

03-14 DIFFERENTIAL

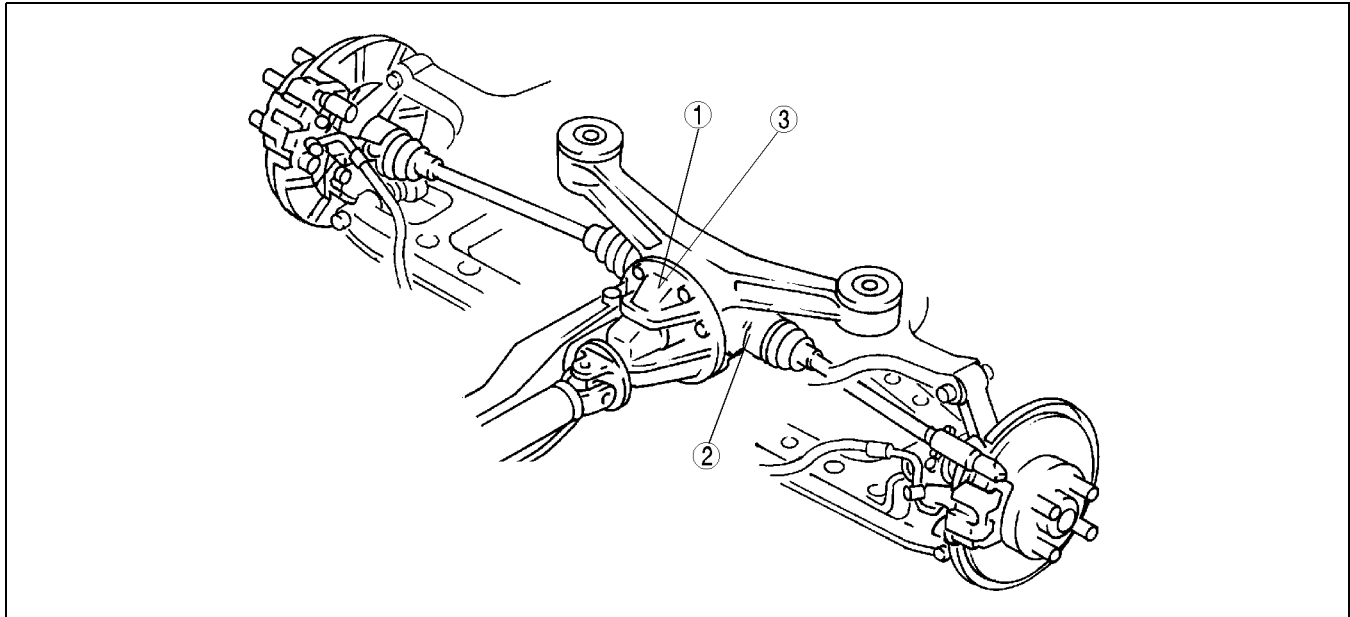
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DIFFERENTIAL LOCATION INDEX

A5U031427000W01



A5U0314W001

1	Differential oil (See 03-14-2 DIFFERENTIAL OIL INSPECTION) (See 03-14-2 DIFFERENTIAL OIL REPLACEMENT)
2	Oil seal (See 03-14-2 OIL SEAL REPLACEMENT)

3	Differential (See 03-14-4 DIFFERENTIAL REMOVAL/INSTALLATION) (See 03-14-8 DIFFERENTIAL DISASSEMBLY/ASSEMBLY)
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DIFFERENTIAL

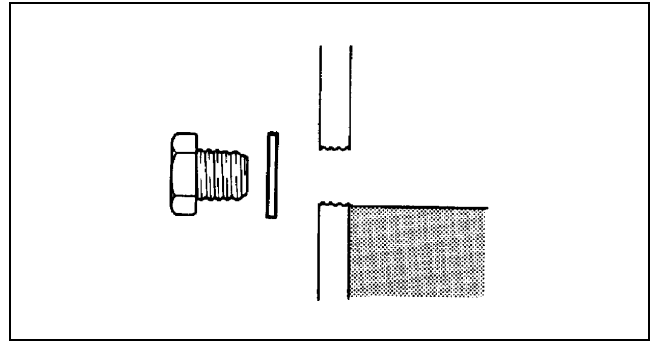
DIFFERENTIAL OIL INSPECTION

A5U031427000W02

1. Remove the filler plug.
2. Verify that the oil is at the brim of the filler plug hole.
 - If it is low, add the specified oil.
3. Install the filler plug.

Tightening torque

40—53 N·m {4.0—5.5 kgf·m, 29—39 ft·lbf}



U5U31401

DIFFERENTIAL OIL REPLACEMENT

A5U031427000W03

1. Remove the filler and drain plugs.
2. Drain the differential oil into a container.
3. Wipe the plugs clean.
4. Install the drain plug and a new washer.

Tightening torque

40—53 N·m {4.0—5.5 kgf·m, 29—39 ft·lbf}

5. Add the specified oil from the filler plug until the level reaches the brim of the plug hole.

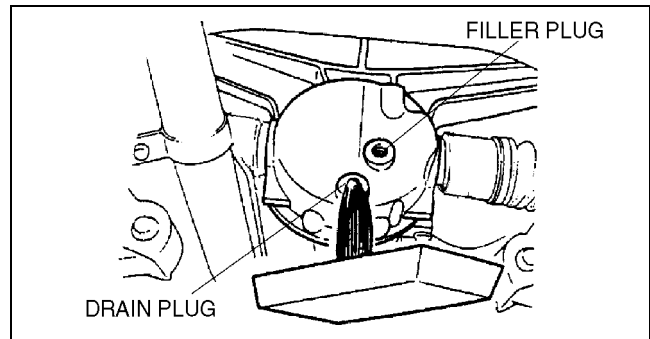
Specified oil

Type (API service GL-5)

Above -18°C {0°F}: SAE 90

Below -18°C {0°F}: SAE 80

Capacity (Approximate quantity) : 1.00 L {1.06 US qt, 0.88 Imp qt}



Z5U0314W147

6. Install the filler plug.

Tightening torque

40—53 N·m {4.0—5.5 kgf·m, 29—39 ft·lbf}

OIL SEAL REPLACEMENT

A5U031401032W01

1. On level ground, jack up the vehicle and support it on safety stands.
2. Drain the differential oil.

Note

- For easier installation, do not depress the brake pedal after removing the brake caliper component.

3. Remove the brake caliper component, then suspend the brake caliper component using a rope.
4. Remove the lower arm installation bolt and nut.
5. Pull the rear hub support from the drive shaft.

Note

- If the drive shaft will not come out of the rear hub support easily, install a discarded nut onto the drive shaft so that the nut is flush with the end of the drive shaft. Tap the nut with a copper hammer to loosen the drive shaft from the wheel hub.

6. Remove the drive shaft from the differential. (See 03-13-2 Drive Shaft Removal Note.)
7. Remove the oil seal.

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8. Apply lithium-based grease to the new oil seal lip and install it using the **SST**.
9. Install a new clip onto the drive shaft. (See 03-13-2 Drive Shaft Installation Note.)
10. Install the lower arm installation bolt and nut.

