
SUSPENSION AND AXLE

FRONT DRIVE SHAFT	SA-1
FRONT SHOCK ABSORBER	SA-13

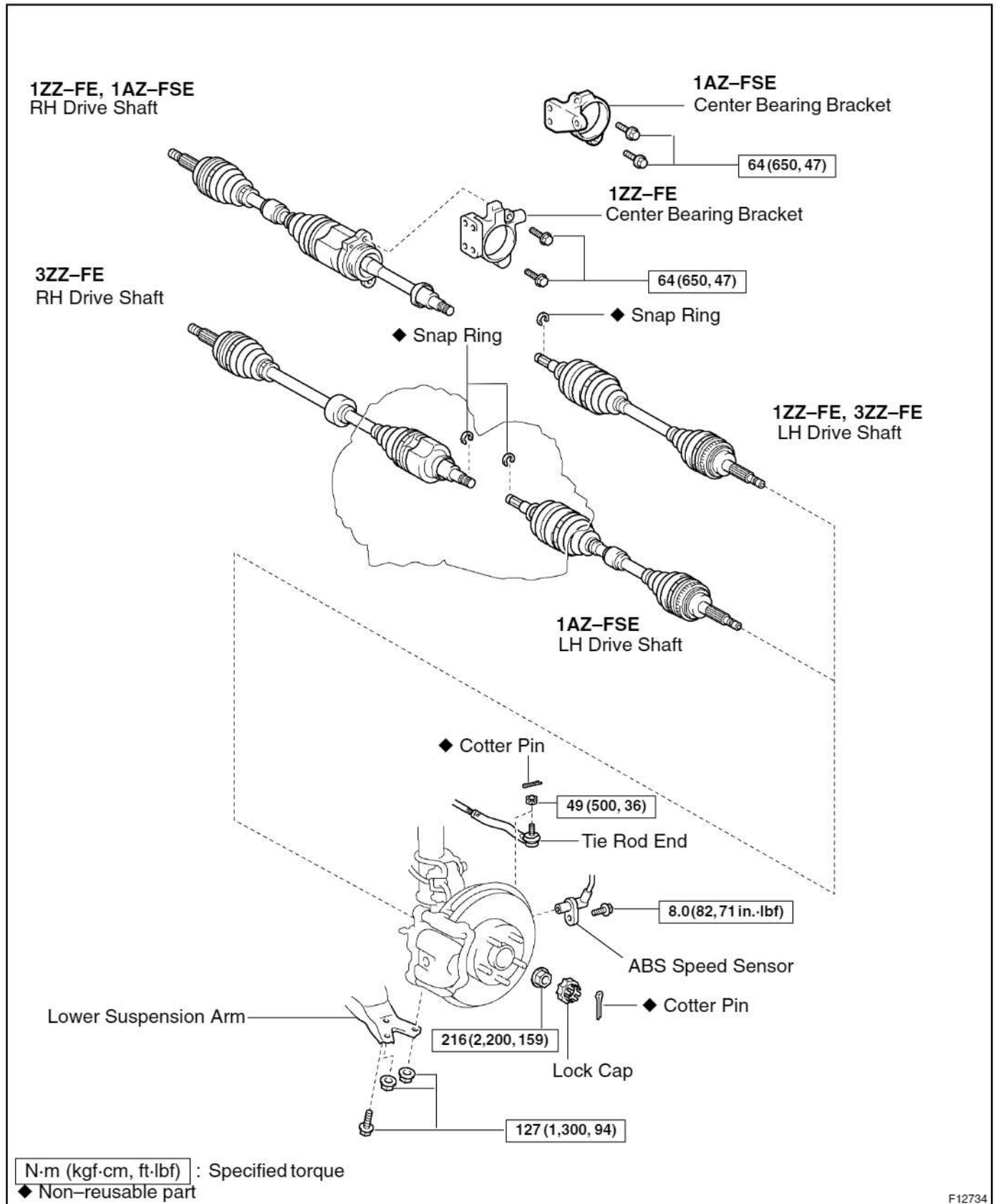
REFER TO FOLLOWING REPAIR MANUALS:

Manual Name	Pub. No.
AVENSIS/CORONA Chassis and Body Repair Manual	RM599E
AVENSIS/CORONA Chassis and Body Repair Manual Supplement (Aug., 1999)	RM698E

