuster	18	185	13
REAR NO. 1 SEAT (Bench Type)	-	-	-
Seat leg x Seat lock	41	420	30
Rear No. 1 seat center belt x Seat leg	43	440	32
Seat cushion assembly x Seat leg	18	185	13
Reclining adjuster x Seat cushion assembly	43	440	32
Reclining adjuster x Seatback assembly	43	440	32
Rear No. 1 seat inner belt x Seat	43	440	32

2001 SIENNA (RM787U)

SERVICE SPECIFICATIONS - BODY

Armrest x Seatback frame	37	380	27
REAR NO.2 SEAT	-	-	-
Seat cushion assembly x seat leg	19	195	14
Seat cushion assembly x Reclining adjuster	43	440	32
Seatback assembly x Reclining adjuster	43	440	32
Rear No. 2 seat inner belt x Seat cushion frame	43	440	32
SEAT BELT	-	-	-
Shoulder anchor x Adjustable anchor	43	440	32
Shoulder anchor x Body	43	440	32
Floor anchor x Body	43	440	32
Retractor x Body Upper bolt:	21	210	15
Retractor x Body Lower bolt:	43	440	32
Inner belt x Seat	43	440	32
Adjustable anchor x Body	43	440	32
Tether anchor bracket x Body	18	185	13
ROOF RAIL	-	-	-
Roof rail assembly x Body	11	115	8

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Starter mounting bolt	37	380	27
End cover x Field frame	1.5	15	13 in·lbf
Starter housing x Magnetic switch	5.9	60	52 in·lbf
Field frame x Armature assembly	5.9	60	52 in·lbf
Lead wire x Terminal C of starter	5.9	60	52 in·lbf
Terminal nut x Terminal C of starter	17	170	12
Terminal nut x Terminal 30 of starter	17	170	12
Magnetic switch end cover x Magnetic switch	2.5	26	23 in·lbf

TORQUE SPECIFICATION

Part tightened		N·m	kgf·cm	ft·lbf
Park/neutral position switch		5.4	55	48 in.·lbf
Park/neutral position switch lock plate nut		6.9	70	61 in.·lbf
Control shaft lever nut		13	130	9
Shift control cable nut		15	150	11
Solenoid wire x Transaxle case		5.5	55	49 in.·lbf
Solenoid valve		6.6	67	58 in.·lbf
Valve body		11	110	8
Connector clamp x Valve body		11	110	8
Pipe retainer x Valve body		11	110	8
Manual valve body x Valve body		11	110	8
Detent spring x Manual valve body		11	110	8
Oil pipe bracket x Valve body		10	100	7
Oil strainer x Valve body		11	110	8
Oil pan		7.8	80	69 in.·lbf
Drain plug		49	500	36
Throttle cable x Transaxle case		5.5	55	49 in.·lbf
Throttle cable x Engine		15	150	11
Shift lever x Shift lever housing		12	120	9
Shift lever housing x Steering column assembly		12	120	9
Parking lock cable x Shift lever housing		4.4	45	39 in.·lbf
Parking lock cable x Column upper bracket		2.2	23	19 in.·lbf
Parking lock cable x Steering column assembly		11	110	8
Starter x Transaxle		37	380	27
Exhaust manifold stay		20	200	15
Transaxle upper side mounting bolt		66	670	48
Left side transaxle mounting nut		80	820	59
Rear side engine mounting nut		66	670	48
Engine mounting absorber bolt		48	490	35
Front side engine mounting bolt	Green color bolt	66	670	48
	Sliver color bolt	44	450	32
Front frame assembly (Front side)	Bolt	181	1,850	134
	Nut	36	370	27
Front frame assembly (Rear side)	19 mm head bolt	181	1,850	134
	17 mm head bolt	32	330	24
	Nut	36	370	27
Exhaust pipe bracket x Engine		21	210	15
Hole cover x Transaxle		8.0	80	71 in.·lbf
Drive plate x Torque converter clutch		41	420	30
Transaxle lower side mounting bolt	A bolt	48	490	35
	B bolt	37	380	27
Drive plate x Crankshaft		83	850	61

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
FRONT COOLING UNIT			
Front cooling unit x Liquid tube	5.4	55	48 in.·lbf
Front cooling unit x Suction hose	5.4	55	48 in.·lbf
Expansion valve x Liquid tube	14	140	10
Expansion valve x Evaporator	22	225	16
REAR COOLING UNIT			
Rear cooling unit x Liquid tube	5.4	55	48 in.·lbf
Rear cooling unit x Suction tube	5.4	55	48 in.·lbf
Evaporator x Tube and accessory	5.4	55	48 in.·lbf
Expansion valve x Liquid tube (Evaporator side)	14	140	10
Expansion valve x Liquid tube (Tube side)	22	225	16
COMPRESSOR AND MAGNETIC CLUTCH			
Discharge hose x Compressor	10	100	7
Suction hose x Compressor	10	100	7
Compressor x Cylinder block	25	250	18
Pressure plate x Compressor	13	135	9
RECEIVER			
Receiver x Liquid tube	5.4	55	48 in.·lbf
CONDENSER			
Condenser x Discharge hose	10	100	7
Condenser x Liquid tube	14	140	10
REFRIGERANT LINE			
Liquid line (Block joint)	5.4	55	48 in.·lbf
Suction line (Block joint)	5.4	55	48 in.·lbf
Liquid line (Piping line)	14	140	10
Suction line (Piping joint)	32	330	24

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Spark plug x Cylinder head	18	180	13
Ignition coil x Cylinder head	8.0	80	69 in.·lbf
Camshaft position sensor x Cylinder head	8.0	80	69 in.·lbf
Crankshaft position sensor x Oil pump	8.0	80	69 in.·lbf