FRONT DRIVE SHAFT (From July, 2003)

300ML–01

OVERHAUL

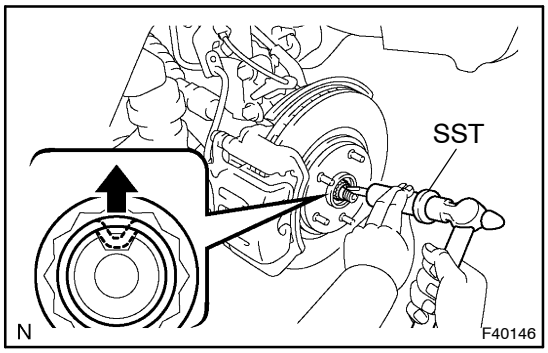
HINT:

- COMPONENTS: See page 30–1
- Use the same procedures for the RH side and LH side.
- The Procedures listed below are for the LH side.

1. DRAIN AUTOMATIC TRANSAXLE FLUID (A/T TRANSAXLE)
(See Pub. No. RM915E, page 40–35)

2. DRAIN MANUAL TRANSAXLE OIL (M/T TRANSAXLE)
(See Pub. No. RM915E, page 41–3)

3. REMOVE FRONT WHEEL

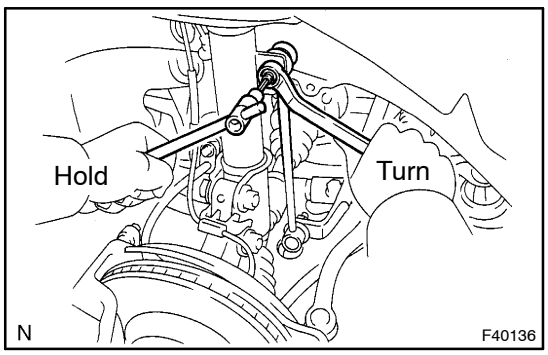


4. REMOVE FRONT AXLE HUB LH NUT

(a) Using SST and a hammer, unstake the staked part of the axle hub LH nut.
SST 09930–00010

NOTICE:
Loosen the staked part of the lock nut completely, otherwise the screw of the drive shaft may be damaged.

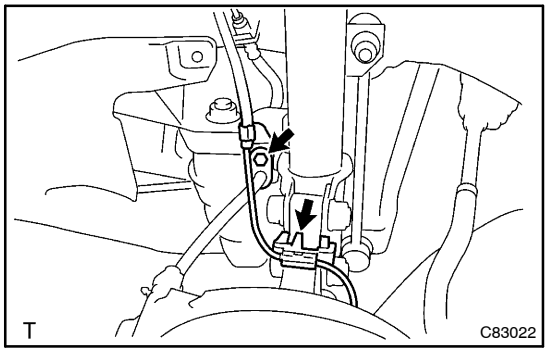
(b) While applying the brakes, remove the front axle hub LH nut.



5. DISCONNECT FRONT STABILIZER LINK ASSY LH

(a) Remove the nut, and separate the stabilizer link assy LH.

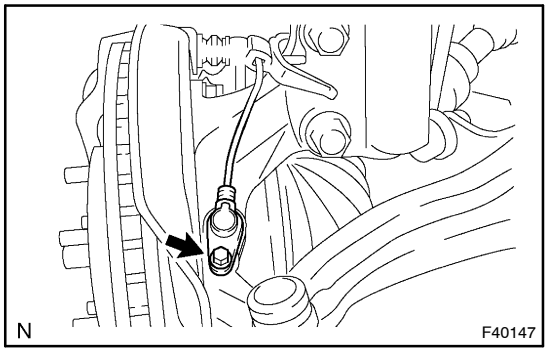
HINT:
If the ball joint turns together with the nut, use a hexagon wrench (6 mm) to hold the stud.



6. DISCONNECT SPEED SENSOR FRONT LH

(a) Remove the bolt and clip, and separate the sensor wire and hose from the shock absorber.

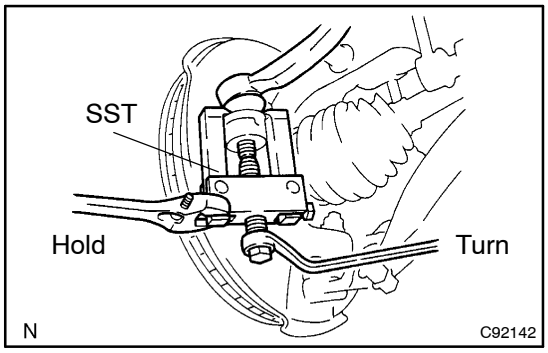
NOTICE:
Be careful not to damage the speed sensor.



(b) Remove the bolt, and separate the speed sensor front LH from the steering knuckle.

NOTICE:

Prevent foreign matter from adhering to the speed sensor.

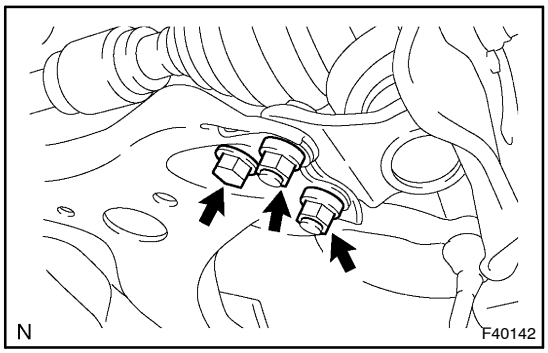


7. DISCONNECT TIE ROD ASSY LH

(a) Remove the cotter pin and nut.

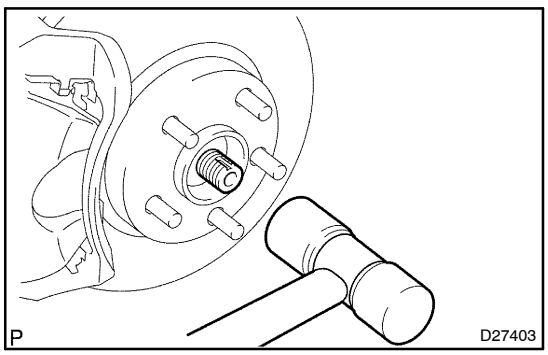
(b) Using SST, separate the tie rod end from the steering knuckle.

SST 09628–62011



8. DISCONNECT FRONT SUSPENSION ARM SUB–ASSY LOWER NO.1 LH

(a) Remove the bolt and 2 nuts, and disconnect the front suspension arm sub–assy lower No.1 LH from the lower ball joint.

