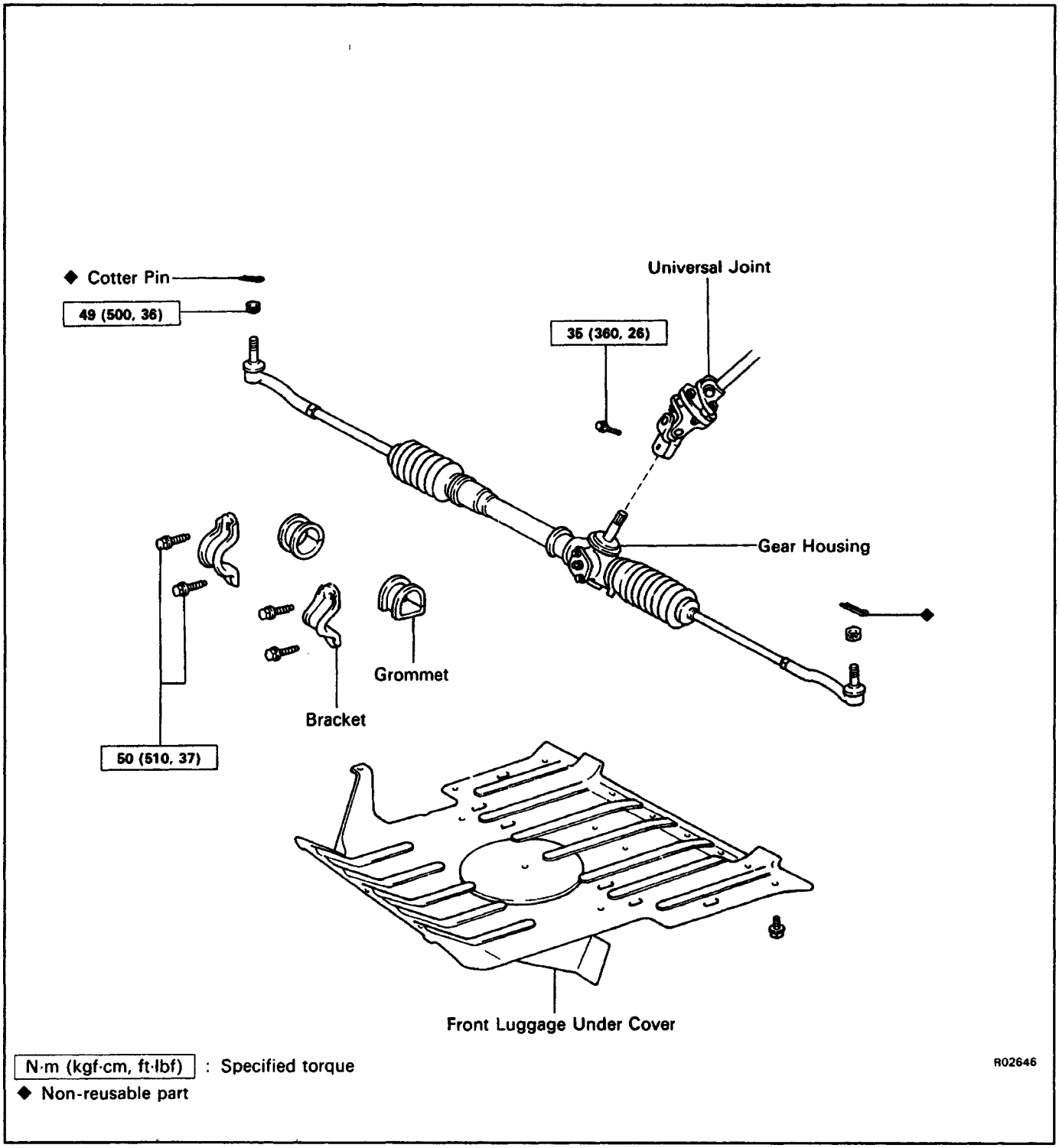
ASSEMBLY REMOVAL AND INSTALLATION

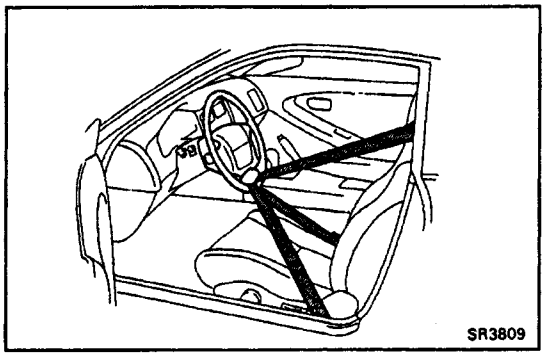
SR076–01

Remove and install the parts as shown.



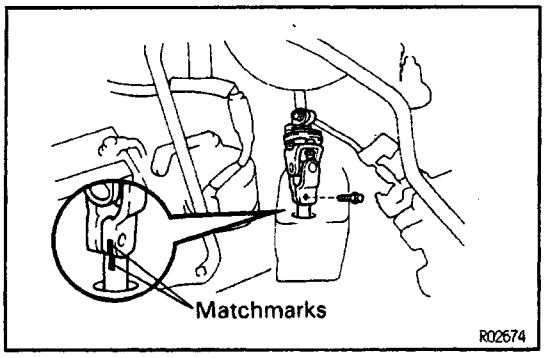
(MAIN POINTS OF REMOVAL AND INSTALLATION)

NOTICE: When disconnecting the universal joint during removal of the gear housing, remove the steering wheel and perform centering of the spiral cable.
(See page AB–2)
If the operation is performed without removing the steering wheel, use the procedure below to make sure the steering wheel is firmly in position and cannot turn.

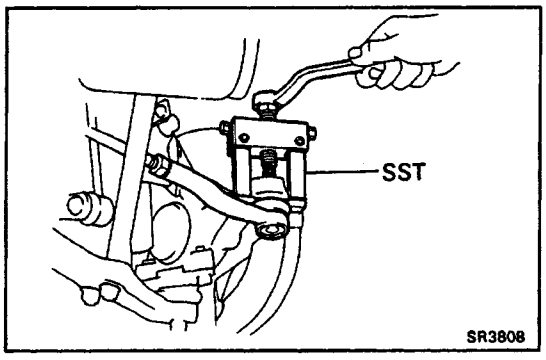


1. DISCONNECT UNIVERSAL JOINT

(a) Position the front wheels facing straight ahead.
(b) Using the seat belt of the driver's seat, fix the steering wheel so that is does not turn.



