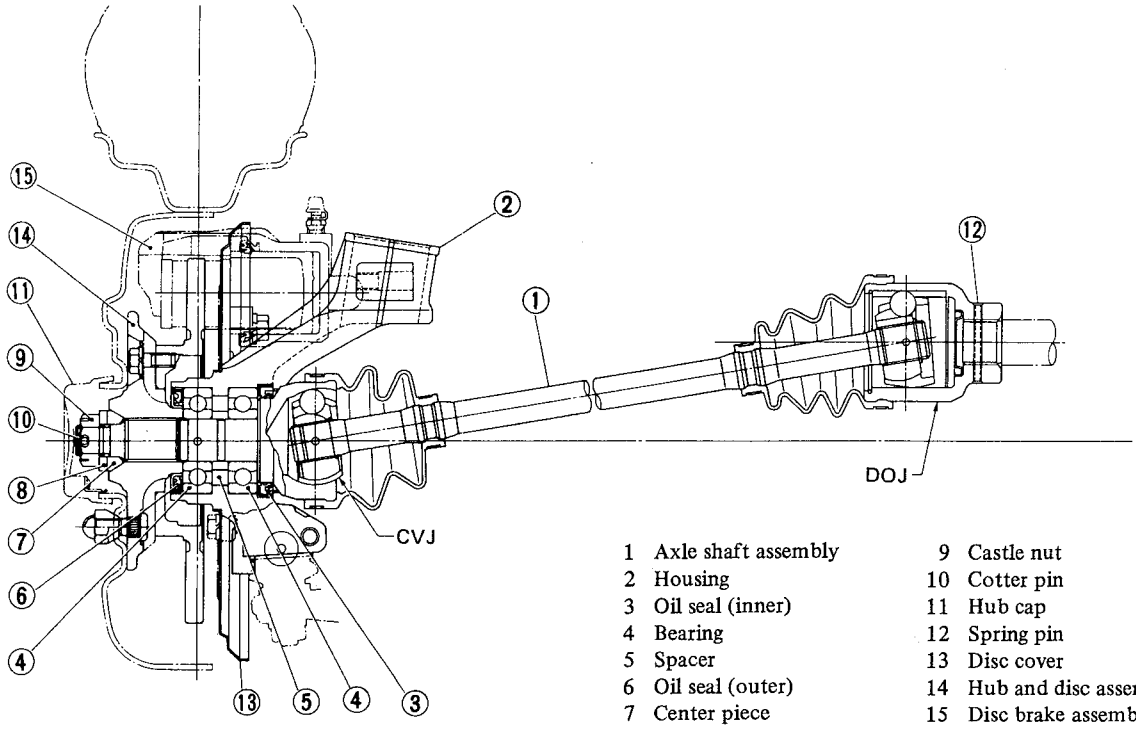
# 5-5. Axles

## 1. General

### 1. Front Axle

This model adopts a front engine, front drive system, and front propeller shaft. The inboard side of this shaft is connected to the differential via the constant velocity joint (DOJ). The DOJ can be extended and retracted in the axial direction. The propeller shaft outboard end is supported by the bearing in the housing via the CVJ.

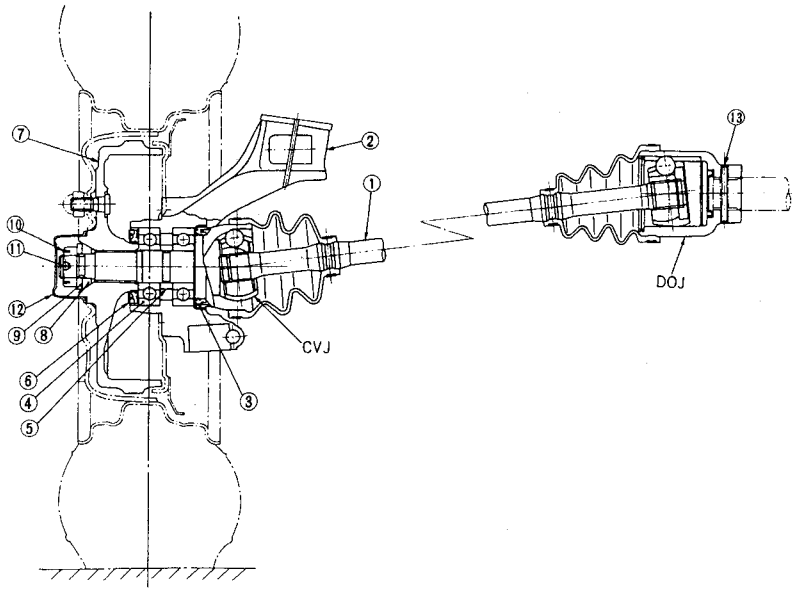
#### (1) 12-inch tire equipped model




1 Axle shaft assembly
2 Housing
3 Oil seal (inner)
4 Bearing
5 Spacer
6 Oil seal (outer)
7 Center piece
8 Conical spring
9 Castle nut
10 Cotter pin
11 Hub cap
12 Spring pin
13 Disc cover
14 Hub and disc assembly
15 Disc brake assembly

