
SERVICE SPECIFICATIONS

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SS

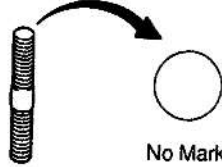
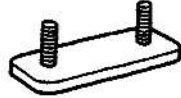
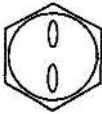
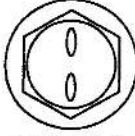
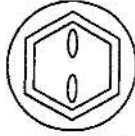
REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
YARIS / ECHO Chassis and Body Repair Manual	RM685E
YARIS / ECHO Chassis and Body Repair Manual Supplement (Aug., 1999)	RM737E
YARIS / ECHO Chassis and Body Repair Manual Supplement (Jan., 2001)	RM838E

NOTE: The above pages contain only the points which differ from the above listed manuals.

STANDARD BOLT**HOW TO DETERMINE BOLT STRENGTH**

SS025-01

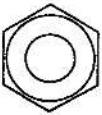
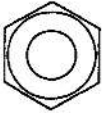
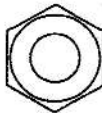
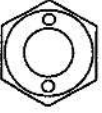
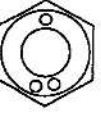
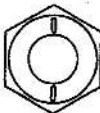
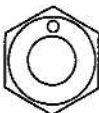
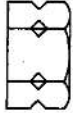
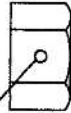
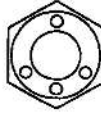
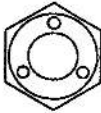
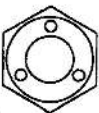
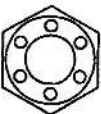
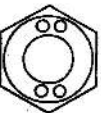
Bolt Type				Class
Hexagon Head Bolt		Stud Bolt	Weld Bolt	
Normal Recess Bolt	Deep Recess Bolt			
 No Mark	 No Mark	 No Mark		4T
 				5T
  w/ Washer	 w/ Washer			6T
 	 			7T
		 		8T
				9T
	 			10T
	 			11T

SS

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:

B06432

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

CLUTCH

SERVICE DATA

SS09Q-10

Pedal height from floor panel	LHD	150.7 – 160.7 mm (5.933 – 6.327 in.)
	RHD	155.5 – 165.5 mm (6.122 – 6.516 in.)
Pedal free play		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
Disc rivet head depth	Minimum	0.3 mm (0.012 in.)
Disc runout	Maximum	0.8 mm (0.031 in.)
Flywheel runout	Maximum	0.1 mm (0.004 in.)
Diaphragm spring finger wear	Maximum depth	0.6 mm (0.024 in.)
Diaphragm spring finger wear	Maximum width	5.0 mm (0.197 in.)
Diaphragm spring tip non-alignment	Maximum	0.5 mm (0.020 in.)

SS

TORQUE SPECIFICATION

Part tightened	N-m	kgf-cm	ft-lbf
Clutch line	15.2	155	11
Release cylinder installation bolt	11.8	120	9
Union bolt	24.5	250	18
Bleeder plug	8.4	84	73 in.-lbf
Clutch accumulator x Glow relay with bracket	5.0	51	44 in.-lbf
Clutch accumulator x Body	5.0	51	44 in.-lbf
Release fork support	36.8	375	27
Clutch cover x Flywheel	19.1	195	14

MANUAL TRANSAXLE (C153)