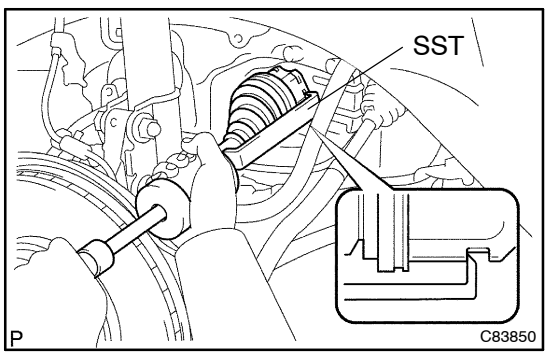


9. DISCONNECT FRONT AXLE ASSY LH

(a) Using a plastic hammer, separate the drive shaft from the axle hub.

NOTICE:

Be careful not to damage the boot and speed sensor rotor.



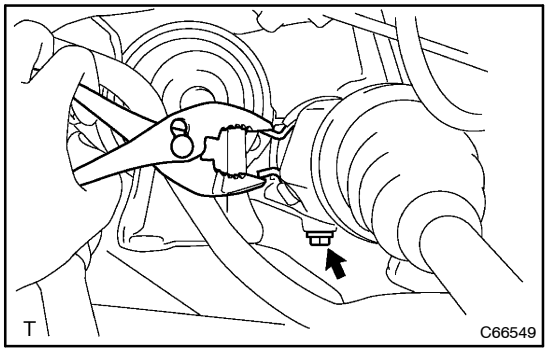
10. REMOVE FRONT DRIVE SHAFT ASSY LH

(a) Using SST, remove the front drive shaft assy LH.

SST 09520–01010, 09520–24010 (09520–32040)

NOTICE:

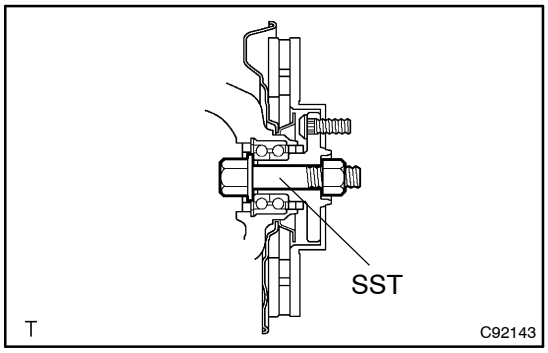
- **Be careful not to damage the transaxle case oil seal, inboard joint boot and drive shaft dust cover.**
- **Be careful not to drop the drive shaft assy.**



11. REMOVE FRONT DRIVE SHAFT ASSY RH

(a) Using a pliers, remove the drive shaft bearing bracket hole snap ring.

(b) Remove the bolt and front drive shaft assy RH from the drive shaft bearing bracket.



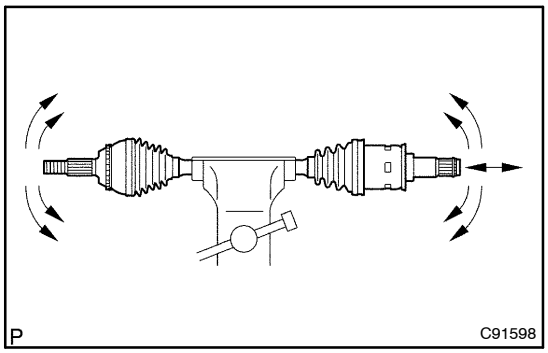
12. FIX FRONT AXLE ASSY LH

SST 09608–16042 (09608–02021, 09608–02041)

NOTICE:

The hub bearing could be damaged if it is subjected to the vehicle's full weight, such as when moving the vehicle with the drive shaft removed.

Therefore, if it is absolutely necessary to place the vehicle weight on the hub bearing, first support it with SST.



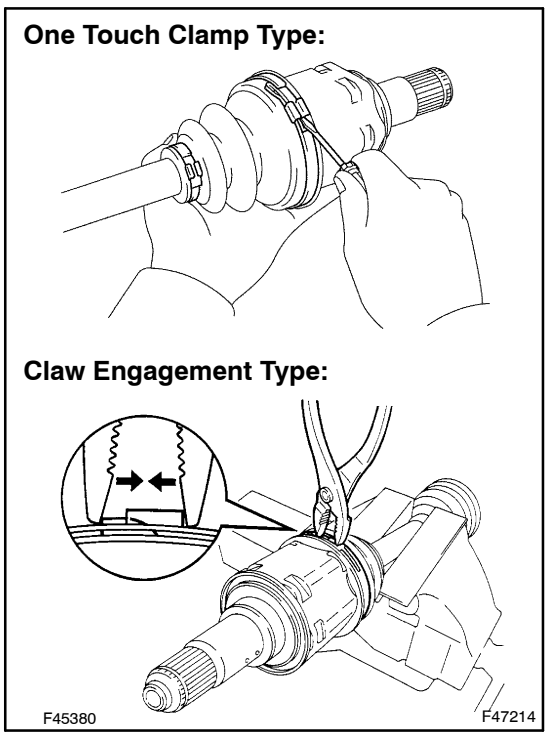
13. INSPECT FRONT DRIVE SHAFT ASSY LH

(a) Check that there is no remarkable play in the radial direction of the outboard joint.

(b) Check that the inboard joint slides smoothly in the thrust direction.

(c) Check that there is no remarkable play in the radial direction of the inboard joint.

(d) Check the boots for damage.



14. REMOVE FRONT AXLE INBOARD JOINT BOOT LH NO.2 CLAMP

(a) One Touch Clamp Type:
Using a screwdriver, disclamp the inboard joint boot LH No.2 clamp.

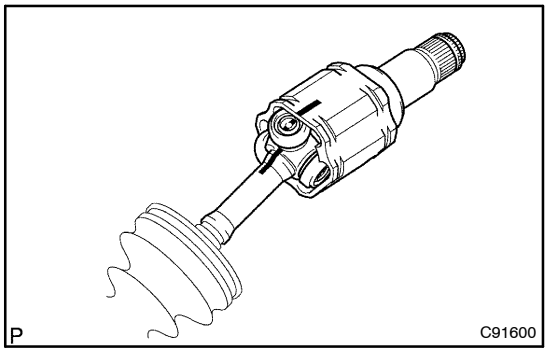
(b) Claw Engagement Type:
Using pliers, remove the inboard joint boot LH No.2 clamp as shown in the illustration.

15. REMOVE FRONT AXLE INBOARD JOINT BOOT LH CLAMP

(a) Remove the inboard joint boot LH clamp using the same procedures as for the inboard joint boot LH clamp.

16. DISCONNECT FR AXLE INBOARD JOINT BOOT

(a) Separate the inboard joint boot from the inboard joint assy.



