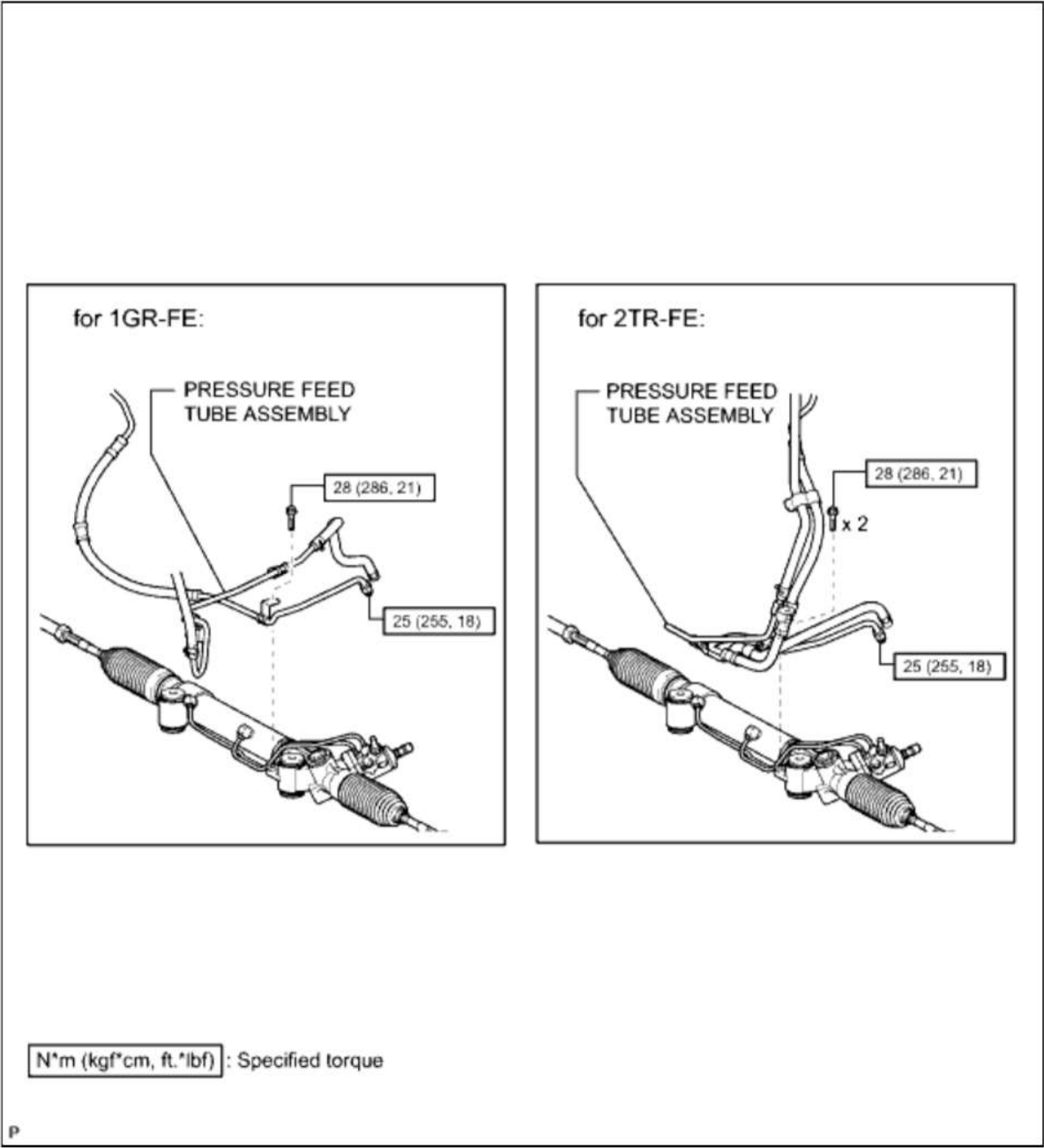


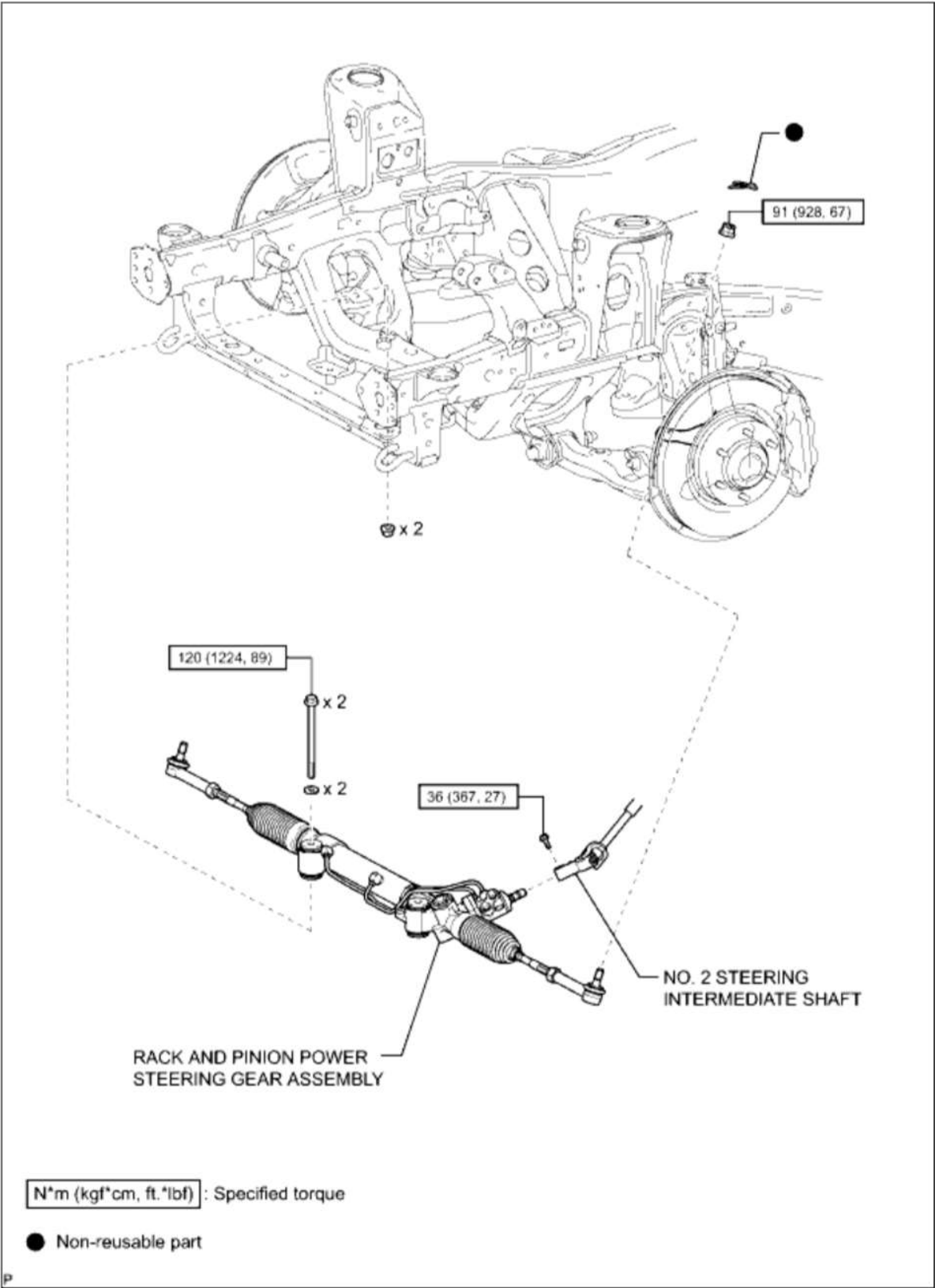
Last Modified: 5-10-2010	6.4 K	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000047A0000X
Title: STEERING GEAR / LINKAGE: STEERING GEAR: COMPONENTS (2010 4Runner)		