*Fig. 5-5-1*

#### (2) 10-inch tire equipped model



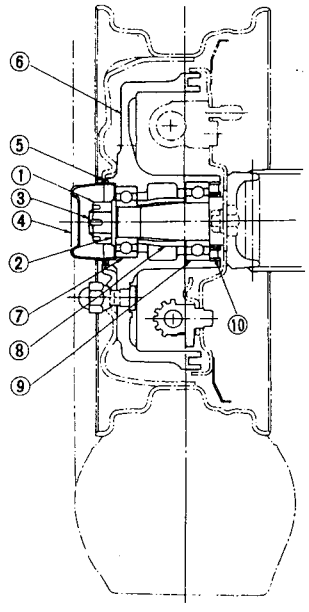

1 Axle shaft assembly
2 Housing
3 Oil seal (inner)
4 Bearing
5 Spacer
6 Oil seal (outer)
7 Brake drum complete
8 Center piece
9 Conical spring
10 Castle nut
11 Cotter pin
12 Hub cap
13 Spring pin

K13-032

*Fig. 5-5-2*

### 2. Rear Axle

The rear axle spindle is welded to the rear trailing arm and the brake drum is mounted on the bearing that rides on the spindle.



1 Castle nut
2 Washer
3 Cotter pin
4 Hub cap
5 O-ring
6 Brake drum complete
7 Bearing (outer)
8 Spacer
9 Bearing (inner)
10 Oil seal

K13-033

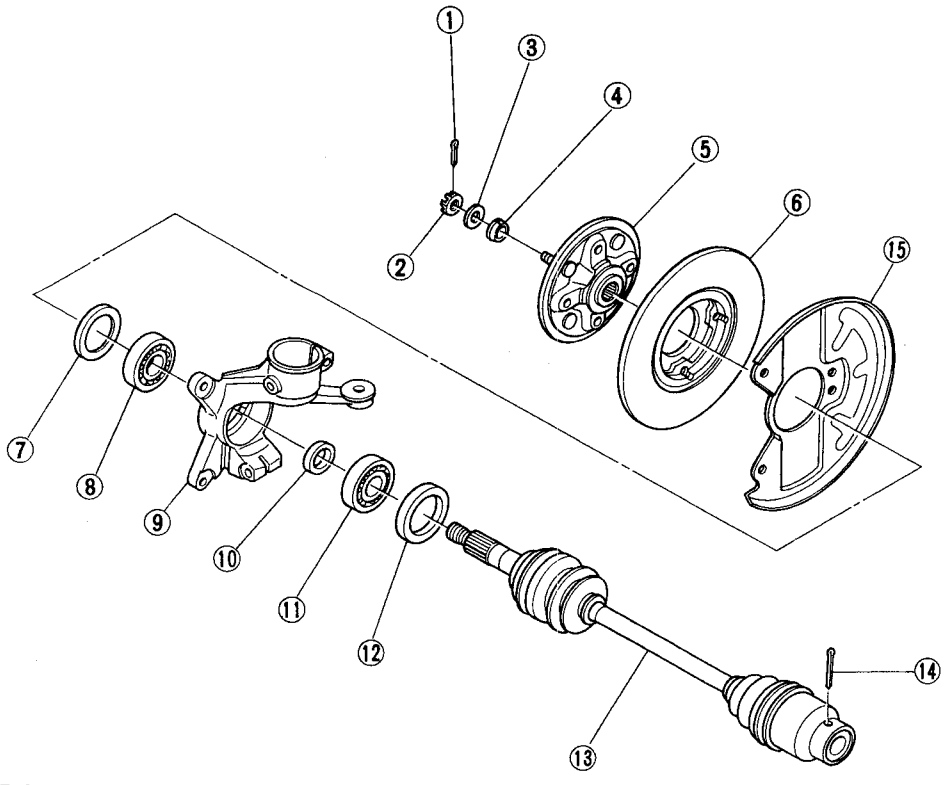
*Fig. 5-5-3*

## 2. Specifications

For the wheel alignment, see the item "Suspension".

## 3. Component Parts and Tightening Torque

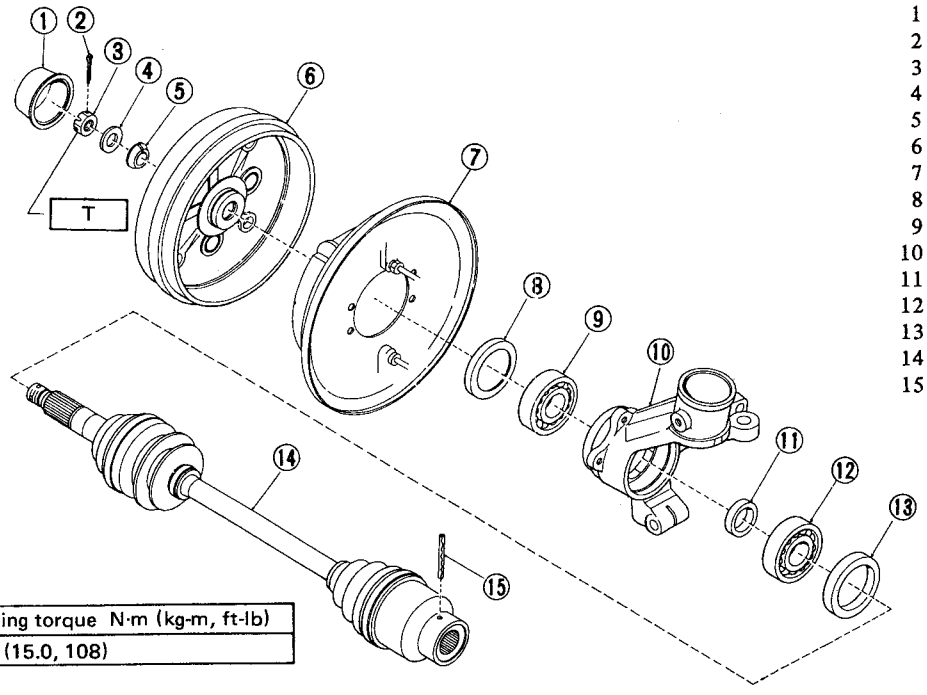
### 1. Front Axle (12-inch tire equipped model)



