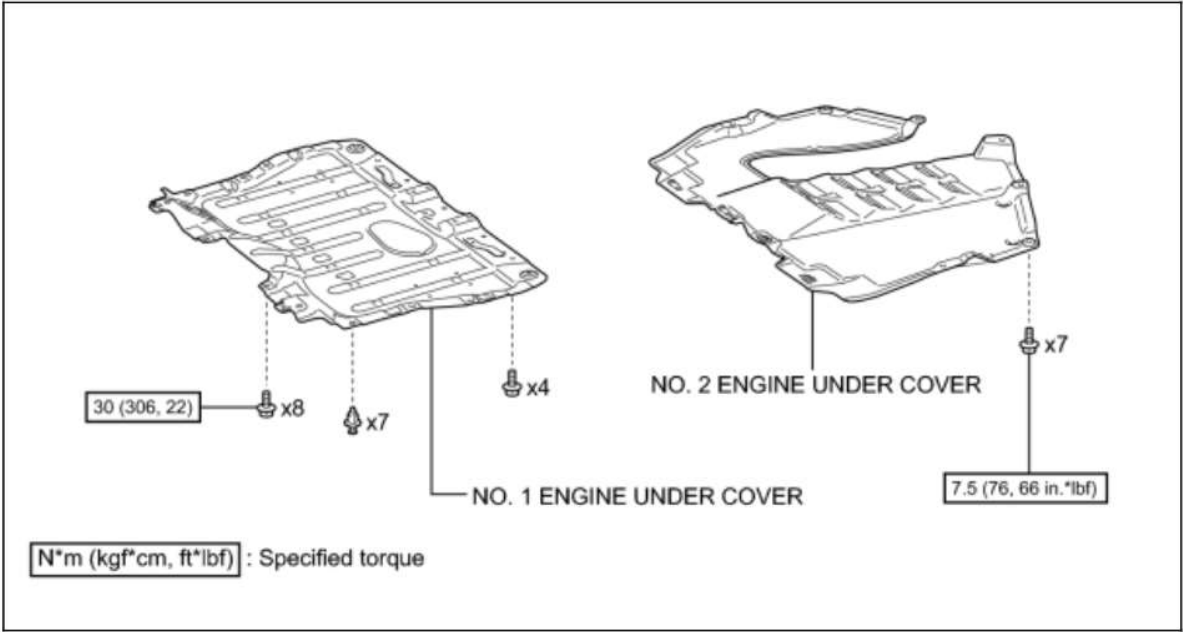


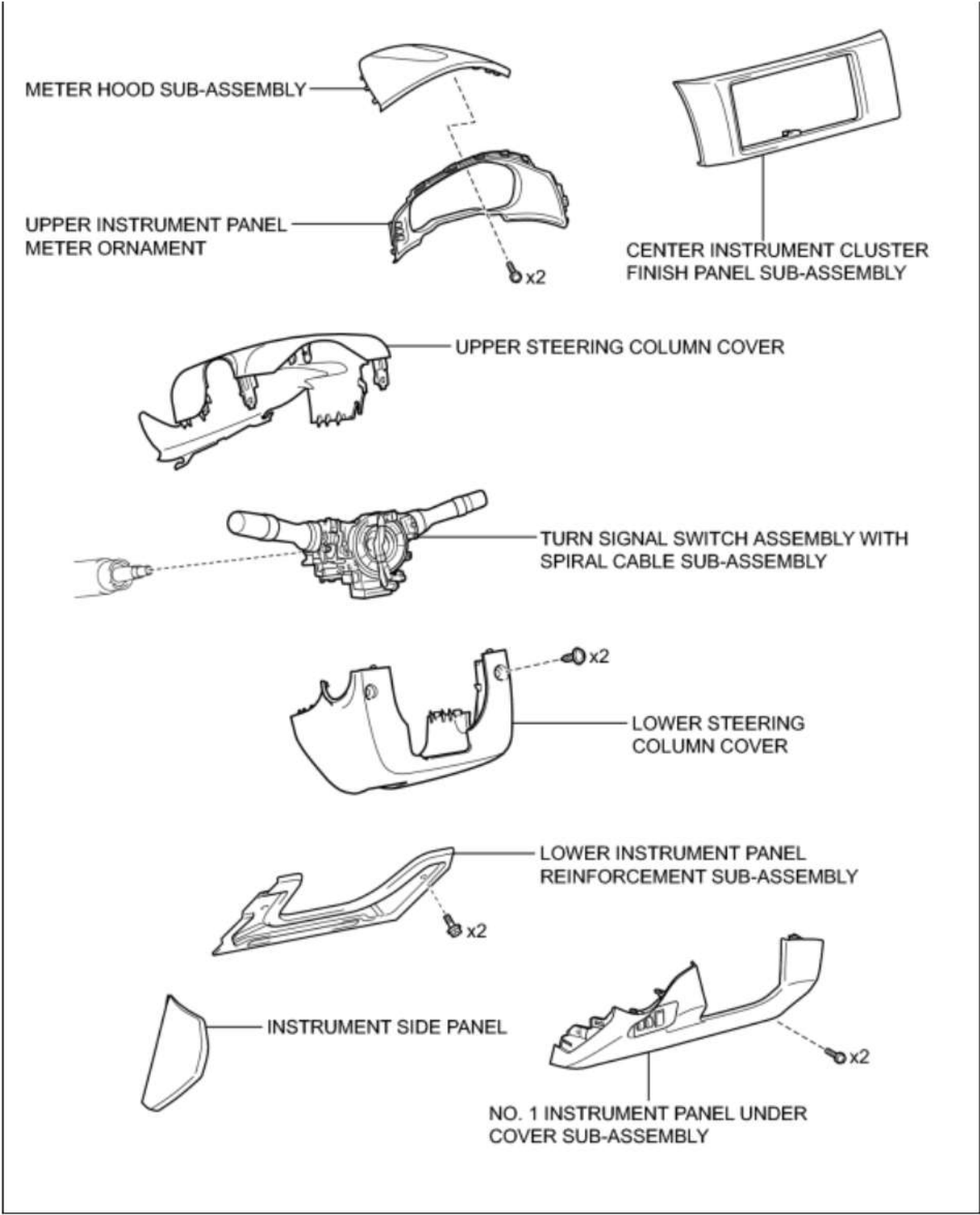
Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002TEU01VX
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: COMPONENTS (2013 FR-S)		

