

SUBARU

SVX

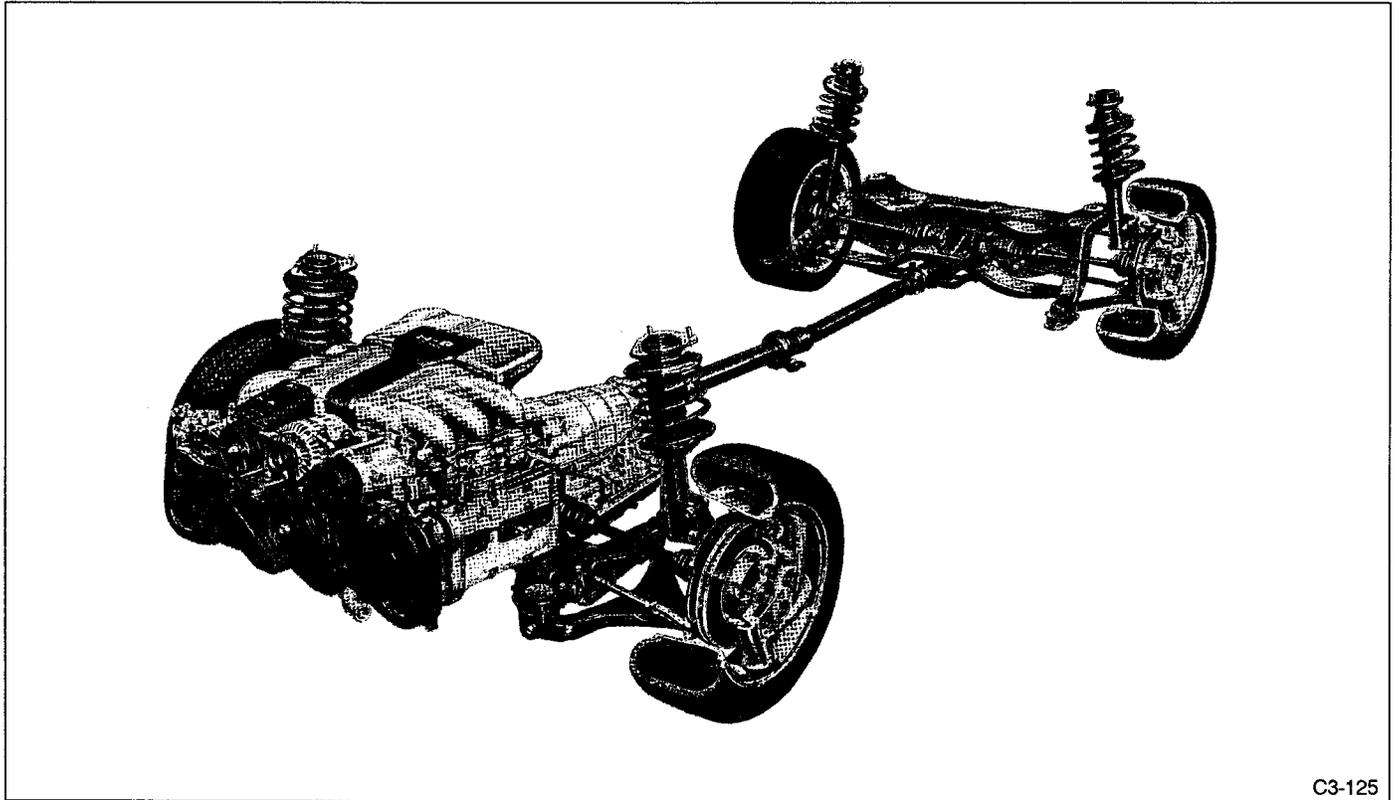
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M MECHANISM AND FUNCTION

1. AWD System



C3-125

Fig. 1

M MECHANISM AND FUNCTION

2. Propeller Shaft

The propeller shaft utilizes a 2-piece design that is provided with three joints.

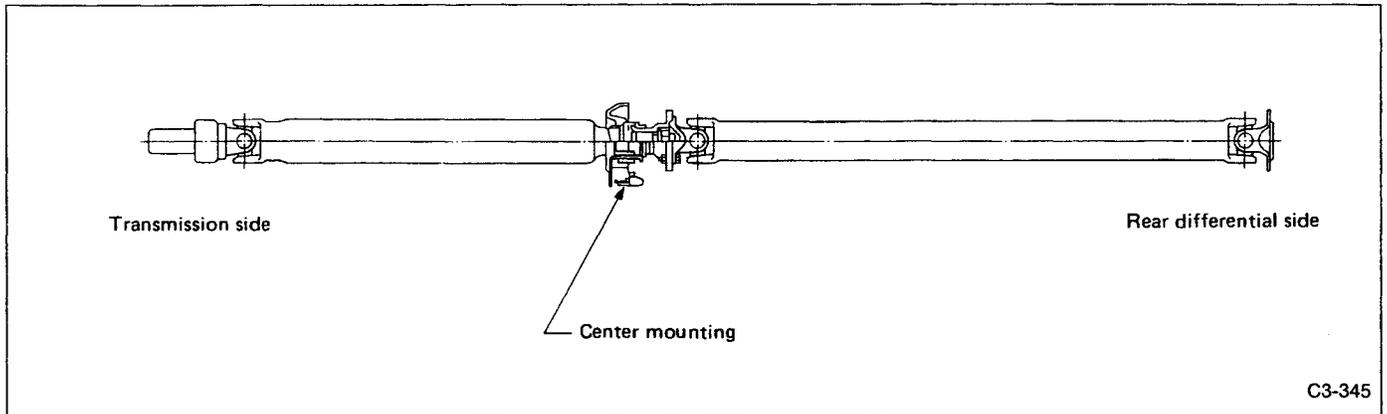
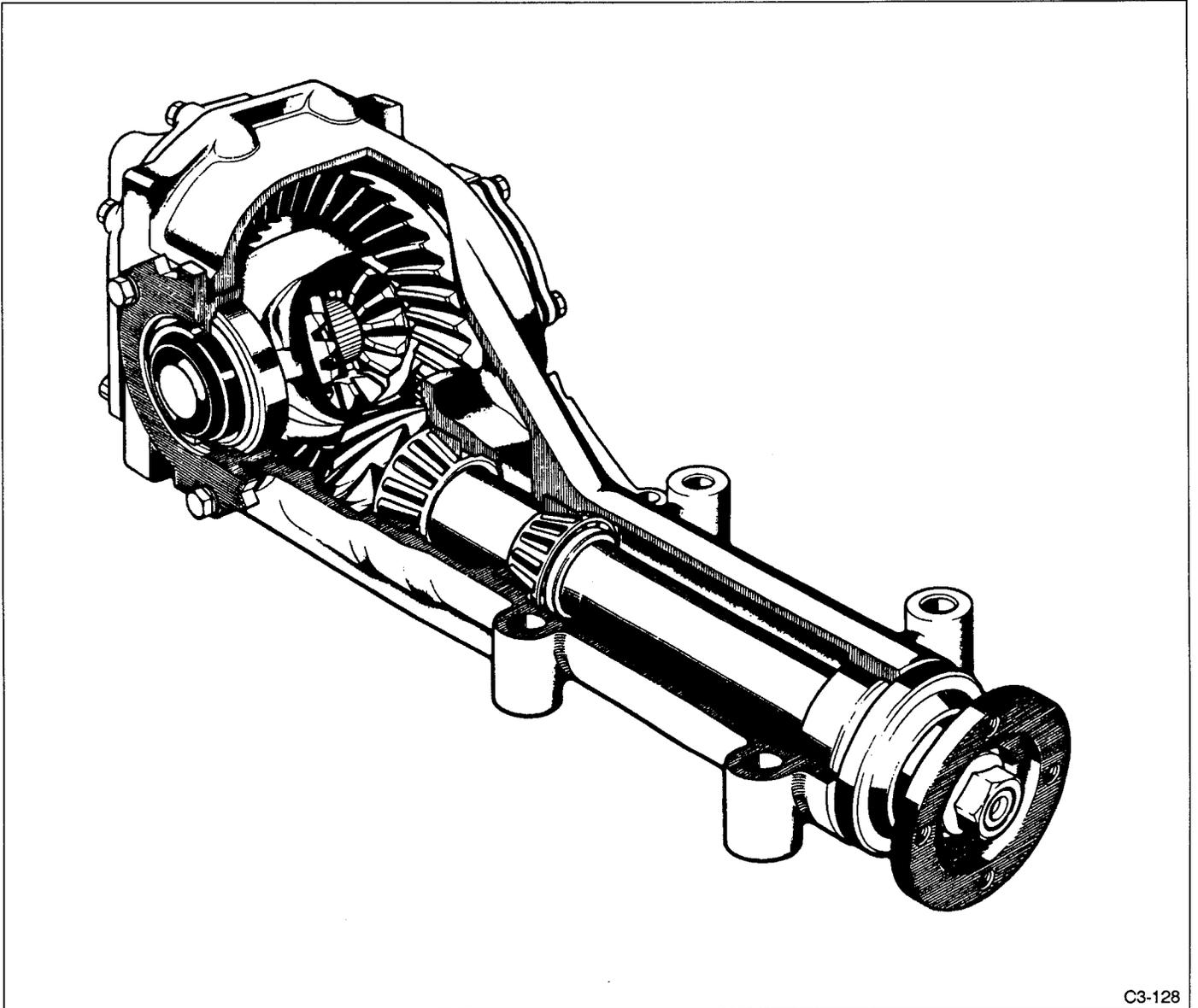


Fig. 1

3. Rear Differential

The rear differential is a limited slip differential (LSD) incorporating outer plates, inner plates and viscous coupling with silicon oil. The spindle, which is an inte-

gral part of the rear drive shaft, is coupled with the differential side gear and viscous coupling (VC) by circlips.



C3-128

Fig. 4

4. Limited Slip Differential (LSD)

A viscous coupling (VC) type LSD has been adopted so as to ensure safe and smooth transfer of increased power under various driving conditions. This VC type LSD features ease of turning while maintaining excellent stability when driving over slippery roads or when using engine brake, thus enabling engine power to be utilized efficiently. Smooth restriction of the differential operation of the left and right wheels results in improved running stability on bad roads, snowy roads, and also on muddy roads.

1. STRUCTURE

The VC type LSD adopts a "shaft to shaft system" in which the RH and LH rear drive shafts are coupled by a VC. This results in a compact structure with high performance.

The inside of the VC housing is formed by alternately combining the outer plates (the outer periphery of each plate engages with the internal spline of the housing) and inner plates (the inner periphery of each plate engages with the outer spline of the hub).

On the outer periphery of the outer plate, the spacer ring is fitted and set in position. On the inner plate, no positioning ring is used: The plate can be moved a certain amount on the hub spline in the axial direction. Sealed inside the housing is a mixture of high viscosity silicon oil and air. The housing is sealed by X-rings so that silicon oil will not leak into the rear final drive even when the pressure increases due to a greater difference in the rotation speed between LH and RH wheels.

The spindle (LH) which is integral with the rear drive shaft (LH) is coupled by the VC case spline, and is fitted to the side gear (LH) which is integral with the VC case. The spindle (RH) which is integral with the rear drive shaft (RH) is spline fitted to the side gear (RH). The end of the spindle is fitted by splines to the VC hub. No disassembling of the VC is allowed.

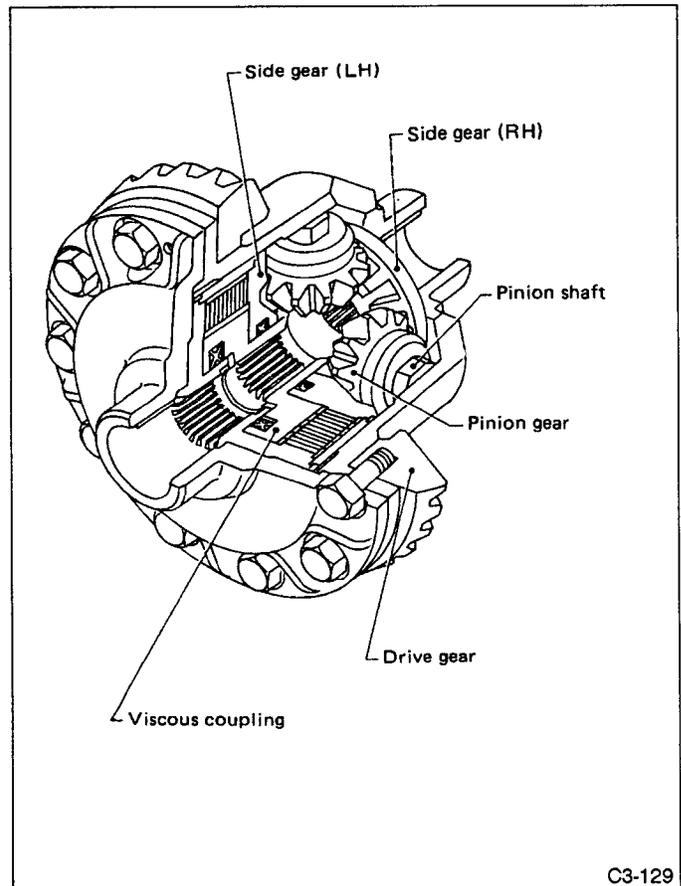


Fig. 5

2. OPERATION

1) When right and left wheels turn at equal speed
During normal straight-road driving where the right and left wheels run at an equal speed, the differential case and side gears rotate together, just as in conventional differentials. As a result, driving torque is transmitted equally to the right and left side gears as shown in Figure 6.

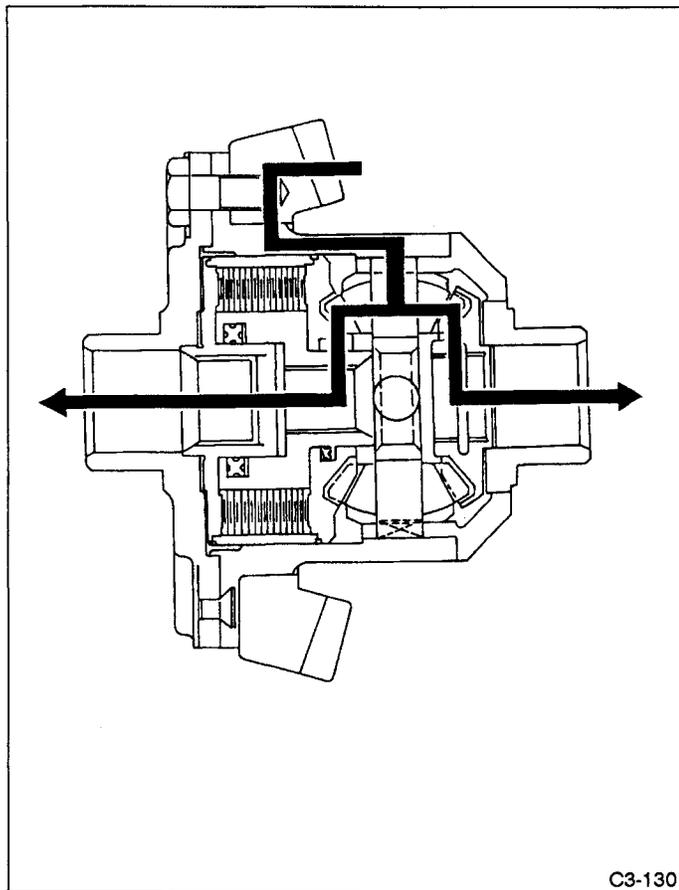


Fig. 6

2) When right and left wheels turn at different speeds. When a speed difference occurs between the right and left wheels, the VC housing and VC hub turn relatively at the same speed difference as that of the rear drive shaft. Because of the shearing force caused in the silicon oil, a differential torque is generated, which controls differential operation (idle rotation). For example, if the left wheel turns idle due to a difference in the road resistance, a speed difference occurs between the right and left wheel. Since the VC is installed between the right and left wheels, a differential torque is generated in the VC corresponding to this speed difference, and this differential torque is transferred from the left wheel to the right wheel. Accordingly, a greater driving force is transferred to the right wheel which is rotating at a lower speed as shown in Figure 7.

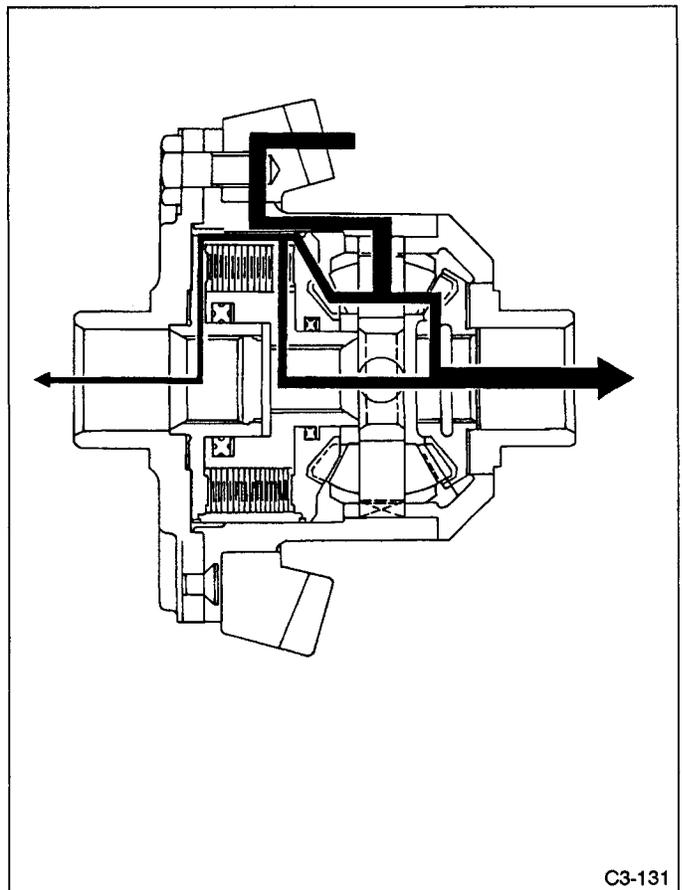


Fig. 7

3. SERVICE PROCEDURES FOR LSD

The component parts of LSD ASSY are not available as piece parts.

Therefore, it is recommended to not disassemble LSD ASSY.