COMPONENTS

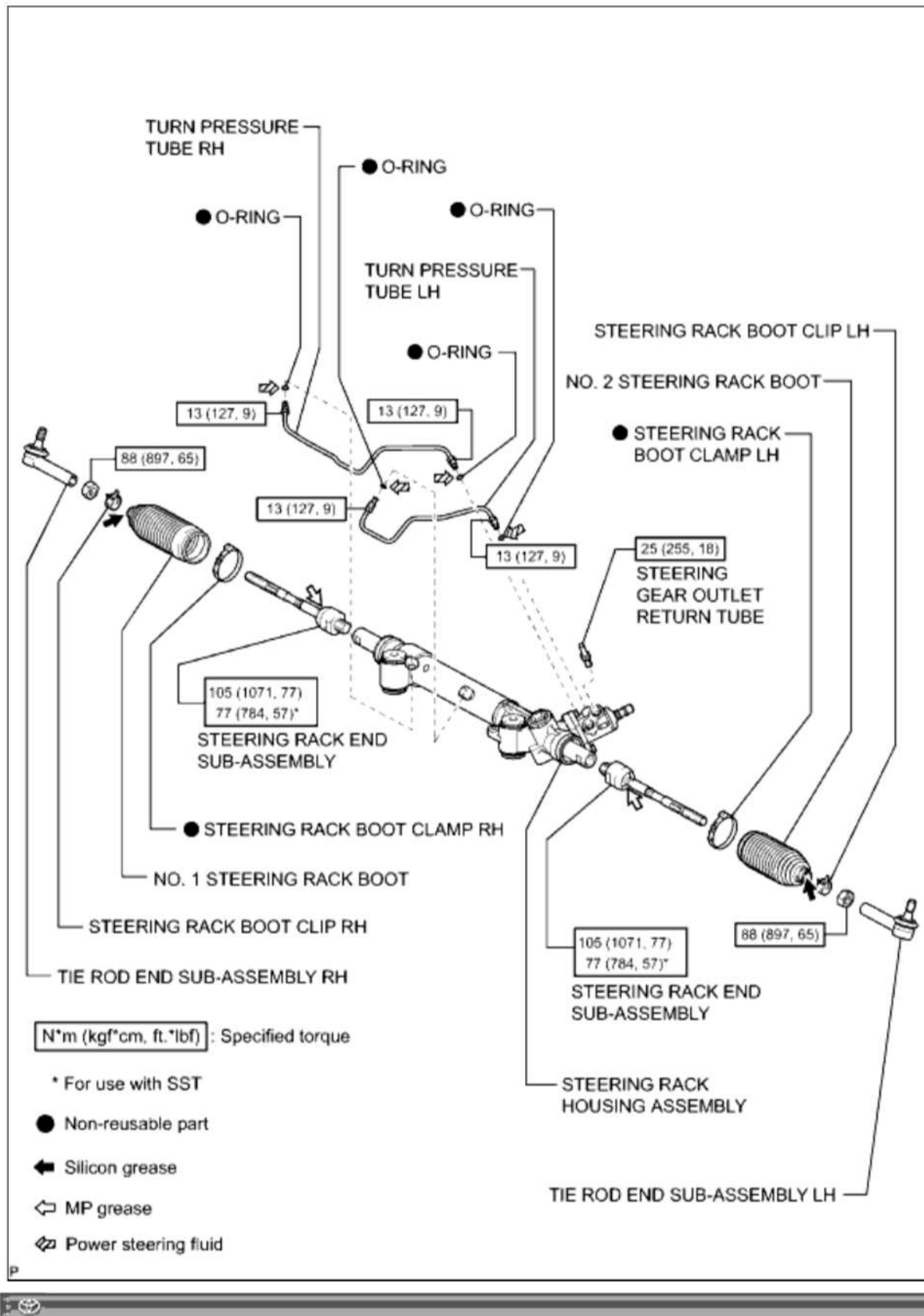
ILLUSTRATION



ILLUSTRATION



ILLUSTRATION



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000039SZ00CX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: REMOVAL (2010 4Runner)		

REMOVAL

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

2. REMOVE FRONT WHEELS

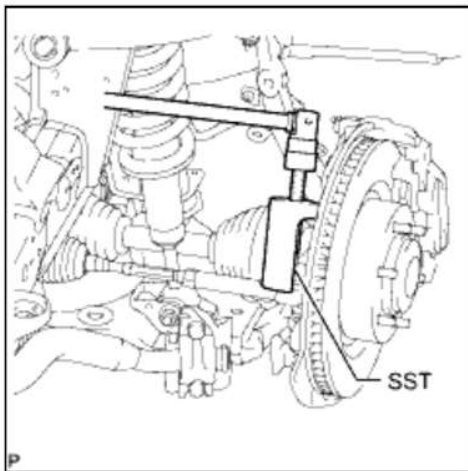
3. REMOVE ENGINE ASSEMBLY

(a) Remove the engine assembly .

4. DISCONNECT NO. 2 STEERING INTERMEDIATE SHAFT

(a) Disconnect the No. 2 steering intermediate shaft .

5. DISCONNECT TIE ROD END SUB-ASSEMBLY LH



(a) Using SST, disconnect the tie rod end assembly.

