TOYOTA

LAND CRUISER

REPAIR MANUAL

CHASSIS & BODY

TOYOTA MOTOR SALES CO., LTD.

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&
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FOREWORD

This repair manual describes the removal, installation, disassembly, assembly, adjustment and maintenance procedures required for servicing chassis, body components and body electrical system of the TOYOTA LAND CRUISER.

For service of the TOYOTA LAND CRUISER engines, refer to the following repair manuals:

2F Engine Repair Manual (Pub. No.98126)
B Engine Repair Manual (Pub. No.98260)
H Engine Repair Manual (Pub. No.98112)

Under DISASSEMBLY and ASSEMBLY, you will find disassembled views which carry numbers indicating the sequence of operation procedure.
The operations can be accomplished by following these numbers.
To facilitate understanding, there are also some figure numbers after operation numbers showing the locations of work details.
The texts have different symbol marks which supersede the figure explanation.

The specifications and repair procedures contained herein are subject to change at any time without previous notice.

TOYOTA MOTOR SALES CO., LTD.

SECTION INDEX

NAME	SECTION
GENERAL	1
CLUTCH	2
TRANSMISSION & TRANSFER	3
PROPELLER SHAFT	4
REAR AXLE	5
FRONT AXLE	6
STEERING	7
BRAKE	8
FRONT WINCH	9
FRAME	10
BODY	11
BODY ELECTRICAL	12
SST & SERVICE SPECIFICATIONS	13

GENERAL

page

GENERAL REPAIR INSTRUCTIONS 1-2

ABBREVIATIONS USED IN THIS MANUAL 1-3

SYMBOL MARKS 1-4

GENERAL REPAIR INSTRUCTIONS

1. Use fender, seat, and floor covers to keep the car clean and prevent damage.
2. During disassembly, keep parts in order for reassembly.
3. Before performing electrical work, disconnect the cable to the positive (+) battery terminal.
4. Always replace cotter pins, gaskets and O-rings with new ones.
5. Always use sealer on gaskets to prevent leaks.
6. Carefully observe all specifications for bolt torques. Always use a torque wrench.
7. Use genuine Toyota parts.
8. If the vehicle is to be jacked up only at the front or rear end, be sure to block the wheels in order to ensure safety.
9. After the vehicle is jacked up, do not fail to support it on stands. It is extremely dangerous to do any work on the vehicle raised on jack alone, even for a small job that can be finished quickly.
10. Use of a special service tool (SST) may be required, depending on the nature of the repair. Be sure to use SST where specified and follow the proper work procedure. A list of the SST is found at the back of this manual.

ABBREVIATIONS USED IN THIS MANUAL

For convenience, the following codes are used in this manual.

Abbreviation	Term	Definition
RH	Right Hand	
LH	Left Hand	
SST	Special Service Tool	This term designates tools that have been manufactured specially for the servicing of this vehicle. Their part numbers are shown in the text enclosed by [ ].
STD	Standard	This term refers to the dimension of the part when originally manufactured.
O/S	Oversize	Sizes larger than STD are indicated as O/S.
U/S	Undersize	Sizes smaller than STD are indicated as U/S.
MP	Multipurpose	Use in the case of MP grease.
W/	With	
W/O	Without	
M/T	Manual Transmission	

SYMBOL MARKS

The following symbols have been adapted for simplicity and for easy comprehension.


ASSEMBLY


DISASSEMBLY


INSTALLATION


REMOVAL


INSPECTION


MEASUREMENT


TIGHTENING


CLEAN


IMPORTANT

CLUTCH

page

ADJUSTMENT 2-2
CLUTCH PEDAL 2-3
CLUTCH MASTER CYLINDER 2-4
CLUTCH RELEASE CYLINDER 2-6
CLUTCH UNIT 2-7

2

CLUTCH PLATE P/N. 31250-60020 $46
PRESSURE PLATE P/N 31210-60062. $102
THRUST BEARING P/N 90363-52086. $26
PILOT BEARING P/N 97143-06201 $6.00
SUMP GASKET P/N 12151-60021 $12
GEAR BOX INPUT SHAFT OIL SEAL P/N 90311-28004 $3.00
" " " END PLATE GASKET P/N 33132-36010 $1.00

Fig. 2-1

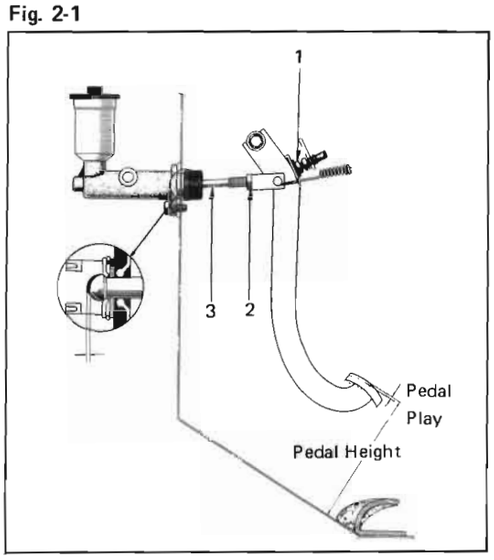


Fig. 2-2

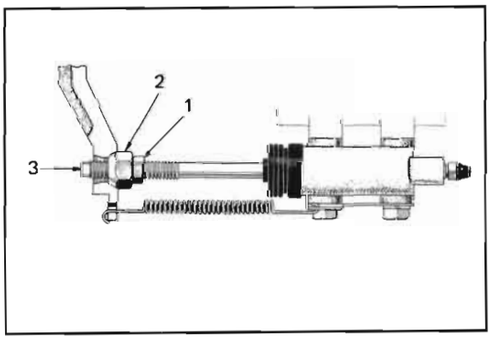
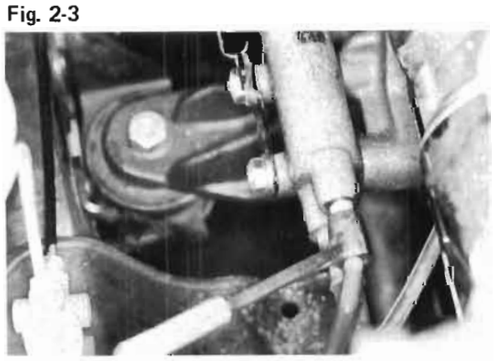


Fig. 2-3



ADJUSTMENT

CLUTCH PEDAL

1. Loosen the lock nut (2) and the push rod (3).
2. Adjust the pedal height by turning the stop bolt (1).

Standard pedal height

	w/brake booster mm (in.)	w/o brake booster mm (in.)
FJ, HJ, BJ40 series	215 (8.46)	198 (7.86)
FJ55 series	185 (7.28)	172 (6.77)

(From asphalt sheet top surface)

3. Adjust the pedal play by loosening the lock nut (2) and turning the push rod (3).

Pedal play 0.5-3.0 mm (0.02-0.12 in.) at pedal top

RELEASE CYLINDER

Adjust the play at release fork tip by loosening the lock nut (1), and turning the push rod (3) tip with a spanner while holding the push rod nut (2) with a wrench.

Fork tip play FJ, HJ series 3-4 mm (0.12-0.16 in.)
BJ series 2-3.5 mm (0.08-0.14 in.)

BLEEDING CLUTCH SYSTEM

If any work is performed on the clutch system or if any air enters in the clutch line, remove the air by bleeding the system.

– Caution –

1. **When bleeding make certain that the brake fluid in the master cylinder reservoir does not become empty.**
2. **Do not allow brake fluid to remain on painted surfaces.**

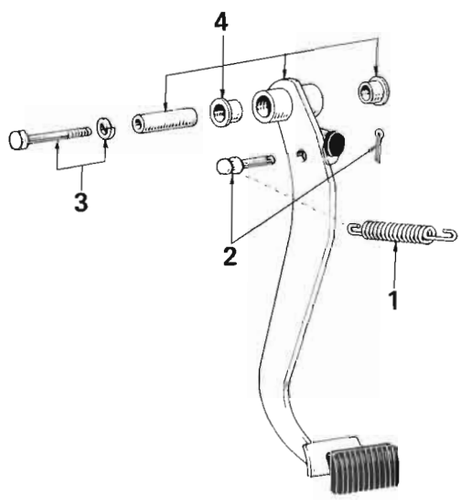
1. Jack up the car and support it on stands.
2. Fill the master cylinder reservoir.
3. Attach a vinyl tube to the release cylinder bleeder plug, and insert the other end of tube into a container.
4. Depress the clutch pedal several times, and then while holding it depressed, loosen the bleeder plug about one-third to one-half turn. When the fluid pressure in the cylinder is almost depleted retighten the plug. Repeat this operation until there are no more air bubbles in the system.
5. When the bubbles stop, depress and hold the clutch pedal and tighten the bleeder plug.
6. After completing the bleeding operation, apply fluid pressure on the pipe line and check for leakage.
7. Replenish the fluid in the reservoir to the specified level.

CLUTCH PEDAL

REMOVAL

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

Fig. 2-4



1 Spring
2 Pins
3 Bolt
4 Pedal Assy

Fig. 2-5



INSPECTION

Inspect the removed parts for damage and wear.

INSTALLATION

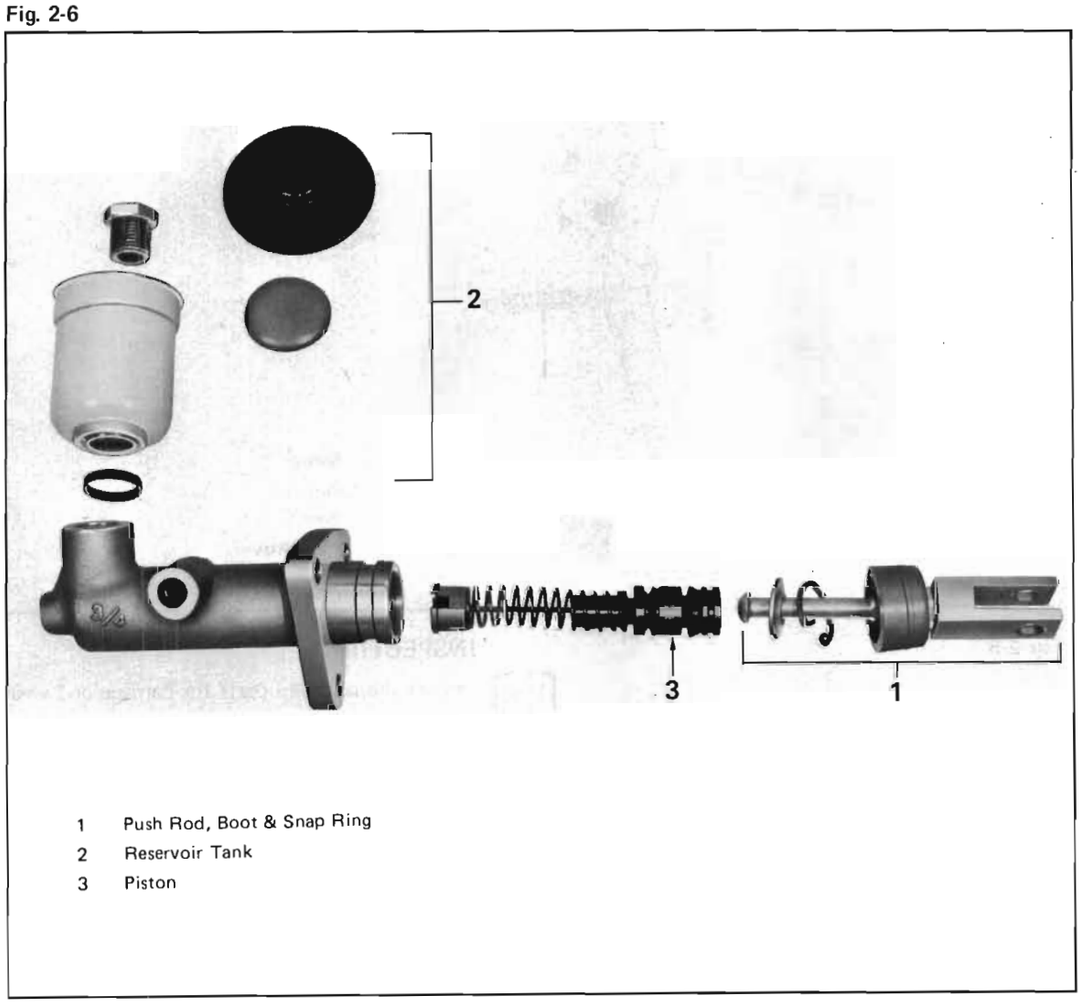
Perform the removal in reverse order.
For pedal height adjustment, refer to Adjustment.

CLUTCH MASTER CYLINDER

DISASSEMBLY

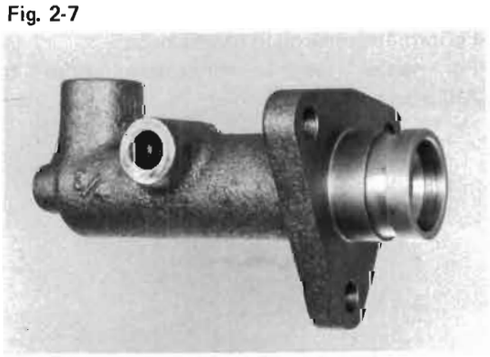
Disassemble the parts in the numbered order shown in the figure.

Fig. 2-6



1 Push Rod, Boot & Snap Ring
2 Reservoir Tank
3 Piston

Fig. 2-7



INSPECTION

Inspect the master cylinder bore for wear and scoring.

Fig. 2-8

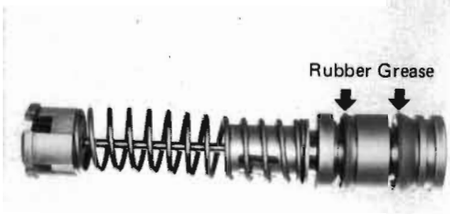


Inspect the piston assembly for wear and scoring.

– Note –

If the cup requires replacement, use the cylinder kit.

Fig. 2-9



ASSEMBLY

Perform the disassembly in reverse order.

– Note –

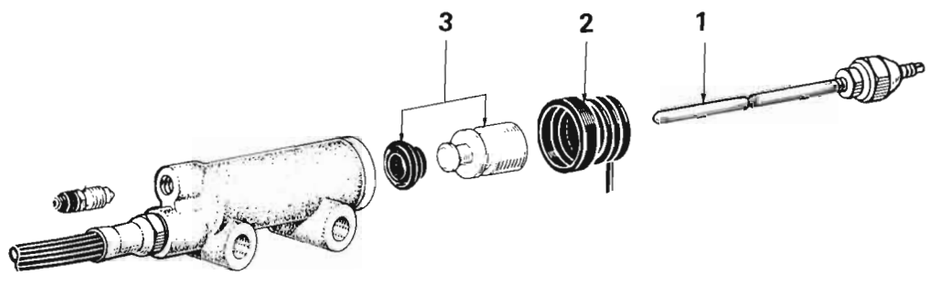
Apply rubber grease on the parts shown by arrows before assembling.

CLUTCH RELEASE CYLINDER

DISASSEMBLY

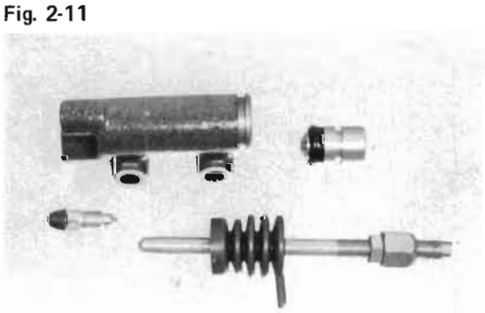
Disassemble the parts in the numbered order shown in the figure.

Fig. 2-10



1 Push Rod
2 Boot
3 Piston

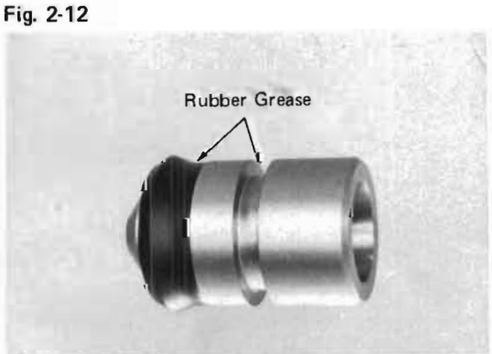
Fig. 2-11



INSPECTION

Inspect the disassembled parts for wear and damage.

Fig. 2-12



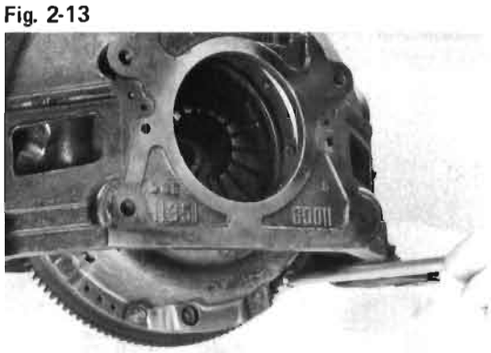
ASSEMBLY

Perform the disassembly in reverse order.

– Note –

1. **Wash all parts in fresh brake fluid before assembling.**
2. **Pack rubber grease in the parts shown by arrows.**
3. **Adjust the release cylinder. (Refer to Adjustment.)**

Fig. 2-13



CLUTCH UNIT

REMOVAL

1. Remove the transmission and transfer. Refer to transmission removal procedures.
2. Remove the clutch cover and clutch disc.

– Note –

Use care not to get oil or grease on the clutch disc linings, or on the pressure plate and flywheel surfaces that contact on the clutch disc.

DISASSEMBLY

Disassemble the parts in the order numbered in the following illustrations.

Fig. 2-14

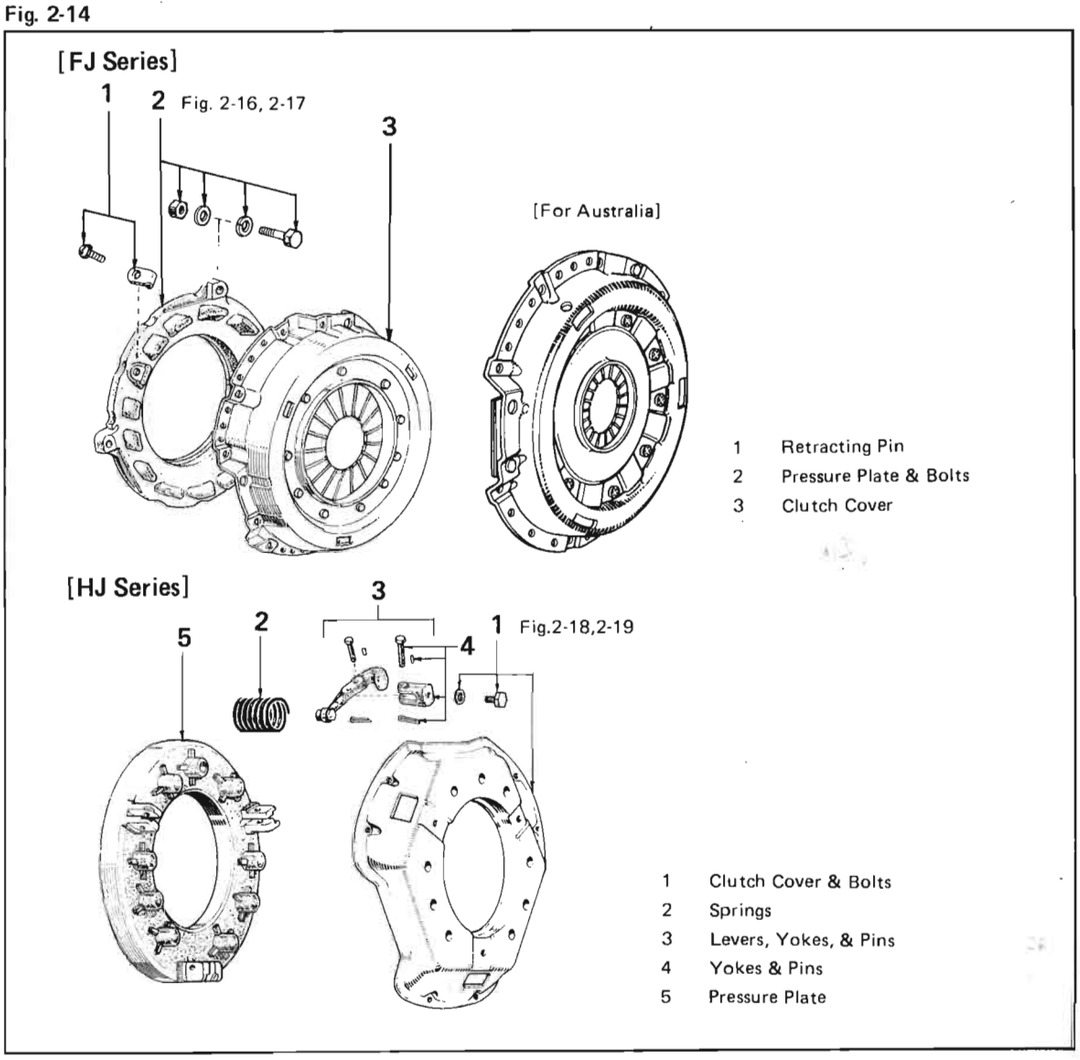
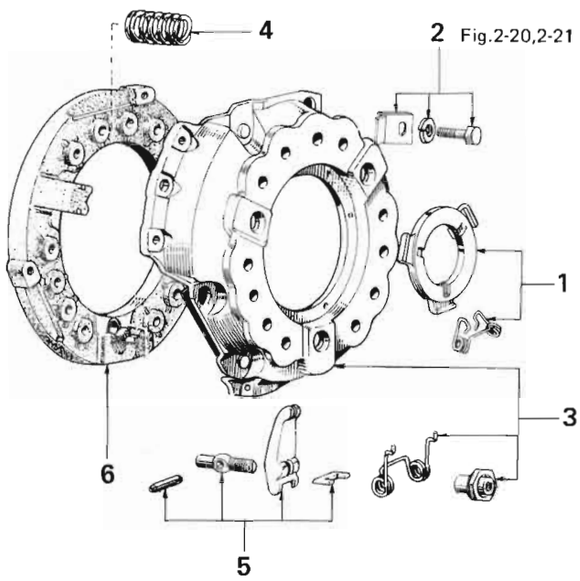


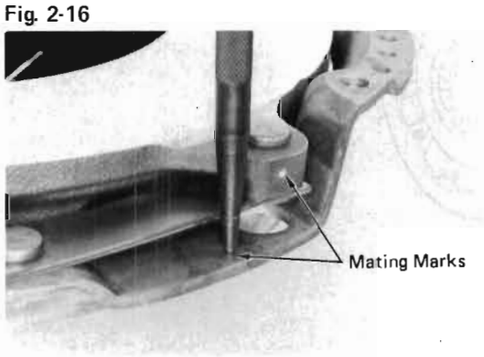
Fig. 2-15

[BJ Series]



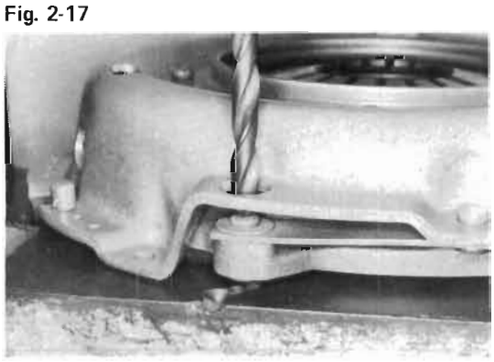
1 Plate & Springs
2 Bolts
3 Bolts, Clutch Cover, & Springs
4 Springs
5 Levers, Bolts & Plates
6 Pressure Plate

Fig. 2-16



[FJ Series]
Place mating marks on the clutch cover and pressure plate.

Fig. 2-17



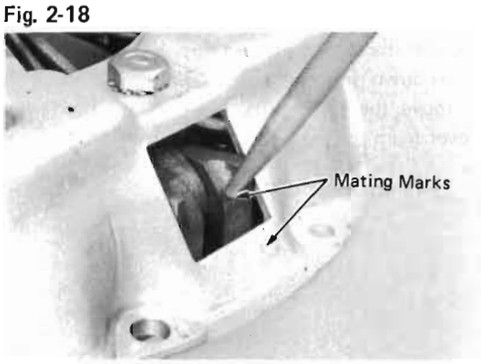
Separate the clutch cover from the pressure plate.

1. With a center punch, accurately locate drill hole at the center of each rivet head.
2. Using a 10-mm drill (13/64 in. drill), out the rivet heads.
3. Punch out the rivets and separate the clutch cover from the pressure plate.

– Note –

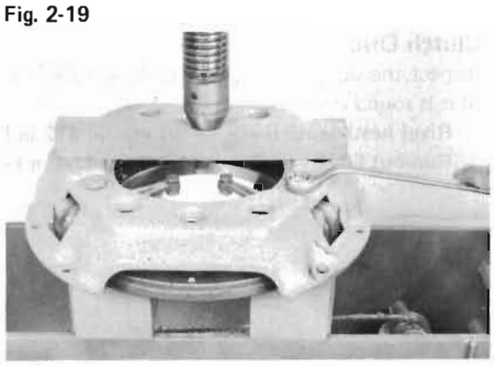
Make the separation with the rivets at the pressure plate side.

Fig. 2-18



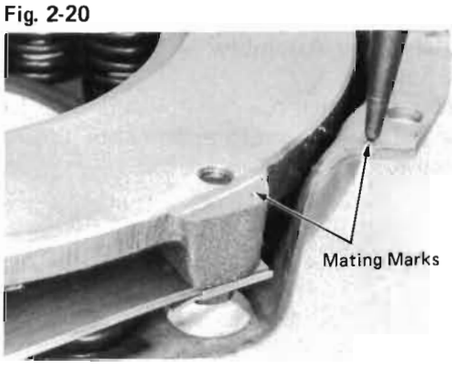
[HJ Series]
Place mating marks on the clutch cover and pressure plate.

Fig. 2-19



Press down only the clutch cover with a press. Remove the three bolts, and separate the clutch cover from the pressure plate.

Fig. 2-20



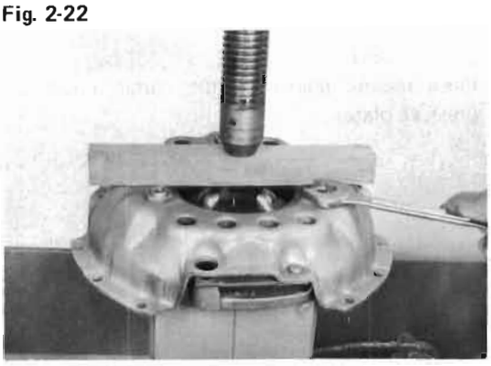
[BJ Series]
Place mating marks on the clutch cover and pressure plate.

Fig. 2-21



Remove the three bolts attaching the clutch straps.

Fig. 2-22



Loosen the three nuts one turn each.
Press down only the clutch cover.
Remove the three nuts and separate the clutch cover from the pressure plate.

Fig. 2-23



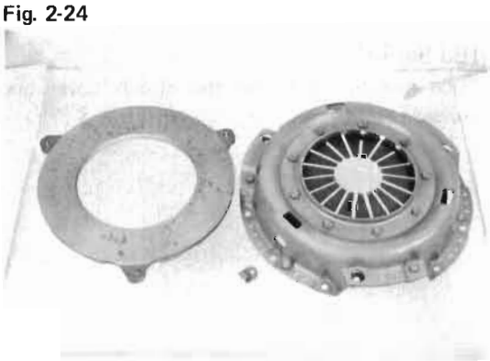
INSPECTION

Clutch Disc

Inspect the disc, and repair or replace if any part of it is found defective.

Rivet head depth limit	**0.3 mm (0.012 in.)**
Run-out limit	**1.0 mm (0.04 in.)**

Fig. 2-24



Clutch Cover Assembly
[FJ Series]

Inspect the clutch cover and pressure plate for wear and burning, and repair or replace if found defective.

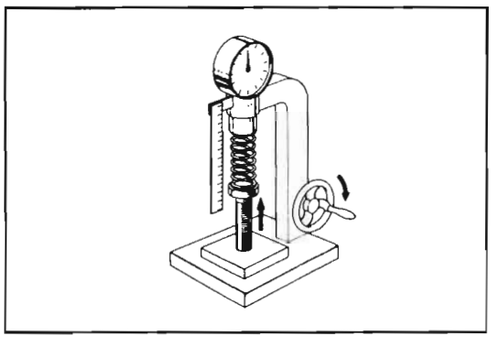
Fig. 2-25



[HJ Series]

Inspect the clutch cover, pressure plate, and pressure levers for wear and burning, and repair or replace all parts found defective.

Fig. 2-26



Measure the installed load of each compression spring, and if below the limit, replace the spring.

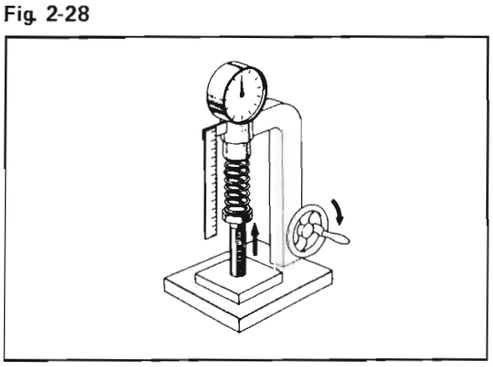
	Small Spring	Large Spring
Installed Length mm (in.)	42.9 (1.689)	43.5 (1.713)
Installed Load kg (lb.)	42.5 (93.5)	62.2 (137)
Installed Load Limit kg (lb.)	40 (88)	53 (117)

Fig. 2-27



[BJ Series]
Inspect the clutch cover, pressure plate, and pressure levers for wear and burning, and repair or replace all parts found defective.

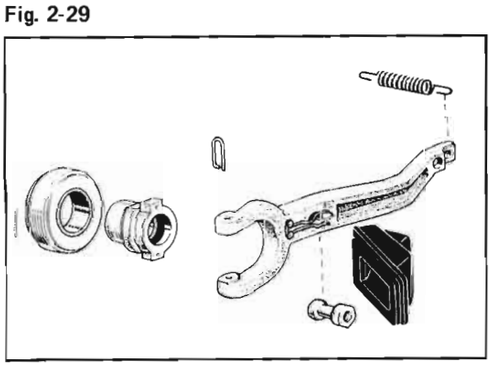
Fig. 2-28



Measure the install load of each compression spring, and if below the limit, replace the spring.

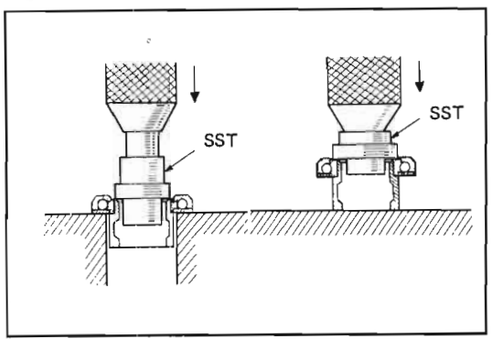
Installed length **37.1 mm (1.461 in.)**
Installed load **44.6 kg (98.3 lb.)**
Installed load limit **39 kg (86 lb.)**

Fig. 2-29



Fork, Hub And Bearing
Inspect for damage and wear.

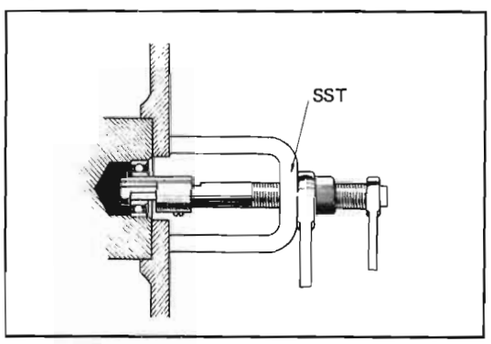
Fig. 2-30



Release Bearing Replacement

1. Using SST [09315-00021], remove the bearing.
2. Using SST [09315-00021], install the bearing.

Fig. 2-31



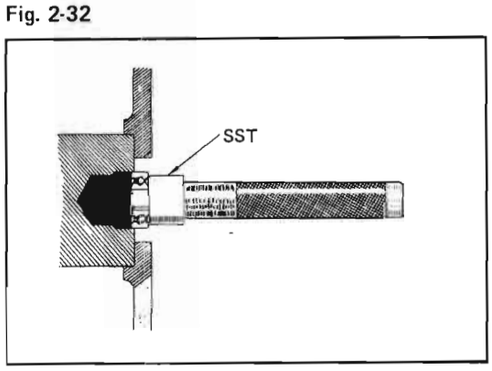
Pilot Bearing

With the bearing still installed on the crankshaft, inspect it for excessive wear, sticking, and abnormal noise.

Replace the bearing if found defective.

1. Using SST [09303-55010 . . . FJ & HJ series, 09303-35010 . . . BJ series], remove the bearing from the crankshaft.

Fig. 2-32



2. Coat the new bearing with multipurpose grease, and using SST [09304-47010 . . . FJ & HJ series, 09304-30012 . . . BJ series], drive the bearing into the crankshaft.

ASSEMBLY

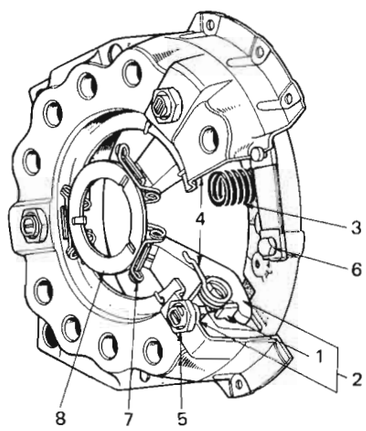
[FJ & HJ Series]

Perform the disassembly in reverse order.

– Note –

1. **Coat multipurpose grease on the sliding surfaces of all parts to be assembled.**
2. **Make sure to align the mating marks when assembling the pressure plate to the clutch cover.**
3. **When assembling the clutch cover to pressure plate in the HJ series, use a press in the same manner as during disassembly.**

Fig. 2-33



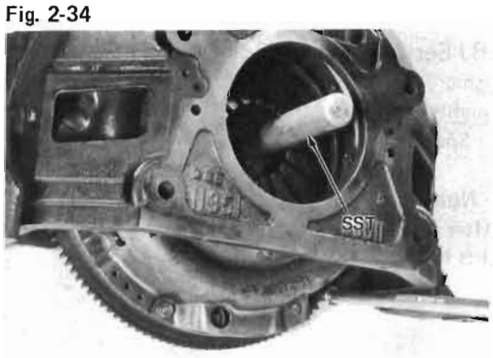
1	Plate	5	Nut
2	Bolt & Lever	6	Spring
3	Spring	7	Plate
4	Cover & Spring		

[BJ Series]
Assemble the parts in the numbered order shown in the figure.

– Note –

1. **Apply multipurpose grease on the sliding surfaces of all parts.**
2. **Have the mating marks aligned when assembling the clutch cover to the pressure plate.**
3. **When assembling the clutch cover to pressure plate, use a press in the same manner as during disassembly.**

Fig. 2-34



INSTALLATION

Install the Clutch Cover

Using SST [09301-55022], install the clutch disc and clutch cover to the flywheel.

– Note –

1. **With the cover attaching bolts tightened lightly, carefully move the guide tool up and down and sideways to see that the cover is properly centered before installing.**
2. **Tighten the bolts back and forth in diagonal order, a little at a time, until tightened to specified torque.**
3. **Use care to see that the clutch disc is facing in proper direction when installed.**
4. **Apply light coat of multipurpose grease on the splines in the disc and input shaft.**

Fig. 2-35

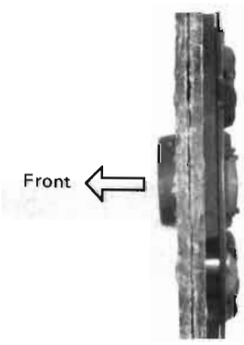
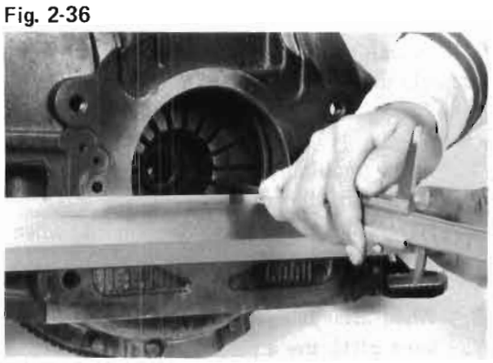


Fig. 2-36



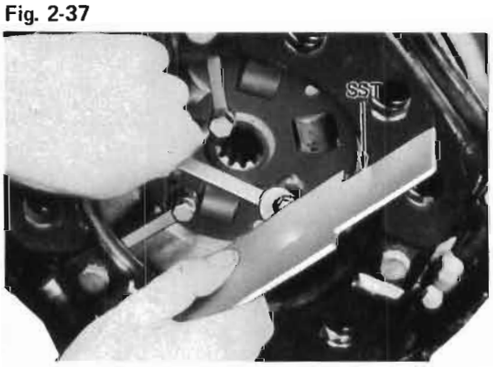
Adjustment

[FJ Series]

Inspect the clutch diaphragm for uniformity of tip heights.

Non-uniformity limit 1.0 mm (0.04 in.)

Fig. 2-37



[HJ Series]

Using SST[09302-25010], adjust the lever heights.

Specified height 14.2 mm (0.559 in.)

– Note –

After completing adjustment, make sure to tighten the lock nuts securely.

Fig. 2-38



[BJ Series]

Using SST[09302-25010], adjust the lever heights.

Specified height 12.0 mm (0.472 in.)

– Note –

After completing adjustment, stake the adjust nuts to prevent them from loosening.