(c) Place matchmarks on the universal joint and pinion shaft.
(d) Loosen the bolt on the upper side of the universal joint, remove the bolt on the lower side and disconnect the universal joint.

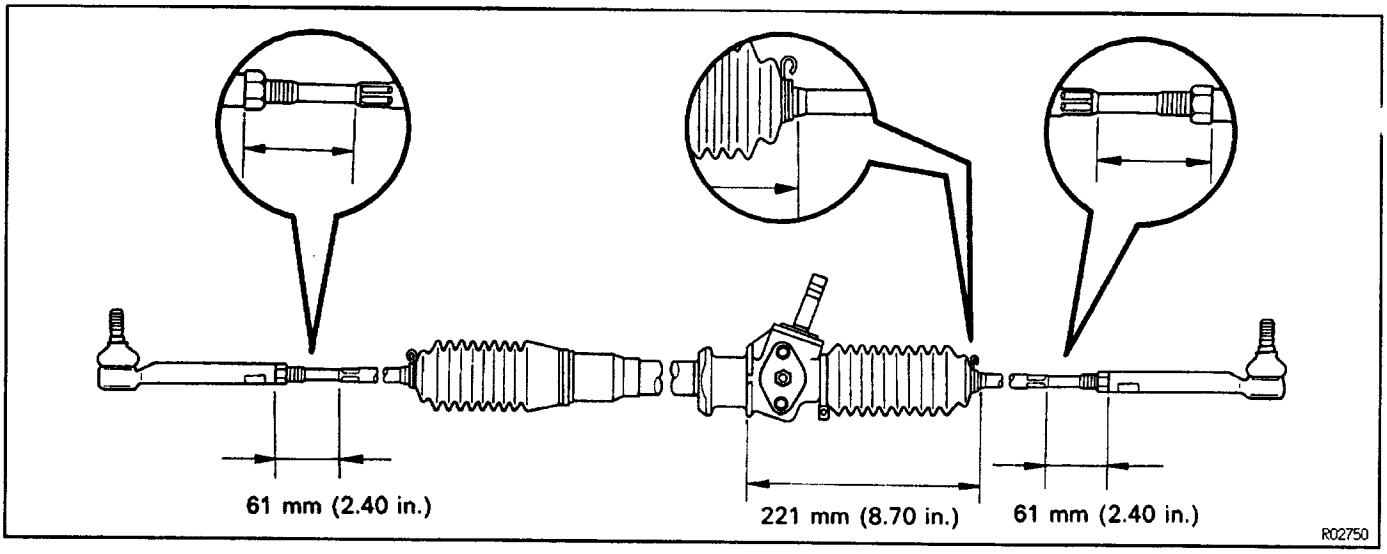


2. DISCONNECT TIE ROD ENDS

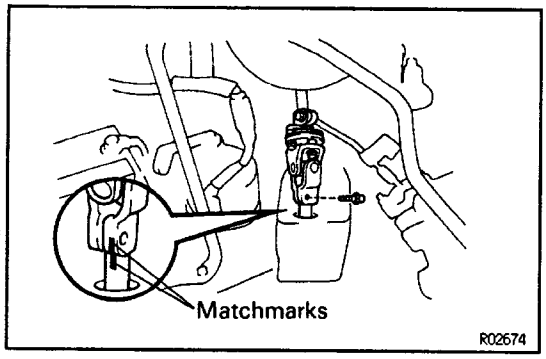
(a) Remove the cotter pin and nut.
(b) Using SST, disconnect the tie rod end from the knuckle arm.
SST 09628–62011

3. CONNECT UNIVERSAL JOINT

(a) Set the gear housing so that it matches the dimensions shown belowwith the gear housing at the center point.



HINT: The dimension of the tie rod end is a reference value, so always adjust the toe–in before tightening the lock nut.



(b) Align matchmarks on the universal joint and pinion shaft and connect them.

4. CENTER SPIRAL CABLE

If the steering wheel has been removed, or the steering wheel may have moved during the operation, always perform centering of the spiral cable.

(See page AB–17)

