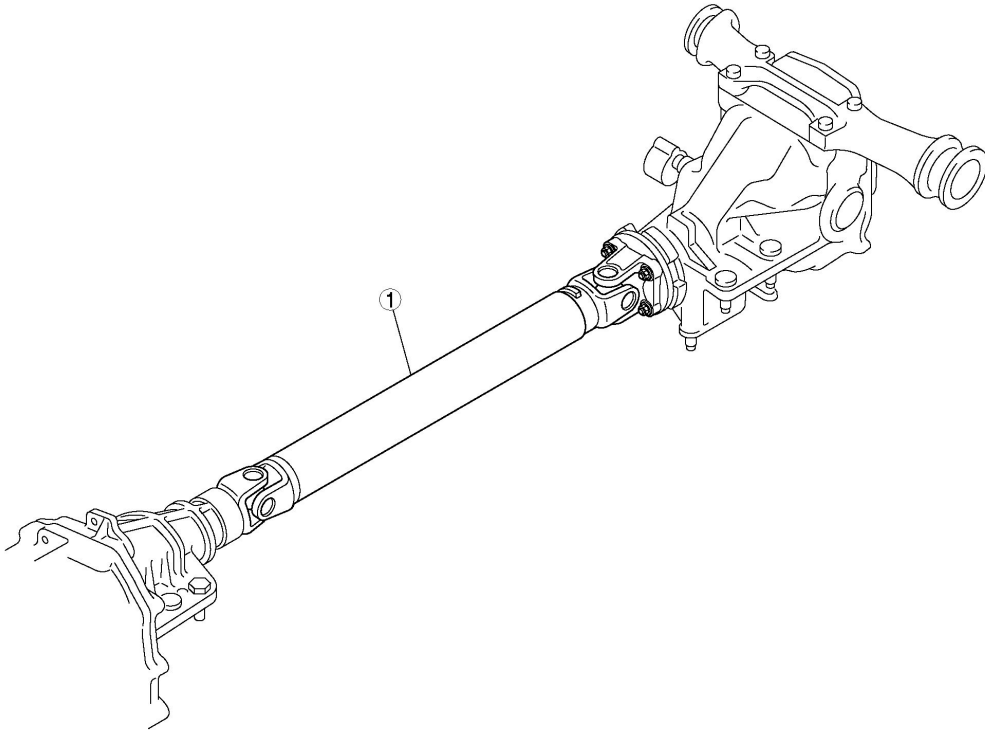


# POWER TRAIN

## PROPELLER SHAFT (w)

### PROPELLER SHAFT LOCATION INDEX



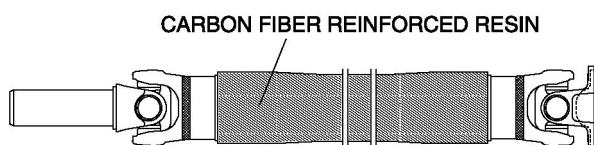
1 Propeller shaft

## PROPELLER SHAFT REMOVAL/INSTALLATION

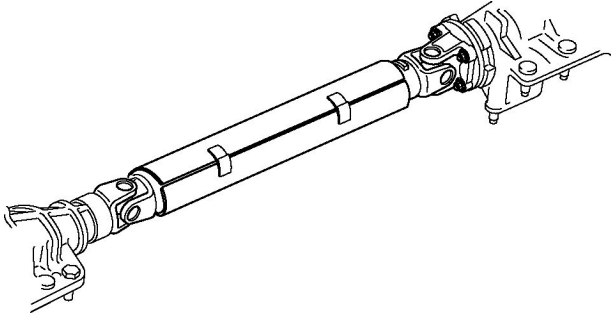
### For Carbon-Fiber Propeller Shaft

#### CAUTION:

- The carbon-fiber-reinforced propeller shaft could be chipped or cracked if dropped. To prevent any damage, handle the shaft with careful attention when removing/installing.
- Replace the propeller shaft if it is dropped.

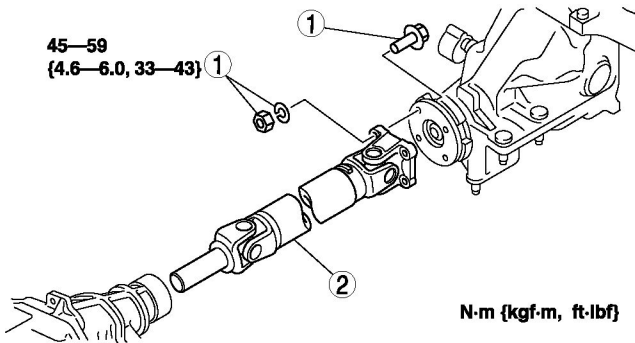


1. Remove the front tunnel member.
2. Remove the rear tunnel member.
3. Remove the exhaust pipe and the silencer.
4. Remove the heat insulator.
5. Protect the propeller shaft with rubber padding or similar protective cover to prevent damage.



**CAUTION:**

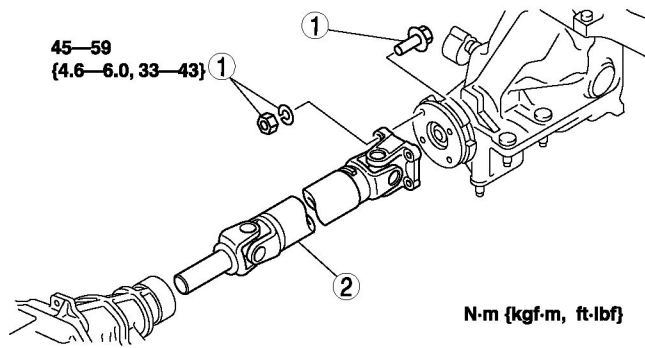
- Remove the rubber padding or similar protective cover after propeller shaft installation is complete.
6. Remove in the order indicated in the table.
  7. Install in the reverse order of removal.
  8. Remove the rubber padding or similar protective cover from the propeller shaft.



1	Bolt, nut
2	Propeller shaft

**For Steel Propeller Shaft**

1. Remove the front tunnel member.
2. Remove the rear tunnel member.
3. Remove the exhaust pipe and the silencer.
4. Remove the heat insulator.
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.

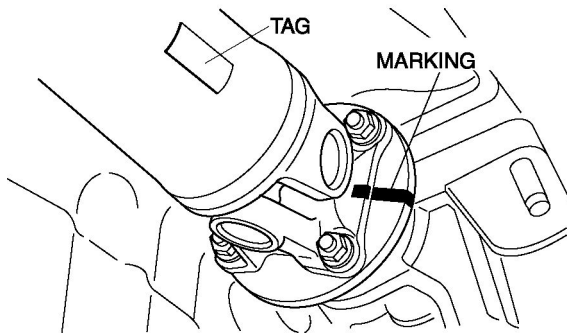


1	Bolt, nut
2	Propeller shaft

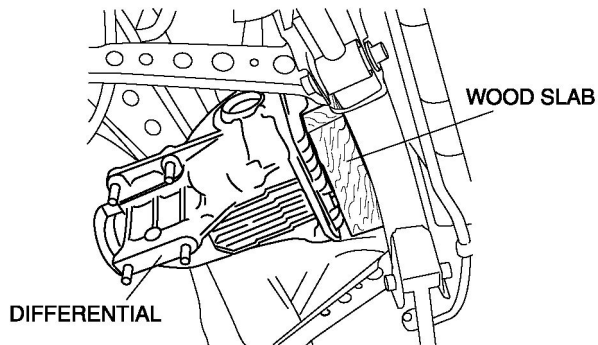
## Propeller Shaft Removal Note

### CAUTION:

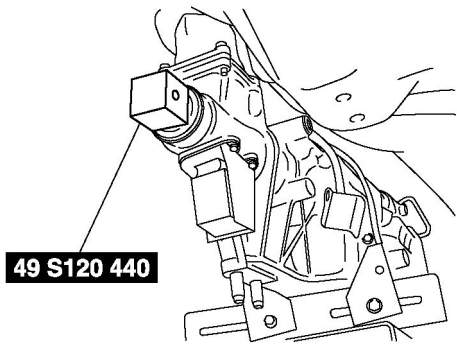
- When replacing with a new propeller shaft, mark the companion flange to match the position of the tag on the propeller shaft.
- Before removing the propeller shaft, make alignment marks on the yoke and differential companion flange.



- Insert a slab of wood behind the rear differential, and remove the propeller shaft.



- Install the SST to the extension housing.

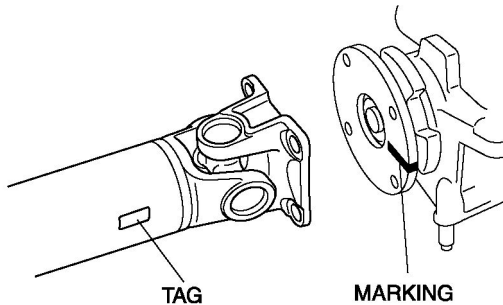


## Propeller Shaft Installation Note

1. Align the marks and install the propeller shaft.

### CAUTION:

- When installing a new carbon-fiber propeller shaft, install the shaft with the protective cover still on and then remove after completion.
  - Handle the propeller shaft with careful attention.
2. When installing a new propeller shaft, align the differential companion flange mark with the tag on the propeller shaft and assemble.

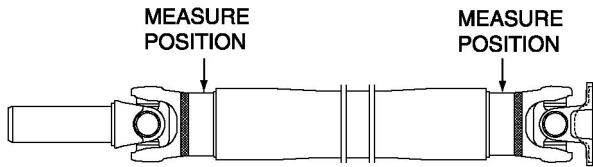


## PROPELLER SHAFT INSPECTION

### For Carbon-Fiber Propeller Shaft

### CAUTION:

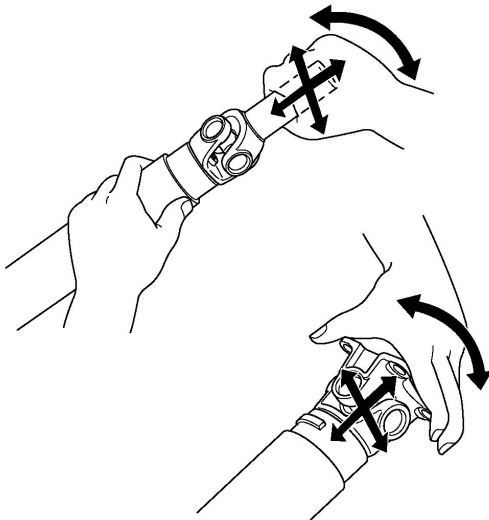
- Replace the propeller shaft if it is dropped.
  - Handle the propeller shaft with care so that the pipe is not damaged from striking surrounding objects or other impacts.
  - Replace the propeller shaft if there is any chipping or warping of the pipe.
  - Protect the propeller shaft from damage and handle with careful attention when working.
1. Use a dial gauge to measure the runout of the propeller shaft at each position.



- If it exceeds the maximum specification, replace the propeller shaft.

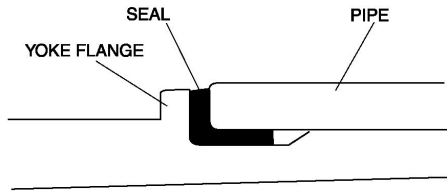
**Maximum runout**

- 0.4 mm {0.016 in}
2. Inspect the play and rotation of the joint by turning the universal joint in the directions shown by the arrows.



**Initial torque (Reference value)**

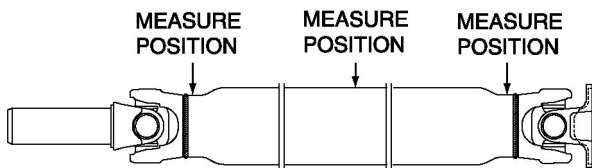
- 0.29—0.98 N·m  
{3.0—10 kgf·cm, 2.7—8.6 in·lbf}
- If there is any play or excessive initial torque, replace the propeller shaft.
3. Verify that the propeller shaft has no bends or damage.
    - If there is any malfunction, replace the propeller shaft.
  4. Verify that there is a gap between the pipe and yoke flange.



- If there is any malfunction, replace the propeller shaft.
5. Verify that there is no cracking, peeling or similar damage to the seal (where the pipe and yoke connect).
    - If there is any malfunction, replace the propeller shaft.

