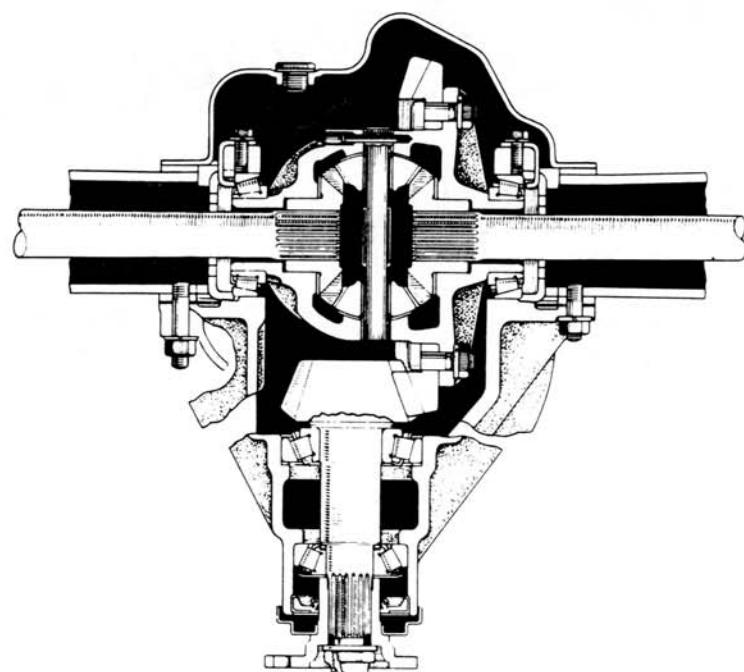
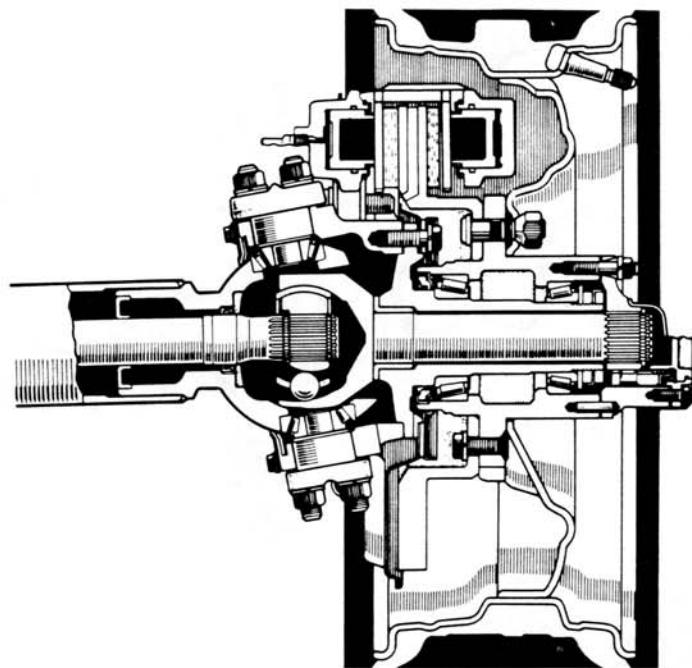


FRONT AXLE & SUSPENSION

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CUTAWAY VIEW

Fig. 6-1



STEERING KNUCKLE & AXLE SHAFT**REMOVAL**

Remove the parts in the numerical order shown in the figure.

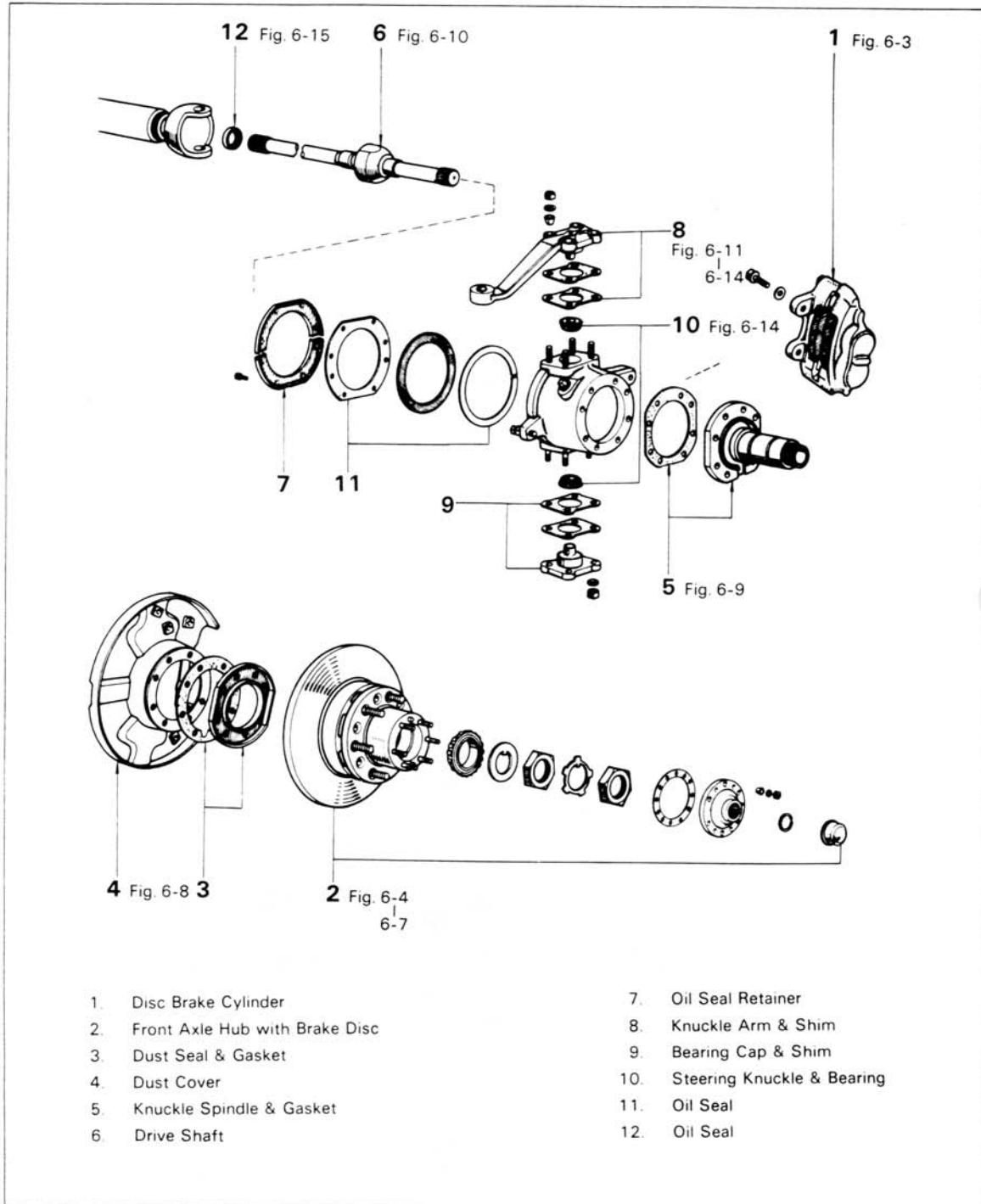
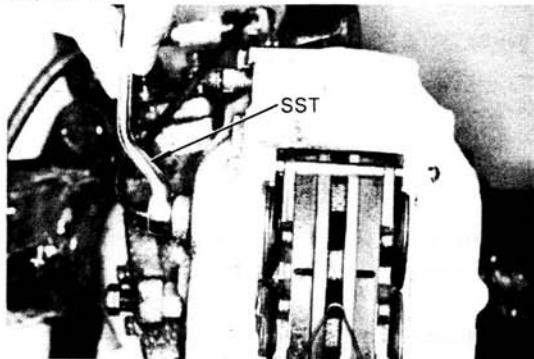
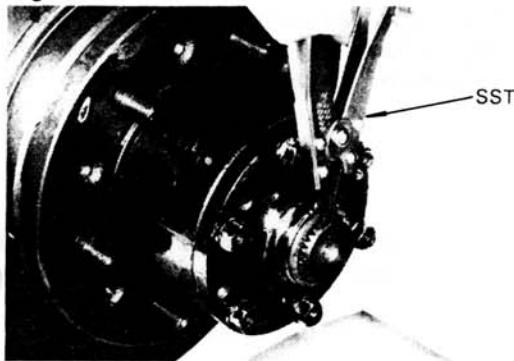
Fig. 6-2

Fig. 6-3

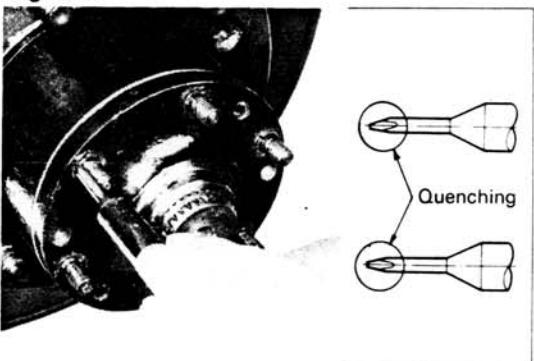
Disconnect the brake tube with SST.
SST [09751-36011]

— Note —

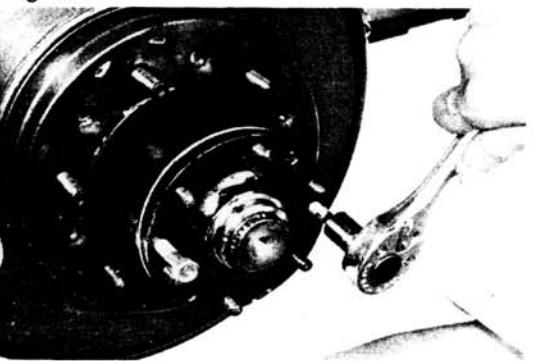
For drum brakes, do not disconnect the
brake tube or hose.

Fig. 6-4

Remove the snap ring with SST.
SST [09905-00012]

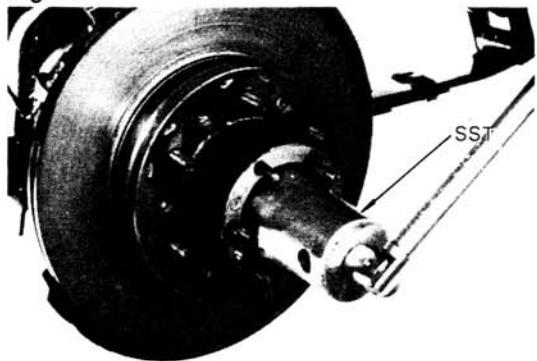
Fig. 6-5

Remove the cone washers with a tapered
punch.

Fig. 6-6

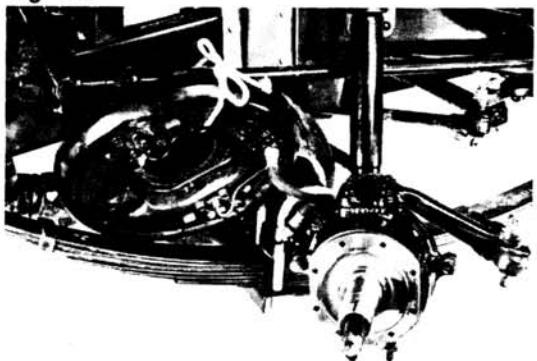
Remove the flange by tightening the bolts.

Fig. 6-7



Remove the lock nut and adjusting nut with SST.
SST [09607-60020]

Fig. 6-8



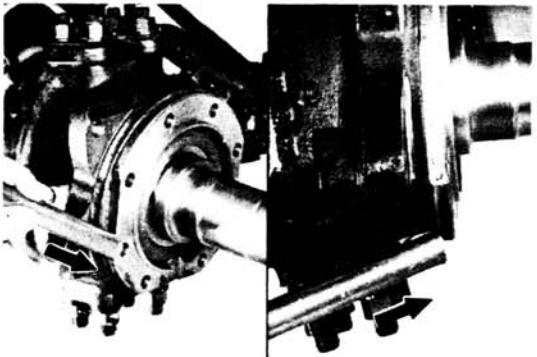
Remove the dust cover or backing plate assembly.

— Note —

For drum brakes, do not disconnect brake tube or hose.

With the steering wheel turned fully to one side, remove the backing plate assembly and keep it supported with a cord.

Fig. 6-9



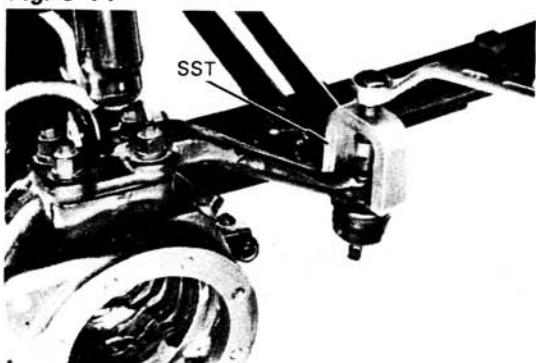
If the spindle does not come off easily, tap it off with a drift.

Fig. 6-10

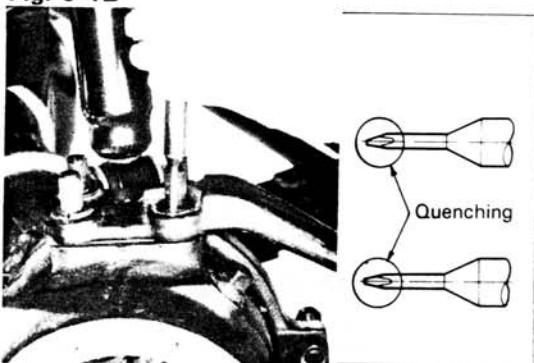


Position one flat part of the outer shaft upward and pull out the driveshaft.

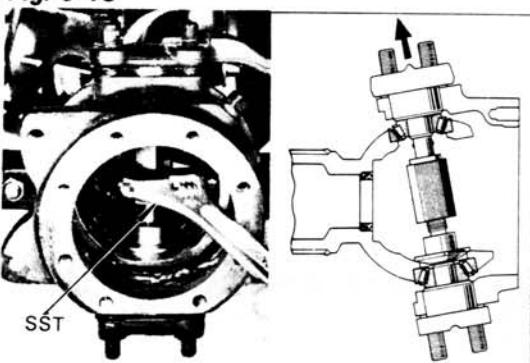


Fig. 6-11

Remove the tie rod with SST.
SST [09611-22011]

Fig. 6-12

Remove the cone washers with a tapered punch.

Fig. 6-13

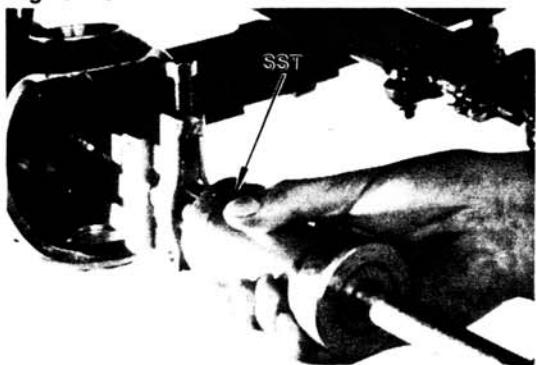
Remove the knuckle arm with SST.
SST [09606-60020]

— Note —

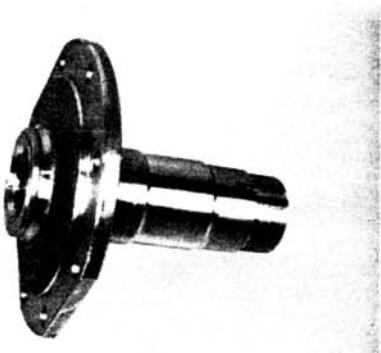
Use SST without a collar.

Fig. 6-14

Mark the removed adjusting shims and bearings so as to enable reassembling them back to their proper positions.

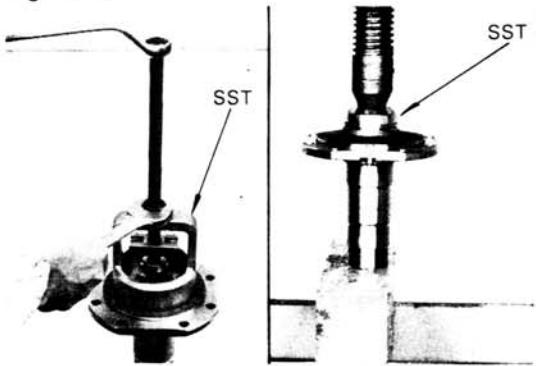
Fig. 6-15

Remove the oil seal with SST.
SST [09308-00010]

Fig. 6-16

INSPECTION & REPAIR Knuckle Spindle

Inspect for wear or damage.

Fig. 6-17

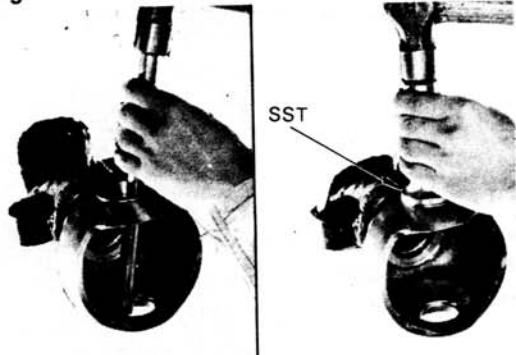
Replace The Bushing

1. Remove the bushing with SST.
SST [09612-65013]
2. Install a new bushing with a press and SST.
SST [09608-35013]

Fig. 6-18

Steering Knuckle Bearing

Inspect for wear or damage.

Fig. 6-19**Replace The Bearing Outer Race**

1. Remove the outer races with a drift.
 2. Install the new outer races with SST.
 SST [09605-60010]

Fig. 6-20**Drive Shaft**

Inspect the parts indicated by arrows for wear, damage or rusting.
 Inspect the joint for excessive looseness.

**Fig. 6-21****Drive Shaft Inner Parts**

1. Hold the inner shaft in a vise.
2. Place a drift against the inner race and drive out the outer shaft.

Fig. 6-22

3. Take out the six bearing balls.

— Note —

Tilt the inner race and cage, and take out the bearing balls one by one.



Fig. 6-23



4. Remove the cage and inner race from the outer shaft.

— Note —

Fit the two large openings in the cage against the protruded parts of the outer shaft, and pull out the cage and inner race.

Fig. 6-24



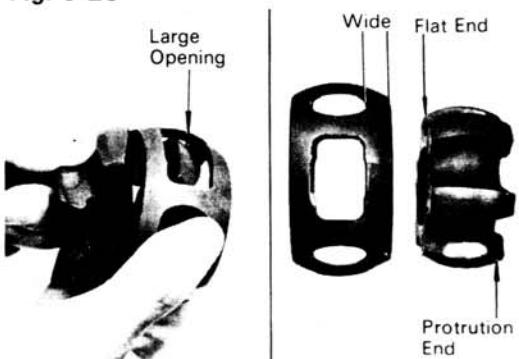
5. Take out the inner race from the cage through the large opening in the cage.

Fig. 6-25



6. Inspect the drive shaft inner parts for wear or damage.

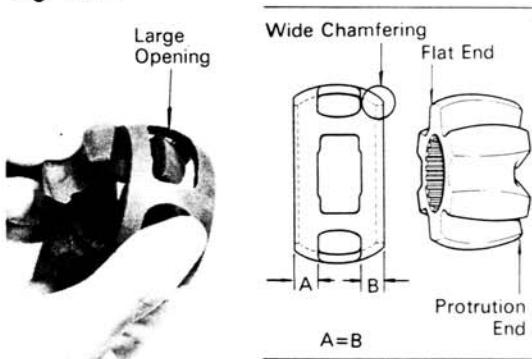
Fig. 6-26



7. Assemble the inner race to the cage by inserting it through the large opening.
(1) For FJ, BJ, HJ4-series
Make sure to position the protrusion end of the race toward the wide side of cage.

— Note —

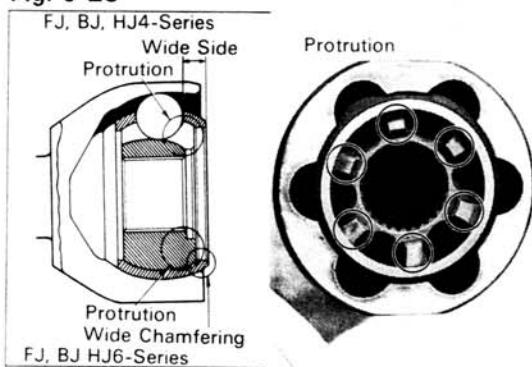
Coat with molybdenum disulphide lithium base grease before assembly.

Fig. 6-27

- (2) For FJ, BJ, HJ6-series
Make sure to position the protrusion end of the race toward the wide chamfering side of cage.

— Note —

Coat with molybdenum disulphide lithium base grease before assembling.

Fig. 6-28

8. Assemble the cage and inner race to the outer shaft.

— Note —

FJ, BJ, HJ4-series
Make sure to position the cage wide side and race protrusion end toward the outside.
FJ, BJ, HJ6-series

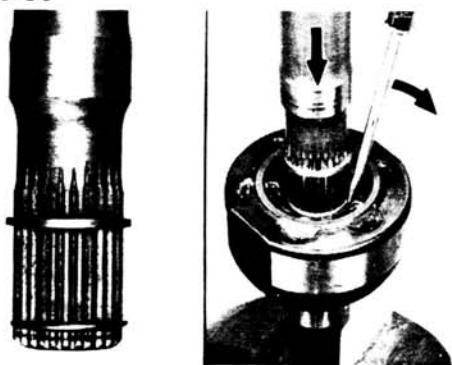
Make sure to position the cage wide chamfering side end race protrusion end toward the outside.



9. Fit the inner race and cage, and assemble the six bearing balls in the outer shaft.

— Note —

Pack molybdenum disulphide lithium base grease in the outer shaft without fail.

**Fig. 6-30**

10. Install new snap rings on the inner shaft.
11. Hold the outer shaft in a vise, and while keeping the snap ring (inner) compressed, install the inner shaft to the outer shaft.

— Note —

After installing, verify that the inner shaft will not pull out.

ADJUSTMENT

Whenever the axle housing or the steering knuckle is replaced, the front driveshaft alignment and knuckle bearing preload are adjusted with SST.

SST [09634-60013]

Fig. 6-31

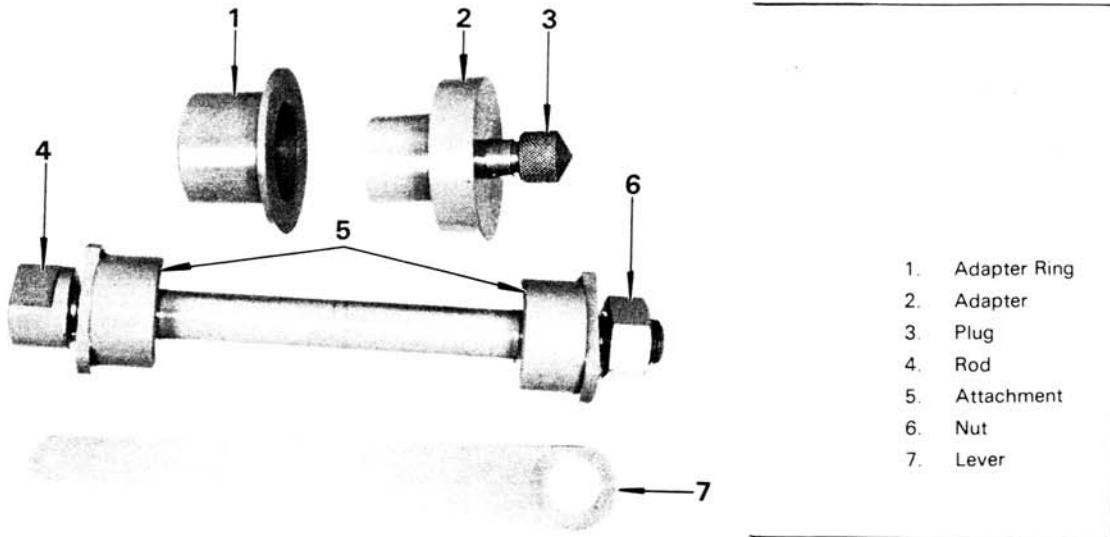
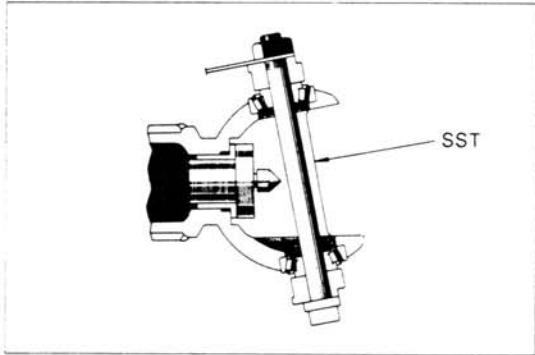


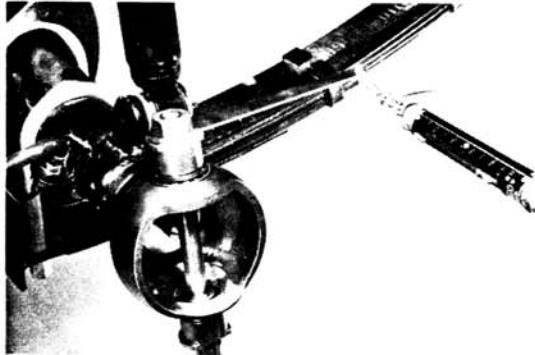
Fig. 6-32



1. Mount the SST on the housing.
SST [09634-60013]

Note —
Coat knuckle bearings lightly with molybdenum disulphide lithium base grease.