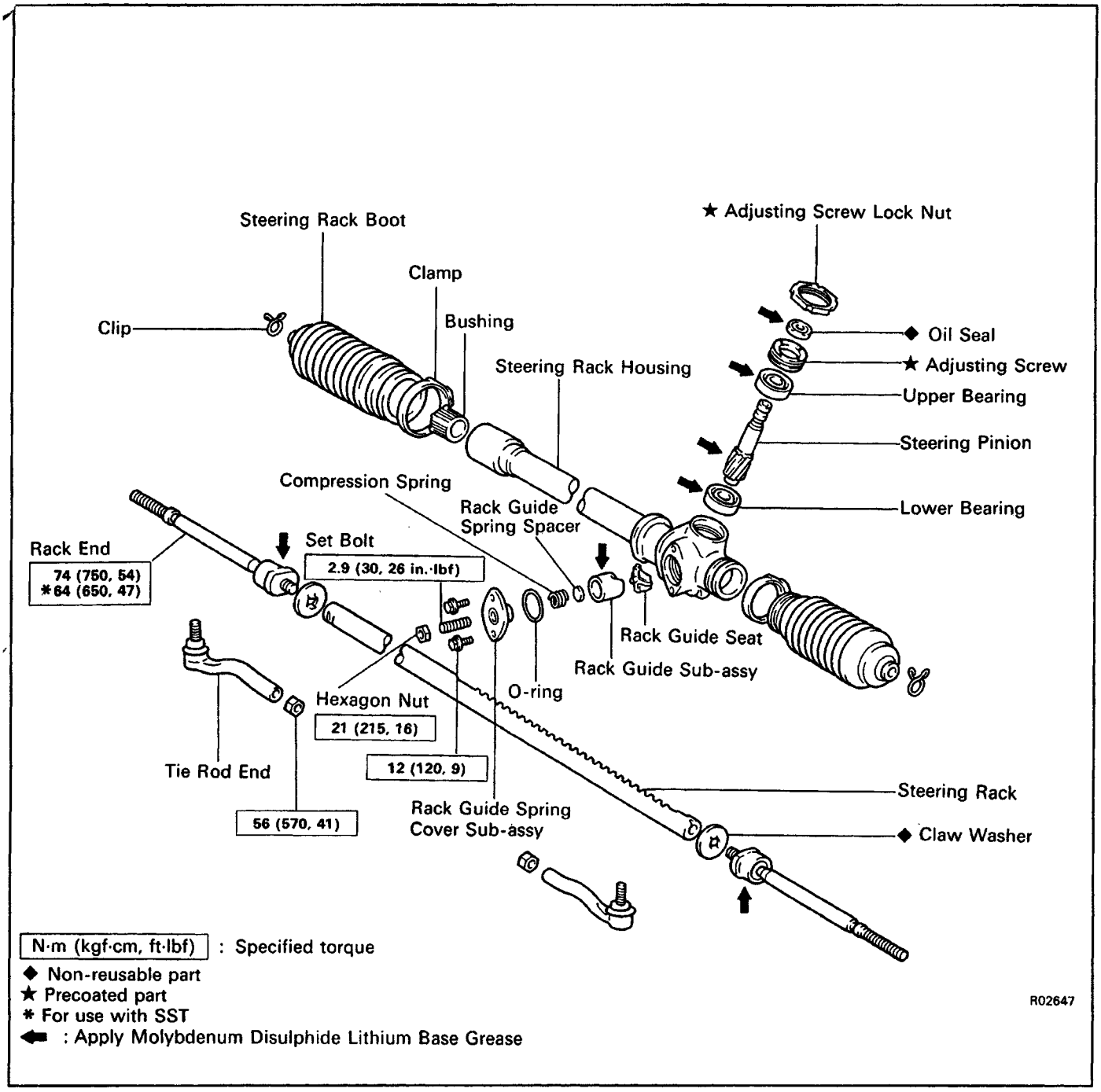
5. CHECK STEERING WHEEL CENTER POINT

6. CHECK TOE–IN

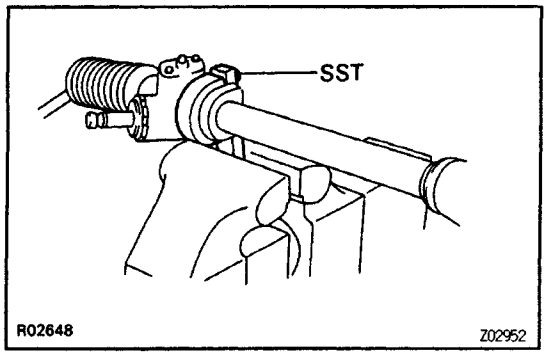
(See page SA–4)

SR077–01

COMPONENTS



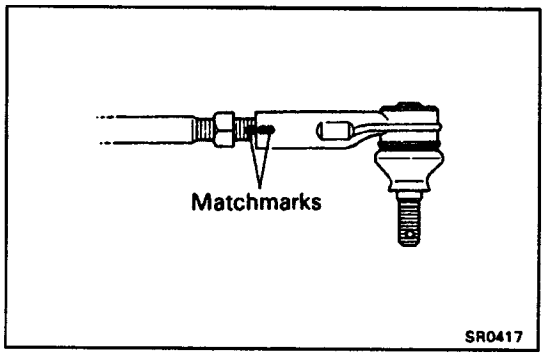
SR076–01



GEAR HOUSING DISASSEMBLY

1. CLAMP GEAR HOUSING IN VISE

Using SST, clamp the gear housing in a vise.
SST 09612–00012



2. REMOVE TIE ROD ENDS

(a) Loosen the lock nuts and place matchmarks on the tie rod ends and rack ends.

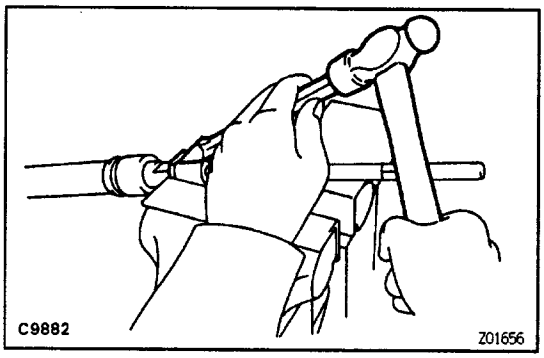
(b) Remove the tie rod ends and lock nuts.

3. REMOVE RACK BOOTS

(a) Remove the clips and clamps.

(b) Remove the rack boots.

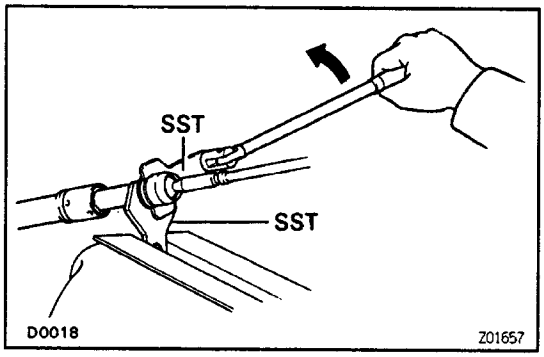
(c) Mark the left and right boots accordingly.



4. REMOVE RACK ENDS

(a) Unstake the claw washers.

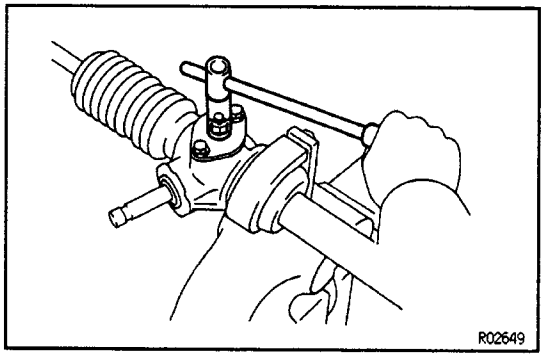
NOTICE: Avoid any impact to the rack.



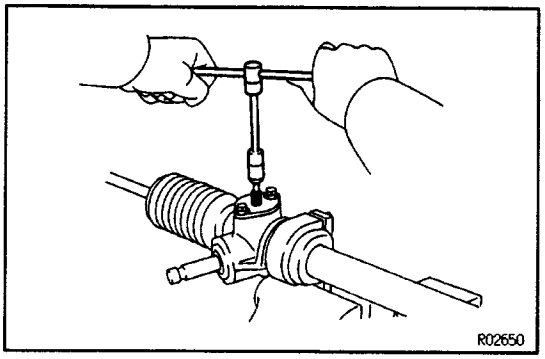
(b) Using SST, remove the rack ends.
SST 09612–10093 (09628–10020),
09612–24014 (09617–24011)

(c) Mark the left and right rack ends accordingly.