1 Cotter pin
2 Castle nut
3 Conical spring
4 Center piece
5 Hub
6 Brake disc
7 Oil seal
8 Ball bearing
9 Housing
10 Spacer
11 Ball bearing
12 Oil seal
13 Axle shaft
14 Spring pin
15 Disc cover

*Fig. 5-5-4*

## 2. Front Axle (10-inch tire equipped model)

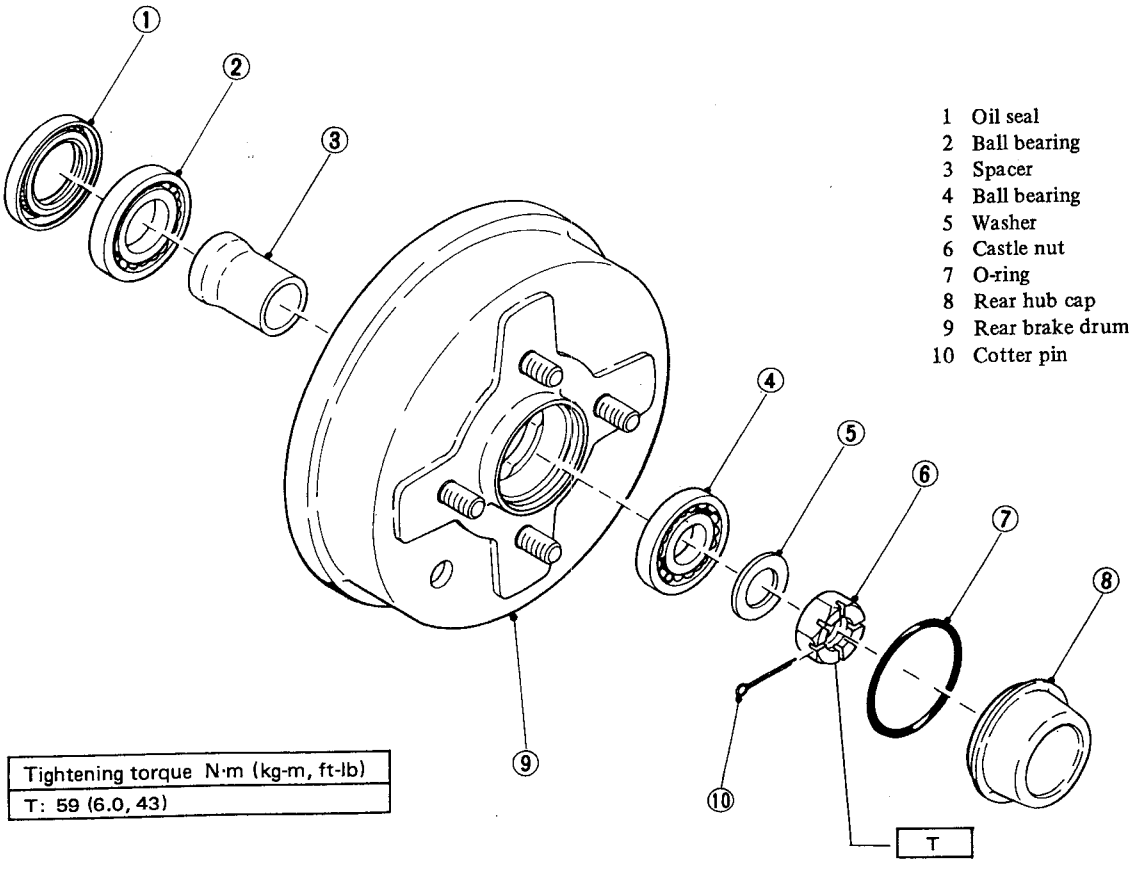



1 Front hub cap
2 Cotter pin
3 Castle nut
4 Conical spring
5 Center piece
6 Front brake drum
7 Back plate
8 Oil seal
9 Ball bearing
10 Housing
11 Spacer
12 Ball bearing
13 Oil seal
14 Axle shaft
15 Spring pin

| Tightening torque N·m (kg-m, ft-lb) |
|---|
| T: 147 (15.0, 108) |

*Fig. 5-5-5*

## 3. Rear Axle




1 Oil seal
2 Ball bearing
3 Spacer
4 Ball bearing
5 Washer
6 Castle nut
7 O-ring
8 Rear hub cap
9 Rear brake drum
10 Cotter pin

| Tightening torque N·m (kg-m, ft-lb) |
|---|
| T: 59 (6.0, 43) |

*Fig. 5-5-6*

## 4. Service Precautions for Major Components

### 1. Front Axle

1) To remove the housing, proceed as follows:
(1) Remove the front wheel.
(2) Remove the hub cap.