S SPECIFICATIONS AND SERVICE DATA

A: SPECIFICATIONS

1. REAR FINAL REDUCTION GEAR RATIO

Type of gear	Hypoid
Gear ratio (Number of gear teeth)	3.545 (39/11)
Oil capacity	0.8 ℓ (0.8 US qt, 0.7 Imp qt)

2. PROPELLER SHAFT

Front propeller shaft joint-to-joint length: mm (in)	L	528 (20.79)
Outside dia. of tube mm (in)	D ₁	63.5 (2.500)
	D ₂	57.0 (2.244)

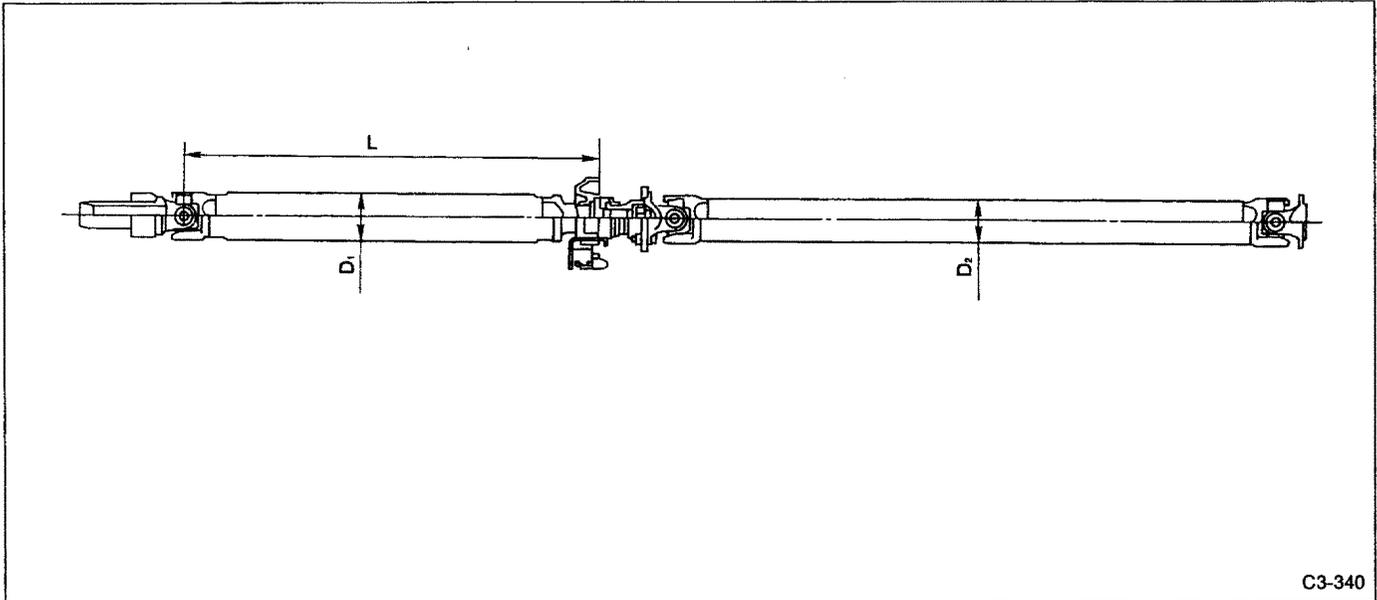


Fig. 2

3. REAR DRIVE SHAFT

	Type of drive shaft	Outside dia. of shaft mm (in)	Distance between boots: L mm (in)
		D	
Right-hand drive shaft	87AC-RH	22.2 (0.874)	305 (12.01)
Left-hand drive shaft	87AC-LH		

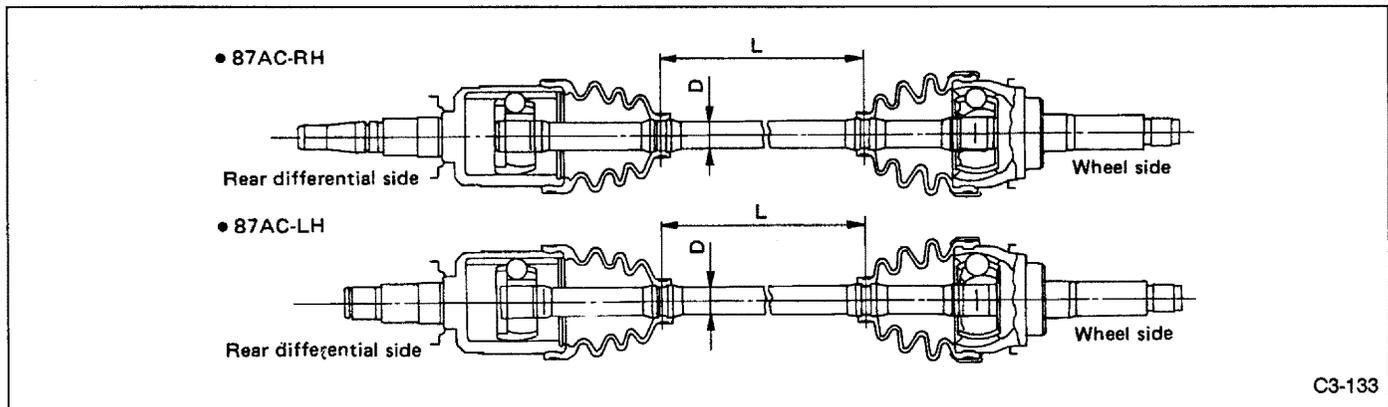


Fig. 9

B: SERVICE DATA

Rear differential

Front & rear bearing preload at companion flange bolt hole	New bearing	19.6 — 28.4 N (2.0 — 2.9 kg, 4.4 — 6.4 lb)
	Used bearing	8.34 — 16.67 N (0.85 — 1.7 kg, 1.87 — 3.75 lb)
Preload adjusting washer length	Part No.	
	383705200	2.59 mm (0.1020 in)
	383715200	2.57 mm (0.1012 in)
	383725200	2.55 mm (0.1004 in)
	383735200	2.53 mm (0.0996 in)
	383745200	2.51 mm (0.0988 in)
	383755200	2.49 mm (0.0980 in)
	383765200	2.47 mm (0.0972 in)
	383775200	2.45 mm (0.0965 in)
	383785200	2.43 mm (0.0957 in)
	383795200	2.41 mm (0.0949 in)
	383805200	2.39 mm (0.0941 in)
	383815200	2.37 mm (0.0933 in)
	383825200	2.35 mm (0.0925 in)
	383835200	2.33 mm (0.0917 in)
383845200	2.31 mm (0.0909 in)	
Preload adjusting spacer length	Part No.	
	383695201	56.2 mm (2.213 in)
	383695202	56.4 mm (2.220 in)
	383695203	56.6 mm (2.228 in)
	383695204	56.8 mm (2.236 in)
	383695205	57.0 mm (2.244 in)
383695206	57.2 mm (2.252 in)	

Pinion height adjusting washer thickness	Part No.	
	383495200	3.09 mm (0.1217 in)
	383505200	3.12 mm (0.1228 in)
	383515200	3.15 mm (0.1240 in)
	383525200	3.18 mm (0.1252 in)
	383535200	3.21 mm (0.1264 in)
	383545200	3.24 mm (0.1276 in)
	383555200	3.27 mm (0.1287 in)
	383565200	3.30 mm (0.1299 in)
	383575200	3.33 mm (0.1311 in)
	383585200	3.36 mm (0.1323 in)
	383595200	3.39 mm (0.1335 in)
	383605200	3.42 mm (0.1346 in)
	383615200	3.45 mm (0.1358 in)
	383625200	3.48 mm (0.1370 in)
	383635200	3.51 mm (0.1382 in)
	383645200	3.54 mm (0.1394 in)
383655200	3.57 mm (0.1406 in)	
383665200	3.60 mm (0.1417 in)	
383675200	3.63 mm (0.1429 in)	
383685200	3.66 mm (0.1441 in)	
Side gear to thrust washer clearance		0.1 — 0.2 mm (0.004 — 0.008 in)
Side gear thrust washer thickness	Part No.	
	383445201	0.75 — 0.80 mm (0.0295 — 0.0315 in)
	383445202	0.80 — 0.85 mm (0.0315 — 0.0335 in)
	383445203	0.85 — 0.90 mm (0.0335 — 0.0354 in)
Side bearing standard width	20.00 mm (0.7874 in)	
Side bearing retainer shim thickness	Part No.	
	383475201	0.20 mm (0.0079 in)
	383475202	0.25 mm (0.0098 in)
	383475203	0.30 mm (0.0118 in)
	383475204	0.40 mm (0.0157 in)
383475205	0.50 mm (0.0197 in)	
Drive gear to drive pinion backlash		0.10 — 0.20 mm (0.0039 — 0.0079 in)
Drive gear runout on its back surface	Limit	0.05 mm (0.0020 in)
Oil capacity		0.8 ℓ (0.8 US qt, 0.7 Imp qt)

C COMPONENT PARTS

1. Rear Differential Mounting System

- 1 Rear sub frame
- 2 Rear differential member
- 3 Stopper (Upper)
- 4 Front bushing
- 5 Stopper (Under)
- 6 Rear differential
- 7 Bracket

Tightening torque: N.m (kg-m, ft-lb)

T1: 53 – 65 (5.4 – 6.6, 39 – 48)

T2: 61 – 76 (6.2 – 7.8, 45 – 56)

T3: 127 – 157 (13.0 – 16.0, 94 – 116)

T4: 127 – 157 (13.0 – 16.0, 94 – 116)

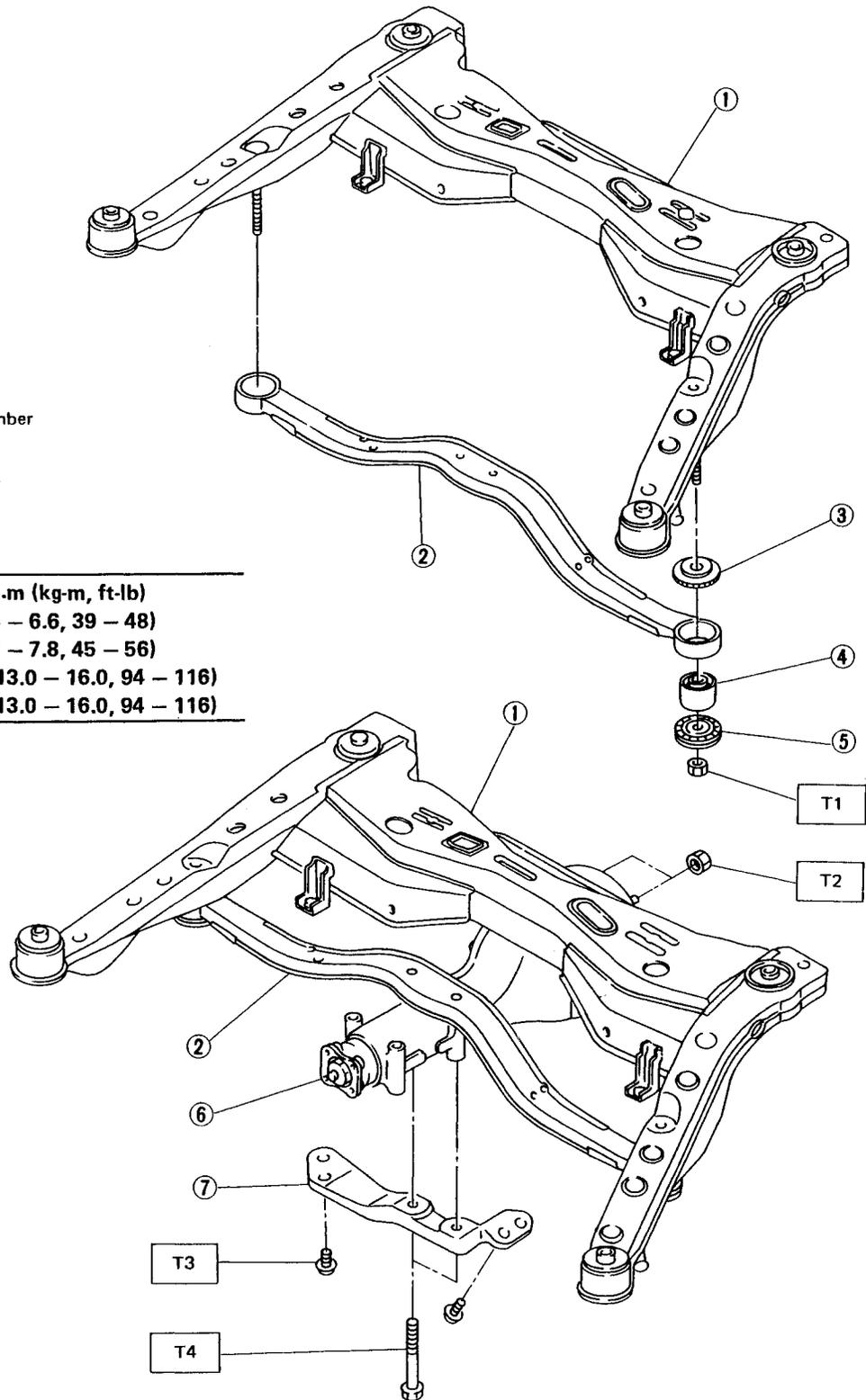


Fig. 10

C COMPONENT PARTS

2. Propeller Shaft and Drive Shaft

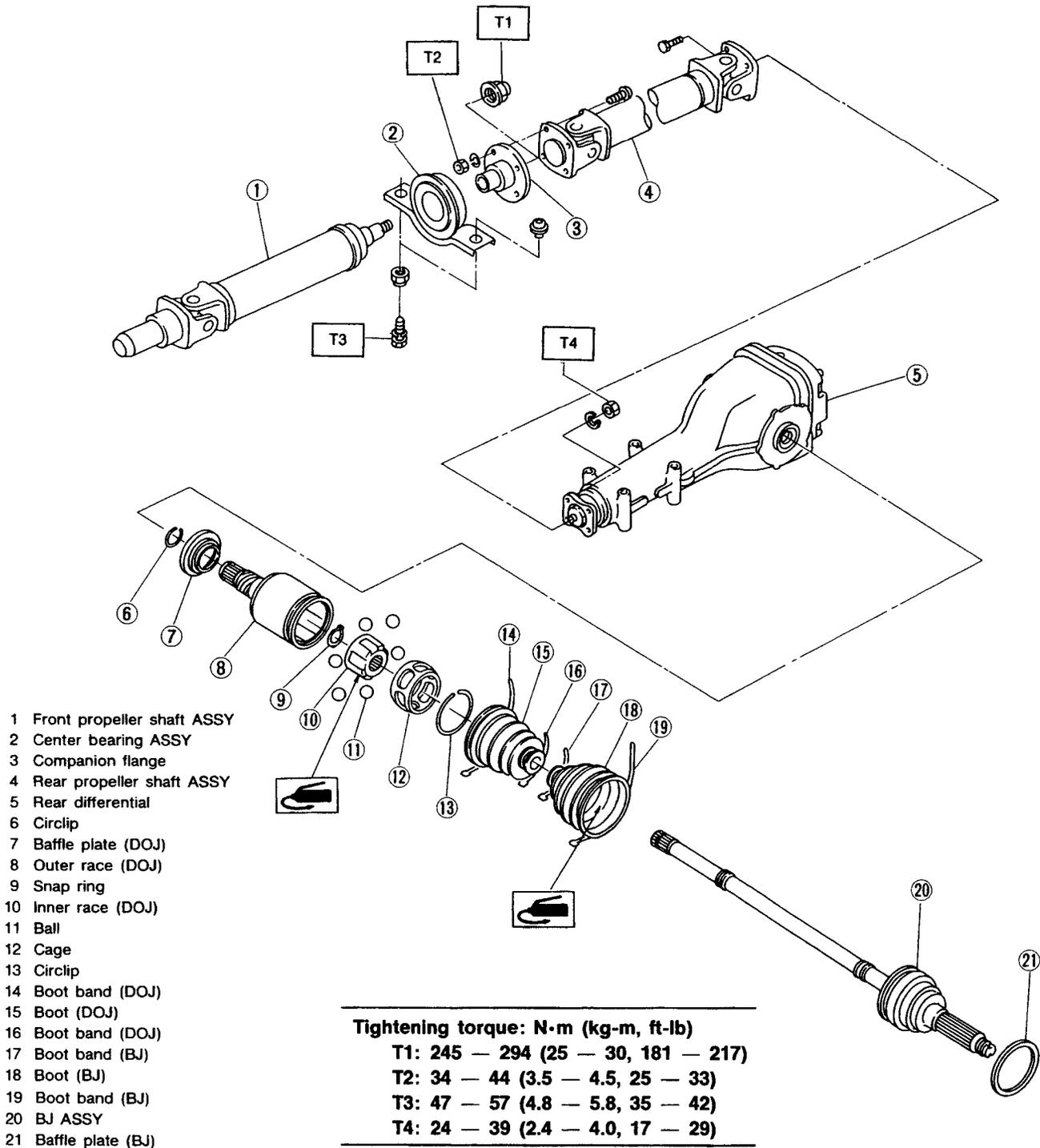
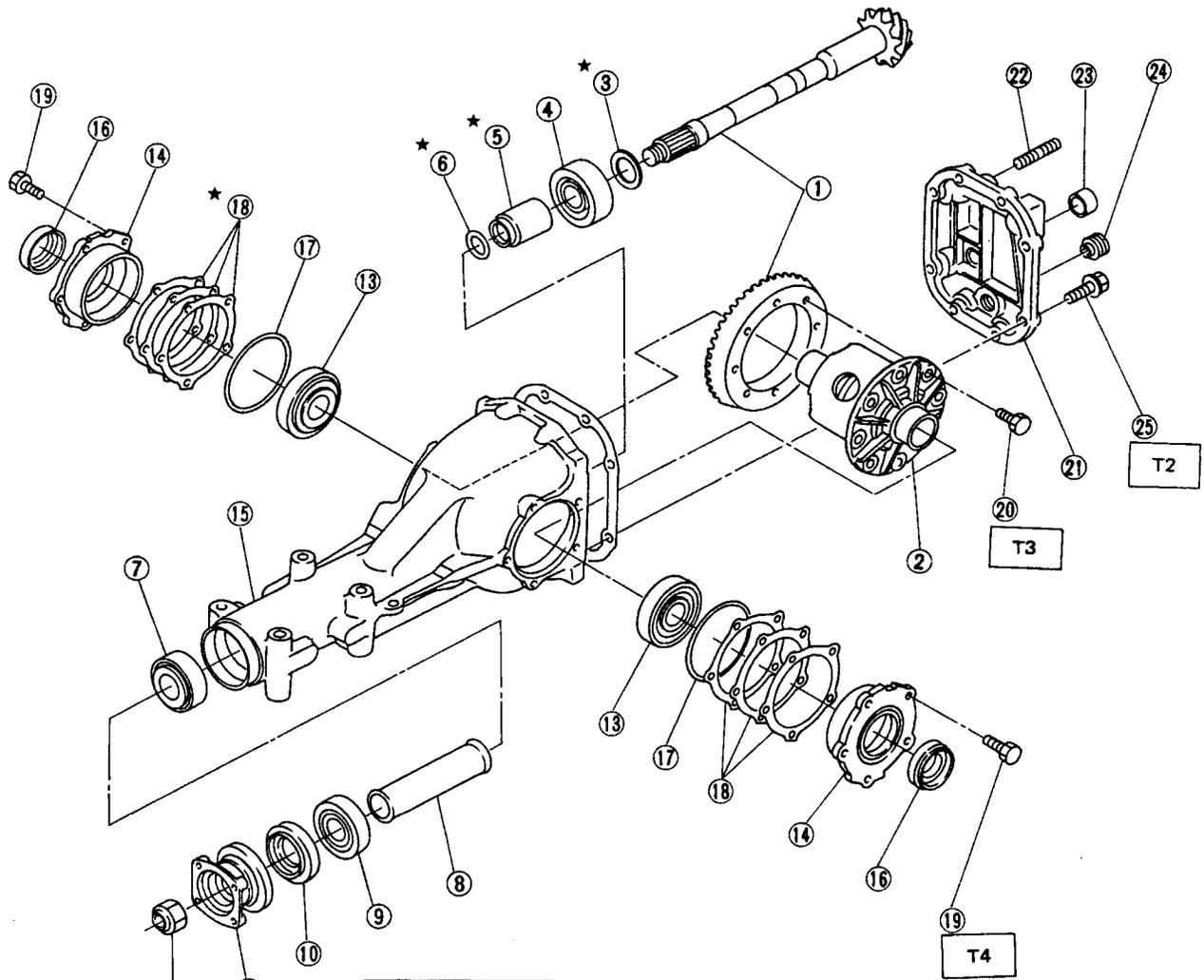


Fig. 3

3. Rear Differential Assembly



Tightening torque: N·m (kg·m, ft·lb)
T1: 167 — 196 (17.0 — 20.0, 123 — 145)
T2: 25 — 34 (2.5 — 3.5, 18 — 25)
T3: 93 — 113 (9.5 — 11.5, 69 — 83)
T4: 9 — 12 (0.9 — 1.2, 6.5 — 8.7)

★: Selective parts.