Tightening torque

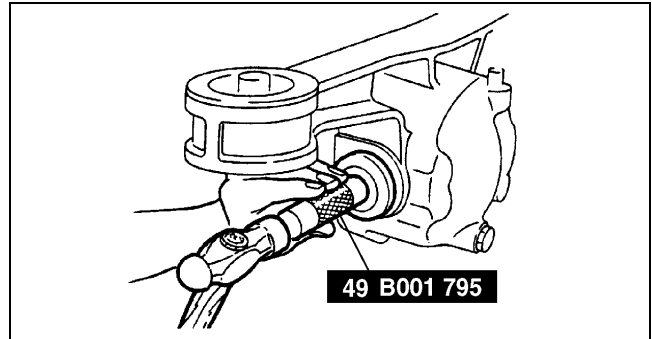
54—76 N·m {5.5—7.8 kgf·m, 40—56 ft·lbf}

11. Install the brake caliper component.

Tightening torque

50—68 N·m {5.0—7.0 kgf·m, 37—50 ft·lbf}

12. Add the specified oil. (See 03-14-2 DIFFERENTIAL OIL REPLACEMENT.)
13. Adjust the rear wheel alignment.



Z5U0314W130

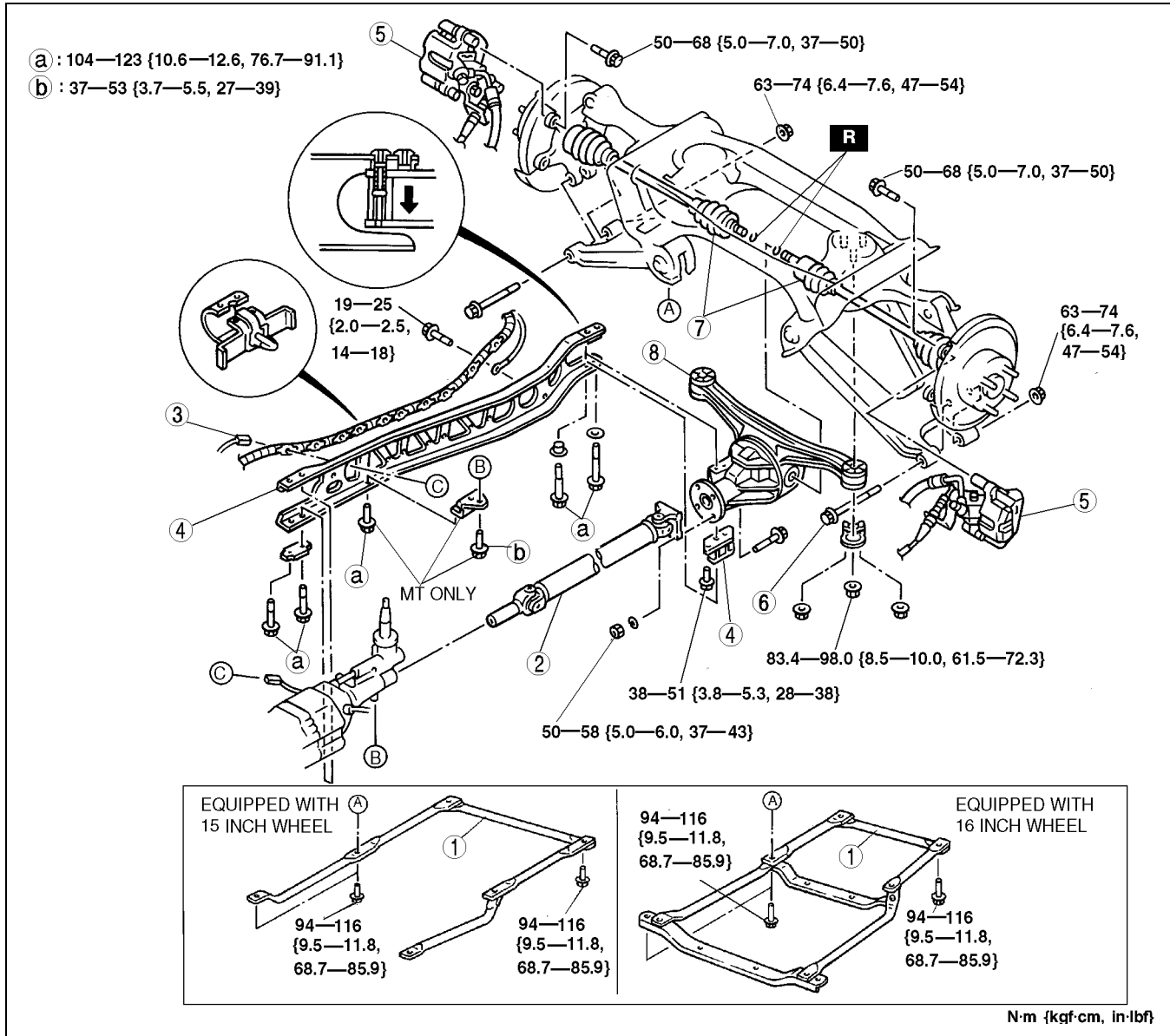
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DIFFERENTIAL REMOVAL/INSTALLATION

A5U031427100W01

1. Drain the differential oil.
2. Remove the crossmember bracket. (See 02-14-9 CROSSMEMBER BRACKET REMOVAL/INSTALLATION.)
3. Remove the main silencer. (See 01-15-1 EXHAUST SYSTEM REMOVAL/INSTALLATION.)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.
6. Add the specified oil to the specified level. (See 03-14-2 DIFFERENTIAL OIL REPLACEMENT.)



A5U0314W002

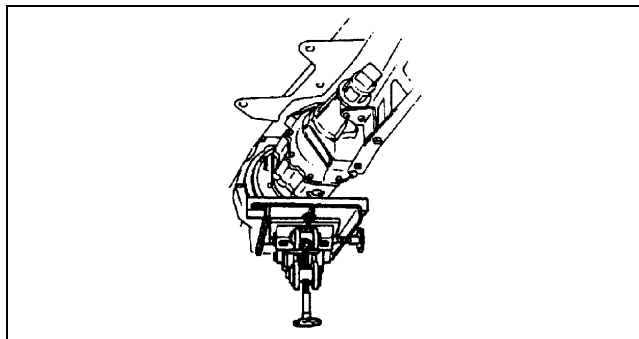
1	Rear crossbar (See 02-14-8 REAR CROSSMEMBER REMOVAL/INSTALLATION)
2	Propeller shaft (See 03-15-2 PROPELLER SHAFT REMOVAL/INSTALLATION)
3	Speedometer cable
4	Power plant frame (PPF), Differential mounting spacer (See 03-14-5 Power Plant Frame (PPF), Differential Mounting Spacer Removal Note) (See 03-14-7 Power Plant Frame (PPF), Differential Mounting Spacer Installation Note)

5	Brake caliper component
6	Bolt
7	Drive shafts (See 03-13-2 Drive Shaft Removal Note) (See 03-13-2 Drive Shaft Installation Note)
8	Differential (See 03-14-6 Differential Removal Note)

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Power Plant Frame (PPF), Differential Mounting Spacer Removal Note

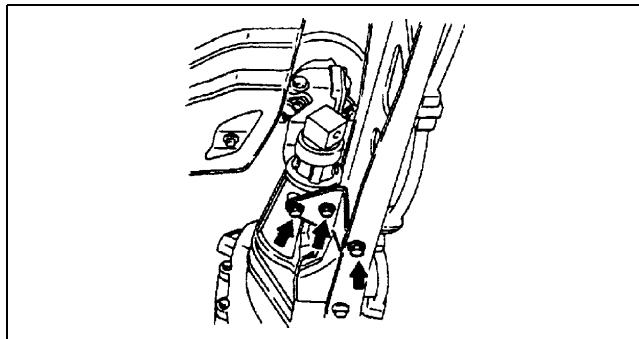
1. Disconnect the wire harness from the PPF.
2. Support the transmission with a jack.



X5U314WA1

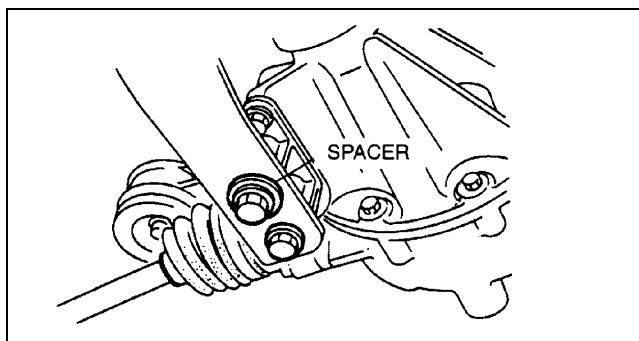
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3. Remove the PPF bracket.



X5U314WA2

4. Remove the differential-side bolts, and pry out the spacer.

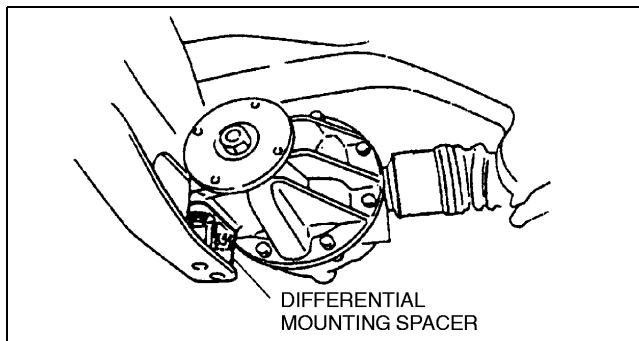


X5U314WA3

5. Remove the differential mounting spacer.

Caution

- Removing the PPF spacers will reduce the performance of the PPF. Do not remove the PPF spacers.
- If the spacers are removed, replace the PPF as a component.



