

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

2008 DRIVELINE/AXLES**Axle - xD****AXLE SYSTEM****PROBLEM SYMPTOMS TABLE****HINT:**

Use the table below to help you find the cause of the problem.

Check each part.

If necessary, replace the applicable parts.

PROBLEM SYMPTOMS CHART

Symptom	Suspected Area	See
Vehicle unstable	Front wheel alignment	<u>FRONT WHEEL ALIGNMENT</u>
	Rear wheel alignment	<u>REAR WHEEL ALIGNMENT</u>
	Steering linkage	<u>REMOVAL</u>
	Hub bearing	<u>FRONT AXLE HUB</u>
	Front stabilizer bar	<u>REMOVAL</u>
Front wheel shimmy	Wheels (Out of balance)	<u>TIRE AND WHEEL SYSTEM</u>
	Front shock absorber	<u>REMOVAL</u>
	Hub bearing	<u>FRONT AXLE HUB</u>
Rear wheel shimmy	Wheels (Out of balance)	<u>TIRE AND WHEEL SYSTEM</u>
	Rear shock absorber	<u>REMOVAL</u>
	Hub bearing	<u>REAR AXLE HUB</u>

FRONT AXLE HUB BOLT**COMPONENTS**

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

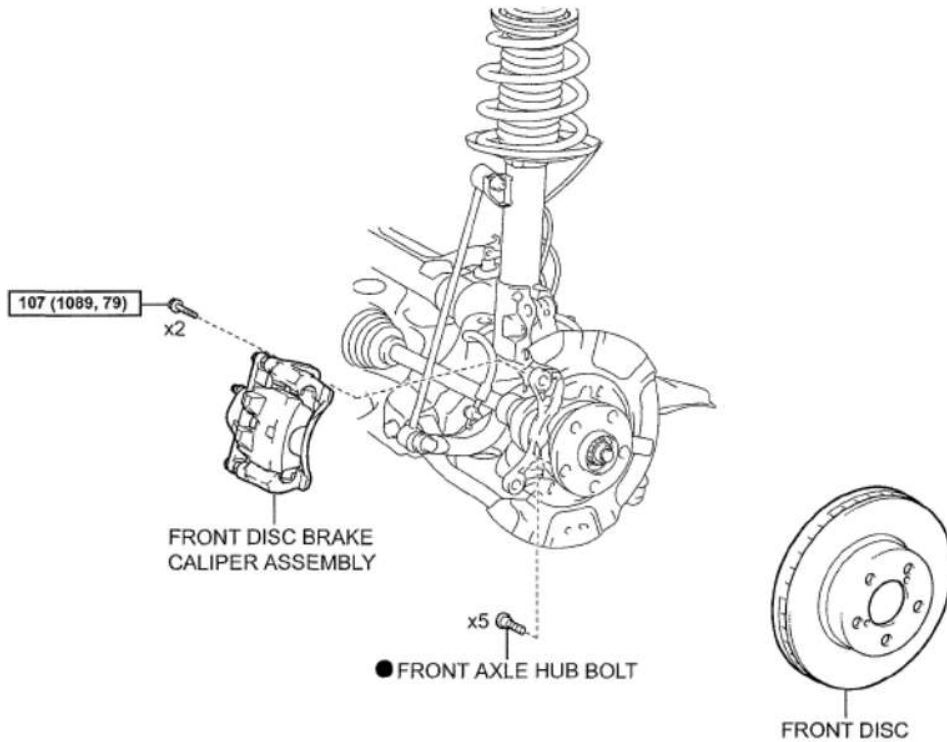


Fig. 1: Identifying Front Axle Hub Bolt Components And Torque Specification
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

1. **REMOVE FRONT WHEEL**
2. **SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY** (See **REMOVAL**)
3. **REMOVE FRONT DISC**
4. **REMOVE FRONT AXLE HUB BOLT**
 - a. Using SST and a screwdriver or the equivalent to hold the axle hub, remove the hub bolt.

SST 09628-10011

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

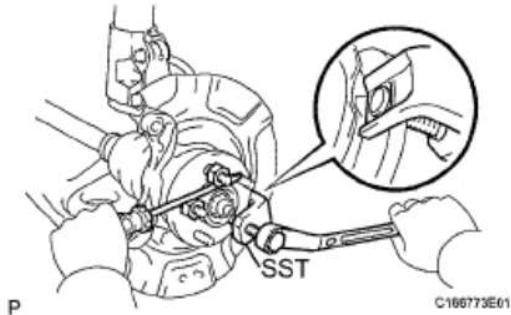


Fig. 2: Removing Hub Bolt

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. INSTALL FRONT AXLE HUB BOLT

- Install the washer and the nut onto a new hub bolt, as shown in the illustration.

