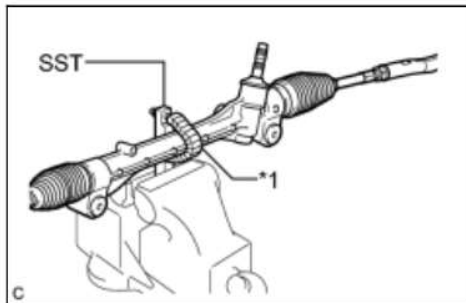


Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000045EQ000X
Title: STEERING GEAR / LINKAGE: STEERING GEAR: DISASSEMBLY (2013 FR-S)		

DISASSEMBLY

1. SECURE RACK AND PINION POWER STEERING GEAR ASSEMBLY



- (a) Using SST, secure the rack and pinion power steering gear assembly in a vise.

SST: 09612-00012

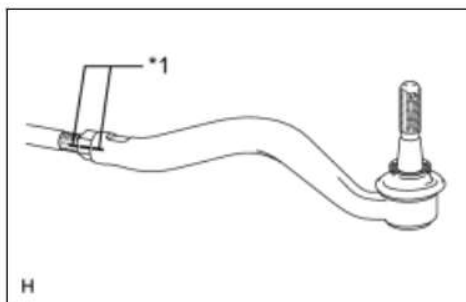
Text in Illustration

*1	Protective Tape
----	-----------------

HINT:

Tape SST before use.

2. REMOVE TIE ROD END SUB-ASSEMBLY LH



- (a) Put matchmarks on the tie rod end sub-assembly LH and the steering rack end sub-assembly.

Text in Illustration

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

- (b) Remove the tie rod end sub-assembly LH and lock nut.

3. REMOVE TIE ROD END SUB-ASSEMBLY RH

HINT:

Use the same procedure as for the LH side.

4. REMOVE STEERING RACK BOOT CLIP

HINT:

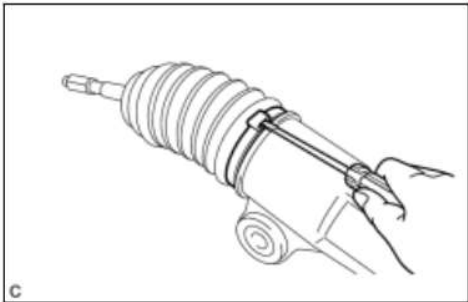
Use the same procedure for both the LH side and RH side.

- (a) Using pliers, remove the steering rack boot clip.

5. REMOVE NO. 1 STEERING RACK BOOT CLAMP

HINT:

Use the same procedure for both the LH side and RH side.



(a) Using a screwdriver, remove the No. 1 steering rack boot clamp.

NOTICE:
Be careful not to damage the No. 1 steering rack boot.

6. REMOVE NO. 1 STEERING RACK BOOT

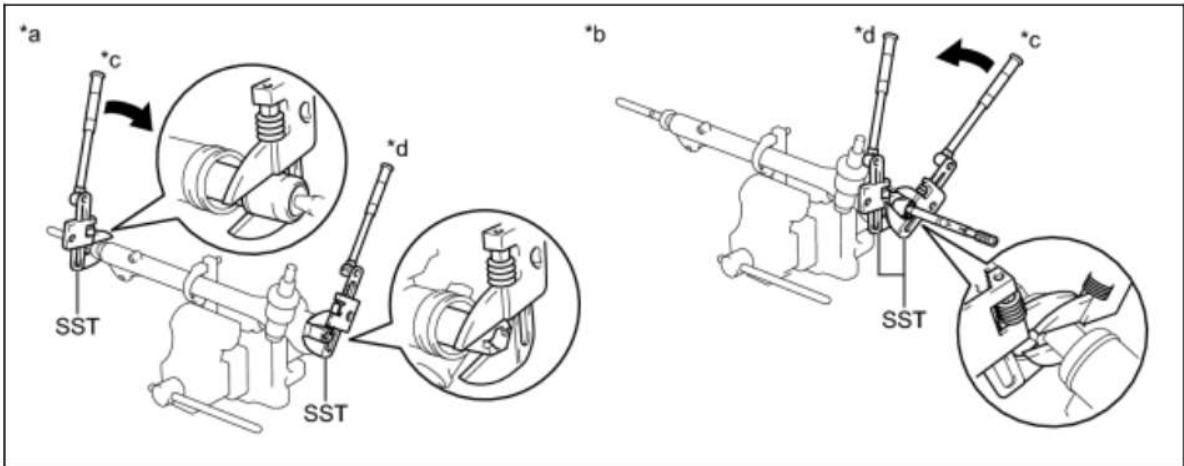
NOTICE:
If the No. 1 steering rack boot is fissured, damaged or deteriorated, replace it with a new one.