- | | | |
|-------------------------------------|---------------------------------|-----------------------|
| 1 Pinion crown gear set | 10 Front oil seal | 19 Bolt (8x20x14 mm) |
| 2 Differential case | 11 Companion flange | 20 Bolt (11x18x11 mm) |
| ★3 Pinion height adjusting washer | 12 Self locking nut | 21 Rear cover |
| 4 Rear bearing | 13 Side bearing | 22 Stud bolt |
| ★5 Bearing preload adjusting spacer | 14 Side bearing retainer | 23 Plug |
| ★6 Bearing preload adjusting washer | 15 Differential carrier | 24 Plug CP |
| 7 Front bearing | 16 Side oil seal | 25 Bolt (10x30x18 mm) |
| 8 Spacer | 17 Side bearing retainer O-ring | |
| 9 Pilot bearing | ★18 Side bearing retainer shim | |

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Fig. 12

W SERVICE PROCEDURE

1. Propeller Shaft

A: ON-CAR SERVICE

Check the following points with propeller shaft installed in vehicle.

1) Joints and connections

Check for any looseness of yoke flange connecting bolts and center bearing retaining bolts.

2) Splines and bearing locations

Turn propeller shaft by hand to see if abnormal free play exists at splines. Also move yokes to see if abnormal free play exists at spiders and bearings.

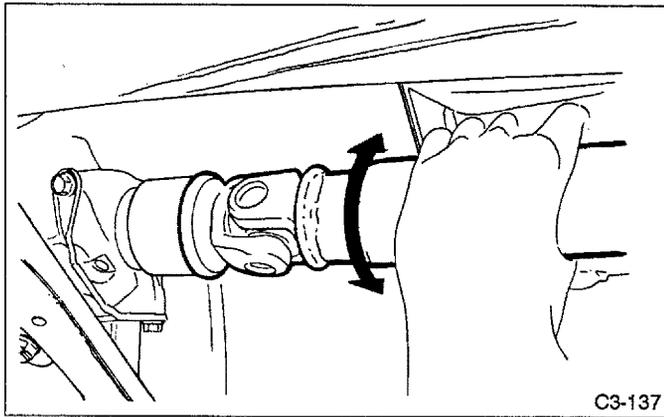


Fig. 13

3) Runout of propeller shaft

Turn rear wheels by hand to check for "runout" of propeller shaft.

(1) Put steel plate on stand, and install magnet stand for dial gauge.

a. Pay attention not to move the vehicle body.

Run out:

Limit 0.6 mm (0.024 in)

Measure runout with a dial gauge at the center of front and rear propeller shaft tubes.

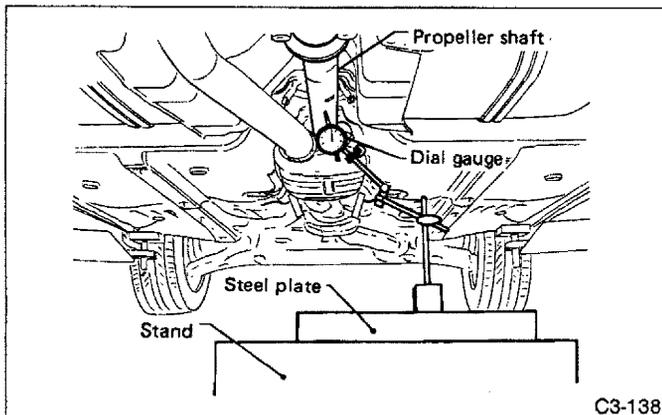


Fig. 14

4) Center bearing free play

While holding propeller shaft near center bearing with your hand, move it up and down, and left and right to check for any abnormal bearing free play.

B: REMOVAL

1) Disconnect the ground cable from battery.

2) Move the selector lever to "N".

3) Release the parking brake.

4) Jack-up the vehicle and support it with rigid racks.

5) Disconnect connector from rear oxygen sensor.

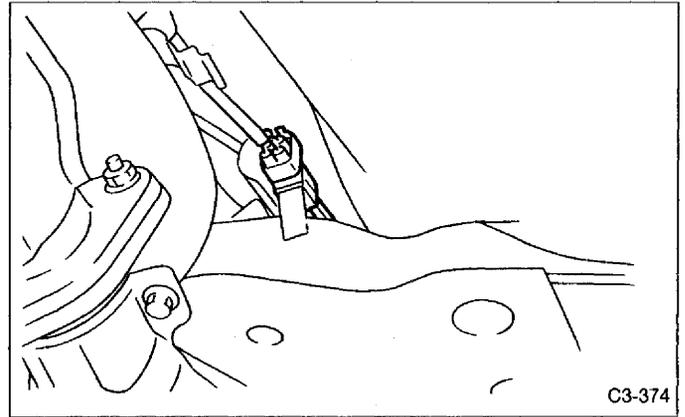


Fig. 1

6) Remove the rear exhaust pipe and the rear catalytic converter.

<Ref. to 2-1 [W2A0]☆5, 2-9 [W5A0].☆1>

7) Remove the front exhaust cover.

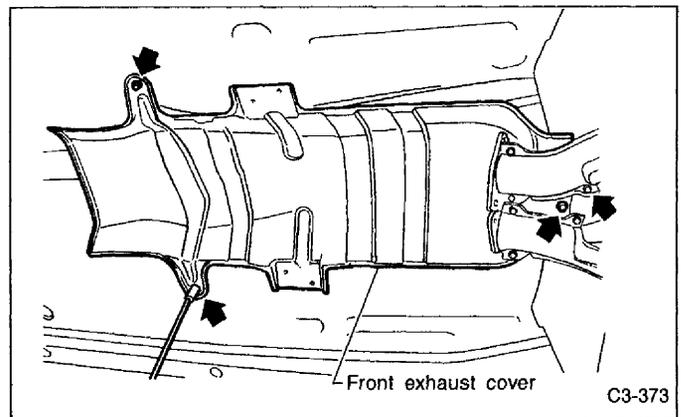


Fig. 2

8) Loosen the four bolts which hold propeller shaft to rear differential.

Remove all but one bolt.

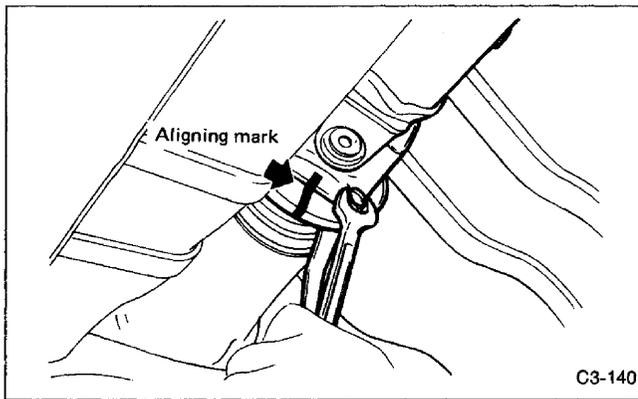


Fig. 3

9) Remove the two bolts which hold center bearing to car body.

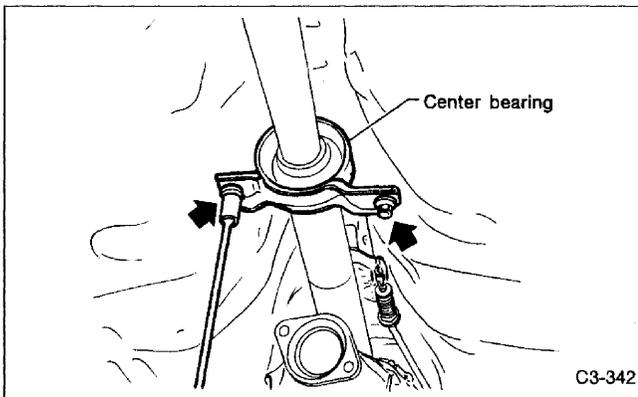


Fig. 4

10) Remove propeller shaft from transmission.

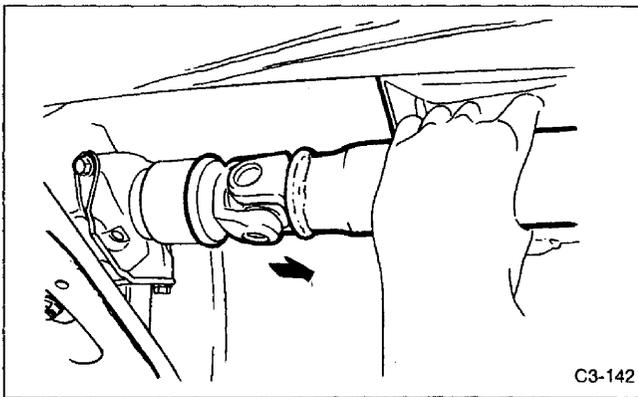


Fig. 5

11) Install the extension cap to transmission.

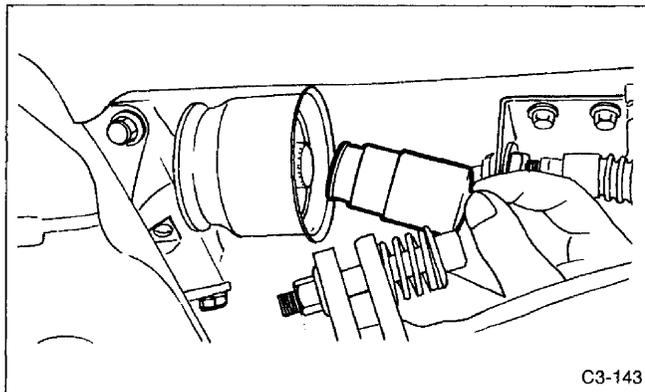


Fig. 6

- a. Be sure to use an empty oil can to catch oil flowing out when removing propeller shaft.
- b. Be sure not to damage oil seals and the frictional surface of sleeve yoke.
- c. Be sure to plug the opening in transmission after removal of propeller shaft.

C: DISASSEMBLY

Before removing center bearing, check its condition. If it does not operate smoothly or if there is any free play or leakage, remove as follows:

- 1) Put matching marks on affected parts.

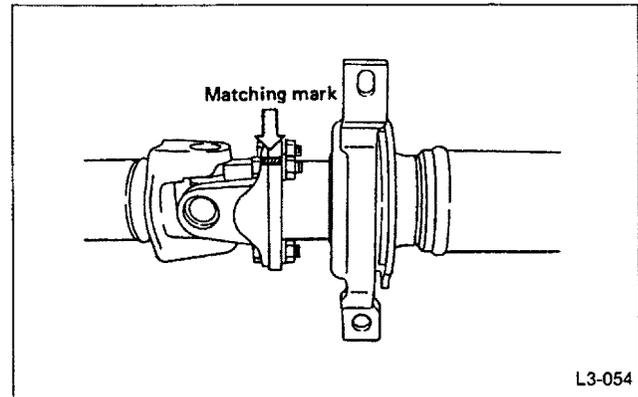


Fig. 9

- 2) Remove bolts which hold front propeller shaft to rear propeller shaft.
- 3) Place companion flange in a vise and remove stake nut.

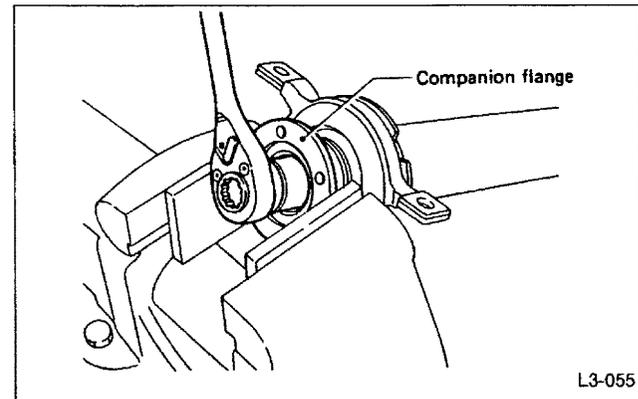


Fig. 10

Be sure not to hold propeller shaft pipe portion in the vise.

- 4) Drive out companion flange with a puller or press.
Before disassembling, put aligning mark on relevant parts.
- 5) Lightly tap the head of front shaft with a copper hammer until center bearing is removed.

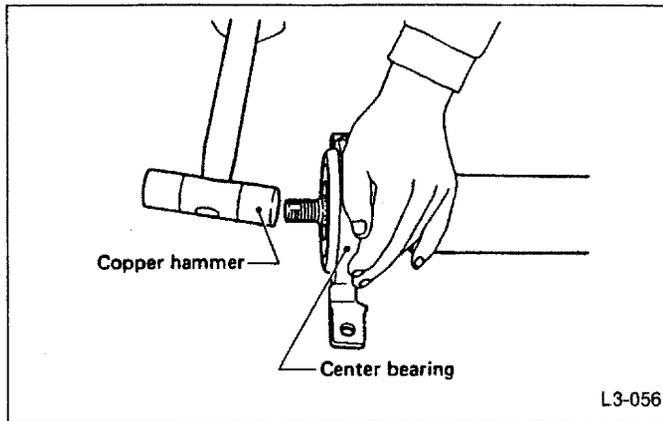


Fig. 11

Be careful not to damage the thread portion.

D: INSPECTION

Do not disassemble propeller shaft. Check the following and replace if necessary.

- 1) Tube surfaces for dents or cracks
- 2) Splines for deformation or abnormal wear
- 3) Joints for non-smooth operation or abnormal noise
- 4) Center bearing for free play, noise or non-smooth operation
- 5) Oil seals for abnormal wear or damage
- 6) Center bearing for breakage or damage to rubber boot

E: INSTALLATION

- 1) Install center bearing onto front propeller shaft.
- 2) Install washer to center bearing.

Apply a coat of grease to both surfaces of washer before installation.

Recommended grease:

Molybdenum disulfide grease

- 3) Align marks and install companion flange.
- 4) Tighten stake nut until center bearing is set in position.

Be sure to install new stake nut.

Tightening torque:

245 — 294 N·m (25 — 30 kg-m, 181 — 217 ft-lb)

Stake the nut after tightening.

- 5) Align marks and connect front and rear shafts.

Tightening torque:

24 — 32 N·m (2.4 — 3.3 kg-m, 17 — 24 ft-lb)

- 6) Remove the extension cap from transmission.
- 7) Insert sleeve yoke into transmission and attach center bearing to car body.

Tightening torque:

47 — 57 N·m (4.8 — 5.8 kg-m, 35 — 42 ft-lb)

- 8) Connect flange yoke and rear differential.

Tightening torque:

24 — 39 N·m (2.4 — 4.0 kg-m, 17 — 29 ft-lb)

- 9) Install front exhaust cover.
- 10) Install rear exhaust pipe and rear catalytic converter.
<Ref. to 2-1 [W2B0]☆5, 2-9 [W5B0].☆1 >

2. Rear Differential

A: ON-CAR SERVICE

1. FRONT OIL SEAL

- 1) Disconnect the ground cable from battery.
- 2) Move the selector lever to "N".
- 3) Release the parking brake.
- 4) Drain gear oil.
- 5) Jack up rear wheels and support the vehicle body with rigid racks.
- 6) Remove propeller shaft from body.
[Refer to "Propeller Shaft".]

Wrap metal parts (installed at the rubber boot center DOJ) with a cloth or rubbered material to prevent it from damage by interference with adjacent metal parts.

- 7) Measure turning resistance of companion flange.
Measure turning resistance after making sure that the companion flange turns smoothly.

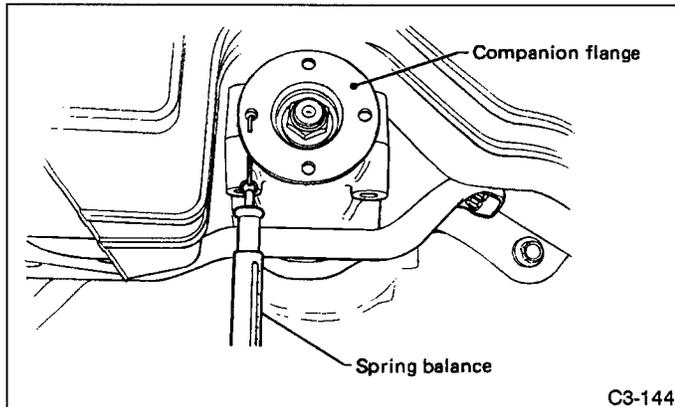


Fig. 24

- 8) Remove self-locking nut while holding companion flange with FLANGE WRENCH.

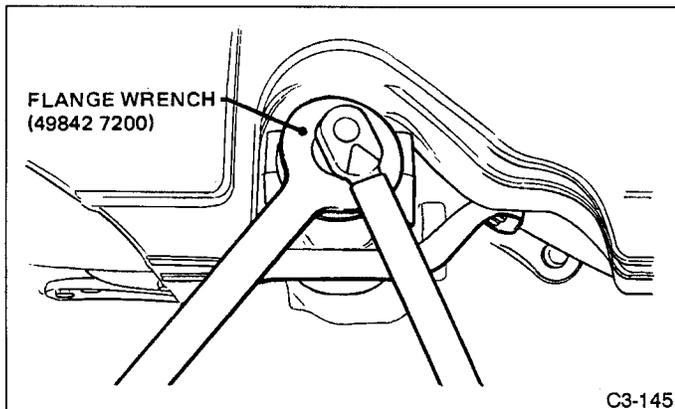


Fig. 25

- 9) Extract companion flange with a puller.
- 10) Remove oil seal.

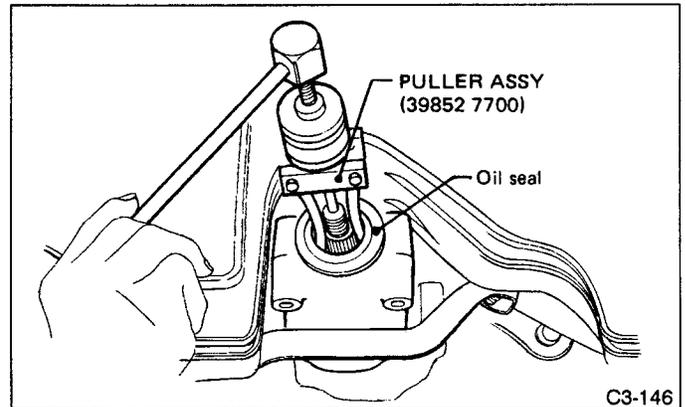


Fig. 26

- 11) Fit a new oil seal.

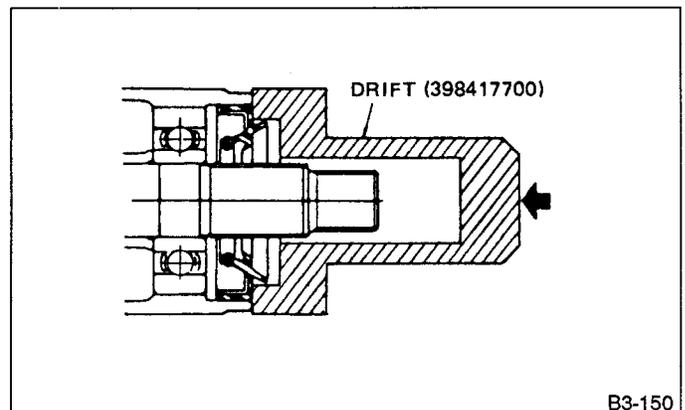


Fig. 27

- 12) Install companion flange.
- 13) Tighten self-locking nut within the specified torque range so that the turning resistance of companion flange becomes the same as that before replacing oil seal.