TRANSMISSION & TRANSFER

page

CUTAWAY VIEW 3- 2

4-SPEED TRANSMISSION (H41 & H42) 3- 3

3-SPEED TRANSMISSION (J30) 3-37

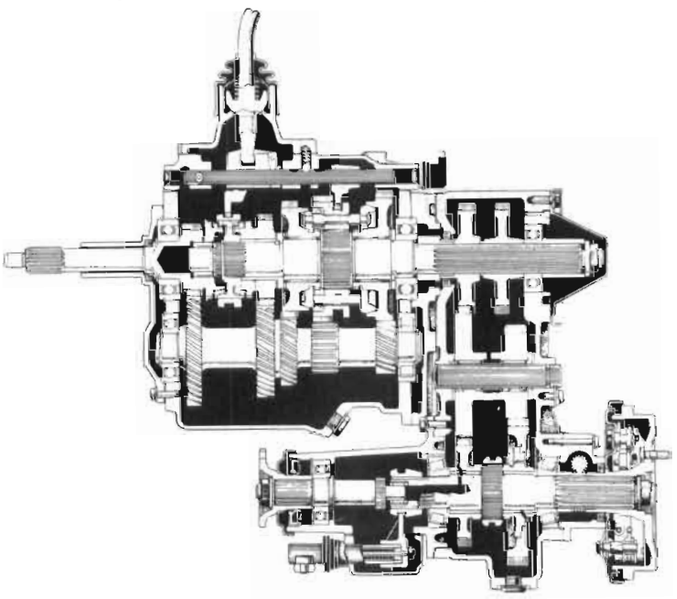
TRANSFER 3-52

3

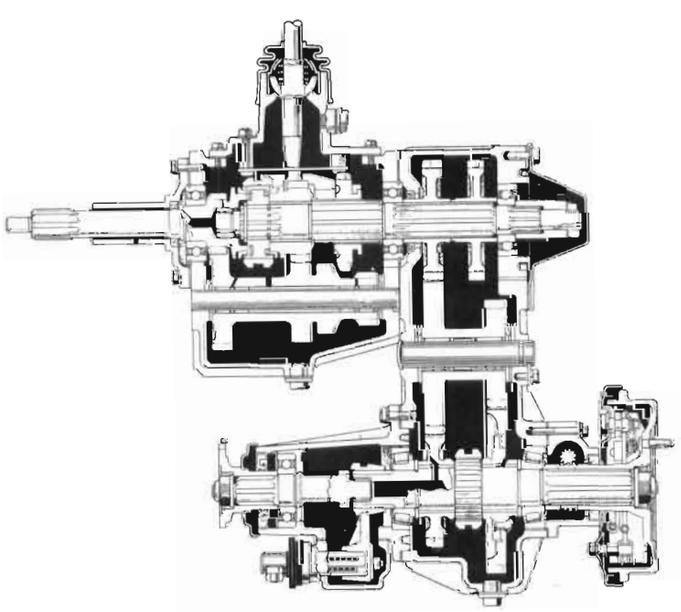
CUTAWAY VIEW

Fig. 3-1

4-Speed Manual Transmission (H41, H42) & Transfer



3-Speed Manual Transmission (J30) & Transfer



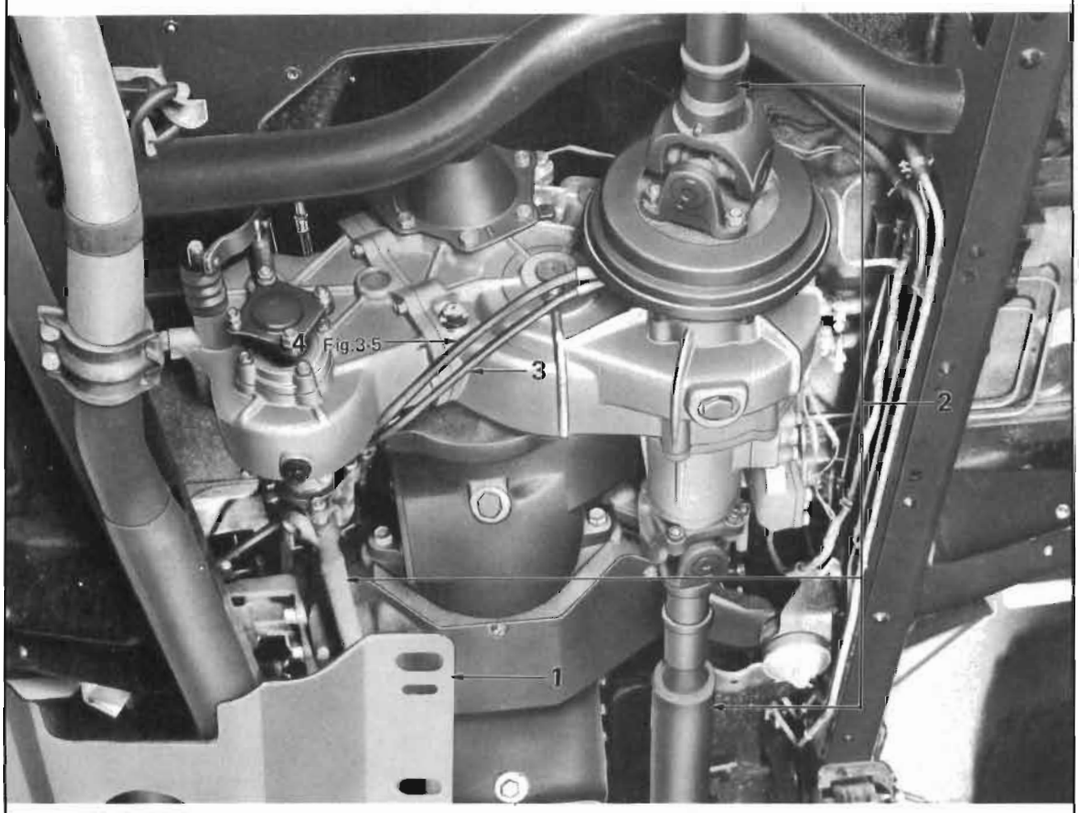
4-SPEED TRANSMISSION (H41 & H42)

REMOVAL

Removal From Vehicle

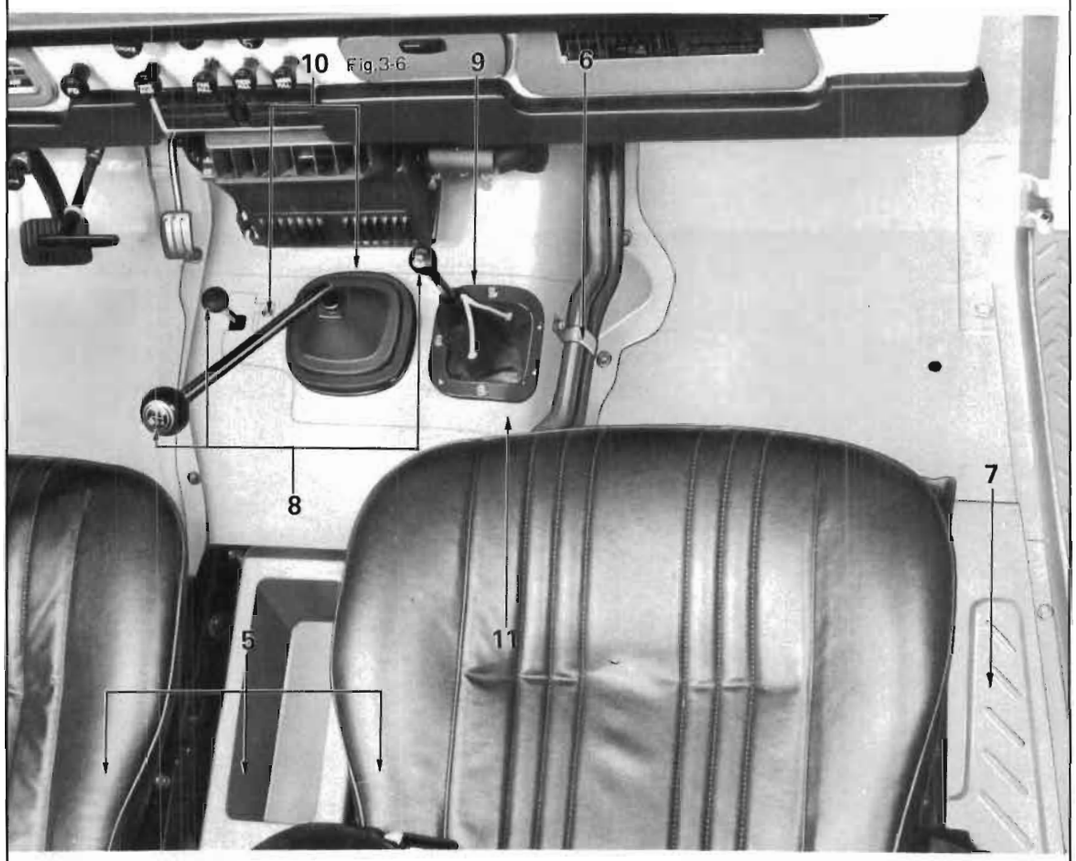
1. Drain out the transmission oil, transfer oil, and fuel (except FJ55 series.)
2. Remove the parts in the order numbered in following illustrations.

Fig. 3-2



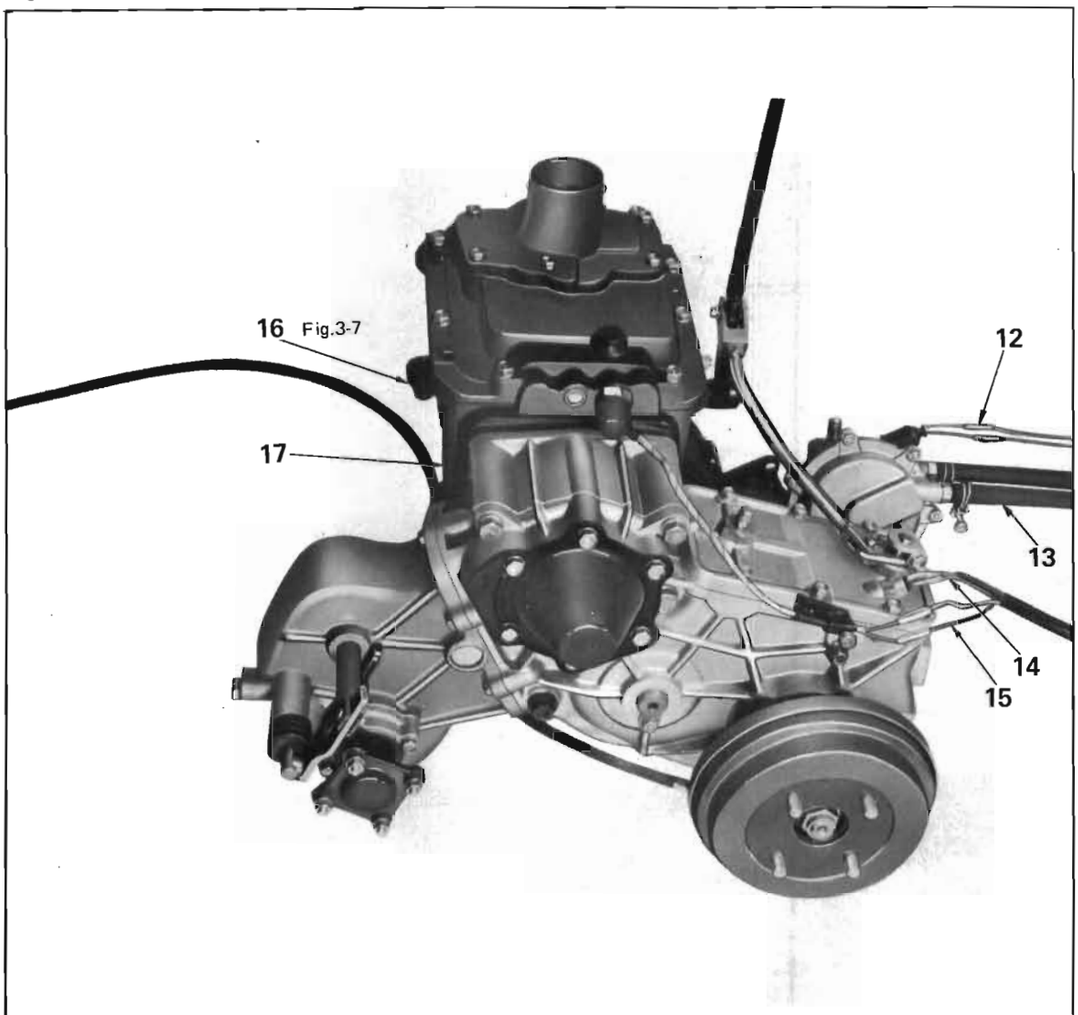
1	Undercover	3	Speedometer Cable
2	Propeller Shafts	4	Parking Brake Cable

Fig. 3-3



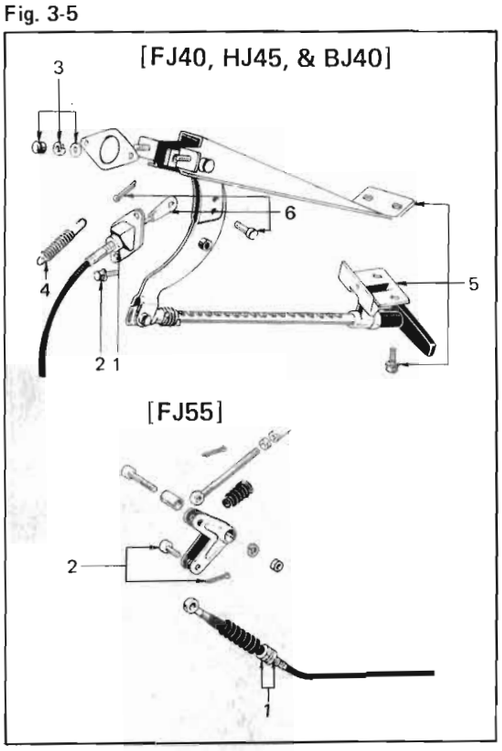
5	Front Seats, Seat Frames, & Console Box (Except FJ55 Series)	8	Shift Lever Knobs
6	Rear Heater Pipe Clamp (Except FJ55 Series)	9	Dust Proof
7	Fuel Tank Cover & Fuel Tank (Except FJ55 Series)	10	Boot And Shift Lever
		11	Transmission Cover

Fig. 3-4



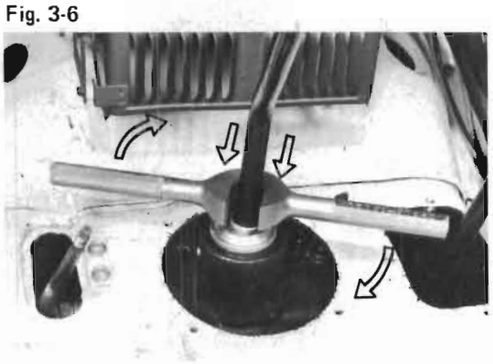
12	Front Drive Indicator Wire Harness (Magnet Type Only)	15	Back Up Light Switch Wire Harness
13	Vacuum Hoses (Magnet Type Only)	16	Bolts
14	Transfer Switch Wire Harness (Magnet Type Only)	17	Transmission With Transfer

Fig. 3-5



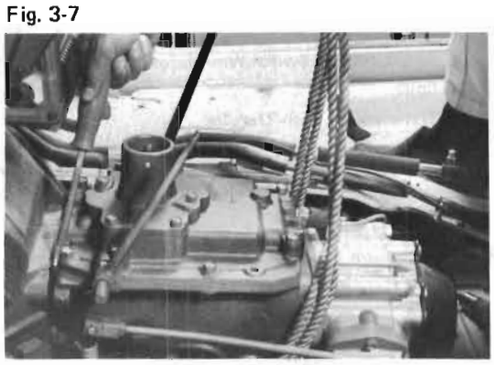
Remove the parking brake cable by disconnecting it at the parking brake lever.
Perform in the numbered order shown in the figure.

Fig. 3-6



Use SST [09305-60010]

Fig. 3-7

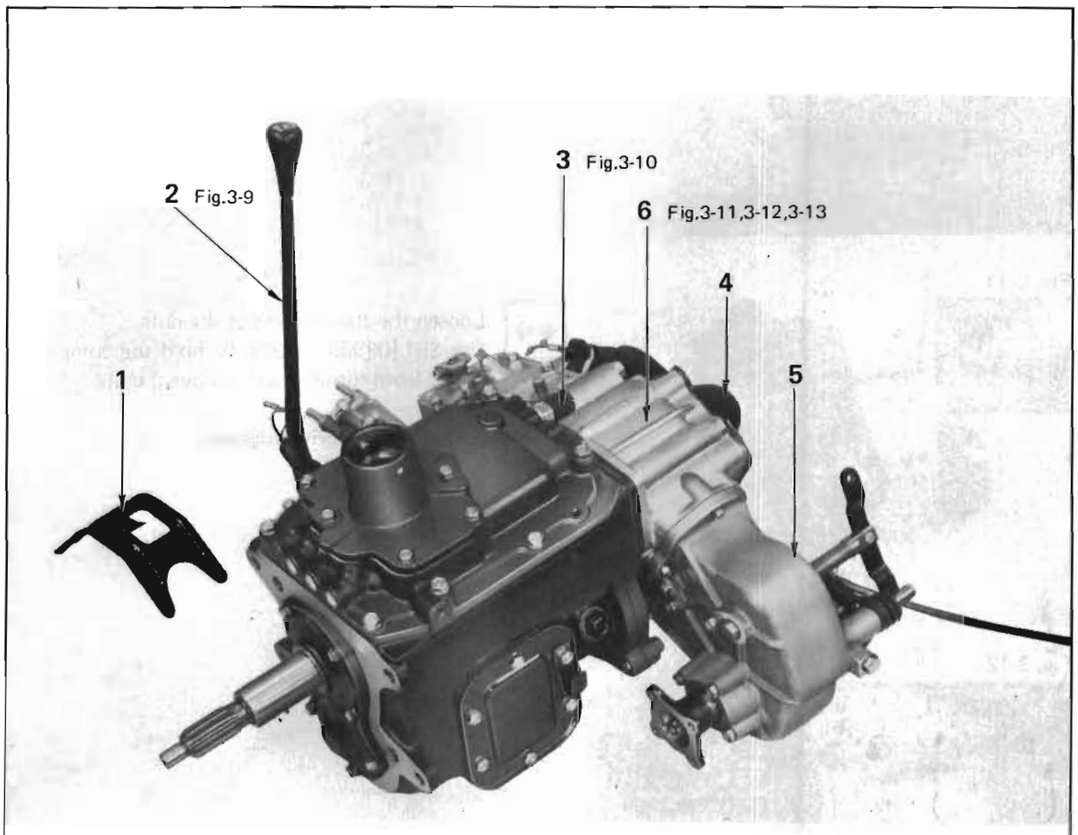


Remove the four bolts while using jack and rope to support the transmission with transfer.

Separate The Transfer From The Transmission.

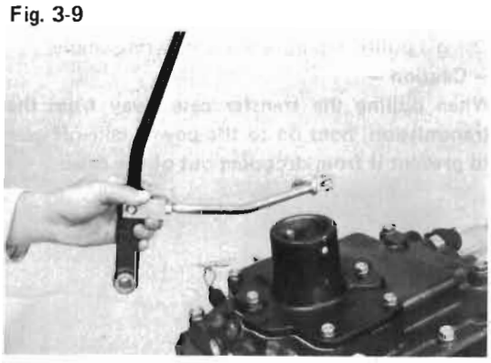
Make the separation in the numbered order shown in the figure.

Fig. 3-8



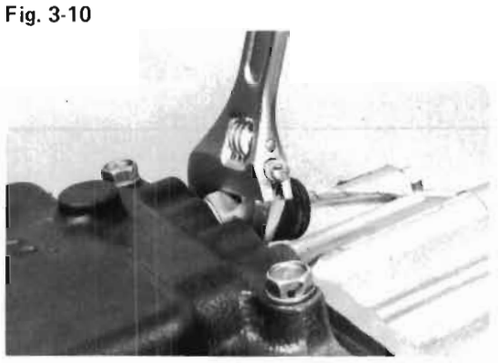
1	Shift Lever Guide (Direct Drive Only)	4	Case Cover No.2
2	Lever & Rod	5	Power Take-Off Assy. Or Cover
3	Back Up Light Switch	6	Transfer Assy.

Fig. 3-9



Remove the lever and rod as a set.

Fig. 3-10

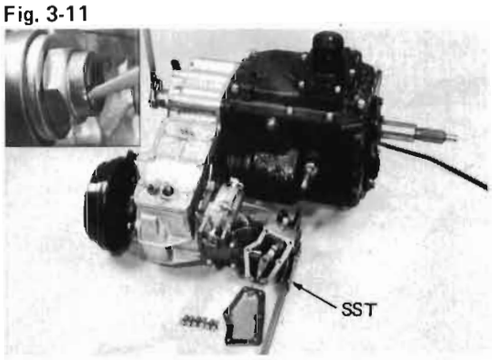


Remove the back up light switch

– Caution –

Back up light switch must always be removed before taking off the transfer assembly.

Fig. 3-11



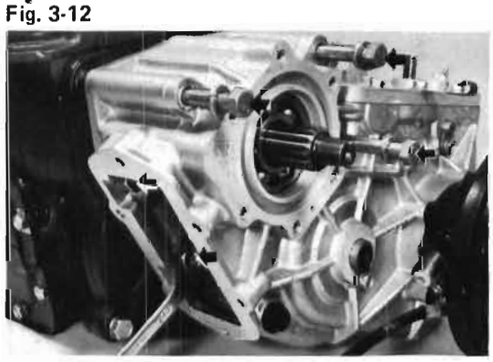
Loosen the staked parts of the nuts.

Use SST [09330-00020] to hold the companion flange from turning, and remove the nut.

– Note –

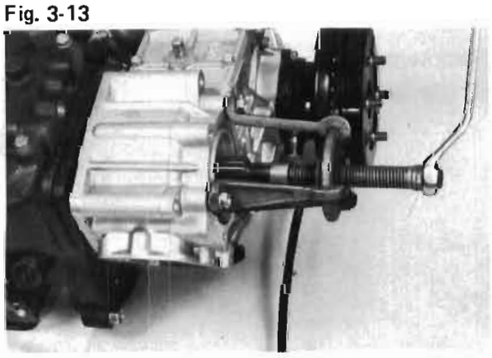
Have the front drive engaged.

Fig. 3-12



Remove the five bolts.

Fig. 3-13



Using a puller, separate the transfer assembly.

– Caution –

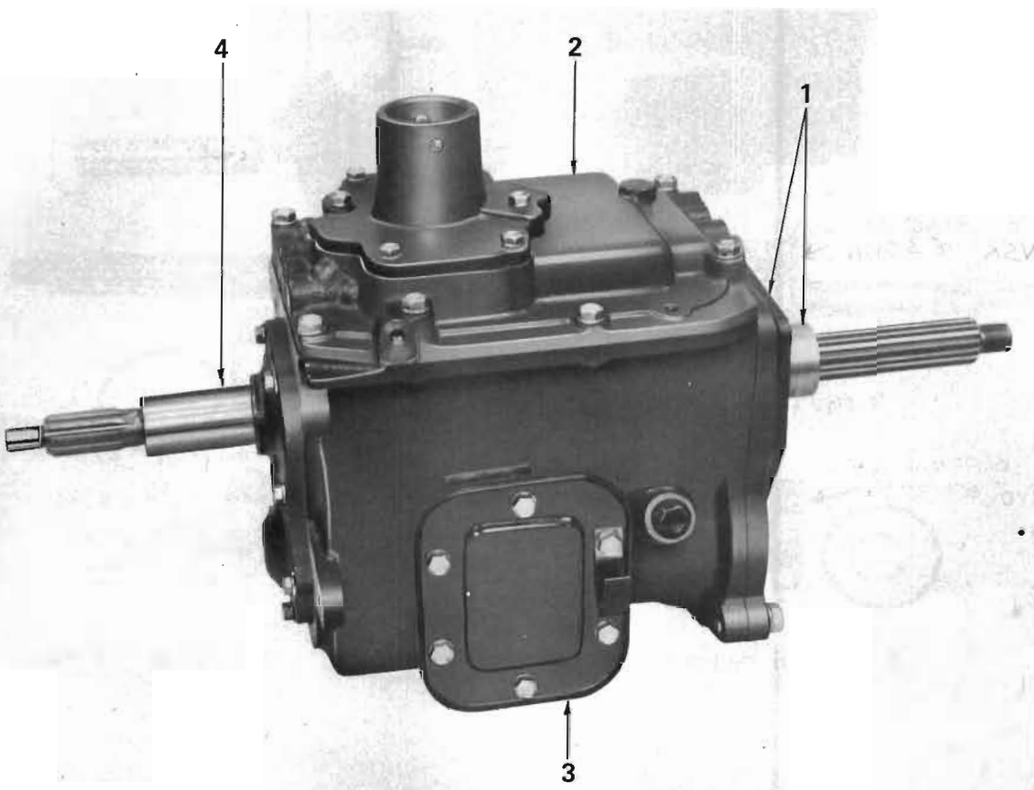
When pulling the transfer case away from the transmission, hold on to the power take-off gear to prevent it from dropping out of the case.

DISASSEMBLY

Transmission Gear And Case Disassembly

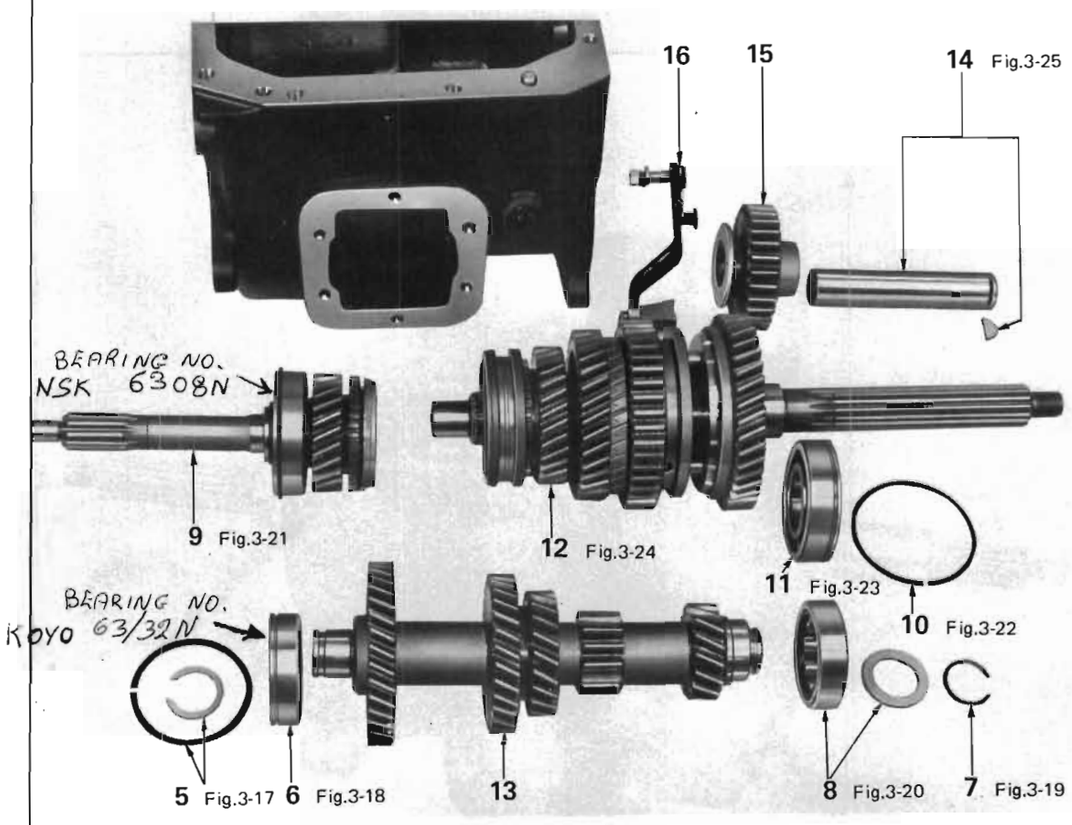
Disassemble in the order numbered in the following illustrations.

Fig. 3-14



1	Rear Bearing Retainer & Spacer	3	Cover
2	Case Cover Assy.	4	Front Bearing Retainer

Fig. 3-15



5	Snap Rings	11	Bearing
6	Bearing	12	Output Shaft Assy.
7	Snap Ring	13	Countershaft Assy.
8	Bearing	14	Reverse Idler Gear Shaft
9	Input Shaft Assy.	15	Reverse Idler Gear
10	Snap Ring	16	Reverse Shift Arm Assy.

Fig. 3-16

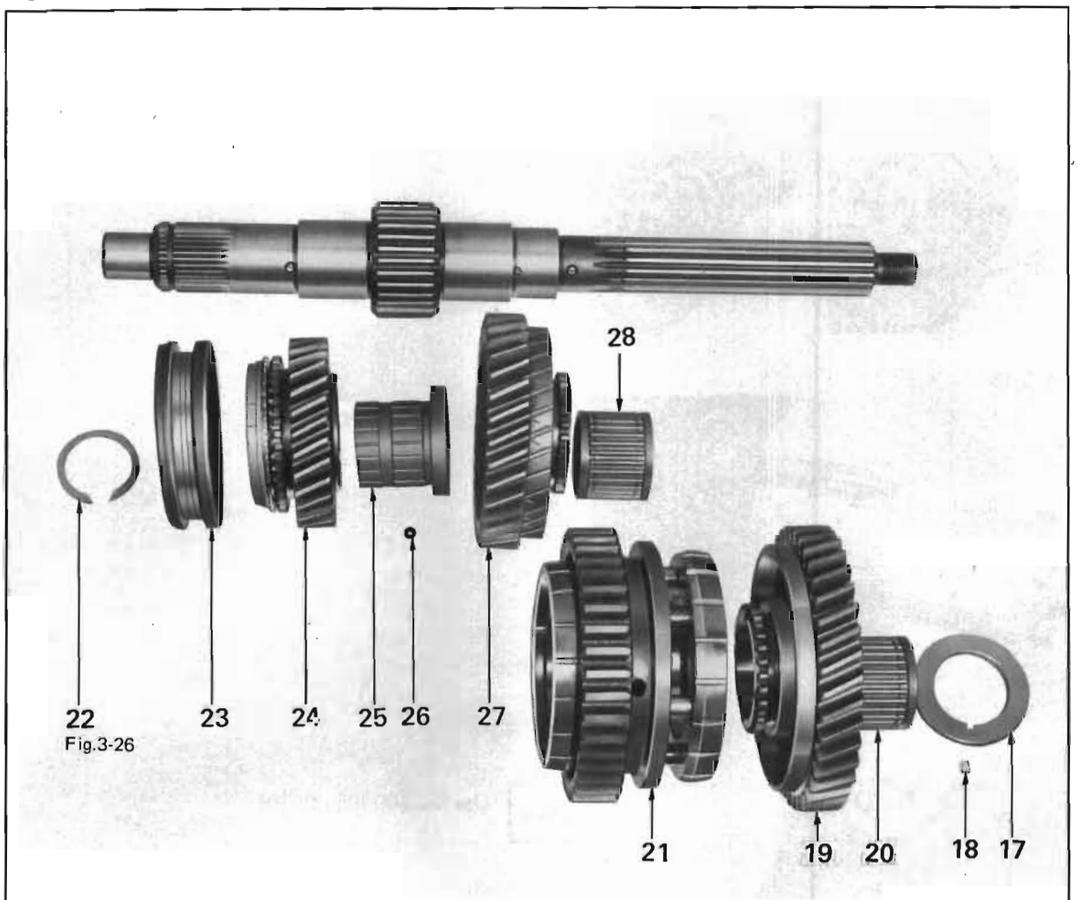
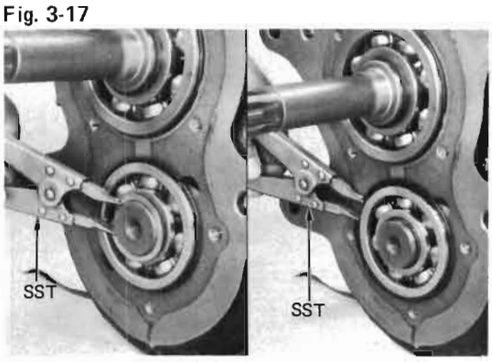


Fig.3-26

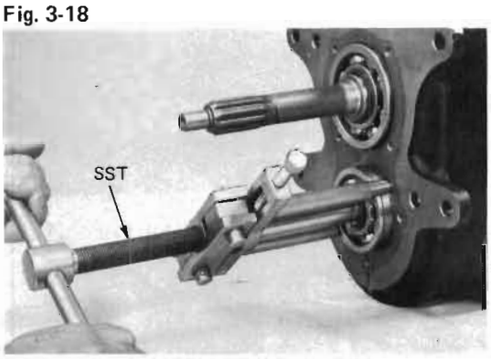
17	Thrust Washer	23	Clutch Hub No.2, Sleeve, & Synchronizer ring
18	Pin	24	Third Gear
19	First Gear	25	Bushing
20	Bearing	26	Ball
21	Synchronizer Ring No.1 Subassy.	27	Second Gear
22	Snap Ring	28	Bearing

Fig. 3-17



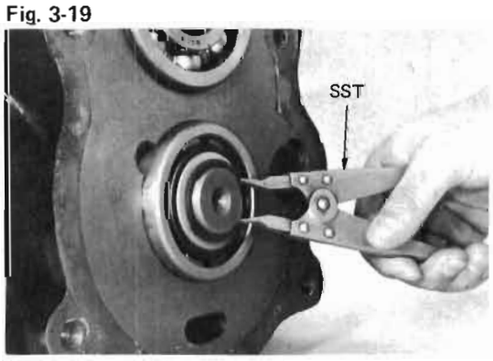
Use SST [09905-00010].

Fig. 3-18



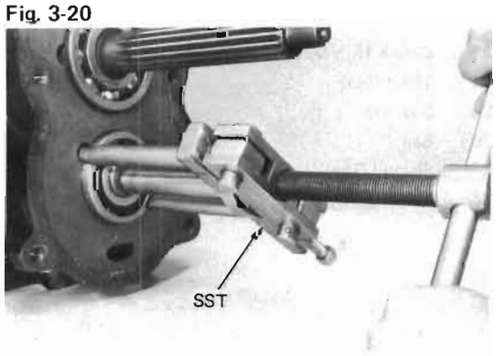
Use SST [09950-20010].

Fig. 3-19



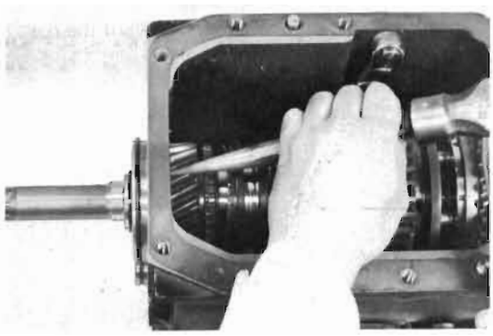
Use SST [09905-00010].

Fig. 3-20



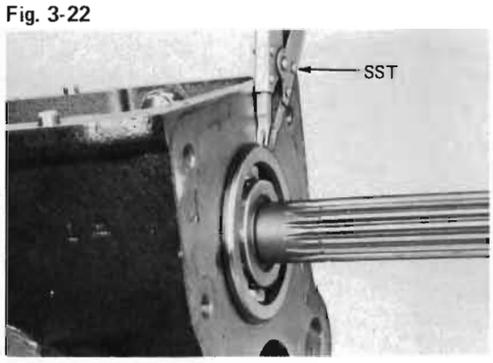
Use SST [09950-20010].

Fig. 3-21



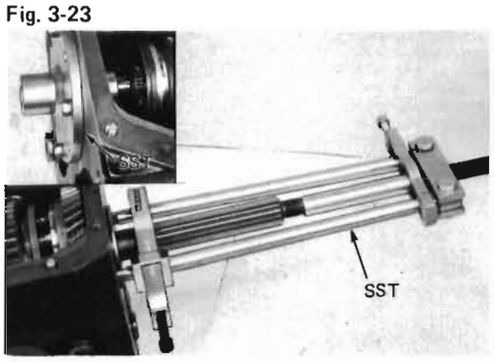
Drive out the input shaft assembly from the case.

Fig. 3-22



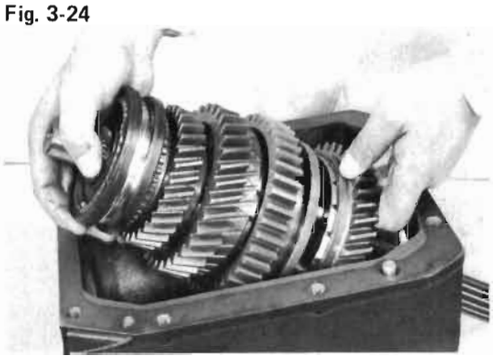
Use SST [09905-00010]

Fig. 3-23



Fit the SST [09314-36010] to the tip of drive shaft and mount the SST to the case.
Using SST [09950-20010] and SST [09956-00010], remove the bearing.

Fig. 3-24



Hold the first gear tightly against the other gears and pull out the output shaft assembly from the case.

– Caution –

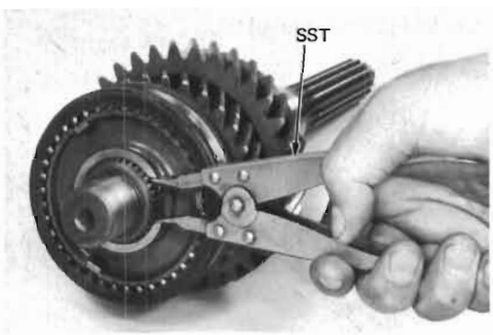
When pulling out the assembly, hold the gears in place to keep them from sliding off the shaft.

Fig. 3-25



Drive out the reverse idler gear toward the rear.

Fig. 3-26

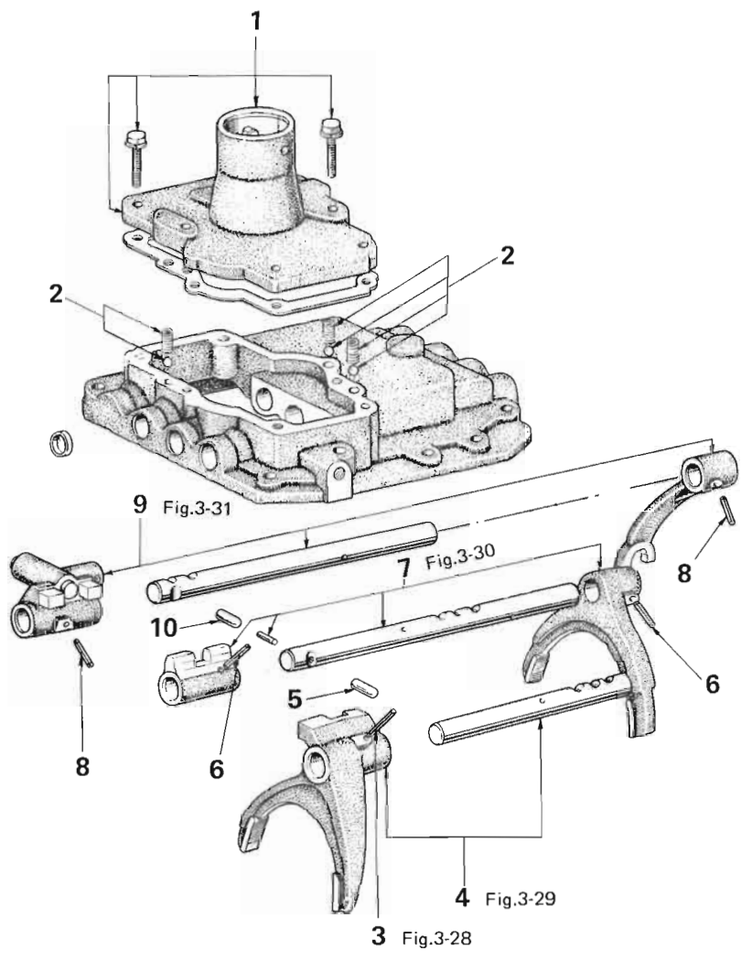


Use SST [09905-00010].

Transmission Case Cover Disassembly

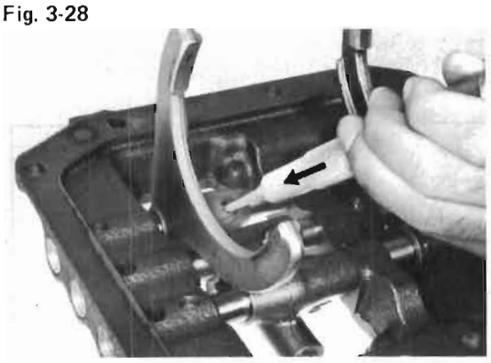
Disassemble in the numbered order shown in the figure.

Fig. 3-27



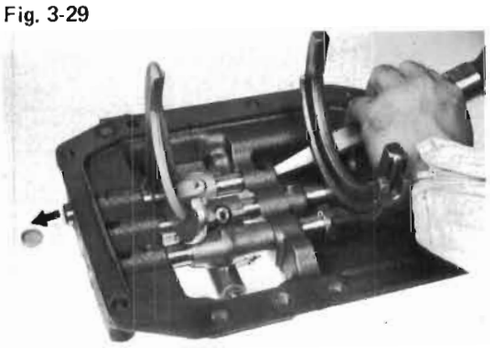
1 Shift Lever Retainer & Gasket
2 Detent Springs & Balls
3 Slotted Spring Pin
4 Third-Fourth Shaft & Shift Fork
5 Interlock Pin
6 Slotted Spring Pins
7 First-Second Shaft, Shift Fork, & Shift Head
8 Slotted Spring Pins
9 Reverse Shift Fork, Head, Shaft & Interlock Pin
10 Interlock Pin

Fig. 3-28



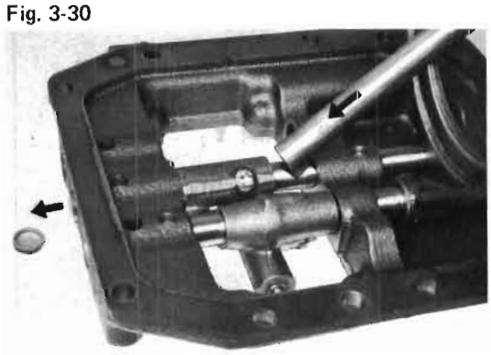
Drive out the slotted spring pin.

Fig. 3-29



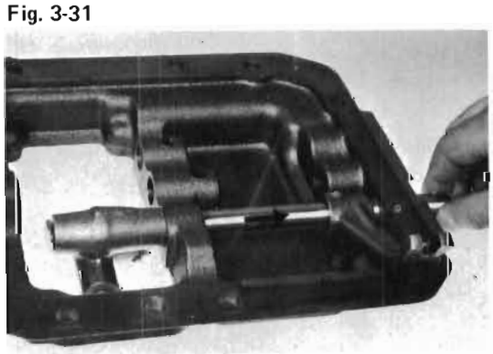
Drive out the expansion plug by hammering the end of shaft.
Take out the shaft and shift fork.
– Caution –
Other shafts must be set at neutral positions.

Fig. 3-30



Revolve the shaft a half-turn, and using a drift pin, drive out the shaft toward the front.
– Caution –
Use care not to lose the small interlock pin fitted in the shaft.

Fig. 3-31



Draw out the shaft through the hole for mounting the back up light switch.

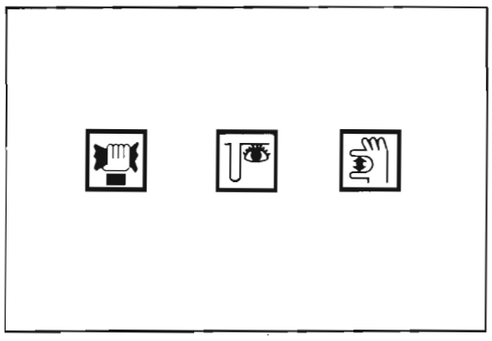


Fig. 3-32

INSPECTION

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

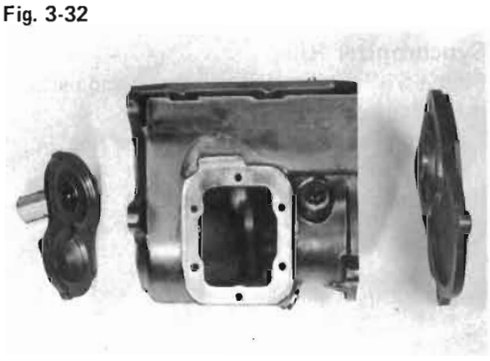


Fig. 3-33

Transmission Case, Front Bearing Retainer, And Rear Bearing Retainer

Inspect for damage and wear.



Fig. 3-34

Output Shaft And Bushing

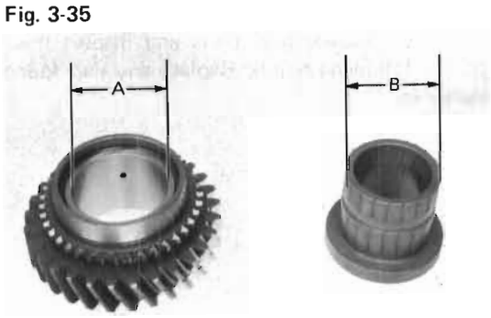
1. Inspect the shaft surfaces contacting on the bearings and gears for damage and wear.
2. Inspect the bushing for damage and wear.



First, Second, And Third Gears And Bearings.

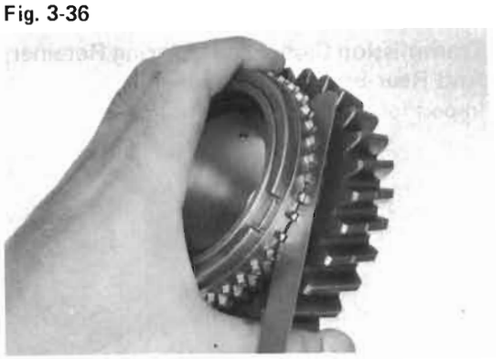
1. Inspect the gears for damage and wear at the teeth, thrust faces, inside diameter, and coned surfaces.
2. Inspect the output shaft rear bearing and the roller bearings for damage and wear.