HINT:
Use the same procedure for both the LH side and RH side.

7. REMOVE STEERING RACK END SUB-ASSEMBLY

(a) Using SST, remove the steering rack end sub-assembly.

SST: 09922-10010



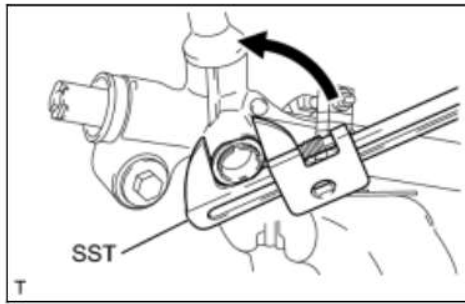
Text in Illustration

*a	LH Side	*b	RH Side
*c	Turn	*d	Hold

NOTICE:
Turn SST in the direction as shown in the illustration.

NOTICE:
Turn SST in the direction as shown in the illustration.

8. REMOVE STEERING RACK GUIDE

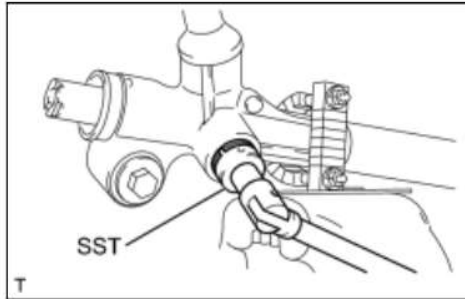


(a) Using SST, remove the lock nut.

SST: 09922-10010

NOTICE:

Turn SST in the direction as shown in the illustration.



(b) Using SST, remove the steering rack guide spring cap.

SST: 09631-10021

(c) Remove the steering rack guide and the steering rack guide spring.



Last Modified: 3-27-2012	6.4 G	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001S2N02GX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: INSPECTION (2013 FR-S)		

INSPECTION

1. INSPECT TIE ROD END SUB-ASSEMBLY

- (a) Secure the tie rod assembly in a vise.

NOTICE:

Do not overtighten the vise.

- (b) Turn the ball joint back and forth.

OK:

There is no unusual resistance or play while turning.

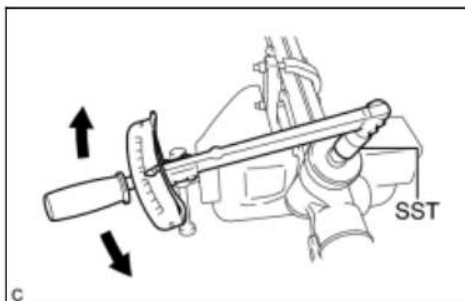
HINT:

- If the result is not as specified, remove the tie rod end sub-assembly with a new one.
- If the dust seal is fissured, damaged or deteriorated, replace it with a new one.

2. INSPECT TOTAL PRELOAD

NOTICE:

Inspect the total preload in a no-load condition by removing the tie rod assembly RH and LH, and steering rack boots.



- (a) Install SST to the pinion shaft and turn it left and right 5 times or more.

SST: 09616-00011

- (b) Set a torque wrench to SST and turn the pinion shaft continuously at a rate of 4 to 6 seconds per turn to inspect the total preload of the steering gear assembly.

Standard Preload:

0.9 to 1.6 N*m (9.2 to 16.3 kgf*cm, 8.0 to 14.2 in.*lbf)

NOTICE:

Inspect the total preload around the steering rack center position.

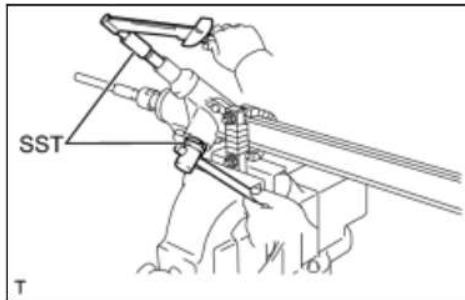
HINT:

If the total preload is not within the specified range, adjust the total preload.

