

DRIVE SHAFT SYSTEM

PROBLEM SYMPTOMS TABLE

Use the table below, with suspected areas listed in numerical order, to determine the cause of the problem. Inspect and repair parts as necessary according to the steps on the following pages.

DRIVE SHAFT SYSTEM

Symptom	Suspected area	See page
Wander	1. Wheel alignment (Front)	SP-9
	2. Wheel alignment (Rear)	SP-16
	3. Steering linkage (Loosen or worn)	-
	4. Hub bearing (Worn)	AH-1
	5. Stabilizer bar	SP-28
Front wheel shimmy	1. Wheel balance	TW-4
	2. Shock absorber	SP-19
	3. Ball joint (Worn)	SP-25
	4. Hub bearing (Worn)	AH-1
Noise (Front drive shaft)	1. Inboard or outboard joint (Worn)	DS-9

REMOVAL

HINT:

- COMPONENTS: See page [DS-2](#)
- Use the same procedures for the RH side and LH side.
- The Procedures listed below are for the LH side.

1. REMOVE ENGINE UNDER COVER LH

2. DRAIN MANUAL TRANSAXLE OIL

- Remove the filler plug and gasket.
- Remove the drain plug and gasket.
- Install 2 new gaskets, drain plug and filler plug.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)

3. DRAIN AUTOMATIC TRANSAXLE FLUID

- Remove the drain plug and gasket, and then drain the ATF.
- Install a new gasket and drain plug.
Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)

4. REMOVE FRONT WHEEL

5. REMOVE FRONT AXLE HUB LH NUT

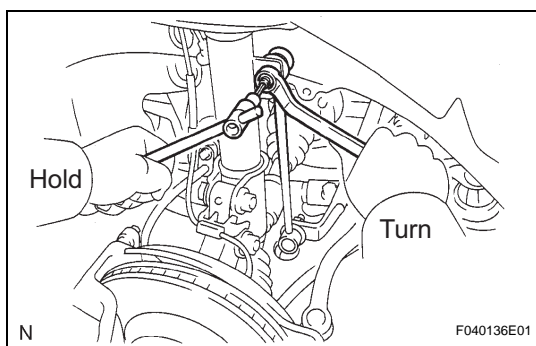
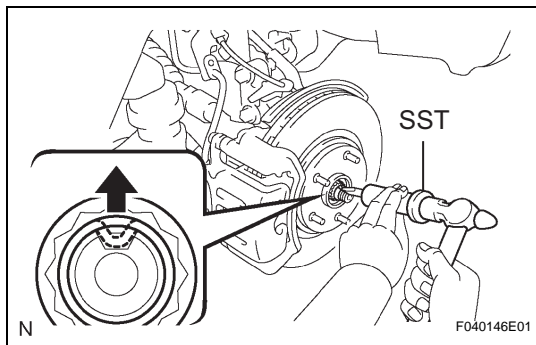
- Using SST and hammer, unstake the staked part of the axle hub LH nut.

SST 09930-00010

NOTICE:

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

- While applying the brakes, remove the lock axle hub LH nut.



6. REMOVE FRONT STABILIZER LINK ASSEMBLY

- Remove the nut and separate the stabilizer link assembly LH.

HINT:

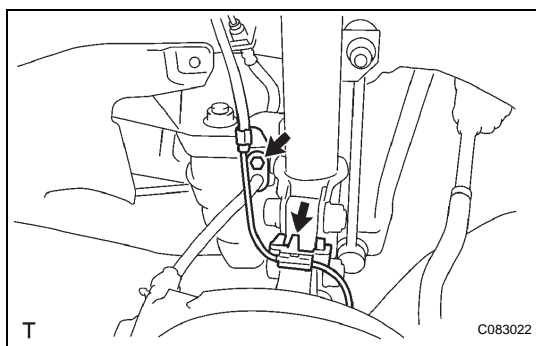
If the ball joint turns together with the nut, use a hexagon wrench (6 mm) to hold the stud.

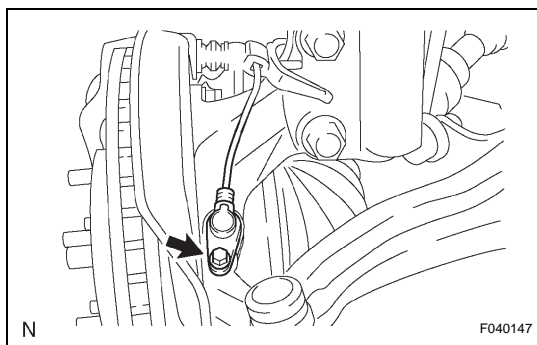
7. REMOVE SPEED SENSOR FRONT LH

- 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.

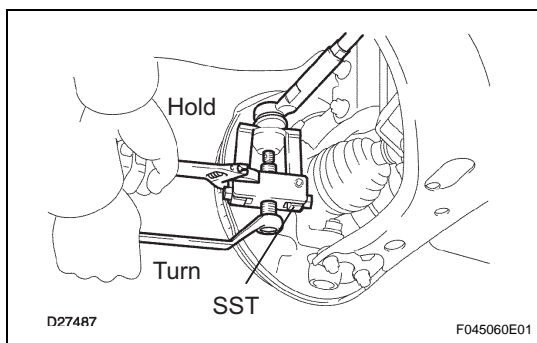




- (b) Remove the bolt and separate the speed sensor front LH from the steering knuckle.

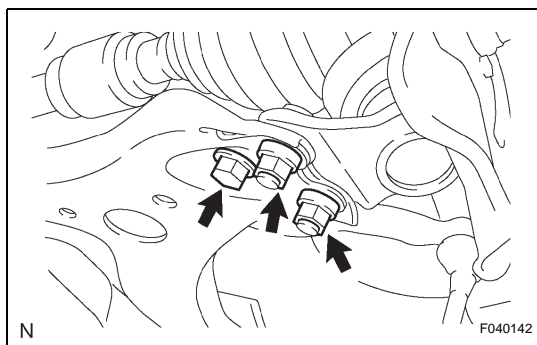
NOTICE:

Prevent foreign matter from adhering to the speed sensor.

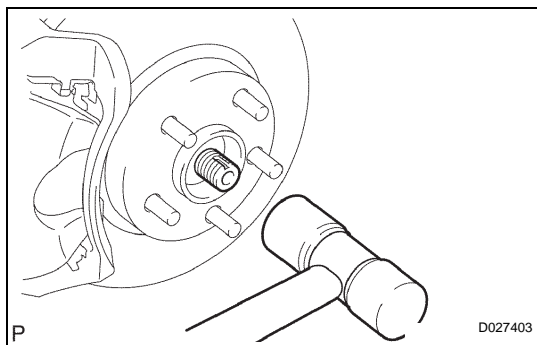
**8. SEPARATE TIE ROD END SUB-ASSEMBLY LH**

- (a) Remove the cotter pin and nut.
(b) Using SST, separate the tie rod end sub-assembly from the steering knuckle.