COMPONENTS

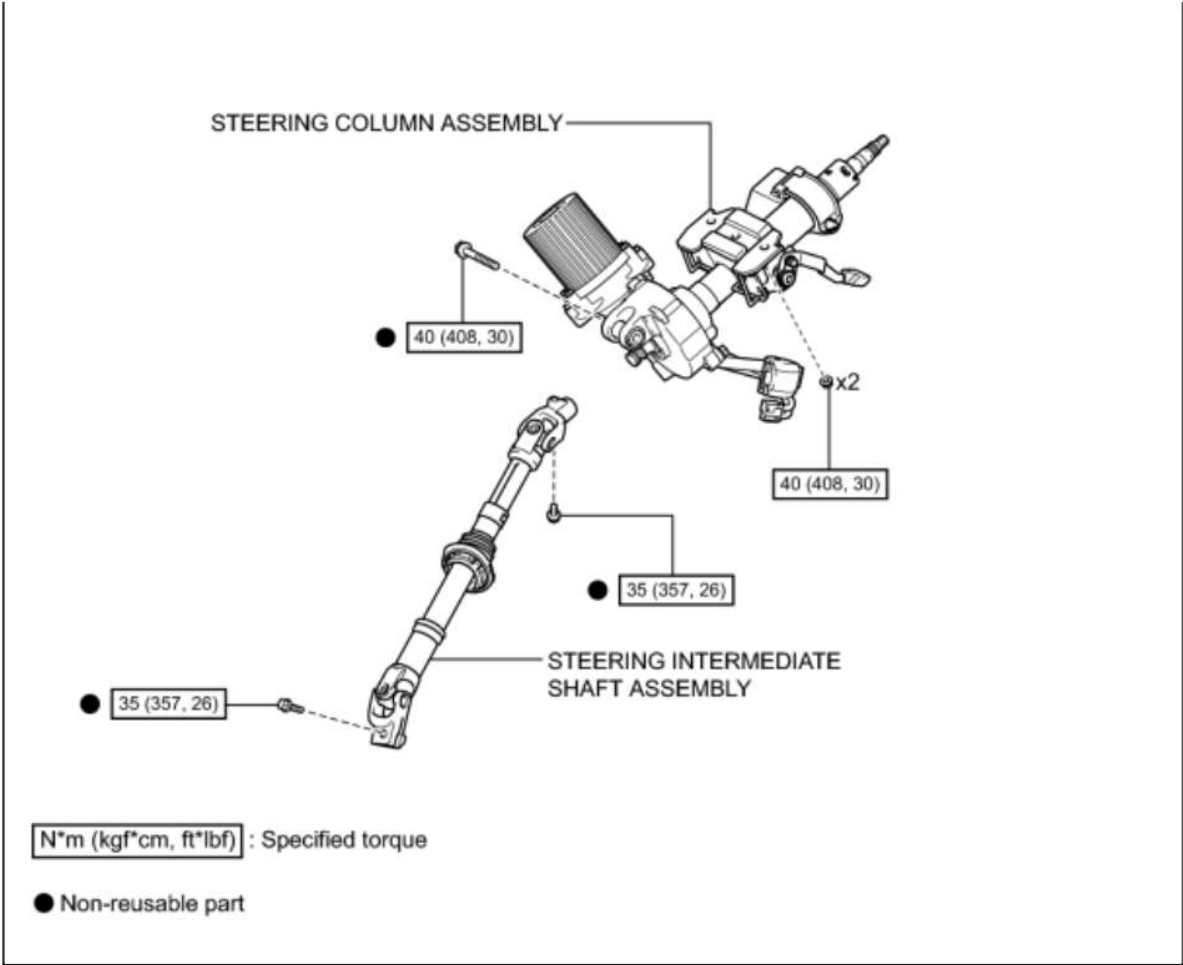
ILLUSTRATION



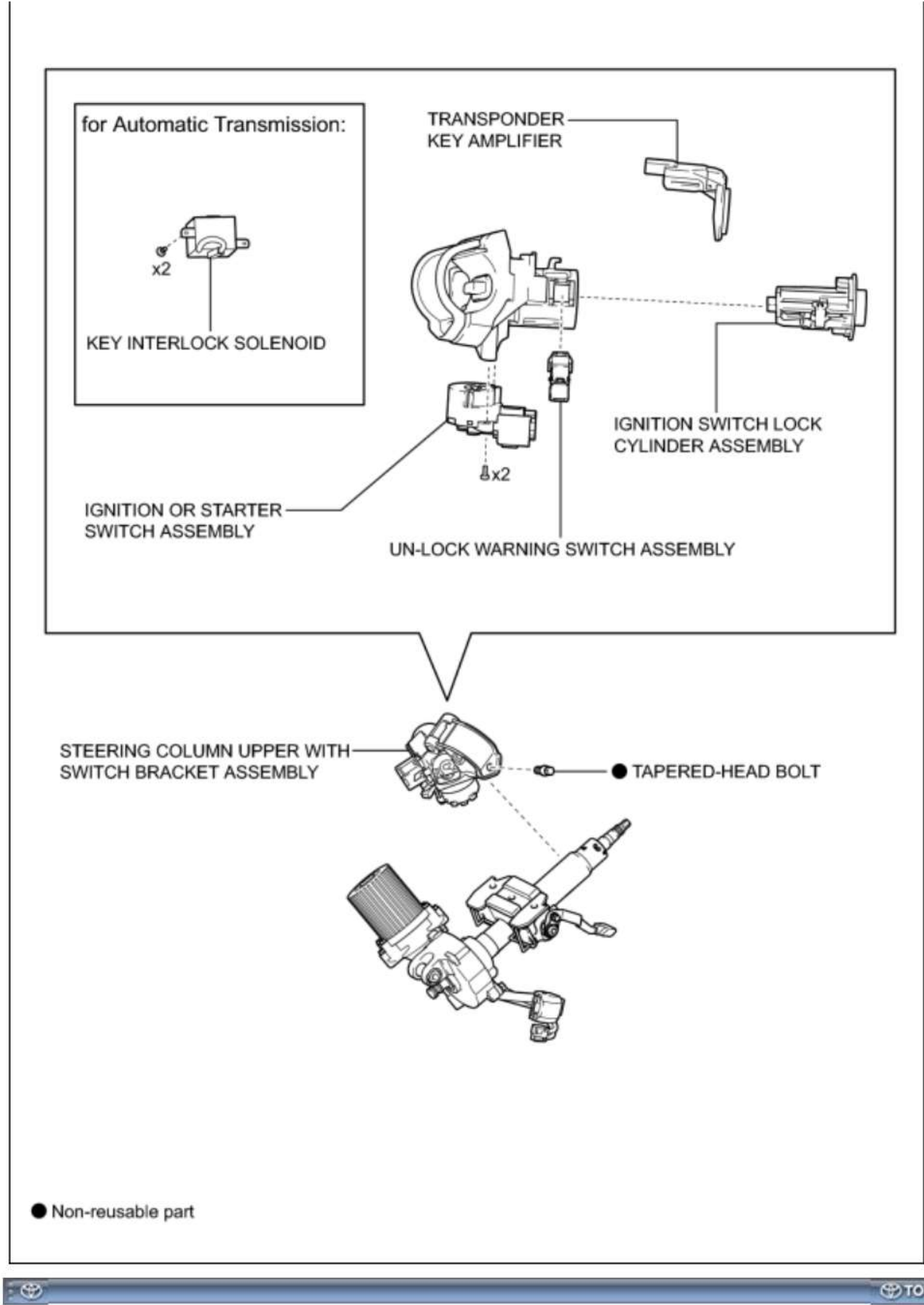
ILLUSTRATION



ILLUSTRATION



ILLUSTRATION



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Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000WAE05WX
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: DISASSEMBLY (2013 FR-S)		

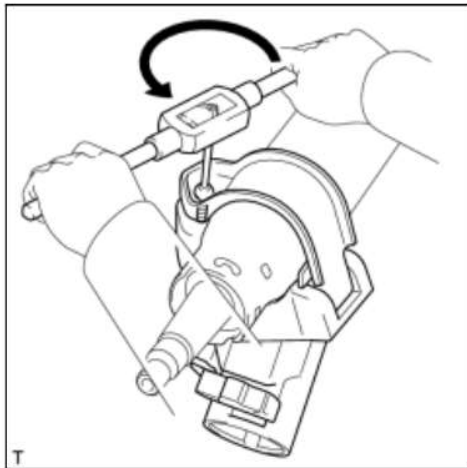
DISASSEMBLY

NOTICE:

- When using a vise, do not overtighten it.
- Do not drop the steering column assembly, strike it with tools or subject it to impacts.
- If the steering column assembly is subjected to an impact, replace it with a new one.
- Do not pull the wire harness of the steering column assembly.
- Do not allow any moisture to come into contact with the steering column assembly.
- Do not loosen any bolts not mentioned in the procedure.

1. REMOVE STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

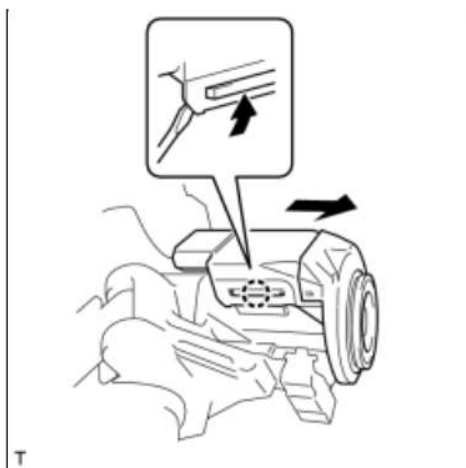
- (a) Using a center punch, mark the center of the 2 tapered-head bolts.
- (b) Using a 3 to 4 mm (0.118 to 0.157 in.) diameter drill bit, drill a hole in each tapered-head bolt.



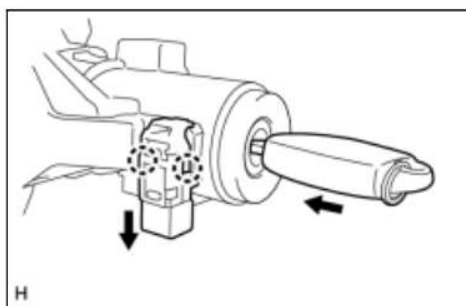
- (c) Using a screw extractor, remove each tapered-head bolt, and then remove the steering column upper with switch bracket assembly from the steering column assembly.

2. REMOVE TRANSPONDER KEY AMPLIFIER

- (a) Slide the transponder key amplifier, disengage the 2 claws and then remove the transponder key amplifier as shown in the illustration.



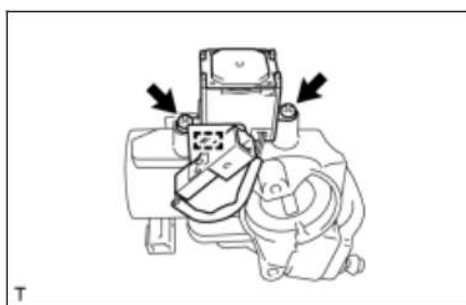
3. REMOVE UN-LOCK WARNING SWITCH ASSEMBLY



(a) Insert the key.

(b) Disengage the 2 claws and slide the unlock warning switch assembly to remove it as shown in the illustration.

4. REMOVE KEY INTERLOCK SOLENOID (for Automatic Transmission)

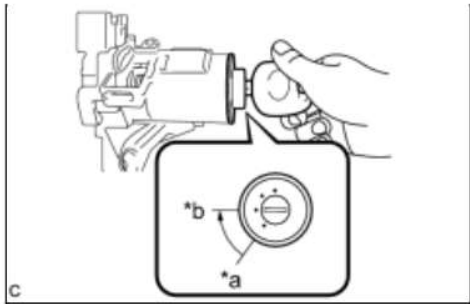


(a) Remove the 2 screws and the key interlock solenoid from the steering column upper bracket assembly.

(b) Disengage the clamp.

5. REMOVE IGNITION SWITCH LOCK CYLINDER ASSEMBLY

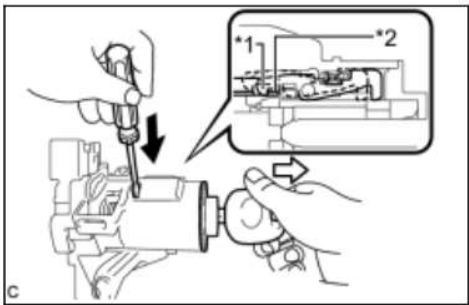
(a) Turn the ignition switch lock cylinder assembly to the ACC position.



Text in Illustration

*a	LOCK
*b	ACC

- (b) Insert a screwdriver into the hole of the steering column upper bracket assembly as shown in the illustration. Pull the ignition switch lock cylinder assembly until its claw contacts the stopper of the steering column upper bracket assembly.

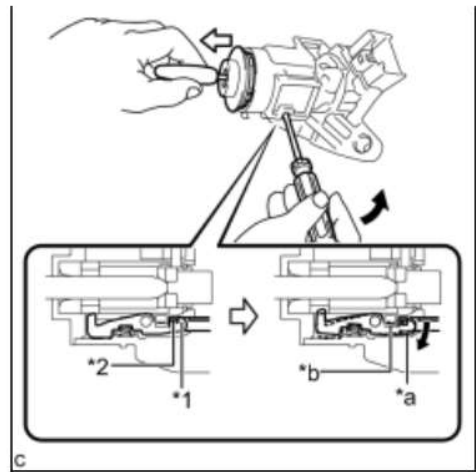


Text in Illustration

*1	Claw
*2	Stopper
	Push
	Pull

NOTICE:
Make sure to pull the ignition switch lock cylinder assembly until its claw contacts the stopper of the steering column upper bracket assembly. Failure to do so will affect later work operations.

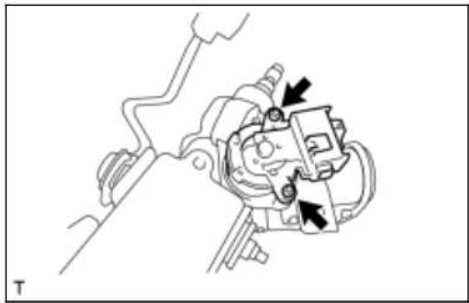
- (c) Insert a screwdriver into the hole of the steering column upper bracket assembly. Tilt the screwdriver as shown in the illustration to disengage the claw of the ignition switch lock cylinder assembly, and pull out the ignition switch lock cylinder assembly from the steering column upper bracket assembly.



Text in Illustration

*1	Claw
*2	Stopper
*a	Claw disengaged
*b	Driver Insertion Hole
	Tilt
	Pull out

6. REMOVE IGNITION OR STARTER SWITCH ASSEMBLY



(a) Remove the 2 screws and the ignition or starter switch assembly from the steering column upper bracket assembly.

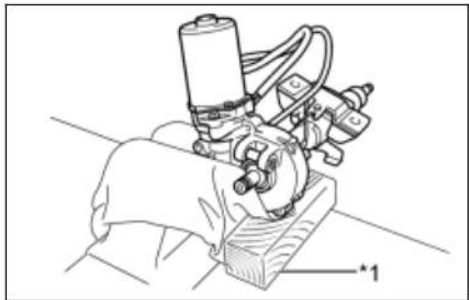
Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001NM101CX
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: INSPECTION (2013 FR-S)		

INSPECTION

NOTICE:
When using a vise, do not overtighten it.

1. INSPECT PRELOAD

(a) Secure the steering column assembly in a vise using aluminum plates and wooden block as shown in the illustration.

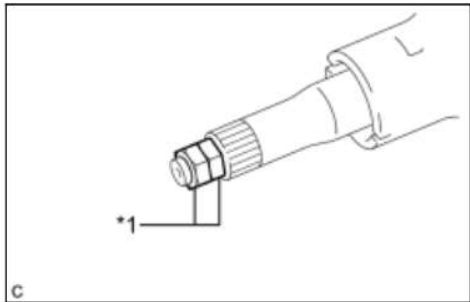


Text in Illustration

*1	Wooden Block
----	--------------

- NOTICE:**
- Do not overtighten the vise, as the steering column assembly may become deformed.
 - Support the steering column assembly with a wooden block or similar item to ensure that it does not fall.

(b) Install the 2 service nuts to the steering main shaft.



