

Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000312N05WX
Title: SPECIFICATIONS: ALIGNMENT / HANDLING DIAGNOSIS: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Vehicle Height (Unloaded Vehicle)

FRONT B - A	REAR C	REAR D	REAR E
146 mm (5.75 in.)	225 mm (8.86 in.)	375 mm (14.76 in.)	372 mm (14.65 in.)

Measurement points:

- A: Ground clearance of front lower suspension arm set front bolt center
- B: Ground clearance of front wheel center
- C: Ground clearance of lower control arm set bolt center
- D: Front wheel arch height of front wheel center
- E: Rear wheel arch height of rear wheel center

Camber (Unloaded Vehicle)

-	CAMBER INCLINATION	RIGHT-LEFT DIFFERENCE
Front	0 +/- 45' (0 +/- 0.75°)	30' (0.50°) or less
Rear	-1°12' +/- 45' (-1.20° +/- 0.75°)	45' (0.75°) or less

Caster (Unloaded Vehicle)

-	CASTER INCLINATION (REFERENCE)	RIGHT-LEFT DIFFERENCE
Front	5°54' (5.90°)	30' (0.50°) or less

Wheel Turning Angle (Unloaded Vehicle)

-	INSIDE WHEEL (REFERENCE)	OUTSIDE WHEEL (REFERENCE)
Front	36°54' (43.90°)	31°12' (31.20°)

Toe-in (Unloaded Vehicle)

-	SPECIFIED CONDITION
Front	C + D: 0°00' +/- 0°11' (0.00° +/- 0.19°)
	B - A: 0 +/- 3.0 mm (0 +/- 0.1181 in.)
Rear	C + D: 0°10' +/- 0°15' (0.16° +/- 0.24°)
	B - A: 2.0 +/- 3.0 mm (0.0787 +/- 0.1181 in.)

Wheel Turning Angle (Unloaded Vehicle)

-	INSIDE WHEEL	OUTSIDE WHEEL REFERENCE
Front	41°48' +/- 2°(41.8° +/- 2°)	36°20' (36.33°)

Distance between the centers of the 2 installation bolts of the rear No. 2 suspension arm assembly LH and RH

-	STANDARD DISTANCE
Rear	443.8 to 447.8 mm (17.47 to 17.63 in.)

Distance between the centers of the 2 installation bolts of the rear No. 2 suspension arm assembly

-	STANDARD DISTANCE
Rear	448.9 to 450.9 mm (17.67 to 17.75 in.)



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003NRN020X
Title: SPECIFICATIONS: ALIGNMENT / HANDLING DIAGNOSIS: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front shock absorber assembly x steering knuckle	155	1581	114
Hub nut	120	1224	89
Tie rod end lock nut	85	867	63
Toe adjust cam nut	100	1020	74



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001ZZA022X
Title: SPECIFICATIONS: AUDIO / VIDEO: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Stereo component amplifier assembly x Body	7.5	77	66 in.*lbf
Front No. 3 speaker assembly x Upper instrument panel assembly	7.5	77	66 in.*lbf
Amplifier antenna assembly x Body	4.5	46	40 in.*lbf



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002G6J012X
Title: SPECIFICATIONS: AXLE AND DIFFERENTIAL: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Axle

Front axle hub bearing looseness	Maximum: 0.05 mm (0.00196 in.)
Front axle hub runout	Maximum: 0.05 mm (0.00196 in.)
Rear axle hub bearing looseness	Maximum: 0.05 mm (0.00196 in.)
Rear axle hub runout	Maximum: 0.05 mm (0.00196 in.)

Differential

Rear differential carrier oil seal drive in depth	1.55 to 2.45 mm (0.0610 to 0.0964 in.)
Rear differential side gear shaft oil seal drive in depth	-0.5 to 0.5 mm (-0.0197 to 0.0197 in.)
Differential ring gear runout	Maximum: 0.07 mm (0.00275 in.)
Rear differential case sub-assembly runout	Maximum: 0.07 mm (0.00275 in.)
Differential ring gear backlash	0.13 to 0.18 mm (0.00512 to 0.00708 in.)
Differential side gear backlash	0 mm (0 in.)
Rear drive pinion companion flange runout	Maximum: 0.09 mm (0.00354 in.)
Differential drive pinion preload (at starting)	New bearing: 1.49 to 2.59 N*m (15.2 to 26.4 kgf*cm, 13.2 to 22.9 in.*lbf) Reused bearing: 1.11 to 1.91 N*m (11.3 to 19.5 kgf*cm, 9.8 to 16.9 in.*lbf)
Total preload (Drive pinion preload plus)	New differential case bearing x New rear drive pinion tapered roller bearing: 2.57 to 4.26 N*m (26.2 to 43.4 kgf*cm, 22.7 to 37.7 in.*lbf) New differential case bearing x Reused rear drive pinion tapered roller bearing: 2.19 to 3.58 N*m (22.3 to 36.5 kgf*cm, 19.4 to 31.7 in.*lbf) Reused differential case bearing x New rear drive pinion tapered roller bearing: 1.98 to 3.37 N*m (20.2 to 34.4 kgf*cm, 17.5 to 29.8 in.*lbf) Reused differential case bearing x Reused rear drive pinion tapered roller bearing: 1.60 to 2.69 N*m (16.3 to 27.4 kgf*cm, 14.2 to 23.8 in.*lbf)
	2.57 to 2.59 (0.1012 to 0.1020) 2.59 to 2.61 (0.1020 to 0.1028) 2.61 to 2.63 (0.1028 to 0.1035)

Rear differential side gear shaft plate washer thickness mm (in.)	2.63 to 2.65 (0.1035 to 0.1043)
	2.65 to 2.67 (0.1043 to 0.1051)
	2.67 to 2.69 (0.1051 to 0.1059)
	2.69 to 2.71 (0.1059 to 0.1067)
	2.71 to 2.73 (0.1067 to 0.1075)
	2.73 to 2.75 (0.1075 to 0.1083)
	2.75 to 2.77 (0.1083 to 0.1091)
	2.77 to 2.79 (0.1091 to 0.1098)
	2.79 to 2.81 (0.1098 to 0.1106)
	2.81 to 2.83 (0.1106 to 0.1114)
	2.83 to 2.85 (0.1114 to 0.1122)
	2.85 to 2.87 (0.1122 to 0.1130)
	2.87 to 2.89 (0.1130 to 0.1138)
	2.89 to 2.91 (0.1138 to 0.1146)
	2.91 to 2.93 (0.1146 to 0.1154)
	2.93 to 2.95 (0.1154 to 0.1161)
	2.95 to 2.97 (0.1161 to 0.1169)
	2.97 to 2.99 (0.1169 to 0.1177)
	2.99 to 3.01 (0.1177 to 0.1185)
	3.01 to 3.03 (0.1185 to 0.1193)
	3.03 to 3.05 (0.1193 to 0.1201)
	3.05 to 3.07 (0.1201 to 0.1209)
	3.07 to 3.09 (0.1209 to 0.1217)
	3.09 to 3.11 (0.1217 to 0.1224)
	3.11 to 3.13 (0.1224 to 0.1232)
	3.13 to 3.15 (0.1232 to 0.1240)
	3.15 to 3.17 (0.1240 to 0.1248)
	3.17 to 3.19 (0.1248 to 0.1256)
	3.19 to 3.21 (0.1256 to 0.1264)
	3.21 to 3.23 (0.1264 to 0.1271)
	3.23 to 3.25 (0.1271 to 0.1280)
	3.25 to 3.27 (0.1280 to 0.1287)
	3.27 to 3.29 (0.1287 to 0.1295)
	3.29 to 3.31 (0.1295 to 0.1303)
	3.31 to 3.33 (0.1303 to 0.1311)
	3.33 to 3.35 (0.1311 to 0.1319)
	3.35 to 3.37 (0.1319 to 0.1327)
	3.37 to 3.39 (0.1327 to 0.1335)
	3.39 to 3.41 (0.1335 to 0.1343)
	3.41 to 3.43 (0.1343 to 0.1350)
	3.43 to 3.45 (0.1350 to 0.1358)
	3.45 to 3.47 (0.1358 to 0.1366)
	3.47 to 3.49 (0.1366 to 0.1374)
	1.69 to 1.71 (0.0665 to 0.0673)
	1.72 to 1.74 (0.0677 to 0.0685)
	1.75 to 1.77 (0.0688 to 0.0697)
	1.78 to 1.80 (0.0701 to 0.0709)
	1.81 to 1.83 (0.0713 to 0.0720)
	1.84 to 1.86 (0.0724 to 0.0732)
	1.87 to 1.89 (0.0736 to 0.0744)
	1.90 to 1.92 (0.0748 to 0.0756)

Rear differential drive pinion plate washer thickness mm (in.)	1.93 to 1.95 (0.0760 to 0.0768)
	1.96 to 1.98 (0.0772 to 0.0780)
	1.99 to 2.01 (0.0783 to 0.0791)
	2.02 to 2.04 (0.0795 to 0.0803)
	2.05 to 2.07 (0.0807 to 0.0815)
	2.08 to 2.10 (0.0819 to 0.0827)
	2.11 to 2.13 (0.0831 to 0.0839)
	2.14 to 2.16 (0.0843 to 0.0850)
	2.17 to 2.19 (0.0854 to 0.0862)
	2.20 to 2.22 (0.0866 to 0.0874)
	2.23 to 2.25 (0.0878 to 0.0886)
	2.26 to 2.28 (0.0890 to 0.0898)
	2.29 to 2.31 (0.0902 to 0.0909)
	2.32 to 2.34 (0.0913 to 0.0921)

TOYOTA

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Model Year: 2013	Model: FR-S	Doc ID: RM000002G6K012X
Title: SPECIFICATIONS: AXLE AND DIFFERENTIAL: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

Axle

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front disc brake caliper assembly x Steering knuckle	80	816	59
Hub nut	120	1224	89
Steering knuckle x Front axle hub sub-assembly	65	663	48
Front speed sensor x Steering knuckle	7.5	77	66 in.*lbf
Steering knuckle x Front shock absorber with coil spring	155	1581	114
Front disc brake dust cover x Steering knuckle	18	184	13
Steering knuckle x Front lower suspension arm assembly	51	520	38
Steering knuckle x Tie rod sub-assembly	27	275	20
Rear axle hub and bearing assembly x Rear axle carrier sub-assembly	65	663	48
Rear speed sensor x Rear axle carrier sub-assembly	7.5	77	66 in.*lbf
Rear axle shaft nut x Rear drive shaft assembly	190	1938	140
Toe control link sub-assembly x Rear axle carrier sub-assembly	60	612	44
Rear upper control arm assembly x Rear axle carrier sub-assembly	80	816	59
Rear No. 1 suspension arm assembly x Rear axle carrier sub-assembly	110	1122	81
Rear No. 2 suspension arm assembly x Rear axle carrier sub-assembly	80	816	59
Rear stabilizer Link assembly x Rear No. 2 suspension arm assembly	38	388	28

Differential

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear differential filler plug x Rear differential carrier assembly	49	500	36
Rear differential drain plug x Rear differential carrier assembly	49	500	36
Bearing cap x Rear differential carrier	85	870	63
Differential ring gear x Rear differential case sub-assembly	97	984	71
Rear drive pinion nut x Differential drive pinion	338 or less	3445 or less	249 or less
Rear differential breather plug oil deflector x Rear differential carrier cover	8.0	82	71 in.*lbf
Rear differential carrier cover x Rear differential carrier	47	475	35
Rear differential breather plug x Rear differential carrier cover	21	210	15
Rear differential carrier assembly x Rear suspension member sub-assembly (Rear)	103	1050	76

Rear differential carrier assembly x Rear suspension member sub-assembly (Front)	95	970	70
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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003EFG01VX
Title: SPECIFICATIONS: BRAKE (FRONT): SERVICE DATA (2013 FR-S)		

SERVICE DATA

Pad lining thickness	Standard	1.5 mm (0.0591 in.)
	Minimum	11.0 mm (0.433 in.)
Disc thickness	Standard	24.0 mm (0.945 in.)
	Minimum	22.0 mm (0.866 in.)
Disc runout	Maximum	0.05 mm (0.0020 in.)



TOYOTA

Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003EFH01VX
Title: SPECIFICATIONS: BRAKE (FRONT): TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Hub nut	120	1224	89
Carrier x Steering knuckle	80	816	59
Disc brake cylinder assembly x Carrier	26	270	19
No. 1 front flexible hose x Disc brake cylinder assembly	18	184	13
No. 1 front flexible hose x brake tube	18	184	13
No. 1 front flexible hose x front shock absorber assembly	33	337	24



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003ED3024X
Title: SPECIFICATIONS: BRAKE (REAR): SERVICE DATA (2013 FR-S)		

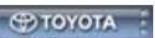
SERVICE DATA

for for Solid Disc Brake

Pad lining thickness	Standard	9.0 mm (0.354 in.)
	Minimum	1.5 mm (0.059 in.)
Disc thickness	Standard	10.0 mm (0.3937 in.)
	Minimum	8.5 mm (0.3346 in.)
Disc runout	Maximum	0.05 mm (0.0020 in.)

for Ventilated Disc Brake

Pad lining thickness	Standard	11.0 mm (0.433 in.)
	Minimum	1.5 mm (0.059 in.)
Disc thickness	Standard	18.0 mm (0.7087 in.)
	Minimum	16.5 mm (0.6496 in.)
Disc runout	Maximum	0.05 mm (0.0020 in.)