3. ADJUST TOTAL PRELOAD

- (a) Temporarily install the rack ends sub-assembly RH and LH.

- (b) Install the steering rack guide and steering rack guide spring to the steering rack housing.
- (c) Apply the three bond to the screw part of steering rack guide spring cap and steering rack housing.
- (d) Temporarily install the steering rack guide spring cap.



- (e) Using SST, tighten the steering rack guide spring cap so that the rotational torque of the pinion shaft reaches the standard value.

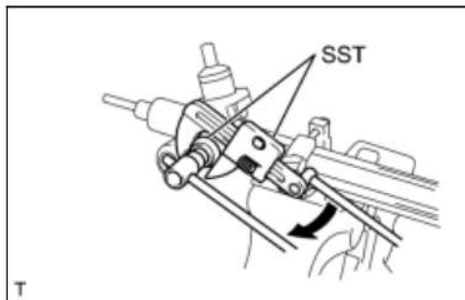
SST: 09631-10021

SST: 09616-00011

Torque: Preload (turning):

0.9 to 1.6 N·m (9.2 to 16.3 kgf·cm, 8.0 to 14.2 in.*lbf)

- (f) Apply the three bond to the screw part of lock nut.



- (g) Using SST, hold the steering rack guide spring cap and tighten the lock nut.

SST: 09631-10021

SST: 09922-10010

Torque: 60 N·m (612 kgf·cm, 44ft·lbf)

NOTICE:

- Use the formula to calculate special torque values for situations where SST is combined with a torque wrench
- Turn SST in the direction as shown in the illustration.

- (h) Set a torque wrench to SST and turn the pinion shaft continuously at a rate of 4 to 6 seconds per turn to inspect the total preload of the steering gear assembly.

SST: 09616-00011

Standard Preload:

0.9 to 1.6 N·m (9.2 to 16.3 kgf·cm, 8.0 to 14.2 in.*lbf)

NOTICE:

Inspect the total preload around the steering rack center position.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001S2M03AX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: INSTALLATION (2013 FR-S)		

INSTALLATION

1. INSTALL RACK AND PINION POWER STEERING GEAR ASSEMBLY

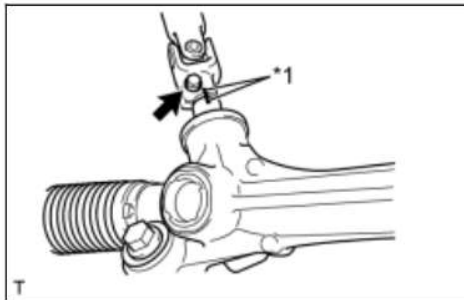
- (a) Install the rack and pinion power steering gear assembly with the 2 bolts.

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

HINT:

Confirm that the rack is positioned in neutral.

2. CONNECT STEERING INTERMEDIATE SHAFT ASSEMBLY



- (a) Align the matchmarks and install the steering intermediate shaft to the rack and pinion power steering gear assembly.

Text in Illustration

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

- (b) Install the new bolt.

Torque: 35 N·m (357 kgf·cm, 26ft·lbf)

3. CONNECT TIE ROD END SUB-ASSEMBLY LH

- (a) Connect the tie rod end sub-assembly LH to the steering knuckle with the nut.

Torque: 27 N·m (275 kgf·cm, 20ft·lbf)

- (b) Install a new cotter pin.

NOTICE:

Further tighten the nut up to 60° if the holes for the cotter pin are not aligned.

4. CONNECT TIE ROD END SUB-ASSEMBLY RH

HINT:

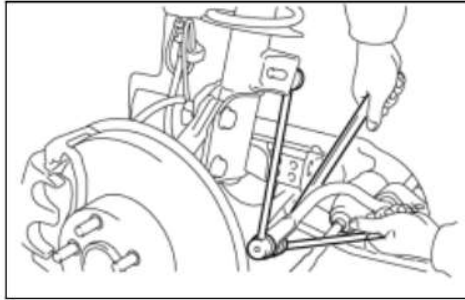
Use the same procedure as for the LH side.