(d) Remove the claw washers.

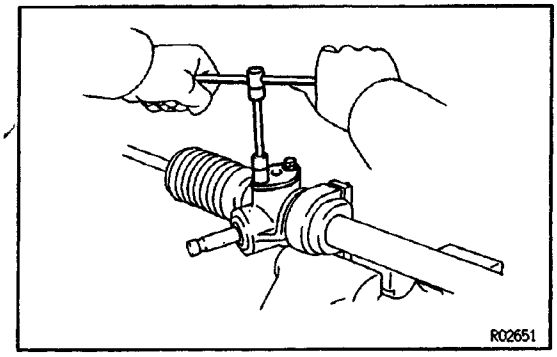


5. REMOVE HEXAGON NUT

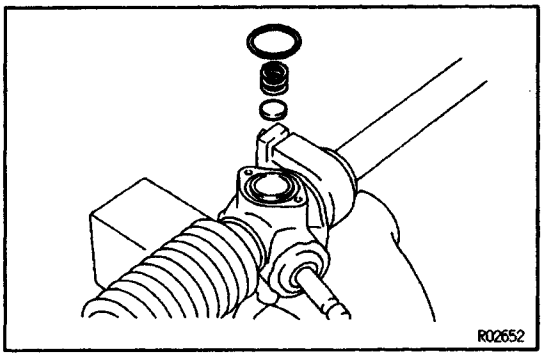


6. REMOVE SET BOLT

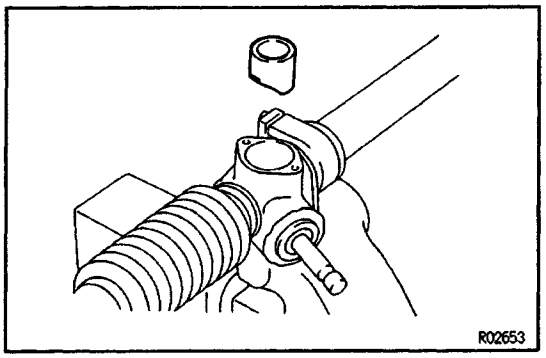
Using a hexagon wrench 4 mm, remove the set bolt.



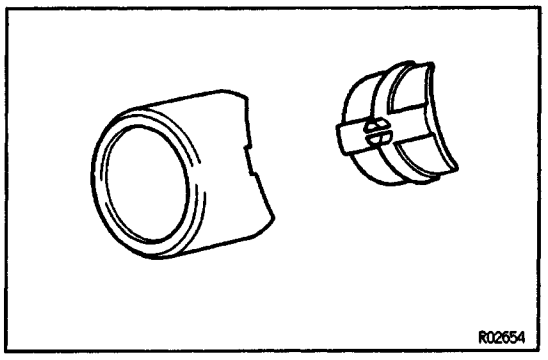
7. REMOVE RACK GUIDE SPRING COVER SUB –ASSY
Remove two bolts and the rack guide spring cover sub – assy.



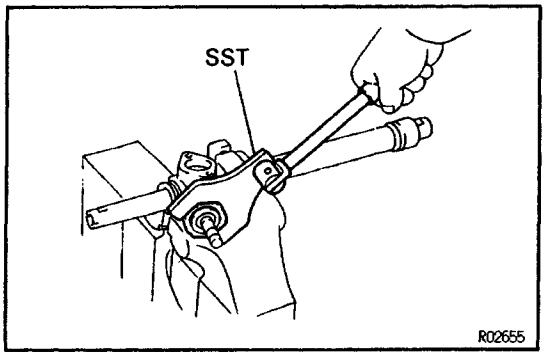
8. REMOVE O – RING
9. REMOVE COMPRESSION SPRING
10. REMOVE RACK GUIDE SPRING SPACER



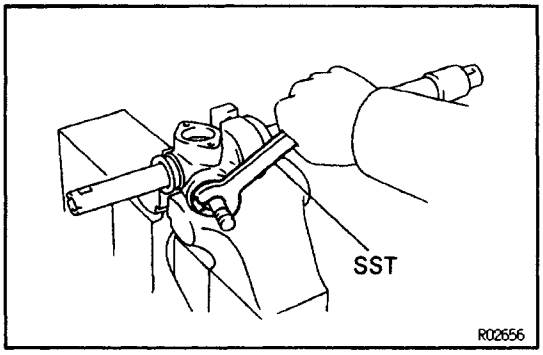
11. REMOVE RACK GUIDE SUB–ASSY



12. REMOVE RACK GUIDE SEAT
Remove rack guide seat from the rack guide sub–assy.



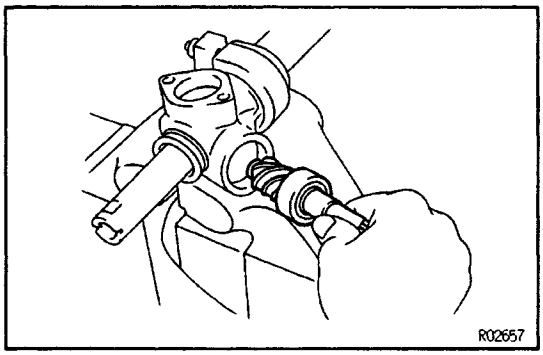
13. REMOVE PINION BEARING ADJUSTING SCREW LOCK NUT
Using SST, remove the pinion bearing adjusting screw lock nut.
SST 09612 –10093 (09617 –10010)



14. REMOVE PINION BEARING ADJUSTING SCREW

Using SST, remove the pinion bearing adjusting screw.

SST 09612–24014 (09616–10020)

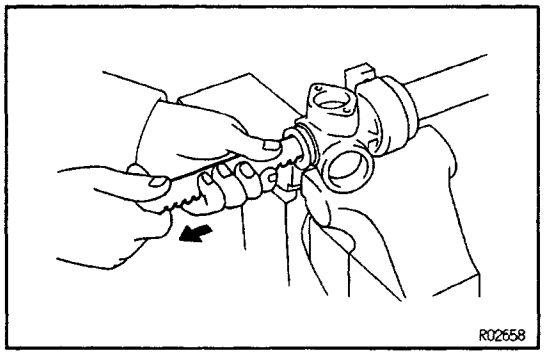


15. REMOVE PINION WITH UPPER BEARING

HINT: Be careful not to damage the serrations.