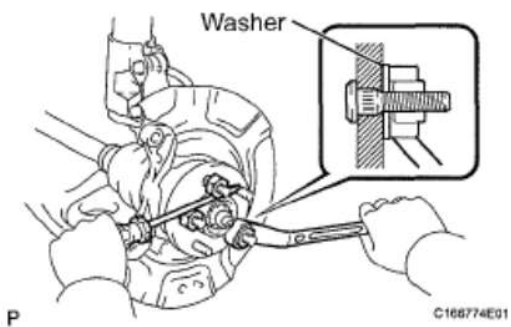


Fig. 3: Installing Hub Bolt

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using a screwdriver or the equivalent to hold the axle hub, install the hub bolt by tightening the nut.

6. INSTALL FRONT DISC

7. INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY (See INSTALLATION)

8. INSTALL FRONT WHEEL

Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)

FRONT AXLE HUB

COMPONENTS

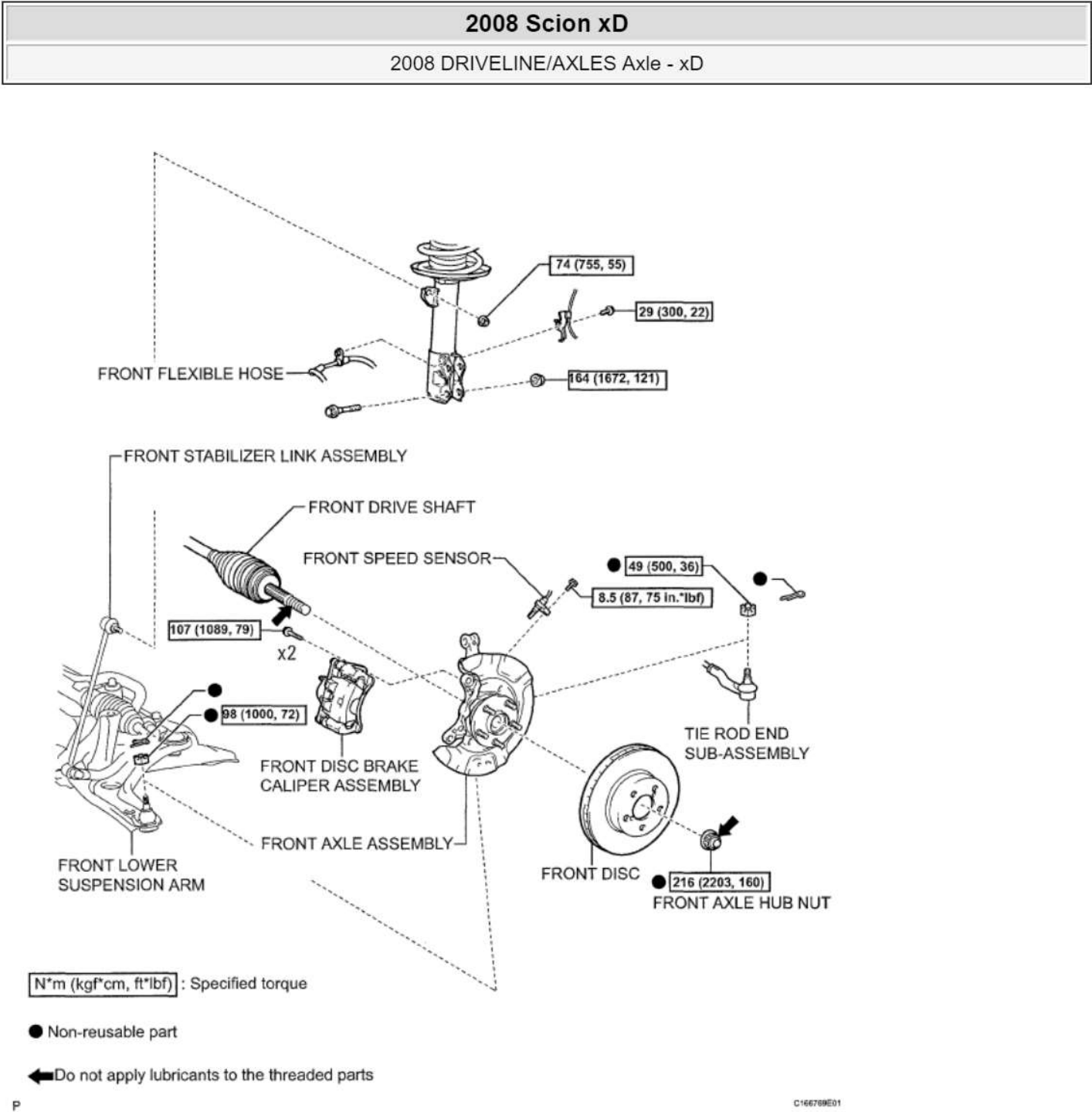
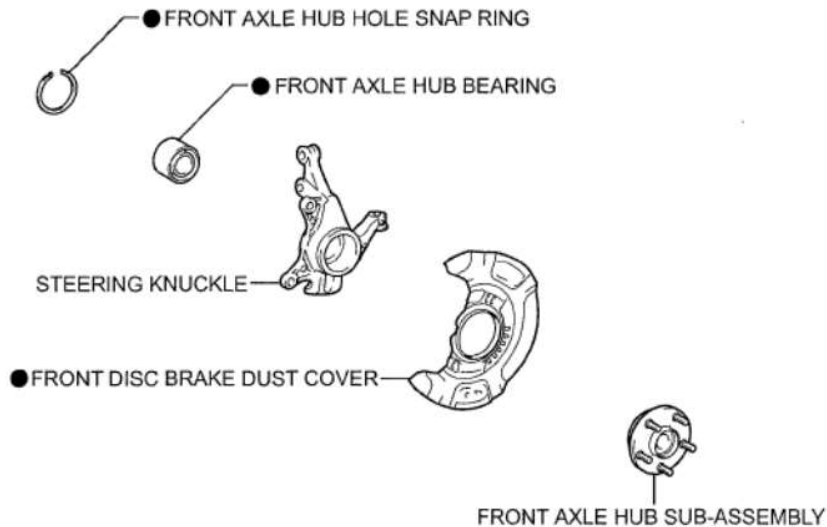