Use ordinary hub cap pliers to remove the hub cap. (10-inch tire equipped models only)

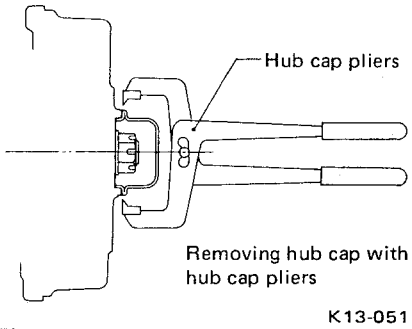



*Fig. 5-5-7*

If no hub cap pliers are available, the hub cap may be removed using a flat-bladed screwdriver.

Tap the cap flange with a hammer until the hub cap is loosened, then pry the cap off the drum using the screwdriver.

**NOTE:**
**Be sure to use a thin-tipped screwdriver and tap it at a right angle to the axle shaft.**

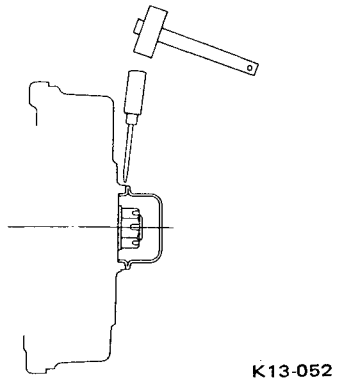



*Fig. 5-5-8*

(3) Remove the castle nut, conical spring and center piece.

To remove the center piece, apply the tip of a flat-bladed screwdriver to the slit of the center piece and tap the screwdriver.

(4) Remove the brake drum. (10-inch tire equipped models only)
(5) Remove the brake pipe.

Disconnect the brake pipe at the strut bracket.

**NOTE:**
**a. Be sure to use a flare nut wrench when removing and installing the flare nut.**
**b. Attach a cap to the brake pipe on the body side to prevent brake fluid from seeping out.**

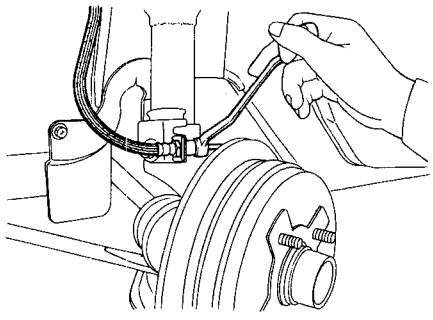



*Fig. 5-5-9*

(6) Remove the brake assembly.
(7) Remove the hub and disc assembly. (12-inch tire equipped models only)
(8) Remove the spring pin of the DOJ.

**NOTE:**
**Do not reuse the spring pin.**

(9) Remove the tie-rod end ball joint.

First remove the cotter pin and castle nut, then remove the ball joint from the housing knuckle arm using a tie-rod end ball joint puller.

(10) Remove the housing.

When removing the housing, do not expand the slit where the damper strut is tightened.

**NOTE:**
**Use care not to damage the boot of the CVJ.**

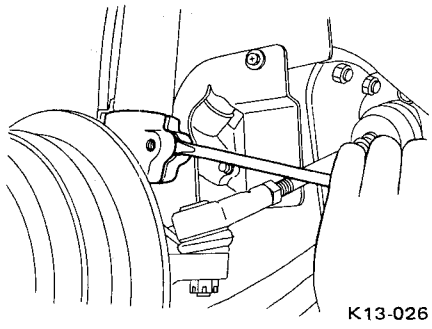



*Fig. 5-5-10*

(11) Remove the transverse link ball joint.
(12) Remove the housing.

Take out the housing with the axle, then pull the housing off the axle shaft using a remover (special tool: 921122000).

To pull off the housing, install the special tools 922490000 and 921122000 to the housing and turn the handle of tool 921122000 until the housing comes off.

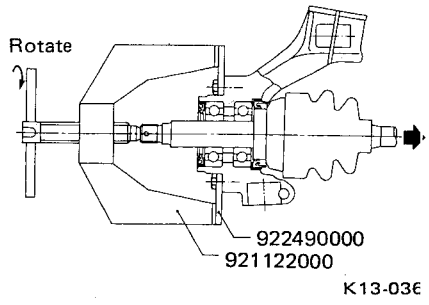



*Fig. 5-5-11*

2) To remove the bearing, proceed as follows:
(1) Move the spacer in radial direction and apply a brass rod to the inner race of the outer side bearing. Tap the rod lightly with a hammer until the bearing and the oil seal come off the housing.

**NOTE:**
**a. Be sure to tap all around the periphery of the bearing inner race.**
**b. If the inner race is forcefully struck during bearing removal, it should not be reused.**
**c. Do not reuse the oil seal.**

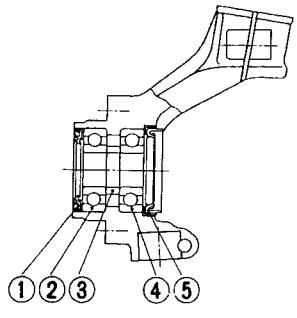



*Fig. 5-5-12*

(2) After removing the spacer, apply a brass rod to the outer race of the inner bearing and tap all around the periphery until the bearing and the oil seal are removed from the housing.