Torque (Drive pinion nut):

167 — 196 N·m
(17.0 — 20.0 kg-m, 123 — 145 ft-lb)

- 14) Reassembling procedure hereafter is the reverse of the disassembling.

2. SIDE OIL SEAL

- 1) Disconnect the ground cable from battery.
- 2) Move the selector lever to "N".
- 3) Release the parking brake.
- 4) Loosen wheel nuts.
- 5) Jack up the vehicle and support it with rigid racks.
- 6) Remove the wheels.
- 7) Remove the rear exhaust pipe.

For removal of the rear exhaust pipe, refer to "2-9 EXHAUST SYSTEM" [W5A0].

- 8) Remove the DOJ of rear drive shaft from the rear differential.

- (1) Remove the ABS sensor cable clamp and parking brake cable guide from the trailing link.

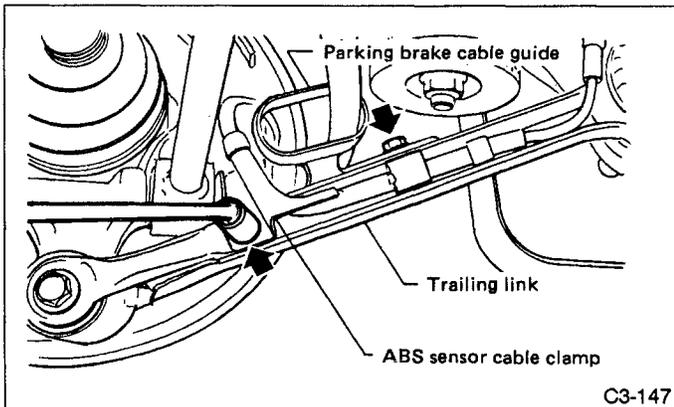


Fig. 28

- (2) Remove the parking brake cable clamp from the rear sub frame.

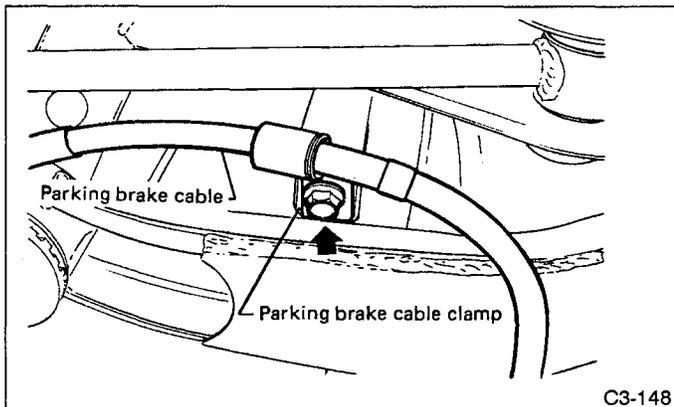


Fig. 29

- (3) Remove the rear stabilizer link.

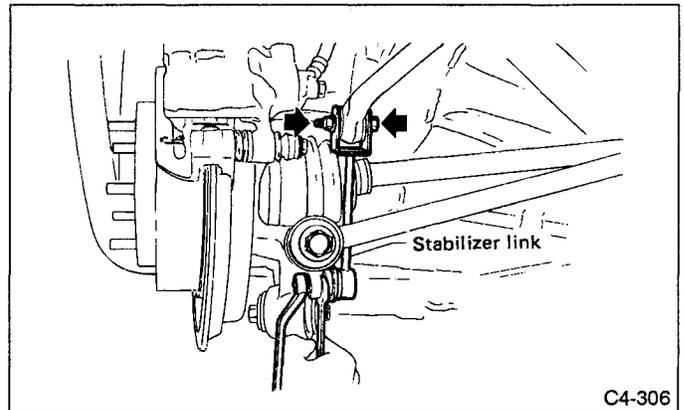


Fig. 30

- (4) Remove the brake hose clamps from rear strut.

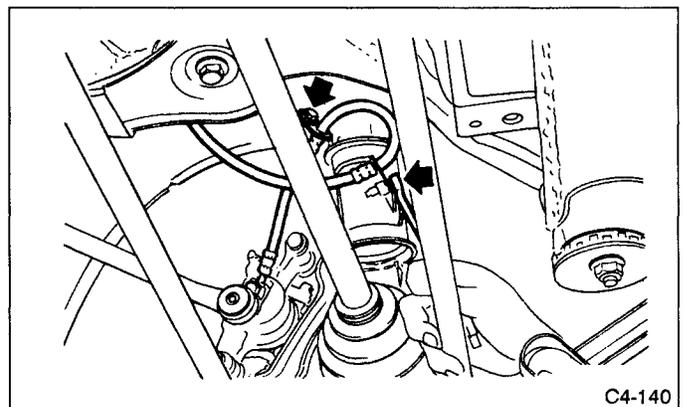


Fig. 31

- (5) Remove the bolts which secure the trailing link to the rear housing.

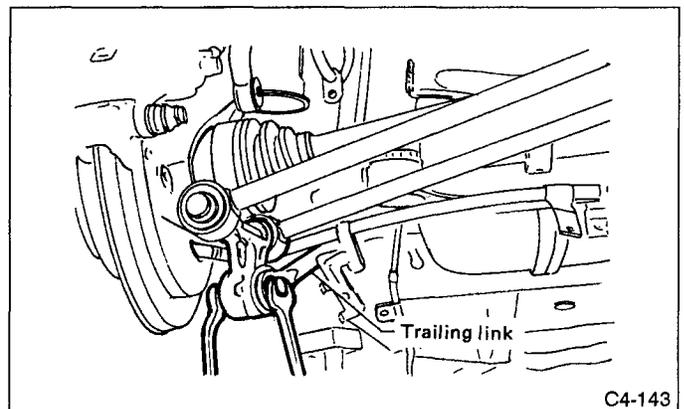


Fig. 32

(6) Remove the bolts which secure the front and rear lateral link to the rear housing.

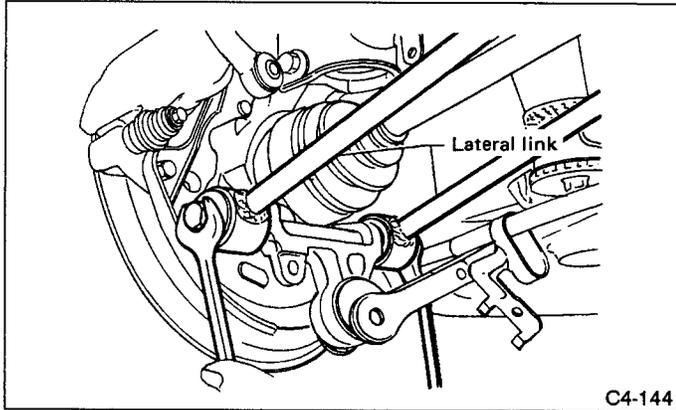


Fig. 33

(7) Remove the DOJ from the rear differential by using the DRIVE SHAFT REMOVER.

Special tool:
DRIVE SHAFT REMOVER (28099PA100)

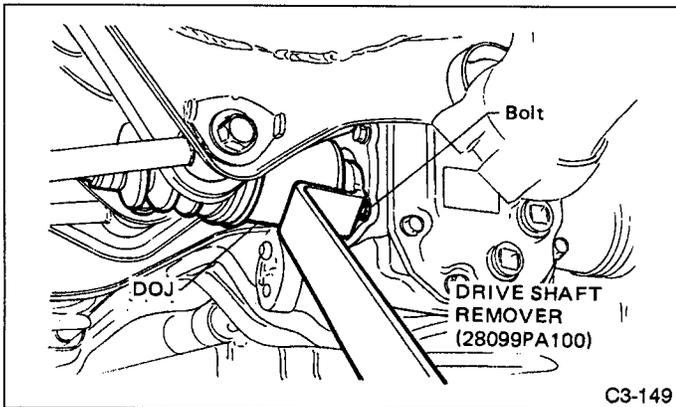


Fig. 34

When removing DOJ from rear differential using remover, fit remover to the bolt as shown in Fig. 35 so as not to damage side bearing retainer.

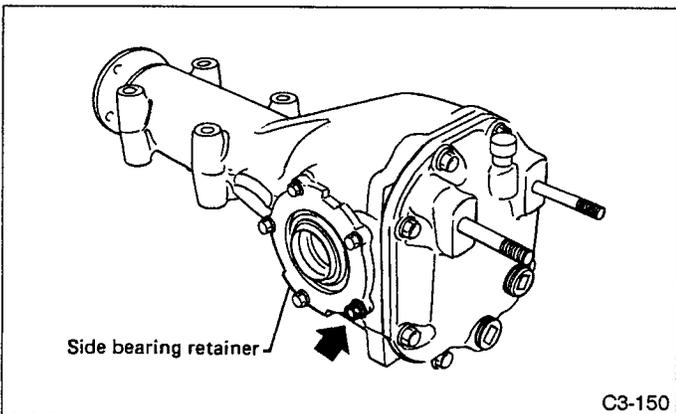


Fig. 35

9) Secure rear drive shaft to rear sub frame using wire.

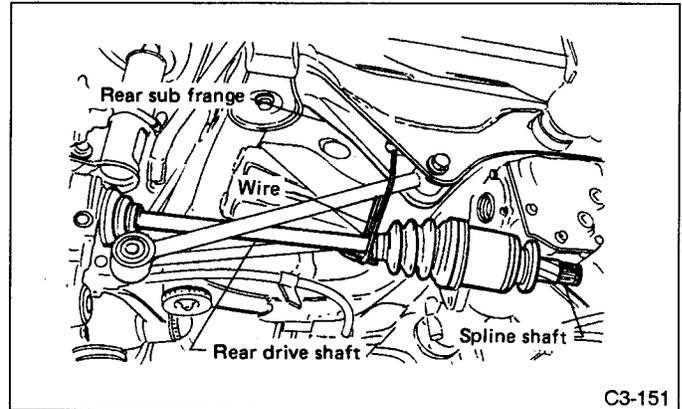


Fig. 36

The LH side spline shaft circlip only comes out together with the shaft. RH side circlip is fitted inside the rear differential, and it need not be removed.

10) Remove the side oil seal.

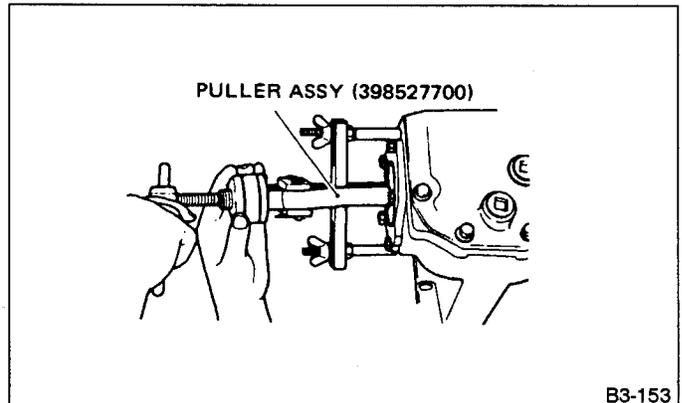


Fig. 37

11) Drive in a new side oil seal with DRIFT. Apply chassis grease between the oil seal lips.

Special tool:
DRIFT (398437700)

12) Insert the DOJ into rear differential. Before inserting, replace the circlip at the end of the LH spline shaft with a new one.

For replace of circlip, refer to "4-2 WHEEL AND AXLES.

(1) Install the side oil seal protector to rear differential.

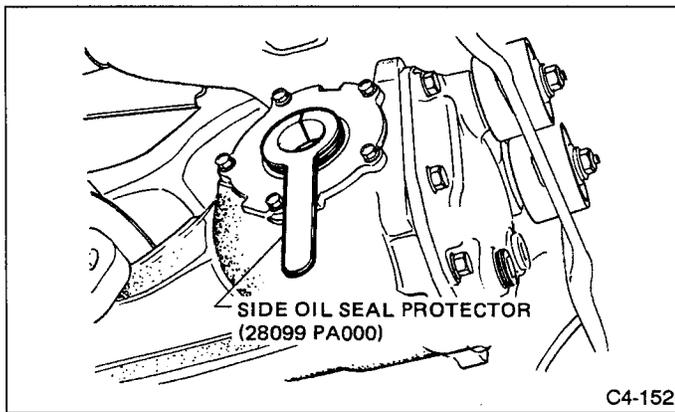


Fig. 38

(2) Insert the spline shaft until the spline portion is inside the side oil seal.

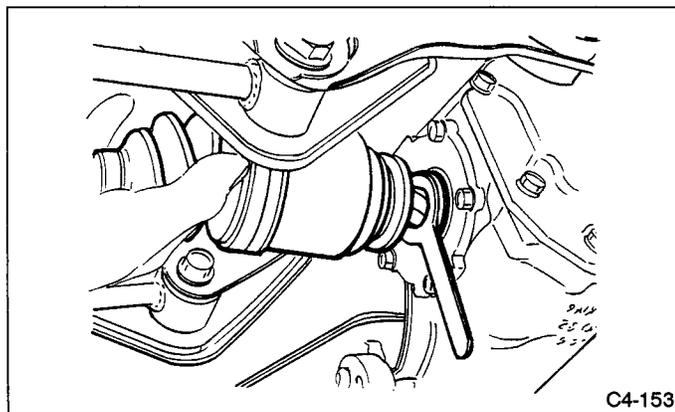


Fig. 39

(3) Remove the side oil seal protector.

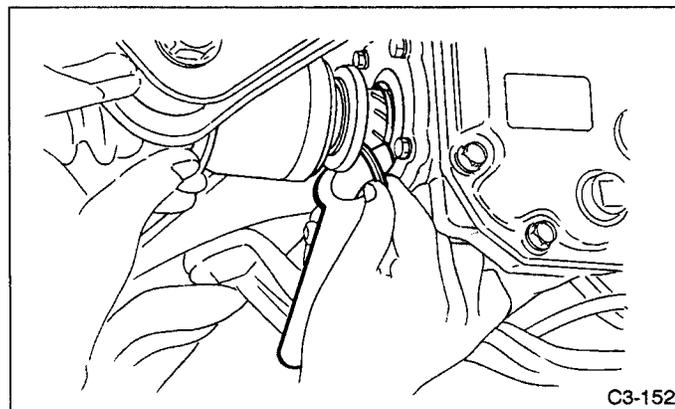


Fig. 40

(4) Completely insert DOJ into rear differential by pressing rear housing.
 Check that oil seal lip is not folded over inward.

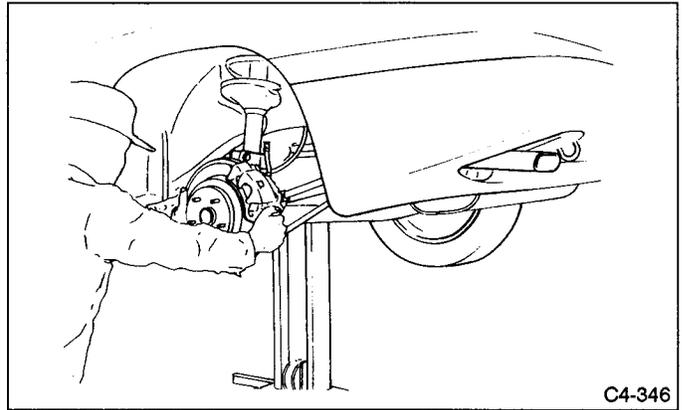


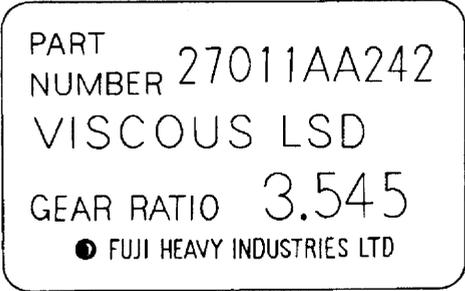
Fig. 41

13) Reassembling procedure hereafter is the reverse of the disassembling.
 For installation of rear suspension parts, refer to "4-1 SUSPENSION".

B: IDENTIFICATION

Using an incorrect rear differential ASSY causes the drive line and wheels to "drag" or emit abnormal noise.

When replacing the rear differential ASSY, select the correct rear differential ASSY.

Gear ratio	Part number	Label stuck on rear differential
3.545	27011AA242	

C3-153

Fig. 42

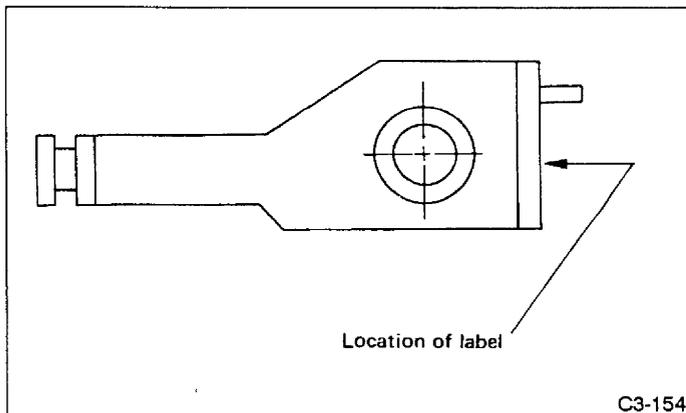


Fig. 43

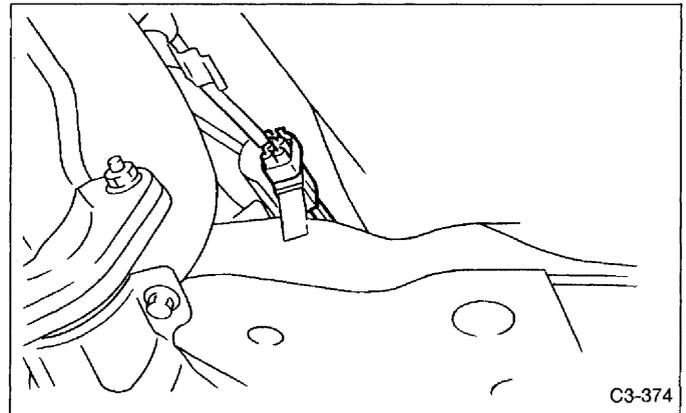


Fig. 7

8) Remove the rear exhaust pipe and rear catalytic converter.

9) Remove the front exhaust cover.

C : REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Move the selector lever to "N".
- 3) Release the parking brake.
- 4) Loosen wheel nuts.
- 5) Jack up the vehicle and support it with rigid racks.
- 6) Remove the wheels.
<Ref. to 2-1 [W2A0].☆5, 2-9 [W5A0].☆1 >
- 7) Disconnect connector from rear oxygen sensor.

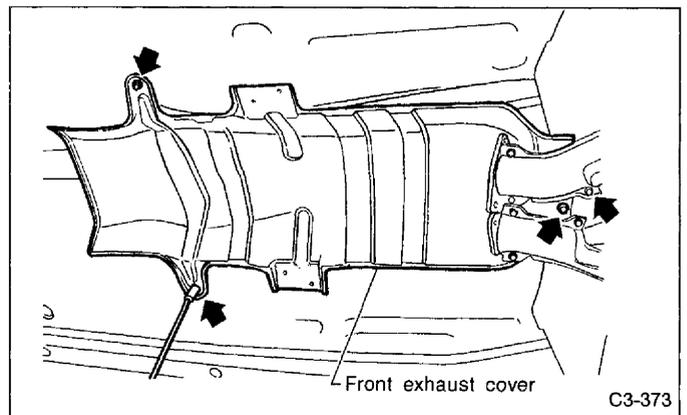


Fig. 8

10) Remove the propeller shaft from body.

