510B4–01

OVERHAUL

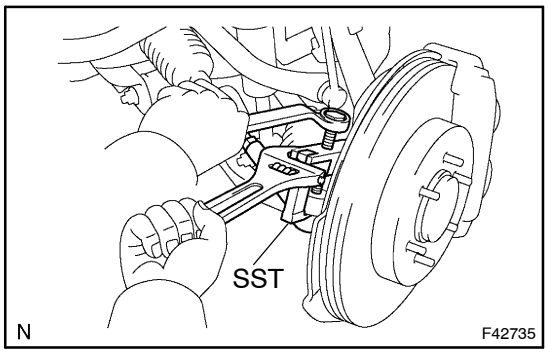
1. **PRECAUTION (See page 60–1)**
2. **DISCONNECT BATTERY NEGATIVE TERMINAL**
3. **PLACE FRONT WHEELS FACING STRAIGHT AHEAD (See page 50–6)**
4. **REMOVE HORN BUTTON ASSY (See page 60–14)**
5. **REMOVE STEERING WHEEL ASSY (See page 50–6)**
   SST 09950–50013 (09951–05010, 09952–05010, 09953–05020, 09954–05021)
6. **REMOVE STEERING COLUMN COVER LWR (See page 50–6)**
7. **REMOVE TURN SIGNAL SWITCH ASSY (See page 50–6)**
8. **REMOVE SPIRAL CABLE SUB–ASSY (See page 50–6)**
9. **REMOVE FRONT WHEEL**
10. **REMOVE ENGINE UNDER COVER ASSY REAR**

(a) Remove the 6 bolts and engine under cover assy rear.

11. **REMOVE ENGINE UNDER COVER SUB–ASSY NO.1**

(a) Remove the 4 bolts and engine under cover sub–assy No.1.

12. **REMOVE STABILIZER BAR FRONT (See page 26–28)**



13. **SEPARATE TIE ROD END SUB–ASSY LH**

(a) Remove the cotter pin and nut.

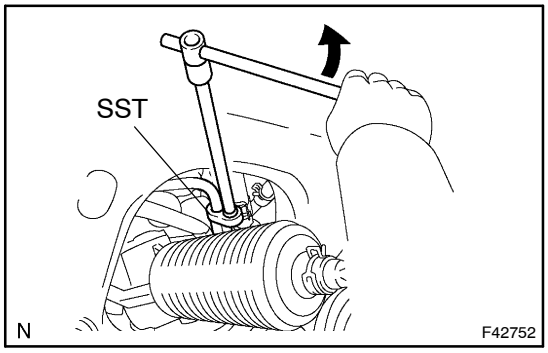
(b) Using SST, separate the tie rod end from the steering knuckle arm.
SST 09628–62011

14. **SEPARATE TIE ROD END SUB–ASSY RH**

HINT:

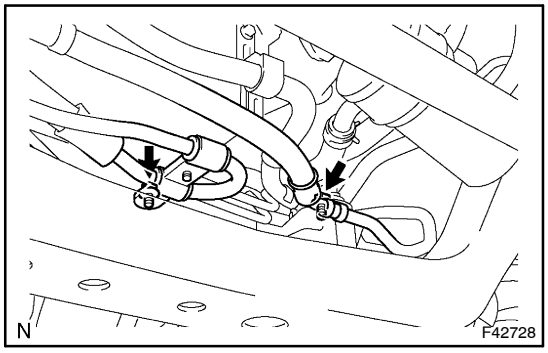
Separate the RH side by the same procedures with the LH side.
SST 09628–62011

15. **REMOVE STEERING INTERMEDIATE SHAFT NO.2 (See page 50–6)**

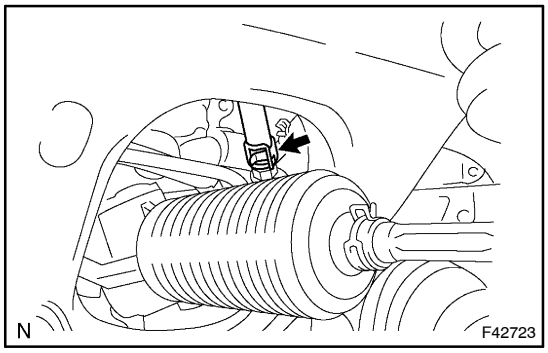


16. **DISCONNECT PRESSURE FEED TUBE ASSY**

(a) Using SST, Loosen the flare nut and disconnect the pressure feed tube.
SST 09023–12700

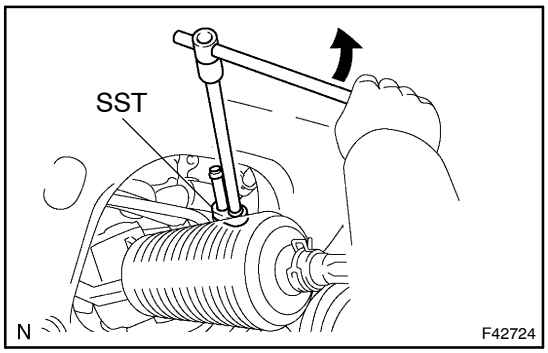


(b) Remove the 2 bolts and separate the pressure feed tube assy from frame sub–assy.

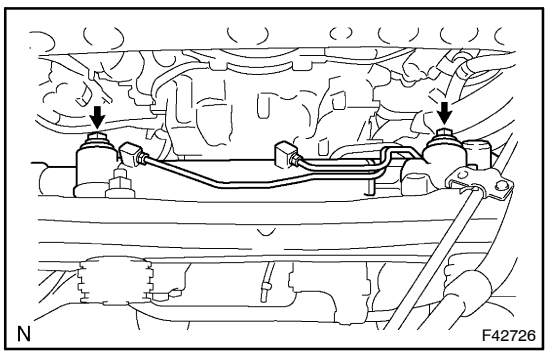


17. DISCONNECT STEERING GEAR OUTLET RETURN TUBE

(a) Remove the clip and disconnect the return hose.



(b) Using SST, remove the outlet return tube.
SST 09023–12700



18. REMOVE POWER STEERING LINK ASSY

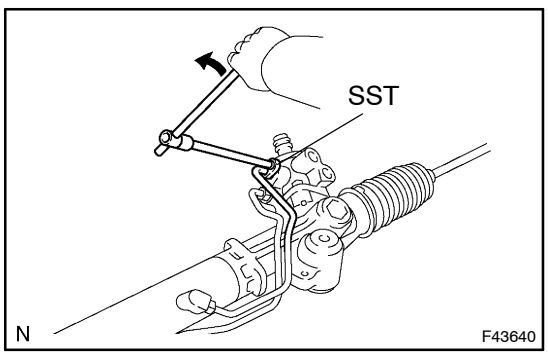
(a) Remove the 2 bolts, 2 nuts and power steering link assy.

NOTICE:

The nut has a detent, so never turn the nut, be sure to turn the bolt.

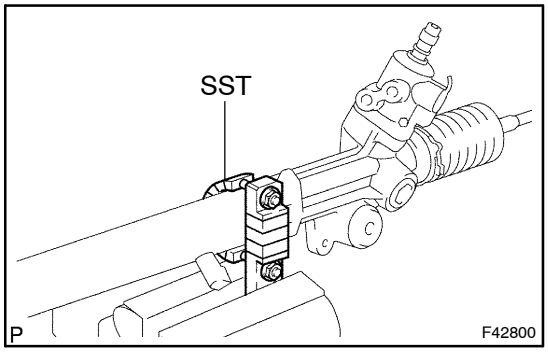
HINT:

After the 2 bolts, raise the bolt from the frame, and slide the gear assy and the bolt as a unit to the position where the bolt can be pulled out, and then remove the bolt.