(a) Fully pull the rack from the housing side and align the rack notched portion with the pinion.

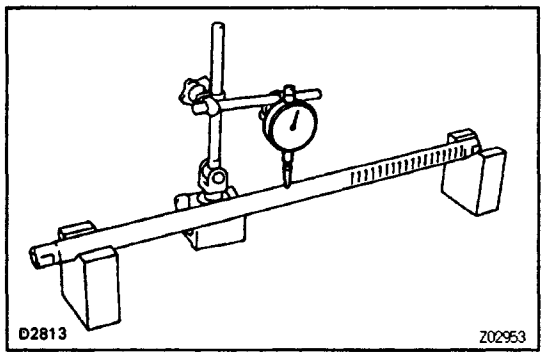
(b) Remove the pinion together with the upper bearing.



16. REMOVE RACK

Remove the rack from the pinion side without re–volving it.

HINT: If the rack is pulled from the tube side, there is a possibility of damaging the busing with the rack teeth surface.



SR079–01

GEAR HOUSING COMPONENTS INSPECTION AND REPAIR

1. INSPECT RACK

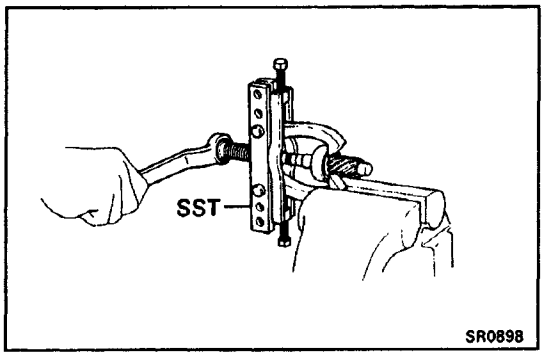
(a) Check the' rack for runout and for teeth wear or damage.

Maximum runout:

0.3 mm (0.012 in.)

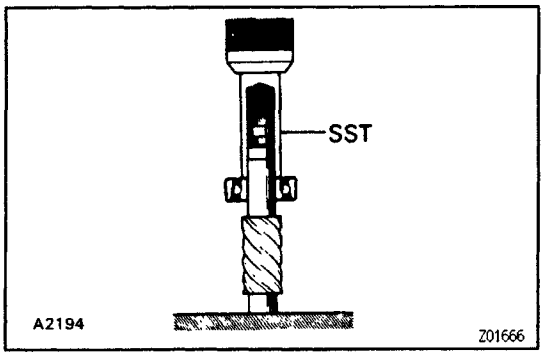
(b) Check the back surface for wear or damage. If faulty, replace it.

NOTICE: Do not use a wire brush when cleaning.

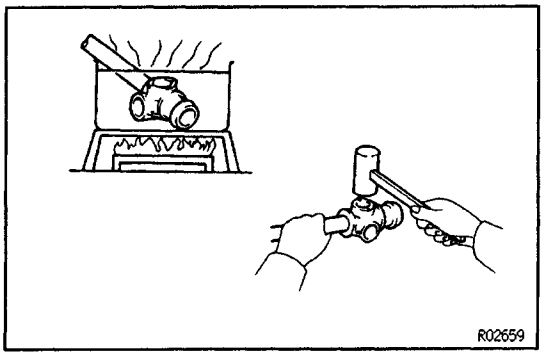


2. IF NECESSARY, REPLACE PINION UPPER BEARING

(a) Using SST, remove the upper bearing.
SST 09950–20017

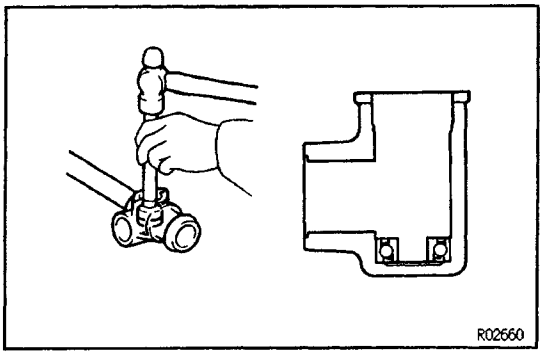


(b) Using SST, install a new upper bearing.
SST 09612–24014 (09612–10061)



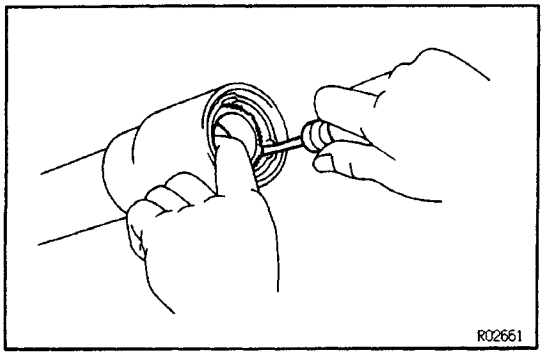
3. IF NECESSARY, REPLACE PINION LOWER BEARING .

(a) Heat the rack housing to above 80˚C (176˚F).
(b) Tap the rack housing with a plastic hammer or such to remove the lower bearing by recoil.



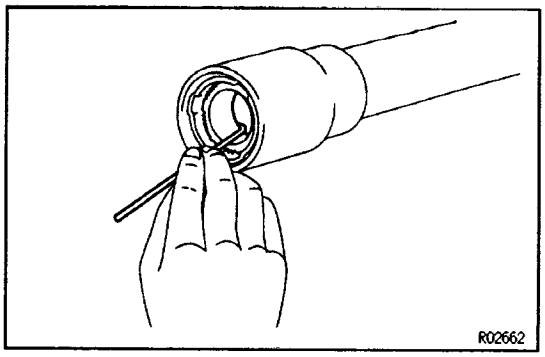
(c) Heat the rack housing to above 80˚C (176˚F).
(d) Using SST, install a new lower bearing.
SST 09620–30010 (09631–00020),
09630–24013 (09620–24030)

HINT: Observe the correct bearing direction.