<Ref. to [W1B0].☆5 >

- a. Prepare an oil can and cap since the transmission oil flows out from the extension at removing propeller shaft.
- b. When removing propeller shaft, pay attention not to damage the sliding surfaces of rear drive shaft (extension) spline, oil seal and sleeve yoke.
- c. Insert the cap into the extension to prevent transmission oil from flowing out immediately after removing the propeller shaft.

11) Remove the DOJ of rear drive shaft from the rear differential.

For removal of DOJ from the rear differential, refer to "3-4 AWD SYSTEM" [W2A2]☆1.

12) Secure rear drive shaft to rear sub frame using wire.

13) Remove the rear differential ASSY from body.

- (1) Remove the four bolts which secure the bracket to the rear differential member.

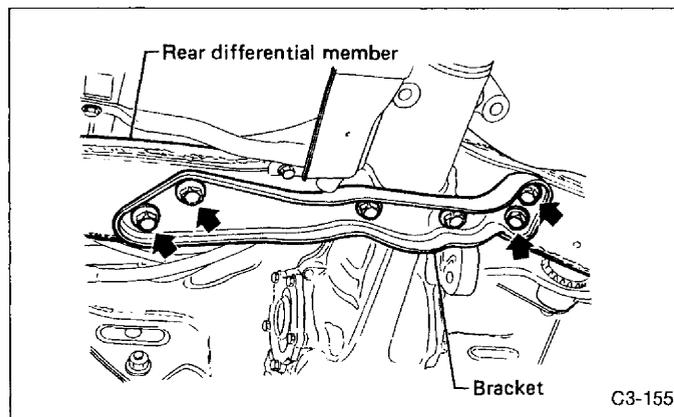


Fig. 9

- (2) Support the rear differential with transmission jack.

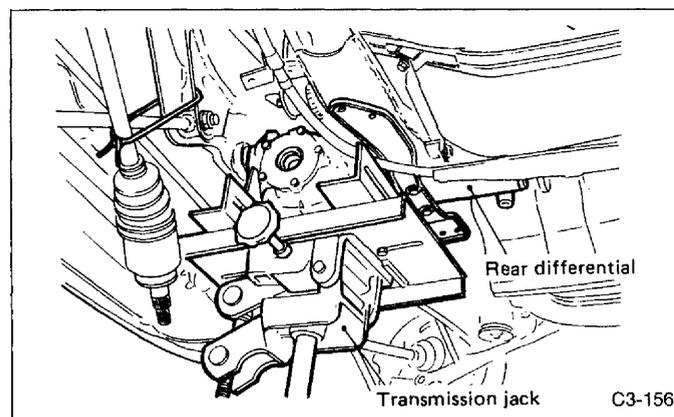


Fig. 10

- (3) Remove the two bolts which secure the bracket and rear differential to rear differential member.

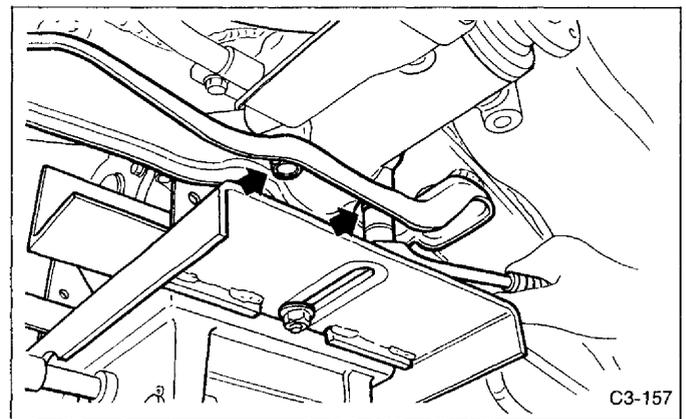


Fig. 11

- (4) Remove the self locking nuts which connect the rear differential to the rear sub frame.

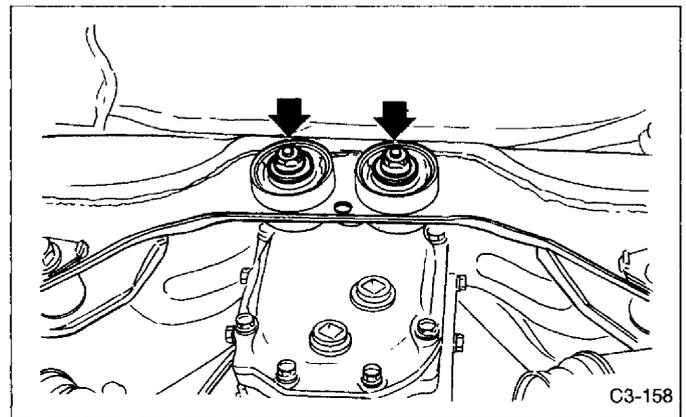


Fig. 12

- (5) While slowly lowering transmission jack, move the rear differential forward and remove bolts from the rear sub frame.

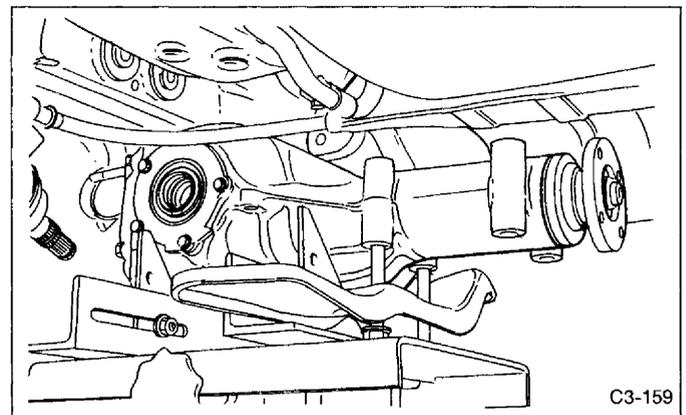


Fig. 13

Do not tilt the rear differential, or rear differential gear oil will spill out.

- (6) Remove the rear differential ASSY from body.

D: DISASSEMBLY

To detect real cause of trouble, inspect the following items before disassembling. (Refer to "ASSEMBLY" for inspection procedures.)

- Tooth contact of hypoid drive gear and pinion, and backlash
- Runout of drive gear at its back surface
- Turning resistance of drive pinion

1) Set ATTACHMENT on vise and install the differential assembly to Attachment.

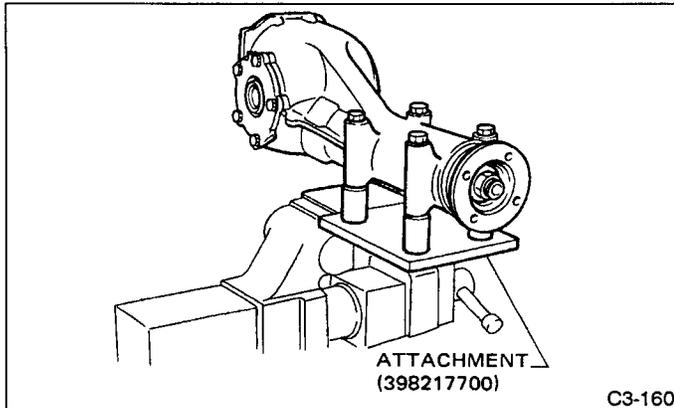


Fig. 51

- 2) Drain gear oil by removing plug.
- 3) Remove rear cover by loosening retaining bolts.

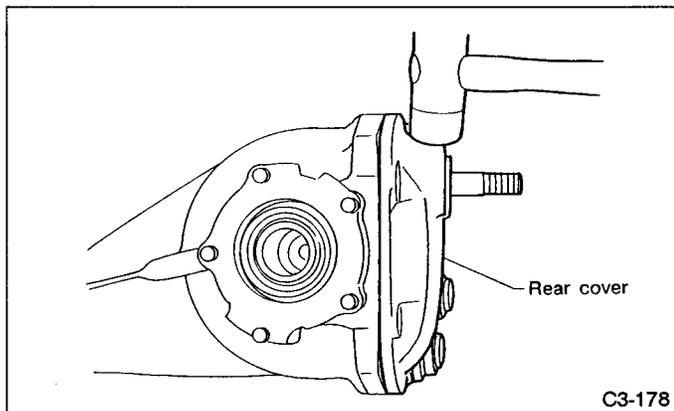


Fig. 52

4) Make right and left side bearing retainers in order to identify them at reassembly. Remove side bearing retainer attaching bolts, set ATTACHMENT to differential case, and extract right and left side bearing retainers with a puller.

Each shim, which is installed to adjust the side bearing preload, should be kept together with its mating retainer.

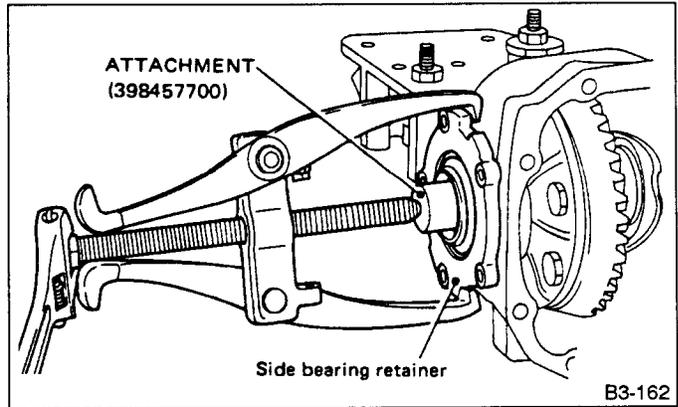


Fig. 53

- 5) Pull out differential case.
Be careful not to permit the teeth to contact the case.

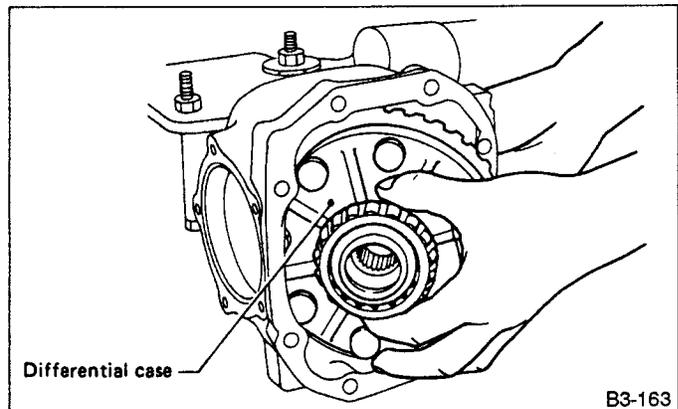


Fig. 54

- 6) When replacing side bearing, pull bearing cup from side bearing retainer.

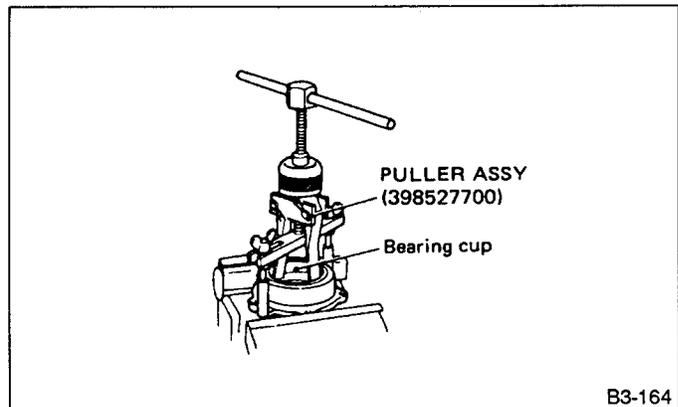


Fig. 55

- 7) Extract bearing cone with PULLER SET.
 - a. Set Puller so that its claws catch the edge of the bearing cone.
 - b. Never mix up the right and left hand bearing cups and cones.

Do not attempt to disassemble the parts unless necessary.

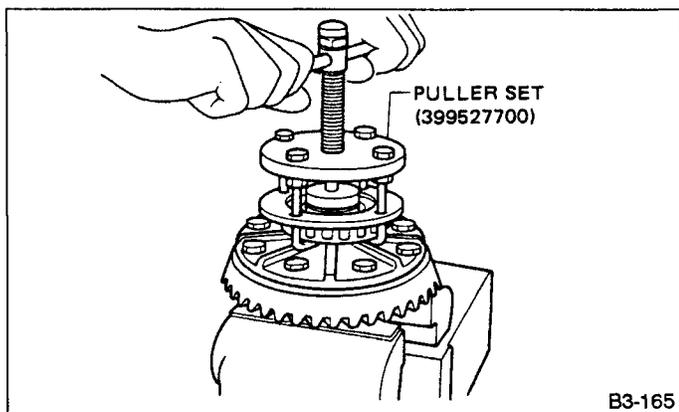


Fig. 56

8) Remove drive gear by loosening drive gear bolts.

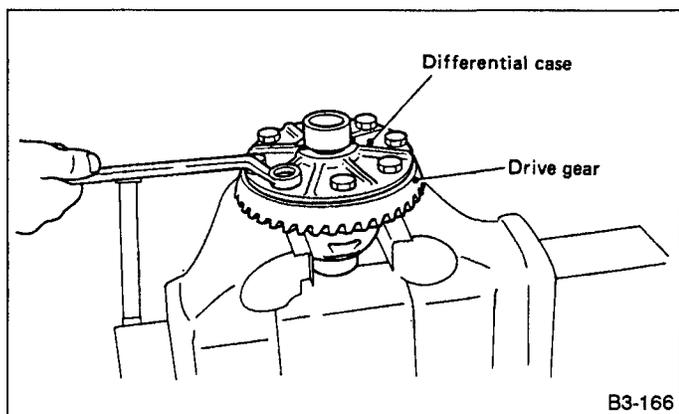


Fig. 57

Further disassembling is not allowed.

9) Hold companion flange with FLANGE WRENCH and remove drive pinion nut.

10) Extract the companion flange with a puller.

11) Press the end of drive pinion shaft and extract it together with rear bearing cone, preload adjusting spacer and washer.

Hold the drive pinion so as not to drop it.

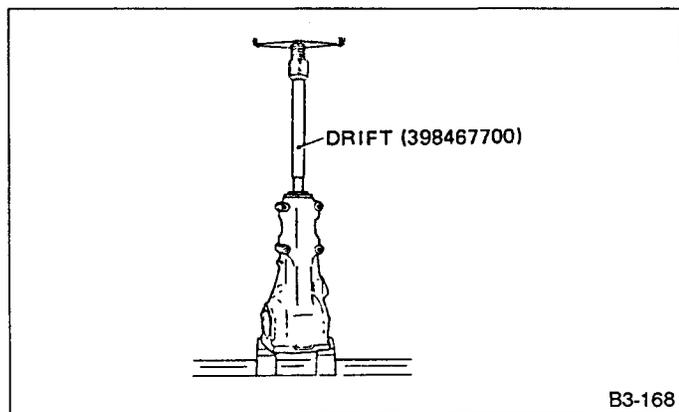


Fig. 58

12) Remove rear bearing cone from drive pinion by supporting cone with REPLACER.

Place the replacer so that its center-recessed side faces the pinion gear.

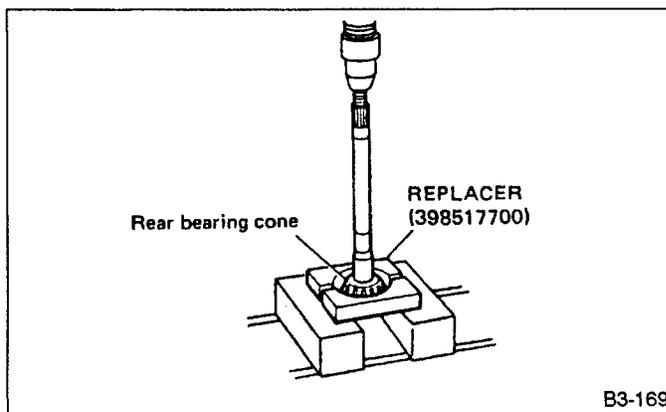


Fig. 59

13) Remove front oil seal from differential carrier.

14) Remove pilot bearing together with front bearing cone.

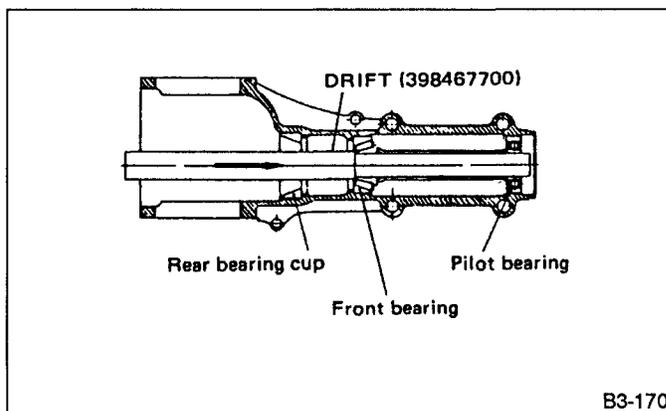


Fig. 60

15) When replacing bearings, tap front bearing cup and rear bearing cup in this order out of case by using a brass bar.

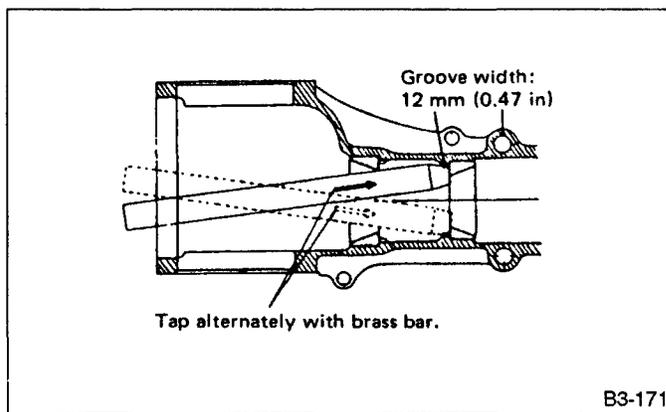


Fig. 61

E: INSPECTION

Wash all the disassembled parts clean, and examine them for wear, damage, or other defects. Repair or replace defective parts as necessary.

1) Drive gear and drive pinion

(1) If abnormal tooth contact is evident, find out the cause and adjust to give correct tooth contact at assembly. Replace the gear if excessively worn or incapable of adjustment.

(2) If crack, score, or seizure is evident, replace as a set. Slight damage of tooth can be corrected by oil stone or the like.

2) Bearing

Replace if seizure, peeling, wear, rust, dragging during rotation, abnormal noise or other defect is evident.

3) Oil seal

Replace if deformed or damaged, and at every disassembling.

4) Differential carrier

Replace if the bearing bores are worn or damaged.

5) Differential case

Replace if its sliding surfaces are worn or cracked.

6) Companion flange

Replace if the oil seal lip contacting surfaces have flaws.

F: ASSEMBLY

1) Precautions for assembling

(1) Assemble in the reverse order of disassembling. Check and adjust each part during assembly.

(2) Keep the shims and washers in order, so that they are not misinstalled.

(3) Thoroughly clean the surfaces on which the shims, washers and bearings are to be installed.

(4) Apply gear oil when installing the bearings and thrust washers.