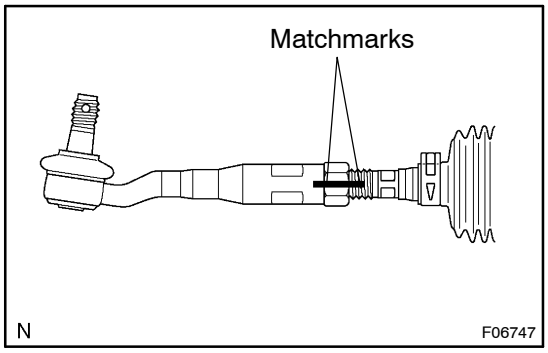


19. FIX POWER STEERING LINK ASSY

(a) Using SST, remove the 2 turn pressure tubes.
SST 09023–38200



(b) Using the SST, fix the gear assembly, between aluminum plates in a vise, as shown in the illustration.
SST 09612–00012



20. REMOVE TIE ROD END SUB–ASSY LH

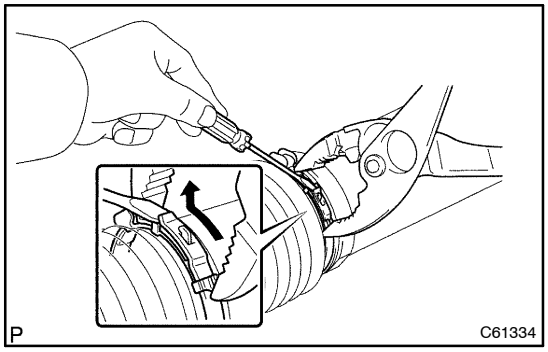
(a) Place matchmarks on the tie rod end, lock nut and rack end.

(b) Loosen the lock nut, remove the tie rod end and lock nut.

21. REMOVE TIE ROD END SUB–ASSY RH

HINT:

Remove the RH side by the same procedures with the LH side.



22. REMOVE STEERING RACK BOOT CLAMP LH

(a) Using pliers and a screwdriver, loosen the clamp.

NOTICE:

Be careful not to damage the boot.

HINT:

Mark the RH and LH boots.

23. REMOVE STEERING RACK BOOT CLAMP RH

HINT:

Remove the RH side by the same procedures with the LH side.

24. REMOVE STEERING RACK BOOT CLIP LH

(a) Using pliers, remove the clip.

NOTICE:

Be careful not to damage the boot.

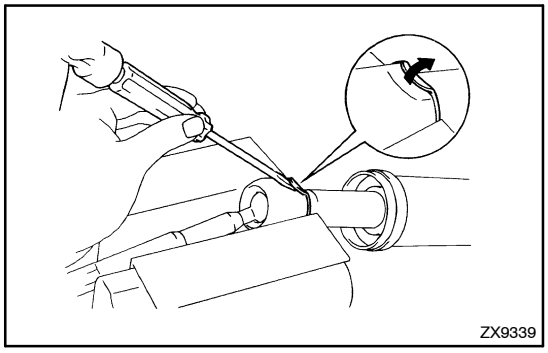
25. REMOVE STEERING RACK BOOT CLIP RH

HINT:

Remove the RH side by the same procedures with the LH side.

26. REMOVE STEERING RACK BOOT LH

27. REMOVE STEERING RACK BOOT RH

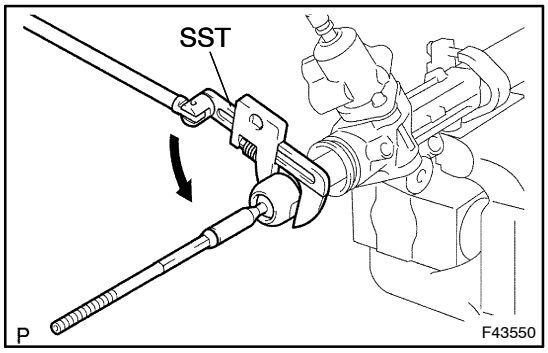


28. REMOVE STEERING RACK END SUB–ASSY

(a) Using a screwdriver and a hammer, stake back the washer.

NOTICE:

Avoid any impact to the steering rack.



(b) Using a spanner to hold the steering rack steady, and using SST, remove the rack end.
SST 09922–10010

(c) Remove the craw washer.

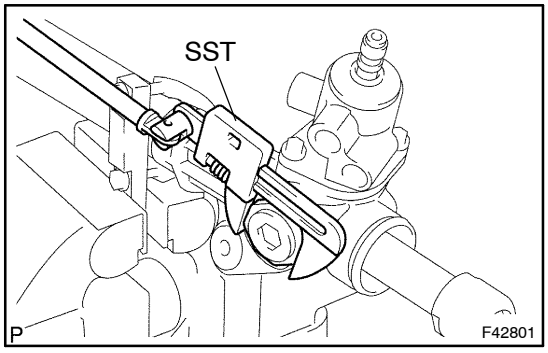
NOTICE:

Use SST 09922–10010 in the direction shown in the illustration.

(d) Employ the same manner described above to the other side.

HINT:

Mark the RH and LH rack ends.

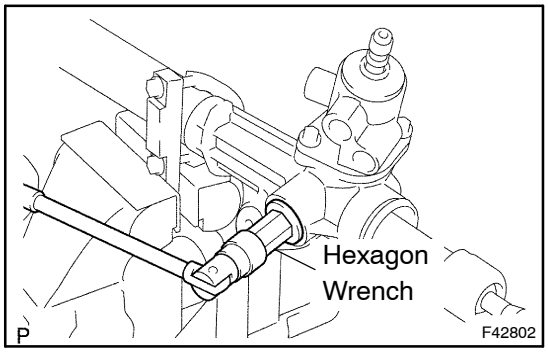


29. REMOVE RACK GUIDE

(a) Using SST, remove the lock nut.
SST 09922–10010

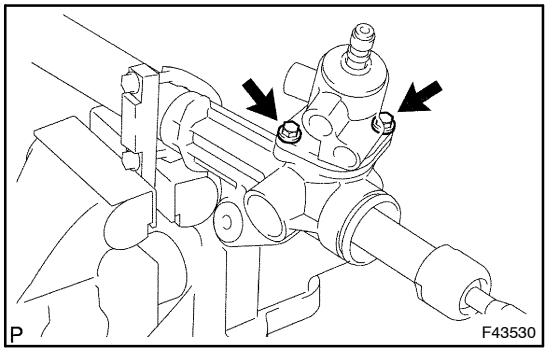
NOTICE:

Use SST 09922–10010 in the direction shown in the illustration.



(b) Using a hexagon wrench (24 mm), remove the rack guide spring cap.

(c) Remove the spring and rack guide.



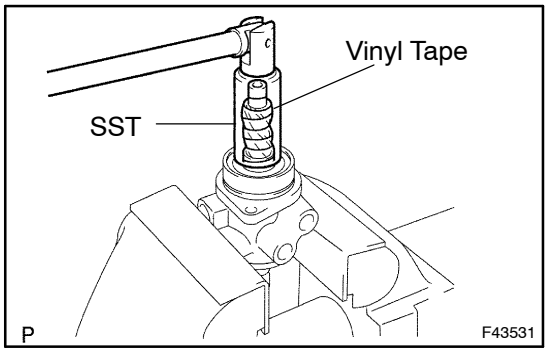
30. REMOVE POWER STEERING CONTROL VALVE

(a) Remove the 2 bolts.