5. INSTALL FRONT STABILIZER BAR

- (a) Install the front stabilizer bar together with the rear body mounting cushion sub-assembly LH and RH to the front suspension cross member with the new 8 bolts.

Torque: 60 N·m (612 kgf·cm, 44ft·lbf)

6. CONNECT FRONT STABILIZER LINK ASSEMBLY LH



- (a) Connect the front stabilizer link assembly LH to the front stabilizer bar with the nut.

Torque: 46 N·m (469 kgf·cm, 34ft·lbf)

If the ball joint turns together with the nut, use a hexagon wrench to hold the stud bolt.

7. CONNECT FRONT STABILIZER LINK ASSEMBLY RH

HINT:

Use the same procedure as for the LH side.

8. INSTALL NO. 2 ENGINE UNDER COVER INFO

9. INSTALL NO. 1 ENGINE UNDER COVER INFO

10. INSTALL FRONT WHEELS

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

11. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

INFO

12. INSPECT STEERING WHEEL CENTER POINT

13. PERFORM MEMORIZATION

HINT:

Perform VSC sensor neutral memorization INFO .



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM0000045ER00OX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: REASSEMBLY (2013 FR-S)		

REASSEMBLY

1. INSTALL STEERING RACK GUIDE

- (a) Apply grease to the steering rack guide spring and the contact surface of the rack guide.
- (b) Install the rack guide and the steering rack guide spring.
- (c) Apply three bond to 2 or 3 threads of the steering rack guide spring cap.
- (d) Temporarily install the steering rack guide spring cap.

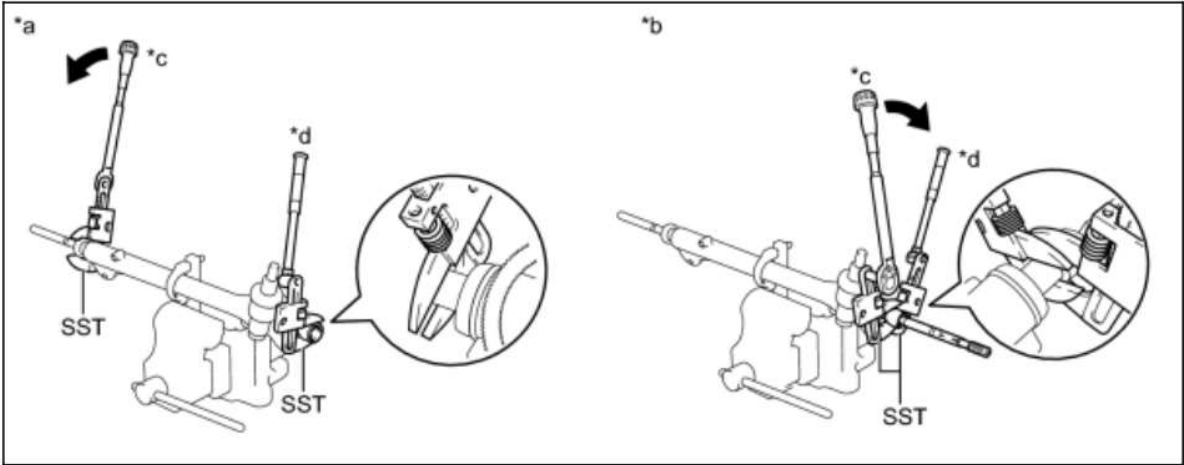
2. ADJUST TOTAL PRELOAD

INFO

3. INSTALL STEERING RACK END SUB-ASSEMBLY

- (a) Using SST, install the steering rack end sub-assembly.

SST: 09922-10010



Text in Illustration

*a	LH Side	*b	RH Side
*c	Turn	*d	Hold

HINT:

Using SST, hold the steering rack and install the steering rack end sub-assembly.

Torque: 103 N·m (1050 kgf·cm, 76ft·lbf)

NOTICE:

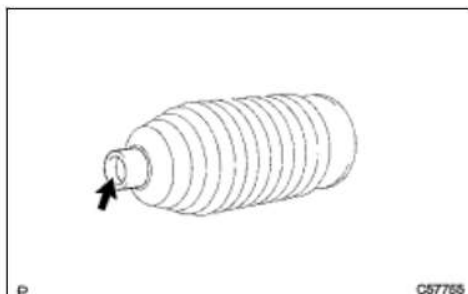
- Use the formula to calculate special torque values for situations where SST is combined with a torque wrench INFO.
- Turn SST in the direction as shown in the illustration.
- Fix the steering rack firmly in place.