SST 09628-62011

**9. SEPARATE FRONT SUSPENSION ARM SUB-ASSEMBLY LOWER NO.1 LH**

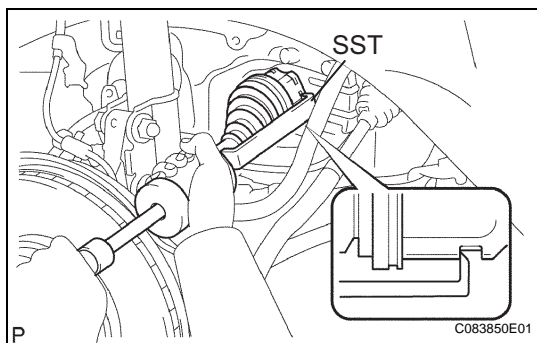
- (a) Remove the bolt and 2 nuts, and separate the front suspension arm sub-assembly lower No.1 LH from the lower ball joint.

**10. SEPARATE FRONT AXLE ASSEMBLY LH**

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

NOTICE:

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

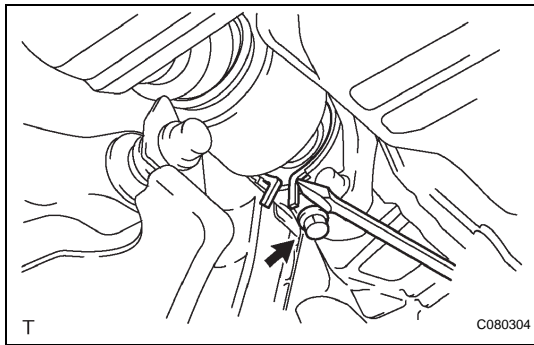
**11. REMOVE FRONT DRIVE SHAFT ASSEMBLY LH**

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

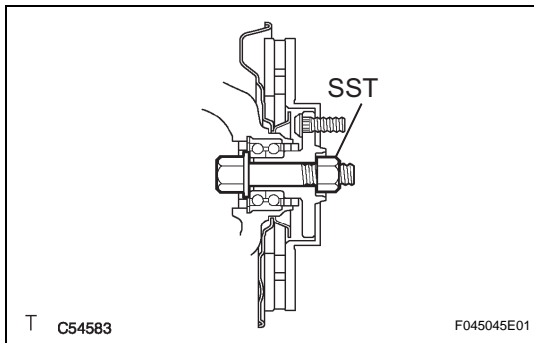
SST 09520-01010, 09520-24010 (09520-32040)

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 assembly.

**12. REMOVE FRONT DRIVE SHAFT ASSEMBLY RH**

- (a) Using a screwdriver, remove the bearing bracket hole snap ring.
- (b) Remove the bolt and front drive shaft assembly RH from the drive shaft bearing bracket.

**13. FIX FRONT AXLE HUB SUB-ASSEMBLY LH**

- (a) Fix the front axle hub sub-assembly LH
SST 09608-16042 (09608-02021, 09608-02041)

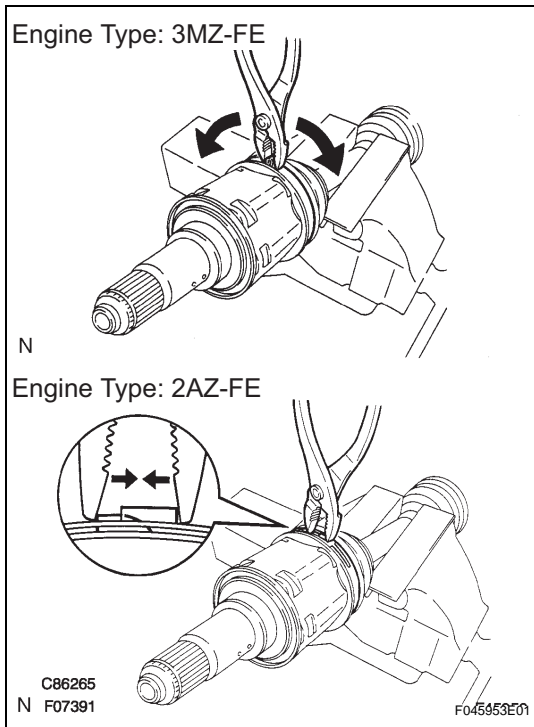
NOTICE:

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's weight on the hub bearing, first support it with SST.

DISASSEMBLY**1. REMOVE FRONT AXLE INBOARD JOINT BOOT LH NO.2 CLAMP**

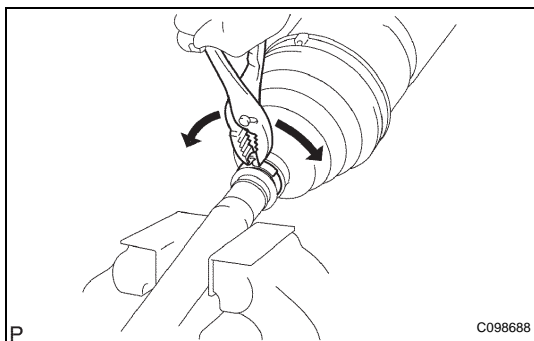
- (a) Using pliers, remove the inboard joint boot LH No.2 clamp, as shown in the illustration.

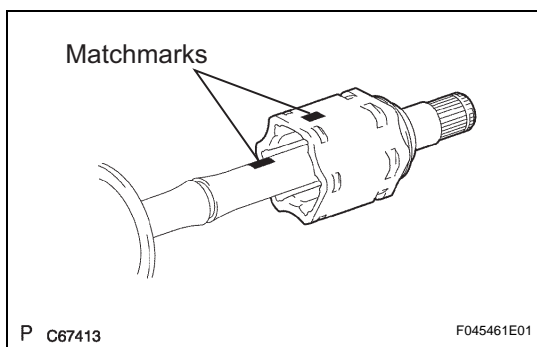
**2. REMOVE FRONT AXLE INBOARD JOINT BOOT LH CLAMP**

- (a) Remove the inboard joint boot LH clamp, as shown in the illustration.

3. SEPARATE INBOARD JOINT BOOT

- (a) Separate the inboard joint boot from the inboard joint assembly.





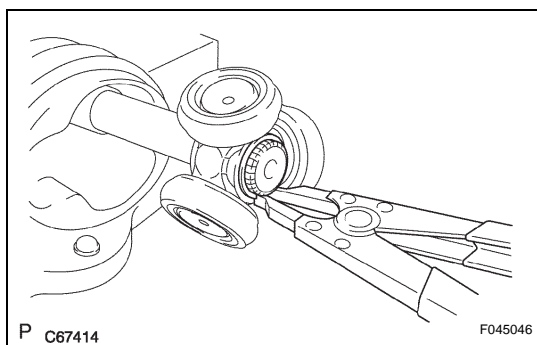
4. REMOVE FRONT DRIVE INBOARD JOINT ASSEMBLY LH

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

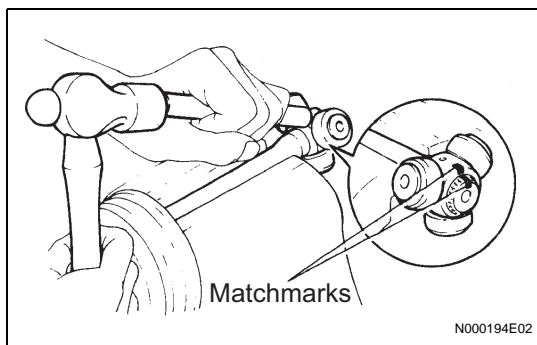
NOTICE:

Do not use a punch for the marks.