SST: 09610-20012

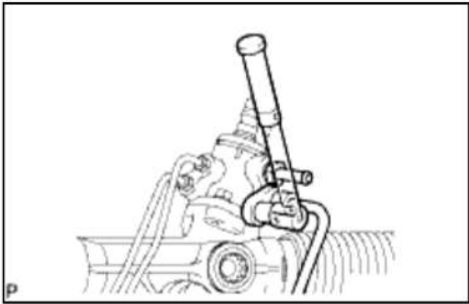
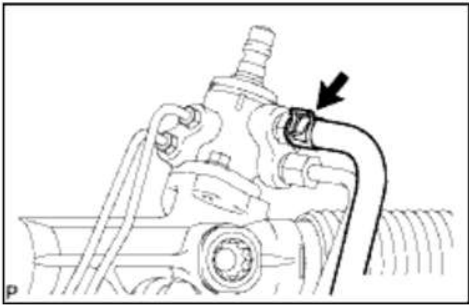
6. DISCONNECT TIE ROD END SUB-ASSEMBLY RH

HINT:

Use the same procedures described for the LH side.

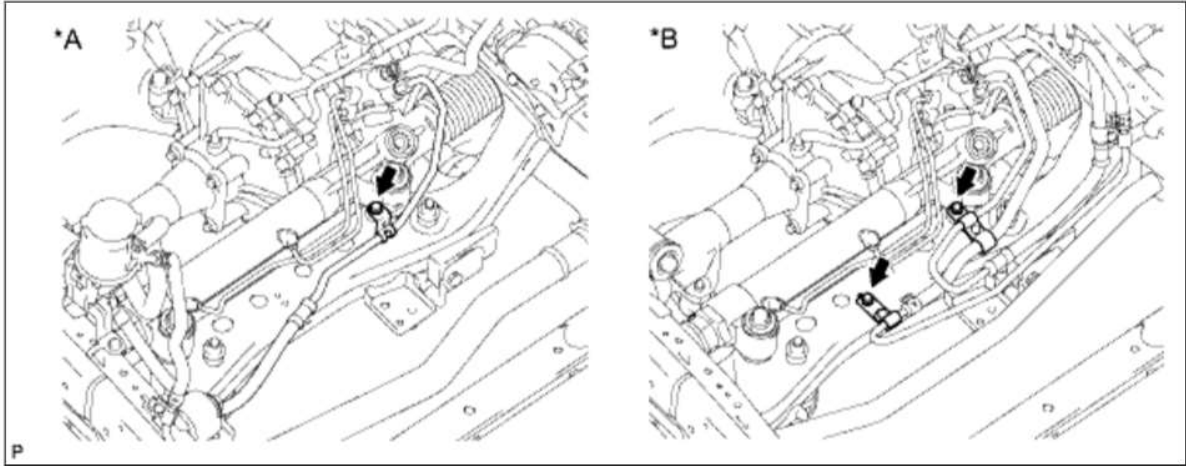
7. DISCONNECT PRESSURE FEED TUBE ASSEMBLY

(a) Remove the clamp and disconnect the pressure feed tube (return tube side) from the steering gear.



(b) Using a union nut wrench, disconnect the pressure feed tube (pressure feed tube side) from the steering gear.

(c) Remove the bolt and disconnect the pressure feed tube clamp.

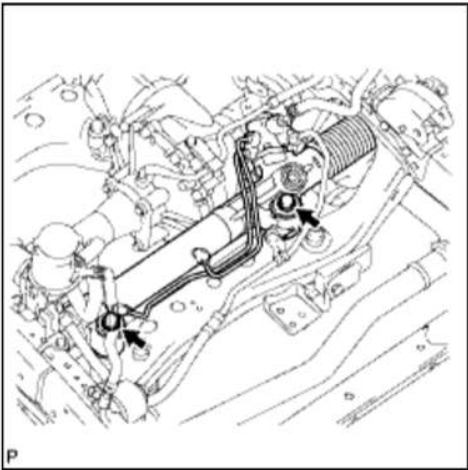


Text in Illustration

*A	for 1GR-FE:	*B	for 2TR-FE:
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8. REMOVE RACK AND PINION POWER STEERING GEAR ASSEMBLY

(a) Remove the 2 bolts, 2 nuts and steering gear assembly.