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003ED4028X
Title: SPECIFICATIONS: BRAKE (REAR): TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

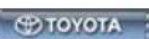
PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear disc brake bleeder plug x Rear disc brake cylinder assembly LH	8.0	82	71 in.*lbf
Hub nut	120	1224	89
Caliper support bracket x Rear axle carrier	66	673	49
Rear disc brake cylinder assembly x Caliper support bracket	26	265	19
Rear brake flexible hose x Rear disc brake cylinder assembly	18	184	13
Brake line union nut	15	155	11
Rear brake flexible hose x Rear axle carrier	33	337	24



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000043EU003X
Title: SPECIFICATIONS: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: SERVICE DATA (2013 FR-S)		

SERVICE DATA

VSC OFF switch	5 - 8	Switch not pushed in	10 k Ω or higher
		Switch pushed in	Below 1 Ω
VSC SPORT switch	1 - 8	Switch not pushed in	10 k Ω or higher
		Switch pushed in	Below 1 Ω



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000043EV003X
Title: SPECIFICATIONS: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front fender liner x Body	7.5	76	66 in.*lbf
Brake actuator bracket assembly x Body	33	337	24
Brake actuator assembly x Brake actuator bracket assembly	7.5	77	66 in.*lbf
Brake actuator assembly x Brake line	15	155	11
Front speed sensor set bolt	7.5	77	66 in.*lbf
Rear speed sensor set bolt	7.5	77	66 in.*lbf
Hub nut	120	1224	89
Battery negative terminal set bolt	6.0	61	53 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002Z3V011X
Title: SPECIFICATIONS: BRAKE SYSTEM (OTHER): SERVICE DATA (2013 FR-S)		

SERVICE DATA

Brake pedal height from floor mat	for Manual Transmission	145mm (5.709in.)
	for Automatic Transmission	150mm (5.906in.)
Brake pedal free play		2mm (0.079in.) or less
Brake pedal reserve distance from asphalt sheet at 490 N (50 kgf, 110 lbf)	for Manual Transmission	More than 55 mm (2.165 in.)
	for Automatic Transmission	More than 55 mm (2.165 in.)
Vacuum of the vacuum pump assembly	With the engine idling	More than 93 kPa (698 mmHg, 27 in.Hg) of vacuum



TOYOTA

Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002Z3W01NX
Title: SPECIFICATIONS: BRAKE SYSTEM (OTHER): TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Disc brake cylinder bleeder plug	8.0	82	71 in.*lbf
Brake master cylinder sub-assembly x Brake tube	19	194	14
Brake pedal support x Brake booster assembly	18	184	13
Brake pedal support x Body	18	184	13
Brake pedal support x Brake pedal	30	306	22
Brake master cylinder sub-assembly x Brake booster assembly	14	143	10
Hub nut	120	1224	86
Brake master cylinder push rod clevis lock nut	19	194	14
Vacuum pump assembly set bolt	16	163	12



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001YXR00CX
Title: SPECIFICATIONS: CLUTCH: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Clutch Pedal

Pedal play	4.0 (0.158 in.)
Pedal stroke (Reference)	105 to 115 mm (4.134 to 4.528 in.)

Clutch Unit

Clutch disc rivet depth	Minimum	0.3 mm (0.0118 in.)
Clutch disc runout	Maximum	0.8 mm (0.0315 in.)
Clutch cover diaphragm spring wear	Maximum depth	0.5 mm (0.0197 in.)
	Maximum width	6.0 mm (0.236 in.)
Flywheel runout	Maximum	0.1 mm (0.00394 in.)
Clutch cover diaphragm spring tip non-alignment	Maximum	0.5 mm (0.0197 in.)

Clutch Pedal Switch

Clutch start switch assembly		
Standard resistance 1 - 2	ON (Pushed in)	Below 1 Ω
	OFF (Released)	10 k Ω or higher
Clutch switch assembly		
Standard resistance 1 - 2	ON (Pushed in)	Below 1 Ω
	OFF (Released)	10 k Ω or higher



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001YXS00CX
Title: SPECIFICATIONS: CLUTCH: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Clutch release cylinder bleeder plug x Clutch release cylinder assembly	7.8	80	69 in.*lbf
Clutch switch assembly x Clutch pedal support sub-assembly	8.0	82	71 in.*lbf
Clutch pedal support sub-assembly x Body	18	184	13
Steering intermediate shaft assembly x Steering column assembly	35	357	26
Clutch master cylinder to flexible hose tube x Master cylinder to release cylinder hose	15	153	11
Clutch master cylinder to flexible hose tube x Clutch master cylinder assembly	15	153	11
Clutch master cylinder assembly x Body	18	184	13
Clutch release cylinder assembly x Clutch housing	37	377	27
Master cylinder to release cylinder hose x Clutch release cylinder assembly	18	184	13
Clutch cover assembly x Flywheel sub-assembly	16	163	12
Release fork support x Manual transmission assembly.	16	163	12
Clutch start switch assembly x Clutch pedal support sub-assembly	8.0	82	71 in.*lbf
Clutch switch assembly x Clutch pedal support sub-assembly	8.0	82	71 in.*lbf

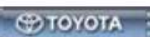


Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000004909015X
Title: SPECIFICATIONS: CRUISE CONTROL: SERVICE DATA (2013 FR-S)		

SERVICE DATA

CRUISE CONTROL MAIN SWITCH

Resistance	1 - 3	Cruise control Main switch Assembly (ON-OFF button) released	1 MΩ or higher
		Cruise control Main switch Assembly (ON-OFF button) pushed	Below 2.5 Ω
		+ / RES switch ON	235 to 245 Ω
		- / SET switch ON	617 to 643 Ω
		CANCEL switch ON	1509 to 1571 Ω



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000203C00IX
Title: SPECIFICATIONS: DOOR / HATCH: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
HOOD			
Hood hinge x Hood panel	25	255	18
HOOD LOCK CONTROL CABLE ASSEMBLY			
Hood lock x Body	33	337	24
Hood lock control lever sub-assembly x Body	7.5	77	66 in.*lbf
FRONT DOOR			
Door hinge x Body	30	306	22
Door hinge x Door panel	25	255	18
Door striker x Body	18	184	13
Door check x Body	33	337	24
Door check x Door panel	7.5	77	66 in.*lbf
Front door sash x Door panel (Under)	14	143	10
Front door sash x Door panel (Upper)	7.5	77	66 in.*lbf
Front door rear lower frame sub-assembly x Door panel	14	143	10
Front door glass sub-assembly x Front door window regulator sub-assembly	7.5	77	66 in.*lbf
Front door window regulator sub-assembly (nut) x Door panel	7.5	77	66 in.*lbf
Front door window regulator sub-assembly (bolt) x Door panel	7.5	77	66 in.*lbf
Front door outside handle frame sub-assembly x Front door lock cylinder assembly	7.5	77	66 in.*lbf
Front door outside handle frame sub-assembly x Door panel	7.5	77	66 in.*lbf
Front door sash stopper x Door panel	7.5	77	66 in.*lbf
Door glass inner stabilizer x Door panel	7.5	77	66 in.*lbf
LUGGAGE DOOR			
Luggage door hinge x Luggage compartment door panel	18	184	13
Luggage compartment door lock assembly x Luggage compartment door panel	5.5	56	49

			in.*lbf
FUEL LID LOCK CONTROL CABLE ASSEMBLY			
Fuel lid lock open lever sub-assembly x Body	7.5	77	66 in.*lbf
Handle cover x Fuel lid lock open lever sub-assembly	4.5	46	40 in.*lbf



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001Z4F00IX
Title: SPECIFICATIONS: DOOR LOCK: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

FRONT DOOR LOCK

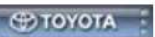
PART TIGHTENED	N*M	KGF*CM	FT*LBF
Front Door lock assembly x Door panel	5.5	56	49 in.*lbf

LUGGAGE COMPARTMENT DOOR LOCK

PART TIGHTENED	N*M	KGF*CM	FT*LBF
Luggage compartment door lock assembly x Luggage compartment door panel	7.5	77	66 in.*lbf
Luggage compartment door lock cylinder assembly x Luggage compartment door panel	4.5	46	40 in.*lbf

DOOR CONTROL RECEIVER

PART TIGHTENED	N*M	KGF*CM	FT*LBF
Door control receiver x Body	13	133	10



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003JAN00GX
Title: SPECIFICATIONS: DRIVE SHAFT / PROPELLER SHAFT: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Propeller Shaft

Propeller shaft with center bearing shaft assembly runout	Maximum runout: 0.6 mm (0.0236 in.)
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Title: SPECIFICATIONS: DRIVE SHAFT / PROPELLER SHAFT: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

Rear Drive Shaft

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear axle shaft set nuts	290	2957	214
Rear wheel set nuts	103	1050	76

Propeller Shaft

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Center support bearing assembly x Body	52	530	38
Propeller shaft assembly x Rear Differential companion flange	74	755	55



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000208R00JX
Title: SPECIFICATIONS: EXTERIOR PANELS / TRIM: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
FRONT BUMPER			
Front bumper cover x Fender liner	7.5	76	66 in.*lbf
Front bumper cover x Body	7.5	76	66 in.*lbf
Front bumper cover x Front lower bumper cover	7.5	76	66 in.*lbf
Front bumper reinforcement sub-assembly x Body	32	326	24
Front bumper stay bracket x Body	7.5	76	66 in.*lbf
Front lower bumper cover x Front bumper stay bracket	7.5	76	66 in.*lbf
Front bumper cover x Front bumper hole cover RH	2.0	20	18 in.*lbf
Front bumper cover x Front bumper hole cover LH	2.0	20	18 in.*lbf
REAR BUMPER			
Rear bumper reinforcement x Body (nut)	45	459	33
Rear bumper reinforcement x Body (bolt)	45	459	33
Rear bumper cover x Body	2.0	20	18 in.*lbf
Rear bumper side retainer LH x Body	2.0	20	18 in.*lbf
Rear bumper side retainer RH x Body	2.0	20	18 in.*lbf
Rear bumper side bracket RH x Body	2.0	20	18 in.*lbf
Rear bumper side bracket LH x Body	2.0	20	18 in.*lbf
REAR SPOILER (for Sport Package)			
Rear spoiler x Luggage compartment door	10	102	7
Rear spoiler x No.1 rear spoiler bracket RH	10	102	7
Rear spoiler x No.1 rear spoiler bracket LH	10	102	7
No.1 rear spoiler bracket RH x Luggage compartment door	10	102	7
No.1 rear spoiler bracket LH x Luggage compartment door	10	102	7
REAR SPOILER			
Rear spoiler x Luggage compartment door	4.5	46	40 in.*lbf
LUGGAGE COMPARTMENT DOOR GARNISH			
Luggage compartment door outside garnish x Luggage compartment door	4.5	46	40 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000205S00GX
Title: SPECIFICATIONS: FA20 BATTERY / CHARGING: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Charging circuit without load	Standard amperage: 10 A or less Standard voltage: 11.3 to 15.6 V
Charging circuit with load	Standard amperage: 30 A or higher
Brush length	Standard length: 22.5 mm (0.885 in.) Minimum exposed length: 5.0 mm (0.196 in.)
Generator rotor assembly	Slip ring resistance: 2.0 to 2.4 k Ω at 20°C (68°F) Standard slip ring diameter: 22.7 mm (0.893 in.) Minimum slip ring diameter: 22.1 mm (0.870 in.)



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000205T00GX
Title: SPECIFICATIONS: FA20 BATTERY / CHARGING: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Terminal x Generator rear end cover	8.9	91	79 in.*lbf
Generator regulator x Generator rear end cover	Bolt A 2.0	20	18 in.*lbf
	Bolt B 3.9	40	35 in.*lbf
Stator coil x Generator rear end cover	2.0	20	18 in.*lbf
Bearing retainer x Generator drive end frame	3.9	40	35 in.*lbf
Generator pulley x Generator rotor assembly	108	1101	80
Generator rear end cover x Generator drive end frame	4.4	45	39 in.*lbf
Generator assembly x V-ribbed belt tensioner assembly	25	255	18
Generator wire x Terminal	16	163	12



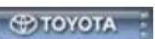
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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001ZB800KX
Title: SPECIFICATIONS: FA20 COOLING: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Radiator Cap	Pumping speed: 1 pump per second Standard valve (for brand-new cap): 93 to 123 kPa (0.95 to 1.25 kgf*cm ² , 14 to 18 psi) Minimum standard valve (after suing cap): 83 kPa (0.85 kgf*cm ² , 12 psi)
Thermostat (for Engine Coolant)	Valve opening temperature: 86 to 90°C (187 to 194°F) Valve lift: 8.0 mm (0.315 in.) or more at 95°C (203°F)
Thermostat (for Automatic Transmission)	Valve opening temperature: 48 to 52°C (118 to 126°F) Valve lift: 6.0 mm (0.236 in.) or more at 63°C (145°F)
Cooling fan motor	Standard current: 7.4 to 11.4 A at 20°C (68°F) (when the battery is connected to the fan motor connector)
No. 2 cooling fan motor	Standard current: 7.4 to 11.4 A at 20°C (68°F) (when the battery is connected to the fan motor connector)
Fan No. 1 relay	Standard resistance (3 - 5): 10 kΩ or higher (Battery voltage is not applied between terminals 1 and 2) Standard resistance (3 - 5): Below 1 Ω (Battery voltage is applied between terminals 1 and 2)
Fan No. 2 relay	Standard resistance (3 - 4): Below 1 Ω (Battery voltage is not applied between terminals 1 and 2) Standard resistance (3 - 5): 10 kΩ or higher (Battery voltage is not applied between terminals 1 and 2) Standard resistance (3 - 4): 10 kΩ or higher (Battery voltage is applied between terminals 1 and 2) Standard resistance (3 - 5): Below 1 Ω (Battery voltage is applied between terminals 1 and 2)
Fan No. 3 relay	Standard resistance (3 - 5): 10 kΩ or higher (Battery voltage is not applied between terminals 1 and 2) Standard resistance (3 - 5): Below 1 Ω ((Battery voltage is not applied between terminals 1 and 2)



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001ZB900KX
Title: SPECIFICATIONS: FA20 COOLING: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Water pump assembly x Chain cover	6.4	65	57 in.*lbf
Water pump pulley x Water pump assembly	14	143	10
Water outlet x Cylinder block assembly (for Engine Coolant)	6.4	65	57 in.*lbf
Water outlet x Water pipe (for Automatic Transmission)	6.4	65	57 in.*lbf
Radiator assembly x Cooler condenser assembly	6.0	61	53 in.*lbf
Radiator support x Body	7.5	77	66 in.*lbf
Radiator support sub-assembly x Body	18	184	13
Cooling fan motor x Fan shroud	3.9	40	35 in.*lbf
No. 2 cooling fan motor x Fan shroud	3.9	40	35 in.*lbf
Fan x Cooling fan motor	6.3	64	56 in.*lbf
No. 2 fan x No. 2 cooling fan motor	6.3	64	56 in.*lbf
Water filler sub-assembly x Body	7.5	77	66 in.*lbf
Air cleaner duct x Body	6.0	61	53 in.*lbf
Air cleaner duct x Air cleaner case	3.0	31	27 in.*lbf
Radiator reserve tank assembly x Body	7.5	77	66 in.*lbf



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000004B6K003X
Title: SPECIFICATIONS: FA20 EMISSION CONTROL: SERVICE DATA (2013 FR-S)		

SERVICE DATA

FUEL CUT-OFF RPM

ITEM	SPECIFIED CONDITION
Fuel cut off rpm	2500 rpm or more
Fuel injection restart rpm	1400 rpm

CANISTER

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
Standard resistance	1 - 5	25 to 30 Ω at 20°C (68°F)
		27 to 35 Ω at 60°C (140°F)
Standard voltage	7 - 8	3.5 V at 25°C (77°F)

PURGE VALVE

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	21 to 27 Ω



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KD802UX
Title: SPECIFICATIONS: FA20 EMISSION CONTROL: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

CANISTER

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Canister base bracket x Charcoal canister assembly	18	184	13
Charcoal canister assembly x Body (Bolt)	7.5	77	66 in.*lbf
Charcoal canister assembly x Body (Nut)	18	184	13
Bracket A x Canister pump module	18	184	13
Bracket B x Canister pump module	18	184	13
Canister pump module x Body	7.5	77	66 in.*lbf