### For Steel Propeller Shaft

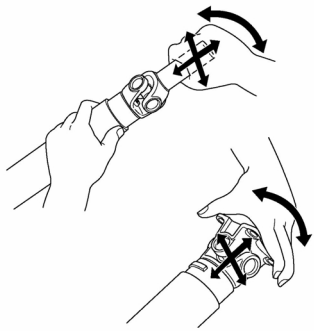
1. Use a dial gauge to measure the runout of the propeller shaft at each position.



- If it exceeds the maximum specification, replace the propeller shaft.

#### Maximum runout

- 0.4 mm {0.016 in}
2. Inspect the play and rotation of the joint by turning the universal joint in the direction shown by the arrow.



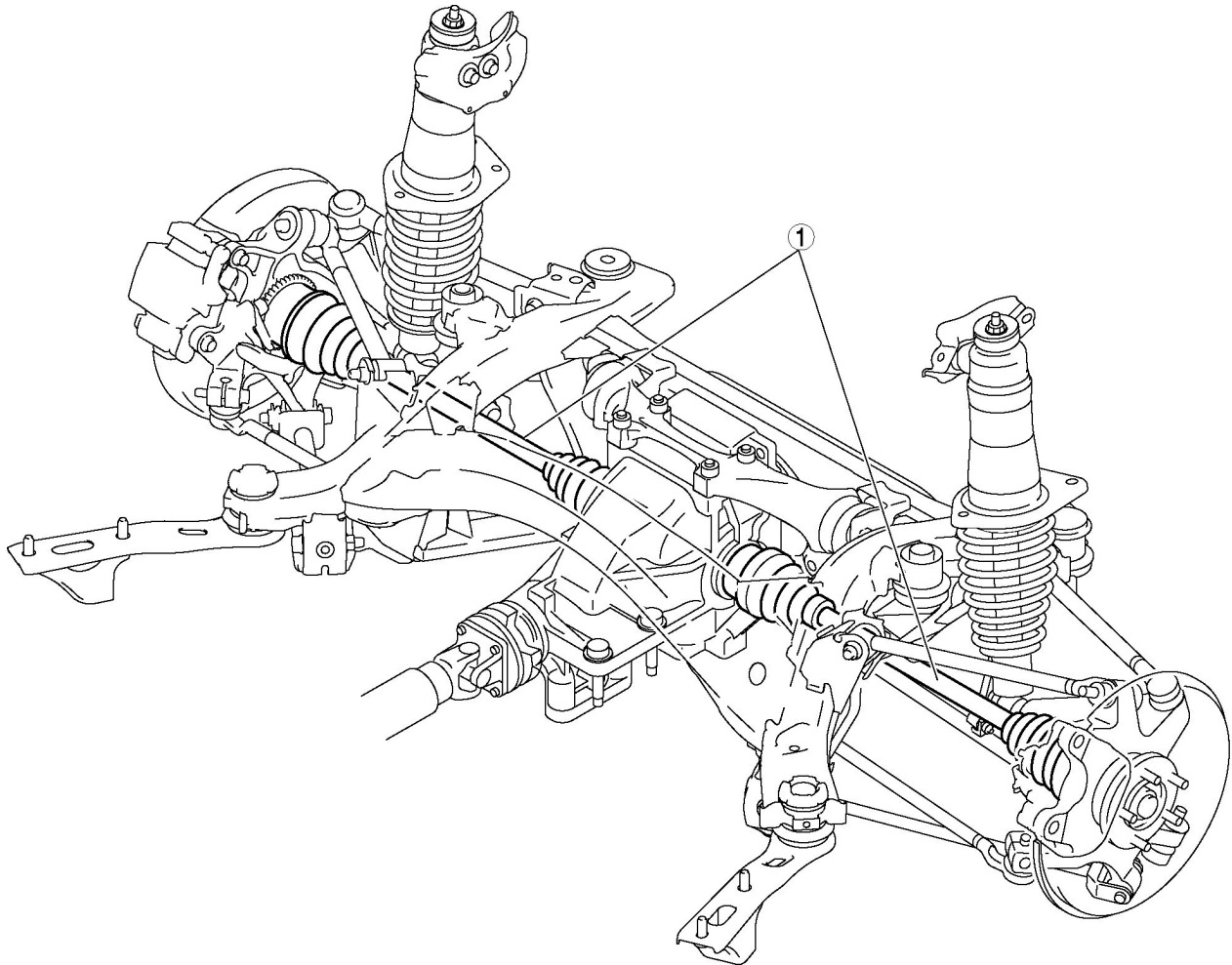
#### Initial torque (Reference value)

- 0.29—0.98 N·m  
{3.0—10 kgf·cm, 2.7—8.6 in·lbf}
- If there is excessive play or initial torque, replace the propeller shaft.

# DRIVE SHAFT

## REAR DRIVE SHAFT

### REAR DRIVE SHAFT LOCATION INDEX



1 Rear drive shaft

### REAR DRIVE SHAFT INSPECTION

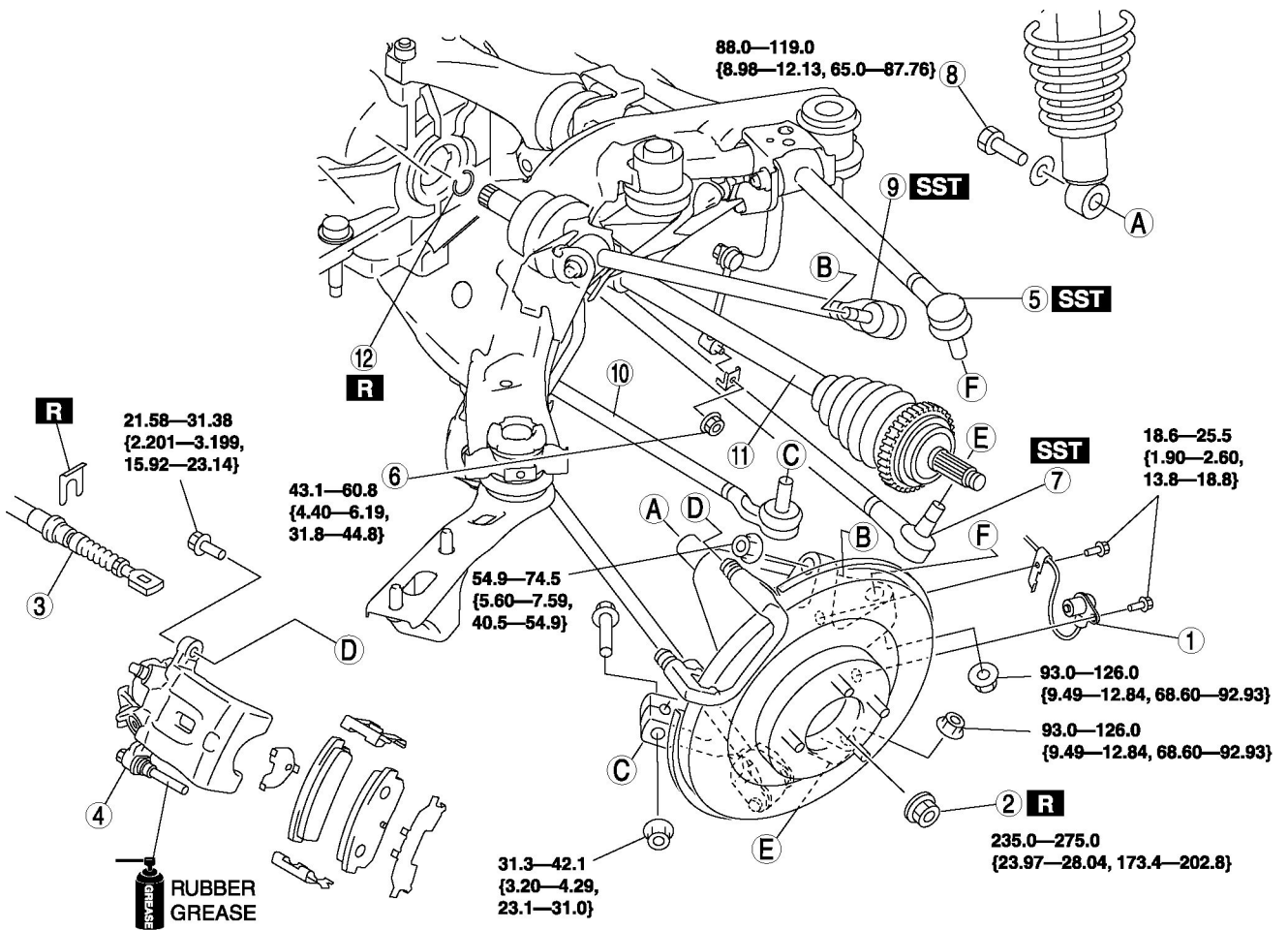
1. Verify that the drive shaft is not twisted or damaged.
  - If there is any malfunction, replace the applicable part.
2. Inspect the dust boot for damage and cracks.
  - If there is any malfunction, replace the applicable part.
3. Move the spline and joint up and down, left and right by hand and verify that there is no roughness.
  - If there is any malfunction, replace the applicable part.

### REAR DRIVE SHAFT REMOVAL/INSTALLATION

#### CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled by mistake while servicing the vehicle.

1. Drain the rear differential oil.
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Add rear differential oil.
5. After installation, inspect the rear wheel alignment.



N·m {kgf·m, ft·lbf}

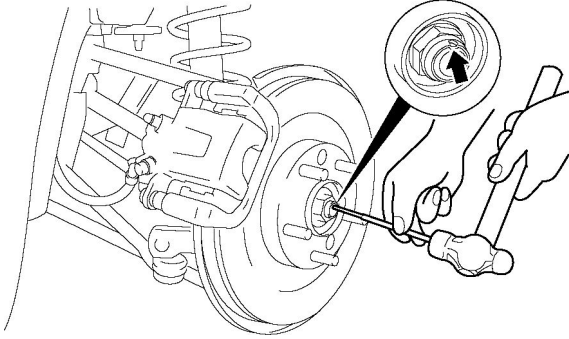
1	ABS wheel-speed sensor
2	Locknut
3	Parking brake cable
4	Brake caliper component
5	Rear lateral link (upper) ball joint
6	Stabilizer control link (lower)
7	Rear lateral link (lower) ball joint
8	Shock absorber bolt (lower)
9	Rear trailing link (upper) ball joint



10	Toe control link (outer)
11	Rear drive shaft
12	Clip

### Locknut Removal Note

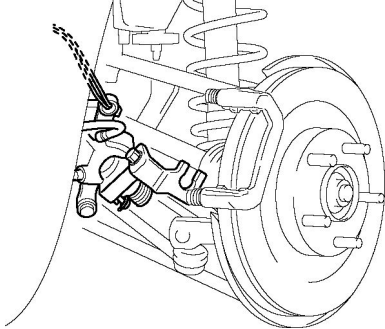
1. Lock the disc plate by applying the brakes.
2. Knock the crimped portion of the locknut outward using a chisel and a hammer.



3. Remove the locknut.

### Brake Caliper Component Removal Note

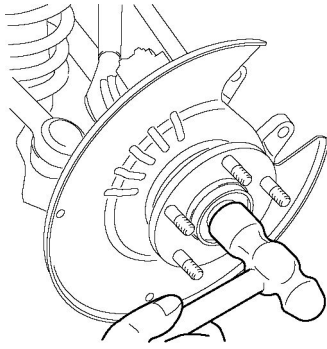
1. Suspend the brake caliper component using a cable.



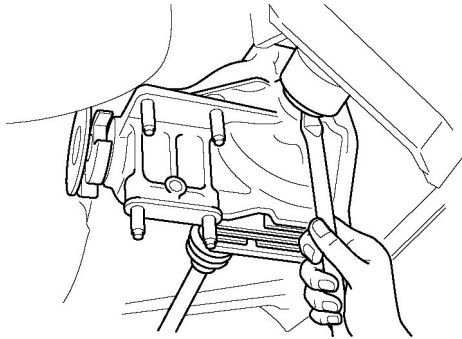
2. Temporarily tighten the wheel nut to prevent the disc plate from falling off.

### Rear Drive Shaft Removal Note

1. Temporarily install a spare nut to the end of the rear drive shaft.
2. Knock the nut with copper hammer lightly and remove the rear drive shaft from the wheel hub.



3. Separate the rear drive shaft from the wheel hub.
4. Insert a tire lever or equivalent between the rear differential and differential side outer ring, and then remove the rear drive shaft.