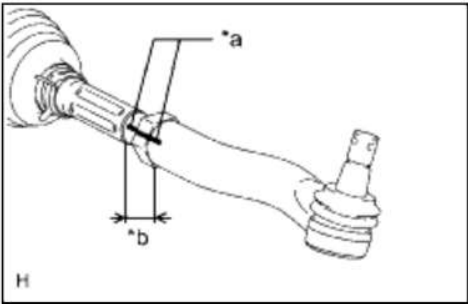
cardiagn.com

Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000039T000IX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: DISASSEMBLY (2010 4Runner)		

DISASSEMBLY

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

1. REMOVE TIE ROD END SUB-ASSEMBLY LH



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

Text in Illustration

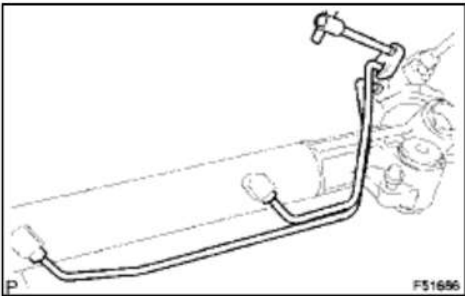
*a	Matchmark
*b	Length A

- (b) Measure length A and record the measurement.
- (c) Remove the tie rod end LH.

2. REMOVE TIE ROD END SUB-ASSEMBLY RH

HINT:
Use the same procedures described for the LH side.

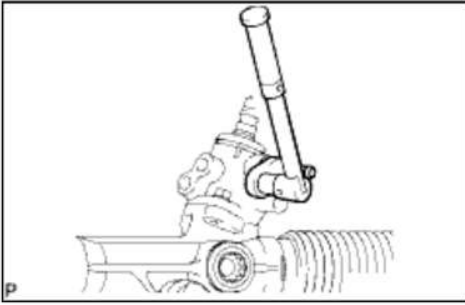
3. REMOVE TURN PRESSURE TUBE



(a) Using a union nut wrench, remove the turn pressure tube LH and RH.

4. REMOVE STEERING GEAR OUTLET RETURN TUBE

(a) Using a union nut wrench, remove the return tube from the steering gear.



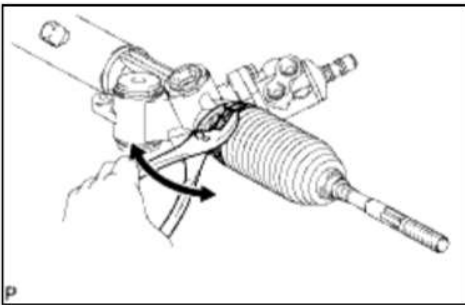
5. REMOVE STEERING RACK BOOT CLIP LH

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

6. REMOVE STEERING RACK BOOT CLIP RH

HINT:

Use the same procedures described for the LH side.



7. REMOVE STEERING RACK BOOT CLAMP LH

(a) Using pliers, remove the boot clamp as shown in the illustration.

NOTICE:

Be careful not to damage the steering rack boot.

8. REMOVE STEERING RACK BOOT CLAMP RH

HINT:

Use the same procedures described for the LH side.

9. REMOVE NO. 2 STEERING RACK BOOT

(a) Remove the steering rack boot.

10. REMOVE NO. 1 STEERING RACK BOOT

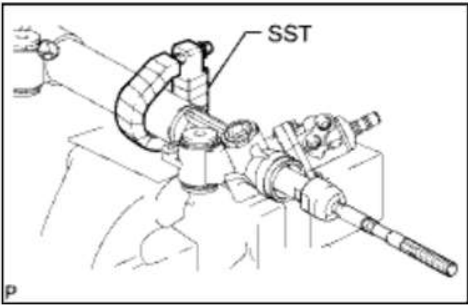
(a) Remove the steering rack boot.

11. SECURE RACK AND PINION POWER STEERING GEAR ASSEMBLY

(a) Using SST, secure the steering gear assembly.

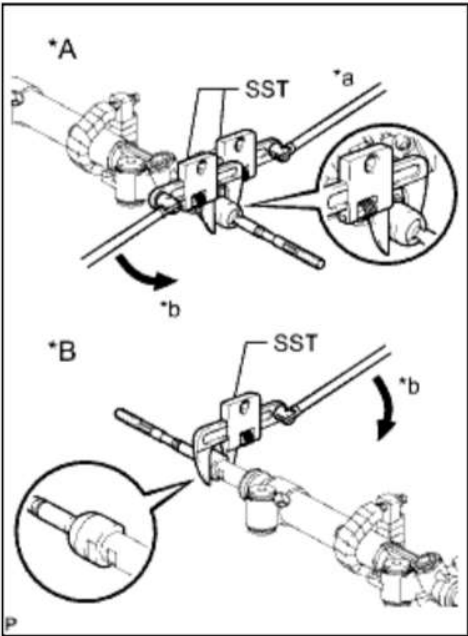
SST: 09612-00012

HINT:



Tape SST before use.