TORQUE SPECIFICATION

SS020-13

Part tightened	N-m	kgf-cm	ft-lbf
Hood set bolt	13	130	9
Wiper arm x Wiper link assembly	21	214	15
Wiper link assembly x Outer front cowl top panel	5.5	56	49 in. · lbf
Outer front cowl top panel x Body	7.8	80	69 in. · lbf
Air cleaner case assembly x Air cleaner bracket	7.5	76	66 in. · lbf
Air cleaner bracket x Transaxle	19	195	14
Transaxle x Engine	33	340	25
Transaxle x Starter (from transaxle to starter)	39	400	29
Transaxle x Starter (from starter to transaxle)	37	370	27
Starter wire x Starter	9.8	100	87 in. · lbf
No. 1 engine hangers set bolt	40	400	29
Engine LH mounting bracket x Engine LH mounting insulator	49	500	36
Engine LH mounting bracket x Transaxle	64	653	48
Clutch release cylinder x Transaxle	11.8	120	9
Clutch release cylinder tube x Transaxle	19	195	14
Engine rear mounting bracket x Transaxle	49	500	36
Engine rear mounting insulator x Engine rear mounting bracket	64	650	47
Front suspension member reinforcement	47	480	35
Pressure feed and return tube x Suspension member	7.8	80	69 in. · lbf
Pressure feed and return tube (LHD) x Power steering gear assembly	25 (*23)	250 (*235)	24 (*22)
Pressure feed and return tube (RHD) x Power steering gear assembly	44.1 (*41.1)	450 (*420)	33 (*31)
Power steering gear assembly x No. 3 intermediate shaft assembly	28	290	21
Suspension member (front) x Body	70	715	52
Suspension member (rear) x Body	116	1,185	86
Engine rear mounting insulator x Suspension member	80	820	59
Front suspension lower arm x Steering knuckle	98	1,000	72
Tie rod end x Steering knuckle	49	500	36
Front drive shaft x Steering knuckle	216	2,200	159

* For use with SST

SUSPENSION AND AXLE

SERVICE DATA

SS13W-09

Cold tire inflation pressure (Europe, diesel)	Vehicle load up to 2 passengers	Front	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear	210 kPa (2.1 kgf/cm ² , 30 psi)
	Vehicle load up to 5 passengers	Front	230 kPa (2.3 kgf/cm ² , 33 psi)
	155/80R 13	Rear*1	210 kPa (2.1 kgf/cm ² , 30 psi)
		Rear*2	230 kPa (2.3 kgf/cm ² , 33 psi)
	175/65R 14	Front	230 kPa (2.3 kgf/cm ² , 33 psi)
		Rear*1	210 kPa (2.1 kgf/cm ² , 30 psi)
		Rear*2	220 kPa (2.2 kgf/cm ² , 32 psi)
Front wheel alignment (Europe, diesel)	Vehicle height	Front: B*4 - A*3	85 mm (3.35 in.)
		Rear: C*5 - D*6	9 mm (0.35 in.)
	Camber	Right-left error	-0°35' ± 45' (-0.58° ± 0.75°)
			45' (0.75°) or less
	Caster	Manual steering	0°34' ± 45' (0.57° ± 0.75°)
		Power steering	1°33' ± 45' (1.55° ± 0.75°)
		Right-left error	45' (0.75°) or less
	Steering axis inclination		10°04' ± 45' (10.07° ± 0.75°)
		Right-left error	45' (0.75°) or less
	Toe-in (total)		0° ± 12' (0° ± 0.2°, 0 ± 2 mm, 0 ± 0.08 in.)
Rear wheel alignment (Europe, diesel)		Rack end length difference	1.5 mm (0.059 in.) or less
	Wheel angle		
	Manual steering	Inside wheel	36°59' ± 2° (36.98° ± 2°)
		Outside wheel: Reference	32°10' (32.17°)
	Power steering	Inside wheel	36°59' ± 2° (36.98° ± 2°)
		Outside wheel: Reference	32°20' (32.28°)
	Camber		-0°56' ± 25' (-0.93° ± 0.42°)
		Right-left error	30' (0.5°) or less
	Toe-in (total)		0°19' ± 15' (0.32° ± 0.25°, 2.9 ± 2.3 mm, 0.11 ± 0.09 in.)

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

*2: For driving at 160 km/h (100 mph) or over

*3: Ground clearance of the front lower suspension arm mounting bolt center.

*4: Ground clearance of the front wheel center.

*5: Ground clearance of the rear axle beam mounting bolt center.

*6: Ground clearance of the rear wheel center.

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
FRONT WHEEL ALIGNMENT			
Tie rod end lock nut	47	480	35
Steering knuckle x Shock absorber	132	1,350	97

BRAKE

SERVICE DATA

SS0M2-13

Brake booster push rod to piston clearance (W/SST)		0 mm (0 in.)
Vacuum pump blade thickness	STD	4.9 mm (0.193 in.)
Vacuum pump blade thickness	Minimum	4.5 mm (0.177 in.)