PURGE VALVE

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Purge valve x Intake manifold	6.4	65	57 in.*lbf

PCV VALVE

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
PCV valve sub-assembly x Cylinder head cover sub-assembly	23	235	17



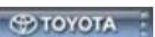
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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020HH00NX
Title: SPECIFICATIONS: FA20 ENGINE CONTROL: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Spark plug		
Resistance Spark plug (terminal part) - Body ground	Always	6.85 to 7.65 Ω
Camshaft timing oil control valve assembly		
Resistance	20°C (68°F)	6.85 to 7.65 Ω
Throttle with motor body assembly		
Resistance 2 (M+) - 1 (M-)	20°C (68°F)	0.3 to 100 Ω
Accelerator pedal assembly		
Voltage Accel sensor out No. 1	Released	0.5 to 0.8 V
	Depressed	2.4 to 3.5 V
Voltage Accsel sensor out No. 2	Released	0.5 to 0.8 V
	Depressed	2.4 to 3.5 V
Mass air flow meter		
Resistance 1 (THA) - 2 (E2)	-20°C (-4°F)	13.6 to 18.4 k Ω
	20°C (68°F)	2.21 to 2.69 k Ω
	60°C (140°F)	0.49 to 0.67 k Ω
Crankshaft position sensor		
1 - 2	Always	1836 to 2244 Ω
Engine coolant temperature sensor		
Resistance	Approx. 20°C (68°F)	2.35 to 2.65 k Ω
	Approx. 80°C (176°F)	0.305 to 0.331 k Ω
Engine oil temperature sensor		
Resistance	Approx. 20°C (68°F)	2.25 to 2.65 k Ω
	Approx. 80°C (176°F)	0.305 to 0.331 k Ω
Knock sensor		
Resistance	20°C (68°F)	532 to 588 k Ω
Air fuel ratio sensor		
Resistance 1 - 2	20°C (68°F)	1.98 to 2.64 Ω
Resistance		

1 - 4	Always	10 k Ω or higher
Heated oxygen sensor		
Resistance 1 - 2	20°C (68°F)	5.0 to 6.4 Ω
Resistance 1 - 4	Always	10 k Ω or higher
EFI MAIN 1 RELAY		
Resistance 3 - 5	Battery voltage not applied to 1 and 2 terminals	10 k Ω or higher
	Battery voltage applied to 1 and 2 terminals	Below 1 Ω
EFI MAIN 2 RELAY		
Resistance 3 - 5	Battery voltage not applied to 1 and 2 terminals	10 k Ω or higher
	Battery voltage applied to 1 and 2 terminals	Below 1 Ω
EFI MAIN 3 RELAY		
Resistance 3 - 5	Battery voltage not applied to 1 and 2 terminals	10 k Ω or higher
	Battery voltage applied to 1 and 2 terminals	Below 1 Ω
IG2 RELAY		
Resistance 3 - 5	Battery voltage not applied to 1 and 2 terminals	10 k Ω or higher
	Battery voltage applied to 1 and 2 terminals	Below 1 Ω
INJ RELAY		
Resistance 3 - 5	Battery voltage not applied to 1 and 2 terminals	10 k Ω or higher
	Battery voltage applied to 1 and 2 terminals	Below 1 Ω
ETCS RELAY		
Resistance 3 - 5	Battery voltage not applied to 1 and 2 terminals	10 k Ω or higher
	Battery voltage applied to 1 and 2 terminals	Below 1 Ω
C/OPEN RELAY		
Resistance 3 - 5	Battery voltage not applied to 1 and 2 terminals	10 k Ω or higher
	Battery voltage applied to 1 and 2 terminals	Below 1 Ω



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020HI00NX
Title: SPECIFICATIONS: FA20 ENGINE CONTROL: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Engine mount assembly x Front suspension cross member	45	459	33
Cylinder head cover sub-assembly x Injector driver	6.4	65	57 in.*lbf
Cylinder head cover sub-assembly x Injector cover	19	194	14
Timing chain or belt cover sub-assembly x Camshaft timing oil control valve (OCV)	6.4	65	57 in.*lbf
Throttle with motor body assembly x Intake manifold	8.0	82	71 in.*lbf
ECM x Body	7.5	77	66 in.*lbf
Accelerator pedal assembly x Body	7.5	77	66 in.*lbf
MASS air flow meter x Air cleaner case sub-assembly	1.0	10	9.0 in.*lbf
VVT sensor x Cylinder block sub-assembly	6.4	65	57 in.*lbf
Crankshaft position sensor x Cylinder block sub-assembly	6.4	65	57 in.*lbf
Spark plug x Cylinder head sub-assembly	17	173	13
Ignition coil x Cylinder head cover sub-assembly	8.5	87	75 in.*lbf
Clutch flexible hose bracket x Body	7.5	77	66 in.*lbf
Engine wire x Injector cover	11	112	8
Engine coolant temperature sensor x Cylinder head sub-assembly	18	184	13
Engine oil temperature sensor x Timing chain or belt cover sub-assembly	18	184	13
Knock sensor x Cylinder block sub-assembly	24	245	18
Manifold absolute pressure sensor x Intake manifold	4.0	41	35 in.*lbf
Air fuel ratio sensor x Exhaust manifold (without SST)	21	214	16
Air fuel ratio sensor x Exhaust manifold (with SST)	18	184	13
Heated oxygen sensor x Exhaust manifold (without SST)	21	214	16

Heated oxygen sensor x Exhaust manifold (with SST)	18	184	13
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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001UZ700FX
Title: SPECIFICATIONS: FA20 ENGINE MECHANICAL: SERVICE DATA (2013 FR-S)		

SERVICE DATA

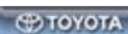
Ignition timing	-5 to 10° BTDC at idle (Transmission in neutral)		
Idle speed	Automatic transmission (in neutral)		600 to 800 rpm
	Manual transmission		550 to 750 rpm
Compression	Compression pressure	1750 kPa (17.8 kgf/cm, 254 psi)	
	Minimum pressure	1150 kPa (11.7 kgf/cm ² , 167 psi)	
	Difference between each cylinder	200 kPa (2.0 kgf/cm ² , 29 psi) or less	
Valve clearance	Standard (Cold)	Intake	0.10 to 0.16 mm (0.0039 to 0.0063 in.)
		Exhaust	0.21 to 0.27 mm (0.0083 to 0.0106 in.)
Camshaft	Circle runout	Maximum	0.020 mm (0.00079 in.)
	Cam lobe height	Intake	40.82 to 40.92 mm (1.6083 to 1.6110 in.)
		Exhaust	40.72 to 40.82 mm (1.6031 to 1.6071 in.)
		For fuel pump	40.6 mm (1.5984 in.)
	Cam base circle	Intake	34.0 mm (1.3386 in.)
		Exhaust	34.0 mm (1.3386 in.)
	Journal diameter		25.946 to 25.963 mm (1.02149 to 1.02216 in.)
	Thrust clearance		0.0068 to 0.1160 mm (0.00027 to 0.00457 in.)
Cylinder head sub-assembly	Oil clearance		0.037 to 0.072 mm (0.00146 to 0.00283 in.)
	Warpage	Maximum	0.035 mm (0.00138 in.)
	Cylinder head height	Standard	98.5 mm (3.878 in.)
		Minimum	98.4 mm (3.874 in.)
Intake valve	Overall length		103.3 mm (4.067 in.)
	Margin thickness		0.8 to 1.2 mm (0.0315 to 0.0472 in.)
	Valve stem diameter		5.455 to 5.470 mm (0.2148 to 0.2154 in.)
	Valve seat width		0.8 to 1.6 mm (0.032 to 0.063 in.)

Exhaust valve	Overall length		95.1 mm (3.744 in.)
	Margin thickness		1.0 to 1.4 mm (0.039 to 0.055 in.)
	Valve stem diameter		5.445 to 5.460 mm (0.21437 to 0.21496 in.)
	Valve seat width		1.1 to 1.7 mm (0.043 to 0.067 in.)
Intake valve guide bush	Inside diameter		5.500 to 5.512 mm (0.21654 to 0.21701 in.)
	Oil clearance		0.030 to 0.057 mm (0.00118 to 0.00224 in.)
	Protrusion height		11.4 to 11.8 mm (0.449 to 0.466 in.)
Exhaust valve guide bush	Inside diameter		5.500 to 5.512 mm (0.21654 to 0.21701 in.)
	Oil clearance		0.040 to 0.067 mm (0.00157 to 0.00264 in.)
	Protrusion height		11.4 to 11.8 mm (0.449 to 0.466 in.)
Valve adjusting shim	Valve stem end diameter	Intake	5.455 to 5.470 mm (0.21476 to 0.21535 in.)
		Exhaust	5.445 to 5.460 mm (0.21437 to 0.21496 in.)
	Valve adjusting shim inside diameter		5.500 to 5.560 mm (0.21654 to 0.21890 in.)
	Oil clearance		0.030 to 0.115 mm (0.00118 to 0.00453 in.)
Valve spring	Free length		41.06 mm (1.617 in.)
	Deviation	Maximum	Less than 1.8 mm (0.0710 in.)
	Angle	Maximum	2.5°
Cylinder block	Warpage	Maximum	0.025 mm (0.00098 in.)
	Cylinder block height	Standard	205.0 mm (8.071 in.)
		Minimum	204.9 mm (8.067 in.)
	Cylinder bore diameter	Thrust	86.005 to 86.015 mm (3.38602 to 3.38641 in.)
		lateral	85.995 to 86.005 mm (3.38562 to 3.38602 in.)
		Maximum (When boring)	86.505 mm (3.40570 in.)
Cylinder bore	Taper		0.030 mm (0.00118 in.)
	Out-of-runout		0.010 mm (0.00039 in.)
		Distance from piston head	39.4 mm (1.551 in.)

Piston	Piston diameter	A grade	85.985 to 85.995 mm (3.38523 to 3.38562 in.)
		B grade	85.975 to 85.985 mm (3.38484 to 3.38523 in.)
		0.25 mm (0.0098 in.) over size	86.225 to 86.245 mm (3.39468 to 3.39547 in.)
		0.50 mm (0.0197 in.) over size	86.475 to 86.495 mm (3.40452 to 3.40531 in.)
	Oil clearance		0.010 to 0.030 mm (0.00039 to 0.00118 in.)
Piston pin	Piston pin oil clearance		0.004 to 0.008 mm (0.00016 to 0.00031 in.)
	Connecting rod bushing oil clearance		0.006 to 0.026 mm (0.00024 to 0.00102 in.)
Piston ring	Piston ring end gap	No. 1	0.25 to 0.30 mm (0.00984 to 0.01181 in.)
		No. 2	0.60 to 0.70 mm (0.02362 to 0.02756 in.)
		Oil ring	0.10 to 0.35 mm (0.00394 to 0.01378 in.)
	Groove clearance	No. 1	0.030 to 0.080 mm (0.00118 to 0.00315 in.)
		No. 2	0.030 to 0.070 mm (0.00118 to 0.00276 in.)
Connecting rod	Bend	Maximum	0.10 mm (0.0039 in.) per 100 mm (3.937 in.) in length
	Twist	Maximum	0.10 mm (0.0039 in.) per 100 mm (3.937 in.) in length
	Thrust clearance		0.070 to 0.330 mm (0.00276 to 0.01299 in.)
	Oil clearance		0.025 to 0.055 mm (0.00098 to 0.00217 in.)
	Bearing size (Thickness at center)	Standard	1.492 to 1.508 mm (0.05874 to 0.05937 in.)
		0.03 mm (0.0012 in.) Undersize	1.511 to 1.515 mm (0.05949 to 0.05965 in.)
		0.05 mm (0.0020 in.) Undersize	1.521 to 1.525 mm (0.05988 to 0.06004 in.)
		0.25 mm (0.0098 in.) Undersize	1.621 to 1.625 mm (0.06382 to 0.06398 in.)
		Standard	49.976 to 50.000 mm (1.96756 to 1.96850 in.)
		0.03 mm (0.0012 in.) Undersize	49.946 to 49.970 mm (1.96637 to 1.96732 in.)

	Crank pin diameter	0.05 mm (0.0020 in.) Undersize	49.926 to 49.950 mm (1.96559 to 1.96653 in.)
		0.25 mm (0.0098 in.) Undersize	49.726 to 49.750 mm (1.95771 to 1.95866 in.)
Crankshaft	Circle runout	Maximum	0.035 mm (0.00138 in.)
	Crank pin taper	Maximum	0.006 mm (0.00024 in.)
	Crank pin out-of-runout	Maximum	0.005 mm (0.00020 in.)
	Crankshaft journal taper	Maximum	0.006 mm (0.00024 in.)
	Crankshaft journal out-of-runout	Maximum	0.005 mm (0.00020 in.)
	Crank pin diameter	Minimum	47.726 mm (1.87897 in.)
	Crankshaft journal diameter	Minimum	67.735 mm (2.66673 in.)
	Connecting rod bearing thickness (at center)	Standard	1.492 to 1.508 mm (0.05874 to 0.05937 in.)
		0.03 mm (0.0012 in.) Undersize	1.511 to 1.515 mm (0.05949 to 0.05965 in.)
		0.05 mm (0.0020 in.) Undersize	1.521 to 1.525 mm (0.05988 to 0.06004 in.)
		0.25 mm (0.0098 in.) Undersize	1.621 to 1.625 mm (0.06382 to 0.06398 in.)
	No. 1 to No. 4 crank bearing thickness (at center)	Standard	2.495 to 2.513 mm (0.09823 to 0.09894 in.)
		0.03 mm (0.0012 in.) Undersize	2.519 to 2.522 mm (0.09917 to 0.09929 in.)
		0.05 mm (0.0020 in.) Undersize	2.529 to 2.532 mm (0.09957 to 0.09968 in.)
		0.25 mm (0.0098 in.) Undersize	2.629 to 2.632 mm (0.10350 to 0.10362 in.)
	No. 5 crank bearing thickness (at center)	Standard	2.493 to 2.511 mm (0.09815 to 0.09886 in.)
		0.03 mm (0.0012 in.) Undersize	2.517 to 2.520 mm (0.09909 to 0.09921 in.)
		0.05 mm (0.0020 in.) Undersize	2.527 to 2.530 mm (0.09949 to 0.09961 in.)
		0.25 mm (0.0098 in.) Undersize	2.627 to 2.630 mm (0.10342 to 0.10354 in.)
	Crank pin outer diameter	Standard	49.976 to 50.000 mm (1.96756 to 1.96850 in.)
		0.03 mm (0.0012 in.) Undersize	49.946 to 49.970 mm (1.96637 to 1.96734 in.)
		0.05 mm (0.0020 in.) Undersize	49.926 to 49.950 mm (1.96559 to 1.96653 in.)