(5) Be careful not to mix up the right and left hand cups of the bearings.

(6) Replace the oil seal with new one at every disassembly. Apply chassis grease between the lips (*) when installing the oil seal.

(7) Do not reuse old gaskets. Install new ones.

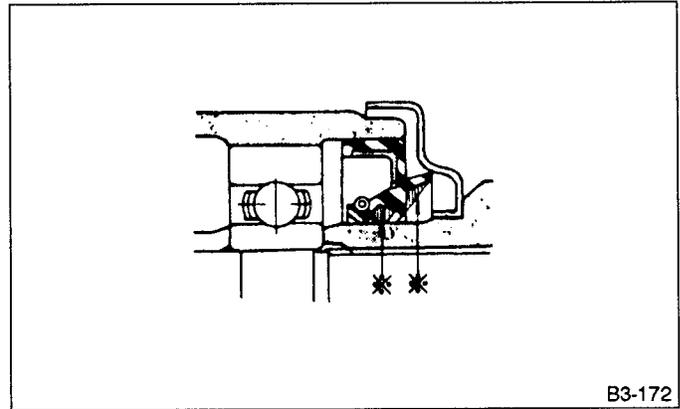


Fig. 62

2) Adjusting preload for front and rear bearings. Adjust the bearing preload with spacer and washer between front and rear bearings. Pinion height adjusting washer has nothing to do with this adjustment. The adjustment must be carried out without oil seal.

(1) Press front and rear bearing cups into differential carrier.

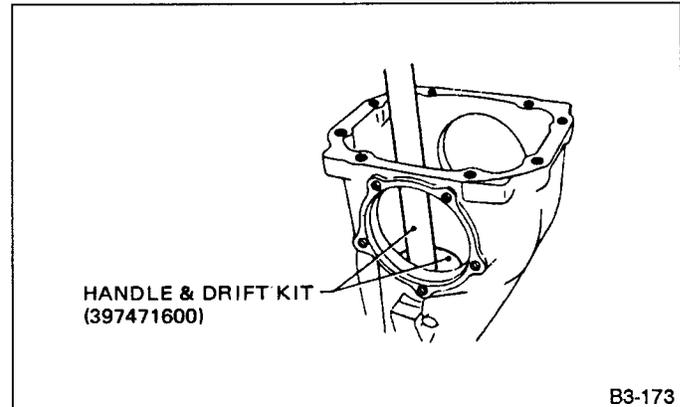


Fig. 63

(2) Insert DUMMY SHAFT with pinion height adjusting washer and rear bearing cone fitted on it into case.

Reuse the used washer if they show normal tooth contact pattern when checked before disassembly.

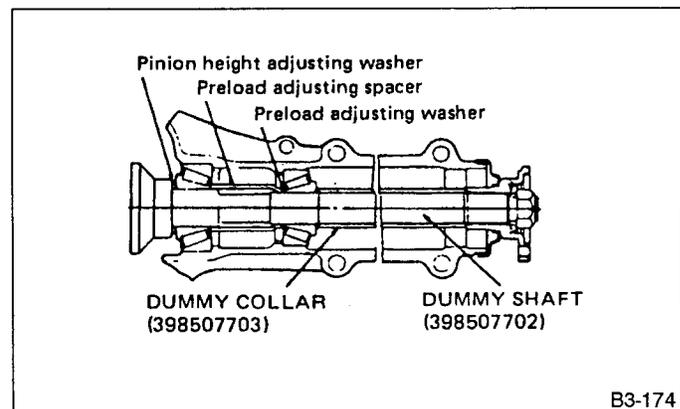


Fig. 64

(3) Then, install preload adjusting spacer and washer, front bearing cone, DUMMY COLLAR, companion flange, washer and drive pinion nut.

(4) Turn Dummy Shaft with hand to make it seated, and tighten drive pinion nut while measuring the preload with spring balance as shown in the figure. Select preload adjusting washer and spacer so that the specified preload is obtained when nut is tightened to the specified torque.

- a. Be careful not to give excessive preload.
- b. When tightening the drive pinion nut, lock Dummy Shaft with BLOCK as illustrated here.

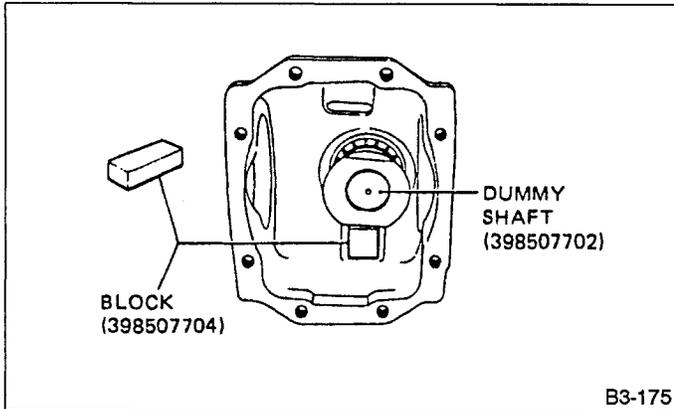


Fig. 65

Torque (Drive pinion nut):
 167 — 196 N·m (17.0 — 20.0 kg-m, 123 — 145 ft-lb)

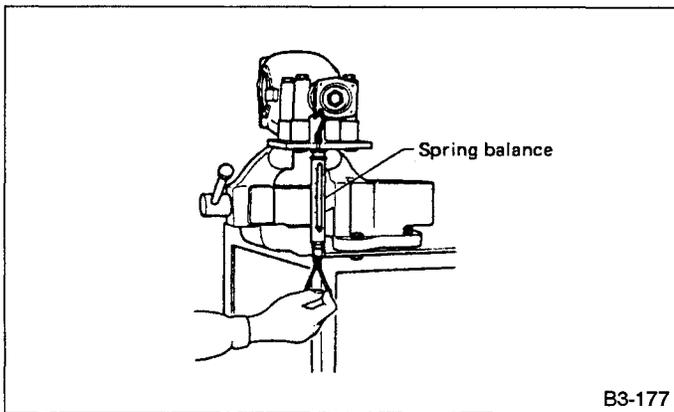


Fig. 66

Front & rear bearing preload
For new bearing: 19.6 — 28.4 N (2.0 — 2.9 kg, 4.4 — 6.4 lb) at companion flange bolt hole
For used bearing: 8.34 — 16.67 N (0.85 — 1.7 kg, 1.87 — 3.75 lb) at companion flange bolt hole

Preload adjusting washers

Part No.	Length mm (in)
383705200	2.59 (0.1020)
383715200	2.57 (0.1012)
383725200	2.55 (0.1004)
383735200	2.53 (0.0996)
383745200	2.51 (0.0988)
383755200	2.49 (0.0980)
383765200	2.47 (0.0972)
383775200	2.45 (0.0965)
383785200	2.43 (0.0957)
383795200	2.41 (0.0949)
383805200	2.39 (0.0941)
383815200	2.37 (0.0933)
383825200	2.35 (0.0925)
383835200	2.33 (0.0917)
383845200	2.31 (0.0909)

Preload adjusting spacers

Part No.	Length mm (in)
383695201	56.2 (2.213)
383695202	56.4 (2.220)
383695203	56.6 (2.228)
383695204	56.8 (2.236)
383695205	57.0 (2.244)
383695206	57.2 (2.252)

3) Adjusting drive pinion height
 Adjust drive pinion height with washer installed between rear bearing cone and the back of pinion gear.

(1) Install Dummy Shaft, Collar and Gauge, as shown in the figure, and apply the specified preload on the bearings. (Refer to 2.) Adjusting preload for front and rear bearings.

At this time, install a pinion height adjusting washer which is temporarily selected or the same as that used before.

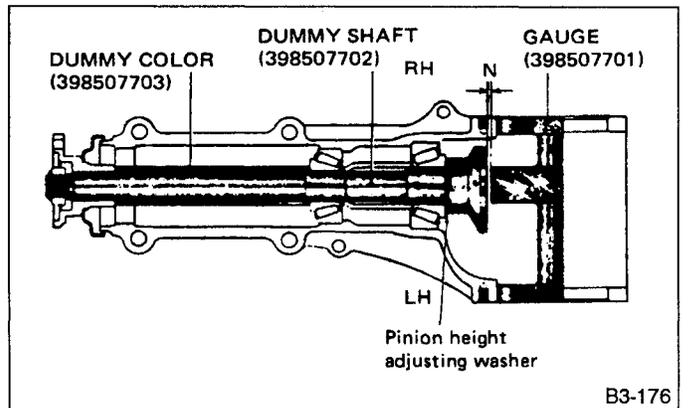


Fig. 67

(2) Measure the clearance N between the end of Gauge and the end surface of Dummy Shaft by using a thickness gauge.

Make sure there is no clearance between the case and Gauge.

(3) Obtain the thickness of pinion height adjusting washer to be inserted from the following formula, and replace the temporarily installed washer with this one.

$$T = T_o + N - (H \times 0.01) - 0.20 \text{ (mm)}$$

where

T = Thickness of pinion height adjusting washer (mm)

T_o = Thickness of washer temporarily inserted (mm)

N = Reading of thickness gauge (mm)

H = Figure marked on drive pinion head

(Example of calculation)

$$T_o = 2.20 + 1.20 = 3.40 \text{ mm}$$

$$N = 0.23 \text{ mm } H = +1,$$

$$T = 3.40 + 0.23 - 0.01 - 0.20 = 3.42$$

Result: Thickness = 3.42 mm

Therefore use the washer 383605200.

Pinion height adjusting washers

Part No.	Thickness mm (in)
383495200	3.09 (0.1217)
383505200	3.12 (0.1228)
383515200	3.15 (0.1240)
383525200	3.18 (0.1252)
383535200	3.21 (0.1264)
383545200	3.24 (0.1276)
383555200	3.27 (0.1287)
383565200	3.30 (0.1299)
383575200	3.33 (0.1311)
383585200	3.36 (0.1323)
383595200	3.39 (0.1335)
383605200	3.42 (0.1346)
383615200	3.45 (0.1358)
383625200	3.48 (0.1370)
383635200	3.51 (0.1382)
383645200	3.54 (0.1394)
383655200	3.57 (0.1406)
383665200	3.60 (0.1417)
383675200	3.63 (0.1429)
383685200	3.66 (0.1441)

4) Install the selected pinion height adjusting washer on drive pinion, and press the rear bearing cone into position with INSTALLER.

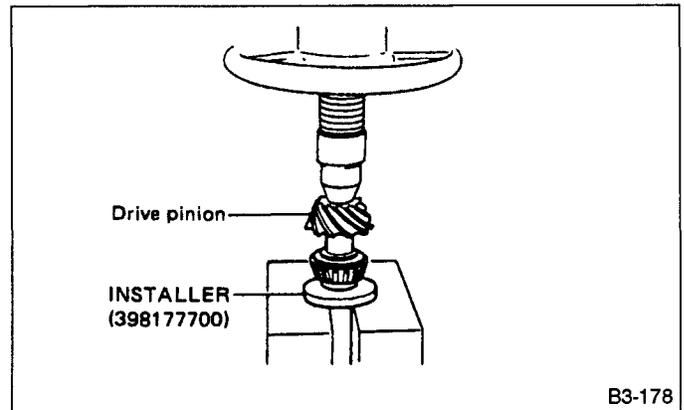


Fig. 68

5) Insert drive pinion into differential carrier, install the previously selected preload adjusting spacer and washer.

6) Press-fit front bearing cone into case.

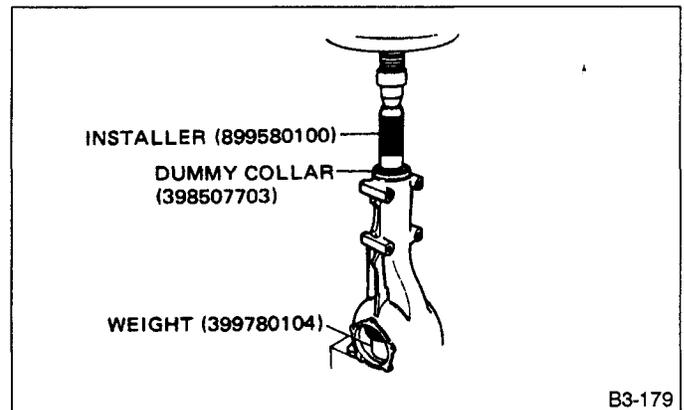


Fig. 69

7) Insert spacer, then press-fit pilot bearing with WEIGHT and INSTALLER.

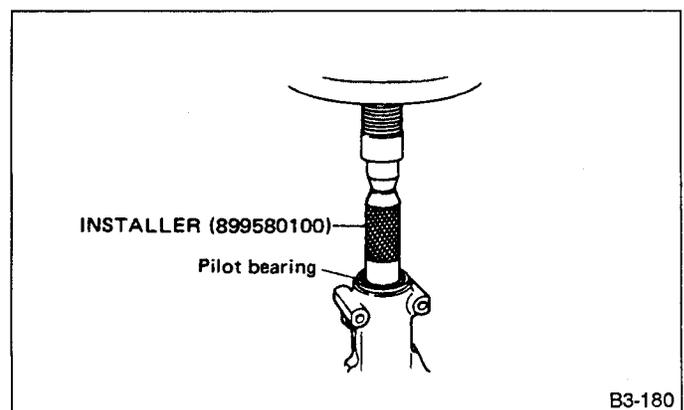


Fig. 70

8) Fit a new oil seal with DRIFT.
Apply grease between the oil seal lips. (Refer to 1.)
Precautions for assembling.

Special tool:
DRIFT (398417700)

9) Press-fit companion flange with **INSTALLER** and **WEIGHT**.

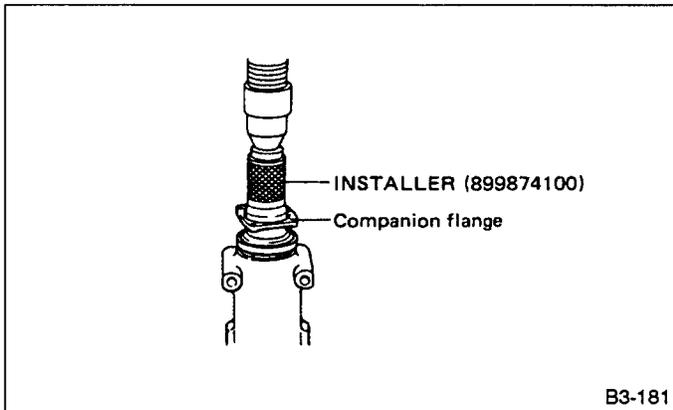


Fig. 71

10) Install self-locking nut with washer.

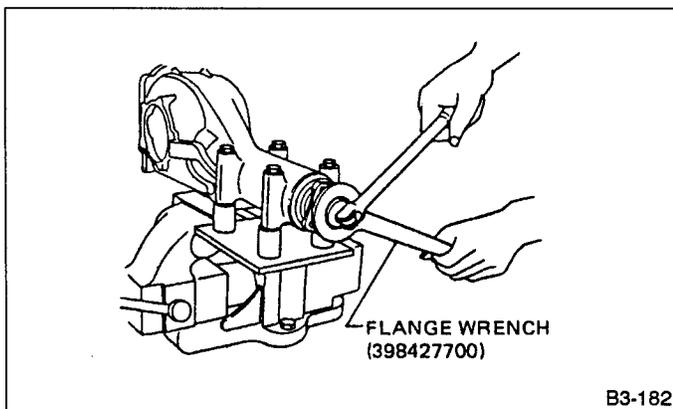


Fig. 72

Torque (Drive pinion nut):
167 — 196 N•m (17.0 — 20.0 kg-m, 123 — 145 ft-lb)

11) **Assembling differential case**
 Install side gears and pinion mate gears, with their thrust washers and pinion mate shaft, into differential case.

Apply gear oil on both sides of the washer and on the side gear shaft before installing.

Insert the pinion mate shaft into the differential case by aligning the lock pin holes.

- (1) Measure the clearance between differential case and the back of side gear.
- (2) Adjust the clearance as specified by selecting side gear thrust washer.

Side gear back clearance:
0.1 — 0.2 mm (0.004 — 0.008 in)

Side gear thrust washers

Part No.	Thickness mm (in)
383445201	0.75 — 0.80 (0.0295 — 0.0315)
383445202	0.80 — 0.85 (0.0315 — 0.0335)
383445203	0.85 — 0.90 (0.0335 — 0.0354)

(3) Check the condition of rotation after applying oil to the gear tooth surfaces and thrust surfaces.

(4) After driving in pinion shaft lock pin, stake the both sides of the hole to prevent pin from falling off.

(5) Install drive gear on differential case.

Torque (Drive gear bolt):
93 — 113 N•m (9.5 — 11.5 kg-m, 69 — 83 ft-lb)

Tighten diagonally while tapping the bolt heads.

12) Before installing side bearing, measure the bearing width by using a dial gauge, **WEIGHT** and **GAUGE**.

Standard bearing width:
20.00 mm (0.7874 in)

Set the dial gauge needle to zero, using a standard bearing or block of specified height in advance.

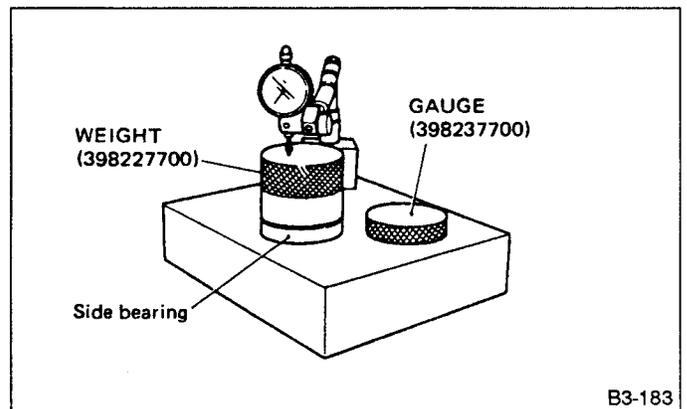


Fig. 73

13) Press side bearing cone onto differential case with DRIFT and ADAPTER included in PULLER SET (399527700).

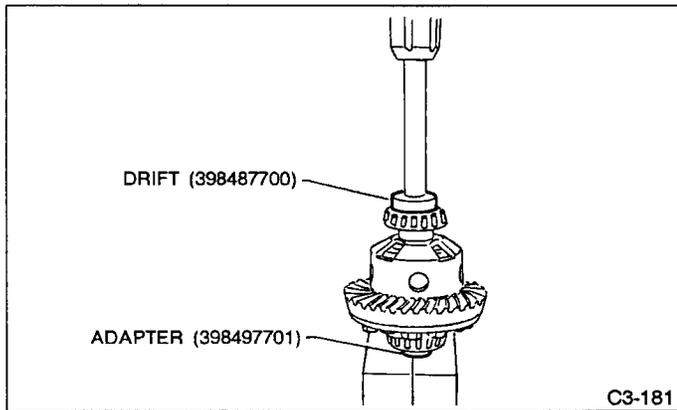


Fig. 74

14) Adjusting side bearing retainer shims

- (1) The drive gear backlash and side bearing preload can be determined by the side bearing retainer shim thickness.
- (2) When replacing differential case, differential carrier, side bearing and side bearing retainer, obtain the right and left retainer shim thickness from the following formulas.