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf	
Brake booster x Installation nut	12.7	130	9	
Brake booster clevis lock nut	26	265	19	
Brake line union nut	15.2	155	11	
Vacuum pump end cover x Casing	6	61	53 in·lbf	
Vacuum pump x Cam position sensor	9	92	80 in·lbf	
Vacuum pump installation flange bolt	21	214	15	
ABS actuator x Actuator No. 1 bracket	4.7	48	42 in·lbf	
ABS actuator assembly x Body	19	194	14	
Front speed sensor installation bolt	8.0	82	71 in·lbf	
Front speed sensor wire harness clamp installation bolt	Bolt A	8.0	82	71 in·lbf
	Bolt B	29.4	300	22

STEERING

SERVICE DATA

SS0MY-19

DRIVE BELT (1ND-TV)		
Drive belt deflection	New belt	8 – 10 mm (0.315 – 0.394 in.)
	Used belt	11 – 13 mm (0.433 – 0.512 in.)
*Drive belt tension	New belt	440 – 540 N (45 – 55 kgf)
	Used belt	240 – 340 N (25 – 35 kgf)
POWER STEERING FLUID (1ND-TV)		
Fluid level rise	Maximum	5 mm (0.20 in.)
Fluid pressure at idle speed with valve closed	Minimum	5,400 kPa (55 kgf/cm ² , 781 psi)
POWER STEERING VANE PUMP (1ND-TV)		
Vane pump rotating torque		0.27 N·m (2.8 kgf·cm, 2.4 in.·lbf) or less
Vane pump shaft and front housing bushing oil clearance	STD	0.021 – 0.043 mm (0.0008 – 0.0017 in.)
	Maximum	0.07 mm (0.0028 in.)
Vane plate height	Minimum	7.6 mm (0.299 in.)
Vane plate thickness	Minimum	1.405 mm (0.0553 in.)
Vane plate length	Minimum	11.993 mm (0.4722 in.)
Vane plate and vane pump rotor groove clearance	Maximum	0.03 mm (0.0012 in.)
Vane plate length	Pump rotor and cam ring mark	
	0	12.001 – 12.003 mm (0.47248 – 0.47256 in.)
	1	11.999 – 12.001 mm (0.47240 – 0.47248 in.)
	2	11.997 – 11.999 mm (0.47232 – 0.47240 in.)
	3	11.995 – 11.997 mm (0.47224 – 0.47232 in.)
	4	11.993 – 11.995 mm (0.47216 – 0.47224 in.)
Spring free length	Minimum	35.8 mm (1.409 in.)

* For use with belt tension gauge

TORQUE SPECIFICATION

Part tightened		N·m	kgf·cm	ft·lbf
TILT STEERING COLUMN (1ND-TV)				
No. 2 intermediate shaft assembly x Main shaft assembly		28	290	21
Column assembly set bolt		21	210	15
Sliding yoke x No. 3 intermediate shaft assembly		28	290	21
No. 2 intermediate shaft assembly x Sliding yoke		28	290	21
Steering wheel set nut		50	510	37
Steering wheel pad set screw (Torx screw)		8.8	90	78 in.·lbf
POWER STEERING VANE PUMP (1ND-TV)				
Rear housing x Front housing		22	220	16
Oil pressure sensor		21	210	15
Pressure port union		69	700	51
Front and rear bracket x Pump housing		44	440	32
Heat insulator and rear stay x Rear housing		44	440	32
Oil reservoir x Pump housing		9.0	90	78 in.·lbf
Pump assembly set bolt	Bolt A	44	440	32
	Bolt B	44	440	32
	Bolt C	44	440	32
Pressure feed tube x Pump assembly		41 (44)	415 (450)	30 (33)
MANUAL STEERING GEAR (1ND-TV)				
Engine hanger set bolt		20	204	15
Engine rear mount bracket set bolt		49	500	36
Engine rear mount bracket x Engine rear mount insulator		64	650	47
No. 3 intermediate shaft assembly x Steering pinion		28	290	21
Manual steering gear assembly set bolt		74	750	54
Steering gear heat insulator set bolt		7.4	75	65 in.·lbf
Front suspension member x Frame	Bolt A	116	1,185	86
	Bolt B	70	715	52
Engine rear mount insulator x Front suspension member		80	810	59
Front suspension member reinforcement set bolt		47	480	35
Lower suspension arm x Steering knuckle		98	1,000	72
Engine hood x Hinge		11	115	8
Tie rod end x Steering knuckle		49	500	36
POWER STEERING GEAR (1ND-TV)				
Engine hanger set bolt		20	204	15
Engine rear mount bracket set bolt		49	500	36
Engine rear mount bracket x Engine rear mount insulator		64	650	47
No. 3 intermediate shaft assembly x Control valve shaft		28	290	21
PS gear assembly set bolt		74	750	54
Rack housing heat insulator set bolt (RHD)		7.4	75	65 in.·lbf
Dynamic damper (with rack housing heat insulator) set bolt (LHD)		18	180	13
Rack housing heat insulator set bolt		35	360	26
Front suspension member x Frame	Bolt A	116	1,185	86
	Bolt B	70	715	52
Engine rear mount insulator x Front suspension member		80	810	59