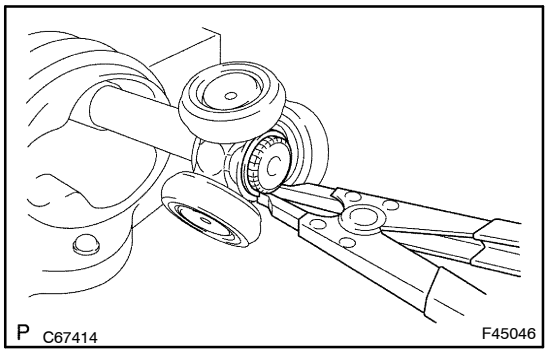
17. REMOVE FRONT DRIVE INBOARD JOINT ASSY LH

(a) Put matchmarks on the inboard joint assy and outboard joint shaft.

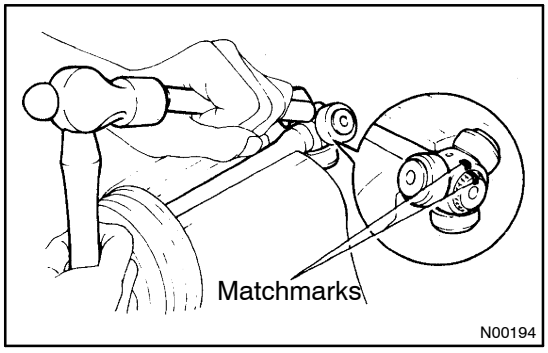
NOTICE:

Do not use a punch for the marks.

(b) Remove the inboard joint assy from the outboard joint shaft.



(c) Using a snap ring expander, remove the front drive inner shaft inner RH shaft snap ring.



(d) Put matchmarks on the outboard joint shaft and tripod joint.

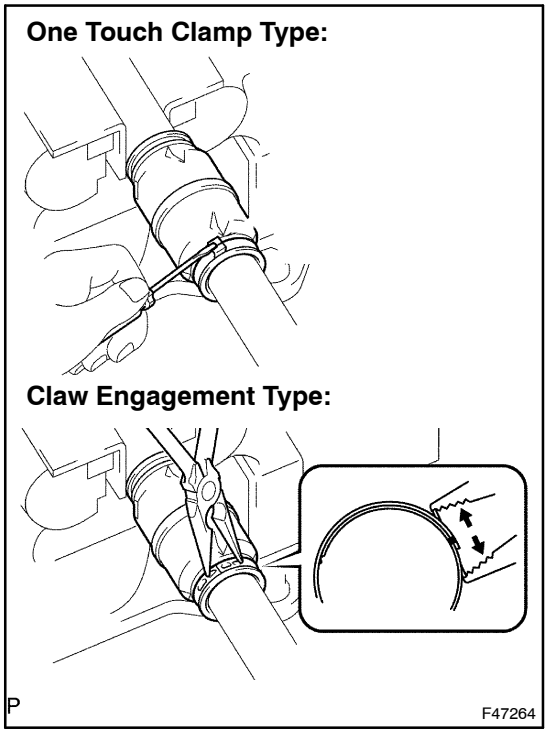
NOTICE:

Do not use a punch for the marks.

(e) Using a brass bar and a hammer, remove the tripod joint from the outboard joint shaft.

NOTICE:

Do not tap the roller.



18. REMOVE FRONT DRIVE SHAFT DAMPER LH (EXCEPT MANUAL TRANSAXLE)

(a) One Touch Clamp Type:
Using a screwdriver, remove the drive shaft damper LH clamp, as shown in the illustration.

(b) Claw Engagement Type:
Using pliers, remove the drive shaft damper LH clamp as shown in the illustration.

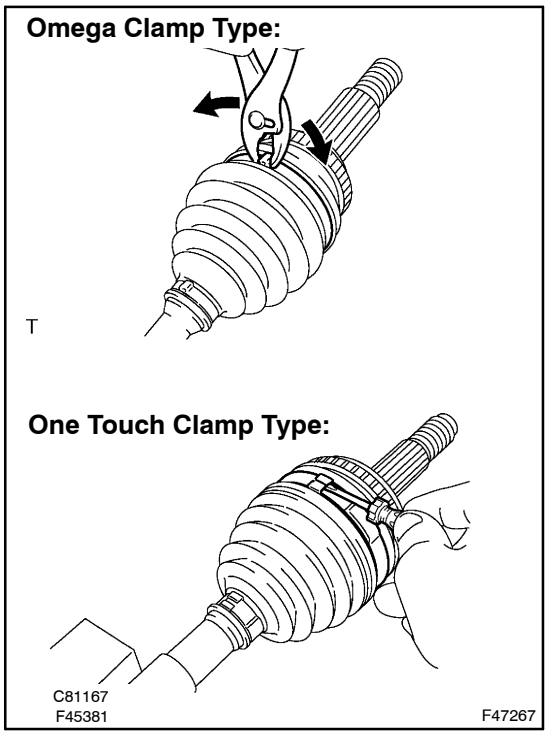
(c) Remove the drive shaft damper LH.

19. REMOVE FRONT DRIVE SHAFT DAMPER RH (EXCEPT 1MZ–FE ENGINE TYPE)

(a) One Touch Clamp Type:
Using a screwdriver, remove the drive shaft damper RH clamp, as shown in the illustration.

(b) Claw Engagement Type:
Using pliers, remove the drive shaft damper RH clamp as shown in the illustration.

(c) Remove the drive shaft damper RH.



20. REMOVE FRONT AXLE OUTBOARD JOINT BOOT LH NO.2 CLAMP

(a) Omega Clamp Type:
Using pliers, remove the drive shaft damper LH clamp, as shown in the illustration.

(b) One Touch Clamp Type:
Using a screwdriver, remove the drive shaft damper LH clamp, as shown in the illustration.

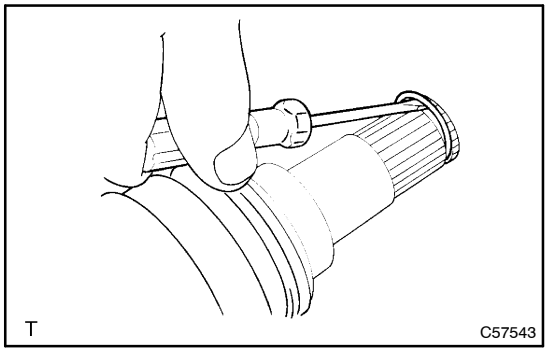
21. REMOVE FRONT AXLE OUTBOARD JOINT BOOT LH CLAMP

(a) Remove the outboard joint boot LH clamp using the same procedures as for the outboard joint boot LH No.2 clamp.