		0.25 mm (0.0098 in.) Undersize	49.726 to 49.750 mm (1.95771 to 1.95866 in.)
	Crankshaft journal diameter	Standard	67.985 to 68.009 mm (2.67657 to 2.67751 in.)
		0.03 mm (0.0012 in.) Undersize	67.955 to 67.979 mm (2.67539 to 2.67633 in.)
		0.05 mm (0.0020 in.) Undersize	67.935 to 67.959 mm (2.67460 to 2.67555 in.)
		0.25 mm (0.0098 in.) Undersize	67.735 to 67.759 mm (2.66673 to 2.66767 in.)
	Thrust clearance		0.130 to 0.308 mm (0.00512 to 0.01213 in.)
	Oil clearance		0.013 to 0.031 mm (0.00051 to 0.00122 in.)



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001UZ800FX
Title: SPECIFICATIONS: FA20 ENGINE MECHANICAL: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KG*CM	FT.*LBF
Belt generator cover x Compressor with magnet clutch		6.4	65	57 in.*lbf
Generator cover x Generator assembly		6.4	65	57 in.*lbf
Air cleaner cap with air cleaner hose x Body	for Bolt	6.0	61	53 in.*lbf
	for Clamp	2.0	20	18 in.*lbf
No. 1 chain vibration damper x Cylinder head sub-assembly		6.4	65	57 in.*lbf
No. 1 chain tensioner assembly x Cylinder head sub-assembly		6.4	65	57 in.*lbf
No. 2 chain tensioner assembly x Cylinder head sub-assembly		6.4	65	57 in.*lbf
Camshaft cap x Camshaft housing sub-assembly LH		18	184	13
Camshaft cap x Camshaft housing sub-assembly RH		18	184	13
Camshaft timing exhaust gear assembly LH x Exhaust camshaft LH		18	184	13
Camshaft timing intake gear assembly LH x Intake camshaft LH		18	184	13
Camshaft timing exhaust gear assembly RH x Exhaust camshaft RH		18	184	13
Camshaft timing intake gear assembly RH x Intake camshaft RH		18	184	13
Cylinder head sub-assembly LH x Cylinder block LH	1st	20	204	15
	2nd	100	1020	74
	3rd	loosen 360°		
	4th	20	204	15
	5th	42	428	31
	6th	Turn 100°		
	7st	turn 100° (2 central bolts) turn 50° (except 2 central bolts)		
Cylinder head sub-assembly RH x Cylinder block RH	1st	20	204	15
	2nd	100	1020	74
	3rd	loosen 360°		
	4th	20	204	15
	5th	42	428	31
	6th	Turn 100°		
	7th	turn 100° (2 central bolts) turn 50° (except 2 central bolts)		
Crankshaft pulley x Crankshaft	1st	20	204	15

	2nd	Turn 90°		
Flywheel sub-assembly x Crankshaft		85	867	63
Drive plate and ring gear sub-assembly x Crankshaft		95	969	70
No. 1 Engine Hanger x Engine assembly		43	439	32
Front engine mounting bracket x Engine assembly		45	459	33
Transmission assembly x Engine assembly		50	510	37
Fuel hose x Fuel pipe		1.3	13	12 in.*lbf
Front engine mounting bracket x Front suspension crossmember sub-assembly		45	459	33
Manual transmission assembly x Engine assembly		50	510	37
Automatic transmission assembly x Engine assembly		50	510	37
Rear engine under cover LH x Body		7.5	77	66 in.*lbf
Grounded cable x Engine assembly		7.5	77	66 in.*lbf
Suction hose sub-assembly x Compressor assembly		10	102	7
Suction hose sub-assembly x Body		7.5	77	66 in.*lbf
Vacuum tube connector hose x Engine assembly		18	184	13
Generator wire x Generator assembly		16	163	12
Wire harness clamp bracket x Body		11	112	8
Wire harness clamp bracket x Engine assembly		11	112	8
Wire harness clamp bracket x No. 2 engine hanger		10	102	7
Water filler sub-assembly x Body		7.5	77	66 in.*lbf
Stay x Body		35	357	26
Air cleaner assembly with hose x Body		6.0	61	53 in.*lbf
Air cleaner assembly with hose x Throttle body with motor assembly		2.0	20	18 in.*lbf
Oil spacer x Camshaft housing sub-assembly LH		6.4	65	57 in.*lbf
Hole plug x Camshaft housing sub-assembly RH		25	255	18
Camshaft oil feed pipe sub-assembly x Camshaft housing sub-assembly RH	for Union bolt	31	316	23
	for Bolt	6.4	65	57 in.*lbf
Oil spacer x Camshaft housing sub-assembly RH		6.4	65	57 in.*lbf
Stud bolt x Oil pan sub-assembly		10	102	7
Baffle plate x Oil pan sub-assembly		6.4	65	57 in.*lbf
Oil strainer sub-assembly x Oil pan sub-assembly		6.4	65	57 in.*lbf
No. 2 oil pan sub-assembly x Oil pan sub-assembly		6.4	65	57 in.*lbf
drain plug x No. 2 oil pan sub		39	400	29
No. 2 engine hanger x Engine assembly		21	214	16
Camshaft housing sub-assembly LH x Cylinder head sub-assembly LH	1st	18	184	13
	2nd	loosen 180°		

	3rd	18	184	13
Cylinder head cover sub-assembly LH x Camshaft housing sub-assembly LH		6.4	65	57 in.*lbf
Camshaft housing sub-assembly RH x Cylinder head sub-assembly RH	1st	18	184	13
	2nd	loosen 180°		
	3rd	18	184	13
Cylinder head cover sub-assembly RH x Camshaft housing sub-assembly RH		6.4	65	57 in.*lbf
Camshaft housing sub-assembly RH x Injector driver bracket		6.4	65	57 in.*lbf
Spark plug x Cylinder head sub-assembly		17	174	13
Timing chain or belt cover sub-assembly	Bolt A and B	10	102	7
	Bolt C and D	25	255	18
Water outlet x Cylinder block sub-assembly		6.4	65	57 in.*lbf
Engine water pump assembly x Cylinder block sub-assembly		6.4	65	57 in.*lbf
Water pump pulley x Engine water pump assembly		14	143	10
No. 1 idler pulley sub-assembly x Timing chain or belt cover sub-assembly		36	367	27
PCV valve sub-assembly x Cylinder block sub-assembly		23	235	17
Water inlet pipe x Cylinder block sub-assembly		6.4	65	57 in.*lbf
Rear cylinder head plate x Camshaft housing sub-assembly RH		16	163	12
PCV hose connector x Cylinder block sub-assembly		6.4	65	57 in.*lbf
Engine oil pressure switch assembly x Timing chain or belt cover sub-assembly		18	184	13
Engine oil temperature sensor x Timing chain or belt cover sub-assembly		18	184	13
Camshaft timing oil control valve x Timing chain or belt cover sub-assembly		6.4	65	57 in.*lbf
VVT sensor x Timing chain or belt cover sub-assembly		6.4	65	57 in.*lbf
Crank position sensor x Cylinder block sub-assembly		6.4	65	57 in.*lbf
Knock control sensor x Cylinder block sub-assembly		24	245	18
E.F.I. water temperature sensor x Water inlet pipe		18	184	13
Oil filter union x Timing chain or belt cover sub-assembly		45	459	33
Oil filter sub-assembly x Timing chain or belt cover sub-assembly		14	143	10
Ignition coil x Cylinder block sub-assembly		8.5	87	75 in.*lbf
No. 1 water by-pass x Engine assembly		6.4	65	57 in.*lbf
Intake manifold x Cylinder head cover sub-assembly		25	255	18
Fuel delivery pipe sub-assembly x Fuel pump assembly		31	316	23
Fuel delivery pipe sub-assembly x Intake manifold		6.4	65	57 in.*lbf
Injector cover x Intake manifold		19	194	14
Generator assembly x Engine assembly		25	255	18
Stud bolt x Cylinder head		18	184	13

Chain cover mount bolt x Cylinder head LH		6.4	65	57 in.*lbf
No. 1 cylinder block tight plug x Cylinder block		37	377	27
Crankshaft sensor holder assembly x cylinder block LH		6.4	65	57 in.*lbf
Cylinder block plate x cylinder block LH		6.4	65	57 in.*lbf
Oil separator cover x cylinder block RH		6.4	65	57 in.*lbf
Connecting rod x Connecting rod cap	1st	10	102	7
	2nd	25	255	18
	3rd	turn 92.5°		
Cylinder block sub-assembly	1st	35	357	26
	2nd	loosen 180°		
	3rd	35	357	26
	4st	loosen 180°		
	5st	17	173	13
	6st	turn 60°		
Cylinder block sub-assembly		25	255	18



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000201W00GX
Title: SPECIFICATIONS: FA20 FUEL: SERVICE DATA (2013 FR-S)		

SERVICE DATA

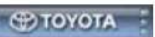
Fuel pressure	350 to 500 kPa (4.0 to 5.0 kgf/cm ² , 51 to 73 psi)
Fuel pressure : at fuel pressure remains for 5 minutes after engine has stopped	147 kPa (1.5 kgf/cm ² , 21 psi) or more
Fuel pressure (for high pressure) : at engine warm up and idle	3000 to 5000 kPa (30.6 to 51.0 kgf/cm ² , 435 to 725 psi)
Fuel injector (for port injection)	
Resistance at 20°C (68°F)	12 Ω
Injection volume	84 to 103 cc(5.1 to 6.3 cu.in.) per 15 seconds
Difference between each injector	19 cc(1.2 cu.in.) or less
Fuel drop	1 drop or less per 22 minutes
Fuel Injector (for direct injection)	
Resistance at 20°C (68°F)	1.9 Ω
Fuel pressure sensor	
voltage	Terminal 2 (VOUT) and 1 (GND) : Apply 5 V between terminals 3 (VCC) and 1 (GND) Approximately 0.5 V
Fuel pump	
Resistance at 20°C (68°F)	0.2 to 3.0 Ω
Fuel pump (for high pressure)	
Resistance at 20°C (68°F)	1.19 to 1.39 Ω
Fuel sender gauge assembly (Main)	
Resistance	Float Level F 6.5 to 8.5 Ω
	Float Level E 168 to 172 Ω
Fuel sender gauge assembly (Sub)	
Resistance	Float Level F 5.5 to 9.5 Ω
	Float Level E 236 to 244 Ω



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000201X00GX
Title: SPECIFICATIONS: FA20 FUEL: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel delivery pipe x Intake manifold	19	194	14
Fuel delivery pipe sub-assembly x Intake manifold	6.4	65	57 in.*lbf
Injector cover x Intake manifold	19	194	14
Wire harness clamp bracket x Intake manifold protector	11	112	8
Fuel delivery pipe LH x Cylinder head	19	194	14
Fuel delivery pipe RH x Cylinder head	19	194	14
Fuel delivery pipe LH x Fuel delivery pipe (Union nut)	25	255	18
Fuel delivery pipe RH x Fuel delivery pipe (Union nut)	25	255	18
Fuel delivery pipe x Water pipe	6.4	65	57 in.*lbf
Fuel delivery pipe LH x No. 2 fuel delivery pipe (Union nut)	25	255	18
No. 2 fuel delivery pipe (Union nut) x Fuel pump (High-pressure)	25	255	18
Fuel pressure sensor x No. 1 fuel delivery pipe	36	367	27
Injector driver x Engine assembly	6.4	65	57 in.*lbf
Fuel pump gauge retainer x Fuel tank	85	867	63
Pump drive case assembly x Cylinder head	19	194	14
Fuel pump (for high pressure) x Pump drive case assembly	21	214	16
Fuel delivery pipe sub-assembly x Fuel pump (for high pressure) (Union bolt)	31	316	23
Fuel pump ECU x Body	5.0	51	44 in.*lbf
Fuel tank to filler pipe hose x Fuel tank assembly (Hose clamp)	2.0	20	18 in.*lbf
Fuel tank assembly x Body	33	337	24
No. 1 fuel tank protector x Body	9.0	92	80 in.*lbf
No. 2 fuel tank protector x Body	9.0	92	80 in.*lbf



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KDA034X
Title: SPECIFICATIONS: FA20 INTAKE / EXHAUST: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

INTAKE MANIFOLD

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel delivery pipe x Intake manifold	19	194	14
Purge valve x Intake manifold	6.4	65	57 in.*lbf
Manifold absolute pressure sensor x Intake manifold	4.0	41	35 in.*lbf
Intake manifold x Cylinder head	25	255	18
Fuel delivery pipe sub-assembly x Intake manifold	6.4	65	57 in.*lbf
Throttle with motor body assembly x Intake manifold	8.0	82	71 in.*lbf

CHAMBER

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Air cleaner duct with chamber x Intake manifold	6.0	61	53 in.*lbf
Chamber duct x Air cleaner case sub-assembly (Hose clamp)	2.0	20	18 in.*lbf
Chamber duct x Chamber (Hose clamp)	2.0	20	18 in.*lbf

EXHAUST MANIFOLD

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Exhaust manifold x Cylinder head	30	306	22
Exhaust manifold x Front exhaust pipe sub-assembly	35	357	26

EXHAUST PIPE

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Tail pipe baffle x Tail exhaust pipe assembly	7.5	77	66 in.*lbf
Tail exhaust pipe assembly x Center exhaust pipe assembly	48	490	35
Center exhaust pipe assembly x Front exhaust pipe assembly	18	184	13
Front exhaust pipe assembly x Front exhaust pipe sub-assembly	43	439	32
Front exhaust pipe assembly x Exhaust pipe bracket	50	510	37
Front exhaust pipe sub-assembly x Exhaust manifold	35	357	26
No. 1 engine under cover x Body (Bolt A)	30	306	22
No. 1 engine under cover x Body (Bolt B)	7.5	77	66 in.*lbf
No. 2 engine under cover x Body	7.5	77	66 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000208G00MX
Title: SPECIFICATIONS: FA20 LUBRICATION: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Oil pressure	Idle: 50 kPa (0.5 kgf/cm2 , 7.3 psi) or more
	6000 rpm: 500 kPa (5.1 kgf/cm2 , 73 psi) or more