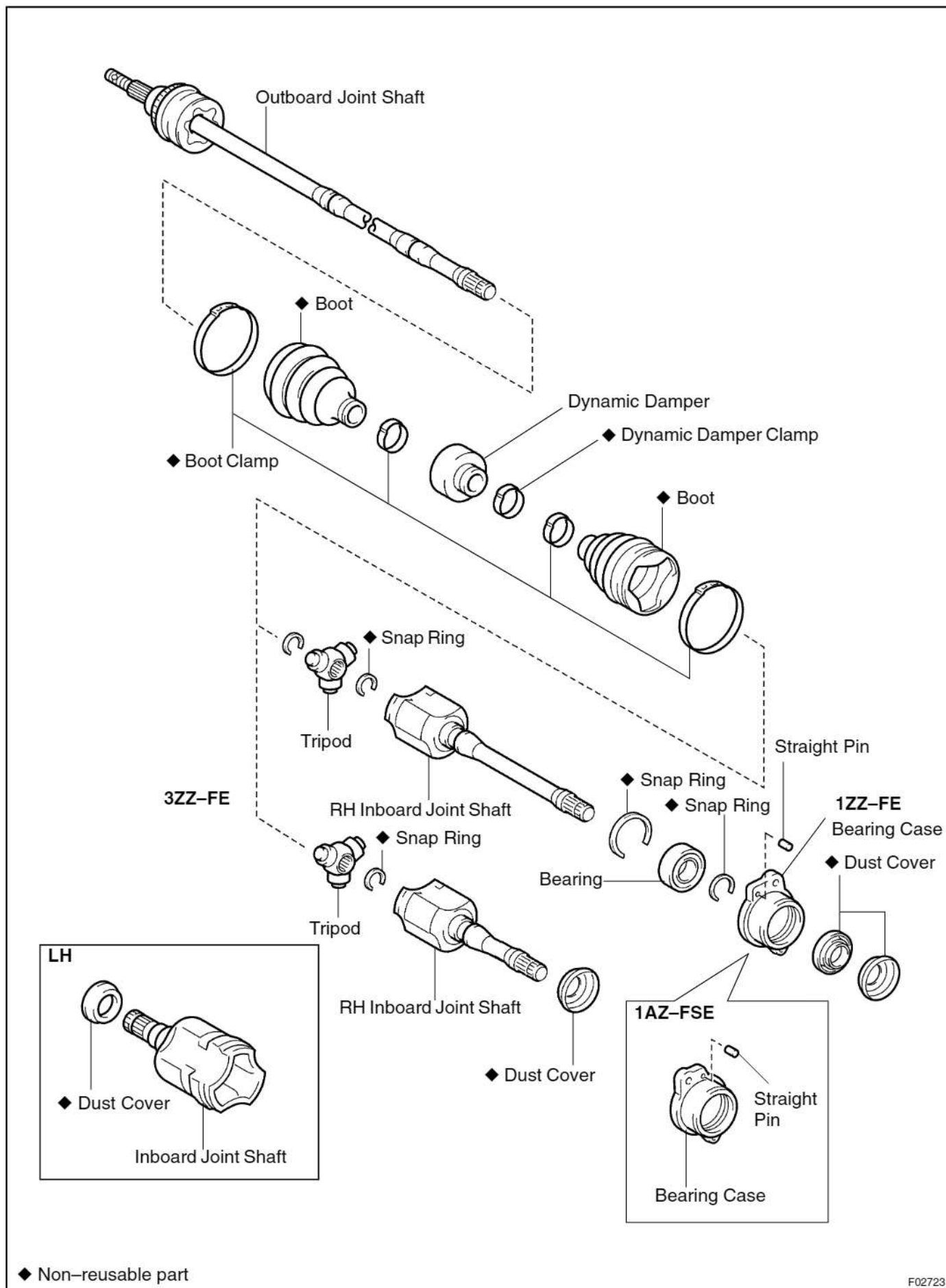
NOTE: The above pages contain only the points which differ from the above listed manuals.

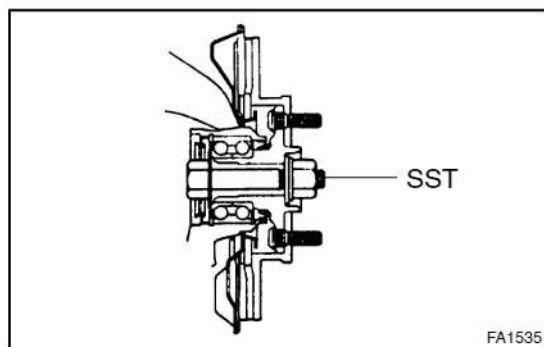
FRONT DRIVE SHAFT COMPONENTS

SA109-03



F12734





REMOVAL

NOTICE:

- The hub bearing could be damaged if it is subjected to the vehicle 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 the SST.

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

- w/ ABS:

After disconnecting the drive shaft from the axle hub, work carefully so as not to damage the ABS speed sensor rotor serration on the drive shaft.

1. REMOVE FRONT WHEEL

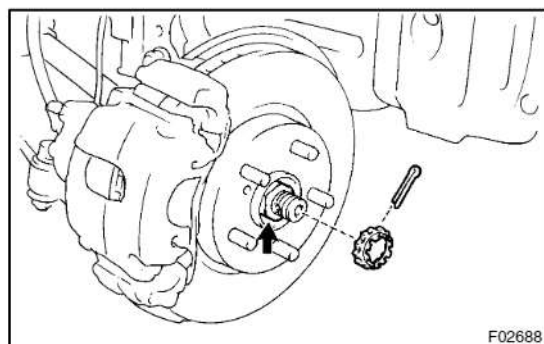
Torque: 103 N·m (1,050 kgf·cm, 76 ft·lbf)