Text in Illustration

*1	Service Nut
----	-------------

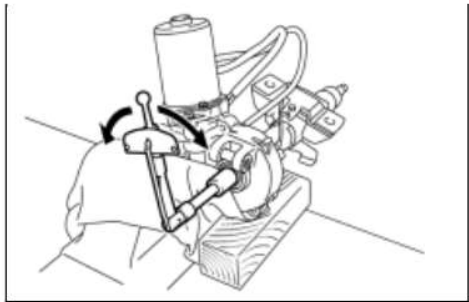
Recommended service nut:
Thread diameter
12.0 mm (0.472 in.)
Thread pitch
1.25 mm (0.0492 in.)

(c) Tighten the 2 service nuts each other to lock them.

NOTICE:
Do not apply excess torque to the service nuts by using a tool such as an impact wrench.

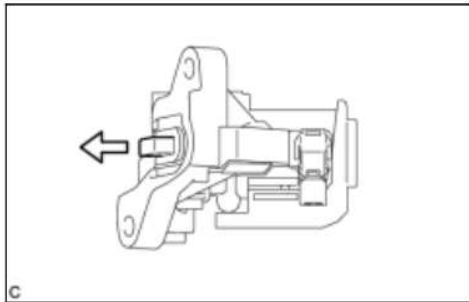
HINT:
These nuts are installed to turn the steering main shaft. They should be removed after inspecting the steering main shaft rotating torque.

(d) Using a torque wrench, turn the main shaft and measure the preload.
Preload:

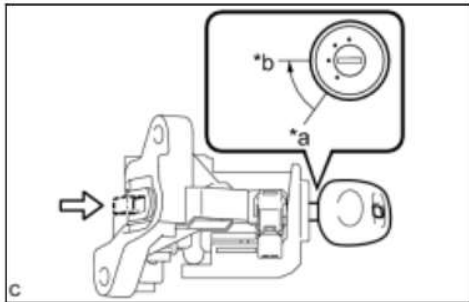


1.6 to 2.1 N*m (16.3 to 21.4 kgf*cm, 14.2 to 18.6 in.*lbf)
If the preload is not as specified, replace the steering column assembly with a new one.

2. INSPECT STEERING LOCK OPERATION



(a) Check that the steering lock mechanism is activated when the key is removed.



(b) Check that the steering lock mechanism is deactivated when the key is inserted and turned to the ACC position.

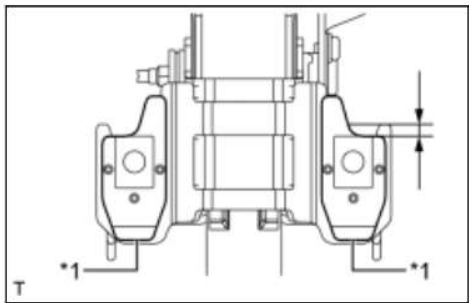
Text in Illustration

*a	LOCK
*b	ACC

HINT:

If there is any abnormality, replace the ignition switch lock cylinder assembly or steering column upper bracket assembly.

3. INSPECT STEERING COLUMN ASSEMBLY



(a) Check that the 2 capsules are securely installed to the steering column assembly as shown in the illustration.
OK:
5.0 mm (0.1969 in.) or more

Text in Illustration

*1	Capsule
----	---------

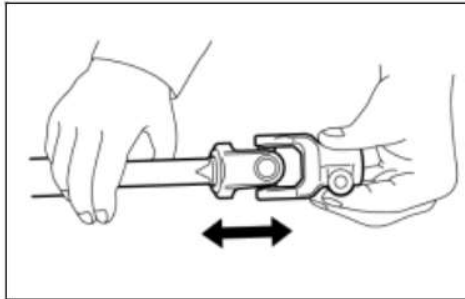
If the capsules are not positioned as specified, replace the steering column assembly with a new one.

(b) Check the 2 capsules for deformation and damage.

If either of the capsules is deformed, loose, missing or damaged, replace the steering column assembly with a new one.

4. INSPECT STEERING INTERMEDIATE SHAFT ASSEMBLY

(a) Check for play



(1) Check that there is no play at the universal joint.

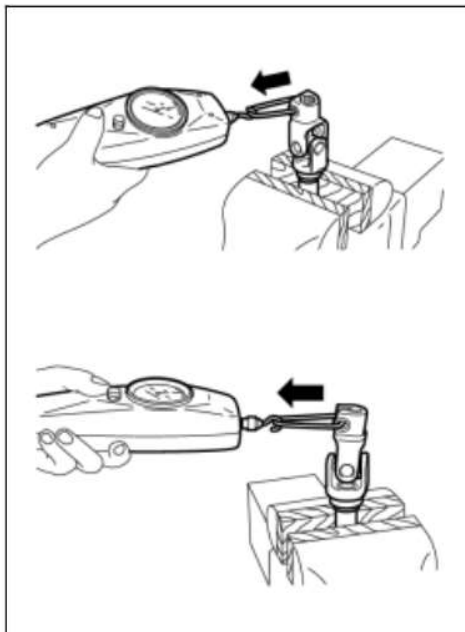
OK:

No play

HINT:

If the result is not as specified, replace the steering intermediate shaft assembly with a new one.

(b) Turning torque



(1) Hold the steering intermediate shaft assembly in a vise with the yoke on the rack and pinion power steering gear assembly side facing upward.

(2) Using a push and pull gauge, measure the turning torque in the both directions.

Torque:

6.6 N*m (66 kgf*cm, 58 in.*lbf) or less

HINT:

If the result is not as specified, replace the steering intermediate shaft assembly with a new one.

(3) Hold the steering intermediate shaft assembly in a vise with the yoke on the steering column assembly side facing upward.

(4) Using a push and pull gauge, measure the turning torque in the both directions.

Torque:

6.0 N*m (61 kgf*cm, 53 in.*lbf) or less

HINT:

If the result is not as specified, replace the steering intermediate shaft assembly with a new one.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000WAB094X
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSPECT STEERING COLUMN ASSEMBLY

INFO

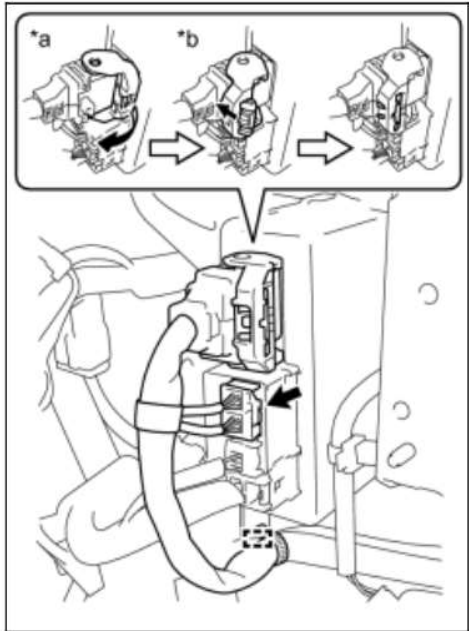
2. INSTALL STEERING COLUMN ASSEMBLY

(a) Install the steering column assembly with the 2 nuts and new bolt.

Torque: 40 N·m (408 kgf·cm, 30ft·lbf)

NOTICE:

When installing the steering column assembly, be careful that the wire harness does not interfere with or is not pinched between other parts.



(b) Engage the clamp.

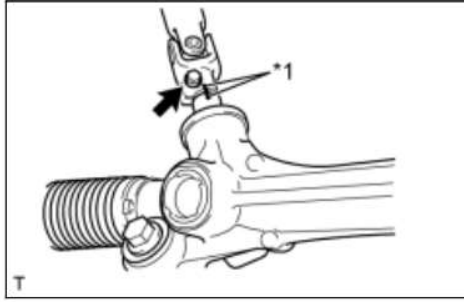
- (c) Connect the 2 connectors to the power steering ECU.
- (1) As shown in the illustration, return the lock lever to its original position to connect the connector and securely push in the lock of the lock lever.
- (d) Connect the each connector and engage the wire harness clamps to the steering column assembly.

Text in Illustration

*a	Return the lock lever
*b	Push in the lock

3. INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY

(a) Pass the steering intermediate shaft assembly through the hole in the body from the inside of the cabin.



- (b) Connect the steering intermediate shaft assembly to the rack and pinion power steering gear assembly.

Text in Illustration

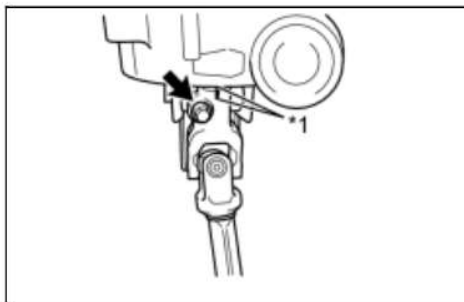
*1	Matchmark
----	-----------

NOTICE:

Align the matchmarks on the steering intermediate shaft assembly and the rack and pinion power steering gear assembly.

- (c) Install the new bolt.

Torque: 35 N·m (357 kgf·cm, 26ft·lbf)



- (d) Install the steering intermediate shaft assembly to the steering column assembly.

Text in Illustration

*1	Matchmark
----	-----------

NOTICE:

Align the matchmarks on the steering intermediate shaft assembly and the steering column assembly.

- (e) Install the new bolt.

Torque: 35 N·m (357 kgf·cm, 26ft·lbf)

- (f) Engage the 4 claws and install the dust seal.

4. INSTALL TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY

NOTICE:

- Do not replace the spiral cable with the battery connected and turn the ignition switch to ON.
- Do not rotate the spiral cable without the steering wheel with the battery connected and turn the ignition switch to ON.
- Ensure that the steering wheel is installed and aligned straight when inspecting the steering sensor.

- (a) With the clamp loosened, install the turn signal switch assembly with spiral cable sub-assembly to the steering column assembly.
- (b) Engage the claw on the turn signal switch assembly with spiral cable sub-assembly to the steering column assembly and tighten the clamp.
- (c) Connect the each connector to the turn signal switch assembly with spiral cable sub-assembly.

5. INSTALL UPPER STEERING COLUMN COVER

- (a) Engage the 2 claws to install the upper steering column cover.

6. INSTALL LOWER STEERING COLUMN COVER

- (a) Engage the 6 claws to install the lower steering column cover.
- (b) Install the 2 screws.

7. INSTALL UPPER INSTRUMENT PANEL METER ORNAMENT INFO

8. INSTALL METER HOOD SUB-ASSEMBLY INFO

9. INSTALL CENTER INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY INFO

10. TURN FRONT WHEELS TO FACE STRAIGHT AHEAD

11. INSPECT AND ADJUST SPIRAL CABLE WITH SENSOR SUB-ASSEMBLY INFO

12. INSPECT STEERING WHEEL CENTER POINT

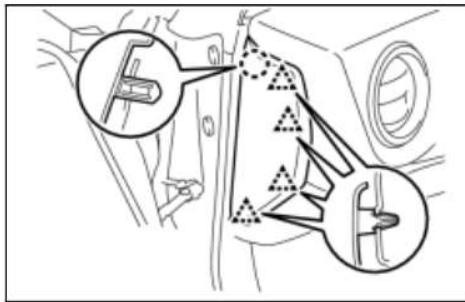
13. INSTALL STEERING WHEEL ASSEMBLY

INFO

14. INSTALL LOWER INSTRUMENT PANEL REINFORCEMENT SUB-ASSEMBLY INFO

15. INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY INFO

16. INSTALL INSTRUMENT SIDE PANEL



(a) Engage the 4 clips and claw to install the instrument side panel.

17. INSTALL NO. 1 ENGINE UNDER COVER INFO

18. INSTALL NO. 2 ENGINE UNDER COVER INFO

19. INSTALL FRONT WHEEL LH

Torque: 120 N·m (1220 kgf·cm, 89ft·lbf)

20. PERFORM MEMORIZATION

HINT:

Perform VSC sensor neutral memorization INFO .