12. REMOVE STEERING RACK END SUB-ASSEMBLY



(a) Using SST, hold the steering rack (LH side).

SST: 09922-10010

Text in Illustration

*A	LH Side
*B	RH Side
*a	Hold
*b	Turn

(b) Using SST, remove the steering rack end (LH side) from the steering rack.

SST: 09922-10010

HINT:

Rotate SST in the direction shown in the illustration.

(c) Using SST, remove the steering rack end (RH side) from the steering rack.

SST: 09922-10010

HINT:

Rotate SST in the direction shown in the illustration.

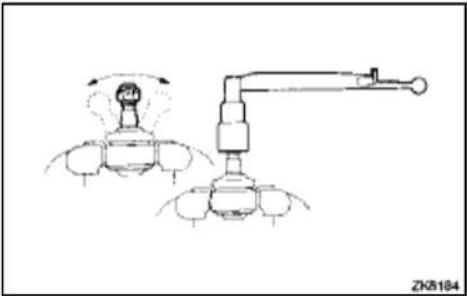
NOTICE:

- Be sure to rotate SST in the correct direction.
- Be sure to keep the steering rack fixed in place with SST.

Last Modified: 5-10-2010	6.4 G	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000039TB00JX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: INSPECTION (2010 4Runner)		

INSPECTION

1. INSPECT TIE ROD END SUB-ASSEMBLY

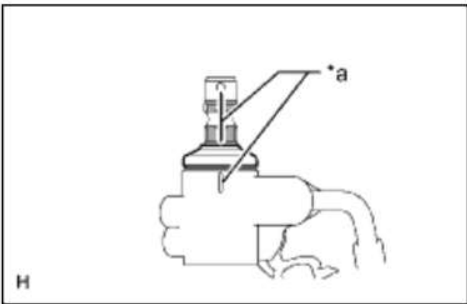


(a) Install the nut.

- (b) Flip the ball joint stud back and forth 5 times as shown in the illustration.
- (c) Using a torque wrench, turn the nut continuously at a rate of 3 to 5 seconds per turn and check the torque reading on the 5th turn.

Standard Torque:
1.0 to 3.9 N*m (10 to 39 kgf*cm, 9 to 34 in.*lbf)

2. INSPECT TOTAL PRELOAD



(a) Place matchmarks as shown in the illustration.

Text in Illustration

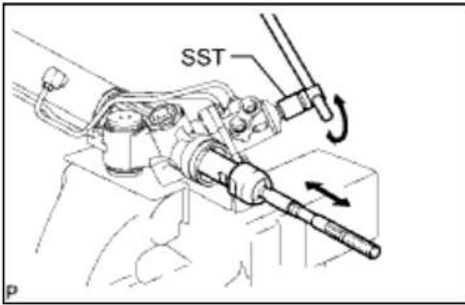
*a	Matchmark
----	-----------

- (b) Temporarily install the 2 steering rack ends to the steering rack.

NOTICE:
Do not fully turn the steering rack without the steering rack ends installed as it may damage the oil seal in the rack housing.

- (c) Using SST, fully turn the steering rack right and left 10 times to settle it.

SST: 09616-00011



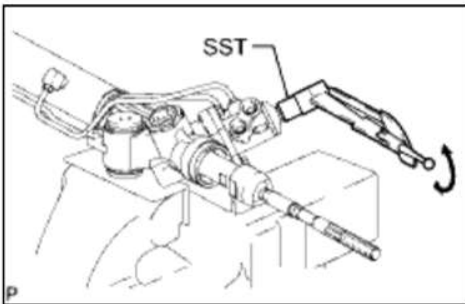
(d) Using SST, turn the control valve and measure the preload.

SST: 09616-00011

Standard preload (turning):

1.6 to 2.3 N*m (16 to 23 kgf*cm, 14 to 20 in.*lbf)

If the turning torque is not as specified, replace the steering gear assembly.