Fig. 4: Identifying Front Axle Hub Components And Torque Specifications (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Scion xD**2008 DRIVELINE/AXLES Axle - xD**

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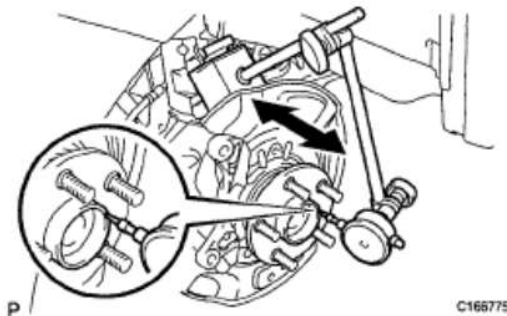
Fig. 5: Identifying Front Axle Hub Components (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ON-VEHICLE INSPECTION

1. **REMOVE FRONT WHEEL**
2. **SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY** (See **REMOVAL**)
3. **REMOVE FRONT DISC**
4. **INSPECT FRONT AXLE HUB BEARING**
 - a. Inspect the axle hub backlash.
 1. Using a dial indicator, check the backlash near the center of the axle hub.

Maximum:**0.05 mm (0.0020 in.)**

If the backlash exceeds the maximum, replace the bearing.



2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

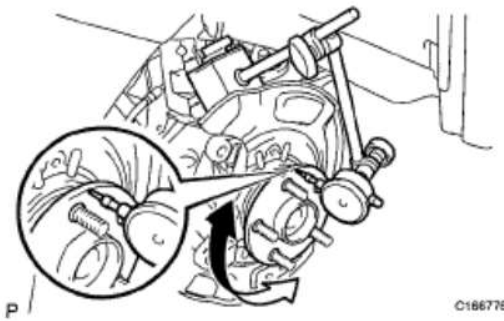
Fig. 6: Checking Axle Hub Backlash

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Inspect the axle hub runout.
 1. Using a dial indicator, check the runout of the surface of the axle hub.

Maximum:**0.05 mm (0.0020 in.)**

If the runout exceeds the maximum, replace the bearing and axle hub.

**Fig. 7: Checking Axle Hub Runout**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **INSTALL FRONT DISC**
6. **INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY** (See **INSTALLATION**)
7. **INSTALL FRONT WHEEL**

Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)**REMOVAL**

1. **REMOVE FRONT WHEEL**
2. **REMOVE FRONT AXLE HUB NUT** (See **REMOVAL**)
3. **SEPARATE FRONT DISC BRAKE CALIPER ASSEMBLY**
 - a. Remove the 2 bolts and separate the disc brake caliper from the steering knuckle.

NOTE: Hang the caliper using a piece of string or the equivalent.

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

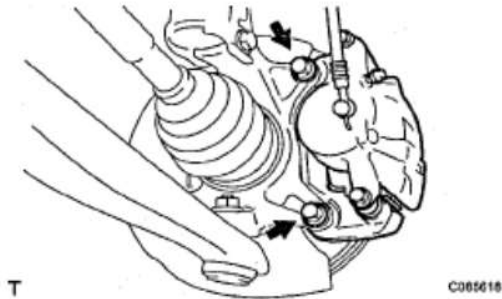


Fig. 8: Locating Bolts And Disc Brake Caliper
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **REMOVE FRONT DISC**
5. **SEPARATE FRONT SPEED SENSOR** (See REMOVAL)
6. **SEPARATE FRONT STABILIZER LINK ASSEMBLY** (See REMOVAL)
7. **SEPARATE TIE ROD END SUB-ASSEMBLY** (See REMOVAL)
8. **SEPARATE FRONT LOWER SUSPENSION ARM** (See REMOVAL)
9. **REMOVE FRONT AXLE ASSEMBLY**
 - a. Using a plastic hammer, tap the end of the drive shaft and disengage the fitting between the drive shaft and front axle.