2. DRAIN OUT GEAR OIL (M/T) OR ATF (A/T)

- w/ ABS:

REMOVE BOLT AND ABS SPEED SENSOR

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



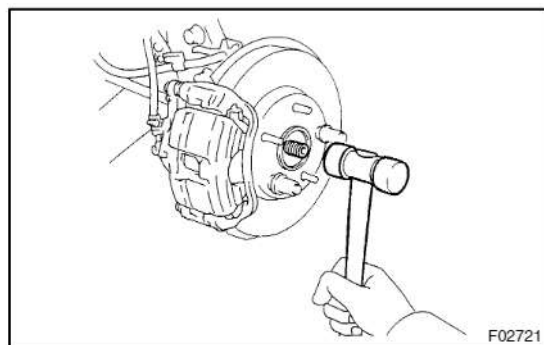
4. REMOVE DRIVE SHAFT LOCK NUT

- Remove the cotter pin and lock cap.
- While applying the brakes, remove the nut.

Torque: 216 N·m (2,200 kgf·cm, 159 ft·lbf)

5. DISCONNECT TIE ROD END FROM STEERING KNUCKLE (See Pub. No. RM599E on page SA 36)

6. DISCONNECT LOWER BALL JOINT FROM LOWER SUSPENSION ARM (See Pub. No. RM599E on page SA-36)



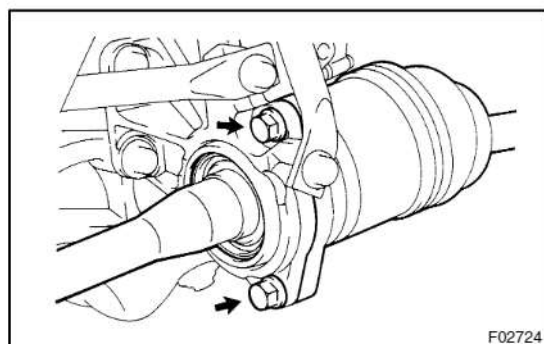
7. DISCONNECT DRIVE SHAFT FROM AXLE HUB

- Using a plastic hammer, disconnect the drive shaft from the axle hub.

NOTICE:

Cover the drive shaft boot and ABS speed sensor rotor with cloth to protect it from being damaged.

- Push the front axle hub toward the outside of the vehicle to separate the drive shaft from the axle hub.



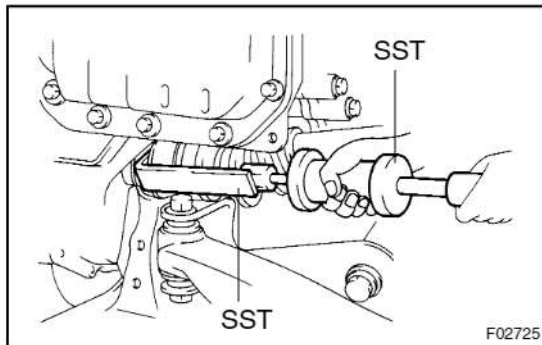
8. RH drive shaft of 1ZZ-FE and 1AZ-FSE engine: REMOVE DRIVE SHAFT

Remove the 2 bolts and pull out the drive shaft together with the center bearing bracket.

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

HINT:

At the time of installation, coat gear oil to the inboard joint shaft and differential case sliding surface.

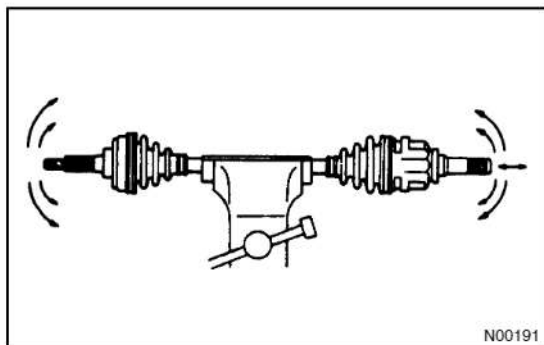
**9. 3ZZ-FE engine:****REMOVE DRIVE SHAFT**

- (a) Using SST, remove the drive shaft.
SST 09520-01010, 09520-24010 (09520-32040)
- (b) Using a screwdriver, remove the snap ring.

HINT:

At the time of installation, please refer to the following items.

- Apply gear oil to the inboard joint shaft and differential case sliding surface.
- Before installing the drive shaft, set the snap ring with its opening side facing downward.
- Whether inboard joint shaft is in contact with pinion shaft or not can be known from the sound or feeling.
- After installation, check that there is 2 – 3 mm (0.08 – 0.12 in.) of play in the axial direction.
- After installation, check that the drive shaft cannot be removed by hand.