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000208H00MX
Title: SPECIFICATIONS: FA20 LUBRICATION: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Oil pan drain plug x No. 2 oil pan sub-assembly		39	400	29
Oil filter union x Timing chain or belt cover sub-assembly		45	459	33
Oil filter sub-assembly x Timing chain or belt cover sub-assembly		14	143	10
Engine oil pressure switch assembly x Timing chain or belt cover sub-assembly		18	184	13
Cam timing oil control valve x Timing chain or belt cover sub-assembly		6.4	65	57 in.*lbf
Camshaft position sensor x Timing chain or belt cover sub-assembly		6.4	65	57 in.*lbf
Engine oil temperature sensor x Timing chain or belt cover sub-assembly		18	184	13
Engine oil pressure switch assembly x Timing chain or belt cover sub-assembly		18	184	13
Timing chain or belt cover sub-assembly	Bolt A and B	10	102	7
	Bolt C and D	25	255	18
No. 1 idler pulley sub-assembly x Timing chain or belt cover sub-assembly		36	367	27
Idler pulley bracket x Engine assembly		36	367	27
No. 2 idler pulley sub-assembly x Timing chain or belt cover sub-assembly		36	367	27
Oil level dipstick guide x Timing chain or belt cover sub-assembly		6.4	65	57 in.*lbf
Wire harness bracket x Timing chain or belt cover sub-assembly		6.4	65	57 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000205Q00CX
Title: SPECIFICATIONS: FA20 STARTING: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Starter assembly	Standard current		Below 90 A at 11.5 V
Starter armature assembly	Standard runout	for Manual Transmission	0.05 mm (0.002 in.)
		for Automatic Transmission	0.02 mm (0.0008 in.)
	Maximum runout	for Manual Transmission	0.10 mm (0.004 in.)
		for Automatic Transmission	0.05 mm (0.002 in.)
	Standard depth Segment - Mold	for Manual Transmission	0.50 mm (0.020 in.)
		for Automatic Transmission	0.7 mm (0.0276 in.)
	Minimum depth Segment - Mold	for Automatic Transmission	0.20 mm (0.0079 in.)
	Standard resistance	Segment - Segment for Automatic Transmission	Below 1 Ω
		Commutator - Armature coil core for Automatic Transmission	10 k Ω or higher
	Standard diameter	for Automatic Transmission	29 mm (1.1417 in.)
	Minimum diameter	for Automatic Transmission	28 mm (1.1024 in.)
Brush length	Standard length	for Manual Transmission	12.3 mm (0.484 in.)
		for Automatic Transmission	14.4 mm (0.5669 in.)
	Minimum length	for Manual Transmission	7.0 mm (0.276 in.)
		for Automatic Transmission	9.0 mm (0.3543 in.)
	Standard brush spring force	for Manual Transmission	15.9 to 19.5 N (1.6 to 2.0 kgf, 3.6 to 4.4 lbf)
	Minimum brush spring force	for Manual Transmission	2.5 N (0.3 kgf, 0.6 lbf)
	Standard resistance for Automatic Transmission	A - B A - C B - D C - D	10 k Ω or higher
		A - D B - C	Below 1 Ω
Starter magnetic switch assembly	Standard resistance Terminal 50 - Terminal C	for Manual Transmission	Below 1 Ω
		for Automatic Transmission	Below 1 Ω
	Standard resistance Terminal 50 -	for Manual Transmission	Below 1 Ω
		for Automatic Transmission	Below 2 Ω

	Switch body		
	Standard resistance Terminal 30 - Terminal C	for Manual Transmission	1 MΩ or higher
Ignition switch assembly	Standard resistance All combinations of all terminals	LOCK	10 kΩ or higher
	Standard resistance 2 (AM1) - 3 (ACC)	ACC	Below 1 Ω
	Standard resistance 2 (AM1) - 3 (ACC) - 4 (IG1) 6 (IG2) - 7 (AM2)	ON	Below 1 Ω
	Standard resistance 1 (ST1) - 2 (AM1) -- 4 (IG1) 6 (IG2) - 7 (AM2) - 8 (ST2)	START	Below 1 Ω
Starter relay	Specified condition	1 - 2 (Battery voltage not applied to terminals 1 and 2) (Measured temperature : 20 °C (68 °F))	93.8 to 136.4 kΩ
		3 - 5 (Battery voltage is applied between terminals 1 and 2)	Below 1 Ω
		3 - 5 (Battery voltage is not applied between terminals 1 and 2)	10 kΩ or higher
Inhibitor relay	Specified condition	1 - 2 (Battery voltage not applied to terminals 1 and 2) (Measured temperature : 20 °C (68 °F))	93.8 to 136.4 kΩ
		3 - 5 (Battery voltage is applied between terminals 1 and 2)	Below 1 Ω
		3 - 5 (Battery voltage is not applied between terminals 1 and 2)	10 kΩ or higher

Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000205R00CX
Title: SPECIFICATIONS: FA20 STARTING: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT*LBF
Starter x Engine	Lower side bolt	50	510	37
	Upper side bolt (without SST)	50	510	37
	Upper side bolt (with SST)	40	408	30
	Terminal 30	10	102	7
	Terminal C	10	102	7
Starter magnetic switch assembly x Starter drive housing		7.5	77	66 in.*lbf
Starter cover x Starter brush holder assembly	for Manual transmission	1.5	15	13 in.*lbf
	for Automatic transmission	1.4	14	12 in.*lbf
Starter yoke assembly x Starter drive housing		6.0	61	53 in.*lbf
Key lock unit		6.0	61	53 in.*lbf



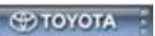
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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KDE00KX
Title: SPECIFICATIONS: FRONT SUSPENSION: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
front suspension upper to cowl brace sub-assembly x Body	16	163	12
Front suspension support sub-assembly x Front shock absorber assembly (without SST)	55	561	41
Front suspension support sub-assembly x Front shock absorber assembly (with SST)	49	495	36
Front shock absorber with coil spring x Body	23	235	17
Front shock absorber with coil spring x Steering knuckle	155	1581	114
Front stabilizer link assembly x Front shock absorber assembly	46	469	34
Front flexible hose x Front shock absorber assembly	33	337	24
Hub nut	120	1224	89
Front lower suspension arm bolt x Body	110	1122	81
Front lower arm suspension arm assembly x Steering knuckle	51	520	38
Lower arm support plate x Body	110	1122	81
Front lower suspension arm assembly x Body	85	867	63
No. 1 engine under cover bolt	30	306	22
No. 2 engine under cover bolt	7.5	77	66 in.*lbf.
Front No. 2 stabilizer bracket bolt	75	765	55
Front No. 2 stabilizer bracket nut	25	255	18
Rear body mounting cushion sub-assembly x Body	60	612	44
Front stabilizer link assembly x Front stabilizer bar	46	469	34
Front cross member sub-assembly x Body	95	969	70



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020EM00IX
Title: SPECIFICATIONS: HEATING / AIR CONDITIONING: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Refrigerant charge volume	Standard: 390 +/-50 g(13.8 +/-1.8 oz)
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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020EN00JX
Title: SPECIFICATIONS: HEATING / AIR CONDITIONING: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

AIR CONDITIONING UNIT

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Instrument panel reinforcement assembly x Body	25	255	18
Lower instrument panel reinforcement sub-assembly x Instrument panel reinforcement assembly	7.5	77	66 in.*lbf
Air conditioning tube assembly x Cooler expansion valve	7.5	77	66 in.*lbf
Air conditioning unit assembly x Body	7.5	77	66 in.*lbf
Cooler expansion valve x Air conditioner tube assembly	3.5	36	31 in.*lbf
Air conditioner tube assembly x No. 1 cooler evaporator sub-assembly	3.5	36	31 in.*lbf

COOLER EXPANSION VALVE

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Suction hose sub-assembly x Cooler expansion valve	7.5	77	66 in.*lbf

COMPRESSOR

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Compressor with magnet clutch x Engine	36	367	27
Suction hose sub-assembly x Compressor with magnet clutch	10	102	7
No. 1 cooler refrigerant discharge hose x Compressor with magnet clutch	10	102	7

CONDENSER

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Cooler condenser assembly x Radiator assembly	6.0	61	53 in.*lbf
No. 1 cooler refrigerant discharge hose x Cooler condenser assembly	10	102	7
Air conditioner tube and accessory assembly x Cooler condenser assembly	10	102	7
No. 1 cooler condenser bracket x Cooler condenser assembly	6.0	61	53 in.*lbf
No. 2 cooler condenser bracket x Cooler condenser assembly	6.0	61	53 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020ED00IX
Title: SPECIFICATIONS: HORN: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

Part Tightened	N*m	kgf*cm	ft.*lbf
Low pitched horn assembly x Body	18	184	13
High pitched horn assembly x Hone bracket sub-assembly	18	184	13
Horn bracket sub-assembly x Front bumper reinforcement sub-assembly	13	133	10



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000200K00NX
Title: SPECIFICATIONS: INTERIOR PANELS / TRIM: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

INSTRUMENT PANEL SAFETY PAD

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Instrument panel reinforcement x Passenger airbag	7.5	77	66 in.*lbf

FRONT CONSOLE BOX

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Console box assembly x Body	6.5	66	58 in.*lbf

ROOF HEADLINING

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Center pillar garnish LH x Body	7.5	77	66 in.*lbf
Center pillar garnish RH x Body	7.5	77	66 in.*lbf
Front seat outer belt assembly LH x Body	30	306	22
Front seat outer belt assembly RH x Body	30	306	22
Rear window side garnish LH x Body	7.5	77	66 in.*lbf
Rear window side garnish RH x Body	7.5	77	66 in.*lbf
Rear quarter trim front garnish LH x Body	7.5	77	66 in.*lbf
Rear quarter trim front garnish RH x Body	7.5	77	66 in.*lbf

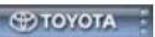


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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KCQ00AX
Title: SPECIFICATIONS: LIGHTING (EXT): TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
HEADLIGHT ASSEMBLY (for Halogen Headlight)			
Headlight assembly x Body	7.5	77	66 in.*lbf
Front bumper side support RH x Body	7.5	77	66 in.*lbf
Front bumper side support LH x Body	7.5	77	66 in.*lbf
HEADLIGHT ASSEMBLY (for HID Headlight)			
Headlight assembly x Body	7.5	77	66 in.*lbf
Front bumper side support RH x Body	7.5	77	66 in.*lbf
Front bumper side support LH x Body	7.5	77	66 in.*lbf
FOG LIGHT ASSEMBLY			
Fog light assembly x Front bumper cover	2.0	20	18 in.*lbf
DAYTIME RUNNING LIGHT RESISTOR			
Daytime running light resistor x Body	7.5	77	66 in.*lbf
FRONT TURN SIGNAL LIGHT ASSEMBLY			
Front turn signal light assembly x Front bumper cover	7.5	77	66 in.*lbf
REAR COMBINATION LIGHT ASSEMBLY			
Rear combination light assembly x Body	4.5	46	40 in.*lbf
REAR LIGHT ASSEMBLY			
Rear light assembly x Rear bumper cover	7.5	77	66 in.*lbf
HEIGHT CONTROL SENSOR			
Rear height control sensor sub-assembly LH x Body	7.5	77	66 in.*lbf
HEADLIGHT LEVELING ECU			
Headlight leveling ECU assembly x Body	7.5	77	66 in.*lbf



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KCP009X
Title: SPECIFICATIONS: LIGHTING (INT): TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front door courtesy switch assembly x Body	7.5	77	66 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020LN03QX
Title: SPECIFICATIONS: MIRROR (EXT): TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Outer rear view mirror sub-assembly x Door panel	7.5	77	66 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020CK00MX
Title: SPECIFICATIONS: PARKING BRAKE: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Parking brake switch assembly resistance (Switch connector - Switch body)	ON (When switch shaft is not pressed)	Below 1 Ω
	OFF (When switch shaft is pressed)	10 k Ω or higher
Parking brake lever travel at 200 N (20 kgf, 45.0 lbf)		7 to 8 notches
Brake disc inside diameter	Standard	190 mm (7.48 in.)
	Maximum	191 mm (7.52 in.)
Parking brake shoe lining thickness	Standard	3.5 mm (0.1378 in.)
	Minimum	1.5 mm (0.0591 in.)



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020CL00MX
Title: SPECIFICATIONS: PARKING BRAKE: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Hub nut	120	1224	89
Parking brake switch assembly set screw	1.5	15	13 in.*lbf
Parking brake lever sub-assembly set bolt	18	184	13
No. 1 fuel tank Protector set bolt	9.0	92	80 in.*lbf
No. 2 fuel tank Protector set bolt	9.0	92	80 in.*lbf
No. 2/No. 3 parking brake cable assembly x Body	18	184	13
Center exhaust pipe assembly x Tail exhaust pipe assembly	48	490	35
Center exhaust pipe assembly x Front exhaust pipe assembly	18	184	13
Lower casing bracket set bolt	18	184	13
Clamp H/B x Casing lower bracket	18	184	13
Rear disc brake caliper assembly set bolt	66	673	49



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KCF00FX
Title: SPECIFICATIONS: POWER ASSIST SYSTEMS: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Power steering ECU set bolts	10	102	7



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002KJF014X
Title: SPECIFICATIONS: POWER DISTRIBUTION: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Battery x Battery current sensor assembly		6.0	61	53 in.*lbf
Engine wire x Battery current sensor assembly		7.5	77	66 in.*lbf
Instrument panel junction block assembly x Instrument panel reinforcement assembly	Nut	7.5	77	66 in.*lbf
	Bolt	7.5	77	66 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000020E700SX
Title: SPECIFICATIONS: REAR SUSPENSION: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear support to rear shock absorber nut without SST	25	255	18
Rear support to rear shock absorber nut with SST	23	235	17
Rear shock absorber with coil spring x Body	30	306	22
Rear No. 1 upper control arm assembly x Rear axle carrier sub-assembly	161	1642	119
Rear No. 2 suspension arm assembly x Rear axle carrier sub-assembly	80	816	59
Rear No. 2 suspension arm assembly x Rear shock absorber with coil spring	80	816	59
Rear stabilizer link sub-assembly x Rear No. 2 suspension arm assembly	38	388	28
Rear height control sensor sub-assembly x Rear No. 2 suspension arm assembly	7.5	77	66 in.*lbf
Hub nut	120	1224	89
Upper control arm assembly x Rear axle carrier sub-assembly	80	816	59
Upper control arm assembly x Rear suspension member assembly	90	918	66
Rear NO. 1 suspension arm assembly x Rear axle carrier sub-assembly	110	1122	81
Rear NO. 1 suspension arm assembly x Rear suspension member assembly	110	1122	81
NO. 1 parking brake cable support bracket x Rear NO. 1 suspension arm assembly	18	184	13
Wheel nut	120	1224	89
Toe control link sub-assembly x Rear axle carrier sub-assembly	60	612	44
Toe control link sub-assembly x Rear suspension member assembly	100	1020	74
Rear stabilizer bracket x Body	30	306	22
Rear stabilizer link sub-assembly x Rear stabilizer bar	38	388	28
NO. 1 fuel tank protector x Body	9.0	92	80 in.*lbf
NO. 2 fuel tank protector x Body	9.0	92	80 in.*lbf
Rear suspension member assembly x Body (Bolt A)	145	1479	107
Rear suspension member assembly x Body (Bolt B)	70	714	52
No. 3 parking brake cable assembly x Rear suspension member assembly	18	184	13



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002Z9308ZX
Title: SPECIFICATIONS: SEAT: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

FRONT SEAT ASSEMBLY

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front seat assembly x Body	53	540	39
Separate type front seatback assembly x Separate type front seat cushion assembly	42	428	31
Front seat inner belt assembly x Front seat assembly	42	428	31
Separate type front seatback cover bracket x Separate type front seatback frame assembly	5.5	56	49 in.*lbf
Front seat airbag assembly x Separate type front seatback frame assembly	5.5	56	49 in.*lbf