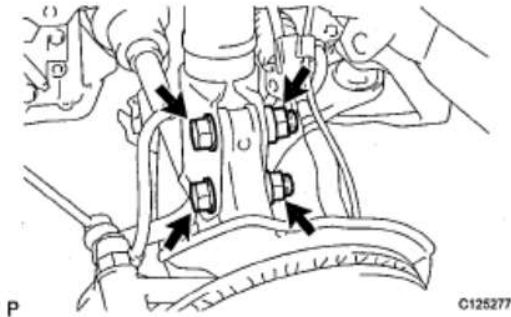
HINT:

If it is difficult to disengage the fitting, tap the end of the drive shaft with a brass bar and hammer.

- b. Push the front axle out of the vehicle to remove the drive shaft from the front axle.

NOTE:

- Do not push the front axle further out of the vehicle than is necessary.
 - Do not damage the outboard joint boot.
 - Do not damage the speed sensor rotor.
 - Suspend the drive shaft with a piece of string or equivalent.
- c. Remove the 2 nuts and 2 bolts and remove the front axle assembly.

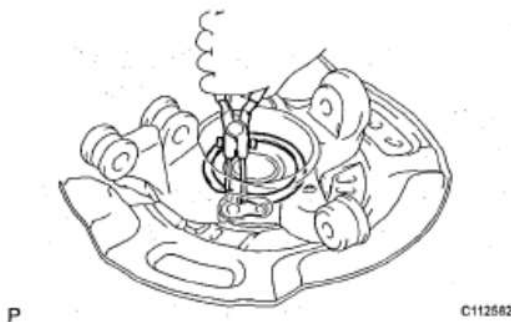
2008 Scion xD**2008 DRIVELINE/AXLES Axle - xD****Fig. 9: Locating Nuts And Bolts**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. REMOVE FRONT AXLE HUB HOLE SNAP RING

- a. Using snap ring pliers, remove the hole snap ring.

NOTE: When removing the hole snap ring, do not damage the magnetic rotor surface.

**Fig. 10: Removing Hole Snap Ring**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

11. REMOVE FRONT AXLE HUB SUB-ASSEMBLY

- a. Fix the steering knuckle in a vise between aluminum plates.

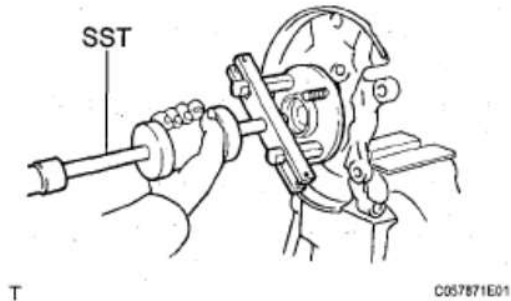
NOTE: Do not overtighten the vise.

- b. Using SST, remove the axle hub.

SST 09520-00031

2008 Scion xD

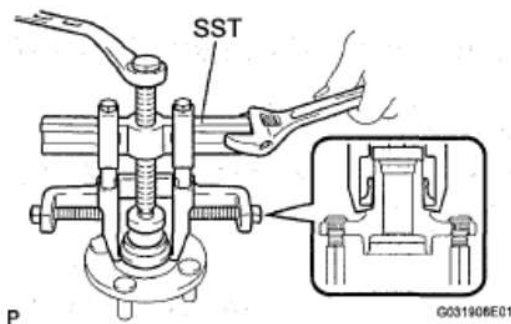
2008 DRIVELINE/AXLES Axle - xD

**Fig. 11: Removing Axle Hub**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using SST, remove the hub bearing inner race from the axle hub.

SST 09950-40011 (09951-04020, 09952-04010, 09953-04020, 09954-04010, 09955-04011, 09957-04010, 09958-04011), 09950-60010 (09951-00370)

**Fig. 12: Removing Hub Bearing Inner Race From Axle Hub**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. REMOVE FRONT DISC BRAKE DUST COVER

- a. Remove the dust cover by tapping the back side with a brass bar and hammer.

**Fig. 13: Removing Dust Cover By Tapping**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

13. REMOVE FRONT AXLE HUB BEARING

- Install the removed hub bearing inner race onto the outer side of the hub bearing.
- Using SST and a press, remove the hub bearing from the steering knuckle.