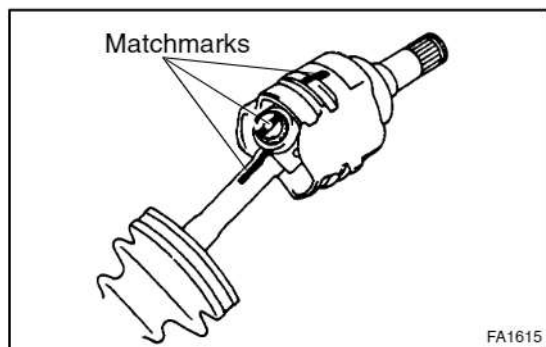
DISASSEMBLY

1. CHECK DRIVE SHAFT

- Check to see that there is no obvious play in the outboard joint.
- Check to see that the inboard joint slides smoothly in the thrust direction.
- Check to see that there is no obvious play in the radial direction of the inboard joint.
- Check the boots for damage.

2. REMOVE INBOARD AND OUTBOARD JOINT BOOT CLAMPS

Using a side cutter, cut the 4 boots clamps and remove them.



3. REMOVE INBOARD JOINT SHAFT

- Place matchmarks on the tripod, inboard and outboard joint shafts.

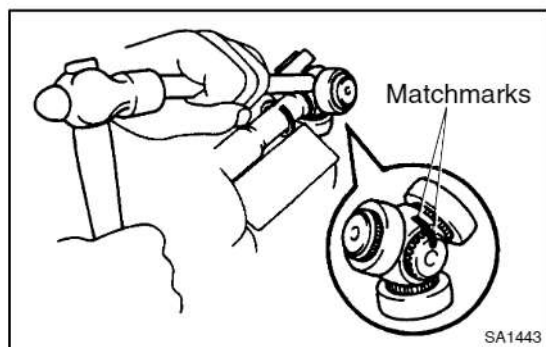
NOTICE:

Do not punch the marks.

- Remove the inboard joint shaft from the outboard joint shaft.

4. REMOVE TRIPOD

- Using a snap ring expander, remove the snap ring.
- Using a snap ring expander, temporarily slide the snap ring toward the outboard joint shaft side.



- Place matchmarks on the outboard joint shaft and tripod.

NOTICE:

Do not punch the marks.

- Using a brass bar and hammer, remove the tripod from the drive shaft.

NOTICE:

Do not tap the roller.

- Using a snap ring expander, remove the snap ring.

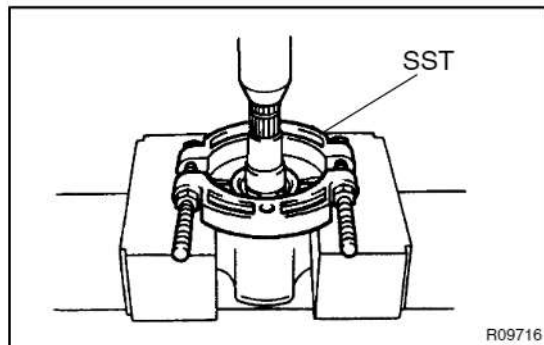
5. REMOVE INBOARD JOINT BOOT

6. REMOVE DYNAMIC DAMPER

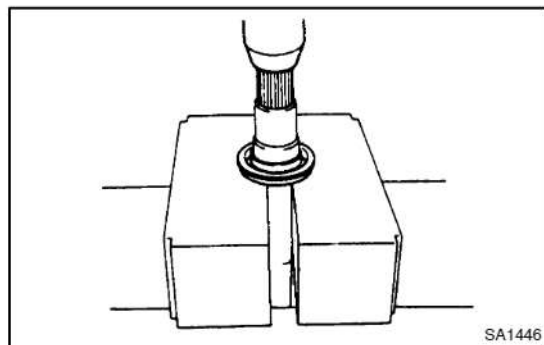
- (a) Using a side cutter, cut the dynamic damper clamp and remove it.
- (b) Remove the dynamic damper.

7. REMOVE OUTBOARD JOINT BOOT**NOTICE:**

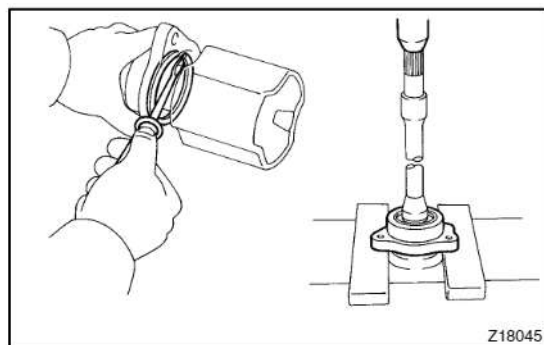
Do not disassemble the outboard joint.