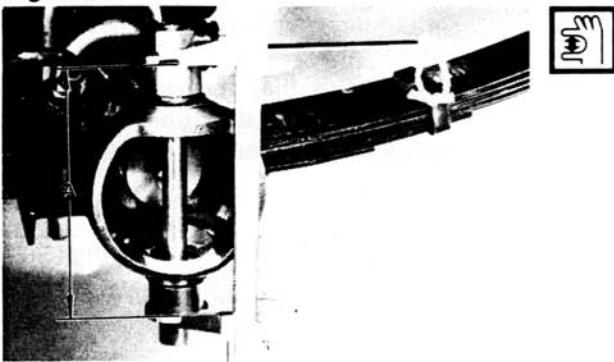
Fig. 6-33



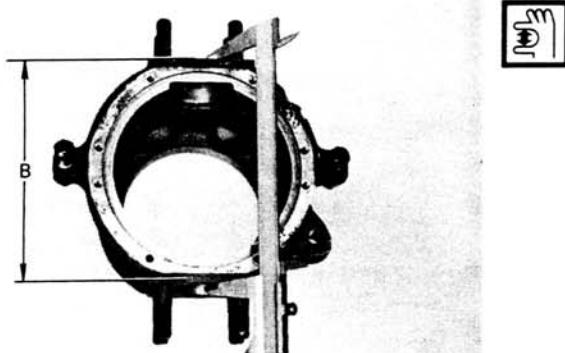
2. Add preload to the bearing by tightening the nut.

Preload (while turning):

**1.8 – 3.8 kg
(4.0 – 8.4 lb)**

Fig. 6-34

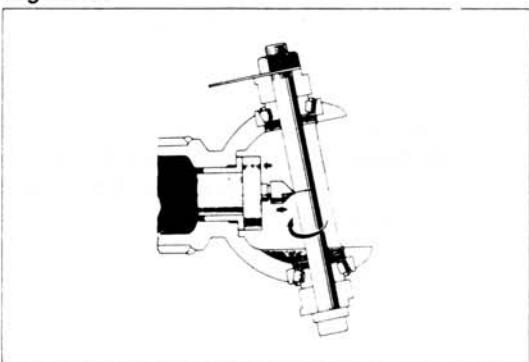
3. Measure the distance A.

Fig. 6-35

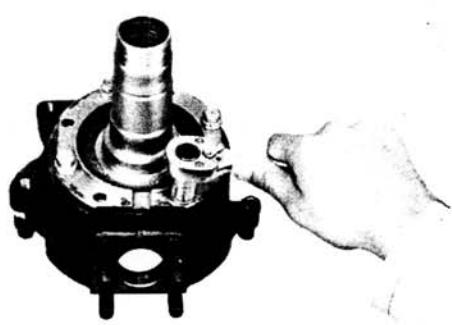
4. Measure the distance B.
5. The difference between A and B is the total adjusting shim thickness that is required to maintain the correct bearing preload.

TOTAL SHIM THICKNESS C

$$C = A - B$$

Fig. 6-36

6. Apply a light coat of red lead on the center part of rod (4).
7. Press the adapters (1) and (2) against the housing, press the plug (3) against the rod (5), and turn the lever (7) so as to have a line scribed on the rod (5).

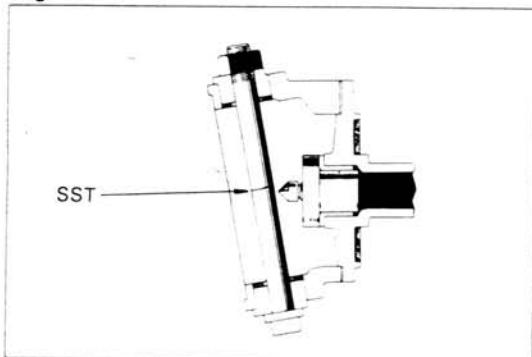
Fig. 6-37

8. Bolt on the knuckle spindle to the knuckle.

— Note —

Install the bolt over two washers.

Fig. 6-38

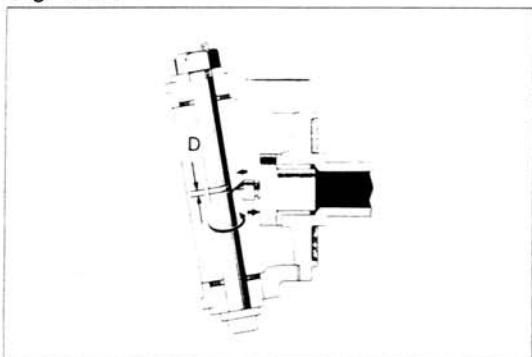


9. Dismount the SST from the housing, and mount it on the knuckle.
SST [09634-60013]

— Note —

1. Use care not to erase the scribed line when dismounting and remounting the SST.
2. Make sure that the rod (5) is in the same vertical direction that it was when mounted on the housing.

Fig. 6-39



10. Turn the rod (5) and scribe another line on it.
11. Measure the distance D between the two scribed lines.
12. The thickness of the steering knuckle lower bearing shim E will be the distance D less 3 mm (0.12 in.).

LOWER SHIM THICKNESS E
 $E = D - 3\text{mm}$

13. The thickness of the steering knuckle upper bearing shim F will be difference between the total adjusting shim thickness C and the shim thickness E.

UPPER SHIM THICKNESS F
 $F = C - E$

— Note —

Compare E and F with the thicknesses of the shims removed at disassembly. If there should be considerable difference, remeasure E and F.

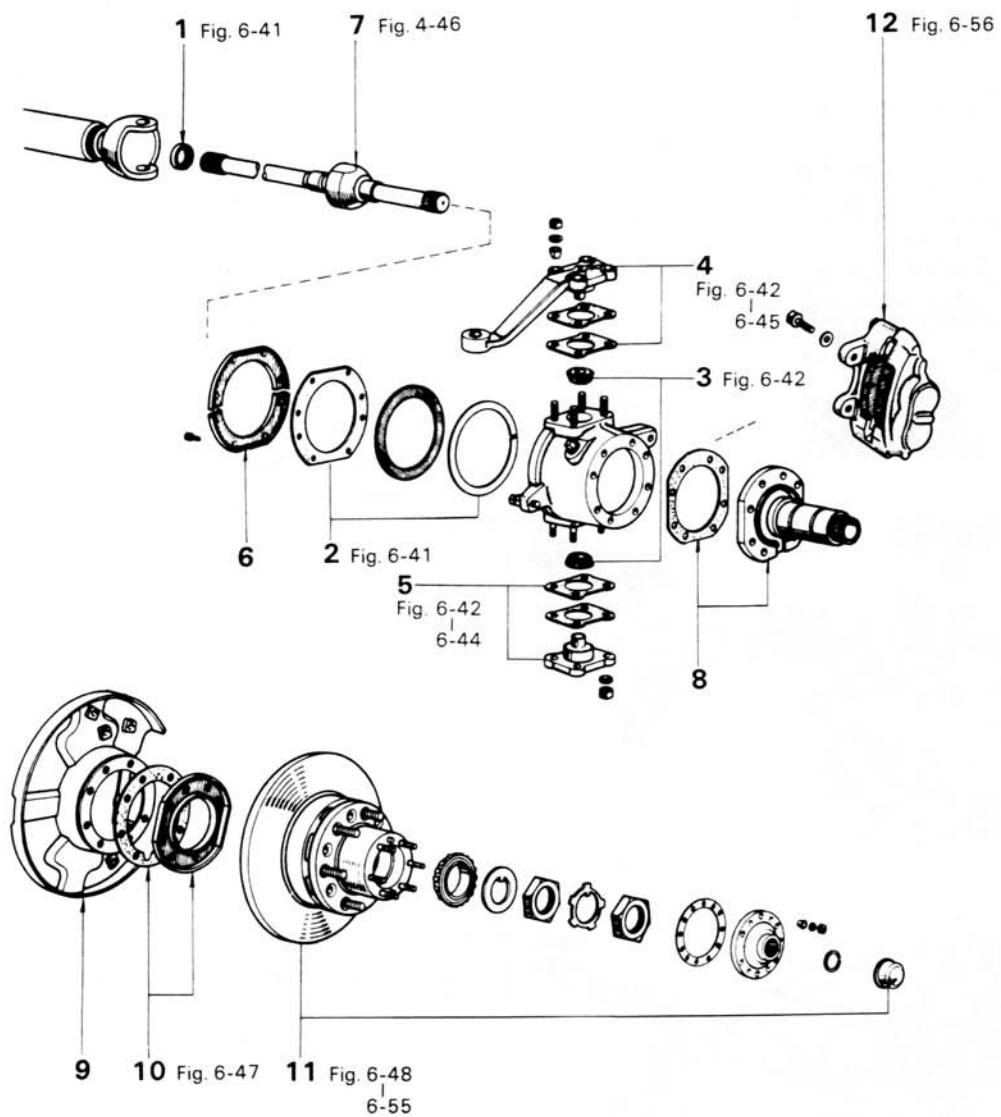
Adjusting shim sizes

Part No.	Thickness mm (in.)
43236-60010	0.1 (0.004)
43233-60011	0.2 (0.008)
43234-60011	0.5 (0.020)
43235-60010	1.0 (0.039)

INSTALLATION

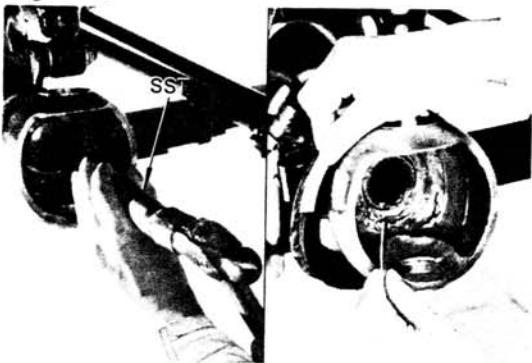
Install the parts in the numerical order shown in the figure.

Fig. 6-40



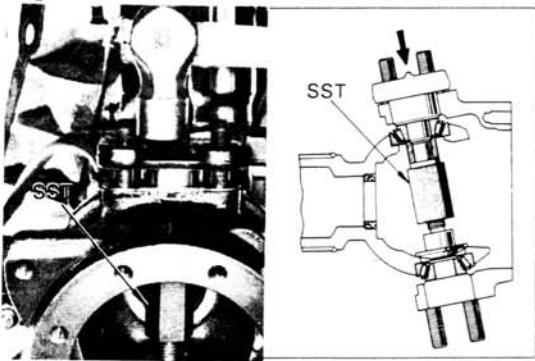
- | | |
|-------------------------------|------------------------------------|
| 1. Oil Seal | 7. Drive Shaft |
| 2. Oil Seal | 8. Knuckle Spindle & Gasket |
| 3. Steering Knuckle & Bearing | 9. Dust Cover |
| 4. Knuckle Arm & Shim | 10. Dust Seal & Gasket |
| 5. Bearing Cap & Shim | 11. Front Axle Hub with Brake Disc |
| 6. Oil Seal Retainer | 12. Disc Brake Cylinder |

Fig. 6-41



Install the oil seal with SST.
Apply MP grease on the oil seal lip.
SST [09618-60010]
Place the oil seal set in the housing.

Fig. 6-42



Apply molybdenum disulphide lithium base grease to the bearings, and install the knuckle and the bearings.
Hold the upper bearing inner race with SST.
SST [09606-60020]
Install the knuckle arm over the shims that were originally used or were selected as described in adjustment operations.

— Note —

Use SST with a collar.

Install the lower bearing cap by the same procedure.



The SST should be removed before tightening the knuckle arm and the bearing cap.
Tighten the knuckle arm and the bearing cap.

Tightening torque: 8.5 – 11.0 kg-m
(62 – 79 ft-lb)

Fig. 6-43

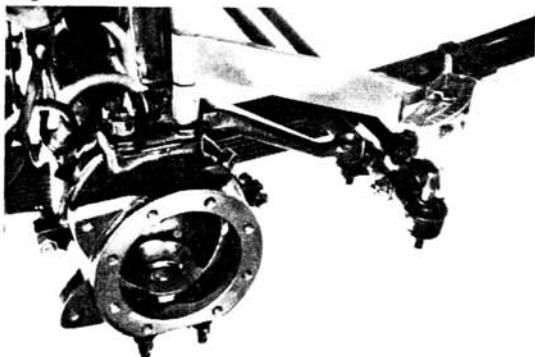
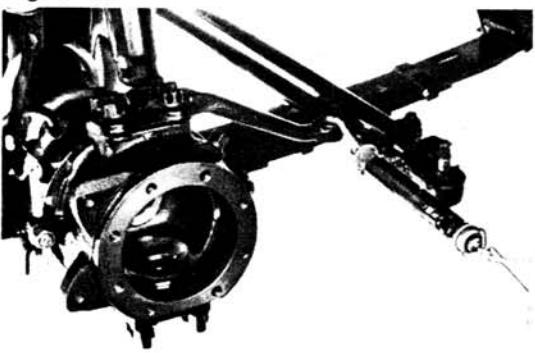
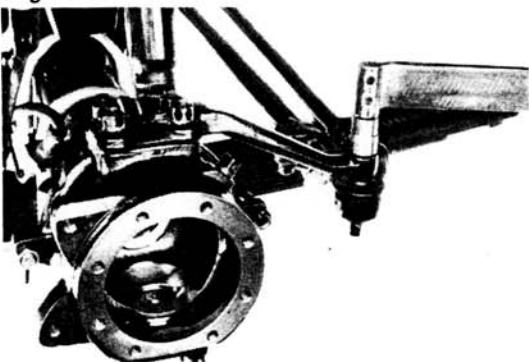


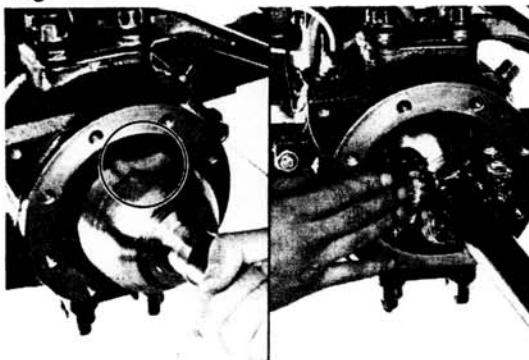
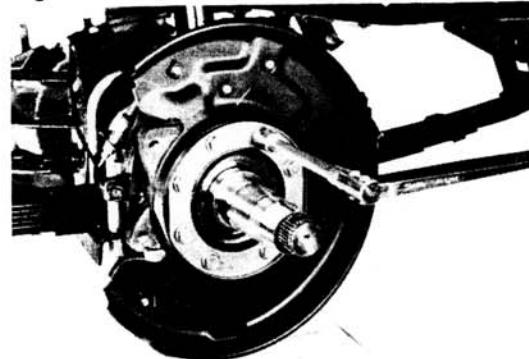
Fig. 6-44



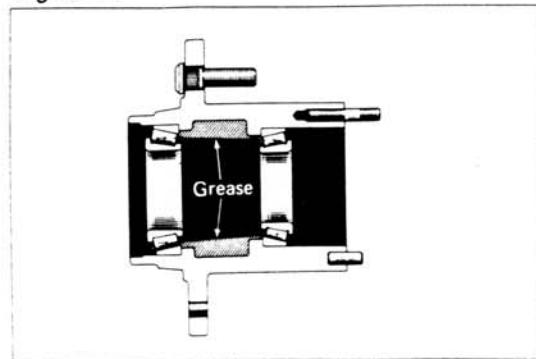
Measure the knuckle bearing preload.
Preload (while rotating):
1.8 – 3.8 kg
(4.0 – 8.4 lb)

Fig. 6-45

Install the tie rod.

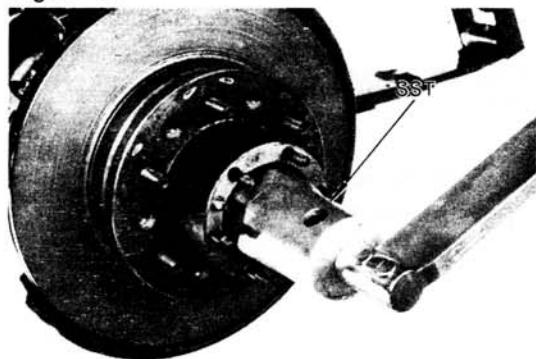
Tightening torque: 7.5 – 11.0 kg-m
(55 – 79 ft-lb)**Fig. 6-46**Position one flat part of the outer shaft upward, and install the shaft.
Pack molybdenum disulphide lithium base grease into the knuckle to about three fourths of the knuckle volume.**Fig. 6-47**

Tighten the bolts.

Tightening torque: 4.0 – 5.5 kg-m
(29 – 39 ft-lb)**Fig. 6-48**

Pack MP grease into the hub.

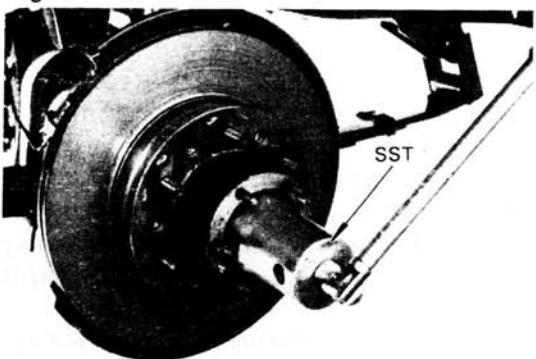
Fig. 6-49



Tighten the adjusting nut with SST and turn the hub left and right two or three times.
SST [09607-60020]

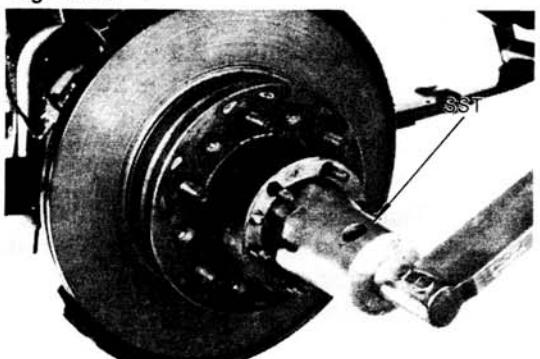
Tightening torque: 6.0 kg-m
(43 ft-lb)

Fig. 6-50



Loosen the adjusting nut.
SST [09607-60020]

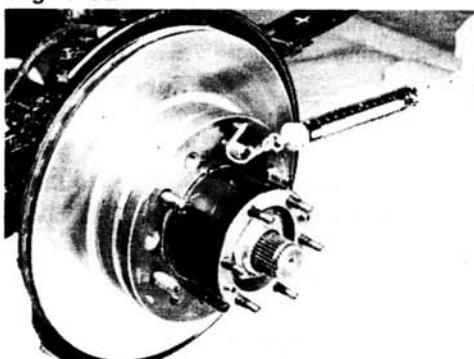
Fig. 6-51



Retighten the adjusting nut.

Tightening torque: 0.4 – 0.7 kg-m
(35 – 60 in.-lb)

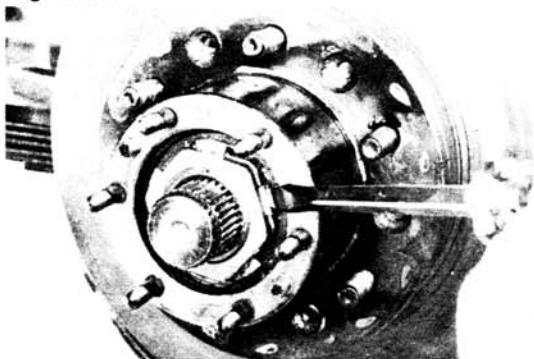
Fig. 6-52



Measure the revolving weight at the hub bolt.

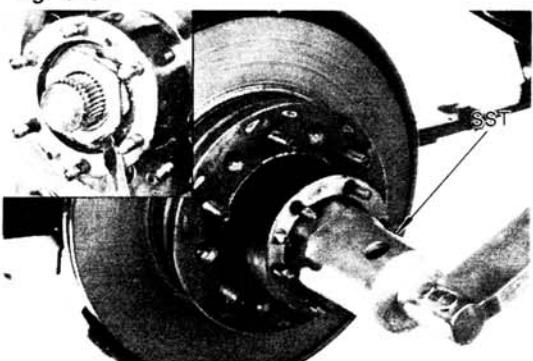
Preload (starting): 2.8 – 5.7 kg
(6.2 – 12.6 lb)

Fig. 6-53



Lock the adjusting nut by bending one of the lock washer teeth inward.

Fig. 6-54



Tighten the lock nut with SST.
SST [09607-60020]

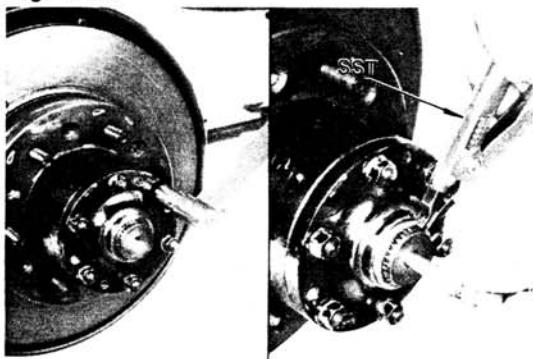
Tightening torque: 8.0 – 10.0 kg-m
(58 – 72 ft-lb)

Recheck the revolving weight.

Preload (starting): 2.8 – 5.7 kg
(6.2 – 12.6 lb)

Lock the lock nut by bending one of the lock washer teeth outward.

Fig. 6-55



Install the flange.

Tightening torque: 2.8 – 3.5 kg-m
(21 – 25 ft-lb)

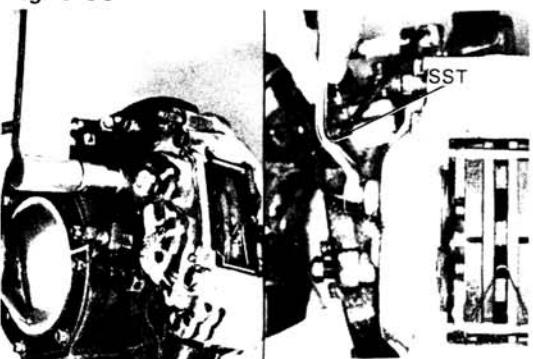
Install the snap ring with SST.

SST [09905-00012]

— Note —

Grip the bolt and pull out the axle shaft to install the snap ring.

Fig. 6-56



Tighten the caliper mounting bolts.

Tightening torque: 7.5 – 10.5 kg-m
(55 – 75 ft-lb)

Connect the brake tube with SST.

SST [09751-36011]

Tightening torque: 1.3 – 1.8 kg-m
(10 – 13 ft-lb)

DIFFERENTIAL REMOVAL

Remove the parts in the numerical order shown in the figure.

Fig. 6-57

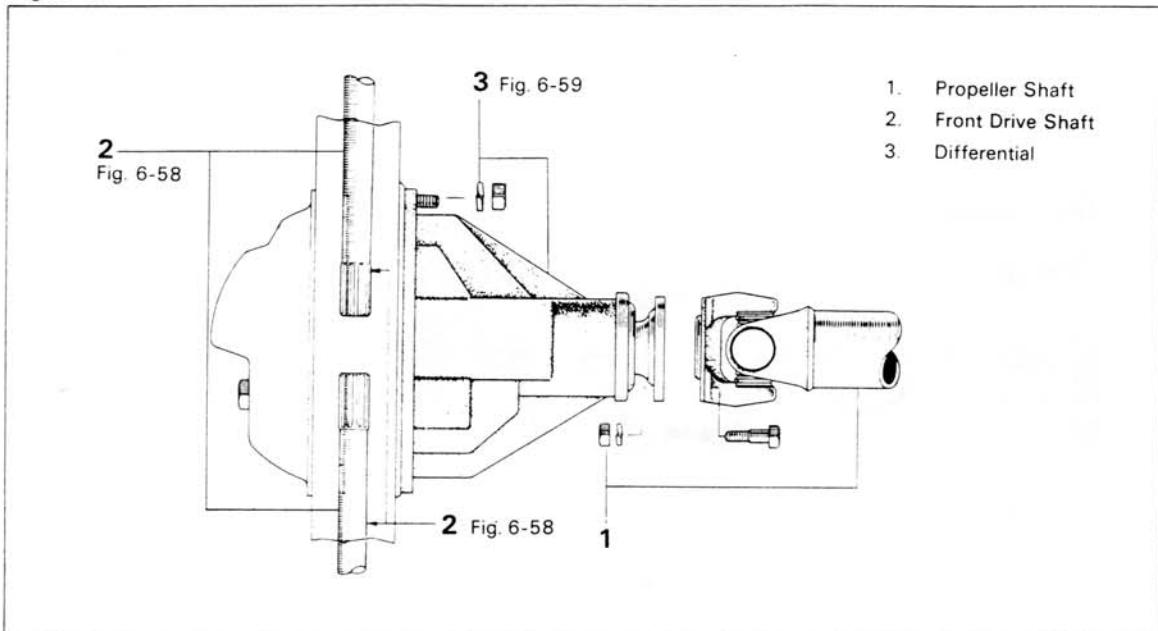


Fig. 6-58

SEE
STEERING KNUCKLE & AXLE
SHAFT REMOVAL SECTION
Fig. 6-3 to 6-15

Remove the axle shafts.

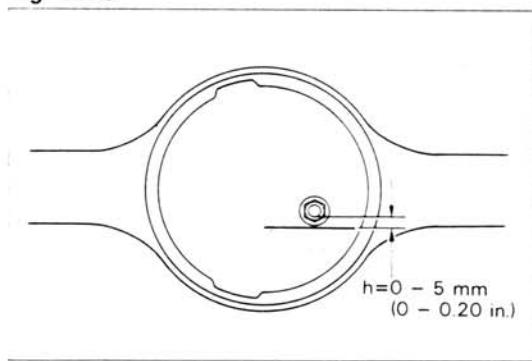
DISASSEMBLY & ASSEMBLY

Refer to the disassembly and assembly procedures for the differential in the Rear Axle and Rear Suspension Section.

INSTALLATION

Perform the removal in reverse order.

Fig. 6-59



After installing the axle shaft fill in hypoid gear oil SAE90, API GL-5.

Capacity:

STD

2.5 liters

(2.6 US qt, 2.2 Imp.qt)

FREE WHEEL HUB

REMOVAL

Remove the parts in the numerical order shown in the figure.