REAR SEAT ASSEMBLY

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Bench type seatback assembly x Rear seat hinge sub-assembly	33	337	24
Separate type rear seat cushion assembly x Body	13	133	10
Rear rear window side garnish x Body	7.5	77	66 in.*lbf
Rear seatback lock striker x Body	33	337	24
Rear seatback lock assembly x Rear seatback frame assembly	25	250	18



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003UWV00QX
Title: SPECIFICATIONS: SEAT BELT: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

FRONT SEAT INNER BELT ASSEMBLY

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front seat inner belt assembly x Front seat assembly	42	428	31

FRONT SEAT OUTER BELT ASSEMBLY

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear window side garnish x Body	7.5	77	66 in.*lbf
Rear quarter trim front garnish x Body	7.5	77	66 in.*lbf
Center pillar garnish x Body	7.5	77	66 in.*lbf
Front seat outer belt assembly (shoulder anchor) x Body	30	306	22
Front seat outer belt assembly (floor anchor) x Body	30	306	22
Front seat outer belt assembly (Upper bolt) x Body	7.5	77	66 in.*lbf
Front seat outer belt assembly (Lower bolt) x Body	30	306	22

REAR SEAT INNER BELT ASSEMBLY

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear seat inner belt assembly x Body	30	306	22

REAR SEAT OUTER BELT ASSEMBLY

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Separate type rear seat cushion assembly x Body	13	133	10
Rear window side garnish x Body	7.5	77	66 in.*lbf
Rear seat outer belt assembly (floor anchor) x Body	30	306	22
Rear seat outer belt assembly x Body	30	306	22

CHILD RESTRAINT SEAT TETHER ANCHOR

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Separate type rear seat cushion assembly x Body	13	133	10
Bench type rear seatback assembly x Body	33	337	24
Rear window side garnish x Body	7.5	77	66 in.*lbf
Child restraint seat tether anchor bracket x Body	25	255	18

CHILD RESTRAINT SEAT ANCHOR BRACKET

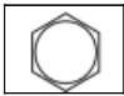
PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Separate type rear seat cushion assembly x Body	13	133	10
Bench type rear seatback assembly x Body	33	337	24
Rear seat hinge sub-assembly x Body	33	337	24
Child restraint seat anchor bracket sub-assembly x Body	25	255	18

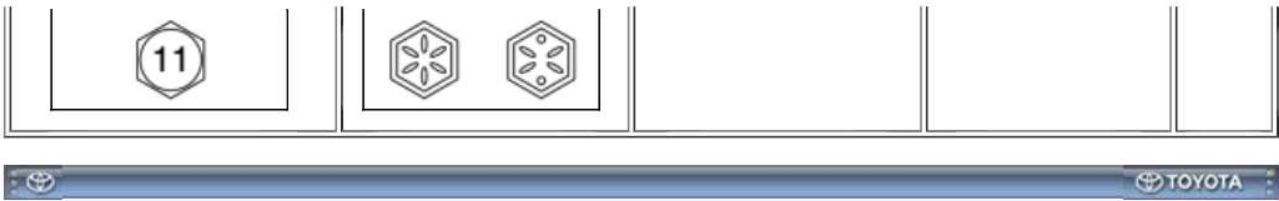


Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000118V0C8X
Title: SPECIFICATIONS: STANDARD BOLT: HOW TO DETERMINE BOLT STRENGTH (2013 FR-S)		

HOW TO DETERMINE BOLT STRENGTH

Bolt Type

HEXAGON HEAD BOLT		STUD BOLT	WELD BOLT	CLASS
NORMAL RECESS BOLT	DEEP RECESS BOLT			
	 No Mark	 No Mark		4T
				5T
	 w/ Washer			6T
				7T
				8T
				9T
				10T
				11T

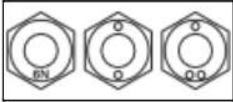
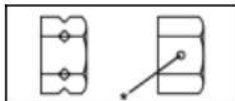
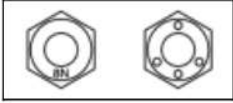
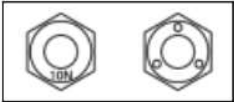
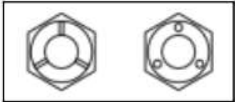
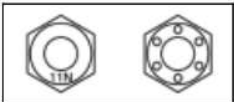


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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000118X0C8X
Title: SPECIFICATIONS: STANDARD BOLT: HOW TO DETERMINE NUT STRENGTH (2013 FR-S)		

HOW TO DETERMINE NUT STRENGTH

Nut Type

PRESENT STANDARD HEXAGON NUT	OLD STANDARD HEXAGON NUT		CLASS
	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



HINT:

- *: Nut with 1 or more marks on one side surface of the nut.
- Use a nut with the same nut strength classification number (or more) as the bolt strength classification number when tightening parts with a bolt and nut.

Example:

- Bolt = 4T
- Nut = 4N or more



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000118W0C8X
Title: SPECIFICATIONS: STANDARD BOLT: SPECIFIED TORQUE FOR STANDARD BOLTS (2013 FR-S)		

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



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003JB01SX
Title: SPECIFICATIONS: STEERING COLUMN: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Maximum steering free play	30 mm (1.18 in.)
Steering column assembly preload	1.6 to 2.1 N*m (16.3 to 21.4 kgf*cm, 14.2 to 18.6 in.*lbf)
Steering intermediate shaft assembly turn torque (rack and pinion power steering gear assembly side)	6.6 N*m (66 kgf*cm, 58 in.*lbf) or less
Steering intermediate shaft assembly turn torque (steering column assembly side)	6.0 N*m (61 kgf*cm, 53 in.*lbf) or less



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003JBK01XX
Title: SPECIFICATIONS: STEERING COLUMN: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 1 engine under cover set bolt	30	306	22
No. 2 engine under cover set bolt	7.5	77	66 in.*lbf.
Steering intermediate shaft assembly x Steering column assembly	35	357	26
Steering intermediate shaft assembly x Rack and pinion steering gear assembly	35	357	26
Steering column assembly set nuts	40	408	30
Steering column assembly set bolt	40	408	30
Steering wheel assembly set nut	39	398	29



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KCH00AX
Title: SPECIFICATIONS: STEERING GEAR / LINKAGE: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Rack and pinion power steering gear assembly total preload (turning)	0.9 to 1.6 N*m (9.2 to 16.3 kgf*cm, 8.0 to 14.2 in.*lbf)
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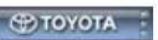


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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KCG00AX
Title: SPECIFICATIONS: STEERING GEAR / LINKAGE: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 1 engine under cover set bolt	30	306	22
No. 2 engine under cover set bolt	7.5	77	66 in.*lbf.
Front stabilizer link assembly x Front stabilizer bar	46	469	34
Front stabilizer bar set bolts	60	612	44
Tie rod end sub-assembly x Steering knuckle	27	275	20
Steering intermediate shaft assembly x Rack and pinion power steering gear assembly	35	357	26
Rack and pinion power steering gear assembly set bolts	120	1220	89
Tie rod end sub-assembly x Steering rack end sub-assembly	85	869	63
Steering rack end sub-assembly	103	1050	76
Lock nut x Steering rack housing	60	612	44



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003KFQ00AX
Title: SPECIFICATIONS: SUPPLEMENTAL RESTRAINT SYSTEMS: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Curtain shield airbag assembly x Body	7.5	77	66 in.*lbf
Separate type front seatback assembly x Separate type front seat cushion assembly	42	428	31
Separate type front seatback cover bracket x Separate type front seatback frame assembly	5.5	55	49 in.*lbf
Front seat airbag assembly x Separate type front seatback frame assembly	5.5	55	49 in.*lbf
Airbag sensor assembly x Body	25	255	18
Front airbag sensor x Body	13	133	10
Door side airbag sensor x Front door	7.5	77	66 in.*lbf
No. 2 side airbag sensor assembly x Body	7.5	77	66 in.*lbf
Rear airbag sensor assembly x Body	7.5	77	66 in.*lbf
No. 2 airbag sensor assembly x Body	7.5	77	66 in.*lbf



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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003K5R00AX
Title: SPECIFICATIONS: THEFT DETERRENT / KEYLESS ENTRY: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Transponder key ECU x Body	7.5	77	66 in.*lbf



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003JBI02HX
Title: SPECIFICATIONS: TIRE / WHEEL: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Cold Tire Inflation Pressure:

TIRE SIZE	COLD TIRE INFLATION PRESSURE	
	KPA (KGF/CM ² , PSI)	
P205/55R16 91V	240 (2.4, 35)	240 (2.4, 35)
215/45R17 87W	240 (2.4, 35)	240 (2.4, 35)
T135/80D16 101M	420 (4.2, 60)	420 (4.2, 60)

Maximum wheel runout	Steel wheel	1.5 mm (0.0591 in.) (Vertical and lateral)
	Aluminum wheel	1.0 mm (0.0394 in.) (Vertical and lateral)

Maximum wheel imbalance after adjustment	10.0 g (0.0220 lb)
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Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000003JBH009X
Title: SPECIFICATIONS: TIRE PRESSURE MONITORING: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
TIRE PRESSURE WARNING VALVE AND TRANSMITTER SET NUT	4.0	41	35 IN.*LBF
HUB NUT	120	1224	89
Door control receiver set bolt	13	133	10



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001YXP00CX
Title: SPECIFICATIONS: TL70 MANUAL TRANSMISSION / TRANSAXLE: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Neutral position switch assembly	1 - 2	Pushed: Below 1 Ω
		Released: 10 k Ω or higher
Back-up light switch assembly	1 - 2	Pushed: Below 1 Ω
		Released: 10 k Ω or higher
Manual transmission extension housing oil seal installation depth	-	0.1 to 1.1 mm (0.00394 to 0.0433 in.)
Reverse idler gear radial clearance	Standard	0.040 to 0.082 mm (0.00157 to 0.00323 in.)
	Maximum	0.082 mm (0.00323 in.)
No. 4 gear shift fork slotted spring pin drive in depth	-	0 mm (0 in.) (from the end surface of the No. 4 gear shift fork)
No. 1 gear shift head slotted spring pin drive in depth	-	0 mm (0 in.) (from the end surface of the No. 1 gear shift head)
No. 2 gear shift head slotted spring pin drive in depth	-	0 mm (0 in.) (from the end surface of the No. 2 gear shift head)
No. 3 gear shift head slotted spring pin drive in depth	-	0 mm (0 in.) (from the end surface of the No. 3 gear shift head)
Transmission front bearing retainer oil seal installation depth	-	11.1 to 11.9 mm (0.437 to 0.469 in.)
Extension housing rear oil seal installation depth	-	1.0 to 2.0 mm (0.0394 to 0.0787 in.)
Counter shaft 6th gear thrust clearance	Standard	0.10 to 0.40 mm (0.00394 to 0.0157 in.)
	Maximum	0.40 mm (0.0157 in.)
Counter shaft 6th gear radial clearance	Standard	0.015 to 0.068 mm (0.000590 to 0.00268 in.)
	Maximum	0.068 mm (0.00268 in.)
Input shaft radial clearance	Standard	0.029 to 0.072 mm (0.00114 to 0.00283 in.)
	Maximum	0.072 mm (0.00283 in.)
1st gear thrust clearance	Standard	0.15 to 0.40 (0.00590 to 0.0157 in.)
	Maximum	0.40 (0.0157 in.)
1st gear radial clearance	Standard	0.015 to 0.066 (0.000590 to 0.00260 in.)
	Maximum	0.066 (0.00260 in.)
2nd gear thrust clearance	Standard	0.10 to 0.45 (0.000394 to 0.0177 in.)
	Maximum	0.45 (0.0177 in.)
2nd gear radial clearance	Standard	0.015 to 0.066 (0.000590 to 0.00260 in.)
	Maximum	0.066 (0.00260 in.)

	Maximum	0.066 (0.00260 in.)
Reverse gear thrust clearance	Standard Maximum	0.10 to 0.45 (0.000394 to 0.0177 in.) 0.45 (0.0177 in.)
Reverse gear radial clearance	Standard Maximum	0.015 to 0.066 (0.000590 to 0.00260 in.) 0.066 (0.00260 in.)
Counter shaft 3rd gear thrust clearance	Standard Maximum	0.10 to 0.35 (0.00393 to 0.0138 in.) 0.35 (0.0138 in.)
Counter shaft 3rd gear radial clearance	Standard Maximum	0.015 to 0.068 (0.000590 to 0.00268 in.) 0.068 (0.00268 in.)
Counter shaft 4th gear thrust clearance	Standard Maximum	0.10 to 0.35 (0.00393 to 0.0138 in.) 0.35 (0.0138 in.)
Counter shaft 4th gear radial clearance	Standard Maximum	0.065 to 0.115 (0.002559 to 0.00453 in.) 0.115 (0.00453 in.)
No. 1 gear shift head clearance	Standard Maximum	15.2 to 15.4 mm (0.59843 to 0.60630 in.) 15.4 mm (0.60630 in.)
No. 2 gear shift head clearance	Standard Maximum	15.2 to 15.4 mm (0.59843 to 0.60630 in.) 15.4 mm (0.60630 in.)
No. 3 gear shift head clearance	Standard Maximum	15.2 to 15.4 mm (0.59843 to 0.60630 in.) 15.4 mm (0.60630 in.)
Shift shaft	Standard width Minimum width	14.8 to 15.0 mm (0.583 to 0.591 in.) 14.8 mm (0.583 in.)
No. 1 shift inter lock block	Standard width Minimum width	14.8 to 15.0 mm (0.583 to 0.591 in.) 14.8 mm (0.583 in.)
No. 4 gear shift fork	Standard Maximum	15.2 to 15.4 mm (0.59843 to 0.60630 in.) 15.4 mm (0.60630 in.)
5th shift head	Standard Maximum	15.2 to 15.4 mm (0.59843 to 0.60630 in.) 15.4 mm (0.60630 in.)
No. 2 synchronizer ring and counter shaft 6th gear clearance	Standard Minimum	0.88 to 1.52 mm (0.0346 to 0.0598 in.) 0.88 mm (0.0346 in.)
Counter shaft 6th gear inside diameter	Standard Maximum	34.015 to 34.040 mm (1.33917 to 1.34016 in.) 34.040 mm (1.34016 in.)
No. 4 gear shift fork claw	Standard	7.9 to 8.0 mm (0.311 to 0.315 in.)