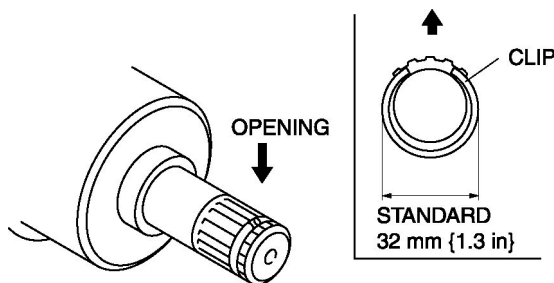


**CAUTION:**

- The sharp edges of the drive shaft can slice or puncture the oil seal. Be careful not to damage the oil seal when removing the drive shaft from the differential.
5. Pull the rear drive shaft to the outer side of the vehicle and disconnect it from the rear differential.
  6. To hold the rear knuckle component, install the rear lateral link (upper) to the rear knuckle temporarily after disconnecting the rear drive shaft.

**Clip Installation Note**

1. Point the opening of the new drive shaft clip upward, install it to the clip groove at the end of the rear drive shaft with the installation width within the specification.



**Standard**

- 32 mm {1.3 in}
2. After installing the clip, measure the outer diameter. If it exceeds the specification, reinstall the new clip.

**Rear Drive Shaft Installation Note**

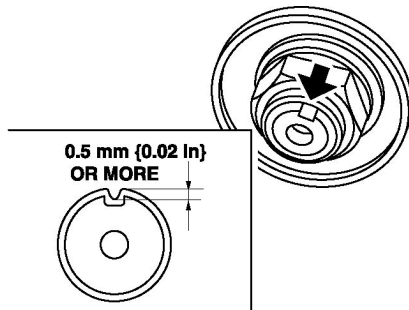
1. Apply differential oil to the differential oil seal lip.

**CAUTION:**

- The sharp edges of the rear drive shaft can slice or puncture the oil seal. Be careful not to damage the oil seal when installing the rear drive shaft from the rear differential.
2. Insert the rear drive shaft into the rear differential with the clip opening facing upward.
  3. After installation, verify that the rear drive shaft is securely held by the clip by pulling the outer ring on the differential side towards the axle.

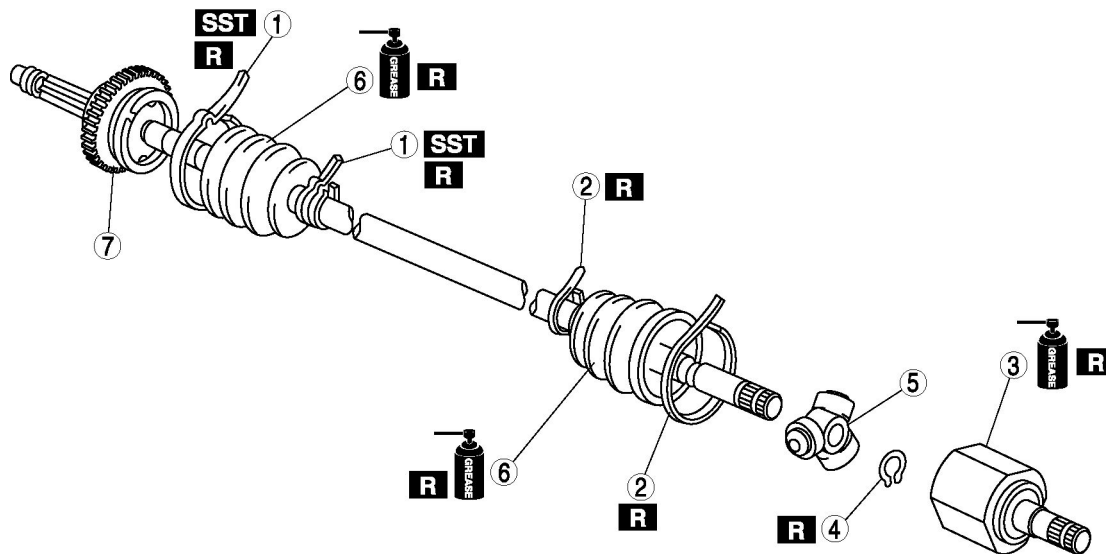
**Locknut Installation Note**

1. Tighten a new locknut.
2. Crimp the locknut, using a chisel and hammer.



**REAR DRIVE SHAFT DISASSEMBLY/ASSEMBLY**

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



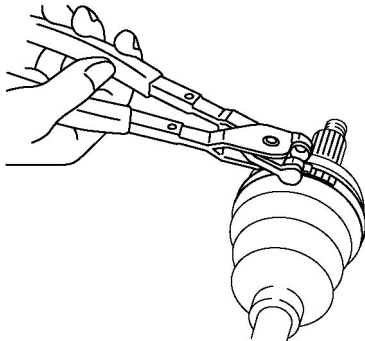
1	Boot band (axle side)
2	Boot band (differential side)
3	Outer ring
4	Snap ring

5	Tripod joint
6	Boot
7	Shaft and ball joint component

### Boot Band (axle side) Disassembly Note

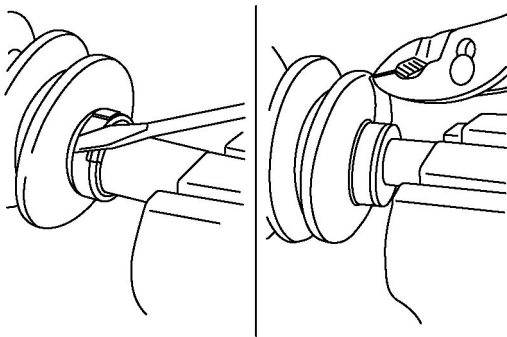
#### NOTE:

- Remove the boot band only if there is an abnormality.
1. Remove the boot band using end clamp pliers.



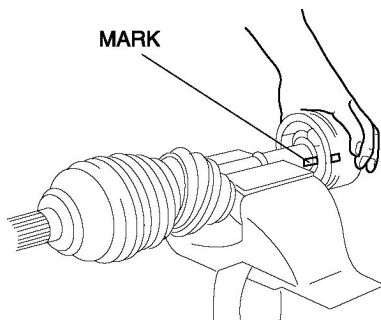
### Boot Band (Differential Side) Disassembly Note

1. Remove the crimp of the clip using a flathead screwdriver.



### Outer Ring Disassembly Note

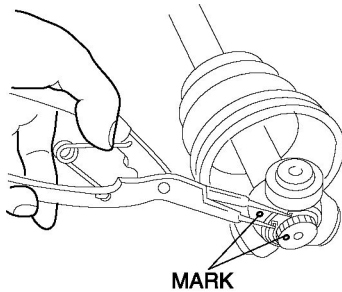
1. Place an alignment mark on the drive shaft and the outer ring.



2. Remove the outer ring.

### Snap Ring, Tripod Joint Disassembly Note

1. Place an alignment mark on the shaft and tripod joint.
2. Remove the snap ring using a snap ring plier.



3. Remove the tripod joint from the shaft.

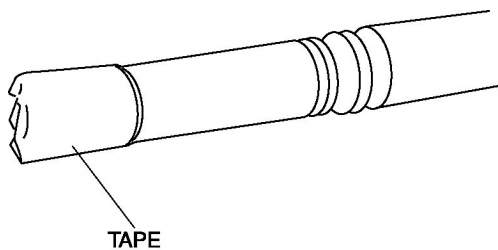
### CAUTION:

- To prevent damage to the component, do not use a hammer when removing it.

### Boot Disassembly Note

#### NOTE:

- Remove the axle side boot only if there is an abnormality.
1. Wrap the shaft spline with vinyl tape.



2. Remove the boot.

### Boot Assembly Note

#### NOTE:

- The boot shapes on the axle side and the differential side are different so do not misinstall them.
1. Fill the inside of the new dust boot (wheel side) with grease.

#### NOTE:

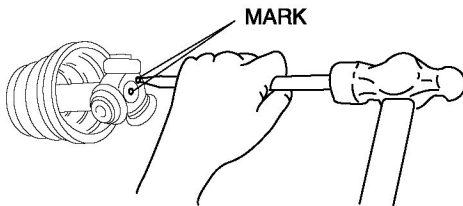
- Do not touch the grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

### Grease amount

- MT: 115—135 g {4.06—4.76 oz}
  - AT: 90—110 g {3.18—3.88 oz}
2. Install the boot with the drive shaft spline still wrapped with vinyl tape.
  3. Remove the vinyl tape.

### Tripod Joint, Snap Ring Assembly Note

1. Align the tripod joint with the shaft mark and insert it using a brass bar.



### CAUTION:

- To prevent damage to the component, do not tap the roller part when installing.
2. Install the new snap ring to the shaft installation slot securely using a snap ring pliers.

### Outer Ring Assembly Note

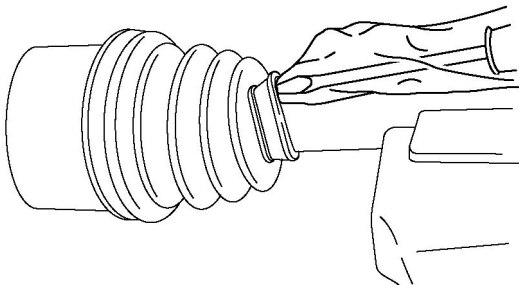
1. Fill the outer ring and boot (differential side) with the repair kit grease.

### NOTE:

- Do not touch the grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

### Grease amount

- MT: 175—195 g {6.18—6.87 oz}
  - AT: 135—155 g {4.77—5.46 oz}
2. Assemble the outer ring.
  3. Release any trapped air from the boots by carefully lifting up the small end of each boot with a cloth wrapped screwdriver.



### CAUTION:

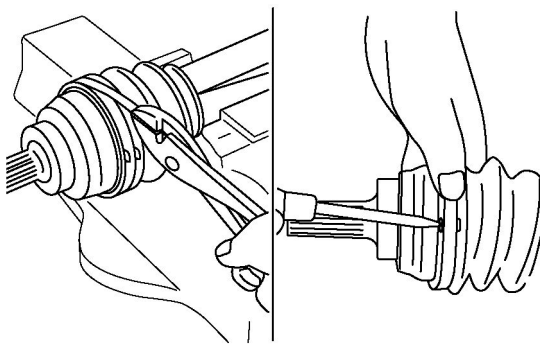
- Do not let the grease leak.
  - Do not damage the boot.
4. Set the drive shaft length to the specification when the inside of the boots is at ambient pressure. Standard

		Drive shaft length (mm {in})
MT	Left side	792.6—802.6 {31.21—31.59}
	Right side	832.6—842.6 {32.78—33.17}
AT	Left side	791.1—801.1 {31.15—31.53}
	Right side	831.1—841.1 {32.71—33.11}

5. After installation, verify that there is no boot damage or grease leakage.

### Boot Band (Differential Side) Assembly Note

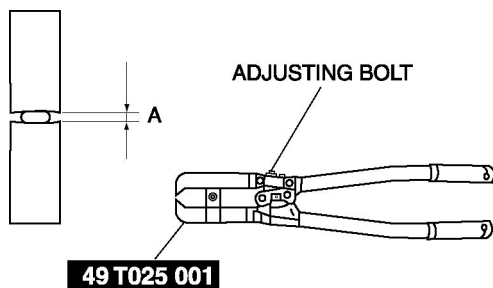
1. Using pliers, pull the boot band around the boot slot in opposite direction of drive shaft forward rotation direction and tighten.



2. Insert the end of the boot band between the boot band clip and fold back the clip tabs using a flathead screwdriver to secure the boot band.
3. Verify that the boot band is installed to the boot slot securely.

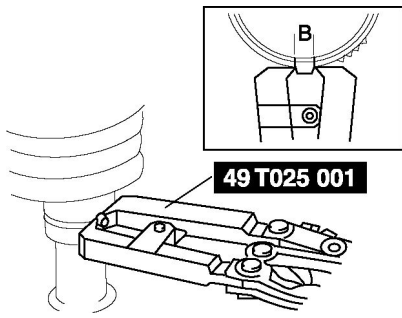
### Boot Band (Axle Side) Assembly Note

1. Turn the adjusting bolt of the SST and adjust the opening size to the specification A.



#### Specification A

- 2.9 mm {0.11 in}
2. Crimp the boot band (small-size) using the SST .



3. Verify that the crimp value B is within the specification.
  - If the crimp value B exceeds the specification, reduce opening length A of the SST and recrimp the boot band.
  - If the crimp value B is less than the specification, increase opening length A of the SST and crimp the new boot band.