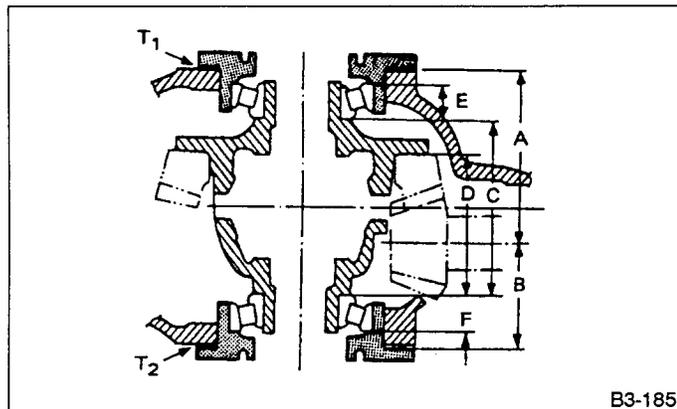


Fig. 75

- T_1 (Left) = $(A + C + G_1 - D) \times 0.01 + 0.76 - E$ (mm)
- T_2 (Right) = $(B + D + G_2) \times 0.01 + 0.76 - F$ (mm)
- T_1 & T_2 : Thickness of left and right side bearing retainer shim (mm)
- A & B : Number marked on differential carrier.
- C & D : Number marked on differential case.
- E & F : Difference of width of left and right side bearing from standard width 20.0 mm, expressed in a unit of 0.01 mm. For example, if the bearing measured width is 19.89 mm, value of E or F is as follows. $20.00 - 19.89 = 0.11$ (E or F)
- G_1 & G_2 : Number marked on side bearing retainer.

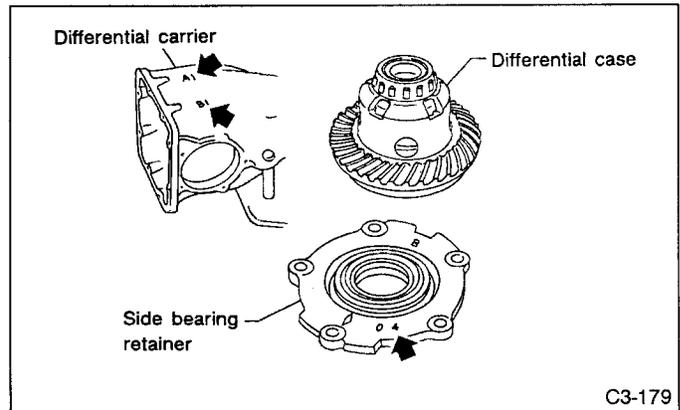


Fig. 76

If a number is not marked, regard it as zero. Use several shims to obtain the calculated thickness.

Side bearing retainer shims

Part No.	Thickness mm (in)
383475201	0.20 (0.0079)
383475202	0.25 (0.0098)
383475203	0.30 (0.0118)
383475204	0.40 (0.0157)
383475205	0.50 (0.0197)

Example of calculation

Ex. 1

A = 5, B = 5, C = 3, D = 3, $G_1 = 4$, $G_2 = 1$,
E = 0.10 mm, F = 0.15 mm

Left side

$$T_1 = (A + C + G_1 - D) \times 0.01 + 0.76 - E$$

$$= (5 + 3 + 4 - 3) \times 0.01 + 0.76 - 0.10$$

$$= 0.09 + 0.76 - 0.10 = 0.75 \text{ mm}$$

The correct shims are as follows

Thickness	Q'ty	
0.25	x 1	= 0.25
0.50	x 1	= 0.50
Total shim thickness =		0.75 mm

Right side

$$T_2 = (B + D + G_2) \times 0.01 + 0.76 - F$$

$$= (5 + 3 + 1) \times 0.01 + 0.76 - 0.15$$

$$= 0.09 + 0.76 - 0.15$$

$$= 0.70 \text{ mm}$$

The correct shims are as follows

Thickness	Q'ty	
0.20	x 1	= 0.20
0.50	x 1	= 0.50
Total shim thickness =		0.70 mm

Ex. 2

A = 2, B = 3, C = 0, D = 3, $G_1 = 2$, $G_2 = 3$,
E = 0.22 mm, F = 0.10 mm

Left side

$$T_1 = (A + C + G_1 - D) \times 0.01 + 0.76 - E$$

$$= (2 + 0 + 2 - 3) \times 0.01 + 0.76 - 0.22$$

$$= 0.01 + 0.76 - 0.22$$

$$= 0.55 \text{ mm}$$

The correct shims are as follows

Thickness	Q'ty	
0.25	x 1	= 0.25
0.30	x 1	= 0.30

Total shim thickness = 0.55 mm

Right side

$$T_2 = (B + D + G_2) \times 0.01 + 0.76 - F$$

$$= (3 + 3 + 3) \times 0.01 + 0.76 - 0.10$$

$$= 0.09 + 0.76 - 0.10$$

$$= 0.75 \text{ mm}$$

The correct shims are as follows

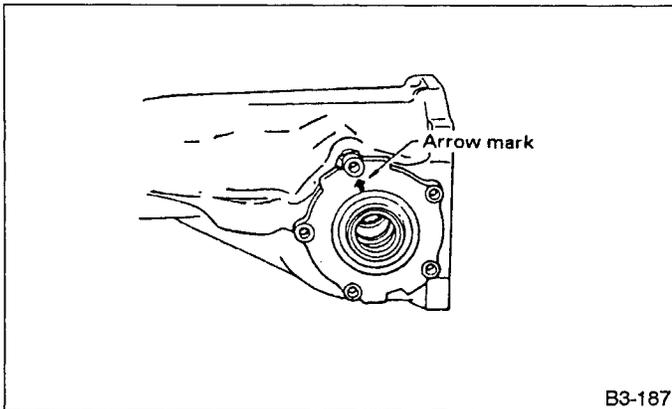
Thickness	Q'ty	
0.25	x 1	= 0.25
0.50	x 1	= 0.50

Total shim thickness = 0.75 mm

(3) Install the differential case ASSY into differential carrier in the reverse order of disassembling.

(4) Fit the selected shims and O-ring on side bearing retainer and install them on differential carrier with the arrow mark on the retainer directed as shown in Figure.

Be careful that side bearing cup is not damaged by bearing roller.



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Fig. 77

(5) Tighten side bearing retainer bolts.

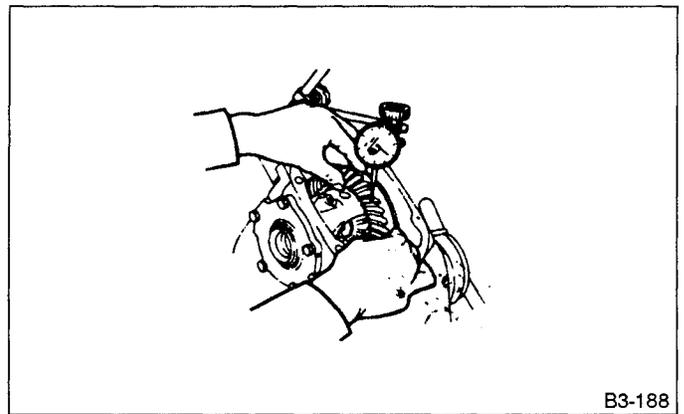
On vehicle with LSD, apply a coat of Three Bond 1215 (P/N 004403007) to threads.

Torque (Side bearing retainer):

9 — 12 N·m (0.9 — 1.2 kg-m, 6.5 — 8.7 ft-lb)

(6) Measure the drive gear-to-drive pinion backlash. If the reading is not within the specified range, correct by decreasing the shim thickness on one side and increasing the shim thickness on the other side the same amount. Total shim thickness must be the same to maintain proper preload.

Backlash: 0.10 — 0.20 mm (0.0039 — 0.0079 in)



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Fig. 78

(7) At the same time, measure the turning resistance of drive pinion. Compared with the resistance when differential case is not installed, if the increase of the resistance is not within the specified range, readjust side bearing retainer shims.

Turning resistance increase:

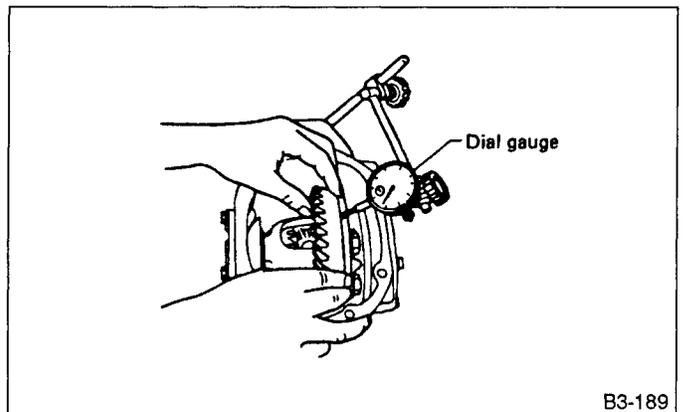
0.1 — 0.6 N·m (1 — 6 kg-cm, 0.9 — 5.2 in-lb)

(8) Recheck drive gear-to-pinion backlash after readjusting shims.

(9) Check the drive gear runout on its back surface, and make sure pinion and drive gear rotate smoothly.

Limit of runout:

0.05 mm (0.0020 in)



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Fig. 79

15) Checking and adjusting tooth contact of drive gear.

(1) Paint evenly both sides of three or four teeth on drive gear with red lead. Check the contact pattern after rotating drive gear several revolutions back and forth until definite contact pattern develops on drive gear.

(2) When the contact pattern is incorrect, readjust according to the instructions given in "Tooth contact pattern".

Be sure to wipe off red lead completely upon completion of adjustment.

(3) After completing the above adjustment, install oil seal in side bearing retainer.

a. Use DRIFT (398437700) to press the oil seal into position.

b. Apply chassis grease between the oil seal lips.

(4) Install rear cover.

Torque (Rear cover bolt):

19 — 25 N·m (1.9 — 2.6 kg-m, 14 — 19 ft-lb)

G: INSTALLATION

To install, reverse the removal sequence.

1) Install the rear differential ASSY to body.

2) Insert the DOJ of rear drive shaft into the rear differential.

For installation of the DOJ, refer to "3-4 AWD SYSTEM" [W2A2].

3) Install other parts in the reverse order of removal.

4) After installation fill differential carrier with gear oil to the upper plug level.

Apply fluid packing to plug.

Fluid packing:

Three-bound 1205 or equivalent

Oil capacity:

0.8 ℓ (0.8 US qt, 0.7 Imp qt)

TOOTH CONTACT PATTERN

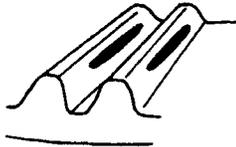
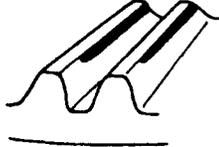
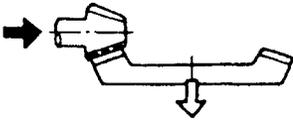
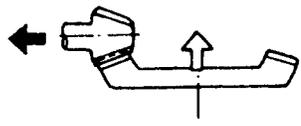
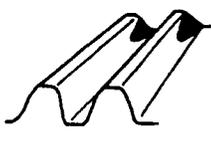
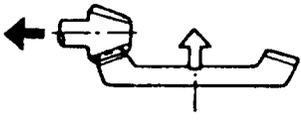
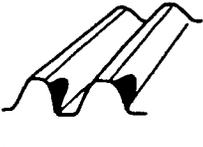
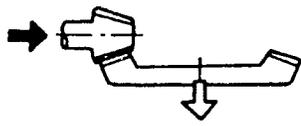
Condition	Contact pattern	Adjustment
<p>Correct tooth contact.</p> <p>Tooth contact pattern slightly shifted towards toe under no load rotation. (When loaded, contact pattern moves toward heel.)</p>		
<p>Face contact</p> <p>Backlash is too large.</p>	 <p>This may cause noise and chipping at tooth ends.</p>	 <p>Increase thickness of drive pinion height adjusting washer in order to bring drive pinion closer to drive gear center.</p>
<p>Flank contact</p> <p>Backlash is too small.</p>	 <p>This may cause noise and stepped wear on surfaces.</p>	 <p>Reduce thickness of drive pinion height adjusting washer in order to move drive pinion away from drive gear.</p>
<p>Toe contact</p>	 <p>Contact area is small. This may cause chipping at toe ends.</p>	 <p>Adjust as for flank contact.</p>
<p>Heel contact</p>	 <p>Contact area is small. This may cause chipping at heel ends.</p>	 <p>Adjust as for face contact.</p>

Fig. 80

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3. Rear Differential Member

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Move the selector lever to "N".
- 3) Release the parking brake.
- 4) Jack up the vehicle and support it with rigid racks.
- 5) Disconnect connector from rear oxygen sensor.

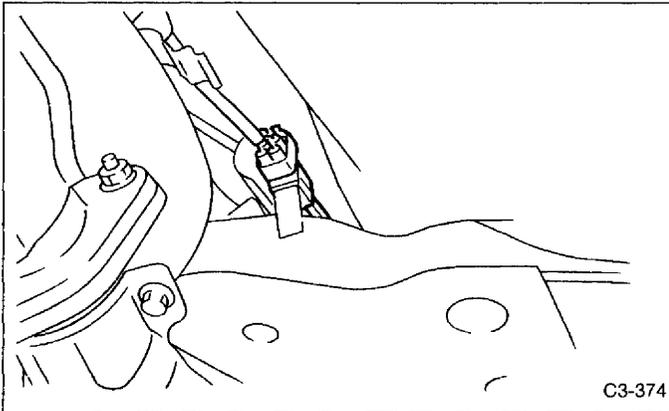


Fig. 14

- 6) Remove the rear exhaust pipe and the rear catalytic converter.

< Ref. to 2-1 [W2A0]☆5, 2-9 [W5A0]☆1 >

- 7) Remove the front exhaust cover.

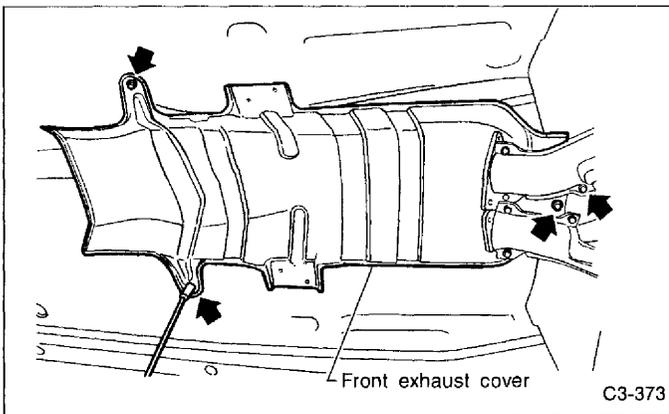


Fig. 15

- 8) Remove the propeller shaft from body.
< Ref. to [W1B0]☆5 >
- 9) Install the extension cap to transmission.
- 10) Remove the parking brake cable guide from the trailing link.

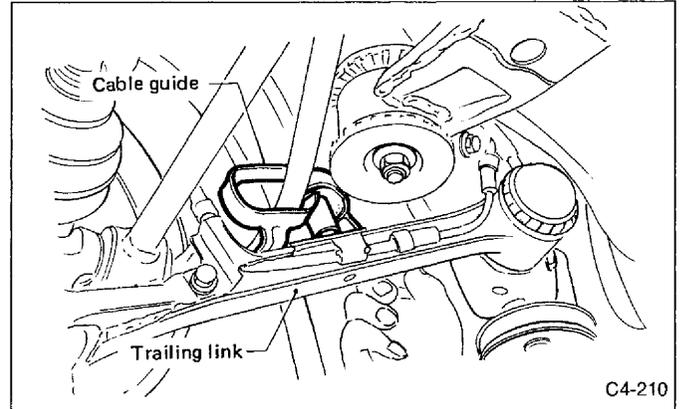


Fig. 16

- 11) Disconnect the parking brake cable clamps.

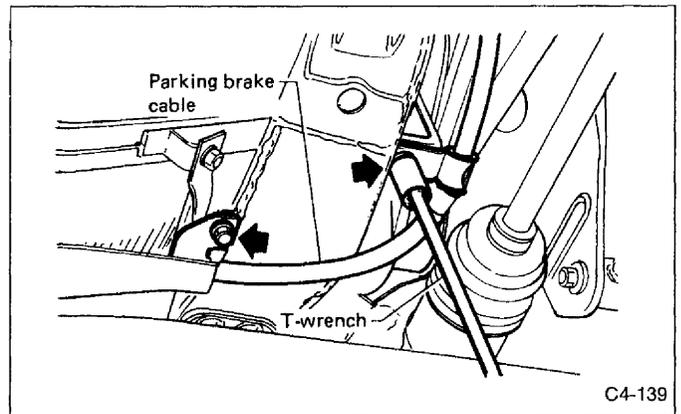


Fig. 17

- 12) Disconnect the parking brake cable from the clip at the tank cover.

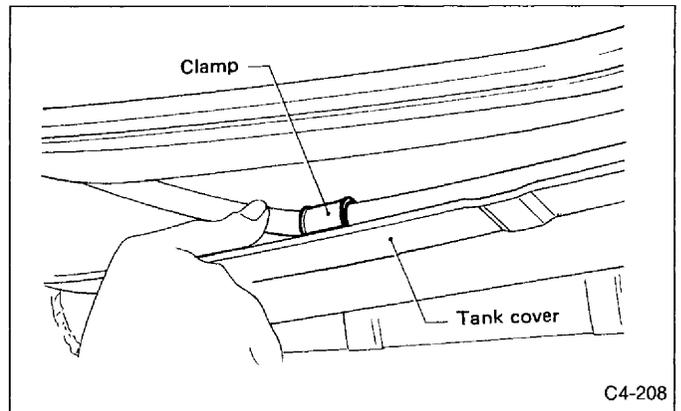


Fig. 18

- 13) Remove the tank cover.

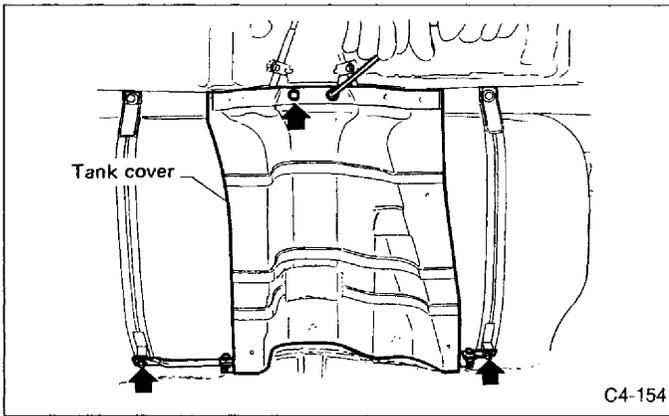


Fig. 19

14) Remove the four bolts which secure the bracket to the rear differential member.

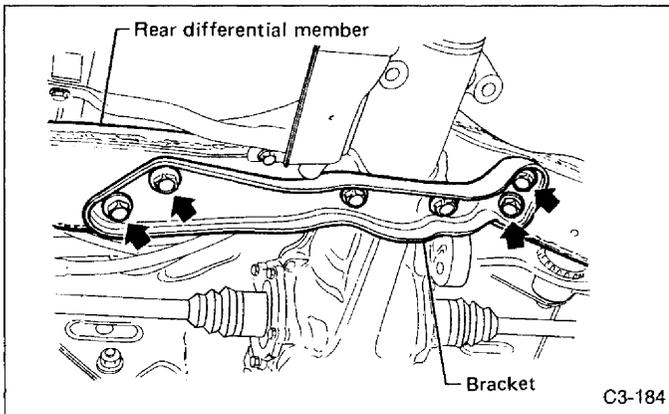


Fig. 20

15) Support the rear differential with transmission jack.