Fig. 3-35



3. **Third gear oil clearance (A – B)**
   Limit **0.12 mm (0.0047 in.)**
   Standard **0.07 – 0.12 mm (0.0028 – 0.0047 in.)**

Fig. 3-36

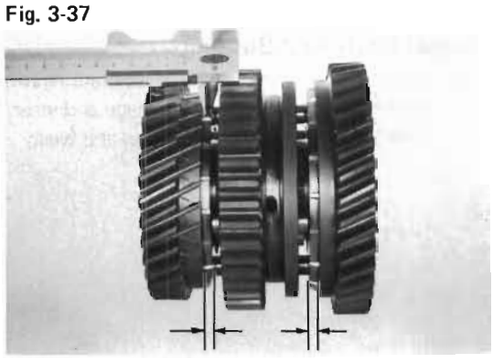


Synchronizer Ring

Fit the synchronizer ring on the gear and measure the clearance.

Third and fourth gear synchronizer ring clearances
Limit **0.8 mm (0.031 in.)**

Fig. 3-37



Synchronizer Ring No.1 Dimensions

Second gear limit **1.8 mm (0.071 in.)**
First gear limit **2.8 mm (0.110 in.)**

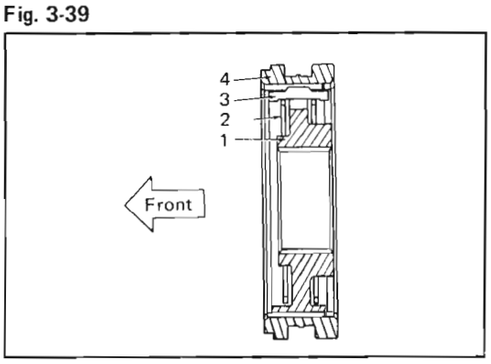
Fig. 3-38



Clutch Hub Sleeve, Clutch Hub, Shifting Keys, And Shifting Key Springs

1. Disassemble the clutch hub and sleeve.
2. Inspect the splines of hub and hub sleeve for damage and wear.
3. Inspect the center humped part of keys for damage and wear.
4. Inspect the key springs for weakening and damage.

Fig. 3-39



5. Assemble the hub sleeve(2), three shifting keys(3) and two key springs(4) to the clutch hub(1).

– Note –

1. **Hub and hub sleeve are parts having directionality.**
2. **Install the key springs positioned so that their end gaps will not be in line.**
3. **Check the hub and hub sleeve to see that they slide smoothly together.**

Fig. 3-40



6. Check the clearance between the sleeve and shift fork.

Third-fourth and first-second
Limit 0.8 mm (0.031 in.)

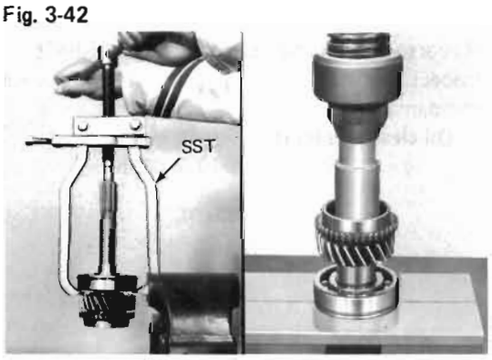
Fig. 3-41



Input Shaft

1. Inspect the gear teeth, splines, coned surfaces, and bearing for damage and wear.
2. Inspect the shaft inner surface that contact on the needle roller bearing for damage and wear.

Fig. 3-42



Input Shaft Bearing Replacement

1. Remove the snap ring, using SST [09905-00010].
2. Remove the bearing, using SST [09950-20010]
3. Install the new bearing, using a press.

Fig. 3-43



4. Select a snap ring of the thickness that will allow minimum axial play, and install it on the shaft.

Snap Ring Sizes

Part No.	Thickness mm (in.)
90520-36015	3.31 – 3.42 (0.1303 – 0.1346)
90520-36016	3.20 – 3.31 (0.1260 – 0.1303)

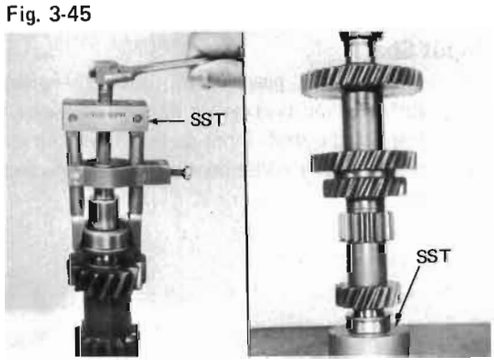
Fig. 3-44



Countergear

1. Inspect the countergear teeth for damage and wear.
2. Inspect the front and rear bearings for damage and wear.

Fig. 3-45



3. Rear bearing inner race replacement.
   a. Using SST [09602-10010], remove the inner race.
   b. Using SST [09515-21010], install the new inner race.

– Caution –

Make sure to position the inner race so that its flanged side will be directed toward the front.

Fig. 3-46

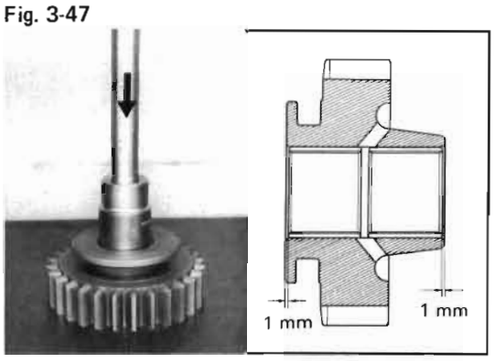


Reverse Idler Gear, Bushing, And Shaft

Inspect the gear, bushing, and shaft for wear and damage.

Oil clearance limit **0.16 mm (0.0063 in.)**

Fig. 3-47



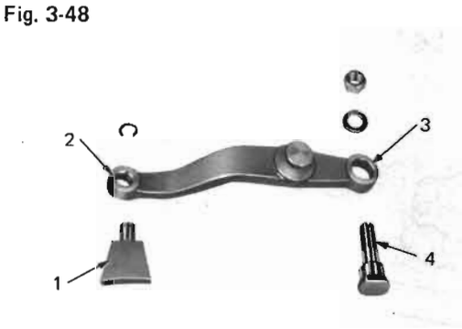
Reverse Idler Gear Bushing Replacement

1. Using a press and socket wrench (24 mm), force out the old bushings.
2. Using the same press and socket wrench, press in the new bushings respectively from the front and rear ends of the gear.

– Note –

Press in the bushings until 1 mm deep from the gear end faces.

Fig. 3-48



Reverse Shift Arm

1. Inspect the shift arm shoe(1) for wear and damage.

   Shoe thickness limit 8.0 mm (0.319 in.)
2. Inspect the shift arm at shoe mounting part(2) and pivot mounting part(3) for wear and damage.
3. Inspect the pivot(4) for wear and damage.
4. Inspect the clearance between the shoe and reverse idler gear slot.

   Limit 0.70 mm (0.028 in.)

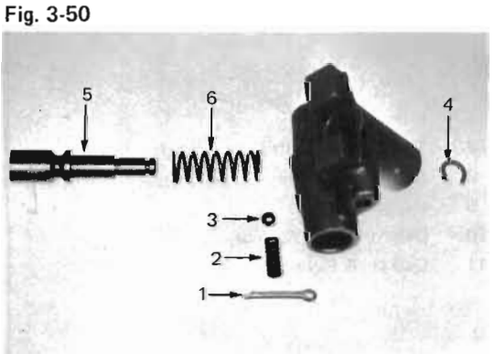
Fig. 3-49



Case Cover Parts

1. Inspect the shafts and shift head for wear and damage at their sliding surfaces. Also, inspect the shafts for bending.
2. Inspect the case cover for wear and damage at the surfaces contacting on the shafts.
3. Inspect the balls for damage and wear.
4. Inspect the springs for weakening.

Fig. 3-50



Reverse Shift Head

1. Disassemble the shift head in the numbered order shown in the figure.
2. Reassemble by performing the disassembly in reverse order.

– Note –

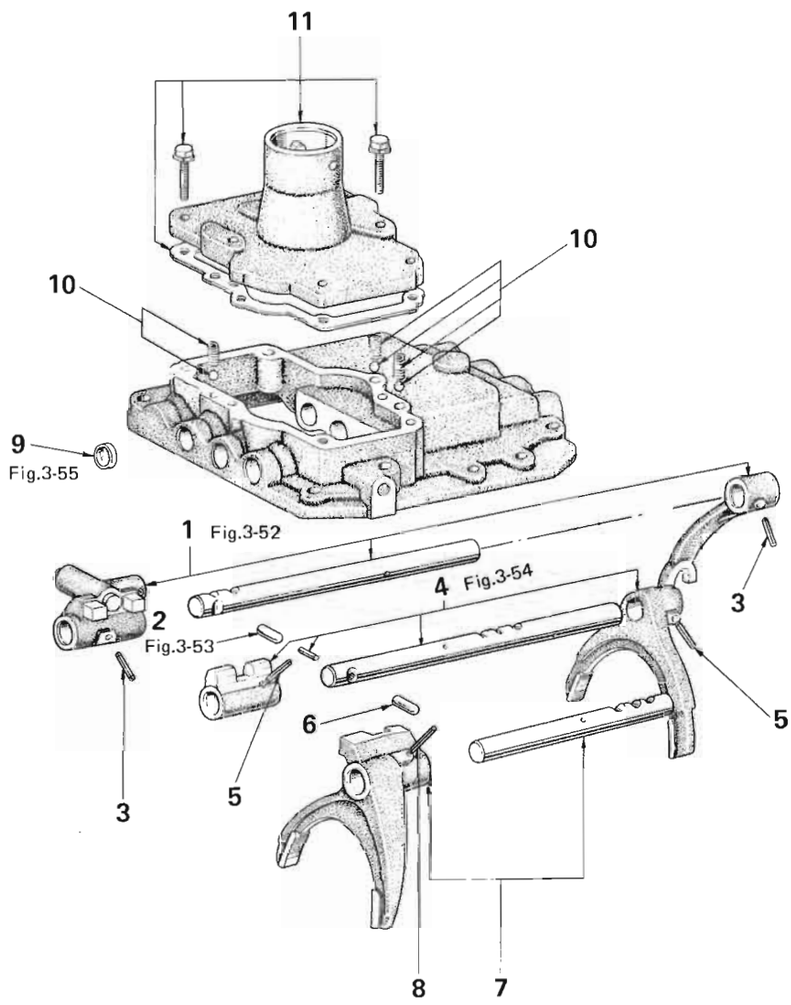
1. **After installing the "C" washer, bend both ends inward.**
2. **Verify that the plunger slides smoothly.**

ASSEMBLY

Transmission Case Cover Assembly

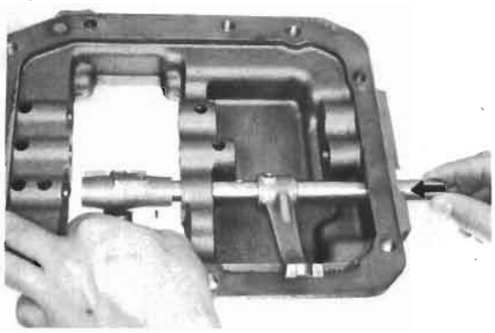
Assemble in the numbered order shown below.

Fig. 3-51



1	Reverse Shift Fork, Head, & Shaft	6	Interlock Pin
2	Interlock Pin	7	Third-fourth Shift Fork & Shaft
3	Slotted Spring Pins	8	Slotted Spring Pin
4	First-Second Shift Head, Fork, Shaft, & Interlock Pin	9	Expansion Plugs
		10	Detent Balls & Springs
5	Slotted Spring Pins	11	Gaskets & Retainer

Fig. 3-52

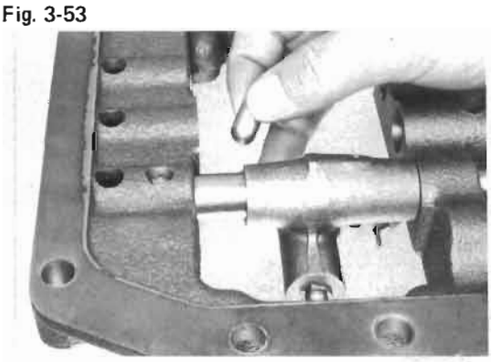


Install the shaft to the shift cover after passing it through the head and fork.

– Note –

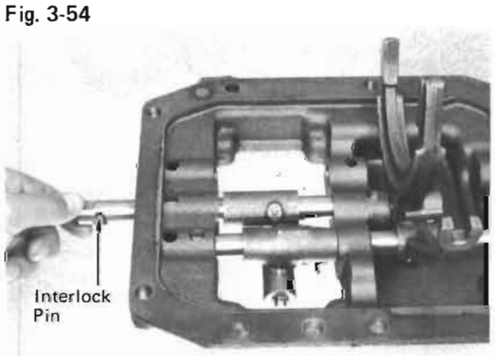
Make sure that the head, fork, and shaft are positioned in the correct directions.

Fig. 3-53



Insert the reverse gear interlock pin.

Fig. 3-54



Insert the interlock pin (small) into the shaft.
Install the shaft to the shift cover after passing it through the head and fork.

Fig. 3-55



Coat liquid seal on the expansion plugs, and drive the plugs into the case cover.

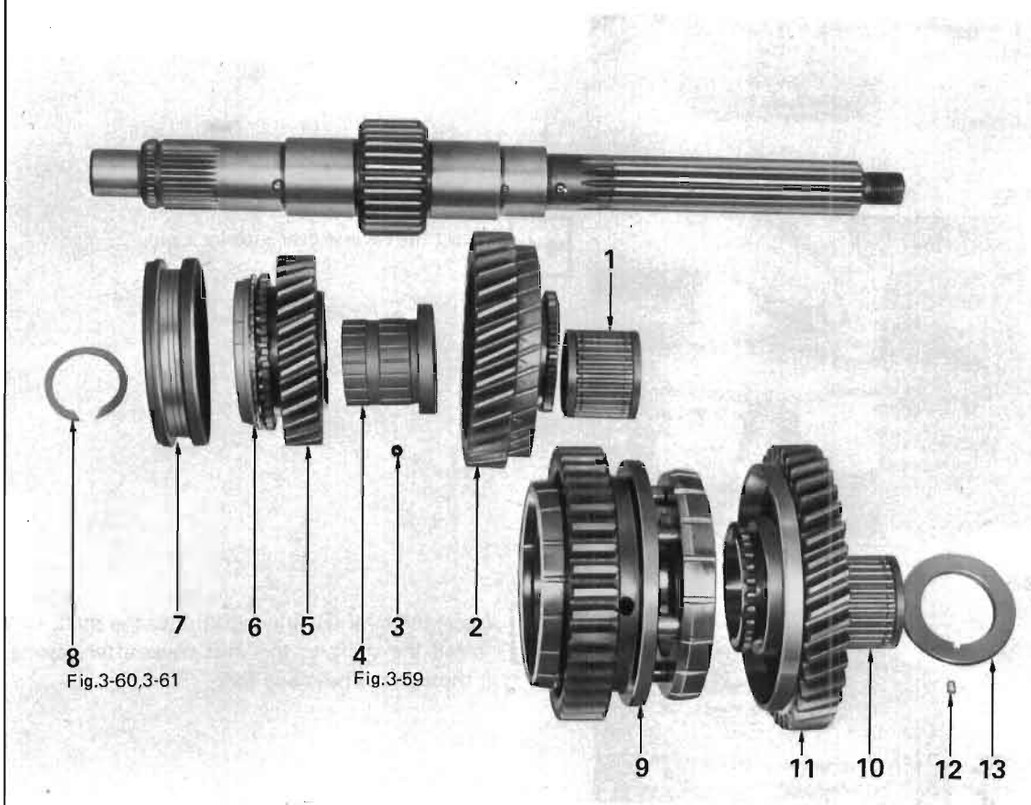
– Note –

Expansion plugs must not be driven in more than 3 mm (0.1 in.) below the case surface.

Transmission Gear And Case Assembly

Assemble the output shaft in the numbered order shown below.

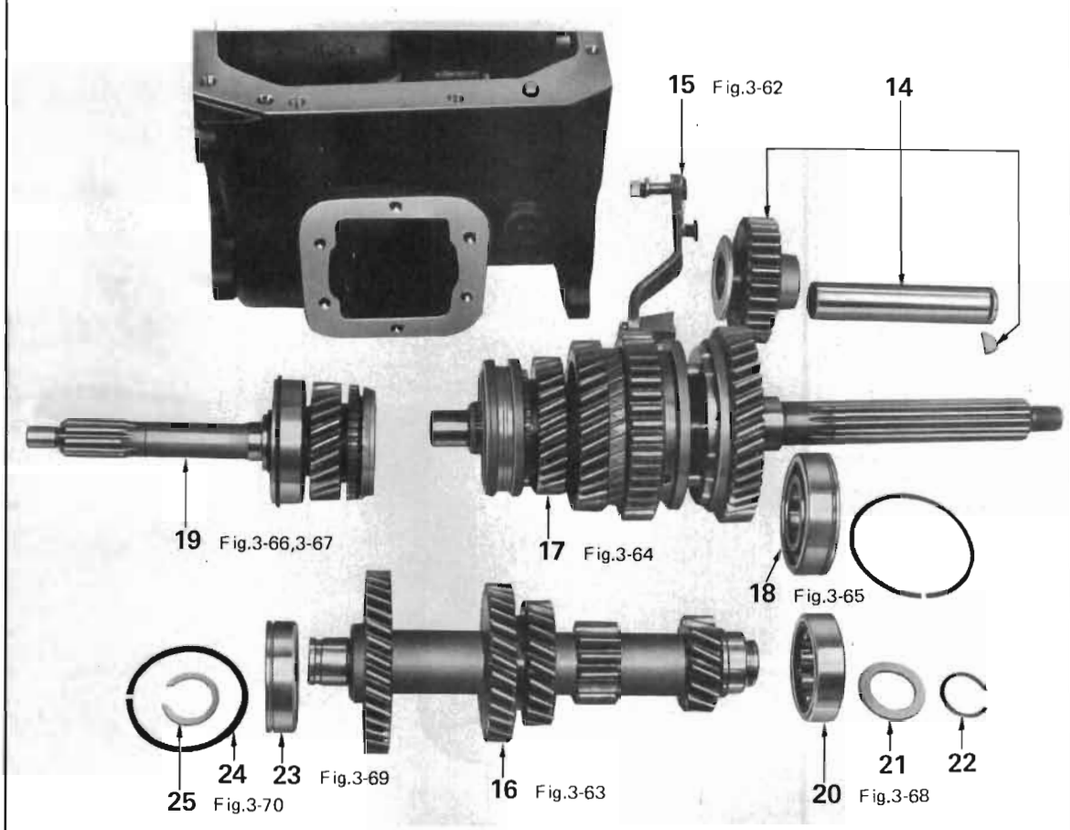
Fig. 3-56



1	Bearing	8	Snap Ring
2	Second Gear	9	Synchronizer Ring No.1 Assy.
3	Locking Ball	10	Bearing
4	Bushing	11	First Gear
5	Third Gear	12	Pin
6	Synchronizer Ring	13	Thrust Washer
7	Clutch Hub No.2 & Sleeve		

Assemble in the numbered order shown below.

Fig. 3-57



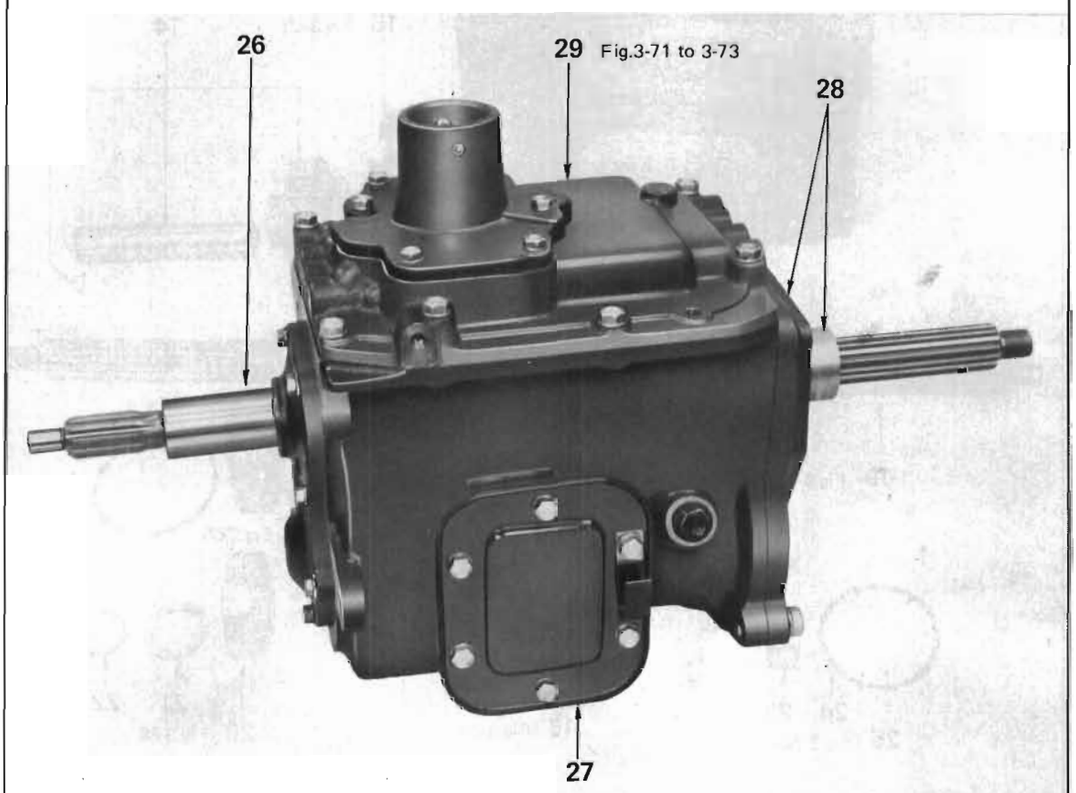
14	Idler Gear, Shaft, & Key	20	Bearing
15	Shift Arm Assy.	21	Retainer
16	Countershaft	22	Snap Ring
17	Output Shaft Assy.	23	Bearing
18	Bearing	24	Snap Ring
19	Input Shaft, Bearings, & Ring	25	Snap Ring

Assemble in the numbered order shown below.

– Note –

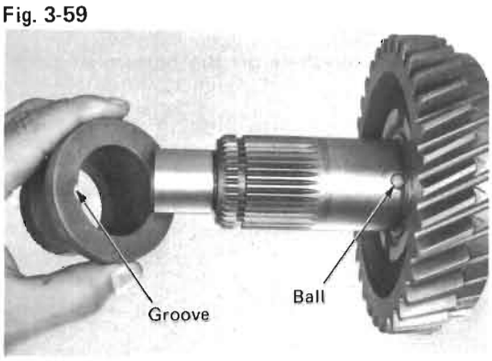
Apply gear oil to all sliding, rotating and engaging parts of the transmission, and coat liquid sealer on the gaskets and through bolts before assembling them.

Fig. 3-58



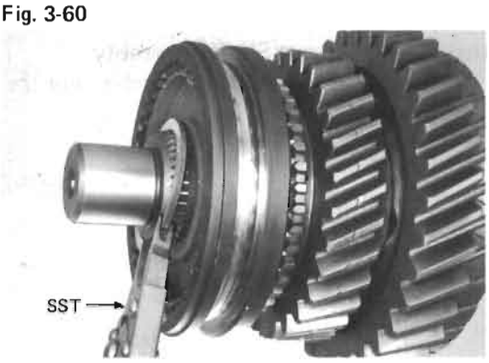
26	Front Bearing Retainer	28	Rear Bearing & Spacer
27	Cover	29	Case Cover Assy.

Fig. 3-59



Align the bushing groove with the ball, and install the bushing to the output shaft.

Fig. 3-60



Select a snap ring of the thickness that will reduce the clearance to a minimum.

Snap Ring Thickness

Size Mark	Thickness mm (in.)
0	2.40 – 2.45 (0.0945 – 0.0965)
1	2.45 – 2.50 (0.0965 – 0.0984)
2	2.50 – 2.55 (0.0984 – 0.1004)
3	2.55 – 2.60 (0.1004 – 0.1024)
4	2.60 – 2.65 (0.1024 – 0.1043)
5	2.65 – 2.70 (0.1043 – 0.1063)

Fig. 3-61



Measure the second and third gear thrust clearances.

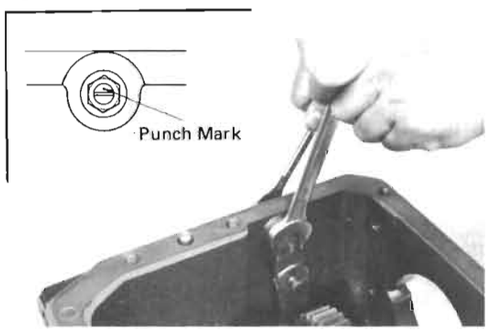
Second gear

Limit	**0.35 mm (0.014 in.)**
Standard	**0.18 – 0.33 mm (0.007 – 0.013 in.)**

Third gear

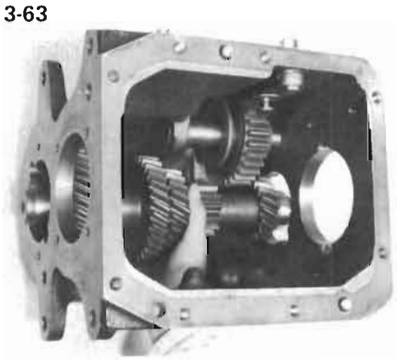
Limit	**0.35 mm (0.014 in.)**
Standard	**0.13 – 0.28 mm (0.005 – 0.011 in.)**

Fig. 3-62



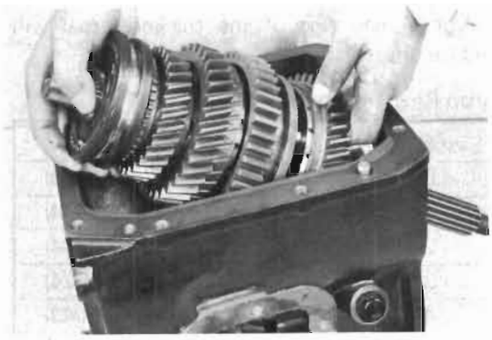
Lock the nut when the punch mark on the shift arm pivot is positioned straight up.

Fig. 3-63



Lay the countershaft on the bottom of transmission case.

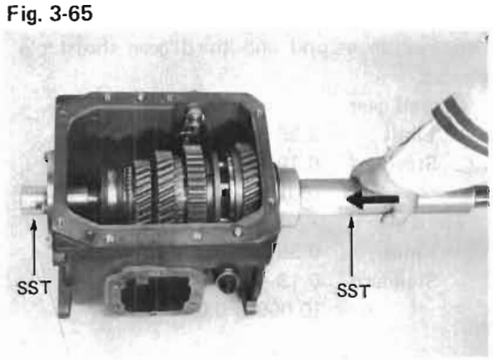
Fig. 3-64



Install The Output Shaft Assembly

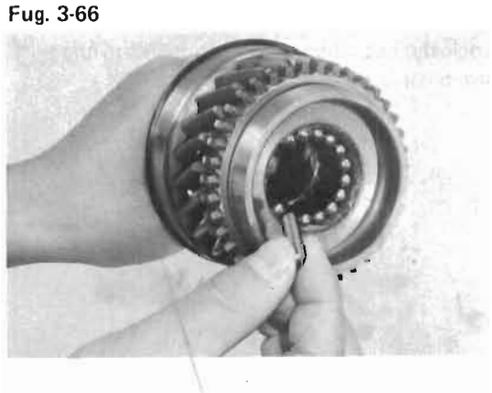
1. Insert the output shaft assembly into the case.

Fig. 3-65



2. Mount SST [09314-36010].
3. Using SST [09309-36020], drive in the bearing.
4. Remove SST [09314-36010].

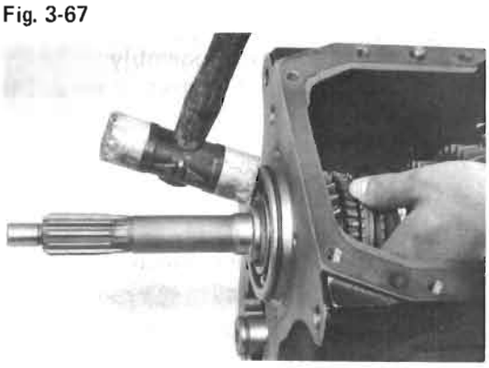
Fug. 3-66



Install The Input Shaft, Bearing, And Ring.

1. Apply grease to the input shaft and assemble in the 17 bearing rollers.

Fig. 3-67

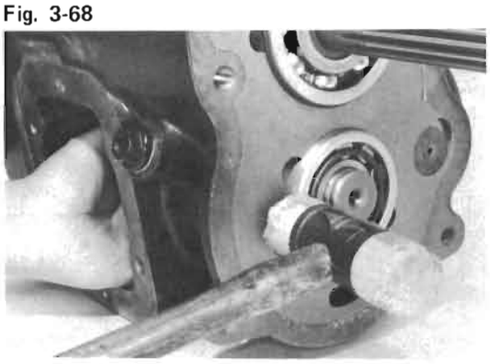


2. Assemble the synchronizer ring to the clutch hub No.2.
3. Using a plastic hammer, drive in the input shaft to the case.

– Caution –

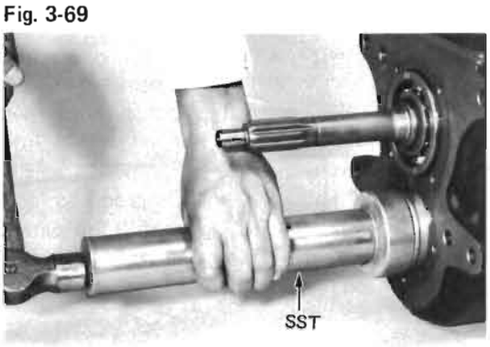
Use care not to damage the synchronizer ring.

Fig. 3-68



Lift up the countershaft to proper position and install the rear bearing with a plastic hammer.

Fig. 3-69

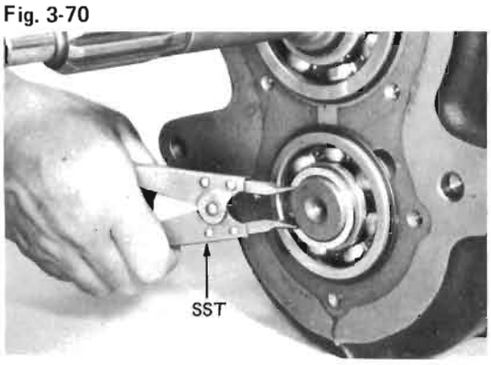


Use SST [09309-36020].

– Note –

Install the front and rear bearings by striking them alternately.

Fig. 3-70

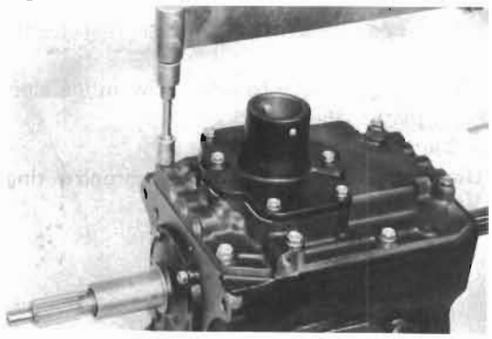


From the table below, select the thickest snap ring that will fit properly on the shaft, and install it with SST [09905-00010].

Snap Ring Thickness

Size Mark	Thickness mm (in.)
0	2.05 – 2.10 (0.0807 – 0.0827)
2	2.15 – 2.20 (0.0846 – 0.0866)
4	2.25 – 2.30 (0.0886 – 0.0906)

Fig. 3-71



Install The Case Cover Assembly

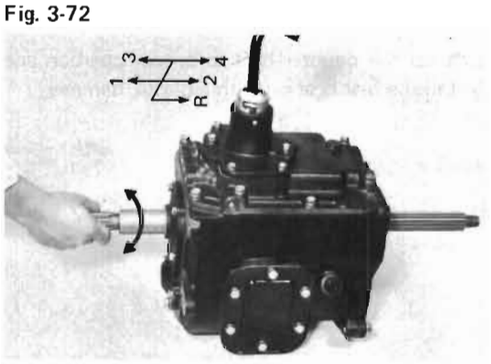
1. Tighten the case cover bolts at the specified torque.

   Tightening torque **3.0 – 4.5 kg-m (21.7 – 32.6 ft-lb)**

– Caution –

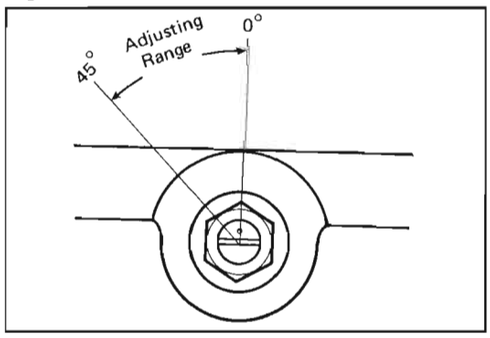
Have the case cover assembly and the gears in neutral positions before installation.

Fig. 3-72



2. Install the shift lever temporarily, and while turning the input shaft, check the shifting and output shaft rotational relationship.

Fig. 3-73



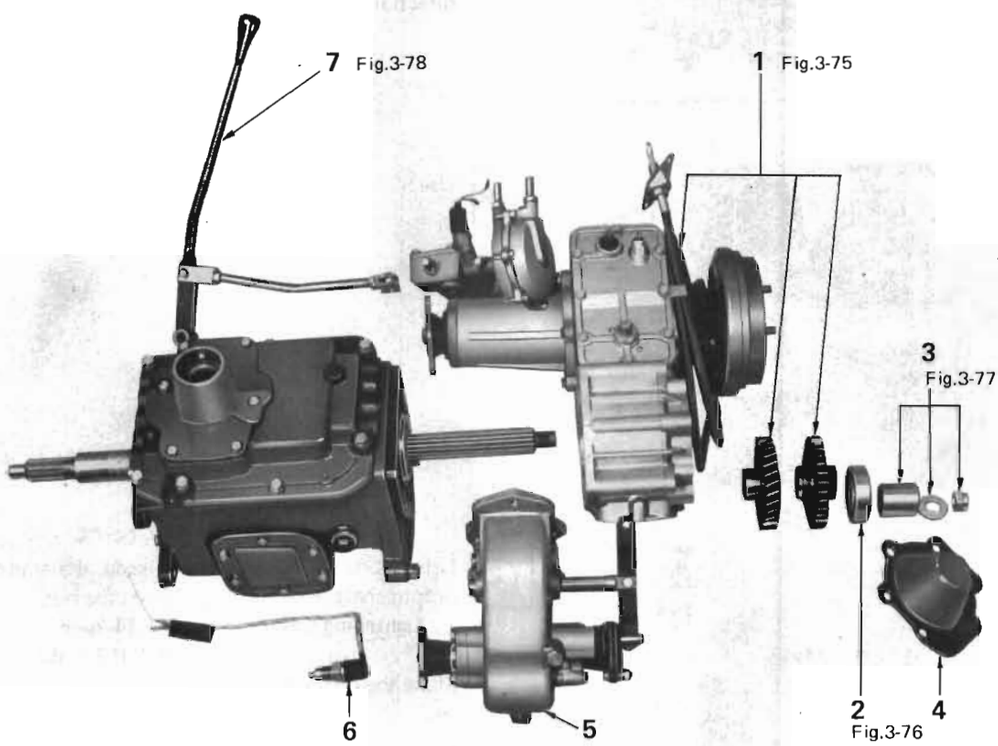
3. Adjust the reverse shift link.
   a. Verify that no abnormal noise develops when the input shaft is turned or when the gear is shifted into reverse.
   b. If abnormal noise is produced, correct by adjusting the shift link within a range of zero to 45° of marker point.

INSTALLATION

Installation Of Transfer To Transmission

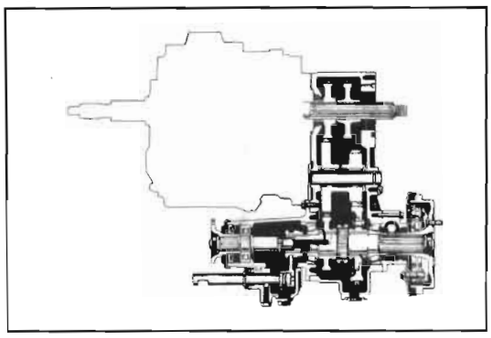
Install in the numbered order shown below.

Fig. 3-74



1 Transfer Assy. & Gears
2 Bearing
3 Spacer, Washer, & Nut
4 Case Cover No.2
5 Power Take-Off Assy. Or Cover
6 Back Up Light Switch
7 Lever & Rod

Fig. 3-75



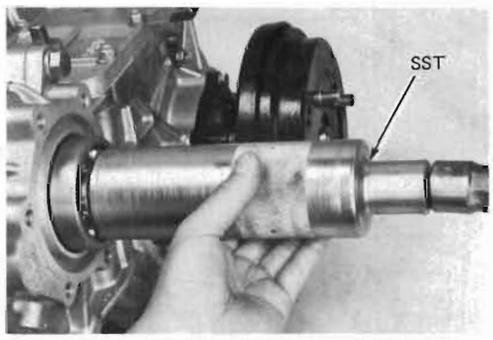
While supporting the gears with one hand, install them to the transmission together with the transfer assembly.

Tightening torque **5 – 8 kg-m (36 – 58 ft-lb)**

– Caution –

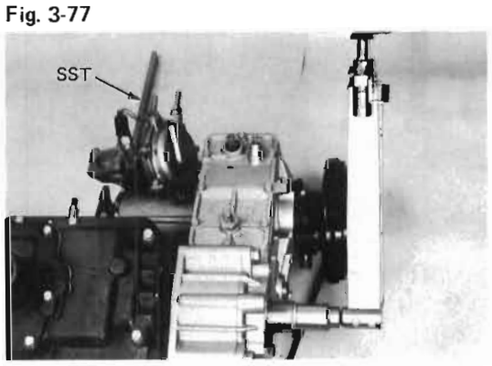
Make sure to position the gears in correct direction.

Fig. 3-76



Use SST [09316-60010].

Fig. 3-77

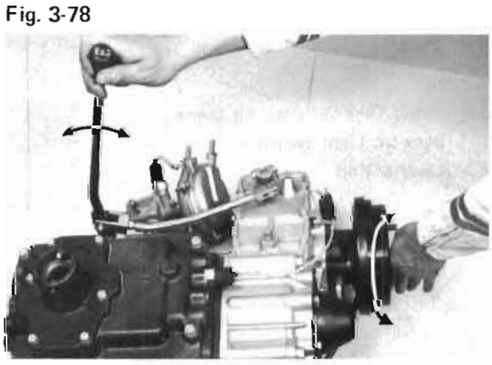


Using SST [09330-00020] to keep the transfer output shaft from turning, tighten the nut.

Tightening torque **11 – 14 kg-m (80 – 101 ft-lb)**

Stake the nut with a punch to prevent loosening.

Fig. 3-78

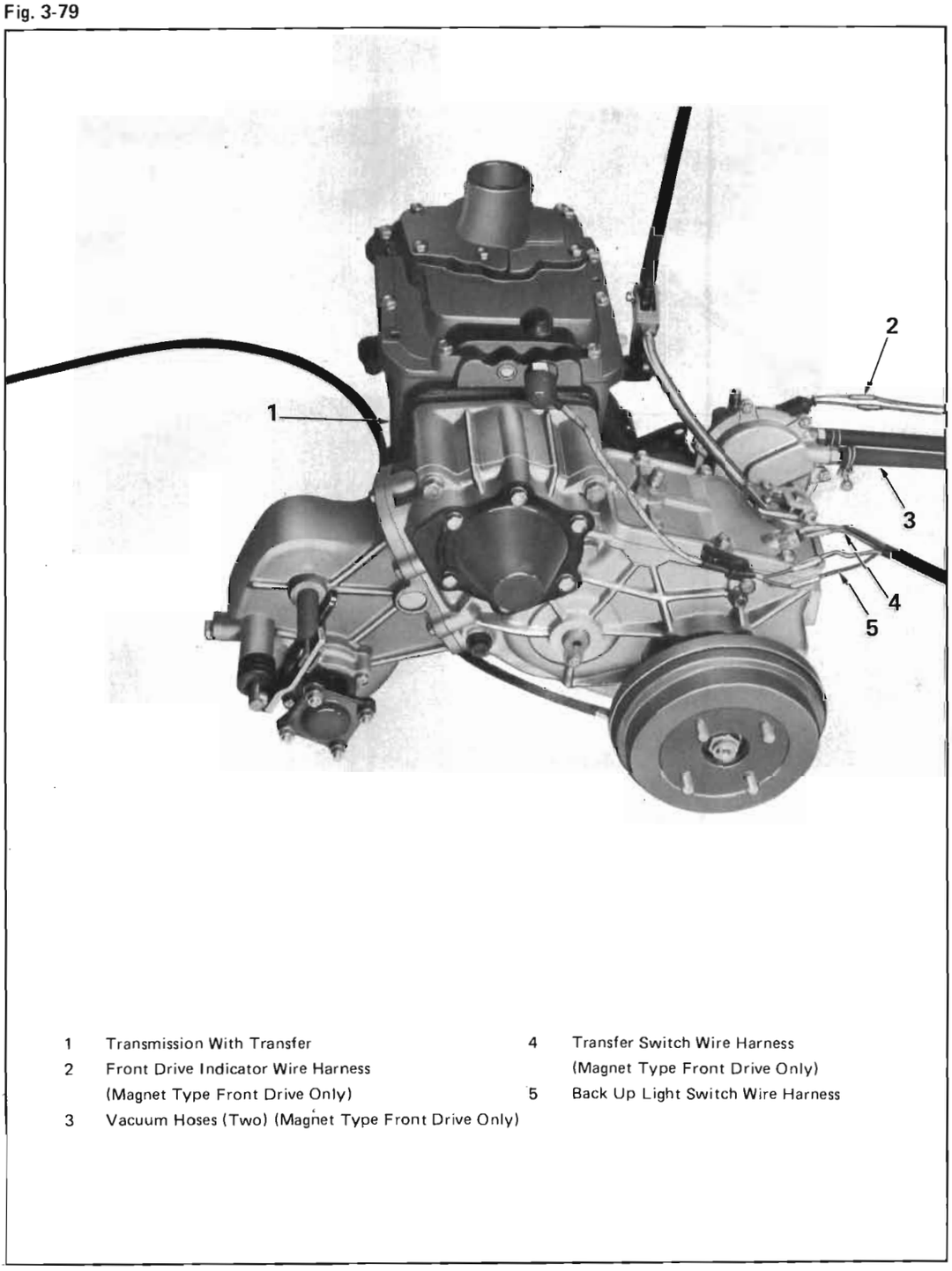


Check the shifting conditions of the transfer shift lever and the turning condition of the output shaft.