#### Specification B

- 2.4—2.8 mm {0.095—0.110 in}
4. Verify that the boot band does not protrude from the boot band installation area.
    - If the boot band protrudes from the installation area, replace it with a new band and repeat Step 2—4.
  5. Fill the boot with the repair kit grease.
  6. Adjust opening length A of the SST to the specification.

#### Specification A

- 3.2 mm {0.13 in}
7. Crimp the boot band (large-size) using the SST .
  8. Verify that the boot band crimp value B is within the specification.
    - If crimp value B exceeds the specification, reduce opening length A of the SST and recrimp the boot band.
    - If the crimp value B is less than the specification, replace the boot band, increase opening length A of the SST , and then recrimp the new boot band.

#### Specification B

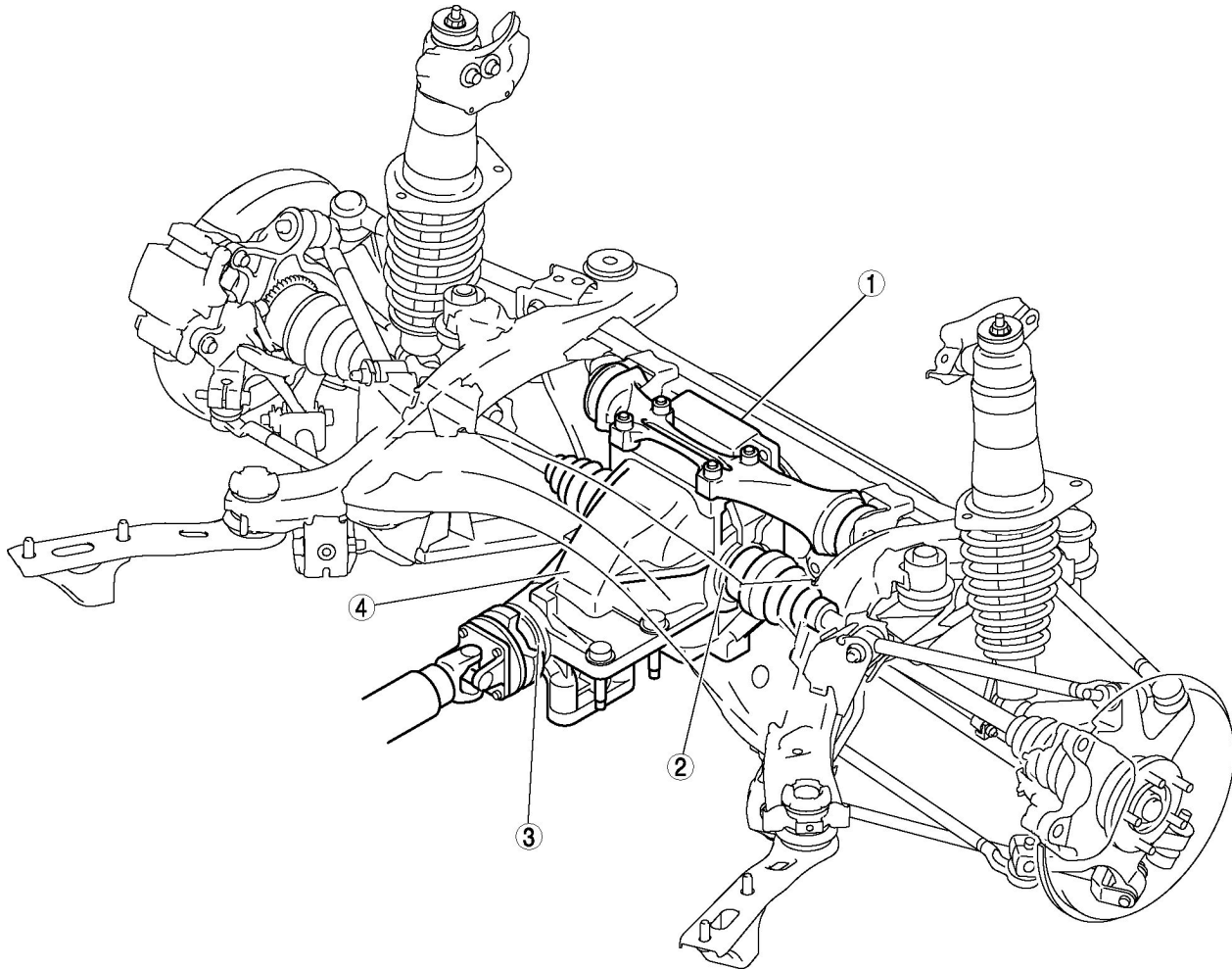
- 2.4—2.8 mm {0.095—0.110 in}
9. Verify that the boot band does not protrude from the boot band installation area.
    - If the boot band protrudes from the installation area, replace it with a new band and repeat Step 7—9.



# DIFFERENTIAL

## DIFFERENTIAL (FF/FR)

### REAR DIFFERENTIAL LOCATION INDEX

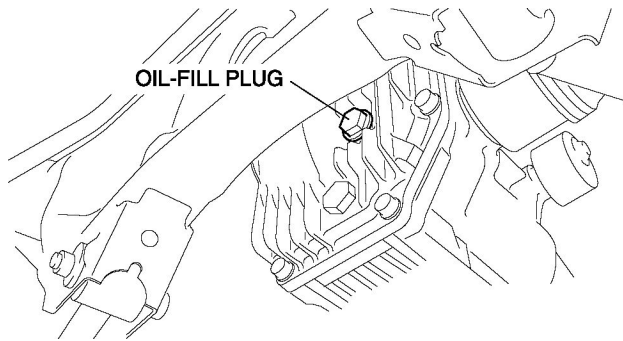


1	Differential oil
2	Oil seal (side gear)
3	Oil seal (companion flange)
4	Rear differential

# DIFFERENTIAL OIL

## DIFFERENTIAL OIL INSPECTION

1. Position the vehicle on level ground.
2. Remove the oil-fill plug and the washer.
3. Inspect if the oil level is close to the rim of the oil-fill plug hole.
4. If the oil is not close to the rim of the oil-fill plug hole, add oil.
5. Install the oil-fill plug with a new washer and tighten.

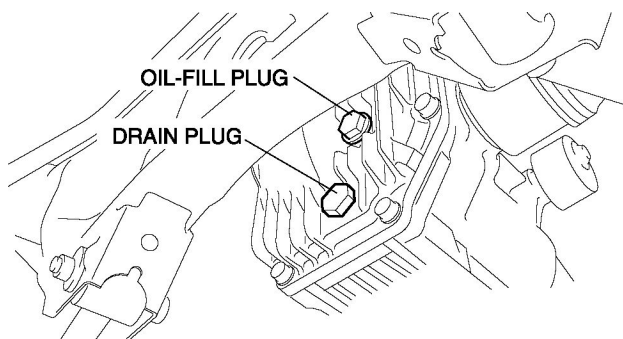


### Tightening torque

- 39.2—53.9 N·m {4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

## DIFFERENTIAL OIL REPLACEMENT

1. Position the vehicle on level ground.
2. Remove the oil-fill plug.
3. Remove the drain plug and drain the oil.



4. Install the drain plug with a new washer and tighten.

### Tightening torque

- 39.2—53.9 N·m  
{4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

5. Add the specified oil through the oil-fill plug hole.

### Specified oil

- Type

API service GL-5 SAE 90

- Oil capacity (approx. quantity)

1.2—1.4 L

{1.3— 1.4 US qt, 1.1—1.2 Imp qt}

6. After adding the oil, perform the oil level inspection.
7. Install the oil-fill plug with a new washer and tighten.

#### **Tightening torque**

- 39.2—53.9 N·m

{4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

## **DIFFERENTIAL OIL SEAL**

### **OIL SEAL (SIDE GEAR) REPLACEMENT**

1. Remove the drain plug and drain the oil.
2. Install the drain plug with a new washer and tighten.

#### **Tightening torque**

- 39.2—53.9 N·m {4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

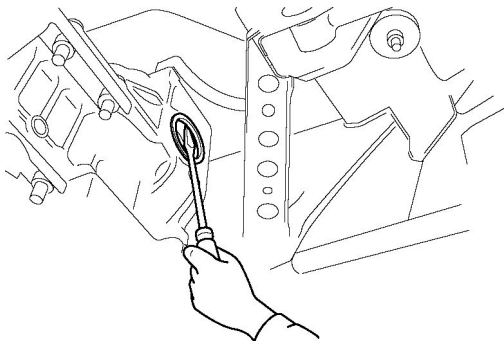
3. Disconnect the rear drive shaft on the differential side.

4. Remove the clip from the rear drive shaft.

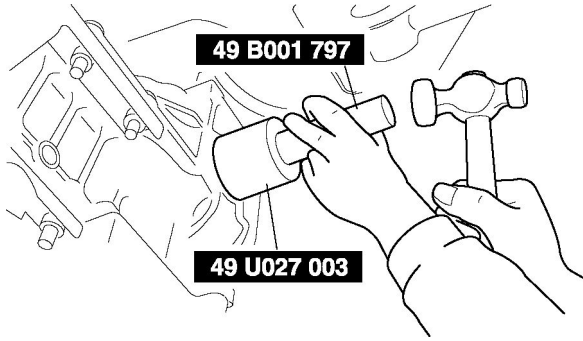
#### **CAUTION:**

- To prevent damaging the inside of the differential casing, wrap cloth on the end of the flathead screwdriver.

5. Remove the oil seal from the differential carrier using a flathead screwdriver.



6. Apply differential oil to the lip of a new oil seal.
7. Tap in the new oil seal until it reaches the differential carrier using the SSTs .



**NOTE:**

- Install the oil seal at a straight angle.
8. After installing a new clip to the rear drive shaft, insert it into the rear differential.
  9. Verify that the rear drive shaft is held securely by the clip by pulling the outer ring on the differential side towards the axle.
  10. Add differential oil.
  11. After adding the oil, perform the oil level inspection.
  12. Install the oil-fill plug with a new washer and tighten.

**Tightening torque**

- 39.2—53.9 N·m {4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

**OIL SEAL (COMPANION FLANGE) REPLACEMENT**

1. Remove the rear differential.
2. Replace the oil seal (companion flange) referring to the rear differential disassembly/assembly procedure.
3. Install the rear differential.

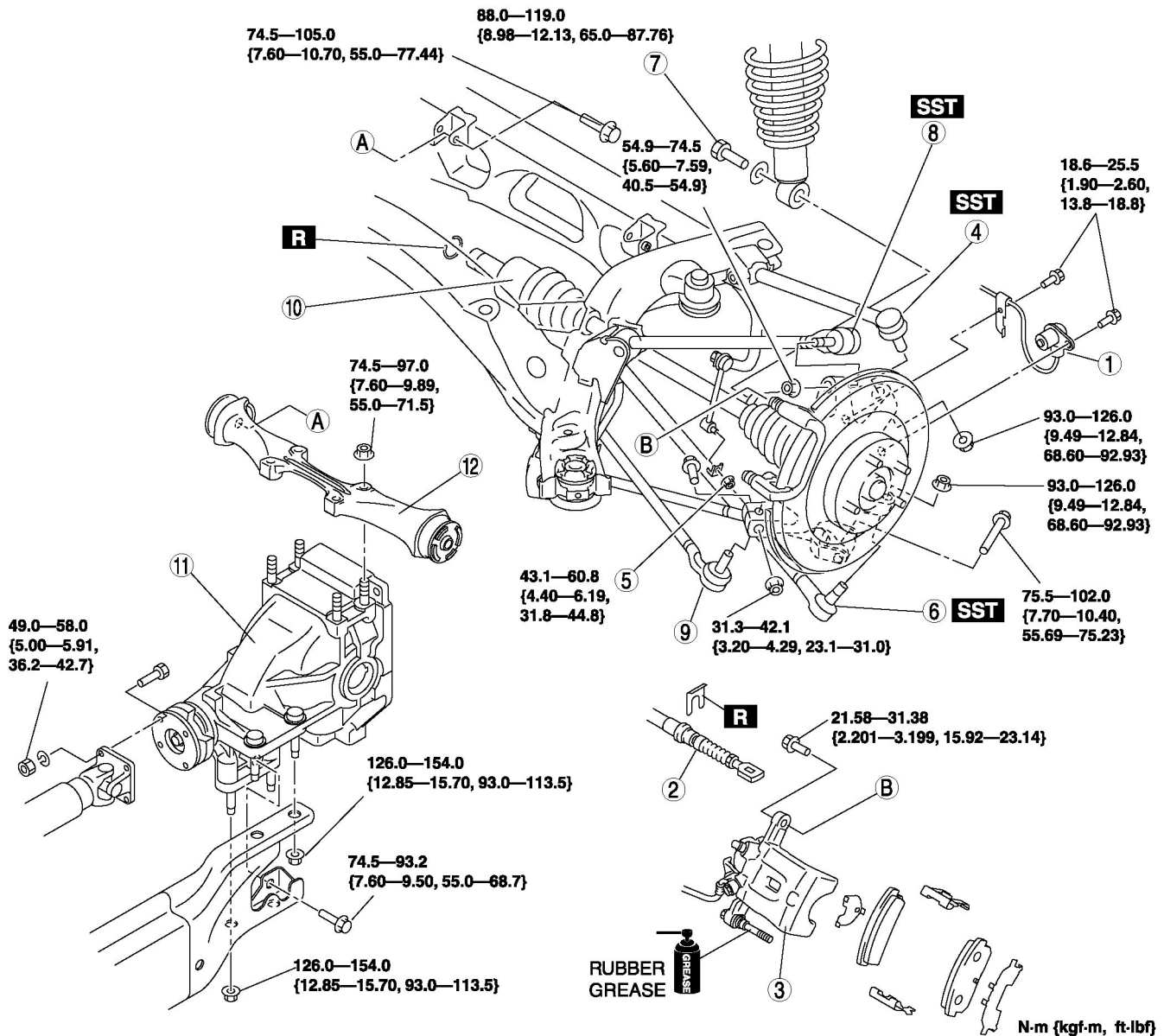
# DIFFERENTIAL (FF/FR)