Fig. 6-60

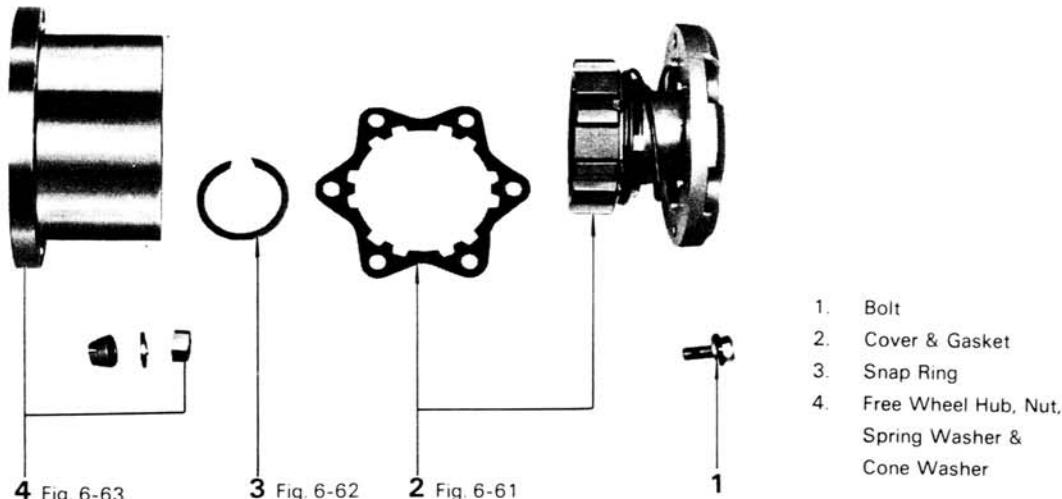
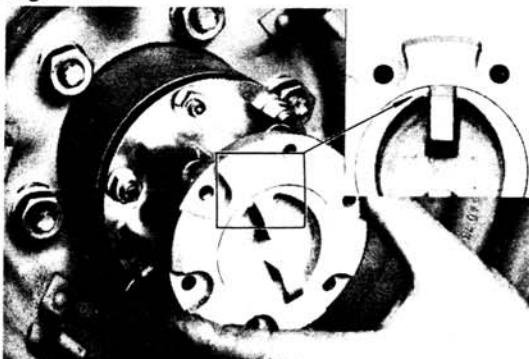


Fig. 6-61



Remove the free wheel hub cover.

— Note —

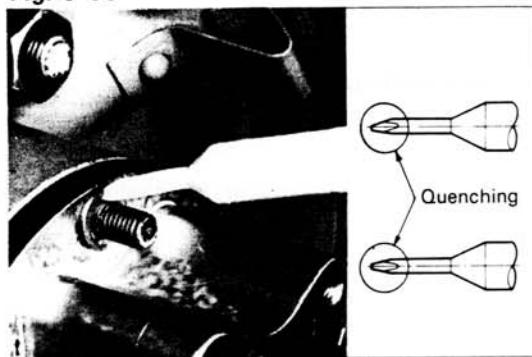
The control handle should be set to FREE.

Fig. 6-62



Remove the snap ring with SST.
SST [09905-00012]

Fig. 6-63



Remove the cone washer.

Fig. 6-64

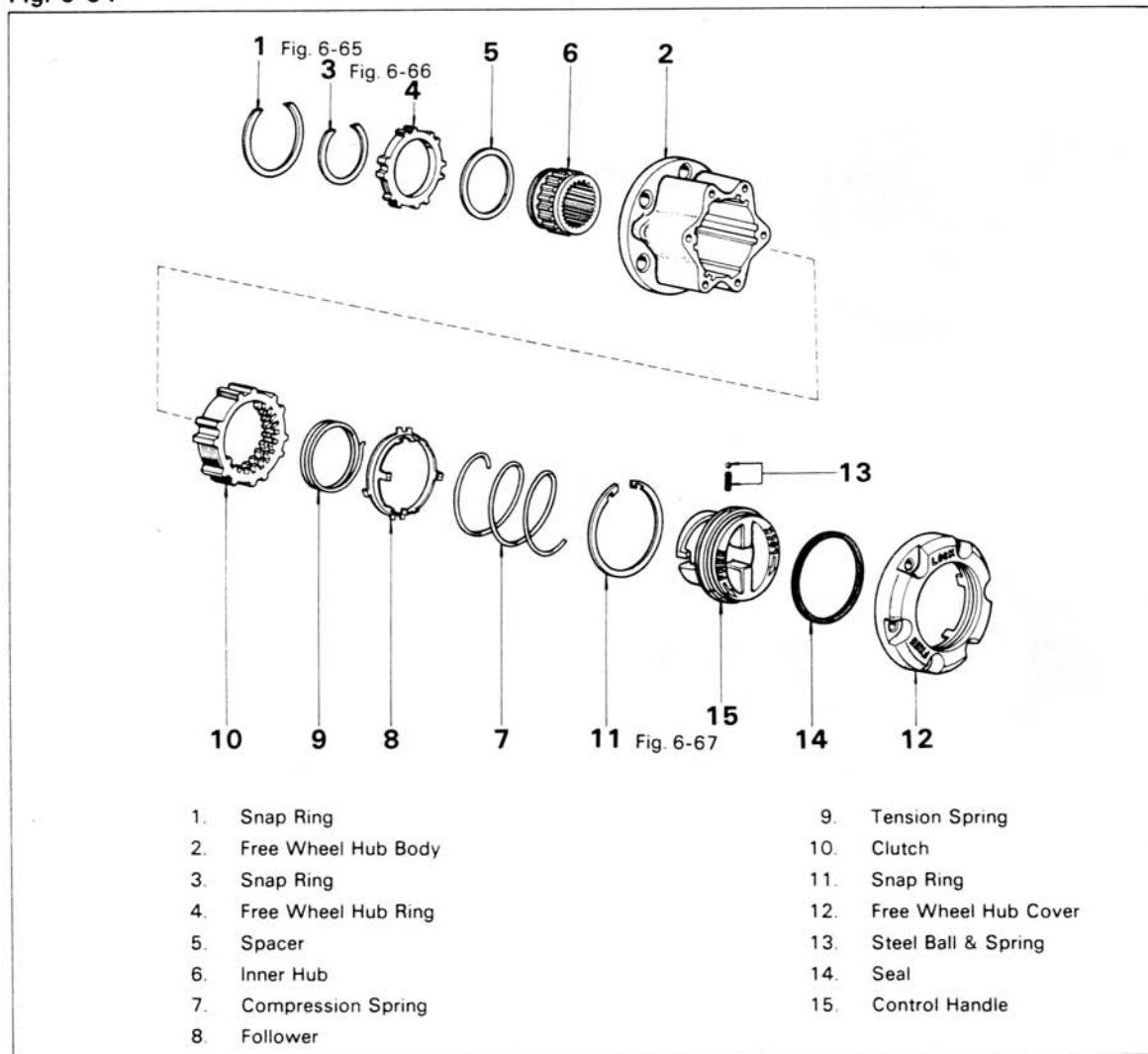
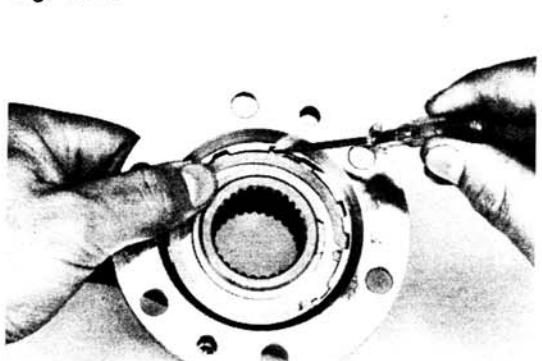
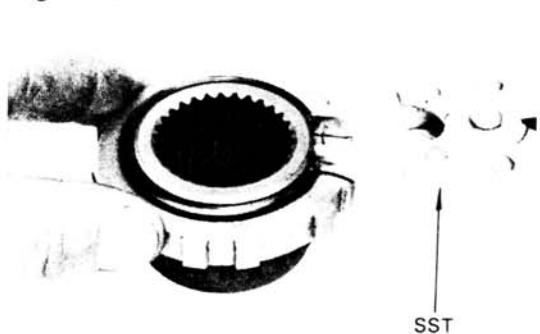
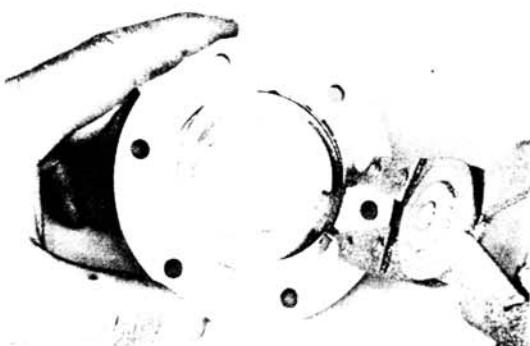


Fig. 6-65

Remove the snap ring and free wheel hub ring.

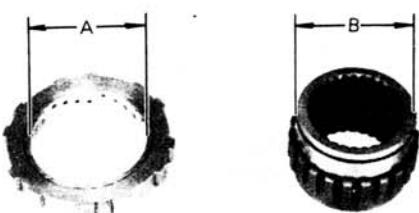
Fig. 6-66

Remove the snap ring from the inner hub with
SST.
SST [09905-00012]

Fig. 6-67

Remove the snap ring, cover and handle.

Fig. 6-68

**INSPECTION**

Wash the disassembled parts and inspect them on the following points.

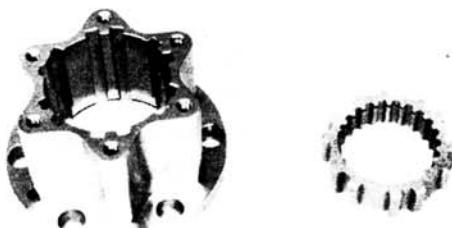
**Inner & Free Wheel Hub Ring**

1. Inspect for wear or damage.
2. Measure the oil clearance.

Oil clearance (A – B):

Limit 0.3 mm
(0.012 in.)

Fig. 6-69

**Body & Clutch**

1. Inspect for wear, damage or rust.
2. Verify that the clutch moves smoothly in the body.

Fig. 6-70

**Cover, Handle & O Ring**

1. Inspect for wear or damage.

Fig. 6-71



2. Rotate the control handle of the hub back and forth to make sure that it moves smoothly and freely.

ASSEMBLY

Assemble the parts in the numerical order shown in the figure.

Fig. 6-72

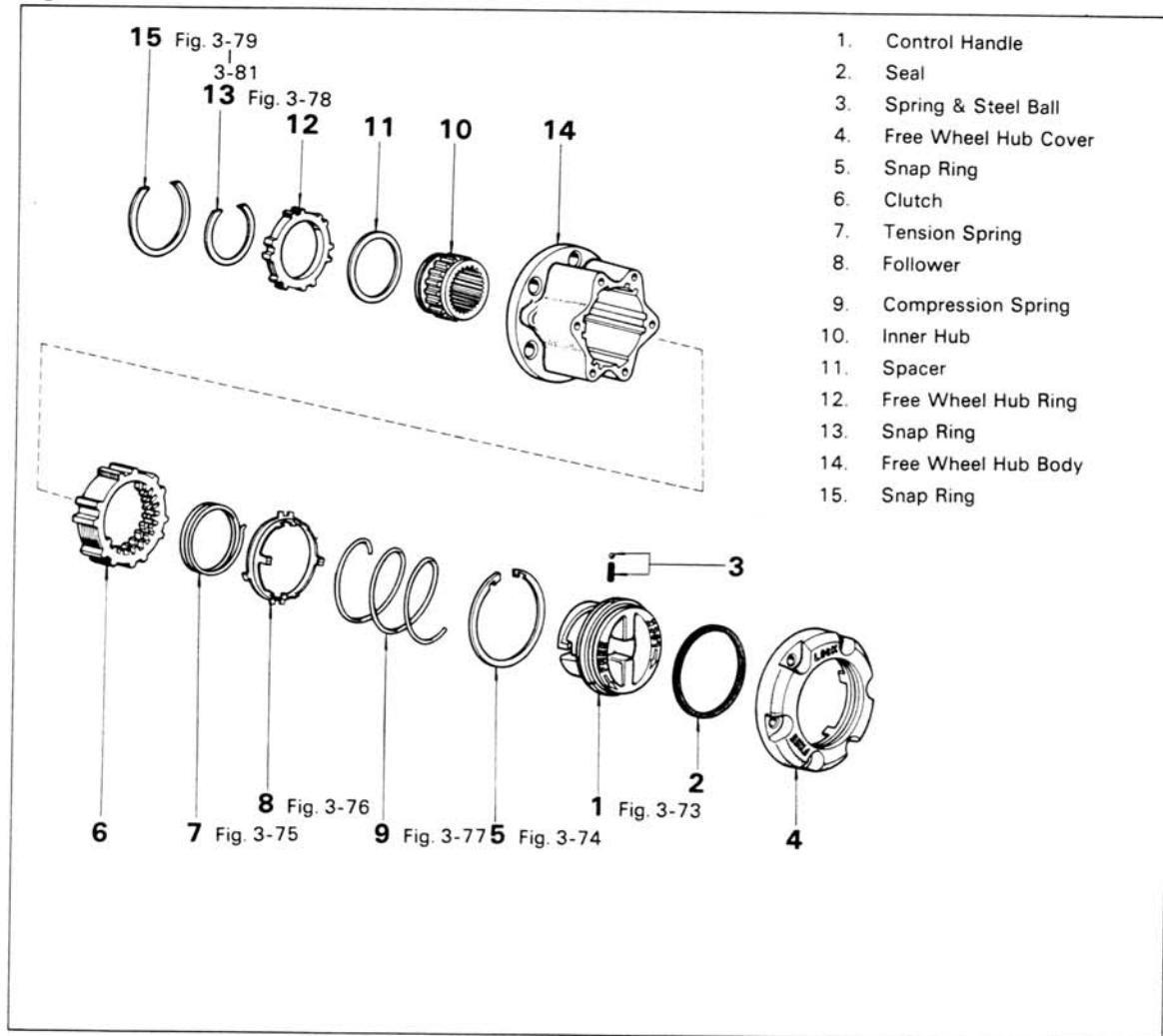


Fig. 6-73

MP grease



Apply MP grease on the arrow mark portion, before assembling.

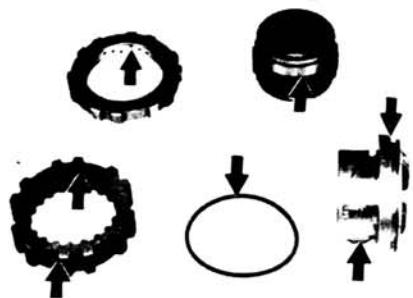
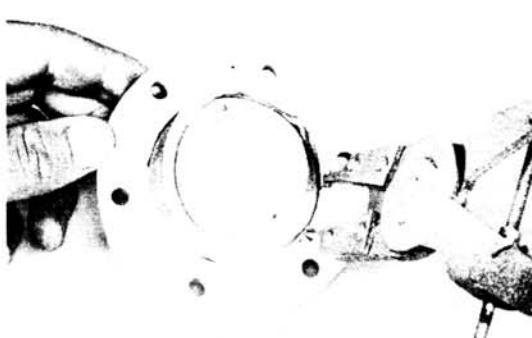
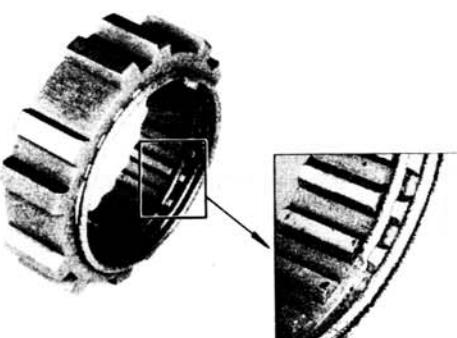


Fig. 6-74



Install the handle in the cover.

Fig. 6-75

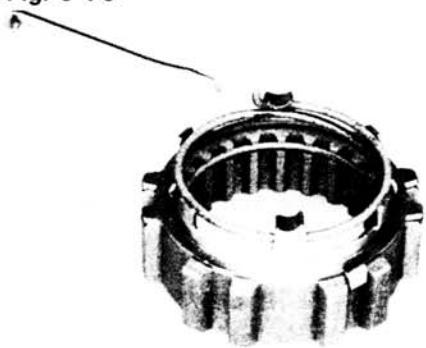


Install the tension spring in the clutch.

— Note —

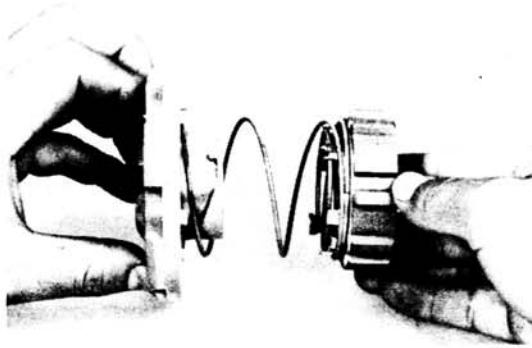
Fit the spring end into the clutch spring so as to be aligned with the initial groove.

Fig. 6-76



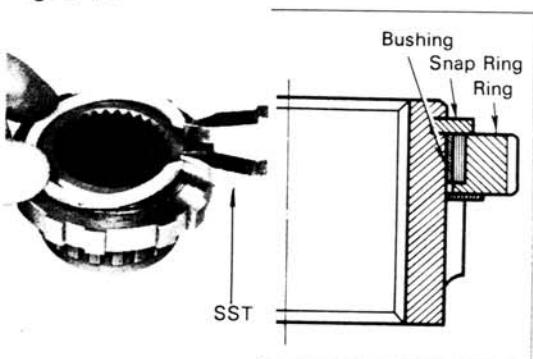
Fit follower pawl together with spring bent portion.

Fig. 6-77



Install the clutch and spring into the handle assembly.

Fig. 6-78

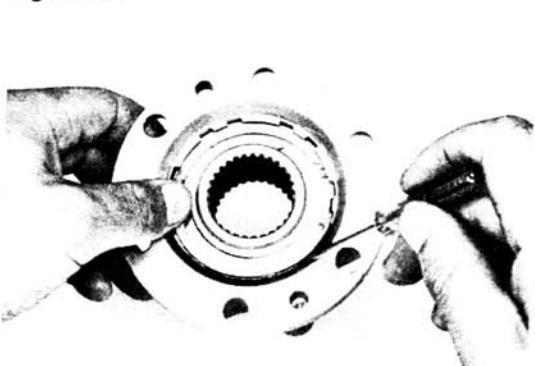


Install the spacer, free wheel hub ring, and snap ring to the inner with SST.
SST [09905-00012]

— Note —

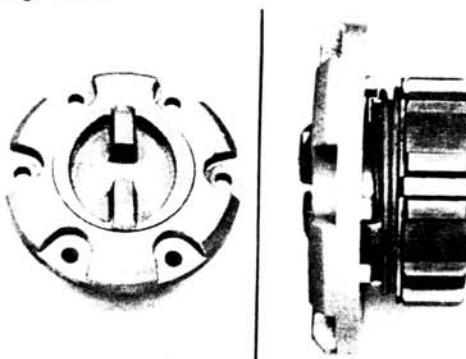
Make sure that ring is assembled in the correct direction as shown in the illustration.

Fig. 6-79



Install the inner assembly and snap ring in the body.

Fig. 6-80



1. Set the handle and clutch to the FREE position.

Fig. 6-81



2. Temporarily install the cover assembly to the body assembly.
3. Verify that the inner assembly turns smoothly.
4. Remove the cover assembly.

INSTALLATION

Install the parts in the numerical order shown in the figure.

Fig. 6-82

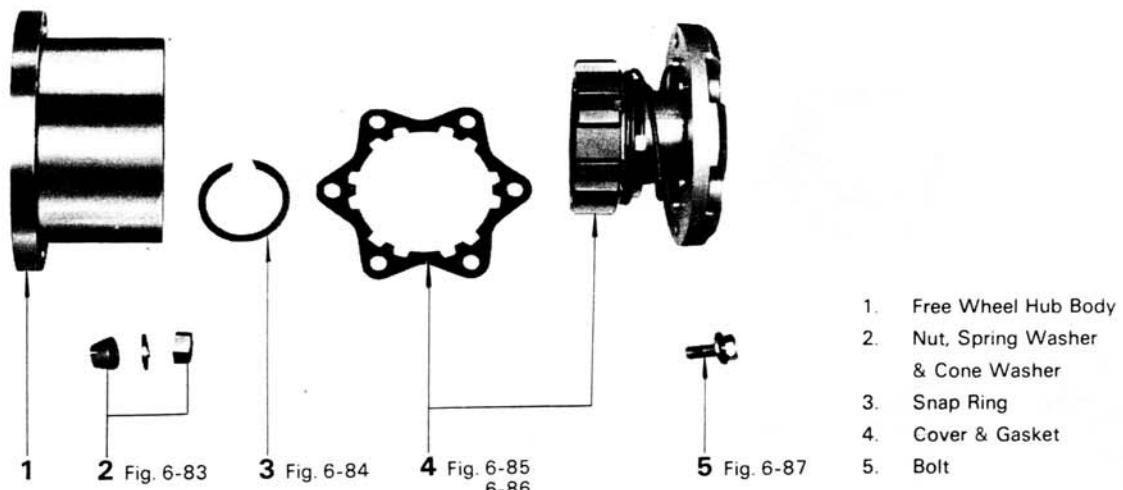
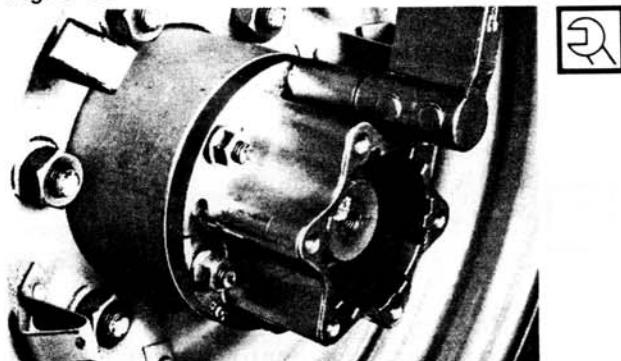


Fig. 6-83



Tighten six nuts to the specified torque.

Tightening torque: 2.8 – 3.5 kg-m
(21 – 25 ft-lb)

Fig. 6-84



Install the snap ring with SST.
SST [09905-00012]

— Note —
Gripping a bolt, pull the axle shaft out to
install the snap ring.

Fig. 6-85

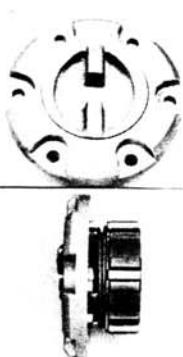
MP Grease



Apply MP grease on the portion indicated.



Fig. 6-86



Install the cover.

— Note —

Set the handle and the clutch to the FREE position.

Fig. 6-87



Tighten six bolts to the specified torque.

Tightening torque: 0.8 – 1.2 kg-m
(70 – 104 in.-lb)

— Note —

Verify that the control handle rotates smoothly.

FRONT SUSPENSION LEAF SPRING REMOVAL

Remove the parts in the numerical order shown in the figure.

Fig. 6-88

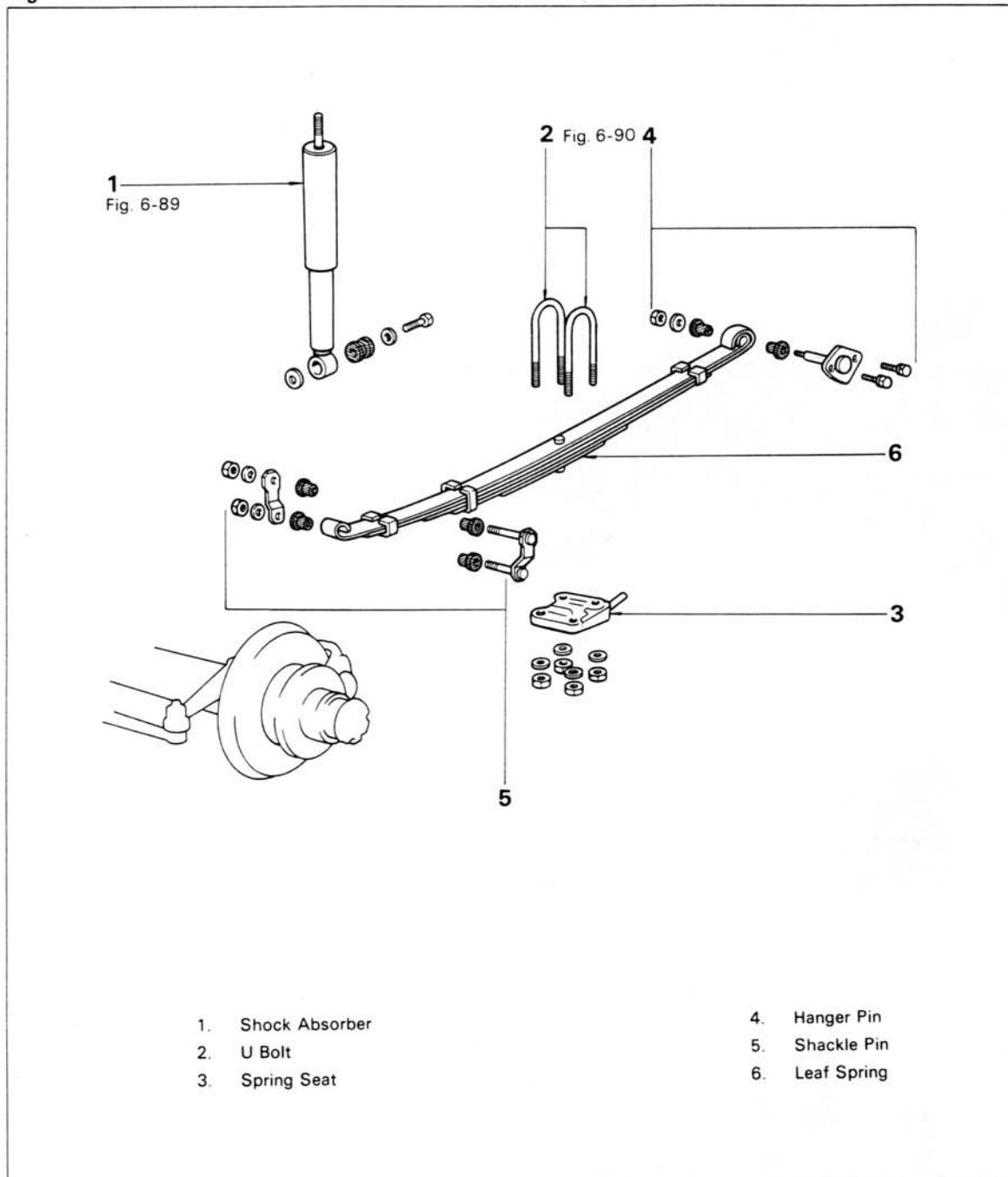
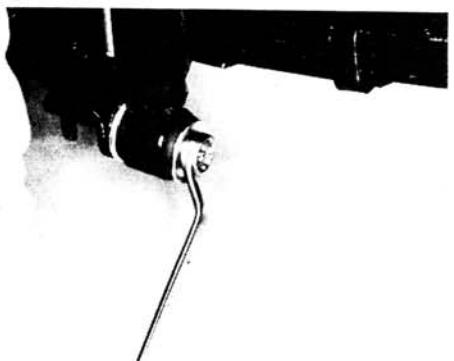
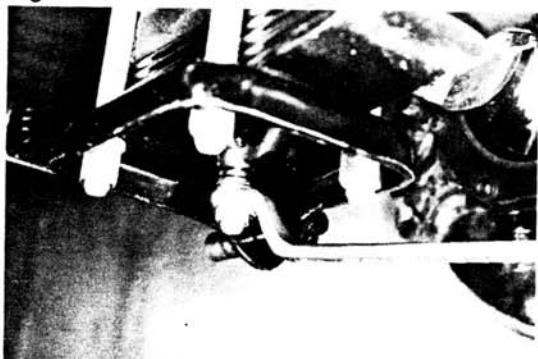


Fig. 6-89

1. Jack up and support the frame on stands.
2. Remove the wheels.
3. Disconnect the shock absorber lower side.

Fig. 6-90

Support the front axle housing with a jack, and remove the U bolts.