Installation Of Transmission To Vehicle

1. Make the installation in the numbered order shown in the figures.

Fig. 3-79



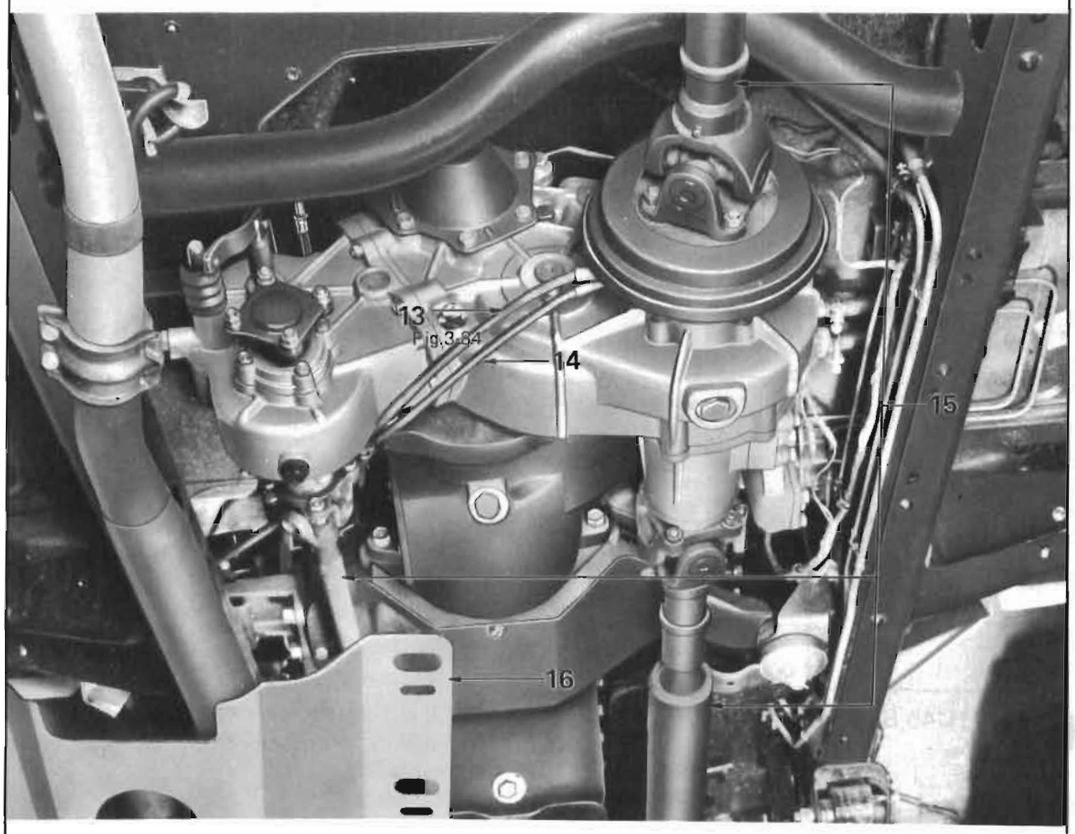
1 Transmission With Transfer
2 Front Drive Indicator Wire Harness (Magnet Type Front Drive Only)
3 Vacuum Hoses (Two) (Magnet Type Front Drive Only)
4 Transfer Switch Wire Harness (Magnet Type Front Drive Only)
5 Back Up Light Switch Wire Harness

Fig. 3-80



6	Transmission Cover	10	Fuel Tank Cover & Fuel Tank (Except FJ55)
7	Shift Lever & Boot	11	Rear Heater Pipe (Except FJ55)
8	Dust Proof & Boot	12	Front Seats & Seat Frames (Except FJ55)
9	Shift Lever Knobs		

Fig. 3-81

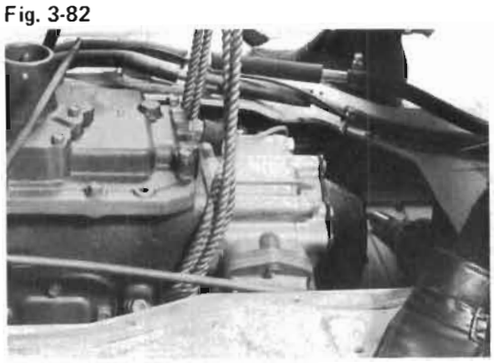


13	Parking Brake Cable	15	Propeller Shafts
14	Speedometer Cable	16	Undercover

2. Fill in coolant, and transmission and transfer oils.

Transmission oil capacity	**3.1 liter (3.3 US. qt., 2.7 Imp. qt.)**
Transfer oil capacity	**1.7 liter (1.8 US. qt., 1.5 Imp. qt.)**
Type	**SAE90, API GL-4**

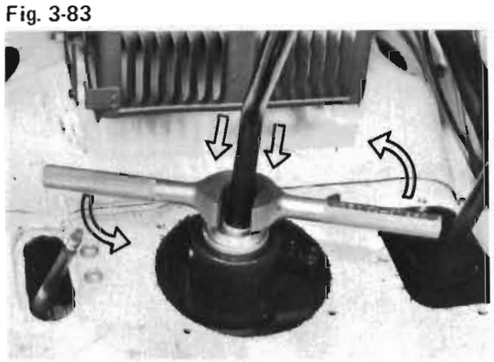
Fig. 3-82



Install the transmission and transfer while supporting them with jack and rope.
Install the four bolts.

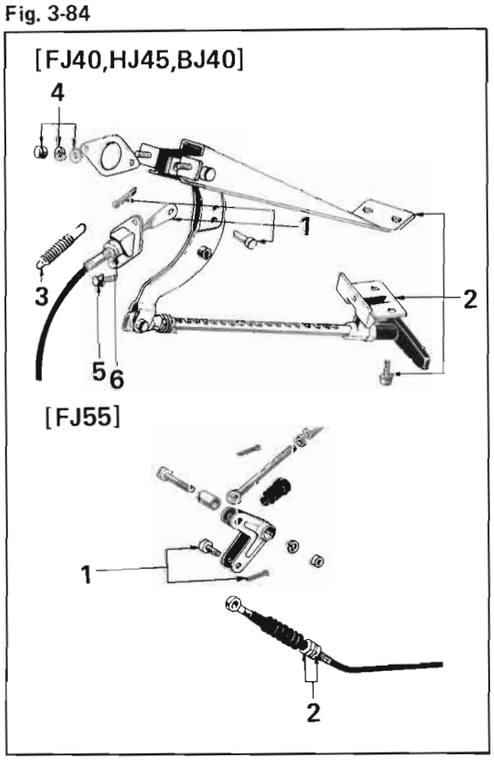
Tightening torque **5.0 – 8.0 kg-m (36 – 58 ft-lb)**

Fig. 3-83



Use SST [09305-60010]

Fig. 3-84



Install in the numbered order shown at left.
For parking brake adjustment, refer to section on brakes.

3-SPEED TRANSMISSION (J30)

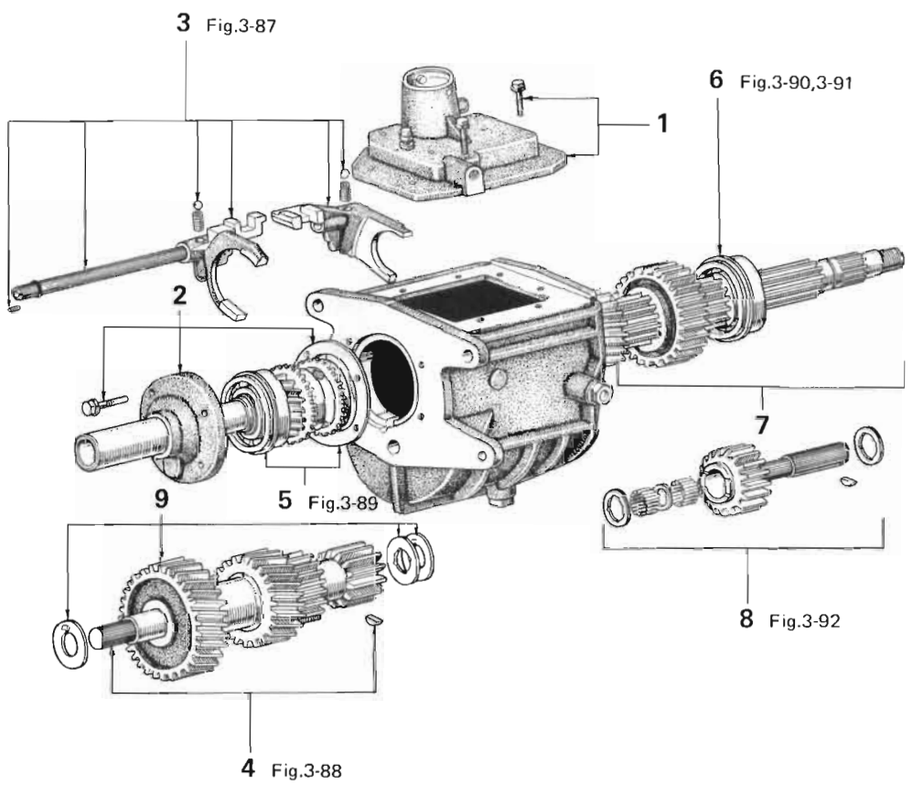
REMOVAL

Refer to the section on 4-Speed Transmission.

DISASSEMBLY

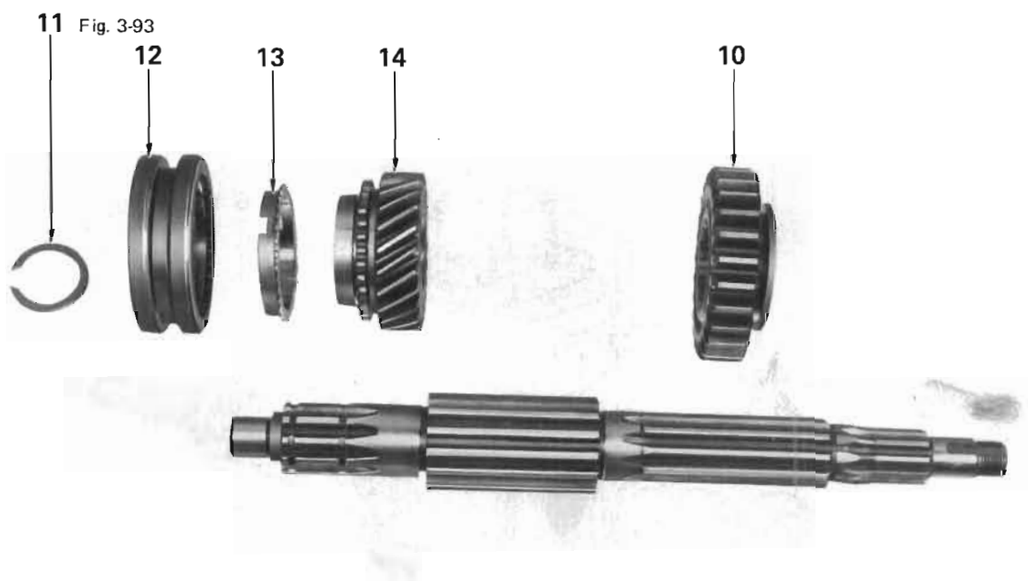
Disassemble in the numbered order shown in the following figures.

Fig. 3-85



1 Case Cover
2 Front Bearing Retainer
3 Shift Forks & Shaft
4 Countershaft & Key
5 Input Shaft Assy. & Synchronizer Ring
6 Bearing
7 Output Shaft Assy.
8 Reverse Idler Gear Assy.
9 Countergear Assy.

Fig. 3-86



10	First & Reverse Gear	13	Synchronizer Ring
11	Snap Ring	14	Second Gear
12	Clutch Hub & Sleeve		

Fig. 3-87

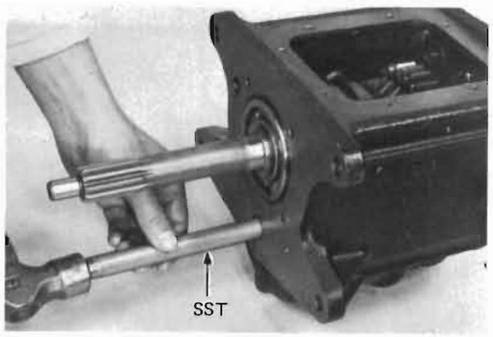


Drive out the shaft toward the front.

– Caution –

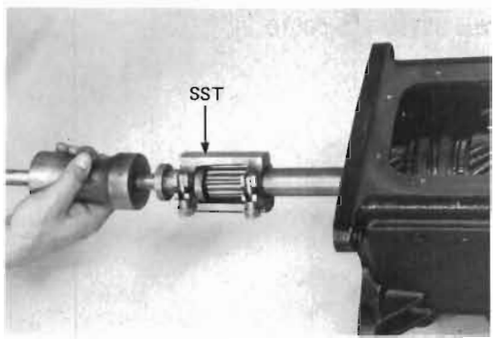
Cover the locking ball hole with finger so as to prevent the locking ball from jumping out.

Fig. 3-88



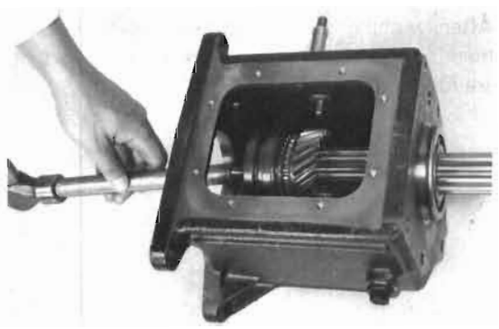
Using SST[09311-60010], drive out the shaft toward the rear.

Fig. 3-89



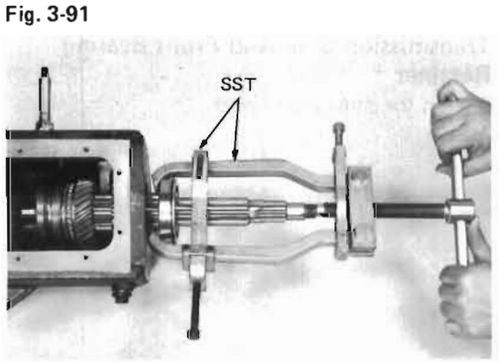
Use SST[09910-00013].

Fig. 3-90



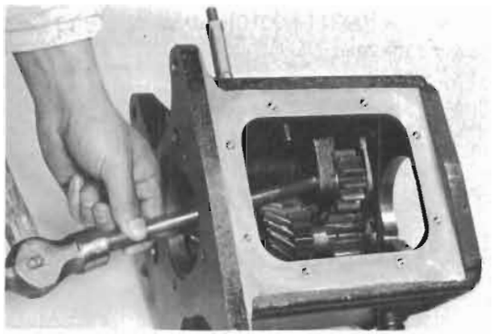
Using a brass bar, hammer the output shaft until the bearing is loosened from the case.

Fig. 3-91



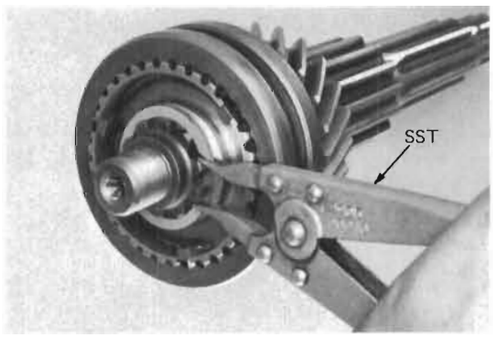
Use SST[09950-20010] and [09956-00010].

Fig. 3-92



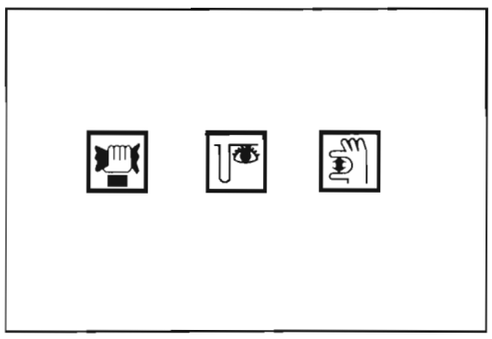
Using a drift pin, drive out the shaft.

Fig. 3-93



Use SST [09905-00010].

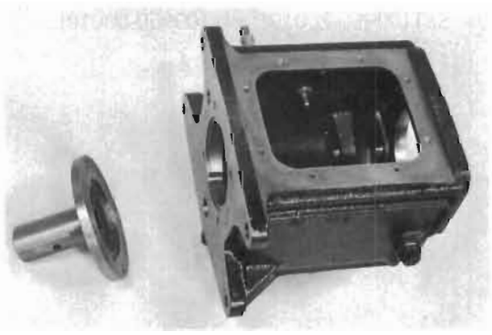
Fig. 3-94



INSPECTION

After washing all disassembled parts, inspect them as instructed below. Replace all parts that are found defective.

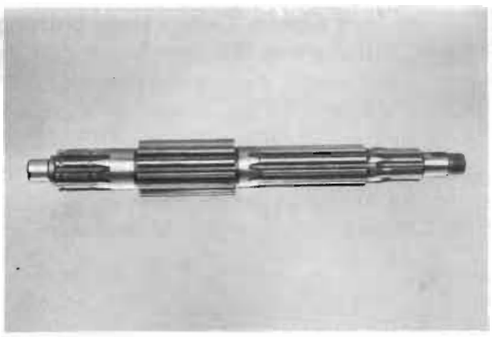
Fig. 3-95



Transmission Case And Front Bearing Retainer

Inspect for damage and wear.

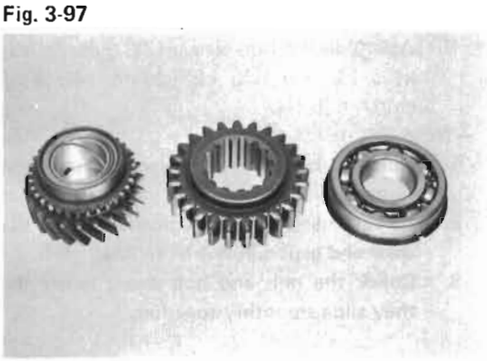
Fig. 3-96



Output Shaft

Inspect the shaft for damage and wear at the surfaces where the gears and bearing are installed.

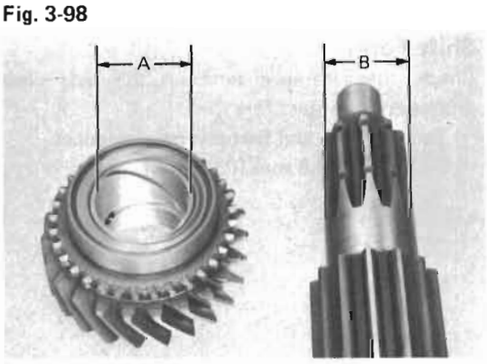
Fig. 3-97



First Gear, Second Gear, and Bearing

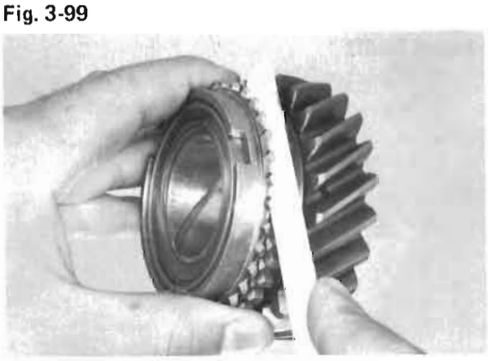
1. Inspect the gears for wear and damage at the teeth, thrust faces, inside diameter surfaces, and coned parts.
2. Inspect the output shaft rear bearing for damage and wear.

Fig. 3-98



3. **Second gear bushing oil clearance (A – B)**
   Limit 0.09 mm (0.0035 in.)

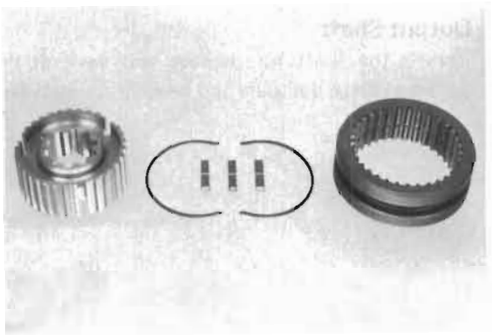
Fig. 3-99



Synchronizer Rings

1. Fit the synchronizer ring on the gear and measure the clearance "A".
   Second and third gear synchronizer ring clearance
   Limit 0.8 mm (0.032 in.)

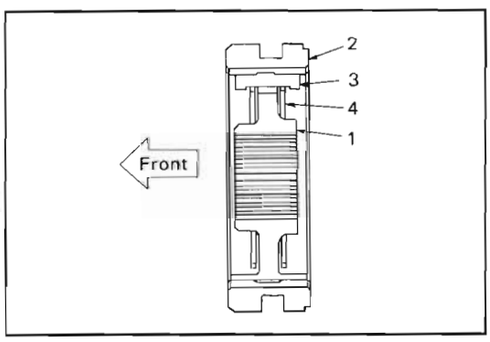
Fig. 3-100



Clutch Hub Sleeve, Clutch Hub, Shifting Keys, Shifting Key Springs

1. Disassemble the clutch hub and sleeve.
2. Inspect the splines of hub and hub sleeve for damage and wear.
3. Inspect the humped part at center of key for damage and wear.
4. Inspect the key springs for weakening and damage.

Fig. 3-101



5. Assemble the hub sleeve (2), three shifting keys (3) and two key springs (4) to the clutch hub (1).

– Note –

1. **Hub and hub sleeve are parts having directionality.**
2. **Install the key springs positioned so that their end gaps will not be in line.**
3. **Check the hub and hub sleeve to see that they slide smoothly together.**

Fig. 3-102

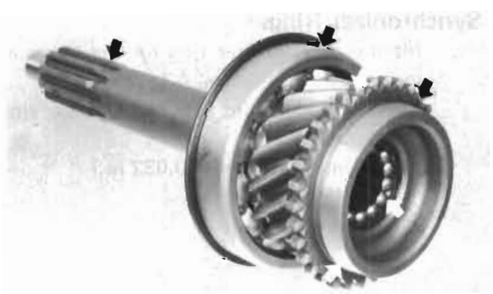


Shift Forks

Check the clearance between the hub sleeve groove and the shift fork.

Second-third and first-reverse clearances
Limit 0.8 mm (0.032 in.)

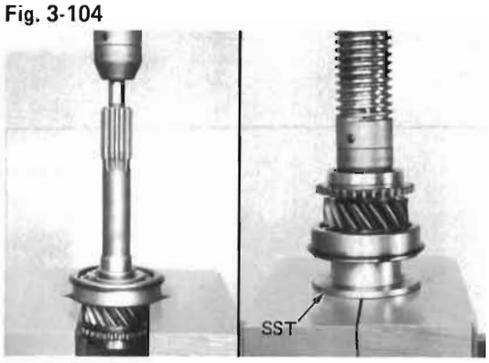
Fig. 3-103



Input Shaft

1. Inspect the gear teeth, splines, coned surfaces, and bearings for wear and damage.

Fig. 3-104



2. Input shaft bearing replacement.
   a. Remove the snap ring, using SST [09905 -00010].
   b. Remove the bearing, using a press.
   c. Install the new bearing, using SST [09316 -60010] and a press.

Fig. 3-105

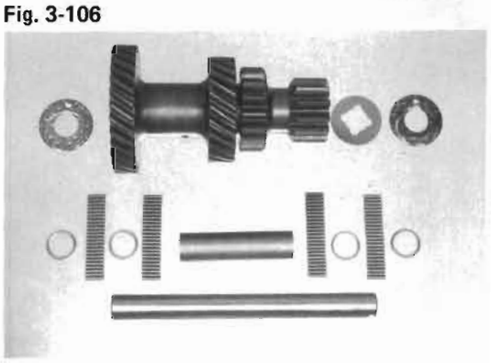


d. Select a snap ring of the thickness that will allow minimum axial play, and install it on the shaft.

Snap Ring Sizes

Part No.	Thickness mm (in.)
90520-33010	2.43–2.57 (0.0957–0.1012)
90520-33011	2.30–2.42 (0.0906–0.0953)

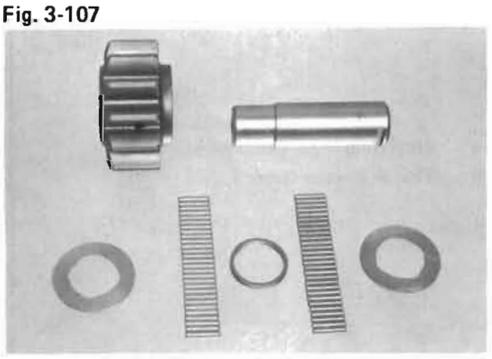
Fig. 3-106



Countergear And Countershaft

1. Inspect the countergear teeth for damage and wear.
2. Inspect the bearings and countershaft for damage and wear.
3. Inspect the thrust washers for damage and wear.

Fig. 3-107



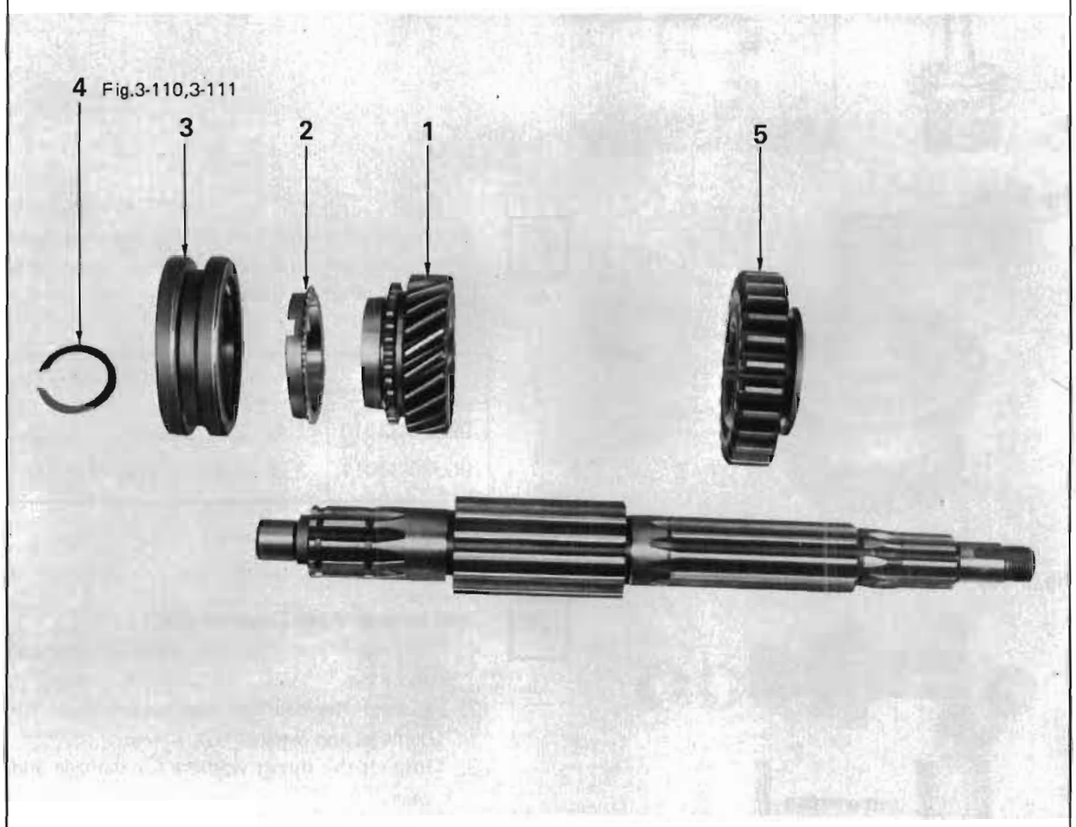
Reverse Idler Gear, Bearings, And Shaft

Inspect the gear, bearings, and shaft for wear and damage.

ASSEMBLY

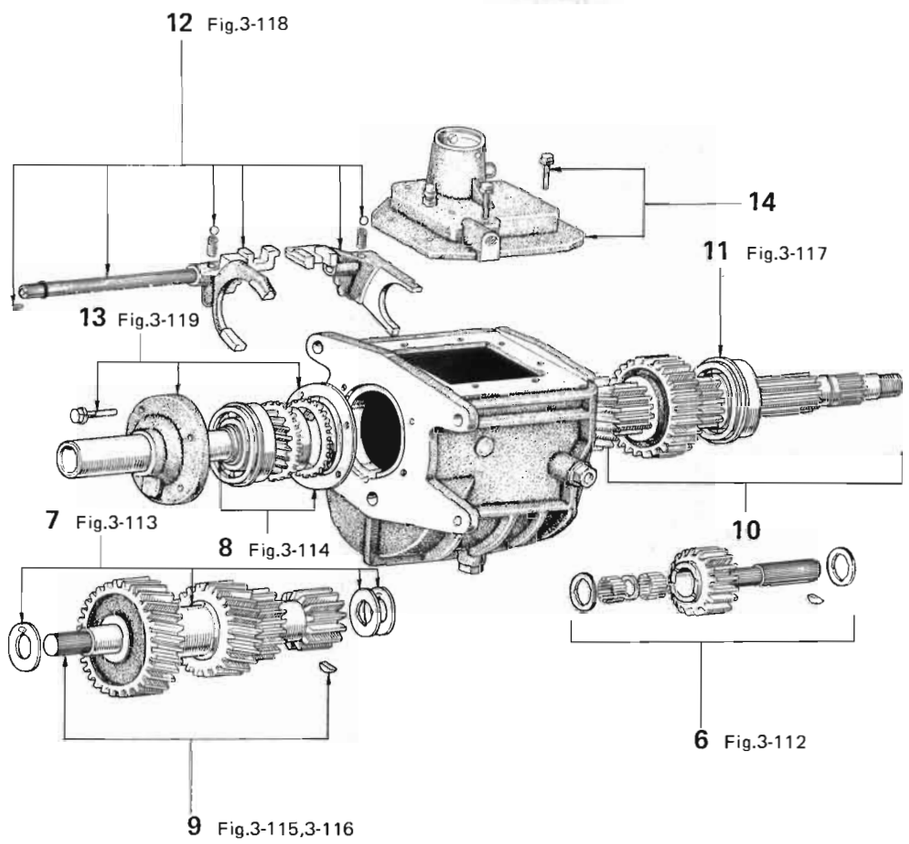
Assemble in the numbered order shown in the following figures.

Fig. 3-108



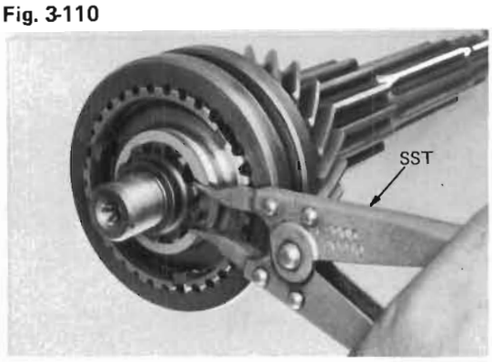
1 Second Gear
2 Synchronizer Ring
3 Clutch Hub & Sleeve
4 Snap Ring
5 First & Reverse Gears

Fig. 3-109



6	Reverse Idler Gear Assy.	11	Bearing
7	Countergear Assy.	12	Shift Fork & Shaft
8	Input Shaft Assy. & Synchronizer Ring	13	Front Bearing Retainer
9	Countershaft & Key	14	Case Cover
10	Output Shaft Assy.		

Fig. 3-110



Use SST[09905-00010].

Fig. 3-111



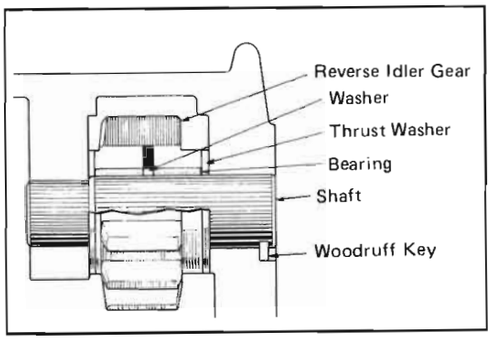
Measure the second gear thrust clearance.

Limit **0.4 mm (0.016 in.)**
Standard **0.08 – 0.23 mm (0.0032 – 0.0091 in.)**

Snap Ring Thickness

Part No.	mm (in.)
90520-33132	2.35–2.40 (0.0925–0.0945)
90520-33172	2.25–2.30 (0.0886–0.0906)

Fig. 3-112

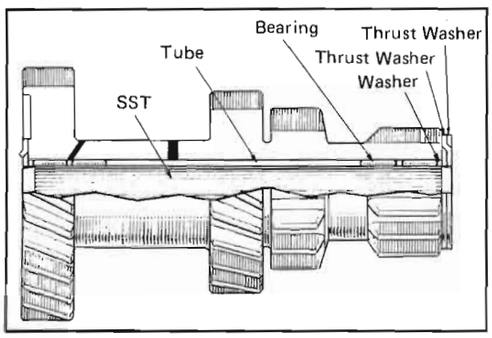


Install as illustrated at left.

– Note –

Coat multipurpose grease on the bearing, washer, and spacer before installing.

Fig. 3-113

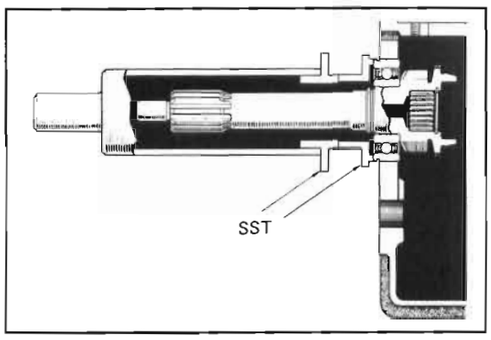


Assemble the countergear assembly as illustrated at left, and install in the case, using SST[09311-60010].

– Note –

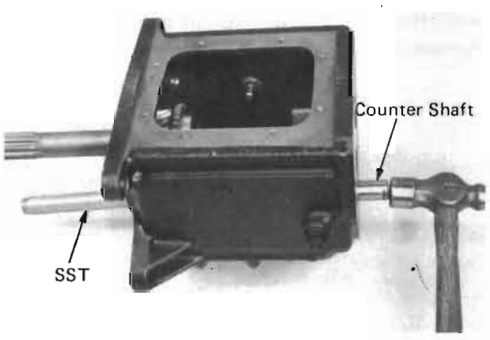
Coat multipurpose grease on the bearing, washer, and spacer before installing.

Fig. 3-114



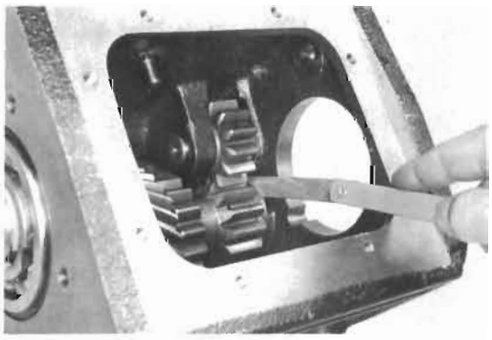
Use SST [09316-60010].

Fig. 3-115



Drive in the countershaft and key.

Fig. 3-116



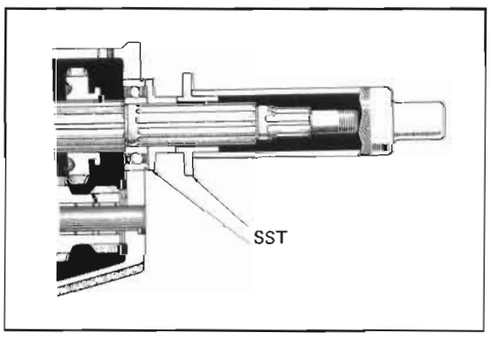
Measure the countergear thrust clearance.

Limit **0.4 mm (0.016 in.)**
Standard **0.05 – 0.20 mm (0.0020 – 0.0079 in.)**

Thrust Washer Thickness

Part No.	mm (in.)
33441-61010	1.45–1.50 (0.0571–0.0591)
33442-61010	1.50–1.55 (0.0591–0.0610)
33443-61010	1.55–1.60 (0.0610–0.0630)

Fig. 3-117

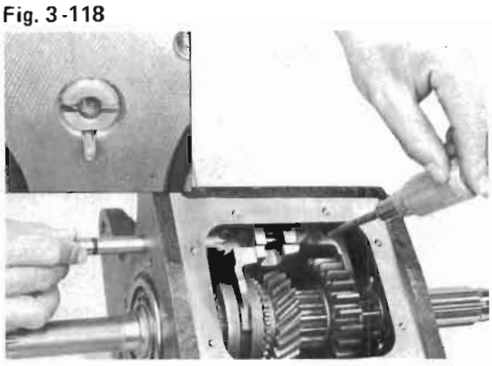


Using SST [09316-60010], drive in the bearing.

– Note –

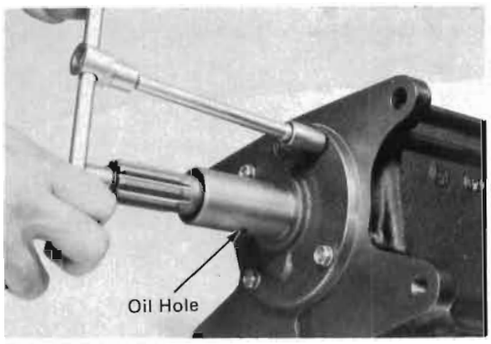
Position the hub sleeve at third speed, and insert the output shaft assembly into the case.

Fig. 3-118



While holding down the locking ball, drive in the shaft, and then lock the shaft with straight pin.

Fig. 3-119

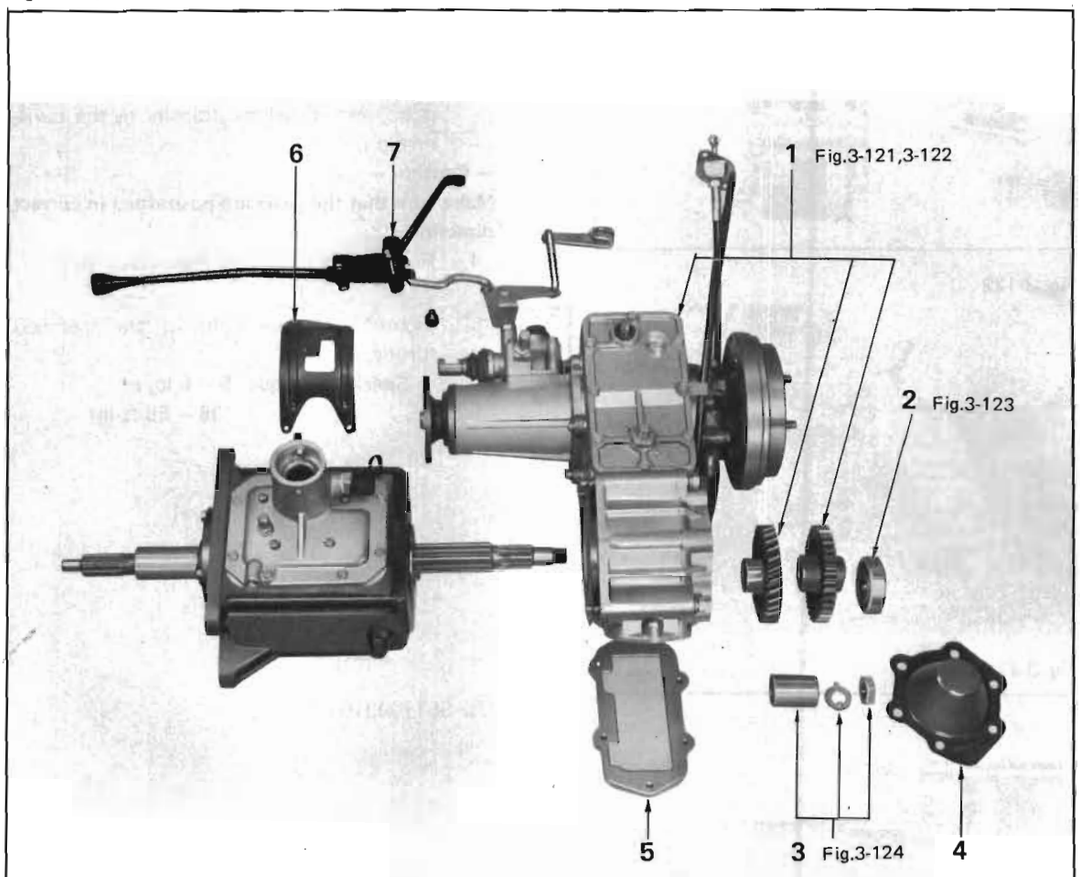


Install the retainer with its oil hole positioned downward.