22. REMOVE OUTBOARD JOINT BOOT

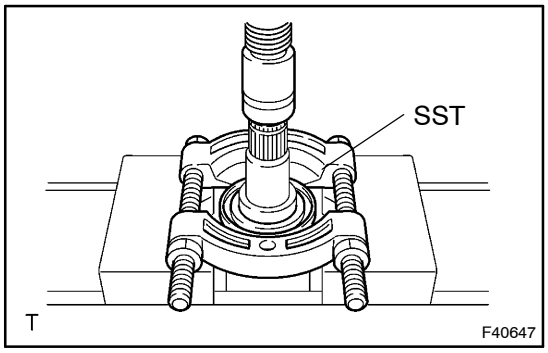
(a) Remove the outboard joint boot from the outboard joint shaft.

(b) Remove the old grease from the outboard joint.



23. REMOVE FRONT DRIVE SHAFT LH HOLE SNAP RING

(a) Using a screwdriver, remove the hole snap ring.



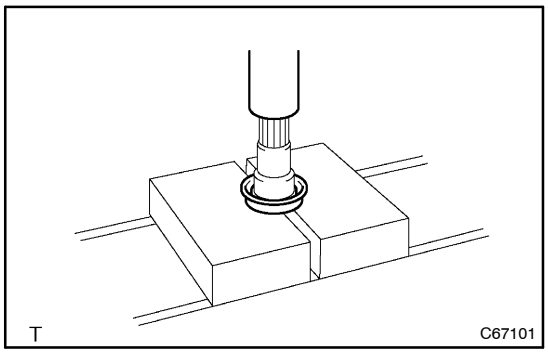
24. REMOVE FRONT DRIVE SHAFT DUST COVER LH

(a) Using SST and a press, remove the front drive shaft dust cover LH.

SST 09950–00020

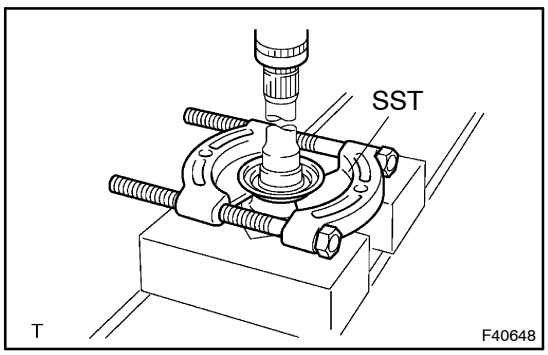
NOTICE:

Be careful not to drop the inboard joint assy.



25. REMOVE FRONT DRIVE SHAFT DUST COVER RH

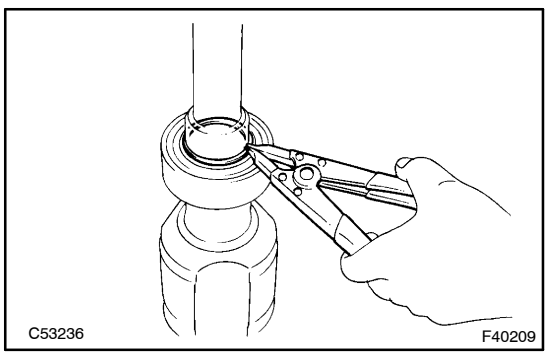
(a) Using a press, remove the front drive shaft dust cover RH.



26. REMOVE FRONT DRIVE SHAFT DUST COVER

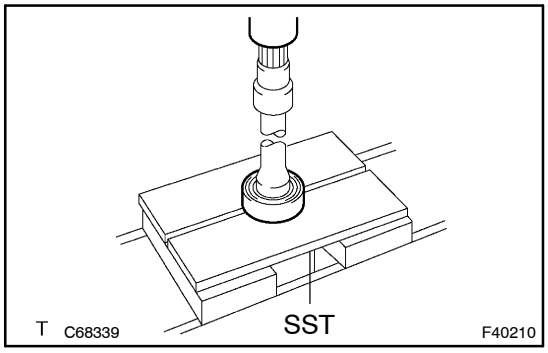
(a) Using SST and a press, remove the front drive shaft dust cover.

SST 09950–00020



27. REMOVE FRONT DRIVE SHAFT BEARING

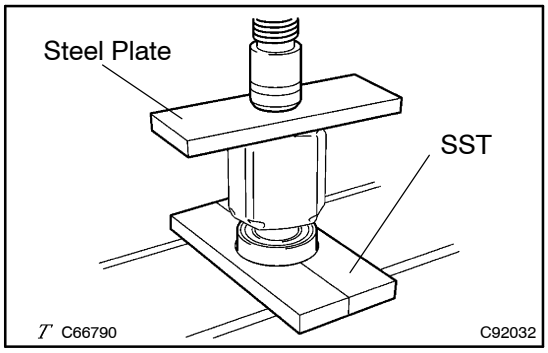
(a) Using a snap ring pliers, remove the front drive shaft hole snap ring RH.



(b) Using SST and a press, remove the bearing.
SST 09527–10011

NOTICE:

Be careful not to drop the inboard joint assy.

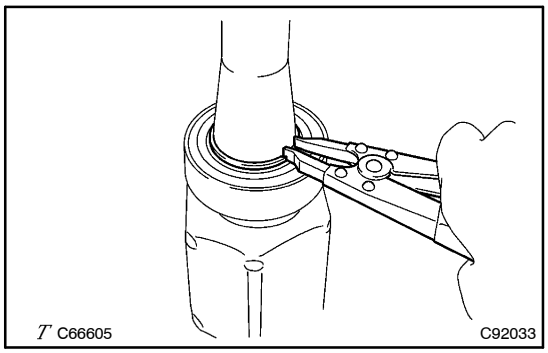


28. INSTALL FRONT DRIVE SHAFT BEARING

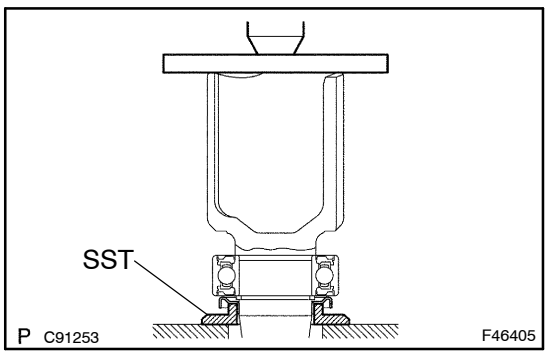
(a) Using SST and a steel plate, install a new front drive shaft bearing.
SST 09527–30010, 09527–10011

NOTICE:

Bearing should be completely installed.



(b) Using a snap ring expander, install a new front drive shaft hole snap ring RH.