**8. REMOVE DUST COVER**

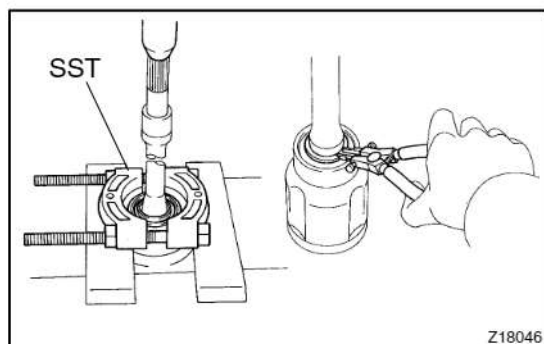
- (a) RH drive shaft of 3ZZ-FE engine and LH drive shaft:
Using SST and a press, remove the dust cover from the inboard joint shaft.
SST 09950-00020



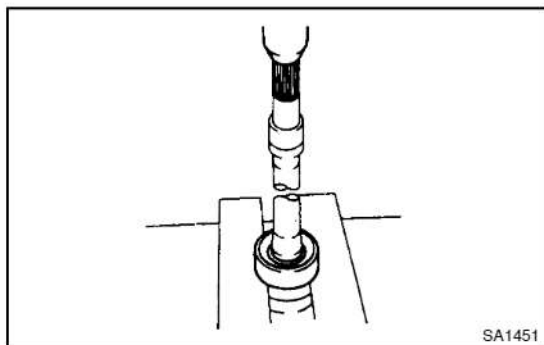
- (b) RH drive shaft of 1ZZ-FE and 1AZ-FSE engine:
Using a press, remove the dust cover from the inboard joint shaft.

**9. RH drive shaft of 1ZZ-FE and 1AZ-FSE engine: DISASSEMBLE INBOARD JOINT SHAFT**

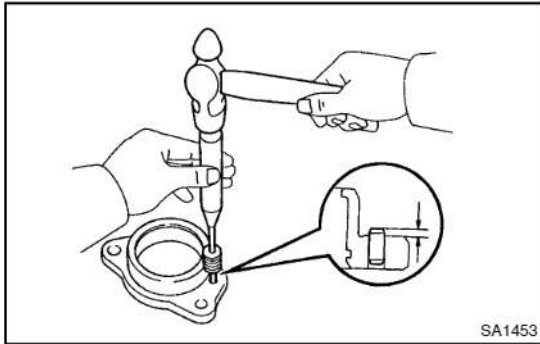
- (a) Using a screwdriver, remove the snap ring.
- (b) Using a press, remove the bearing case.
- (c) Using a pin punch and hammer, remove the straight pin from the bearing case.



- (d) Using SST and a press, remove the dust cover.
SST 09950-00020
- (e) Using a snap ring expander, remove the snap ring.



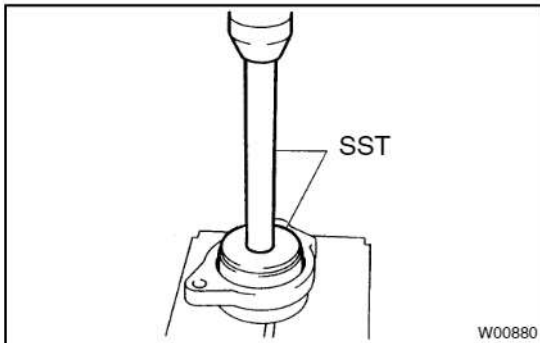
(f) Using a press, remove the bearing.



REASSEMBLY

1. RH drive shaft of 1ZZ-FE and 1AZ-FSE engine: ASSEMBLE INBOARD JOINT SHAFT

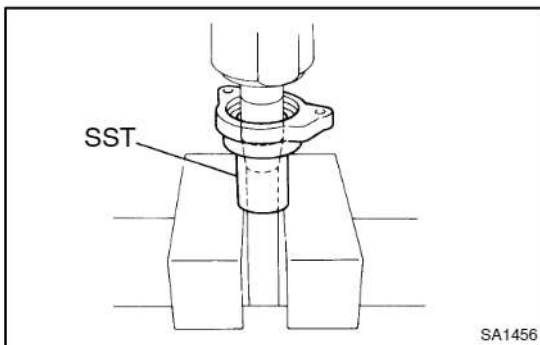
- (a) Using a pin punch and hammer, install the straight pin into the bearing case.



- (b) Using SST and a press, install a new bearing into the bearing case.

SST 09950-60010 (09951-00640), 09950-70010 (09951-07150)

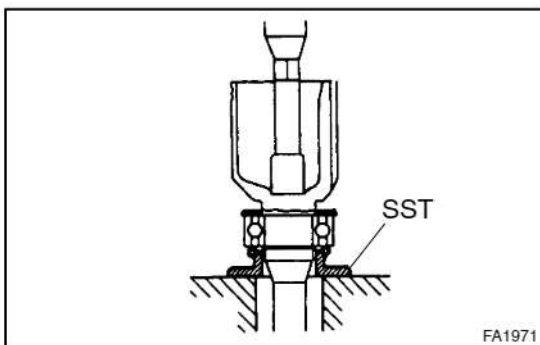
- (c) Using a screwdriver, install a new snap ring.



- (d) Using SST and a press, install the bearing case assembly to the inboard joint shaft.