INSTALLATION

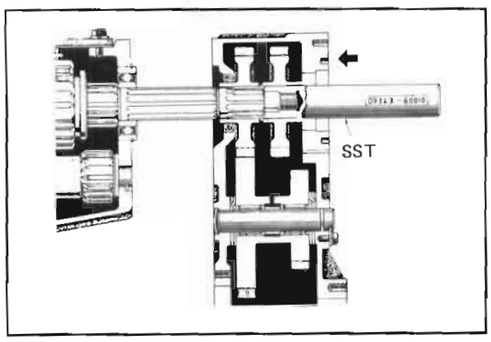
Install the transfer to the transmission in the numbered order shown below.

Fig. 3-120



1 Transfer Assy, & Gears
2 Bearing
3 Spacer, Washer, & Nut
4 Case Cover No.2
5 Power Take-Off Assy. Or Cover
6 Shaft Lever Guide (For Direct Drive Only)
7 Levers & Rods

Fig. 3-121



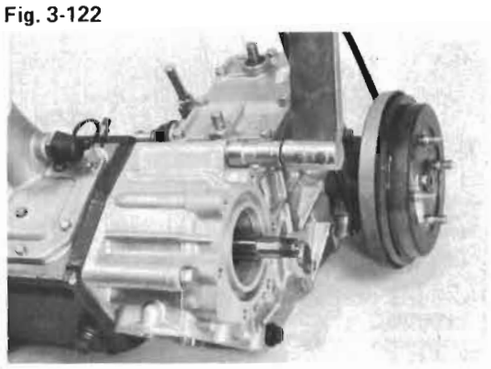
1. Mount SST[09323-60010] to the output shaft.
2. While supporting the gears with one hand, install the transfer assembly together with the gears to the SST.
3. Align the splines of the output shaft and gears, and install the transfer to the transmission.

– Caution –

Make sure that the gears are positioned in correct direction.

4. Remove the SST from the output shaft.

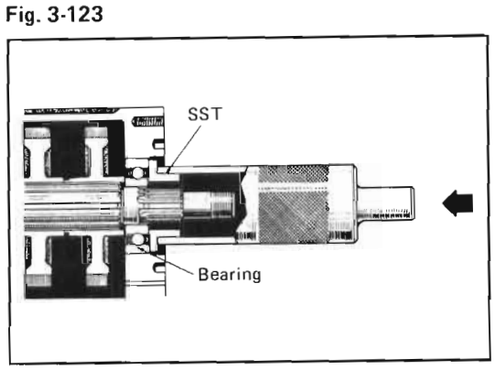
Fig. 3-122



5. Tighten the five bolts at the specified torque.

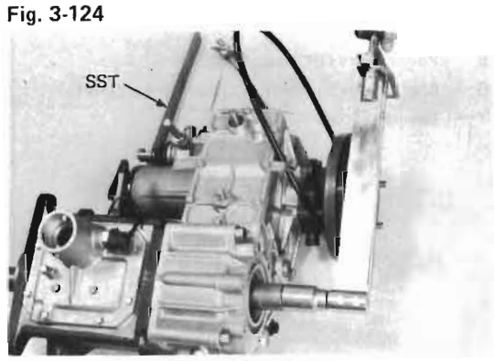
Specified torque 5 – 8 kg-m (36 – 58 ft-lb)

Fig. 3-123



Use SST[09316-60010].

Fig. 3-124



Using SST[09330-00020] to keep the transfer output shaft from turning, tighten the nut.

Specified torque 14 – 15 kg-m (101 – 109 ft-lb)

Secure the nut with lock washer.

– Note –

Perform the work at front drive condition.

Install The Transmission With Transfer To The Vehicle.

Refer to the section on 4-Speed Transmission.

Fill in the coolant, and the transmission and transfer oils.

Transmission oil capacity **1.7 liter (1.8 US.qt.,1.5 Imp.qt.)**

Transfer oil capacity **1.7 liter (1.8 US.qt.,1.5 Imp.qt.)**

Type SAE 90,API GL-4

TRANSFER

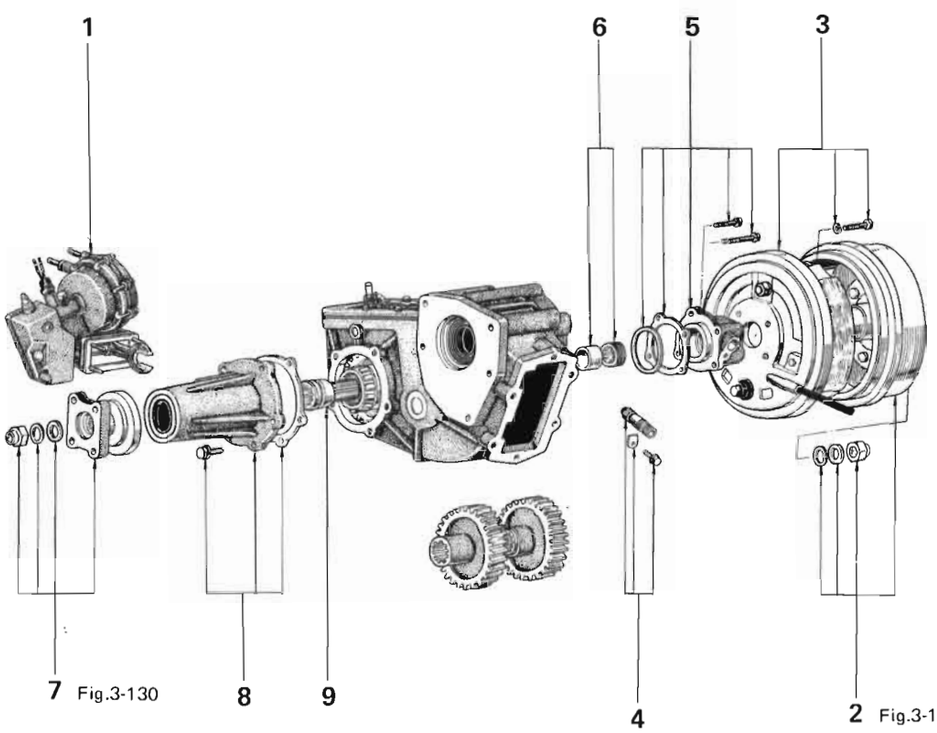
REMOVAL

Refer to the section on 4-Speed Transmission.

DISASSEMBLY

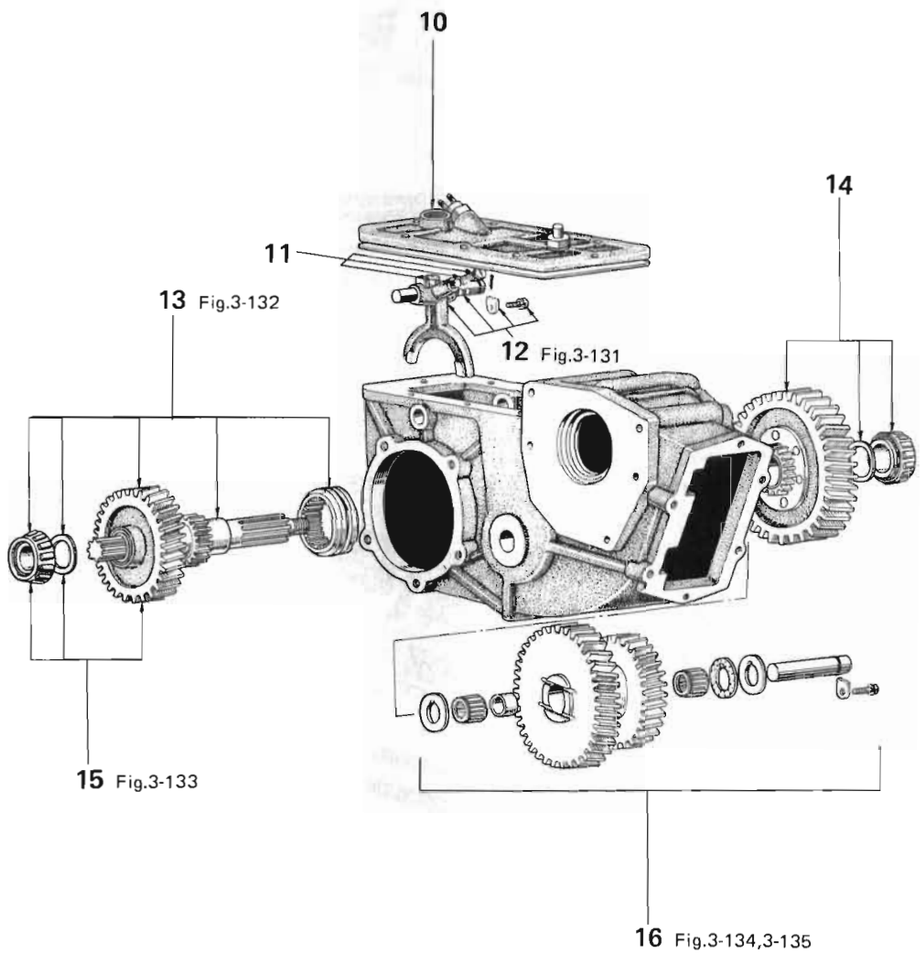
Disassemble in the order numbered in the following illustrations.

Fig. 3-126



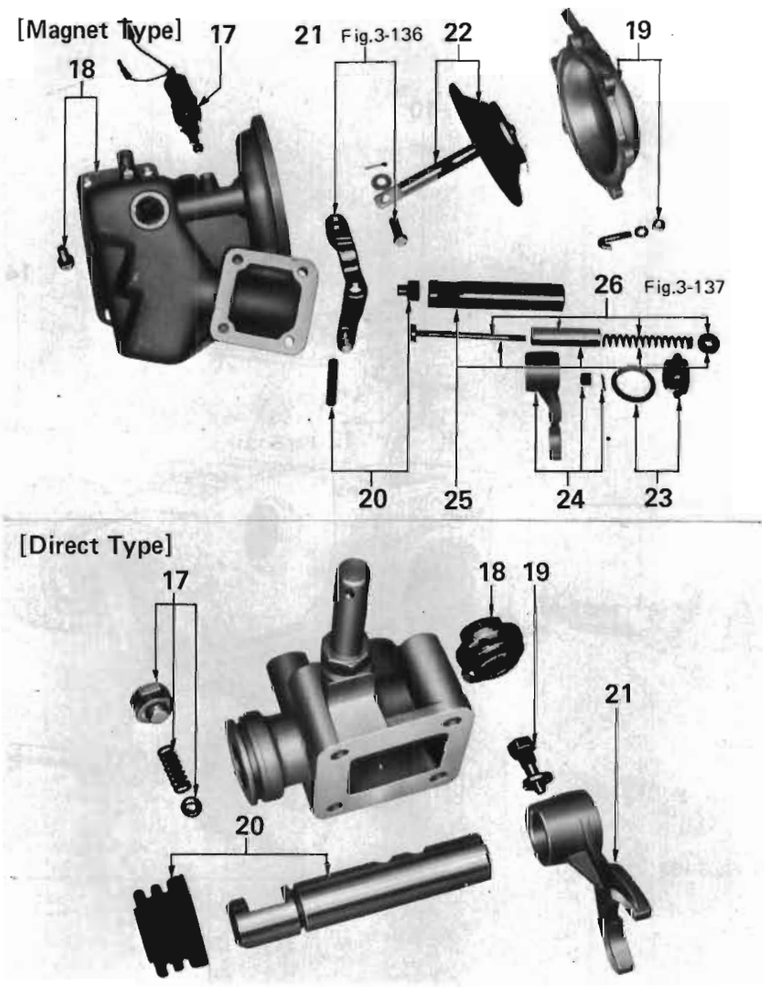
1	Diaphragm Cylinder Or Shift Fork Guide	6	Drive Gear & Spacer
2	Brake Drum, Plate, Shim, Plate, & Nut	7	Companion Flange
3	Backing Plate Assy.	8	Extension Housing
4	Driven Gear	9	Clutch Sleeve
5	Bearing Rear Retainer & Shim		

Fig. 3-127



10	Case Cover & Shift Inner Lever	14	Low Speed Gear, Washer, & Bearing
11	Plug, Spring, & Ball	15	High Speed Gear, Washer, & Bearing
12	Shift Fork & Shaft	16	Idler Gear Assy. & Shaft
13	Clutch Sleeve, Gear, & Output Shaft		

Fig. 3-128



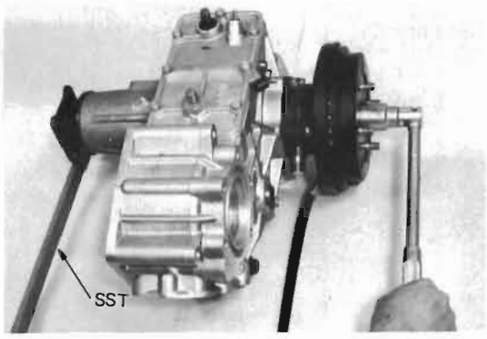
[Magnet Type]

17 Switch & Ball
18 Cover
19 Cover
20 Pins
21 Lever & Pin
22 Diaphragm & Rod
23 Plug
24 Fork
25 Shift Shaft Assy.
26 Stopper, Spring, Spacer, & Bolt

[Direct Type]

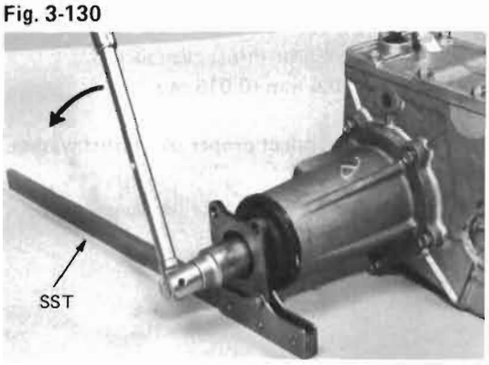
17 Plug, Spring, & Ball
18 Plug
19 Bolt
20 Shaft & Boot
21 Fork

Fig. 3-129



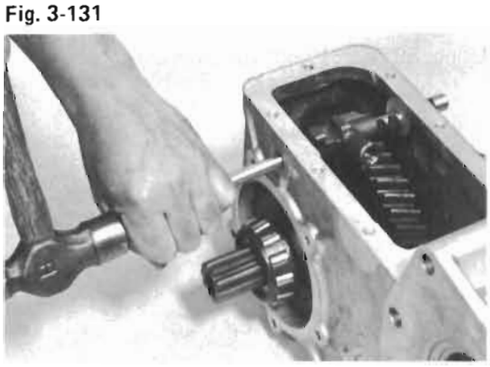
Loosen the staked parts of the nut.
Using SST[09330-00020] to keep the companion flange from turning, unscrew the nut.
– Note –
Have the system in front drive at this time.

Fig. 3-130



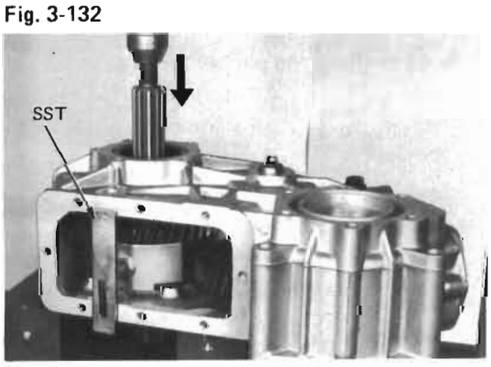
Loosen the staked parts of the nut.
Using SST[09330-00020] to keep the companion flange from turning, unscrew the nut.

Fig. 3-131



Drive out the shaft toward the rear.

Fig. 3-132



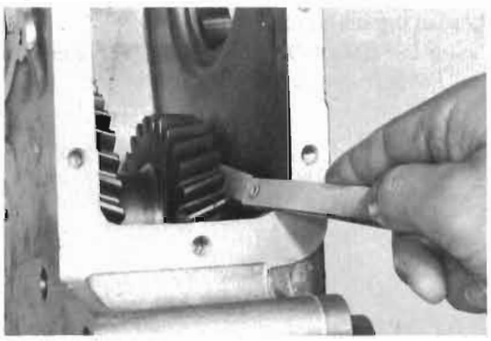
Set the SST[09318-60011] between the low speed gear and case front side.
Force out the output shaft toward the front with a press.

Fig. 3-133



Use a press.

Fig. 3-134



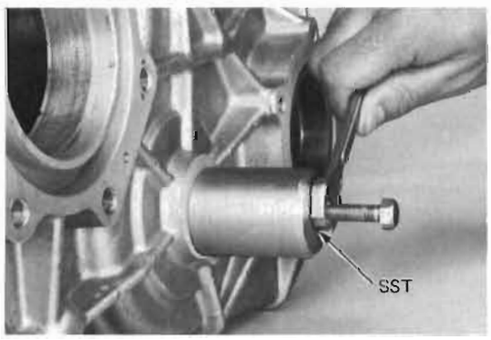
Measure the idler gear thrust clearance.

Limit 0.4 mm (0.016 in.)

– Note –

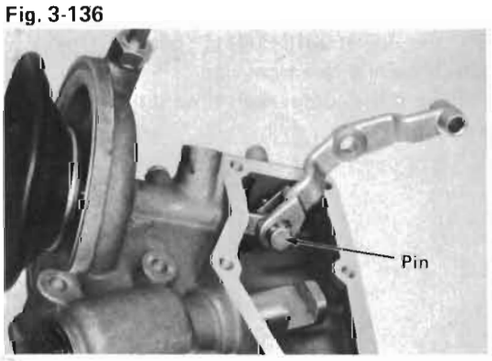
If over the limit, select proper size thrust washer. (Refer to Fig.3-156)

Fig. 3-135



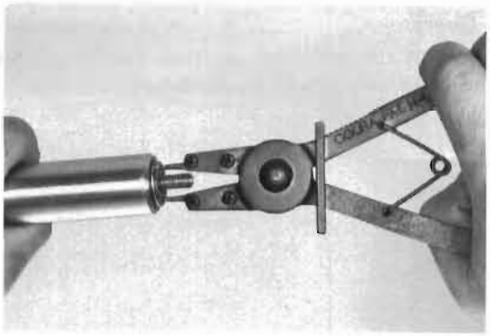
Using SST[09319-60010], remove the shaft.

Fig. 3-136



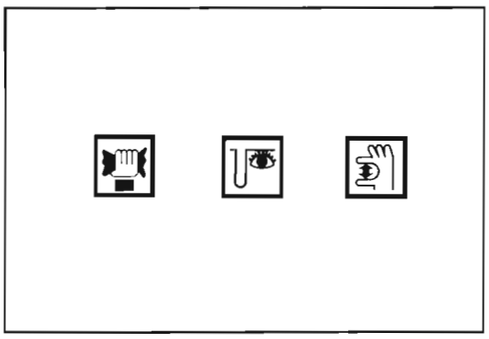
Raise up the lever and remove the pin.

Fig. 3-137



Remove the stopper, and take out the spring, spacer, and bolt.

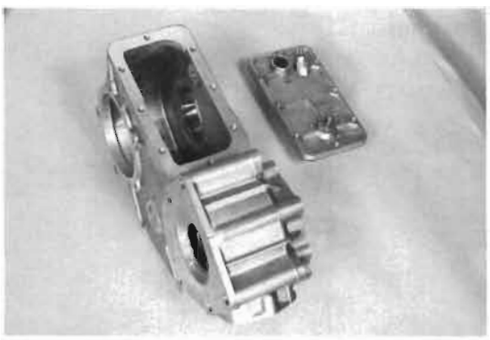
Fig. 3-138



INSPECTION

Wash the disassembled parts and inspect them as instructed below. Replace all parts found defective.

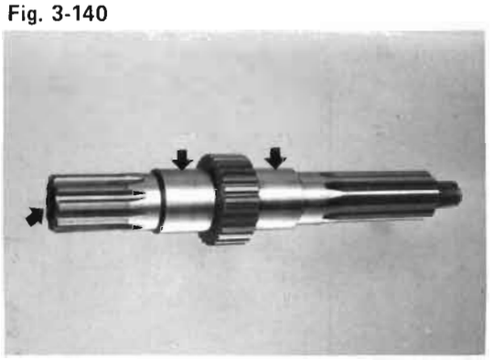
Fig. 3-139



Transfer Case And Cover

Inspect the case and cover for cracks and damage. Inspect the oil seals and bushings for wear and damage.

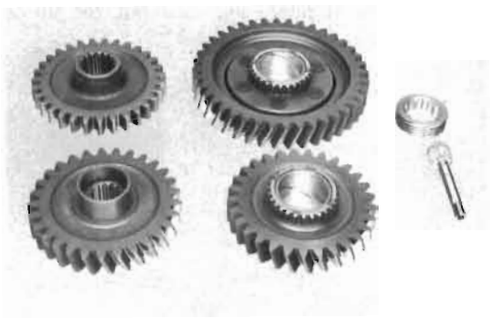
Fig. 3-140



Output Shaft

Inspect the parts indicated by arrows for wear and damage.

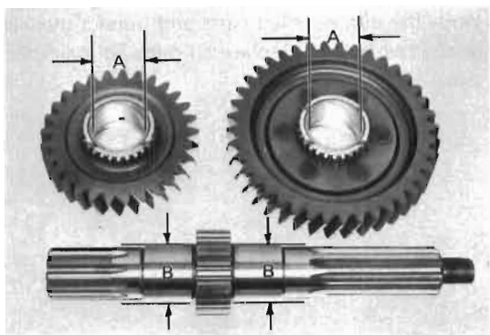
Fig. 3-141



Gears

Inspect the teeth, thrust faces, inside diameter surfaces, and coned parts for damage and wear.

Fig. 3-142



Oil Clearance (A – B)

High and low speed output gears

Limit	**0.09 mm (0.004 in.)**
Standard	**0.035 – 0.081 mm (0.00138 – 0.00319 in.)**

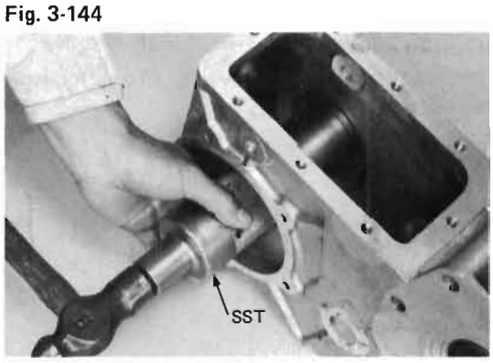
Fig. 3-143



Bearings

Inspect for damage and wear.

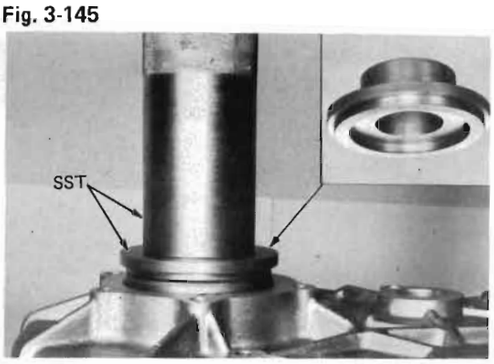
Fig. 3-144



Bearing Race Replacement

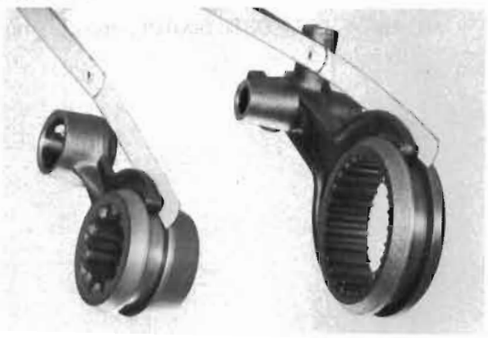
1. Using SST[09316-60010], drive out the outer race.

Fig. 3-145



2. Using SST [09316-60010], drive in the new outer race.

Fig. 3-146

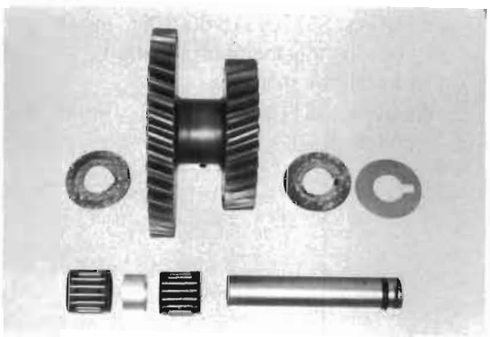


Sleeves And Forks

Check the clearance between the sleeves and the shift forks.

High-low clearance
Front drive clearance
Limit 1.0 mm (0.04 in.)

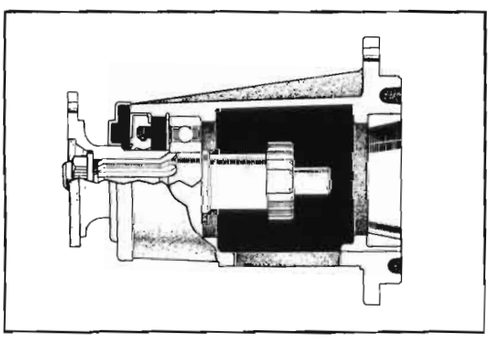
Fig. 3-147



Idler Gear Assembly

Inspect for wear and damage.

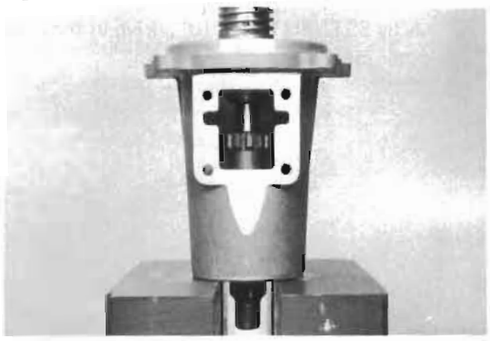
Fig. 3-148



Extension Housing

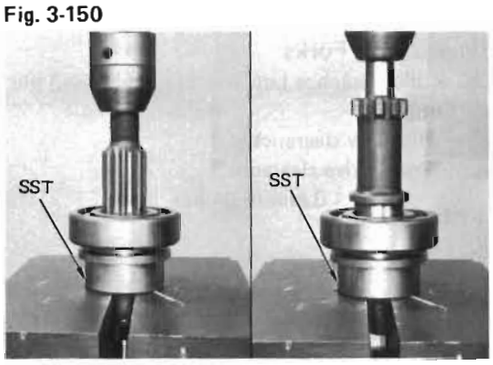
1. Inspect the shaft, bearing, and oil seal for wear and damage.

Fig. 3-149



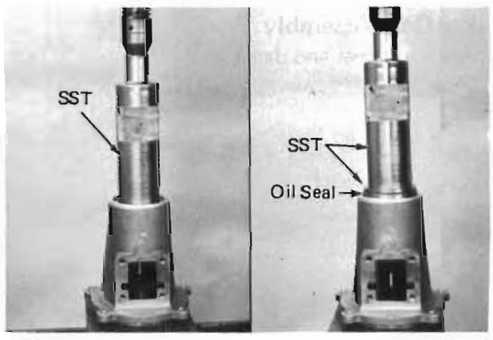
2. Bearing replacement
   a. Remove the oil seal.
   b. Remove the snap ring.
   c. Using a press, remove the bearing together with the shaft.

Fig. 3-150



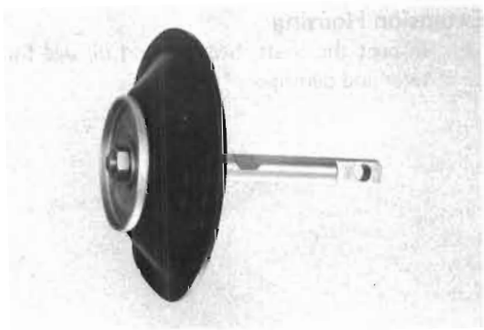
   d. Using SST[09316-60010], replace the bearing.

Fig. 3-151



   e. Using SST[09316-60010], install the bearing together with the shaft.
   f. Install the snap ring.
   g. Using SST[09316-60010], install the oil seal.

Fig. 3-152

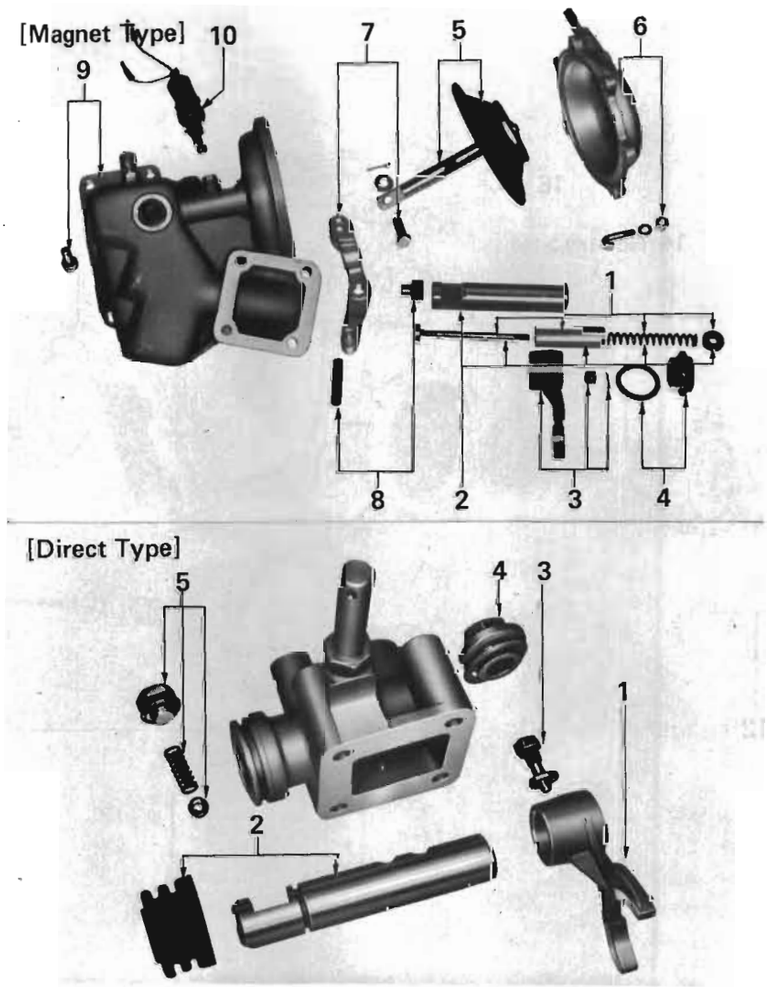


Diaphragm (Magnet type only)
Inspect the diaphragm for cracks and damage.

ASSEMBLY

Assemble the parts in the order numbered in the following illustrations.

Fig. 3-153



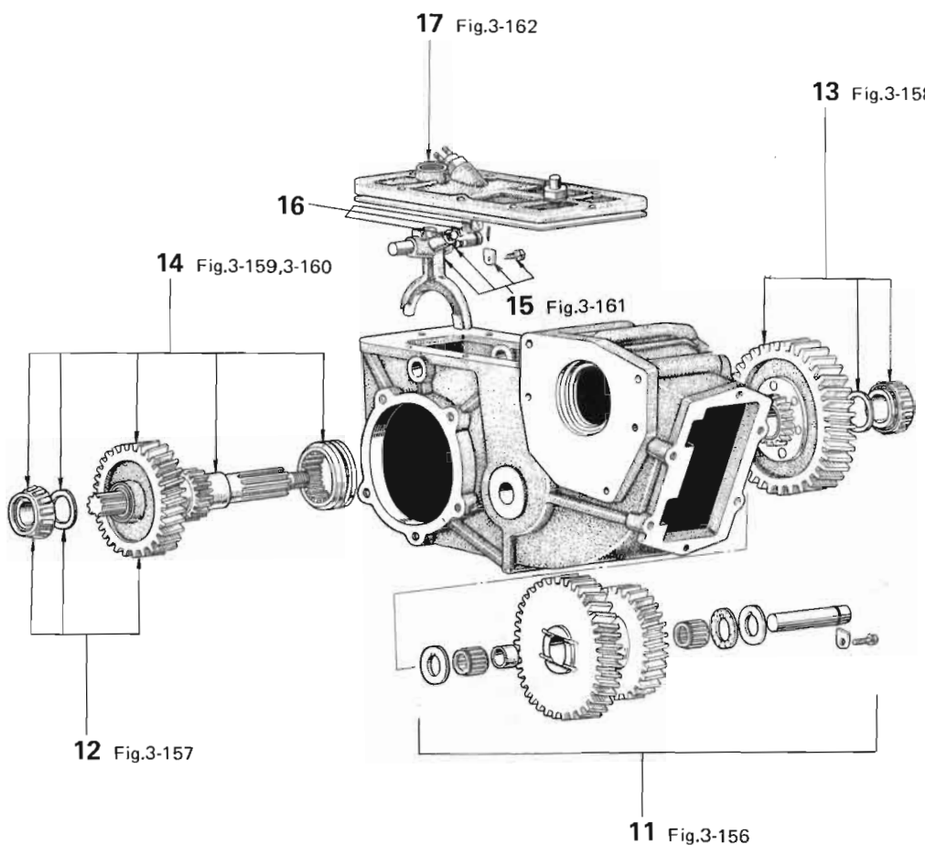
[Magnet Type]

1 Stopper, Spring, Spacer, & Bolt
2 Shift Shaft Assy.
3 Fork
4 Plug
5 Diaphragm & Rod
6 Cover
7 Lever & Pin
8 Pins
9 Cover
10 Switch & Ball

[Direct Drive Type]

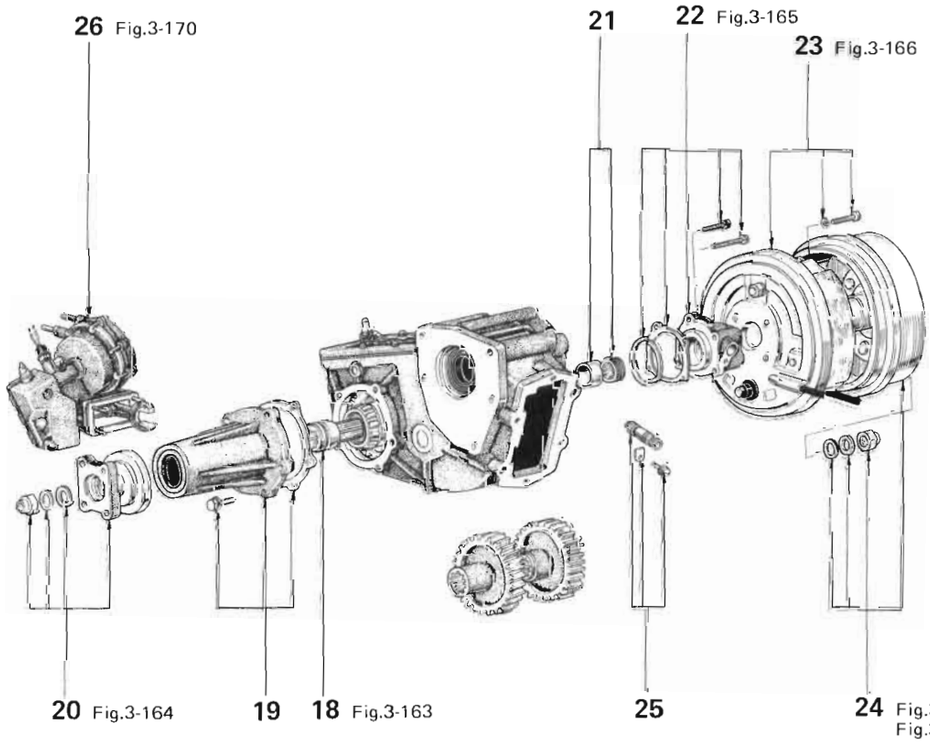
1 Fork
2 Shaft & Boot
3 Bolt
4 Plug
5 Ball, Spring, & Plug
6 _____
7 _____
8 _____
9 _____
10 _____

Fig. 3-154



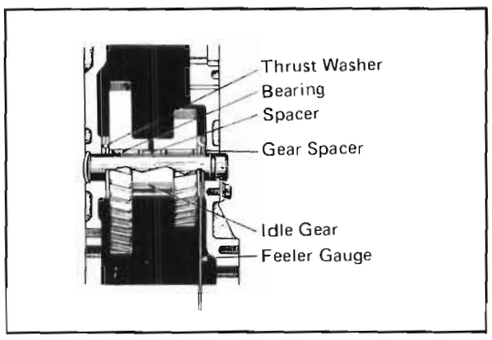
11	Idler Gear Assy. & Shaft	15	Shift Fork & Shaft
12	High Speed Gear, Washer, & Bearing	16	Ball, Spring, & Plug
13	Low Speed Gear, Washer, & Bearing	17	Case Cover & Shift Inner Lever
14	Clutch Sleeve, Gear, & Output Shaft		

Fig. 3-155



18	Clutch Sleeve	23	Backing Plate Assy.
19	Extension Housing Assy.	24	Brake Drum, Plate, & Nut
20	Companion Flange	25	Drive Gear
21	Spacer & Drive Gear	26	Diaphragm Cylinder Or Shift Fork Guide
22	Bearing Retainer & Shim		

Fig. 3-156



Install the idler gear assembly and shaft as illustrated.

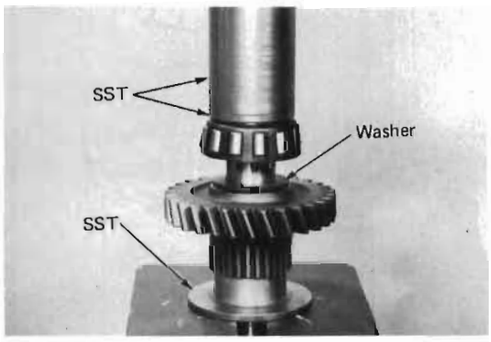
Thrust clearance

Standard 0.1 – 0.3 mm (0.004 – 0.012 in.)

Spacer Thickness

Part No.	Thickness mm (in.)
36261-60010	1.2–1.3 (0.047–0.051)
36262-60010	1.3–1.4 (0.051–0.055)
36263-60010	1.4–1.5 (0.055–0.059)

Fig. 3-157

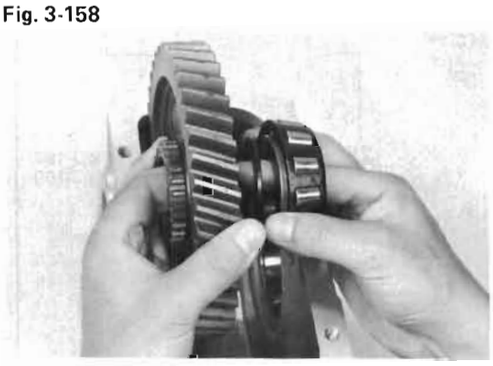


Use SST[09316-60010].

– Note –

Make sure that the gear is positioned in correct direction.

Fig. 3-158

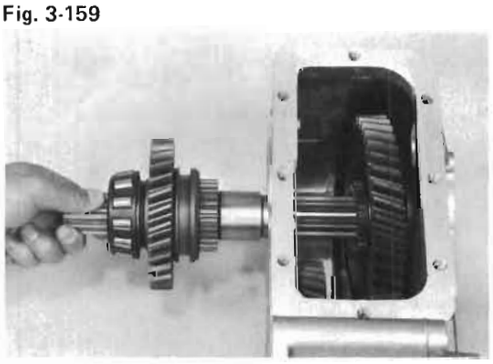


Place the low speed gear, washer, and spacer inside the case.

– Note –

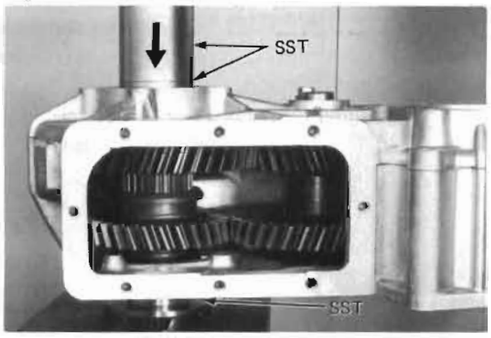
Make sure that the gear is positioned in correct direction.

Fig. 3-159



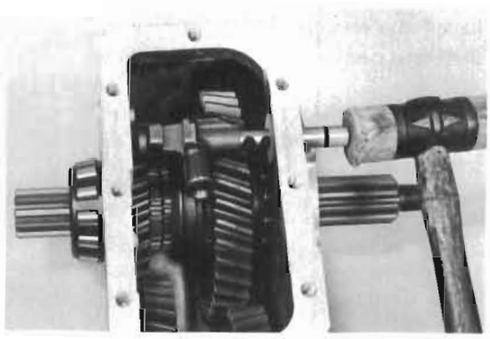
Install the clutch sleeve to the output shaft.
Install the output shaft assembly to the case after inserting it through the low speed gear, washer, and bearing.

Fig. 3-160



Using SST[09316-60010], fit the bearing to the output shaft.

Fig. 3-161



Drive in the shaft from the rear side of case.

– Note –

Position the fork in the direction shown in the figure.

Fig. 3-162



Position the lever tip to align with the shift fork groove, and install the cover.

Fig. 3-163

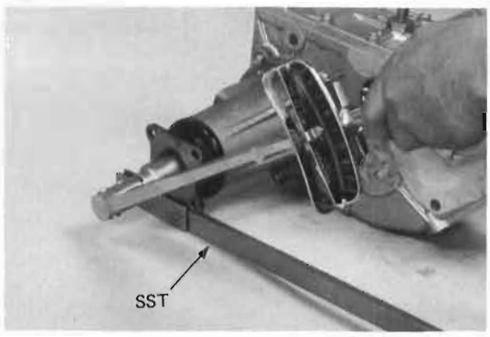


Install the clutch sleeve to the output shaft.

– Note –

Make sure that the clutch sleeve is positioned in the correct direction.

Fig. 3-164



Using SST[09330-00020] to keep the companion flange from turning, screw on the nut. Stake the nut after installation.