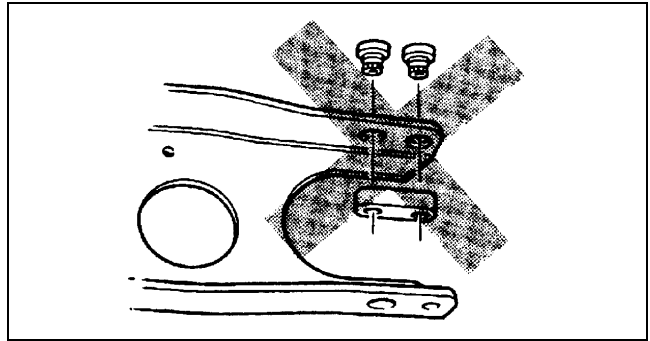
X5U314WA4

DIFFERENTIAL

- Remove the transmission-side bolts, and remove the PPF.

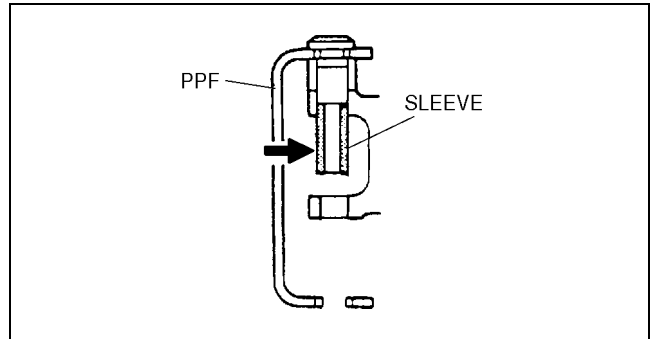
Note

- If the sleeve cannot be removed easily, tap the side of sleeve with a plastic hammer.



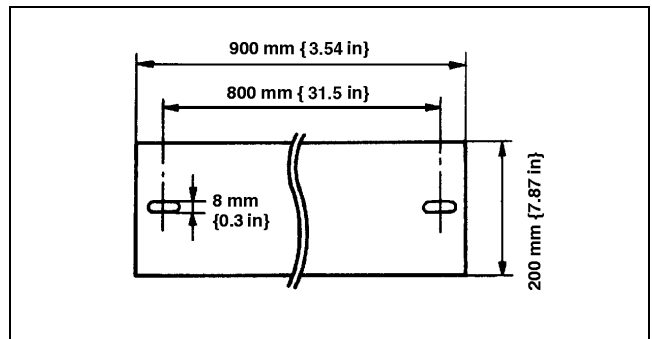
X5U314WA5

- Remove the sleeve.
- To prevent damaging the fire wall and engine mount, support the transmission as follows.



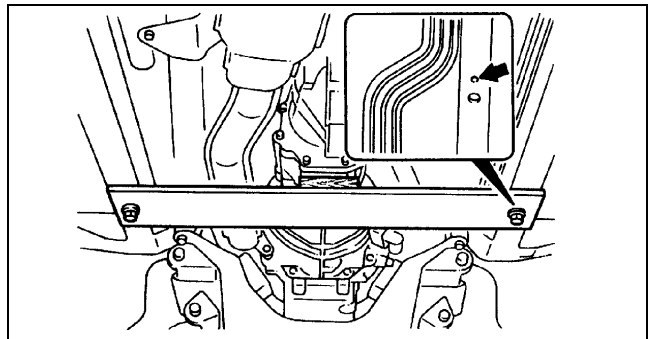
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- Prepare a steel plate (as shown in the figure), a wooden block, bolts (M8×1.25), and washers.



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- Install a wooden block as shown in the figure.



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Differential Removal Note

- Support the differential using a jack.
- Lower the differential and move it forward.

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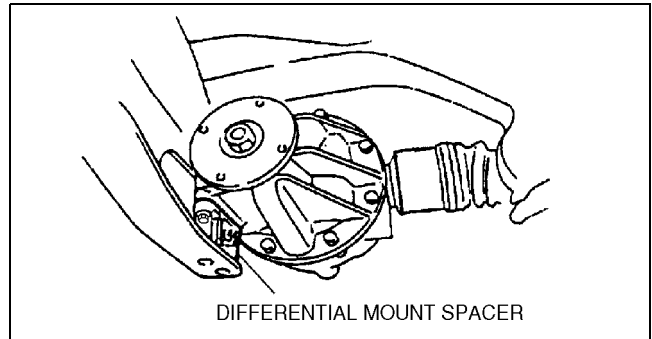
Power Plant Frame (PPF), Differential Mounting Spacer Installation Note

1. Install the differential mounting spacer.

Tightening torque

38—51N·m {3.8—5.3 kgf·m, 28—38 ft·m}

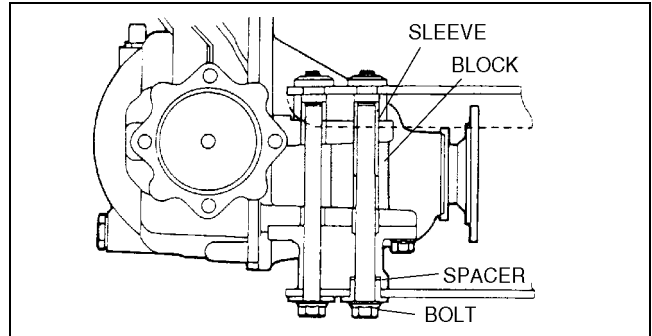
2. Support the transmission horizontally with a jack.
3. Install the PPF, and tighten the transmission side bolt slightly.
4. Align the PPF of the differential side, and install the sleeve.



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5. Install the spacer and bolt to the front side installation hole of the differential side.



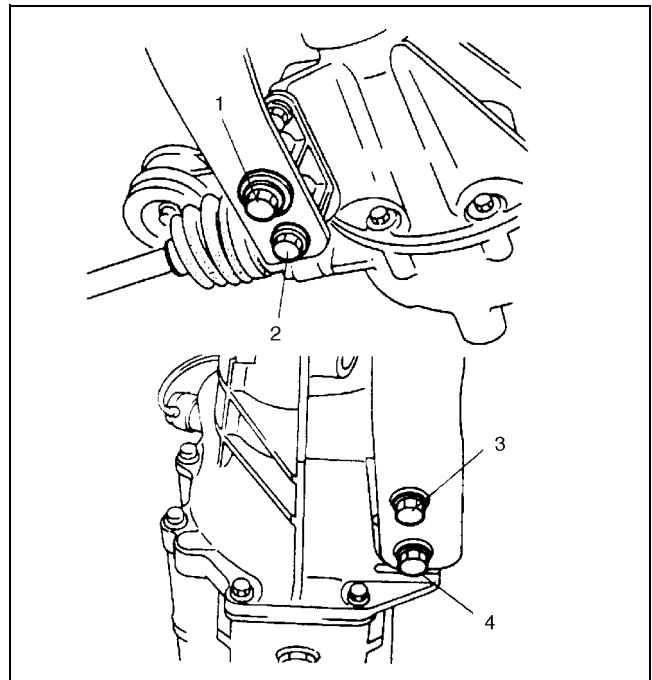
Z5U0314W113

6. Install the PPF installation bolt in the order as shown.

Tightening torque

104—123 N·m

{10.6—12.6 kgf·m, 76.7—91.1 ft·m}



Z5U0314W114

7. Install the PPF bracket.(MT only)

Tightening torque

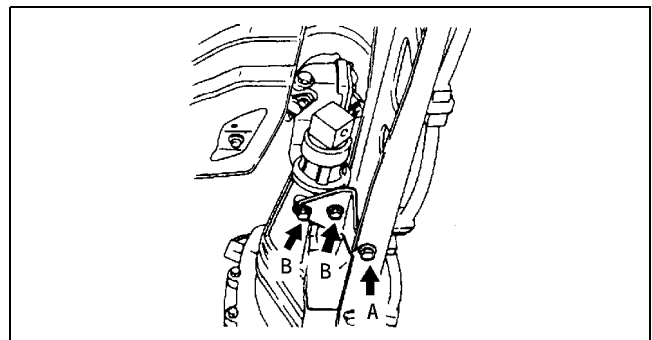
A: 104—123 N·m

{10.6—12.6 kgf·m, 76.7—91.1 ft·m}

B: 37—53N·m

{3.7—5.5 kgf·m, 27—39 ft·m}

8. Remove the jack, and install the wiring harness.



Z5U0314W115

DIFFERENTIAL

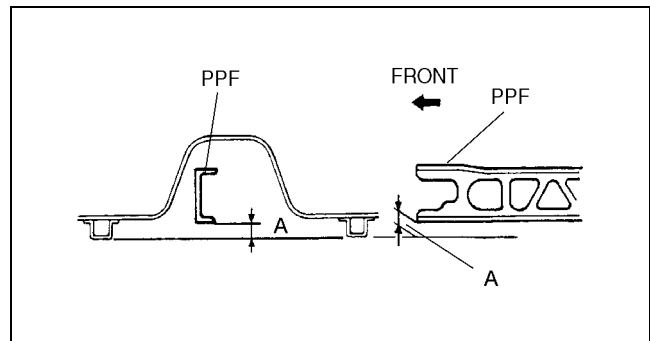
9. Measure the length A as shown.