## REAR DIFFERENTIAL REMOVAL/INSTALLATION

### CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled by mistake while servicing the vehicle.

1. Drain the rear differential oil.
2. Remove the middle pipe and main silencer.
3. Remove the propeller shaft.
4. Remove the power plant frame.
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Add rear differential oil.

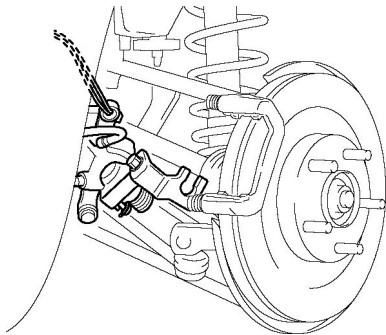


(w)

1	ABS wheel-speed sensor
2	Parking brake cable
3	Brake caliper component
4	Rear lateral link (upper) ball joint
5	Stabilizer control link (lower)
6	Rear lateral link (lower) ball joint
7	Shock absorber bolt (lower)
8	Rear trailing link (upper) ball joint
9	Toe control link (outer)
10	Rear drive shaft, rear knuckle component
11	Rear differential
12	Differential mount

### Brake Caliper Component Removal Note

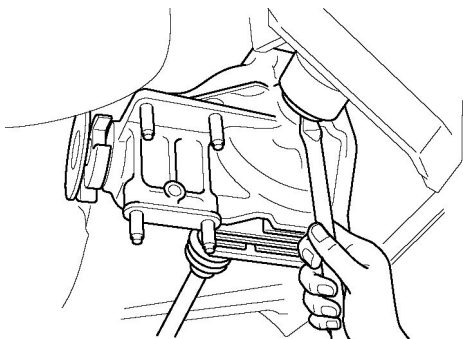
1. Suspend the brake caliper component using a cable.



2. Temporarily tighten the wheel nut to prevent the disc plate from falling off.

### Rear Drive Shaft, Rear Knuckle Component Removal Note

1. Insert a tire lever or equivalent between the rear differential and differential side outer ring, and remove the rear drive shaft.



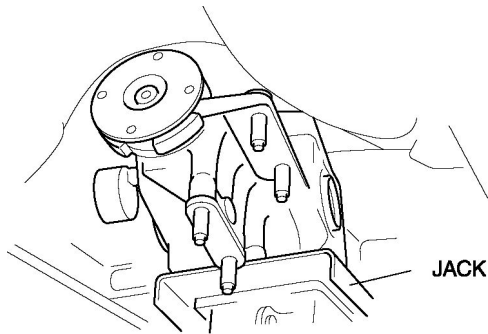
**CAUTION:**

- The sharp edges of the drive shaft can slice or puncture the oil seal. Be careful not to damage the oil seal when removing the drive shaft from the differential.
2. Pull the rear drive shaft and rear knuckle component to the outer side, and detach the rear drive shaft from the rear differential.
  3. To hold the rear drive shaft and rear knuckle component, install the rear lateral link (upper) to the rear knuckle temporarily after disconnecting the rear drive shaft.

### Rear Differential Removal/Installation Note

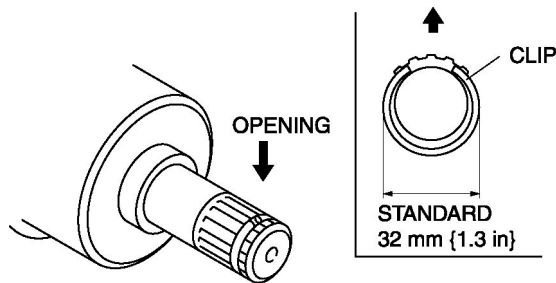
#### WARNING:

- If the rear differential falls off, it can cause serious injuries or death, and damage to the vehicle. When removing/installing the rear differential, verify that it is supported securely with a jack.
1. Remove or install the rear differential, while supporting it securely with a jack, and moving the jack gradually.



### Rear Drive Shaft, Rear Knuckle Component Installation Note

1. Install a new drive shaft clip to the clip groove at the top of the rear drive shaft with the clip opening facing upward and the clip width within the specification.



#### Standard

- 32 mm {1.3 in}
2. After installing the clip, measure the outer diameter if it exceeds the specification, reinstall a new clip.
  3. Apply differential oil to the differential oil seal lip.

#### CAUTION:

- The sharp edges of the rear drive shaft can slice or puncture the oil seal. Be careful not to damage the oil seal when installing the rear drive shaft from the rear differential.
4. Insert the rear drive shaft into the rear differential with the clip opening facing upward.



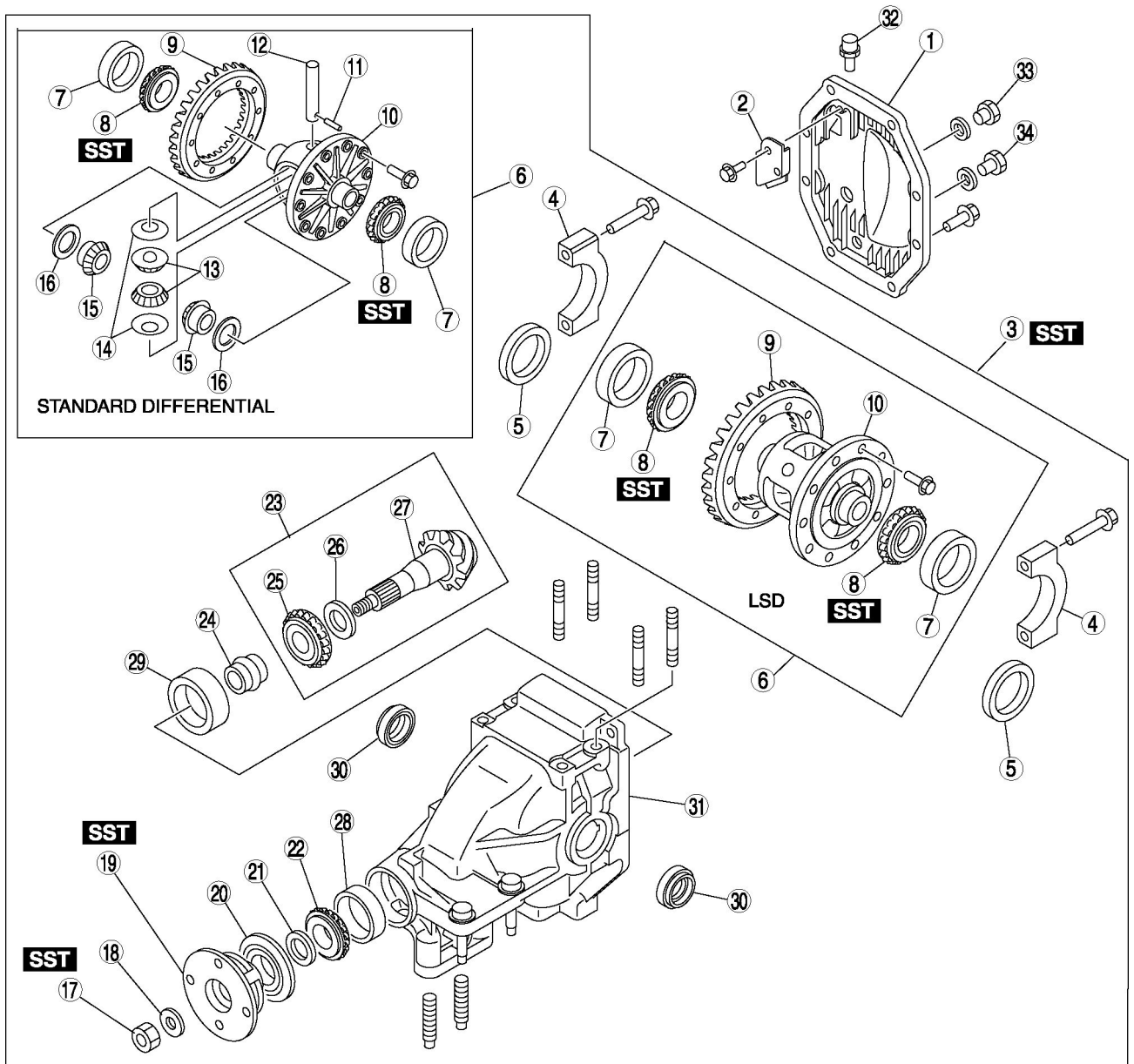
- After installation, verify that the rear drive shaft is securely held by the clip by pulling the outer ring on the differential side towards the axle.

## REAR DIFFERENTIAL DISASSEMBLY

### WARNING:

- The engine stand is equipped with a self-lock mechanism, however, if the rear differential is tilted, the self-lock mechanism could become inoperative. If the rear differential unexpectedly rotates, it could cause injury, therefore do not maintain the rear differential tilted. When turning the rear differential, grasp the rotation handle firmly.

- Disassemble in the order indicated in the table.

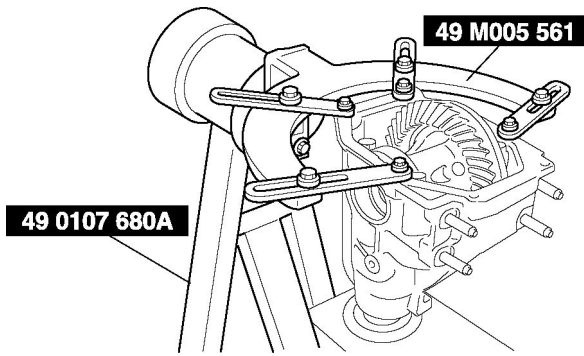




1	Rear cover
2	Baffle plate
3	Differential component
4	Bearing cap
5	Adjustment shim
6	Differential gear case component
7	Side bearing outer race
8	Side bearing
9	Ring gear
10	Gear case
11	Roll pin
12	Pinion shaft
13	Pinion gear
14	Thrust washer
15	Side gear
16	Washer
17	Locknut
18	Washer
19	Companion flange
20	Oil seal (companion flange)
21	Spacer
22	Front bearing
23	Drive pinion component
24	Collapsible spacer
25	Rear bearing
26	Spacer
27	Drive pinion
28	Front bearing outer race
29	Rear bearing outer race
30	Oil seal (side gear)
31	Differential carrier
32	Bleeder plug
33	Oil-fill plug
34	Drain plug

### Differential Component Disassembly Note

1. Install the differential component to the SSTs .

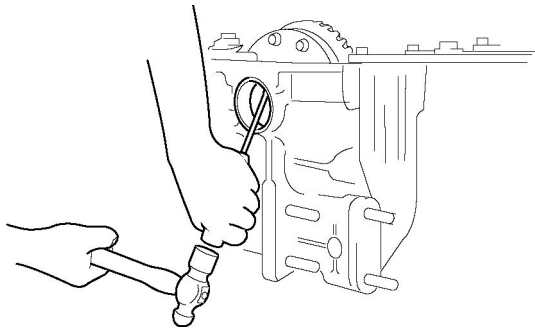


### Bearing Cap Disassembly Note

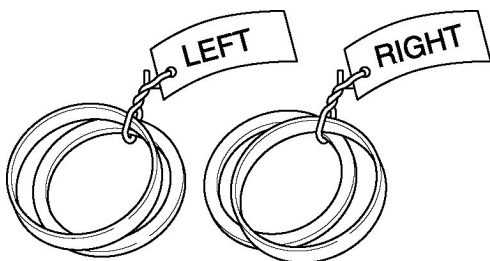
1. Mark the bearing cap and differential carrier for proper installation.