Tightening torque **11 – 14 kg-m (80 – 101 ft-lb)**

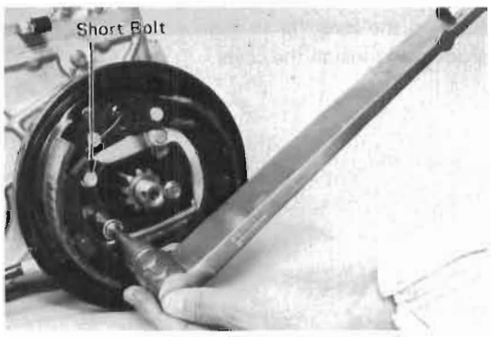
Fig. 3-165



Install the retainer using the same thickness of shim as at disassembly.

SEAL 180 x 110 x 005

Fig. 3-166



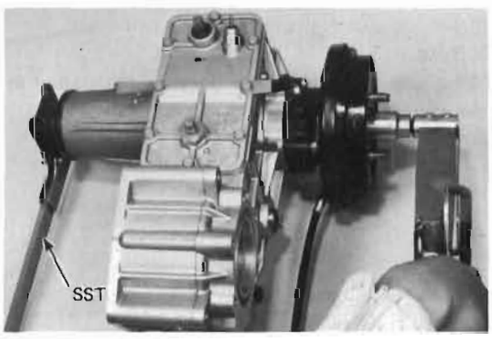
Install the backing plate assembly.

Tightening torque **2.0 – 3.9 kg-m (14 – 22 ft-lb)**

– Note –

Install the short bolt at upper left.

Fig. 3-167

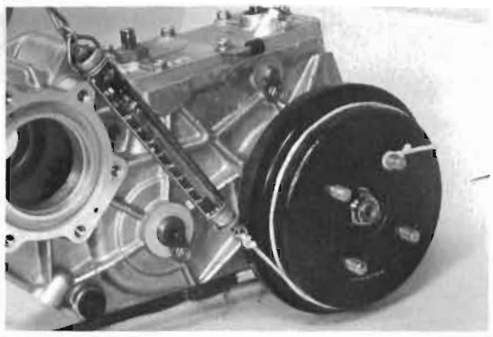


Set the system to front drive.

Using SST[09330-00020] to keep the companion flange from turning, screw on the nut.

Tightening torque **11 – 14 kg-m (80 – 101 ft-lb)**

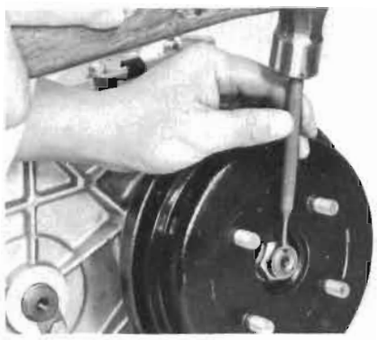
Fig. 3-168



Disengage the front drive.
Using spring scale, measure the output shaft bearing preload.

Standard preloads
Bearing replaced 1.2 – 4.1 kg (2.6 – 9.0 lbs.)
Old bearing reused More than 0.47 kg (1.04 lbs.)

Fig. 3-169

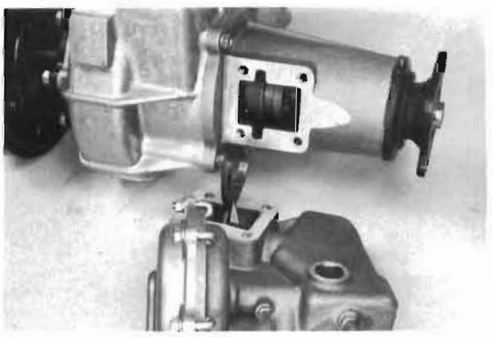


If the preload is up to the standard value, stake the nut to lock it in place: If not up to the standard value, adjust by selecting proper thickness shims.

Adjust Shim Thickness

Part No.	Thickness mm (in.)
90564-64017	0.10 (0.0039)
90564-64023	0.15 (0.0059)
90564-64024	0.20 (0.0079)
90564-64025	0.25 (0.0098)

Fig. 3-170



Insert the fork properly into the sleeve.

INSTALLATION

Refer to the instructions in the 4-Speed and 3-Speed Transmission Sections.

PROPELLER SHAFT

page

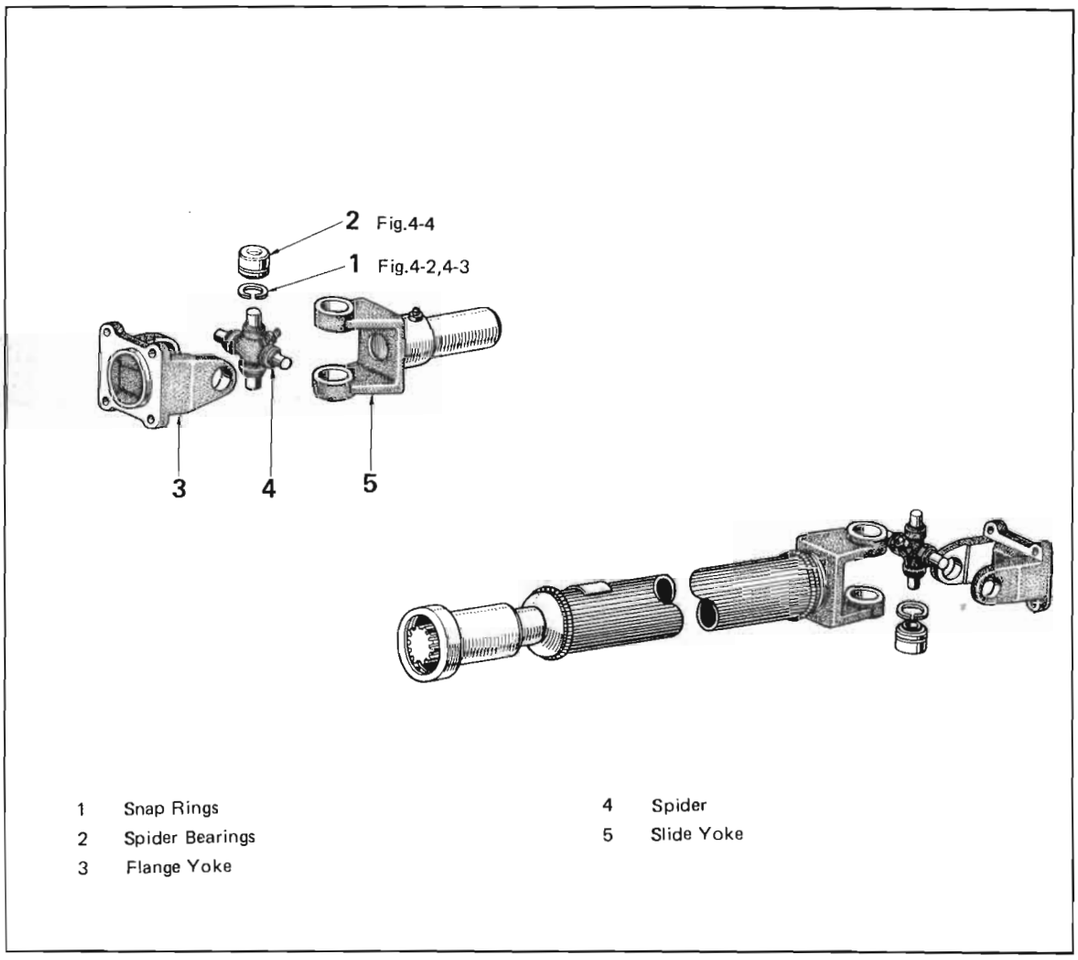
PROPELLER SHAFT 4-2

PROPELLER SHAFT

DISASSEMBLY

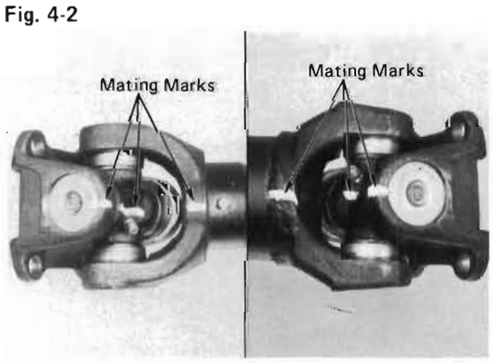
Disassemble the parts in the order numbered below.

Fig.4-1



1 Snap Rings
2 Spider Bearings
3 Flange Yoke
4 Spider
5 Slide Yoke

Fig. 4-2



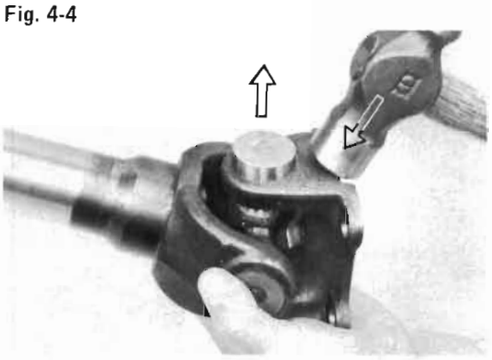
⚠ Place mating marks on the flange yokes, spiders, sliding yoke and propeller shaft.

Fig. 4-3



Remove the snap ring.

Fig. 4-4



Remove the bearings by lightly tapping the flange yoke with a hammer.

Fig. 4-5

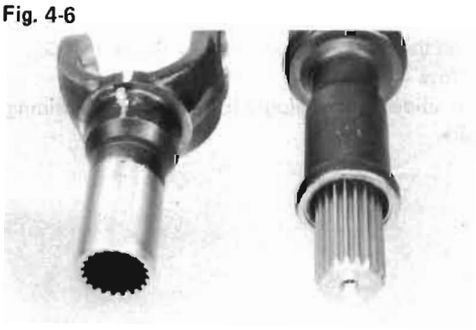


INSPECTION

Bearing And Spider

Inspect for damage and wear.

Fig. 4-6



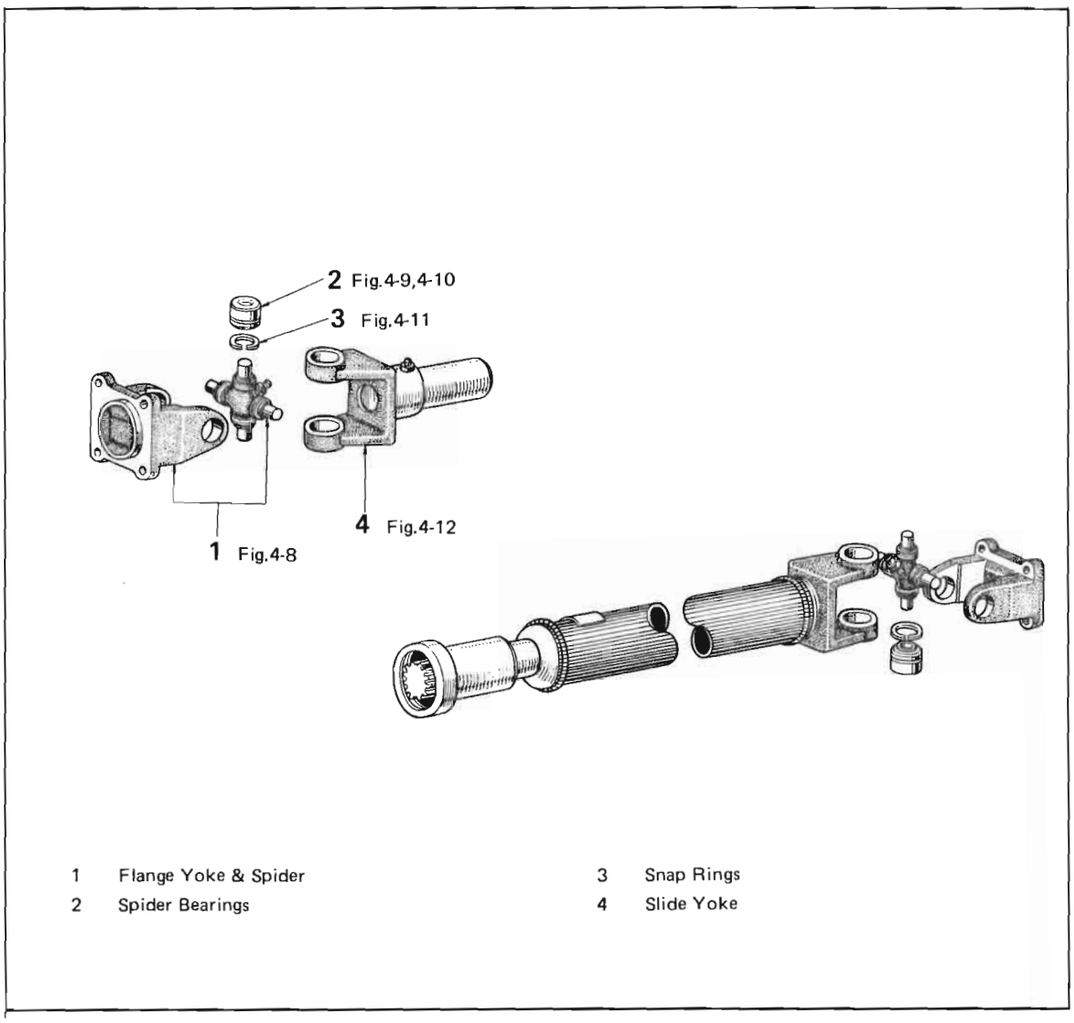
Propeller Shaft And Sliding Yoke

Inspect for wear and damage.

ASSEMBLY

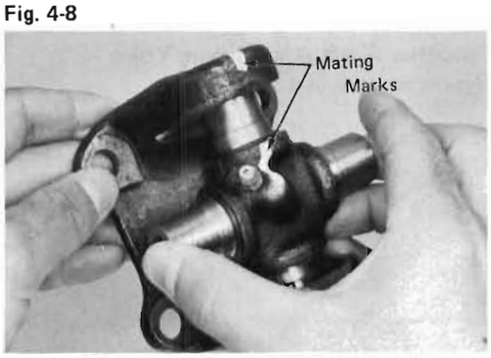
Assemble the parts in the order numbered below.

Fig. 4-7



1 Flange Yoke & Spider
2 Spider Bearings
3 Snap Rings
4 Slide Yoke

Fig. 4-8



Align the mating marks on the yoke and spider.

– Note –

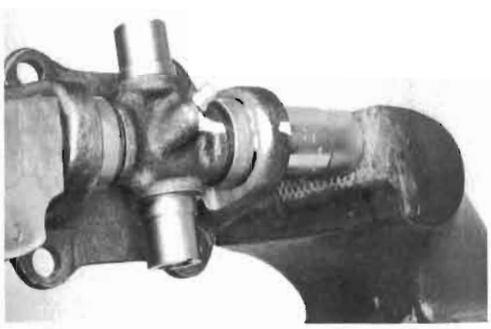
The spider grease nipple is located at the sliding yoke.

Fig. 4-9



Fit in the bearing rollers by coating them with grease.

Fig. 4-10



Press in the bearing.

Fig. 4-11



Make the assembly with a snap ring selected to provide the spider with a play not exceeding 0.05 mm (0.002 in.)

Snap Ring Thickness

Part No.	Thickness mm (in.)
90520-29286	1.48–1.53 (0.0583–0.0602)
90520-29287	1.53–1.58 (0.0602–0.0622)
90520-29288	1.58–1.63 (0.0622–0.0642)

Fig. 4-12



Assemble the sliding yoke, bearing, and propeller shaft with their mating marks aligned.

– Note –

Have the yoke and grease nipple positioned as shown in figure.

REAR AXLE

page

CUTAWAY VIEW 5- 2

REAR AXLE SHAFT(SEMI-FLOATING TYPE) · 5- 3

REAR AXLE SHAFT(FULL FLOATING TYPE) 5- 8

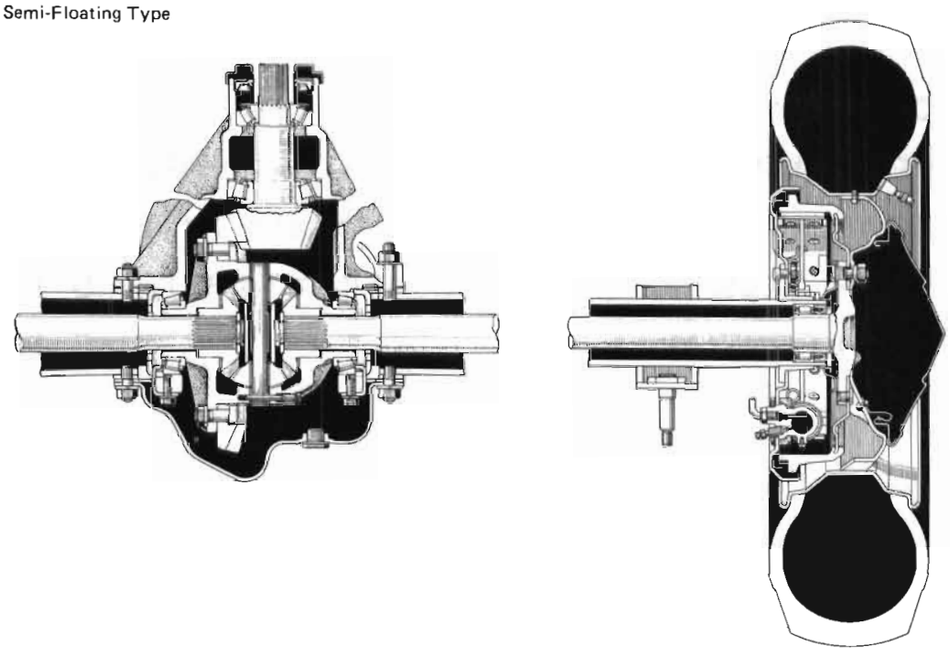
REAR AXLE HUB(FULL FLOATING TYPE) ··· 5-11

DIFFERENTIAL 5-16

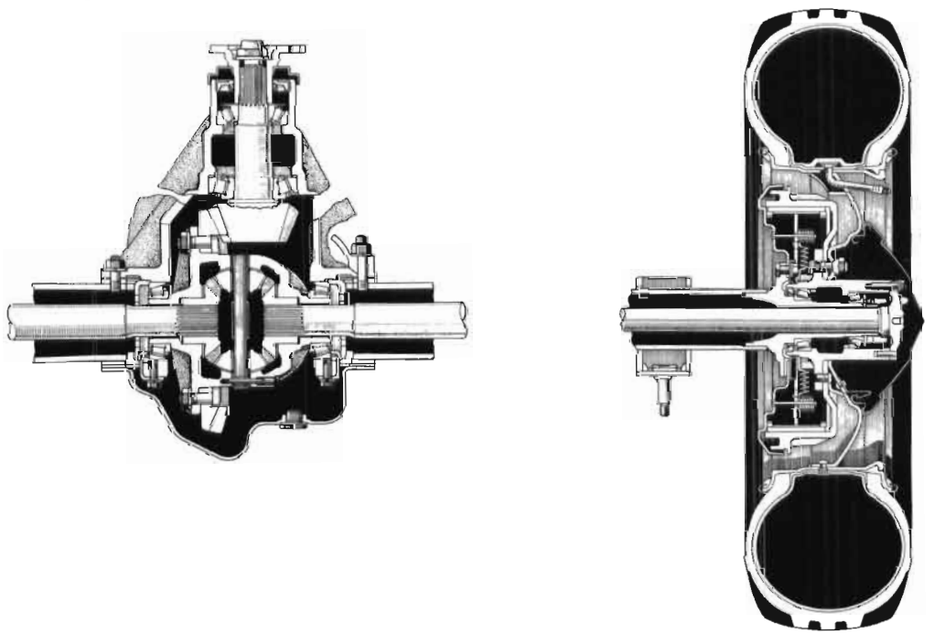
CUTAWAY VIEW

Fig. 5-1

Semi-Floating Type



Full Floating Type

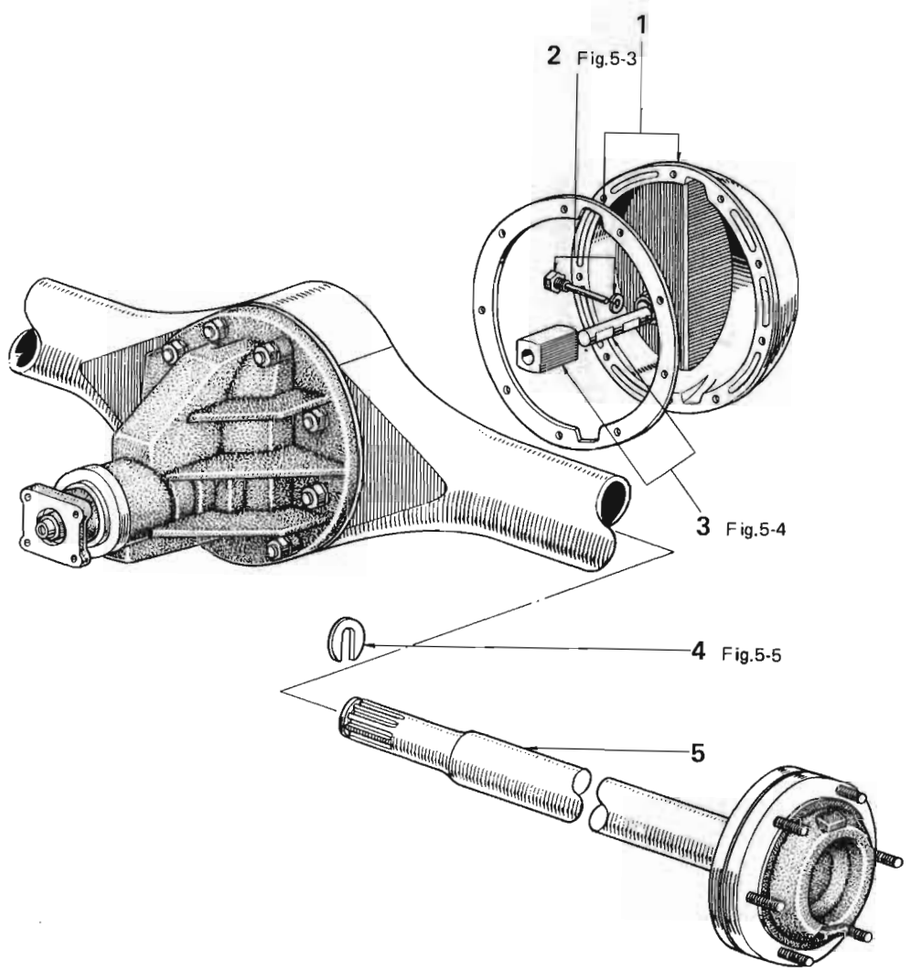


REAR AXLE SHAFT (SEMI-FLOATING TYPE)

REMOVAL

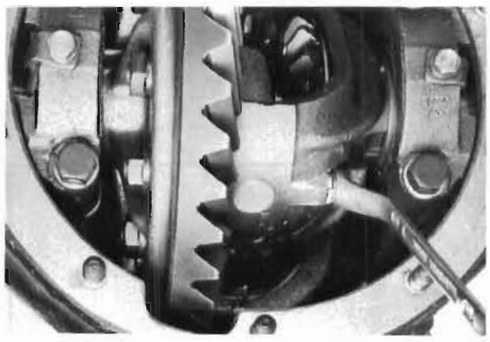
Drain out the oil and remove the parts in the order numbered below.

Fig. 5-2



1 Housing Cover & Gasket
2 Pinion Shaft Pin
3 Pinion Shaft & Spacer
4 Axle Shaft Lock
5 Axle Shaft

Fig. 5-3



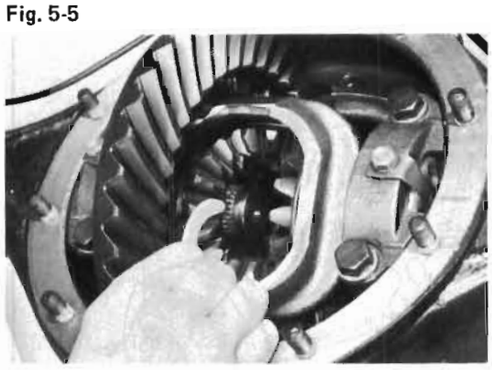
Remove the pinion shaft pin.

Fig. 5-4



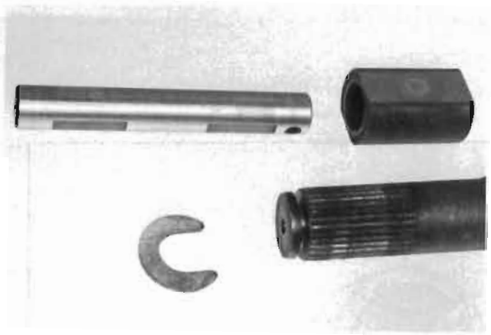
Draw out the pinion shaft and spacer.

Fig. 5-5



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

Fig. 5-6

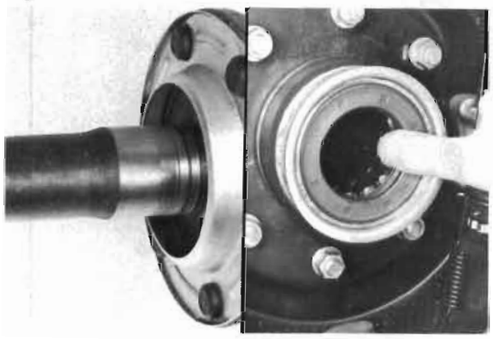


INSPECTION

Axle Shaft And Pinion Shaft Spacer

Inspect for damage and wear.

Fig. 5-7



Axle Shaft Bearing

Inspect for damage and wear.

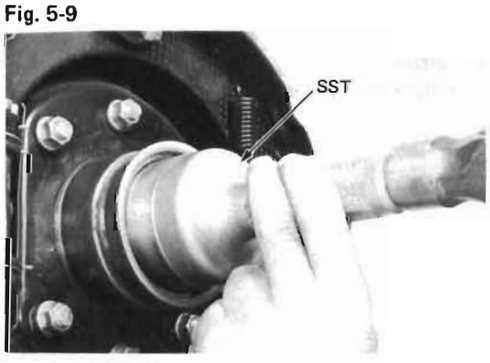
Fig. 5-8



Axle Shaft Bearing Replacement

1. Using SST [09514-35010], remove the bearing and oil seal together.

Fig. 5-9

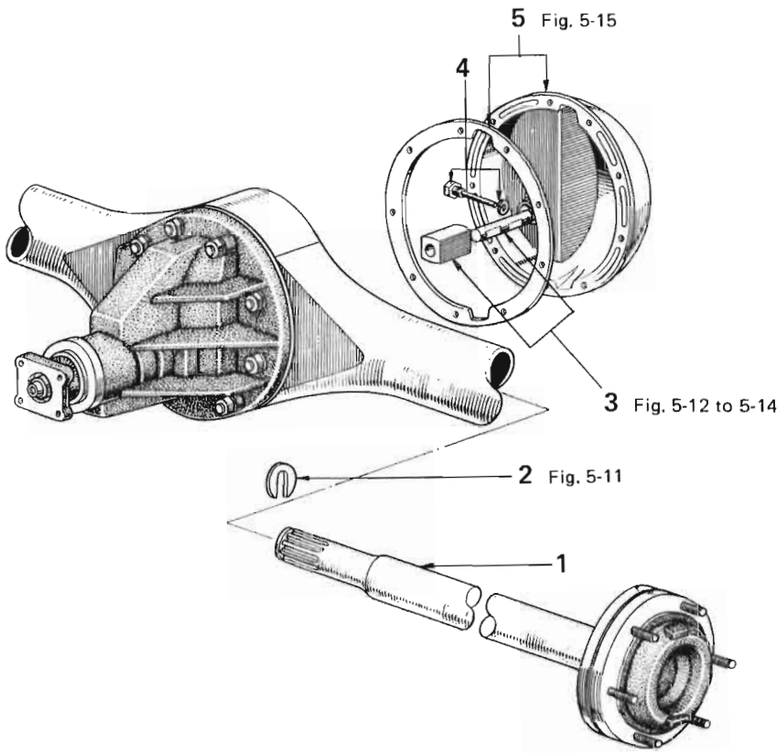


2. Using SST [09515-35010], drive in the bearing and oil seal.

INSTALLATION

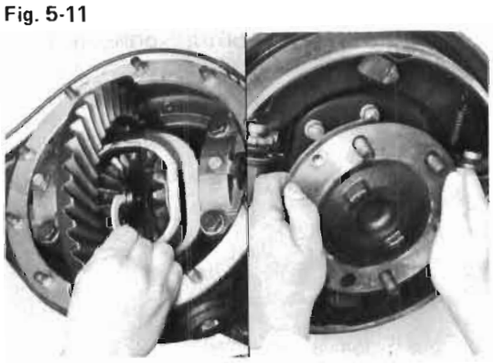
Install the parts in the order numbered in figure.

Fig. 5-10



1 Axle Shaft
2 Axle Shaft Lock
3 Pinion Shaft & Spacer
4 Pinion Shaft Pin
5 Housing Cover & Gasket

Fig. 5-11



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

Fig. 5-12

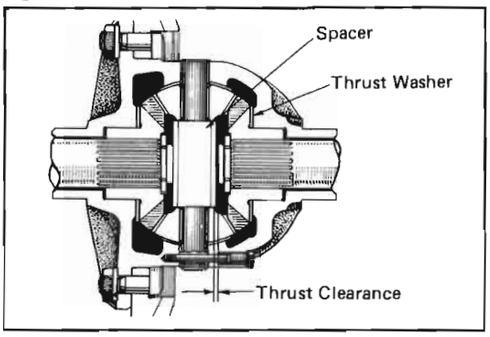


Measure the differential gear backlash.

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

Standard value 0.02 – 0.20 mm (0.0008 – 0.0079 in.)

Fig. 5-13

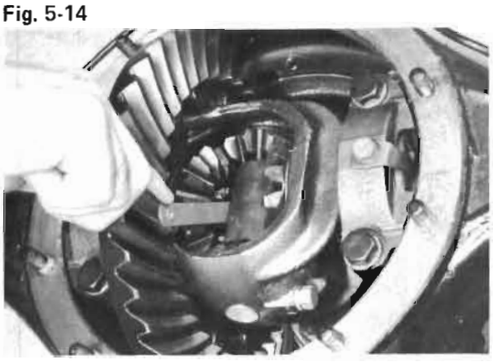


2. If outside the standard value range, correct by selecting proper size side gear thrust washers.

Thrust Washer Thickness

Part No.	Thickness mm (in.)
41361-35010	1.6 (0.063)
41362-35010	1.75 (0.069)
41363-35010	1.90 (0.075)
41364-35010	2.05 (0.081)

Fig. 5-14



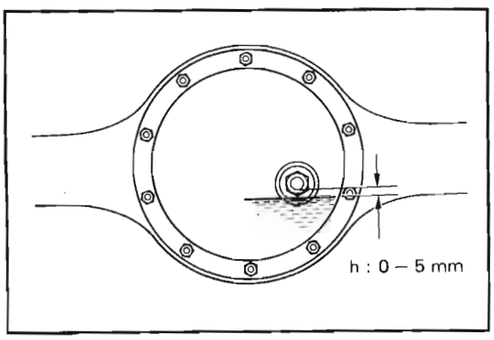
Rear axle shaft end thrust clearance.
Select pinion shaft spacer of the thickness that will set the thrust clearance to the standard value.

Standard value 0.06 – 0.46 mm (0.0024 – 0.0181 in.)

Spacer Thickness

Part No.	Thickness mm (in.)
41344-35010	29.8 (1.173)
41345-35010	30.2 (1.189)
41346-35010	30.6 (1.204)
41347-35010	29.0 (1.142)
41348-35010	29.4 (1.157)

Fig. 5-15



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

Standard capacity

FJ40 & BJ40 2.4 liter (2.6 US.qt., 2.1 Imp.qt.)

FJ43 & BJ43 2.7 liter (2.9 US.qt., 2.4 Imp.qt.)

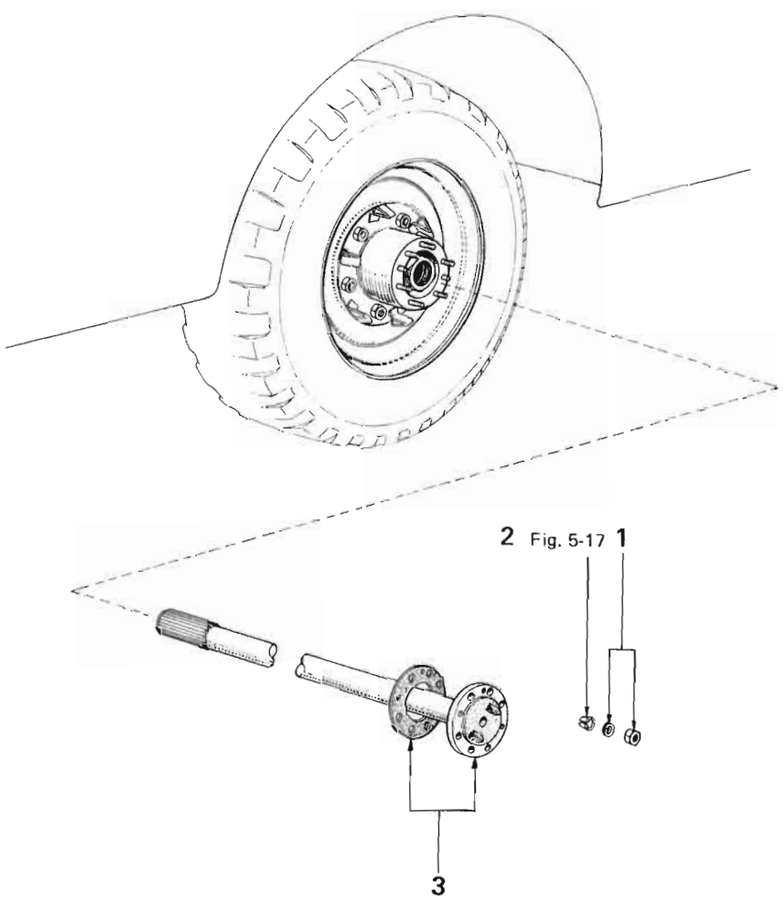
FJ45, HJ45 & FJ55 2.9 liter (3.1 US.qt., 2.6 Imp.qt.)

REAR AXLE SHAFT(FULL FLOATING TYPE)

REMOVAL

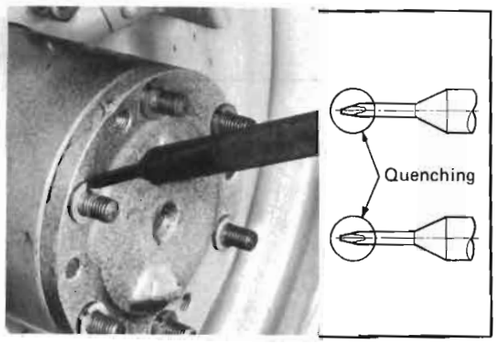
Remove the parts in the order shown below.

Fig. 5-16



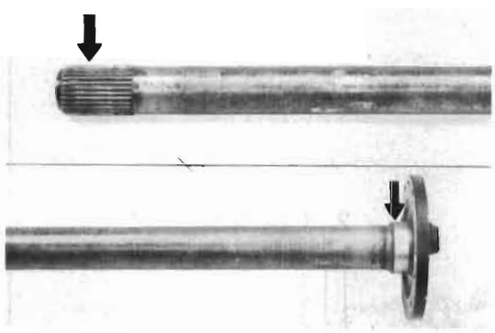
1. Nut & Washer
2. Cone Washer
3. Rear Axle Shaft & Gasket

Fig. 5-17



Remove the cone washer.

Fig. 5-18

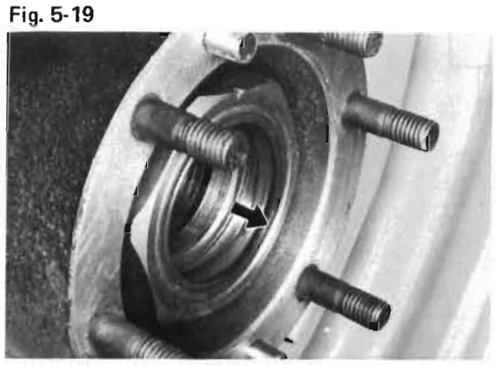


INSPECTION

Rear Axle Shaft

Inspect the parts indicated by arrows for wear and cracks.

Fig. 5-19



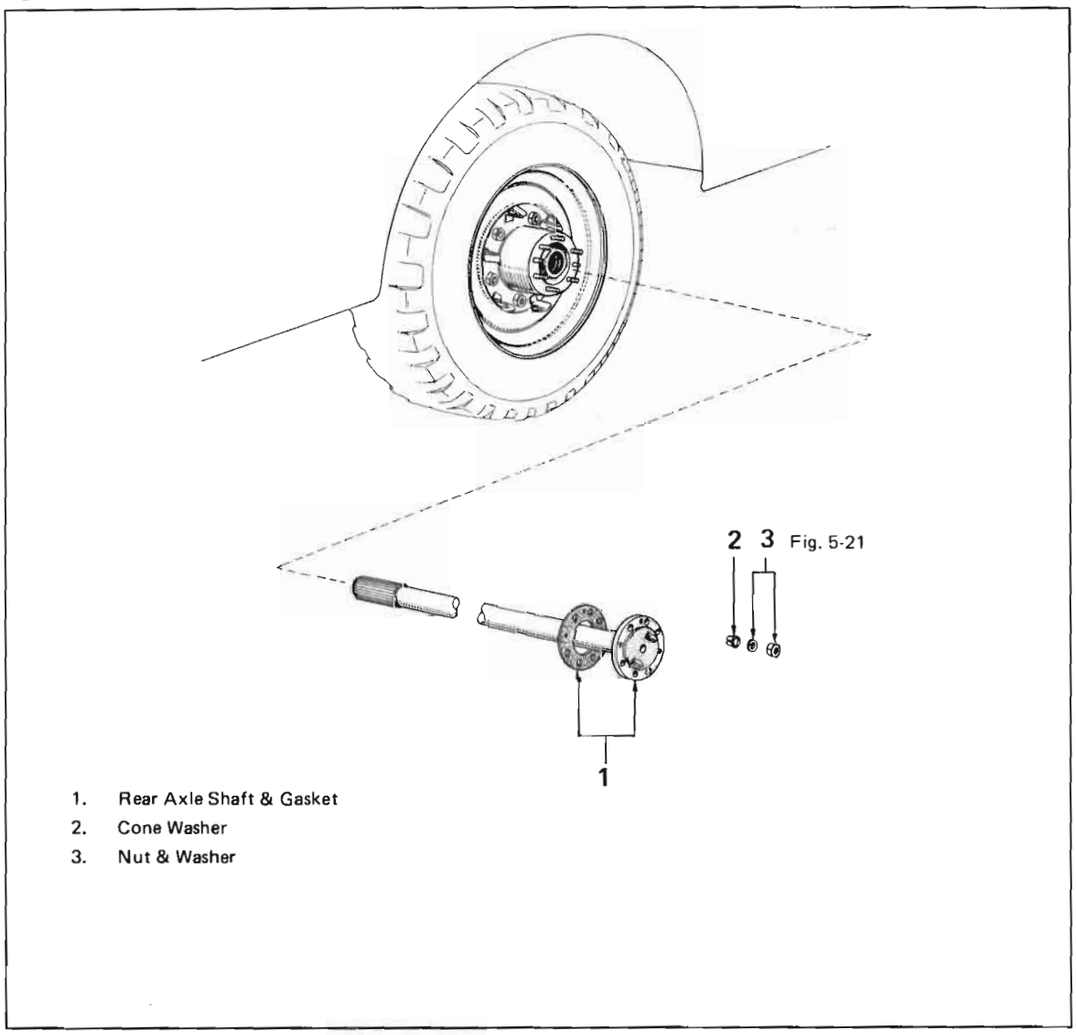
Rear Axle Shaft Oil Seal

Inspect the oil seal for wear.

INSTALLATION

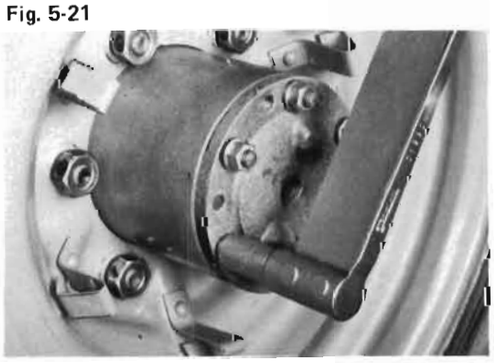
Install the parts in the order shown in the figure below.

Fig. 5-20



1. Rear Axle Shaft & Gasket
2. Cone Washer
3. Nut & Washer

Fig. 5-21



Tighten the nuts to the specified torque.