- (b) Remove the inboard joint assembly from the outboard joint shaft.



- (c) Using a snap ring expander, remove the 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:

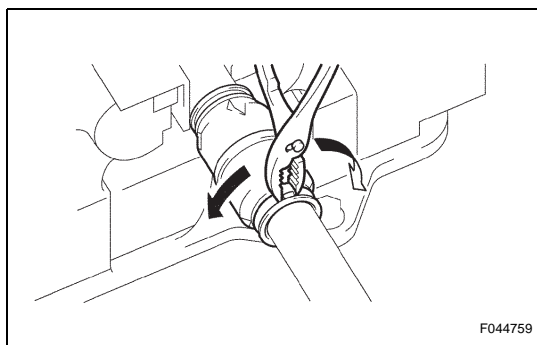
Do not tap the roller.

5. REMOVE FRONT DRIVE SHAFT DAMPER LH

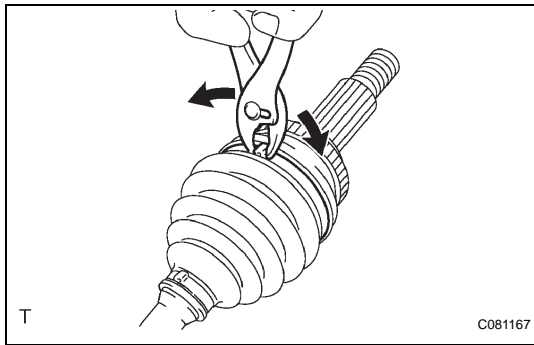
HINT:

This procedure is unnecessary for a manual transaxle vehicle because it does not have a drive shaft damper.

- (a) Using pliers, remove the drive shaft damper clamp, as shown in the illustration.
- (b) Remove the drive shaft damper.



DS



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

- (a) Using pliers, remove the outboard joint boot LH No.2 clamp, as shown in the illustration.

7. REMOVE FRONT AXLE OUTBOARD JOINT BOOT LH CLAMP

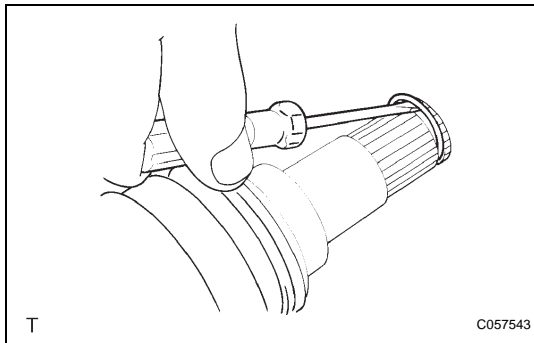
- (a) Remove the outboard joint boot LH clamp using the same procedures as for the outboard joint boot LH No.2 clamp.

8. REMOVE OUTBOARD JOINT BOOT

- (a) Remove the outboard joint boot from the outboard joint shaft.
(b) Remove the grease from the outboard joint.

9. REMOVE FRONT DRIVE SHAFT LH HOLE SNAP RING

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



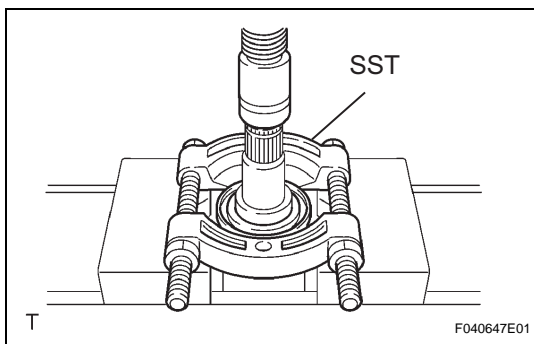
10. REMOVE FRONT DRIVE SHAFT DUST COVER LH

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

SST 09950-00020

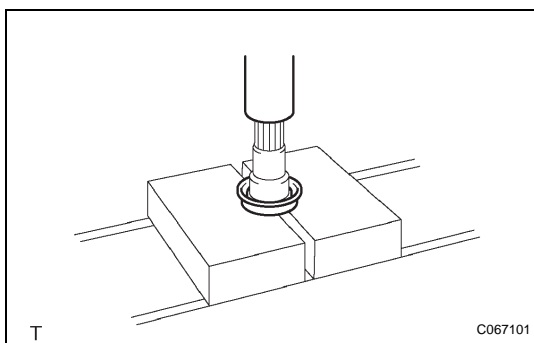
NOTICE:

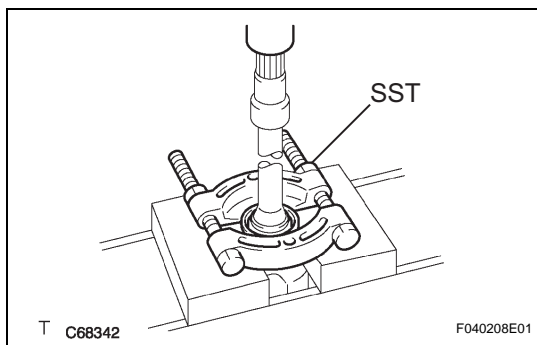
Be careful not to drop the inboard joint assembly.



11. REMOVE FRONT DRIVE SHAFT DUST COVER RH

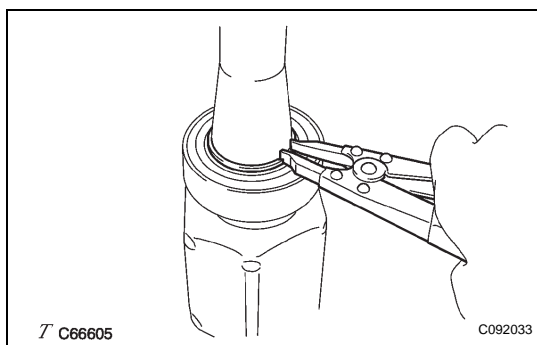
- (a) Using a press, remove the drive shaft dust cover RH.