### Adjustment Shim, Side Bearing Outer Race Disassembly Note

1. Remove the adjustment shim using a flathead screwdriver.

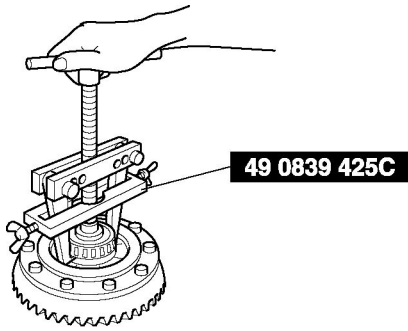


2. Put left and right identification marks on the removed adjustment shims and side bearing outer races.



### Side Bearing Disassembly Note

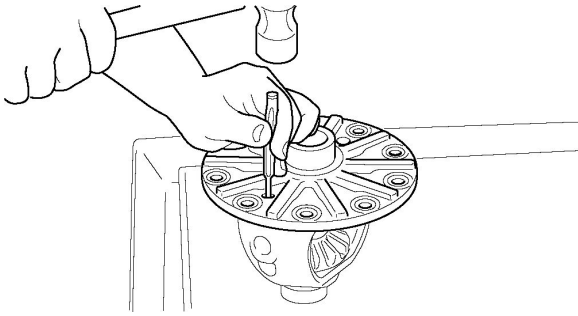
1. Remove the side bearing using the SST .



2. Put left and right identification marks on the removed side bearings.

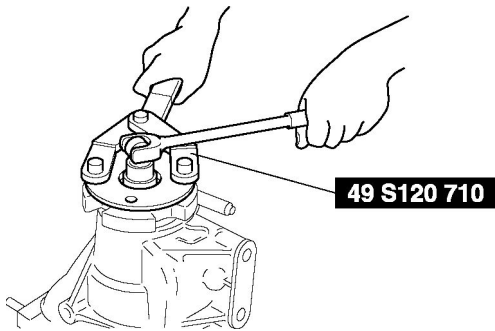
### Roll Pin Disassembly Note

1. Tap the roll pin out from the direction shown in the figure using a pin punch.



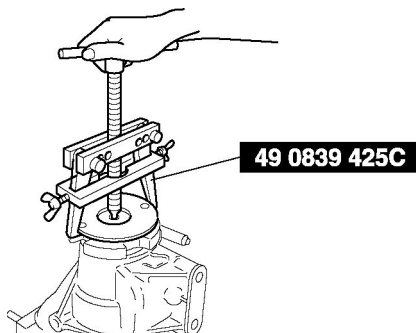
### Locknut Disassembly Note

1. Remove the locknut while fixing the companion flange using the SST .



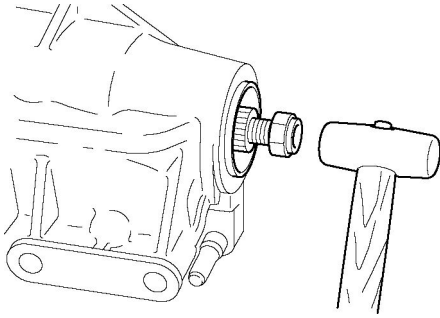
### Companion Flange Disassembly Note

1. Remove the companion flange using the SST .



## Drive Pinion Component Disassembly Note

1. Install the removed locknut to the drive pinion top to prevent damage to the thread.

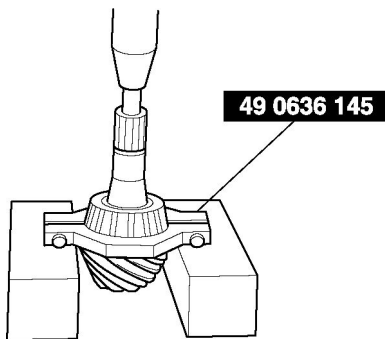


2. Remove the drive pinion component by tapping the locknut lightly using a plastic hammer.
3. Remove the locknut installed in Step 1.

## Rear Bearing Disassembly Note

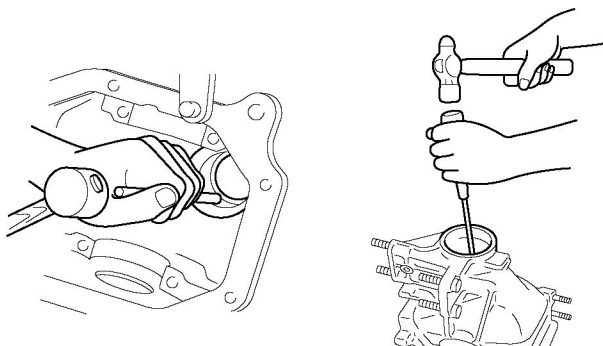
### CAUTION:

- The drive pinion could be damaged if it falls off. Support the drive pinion with your hand when removing the rear bearing.
1. Remove the rear bearing using the SST and a press.



## Front Bearing Outer Race, Rear Bearing Outer Race Disassembly Note

1. Remove the bearing outer race by lightly tapping the edge of the bearing outer race using a flathead screwdriver.



# REAR DIFFERENTIAL ASSEMBLY

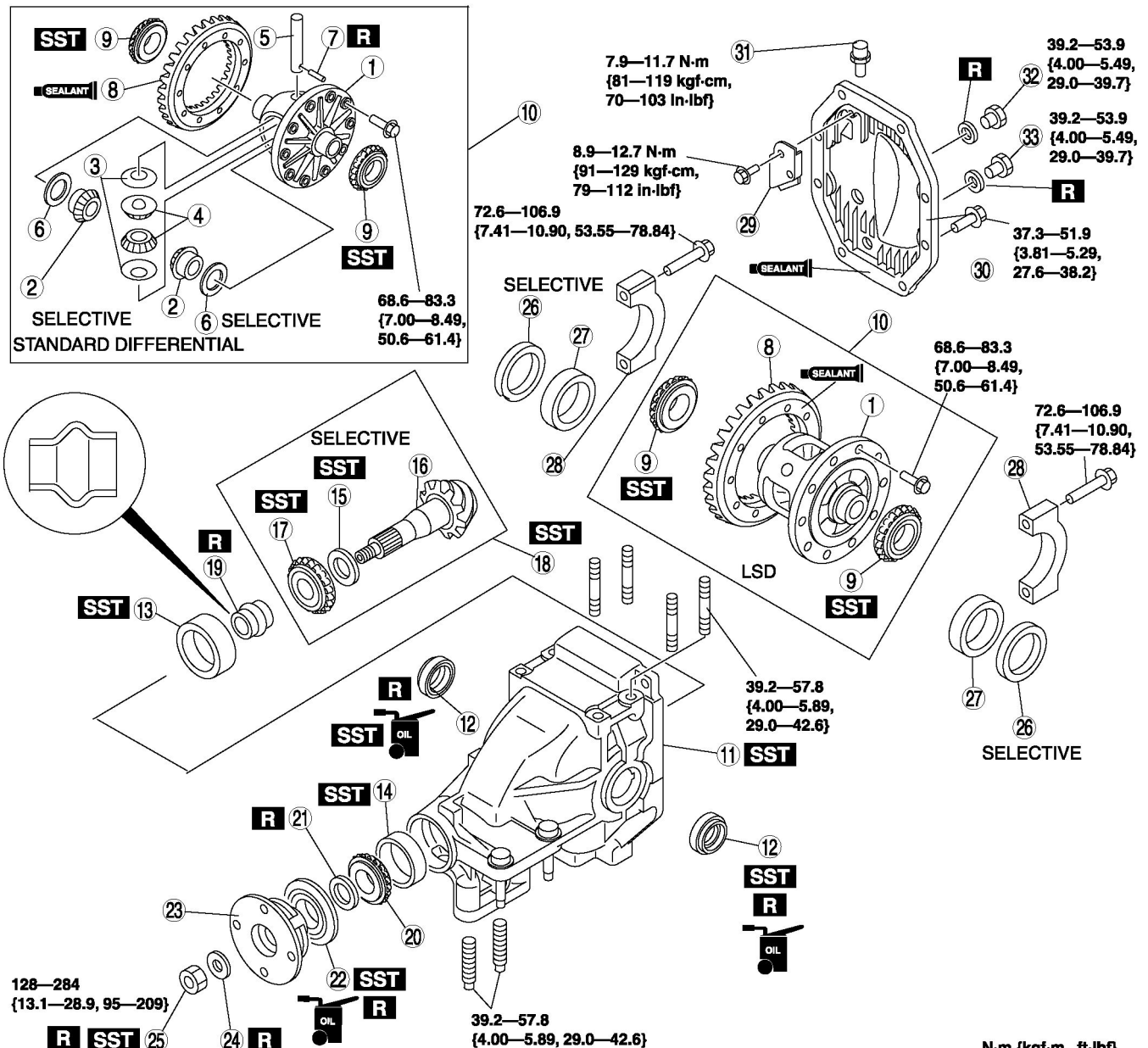
## WARNING:

- The engine stand is equipped with a self-lock mechanism, however, if the rear differential is tilted, the self-lock mechanism could become inoperative. If the rear differential unexpectedly rotates, it could cause injury, therefore do not maintain the rear differential tilted. When turning the rear differential, grasp the rotation handle firmly.

## NOTE:

- Clean away the old silicone sealant before applying the new silicone sealant.
- Install the rear cover **within 10 min** after applying the silicone sealant.
- Allow the sealant to set **at least 30 min or more** after installation before filling the differential with differential oil.

- Assemble in the order indicated in the table.



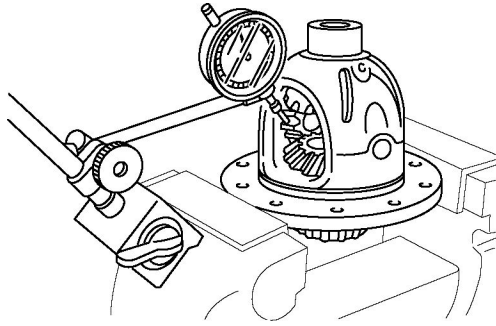
N·m (kgf·m, ft·lbf)

(w)

1	Gear case
2	Side gear
3	Thrust washer
4	Pinion gear
5	Pinion shaft
6	Washer
7	Roll pin
8	Ring gear
9	Side bearing
10	Differential gear case component
11	Differential carrier
12	Oil seal (side gear)
13	Rear bearing outer race
14	Front bearing outer race
15	Spacer
16	Drive pinion
17	Rear bearing
18	Drive pinion component
19	Collapsible spacer
20	Front bearing
21	Spacer
22	Oil seal (companion flange)
23	Companion flange
24	Washer
25	Locknut
26	Adjustment shim
27	Side bearing race
28	Bearing cap
29	Baffle plate
30	Rear cover
31	Bleeder plug
32	Oil-level plug
33	Drain plug

### Washer Assembly Note

1. Assemble the side gear, thrust washer, pinion gear, and the pinion shaft to the gear case.
2. Install the dial gauge with the measuring probe of the dial gauge attached perpendicularly to the end of one of the pinion gear teeth.



3. Fix either one of the side gears.
4. Move the pinion gear and measure the backlash at the pinion gear top.
  - If it is not within the specification, adjust by choosing the proper washer.