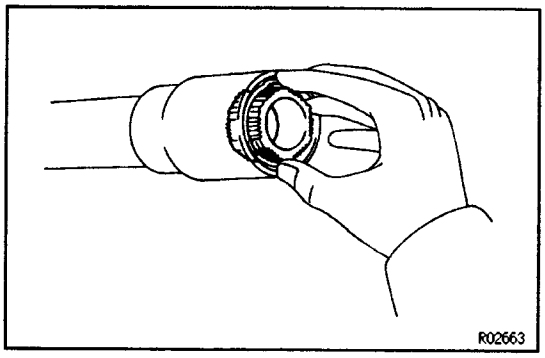


4. IF NECESSARY, REPLACE RACK BUSHING

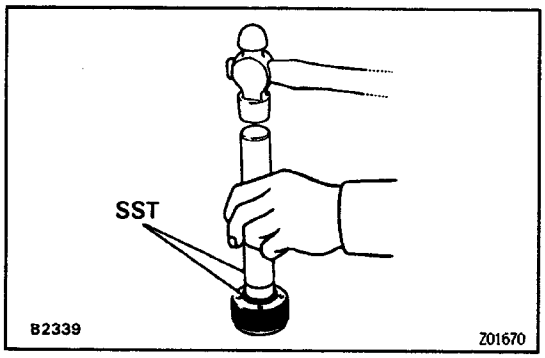
(a) Using a screwdriver, loosen the three bushing claws and remove the rack busing from the rack housing.



(b) Insure that the tube holes are not clogged with grease.
HINT: If the tube holes are clogged, the pressure inside the boot will

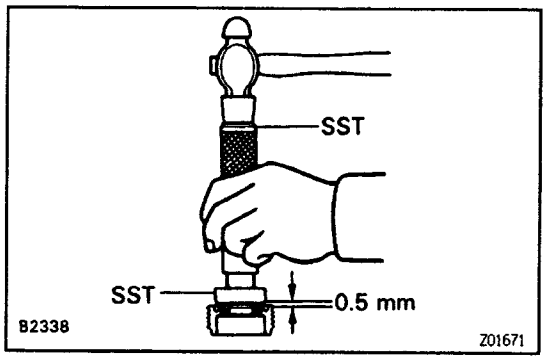


(c) Install a new bushing into the rack housing, making sure to align into the three holes.



5. IF NECESSARY, REPLACE PINION OIL SEAL

(a) Using SST, remove the pinion oil seal.
SST 09620–30010 (09631 –00020),
09630 – 24013 (09620 – 24010)

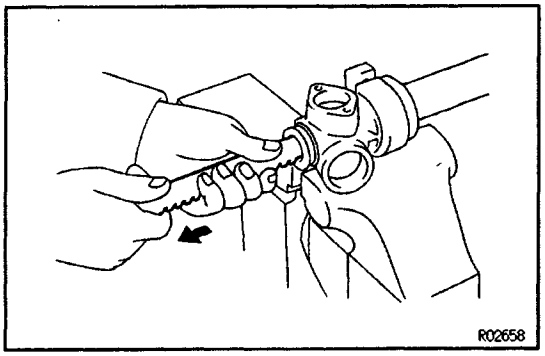


(b) Using SST, drive in a new oil seal until it is protruding 0.5 mm (0.020 in.)
SST 09620–30010 (09631 –00020),
09630–24013 (09620–24020)

SR07A–01

GEAR HOUSING ASSEMBLY

1. PACK MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE

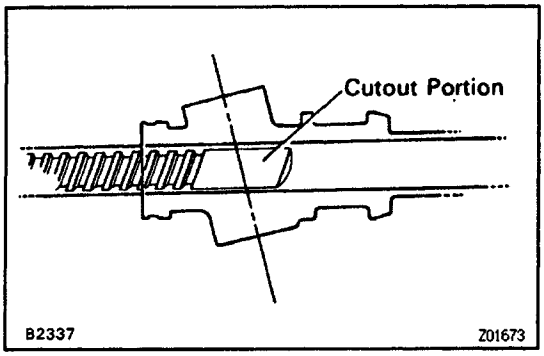


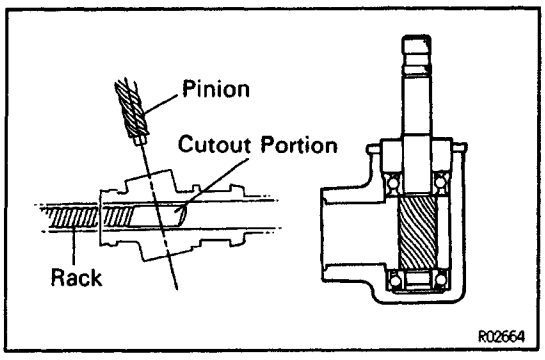
2. INSTALL RACK INTO RACK HOUSING

(a) From the pinion side, install the rack into the rack housing.

(b) Set the rack notched side so that the pinion can be positioned inside.

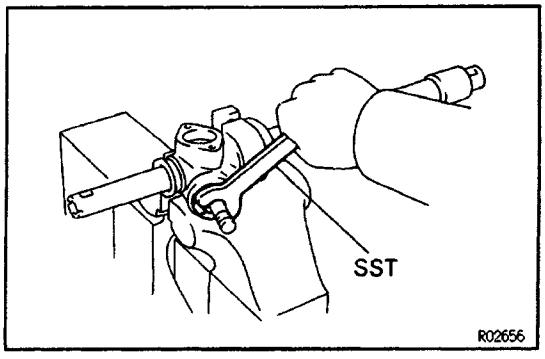
(c) Line up the cutout portion of the rack with the pinion.





3. INSTALL PINION INTO HOUSING

Insure that the pinion end is securely in the lower bearing.



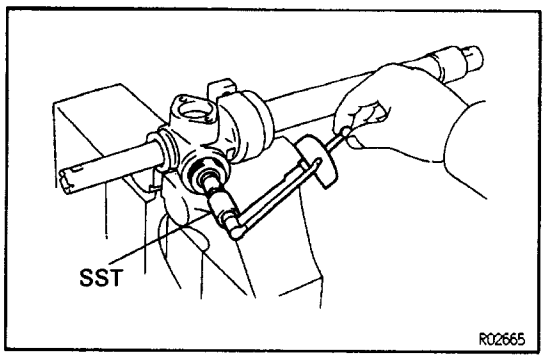
4. INSTALL PINION BEARING ADJUSTING SCREW

(a) Coat sealant onto the screw threads.