Fig. 6-91**INSPECTION & REPAIR****U Bolt & Spring Seat**

Inspect for wear or damage.

**Fig. 6-92****Shackle Pin, Hanger Pin & Bushing**

Inspect for wear or damage.

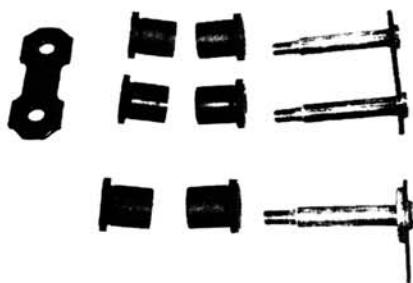
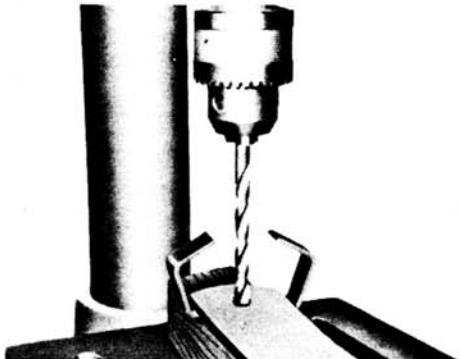


Fig. 6-93**Replace The Leaf**

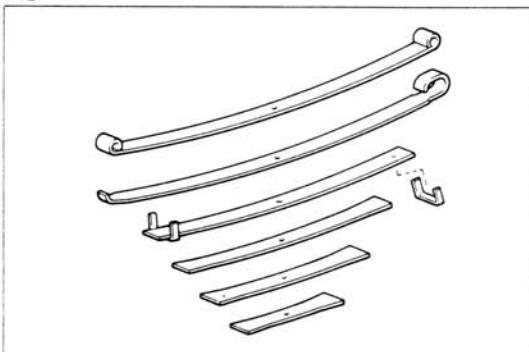
1. Pry up the spring clip.

Fig. 6-94

2. Secure the spring with a vise, and remove the spring center bolt.
3. Disassemble the leaf spring.

Fig. 6-95

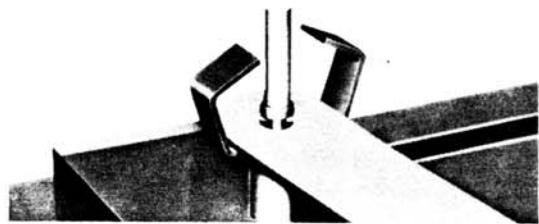
4. Drill the riveted head of the rivet, then drive it out.

Fig. 6-96

5. Inspect the leaves for damage or weakness.

Fig. 6-97

6. Using a press, install a new rivet into the holes of the leaf and clip.

**Fig. 6-98**

7. Secure the spring leaves with a vise, then install the spring center bolt and tighten firmly.

**Fig. 6-99**

8. Bend the clip into the position.



INSTALLATION

Install the parts in the numerical order shown in the figure.

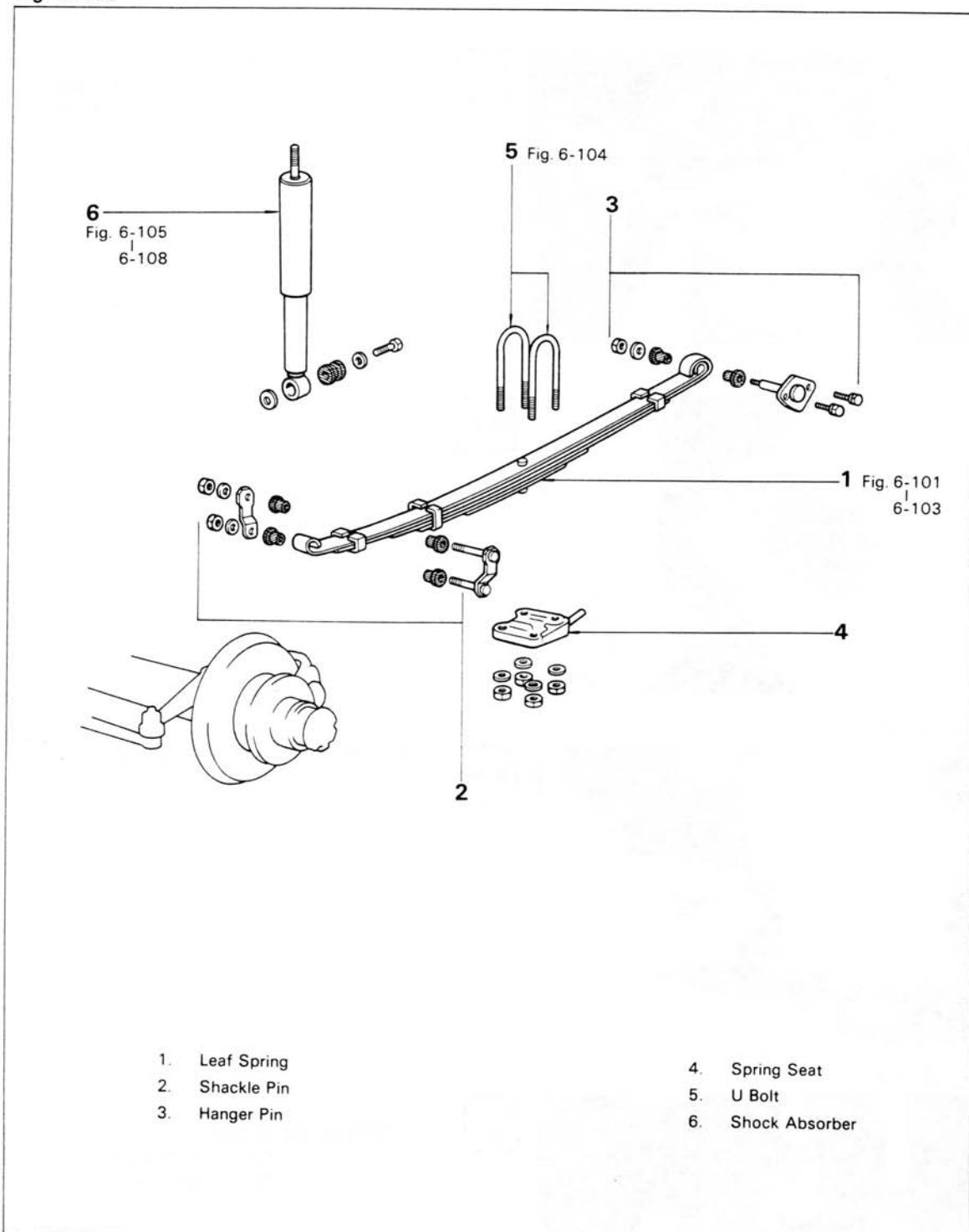
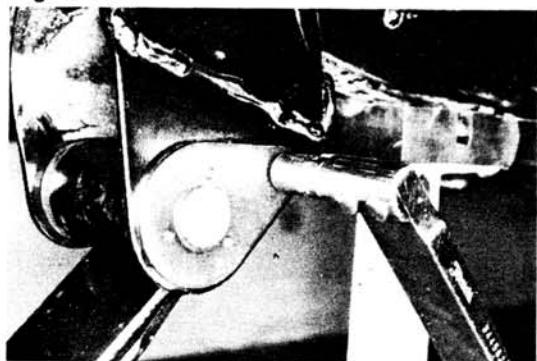
Fig. 6-100

Fig. 6-101



Install the hanger pin.

Tightening torque: 1.0–1.6 kg-m
(8–11 ft-lb)

Fig. 6-102



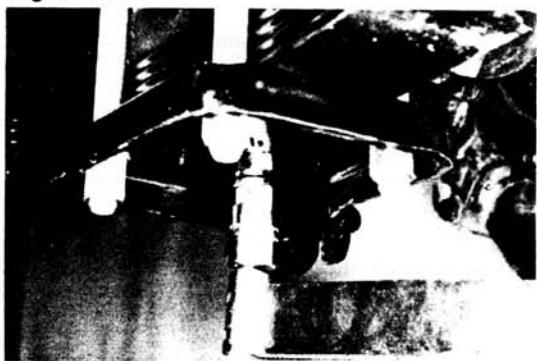
Finger tighten the nut.

Fig. 6-103



Finger tighten the shackle pin nuts.

Fig. 6-104



Install the U bolt.

Tightening torque:
10.0 – 15.0 kg-m
(73 – 108 ft-lb)

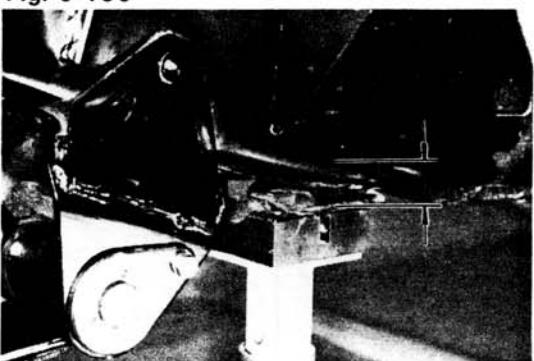
Fig. 6-105



Connect the shock absorber.

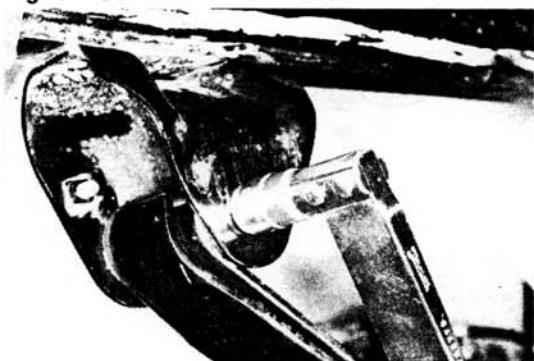
Tightening torque: 5.0 – 5.8 kg-m
(37 – 41 ft-lb)

Fig. 6-106



Raise the axle housing until the vehicle is free from the stands.

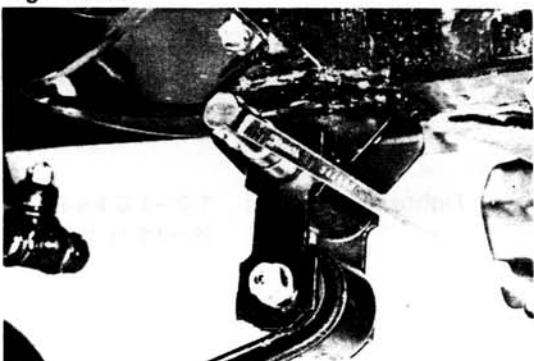
Fig. 6-107



Tighten the hanger pin nut.

Tightening torque: 7.5–11.0 kg-m
(55–79 ft-lb)

Fig. 6-108



Tighten the shackle pin nuts.

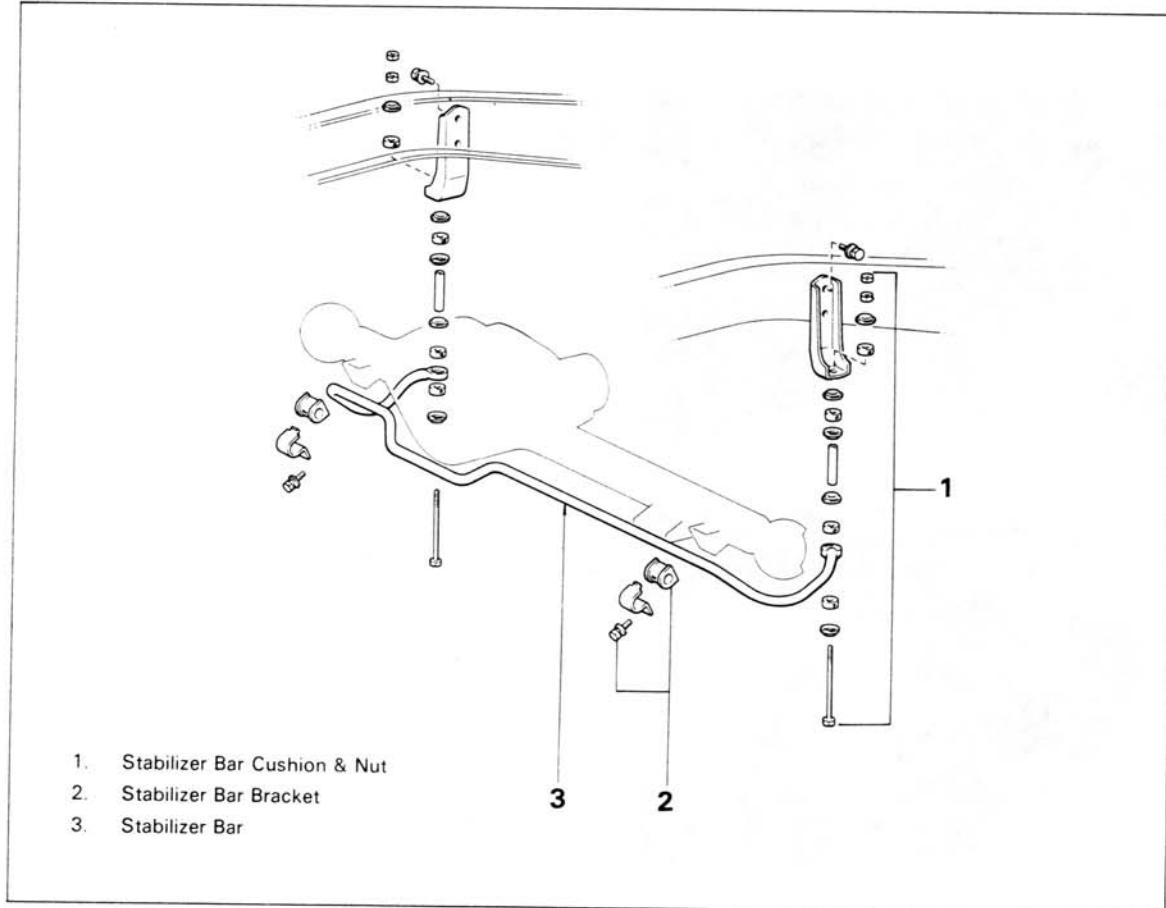
Tightening torque: 7.5–11.0 kg-m
(55–79 ft-lb)

FRONT STABILIZER BAR

REMOVAL

Remove the parts in the numerical order shown in the figure.

Fig. 6-109



1. Stabilizer Bar Cushion & Nut
2. Stabilizer Bar Bracket
3. Stabilizer Bar

INSTALLATION

Perform the removal procedure in reverse order.

Fig. 6-110

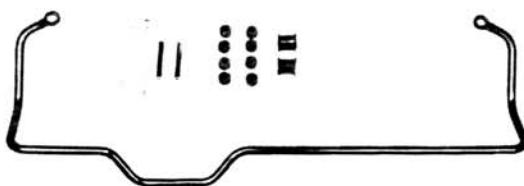


Install the mounting bolts.



Tightening torque: 1.0–1.6 kg-m
(8–11 ft-lb)

Fig. 6-111

**INSPECTION**

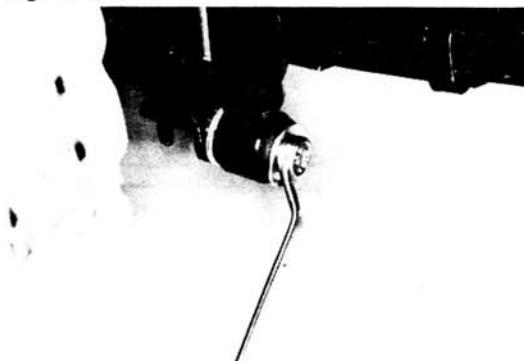
Inspect the disassembled parts for wear, damage or cracks.

Fig. 6-112

**FRONT SHOCK ABSORBER REMOVAL**

Remove the lock nut and the mounting nut.

Fig. 6-113



Remove the lower mounting bolt.

Fig. 6-114

**INSPECTION**

1. Inspect the disassembled parts for wear, damage or oil leakage.

Fig. 6-115



2. Check the operation.
Apply an even pressure and insure that the tension is equal throughout the stroke.

Fig. 6-116



INSTALLATION

Install the lower mounting bolt.

Tightening torque: 5.0 – 5.8 kg-m
(37 – 41 ft-lb)

Fig. 6-117



Install the bushings and retainers.

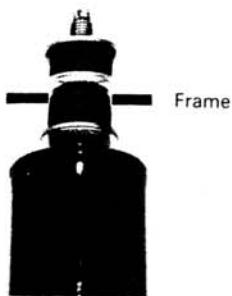


Fig. 6-118



Tighten the upper mounting nut and lock nut.

Tightening torque: 1.9–3.1 kg-m
(14–22 ft-lb)



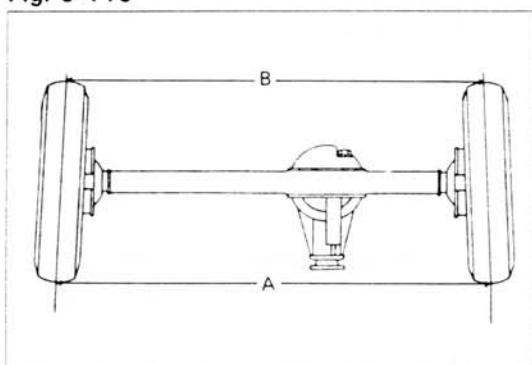
FRONT WHEEL ALIGNMENT

PRE-ALIGNMENT PREPARATIONS

Check the following points before performing the front wheel alignment:

1. Tire pressure, tire wear and difference in outer diameter measurements
2. Wheel play or unbalance
3. Play in the front wheel bearing
4. King pin play
5. Tie rod end and drag link play
6. Disalignment of wheel base left-right movement
7. Body leaning
8. Looseness of the spring U bolt, knuckle arm or steering gear housing
9. Improper movement of the shock absorbers
10. During alignment the vehicle must be empty and level.

Fig. 6-119



Toe-in

Measure the toe-in.

Toe-in:

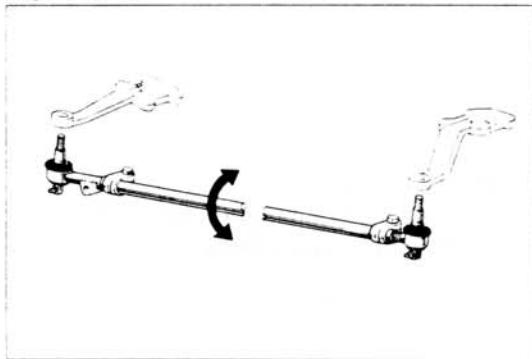
Bias tire

4 ± 2 mm
(0.10 ± 0.08 in.)

Radial tire

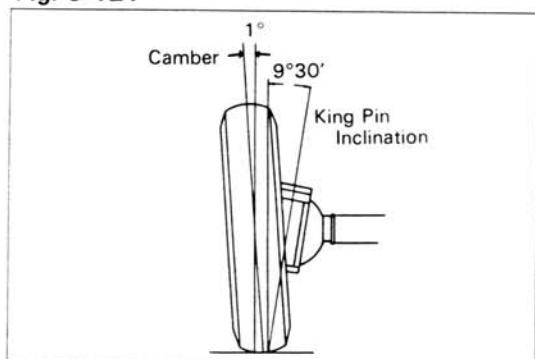
1 ± 2 mm
(0.04 ± 0.08 in.)

Fig. 6-120



To adjust, turn the tie rod adjusting tube.

Fig. 6-121

**Camber & King Pin Angle**

Measure the camber and king pin angle.

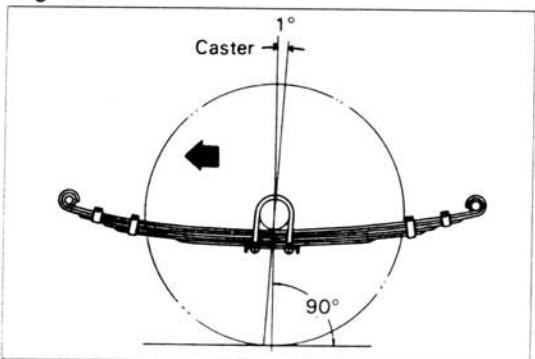
Camber angle: $1^\circ \pm 45'$

King pin inclination: $9^\circ 30'$

— Note —

If measurements are off standard, inspect each part thoroughly and adjust.

Fig. 6-122

**Caster**

Measure the caster.

Caster angle:

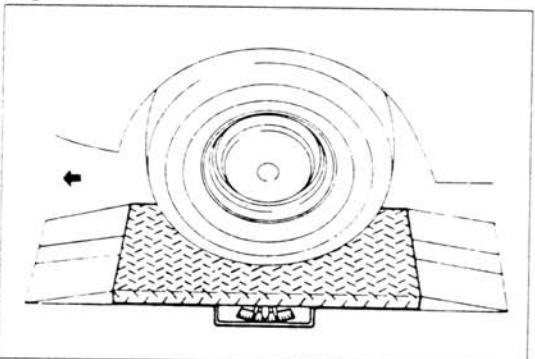
FJ, BJ, HJ4_series $1^\circ \pm 45'$

FJ, BJ, HJ6_series $1^\circ 05' \pm 45'$

— Note —

If measurements are off standard, inspect each part and adjust.

Fig. 6-123

**Side Slip**

Measure the side slip.

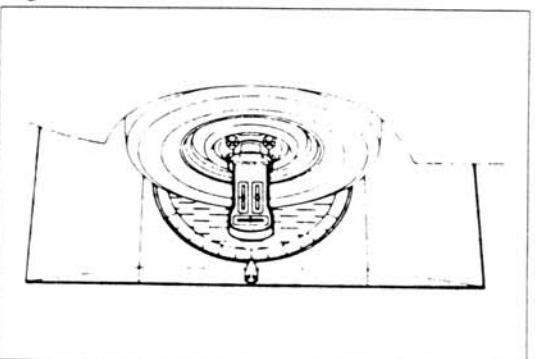
Side slip: Within 3.0 mm/m

(0.12 in./3.3 ft)

— Note —

If not within limit, adjust by lengthening or shortening the tie rod.

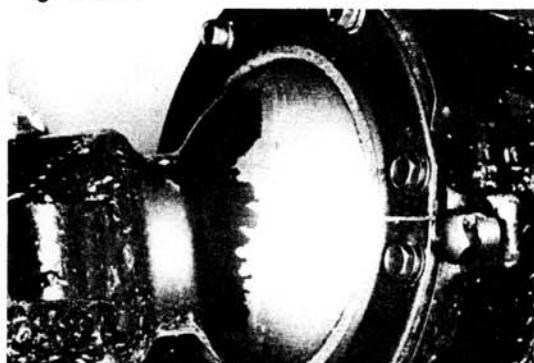
Fig. 6-124

**Turning Angle**

Inside wheel angle: $29 - 32^\circ$

Outside wheel angle: 30°

(Reference)

Fig. 6-125

If not within limits, adjust the steering angles to standard values with knuckle stopper.