(b) Pull out the control valve assembly with the control valve housing.

(c) Remove the O–ring.

(d) Carefully mount the control valve assembly in a soft jaw vise.



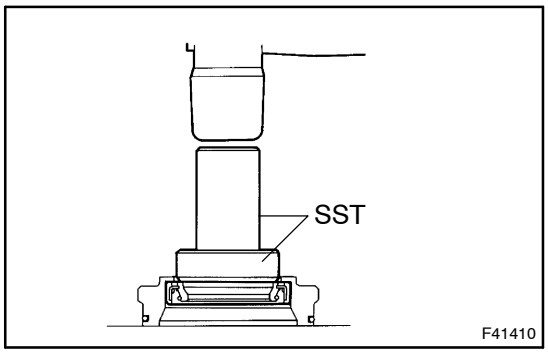
(e) Using SST, remove the bearing guide nut.
SST 09631–20060

NOTICE:

Be careful not to damage the oil seal lip.

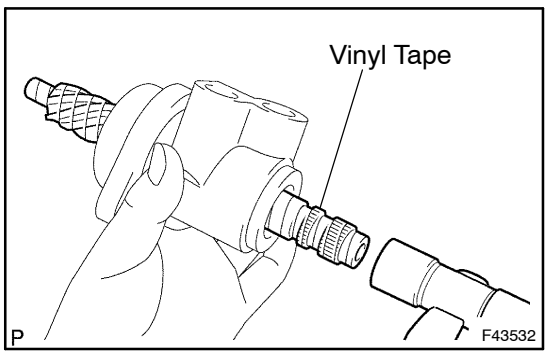
(f) Remove the O–ring.

(g) Remove the dust cover.



(h) Using SST and a hammer, drive out the oil seal from the bearing guide nut.
SST 09950–60010 (09951–00300), 09950–70010 (09951–07100)

(i) Wind vinyl tape to the control valve shaft.



(j) Using a plastic hammer, tap out the valve assembly with the bearing guide nut from the control valve housing.

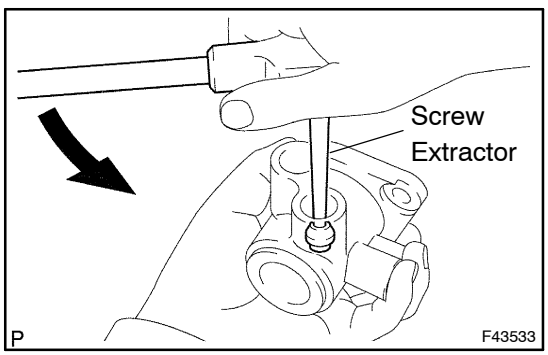
NOTICE:

Be careful not to damage the oil seal lip.

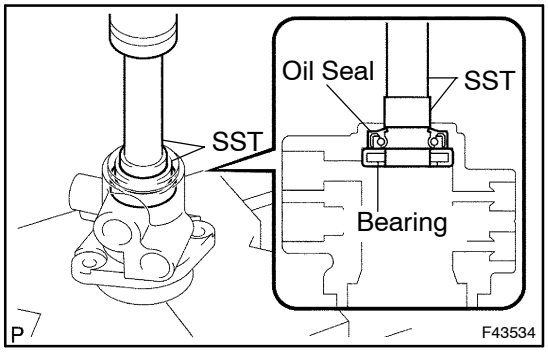
(k) Using a screwdriver, remove the 4 teflon rings from the control valve assembly.

NOTICE:

Be careful not to damage the grooves for the ring.

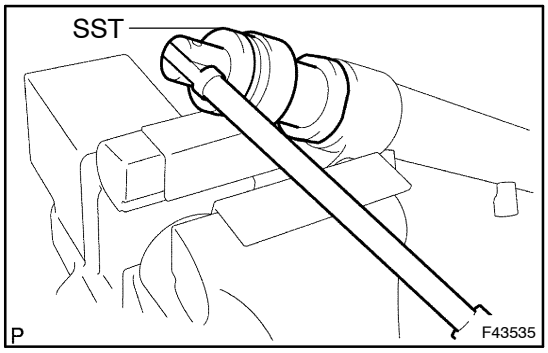


(l) Using a screw extractor, remove the union seat from the control valve housing.



31. REMOVE POWER STEERING CONTROL VALVE UPPER OIL SEAL

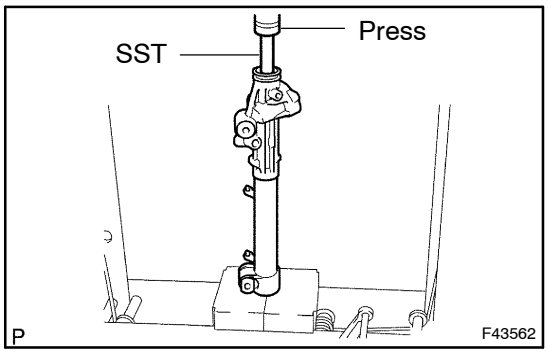
(a) Using SST, press out the bearing and oil seal from the control valve housing.
SST 09950–70010 (09951–07150), 09950–60010 (09951–00250)



32. REMOVE CYLINDER END STOPPER

(a) Using SST, remove the stopper.
SST 09631–20120

(b) Remove the O–ring from the stopper.



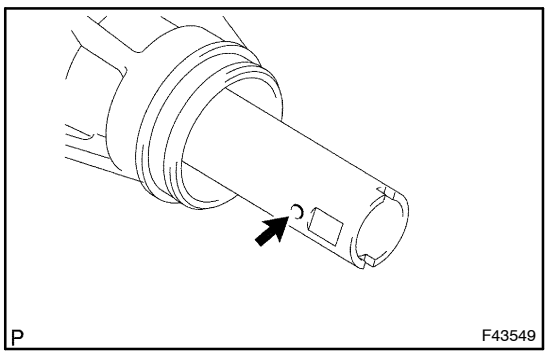
33. REMOVE STEERING RACK AND OIL SEAL

(a) Using SST, press out the steering rack and oil seal.
SST 09950–70010 (09951–07200)

NOTICE:

Take care not to drop the steering rack.

(b) Remove the oil seal from the steering rack.

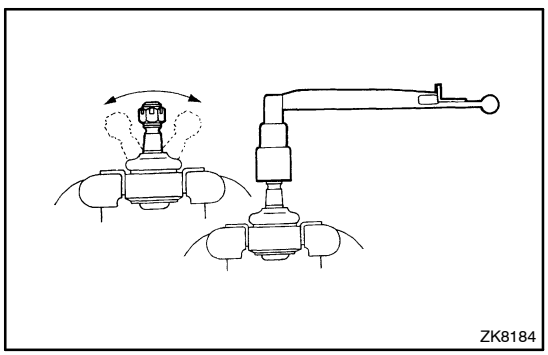


34. INSPECT POWER STEERING RACK

(a) Insert a wire into the vent hole of the steering rack by 30 mm (1.18 in.), and ensure that the vent hole is not clogged with grease.