Sealant:

Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

(b) Using SST, install the pinion bearing adjusting screw.
SST 09612–24014 (09616–10020)

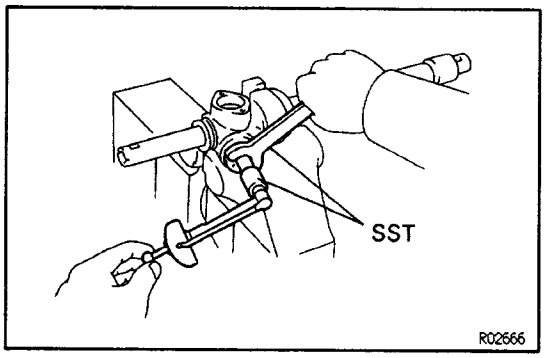


5. ADJUST PINION PRELOAD

(a) Line up the cutout portion of the rack with the pinion.

(b) Using SST, tighten the pinion bearing adjusting screw to the point where the turning torque is 0.4 N–m (3.7 kgf–cm, 3.2 in.–lbf).

SST 09612 – 24014 (09616 –10010)



(c) Using SST, loosen the pinion bearing adjusting screw to the point where the turning torque is 0.2–0.3 N .m (2.3–3.3 kgf–cm, 2.0–2.9 in.–lbf)

SST 09612–24014 (09616–10010,09616–10020)

Preload (turning):

0.2–0.3 N–m

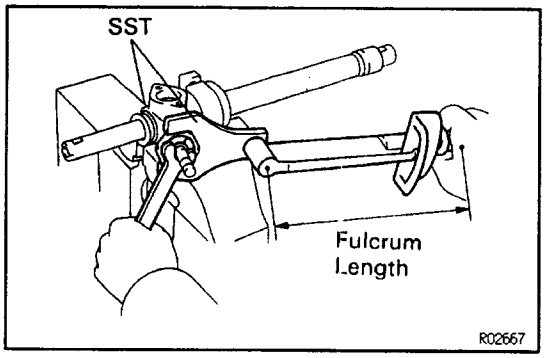
(2.3–3.3 kgf–cm, 2.0–2.8 in.–lbf)

6. INSTALL PINION BEARING ADJUSTING SCREW LOCK NUT

(a) Apply sealant to 2 or 3 threads of the lock nut.

Sealant:

Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent



(b) Using SST, install the lock nut.

SST 09612 –10093 (09617 –10010), 09612–24012 (09616–10020)

Torque: 91 N–m (830 kgf–cm, 67 ft–lbf)

HINT: Use a torque wrench with a fulcrum length of 425 mm (16.73 in.).

(c) Recheck the pinion preload.

If incorrect, readjust.

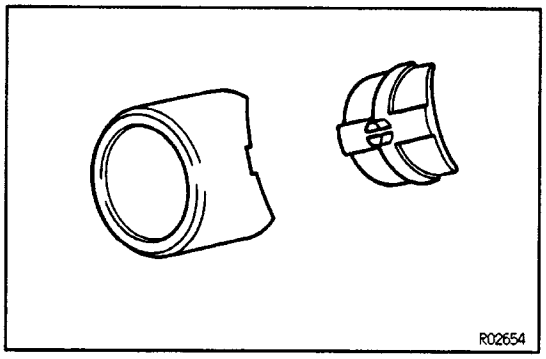
Preload (turning):

0.1 –0.2 N–m

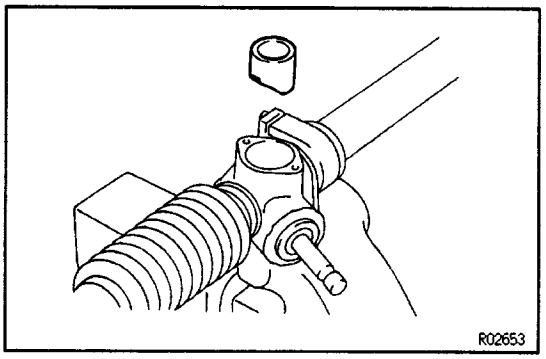
(1.5–2.5 kgf–cm, 1.3–2.2 ft–lbf)

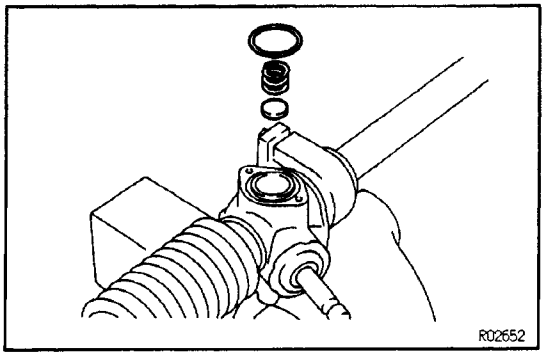
7. INSTALL RACK GUIDE SEAT

Install rack guide seat to the rack guide sub–assy.

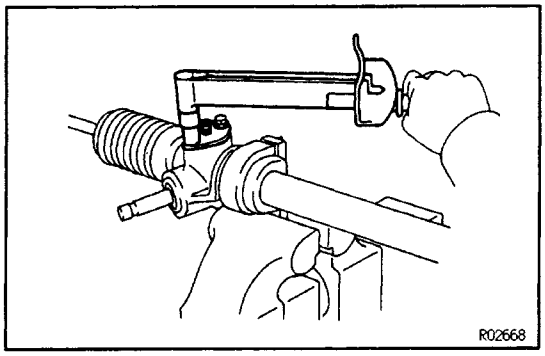


8. INSTALL RACK GUIDE SUB–ASSY



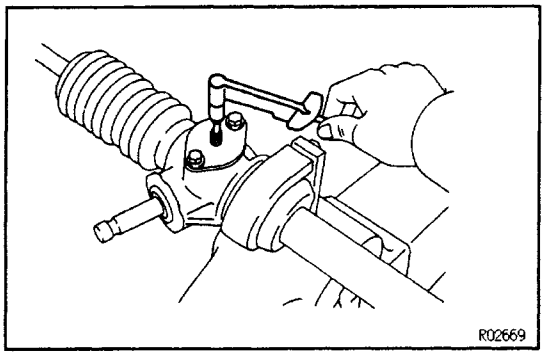


9. INSTALL RACK GUIDE SPRING SPACER
10. INSTALL COMPRESSION SPRING
11. INSTALL O–RING



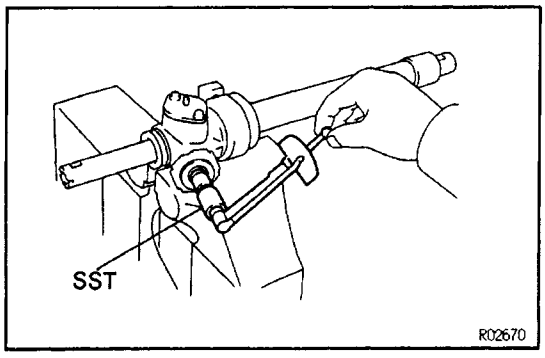
12. INSTALL RACK GUIDE SPRING COVER SUB–ASSY
Install rack guide spring cover sub–assy with two bolts.