**NOTE:**
**Do not reuse the oil seal.**

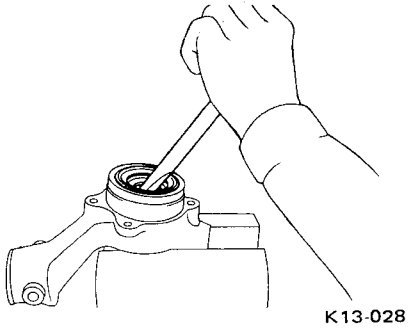



*Fig. 5-5-13*

3) To install the bearing, use a hand press and proceed as follows:
(1) Set the housing to the installer (special tool: 92244100) and pack bearing grease into the inner bearing. Force fit the bearing, using an installer (special tool: 922470000) and shunk (special tool: 498477000), with a pressure of 20 kN (2 ton, 2.2 US ton, 2.0 Imp ton).

**NOTE:**
**Slowly force fit the bearing until it bottoms the housing stopper.**

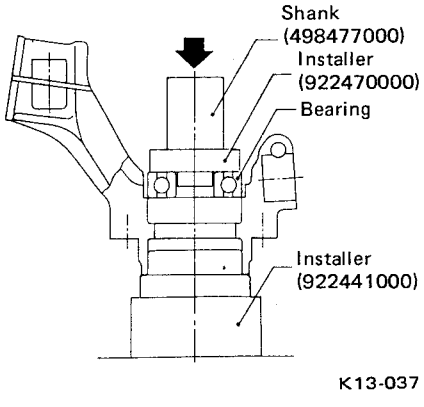



*Fig. 5-5-14*

(2) Smear about 6 g (0.21 oz) of bearing grease on the inside of the housing and install the spacer. Force fit the outer bearing in the same way as the inner bearing [Fitting pressure 2 kN (2 ton, 2.2 US ton, 2.0 Imp ton).]

**NOTE:**
**Do not apply excessive grease as the grease may work into the brake drum through the outer oil seal.**

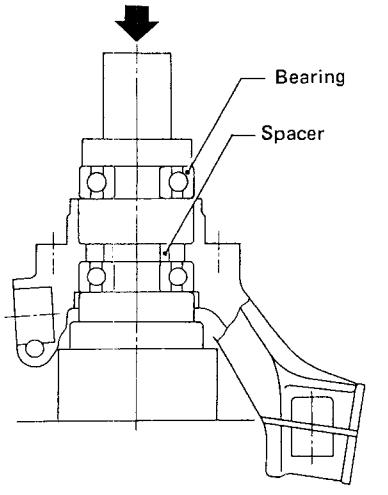



*Fig. 5-5-15*

(3) Pack grease in the oil seal, and force fit the oil seal using an installer (special tool for fitting outer oil seal: 922450000, special tool for fitting inner oil seal: 922460000) until the oil seal bottoms the bearing end.

**NOTE:**
**Improper fitting of the oil seal may cause wear on the oil seal lip.**

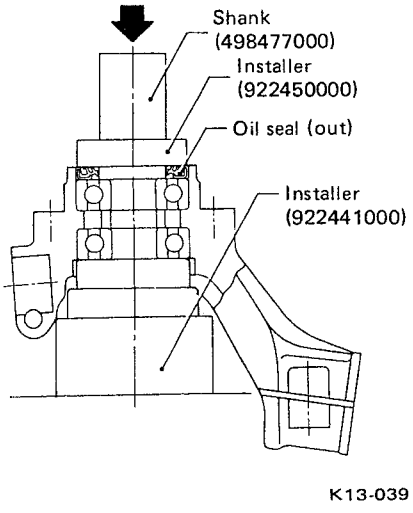



*Fig. 5-5-16*

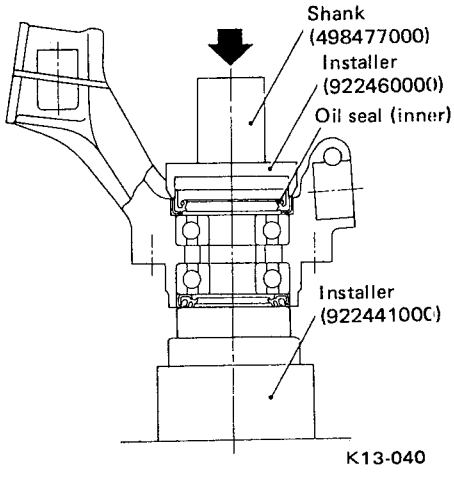
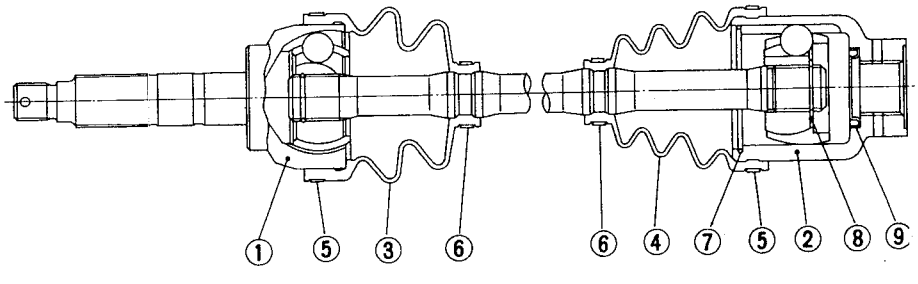



*Fig. 5-5-17*

4) Disassembly of the axle shaft CVJ is not allowed. Replacement of the boot can be performed by removing the CVJ utilizing the following procedure:




1 CVJ assembly
2 DOJ assembly
3 Boot (CVJ)
4 Boot (DOJ)
5 Boot band
6 Boot band
7 Circlip
8 Snap ring
9 Seal plate

*Fig. 5-5-18*

(1) Remove the boot band from both sides of the DOJ boot and remove the boot from the large diameter portion of the DOJ.