HINT:

If the hole is clogged, the pressure inside the boot will change after it is assembled and the steering wheel is turned.



35. INSPECT TIE ROD END SUB–ASSY LH

(a) Flip the ball joint stud back and forth 5 times as shown in the figure, before installing the nut.

(b) Using a torque wrench, turn the nut continuously at a rate of 2 – 4 seconds per 1 turn and take the torque reading on the5th turn.
Torque(Turning):
0.29 – 1.96 N·m (2.9 – 20.0 kgf·cm, 2.57 – 17.35 in.·lbf)

36. INSPECT TIE ROD END SUB–ASSY RH

HINT:

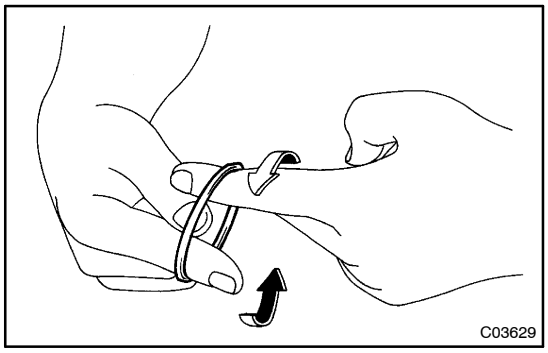
Inspect the RH side by the same procedures with LH side.

37. REMOVE STEERING RACK PISTON RING

(a) Using a screwdriver, remove the teflon ring and O–ring from the steering rack.

NOTICE:

Be careful not to damage the groove for the ring.



38. INSTALL STEERING RACK PISTON RING

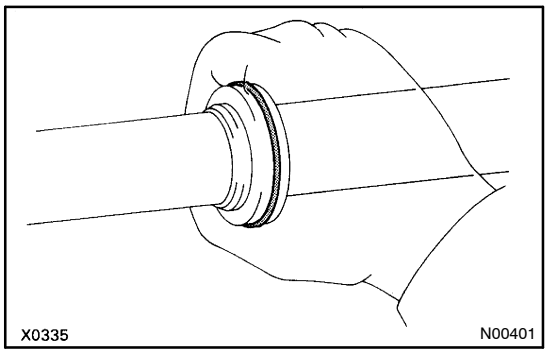
(a) Coat a new O–ring with power steering fluid and install it on steering rack.

(b) Expand a new teflon ring with your fingers.

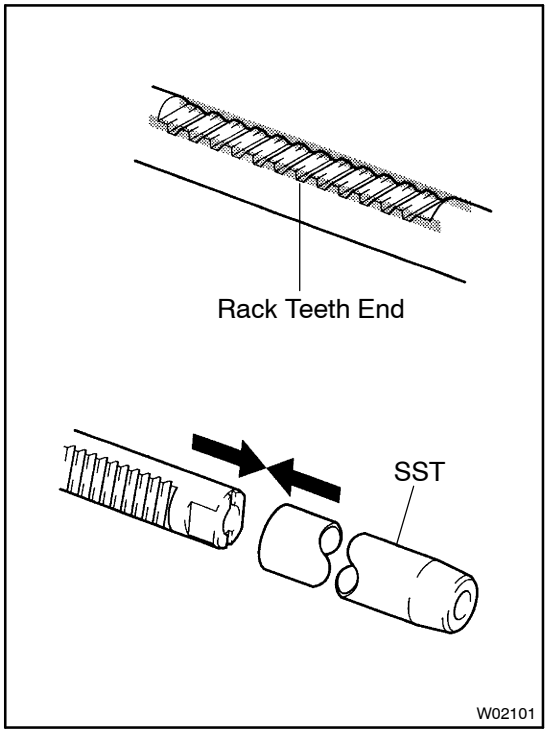
NOTICE:

Be careful no to overexpand the teflon ring.

(c) Coat the teflon ring with power steering fluid.



(d) Install the teflon ring to the steering rack, and settle it down with your fingers.



39. INSTALL POWER STEERING RACK

(a) Coat SST with power steering fluid.

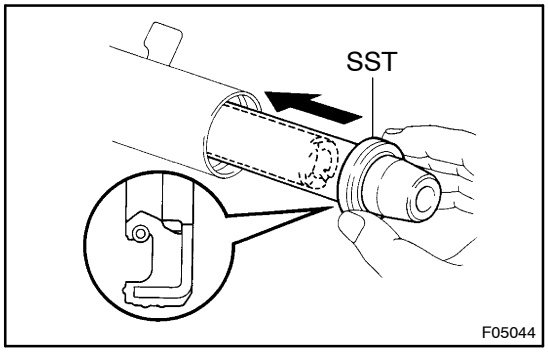
(b) Install SST to the rack.

SST 09631–00350

HINT:

Is necessary, scrape the burrs off the rack teeth end and burnish.

(c) Install the rack into the rack housing.

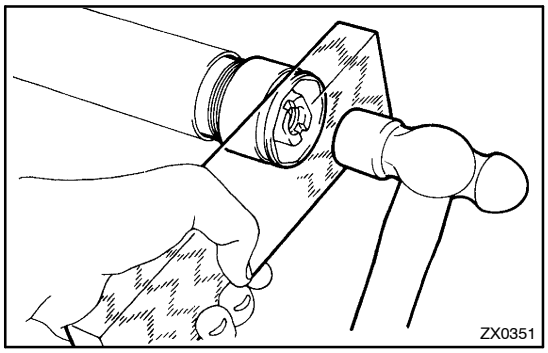


(d) Coat SST with power steering fluid.
SST 09631–00350
(e) Install SST to the steering rack opposite end.
(f) Coat a new oil seal lip with power steering fluid, and install the oil seal by pushing it without tilting.

NOTICE:

- **Make sure to install the oil seal facing in the correct direction.**
- **Be careful not to damage the oil seal lip.**

(g) Remove the SST.
SST 09631–00350

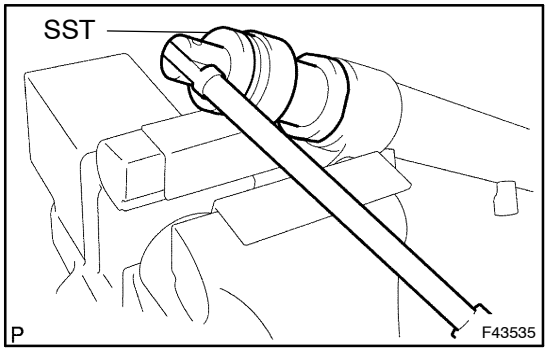


40. INSTALL CYLINDER END STOPPER

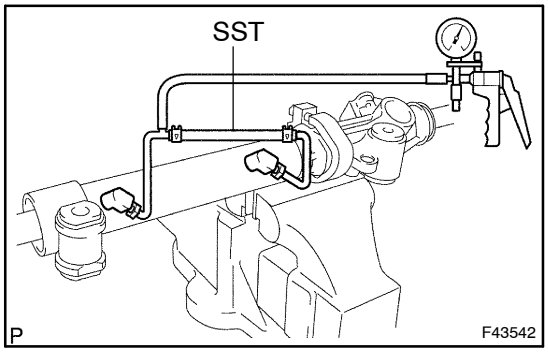
(a) Coat a new O–ring with power steering fluid, and install it to the stopper.
(b) Using a wooden block and a hammer, drive in the stopper until it is tightly installed.

NOTICE:

Be careful no to damage the O–ring.