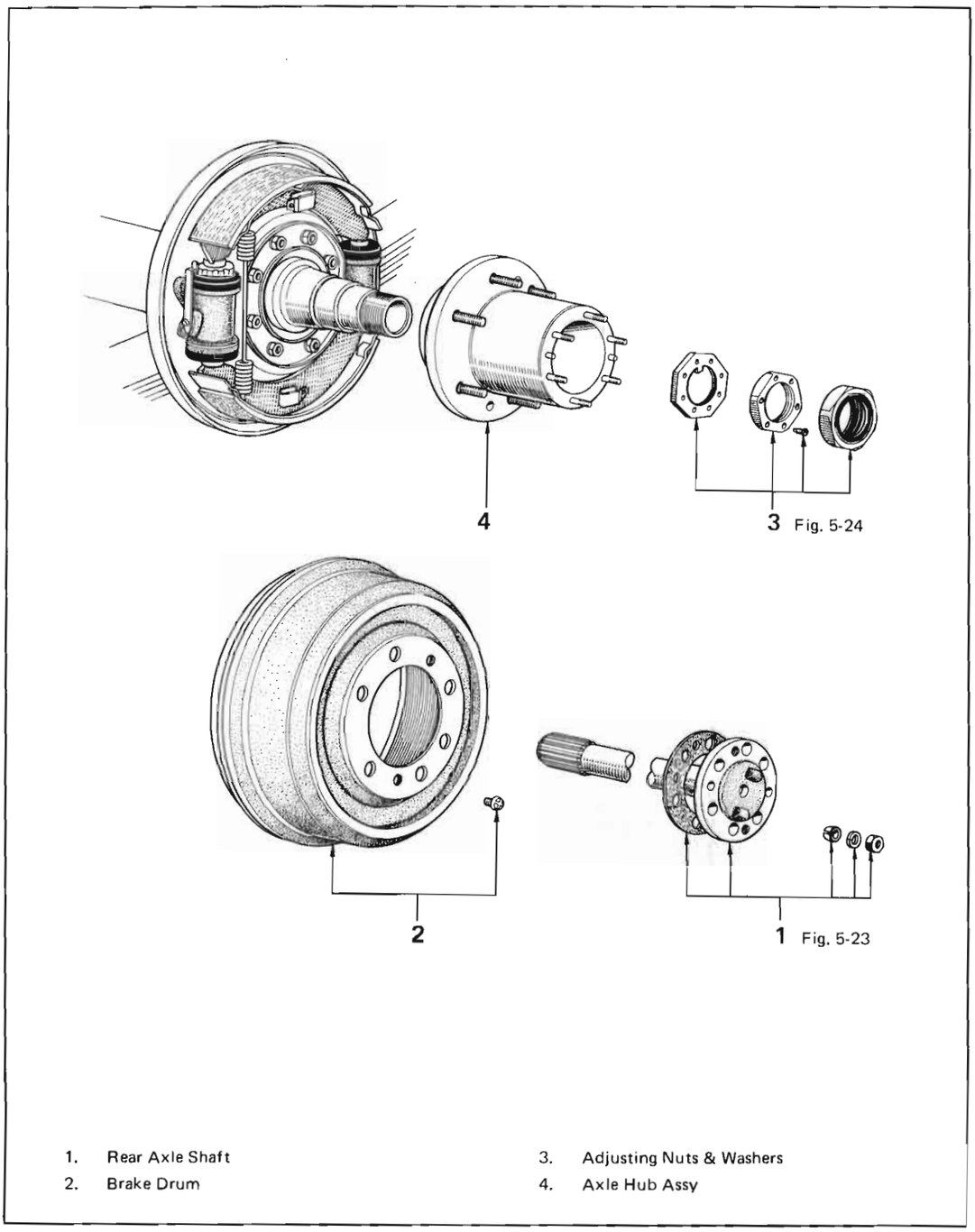
Tightening torque **2.8 – 4.0 kg-m (20.3 – 28.9 ft-lb)**

REAR AXLE HUB (FULL FLOATING TYPE)

REMOVAL

Remove the parts in the order shown below.

Fig. 5-22



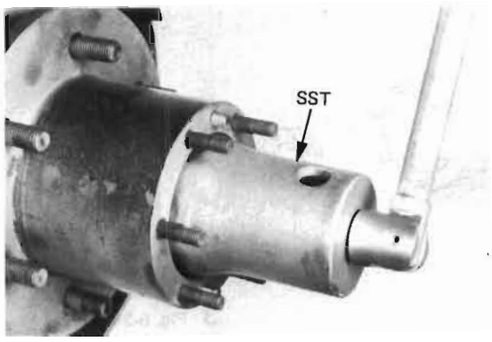
1. Rear Axle Shaft
2. Brake Drum
3. Adjusting Nuts & Washers
4. Axle Hub Assy

Fig. 5-23

SEE
REAR AXLE SHAFT
(FULL FLOATING TYPE)
SECTION

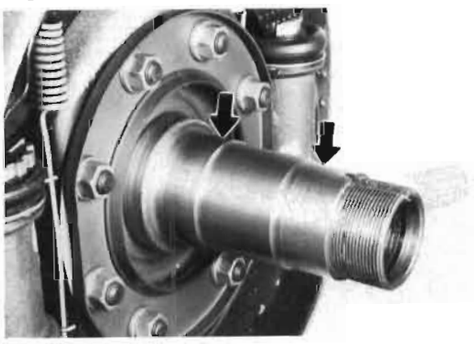
Remove the axle shaft.

Fig. 5-24



Remove the nuts using SST [09607-60020].

Fig. 5-25

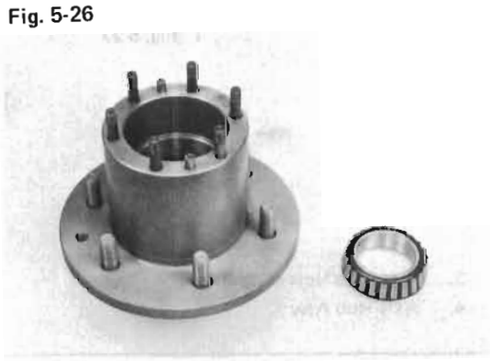


INSPECTION

Rear Axle Housing

Inspect the parts indicated for wear or damage.

Fig. 5-26



Rear Axle Hub

1. Inspect the bearings and oil seal for wear or damage.

Fig. 5-27



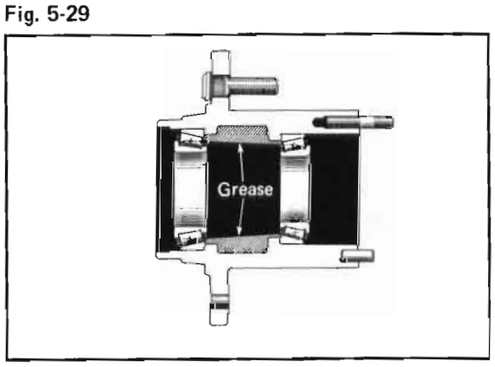
2. Bearing replacement
   (1) Remove the bearing outer race with a drift.

Fig. 5-28



(2) Install with SST [09608-35012].

Fig. 5-29

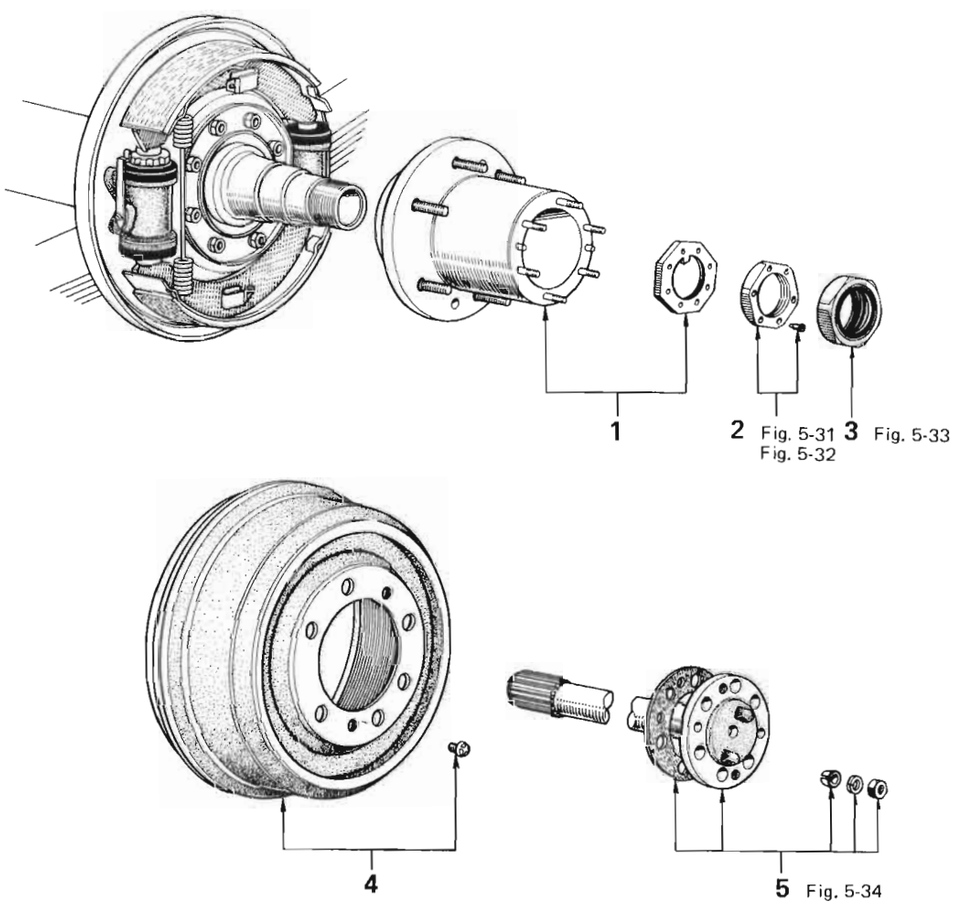


Pack MP grease into the hub and bearing. Apply MP grease to the oil seal lip.

INSTALLATION

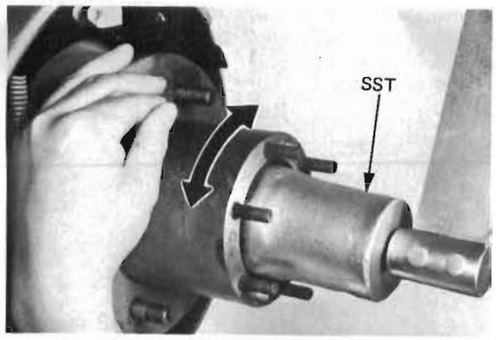
Install the parts in the order shown below.

Fig. 5-30



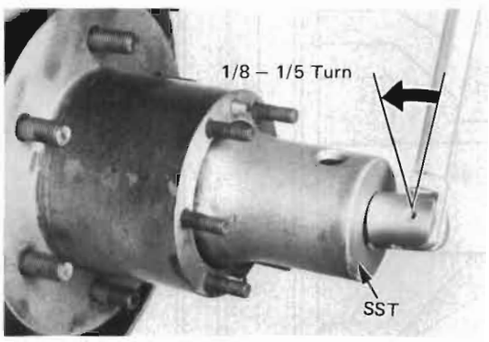
1. Axle Hub Assy & Lock Plate
2. Adjusting Nut
3. Lock Nut
4. Brake Drum
5. Rear Axle Shaft

Fig. 5-31



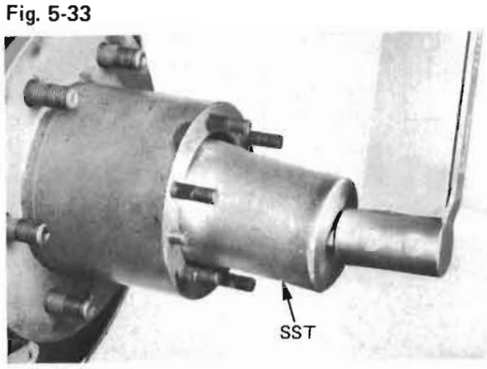
1. Tighten the adjusting nut to 6 kg-m (43 ft-lb).
2. Rotate the hub back and forth about three times to snug down the bearing.

Fig. 5-32



3. Retighten the adjusting nut to 6 kg-m (43 ft-lb), then unscrew the adjusting nut 1/8th to 1/5th turn.

Fig. 5-33



Tighten the lock nut to the specified torque.

Tightening torque **8 – 10 kg-m (58 – 72 ft-lb)**

Fig. 5-34

SEE
REAR AXLE SHAFT
(FULL FLOATING TYPE)
SECTION

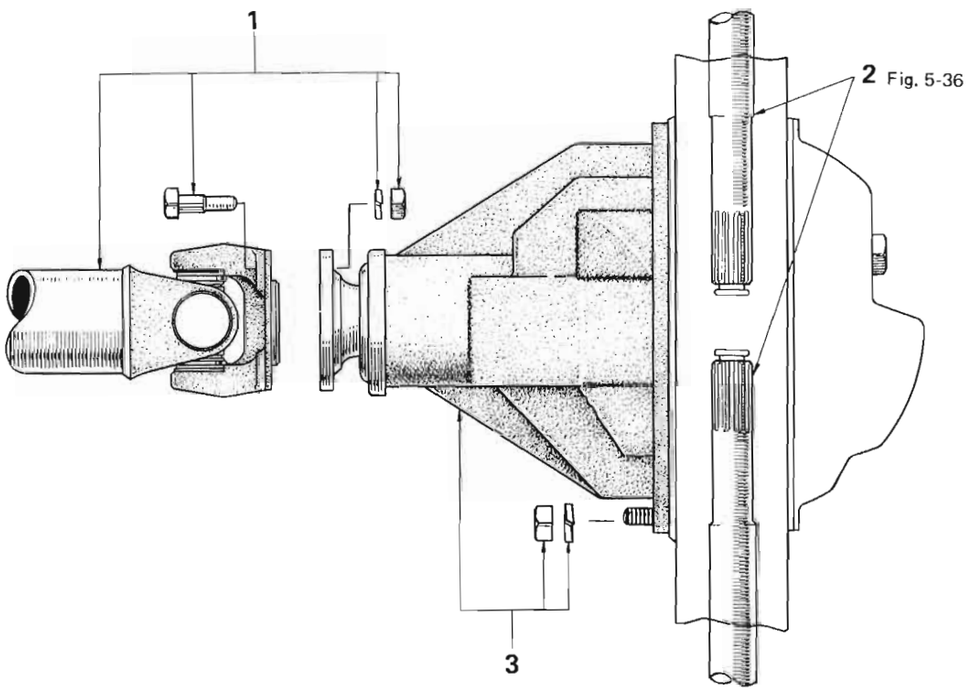
Install the rear axle shaft.

DIFFERENTIAL

REMOVAL

After draining out the oil, remove the parts in the order numbered below.

Fig. 5-35



1 Propeller Shaft
2 Axle Shaft
3 Differential Assy.

Fig. 5-36

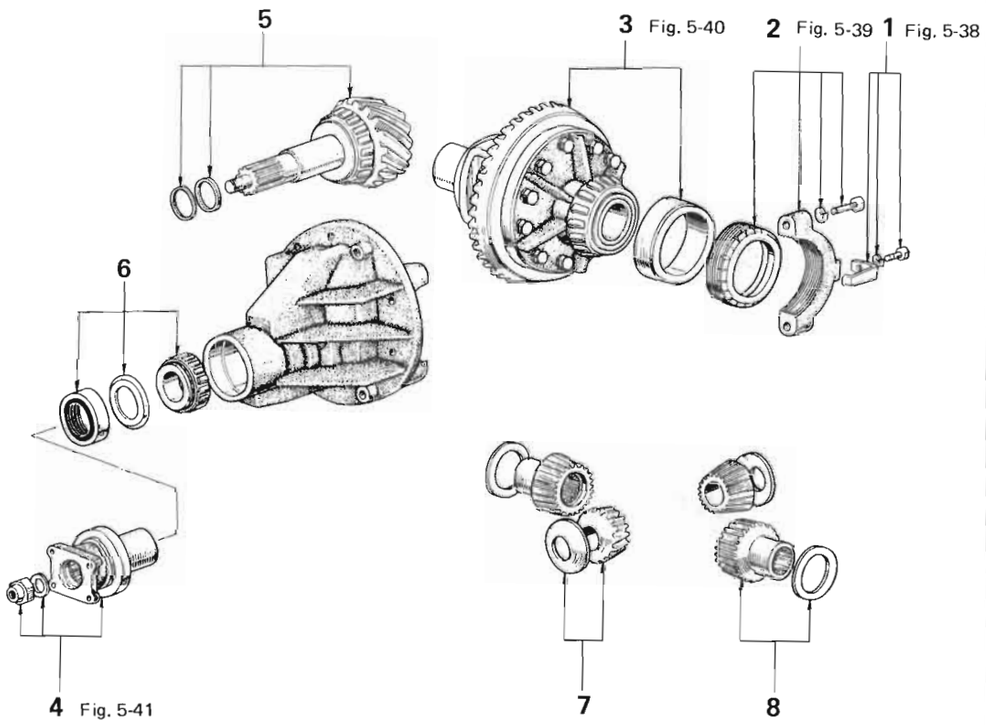
SEE REAR AXLE SHAFT SECTION

Remove the axle shafts.

DISASSEMBLY

Disassemble the parts in the order numbered below.

Fig. 5-37



1 Adjusting Nut Locks
2 Bearing Caps & Adjusting Nuts
3 Ring Gear, Case, & Bearings
4 Joint Flange
5 Drive Pinion, Bearing, Shim, & Washer
6 Oil Seal, Slinger, & Bearing
7 Pinions & Thrust Washers
8 Side Gears & Thrust Washers

Fig. 5-38



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

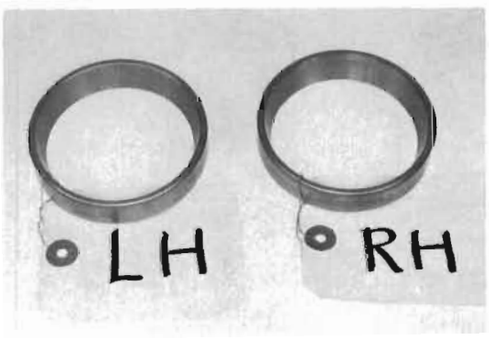
Limit 0.1 mm (0.004 in.)

Fig. 5-39



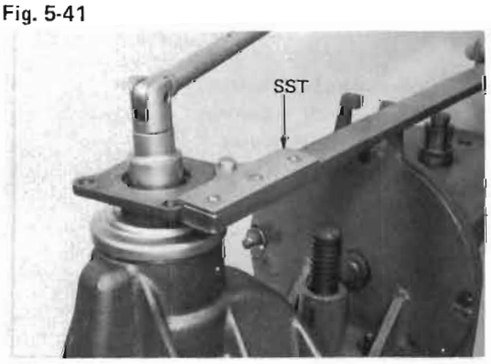
Place mating marks on the bearing caps.

Fig. 5-40



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

Fig. 5-41



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

– Note –

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

INSPECTION

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

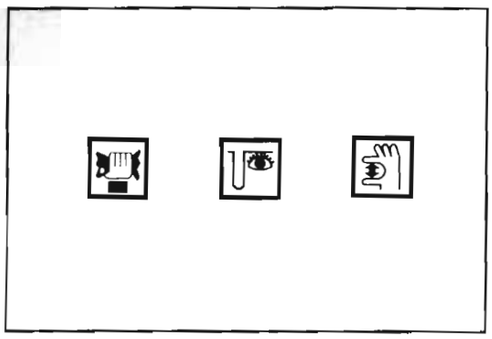


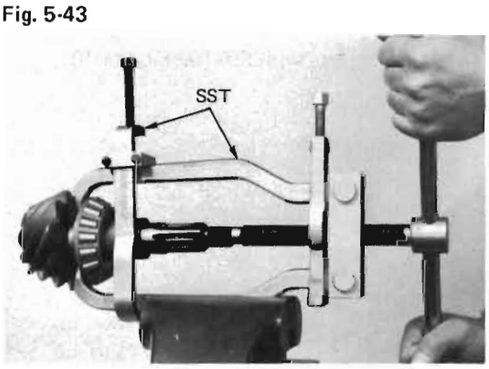
Fig. 5-42



Drive Pinion And Bearings

1. Inspect the drive pinion gear teeth for damage, wear, and burning.
2. Inspect the bearings for damage and wear.

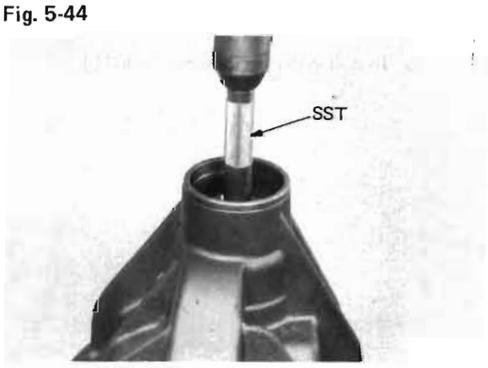
Fig. 5-43



3. Bearing removal
   Remove the bearings by using SST [09950-20010] and [09956-00010].

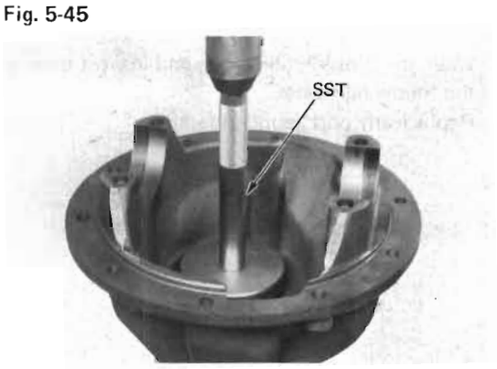
– Note –
If there is not enough clearance for the SST to hook on, draw out the bearing slightly with a chisel.

Fig. 5-44



4. Bearing outer race replacement
   a. Remove with SST [09608-35011].

Fig. 5-45



b. Install with SST [09608-35012].

– Caution –

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

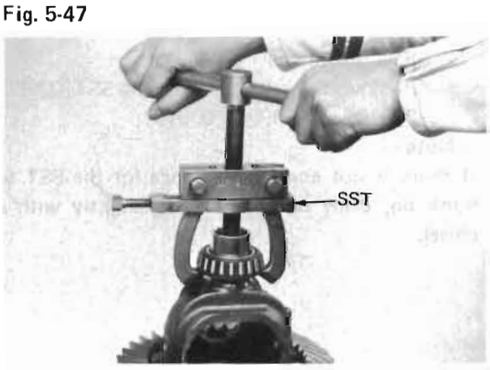
Fig. 5-46



Differential Case, Side Bearings, And Ring Gear

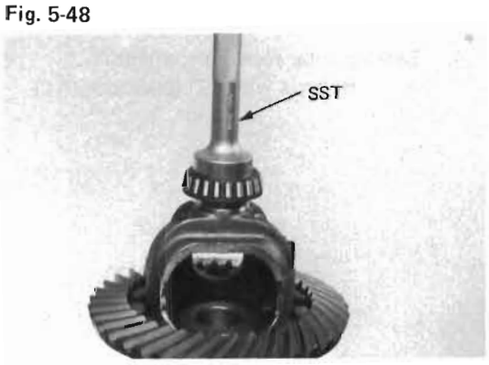
1. Inspect the ring gear teeth for damage, wear, and burning.
2. Inspect the side bearings for damage and wear.
3. Inspect the case for cracks.
4. Side bearing replacement.

Fig. 5-47



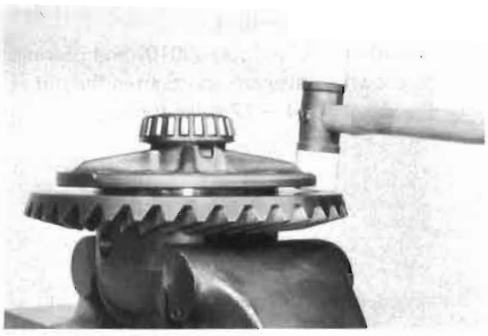
a. Remove with SST [09950-20010].

Fig. 5-48



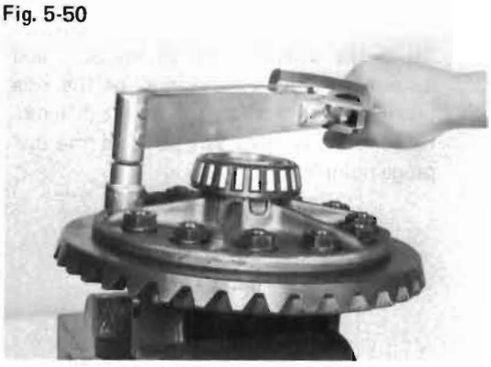
b. Install with SST [09505-20010].

Fig. 5-49



5. Ring gear replacement.
   a. Loosen the attaching bolts uniformally, and remove the ring gear by tapping it with a plastic hammer.

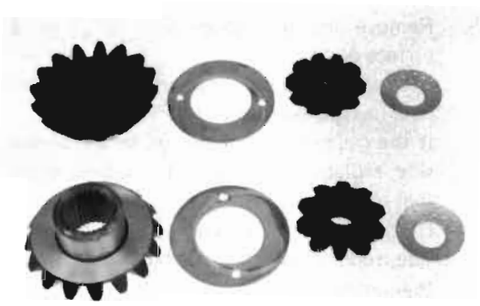
Fig. 5-50



b. 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 kg-m (75.9 – 86.8 ft-lb)

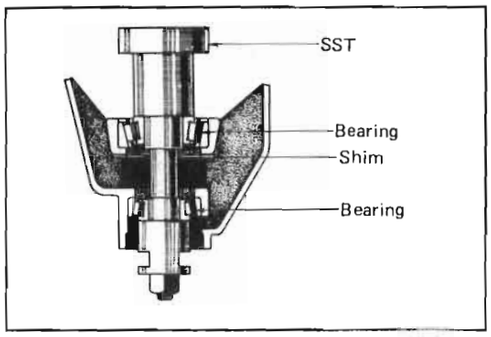
Fig. 5-51



Pinions, Side Gears, And Washers

Inspect for damage and wear.

Fig. 5-52

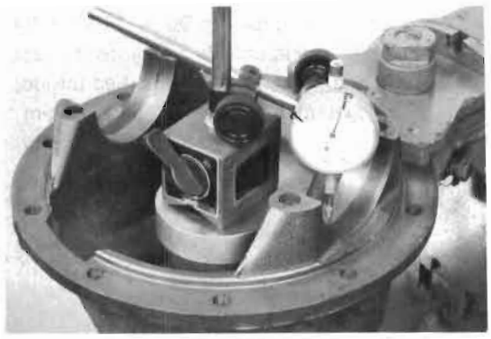


SELECTION OF SHIMS AND SPACER

Drive Pinion Positioning.

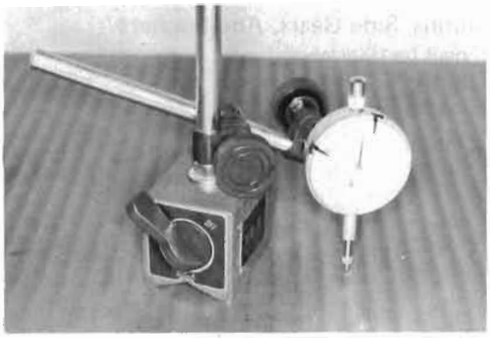
1. Mount the SST [09530-35010] and bearings as shown in diagram and tighten the nut at 2 – 3 kg-m (14 – 22 ft-lb) torque.

Fig. 5-53



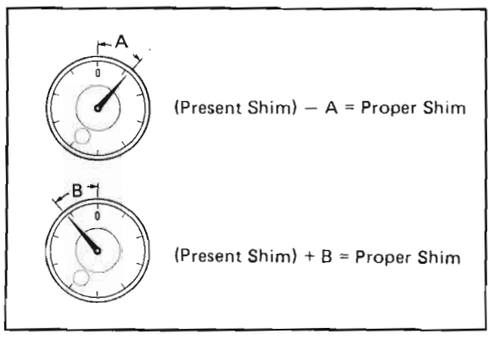
2. Set a dial gauge on top of the SST, and measure the lowest position of the side bearing installation surface on the differential carrier. At this position, set the dial gauge pointer to zero.

Fig. 5-54



3. Remove the dial gauge and set it on a surface plate.
   If the gauge pointer stays at zero, the shim now being used is satisfactory.
   It the gauge pointer indicates on the minus side, replace with a shim that is thinner by that amount.
   If the gauge pointer registers on the plus side, replace with a shim that is thicker by that amount.

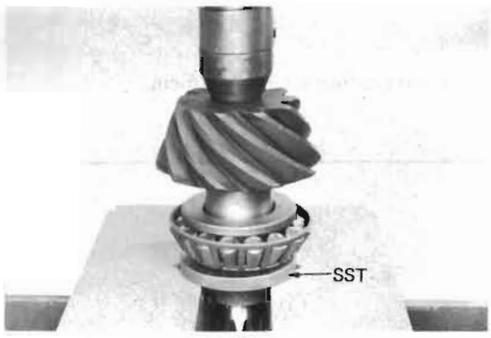
Fig. 5-55



Adjusting Shim Thickness

Part No.	Thickness mm (in.)
90564-70101	0.25 (0.0098)
90564-70102	0.30 (0.0118)
90564-70103	0.35 (0.0138)
90564-70104	0.45 (0.0177)
90564-70121	0.40 (0.0158)

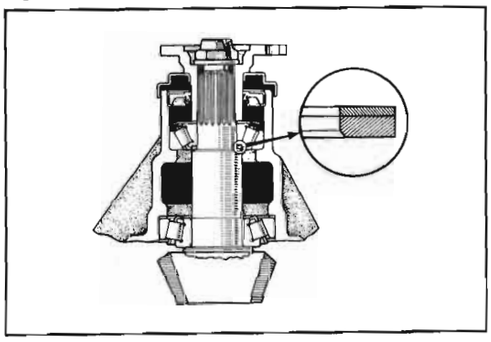
Fig. 5-56



Drive Pinion Preload

1. Using SST [09506-35010] , install the bearing to the drive pinion.

Fig. 5-57



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

Tightening torque 20 – 24 kg-m (144 – 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.**

Fig. 5-58



3. Measure the preload.

Specified preload (starting)

New bearing 19 – 26 kg-cm (16.5 – 22.6 in-lb)

Old bearing 9 – 13 kg-cm (7.8 – 11.3 in-lb)

4. 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 and Washer Thickness

Part No.	Thickness mm (in.)	Part No.	Thickness mm (in.)
90564-30035	0.25 (0.0098)	90560-30188	2.87 (0.1130)
90560-30184	2.75 (0.1083)	90560-30190	2.90 (0.1142)
90560-30185	2.78 (0.1094)	90560-30191	2.93 (0.1154)
90560-30186	2.81 (0.1106)	90560-30192	2.96 (0.1165)
90560-30187	2.84 (0.1118)	90560-30199	2.99 (0.1177)

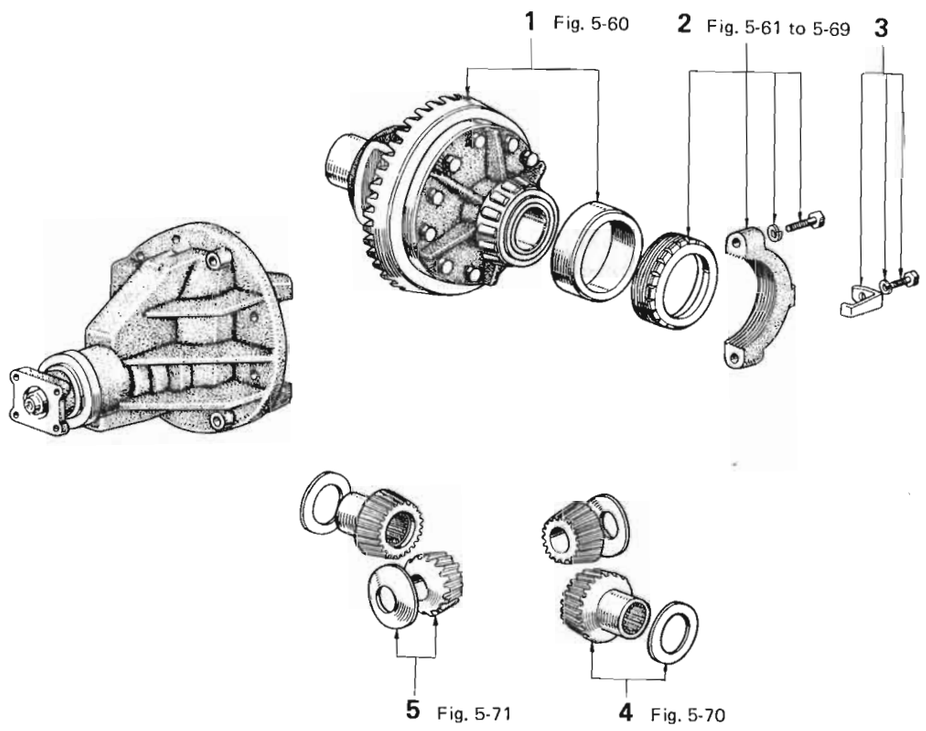
ASSEMBLY AND ADJUSTMENT

Assemble the parts in the order numbered below.

– Note –

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

Fig. 5-59



1 Ring Gear, Case, & Bearing
2 Bearing Caps & Adjusting Nuts
3 Adjusting Nut Locks
4 Thrust Washers & Side Gears
5 Thrust Washers & Pinions

Fig. 5-60

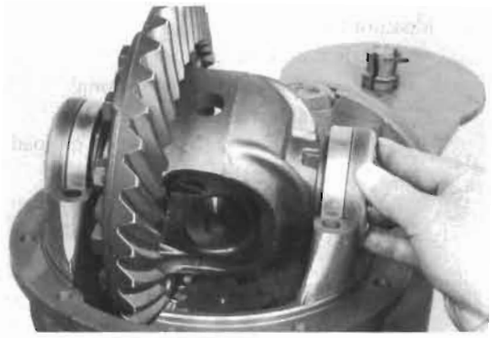


Assemble the bearing cups to the side bearings and install the differential case to the carrier.

– Caution –

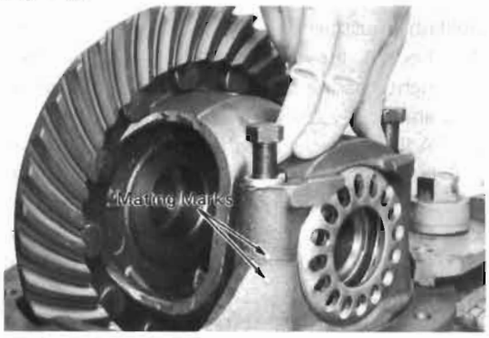
1. **Use care not to intermix the left and right bearing cups.**
2. **Make sure that backlash has been provided between the ring gear and drive pinion.**

Fig. 5-61



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

Fig. 5-62

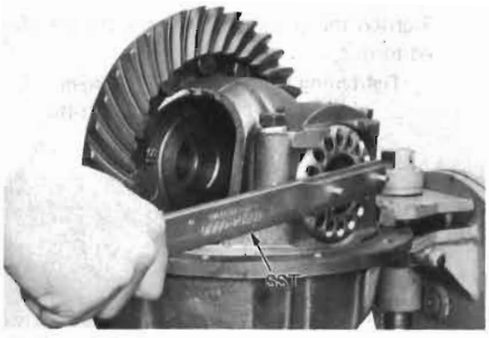


2. Screw in the two bearing cap bolts two or three turns and press down the bearing cap with hand.

– Caution –

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 mating mark is aligned with that on the carrier.**

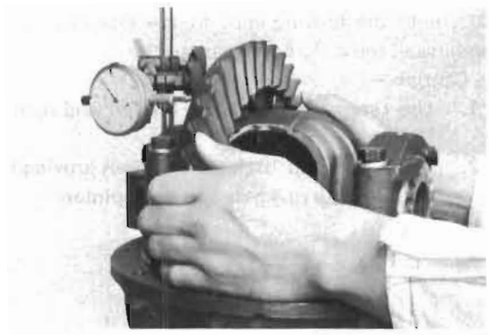
Fig. 5-63



Side bearing preload adjustment

1. Tighten the bearing cap bolts until the spring washers are slightly compressed.
2. Using SST [09504-00010] tighten both the left and right adjusting nuts to seat the bearing cups in the carrier.

Fig. 5-64



3. Mount a dial gauge to the carrier with the plunger set on the rear face of ring gear.
4. Tighten the adjusting nut until side play is removed, and from this zero-play position, tighten the adjusting nut further one to two notches.
5. Tighten the bearing caps at the specified torque.

Tightening torque 9.0 – 11 kg-m (65.1 – 79.6 ft-lb)

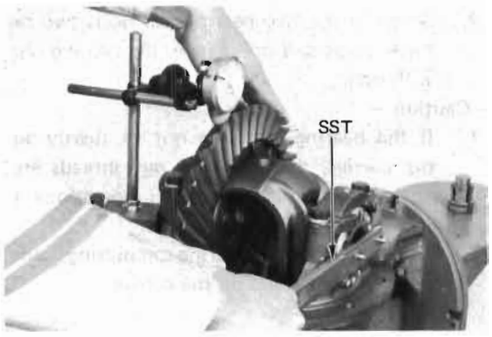
Fig. 5-65



6. Measure the overall preload.

Specified preload (starting)
(For both new and old bearing)
4 – 6 kg-cm (3.5 – 5.2 in-lb)
+ Drive pinion preload

Fig. 5-66



Backlash adjustment

1. Loosen the bolts installing the left and right bearing caps until the spring washers are loosely compressed.
2. Adjust the backlash to the specified value by using SST[09504-00010] and turning the left and right adjusting nuts by equal amounts (such as loosening the left side one notch and tightening the right side one notch).

Specified backlash 0.15 – 0.20 mm (0.0059 – 0.0079 in.)

Fig. 5-67



3. Tighten the bearing cap bolts at the specified torque.

Tightening torque 9.0 – 11 kg-m (65.1 – 79.6 ft-lb)

Fig. 5-68

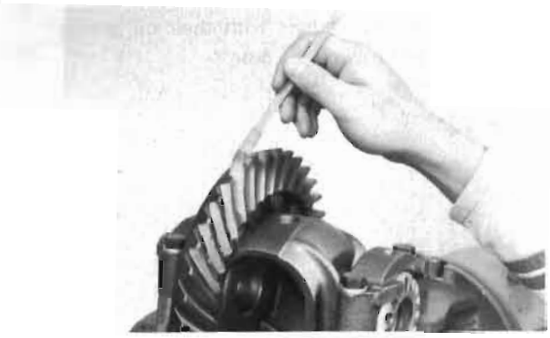


Fig. 5-69

Tooth Contact Inspection

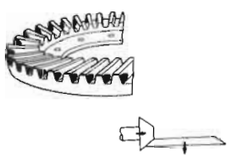
1. Inspect the contact between the ring gear and drive pinion teeth by coating red lead on the ring gear teeth.

– 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 figure.**

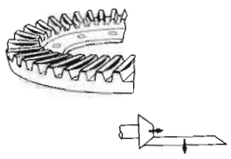
2. Install the adjusting lock nut on each bearing cap, and stake the companion flange nut.

(1) Heel Contact

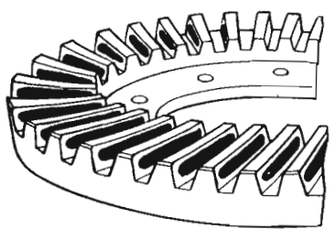


Select Adjusting Shim That Will Bring Drive Pinion Closer To Ring Gear

(3) Face Contact

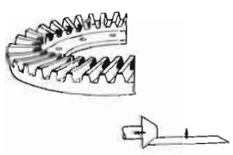


Adjust By Same Method As In (1)



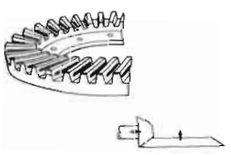
Proper Contact

(2) Toe Contact



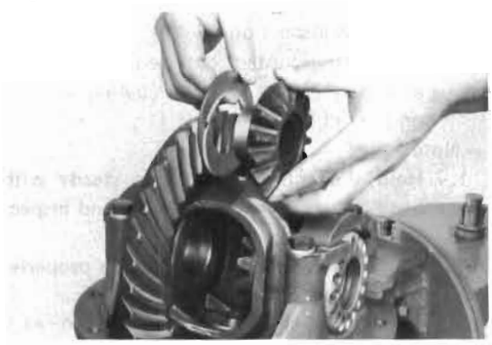
Select Adjusting Shim That Will Shift Drive Pinion Away From Ring Gear

(4) Flank Contact



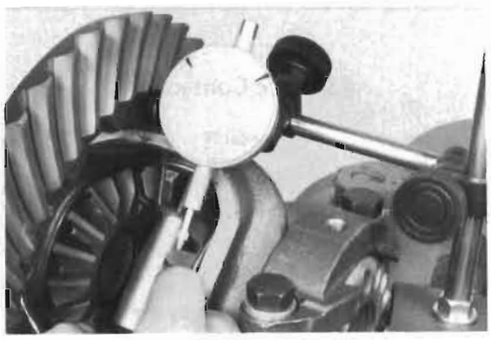
Adjust By Same Method As In (2)

Fig. 5-70



Install the thrust washers with their oil groove face positioned toward the gear.

Fig. 5-71



Differential Gear Backlash Measurement

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

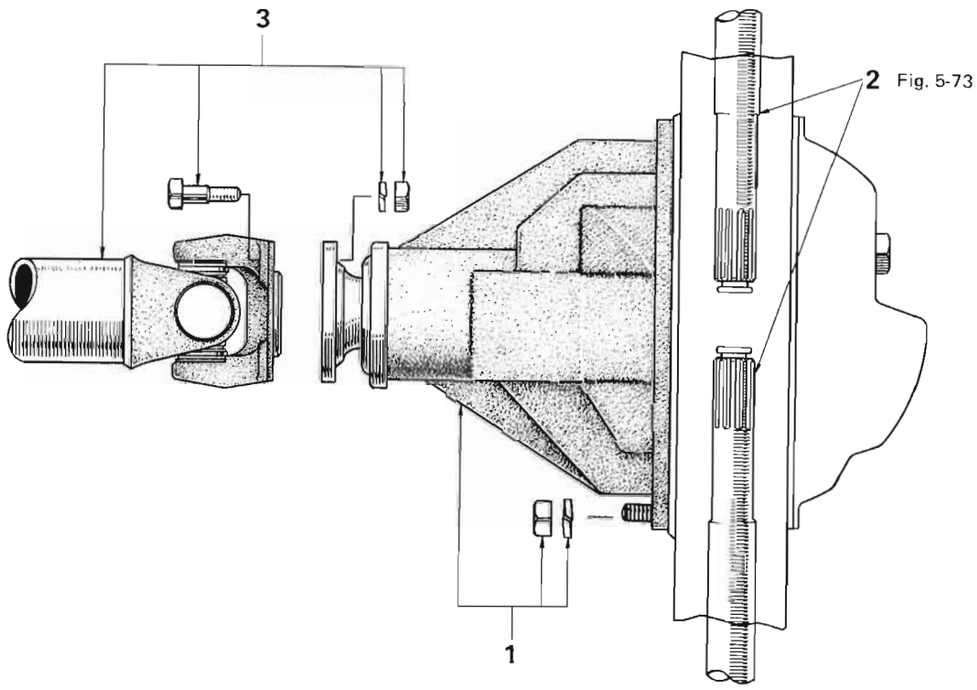
Thrust Washer Thickness

Part No.	Thickness mm (in.)
41361-35010	1.6 (0.063)
41362-35010	1.75 (0.069)
41363-35010	1.90 (0.075)
41364-35010	2.05 (0.081)

INSTALLATION

Install the parts in the order numbered below.