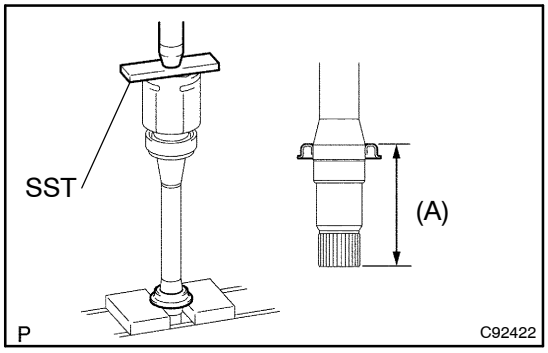


29. INSTALL FRONT DRIVE SHAFT DUST COVER

(a) Using SST and a press, install a new drive shaft dust cover.
SST 09726–40010

NOTICE:

- **Dust cover should be completely installed.**
- **Be careful not to damage the dust cover.**



30. INSTALL FRONT DRIVE SHAFT DUST COVER RH

(a) Using SST and a press, install a new drive shaft dust cover RH until the distance from the tip of the center drive shaft to the drive shaft dust cover RH meets the specification, as shown in the illustration.

SST 09527–10011

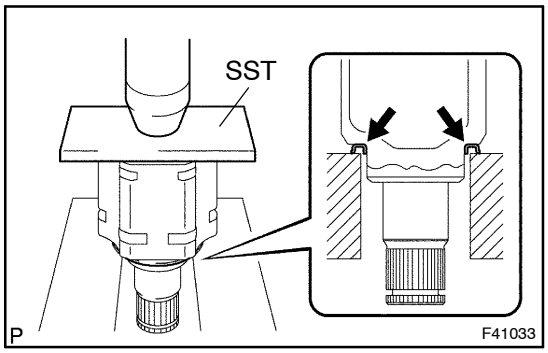
Distance (A):

1MZ–FE: 110.5 ± 0.5 mm (4.3 ± 0.02 in.)

1AZ–FE, 2AZ–FE: 91.5 ± 0.5 mm (3.6 ± 0.02 in.)

NOTICE:

- **Dust cover should be completely installed.**
- **Be careful not to damage the dust cover.**



31. INSTALL FRONT DRIVE SHAFT DUST COVER LH

(a) Using SST and a press, install a new front drive shaft dust cover LH.

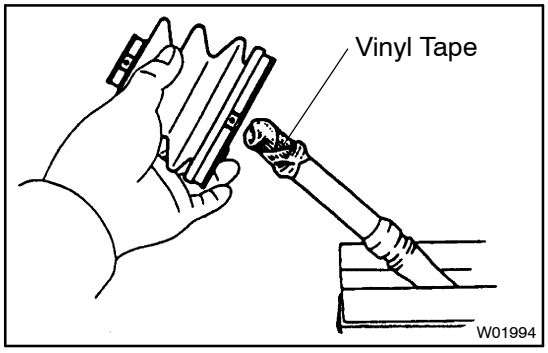
SST 09527–10011

NOTICE:

- **Dust cover should be completely installed.**
- **Be careful not to damage the dust cover.**

32. INSTALL FRONT DRIVE SHAFT LH HOLE SNAP RING

(a) Install a new front drive shaft LH hole snap ring.



33. INSTALL OUTBOARD JOINT BOOT

HINT:

Before installing the boots, wrap the spline of the drive shaft with vinyl tape to prevent the boots from being damaged.

(a) Hold the drive shaft lightly in a soft vise.

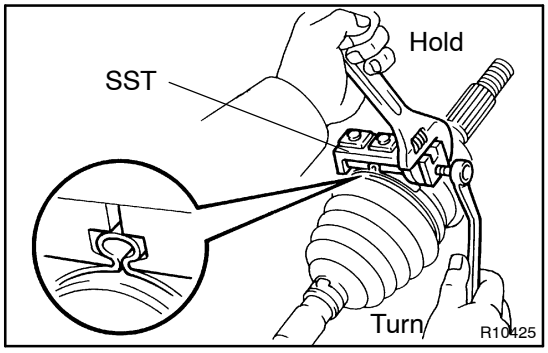
(b) Temporarily install a new outboard joint boot with 2 clamps to the drive shaft.

(c) Pack the outboard joint shaft and boot with grease.

Grease capacity:

1AZ–FE, 2AZ–FE: 190 – 200 g (6.7 – 7.1 oz.)

1MZ–FE: 205 – 215 g (7.2 – 7.6 oz.)



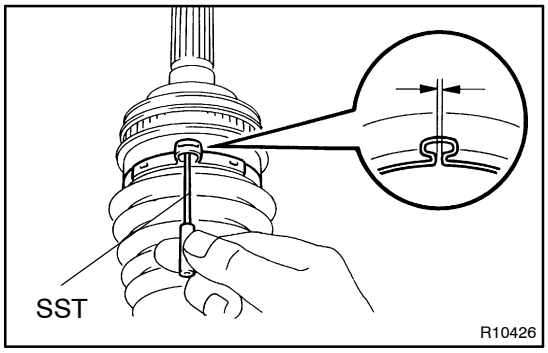
34. INSTALL FRONT AXLE OUTBOARD JOINT BOOT LH NO.2 CLAMP

(a) Install the 2 outboard joint boot clamps onto the boot.

(b) Place SST onto the outboard joint boot LH No.2 clamp.
SST 09521–24010

(c) Tighten the SST so that the outboard joint boot LH No.2 clamp is pinched.

NOTICE:
Do not overtighten the SST.

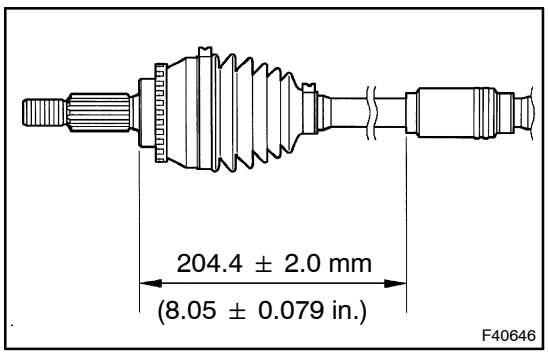


(d) Using SST, measure the clearance of the outboard joint boot LH No.2 clamp.
SST 09240–00020
Clearance: 3.0 to 4.0 mm (0.118 to 0.157 in.)

NOTICE:
When the measured value is greater than the specified value, retighten the clamp.

35. INSTALL FRONT AXLE OUTBOARD JOINT BOOT LH CLAMP

(a) The procedure for the outboard joint boot LH clamp is the same as above.
SST 09521–24010, 09240–00020
Clearance: 1.5 to 2.5 mm (0.059 to 0.098 in.)