Standard length

MT: 60.0—72.0mm {2.36—2.38 in}

AT: 50.5—62.5mm {1.99—2.46 in}

10. If not as specified, adjust the position of the PPF.

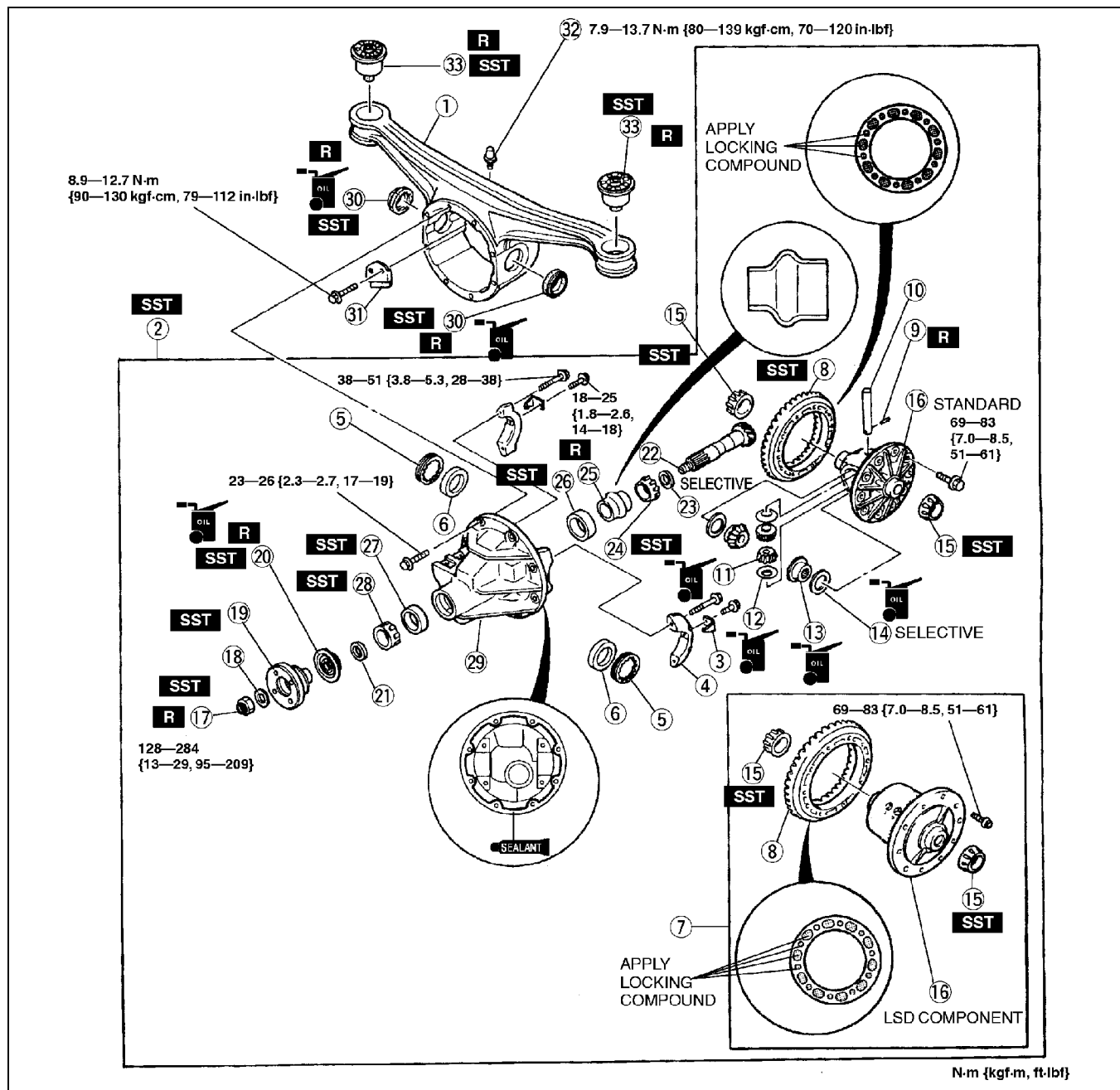


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DIFFERENTIAL DISASSEMBLY/ASSEMBLY

A5U031427100W02

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



Z5U0314W123

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1	Differential case (See 03–14–9 Differential Case Disassembly Note)
2	Differential gear component (See 03–14–10 Differential Gear Component Disassembly Note)
3	Lock plates
4	Bearing caps (See 03–14–10 Bearing Caps Disassembly Note)
5	Adjusting nuts (See 03–14–10 Adjusting Nuts Disassembly Note)
6	Bearing outer races (side bearing)
7	Gear case component (LSD)
8	Ring gear
9	Knock pin (standard) (See 03–14–10 Knock Pin (Standard) Disassembly Note)
10	Pinion shaft (standard)
11	Pinion gears (standard)
12	Thrust washers (standard)
13	Side gears (standard)
14	Thrust washers (standard) (See 03–14–16 Thrust Washers (Standard) Assembly Note)
15	Bearing inner races (side bearing) (See 03–14–10 Bearing Inner Races (Side Bearing) Disassembly Note)
16	Gear case
17	Locknut (companion flange) (See 03–14–10 Locknut (Companion Flange) Disassembly Note)
18	Washer
19	Companion flange (See 03–14–11 Companion Flange Disassembly Note)

20	Oil seal (companion flange)
21	Washer
22	Drive pinion (See 03–14–11 Drive Pinion Disassembly Note)
23	Spacer
24	Bearing inner race (rear bearing) (See 03–14–11 Bearing Inner Race (Rear Bearing) Disassembly Note) (See 03–14–13 Bearing Inner Race (Rear Bearing), Bearing Inner Race (Front Bearing) Assembly Note)
25	Collapsible spacer
26	Bearing outer race (rear bearing) (See 03–14–11 Bearing Outer Races (Front and Rear Bearing) Disassembly Note) (See 03–14–13 Bearing Outer Race (Rear Bearing) Assembly Note)
27	Bearing outer race (front bearing) (See 03–14–11 Bearing Outer Races (Front and Rear Bearing) Disassembly Note) (See 03–14–13 Bearing Outer Race (Front Bearing) Assembly Note)
28	Bearing inner race (front bearing) (See 03–14–13 Bearing Inner Race (Rear Bearing), Bearing Inner Race (Front Bearing) Assembly Note)
29	Differential carrier
30	Oil seal (See 03–14–12 Oil Seal Assembly Note)
31	Baffle
32	Breather
33	Differential mount (See 03–14–12 Differential Mount Disassembly Note) (See 03–14–12 Differential Mount Assembly Note)

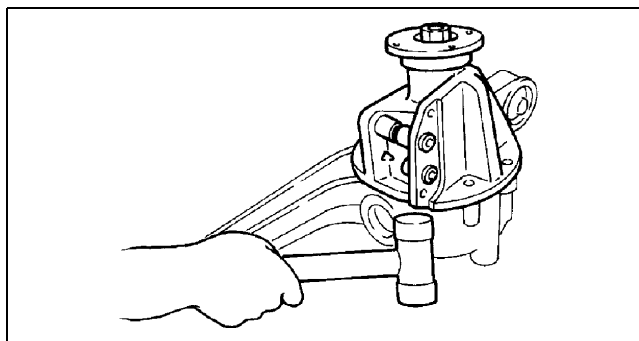
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Differential Case Disassembly Note

- Strike the differential carrier with a plastic hammer to separate it from the case.

Caution

- The differential case is made of aluminum, and is therefore easily dented and scratched by metal tools. When separating the differential carrier from the case, use only a plastic hammer at the point shown in the figure.