21. INITIALIZE ROTATION ANGLE SENSOR AND CALIBRATE TORQUE SENSOR ZERO POINT

INFO



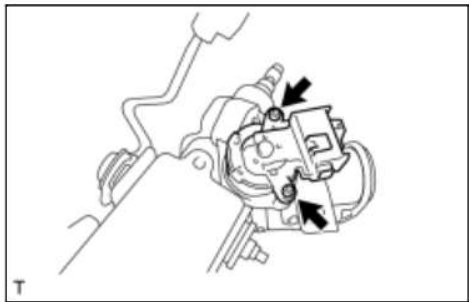
Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000WAF05WX
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: REASSEMBLY (2013 FR-S)		

REASSEMBLY

NOTICE:

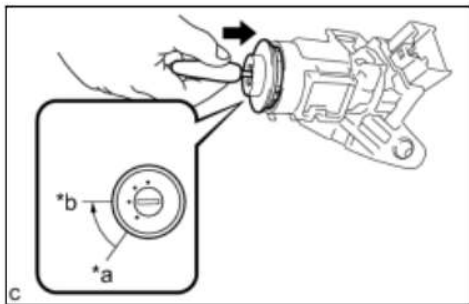
- When using a vise, do not overtighten it.
- Do not drop the steering column assembly, strike it with tools or subject it to impacts.
- If the steering column assembly is subjected to an impact, replace it with a new one.
- Do not pull the wire harness of the steering column assembly.
- Do not allow any moisture to come into contact with the steering column sub-assembly.
- Do not loosen any bolts not mentioned in the procedure.

1. INSTALL IGNITION OR STARTER SWITCH ASSEMBLY



(a) Install the ignition or starter switch assembly with the 2 screws to the steering column upper bracket assembly.

2. INSTALL IGNITION SWITCH LOCK CYLINDER ASSEMBLY



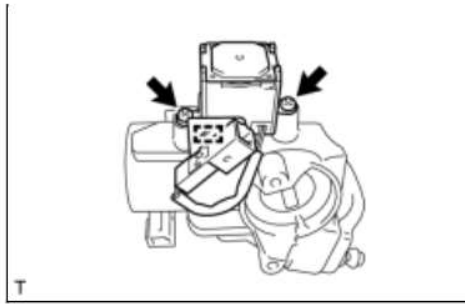
(a) Make sure that the ignition switch lock cylinder assembly is in the ACC position.

Text in Illustration

*a	LOCK
*b	ACC

- (b) Install the ignition switch lock cylinder assembly to the steering column upper bracket assembly.
- (c) Make sure that the ignition switch lock cylinder assembly is securely installed.

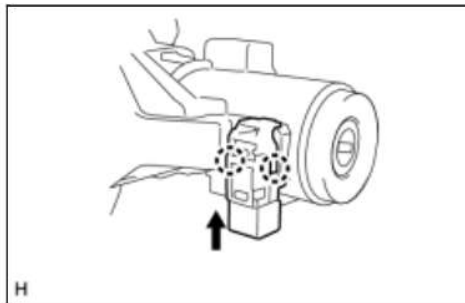
3. INSTALL KEY INTERLOCK SOLENOID (for Automatic Transmission)



(a) Engage the clamp.

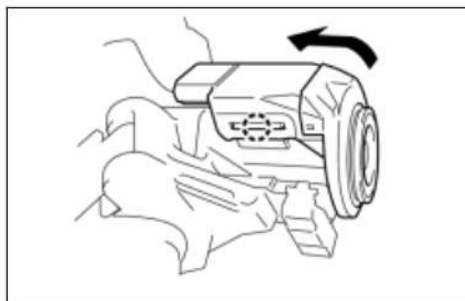
(b) Install the 2 screws and the key interlock solenoid to the steering column upper bracket assembly.

4. INSTALL UN-LOCK WARNING SWITCH ASSEMBLY



(a) Slide the unlock warning switch assembly and engage the 2 claws to install the unlock warning switch assembly to the steering column upper bracket assembly as shown in the illustration.

5. INSTALL TRANSPONDER KEY AMPLIFIER



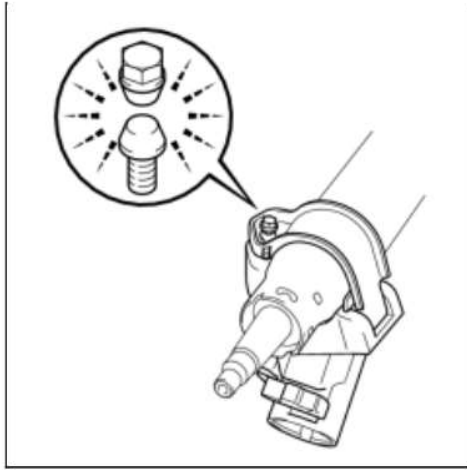
(a) Align the transponder key amplifier with the steering column upper bracket assembly. Tilt the transponder key amplifier slightly and slide it into position.

(b) Push the transponder key amplifier, and engage the 2 claws to install the transponder key amplifier to the steering column upper bracket assembly.

6. INSPECT STEERING LOCK OPERATION INFO

7. INSTALL STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

(a) Secure the steering column assembly in a vise.



(b) Temporarily install the steering column upper with switch bracket assembly to the steering column assembly with new tapered-head bolt.

(c) Tighten the tapered-head bolt until the bolt head break off.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000WAD090X
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: REMOVAL (2013 FR-S)		

REMOVAL

CAUTION:

Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing the steering column. [INFO](#)

1. PRECAUTION

[INFO](#)

2. TURN FRONT WHEELS TO FACE STRAIGHT AHEAD

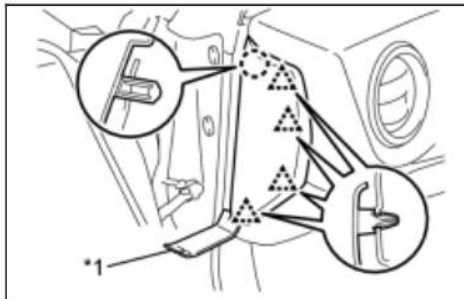
3. REMOVE NO. 1 ENGINE UNDER COVER [INFO](#)

4. REMOVE NO. 2 ENGINE UNDER COVER [INFO](#)

5. REMOVE STEERING WHEEL ASSEMBLY

[INFO](#)

6. REMOVE INSTRUMENT SIDE PANEL



(a) Using a moulding remover, disengage the claw and 4 clips and remove the instrument side panel.

Text in Illustration

*1	Moulding Remover
----	------------------

7. REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY [INFO](#)

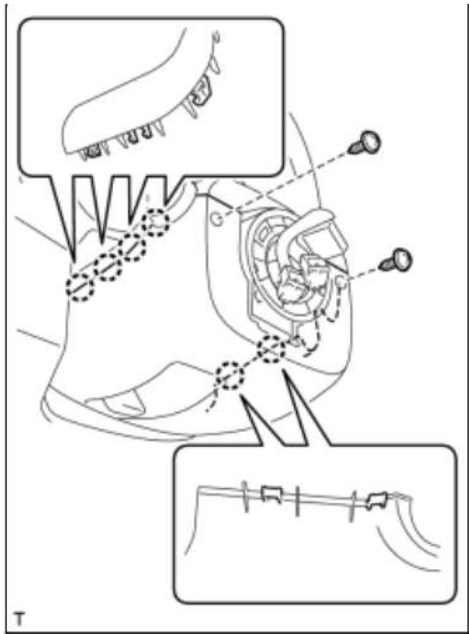
8. REMOVE LOWER INSTRUMENT PANEL REINFORCEMENT SUB-ASSEMBLY [INFO](#)

9. REMOVE CENTER INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY [INFO](#)

10. REMOVE METER HOOD SUB-ASSEMBLY [INFO](#)

11. REMOVE UPPER INSTRUMENT PANEL METER ORNAMENT [INFO](#)

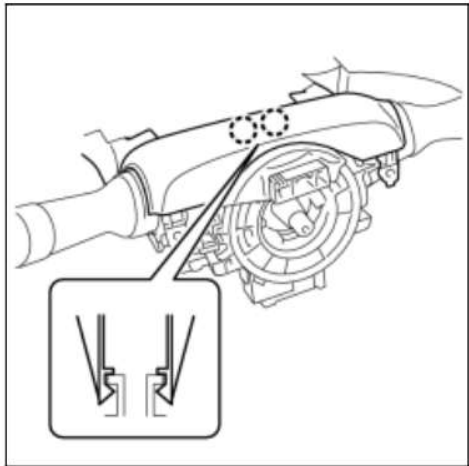
12. REMOVE LOWER STEERING COLUMN COVER



(a) Remove the 2 screws.

(b) Disengage the 6 claws and remove the lower steering column cover.

13. REMOVE UPPER STEERING COLUMN COVER



(a) Disengage the 2 claws to remove the upper steering column cover.

14. REMOVE TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY

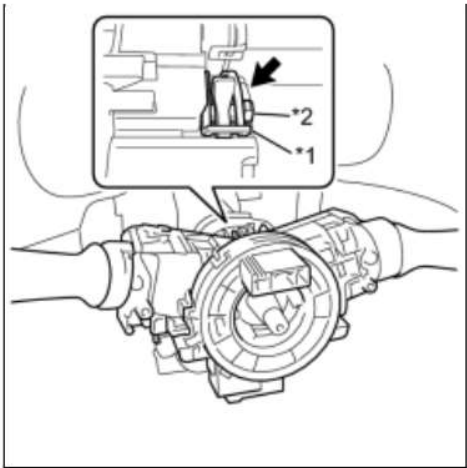
(a) Disconnect the each connector from the turn signal switch assembly with spiral cable sub-assembly.

(b) Using pliers, loosen the clamp.

(c) With the clamp loosened, use a screwdriver to disengage the claw, and remove the turn signal switch assembly with spiral cable sub-assembly from the steering column assembly.

Text in Illustration

*1	Clamp
----	-------

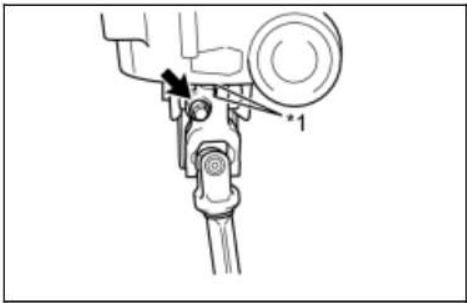


*2	Claw

NOTICE:

- Do not replace the spiral cable with the battery connected and turn the ignition switch to ON.
- Do not rotate the spiral cable with the battery connected and turn the ignition switch to ON.
- Ensure that the steering wheel is installed and aligned straight when inspecting the steering sensor.

15. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY

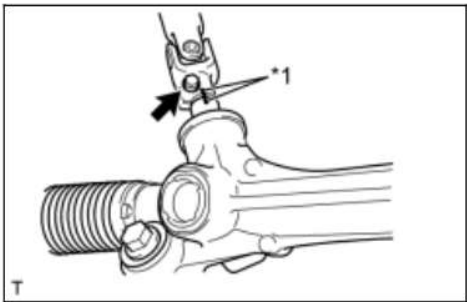


- (a) Put matchmarks on the steering intermediate shaft assembly and the steering column assembly.

Text in Illustration

*1	Matchmark
----	-----------

- (b) Remove the bolt and separate the steering intermediate shaft assembly from the steering column assembly.