**NOTE:**
**Use care not to damage the boot.**

(2) Using a flat-bladed screwdriver, remove the circlip securing the DOJ outer race and remove the outer race.

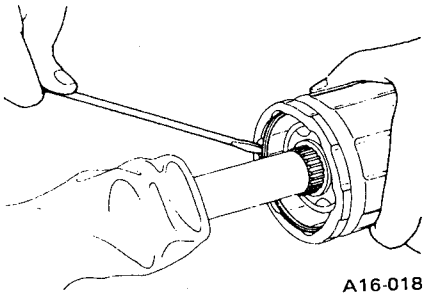



*Fig. 5-5-19*

(3) Wipe off the grease and remove the six balls. Then move the case to the boot side by rotating 1/2 pitch with respect to the track of the inner race.

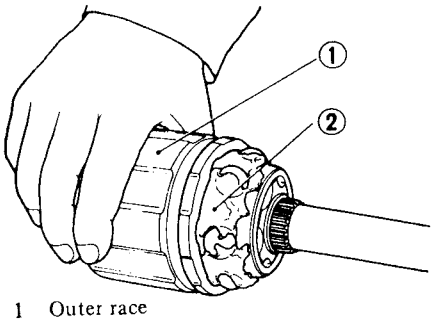



*Fig. 5-5-20*

(4) Remove the snap ring securing the inner race and shaft and remove the inner race. Then remove the DOJ case and boot from the shaft.

(5) Remove the circlip of the CVJ boot and pull the boot from the shaft.

5) To install the CVJ and DOJ boots, reverse the removal procedure. Be careful to take note of the following points:

(1) Be sure to use constant velocity joint grease (Molytex No. 2 or equivalent).

(2) When installing the DOJ case to the axle shaft, note the orientation of the cage. Install the cage with the cut-out side facing the shaft end.

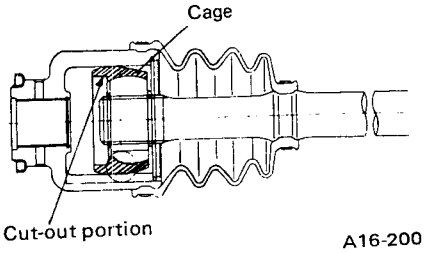



*Fig. 5-5-21*

(3) Assemble the case to the inner race. Ensure the cage pocket is aligned with the midpoint between the tracks of the inner race. Rotate the case by 1/2 pitch. After assembling, apply grease. [Grease quantity: 60 to 90 g (2.12 to 3.17 oz)]

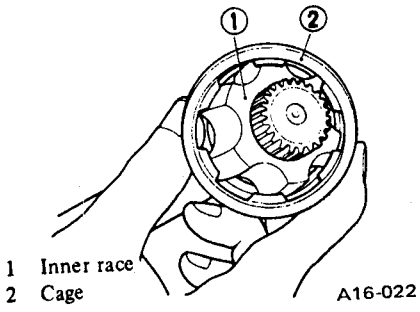



*Fig. 5-5-22*

(4) Install the circlip to the outer race of the DOJ and confirm that the balls, cage and inner race are placed correctly.

**NOTE:**
**Make sure that the gap of the circlip is not located at the ball groove of the outer race.**

(5) Pack CVJ grease into the DOJ and boot and install the boot.

(6) After setting the boot to the specified length (distance between A and B shown in Figure), tighten the boot bands so that the boot contains the specified amount of air.

**NOTE:**
**After setting the boot to the specified length, expand the end of the boot with a screwdriver. Ensure that a vacuum is not created inside the boot, then attach the boot bands.**

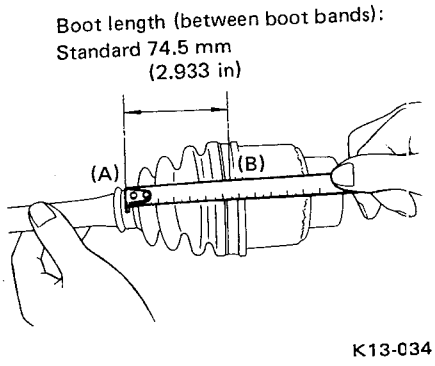



*Fig. 5-5-23*

(7) Pass the boot band through the clip and wrap it around the boot band groove twice. Then tighten the band, using a band tightener (special tool: 925090000), until it can't be moved by hand. Cut the band 10 mm (0.39 in) from the clip by tapping with a punch and bend the end over the clip.