### Standard

- 0.03—0.15 mm {0.001—0.005 in} (MT)
- 0.1 mm {0.004 in} or less (AT)

#### Washer table (MT)

Identification mark	Part name	Thickness (mm {in})
0	RA12 27 252	0.75 {0.0295}
05	RA12 27 253	0.80 {0.0315}
1	RA12 27 254	0.85 {0.0335}
15	RA12 27 257	0.90 {0.0354}
2	RA12 27 258	0.95 {0.0374}

#### Washer table (AT)

Identification mark	Part name	Thickness (mm {in})
0	0578 27 252	2.00 {0.0787}
05	P016 27 252	2.05 {0.0807}
1	0578 27 253	2.10 {0.0827}
15	P016 27 253	2.15 {0.0846}
2	0578 27 254	2.20 {0.0866}

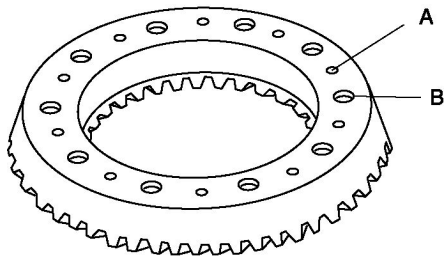
### Roll Pin Assembly Note

1. Align the differential gear case and pinion shaft pin holes.
2. Tap the roll pin in using a pin punch.

### Ring Gear Assembly Note

#### CAUTION:

- The gear case and ring gear could be damaged if the ring gear is installed with old thread-locking compound remaining on the bolt threads. Before installing the ring gear, completely remove the old thread-locking compound from the bolt threads.
1. Apply a small amount of thread-locking compound to each of points A on the back of the ring gear, and bolt thread areas B (around the entire ring).



### Application thickness

- Back of ring gear points A:  
Approx.  $0.4 \text{ cm}^3$  {0.4 cc, 0.024 cu in}  
(1 location approx.  $0.04 \text{ cm}^3$   
{0.04 cc, 0.0024 cu in})
- Ring gear bolt thread points B:  
Approx.  $0.4 \text{ cm}^3$  {0.4 cc, 0.024 cu in}  
(1 location approx.  $0.04 \text{ cm}^3$   
{0.04 cc, 0.0024 cu in})

2. Install the ring gear to the differential gear case and tighten the bolts in a criss-cross pattern.

### Tightening torque

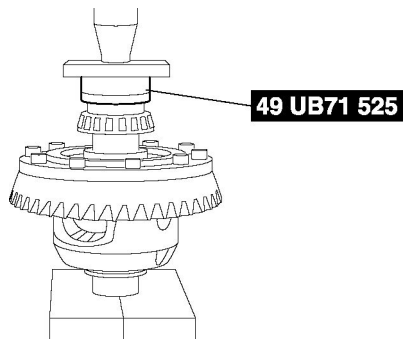
- 68.6—83.3 N·m  
{7.00—8.49 kgf·m, 50.6—61.4 ft·lbf}

### Side Bearing Assembly Note

#### NOTE:

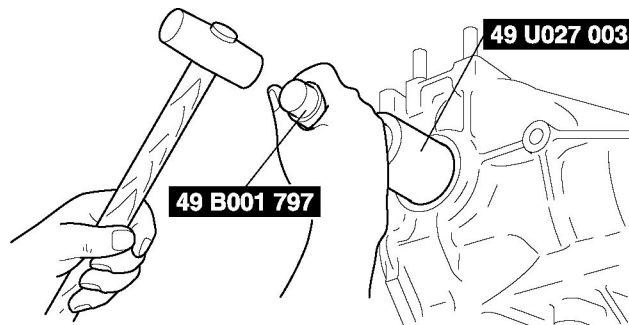
- When assembling the side bearings, do not mix the left and right side bearings that were identified during disassembly.
1. Press the side bearing in using the SST and a press.





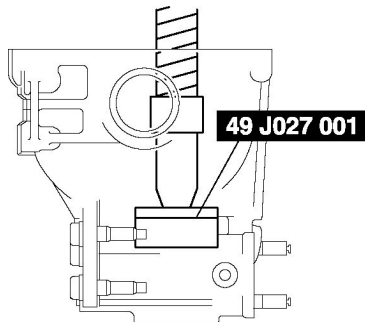
### Oil Seal (Side Gear) Assembly Note

1. Apply differential oil to the lip of a new oil seal.
2. Assemble the oil seal using the SSTs .



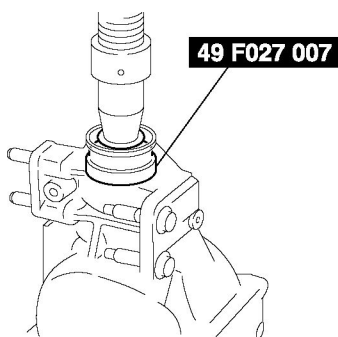
### Rear Bearing Outer Race Assembly Note

1. Press the rear bearing outer race into the differential carrier using the SST and a press.



### Front Bearing Outer Race Assembly Note

1. Press the front bearing outer race into the differential carrier using the SST and a press.

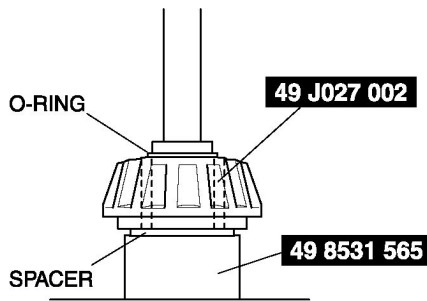


## Spacer Assembly Note

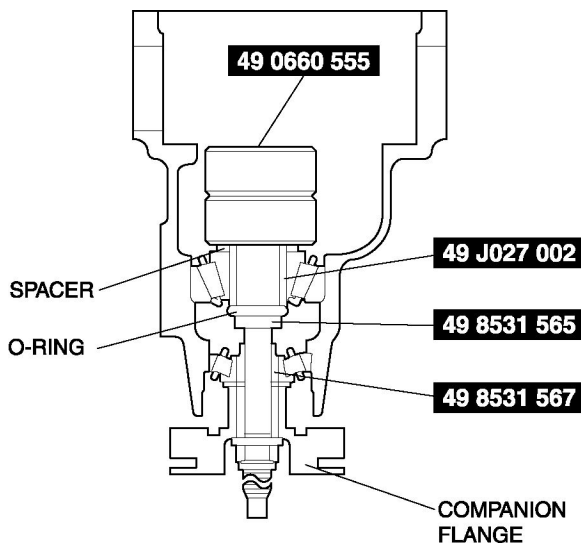
### Pinion height adjustment

#### NOTE:

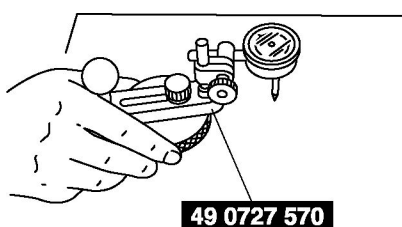
- Use the installed spacer when adjusting.
  - Install the spacer with the chamfer on the **SST** side.
1. Assemble the spacer, bearing inner race (rear side), and the **SST** (O-ring) to the **SST** (49 8531 565) as shown in the figure.



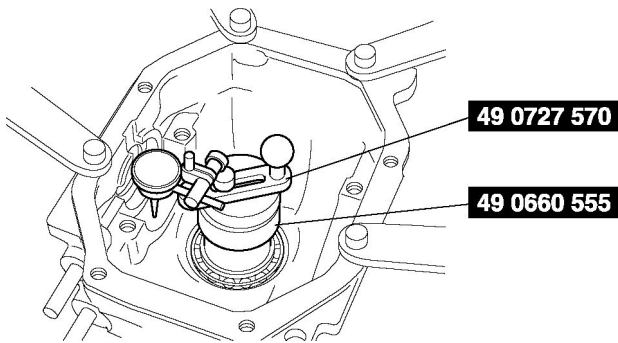
2. Insert the set assembled in Step 1 from the rear side of the differential carrier.



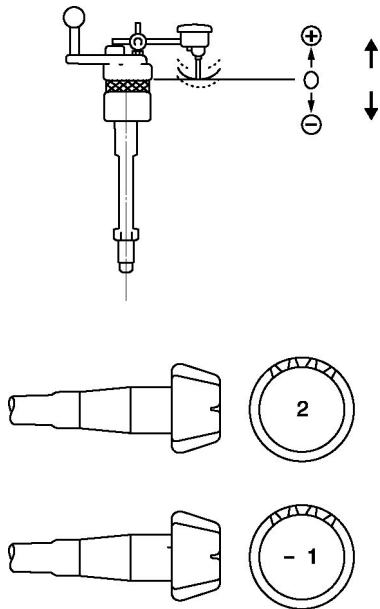
3. Assemble the **SST** (49 8531 567), front bearing, companion flange, and a washer from the front side of the differential carrier.
4. Tighten the locknut to the extent that the **SST** (49 8531 565) can be turned by hand.
5. Place the **SST** (49 8531 565) on top of the **SST** (49 0660 555).
6. Place the **SST** on the surface plate and set the dial gauge to zero.



7. Set the SSTs as shown in the figure.



8. Place the measuring probe of the dial gauge at the point where the side bearing is installed in the differential carrier and measure at the lowest position. Measure the left and right sides.
9. Add the two (left and right) values obtained by the measurements taken in Step 8 and then divide the total by 2 . From this sum, subtract the sum of the number inscribed on the end of the drive pinion divided by 100 . (If there is no figure inscribed, use 0.) This is the pinion height adjustment value.



**Pinion height standard**

- o 0.038 mm {0.0015 in} or less

**NOTE:**

- When the values obtained by the measurements taken in Step 8, 9 are 0.06 mm {0.0024 in}, 0.04 mm {0.0016 in} and the tip surface of the drive pinion value is 2, the formula is  $((0.06+0.04)/2)-(2/100)=0.03$ . Therefore, assemble a spacer 0.03 mm {0.0012} thicker than the currently assembled one. The thickness settings are in increments of 0.015 mm {0.0006}, so choose one closest in thickness and install.

Spacer table

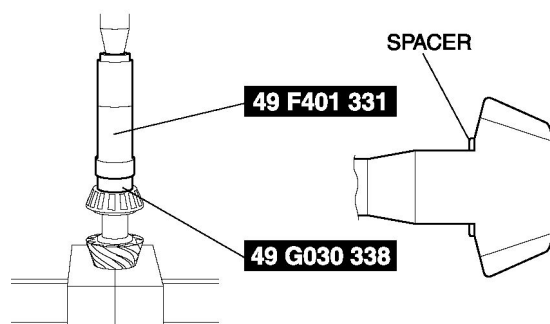
Identification mark	Thickness (mm {in})	Identification mark	Thickness (mm {in})
---------------------	---------------------	---------------------	---------------------

08	3.080 {0.1213}	29	3.290 {0.1295}
09	3.095 {0.1220}	30	3.305 {0.1301}
11	3.110 {0.1224}	32	3.320 {0.1307}
12	3.125 {0.1230}	33	3.335 {0.1313}
14	3.140 {0.1234}	35	3.350 {0.1319}
15	3.155 {0.1242}	36	3.365 {0.1325}
17	3.170 {0.1248}	38	3.380 {0.1331}
18	3.185 {0.1254}	39	3.395 {0.1331}
20	3.200 {0.1260}	41	3.410 {0.1343}
21	3.215 {0.1266}	42	3.425 {0.1348}
23	3.230 {0.1271}	44	3.440 {0.1354}
24	3.245 {0.1278}	45	3.455 {0.1360}
26	3.260 {0.1283}	47	3.470 {0.1366}
27	3.275 {0.1289}	—	—

## Rear Bearing Assembly Note

### NOTE:

- Install the spacer with the chamfer on the gear side.
1. Assemble the spacer selected in the pinion height adjustment to the drive pinion.
  2. Press the drive pinion into the rear bearing using the SSTs and a press.



## Drive Pinion Component Assembly Note

### Drive pinion preload adjustment

### NOTE:

- Perform preload adjustment with the oil seal uninstalled.
1. Assemble the following parts to the drive pinion.
    - New collapsible spacer
    - Front bearing
    - New spacer

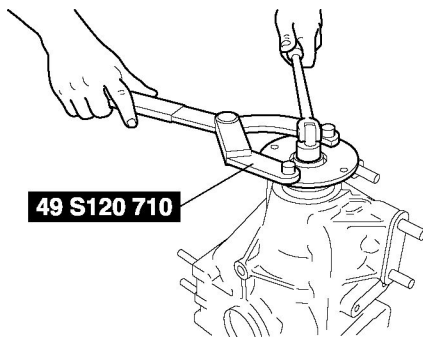
- Companion flange
  - New washer
  - New locknut
2. Turn the serrated part of the drive pinion by hand to seat the bearing.
  3. Tighten the locknut temporarily tightened in Step 1 from the lower limit of the specified tightening torque using the **SST** , and obtain the specified preload. Record the tightening torque at this time.