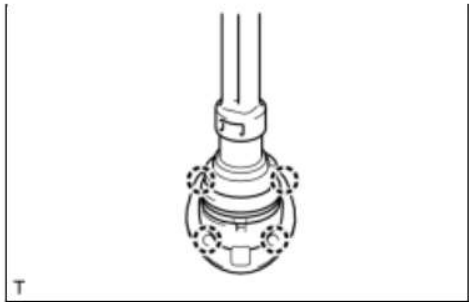
- (c) Put matchmarks on the steering intermediate shaft assembly and the rack and pinion power steering gear assembly.

Text in Illustration

*1	Matchmark
----	-----------

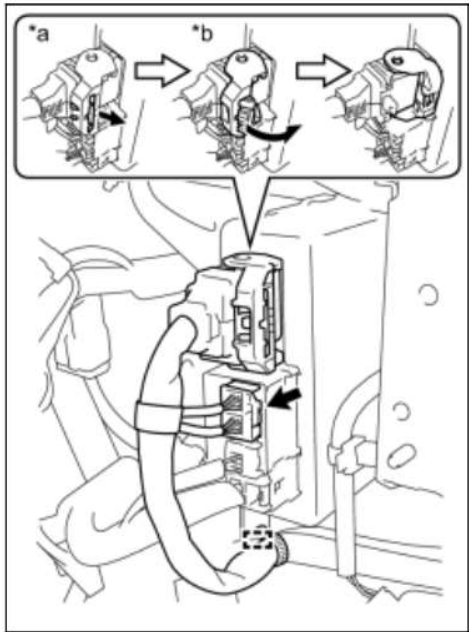
- (d) Remove the bolt and separate the steering intermediate shaft assembly from the rack and pinion power steering gear assembly.

- (e) Disengage the 4 claws from the exterior of the vehicle



cabin, and remove the steering intermediate shaft assembly.

16. REMOVE STEERING COLUMN ASSEMBLY



- (a) Disconnect the 2 connectors from the power steering ECU.
- (1) As shown illustration, pull out the lock of the lock lever and turn the lock lever to disconnect the connector.

Text in Illustration

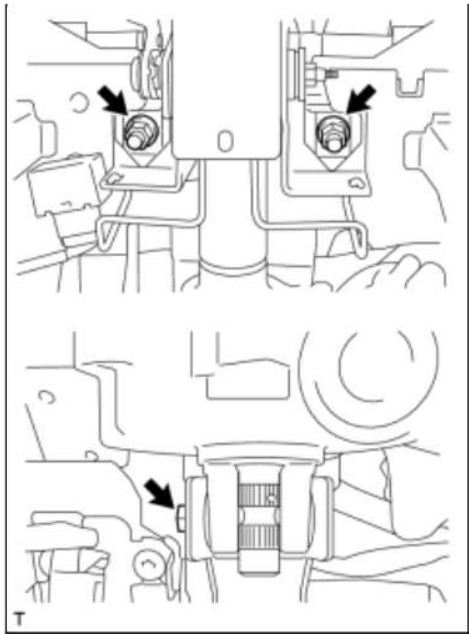
*a	Pull out the lock
*b	Turn the lock lever

- (b) Disengage the clamp.
- (c) Disconnect the each connector and disengage the wire harness clamps from the steering column assembly.

- (d) Remove the bolt and 2 nuts to remove the steering column assembly.

HINT:

When pulling the bolts out, lifting the motor section of the steering column assembly and tilting the steering column assembly will make it easier to remove the bolts.

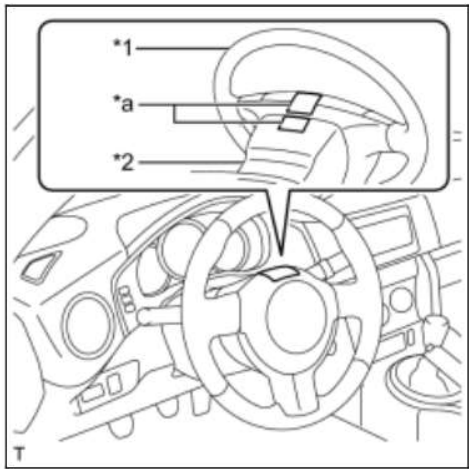


Last Modified: 3-27-2012	6.4 N	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001R4405BX
Title: STEERING COLUMN: STEERING SYSTEM: ADJUSTMENT (2013 FR-S)		

ADJUSTMENT

1. STEERING WHEEL OFF CENTER ADJUSTMENT PROCEDURE

- (a) Inspect steering wheel off center.
 - (1) Turn the steering wheel to the center position.

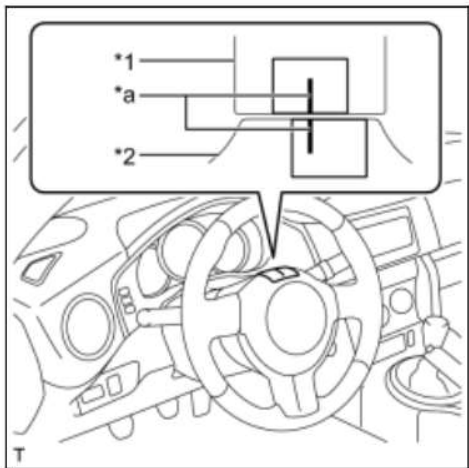


- (2) Apply masking tape to the top center of the steering wheel and upper steering column cover.

Text in Illustration

*1	Steering Wheel
*2	Upper Steering Column Cover
*a	Masking Tape

- (3) Drive the vehicle in a straight line for 100 m (328 ft.) at a constant speed of 56 km/h (35 mph), while holding the steering wheel to maintain the course.



- (4) Draw a line on the masking tape as shown in the illustration.

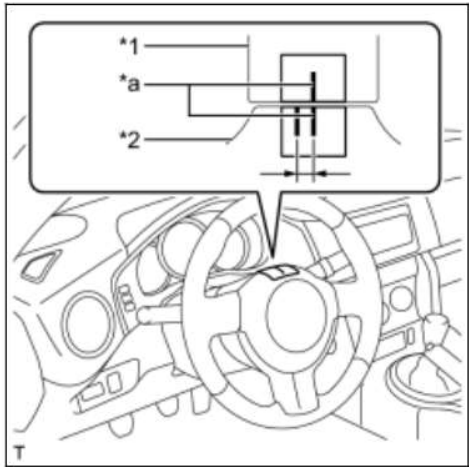
Text in Illustration

*1	Upper Steering Column Cover
*2	Steering Wheel
*a	Marked Line

- (5) Turn the steering wheel to the center position.

HINT:

Look at the upper surface of the steering wheel, steering spoke and SRS airbag line to find the center position.



(6) Draw a new line on the masking tape on the steering wheel as shown in the illustration.

Text in Illustration

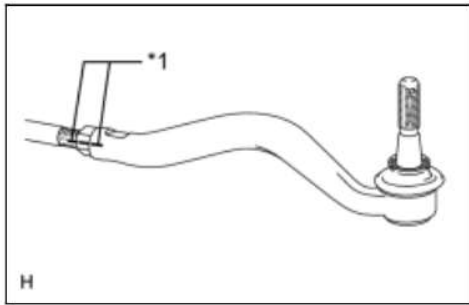
*1	Upper Steering Column Cover
*2	Steering Wheel
*a	Marked Line

- (7) Measure the distance between the 2 lines on the masking tape on the steering wheel.
- (8) Convert the measured distance to steering angle.

HINT:

- Measured distance 1 mm (0.0394 in.) = Steering angle of approximately 1 degree.
- Make a note of the steering angle.

(b) Adjust the steering angle.



(1) Put matchmarks on both sides of the tie rod assembly and steering rack end sub-assembly respectively.

Text in Illustration

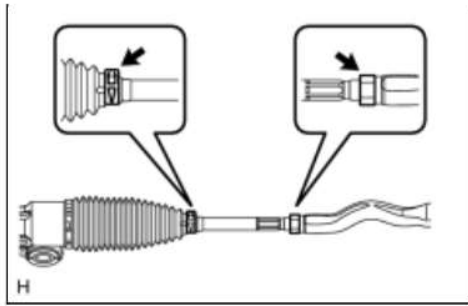
*1	Matchmark
----	-----------

(2) Using a paper gauge, measure the distance from the RH and LH tie rod ends to the rack end screws.

HINT:

- Measure both RH and LH sides.
- Make a note of the measured values.

(3) Remove the steering rack boot clips from both sides of



the rack boots.

- (4) Loosen the RH and LH lock nuts.
- (5) Turn the RH and LH rack ends by the same amount (but in different directions) according to the steering angle.

HINT:

One 360 degree turn of rack end (1.5 mm (0.0591 in.) horizontal movement) equals to 12 degrees of steering angle.

- (6) Tighten the RH and LH lock nuts to the specified torque.

Torque: 85 N·m (869 kgf·cm, 63ft·lbf)

NOTICE:

Make sure that the difference in length between the RH and LH tie rod ends and rack end screws is within 1.5 mm (0.0591 in.).

- (7) Install the RH and LH boot clips.



Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000WB705QX
Title: STEERING COLUMN: STEERING SYSTEM: ON-VEHICLE INSPECTION (2013 FR-S)		

ON-VEHICLE INSPECTION

1. INSPECT STEERING WHEEL FREE PLAY

- (a) Stop the vehicle and position the front wheels straight ahead.
- (b) Gently turn the steering wheel right and left, and check steering wheel free play.
Maximum free play:
30 mm (1.18 in.)

HINT:

If the free play exceeds the maximum, check the steering system [INFO](#) .



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Last Modified: 3-27-2012	6.4 L	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000WB506OX
Title: STEERING COLUMN: STEERING SYSTEM: PRECAUTION (2013 FR-S)		

PRECAUTION

1. HANDLING PRECAUTIONS FOR STEERING SYSTEM

- (a) Care must be taken when replacing parts. Incorrect replacement may affect the performance of the steering system and result in a driving hazard.

2. HANDLING PRECAUTIONS FOR SRS AIRBAG SYSTEM

- (a) This vehicle is equipped with a Supplemental Restraint System (SRS). Failure to carry out service operations in the correct sequence could cause the SRS to unexpectedly deploy during servicing. This may cause a serious accident. Before servicing (including inspection, replacement, removal, and installation of parts), be sure to read the precautionary notices for Supplemental Restraint System **INFO**.

3. HANDLING PRECAUTIONS FOR STEERING COLUMN (When handling the steering column assembly)

- (a) Avoid any impact to the steering column assembly, especially to the torque sensor. Replace the steering column assembly with a new one if it is dropped or subjected to any severe impacts.
- (b) Do not pull the wire harness when moving the steering column assembly.
- (c) When the steering column assembly has been replaced, perform the rotation angle sensor initialization and torque sensor zero point calibration **INFO**.
- (d) When the steering column assembly has been replaced, perform the VSC sensor neutral memorization **INFO**.
- (e) Do not release the tilt lever when the steering column assembly is not installed on the vehicle.

4. HANDLING PRECAUTIONS FOR STEERING COLUMN (When disconnecting or reconnecting the connectors)

- (a) Before disconnecting the connectors related to the power steering system, turn the ignition switch to ON, center the steering wheel, turn the ignition switch off, and then disconnect the connectors.
- (b) Before reconnecting the connectors related to the power steering system, ensure that the ignition switch is off. Then center the steering wheel and turn the ignition switch to ON.