**NOTE:**
**a. Ensure that the cut end of the band will not come loose from the clip.**
**b. Be sure to use a new band.**

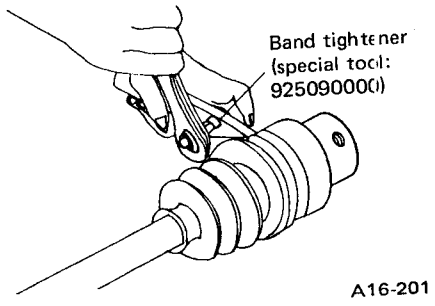



*Fig. 5-5-24*

6) Force-fit the axle shaft into the housing using an installer (special tool: 922430000).

Secure the tie-rod joint of the housing in a vise and attach the installer to the threaded portion of the axle shaft. Turn the handle of the installer and insert the axle shaft until its end face contacts the bearing.

If the installer itself rotates as the handle is rotated, hold the installer body with a 41 mm (1.61 in) wrench.

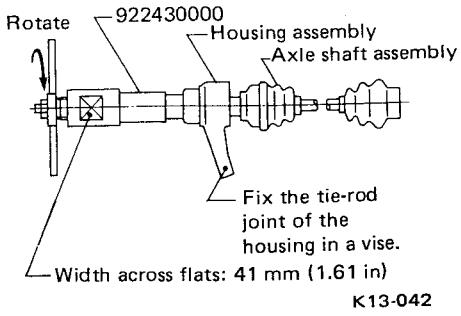



*Fig. 5-5-25*

7) Install the front axle assembly in the reverse order of removal. Be careful to take note of the following points:
(1) When installing the DOJ of the axle shaft, always use a new spring pin.
(2) When tightening the housing knuckle arm to the tie-rod end ball joint, secure the castle nut to a torque of 25 to 29 N·m (2.5 to 3.0 kg-m, 18 to 22 ft-lb), then further tighten the nut within 60° until the cotter pin hole is aligned. Install a new cotter pin to the nut.
(3) When installing the center piece and conical spring for mounting the brake drum or hub, pay attention to their orientation.
(4) When installing the brake pipe, be sure to tighten the flare nut with a flare nut wrench. The tightening torque is 15 to 20 N·m (1.5 to 2.0 kg-m, 11 to 14 ft-lb).

Tighten the castle nut to 147 N·m (15 kg-m, 108 ft-lb) torque, then further tighten within 30° until the cotter pin hole is aligned.

Always use a new cotter pin. Bend two legs of the cotter pin as shown.

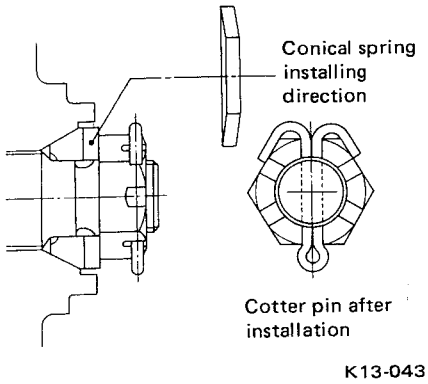



*Fig. 5-5-26*

(5) To install the hub cap, use a plastic hammer. If a soft hammer is not available, cushion the blows with a cloth or wood piece. (10-inch tire equipped models only)

## 2. Rear Axle

1) To remove the rear brake drum, proceed as follows:
(1) Remove the wheel and hub cap.

When removing the hub cap, use hub cap pliers. If hub cap pliers are unavailable, remove the hub cap with a flat-bladed screwdriver. Be careful not to damage the O-ring.
(2) Remove the cotter pin and castle nut, then remove the brake drum.

To remove the brake drum, use a puller (special tool: 921122000). To install the brake drum, use a puller attachment (special tool: 922490000) and wheel nut.

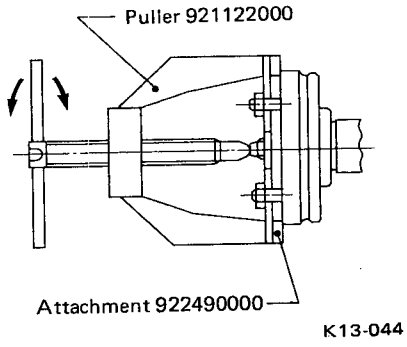



*Fig. 5-5-27*

2) To remove the bearing, proceed as follows:
(1) Apply a brass rod to the inner race of the outer bearing and tap, from the inside, until the bearing comes off.

**NOTE:**
**a. Be sure to tap all around the periphery of the bearing inner race.**
**b. If the inner race is forcefully struck during removal, it should not be reused.**

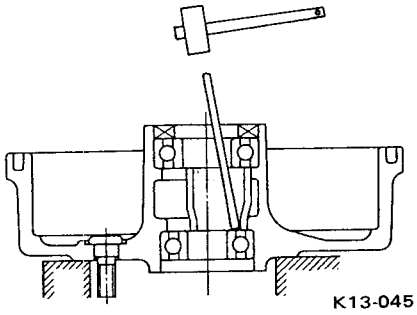



*Fig. 5-5-28*

(2) Apply a brass rod to the outer race of the inner bearing through the cut-out portion on the inside periphery of the drum boss and tap the rod lightly with a hammer to remove the inner bearing and oil seal.

To replace the oil seal only, use a screwdriver to remove the oil seal.