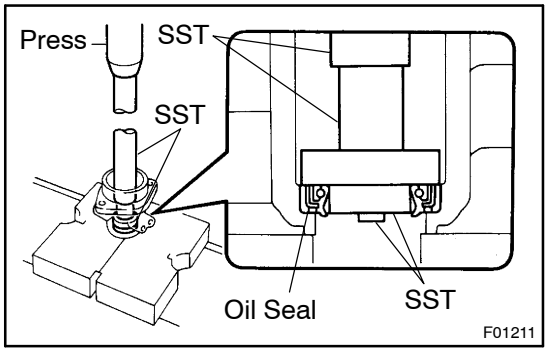
(c) Using SST, torque the stopper.
SST 09631–20120
Torque: 145 N·m (1,479 kgf·cm, 107 ft·lbf)



41. AIR TIGHTNESS TEST

(a) Install SST to the unions of the rack housing.
SST 09631–12071 (09633–00010)
(b) Apply 53.33 kPa (400 mmHg, 15.75 in Hg) of vacuum for about 30 seconds.
(c) Check that there is no change in the vacuum.

If there is change in the vacuum, check the installation of the oil seals.



42. INSTALL POWER STEERING CONTROL VALVE UPPER OIL SEAL

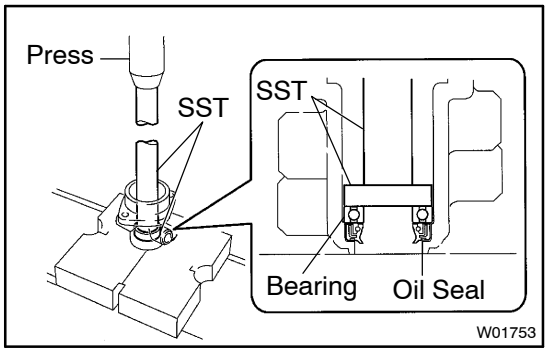
(a) Coat a new oil seal lip with power steering fluid.

(b) Using SST, press in the oil seal.

SST 09950–60010 (09951–00180, 09951–00320, 09952–06010), 09950–70010 (09951–07150)

NOTICE:

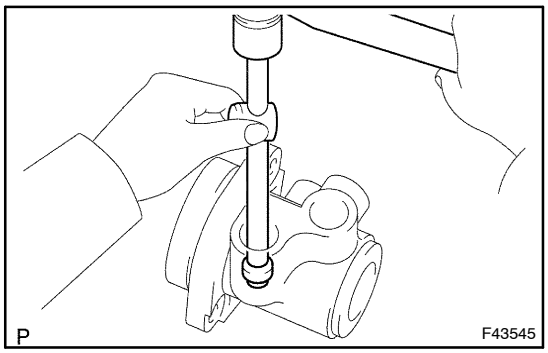
Make sure that the oil seal is installed facing in the correct direction.



(c) Coat a new bearing with molybdenum disulfide lithium base grease.

(d) Using SST, press in the bearing.

SST 09950–60010 (09951–00180, 09951–00340, 09952–06010), 09950–70010 (09951–07150)

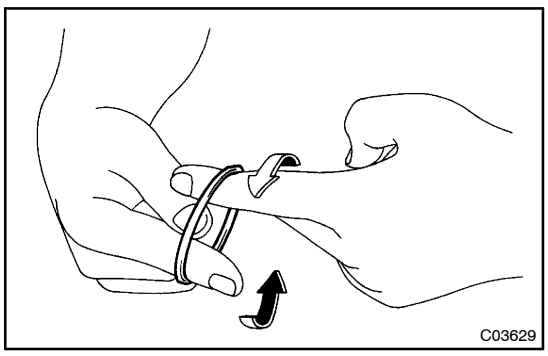


43. INSTALL POWER STEERING CONTROL VALVE

(a) Using a plastic hammer and a sliding handle, lightly tap in a new union seat.

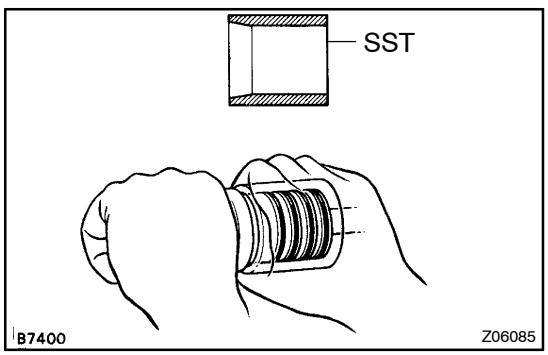
NOTICE:

Before installing the union seat, remove dust sticking to the control valve housing.



(b) Coat the rings with power steering fluid.

(c) Expand 4 new rings with your fingers.



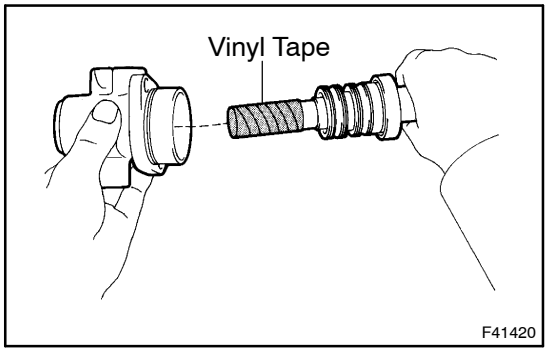
(d) Install the rings to the control valve assembly, and settle them down with your fingers.

(e) Carefully slide the tapered end of SST over the rings until the ring fits to the steering rack.

SST 09631–20081

NOTICE:

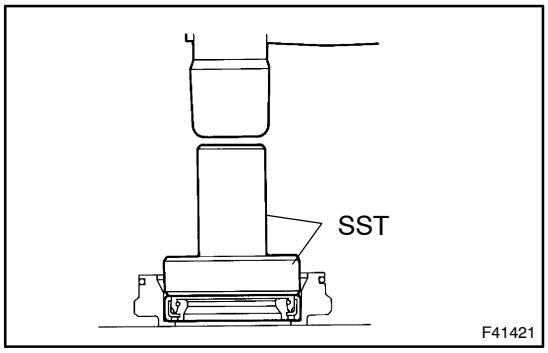
Be careful not to overexpand the ring.



(f) Coat the teflon rings with power steering fluid.
(g) To prevent oil seal lip damage, wind vinyl tape on the serrated port of the control valve shaft.
(h) Push the valve assembly into the control valve housing.

NOTICE:
Be careful not to damage the teflon rings and oil seal lip.

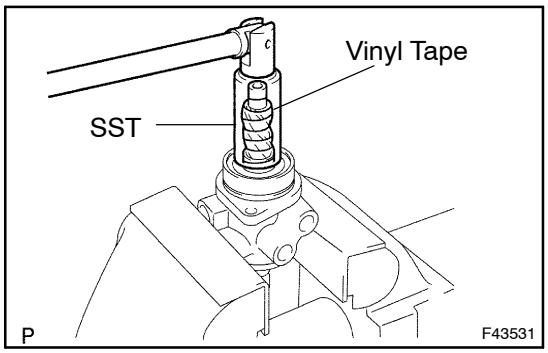
(i) Coat a new O–ring with power steering fluid, and install it to the bearing guide nut.
(j) Coat a new oil seal lip with power steering fluid.