NOTICE:

Do not turn the ignition switch to ON when the steering wheel is not centered.

- (c) If the above operations are not carried out properly, the steering center point (zero point) will deviate, which may lead to a difference in steering effort between turning right and left. If there is a difference in steering effort between turning right and left, perform the rotation angle sensor initialization and torque sensor zero point calibration **INFO**.

5. HANDLING PRECAUTION FOR SPIRAL CABLE

- (a) Do not replace the spiral cable with the battery connected and turn the ignition switch to ON.
- (b) Do not rotate the spiral cable without the steering wheel with the battery connected and turn the ignition switch to ON.
- (c) Ensure that the steering wheel is installed and aligned straight when inspecting the steering sensor.
- (d) Be sure that the spiral cable with sensor sub-assembly is in the center position during installation and when removing and installing the steering wheel **INFO**.

CAUTION:

If the steering wheel is turned without the spiral cable installed in the neutral position, the cable may break.



Last Modified: 3-27-2012	6.4 T	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000WB606VX
Title: STEERING COLUMN: STEERING SYSTEM: PROBLEM SYMPTOMS TABLE (2013 FR-S)		

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Steering System

SYMPTOM	SUSPECTED AREA	SEE PAGE
Heavy steering	Front tires (Improperly inflated, unevenly worn)	INFO
	Front wheel alignment (Incorrect)	INFO
	Steering system joints (Worn)	-
	Steering column	INFO
	Torque sensor (Built into steering column assembly)	-
	Power steering motor (Built into steering column assembly)	-
	Speed sensor	INFO
	Battery and power source system	-
	Power steering ECU power source voltage and relay	INFO
	Rack and pinion power steering gear assembly	INFO
	Power steering ECU	INFO
	Skid control ECU (Brake actuator assembly)	-
Poor return	Front tires (Improperly inflated, unevenly worn)	INFO
	Front wheel alignment (Incorrect)	INFO
	Steering column assembly	INFO
	Rack and pinion power steering gear assembly	INFO

	Power steering ECU	INFO
Excessive free play	Steering system joints (Worn)	-
	Front suspension (Lower ball joint)	INFO
	Intermediate shaft, universal joint, sliding yoke (Worn)	-
	Front axle hub (Hub bearing)	INFO
	Rack and pinion power steering gear assembly	INFO
A knocking (or clunking) sound occurs when turning the steering wheel back and forth while power steering is operating.	Front suspension (Lower ball joint)	INFO
	Steering intermediate shaft	-
	Power steering ECU	INFO
Friction occurs when turning the steering wheel during low-speed driving.	Steering column assembly	INFO
	Power steering motor (Built into steering column assembly)	-
A high-pitched sound (squeaking) occurs when turning the steering wheel slowly with the vehicle stopped.	Steering column assembly	INFO
	Power steering motor (Built into steering column assembly)	-
Steering wheel vibrates and noise occurs when turning the steering wheel with the vehicle stopped.	Steering column assembly	INFO
	Power steering motor (Built into steering column assembly)	-



Last Modified: 3-27-2012	6.4 T	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000000WB606VX
Title: STEERING COLUMN: STEERING SYSTEM: PROBLEM SYMPTOMS TABLE (2013 FR-S)		

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Steering System

SYMPTOM	SUSPECTED AREA	SEE PAGE
Heavy steering	Front tires (Improperly inflated, unevenly worn)	INFO
	Front wheel alignment (Incorrect)	INFO
	Steering system joints (Worn)	-
	Steering column	INFO
	Torque sensor (Built into steering column assembly)	-
	Power steering motor (Built into steering column assembly)	-
	Speed sensor	INFO
	Battery and power source system	-
	Power steering ECU power source voltage and relay	INFO
	Rack and pinion power steering gear assembly	INFO
	Power steering ECU	INFO
	Skid control ECU (Brake actuator assembly)	-
Poor return	Front tires (Improperly inflated, unevenly worn)	INFO
	Front wheel alignment (Incorrect)	INFO
	Steering column assembly	INFO
	Rack and pinion power steering gear assembly	INFO

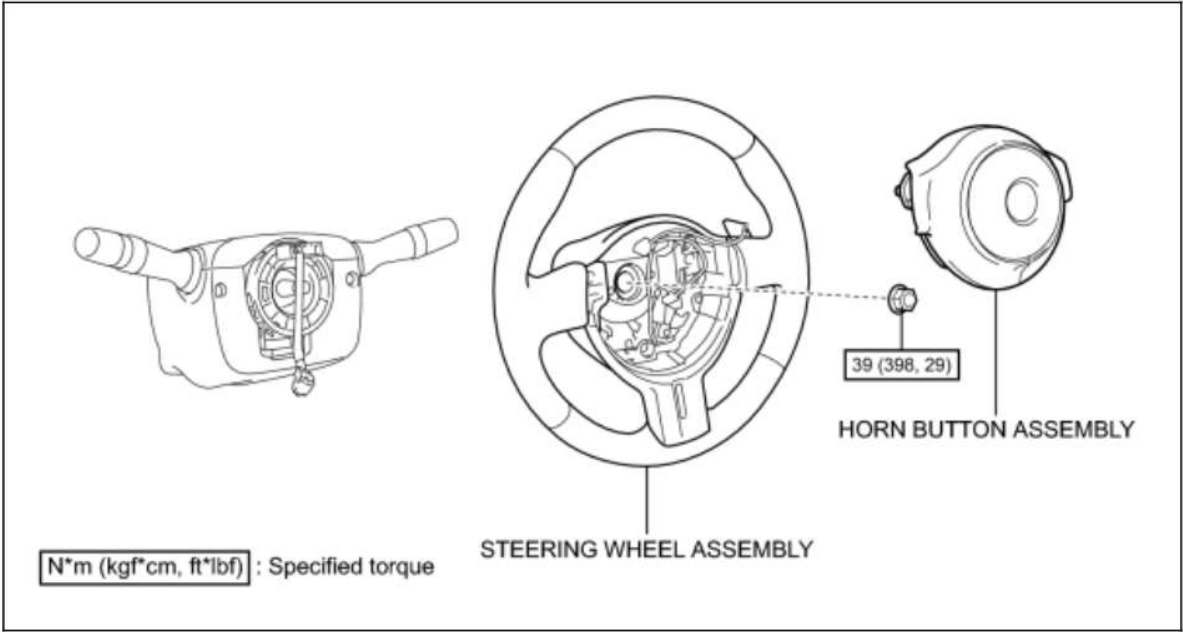
	Power steering ECU	INFO
Excessive free play	Steering system joints (Worn)	-
	Front suspension (Lower ball joint)	INFO
	Intermediate shaft, universal joint, sliding yoke (Worn)	-
	Front axle hub (Hub bearing)	INFO
	Rack and pinion power steering gear assembly	INFO
A knocking (or clunking) sound occurs when turning the steering wheel back and forth while power steering is operating.	Front suspension (Lower ball joint)	INFO
	Steering intermediate shaft	-
	Power steering ECU	INFO
Friction occurs when turning the steering wheel during low-speed driving.	Steering column assembly	INFO
	Power steering motor (Built into steering column assembly)	-
A high-pitched sound (squeaking) occurs when turning the steering wheel slowly with the vehicle stopped.	Steering column assembly	INFO
	Power steering motor (Built into steering column assembly)	-
Steering wheel vibrates and noise occurs when turning the steering wheel with the vehicle stopped.	Steering column assembly	INFO
	Power steering motor (Built into steering column assembly)	-



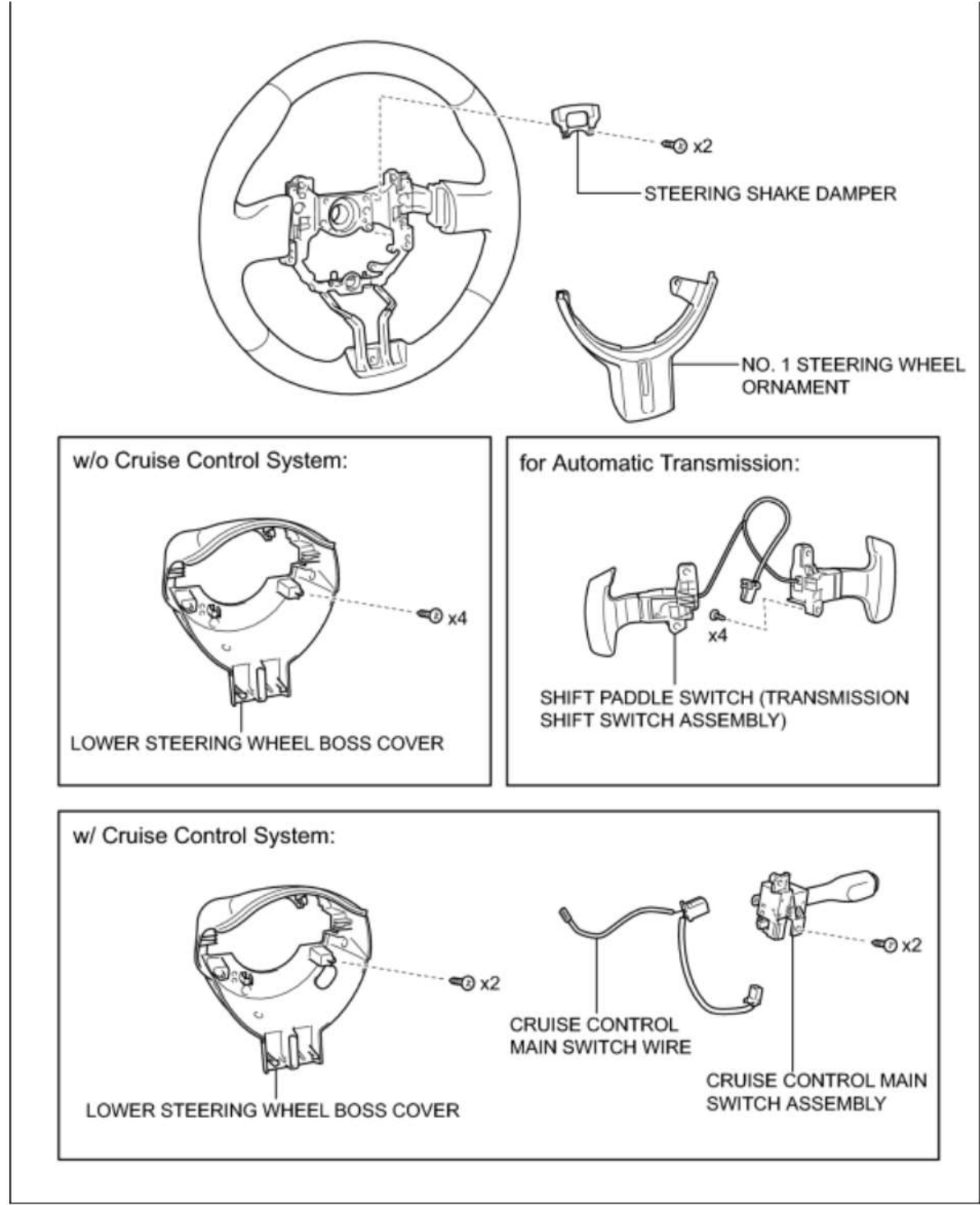
Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000033RS06RX
Title: STEERING COLUMN: STEERING WHEEL: COMPONENTS (2013 FR-S)		

COMPONENTS

ILLUSTRATION



ILLUSTRATION



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Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000033RR08CX
Title: STEERING COLUMN: STEERING WHEEL: INSTALLATION (2013 FR-S)		

INSTALLATION

NOTICE:

- Do not replace the spiral cable with the battery connected and the ignition switch ON.
- Do not rotate the spiral cable without the steering wheel with the battery connected and the ignition switch ON.
- Ensure that the steering wheel is installed and aligned straight when inspecting the steering sensor.