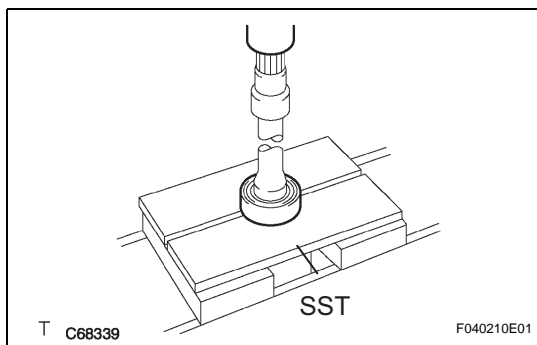
**12. REMOVE FRONT DRIVE SHAFT DUST COVER**

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

SST 09950-00020

**13. REMOVE FRONT DRIVE SHAFT BEARING**

- (a) Using a snap ring expander, remove the drive shaft hole snap ring.



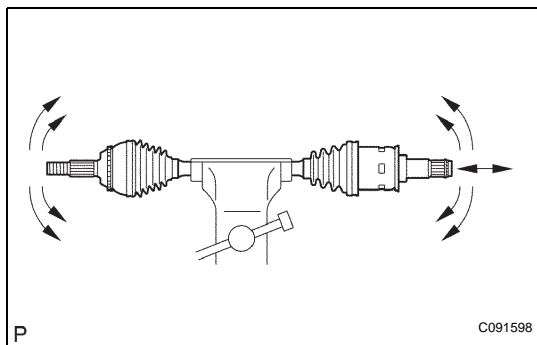
- (b) Using SST and a press, remove the bearing.

SST 09527-10011

- (c) Remove the bearing bracket hole snap ring.

NOTICE:

Be careful not to drop the inboard joint assembly.

**INSPECTION****1. 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) Measure the distance indicated by (A) shown in the illustration.

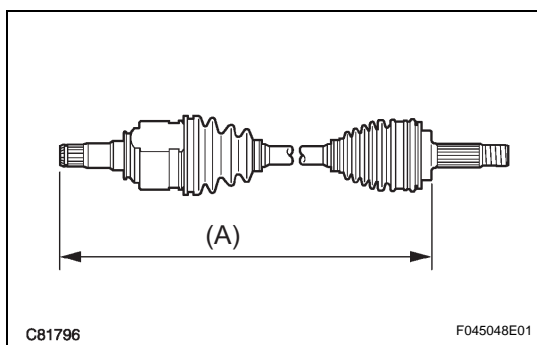
Reference:

3MZ-FE

Specification	Reference distance
LHD vehicles	578.8 to 582.8 mm (22.787 to 22.945 in.)
RHD vehicle	896.0 to 900.0 mm (35.276 to 35.433 in.)

2AZ-FE

Specification	Reference distance
LHD vehicle	589.2 to 593.2 mm (23.197 to 23.354 in.)



Specification	Reference distance
RHD vehicle	888.0 to 892.0 mm (34.961 to 35.118in.)

REASSEMBLY

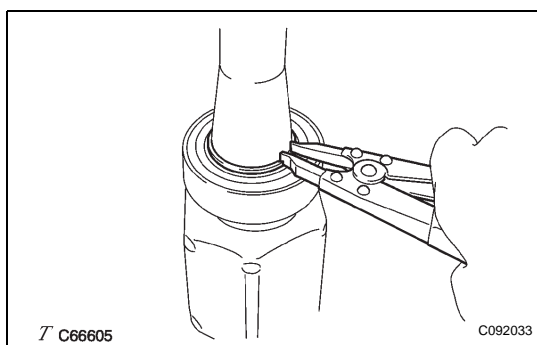
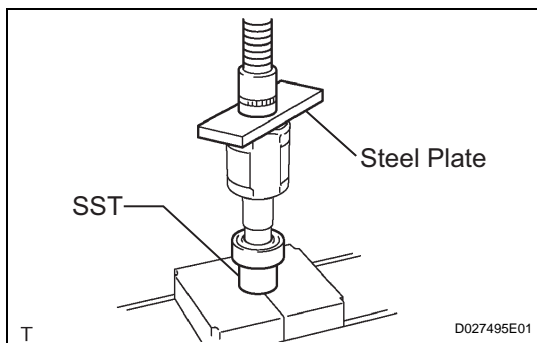
1. INSTALL FRONT DRIVE SHAFT BEARING

- Install a new bearing bracket hole snap ring to the front driver shaft assembly RH.
- Using SST and a steel plate, install a new front drive shaft bearing.

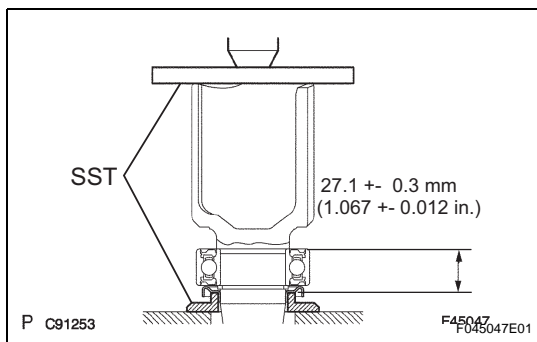
SST 09710-30021 (09710-03141)

NOTICE:

Bearing should be completely installed.



- Using a snap ring expander, install a new drive shaft hole snap ring.



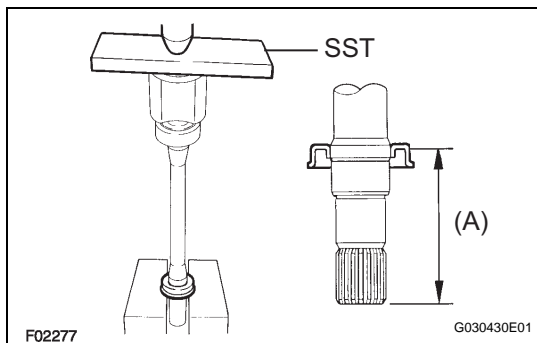
2. INSTALL FRONT DRIVE SHAFT DUST COVER

- Using SST and a press, install a new drive shaft dust cover.

SST 09726-40010, 09527-10011

NOTICE:

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



3. INSTALL FRONT DRIVE SHAFT DUST COVER RH

- 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):

3MZ-FE:

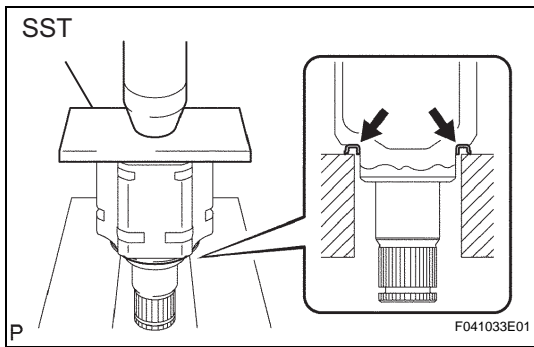
109.0 to 110.0 mm (4.291 to 4.330 in.)

2AZ-FE:

90.0 to 91.0 mm (3.543 to 3.583 in.)