(k) Using SST and a hammer, drive in the oil seal.
SST 09950–60010 (09951–00390), 09950–70010 (09951–07100)

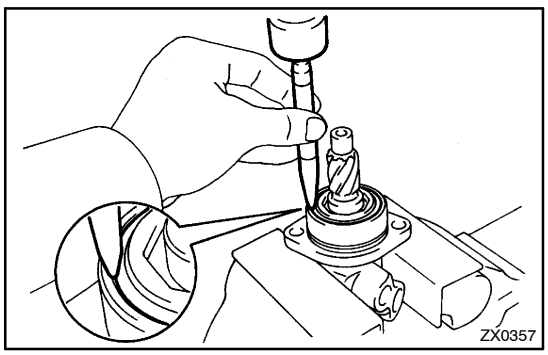
NOTICE:
Make sure to install the oil seal facing in the correct direction.

(l) Lightly mount the control valve assembly between aluminum plates in a vise.
(m) To prevent oil seal lip damage, wind vinyl tape on the pinion part of the control valve shaft.

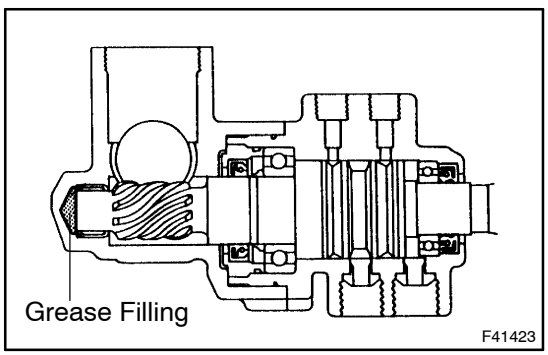


(n) Using SST, torque the guide nut.
SST 09631–20060
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

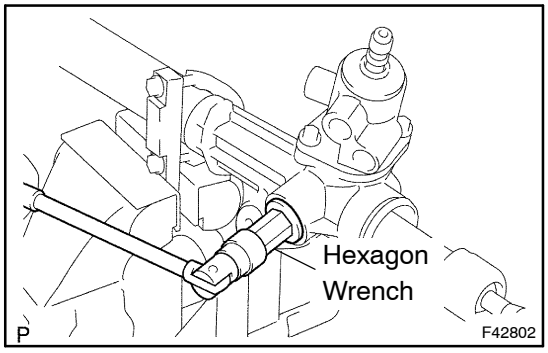
NOTICE:
Be careful not to damage the oil seal lip.



(o) Using a punch and a hammer, stake the nut.
(p) Coat a new O–ring with power steering fluid, and install it to the valve housing.



(q) Apply molybdenum disulfide base grease for the needle roller baring inside the rack housing in the illustrated portion.
Volume of grease applied: Approximately 2 g (0.07 oz)
(r) Install the control valve assembly with the 2 bolts.
Torque: 18 N·m (184 kgf·cm, 13 ft·lbf)



44. INSTALL RACK GUIDE

(a) Install the rack guide and spring.

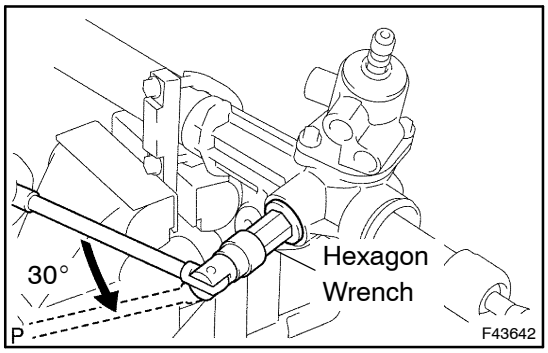
(b) Apply sealant to 2 or 3 threads of the rack guide spring cap.

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

(c) Using a hexagon wrench (24 mm), temporarily install the spring cap.

45. ADJUST TOTAL PRELOAD

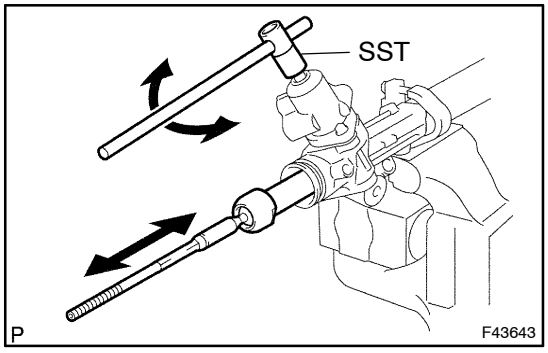
(a) To prevent the steering rack teeth from damaging the oil seal lip, temporarily install the RH and LH rack ends.



(b) Using a hexagon wrench (24 mm), tighten the rack guide spring cap.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

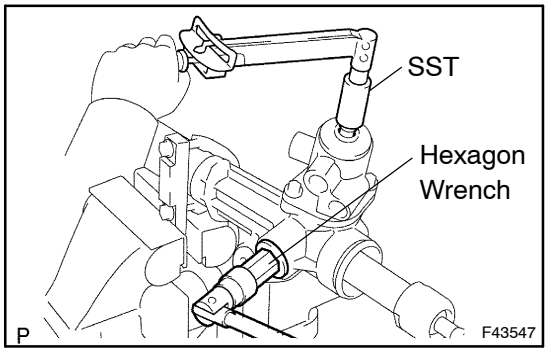
(c) Return the cap 30°.



(d) Using SST, turn the control valve shaft right and left 1 or 2 times.

SST 09616–00011

(e) Using a hexagon wrench (24 mm), loosen the cap until the rack guide spring is not functioning.



(f) Using SST, a torque wrench and a hexagon wrench (24 mm), tighten the cap until the preload is within specification.

SST 09616–00011

Preload (turning):

0.7 – 1.5 N·m (7.1 – 15.1 kgf·cm, 6.2 – 13.3 in.·lbf)

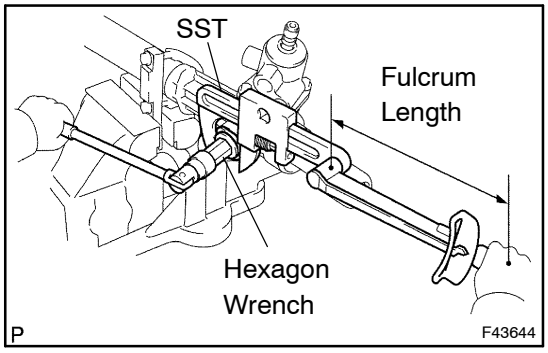
NOTICE:

Adjustment should be done in the tightening direction of the spring cap.

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

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

(h) Temporarily install the lock nut.