	Minimum	7.9 mm (0.311 in.)
No. 4 gear shift fork claw and glove of the No. 4 transmission hub sleeve clearance	Standard Maximum	0.15 to 0.35 mm (0.00590 to 0.0138 in.) 0.35 mm (0.0138 in.)
Reverse idler gear inside diameter	Standard Maximum	22.040 to 22.061mm (0.86771 to 0.86854 in.) 22.061mm (0.86854 in.)
Reverse idler gear shaft outer diameter	Standard Minimum	21.979 to 22.000 mm (0.86531 to 0.86614 in.) 21.979 mm (0.86531 in.)
Front input shaft bearing shaft snap ring thickness	Standard	0 to 0.1 mm (0 to 0.00394 in.)
No. 4 transmission clutch hub shaft snap ring	Mark A	2.80 mm (0.11023 in.)
	B	2.85 mm (0.11220 in.)
	C	2.90 mm (0.11417 in.)
	D	2.95 mm (0.11614 in.)
	E	3.00 mm (0.11811 in.)
	F	3.05 mm (0.12007 in.)
No. 2 synchronizer ring and 3rd gear clearance	Standard Minimum	0.8 to 1.6 mm (0.0315 to 0.0630 in.) 0.8 mm (0.0315 in.)
Front input shaft bearing shaft snap ring thickness	Standard Maximum	0 mm (0 in.) 0.1 mm (0.00394 in.)
Front input shaft bearing shaft snap ring	Mark 0	1.95 mm (0.07677 in.)
	2	2.00 mm (0.07874 in.)
	3	2.05 mm (0.08070 in.)
	4	2.10 mm (0.08267 in.)
	5	2.15 mm (0.08464 in.)
	6	2.20 mm (0.08661 in.)
Output shaft outer diameter	Standard A	31.984 to 32.000 mm (1.25921 to 1.25984 in.)
	B	42.984 to 43.000 mm (1.69228 to 1.69291 in.)
	C	40.984 to 41.000 mm (1.61354 to 1.61417 in.)
	Minimum A	31.984 mm (1.25921 in.)
	B	42.9849 mm (1.69228 in.)
	C	40.984 mm (1.61354 in.)
Output shaft runout	Standard	0.03 mm (0.00118 in.) or less
Reverse gear inside diameter	Standard Maximum	47.015 to 47.040 mm (1.85098 to 1.85197 in.) 47.040 mm (1.85197 in.)

1st gear inside diameter	Standard Maximum	46.315 to 46.340 mm (1.82343 to 1.82441 in.) 46.340 mm (1.82441 in.)
2nd gear inside diameter	Standard Maximum	49.015 to 49.040 mm (1.92972 to 1.93071 in.) 49.040 mm (1.93071 in.)
1st gear bearing inner race outer diameter	Standard Minimum	40.284 to 40.300 mm (1.58598 to 1.58661 in.) 40.284 mm (1.58598 in.)
No. 1 gear shift fork claw	Standard Minimum	7.9 to 8.0 mm (0.311 to 0.315 in.) 7.9 mm (0.311 in.)
No. 1 gear shift fork claw and glove of the No. 1 transmission hub sleeve clearance	Standard Maximum	0.15 to 0.35 mm (0.00590 to 0.0138 in.) 0.35 mm (0.0138 in.)
No. 3 gear shift fork claw	Standard Minimum	7.9 to 8.0 mm (0.311 to 0.315 in.) 7.9 mm (0.311 in.)
No. 3 gear shift fork claw and glove of the No. 3 transmission hub sleeve clearance	Standard Maximum	0.15 to 0.35 mm (0.00590 to 0.0138 in.) 0.35 mm (0.0138 in.)
No. 1 synchronizer ring set and 1st gear clearance	Standard inner	0.48 to 1.12 mm (0.0189 to 0.0441 in.)
	Middle	0.38 to 1.22 mm (0.0150 to 0.0480 in.)
	Outer	0.8 to 1.8 mm (0.0315 to 0.0709 in.)
No. 1 synchronizer ring set and 2nd gear clearance	Standard inner	0.48 to 1.12 mm (0.0189 to 0.0441 in.)
	Middle	0.38 to 1.22 mm (0.0150 to 0.0480 in.)
	Outer	0.8 to 1.8 mm (0.0315 to 0.0709 in.)
No. 3 transmission clutch hub shaft snap ring thickness	Standard	0 to 0.1 mm (0 to 0.00394 in.)
No. 3 transmission clutch hub shaft snap ring	Mark A	1.80 mm (0.07086 in.)
	B	1.85 mm (0.07283 in.)
	C	1.90 mm (0.07480 in.)
	D	1.95 mm (0.07677 in.)
	E	2.00 mm (0.07874 in.)
	F	2.05 mm (0.08070 in.)
6th gear shaft snap ring thickness	Standard	0 to 0.11 mm (0 to 0.00433 in.)
6th gear shaft snap ring	Mark A	2.67 mm (0.10511 in.)
	B	2.73 mm (0.10748 in.)
	C	2.79 mm (0.10984 in.)
	D	2.85 mm (0.11220 in.)
	E	2.91 mm (0.11456 in.)
	F	2.97 mm (0.11692 in.)

	G	3.03 mm (0.11929 in.)
	H	3.09 mm (0.12165 in.)
	J	3.15 mm (0.12401 in.)
	K	3.21 mm (0.01053 in.)
	L	3.27 mm (0.12874 in.)
No. 2 gear shift fork claw	Standard Minimum	7.9 to 8.0 mm (0.311 to 0.315 in.) 7.9 mm (0.311 in.)
No. 2 gear shift fork claw and glove of the No. 2 transmission hub sleeve clearance	Standard Maximum	0.15 to 0.35 mm (0.00590 to 0.0138 in.) 0.35 mm (0.0138 in.)
No. 2 synchronizer ring and 3rd gear clearance	Standard Maximum	0.8 to 1.6 mm (0.0314 to 0.0629 in.) 1.6 mm (0.0629 in.)
No. 3 synchronizer ring set and counter shaft 3rd gear clearance	Standard inner	0.4 to 1.2 mm (0.0157 to 0.0472 in.)
	Middle	0.3 to 1.3 mm (0.0118 to 0.0512 in.)
	Outer	0.8 to 1.8 mm (0.0315 to 0.0709 in.)
Counter shaft outer diameter	Standard A	39.284 to 39.300 mm (1.54661 to 1.54721 in.)
	B	37.984 to 38.000 mm (1.49543 to 1.49606 in.)
	C	24.987 to 25.000 mm (0.98374 to 0.98425 in.)
	Minimum A	39.284 mm (1.54661 in.)
	B	37.984 mm (1.49543 in.)
	C	24.987 mm (0.98374 in.)
Counter shaft runout	Standard	0.03 mm (0.00118 in.) or less
Counter shaft 3rd gear inside diameter	Standard Maximum	43.015 to 43.040 mm (1.69350 to 1.69448 in.) 43.040 mm (1.69448 in.)
Counter shaft 4th gear inside diameter	Standard Maximum	46.315 to 46.340 mm (1.82425 to 1.82441 in.) 46.340 mm (1.82441 in.)
4th gear bearing inner race outer diameter	Standard Minimum	46.225 to 46.250 mm (1.81988 to 1.82087 in.) 46.225 mm (1.81988 in.)
4th inner race thrust washer thickness	Standard	0 to 0.1 mm (0 to 0.00394 in.)
4th inner race thrust washer	Mark A	3.75 mm (0.14763 in.)
	B	3.80 mm (0.14960 in.)
	C	3.85 mm (0.15157 in.)
	D	3.90 mm (0.15354 in.)
	E	3.95 mm (0.15551 in.)

	F	4.00 mm (0.15748 in.)
	G	4.05 mm (0.15944 in.)
	H	4.10 mm (0.16141 in.)
Counter drive gear shaft snap ring thickness	Standard	0 to 0.1 mm (0 to 0.00394 in.)
Counter drive gear shaft snap ring	Mark A	1.80 mm (0.07086 in.)
	B	1.85 mm (0.07283 in.)
	C	1.90 mm (0.07480 in.)
	D	1.95 mm (0.07677 in.)
	E	2.00 mm (0.07874 in.)
	F	2.05 mm (0.08070 in.)
Front counter gear bearing shaft snap ring thickness	Standard	0 to 0.1 mm (0 to 0.00394 in.)
Front counter gear bearing shaft snap ring	Mark 1	2.05 mm (0.08070 in.)
	2	2.10 mm (0.08267 in.)
	3	2.15 mm (0.08464 in.)
	4	2.20 mm (0.08661 in.)
	5	2.25 mm (0.08858 in.)
	6	2.30 mm (0.09055 in.)



TOYOTA

Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001YXQ00EX
Title: SPECIFICATIONS: TL70 MANUAL TRANSMISSION / TRANSAXLE: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Manual transmission assembly filler plug x Manual transmission assembly	37	377	27
Manual transmission assembly drain plug x Manual transmission assembly	37	377	27
Neutral position switch assembly x Manual transmission assembly	32	329	24
Back-up light switch assembly x Manual transmission assembly	32	329	24
Manual transmission assembly x Rear No. 1 engine mounting insulator	40	408	30
Manual transmission assembly x Engine for bolt	50	510	37
Manual transmission assembly x Engine for nut	50	510	37
Rear No. 2 engine mounting insulator x Body for bolt	65	663	48
Rear No. 2 engine mounting insulator x Body for nut	40	408	30
Exhaust pipe bracket x Manual transmission assembly	23	235	17
Floor shift control shift lever retainer sub-assembly x Body	18	184	13
Clutch release cylinder assembly x Manual transmission assembly	37	377	27
Wire harness clamp bracket x Manual transmission assembly	10	102	7
Ground cable x Manual transmission assembly	13	133	10
Shift lever cap x floor shift control shift lever retainer	7.5	77	66 in.*lbf
Shift lever boot x Body	18	184	13
No. 3 gear shift fork shaft x No. 3 gear shift fork	20	199	14
No. 1 gear shift fork shaft x No. 1 gear shift fork	20	199	14
No. 2 gear shift fork shaft x No. 2 gear shift fork	20	199	14
Front bearing retainer x Clutch housing	17	173	13
Transmission case x Clutch housing	29	296	21
Transmission case x Reverse idler gear shaft	28	286	21
Clutch housing x Reverse idler gear shaft	28	286	21
Rear bearing retainer x Transmission case	30	306	22
Head straight screw plug x Transmission case	19	194	14
Front shift inner lever x Shift shaft	33	340	25
No. 1 extension housing oil receiver pipe x Transmission extension housing sub-assembly	8.5	87	75 in.*lbf
Transmission extension housing sub-assembly x Transmission case	29	296	21
Bolt x Transmission extension housing sub-assembly	31	316	23

Holder x Transmission extension housing sub-assembly	39	400	29
Head straight screw plug x Transmission extension housing sub-assembly	25	250	18
Wire harness clamp bracket x Clutch housing	7.0	71	62 in.*lbf
Release fork support x Clutch housing	16	163	12



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001PMD00GX
Title: SPECIFICATIONS: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: SERVICE DATA (2013 FR-S)		

SERVICE DATA

Line pressure (Fluid temperature): 50 to 80°C (122 to 176°F) Engine idling	D position	350 to 430 kPa (3.6 to 4.4 kgf/cm ² , 51 to 62 psi)
	R position	760 to 950 kPa (7.7 to 9.7 kgf/cm ² , 110 to 138 psi)
Line pressure (Fluid temperature): 50 to 80°C (122 to 176°F) At stall speed (Throttle valve fully open)	D position	1200 to 1380 kPa (12.5 to 14.0 kgf/cm ² , 174 to 200 psi)
	R position	1410 to 1630 kPa (14.4 to 16.6 kgf/cm ² , 204 to 236 psi)
Engine stall speed	D position	2350 +/- 250 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	600 to 800 r/min
Drive plate runout	Maximum	0.30 mm (0.0118 in.)
Shift schedule		
D, 6 position		
Throttle valve fully open	1 → 2	47 km/h (29 mph)
	2 → 3	96 km/h (59 mph)
	3 → 4	142 km/h (88 mph)
	4 → 5	201 km/h (125 mph)
	5 → 6	282 km/h (175 mph)
Throttle valve opening 6 %	1 → 2	12 km/h (7 mph)
	2 → 3	20 km/h (12 mph)
	3 → 4	30 km/h (19 mph)
	4 → 5	48 km/h (30 mph)
	5 → 6	59 km/h (37 mph)
Manual downshift speed		
5, 4, 3, 2, 1 gear range	→ 5	264 km/h (164 mph)
	→ 4	186 km/h (116 mph)
	→ 3	129 km/h (80 mph)
	→ 2	80 km/h (50 mph)

→ 1	38 km/h (23 mph)
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NOTICE:

- All shift point values indicated in the above tables are actual values. Therefore, if checking a shift point with a chassis dynamometer, keep in mind that there is a range of error in the chassis dynamometer indication.
- If checking a shift point against the speed indicated on the speedometer, remember to consider the speedometer correction rate and range of error in the tester indication.

Transmission Revolution Sensor

ITEM	TESTER CONNECTION CONDITION	SPECIFIED CONDITION
Transmission revolution sensor NT	1 - 2 20°C (68°F)	560 to 680 Ω
Transmission revolution sensor SP2	1 - 2 20°C (68°F)	560 to 680 Ω

Transmission Wire

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 (E2) - 9 (OIL)	10°C (50°F)	5 to 8 kΩ
1 (E2) - 9 (OIL)	25°C (77°F)	2.5 to 4.5 kΩ
1 (E2) - 9 (OIL)	110°C (230°F)	0.22 to 0.28 kΩ
1 (E2) - 9 (OIL)	Always	79 Ω to 156 kΩ
1 (E2) - Body ground	Always	10 kΩ or higher
9 (OIL) - Body ground	Always	10 kΩ or higher

Shift Solenoid Valve

ITEM	TESTER CONNECTION CONDITION	SPECIFIED CONDITION
Shift solenoid valve SL1	1 - 2 20°C (68°F)	5.0 to 5.6 Ω
Shift solenoid valve S1	Solenoid Connector (S1) - Solenoid Body (S1) 20°C (68°F)	11 to 15 Ω
Shift solenoid valve S2	Solenoid Connector (S2) - Solenoid Body (S2) 20°C (68°F)	11 to 15 Ω
Shift solenoid valve S3	Solenoid Connector (S3) - Solenoid Body (S3) 20°C (68°F)	11 to 15 Ω
Shift solenoid valve S4	Solenoid Connector (S4) - Solenoid Body (S4) 20°C (68°F)	11 to 15 Ω
Shift solenoid valve SL2	1 - 2 20°C (68°F)	5.0 to 5.6 Ω
Shift solenoid valve SR	Solenoid Connector (SR) - Solenoid Body (SR) 20°C (68°F)	11 to 15 Ω

Shift solenoid valve SLT	1 - 2 20°C (68°F)	5.0 to 5.6 Ω
Shift solenoid valve SLU	1 - 2 20°C (68°F)	5.0 to 5.6 Ω

Park/Neutral Position Switch

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (RB) - 6 (PL) 4 (B) - 5 (L)	Shift lever in P	Below 1 Ω
	Shift lever not in P	10 k Ω or higher
2 (RB) - 1 (RL)	Shift lever in R	Below 1 Ω
	Shift lever not in R	10 k Ω or higher
2 (RB) - 9 (NL) 4 (B) - 5 (L)	Shift lever in N	Below 1 Ω
	Shift lever not in N	10 k Ω or higher
2 (RB) - 7 (DL)	Shift lever in D, M, "+" or "-"	Below 1 Ω
	Shift lever not in D, M, "+" or "-"	10 k Ω or higher