NOTICE:

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



4. INSTALL FRONT DRIVE SHAFT DUST COVER LH

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

SST 09527-10011

NOTICE:

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

5. INSTALL FRONT DRIVE SHAFT LH HOLE SNAP RING

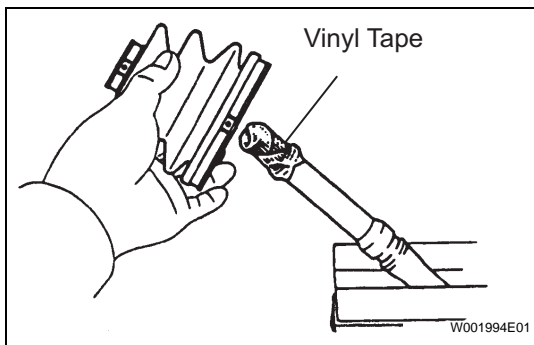
- (a) Install a new hole snap ring.

6. INSTALL OUTBOARD JOINT BOOT

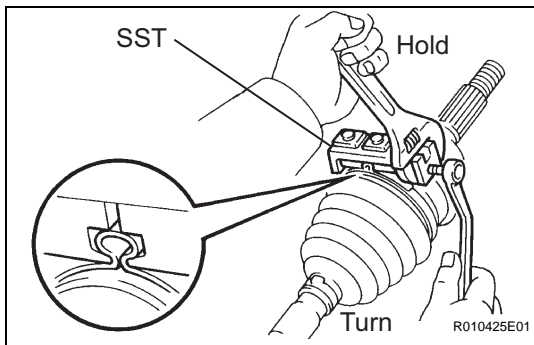
HINT:

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.



Drive type	Grease capacity
2AZ-FE (AT)	100 to 120 g (3.5 to 4.2 oz.)
2AZ-FE (MT)	105 to 125 g (3.7 to 4.4 oz.)
3MZ-FE	195 to 225 g (6.9 to 7.9 oz.)



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

- (a) Secure 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.

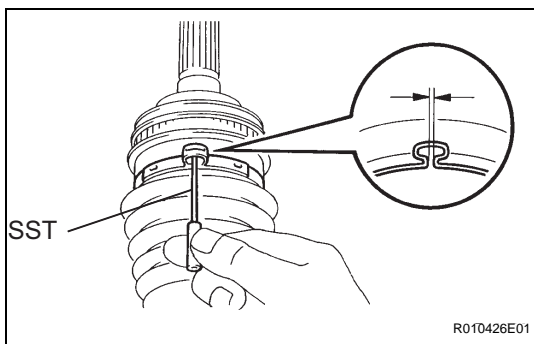
SST 09240-00020

Clearance:

0.8 mm (0.031 in.) or less

NOTICE:

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



8. 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:

0.8 mm (0.031 in.) or less

9. INSTALL FRONT DRIVE SHAFT DAMPER LH**HINT:**

This procedure is unnecessary for a manual transaxle vehicle because it does not have a drive shaft damper.

- (a) Install the drive shaft damper LH to the drive shaft.
- (b) Make sure that the damper is on the shaft groove.

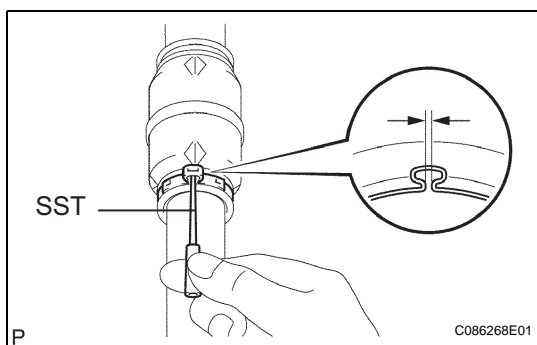
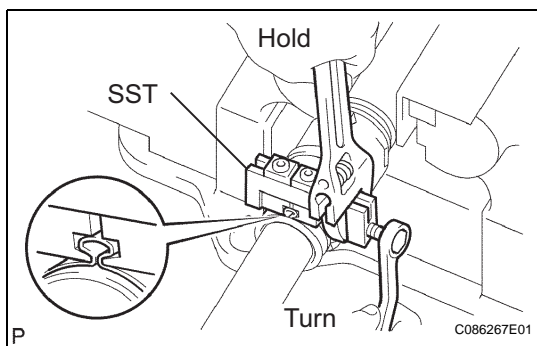
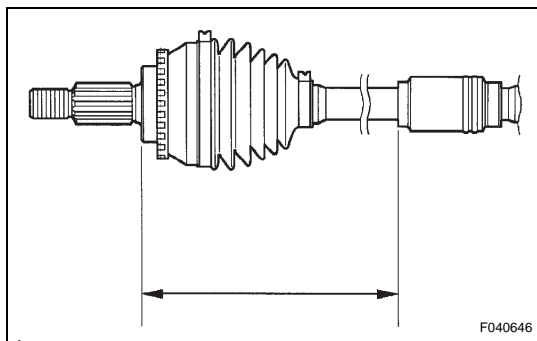
- (c) Set the distance, as shown below.

Distance:**3MZ-FE:**

204.5 to 208.5 mm (8.051 to 8.209 in.)

2AZ-FE:

204.4 to 208.4 mm (8.047 to 8.205 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) Place SST onto the drive shaft damper clamp.

SST 09521-24010

- (g) Tighten the SST so that the clamp is pinched.

NOTICE:

Do not overtighten the SST.

- (h) Using SST, measure the clearance of the drive shaft damper clamp.

SST 09240-00020**Clearance:**

0.5 to 1.2 mm (0.020 to 0.047 in.)

NOTICE:

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

10. INSTALL FRONT DRIVE INBOARD JOINT ASSEMBLY LH

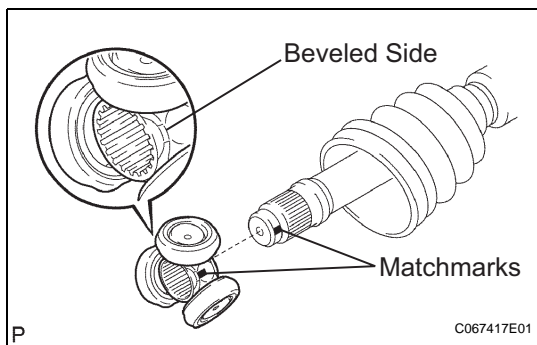
- (a) Temporarily install a new inboard joint boot with 2 clamps to the drive shaft.
- (b) Place the beveled side of the tripod joint axial spline toward the outboard joint shaft.

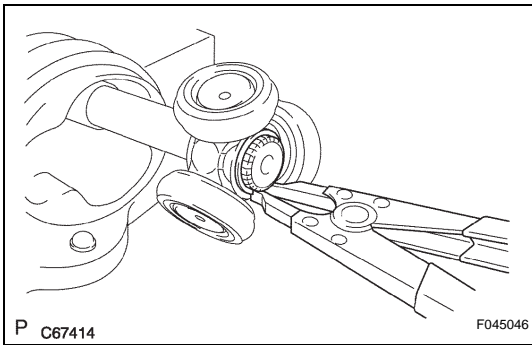
- (c) Align the matchmarks.