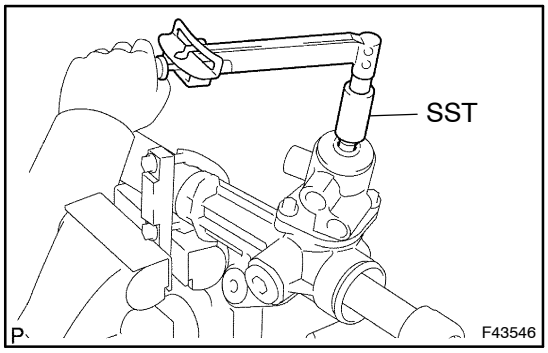
(i) Using a hexagon wrench (24 mm), holding the rack guide spring cap rotating, and using SST, torque the nut.
SST 09922–10010
Torque: 65 N·m (660 kgf·cm, 48 ft·lbf) for use with SST

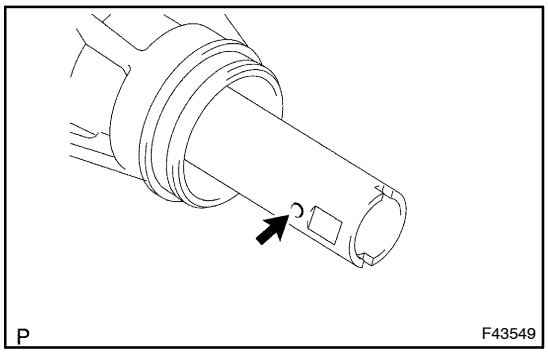
NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

HINT:
Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

(j) Recheck the total preload.
Preload (turning):
0.7 – 1.5 N·m (7.1 – 15.1 kgf·cm, 6.2 – 13.3 in.·lbf)

(k) Remove the RH and LH rack ends.





46. INSPECT POWER STEERING RACK

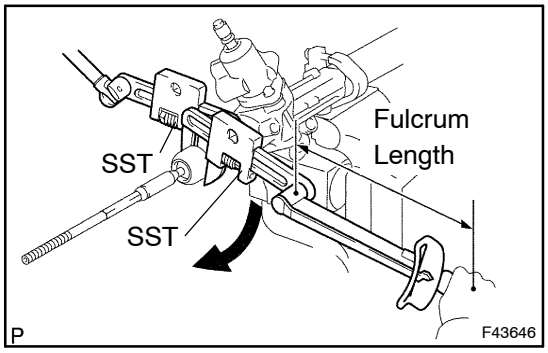
(a) Insert a wire into the vent hole of the steering rack by 30 mm (1.18 in.), and ensure that the vent hole is not clogged with grease.

HINT:
If the hole is clogged, the pressure inside the boot will change after it is assembled and the steering wheel is turned.

47. INSTALL STEERING RACK END SUB–ASSY

(a) Install a new claw washer, and temporarily tighten the rack end.

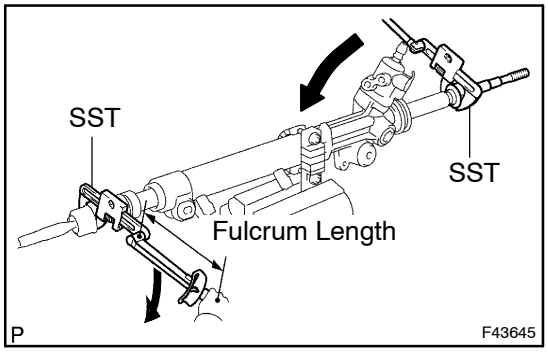
HINT:
Align the claws of the washer with the steering rack grooves.



(b) Using SST to hold the steering rack steady, and using another SST, torque the rack end LH.
SST 09922–10010
Torque: 98 N·m (1,000 kgf·cm, 72 ft·lbf) for use with SST

NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

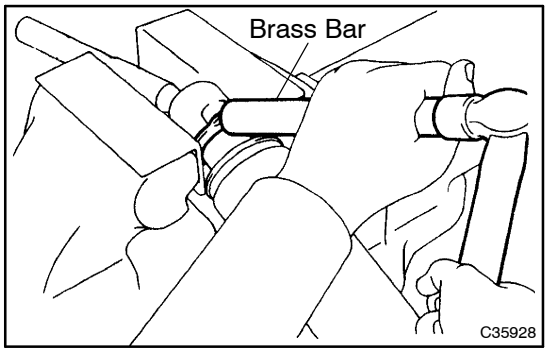
HINT:
Use a torque wrench with a fulcrum length of 380 mm (14.9 in.).



(c) Using SST to hold the rack end LH steady, and using another SST, torque the rack end RH.
SST 09922–10010
Torque: 98 N·m (1,000 kgf·cm, 72 ft·lbf) for use with SST

NOTICE:
Use SST 09922–10010 in the direction shown in the illustration.

HINT:
Use a torque wrench with a fulcrum length of 380 mm (14.9 in.).



(d) Using a brass bar and a hammer, stake the washer.

NOTICE:
Avoid any impact to the rack.

(e) Employ the same manner described above to the other side.

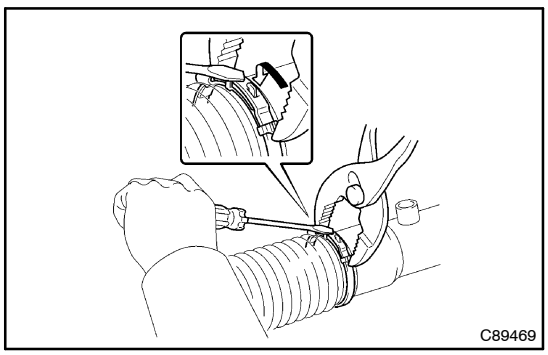
48. INSTALL STEERING RACK BOOT LH

(a) Install the boot.

NOTICE:
Be careful not to damage or twist the boot.

49. INSTALL STEERING RACK BOOT RH

HINT:
Install the RH side by the same procedures with the LH side.



50. INSTALL STEERING RACK BOOT CLAMP LH

(a) Using pliers and a screwdriver, install the clamp.

51. INSTALL STEERING RACK BOOT CLAMP RH

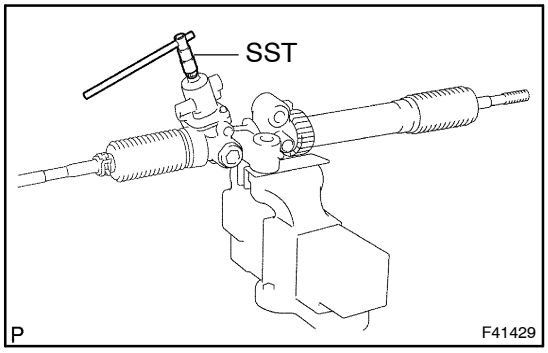
HINT:
Install the RH side by the same procedures with the LH side.

52. INSTALL STEERING RACK BOOT CLIP LH

(a) Using pliers, install the clip.

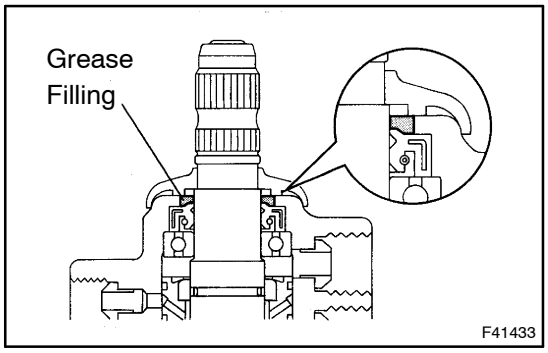
53. INSTALL STEERING RACK BOOT CLIP RH

HINT:
Install the RH side by the same procedures with the LH side.

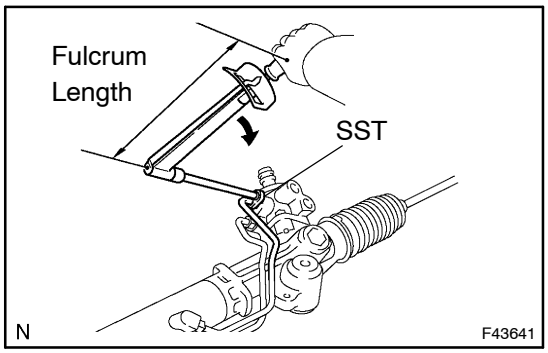


54. INSPECT POWER STEERING GEAR ASSY

(a) Using SST, check that the rack boot stretches smoothly when the control valve shaft is being rotated.
SST 09616–00011



(b) Apply MP grease in the illustrated portion.
(c) Install the dust cover.