Shift Lever Assembly

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 3	Shift lever not in P	Below 1 Ω
2 - 3	Shift lever in P	
8 - 9	Shift lever in M	
	Shift lever held in "+" (Up shift)	
10 - 11	Shift lever in M	
12 - 13	Shift lever in M	10 k Ω or higher
	Shift lever held in "-" (Down shift)	
1 - 3	Shift lever in P	
2 - 3	Shift lever not in P	
8 - 9	Shift lever in M	
	Shift lever not in "+"	
10 - 11	Shift lever not in M	
12 - 13	Shift lever in M	
	Shift lever not in "-"	

Shift Lock Solenoid

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
4 - 5	20°C (68°F)	27.6 to 30.5 Ω

Shift Paddle Switch

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
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1 - 3	Pull continuously "+" (Up shift)	Below 1 Ω
	Release "+"	10 k Ω or higher
1 - 4	Pull continuously "-" (Down shift)	Below 1 Ω
	Release "-"	10 k Ω or higher

Pattern Select Switch

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
6 - 8	Pattern select (SNOW) switch on	Below 1 Ω
	Pattern select (SNOW) switch off	10 k Ω or higher
4 - 8	Pattern select (SPORT) switch on	Below 1 Ω
	Pattern select (SPORT) switch off	10 k Ω or higher

Automatic Transmission Unit:

1st and reverse return spring free length	Standard: 23.74 mm (0.934 in.)
Rear planetary gear pinion thrust clearance	Standard: 0.2 to 0.6 mm (0.00788 to 0.0236 in.)
Rear planetary gear bushing inside diameter	Standard: 18.025 mm (0.710 in.)
1st and reverse brake pack clearance	0.5 to 0.8 mm (0.0197 to 0.0315 in.)
Flange thickness (1st and reverse brake)	Mark 0: 0 mm (0 in.) Mark 2: 0.2 mm (0.00787 in.) Mark 4: 0.4 mm (0.01575 in.) Mark 6: 0.6 mm (0.02362 in.) Mark 8: 0.8 mm (0.03150 in.) Mark 10: 1.0 mm (0.03937 in.) Mark 12: 1.2 mm (0.04724 in.) Mark 14: 1.4 mm (0.05512 in.)
Intermediate shaft runout	Standard: 0.03 mm (0.00118 in.)
Intermediate shaft diameter	Standard A: 22.962 to 22.975 mm (0.9041 to 0.9045 in.) Standard B: 27.759 to 27.775 mm (1.0929 to 1.0935 in.)
Center planetary gear pinion thrust clearance	Standard: 0.12 to 0.68 mm (0.00473 to 0.0267 in.)
No. 2 brake pinion return spring free length	Standard: 22.66 mm (0.892 in.)
No. 2 brake piston piston stroke	0.6 to 0.9 mm (0.0237 to 0.0354 in.)
Flange thickness (No. 2 brake piston)	Mark 0: 2.0 mm (0.0787 in.) Mark 1: 2.1 mm (0.0826 in.) Mark 2: 2.2 mm (0.0866 in.) Mark 3: 2.3 mm (0.0905 in.) Mark 4: 2.4 mm (0.0944 in.) Mark 5: 2.5 mm (0.0984 in.) Mark 6: 2.6 mm (0.102 in.) Mark 7: 2.7 mm (0.106 in.)
Brake piston return spring free length	Standard: 17.05 mm (0.671 in.)
Front planetary gear pinion thrust clearance	Standard: 0.20 to 0.60 mm (0.00788 to 0.0236 in.)

Front planetary gear bushing inside diameter	Standard: 48.78 mm (1.92 in.)
No. 1 brake piston stroke	0.42 to 0.72 mm (0.0166 to 0.0283 in.)
No. 3 brake piston return spring free length	Standard: 15.72 mm (0.619 in.)
Flange thickness (No. 1 brake piston)	Mark 0: 2.0 mm (0.0787 in.) Mark 1: 2.2 mm (0.0866 in.) Mark 2: 2.4 mm (0.0944 in.) Mark 3: 2.6 mm (0.102 in.)

Oil Pump:

Oil pump body bushing inside diameter	Standard: 38.138 mm (1.5015 in.)
Stator shaft bushing inside diameter	Standard: 21.527 mm (0.8475 in.)
Body clearance	Standard: 0.10 to 0.17 mm (0.00394 to 0.00669 in.)
Tip clearance	Standard: 0.070 to 0.150 mm (0.00276 to 0.00590 in.)
Side clearance	Standard: 0.02 to 0.04 mm (0.000787 to 0.00157 in.)
Drive and driven gear thickness	Mark 0: 9.946 to 9.952 mm (0.39157 to 0.39181 in.) Mark 1: 9.953 to 9.959 mm (0.39185 to 0.39209 in.) Mark 2: 9.960 to 9.966 mm (0.39213 to 0.39236 in.) Mark 3: 9.967 to 9.973 mm (0.39240 to 0.39264 in.) Mark 4: 9.974 to 9.980 mm (0.39268 to 0.39291 in.) Mark 5: 9.981 to 9.987 mm (0.39295 to 0.39319 in.) Mark 6: 9.988 to 9.994 mm (0.39323 to 0.39346 in.)

Clutch Drum And Input Shaft:

Direct clutch return spring free length	Standard: 20.02 mm (0.788 in.)
Reverse clutch return spring free length	Standard: 21.03 mm (0.828 in.)
Direct clutch pack clearance	0.5 to 0.8 mm (0.0197 to 0.0314 in.)
Flange thickness (Direct clutch)	Mark 0: 3.0 mm (0.118 in.) Mark 1: 3.1 mm (0.122 in.) Mark 2: 3.2 mm (0.126 in.) Mark 3: 3.3 mm (0.130 in.) Mark 4: 3.4 mm (0.134 in.) Mark 5: 3.5 mm (0.138 in.) Mark 6: 3.6 mm (0.142 in.) Mark 7: 3.7 mm (0.146 in.) Mark 8: 3.8 mm (0.150 in.)
Reverse clutch pack clearance	0.4 to 0.7 mm (0.0158 to 0.0275 in.)
Flange thickness (Reverse clutch)	Mark 0: 2.4 mm (0.0945 in.) Mark 1: 2.5 mm (0.0984 in.) Mark 2: 2.6 mm (0.102 in.) Mark 3: 2.7 mm (0.106 in.) Mark 4: 2.8 mm (0.110 in.) Mark 5: 2.9 mm (0.114 in.) Mark 6: 3.0 mm (0.118 in.) Mark 7: 3.1 mm (0.122 in.)

	Mark 8: 3.2 mm (0.126 in.) Mark 9: 3.3 mm (0.130 in.) Mark A: 3.4 mm (0.134 in.) Mark B: 3.5 mm (0.138 in.)
Forward clutch return spring free length	Standard: 26.29 mm (1.04 in.)
Forward clutch pack clearance	0.56 to 0.86 mm (0.0221 to 0.0338 in.)
Flange thickness (Forward clutch)	Mark 0: 3.0 mm (0.118 in.) Mark 1: 3.1 mm (0.122 in.) Mark 2: 3.2 mm (0.126 in.) Mark 3: 3.3 mm (0.130 in.) Mark 4: 3.4 mm (0.134 in.) Mark 5: 3.5 mm (0.138 in.) Mark 6: 3.6 mm (0.142 in.) Mark 7: 3.7 mm (0.146 in.) Mark 8: 3.8 mm (0.150 in.) Mark 9: 3.9 mm (0.154 in.)
Coast clutch pack clearance	0.4 to 0.7 mm (0.0158 to 0.0275 in.)
Flange thickness (Coast clutch)	Mark 0: 3.0 mm (0.118 in.) Mark 1: 3.1 mm (0.122 in.) Mark 2: 3.2 mm (0.126 in.) Mark 3: 3.3 mm (0.130 in.) Mark 4: 3.4 mm (0.134 in.) Mark 5: 3.5 mm (0.138 in.) Mark 6: 3.6 mm (0.142 in.) Mark 7: 3.7 mm (0.146 in.) Mark 8: 3.8 mm (0.150 in.) Mark 9: 3.9 mm (0.154 in.)
Forward clutch hub inside diameter	Standard: 23.037 to 23.062 mm (0.9070 to 0.9079 in.)
Reverse clutch hub inside diameter	Standard: 33.312 to 33.337 mm (1.3115 to 1.3125 in.)

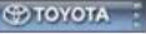
Accumulator:

SPRING	FREE LENGTH/OUTER DIAMETER MM (IN.)	COLOR
B ₁ (Outer)	46.36 (1.8252)/17.10 (0.6732)	Natural
C ₂	65.07 (2.5618)/16.2 (0.6378)	Pink
B ₃	64.5 (2.539)/19.5 (0.768)	Orange
C ₃ (Inner)	44.0 (1.732)/14.0 (0.551)	Yellow
C ₃ (Outer)	76.65 (3.0178)/20.10 (0.7913)	White

Output Shaft Bearing:

Clearance	0.02 to 0.12 mm (0.000787 to 0.00472 in.)
	No. 1: 3.80 mm (0.150 in.) No. 2: 3.85 mm (0.152 in.) No. 3: 3.90 mm (0.154 in.)

Flange thickness	No. 4: 3.95 mm (0.156 in.)
	No. 5: 4.00 mm (0.157 in.)
	No. 6: 4.05 mm (0.159 in.)
	No. 7: 4.10 mm (0.161 in.)
	No. 8: 4.15 mm (0.163 in.)
	No. 9: 4.20 mm (0.165 in.)
	No. 10: 4.25 mm (0.167 in.)
	No. 11: 4.30 mm (0.169 in.)
	No. 12: 4.35 mm (0.171 in.)



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001PME00GX
Title: SPECIFICATIONS: TX6A AUTOMATIC TRANSMISSION / TRANSAXLE: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Overflow plug x Automatic transmission assembly	20	204	15
Refill plug x Automatic transmission assembly	39	400	29
Transmission revolution sensor x Automatic transmission assembly	5.4	55	48 in.*lbf
ATF temperature sensor x Transmission valve body assembly	10	102	7
Valve body wire harness clamp x Transmission valve body assembly	6.4	65	57 in.*lbf
Valve body oil strainer assembly x Transmission valve body assembly	10	102	7
Automatic transmission oil pan sub-assembly x Automatic transmission assembly	7.0	71	62 in.*lbf
Shift solenoid valve (S2) x Transmission valve body assembly	10	102	7
Shift solenoid valve (S3) x Transmission valve body assembly	10	102	7
Shift solenoid valve (S4) x Transmission valve body assembly	10	102	7
Shift solenoid valve (SR) x Transmission valve body assembly	10	102	7
Lock plate x Transmission valve body assembly	6.4	65	57 in.*lbf
Transmission valve body assembly x Automatic transmission assembly	11	112	8
Detent spring x Transmission valve body assembly	10	102	7
Lock nut x Park/neutral position switch assembly	6.9	70	61 in.*lbf
Park/neutral position switch assembly x Automatic transmission assembly	13	130	9
Transmission control shaft lever RH x Park/neutral position switch assembly	16	163	12
Transmission oil cooler bracket x Transmission oil cooler	23	235	17
Transmission oil cooler x Body	23	235	17
Floor shift gear shifting rod sub-assembly x Shift lever assembly	18	184	13
Floor shift assembly x Body	18	184	13
Shift Paddle Switch (Transmission Shift Switch Assembly) x Steering wheel assembly	1.7	18	15 in.*lbf
Oil cooler tube x Automatic transmission assembly	21	214	16
Automatic transmission assembly x Engine	50	510	37
Rear No. 1 engine mounting insulator x Automatic transmission assembly	40	408	30
Rear No. 2 engine mounting insulator x Rear No. 1 engine mounting insulator	40	408	30

Rear No. 2 engine mounting insulator x Body	65	663	48
Exhaust pipe bracket x Automatic transmission assembly	23	235	17
Torque converter assembly x Drive plate	25	255	18
Vacuum tube connector hose x Engine	18	184	13
No. 2 engine hanger x Engine	21	214	16
Wire harness clamp bracket x No. 2 engine hanger	10	102	7
Ground cable x Automatic transmission assembly	13	133	10
Oil pump assembly x Automatic transmission case sub-assembly	21	214	16
Parking lock pawl bracket x Automatic transmission case sub-assembly	7.3	74	65 in.*lbf
Extension housing sub-assembly x Automatic transmission case sub-assembly	34	345	25
Automatic transmission housing x Automatic transmission case sub-assembly (for Bolts A and B)	34	347	25
Automatic transmission housing x Automatic transmission case sub-assembly (for Bolt C)	57	581	42
Automatic transmission case plug (TORX) x Automatic transmission case sub-assembly	39	400	29
Automatic transmission case plug (Hexagon) x Automatic transmission case sub-assembly	7.4	75	65 in.*lbf
Automatic transaxle breather tube x Automatic transmission case sub-assembly	5.4	55	48 in.*lbf
Oil cooler tube union x Automatic transmission case sub-assembly	39	393	28
TCM bracket x TCM	7.5	77	66 in.*lbf
TCM x Body	7.5	77	66 in.*lbf
Stator shaft assembly x Front oil pump body sub-assembly	11	112	8



TOYOTA

Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002E8X03DX
Title: SPECIFICATIONS: WINDOW / GLASS: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

POWER WINDOW REGULATOR MOTOR

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Power window regulator motor assembly x Front door window regulator sub-assembly	6.0	61	53 in.*lbf



Last Modified: 3-27-2012	6.4 F	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM00000313803JX
Title: SPECIFICATIONS: WIPER / WASHER: TORQUE SPECIFICATIONS (2013 FR-S)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
FRONT WIPER MOTOR			
Windshield wiper arm and blade assembly LH x Front wiper motor and link assembly	22	224	16
Windshield wiper arm and blade assembly RH x Front wiper motor and link assembly	22	224	16
Front wiper motor and link assembly x Body	6.0	61	53 in.*lbf
Windshield wiper link assembly x Windshield wiper motor assembly	7.5	77	66 in.*lbf
Windshield wiper motor assembly x Front wiper crank sub-assembly	8.5	87	75 in.*lbf
WASHER MOTOR			
Front fender liner LH x Front bumper cover	7.5	77	66 in.*lbf
HEADLIGHT CLEANER ACTUATOR			
Headlight washer actuator sub-assembly LH x Front bumper side support LH	##	##	## in.*lbf
Headlight washer actuator sub-assembly RH x Front bumper side support RH	##	##	## in.*lbf
Clamp x Washer jar	##	##	## in.*lbf
Headlight cleaner control relay x Washer jar	4.0	41	35 in.*lbf