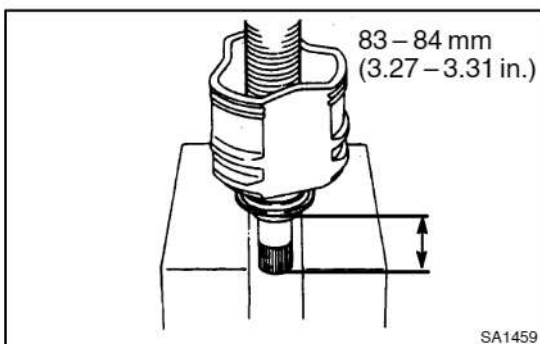
SST 09710-30021 (09710-03141)

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



- (f) Using SST, an extension bar and press, install a new dust cover.

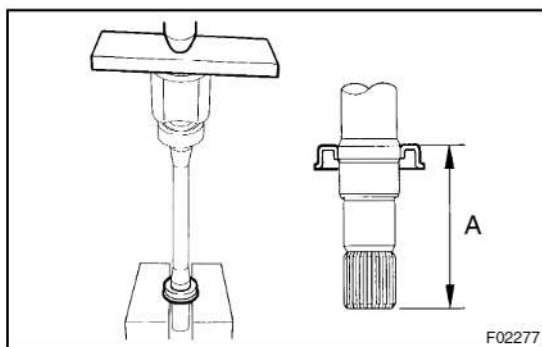
SST 09506-35010



2. INSTALL NEW DUST COVER

- (a) RH drive shaft of 3ZZ-FE engine:

Using a steel plate and press, install a new dust cover until the distance from the tip of center drive shaft to the dust cover reaches the specification, as shown in the illustration.



- (b) RH drive shaft of 1ZZ-FE and 1AZ-FSE engine:
Using a steel plate and press, install a new dust cover until the distance from the tip of center drive shaft to the dust cover reaches the specification, as shown in the illustration.

A:**1ZZ-FE Engine M/T:**

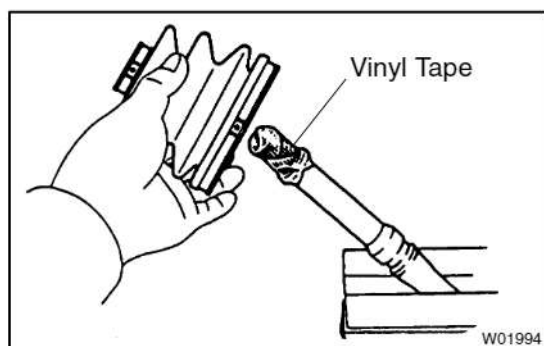
86 – 87 mm (3.39 – 3.43 in.)

1ZZ-FE Engine A/T:

83 – 84 mm (3.27 – 3.31 in.)

1AZ-FSE Engine:

87 – 88 mm (3.43 – 3.46 in.)

**3. TEMPORARILY INSTALL NEW OUTBOARD AND INBOARD JOINT BOOTS WITH NEW BOOT CLAMPS****HINT:**

- Before installing the boots (and dynamic damper), wrap the spline of the outboard joint shaft with vinyl tape to prevent them from being damaged.
 - Before installing the boots (and dynamic damper), place new clamps to each of them and then install boots to drive shaft.
- (a) Temporarily install a new outboard joint boot with 2 clamps to the drive shaft.
- (b) w/ Dynamic damper:
Temporarily install the dynamic damper with clamp to the drive shaft.
- (c) Temporarily install a new inboard joint boot with 2 clamps to the drive shaft.

4. INSTALL TRIPOD

- (a) Using a snap ring expander, install a new snap ring.
- (b) Place the beveled side of the tripod axial spline toward the outboard joint.
- (c) Align the matchmarks placed before removal.
- (d) Using a brass bar and hammer, tap in the tripod to the drive shaft.

NOTICE:**Do not tap the roller.**

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

5. INSTALL BOOT TO OUTBOARD JOINT

Before assembling the boot, pack the outboard joint shaft and boot with grease in the boot kit.

Grease capacity: (Color = Black)

85 – 105 g (3.00 – 3.70 oz.)

6. INSTALL INBOARD JOINT SHAFT TO OUTBOARD JOINT SHAFT

- (a) Pack the inboard joint shaft and boot with grease in the boot kit.

Grease capacity: (Color = Yellow)

1ZZ-FE engine:

140 – 150 g (4.94 – 5.29 oz.)

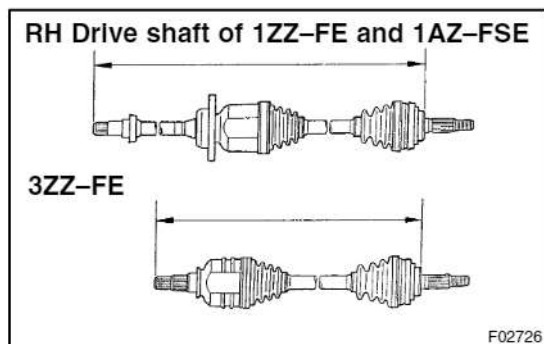
3ZZ-FE engine:

125.5 – 135.5 g (4.43 – 4.78 oz.)

1AZ-FSE engine:

120 – 130 g (4.23 – 4.59 oz.)

- (b) Align the matchmarks placed before removal.
 (c) Install the inboard joint shaft to the outboard joint shaft.
 (d) Temporarily install the boot to the inboard joint shaft.