Torque: 12 N–m (120 kgf–cm, 9 ft–lbf)



13. ADJUST TOTAL PRELOAD

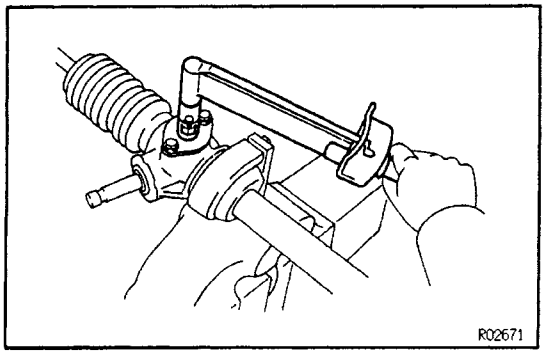
(a) Using a hexagon wrench (4mm), tighten the set bolt.
Torque: 2.9 N–m (30 kgf–cm, 26 in.–lbf)



(b) Measure the total preload with SST.
SST 09612 – 24014 (09616 –10010)

Preload (turning):
0.6–1.1 N–m
(6–11 kgf–cm, 5.2–9.5 in.–lbf)

- If preload is insufficient:
  Retorque the rack guide spring cap, and return it 12° or slightly less.
- If there is excess preload:
  Slightly return the rack guide spring cap.

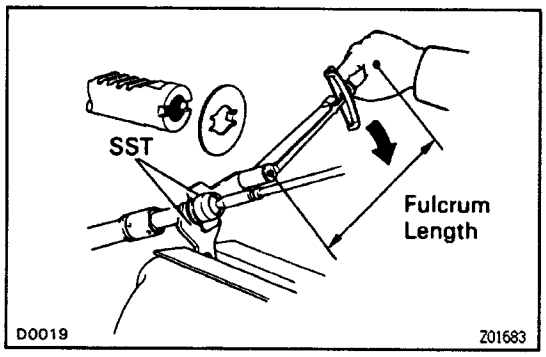


14. INSTALL HEXAGON NUT

(a) Install hexagon nut.
Torque: 21 N–m (215 kgf–cm, 16 ft–lbf)

(b) Recheck the total preload.
If incorrect, read just.

Preload (turning):
0.6–1.1 N–m
(6–11 kgf–cm, 5.2–9.5 in.–lbf)



15. INSTALL RACK ENDS

(a) Install new claw washers.

HINT: Align the claw of the claw washer with the rack groove.

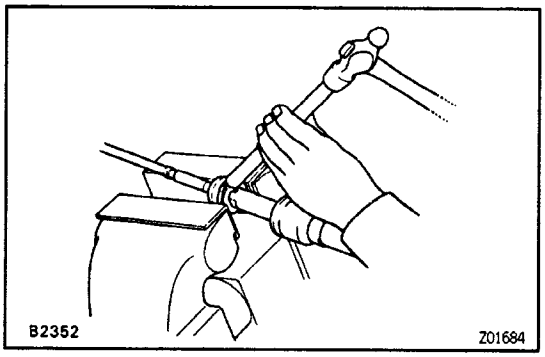
(b) Using SST, install the rack ends.

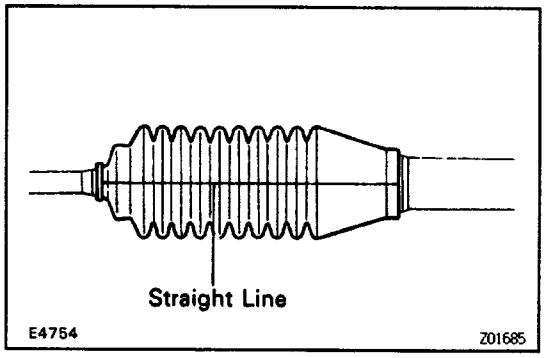
SST 09612–10093 (09628–10020), 09612–24014 (09617–24011)

Torque: 64 N–m (650 kgf–cm, 47 ft–lbf)

HINT: Use a torque wrench with a fulcrum length of 340 mm (13.39 in.).

(c) Using a brass bar and hammer, stake the claw washers.





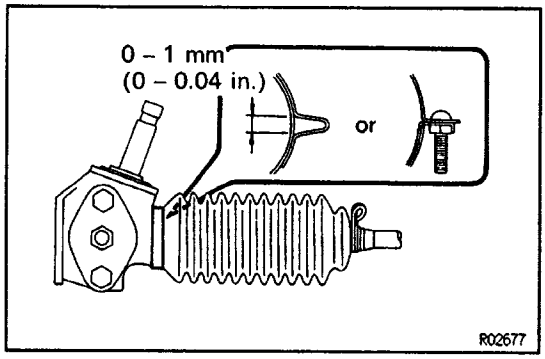
16. INSTALL RACK BOOTS

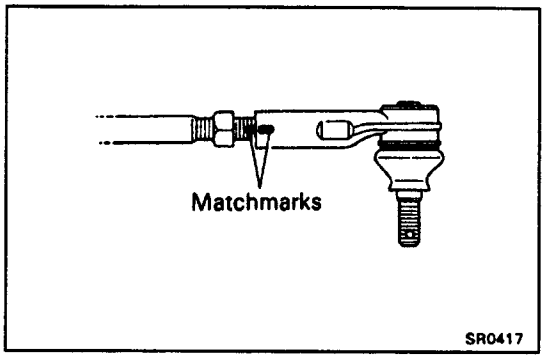
(a) Install the rack boots.

HINT: Be careful not to damage or twist the boot. The left and right boots are different. Be careful not to interchange them.

(b) Install the clamps and clips.

HINT: Face the open ends of the clip outward as shown, to avoid damage to the boot.





17. INSTALL TIE ROD ENDS

(a) Screw the lock nuts and tie rod ends onto the rack ends until the matchmarks are aligned.

(b) After adjusting toe–in, torque the lock nuts.

Torque: 56 N–m (570 kgf–cm, 41 ft–lbf)