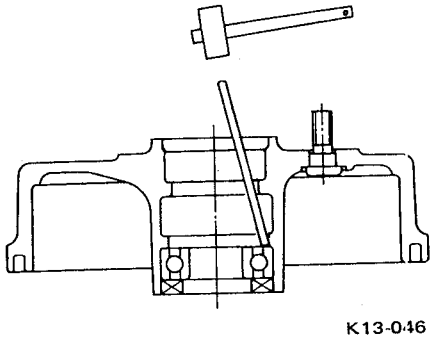



*Fig. 5-5-29*

3) Install the bearing using a hand press.
(1) Pack bearing grease to the outer bearing, and force fit the bearing using an installer (special tool: 925741000).

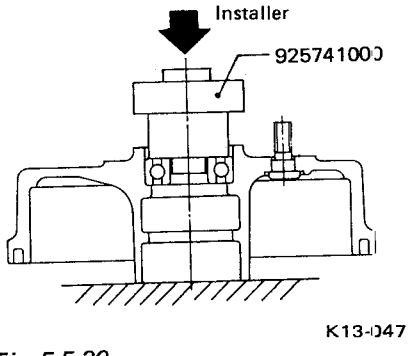
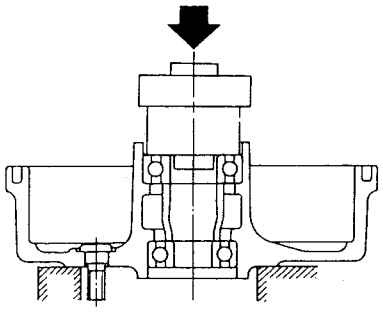



*Fig. 5-5-30*

(2) Pack approx. 150 g (5.29 oz) of bearing grease to the recess in the inside surface of the brake drum boss and install the spacer.

**NOTE:**
**Pay attention to the orientation of the spacer during assembly. The spacer is not symmetrical in shape and each end is designed to fit the inner race of a specific bearing.**

(3) Force-fit the inner bearing using an installer (special tool: 925741000). [Fitting force: 20 kN (2 ton, 2.2 US ton, 2.0 Imp ton).]

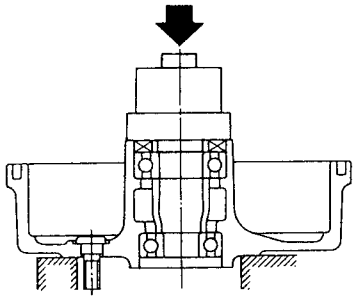


K13-048

*Fig. 5-5-31*

(4) Coat the oil seal lips with grease and force-fit the oil seal, using an installer (special tool: 925741000), until the oil seal is flush with the drum end face.

**NOTE:**
**Be sure to use a new oil seal when assembling.**

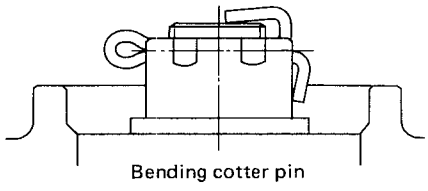


K13-049

*Fig. 5-5-32*

4) Install the brake drum to the spindle and tighten the castle nut to 59 N·m (6.0 kg-m, 43 ft-lb) torque. Retighten the nut within 30° until the cotter pin hole in the spindle is aligned with a slot in the nut.

**NOTE:**
**a. Be sure to use a new cotter pin.**
**b. Sharply bend the legs of the cotter pin, as shown, so that it will not interfere with the brake drum or hub cap.**

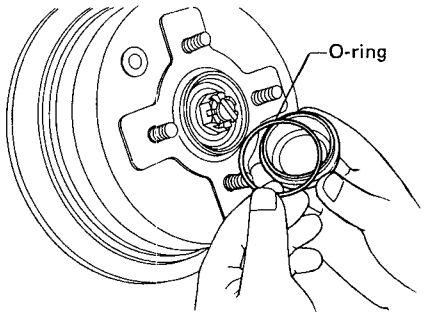



K13-050

*Fig. 5-5-33*

5) Install the O-ring to the flange of the hub cap and drive in the hub cap. Use care not to damage the hub cap.

**NOTE:**
**Be sure to replace the O-ring if it is damaged.**




K13-030

*Fig. 5-5-34*

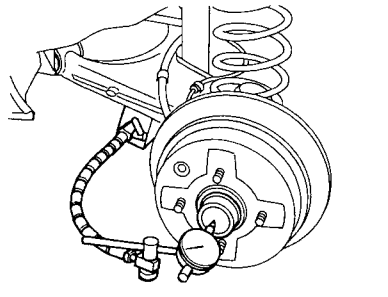
6) Check the rear wheel as follows:
(1) Check the wheel for smooth rotation.

Jack up the vehicle and rotate the wheels by hand. Make sure that the shoe does not contact the drum. Disassemble and check to see if noise or binding is noted when turning. The causes may be damage in the bearing, dirt or dust caught inside the bearing or other interference.

(2) Check wheel for free play.

a. Shake the wheel in the front-to-rear and left-to-right directions to check for play. If large play is noted, perform the following:
b. Remove the wheel and attach the dial gauge and stand to the trailing arm. Then measure the axial play of the spindle. To check, place the contact point of the dial gauge on the flat end face of the spindle and read the deflection of the dial gauge needle when the brake drum or the hub cap is pushed or pulled.

| | | |
|---|---|---|
| Standard | Axial play | 0 – 0.3 mm<br>(0 – 0.012 in) |



K13-031

*Fig. 5-5-35*