4. INSTALL NO. 1 STEERING RACK BOOT

HINT:

Use the same procedure for both the LH side and RH side.

- (a) Wipe the old grease off of the No. 1 steering rack boot and rack end mating groove.



- (b) Apply silicone grease to the inside of the small opening of a new No. 1 steering rack boot.

- (c) Install the No. 1 steering rack boot to the groove on the rack housing.

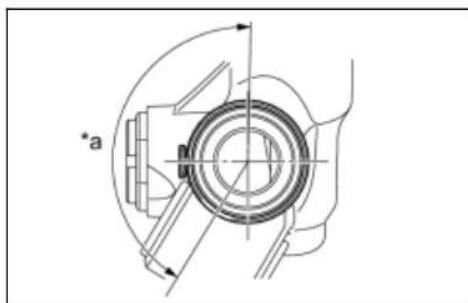
NOTICE:

- Be careful not to damage or twist the boot.
- Make sure that the boot is free of rust and foreign matter.

5. INSTALL NO. 1 STEERING RACK BOOT CLAMP

HINT:

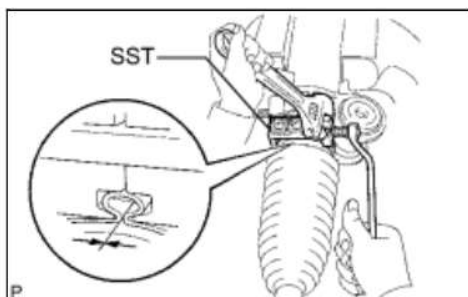
Use the same procedure for both the LH side and RH side.



- (a) Install the new No. 1 steering rack boot clamp to the No. 1 steering rack boot in such a way that the staked part of the clamp is positioned within the range, as shown in the illustration.

Text in Illustration

*a	150°
----	------



- (b) Using SST, tighten a new No. 1 steering rack boot clamp as shown in the illustration.

SST: 09521-24010

Clearance:

2.0 mm (0.079 in.) or less

NOTICE:

- Be careful not to damage the No. 1 steering rack boot.
- If the No. 1 steering rack boot is fissured, damaged or deteriorated, replace it with a new one.

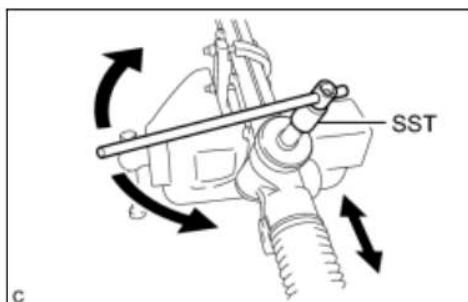
6. INSTALL STEERING RACK BOOT CLIP

HINT:

Use the same procedure for both the LH side and RH side.

- (a) Using pliers, install the steering rack boot clip.

7. INSPECT RACK AND PINION POWER STEERING GEAR ASSEMBLY



- (a) Using SST, rotate the pinion shaft to see if both the left and the right steering rack boots expand and contract smoothly.

SST: 09616-00011

NOTICE:

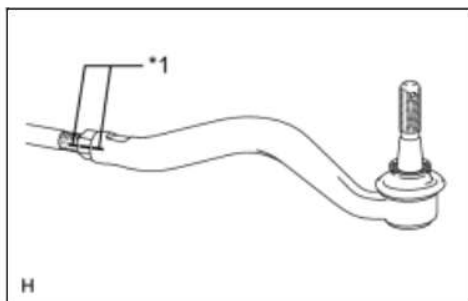
Set the pinion shaft at the neutral position after the inspection.

HINT:

If the operation cannot be done as specified, use a new steering rack boot clamp and reinstall the steering rack boots.

8. INSTALL TIE ROD END SUB-ASSEMBLY LH

- (a) Temporarily tighten the lock nut and tie rod end sub-assembly LH to the steering rack end sub-assembly until the matchmarks are aligned.



Text in Illustration

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

HINT:

After adjusting the front wheel alignment, securely tighten the lock nut.