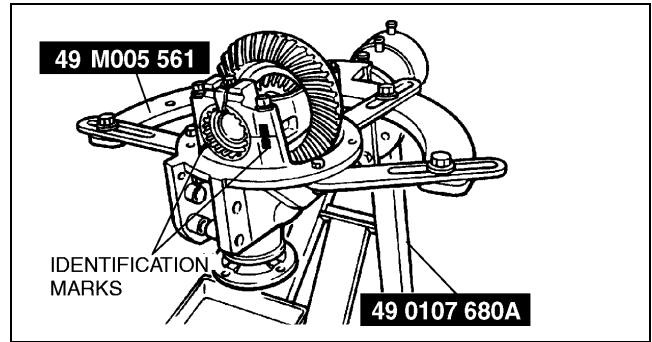


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Differential Gear Component Disassembly Note

1. Mount the differential gear component on the SSTs.



Z5U0314W131

Bearing Caps Disassembly Note

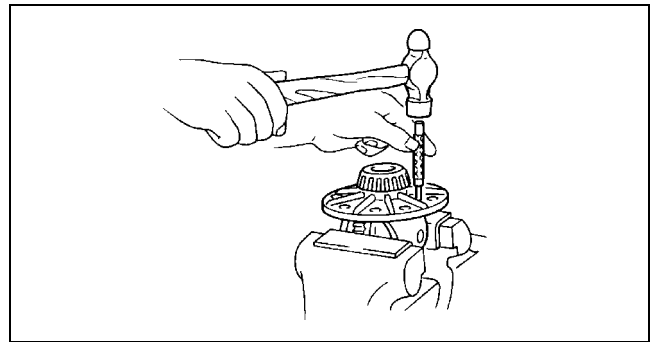
1. Mark one bearing cap and the carrier.

Adjusting Nuts Disassembly Note

1. Mark one adjusting nut and the carrier.

Knock Pin (Standard) Disassembly Note

1. Secure the gear case in a vise and tap out the knock pin toward the ring gear side.



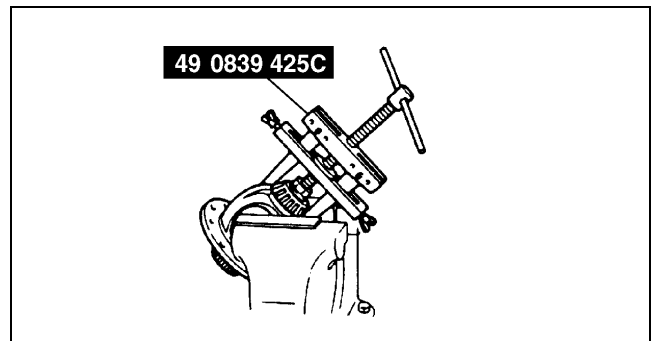
Z5U0314W102

Bearing Inner Races (Side Bearing) Disassembly Note

1. Remove the bearing inner races (side bearing) from the gear case using the SST.

Note

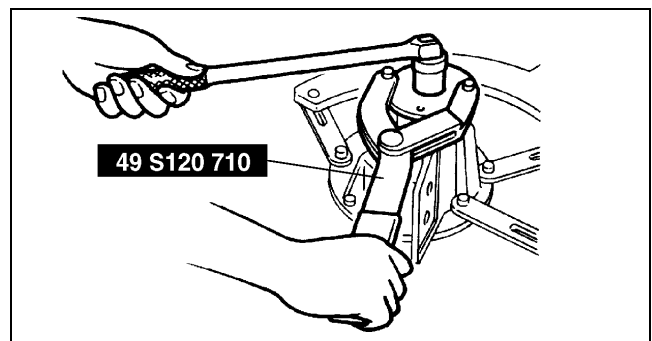
- Mark the bearings so that they can later be reinstalled in the same position.



Z5U0314W132

Locknut (Companion Flange) Disassembly Note

1. Hold the companion flange using the SST and remove the locknut.

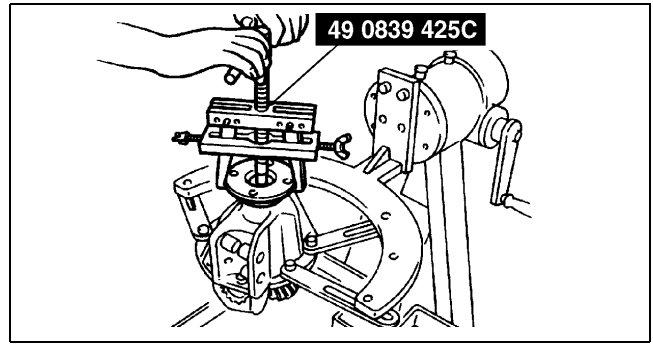


Z5U0314W133

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Companion Flange Disassembly Note

1. Pull the companion flange off using the SST.

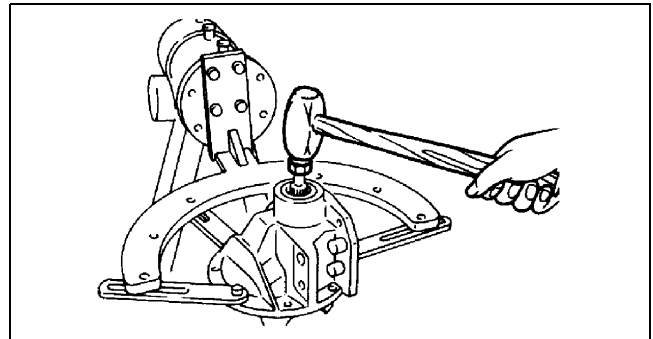


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Drive Pinion Disassembly Note

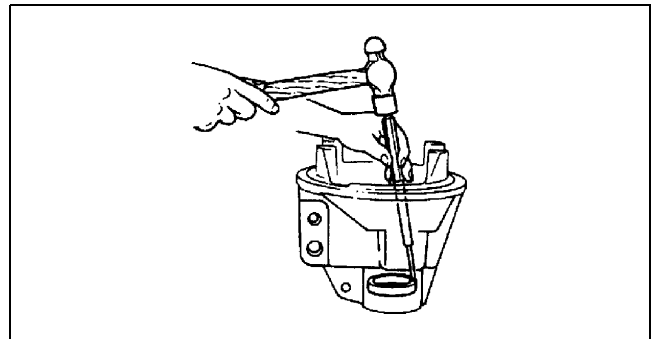
1. Push out the drive pinion by attaching a miscellaneous locknut to the drive pinion, and tapping it with a copper hammer.



U5U31416

Bearing Outer Races (Front and Rear Bearing) Disassembly Note

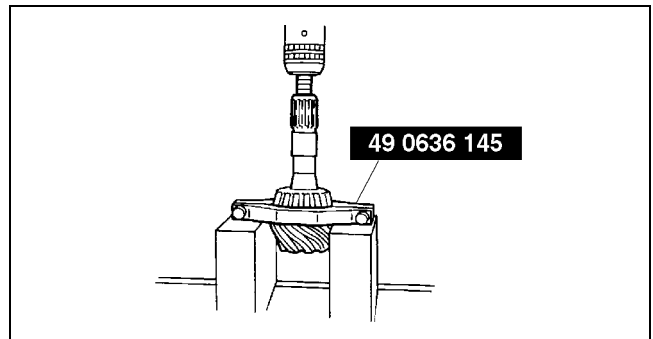
1. Remove the bearing outer races using the 2 grooves in the carrier and alternately tapping the sides of the races.



U5U31417

Bearing Inner Race (Rear Bearing) Disassembly Note

1. While supporting the drive pinion to keep it from falling, remove the bearing inner race (rear bearing) using the SST.

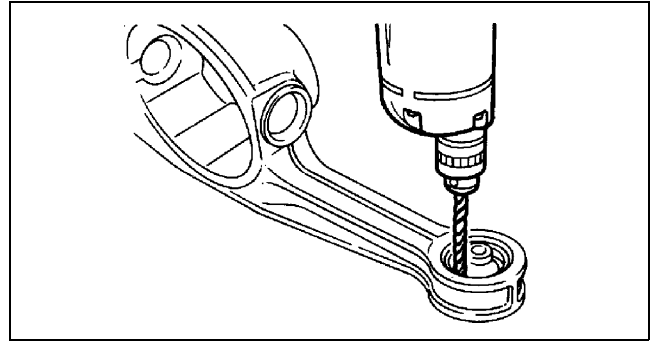


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DIFFERENTIAL

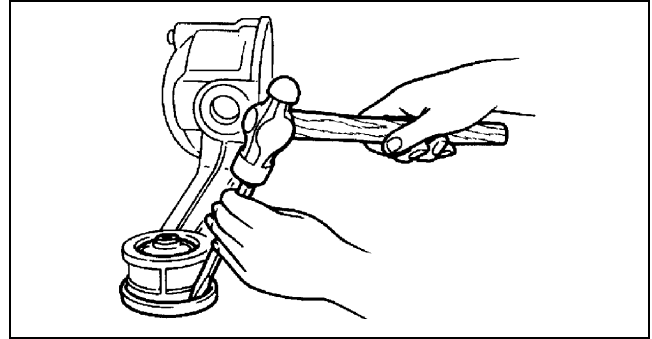
Differential Mount Disassembly Note

1. Drill holes around the differential mount.



U5U31419

2. Hit the edge of the differential mount to remove it.



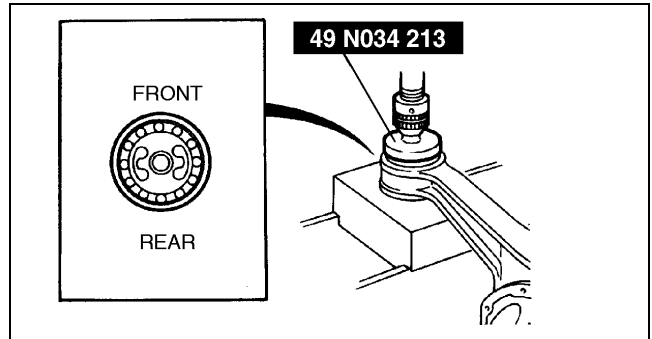
U5U31420

Differential Mount Assembly Note

1. Install the new differential mount with the voids facing front and rear.
2. Press in the differential mount using the **SST**.