1. INSTALL NO. 1 STEERING WHEEL ORNAMENT

- (a) Engage the 2 claws and guide to install the No. 1 steering wheel ornament.

2. INSTALL LOWER STEERING WHEEL BOSS COVER (w/ Cruise Control System) INFO

3. INSTALL LOWER STEERING WHEEL BOSS COVER (w/o Cruise Control System)

- (a) Engage the 2 claws and install the lower steering wheel boss cover.
(b) Install the 2 screws.

4. INSTALL STEERING SHAKE DAMPER

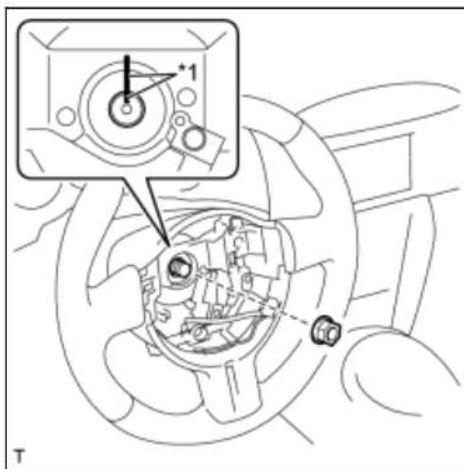
- (a) Install the steering shake damper with 2 screws to steering wheel assembly.

5. INSTALL SHIFT PADDLE SWITCH (TRANSMISSION SHIFT SWITCH ASSEMBLY) (for Automatic Transmission) INFO

6. ALIGN FRONT WHEELS FACING STRAIGHT AHEAD

7. INSPECT AND ADJUST SPIRAL CABLE WITH SENSOR SUB-ASSEMBLY INFO

8. INSTALL STEERING WHEEL ASSEMBLY



- (a) Install the steering wheel assembly aligning the matchmarks on the steering wheel assembly and steering main shaft.

Text in Illustration

*1	Matchmark
----	-----------

- (b) Install the steering wheel assembly set nut.

Torque: 39 N·m (398 kgf·cm, 29ft·lbf)

(c) Connect the connectors to the spiral cable sub-assembly and steering wheel assembly.

9. CHECK STEERING WHEEL CENTER POINT

10. INSTALL HORN BUTTON ASSEMBLY INFO

11. INSPECT HORN BUTTON ASSEMBLY INFO

12. PERFORM DIAGNOSTIC SYSTEM CHECK

INFO

13. INSPECT SRS WARNING LIGHT

INFO



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000033RT088X
Title: STEERING COLUMN: STEERING WHEEL: REMOVAL (2013 FR-S)		

REMOVAL

NOTICE:

- Do not replace the spiral cable with the battery connected and the ignition switch ON.
- Do not rotate the spiral cable without the steering wheel with the battery connected and the ignition switch ON.
- Ensure that the steering wheel is installed and aligned straight when inspecting the steering sensor.

1. PRECAUTION

CAUTION:

Be sure to read Precaution thoroughly before servicing [INFO](#).

NOTICE:

After turning the ignition switch off, waiting time may be required before disconnecting the cable from the negative (-) battery terminal. Therefore, make sure to read the disconnecting the cable from the negative (-) battery terminal notices before proceeding with work [INFO](#).

2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

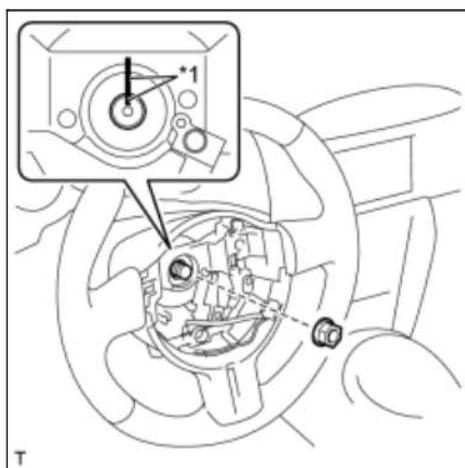
NOTICE:

The power window system utilizes a mechanism that the door glass moves down slightly when the door is opened, and that the glass moves up when closing the door in order to prevent the door molding from being damaged. When the battery negative (-) terminal needs to be disconnected for servicing, fully open the driver and passenger door glasses in advance.

3. ALIGN FRONT WHEELS FACING STRAIGHT AHEAD

4. REMOVE HORN BUTTON ASSEMBLY [INFO](#)

5. REMOVE STEERING WHEEL ASSEMBLY

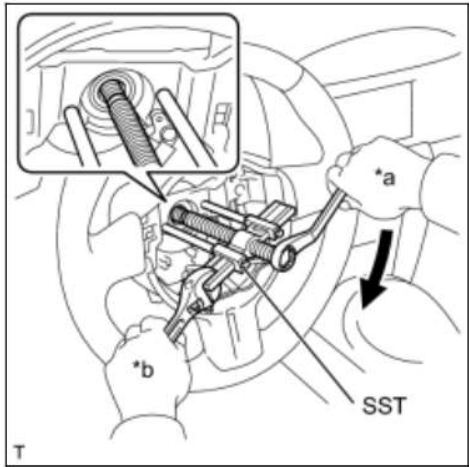


(a) Remove the steering wheel assembly set nut.

Text in Illustration

*1	Matchmark
----	-----------

- (b) Put matchmarks on the steering wheel assembly and steering main shaft.
- (c) Disconnect the connectors from the spiral cable sub-assembly and steering wheel assembly.
- (d) Using SST, remove the steering wheel assembly.



Text in Illustration

*a	Turn
*b	Hold

SST: 09950-50013

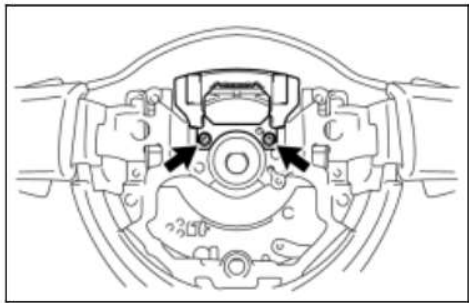
- 09951-05010
- 09952-05010
- 09953-05020
- 09954-05031

NOTICE:

Apply a small amount of grease to the threads and tip of SST (09953-05020) before use.

6. REMOVE SHIFT PADDLE SWITCH (TRANSMISSION SHIFT SWITCH ASSEMBLY) (for Automatic Transmission) INFO

7. REMOVE STEERING SHAKE DAMPER

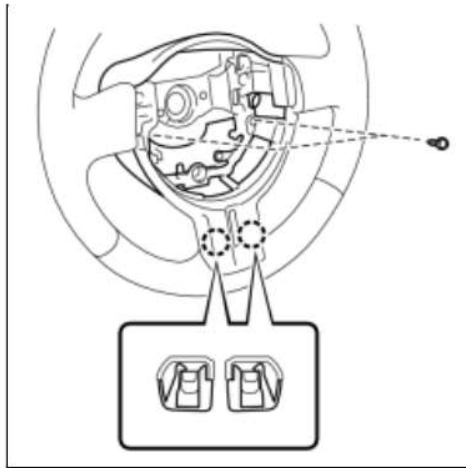


- (a) Remove the 2 screws and steering shake damper from steering wheel assembly.

8. REMOVE LOWER STEERING WHEEL BOSS COVER (w/ Cruise Control System) INFO

9. REMOVE LOWER STEERING WHEEL BOSS COVER (w/o Cruise Control System)

- (a) Remove the 2 screws.

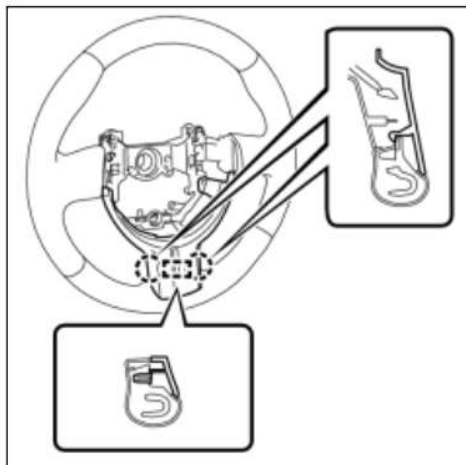


(b) Disengage the 2 claws and remove the lower steering wheel boss cover.

10. REMOVE CRUISE CONTROL MAIN SWITCH ASSEMBLY (w/ Cruise Control System)

INFO

11. REMOVE NO. 1 STEERING WHEEL ORNAMENT



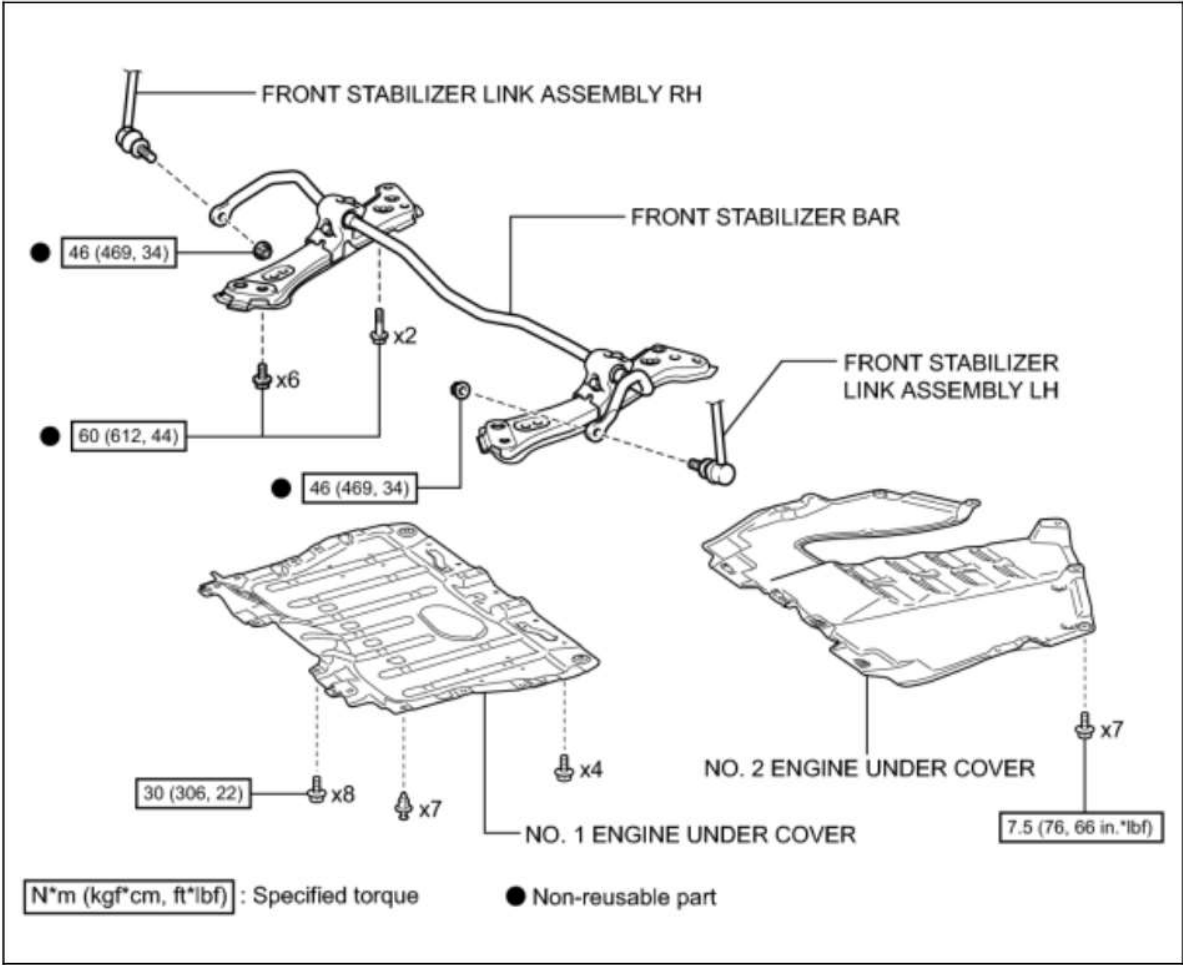
(a) Disengage the 2 claws and guide to remove the No. 1 steering wheel ornament.