**7. ASSEMBLE BOOT CLAMPS TO BOTH BOOTS**

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

Drive shaft standard length:

1ZZ-FE engine M/T:

RH	943.60 ± 1.0 mm (37.15 ± 0.039 in.)
LH	657.90 ± 0.8 mm (25.90 ± 0.032 in.)

1ZZ-FE engine A/T:

RH	943.60 ± 1.0 mm (37.15 ± 0.039 in.)
LH	653.20 ± 0.8 mm (25.72 ± 0.032 in.)

3ZZ-FE engine:

RH	944.70 ± 0.8 mm (37.19 ± 0.032 in.)
LH	655.70 ± 0.8 mm (25.82 ± 0.032 in.)

1AZ-FSE engine:

RH	922.65 ± 1.0 mm (36.32 ± 0.039 in.)
LH	650.85 ± 0.7 mm (25.62 ± 0.028 in.)

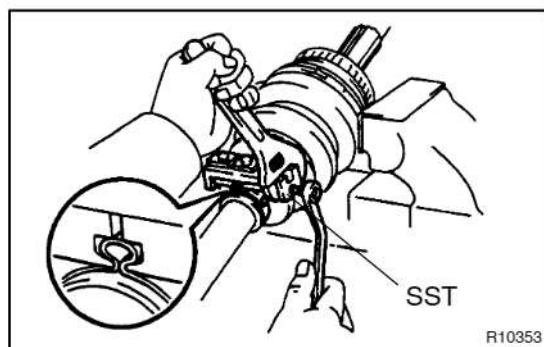
- (c) Secure the clamps onto the boot.
 (d) Place SST onto the clamps.
 SST 09521-24010
 (e) Tighten the SST so that the clamps are pinched.

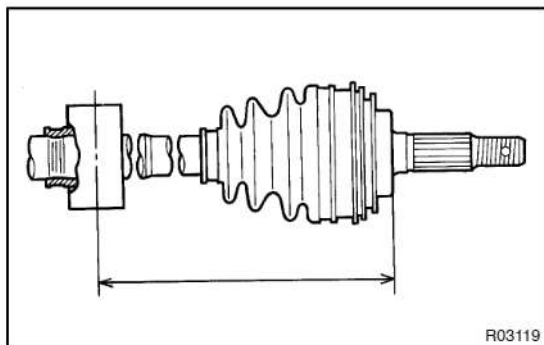
NOTICE:

Do not overtighten the SST.

- (f) Using SST, adjust the clearance of the clamps.
 SST 09240-00020

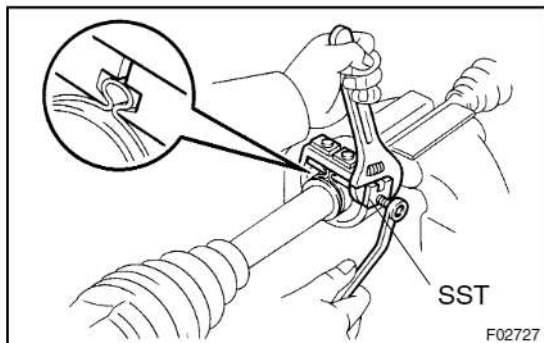
Clearance: 1.9 mm (0.075 in.) or less





**8. RH drive shaft of 3ZZ-FE engine:
ASSEMBLE DAMPER CLAMP**

- (a) Make sure that the dynamic damper is on the shaft groove.
- (b) Set the distance, as described below.
Distance: 432.1 ± 2.0 mm (17.012 ± 0.079 in.)
- (c) Secure the clamp onto the damper.



- (d) Place SST onto the clamps.
SST 09521-24010
- (e) Tighten the SST so that the clamps are pinched.

NOTICE:

Do not overtighten the SST.