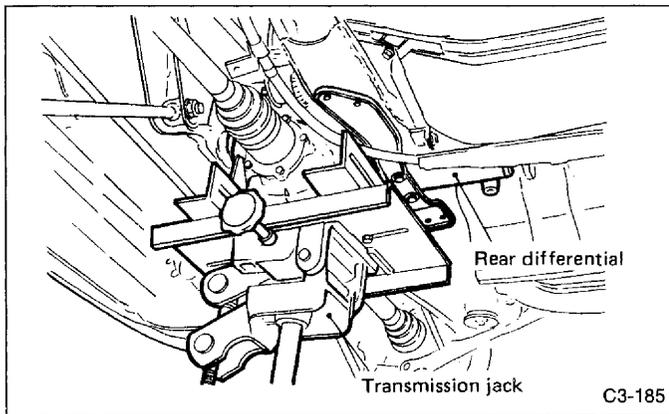


Fig. 21

16) Remove the two bolts which secure the bracket and rear differential to rear differential member.

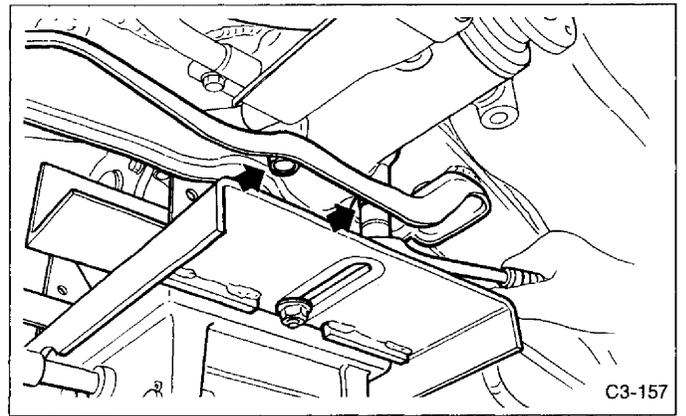


Fig. 22

17) Remove the self locking nuts which connect the rear differential to the rear sub frame.

18) While slowly lowering transmission jack, move the rear differential forward and remove bolts from the rear sub frame.

Do not tilt the rear differential, or the rear differential gear oil will spill out.

Do not lower the rear differential excessively, or the rear drive shaft boot may be damaged.

19) Remove the bolts which secure the rear differential member to rear sub frame.

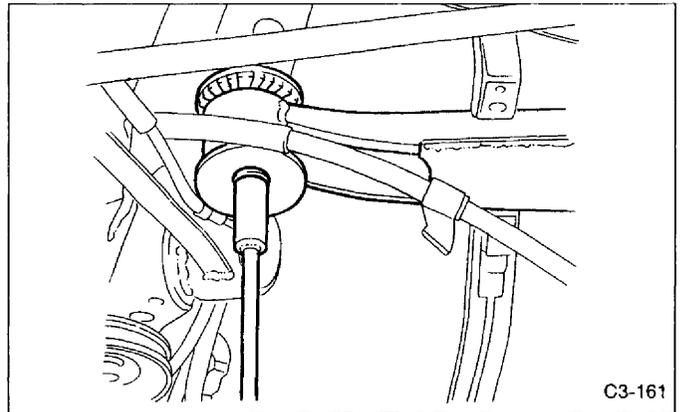


Fig. 23

20) Remove the rear differential member.

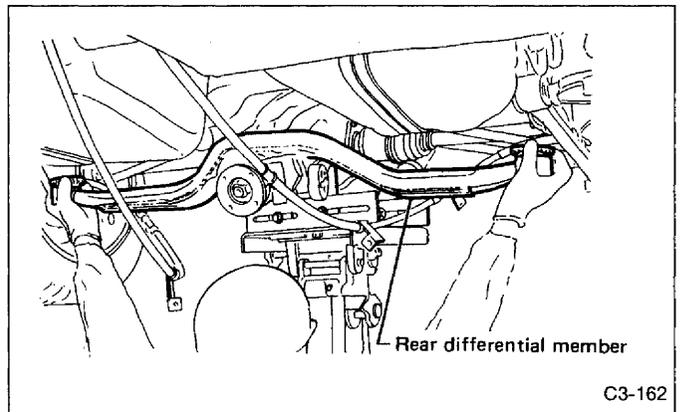


Fig. 24

B: INSTALLATION

To install, reverse the removal sequence.

1) Install the rear differential member.

When installing the rear differential member, pay attention not to confuse the installation sequence of the upper and lower stoppers.

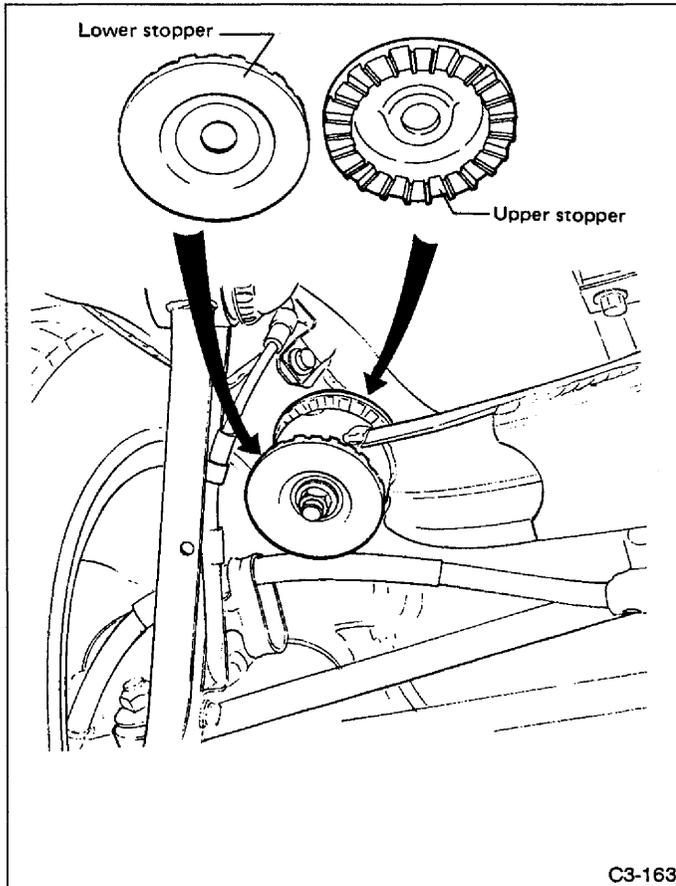
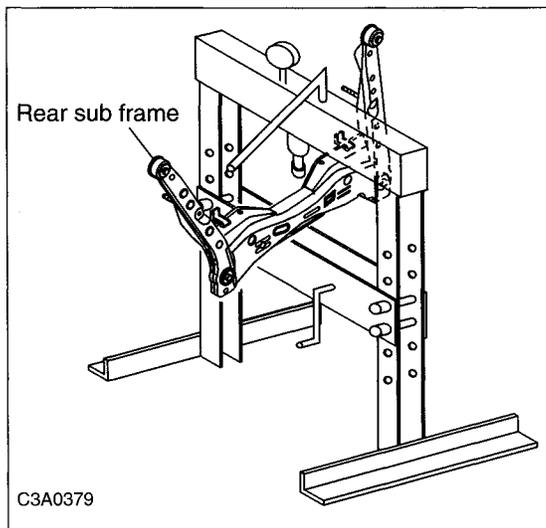


Fig. 91

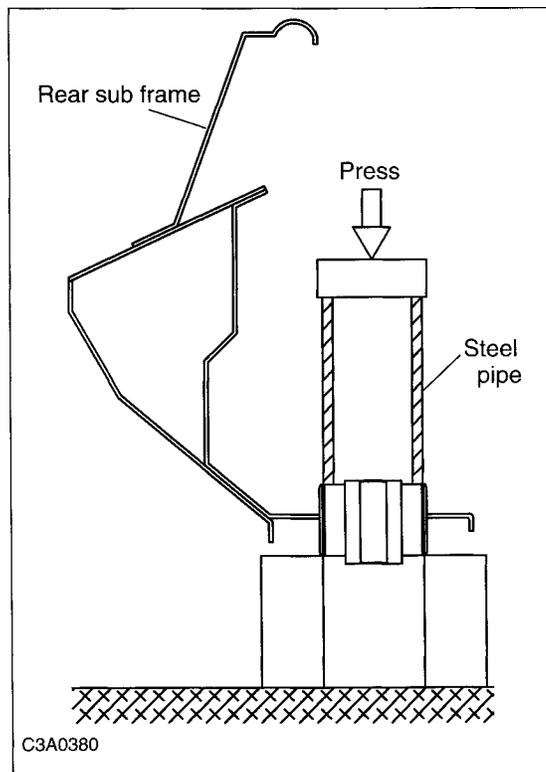
2) Installing procedure hereafter is the reverse of the removal.

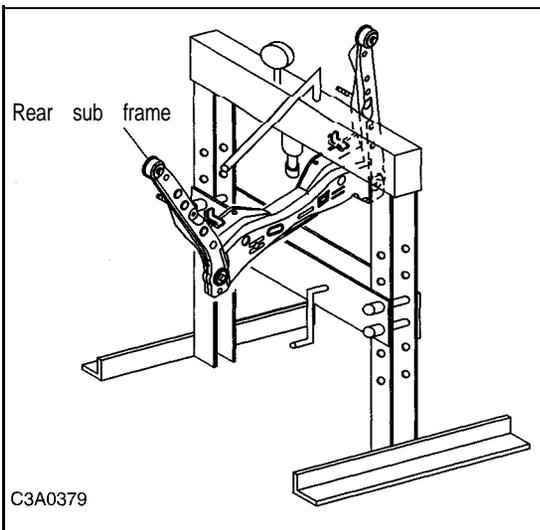


4. Rear Differential Bushing

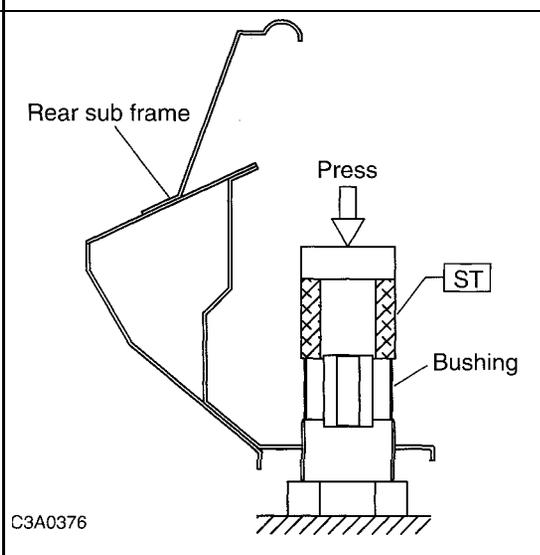
A: REMOVAL

- 1) Remove the rear differential member from the chassis. <Refer to 3-4 [W3AO]. ☆1>
- 2) Remove the rear sub member from the rear sub frame.
- 3) Set the rear sub frame with a press.
- 4) Remove the rear sub frame bush using a steel pipe with a minimum outer diameter of $\phi 57$ and minimum inner diameter of $\phi 35$.



**B: INSTALLATION**

- 1) With the front of the rear sub frame facing up, set the rear sub frame with a press.



- 2) Use a ST to press-fit the bushing into the rear sub frame.

ST 498215402 INSTALLER

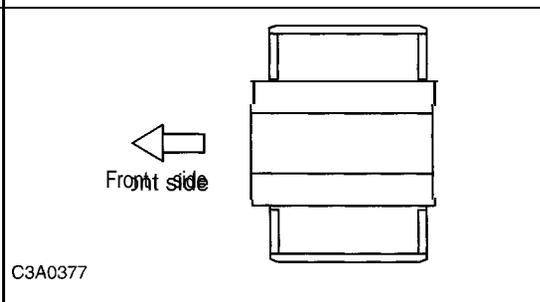
- 3) Assemble the rear member onto the rear sub frame.

Tightening torque:

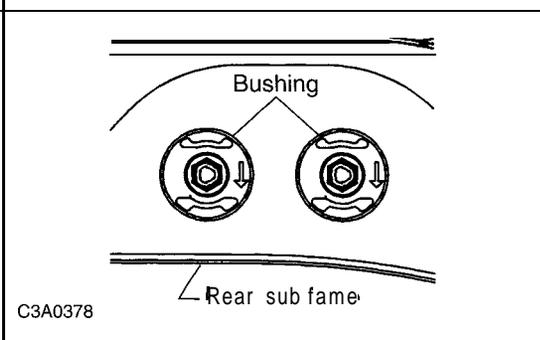
53-65 N·m (5.4-6.6 kg-m, 39-48ft-lb)

- 4) Assemble the rear differential member onto the chassis.

(Refer to 3-4 [W3BO]. ☆1)

**NOTE :**

- Pay attention to the press-fitting direction of the bushing.



- The arrow mark of the bushing shall point to the lower side of the rear sub frame.
- To prevent a load onto the rubber part of the bushing, press fit until the bushing is flush with the pipe end surface of the rear sub frame.

T TROUBLESHOOTING

1. Rear Differential

Symptom and possible cause	Remedy
Oil leakage	
<ul style="list-style-type: none"> Worn, scratched, or incorrectly seated front or side oil seal. Scored, battered, or excessively worn sliding surface of companion flange. 	Repair or replace.
<ul style="list-style-type: none"> Clogged or damaged air breather. 	Clean, repair or replace.
<ul style="list-style-type: none"> Loose bolts on differential spindle or side retainer, or incorrectly fitted O-ring. 	Tighten bolts to specified torque. Replace O-ring.
<ul style="list-style-type: none"> Loose rear cover attaching bolts or damaged gasket. 	Tighten bolts to specified torque. Replace gasket and apply liquid packing.
<ul style="list-style-type: none"> Loose oil filler or drain plug. 	Retighten and apply liquid packing.
<ul style="list-style-type: none"> Wear, damage or incorrectly fitting for spindle, side retainer and oil seal. 	Repair or replace.
Seizure Seized or damaged parts should be replaced, and also other parts should be thoroughly checked for any defect and should be repaired or replaced as required.	
<ul style="list-style-type: none"> Insufficient backlash for hypoid gear. 	Readjust or replace.
<ul style="list-style-type: none"> Excessive preload for side, rear, or front bearing. 	Readjust or replace.
<ul style="list-style-type: none"> Insufficient or improper oil used. 	Replace seized part and fill with specified oil to specified level.
Damage Damaged parts should be replaced, and also other parts should be thoroughly checked for any defect and should be repaired or replaced as required.	
<ul style="list-style-type: none"> Improper backlash for hypoid gear. 	Replace.
<ul style="list-style-type: none"> Insufficient or excessive preload for side, rear, or front bearing. 	Readjust or replace.
<ul style="list-style-type: none"> Excessive backlash for differential gear. 	Replace gear or thrust washer.
<ul style="list-style-type: none"> Loose bolts and nuts such as drive gear bolt. 	Retighten.
<ul style="list-style-type: none"> Damage due to overloading. 	Replace.
Noises when starting or shifting gears Noises may be caused by differential ASSY, universal joint, wheel bearing, etc. Find out what is actually making noise before disassembly.	
<ul style="list-style-type: none"> Excessive backlash for hypoid gear. 	Readjust.
<ul style="list-style-type: none"> Excessive backlash for differential gear. 	Replace gear or thrust washer.
<ul style="list-style-type: none"> Insufficient preload for front or rear bearing. 	Readjust.
<ul style="list-style-type: none"> Loose drive pinion nut. 	Tighten to specified torque.
<ul style="list-style-type: none"> Loose bolts and nuts such as side bearing retainer attaching bolt. 	Tighten to specified torque.

Symptom and possible cause	Remedy
Noises when cornering	
• Damaged differential gear.	Replace.
• Excessive wear or damage of thrust washer.	Replace.
• Broken pinion mate shaft.	Replace.
• Seized or damaged side bearing.	Replace.
Gear noises Since noises from engine, muffler, transmission, propeller shaft, wheel bearings, tires, and body are sometimes mistaken for noises from differential ASSY, be careful in checking them. Inspection methods to locate noises include coasting, accelerating, cruising, and jacking up all four wheels. Perform these inspections according to condition of trouble. When listening to noises, shift gears into four wheel drive and fourth speed position, trying to pick up only differential noise.	
• Improper tooth contact of hypoid gear.	Readjust or replace hypoid gear set.
• Improper backlash for hypoid gear.	Readjust.
• Scored or chipped teeth of hypoid gear.	Replace hypoid gear set.
• Seized hypoid gear.	Replace hypoid gear set.
• Improper preload for front or rear bearings.	Readjust.
• Seized, scored, or chipped front or rear bearing.	Replace.
• Seized, scored, or chipped side bearing.	Replace.
• Vibrating differential carrier.	Replace.

2. Propeller Shaft

Trouble and possible cause	Remedy
Vibration of propeller shaft Vibration is caused by propeller shaft during operation and is transferred to vehicle body. Generally vibration increase in proportion to vehicle speed.	
• Worn or damaged universal joint / DOJ	Replace.
• Unbalanced propeller shaft due to bend or dent.	Replace.
• Loose installation of propeller shaft.	Retighten.
• Worn or damaged center bearing and damaged center mounting rubber.	Replace.
Tapping when starting and noise while cruising, caused by propeller shaft.	
• Worn or damaged universal joint/ DOJ.	Replace.
• Worn spline of sleeve yoke.	Replace.
• Loose installation of propeller shaft.	Retighten.
• Loose installation of joint.	Replace.
• Worn or damaged center bearing and damaged center mounting rubber.	Replace.

Vibration while cruising may be caused by an unbalanced tire, improper tire inflation pressure, improper wheel alignment, etc.

11. General Troubleshooting Table

Priority "part of check" is shown by figures (1, 2, 3, ..., 17, 18).

Part to check		ECU power supply	Air flow sensor	Water temperature sensor	Throttle sensor	Fuel pump	Pressure regulator	Fuel injector	Ignitor	Ignition coil	Spark plug	Knock sensor 1 & 2	Crank angle sensor 1	Crank angle sensor 2	Cam angle sensor	O ₂ sensor 1 & 2	Induction solenoid valve	By-pass air control solenoid valve	Auxiliary air control valve
Symptom																			
Failure of engine to start	Internal combustion does not occur.	1	11	12		5	6	7	2	3	4		8	9	10				
	Internal combustion occur.	1	11			2	3	4	5	6	7		8	9	10			12	13
	Engine stalls after initial combustion.	1	2	8	9	5	6	7	13	14	15		10	11	12			3	4
Rough idling		1	3	11	10	7	8	9	4	5	6		12	13	14	15		2	
Hard to drive at constant speed		1	4	6	7	3	2	8	12	13	14		9	10	11	5			
Poor acceleration/deacceleration		1	2	6	7	3	4	5	13	14	15	8	10	11	12		16	9	
Poor return to idle				3	2													1	
Backfire				4	5		6	7					1	2	3				
Knocking			1	2			4	5				3	6	7					
Excessive fuel consumption			3	4			1	2											
Shocks while driving		1	9					8	5	6	7		2	3	4				
Poor engine reving			2	3	4		1												
Remarks		Include ECU grounding circuit.															Check hoses and relating part	Check hoses	Check hoses

SUBARU®

SVX

SERVICE MANUAL

FOREWORD

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU SVX.

This manual include the procedures for maintenance disassembling, reassembling, inspection and adjustment of components and troubleshooting for guidance of both the fully qualified and the less-experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

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