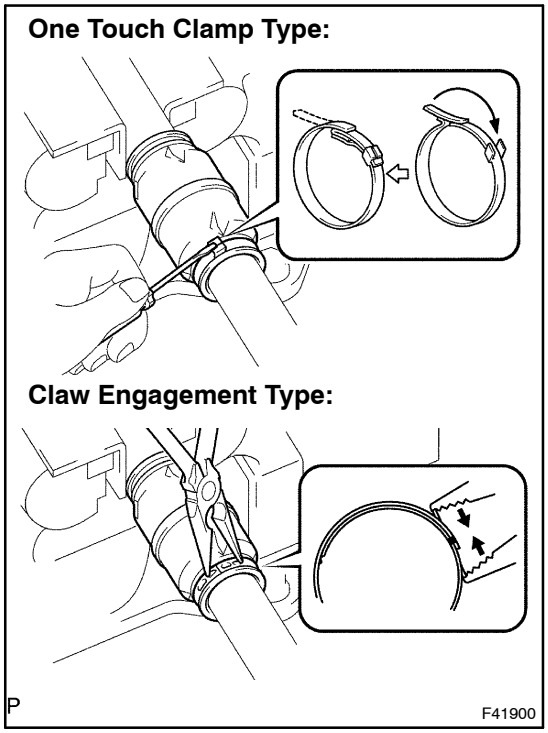


36. INSTALL FRONT DRIVE SHAFT DAMPER LH (EXCEPT MANUAL TRANSAXLE)

(a) Install the drive shaft damper LH to the drive shaft.

(b) Make sure that the damper is on the shaft groove.

(c) Set the distance, as described below.
Distance: 204.4 ± 2.0 mm (8.05 ± 0.079 in.)

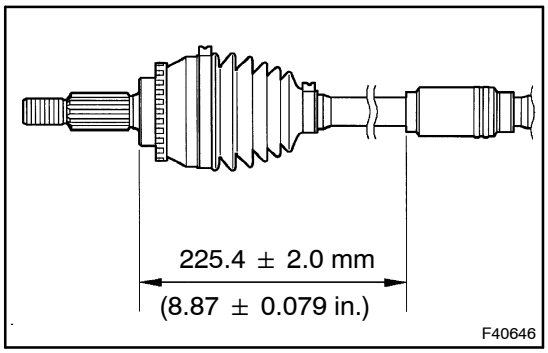


(d) Hold the front drive shaft lightly in a soft vise.
(e) Install the drive shaft damper clamp to the damper.

NOTICE:

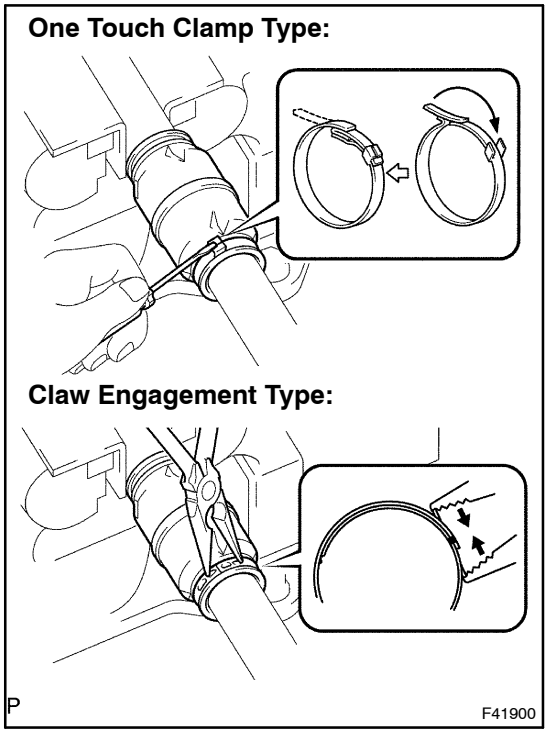
Be sure to install the clamp in the correct position.

(f) One Touch Clamp Type:
  (1) Using a screwdriver, install the drive shaft damper clamp, as shown in the illustration.
(g) Claw Engagement Type:
  (1) Using needle nose pliers and install the drive shaft damper clamp, as shown in the illustration.



37. INSTALL FRONT DRIVE SHAFT DAMPER RH (EXCEPT 1MZ–FE ENGINE TYPE)

(a) Install the drive shaft damper RH to the drive shaft.
(b) Make sure that the damper is on the shaft groove.
(c) Set the distance, as described below.
  Distance: 225.4 ± 2.0 mm (8.87 ± 0.079 in.)

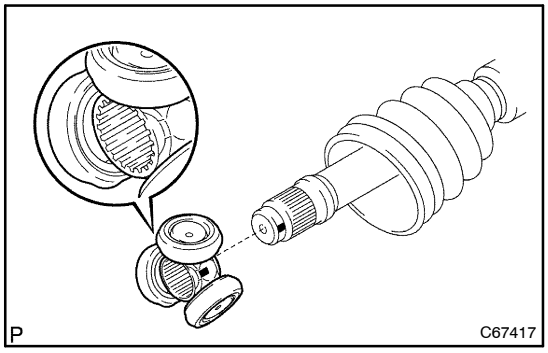


(d) Hold the front drive shaft lightly in a soft vise.
(e) Install the drive shaft damper clamp to the damper.

NOTICE:

Be sure to install the clamp in the correct position.

(f) One Touch Clamp Type:
  (1) Using a screwdriver, install the drive shaft damper clamp, as shown in the illustration.
(g) Claw Engagement Type:
  (1) Using needle nose pliers and install the drive shaft damper clamp, as shown in the illustration.



38. INSTALL FRONT DRIVE INBOARD JOINT ASSY LH

(a) Temporarily install a new inboard joint boot with 2 clamps to the drive shaft.

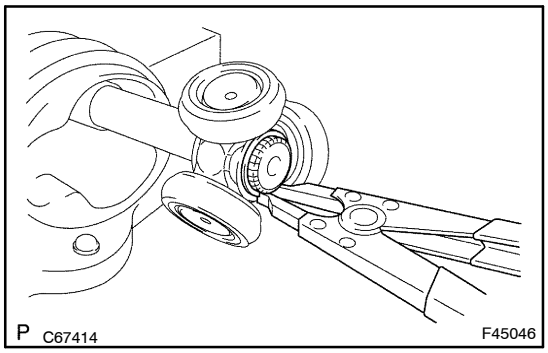
(b) Place the beveled side of the tripod joint axial spline toward the outboard joint shaft.

(c) Align the matchmarks.

(d) Using a brass bar and a hammer, tap in the tripod joint to the outboard joint shaft.