Temporarily tighten - Torque: 5.0 N·m (51 kgf·cm, 44in·lbf)

Securely tighten - Torque: 85 N·m (869 kgf·cm, 63ft·lbf)

9. INSTALL TIE ROD END SUB-ASSEMBLY RH

HINT:

Use the procedure as for the LH side.



Last Modified: 3-27-2012	6.4 A	From: 201203
Model Year: 2013	Model: FR-S	Doc ID: RM000001S2P03AX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: REMOVAL (2013 FR-S)		

REMOVAL

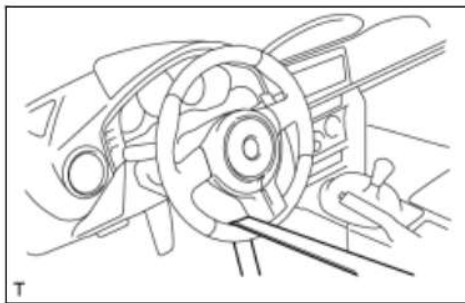
NOTICE:

- Be sure to align the front wheels straight ahead when removing and installing the steering gear assembly.
- When disconnecting the steering intermediate shaft assembly and the pinion shaft of the steering gear assembly, be sure to place matchmarks before servicing.

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

2. REMOVE FRONT WHEELS

3. SECURE STEERING WHEEL ASSEMBLY



- (a) Secure the steering wheel assembly with the seat belt in order to prevent rotation.

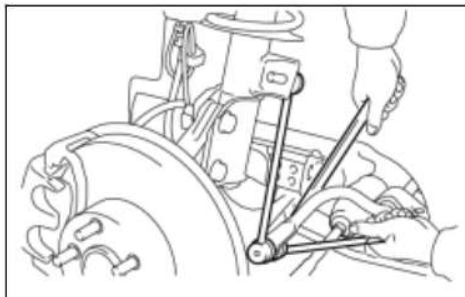
HINT:

This operation is useful to prevent damage to the spiral cable.

4. REMOVE NO. 1 ENGINE UNDER COVER INFO

5. REMOVE NO. 2 ENGINE UNDER COVER INFO

6. DISCONNECT FRONT STABILIZER LINK ASSEMBLY LH



- (a) Remove the nut and front stabilizer link assembly LH from the front stabilizer bar.

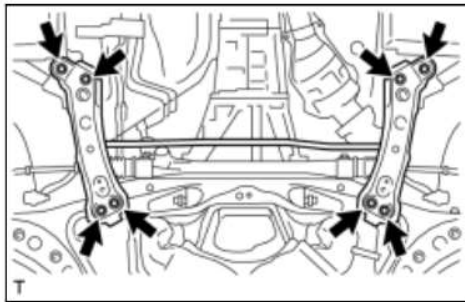
If the ball joint turns together with the nut, use a hexagon wrench to hold the stud bolt.

7. DISCONNECT FRONT STABILIZER LINK ASSEMBLY RH

HINT:

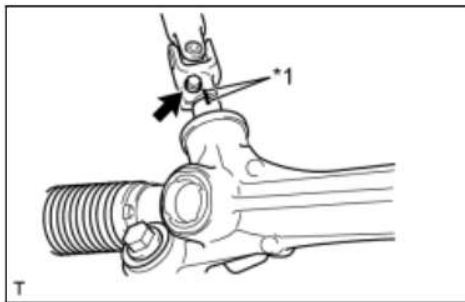
Use the same procedure as for the LH side.

8. REMOVE FRONT STABILIZER BAR



- (a) Remove the 8 bolts, and remove the front stabilizer bar together with the rear body mounting cushion sub-assembly LH and RH from the front suspension cross member.

9. SEPARATE STEERING INTERMEDIATE SHAFT ASSEMBLY



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

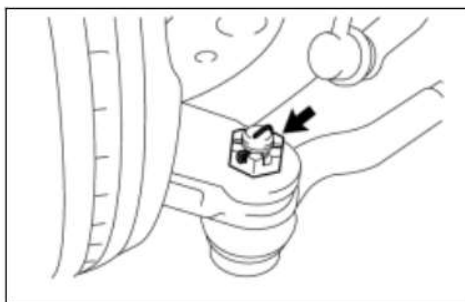
Text in Illustration

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

- (b) Remove the bolt.