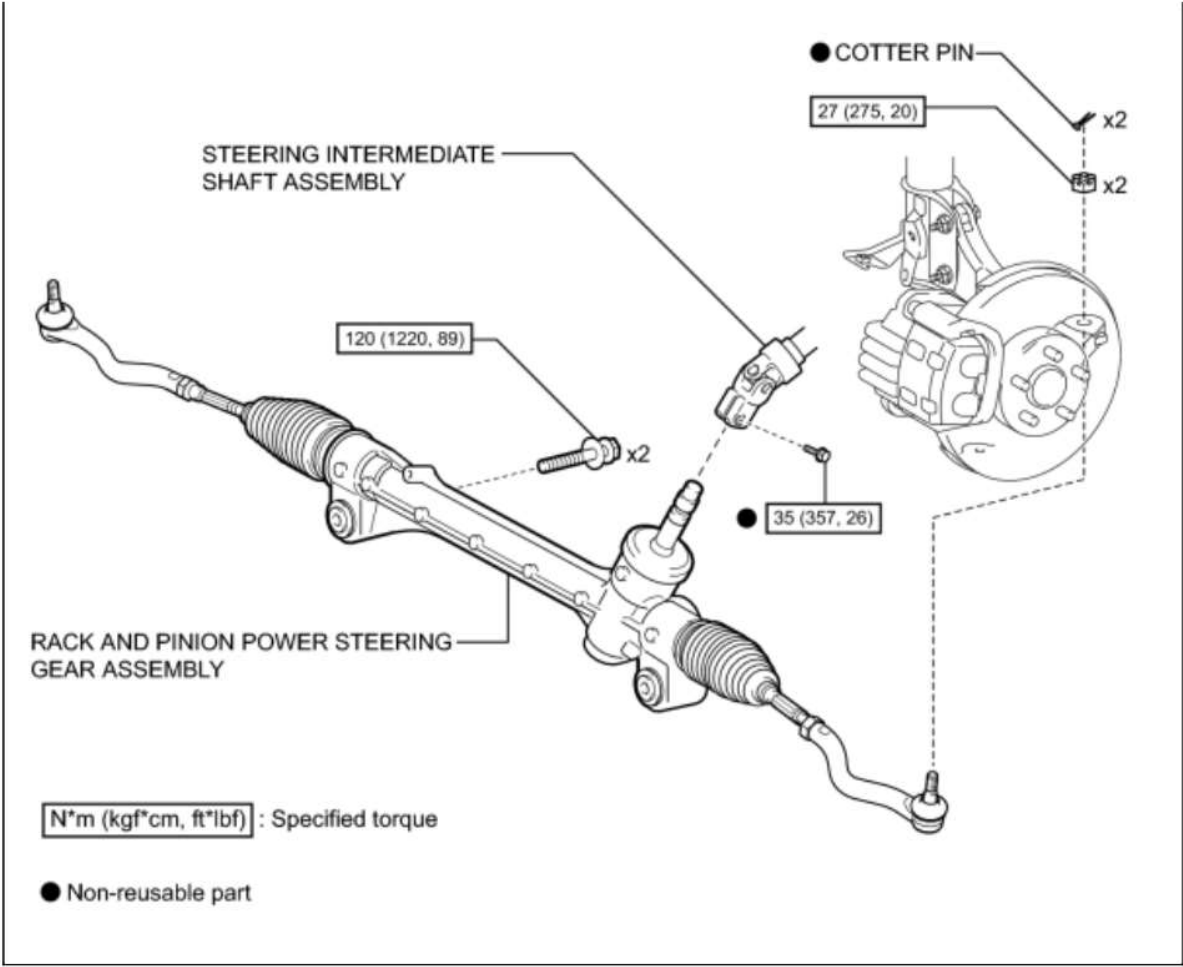
Last Modified: 3-27-2012	6.4 K	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000002TET014X
Title: STEERING GEAR / LINKAGE: STEERING GEAR: COMPONENTS (2013 FR-S)		

COMPONENTS

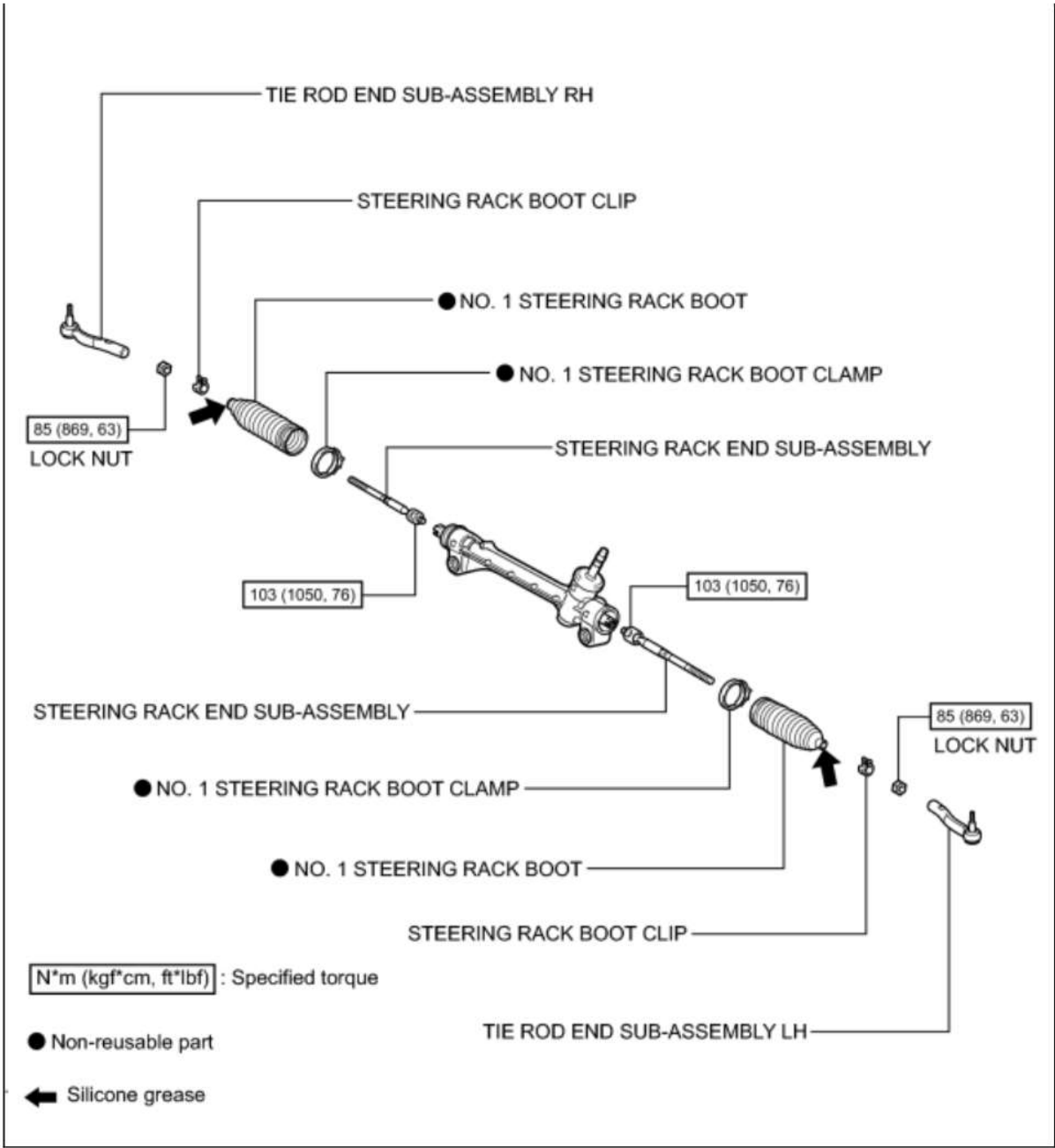
ILLUSTRATION



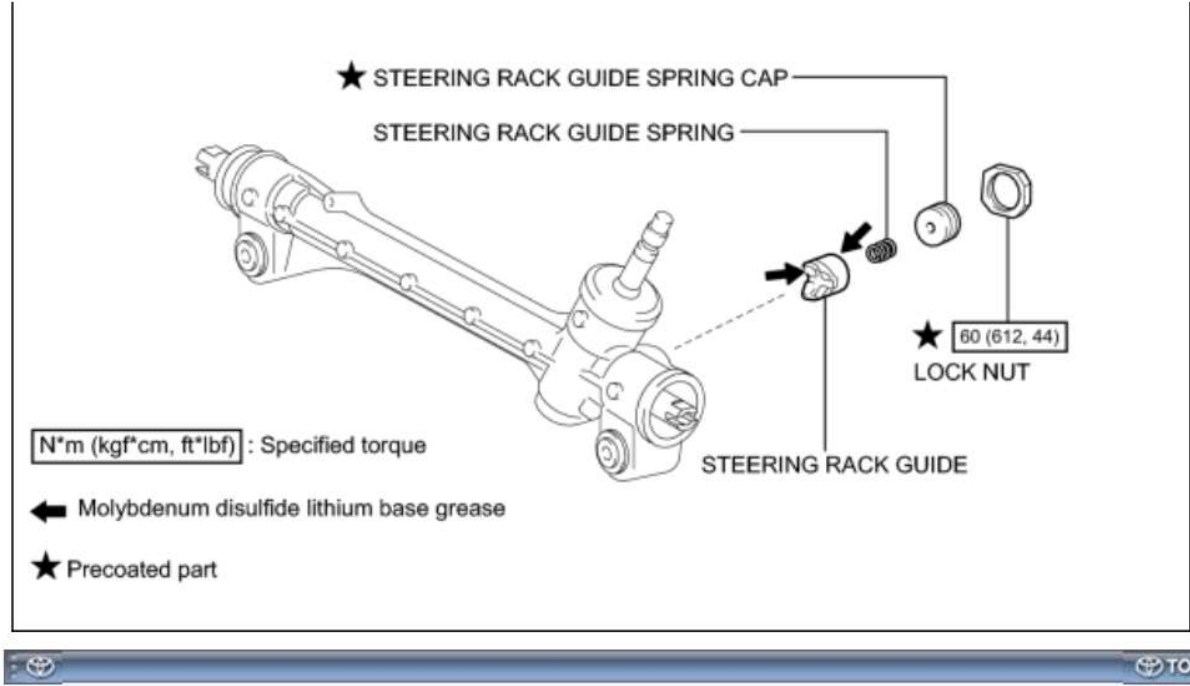
ILLUSTRATION



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