HINT:

- Measure the standard preload at the steering rack neutral point.
- The steering control valve is fully turned when turned 2.74 (for Mexico 3.00) times. Half of the distance from the fully turned position is the neutral point.

(e) After inspecting the preload, align the matchmarks.

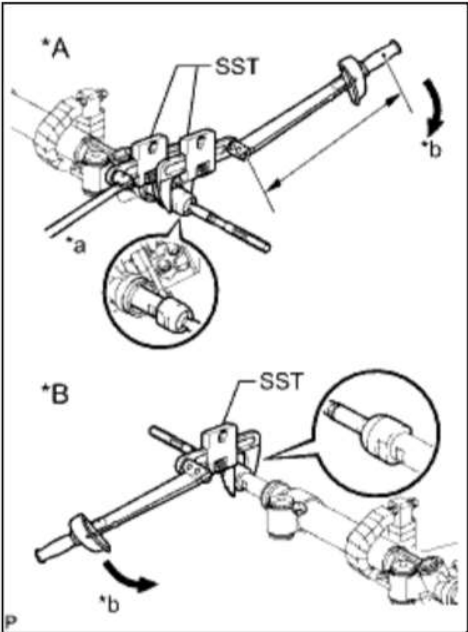


Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000039T100IX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: REASSEMBLY (2010 4Runner)		

REASSEMBLY

1. INSTALL STEERING RACK END SUB-ASSEMBLY

- (a) Temporarily install the 2 steering rack ends to the steering rack.
- (b) Fill up the ball joints of the steering rack ends with MP grease.
- (c) Using SST, install the steering rack end (RH side) to the steering rack.



SST: 09922-10010
without SST - Torque: 105 N·m (1071 kgf·cm, 77ft·lbf)
with SST - Torque: 77 N·m (784 kgf·cm, 57ft·lbf)

Text in Illustration

*A	LH Side
*B	RH Side
*a	Hold
*b	Turn

- HINT:**
- Rotate SST in the direction shown in the illustration.
 - Use a torque wrench with a fulcrum length of 400 mm (15.75 in.).

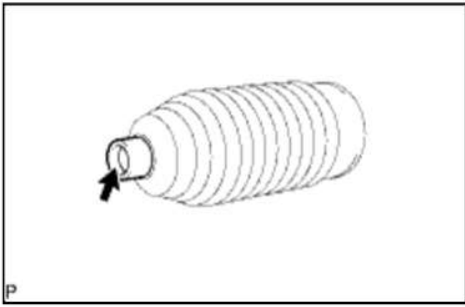
- (d) Using SST and a wrench, install the steering rack end (LH side) to the steering rack.

SST: 09922-10010
without SST - Torque: 105 N·m (1071 kgf·cm, 77ft·lbf)
with SST - Torque: 77 N·m (784 kgf·cm, 57ft·lbf)

- HINT:**
- Rotate SST in the direction shown in the illustration.
 - Use a torque wrench with a fulcrum length of 400 mm (15.75 in.).

2. INSTALL NO. 2 STEERING RACK BOOT

- (a) Apply silicon grease to the inside of the small opening of the boot.



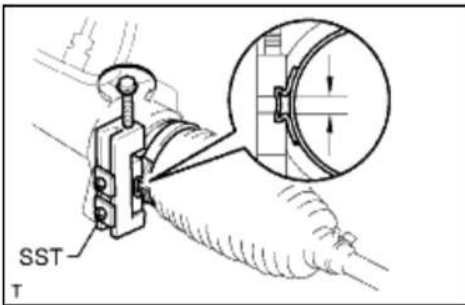
(b) Install the 2 boots to the groove on the rack housing.

3. INSTALL NO. 1 STEERING RACK BOOT

HINT:

Use the same procedures described for No. 2 boot.

4. INSTALL STEERING RACK BOOT CLAMP RH



(a) Using SST, install a new boot clamp as shown in the illustration.

SST: 09521-24010

Standard clearance:

3.0 mm (0.118 in.) or less

NOTICE:

Be careful not to damage the boot.