REAR AXLE & SUSPENSION

	Page
CUTAWAY VIEW	7-2
REAR AXLE SHAFT	7-4
REAR AXLE HUB	7-11
DIFFERENTIAL	7-17
LIMITED SLIP DIFFERENTIAL	7-31
REAR SUSPENSION	7-41

CUTAWAY VIEW

Fig. 7-1

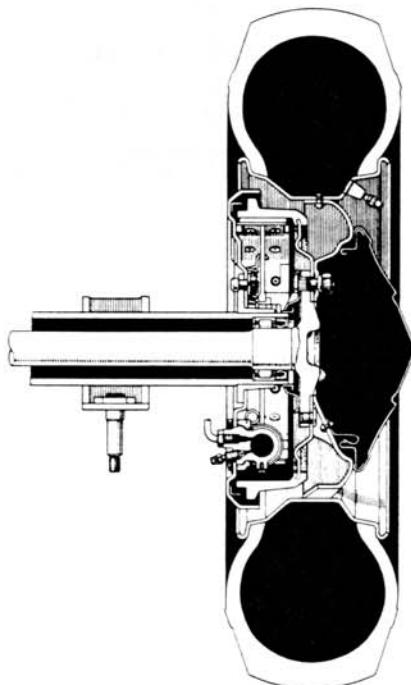
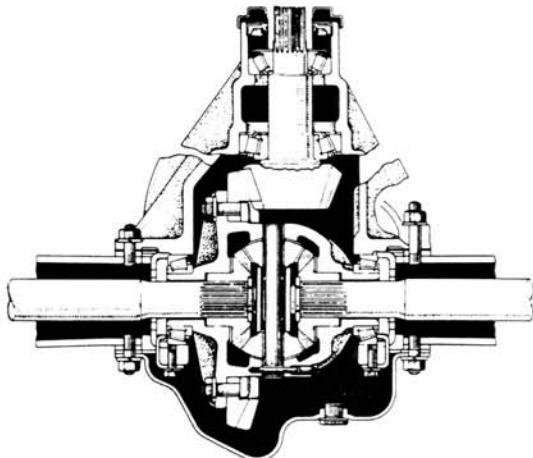
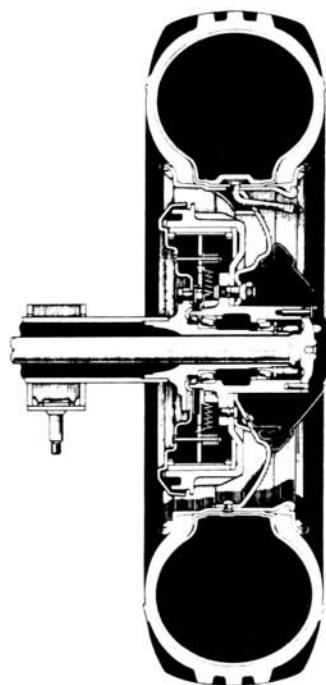
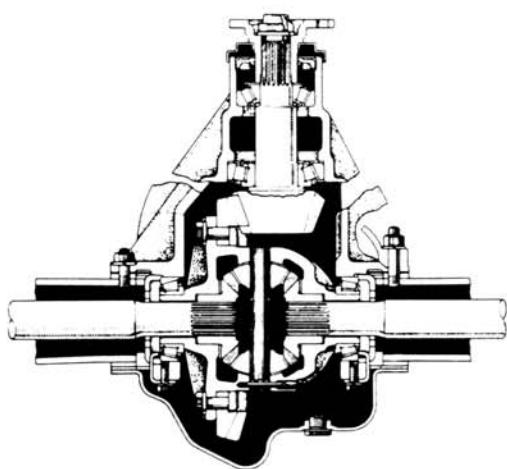
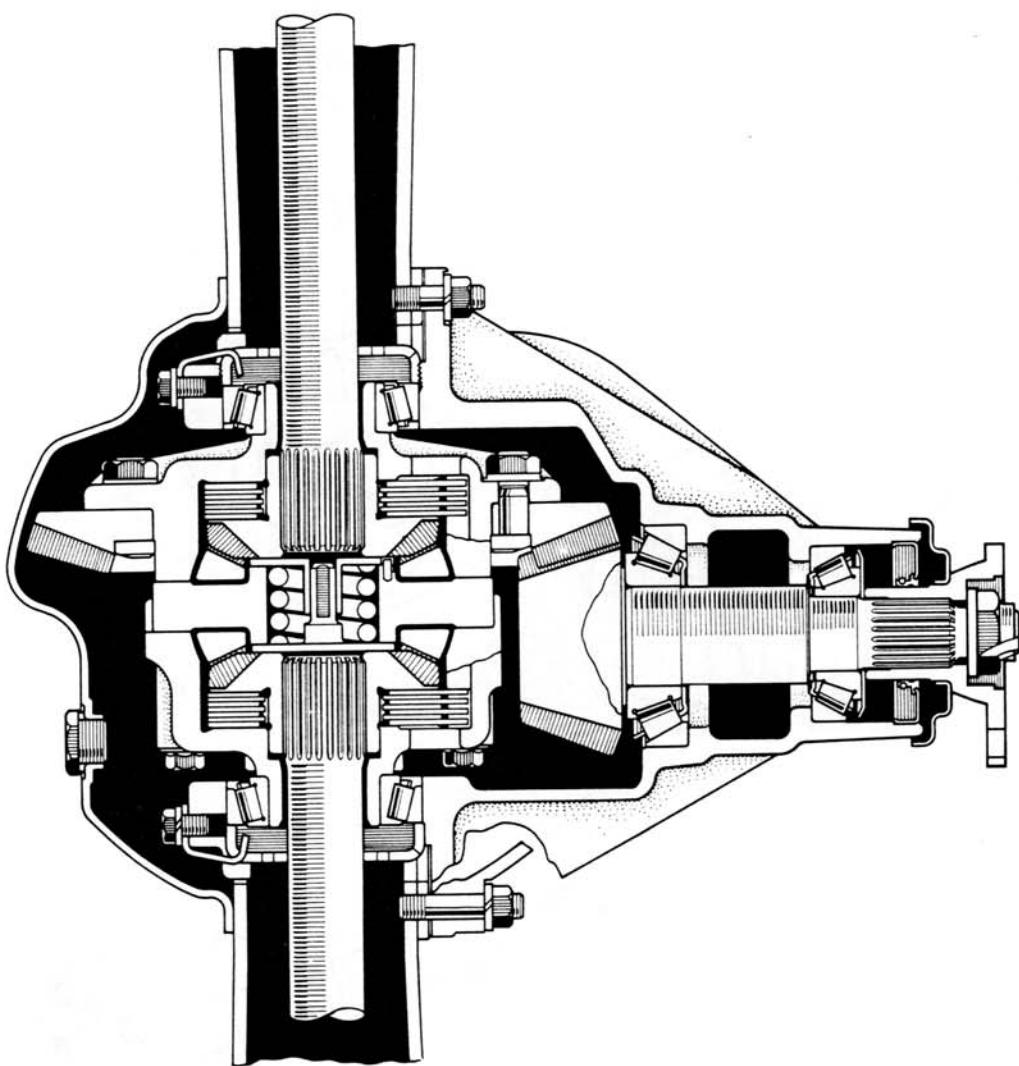
Semi-Floating Type**Full Floating Type**

Fig. 7-2

LIMITED SLIP DIFFERENTIAL

REAR AXLE SHAFT (SEMI-FLOATING TYPE)

REMOVAL

Remove the parts in the numerical order shown in the figure.

Fig. 7-3

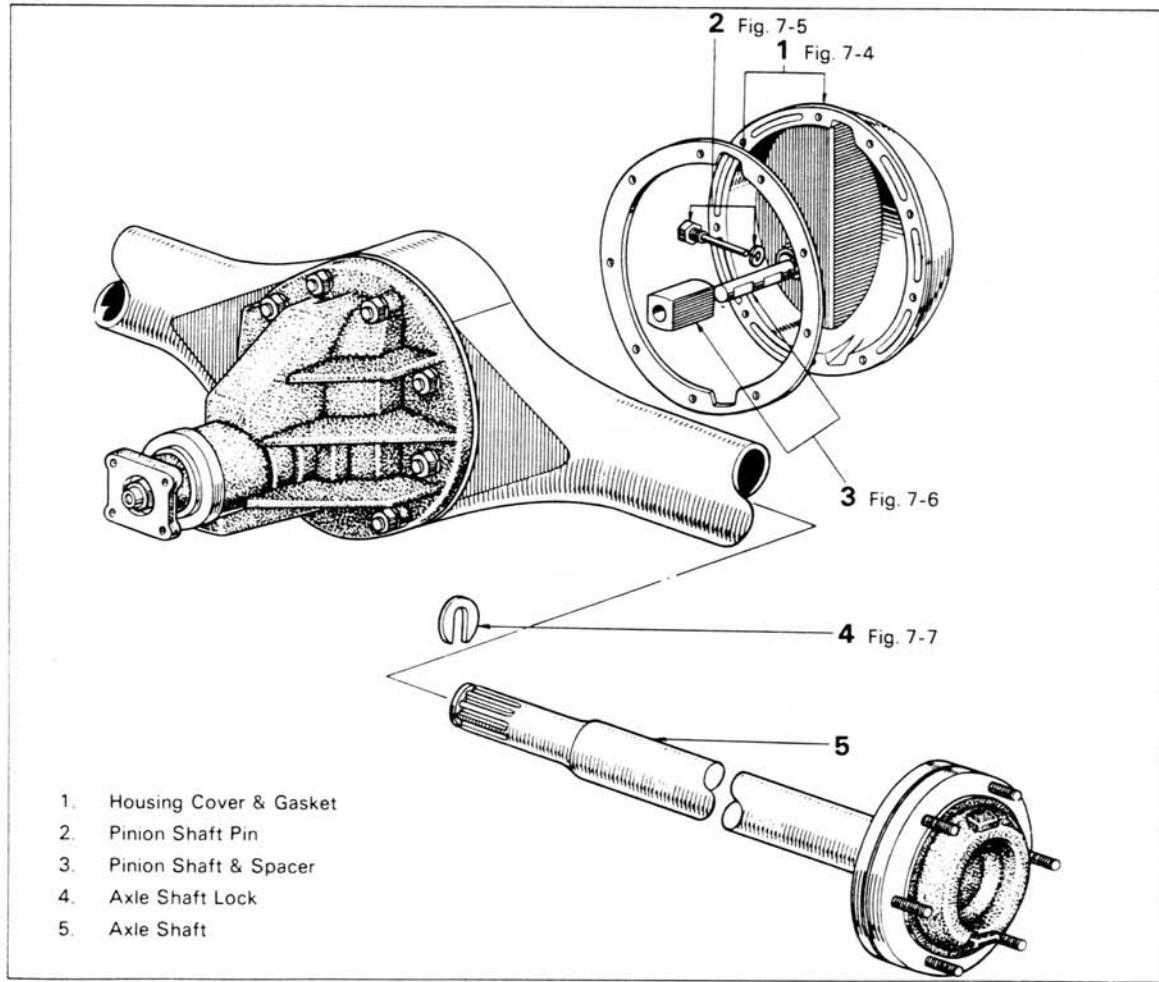


Fig. 7-4

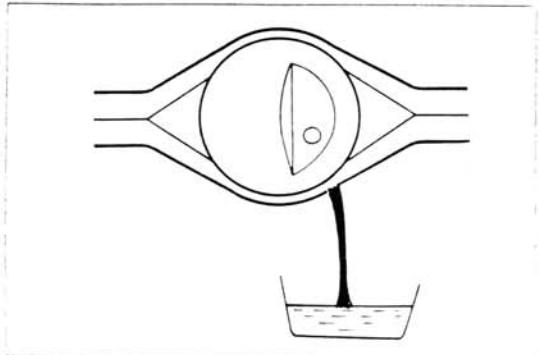
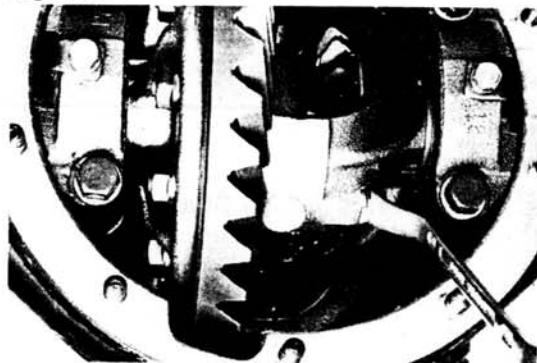


Fig. 7-5



Remove the pinion shaft pin.

Fig. 7-6



Draw out the pinion shaft and spacer.

Fig. 7-7



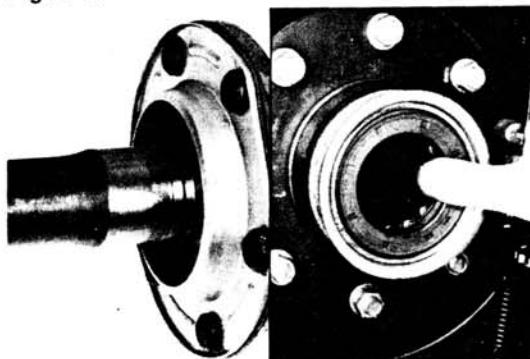
Push the axle shaft to the center of vehicle and remove the axle shaft lock.

Fig. 7-8

**INSPECTION****Axle Shaft & Pinion Shaft Spacer**

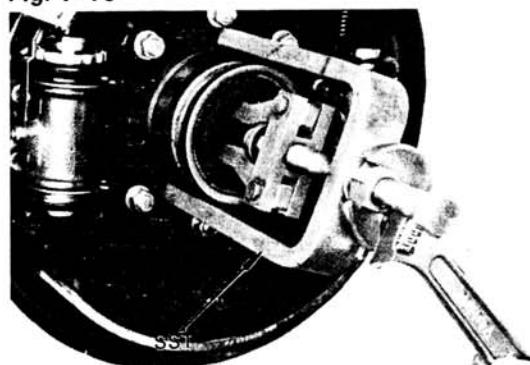
Inspect for wear or damage.

Fig. 7-9

**Axle Shaft Bearing**

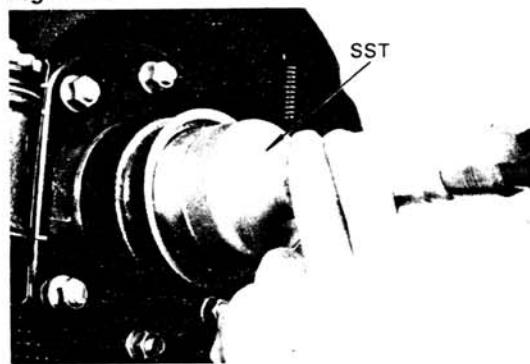
Inspect for wear or damage.

Fig. 7-10

**Replace The Axle Shaft Bearing**

1. Remove the bearing and oil seal together with SST.
SST [09514-35011]

Fig. 7-11



2. Drive in the bearing and oil seal with SST.
SST [09515-35010]

INSTALLATION

Install the parts in the numerical order shown in the figure.

Fig. 7-12

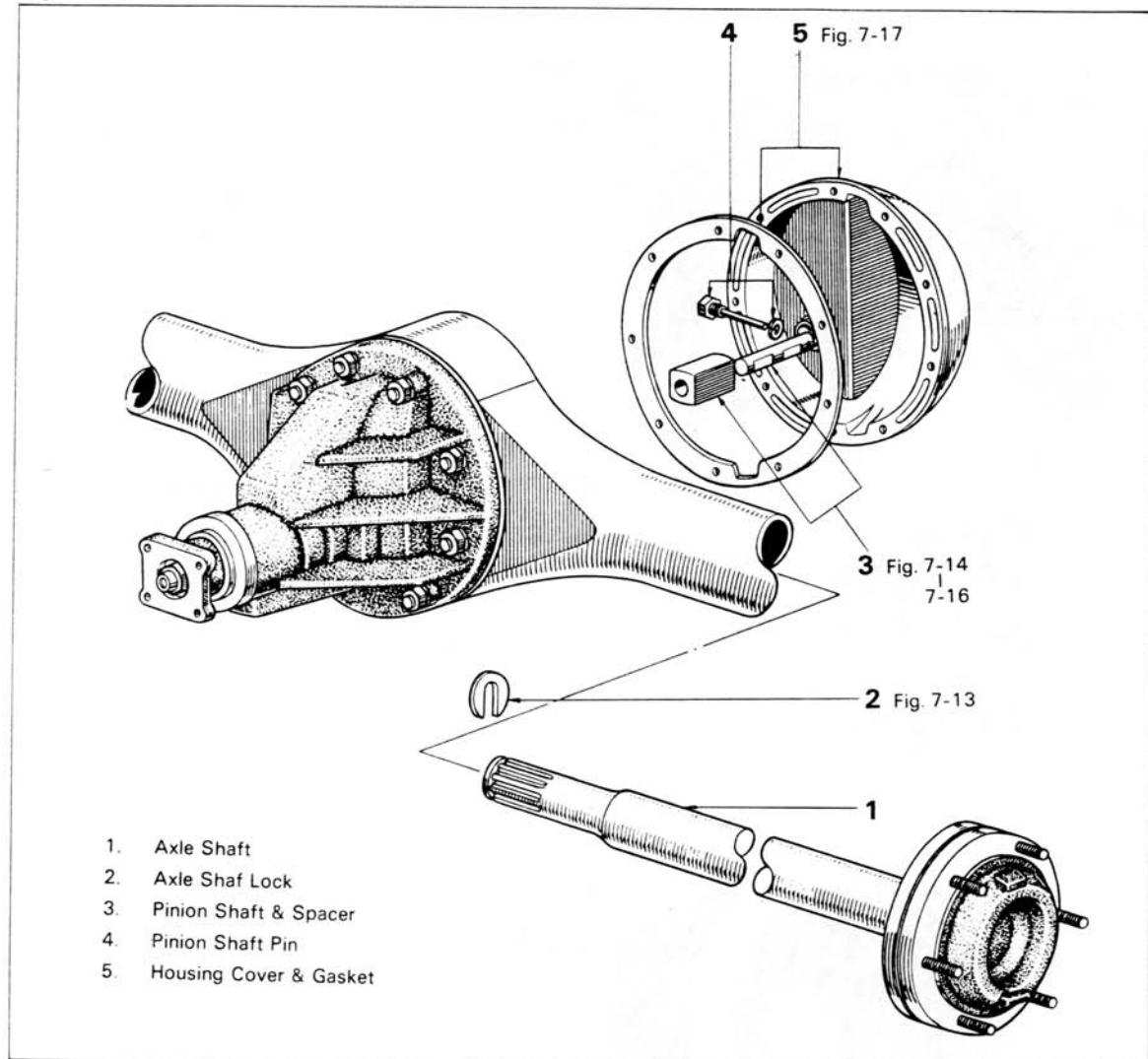
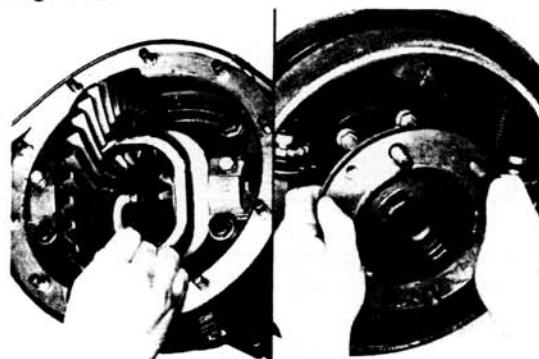
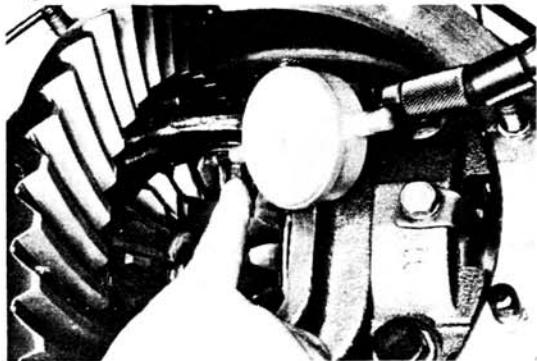


Fig. 7-13



After installing the lock to the shaft, pull the shaft fully toward the outer side of vehicle.

Fig. 7-14



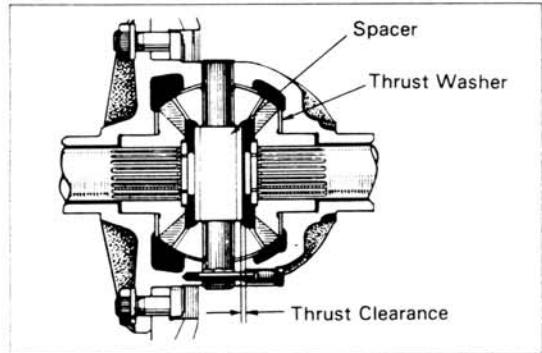
Measure the differential gear backlash.

- Hold the side gear steady and measure the backlash of the pinion.

Backlash:

**STD 0.02 – 0.20 mm
(0.0008 – 0.0079 in.)**

Fig. 7-15



- If outside the standard value range, correct by selecting proper size side gear thrust washers.

Thrust washer thickness

Part No.	Thickness mm (in.)
41361-60010	1.55 – 1.65 (0.0610 – 0.0650)
41361-60020	1.70 – 1.80 (0.0670 – 0.0709)
41361-60030	1.85 – 1.95 (0.0728 – 0.0768)
41361-60040	2.00 – 2.10 (0.0787 – 0.0827)

Fig. 7-16



Rear axle shaft end thrust clearance.

Select pinion shaft spacer of the thickness that will set the thrust clearance to the standard value.

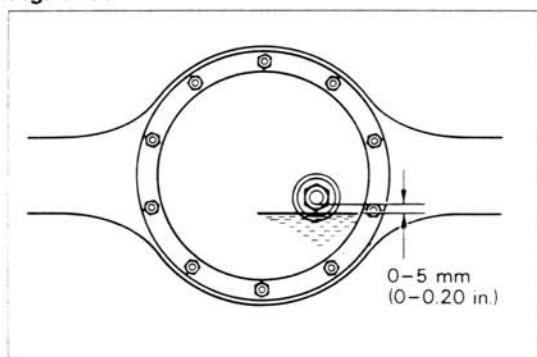
Clearance:

**STD 0.060 – 0.465 mm
(0.0024 – 0.0183 in.)**

Spacer thickness

Part No.	Thickness mm (in.)
41344-35010	29.8 (1.173)
41345-35010	30.2 (1.189)
41346-35010	30.6 (1.205)
41347-35010	29.0 (1.142)
41348-35010	24.9 (1.157)

Fig. 7-17



After installing the axle shaft, fill in hypoid gear oil SAE90, API GL-5.

Capacity:

**STD 2.5 liters
(2.6 US qt., 2.2 Imp.qt)**

—Note—

With LSD fill in hypoid gear oil LSD, SAE90, API GL-5.

REAR AXLE SHAFT (FULL FLOATING TYPE) COMPONENTS

Fig. 7-18

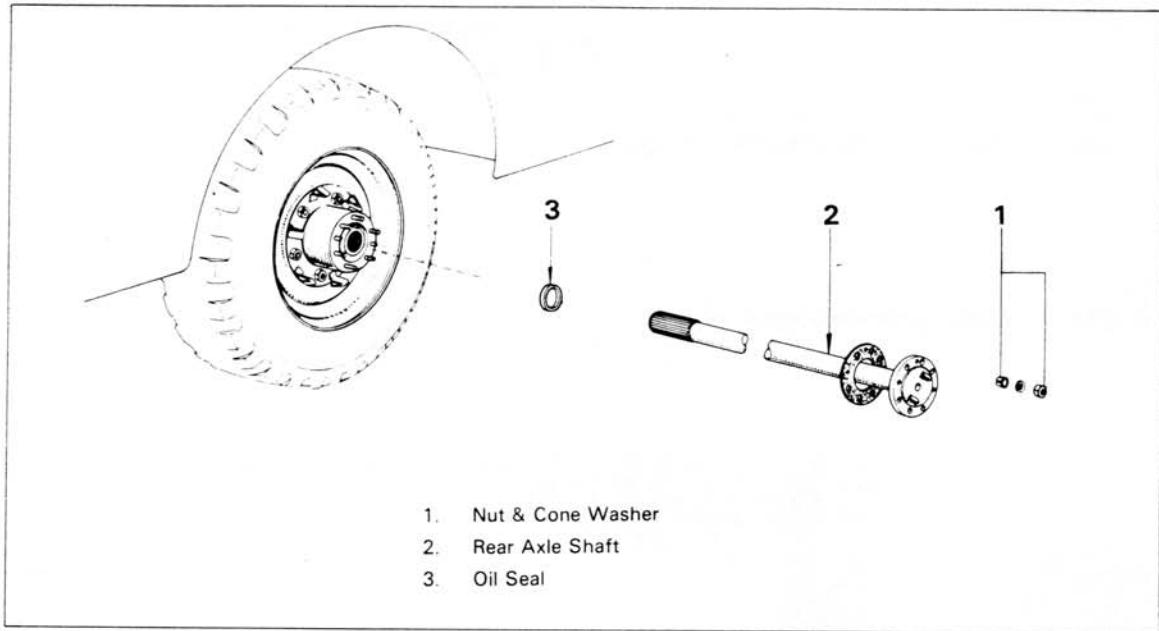
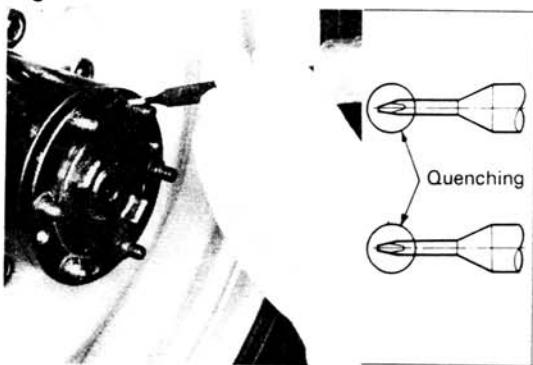


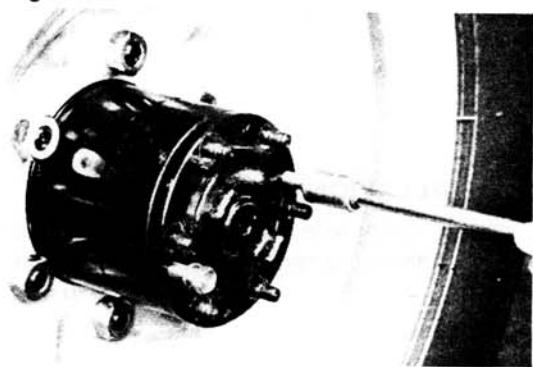
Fig. 7-19



REMOVAL

1. Remove the nuts and cone washers with a tapered punch.

Fig. 7-20



2. Remove the rear axle shaft by tightening the bolts.

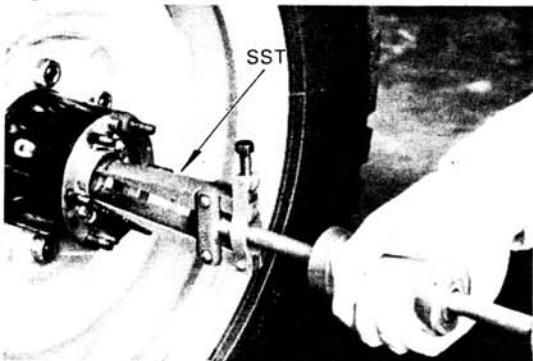
Fig. 7-21

**INSPECTION & REPAIR****Rear Axle Shaft**

Inspect the parts identified by arrows for wear or damage.