SERVICE SPECIFICATIONS – STEERING

Part tightened		N·m	kgf·cm	ft·lbf
Front suspension member reinforcement set bolt		47	480	35
Lower suspension arm x Steering knuckle		98	1,000	72
Engine hood x Hinge		11	115	8
Tube clamp		7.8	80	69 in·lbf
Pressure feed and return tube	LHD	27 (25)	280 (250)	20 (18)
	RHD	41 (44)	415 (450)	30 (33)

(): For use without SST

BODY ELECTRICAL

SERVICE DATA

SS02V-07

SPEEDOMETER (ON-VEHICLE)	
Digital meter:	
Standard indication (mph)	Allowable range (mph)
20	20 – 23
40	41 – 44
60	63 – 67
80	84 – 88
100	105 – 109
120	126 – 130
Standard indication (km/h)	Allowable range (km/h)
20	20 – 24
40	41 – 45
60	62 – 66
80	84 – 88
100	105 – 111
120	126 – 132
140	148 – 154
160	169 – 175
Except australia analog meter:	
Standard indication (mph)	Allowable range (mph)
20	21 – 23.5
40	41.5 – 44
60	62.5 – 66
80	83 – 87
100	104 – 108.5
Standard indication (km/h)	Allowable range (km/h)
20	21 – 25
40	41.5 – 46
60	62.5 – 67
80	83 – 88
100	104 – 109
120	125 – 130.5
140	145.5 – 151.5
160	166 – 173
180	188.5 – 194.5
Australia analog meter:	
Standard indication (km/h)	Allowable range (km/h)
20	17.5 – 21.5
40	38 – 42
60	58 – 63
80	78 – 84
100	99 – 104.5
120	119.5 – 125.5

SERVICE SPECIFICATIONS - BODY ELECTRICAL

140	139.5 - 146.5
160	159.5 - 167.5
180	179.5 - 188.5

AIR CONDITIONING

SS072-06

SERVICE DATA

Refrigerant charge volume	430 ± 30 g (15.17 ± 1.06 oz.)
Drive belt tension (Apply load of 98 N)	—
New belt	7.0 – 8.5 mm (0.28 – 0.33 in.)
Used belt	11.0 – 13.0 mm (0.43 – 0.51 in.)
Drive belt tension	—
New belt	540 – 640 N (55 – 65 kgf)
Used belt	250 – 390 N (25 – 40 kgf)

TORQUE SPECIFICATION

Part tightened	N·m	kgf·cm	ft·lbf
Drive belt			
Pivot bolts	54	540	39
Refrigerant line			
A/C unit x Liquid and Suction hose	5.4	55	48 in.·lbf
Expansion valve x Evaporator	3.4	35	30 in.·lbf
Condenser x Liquid tube	5.4	55	48 in.·lbf
Condenser x Discharge hose	5.4	55	48 in.·lbf
Pressure switch x Liquid tube	10	100	7
Compressor and magnetic clutch			
Compressor x Engine	25	250	18
Pressure plate x Compressor	13.2	135	9