SST 09223-15020, 09387-00041 (09387-02010), 09950-60010 (09951-00630), 09950-70010 (09951-07100)

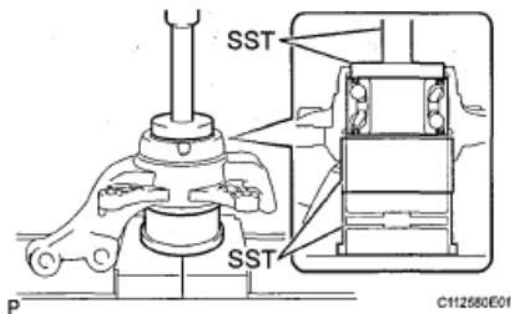


Fig. 14: Removing Hub Bearing From Steering Knuckle
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. INSTALL FRONT AXLE HUB BEARING

- Using SST and a press, insert a new hub bearing, with its magnetic rotor side facing the inside of the vehicle, until it reaches the end of the steering knuckle.

SST 09950-60020 (09951-00710), 09950-70010 (09951-07100)

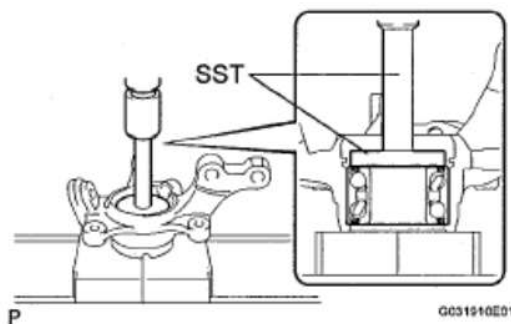


Fig. 15: Installing Hub Bearing Into Steering Knuckle
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- Do not remove the inner race because the hub bearing is built into the oil seal.
- Do not use bearings that have been removed.

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

- Do not wipe off any grease that has been applied to new bearings.
- Do not bring magnets close to the magnetic rotor surface of the bearing.
- Keep the magnetic rotor surface of the bearing free of foreign matter.

2. INSTALL FRONT DISC BRAKE DUST COVER

- Provisionally install a new disc brake dust cover, as shown in the illustration.

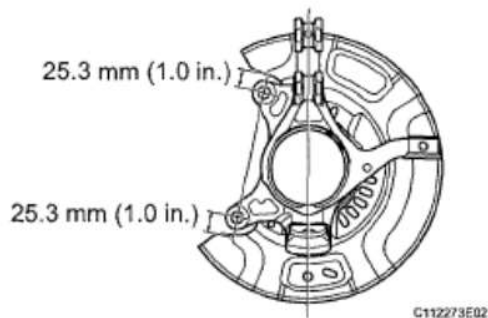


Fig. 16: Identifying Disc Brake Dust Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using SST and a hammer, install the disc brake dust cover.

SST 09223-56010

NOTE:

- Uniformly press in the disc brake dust cover while sliding SST slightly.
- Press in the disc brake dust cover until it is securely seated to the pressing-in base.

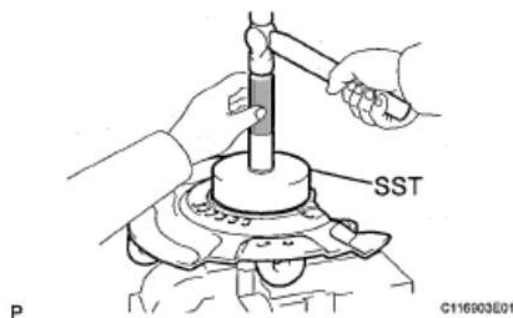


Fig. 17: Installing Disc Brake Dust Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

- c. Using a chisel, fix the 3 points on the circumference.

NOTE: Securely fold each end into the engagement grooves.

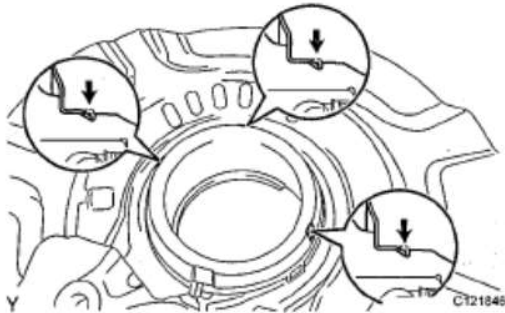


Fig. 18: Locating Points On Circumference
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. INSTALL FRONT AXLE HUB SUB-ASSEMBLY

- a. Using SST and a press, press the axle hub into the steering knuckle.

SST 09608-32010, 09950-60010 (09951-00500), 09950-70010 (09951-07100)

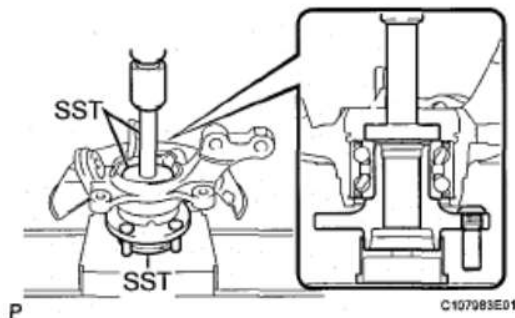


Fig. 19: Pressing Axle Hub Into Steering Knuckle
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. INSTALL FRONT AXLE HUB HOLE SNAP RING

- a. Using snap ring pliers, install a new hole snap ring, as shown in the illustration.