Fig. 7-22

**Replace The Rear Axle Shaft Oil Seal**

1. Remove the oil seal with SST.
SST [09308-00010]

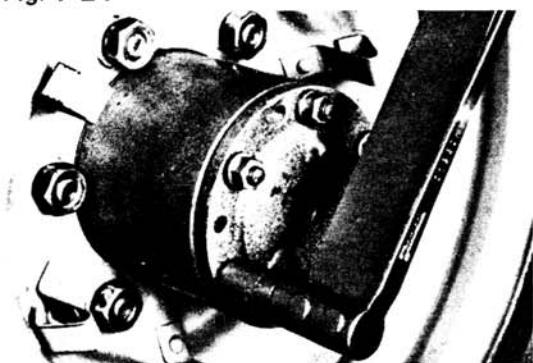


2. Install the new oil seal with SST.
SST [09517-36010]



3. Apply MP grease on the oil seal.

Fig. 7-24

**INSTALLATION**

Install the rear axle shaft and tighten the nuts.

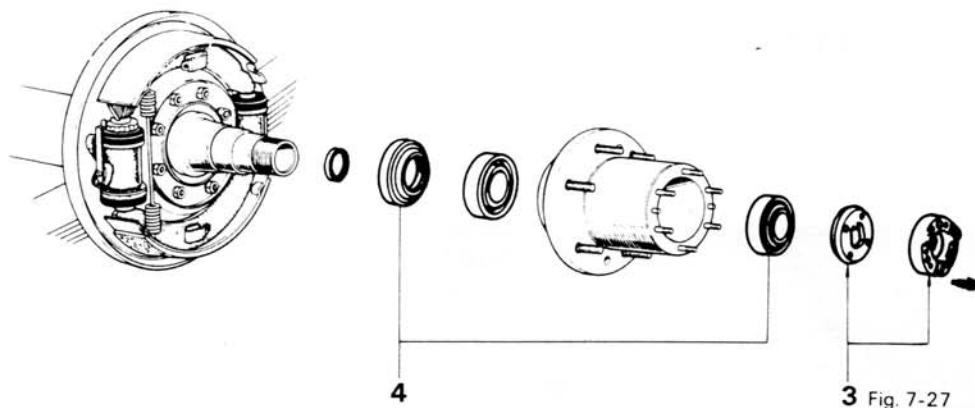
Tightening torque: 2.8 – 3.5 kg·m
(21 – 25 ft-lb)

REAR AXLE HUB (FULL FLOATING TYPE)

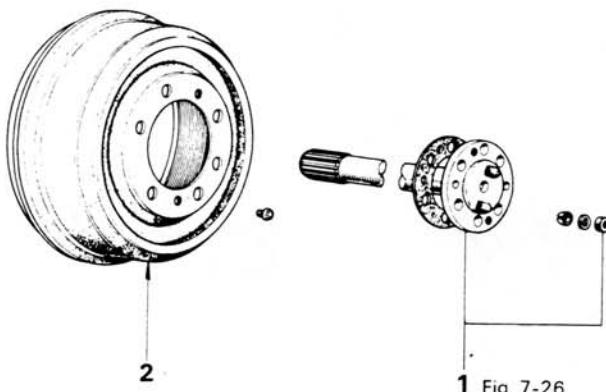
REMOVAL

Remove the parts in the numerical order shown in the figure.

Fig. 7-25

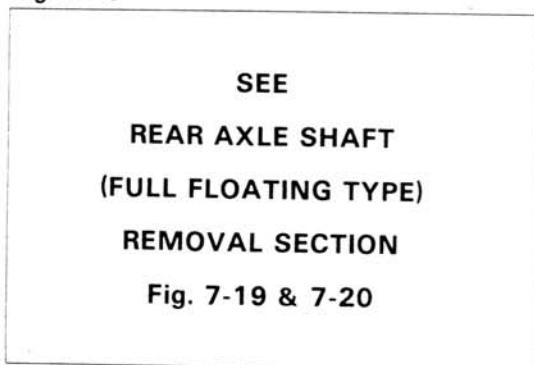


3 Fig. 7-27

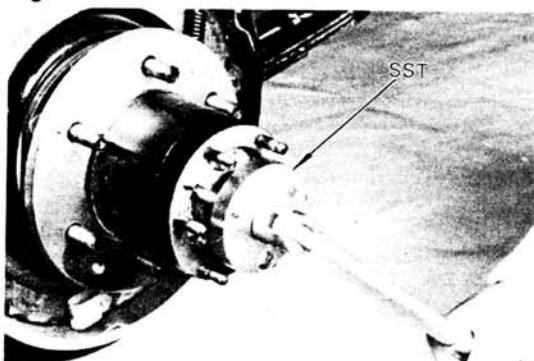


1 Fig. 7-26

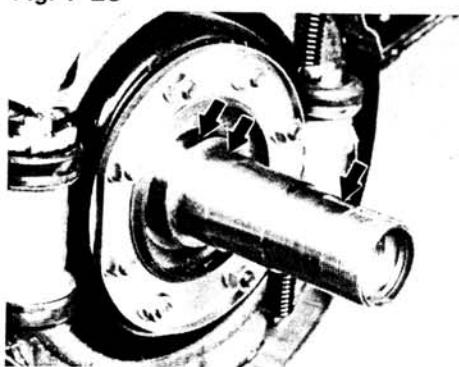
1. Rear Axle Shaft
2. Brake Drum
3. Adjusting Nut & Lock Washer
4. Axle Hub

Fig. 7-26

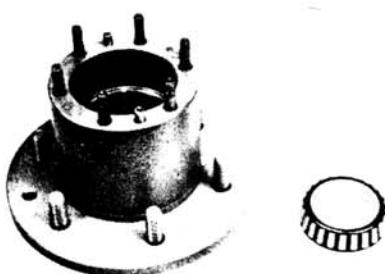
Remove the rear axle shaft.

Fig. 7-27

Remove the adjusting nut with SST.
SST [09509-25011]

Fig. 7-28**INSPECTION & REPAIR
Rear Axle Housing**

Inspect the parts indicated by arrows for wear or damage.

Fig. 7-29**Rear Axle Hub & Bearing**

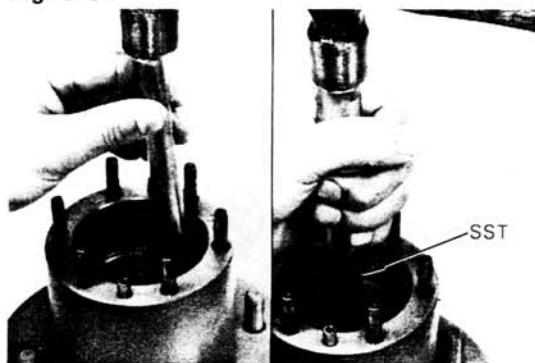
Inspect the bearings and oil seal for wear or damage.

Fig. 7-30

**Replace The Bearing**

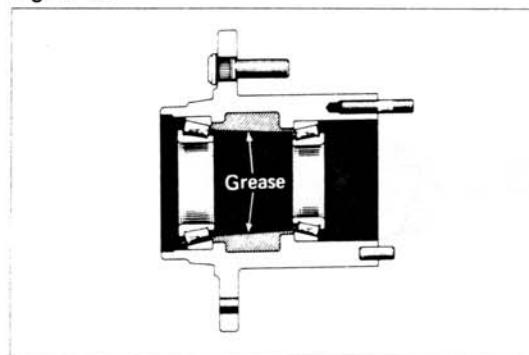
1. Remove the oil seal with a screw driver.

Fig. 7-31



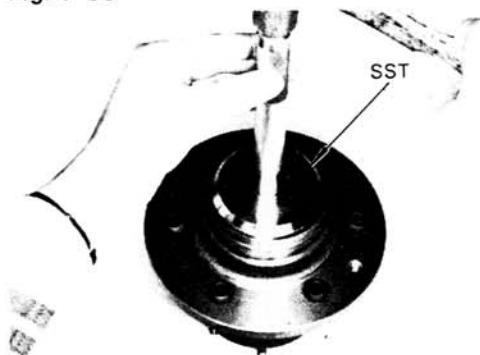
2. Remove the bearing outer races with a drift.
3. Install the new bearing outer races with SST.
SST [09608-35013]

Fig. 7-32



4. Pack MP grease into the hub and bearings.

Fig. 7-33



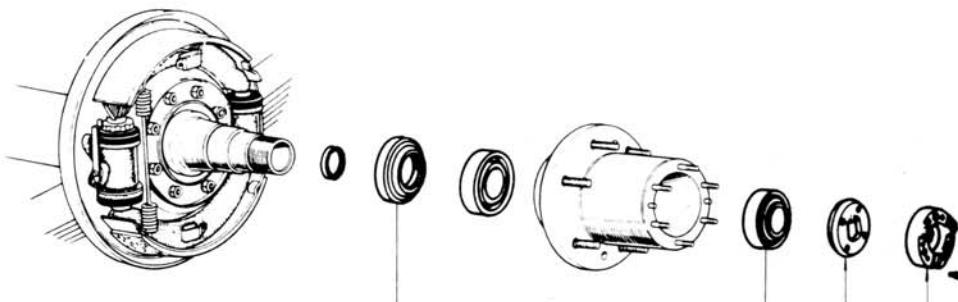
5. Install the inner bearing and oil seal with SST.
SST [09608-35013]
6. Apply MP grease on the oil seal.



INSTALLATION

Install the parts in the numerical order shown in the figure.

Fig. 7-34



1

2

Fig. 7-35

Fig. 7-36
7-41

3

4

5

Fig. 7-42

1. Rear Axle Hub
2. Lock Plate
3. Adjusting Nut
4. Brake Drum
5. Rear Axle Shaft

Fig. 7-35



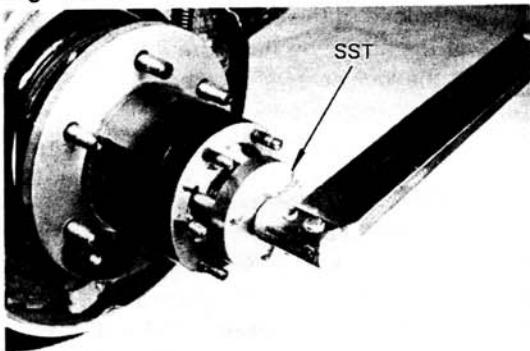
Install the lock plate.



-Note-

After fully pushing in the outer bearing,
position the protrusion of the lock plate into
axle housing groove.

Fig. 7-36

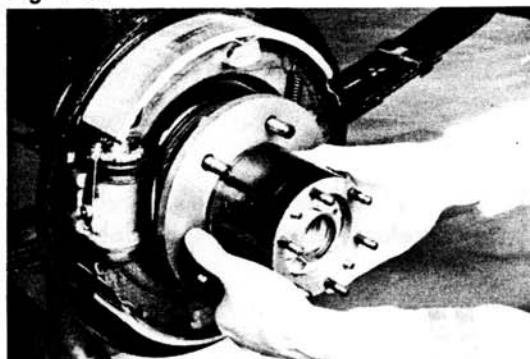


Tighten the adjusting nut with SST.
SST [09509-25011]

Tightening torque: 6.0 kg-m
(43 ft-lb)



Fig. 7-37

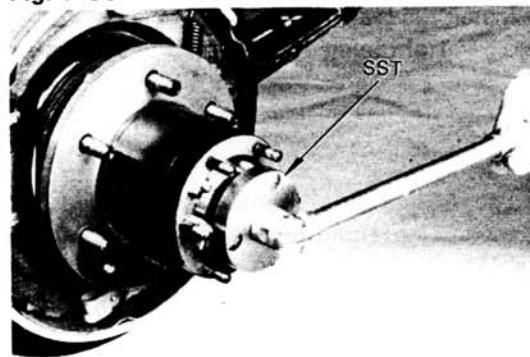


Rotate the rear axle hub about three times to
snug down the bearings.
Retighten the adjusting nut.



Tightening torque: 6.0 kg-m
(43 ft-lb)

Fig. 7-38



With SST, loosen the adjusting nut until it can
be rotated by hand.
Then, add the preload a little at time by
tightening the nut.
SST [09509-25011]



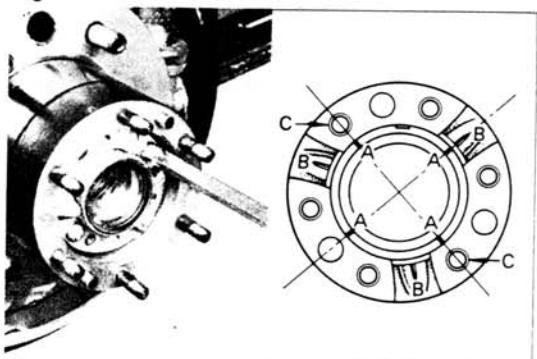
Fig. 7-39



Measure the preload at the hub bolt.

**Preload (starting): 2.6 – 5.7 kg
(5.7 – 12.6 lb)**

Fig. 7-40



Align the one of the axle housing slots A with one of the adjusting nut slots B.
Install the lock screws into the holes C which are at right angles to the aligned slots A and B.

**Tightening torque: 0.4 – 0.7 kg-m
(35 – 60 in.-lb)**

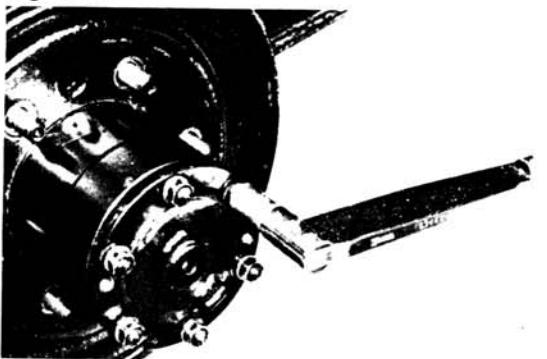
Fig. 7-41



Recheck the preload at the hub bolt.

**Preload (starting): 2.6 – 5.7 kg
(5.7 – 12.6 lb)**

Fig. 7-42



Install the rear axle shaft.

**Tightening torque: 2.8 – 3.5 kg-m
(21 – 25 ft-lb)**

DIFFERENTIAL

REMOVAL

After draining out the oil, remove the parts in the numerical order shown in the figure.

Fig. 7-43

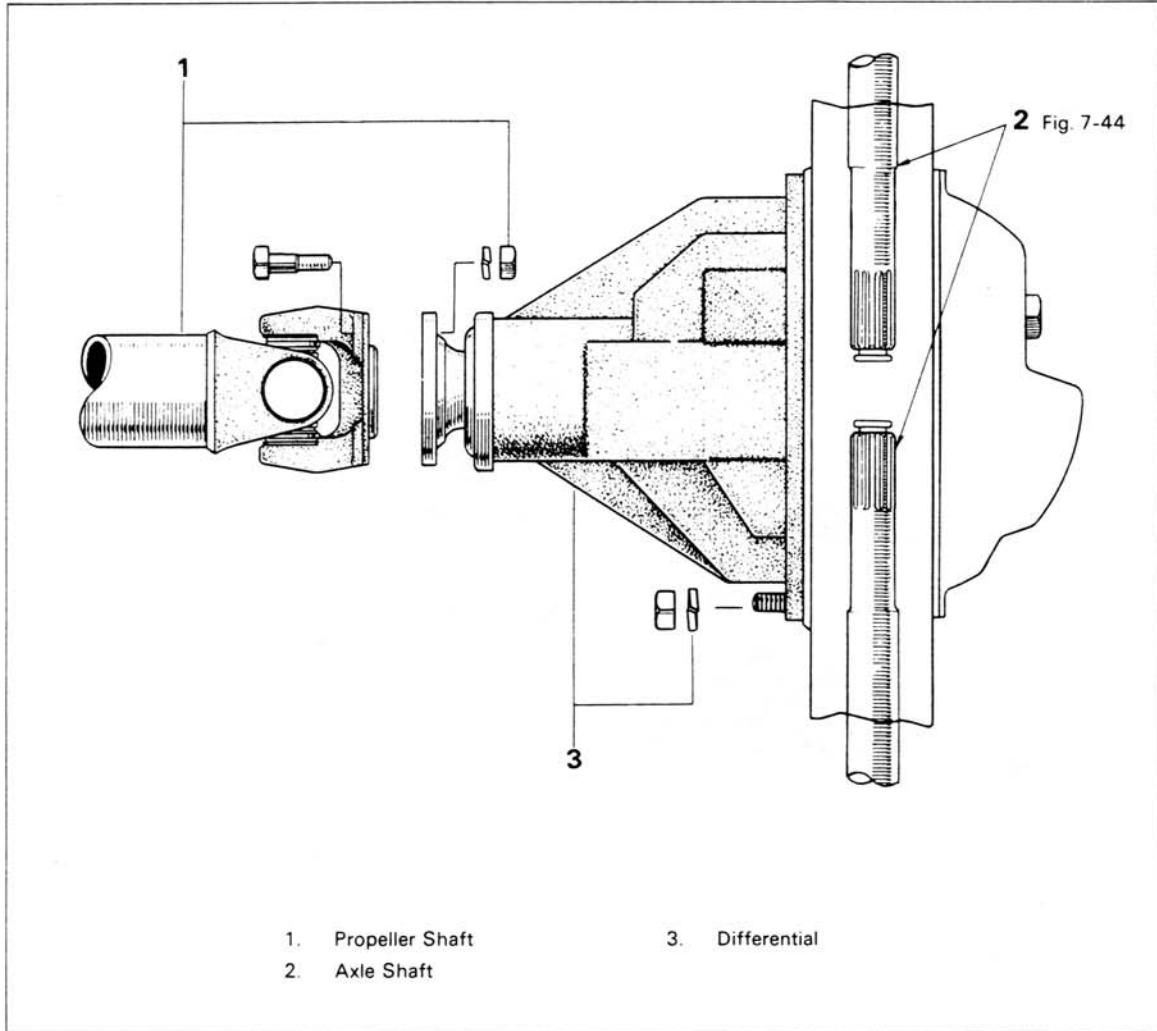


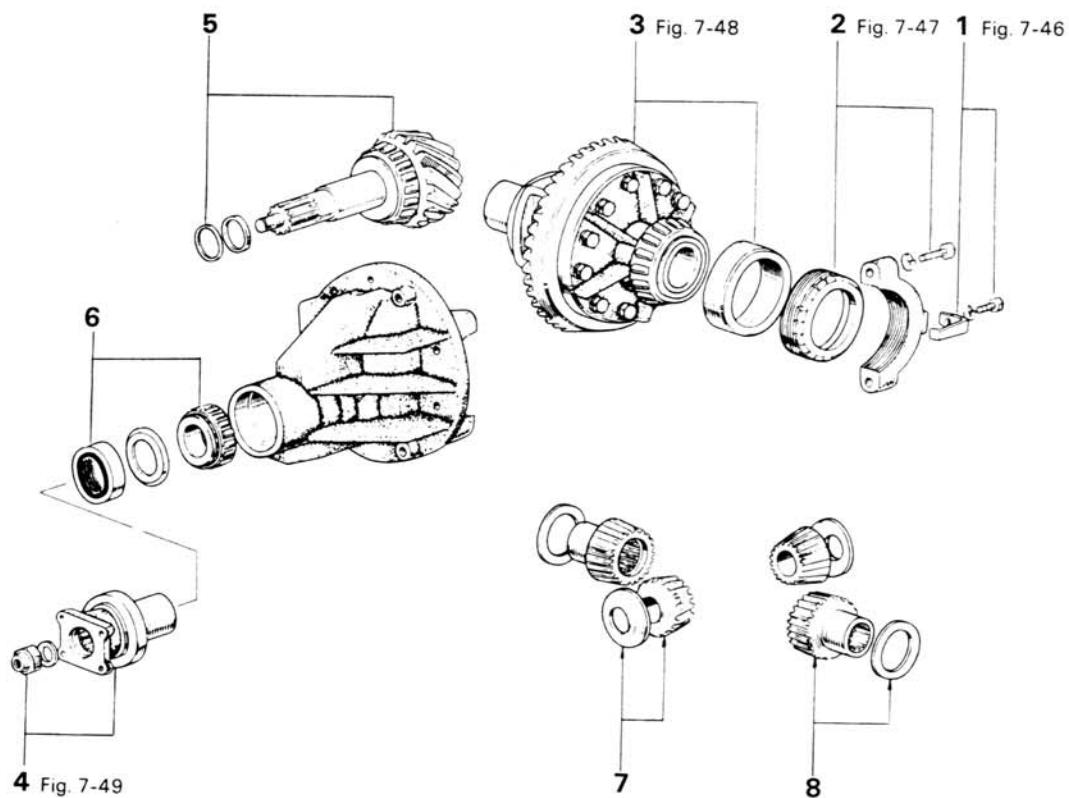
Fig. 7-44

Remove the axle shafts.

SEE
REAR AXLE SHAFT
(SEMI-FLOATING TYPE)
REMOVAL SECTION
Fig. 7-4 to 7-7,
7-19 & 7-20

DISASSEMBLY

Disassemble the parts in the numerical order shown in the figure.

Fig. 7-45

- | | |
|--------------------------------|---|
| 1. Adjust Nut Lock | 5. Drive Pinion, Bearing, Shim & Washer |
| 2. Bearing Cap & Adjusting Nut | 6. Oil Seal, Slinger & Bearing |
| 3. Ring Gear, Cap & Bearing | 7. Pinion & Thrust Washer |
| 4. Joint Flange | 8. Side Gear & Thrust Washer |

Fig. 7-46

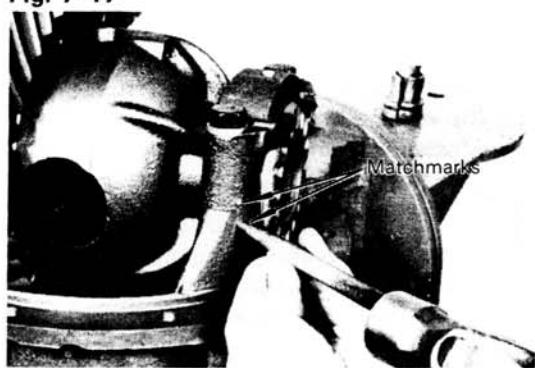


Before starting disassembly, measure the runout of the ring gear back face.

Runout:

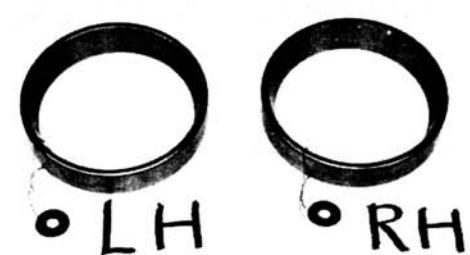
Limit 0.10 mm
(0.0039 in.)

Fig. 7-47



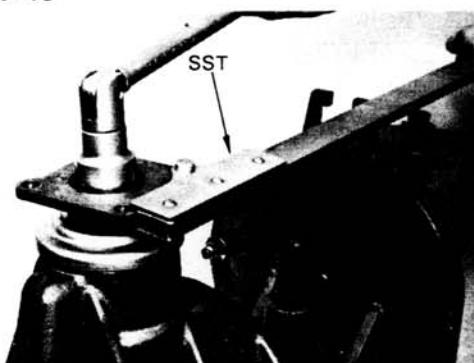
Place matchmarks on the bearing caps.

Fig. 7-48



Place tags on the bearing outer races to differentiate the left and right side usage.

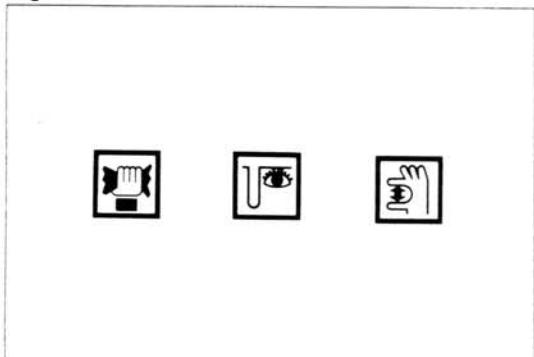
Fig. 7-49



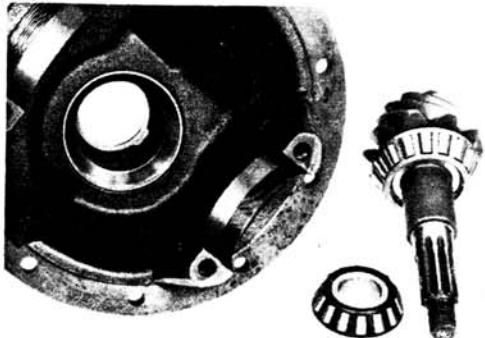
Loosen the staked parts of the nut, and remove the nut with SST.
SST [09330-00020]

—Note—

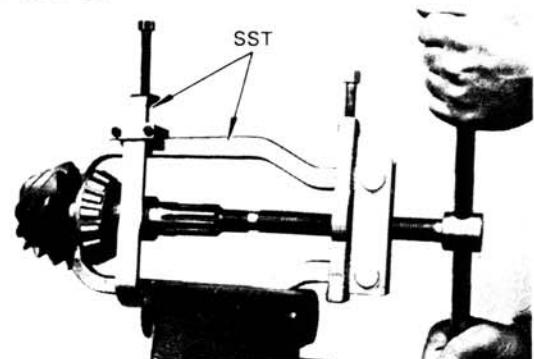
Hold the gear part of the drive pinion with hand, and remove the flange by tapping the pinion gear with a plastic hammer.