- (f) Using SST, adjust the clearance of the clamps.
SST 09240-00020

Clearance: 1.9 mm (0.075 in.) or less

9. CHECK DRIVE SHAFT (See page SA-5)

INSTALLATION

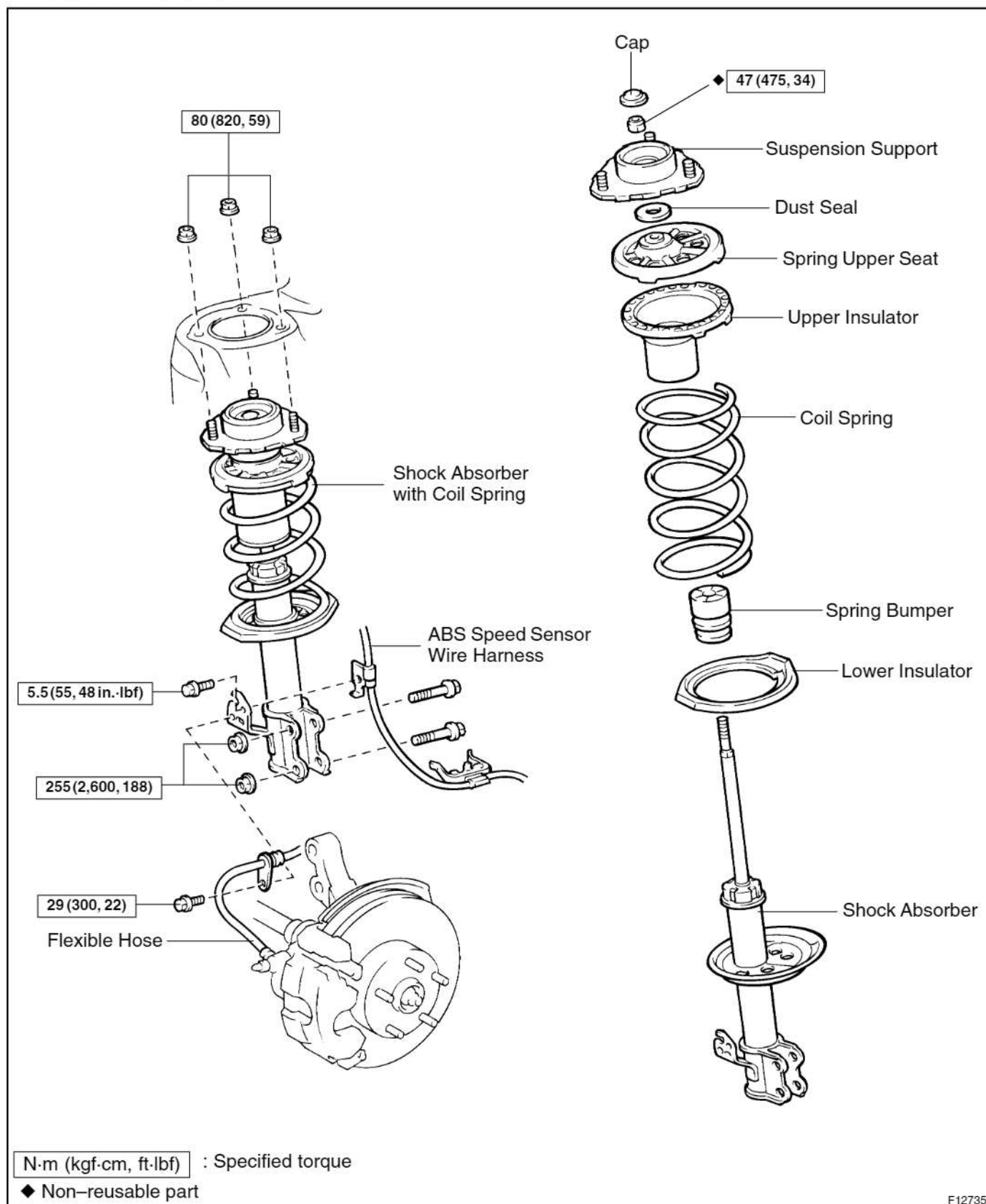
Installation is in the reverse order of removal (See page SA-3).

HINT:

After installation, check the ABS speed sensor signal and front wheel alignment (See Pub. No. RM599E on page SA-4).

FRONT SHOCK ABSORBER COMPONENTS

SA10J-06



F12735

REMOVAL

1. REMOVE FRONT WHEEL

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

2. DISCONNECT ABS SPEED SENSOR WIRE HARNESS CLAMPS FROM SHOCK ABSORBER

Remove the bolt and disconnect the ABS speed sensor wire harness clamps.

Torque: 5.5 N·m (55 kgf·cm, 48 in·lbf)

3. DISCONNECT FLEXIBLE HOSE

Remove the bolt and disconnect the flexible hose from the shock absorber bracket.

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

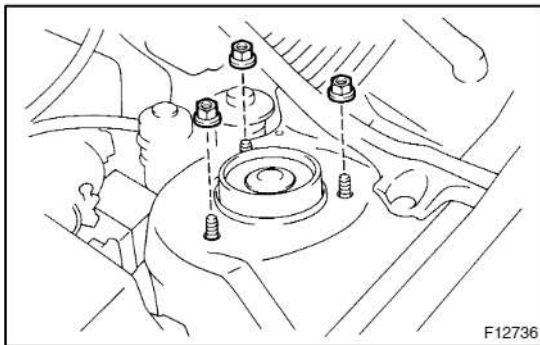
4. REMOVE SHOCK ABSORBER WITH COIL SPRING

(a) Loosen the 2 nuts on the lower side of shock absorber.

Torque: 255 N·m (2,600 kgf·cm, 188 ft·lbf)

HINT:

Do not remove the 2 bolts.



(b) Remove the 3 nuts.

Torque: 80 N·m (820 kgf·cm, 59 ft·lbf)

(c) Remove the 2 nuts and bolts on the lower side of shock absorber.

HINT:

At the time of installation, coat the nut's thread with engine oil.

(d) Remove the shock absorber with coil spring.

INSTALLATION

Installation is in the reverse order of removal (See page SA-14).

HINT:

After installation, check the front wheel alignment (See Pub. No. RM599E on page SA-4).