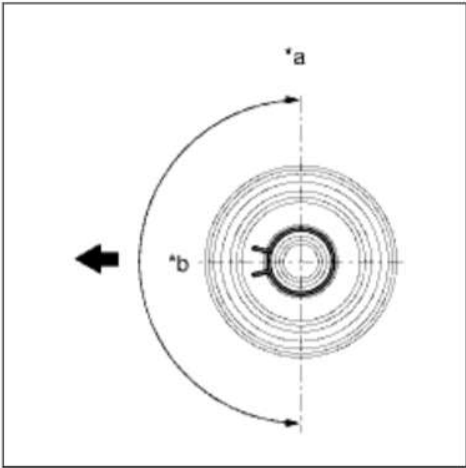
5. INSTALL STEERING RACK BOOT CLAMP LH

HINT:

Use the same procedures described for the RH side.

6. INSTALL STEERING RACK BOOT CLIP RH

(a) Using pliers, install the boot clip.



Text in Illustration

* a	Upward
* b	180°
	Front of Vehicle

NOTICE:

Make sure that the claws of the clip are positioned within the area shown in the illustration.

7. INSTALL STEERING RACK BOOT CLIP LH

HINT:

Use the same procedures described for the RH side.

8. INSTALL STEERING GEAR OUTLET RETURN TUBE

- (a) Using a union nut wrench, install the return tube to the steering gear.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

HINT:

Use the formula to calculate special torque values for situations where a union nut wrench is combined with a torque wrench  .

9. INSTALL TURN PRESSURE TUBE

- (a) Apply steering fluid to 2 new O-rings. Using a union nut wrench, install the 2 O-rings and turn pressure tube LH.

Torque: 13 N·m (127 kgf·cm, 9ft·lbf)

HINT:

Use the formula to calculate special torque values for situations where a union nut wrench is combined with a torque wrench  .

- (b) Apply steering fluid to 2 new O-rings. Using a union nut wrench, install the 2 O-rings and turn pressure tube RH.

Torque: 13 N·m (127 kgf·cm, 9ft·lbf)

HINT:

Use the formula to calculate special torque values for situations where a union nut wrench is combined with a torque wrench .

10. INSTALL TIE ROD END SUB-ASSEMBLY LH

- (a) Align the matchmarks of the tie rod and rack end, and temporarily install the tie rod with the lock nut.

HINT:

After adjusting toe-in, tighten the lock nut.

Torque: 88 N·m (897 kgf·cm, 65ft·lbf)

11. INSTALL TIE ROD END SUB-ASSEMBLY RH

HINT:

Use the same procedures described for the LH side.



Last Modified: 5-10-2010	6.4 A	From: 200908
Model Year: 2010	Model: 4Runner	Doc ID: RM0000039SX00CX
Title: STEERING GEAR / LINKAGE: STEERING GEAR: INSTALLATION (2010 4Runner)		

INSTALLATION

1. INSTALL RACK AND PINION POWER STEERING GEAR ASSEMBLY

- (a) Install the steering gear assembly with the 2 bolts and 2 nuts.

Torque: 120 N·m (1224 kgf·cm, 89ft·lbf)

HINT:

Hold the bolts and tighten the nuts to install the steering gear assembly.

2. CONNECT PRESSURE FEED TUBE ASSEMBLY

- (a) Install the pressure feed tube clamp with the bolt.

Torque: 28 N·m (286 kgf·cm, 21ft·lbf)

- (b) Connect the pressure feed tube (return tube side) to the steering gear with the clamp.

- (c) Using a union nut wrench, connect the pressure feed tube (pressure feed tube side) to the steering gear. Using a union nut wrench, connect the tube to the vane pump.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

HINT:

Use the formula to calculate special torque values for situations where a union nut wrench is combined with a torque wrench  .

3. CONNECT TIE ROD END SUB-ASSEMBLY LH

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

Torque: 91 N·m (928 kgf·cm, 67ft·lbf)

NOTICE:

Tighten the nut up to an additional 60° if the holes for the cotter pin are not aligned.

- (b) Install a new cotter pin.

4. CONNECT TIE ROD END SUB-ASSEMBLY RH

HINT:

Use the same procedures described for the LH side.

5. CONNECT NO. 2 STEERING INTERMEDIATE SHAFT

- (a) Connect the No. 2 steering intermediate shaft  .

6. INSTALL ENGINE ASSEMBLY

- (a) Install the engine assembly  .

7. ADD POWER STEERING FLUID

8. BLEED AIR FROM POWER STEERING FLUID

(a) Bleed air from the power steering fluid  .

9. CHECK FOR POWER STEERING FLUID LEAK

10. INSTALL FRONT WHEELS

11. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

12. ADJUST FRONT WHEEL ALIGNMENT

(a) Adjust the front wheel alignment  .