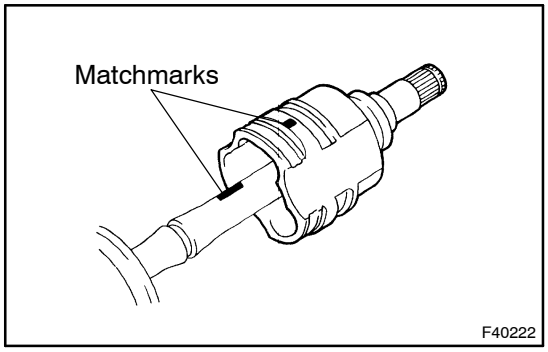
NOTICE:

- **Do not tap the roller.**
- **Be sure to install the tripod joint assy in the correct direction.**



(e) Using a snap ring expander, install a new shaft snap ring.

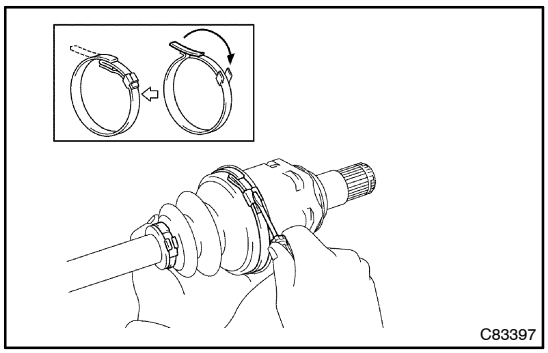
(f) Pack the outboard joint shaft and boot with grease.
Grease capacity:175 to 185 g (6.3 to 6.6 oz.)



(g) Align the matchmarks and install the inboard joint assy to the outboard joint shaft assy.

39. INSTALL FR AXLE INBOARD JOINT BOOT

(a) Install the inboard joint boot to the inboard joint assy.

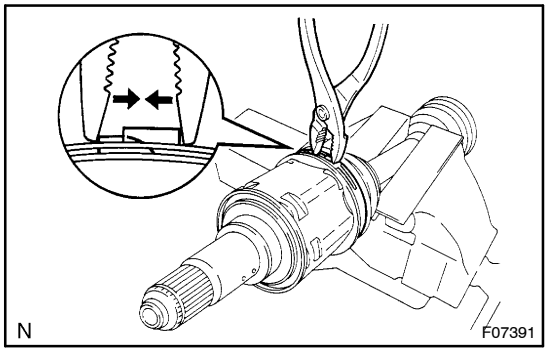


40. INSTALL FRONT AXLE INBOARD JOINT BOOT LH NO.2 CLAMP

(a) One Touch Clamp Type:

(1) Hold the drive shaft lightly in a soft vise.

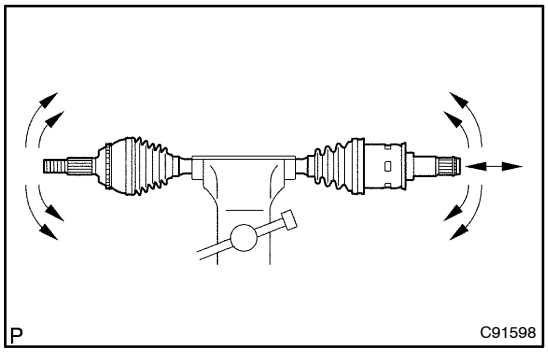
(2) Bend the band and lock new inboard joint boot LH No.2 clamp with a screwdriver.



(b) Claw Engagement Type:
(1) Using pliers, pinch the claws to compress new inboard joint boot LH No.2 clamp and engage the other claws.

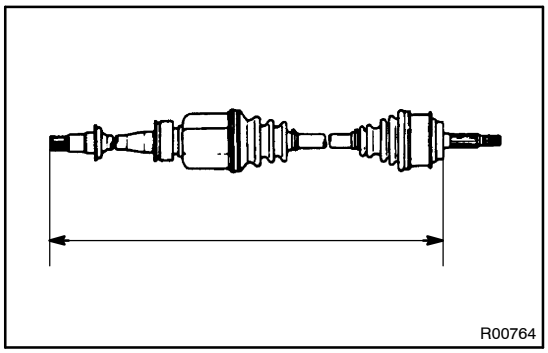
41. INSTALL FRONT AXLE INBOARD JOINT BOOT LH CLAMP

(a) Install the inboard joint boot LH clamp using the same procedures as for the inboard joint boot LH No.2 clamp.



42. INSPECT FRONT DRIVE SHAFT

(a) Check that there is no remarkable play in the radial direction of the outboard joint.
(b) Check that the inboard joint slides smoothly in the thrust direction.
(c) Check that there is no remarkable play in the radial direction of the inboard joint.
(d) Check the boots for damage.



(e) Make sure that the 2 boots are on the shaft groove.
(f) Make sure that the 2 boots are not stretched or contracted when the drive shaft is at standard length.

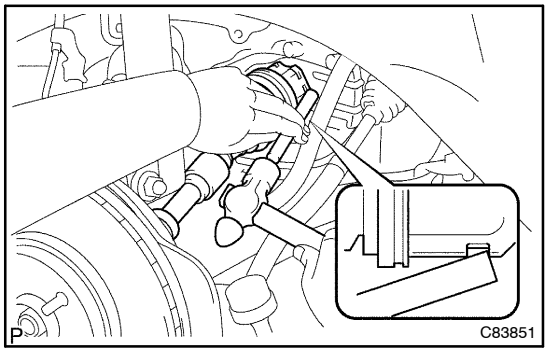
Drive shaft standard length: mm (in.)

1MZ–FE:

LH	576.9 ± 2.0 (22.713 ± 0.079)
RH	895.4 ± 2.0 (35.252 ± 0.079)

1AZ–FE, 2AZ–FE:

LH	591.2 ± 2.0 (23.276 ± 0.079)
RH	890 ± 2.0 (35.039 ± 0.079)

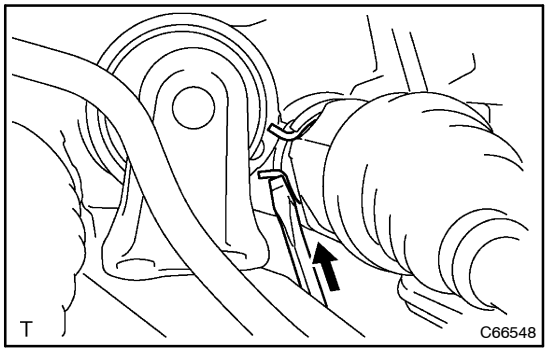


43. INSTALL FRONT DRIVE SHAFT ASSY LH

(a) Coat the spline of the inboard joint shaft assy with ATF.
(b) Align the shaft splines and install the drive shaft assy with a brass bar and a hammer.