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

NOTICE:

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

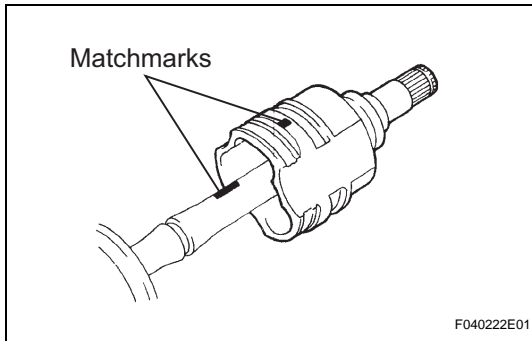




- (e) Using a snap ring expander, install a new shaft snap ring.
- (f) Pack the outboard joint shaft and boot with grease.
Grease capacity

Engine Type	Specified condition
2AZ-FE	170 to 190 g (6.0 to 6.7 oz.)
3MZ-FE	155 to 175 g (5.5 to 6.2 oz.)

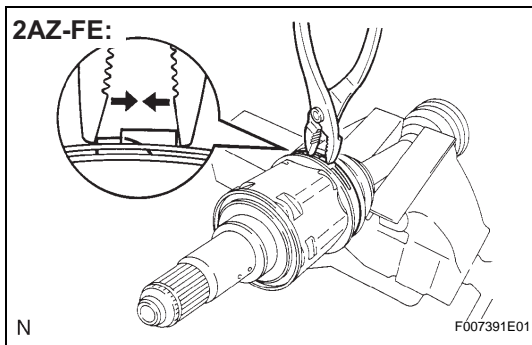
DS



- (g) Aligning the matchmarks, install the inboard joint assembly to the outboard joint shaft assembly.

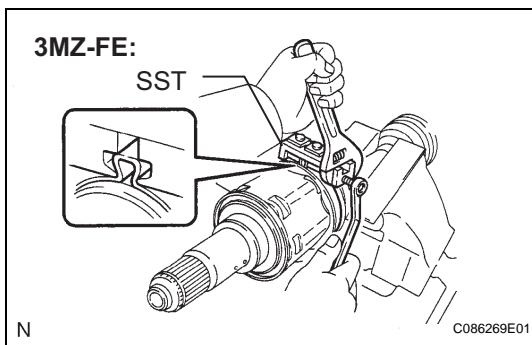
11. INSTALL INBOARD JOINT BOOT

- (a) Install the inboard joint boot to the inboard joint assembly.



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

- (a) 2AZ-FE Engine : Claw Engagement
 - (1) Using pliers, install the inboard joint boot LH No.2 clamp, as shown in the illustration.

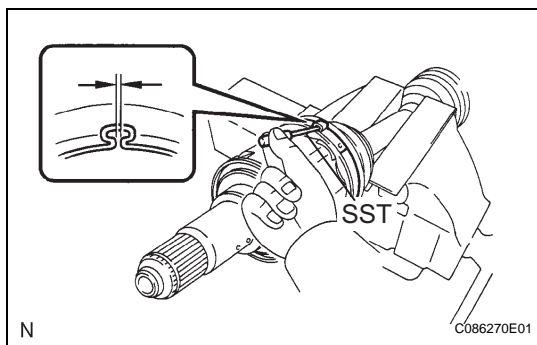


- (b) 3MZ-FE Engine : Omega Clamp Type
 - Install new inboard joint boot clamps.
 - (1) Hold the drive shaft lightly in a soft vise.
 - (2) Install 2 new inboard joint boot clamps to the boot.
 - (3) Place SST onto the inboard joint boot LH No.2 clamp.
 - (4) Tighten the SST so that the inboard joint boot LH No.2 clamp is pinched.

SST 09521-24010

NOTICE:

Do not overtighten the SST.



- (5) Using SST, measure the clearance of the inboard joint boot LH No.2 clamp.

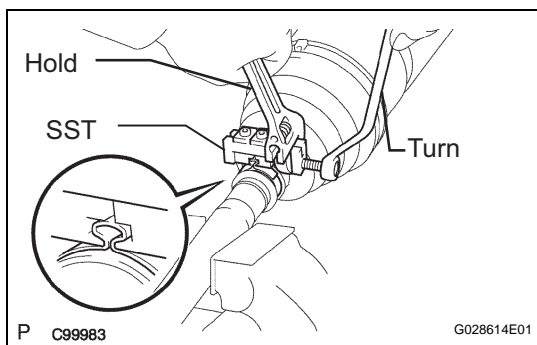
SST 09240-00020

Clearance:

1.9 mm (0.075 in.) or less

NOTICE:

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



13. INSTALL FRONT AXLE INBOARD JOINT BOOT LH CLAMP

- (a) Install new inboard joint boot clamps.

- (1) Hold the drive shaft lightly in a soft vise.
- (2) Install 2 new inboard joint boot clamps to the boot.
- (3) Place SST onto the inboard joint boot LH clamp.

SST 09521-24010

- (4) Tighten the SST so that the inboard joint boot LH clamp is pinched.

NOTICE:

Do not overtighten the SST.

- (5) Using SST, measure the clearance of the inboard joint boot LH clamp.

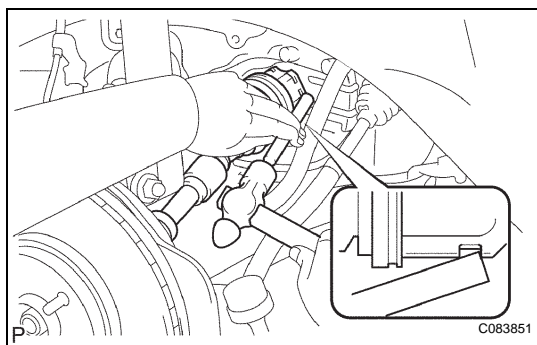
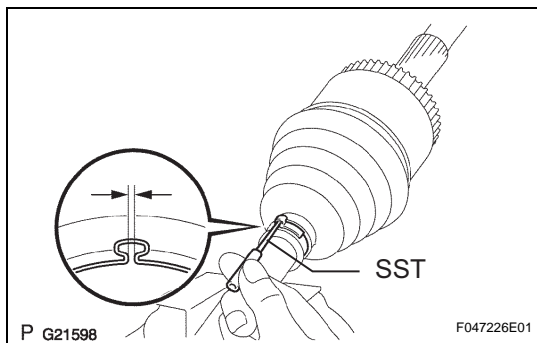
SST 09240-00020

Clearance:

1.9 mm (0.075 in.) or less

NOTICE:

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



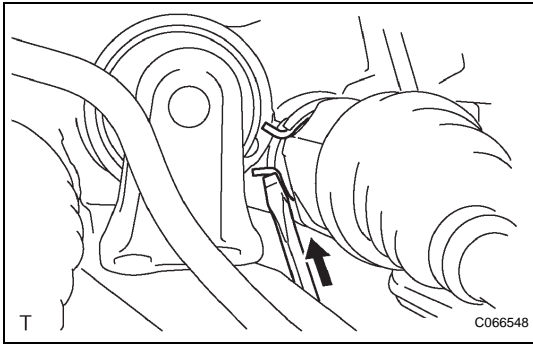
INSTALLATION

1. INSTALL FRONT DRIVE SHAFT ASSEMBLY LH

- (a) Coat the spline of the inboard joint shaft assembly with ATF.
- (b) Align the shaft splines and install the drive shaft assembly with a brass bar and 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 assembly while keeping it level.**



2. INSTALL FRONT DRIVE SHAFT ASSEMBLY 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.

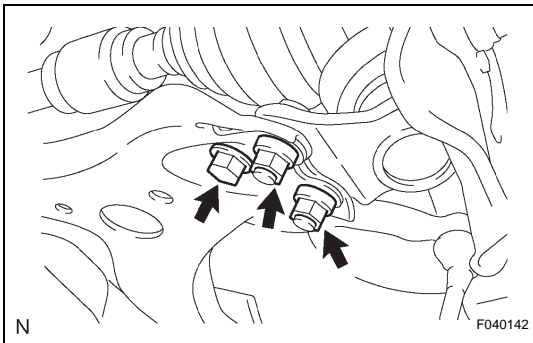
Torque: 32 N*m (330 kgf*cm, 24 ft.*lbf)

3. INSTALL FRONT AXLE ASSEMBLY LH

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

NOTICE:

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



4. INSTALL FRONT SUSPENSION ARM SUB-ASSEMBLY LOWER NO.1 LH

- (a) Install the lower ball joint to the front suspension arm sub-assembly lower with the bolt and 2 nuts.

Torque: 75 N*m (760 kgf*cm, 55 ft.*lbf)

5. INSTALL TIE ROD END SUB-ASSEMBLY LH

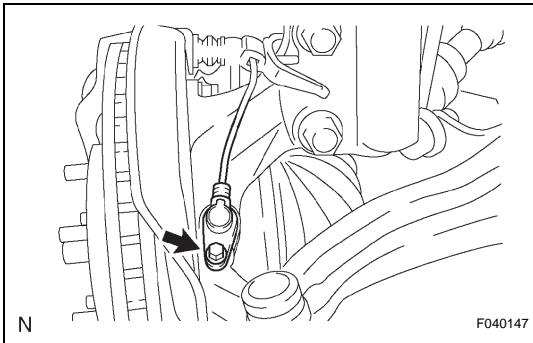
- (a) Install the tie rod end to the steering knuckle with the nut.

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, tighten the nut up to 60° further.



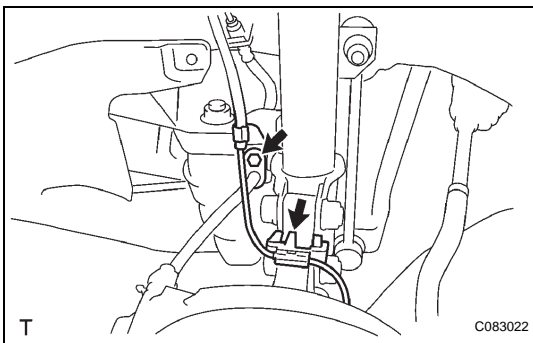
6. INSTALL SPEED SENSOR FRONT LH

- (a) 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.

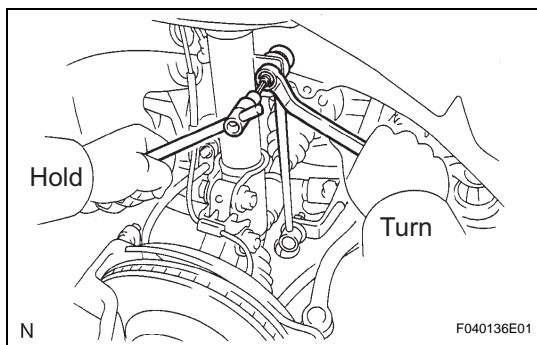


- (b) Install the flexible hose and the speed sensor to the shock absorber with the bolt and set the sensor clip on the knuckle.

Torque: 19 N*m (192 kgf*cm, 14 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.

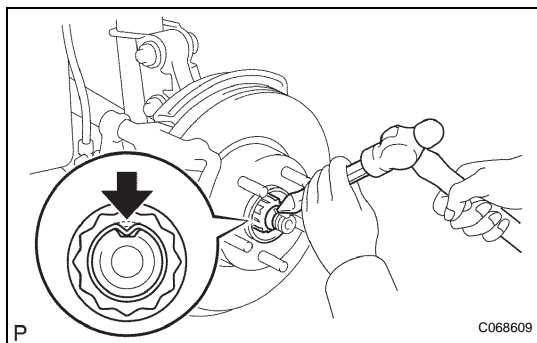
**7. INSTALL FRONT STABILIZER LINK ASSEMBLY LH**

- (a) Install the stabilizer link assembly 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.

**8. INSTALL FRONT AXLE HUB LH NUT**

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

Torque: 294 N*m (3,000 kgf*cm, 217 ft.*lbf)

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

9. INSTALL FRONT WHEEL

Torque: 103 N*m (1,050 kgf*cm, 76 ft.*lbf)

10. ADD MANUAL TRANSAXLE OIL**11. INSPECT MANUAL TRANSAXLE OIL LEVEL**

HINT:

See page [MX-2](#)

12. ADD AUTOMATIC TRANSAXLE FLUID**13. INSPECT AUTOMATIC TRANSAXLE FLUID**

HINT:

U151E: See page [AX-119](#)

U250E: See page [AX-120](#)

14. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT

HINT:

See page [SP-9](#)