NOTE:

- Do not overlap the end of the snap ring and the installation hole in the speed sensor on the knuckle side.
- Do not damage the magnetic rotor surface of the bearing when installing the snap ring.

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

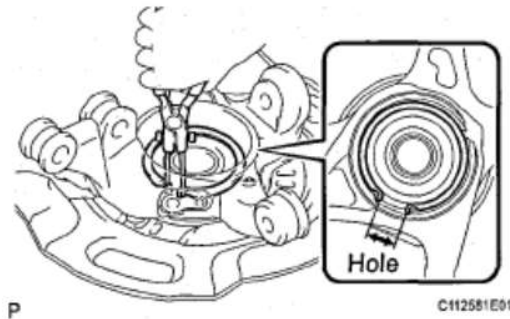


Fig. 20: Installing Hole Snap Ring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. INSTALL FRONT AXLE ASSEMBLY

- Install the front axle assembly onto the shock absorber.
- Install the 2 bolts and 2 nuts.

Torque: 164 N*m (1672 kgf*cm, 121 ft.*lbf)

HINT:

Keep the bolt from rotating while turning the nut.



Fig. 21: Locating Nuts And Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Push the front axle out of the vehicle to align the spline of the drive shaft with the front axle and insert the front axle.

NOTE:

- Do not push the front axle further out of the vehicle than is necessary.
- Do not damage the outboard joint boot.
- Check for any foreign matter on the speed sensor rotor and insertion part.

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

- Do not damage the speed sensor rotor.

6. **INSTALL FRONT LOWER SUSPENSION ARM** (See INSTALLATION)
7. **INSTALL TIE ROD END SUB-ASSEMBLY** (See INSTALLATION)
8. **INSTALL FRONT STABILIZER LINK ASSEMBLY** (See INSTALLATION)
9. **INSTALL FRONT SPEED SENSOR** (See INSTALLATION)
10. **INSTALL FRONT DISC**
11. **INSTALL FRONT DISC BRAKE CALIPER ASSEMBLY**
 - a. Install the disc brake caliper onto the steering knuckle.

Torque: 107 N*m (1089 kgf*cm, 79 ft.*lbf)

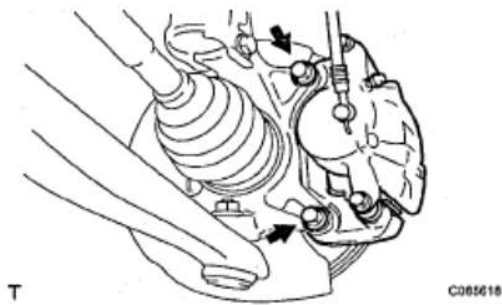


Fig. 22: Locating Bolts And Disc Brake Caliper
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. **INSTALL FRONT AXLE HUB NUT** (See INSTALLATION)
13. **INSPECT FRONT AXLE HUB BEARING** (See ON-VEHICLE INSPECTION)
14. **INSTALL FRONT WHEEL**

Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)

15. **INSPECT AND ADJUST FRONT WHEEL ALIGNMENT**

HINT:

(See ADJUSTMENT)

16. **CHECK ABS SENSOR SIGNAL**

HINT:

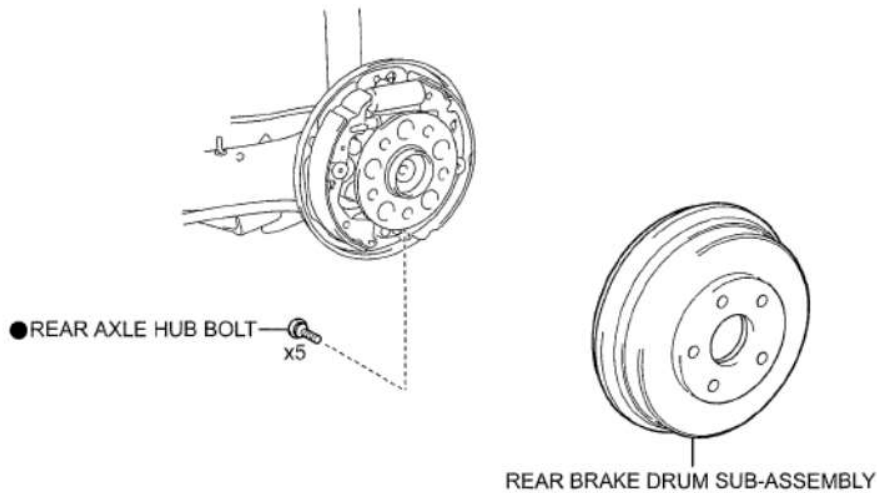
(See TEST MODE PROCEDURE)