Press force

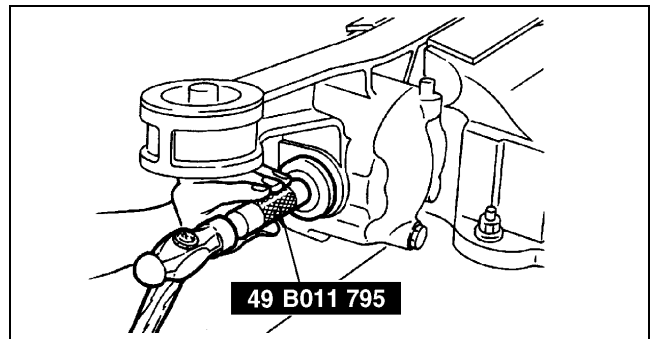
19,610 N {2,000 kgf, 4,400 lbf} max.



Z5U0314W135

Oil Seal Assembly Note

1. Apply differential gear oil to the new oil seal lip and install it using the **SST**.

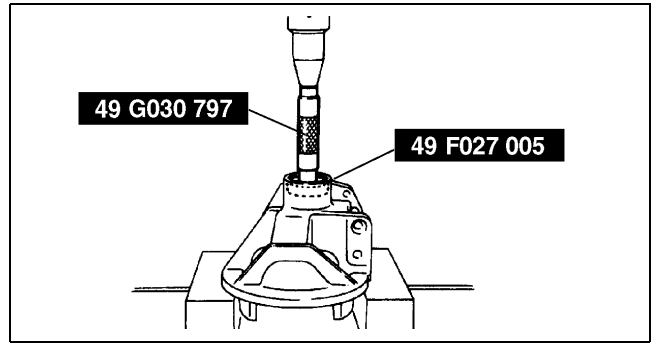


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Bearing Outer Race (Front Bearing) Assembly Note

1. Install the bearing outer race (front bearing) using the **SSTs**.

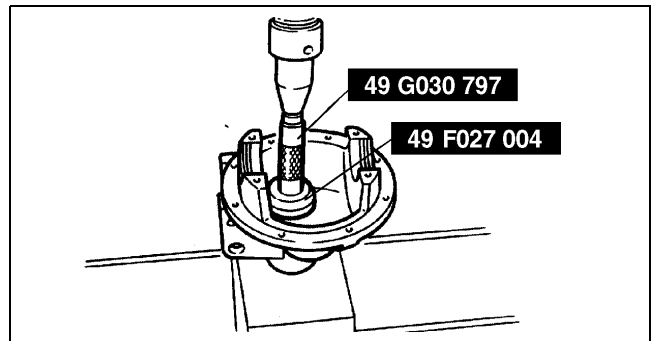


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Bearing Outer Race (Rear Bearing) Assembly Note

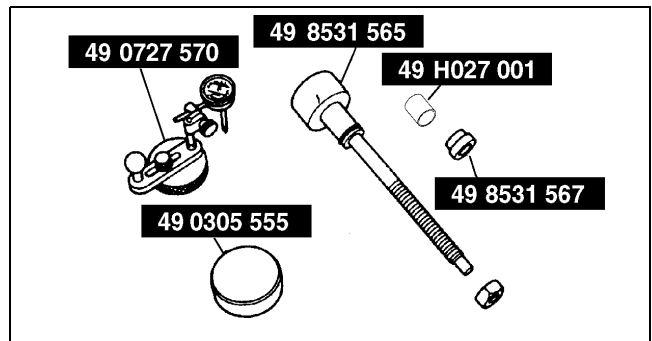
1. Install the bearing outer race (rear bearing) using the **SSTs**.



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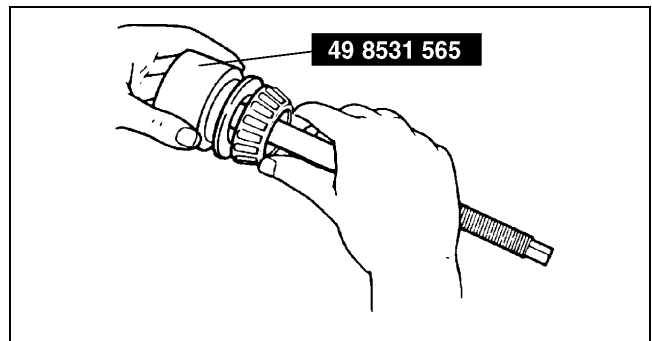
Bearing Inner Race (Rear Bearing), Bearing Inner Race (Front Bearing) Assembly Note

1. Adjust the drive pinion height as follows, using the **SSTs**.



Z5U0314W139

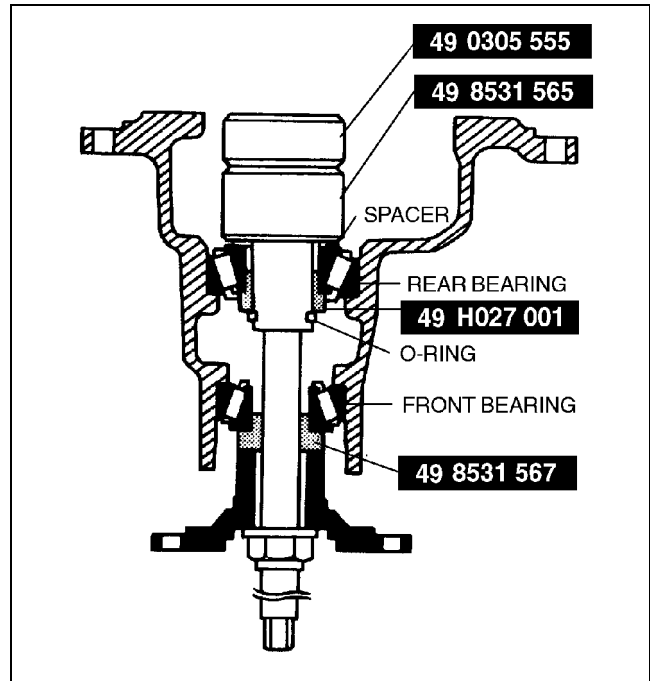
- (1) Install the previously-removed spacer onto the **SST** so that the beveled side of the spacer faces the drive pinion. Then install the rear bearing and O-ring onto the **SST**/spacer as shown in the figure.



Z5U0314W140

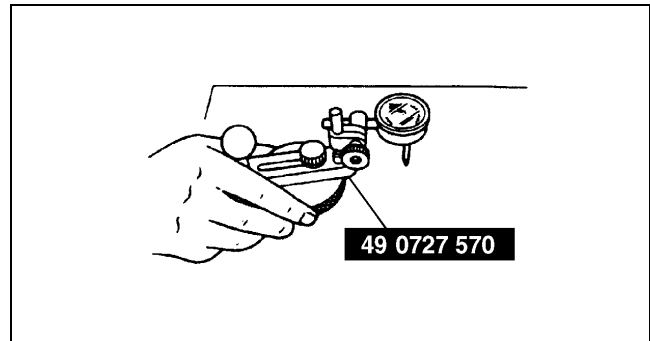
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- (2) Assemble the spacer, bearing inner race (rear bearing), and **SSTs**.
- (3) Secure the **SST** with the O-ring. Install this assembly in the carrier.
- (4) Install the bearing inner race (front bearing), the **SST**, companion flange, washer, and nut.
- (5) Tighten the nut just enough so that the companion flange can still be turned by hand.



Z5U0314W141

- (6) Place the **SST** on the surface plate and set the dial indicator to "Zero".