#### **Tightening torque**

- 128—284 N·m {13—29 kgf·m, 95—209 ft·lbf}

#### **Drive pinion preload**

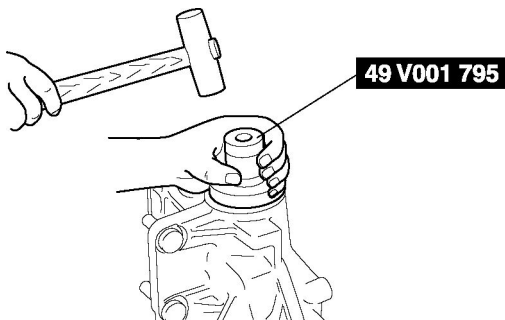
- 1.3—1.7 N·m {14—17 kgf·cm, 12—15 in·lbf}



- If the specified preload cannot be obtained within the specified tightening torque, replace with a new collapsible spacer and adjust again.
4. Remove the locknut, washer, and companion flange.

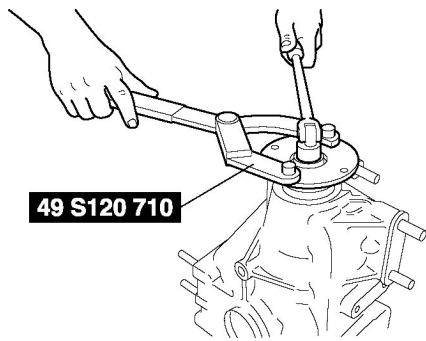
#### **Oil Seal (Companion Flange) Assembly Note**

1. Apply differential oil to the lip of a new oil seal.
2. Assemble the oil seal using the **SST** .

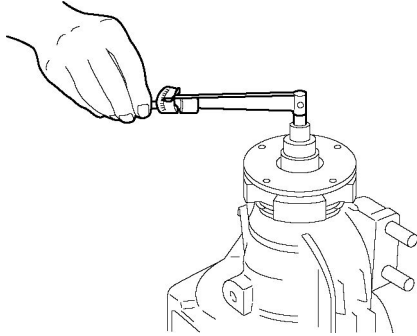


#### **Locknut Assembly Note**

1. Tighten a new locknut with the torque recorded at the drive pinion preload adjustment using the **SST** .



2. Verify that the drive pinion preload is within the specification.



- If not within the specification, perform the preload adjustment again.

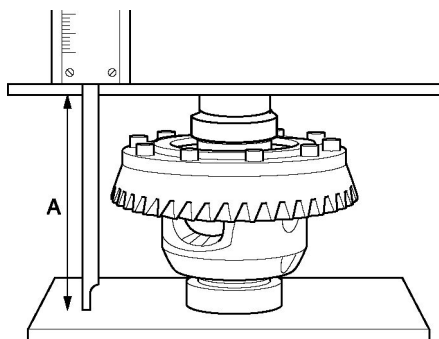
### Drive pinion preload

- 1.3—1.7 N·m {14—17 kgf·cm, 12—15 in·lbf}

### Adjustment Shim Assembly Note

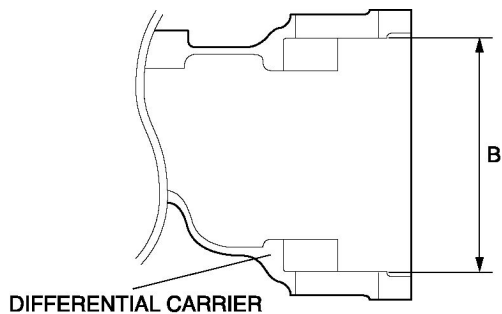
#### Ring gear backlash adjustment

1. Stack the side bearing race and differential gear case component on the surface plate as shown in the figure, and measure the height using a caliper and a ruler. This is value A.



### Standard Height A

- 158.8—159 mm {6.252—6.267 in}
2. Measure the width of the section of the differential gear case component installed in the differential carrier. This is value B.



### Standard width B

- 171 mm {6.73 in}

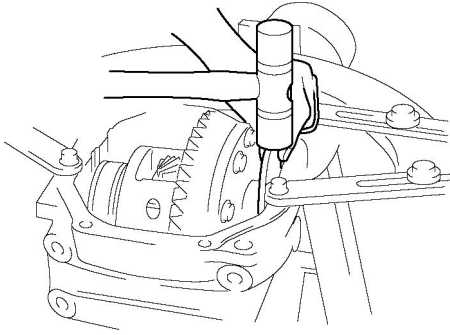
1. The combined thickness of the left and right adjustment shims is obtained by the following formula.

$$\text{Shim thickness (mm \{in\})} = B - A + (0.01\text{---}0.03 \{0.0004\text{---}0.0118 \text{ in}\})$$

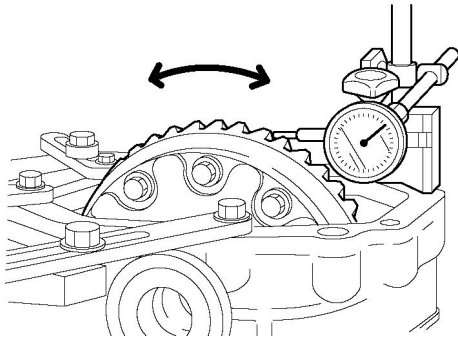
2. If the combined thickness of the previously assembled adjustment shims is equal to the calculated thickness, use the shims as they are.
3. If the combined thickness of the previously assembled adjustment shims is not equal to the calculated thickness, or if the adjustment shims have to be replaced, select two appropriate adjustment shims from the table below. Adjustment shim table

Identification mark	Thickness (mm {in})	Identification mark	Thickness (mm {in})
550	5.50 {0.217}	605	6.05 {0.238}
560	5.60 {0.220}	610	6.10 {0.240}
565	5.65 {0.222}	615	6.15 {0.242}
570	5.70 {0.224}	620	6.20 {0.244}
575	5.75 {0.226}	625	6.25 {0.246}
580	5.80 {0.228}	630	6.30 {0.248}
585	5.85 {0.230}	635	6.35 {0.250}
590	5.90 {0.232}	640	6.40 {0.252}
595	5.95 {0.234}	650	6.50 {0.256}
600	6.00 {0.236}	—	—

4. **NOTE:**
  - If the adjustment shims are to be reused, assemble the left and right shims that were identified during disassembly.
  - When assembling the side bearing races, do not mix the left and right side bearings that were identified during disassembly.
5. Assemble the differential gear case component and the side bearing race to the differential carrier.
6. Tap the selected adjustment shim between the differential carrier and the side bearing race with a plastic hammer as shown in the figure.



7. Align the bearing cap alignment marks, assemble the bearing cap, and then temporarily tighten the bolts.
8. Install the dial gauge with the measuring probe of the dial gauge attached perpendicularly to the end of one of the ring gear teeth.



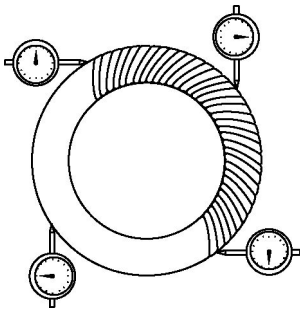
9. Secure the drive pinion and measure the backlash of the ring gear.

### Backlash

- Standard: **0.09—0.11 mm {0.0035—0.0043 in}**
- Minimum value: **0.05 mm {0.0020 in}** or more
- Variance: **0.07 mm {0.0028 in}** or less

### NOTE:

- Measure the backlash at 4 locations around the ring gear. Make sure all of the 4 locations are within specification, and the minimum value for the 4 locations is **0.05 mm {0.0020in}** or more and the variance is **0.07 mm {0.0028 in}** or less



10. If the backlash is not within the specification, adjust the gear case component by moving it in the axial direction.

### NOTE:



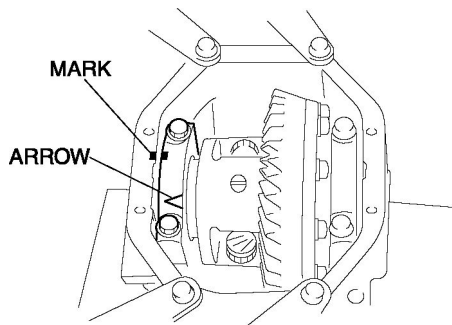
- When moving the gear case component in the axial direction, replace the adjustment shims. If the adjustment shim on the right side is replaced with one that is **0.05 mm {0.0020 in}** thicker, replace the one on the left with one that is **0.05 mm {0.0020 in}** thinner.

### Bearing Cap Assembly Note

1. Align the bearing cap alignment marks and assemble the bearing cap with the arrow facing outward.

#### Tightening torque

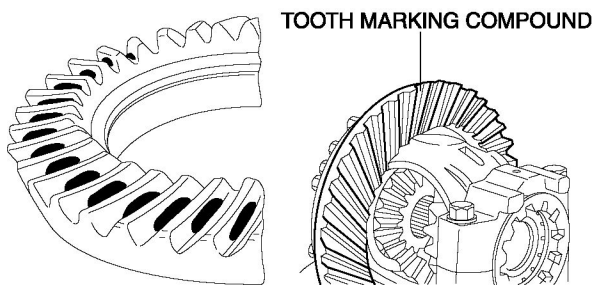
- 72.6—106.9 N·m  
{7.41—10.91 kgf·m, 53.5—78.84 ft·lbf}



2. Perform the drive pinion and ring gear tooth contact inspection.

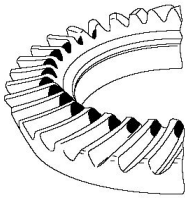
### Drive Pinion, Ring Gear Tooth Contact Inspection

1. Apply tooth marking compound evenly to both surfaces of the ring gear.
2. Rotate the ring gear back and forth for several times.
3. Inspect the tooth contact pattern in 4 locations around the ring gear, and verify that the tooth contact points exhibit the pattern shown in the figure.
  - If the tooth contact points are normal, wipe off the marking compound.
  - If the tooth contact points are not normal, adjust the pinion height, then adjust the backlash.

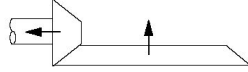
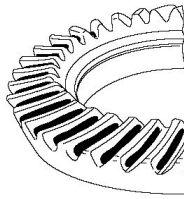


4. If the toe and flank contact points appear as shown in the figure after the drive pinion and ring gear teeth contact inspection, replace the spacer with a thinner one, and move the drive pinion outward.

TOE CONTACT

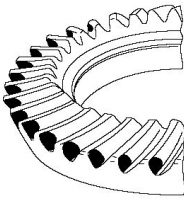


FLANK CONTACT

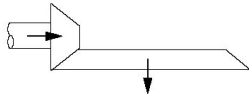
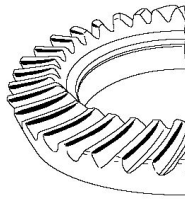


5. If the heel and face contact points appear as shown in the figure after the drive pinion and ring gear teeth contact inspection, replace the spacer with a thicker one, and move the drive pinion inward.

HEEL CONTACT



FACE CONTACT



Notes:

# TECHNICAL DATA

## DRIVELINE/AXLE

Item			Specification		
			MT	AT	
<b>FRONT AND REAR AXLES</b>					
Front axle	Maximum wheel bearing play	(mm {in})	0.05 {0.002}		
Rear axle	Maximum wheel bearing play	(mm {in})	0.05 {0.002}		
Drive shaft	Length (Air in boot at atmospheric pressure)	Left side	(mm {in})	792.6—802.6 {31.21—31.59}	791.1—801.1 {31.15—31.53}
		Right side	(mm {in})	832.6—842.6 {32.78—33.17}	831.1—841.1 {32.71—33.11}
Differential	Pinion height		(mm {in})	0.038 {0.0015} or less	
	Drive pinion preload	(N·m {kgf·cm, in·lbf})	1.3—1.7 {14—17, 12—15}		
	Backlash of drive pinion and ring gear	Standard	0.09—0.11 {0.0035—0.0043}		
		Minimum	0.05 {0.0020} or more		
	(mm {in})	Variance	0.07 {0.0028} or less		
	Oil	Grade	API service GL-5		
		Viscosity	SAE 90		
		Capacity (Approx. quantity)	1.2—1.4 {1.3—1.4, 1.1—1.2}		
(L {US qt, Imp qt})					
<b>PROPELLER SHAFT</b>					
Runout	(mm {in})	0.4 {0.016}			
Starting torque	(N·m {kgf·cm, in·lbf})	0.29—0.98 {3.0—10, 2.7—8.6}			