15. INSTALL ENGINE UNDER COVER LH**16. CHECK ABS SPEED SENSOR SIGNAL**

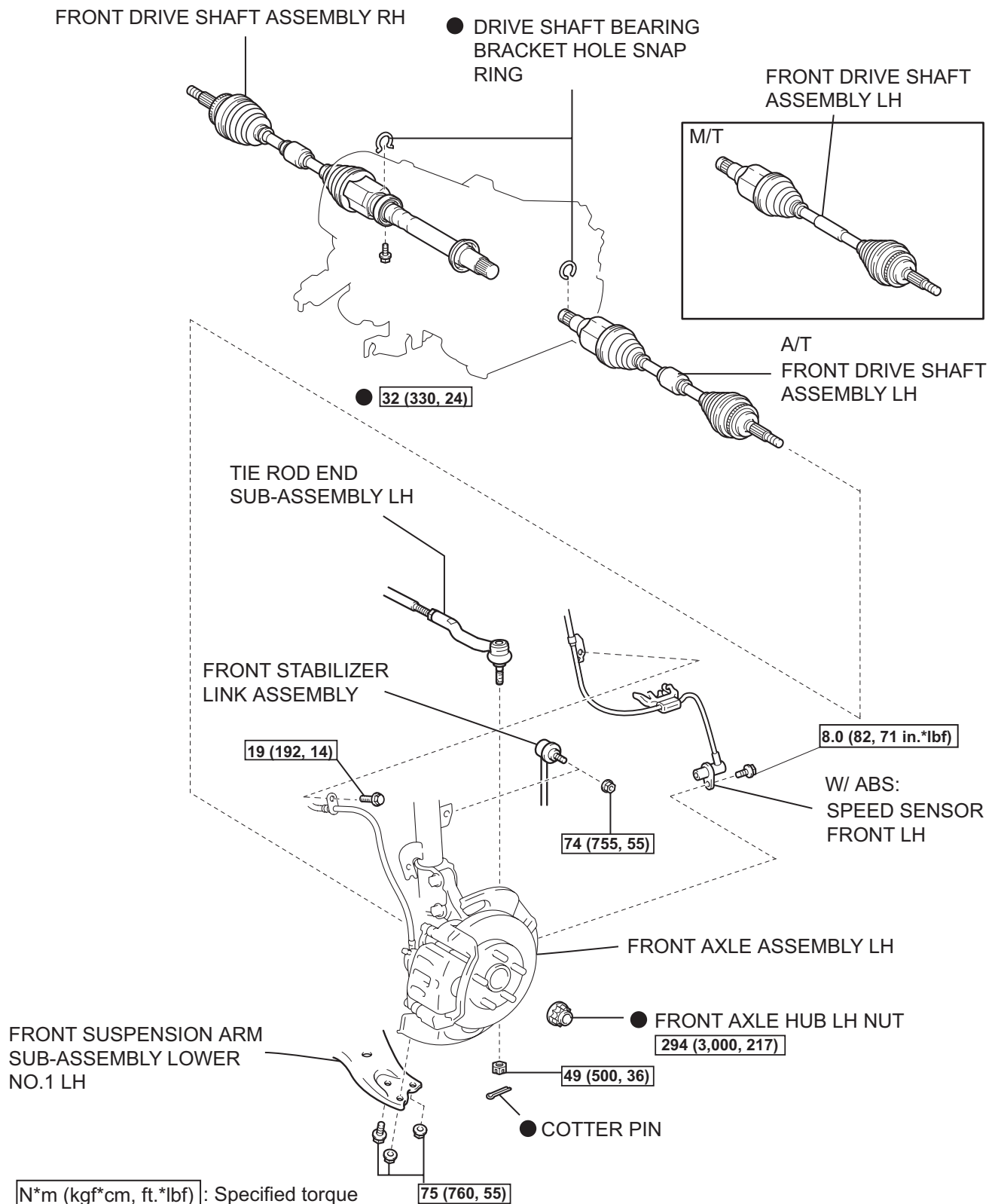
- (a) ABS WITH EBD SYSTEM (See page [BC-6](#))

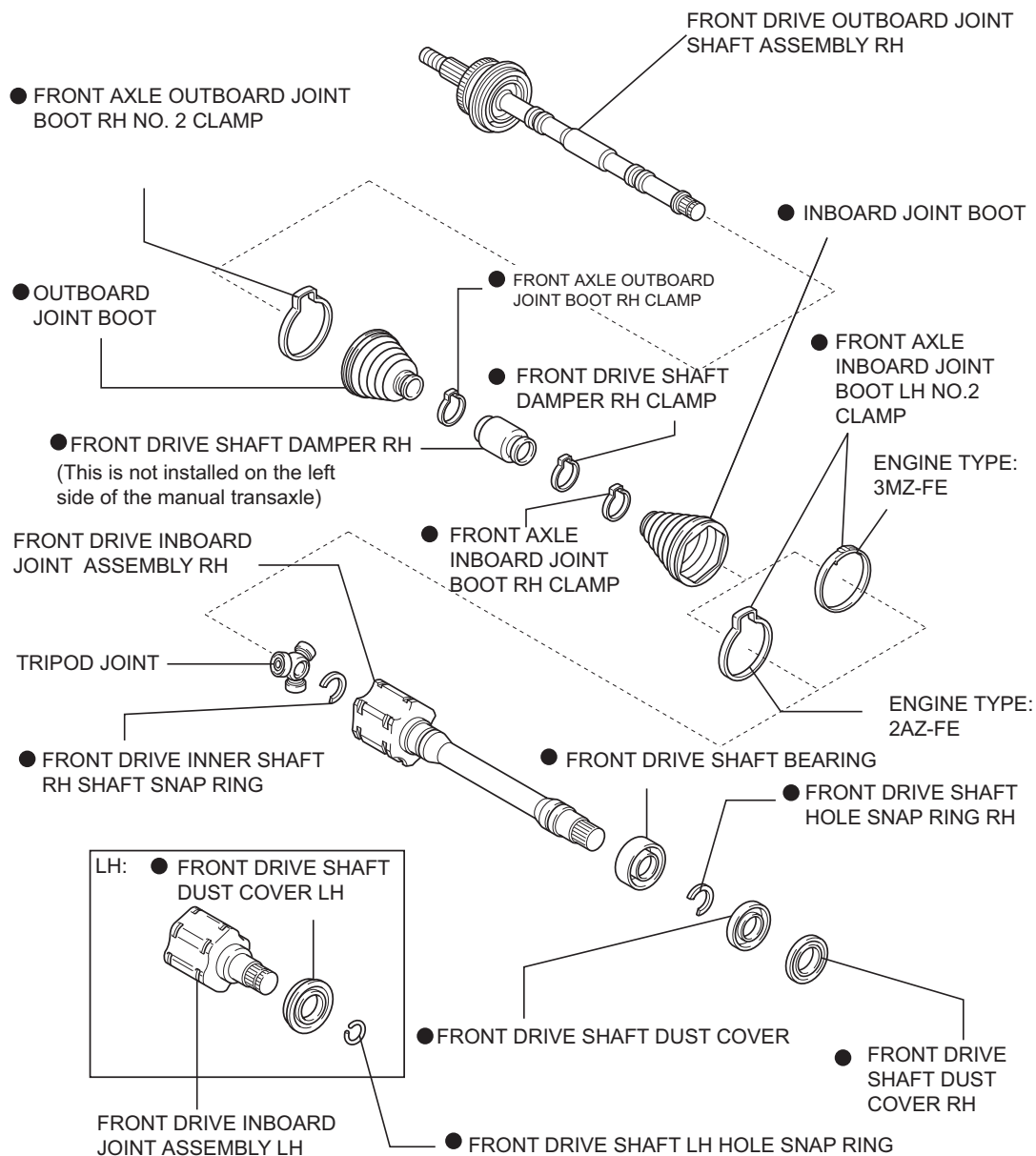
- (b) ABS WITH EBD AND BA AND TRAC AND VSC SYSTEM (See page [BC-70](#))

FRONT DRIVE SHAFT

COMPONENTS

DS





● Non-reusable part

C