Fig. 7-50**INSPECTION**

Wash the disassembled parts and inspect them on the following points.
Replace any part found defective.

Fig. 7-51**Drive Pinion & Bearing**

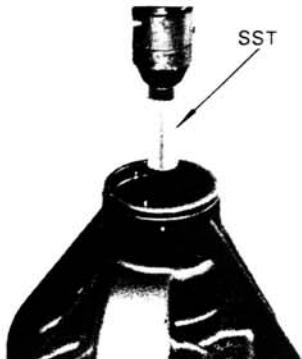
1. Inspect the drive pinion gear teeth for damage, wear or burning
2. Inspect the bearings for wear or damage.
3. Measure the shim and adjust washer thickness.

Fig. 7-52**Replace The Bearing**

1. Remove the bearings with SST.
SST [09950-20014]

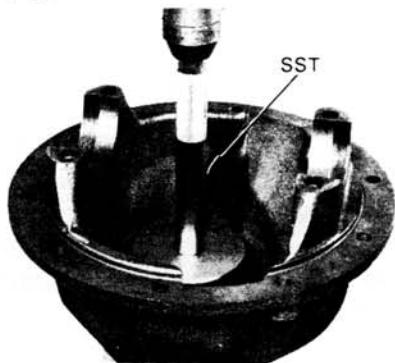
-Note-

If there is not enough clearance for the SST to hook on, draw out the bearing slightly with a chisel.

Fig. 7-53

2. Remove the bearing outer race with SST
SST [09608-35013]

Fig. 7-54

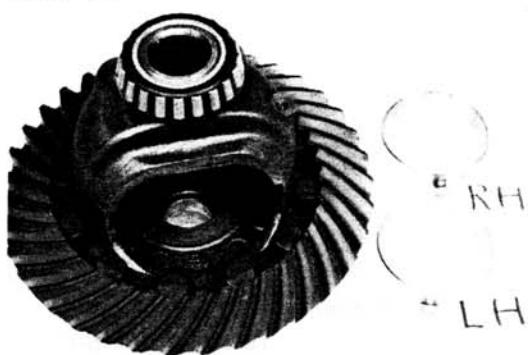


3. Install the new bearing outer race with SST.
SST [09608-35013]

—Note—

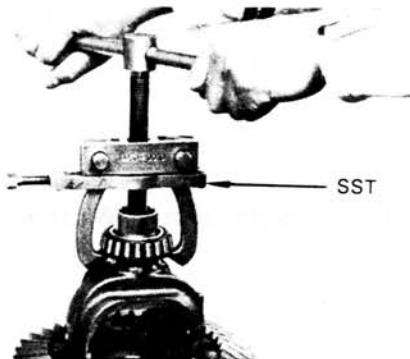
Make sure to reinstall the shim to the back side of outer race at gear side that was removed at disassembly.

Fig. 7-55

**Differential Case, Side Bearing & Ring Gear**

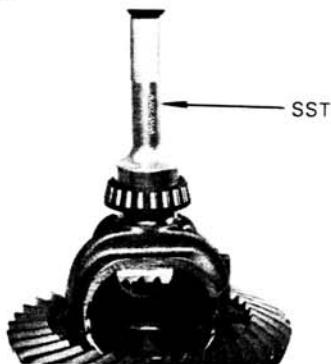
1. Inspect the ring gear teeth for damage, wear or burning.
2. Inspect the side bearings for wear or damage.
3. Inspect the case for cracks.

Fig. 7-56

**Replace The Side Bearing**

1. Remove the bearing with SST.
SST [09950-20014]

Fig. 7-57



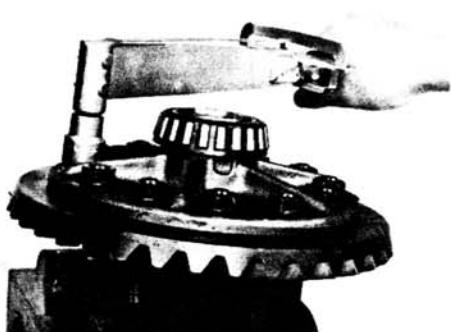
2. Install the bearing with SST.
SST [09505-20010]

Fig. 7-58

**Replace The Ring Gear**

1. Loosen the attaching bolts uniformly, and remove the ring gear by tapping it with a plastic hammer.

Fig. 7-59



2. Heat the ring gear to 90 – 110°C (194 – 230°F) and quickly fit it into the case. Tighten the nuts at the specified torque.

Tightening torque:

10.5 – 12.0 kg-m
(76 – 86 ft-lb)

Fig. 7-60

**Pinion, Side Gear & Washer**

Inspect for wear or damage.

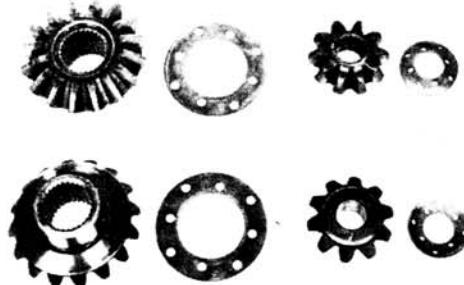


Fig. 7-61

Differential Adjusting Procedure

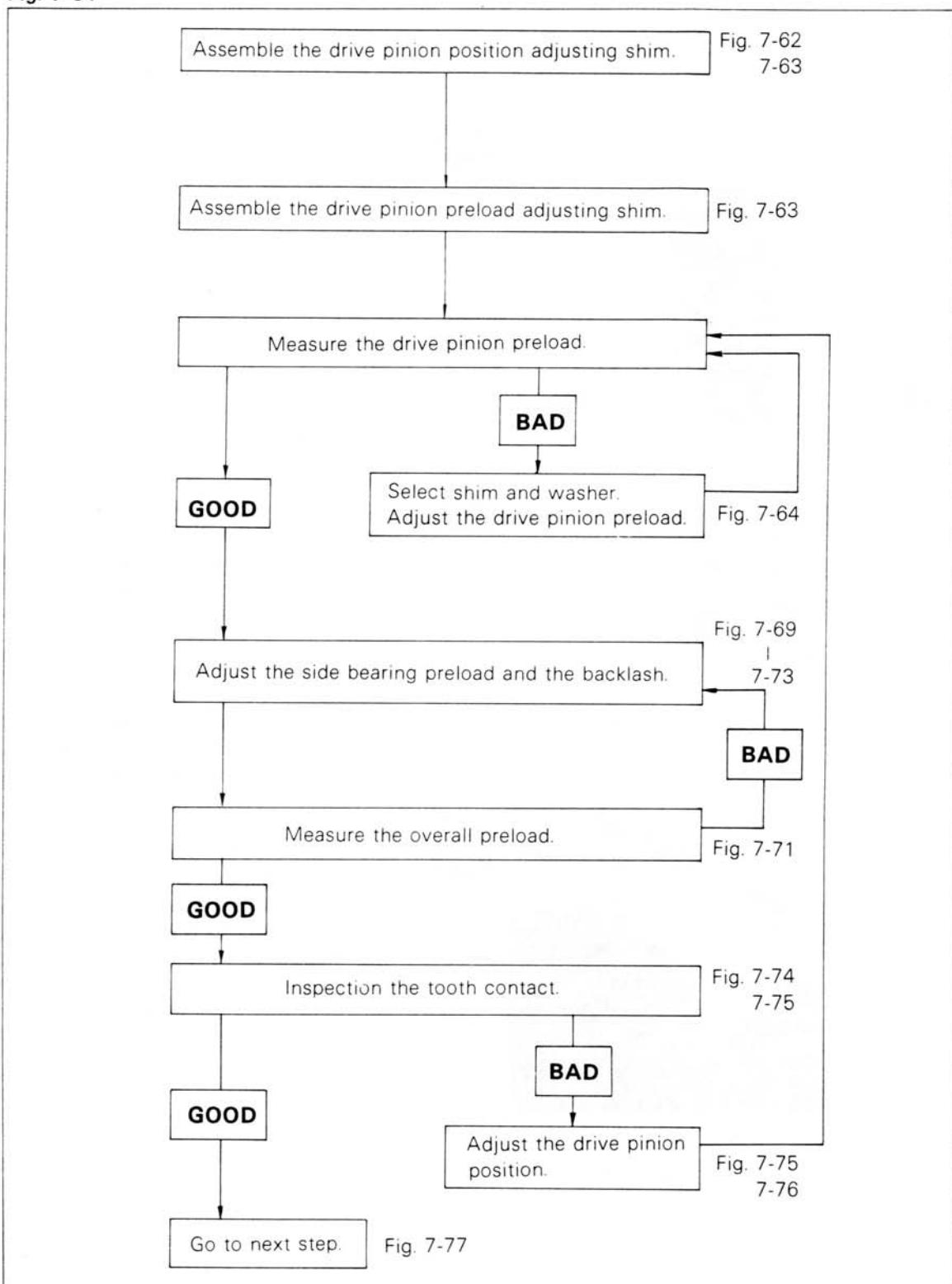
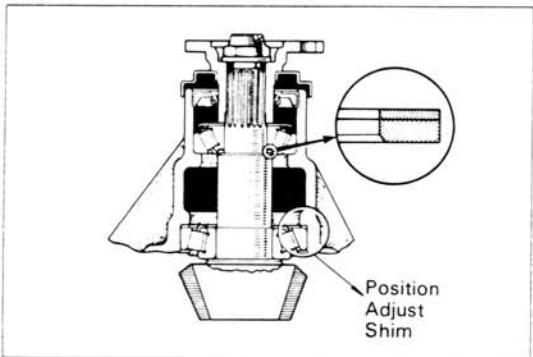


Fig. 7-62



Install the bearing to the drive pinion with SST.
SST [09506-35010]

Fig. 7-63



Install the drive pinion assembly to the differential carrier as shown in the figure, and tighten the nut at the specified torque.

Tightening torque: 20.0 — 24.0 kg-m
(145 — 173 ft-lb)

Note—

1. Have the bearings lubricated with hypoid gear oil.
2. Install the same size shims and washer that were used before disassembly.
(for position and preload adjusting shim)



Measure the preload.

Preload (starting):

New bearing

19 — 26 kg-cm
(16.5 — 22.6 in.-lb)

Reused bearing

9 — 13 kg-cm
(7.8 — 11.3 in.-lb)

If the preload is not within the specified limits, correct by selecting suitable adjusting washer and increasing or decreasing the number of adjusting shims (limited to 4 shims).

Adjusting shim & washer thickness

Part No.	Thickness mm (in.)	Part No.	Thickness mm (in.)
90564-30035	0.25 (0.0098)	90560-30188	2.86 — 2.88 (0.1126 — 0.1134)
90560-30184	2.74 — 2.76 (0.1079 — 0.1087)	90560-30190	2.89 — 2.91 (0.1138 — 0.1146)
90560-30185	2.77 — 2.79 (0.1091 — 0.1098)	90560-30191	2.92 — 2.94 (0.1150 — 0.1157)
90560-30186	2.80 — 2.82 (0.1102 — 0.1110)	90560-30192	2.95 — 2.97 (0.1161 — 0.1169)
90560-30187	2.83 — 2.85 (0.1114 — 0.1122)	90560-30199	2.98 — 3.00 (0.1173 — 0.1181)

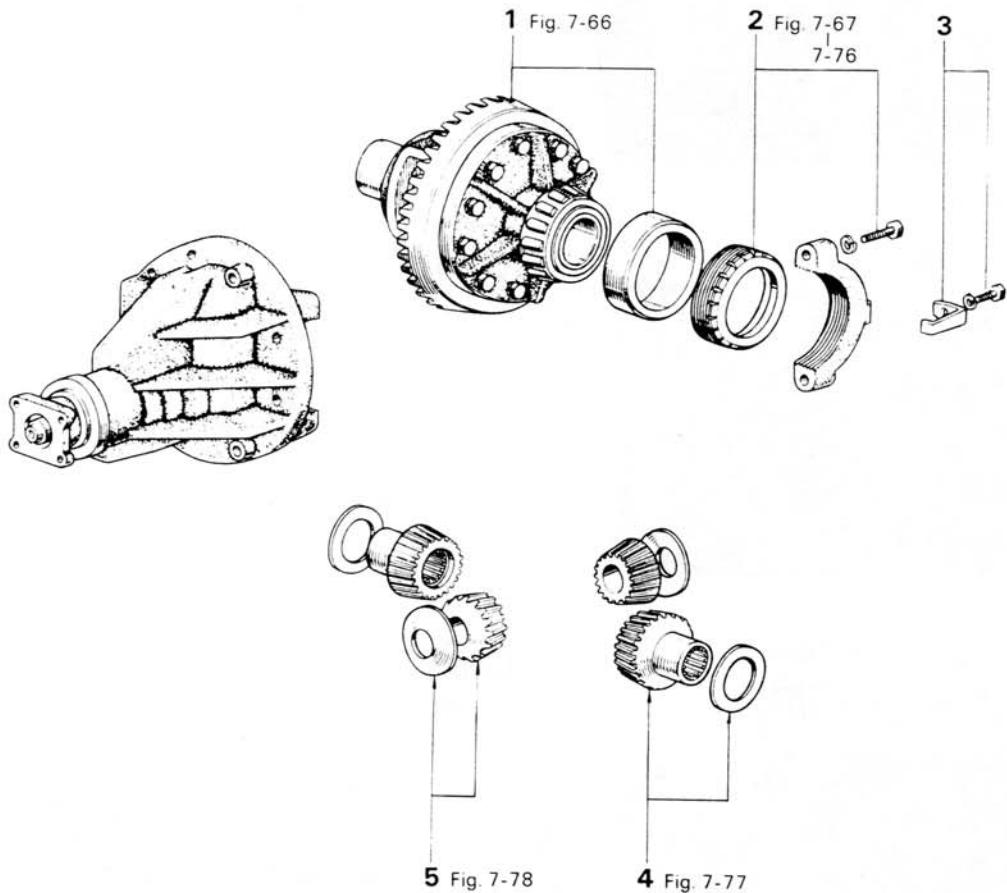
ASSEMBLY & ADJUSTMENT

Assemble the parts in the numerical order shown in the figure.

Fig. 7-65

-Note-

Coat hypoid gear oil on the bearings, thrust washers, and similar parts before assembling them.



- | | |
|--------------------------------|------------------------------|
| 1. Ring Gear, Case & Bearing | 4. Thrust Washer & Side Gear |
| 2. Bearing Cap & Adjusting Nut | 5. Thrust Washer & Pinion |
| 3. Adjusting Nut Lock | |

Fig. 7-66

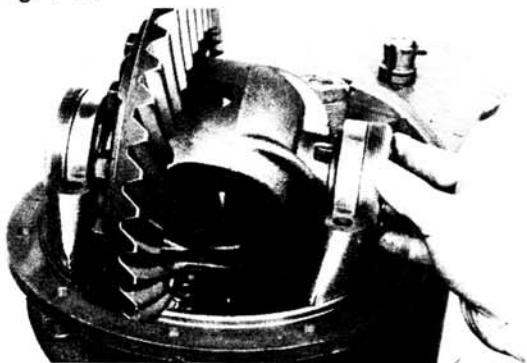


Assemble the bearing cups to the side bearings and install the differential case to the carrier.

-Note-

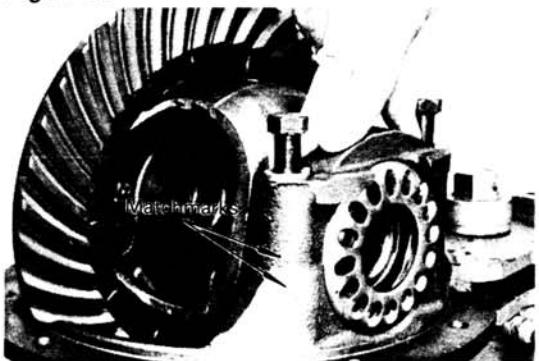
1. Use care not to intermix the left and right bearing cups.
2. Make sure that backlash has been provided between the ring gear and drive pinion.

Fig. 7-67



1. Assemble the adjusting nuts to their respective carriers with the threads fitted on properly.

Fig. 7-68

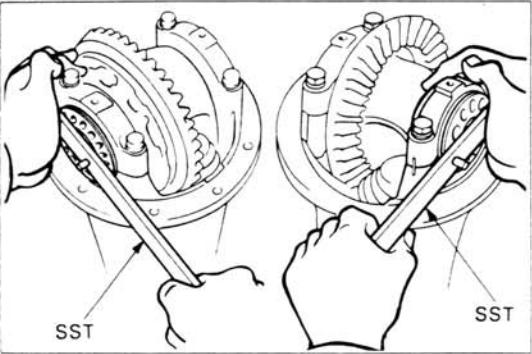


2. Screw in the two bearing cap bolts two or three turns and press down the bearing cap with hand.

-Note-

1. If the bearing cap does not fit tightly on the carrier, the adjusting nut threads are not fitting properly so that operations 1 and 2 above must be repeated.
2. Make sure that the bearing cap matchmarks are aligned with that on the carrier.

Fig. 7-69

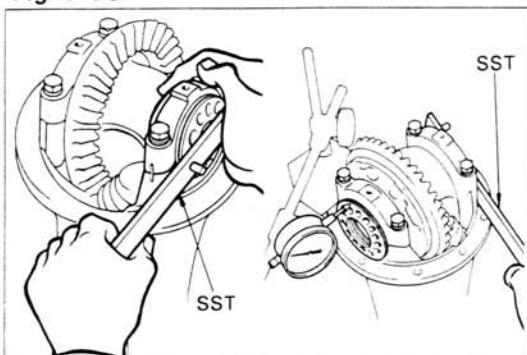


Adjust The Side Bearing Preload

SST [09504-00010]

1. Tighten the bearing cap bolts until the spring washers are slightly compressed.
2. Tighten the adjusting nut on the ring gear side with SST so that the ring gear has a backlash of about 0.2 mm (0.008 in.).
3. With SST, tighten firmly the adjusting nut on the drive pinion side in order to snug down the bearing in the carrier.
4. Check to see if tightening of the adjusting nut creates ring gear backlash.

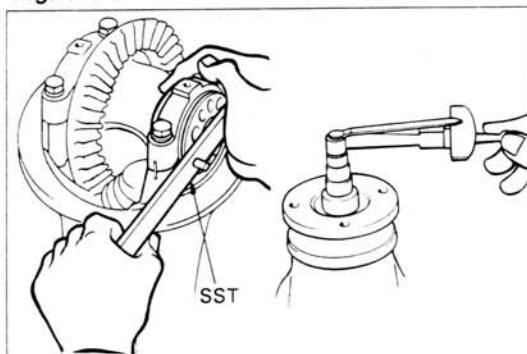
Fig. 7-70



- 5. With SST, sufficiently loosen the side bearing adjusting nut on the drive pinion side.
- 6. Set the adjusting nut to the zero preload position for the side bearing.
 - (1) Place a dial gauge on top of the bearing outer race.
 - (2) Tighten the other adjusting nut until the dial gauge pointer begins to move.



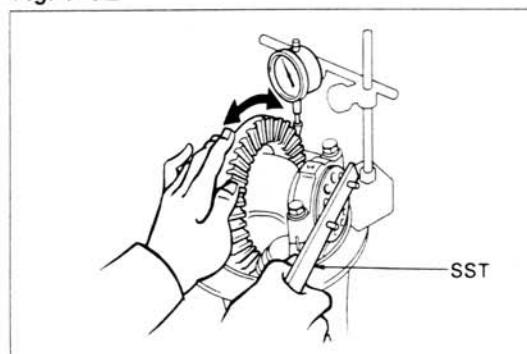
Fig. 7-71



- 7. Tighten adjusting nut 1 – 1.5 clicks from the zero preload position.
- 8. Measure the overall preload.
Preload (starting):
(For both new and reused bearing)
4 – 6 kg-cm
(3.5 – 5.2 in.-lb)
+ Drive pinion preload



Fig. 7-72



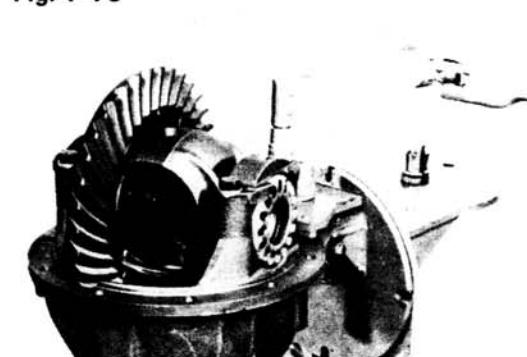
- 1. Adjust the backlash to the specified value with SST, turning the left and right adjusting nuts by equal amounts (such as loosening the left side one click and tightening the right side one click).



Adjust The Backlash

**Backlash: 0.15 – 0.20 mm
(0.0059 – 0.0079 in.)**

Fig. 7-73



- 2. Tighten the bearing cap bolts at the specified torque.

Tightening torque:

**9.0 – 11.0 kg-m
(66 – 79 ft-lb)**

Fig. 7-74



Fig. 7-75

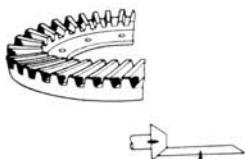
**Inspect The Tooth Contact**

1. Inspect the contact between the ring gear and drive pinion teeth by coating red lead on the ring gear teeth.

-Note-

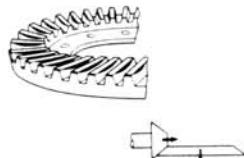
1. Hold the companion flange steady with hand and rotate the ring gear, and inspect the contact pattern formed.
2. If the teeth are not contacting properly, correct by method shown in the figure.
2. Install the adjusting lock nut on each bearing cap, and stake the companion flange nut.

(1) Heel Contact

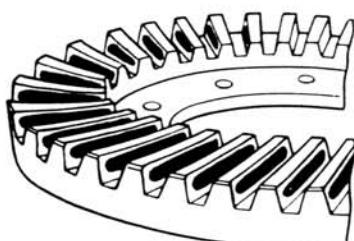


Select Adjusting Shim That Will Bring Drive Pinion Closer To Ring Gear

(3) Face Contact

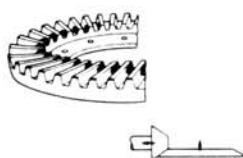


Adjust By Same Method As In (1)



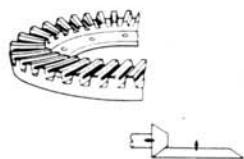
Proper Contact

(2) Toe Contact



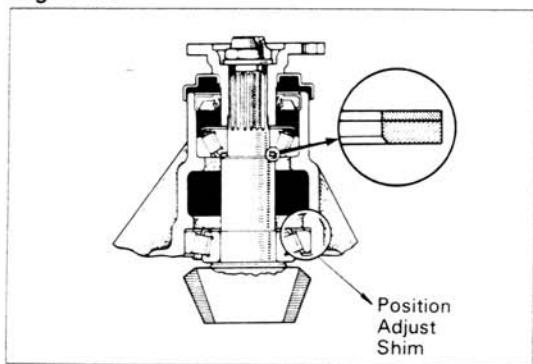
Select Adjusting Shim That Will Shift Drive Pinion Away From Ring Gear

(4) Flank Contact



Adjust By Same Method As In (2)

Fig. 7-76



Adjusting shim thickness

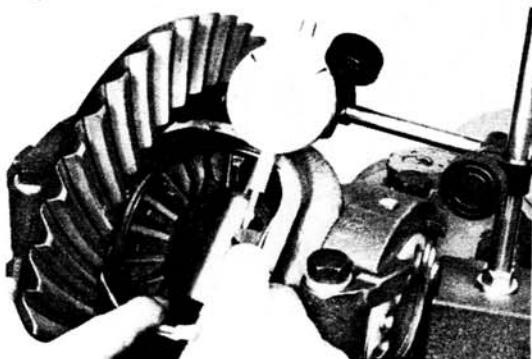
Part No.	Thickness	mm (in.)
90564-68001	0.25	(0.0098)
90564-68002	0.30	(0.0118)
90564-68003	0.35	(0.0138)
90564-68004	0.40	(0.0157)
90564-58005	0.45	(0.0177)

Fig. 7-77



Install the thrust washers and side gears.

Fig. 7-78



Measure the differential gear backlash.