55. INSTALL STEERING TURN PRESSURE TUBE

(a) Using SST, install the 2 turn pressure tubes.
SST 09023–38200
Torque: 23 N·m (230 kgf·cm, 17 ft·lbf) for use with SST

HINT:

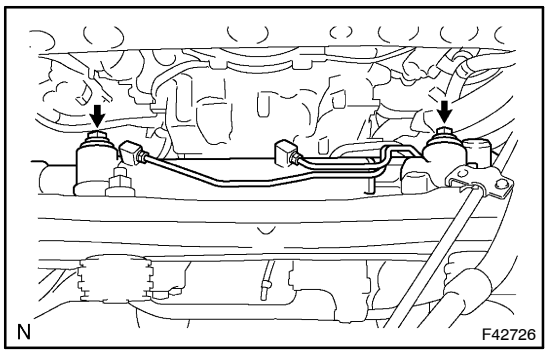
- Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.

56. INSTALL TIE ROD END SUB–ASSY LH

(a) Screw the lock nut and tie rod end onto the rack end until the matchmarks are aligned.
(b) After adjusting toe–in, torque the nut.
Torque: 88 N·m (897 kgf·cm, 65 ft·lbf)

57. INSTALL TIE ROD END SUB–ASSY RH

HINT:
Install the RH side by the same procedures with the LH side.



58. INSTALL POWER STEERING LINK ASSY

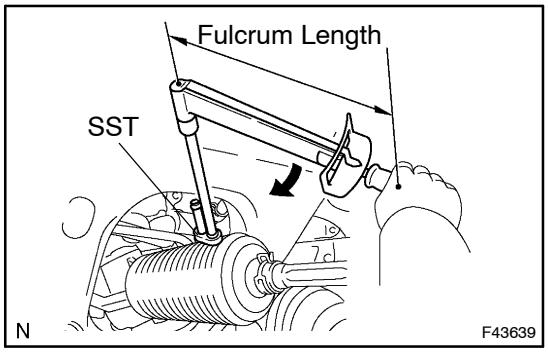
(a) Install the power steering link assy with the 2 bolts and 2 nuts.
Torque: 100 N·m (1,020 kgf·cm, 74 ft·lbf)

NOTICE:
The nut has a detent, so never turn the nut, be sure to turn the bolt.

HINT:
Insert the bolt and slide it with the gear assy as a unit and then install the bolt on the frame.

59. INSTALL STABILIZER BAR FRONT (See page 26–28)

60. STABILIZE SUSPENSION (See page 26–12)



61. CONNECT STEERING GEAR OUTLET RETURN TUBE

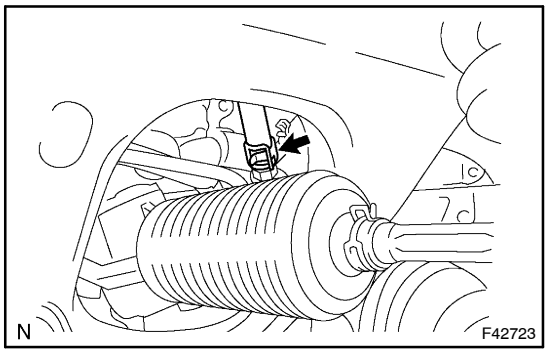
(a) Using SST, connect the outlet return tube.

SST 09023–12700

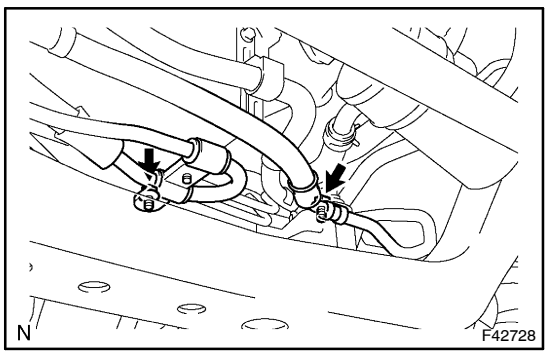
Torque: 42 N·m (420 kgf·cm, 31 ft·lbf) for use with SST

HINT:

- Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.



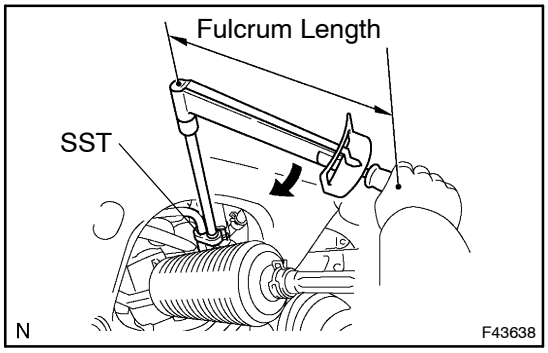
(b) Install the hose with the clip.



62. CONNECT PRESSURE FEED TUBE ASSY

(a) Install the pressure feed tube assy to the frame sub–assy with the 2 bolts.

Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)



(b) Using SST, tighten the flare nut and connect the pressure feed tube.

SST 09023–12700

Torque: 42 N·m (420 kgf·cm, 31 ft·lbf) for use with SST

HINT:

- Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
- This torque value is effective in case that SST is parallel to a torque wrench.

63. FULLY TIGHTEN STEERING INTERMEDIATE SHAFT NO.2 (See page 50–6)

64. CONNECT TIE ROD END SUB–ASSY LH

(a) Connect the tie rod end to the steering knuckle arm.

(b) Install the nut and cotter pin.

Torque: 91 N·m (928 kgf·cm, 67 ft·lbf)

65. CONNECT TIE ROD END SUB–ASSY RH

HINT:

Install the RH side by the same procedures with the LH side.

66. INSTALL ENGINE UNDER COVER SUB–ASSY NO.1

(a) Install the engine under cover sub–assy No.1 with the 4 bolts.

67. INSTALL ENGINE UNDER COVER ASSY REAR

(a) Install the engine under cover assy rear with the 6 bolts.

68. INSTALL FRONT WHEEL

Torque: 112 N·m (1,142 kgf·cm, 83 ft·lbf)

69. PLACE FRONT WHEELS FACING STRAIGHT AHEAD (See page 50–6)

70. INSTALL TURN SIGNAL SWITCH ASSY (See page 50–6)

71. INSTALL SPIRAL CABLE SUB–ASSY (See page 50–6)

72. INSTALL STEERING COLUMN COVER LWR (See page 50–6)

73. CENTER SPIRAL CABLE (See page 50–6)

74. INSTALL STEERING WHEEL ASSY (See page 50–6)

75. INSPECT STEERING WHEEL CENTER POINT (See page 50–6)

76. INSTALL HORN BUTTON ASSY (See page 60–14)

77. INSPECT HORN BUTTON ASSY (See page 60–14)

78. INSPECT SRS WARNING LIGHT (See page 05–1122)

79. ADD POWER STEERING FLUID

80. BLEED POWER STEERING FLUID (See page 51–3)

81. CHECK POWER STEERING FLUID LEAKAGE (See page 51–3)

82. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT (See page 26–6)