REAR AXLE HUB BOLT

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

COMPONENTS



● Non-reusable part

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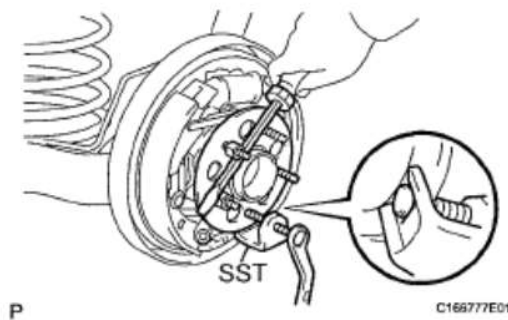
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Fig. 23: Identifying Rear Axle Hub Bolt Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REPLACEMENT

1. REMOVE REAR WHEEL
2. REMOVE REAR BRAKE DRUM SUB-ASSEMBLY (See **REMOVAL**)
3. REMOVE REAR AXLE HUB BOLT
 - a. Using SST and a screwdriver or the equivalent, remove the hub bolt.

SST 09628-10011



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Fig. 24: Removing Hub Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. INSTALL REAR AXLE HUB BOLT

2008 Scion xD**2008 DRIVELINE/AXLES Axle - xD**

- a. Install the washer and the nut onto a new hub bolt as shown in the illustration.

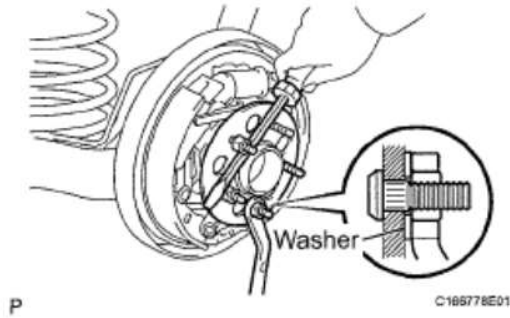


Fig. 25: Installing Hub Bolt

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

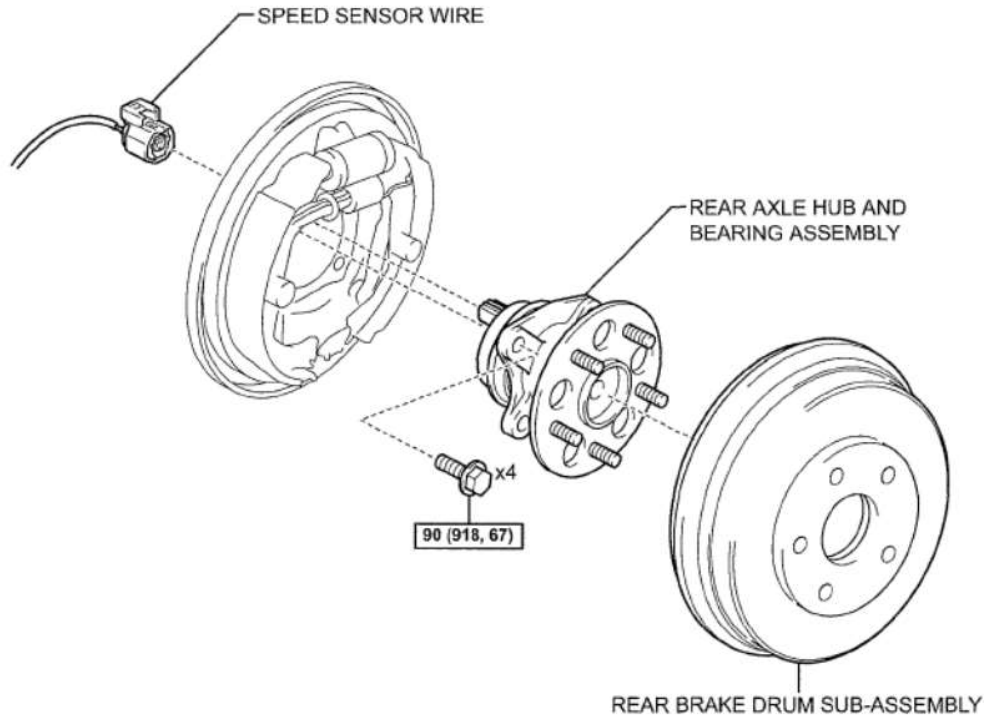
- b. Using a screwdriver or the equivalent to hold the hub and bearing, install the hub bolt by tightening the nut.
5. **INSTALL REAR BRAKE DRUM SUB-ASSEMBLY**
6. **ADJUST REAR DRUM BRAKE SHOE CLEARANCE** (See **INSTALLATION**)
7. **INSTALL REAR WHEEL**

Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)

REAR AXLE HUB

COMPONENTS

2008 Scion xD
2008 DRIVELINE/AXLES Axle - xD



90 (918, 67) : Specified torque

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Fig. 26: Identifying Rear Axle Hub Components And Torque Specification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ON-VEHICLE INSPECTION

1. **REMOVE REAR WHEEL**
2. **REMOVE REAR BRAKE DRUM SUB-ASSEMBLY** (See **REMOVAL**)
3. **INSPECT REAR AXLE HUB BEARING**
 - a. Inspect the axle hub and bearing backlash.
 1. Using a dial indicator, check the backlash near the center of the axle hub.