1. Hold the pinion gear steady with hand, and measure the side gear backlash.

Backlash:

**STD 0.02 – 0.20 mm
(0.0008 – 0.0079 in.)**

2. If outside the specified limit, correct by selecting proper thickness side gear thrust washers.

Note—

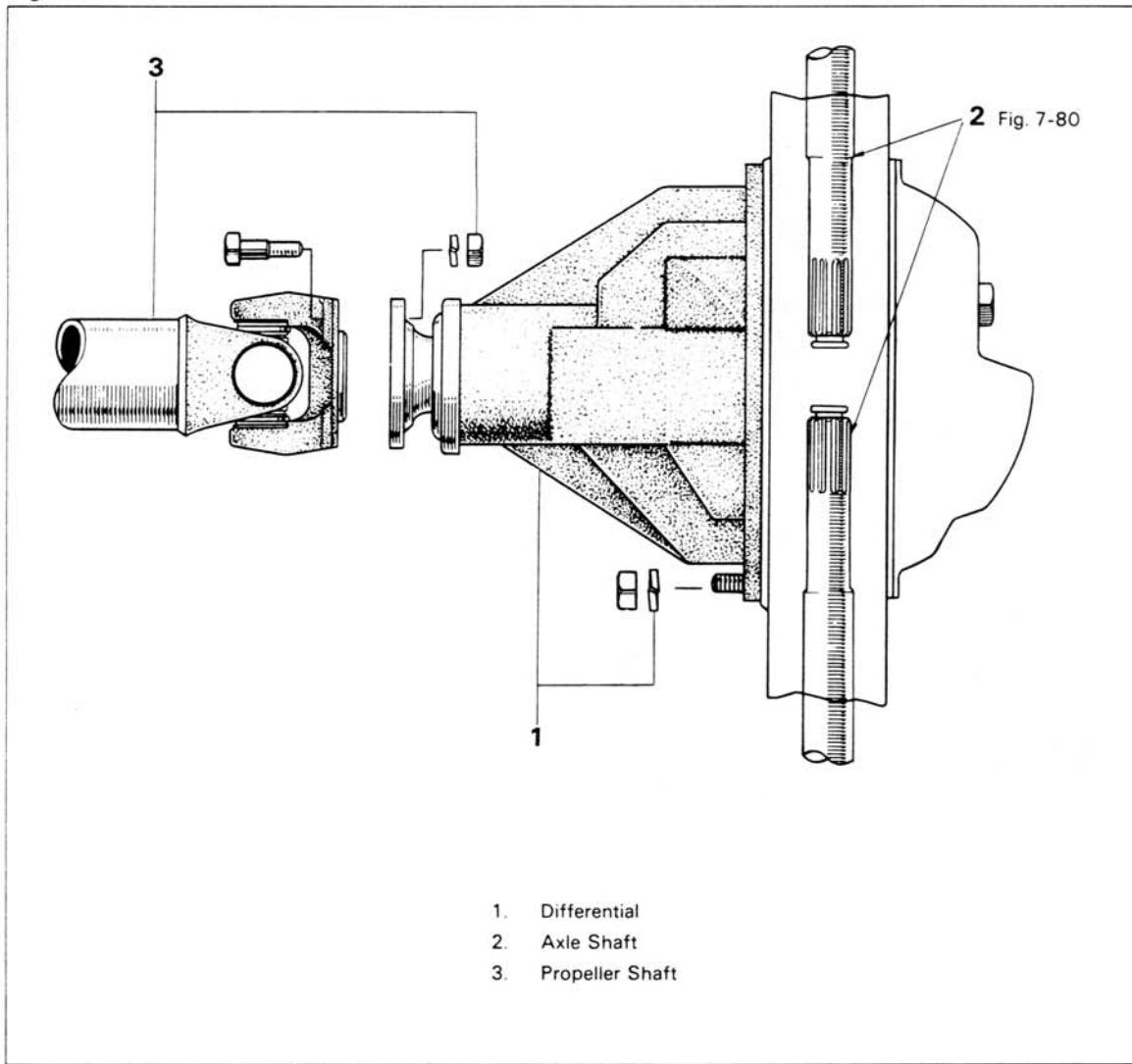
All efforts should be taken to use same thickness thrust washers at the left and right sides.

Thrust washer thickness

Part No.	Thickness	mm (in.)
41361-60010	1.55 – 1.65	(0.0610 – 0.0650)
41361-60020	1.70 – 1.80	(0.0669 – 0.0709)
41361-60030	1.85 – 1.95	(0.0728 – 0.0768)
41361-60040	2.00 – 2.10	(0.0787 – 0.0827)

INSTALLATION

Install the parts in the numerical order shown in the figure.

Fig. 7-79**Fig. 7-80****SEE****REAR AXLE SHAFT****(SEMI-FLOATING TYPE)****INSTALLATION SECTION****Fig. 7-13 to 7-17, 7-24**

Install the axle shafts.

-Note-

Measurement of differential gear backlash shall be excluded.

LIMITED SLIP DIFFERENTIAL DIFFERENTIAL CASE DISASSEMBLY

Disassemble the parts in the numerical order shown in the figure.

Fig. 7-81

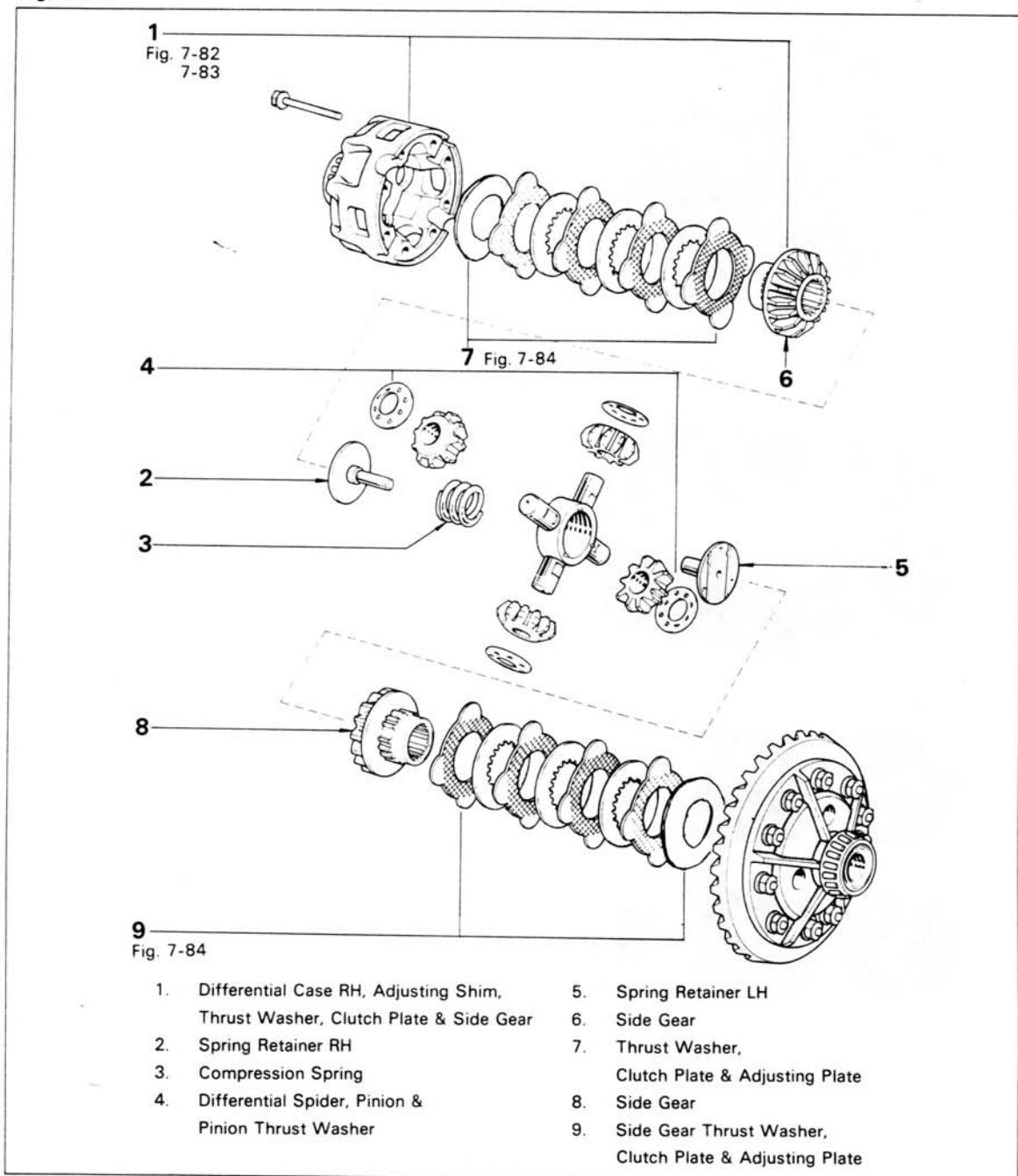
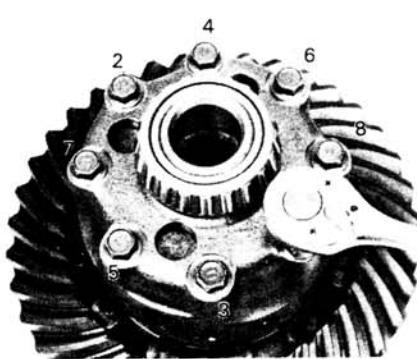
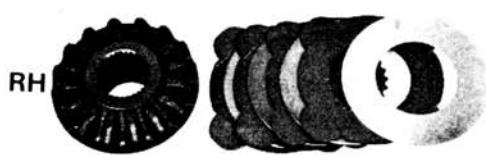


Fig. 7-82

Place matchmarks on the RH and LH differential case.

Fig. 7-83

Loosen each bolt a little at a time, and in the sequence shown in the figure.

Fig. 7-84

Arrange the clutch plate, side gear and thrust washer in order.

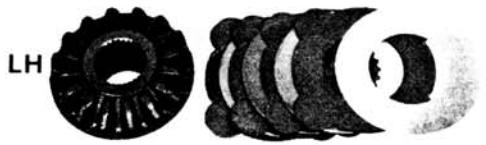
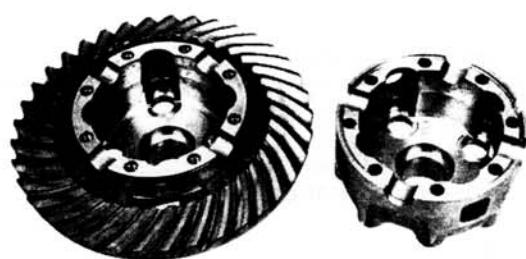


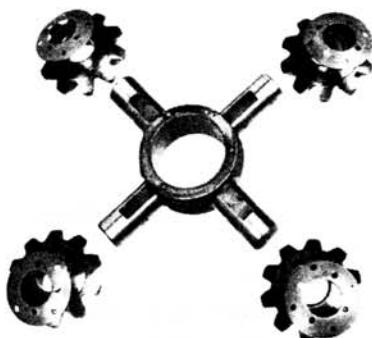
Fig. 7-85

**INSPECTION****Differential Case**

Check for wear or damage.

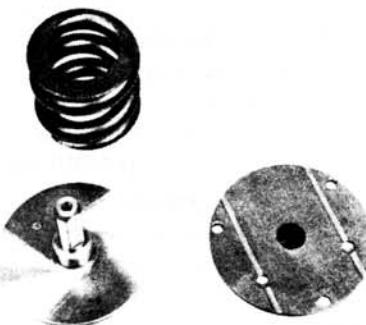


Fig. 7-86

**Differential Spider, Pinion & Pinion Thrust Washer**

Check for wear or damage.

Fig. 7-87

**Spring Retainer & Compression Spring**

Check for wear or damage.

Fig. 7-88



Measure the free length of the spring.

Free length:Compression spring 38.6 mm
(1.520 in.)

Fig. 7-89

**Side Gear**

Check for wear or damage.

Note—

If replacing the side gear, also replace the side gear thrust washer making contact with it.

Fig. 7-90

**Clutch Plate & Side Gear Thrust Washer**

Check for wear or damage.

Thrust washer thickness:

(Reference only)

Wear

Limit 1.93 mm

(0.0760 in.)

Clutch plate thickness:

(Reference only)

Wear

Limit 1.93 mm

(0.0760 in.)

**Select The Adjusting Shim**

- Assemble the side gear thrust washer and clutch plate on the side gear.

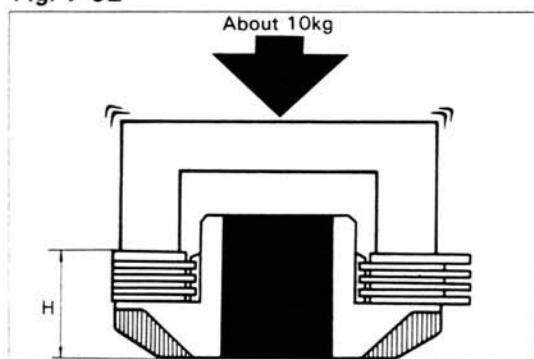
Note—

Do not assemble the adjusting shim.

Fig. 7-91



Fig. 7-92



- Using a suitable tool as shown, press down with about 10 kg (22 lb) of pressure, and measure the dimension H.

Fig. 7-93



3. Select the adjusting shim thickness.
Adjusting shim thickness T
 $T = 31.02 - H$

4. Select a proper adjusting shim according to the following table.

Shim thickness

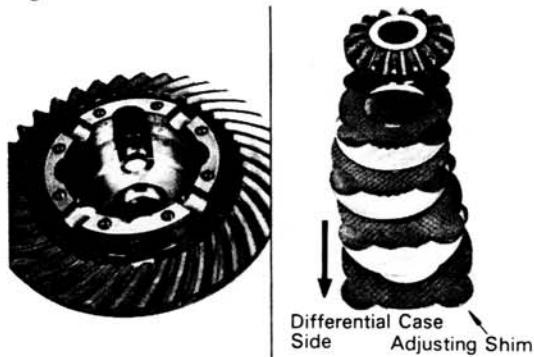
Part No.	Thickness mm (in.)
90564-54001	0.20 (0.0079)
90564-54002	0.25 (0.0098)
90564-54003	0.30 (0.0118)
90564-54004	0.35 (0.0138)

Fig. 7-94



5. In the same manner, select the another thrust washer for the others.

Fig. 7-95



6. Assemble the following parts in the case.
- (1) Adjusting shim
 - (2) Thrust washer
 - (3) Clutch plate
 - (4) Thrust washer
 - (5) Clutch plate
 - (6) Thrust washer
 - (7) Clutch plate
 - (8) Thrust washer
 - (9) Side gear

Fig. 7-96



7. Install the spring retainer, pinion and thrust washer.
8. Secure the side gear and measure the backlash while pushing in the spring retainer.

Backlash: 0.02 – 0.24 mm

(0.0008 – 0.0094 in.)

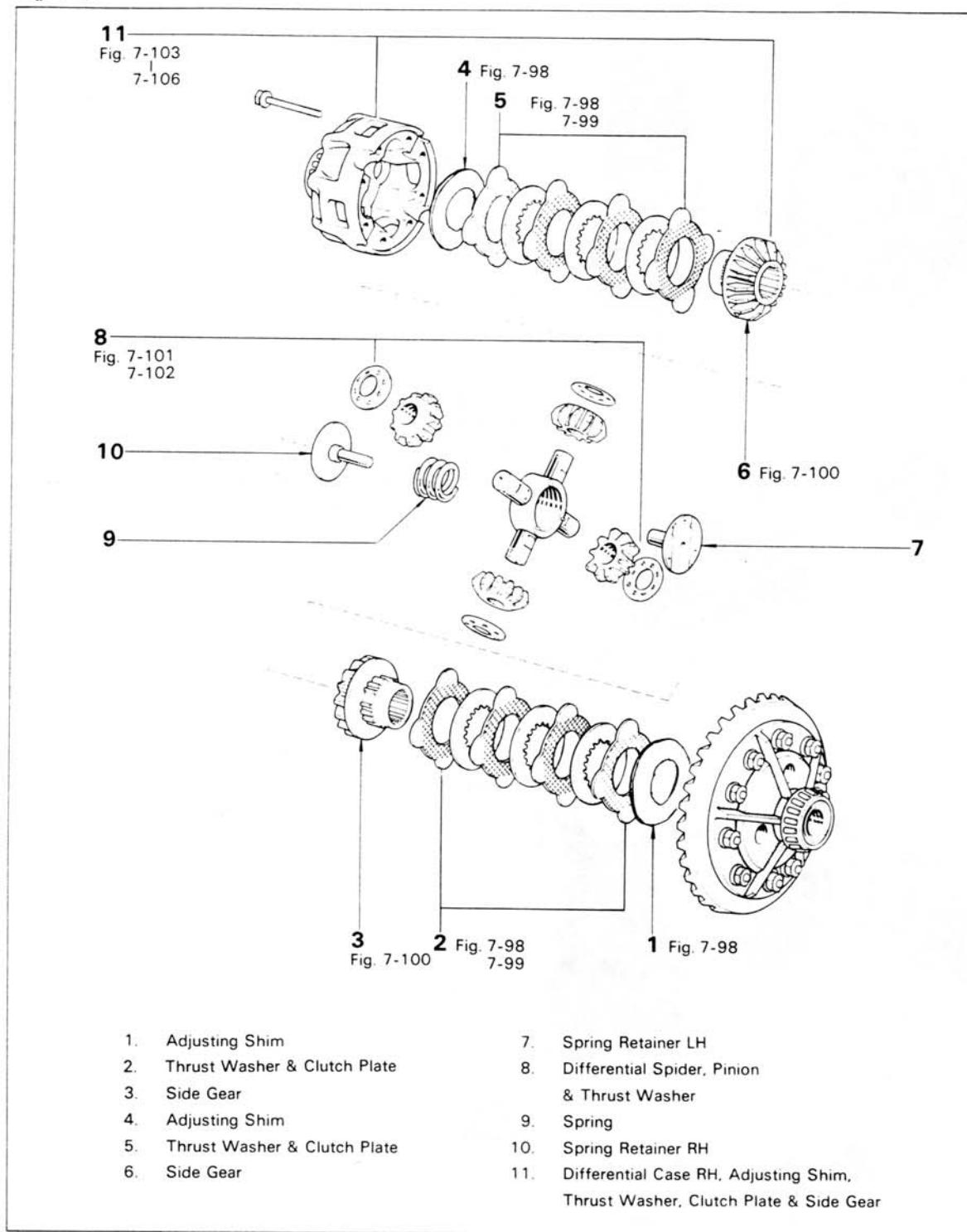
—Note—

1. Measure at all four locations.
2. Measure the others in the same manner.
3. If one of the backlashes are not within specification, change that pinion gear with another and measure again.

ASSEMBLY

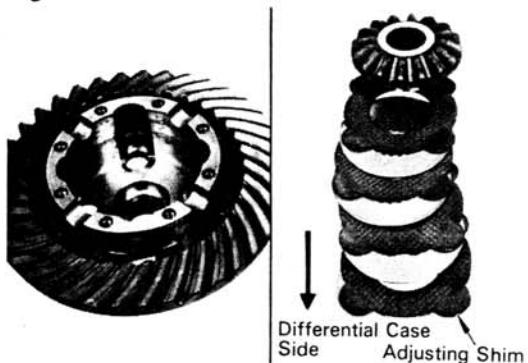
Assemble the parts in the numerical order shown in the figure.

Fig. 7-97



1. Adjusting Shim
2. Thrust Washer & Clutch Plate
3. Side Gear
4. Adjusting Shim
5. Thrust Washer & Clutch Plate
6. Side Gear
7. Spring Retainer LH
8. Differential Spider, Pinion & Thrust Washer
9. Spring
10. Spring Retainer RH
11. Differential Case RH, Adjusting Shim, Thrust Washer, Clutch Plate & Side Gear

Fig. 7-98



Assemble the thrust washer with the surface without an oil groove facing the case.

-Note-

Coat the thrust washer with hypoid gear oil LSD.

Fig. 7-99



Assemble the clutch plate and thrust washer.

-Note-

Coat the clutch plate and thrust washer with hypoid gear oil LSD.

Fig. 7-100



Coat the side gear with hypoid gear oil LSD.

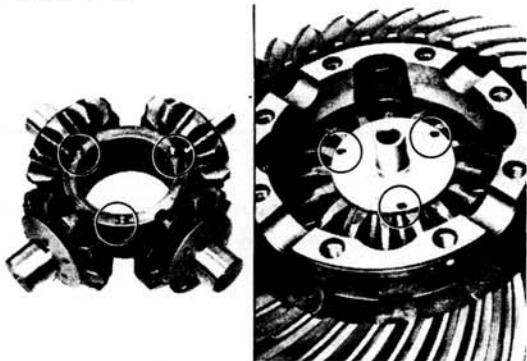
Fig. 7-101



Coat the pinion gear with hypoid gear oil LSD.

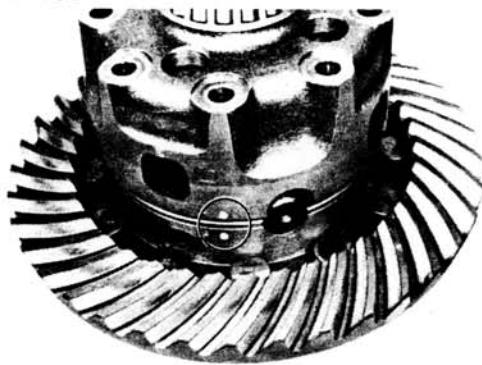


Fig. 7-102



Align the protrusion of the spider and hole of the spring retainer.

Fig. 7-103



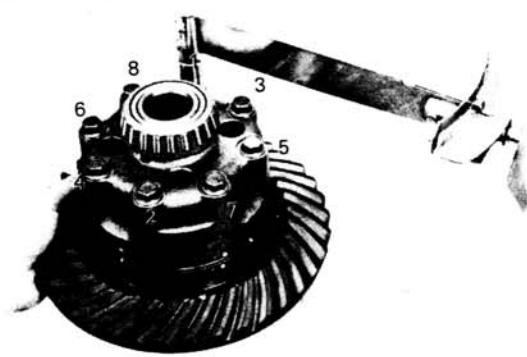
Align the matchmarks and assemble the differential cases.

Fig. 7-104



Mesh the side gear and pinion gears.

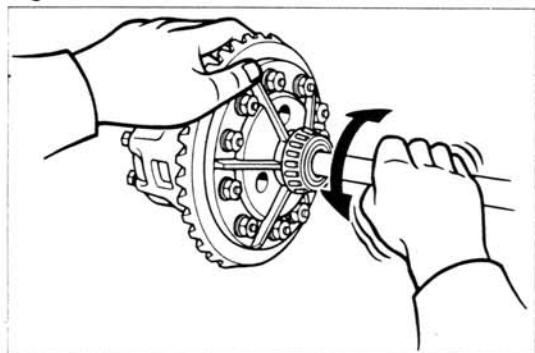
Fig. 7-105



Tighten each bolt a little at a time to the specified torque, in the sequence shown in the figure.

Tightening torque: 3.9 – 5.7 kg-m
(29 – 41 ft-lb)

Fig. 7-106



Turn the side gears with axle shaft or other means and check to see that they turn smoothly.

—Note—

Reselect thrust washer if side gear does not turn smoothly.

REAR SUSPENSION COMPONENTS

Fig. 7-107

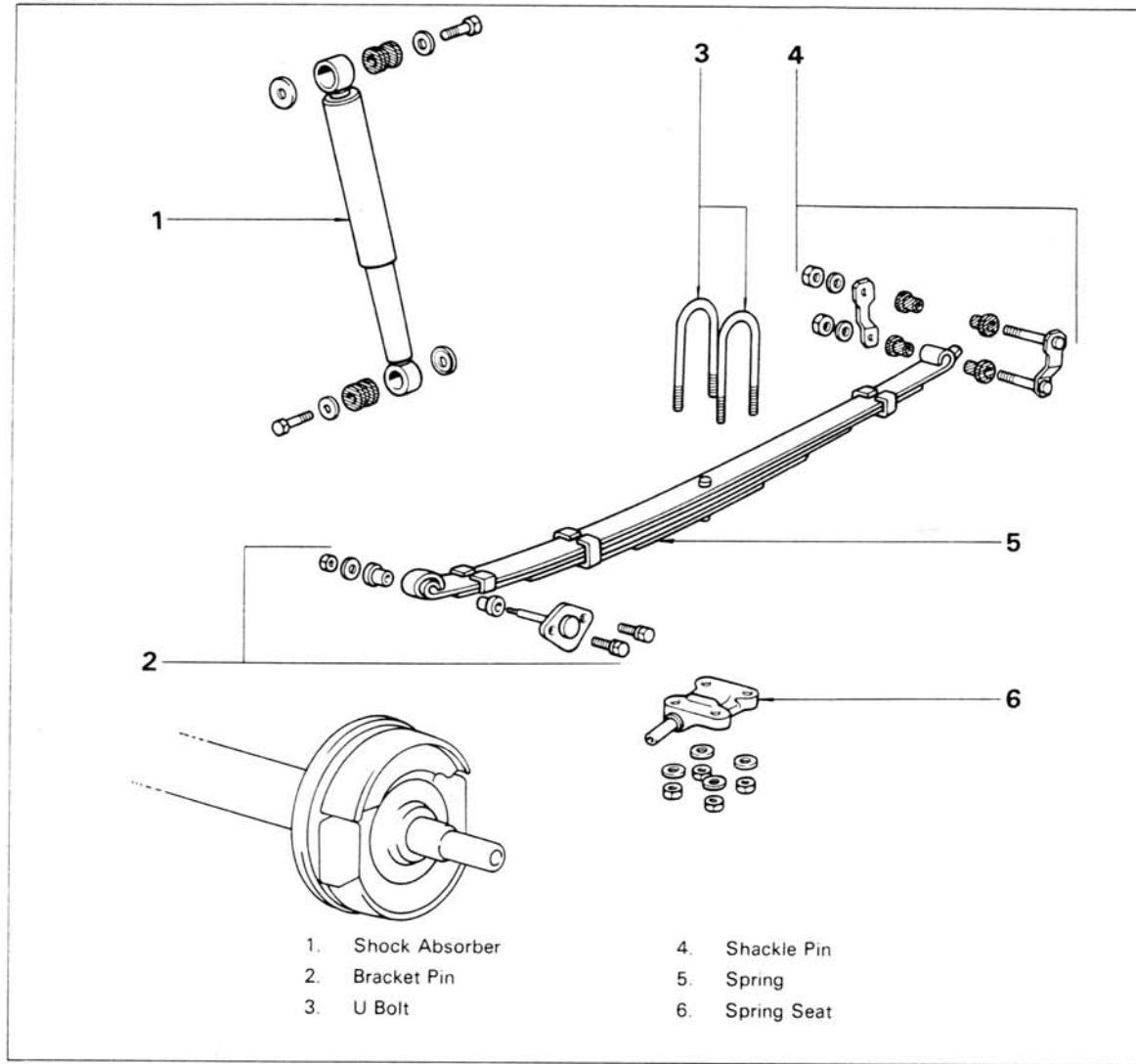
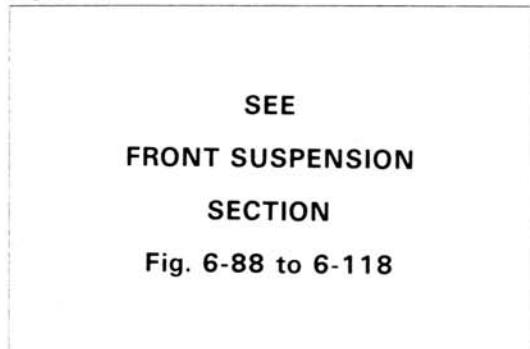


Fig. 7-108



Disassemble and assemble the rear suspension.