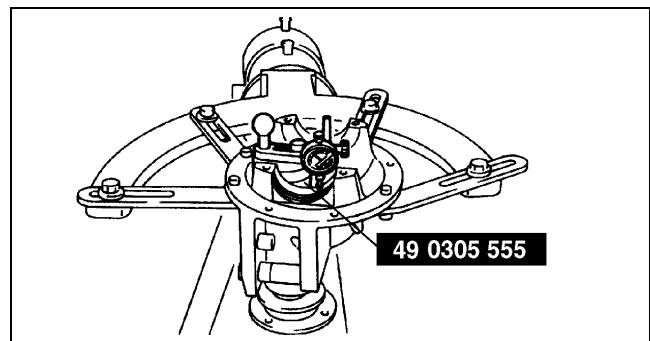


Z5U0314W142

- (7) Place the **SST** atop the drive pinion model. Set the gauge body atop the gauge block.
- (8) Place the feeler of the dial indicator so that it contacts where the bearing inner race (side bearing) is installed in the carrier. Measure the lowest position on the left and right sides of the carrier.

Note

- The number is inscribed on the end of the drive pinion.



Z5U0314W143

- (9) Add the 2 (left and right) values obtained by the measurements taken in step (8), and then divide the total by 2. From this result, subtract the result obtained by dividing the number inscribed on the end surface of the drive pinion by 100. (If there is no figure inscribed, use 0.) This is the pinion height adjustment value.

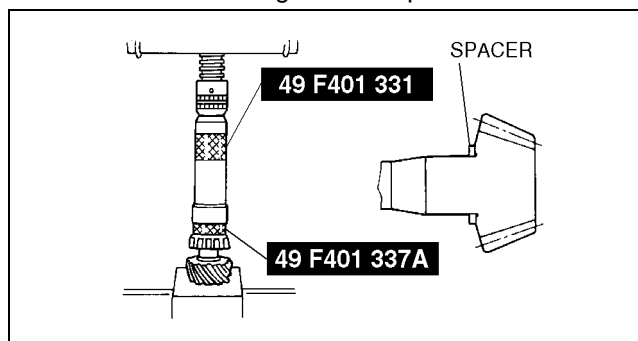
Mark	Thickness	Mark	Thickness
08	3.08 mm {0.1213 in}	29	3.29 mm {0.1295 in}
11	3.11 mm {0.1224 in}	32	3.32 mm {0.1307 in}
14	3.14 mm {0.1234 in}	35	3.35 mm {0.1319 in}
17	3.17 mm {0.1248 in}	38	3.38 mm {0.1331 in}
20	3.20 mm {0.1260 in}	41	3.41 mm {0.1343 in}
23	3.23 mm {0.1271 in}	44	3.44 mm {0.1354 in}
26	3.26 mm {0.1283 in}	47	3.47 mm {0.1366 in}

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Note

- The identification number is indicated on the outer side of the washer.

2. Install the spacer, selected in the procedure above, with the beveled side facing the drive pinion.
3. Using the **SSTs**, press the bearing inner race (rear bearing) onto the drive pinion until the force required starts to increase sharply.



Z5U0314W104

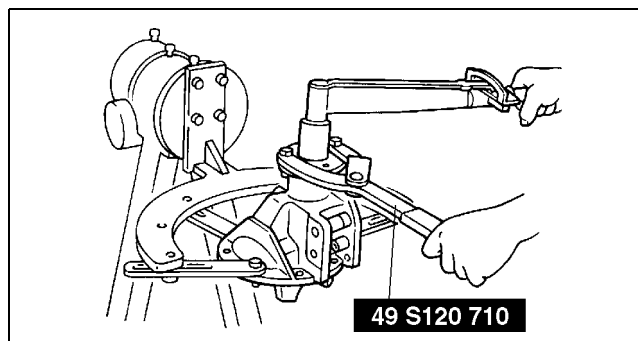
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4. Without installing the oil seal, install the drive pinion, spacer, new collapsible spacer, front bearing, washer, and companion flange to the carrier, and temporarily tighten the locknut using the **SST**.

Tightening torque

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

5. Turn the companion flange several turns by hand to seat the bearing.



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6. Measure the drive pinion preload. Adjust the preload by tightening the locknut, and record the tightening torque.

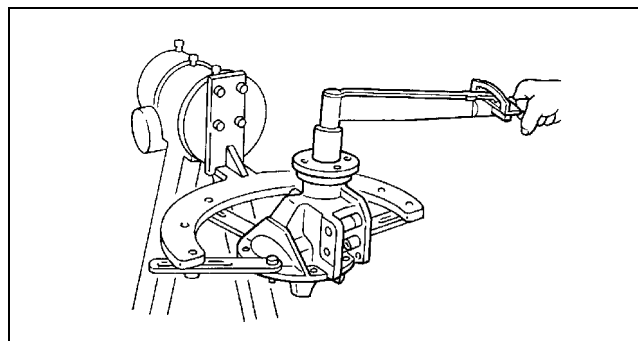
Preload

0.9—1.3 N·m {9—14 kgf·cm, 7.9—12.1 in·lbf}

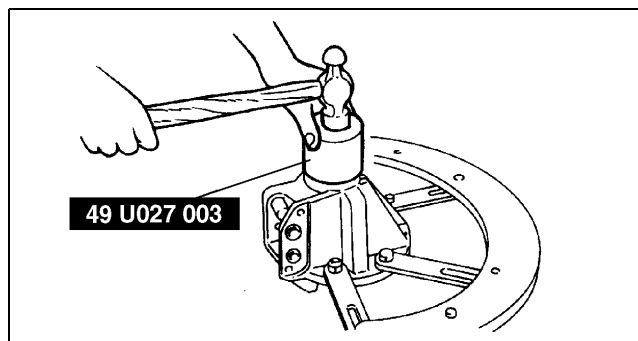
Tightening torque

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

7. Remove the locknut, washer, and companion flange.
8. Tap a new oil seal into the differential carrier with the **SST**.



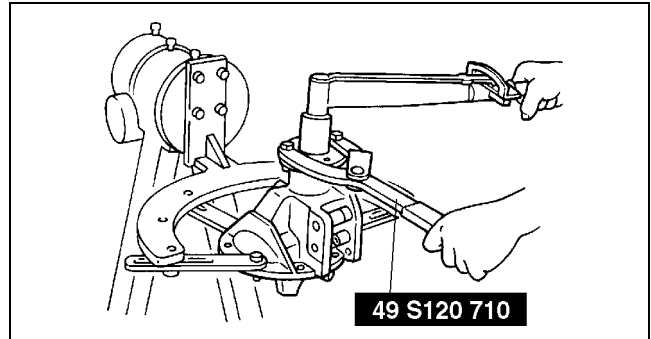
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Z5U0314W144

DIFFERENTIAL

9. Install the companion flange and washer while holding the flange with the **SST**, and tighten a new locknut to the tightening torque recorded in step 6.



Z5U0314W105

Thrust Washers (Standard) Assembly Note

1. Adjust the backlash of the side gears and pinion gear as follows.
 - (1) Set a dial gauge against the pinion gear as shown.
 - (2) Move the pinion gear, and measure the backlash at the end of it.
 - (3) Secure one of the side gears.

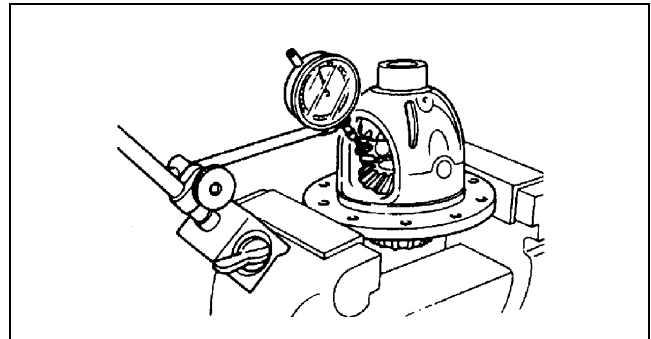
Standard backlash

0—0.1 mm {0—0.004 in}

- (4) If the backlash exceeds the standard, use the selectable thrust washers for adjustment.

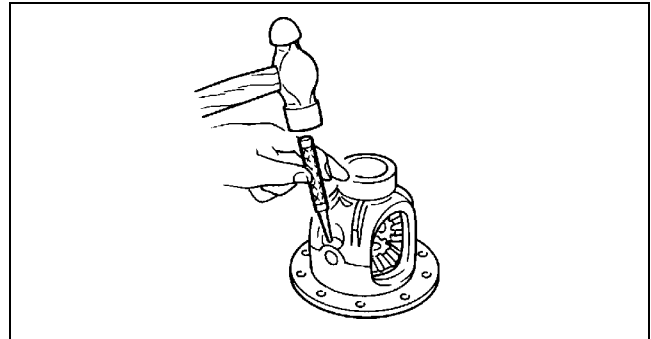
Thrust washer thickness

Identification mark	Thickness
0	2.00 mm {0.0787 in}
0.5	2.05 mm {0.0807 in}
1	2.10 mm {0.0827 in}
1.5	2.15 mm {0.0846 in}
2	2.20 mm {0.0866 in}



U5U31435

2. Install the new knock pin to secure the pinion shaft. Stake the pin with a punch to prevent it from coming out of the case.