Maximum:

0.05 mm (0.0020 in.)

If the backlash exceeds the maximum, replace the axle hub and bearing.

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

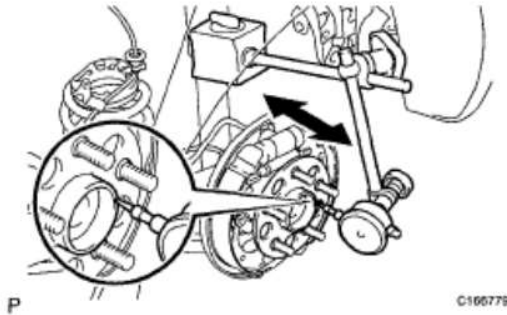


Fig. 27: Checking Axle Hub And Bearing Backlash
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Inspect the axle hub and bearing runout.
 1. Using a dial indicator, check the runout of the surface of the axle hub.

Maximum:

0.07 mm (0.0028 in.)

If the runout exceeds the maximum, replace the axle hub and bearing.

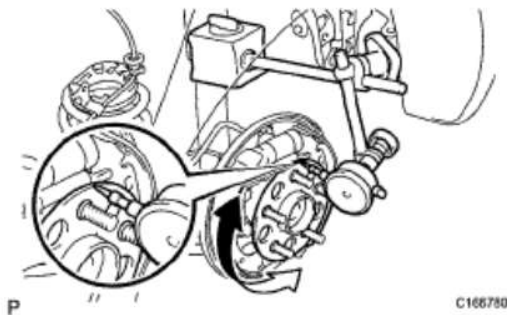


Fig. 28: Checking Axle Hub And Bearing Runout
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **INSTALL REAR BRAKE DRUM SUB-ASSEMBLY**
5. **ADJUST REAR DRUM BRAKE SHOE CLEARANCE** (See **INSTALLATION**)
6. **INSTALL REAR WHEEL**

Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)

REMOVAL

1. **REMOVE REAR WHEEL**
2. **REMOVE REAR BRAKE DRUM SUB-ASSEMBLY** (See **REMOVAL**)
3. **DISCONNECT SPEED SENSOR WIRE**

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD

- a. Using a screwdriver, remove the claw of the connector lock portion and disconnect the skid control sensor wire connector.

NOTE: Do not remove the connector cover from the connector because the skid control sensor wire may be damaged.

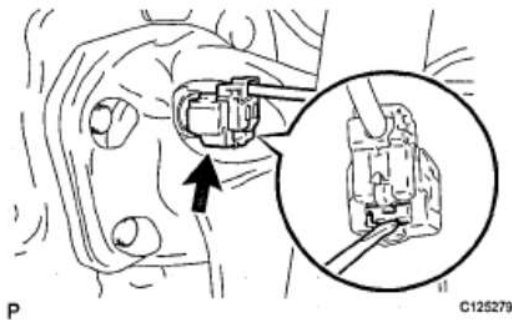


Fig. 29: Disconnecting Skid Control Sensor Wire Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY

- a. Remove the 4 bolts and remove the axle hub and bearing from the axle beam.

NOTE: Suspend the backing plate with a piece of rope.



Fig. 30: Locating Bolts And Axle Hub
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY

- a. Install the axle hub and bearing onto the axle beam with the 4 bolts.

Torque: 90 N*m (918 kgf*cm, 67 ft.*lbf)

2008 Scion xD

2008 DRIVELINE/AXLES Axle - xD



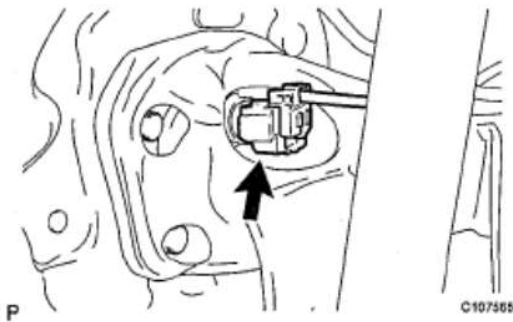
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Fig. 31: Locating Bolts And Axle Hub

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSPECT REAR AXLE HUB BEARING** (See ON-VEHICLE INSPECTION)
3. **CONNECT SPEED SENSOR WIRE**
 - a. Connect the skid control sensor wire connector.



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Fig. 32: Connecting Skid Control Sensor Wire Connector

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **INSTALL REAR BRAKE DRUM SUB-ASSEMBLY**
5. **ADJUST REAR DRUM BRAKE SHOE CLEARANCE** (See INSTALLATION)
6. **INSTALL REAR WHEEL**

Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)

7. **CHECK ABS SENSOR SIGNAL**

HINT:

(See TEST MODE PROCEDURE)