- (c) Disconnect the steering intermediate shaft assembly from the rack and pinion power steering gear assembly.

10. DISCONNECT TIE ROD END SUB-ASSEMBLY LH

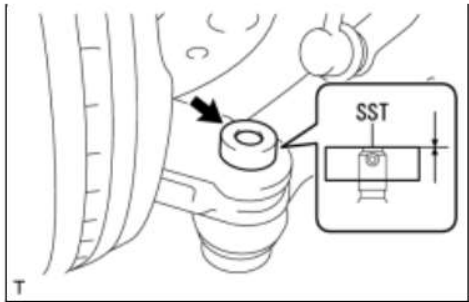


- (a) Remove the cotter pin and nut.

- (b) Install SST to the tie rod end sub-assembly LH.

SST: 09960-20010

09961-02060

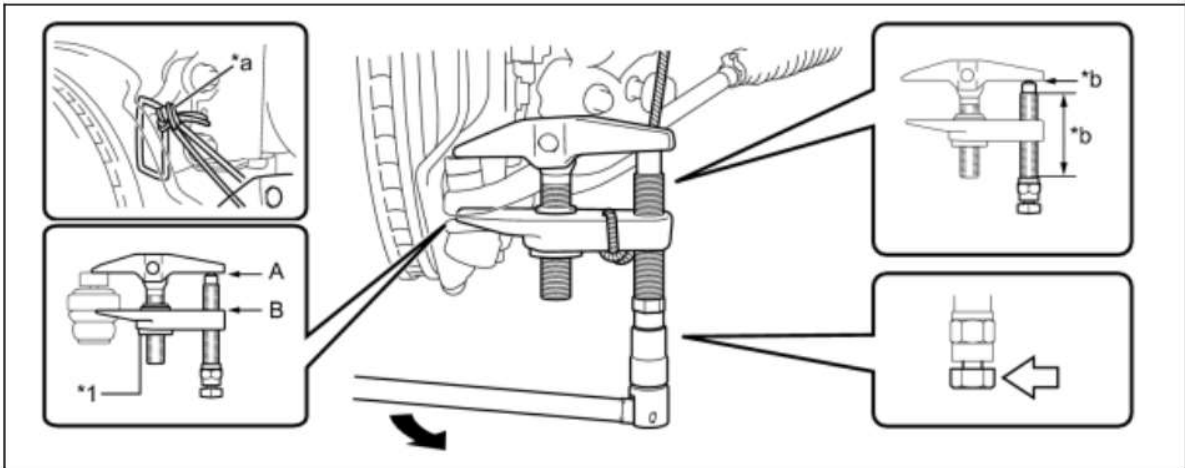


NOTICE:
Make sure that the lower ends of the tie rod end sub-assembly LH and SST are aligned.

(c) Secure SST using a string.

NOTICE:
Be sure to tighten the string firmly to secure SST to the steering knuckle to prevent SST from falling off.

(d) Using SST, separate the tie rod end sub-assembly LH from the steering knuckle.



Text in Illustration

*1	Center Nut	-	-
*a	String	*b	Grease Application Area
	Place the wrench here.	-	-

SST: 09960-20010
09961-02010

CAUTION:
Apply grease to the bolt threads and the tip of SST.

- NOTICE:**
- Install SST with the center nut so that A and B shown in the illustration are parallel. Otherwise, the dust cover may be damaged.
 - Be sure to place the wrench on the part indicated in the illustration.
 - Do not damage the front disc brake dust cover.

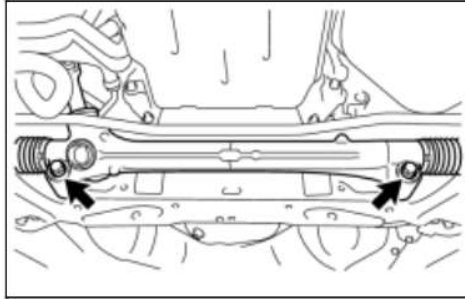
- Do not damage the ball joint dust cover.
- Do not damage the steering knuckle.

11. DISCONNECT TIE ROD END SUB-ASSEMBLY RH

HINT:

Use the same procedure as for the LH side.

12. REMOVE RACK AND PINION POWER STEERING GEAR ASSEMBLY



- (a) Remove the 2 bolts and rack and pinion power steering gear assembly.