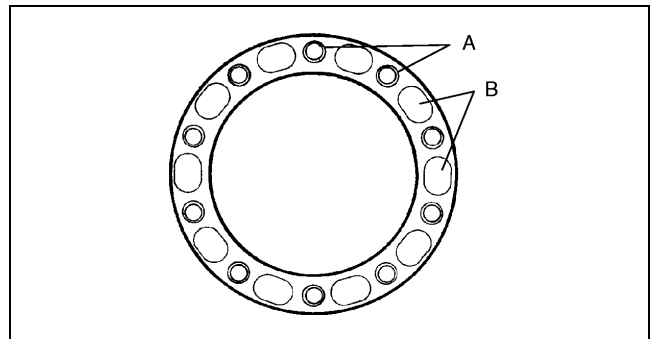


Z5U0314W107

3. Apply thread-locking compound to bolt threads A and points B of the gear back face. Apply approximately **0.04 cm³ {0.04 cc, 0.0024 cu in}** of thread-locking compound at each point and bolt thread.
4. Install the ring gear onto the gear case.

Tightening torque

69—83 N·m {7.0—8.5 kgf·m, 51—61 ft·lbf}

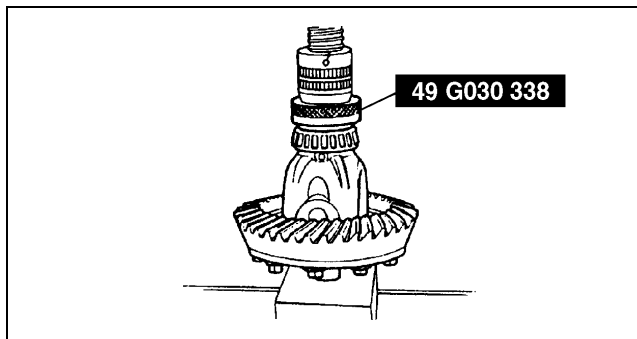


U5U31437

DIFFERENTIAL

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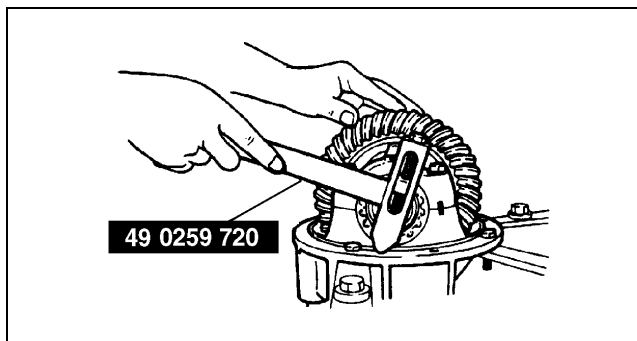
5. Press the bearing inner races (side bearing) on using the **SST**.
6. Install the differential gear component in the carrier.
7. Note the identification marks on the adjusting nuts, and install them on their respective sides.



Z5U0314W145

8. Install the differential bearing caps, making sure that the identification mark on the cap corresponds with the one on the carrier, using the **SST**. Then temporarily tighten the bolts.

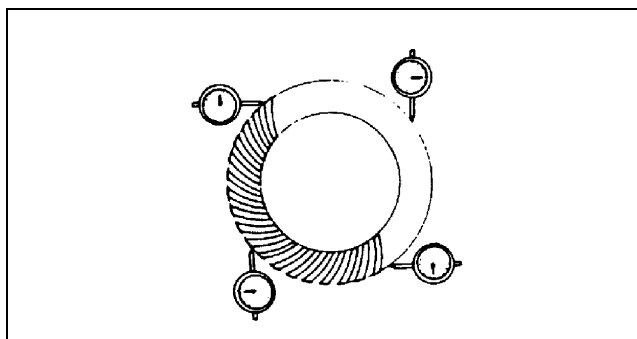
- (1) Mark the ring gear at four points at **approx. 90°** intervals. Mount a dial indicator to the carrier so that the feeler comes in contact at a right angle with 1 of the ring gear teeth.
- (2) Turn both bearing adjusters equally using the **SST** until the backlash is **0.09—0.11 mm {0.0035—0.0043 in}**.



Z5U0314W146

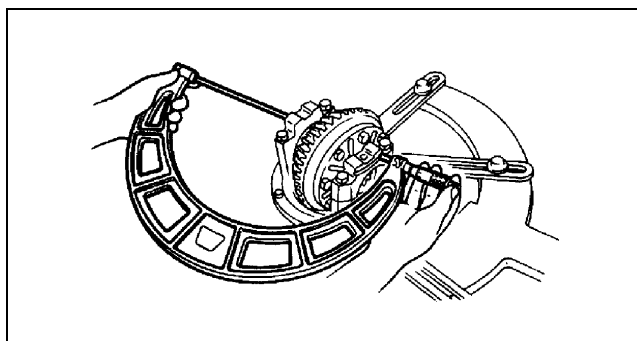
- (3) Inspect for the backlash at the 3 other marked points, and make sure the maximum backlash is less than **0.07 mm {0.0028 in}**.

9. Tighten or loosen the adjusting nuts equally until the distance between the pilot sections on the bearing caps is **185.428—185.500 mm {7.3003—7.3031 in}**.



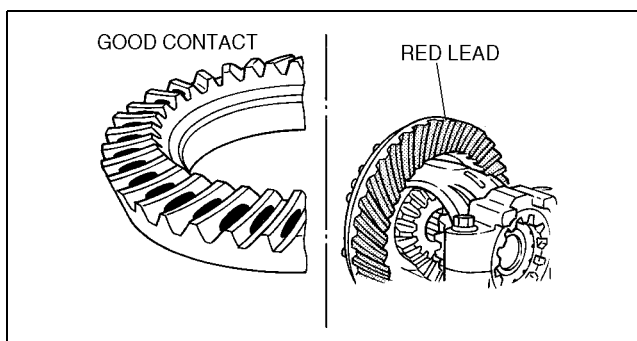
U5U31440

10. Reinspect for the backlash.
11. Inspect the teeth contact as follows.



U5U31441

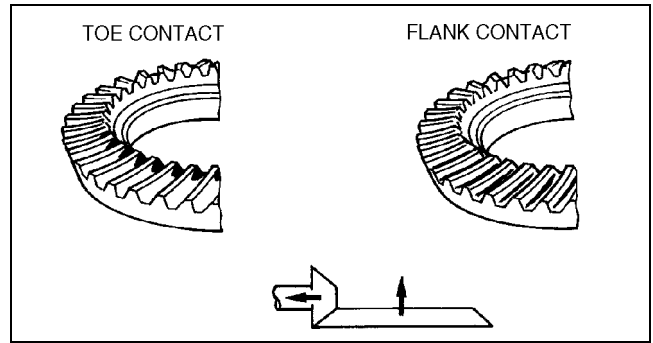
- (1) Coat both surfaces of 6—8 teeth of the ring gear with a thin coat of red lead.
- (2) While moving the ring gear back and forth by hand, rotate the drive pinion several times and inspect the tooth contact.
- (3) If the tooth contact is good, wipe off the red lead.
- (4) If it is not good, adjust the pinion height, and then adjust the backlash.



Z5U0314W108

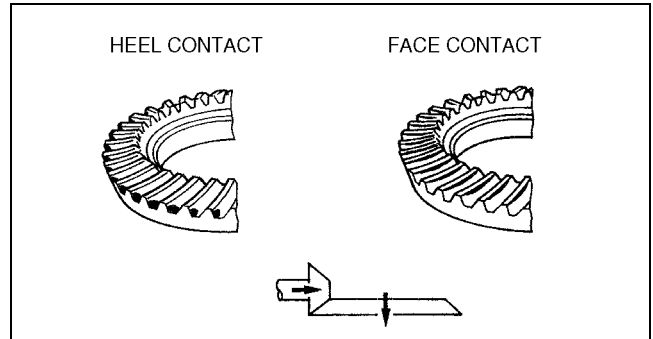
DIFFERENTIAL

- 1) Inspect the toe and flank contact by replacing the spacer with a thinner one to move the drive pinion outward.



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- 2) Inspect the heel and face contact by replacing the spacer with a thicker one to bring the drive pinion in.



Z5U0314W122