NOTICE:

- **Set the snap ring with the opening side facing downward.**
- **Be careful not to damage the oil seal boot and dust cover.**
- **Move the drive shaft assy while keeping it level.**



44. INSTALL FRONT DRIVE SHAFT ASSY RH

(a) Using a screwdriver, install a new bearing bracket hole snap ring.

NOTICE:

Do not damage the oil seal and boot.

(b) Install the bolt.

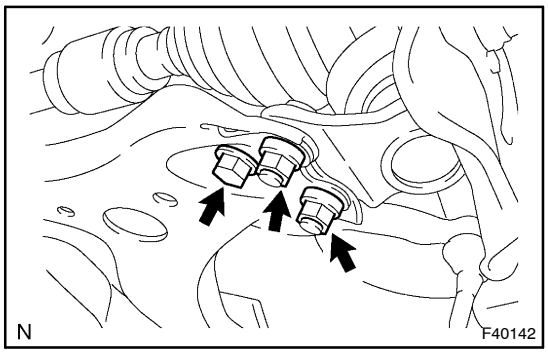
Torque: 32 N·m (330 kgf·cm, 24 ft·lbf)

45. INSTALL FRONT AXLE ASSY LH

(a) Install the front drive shaft assy LH to the front axle assy LH.

NOTICE:

- **Be careful not to damage the outboard joint boot.**
- **Be careful not to damage the speed sensor rotor.**



46. INSTALL FRONT SUSPENSION ARM SUB–ASSY LOWER NO.1 LH

(a) Install the lower ball joint to the front suspension arm sub–assy lower with the bolt and nuts.

Torque: 75 N·m (765 kgf·cm, 55 ft·lbf)

47. INSTALL TIE ROD ASSY LH

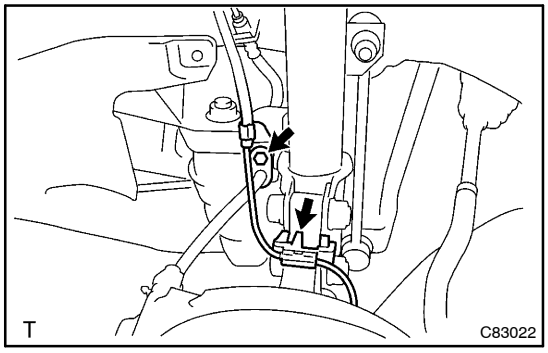
(a) Install the tie rod end to the steering knuckle with the nut.

Torque: 49 N·m (500 kgf·cm, 36 ft·lbf)

(b) Install a new cotter pin.

NOTICE:

If the holes for the cotter pin are not aligned, further tighten the nut up to 60°.



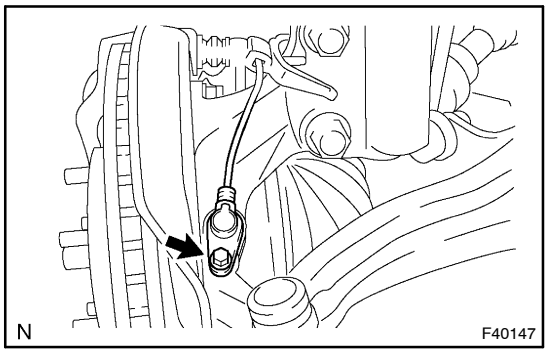
48. INSTALL SPEED SENSOR FRONT LH

(a) Install the flexible hose and the speed sensor to the shock absorber with the bolt and set the clip of sensor on knuckle.

Torque: 19 N·m (192 kgf·cm, 13 ft·lbf)

NOTICE:

- **Be careful not to damage the speed sensor.**
- **Prevent foreign matter from adhering to the speed sensor.**
- **Do not twist the sensor wire when installing the speed sensor.**

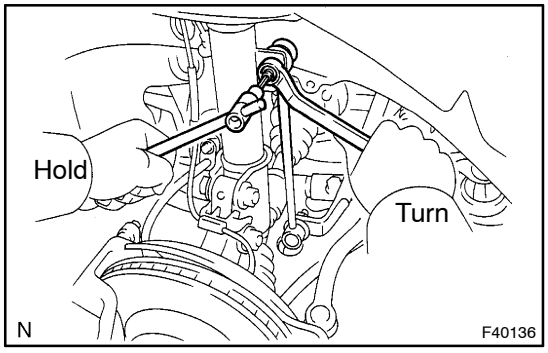


(b) Install the speed sensor to the steering knuckle with the bolt.

Torque: 8.0 N·m (82 kgf·cm, 71 in.·lbf)

NOTICE:

Prevent foreign matter from adhering to the speed sensor.



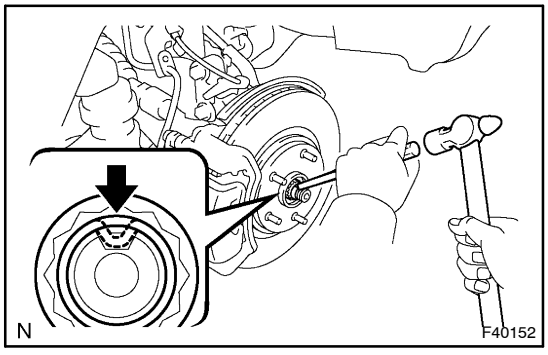
49. INSTALL FRONT STABILIZER LINK ASSY LH

(a) Install the front stabilizer link assy LH with the nut.

Torque: 74 N·m (755 kgf·cm, 55 ft·lbf)

HINT:

If the ball joint turns together with the nut, use a hexagon (6 mm) wrench to hold the stud.



50. INSTALL FRONT AXLE HUB LH NUT

(a) Using a socket wrench (30 mm), install a new axle hub LH nut.

Torque: 294 N·m (2,998 kgf·cm, 217 ft·lbf)

(b) Using a chisel and a hammer, stake the front axle hub LH nut.

51. INSTALL FRONT WHEEL

52. ADD AUTOMATIC TRANSAXLE FLUID (A/T TRANSAXLE)

53. INSPECT AUTOMATIC TRANSAXLE FLUID (A/T TRANSAXLE)
(See Pub. No. RM915E, page 40–1)

54. ADD MANUAL TRANSAXLE OIL (M/T TRANSAXLE)
(See Pub. No. RM915E, page 41–4)

55. INSPECT MANUAL TRANSAXLE OIL (M/T TRANSAXLE)
(See Pub. No. RM915E, page 41–2)

56. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT
(See Pub. No. RM915E, page 26–4)

57. CHECK ABS SPEED SENSOR SIGNAL

(a) ABS WITH EBD SYSTEM (See Pub. No. RM915E, page 05–451)

(b) ABS WITH EBD & BA & TRAC & VSC SYSTEM (See Pub. No. RM915E, page 05–511)