Fig. 5-72



1 Differential Assy.
2 Axle Shaft
3 Propeller Shaft

Fig. 5-73

SEE
REAR AXLE SHAFT
SECTION

Install the axle shafts.

– Note –

Measurement of differential gear backlash shall be excluded.

FRONT AXLE

page

CUTAWAY VIEW 6- 2

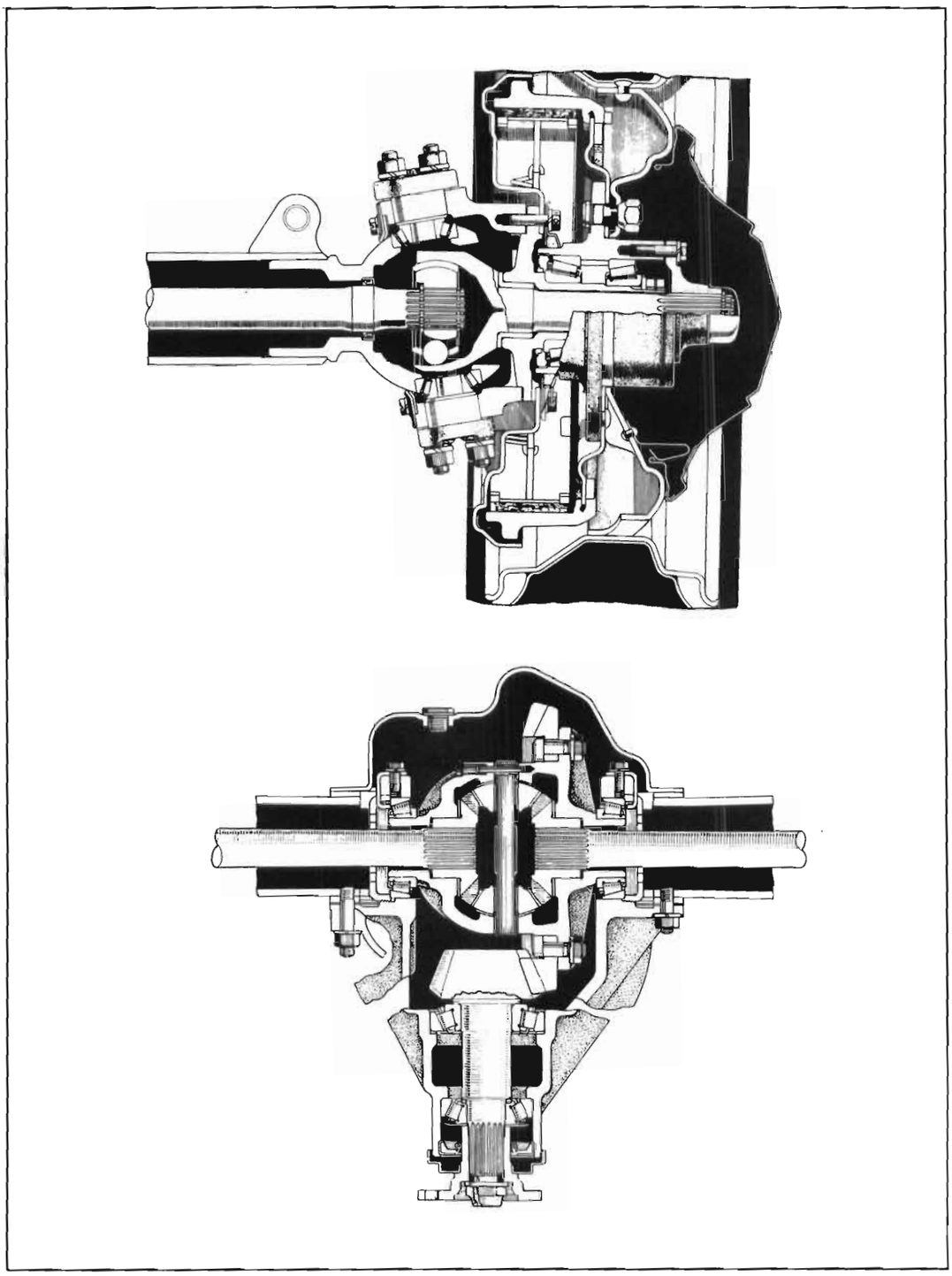
STEERING KNUCKLE AND AXLE SHAFT 6- 3

DIFFERENTIAL 6-19

FREE WHEEL HUB 6-20

CUTAWAY VIEW

Fig. 6-1

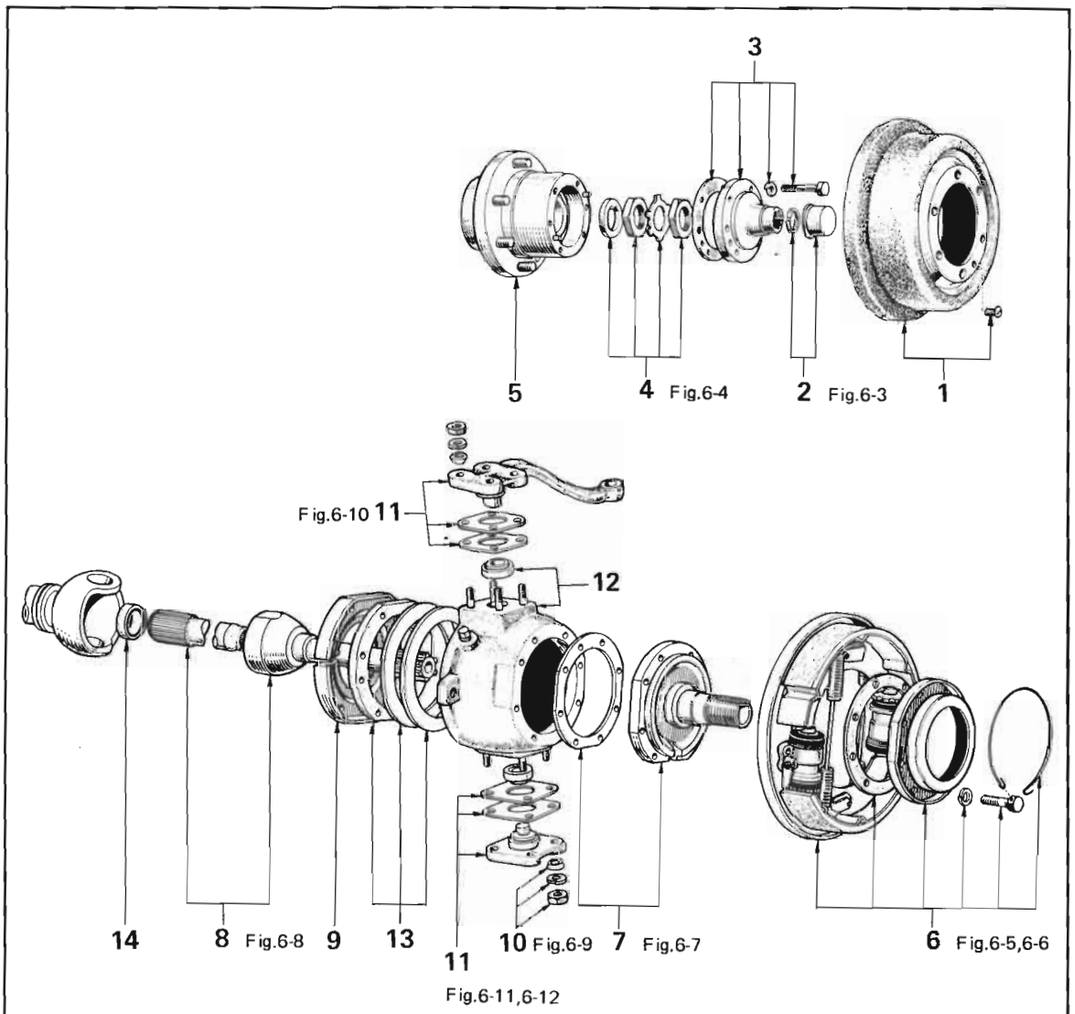


STEERING KNUCKLE AND SHAFT

REMOVAL

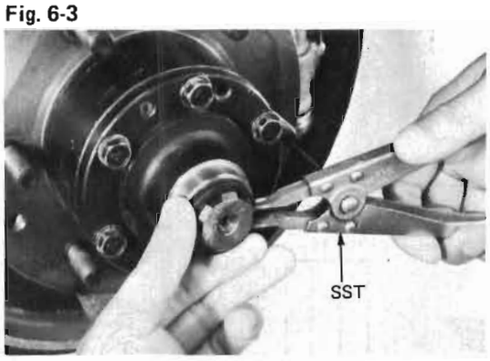
Remove the parts in the order numbered below.

Fig. 6-2



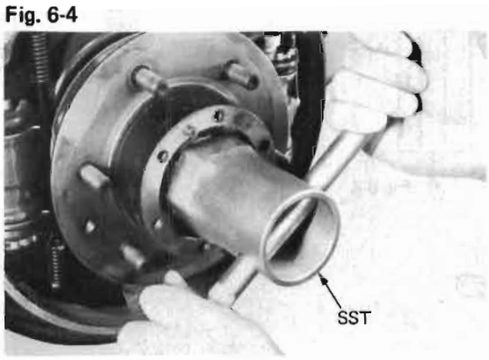
1	Brake Drum	8	Drive Shaft Assy.
2	Cap & Snap Ring	9	Bolts & Covers
3	Flange	10	Nuts & Dowels
4	Adjusting Nuts & Washers	11	Bearing Cap, Knuckle Arm, & Shims
5	Axle Hub Assy.	12	Steering Knuckle & Bearing
6	Backing Plate Assy.	13	Oil Seal Set
7	Knuckle Spindle	14	Oil Seal

Fig. 6-3



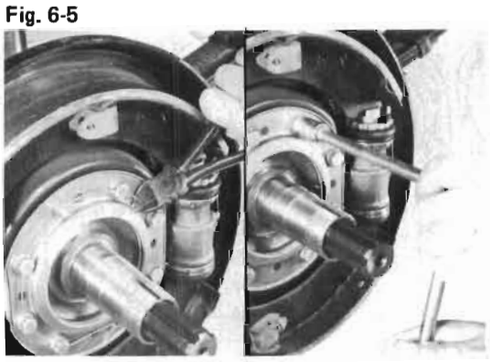
Use SST [09905-00010]

Fig. 6-4



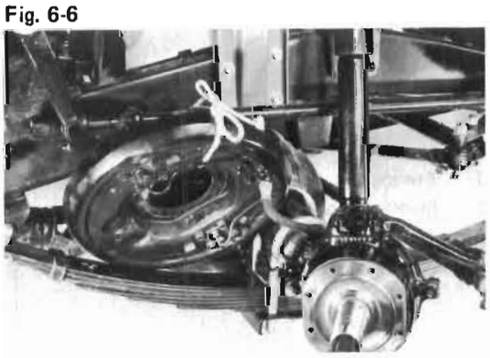
Use SST [09607-60020]

Fig. 6-5



1. Cut the lock wire.
2. Remove the bolts.

Fig. 6-6

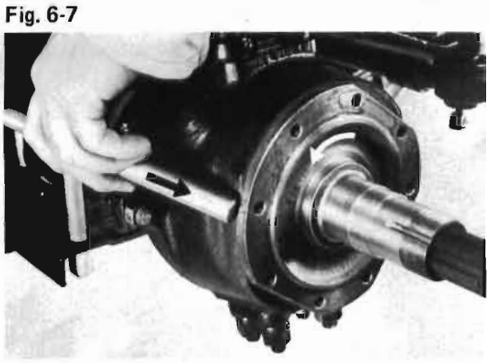


Remove the backing plate assembly and keep the parts tied together with a cord as shown in the photo.

– Note –

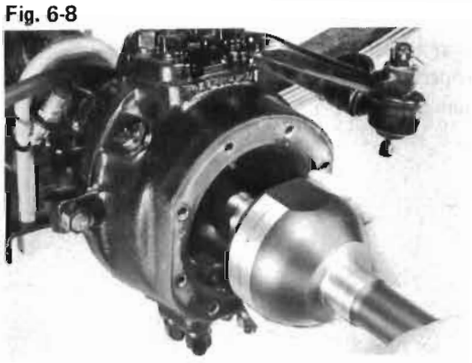
1. **Have the steering wheel turned fully to one side when removing the backing plate.**
2. **In removing the backing plate, do not disconnect the brake flexible hose.**

Fig. 6-7



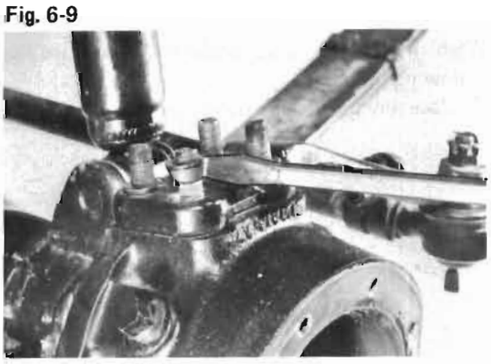
If the spindle does not come off easily, tap it off with a drift and hammer as shown in the photo.

Fig. 6-8



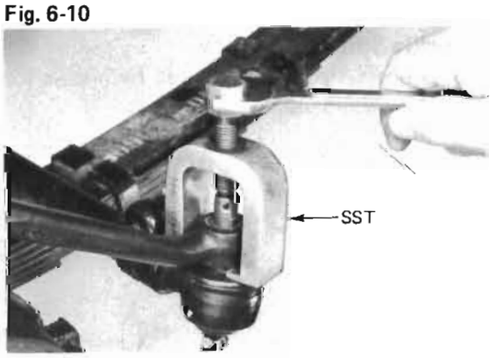
Position the flat part of the outer shaft in vertical direction, and pull out the drive shaft.

Fig. 6-9



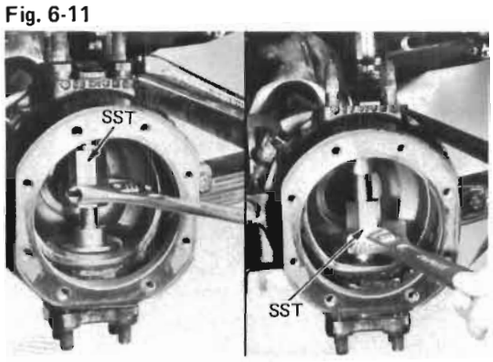
Remove the dowel by hammering in a screwdriver into the slotted part of the dowel.

Fig. 6-10



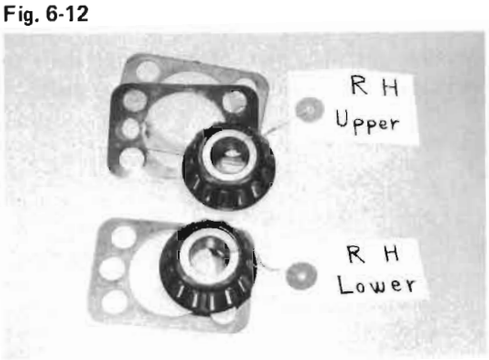
Use SST[09611-20014] or SST[09628-62010].

Fig. 6-11

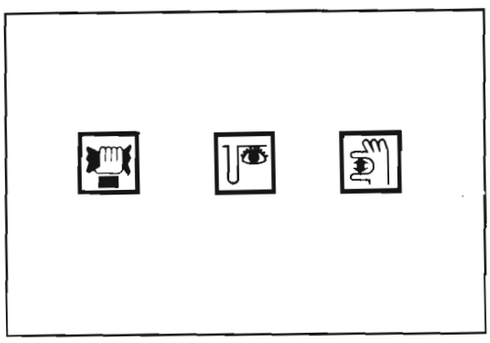


Use SST [09606-60010] to remove the knuckle and bearing cap.

Fig. 6-12



Keep the removed adjusting shims and bearings properly marked so as to enable reassembling them back to former position.



INSPECTION

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

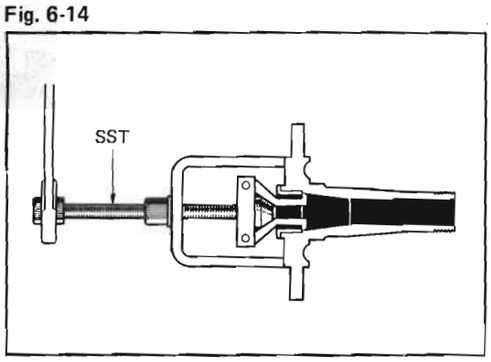
Fig. 6-13



Knuckle Spindle

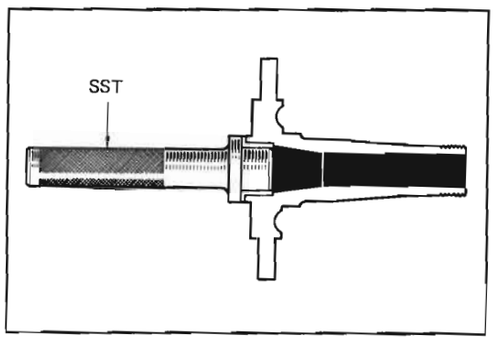
1. Inspect the parts indicated by arrows for wear and damage.

Fig. 6-14



2. Bushing replacement
   a. Remove the bushing with SST[09612-65012].

Fig. 6-15



   b. Install the new bushing with SST [09618-60010].

Fig. 6-16

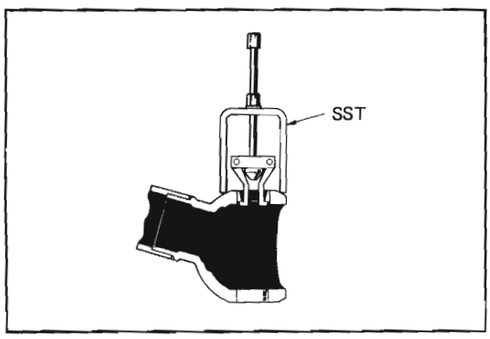


Steering Knuckle Bearing

1. Inspect for wear, damage, and rusting.

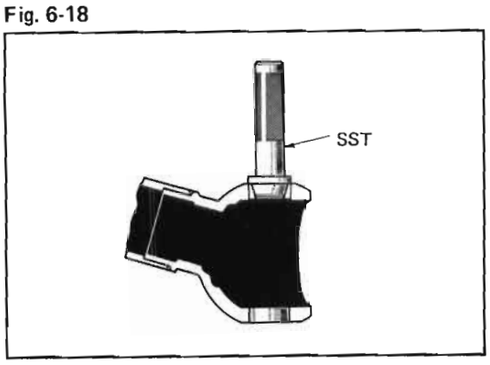
BEARING 4T 30303D

Fig. 6-17



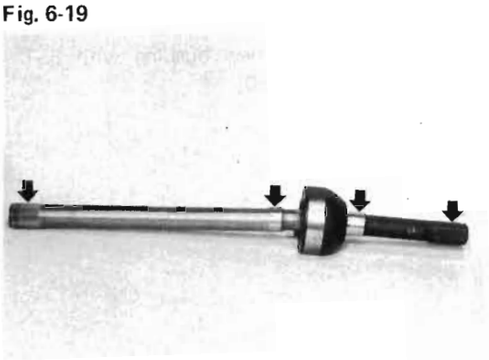
2. Outer race replacement
   a. Remove the bearing outer race with SST[09612-65012].

Fig. 6-18



b. Install the new outer race with SST [09605-60010].

Fig. 6-19



Drive Shaft

1. Drive shaft inspection
   a. Inspect the parts indicated by arrows for wear, damage, and rusting.
   b. Inspect the Birfield joint for excessive looseness.

Fig. 6-20



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

Fig. 6-21

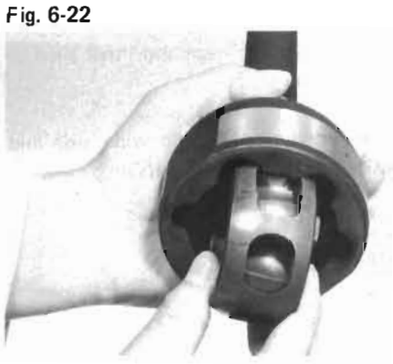


c. Take out the six bearing balls.

– Note –

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

Fig. 6-22

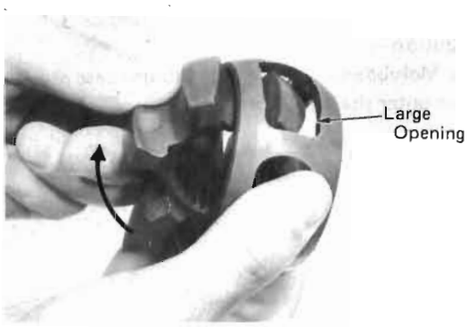


d. Remove the cage and inner race from the outer shaft.

– 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. 6-23



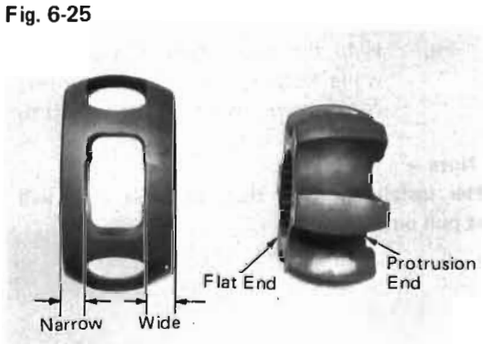
e. Take out the inner race from the cage through the large opening in the cage.

Fig. 6-24



3. Drive shaft inner parts inspection.
Inspect for wear, damage, and rusting.

Fig. 6-25



4. Drive shaft reassembly

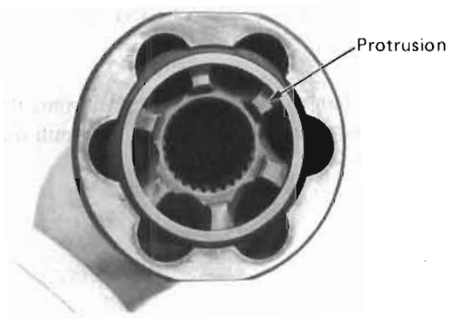
a. Assemble the inner race to the cage by inserting it through the large opening in the cage.

– Caution –

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

Coat with Molybdenum disulphide lithium base grease before assembling.

Fig. 6-26

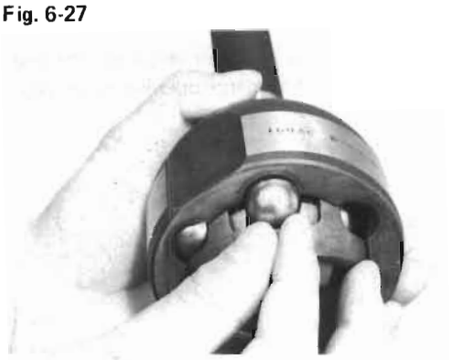


b. Assemble the cage and inner race to the outer shaft.

– Caution –

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

Fig. 6-27



c. Assemble in the six bearing balls.

– Caution –

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

Fig. 6-28



d. Install new snap rings on the inner shaft.

Fig. 6-29



e. 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 drive shaft alignment and knuckle bearing preload are adjusted with SST [09634-60012].

Fig. 6-30

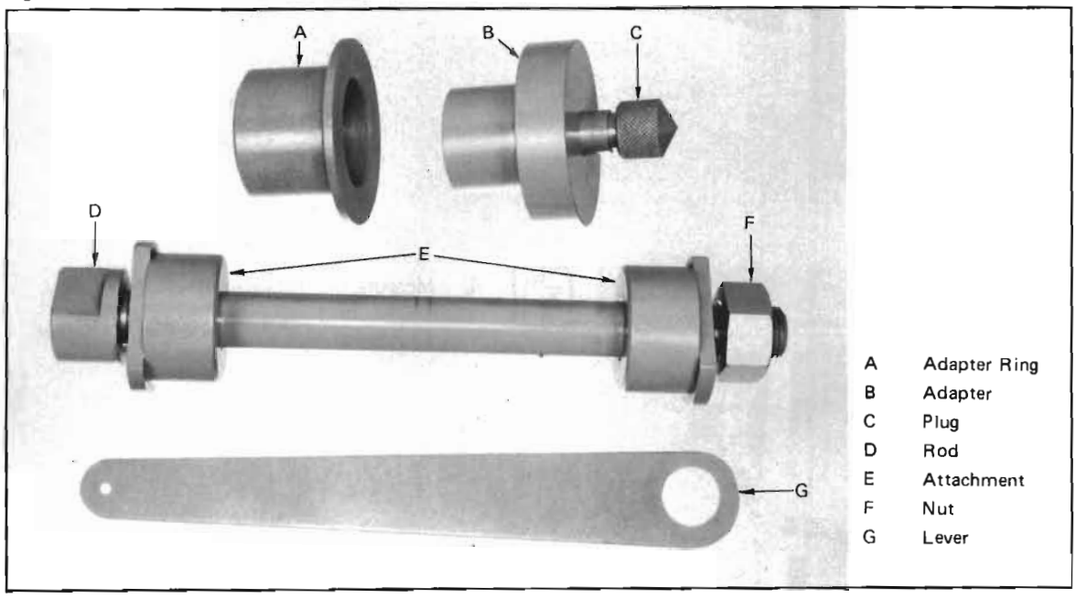
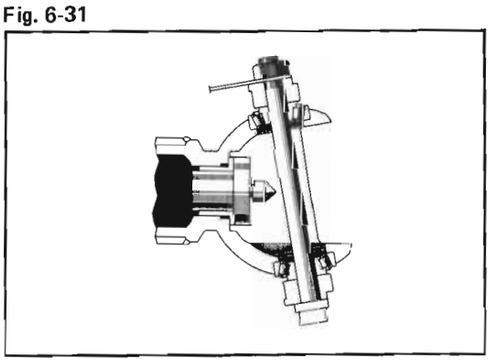


Fig. 6-31

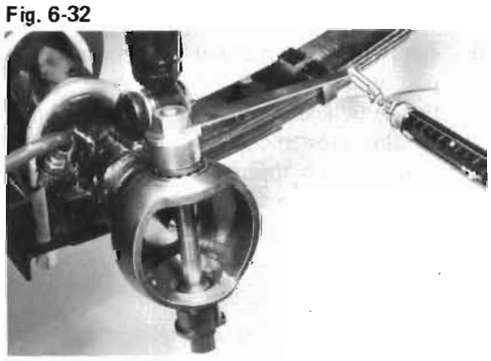


1. Mount the SST [09634-60012] on the housing.

– Note –

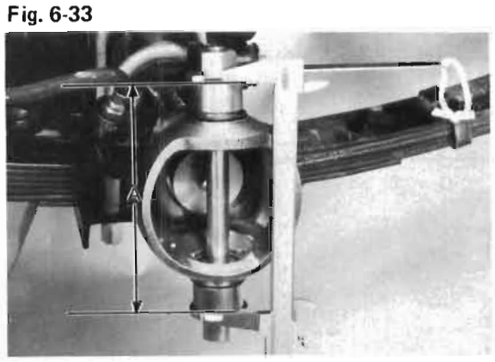
Have the knuckle bearings coated lightly with Molybdenum disulphide lithium base grease.

Fig. 6-32



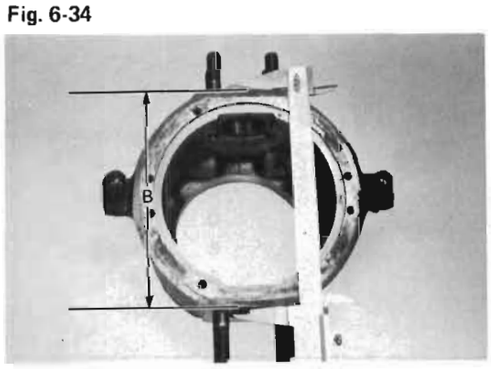
2. Tighten the nut (F) until the spring scale indicates about 2.0 – 2.5 kg (4.4 – 5.5 lb.)

Fig. 6-33



3. Measure the distance "A".

Fig. 6-34



4. Measure the distance "B".

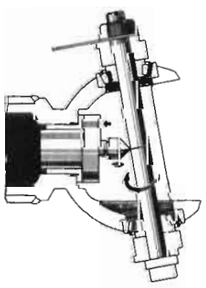
Fig. 6-35

TOTAL SHIM THICKNESS "C"

"C" = "A" - "B"

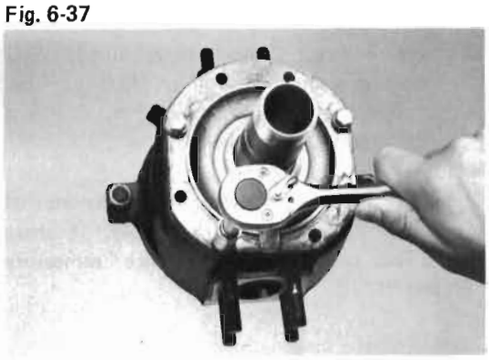
5. The difference between "A" and "B" is the total adjusting shim thickness that is required to maintain the correct bearing preload.

Fig. 6-36



6. Apply a light coat of red lead on the center part of rod (D)
7. Press the adapters (A) and (B) against the housing, press the plug (C) against the rod (D), and turn the lever (G) so as to have a line scribed on the rod (D).

Fig. 6-37

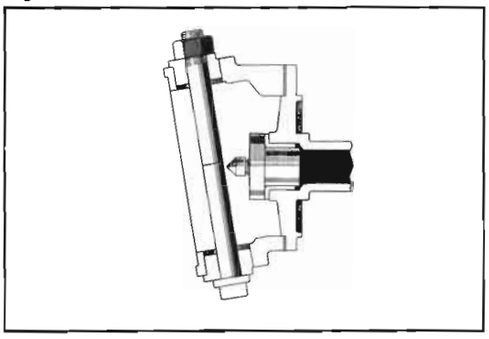


8. Bolt on the knuckle spindle to the knuckle.

– Note –

Install the bolt over two washers.

Fig. 6-38

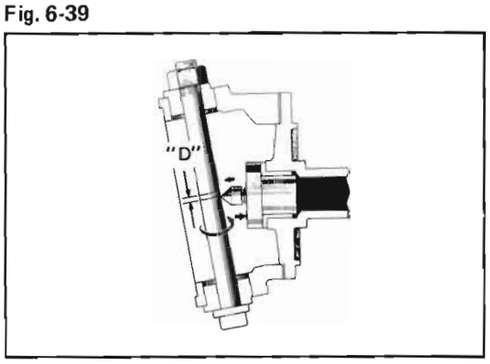


9. Dismount the SST[09634-60012] from the housing, and mount it on the knuckle.

– Caution –

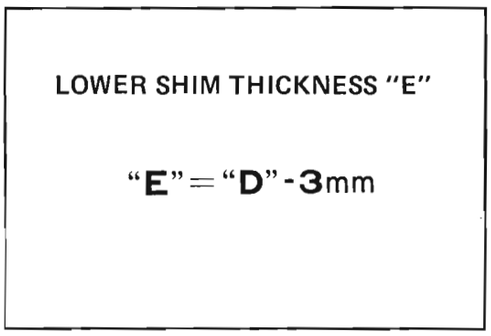
1. **Use care not to erase the scribed line when dismounting and remounting the SST.**
2. **Make sure that the rod (D) is in the same vertical direction that it was when mounted on the housing.**

Fig. 6-39



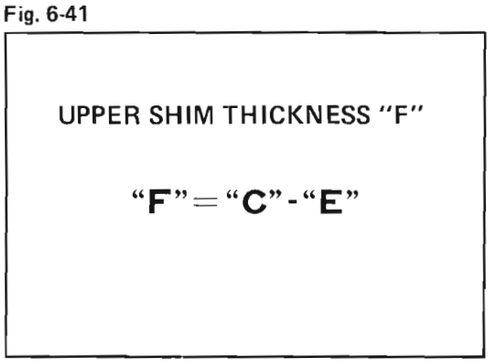
10. Turn the rod (D) and scribe another line on it.
11. Measure the distance "D" between the two scribed lines.

Fig. 6-40



12. The thickness of the steering knuckle lower bearing shim "E" will be the distance "D" less 3 mm (0.12 in.)

Fig. 6-41



Adjusting Shim Sizes

Part No.	Thickness mm (in)
43233-60010	0.2 (0.008)
43234-60010	0.5 (0.020)
43233-60020	1.0 (0.04)

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".

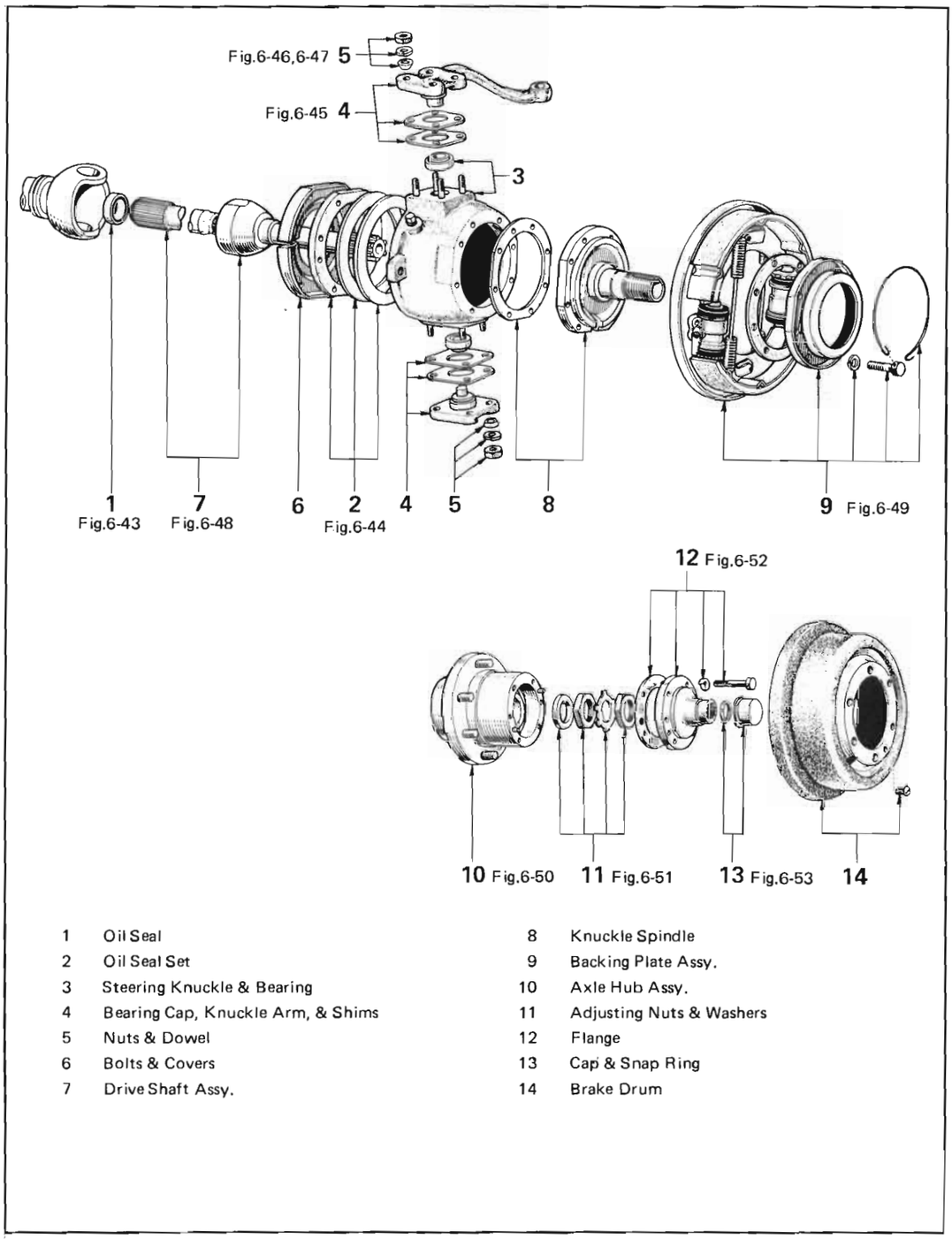
– Note –

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

INSTALLATION

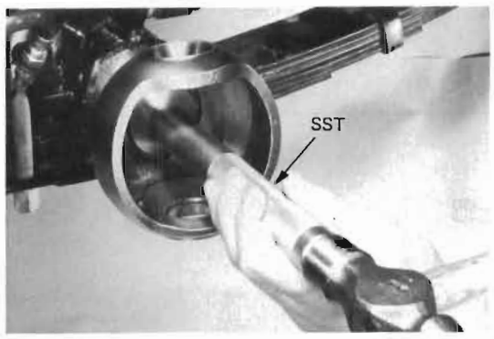
Install the parts in the order numbered below.

Fig. 6-42



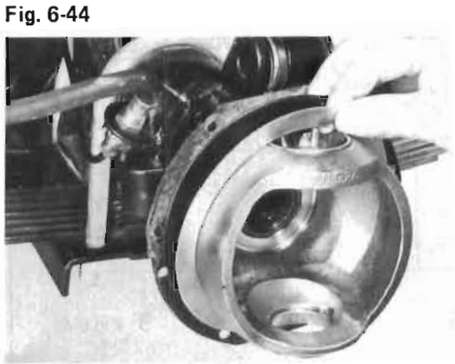
1	Oil Seal	8	Knuckle Spindle
2	Oil Seal Set	9	Backing Plate Assy.
3	Steering Knuckle & Bearing	10	Axle Hub Assy.
4	Bearing Cap, Knuckle Arm, & Shims	11	Adjusting Nuts & Washers
5	Nuts & Dowel	12	Flange
6	Bolts & Covers	13	Cap & Snap Ring
7	Drive Shaft Assy.	14	Brake Drum

Fig. 6-43



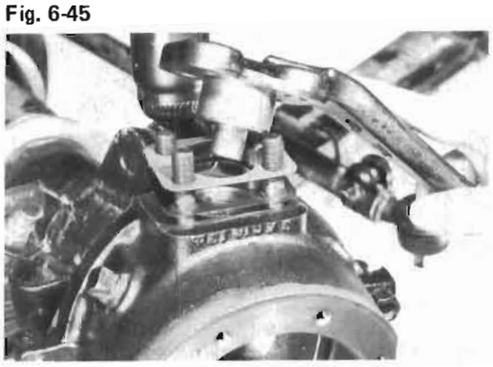
Use SST [09618-60010].
– Note –
Apply multipurpose grease to the seal lip.

Fig. 6-44



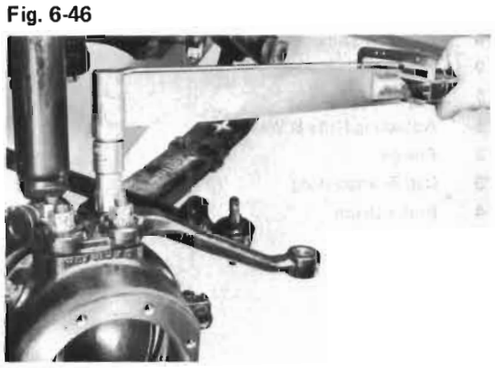
Place oil seal set in the housing.

Fig. 6-45



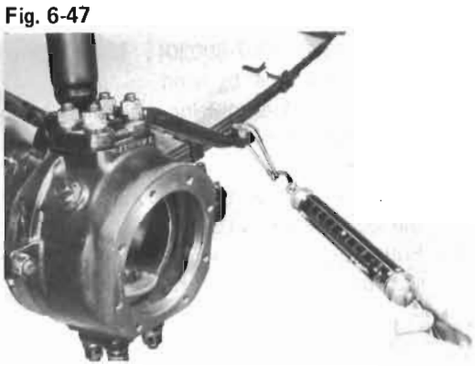
Install the bearing cap and knuckle arm over the shims that were originally used or were selected as described in adjustment operations.

Fig. 6-46



Tighten the nut.
Specified torque **6 – 7.5 kg-m (43 – 54.3 ft-lb)**

Fig. 6-47

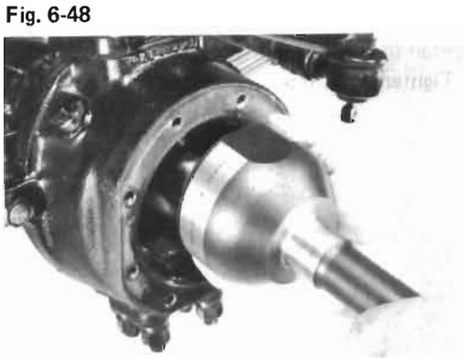


1. Measure the knuckle bearing preload.
   Specified pull 1.8 – 2.3 kg (3.9 – 5.0 lb)
2. Install the tie rod end to the knuckle arm.

– Caution –

If the specified pull is not indicated, correct by varying the number of upper and lower adjusting shims by equal amounts.

Fig. 6-48

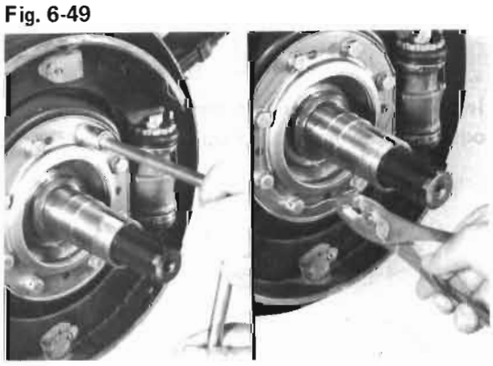


Position the flat part of the outer shaft in vertical direction and install the drive shaft assembly.

– Caution –

1. **Use care not to damage the oil seal lip.**
2. **Pack Molybdenum disulphide lithium base grease into the knuckle to about three-fourth of the knuckle volume.**

Fig. 6-49



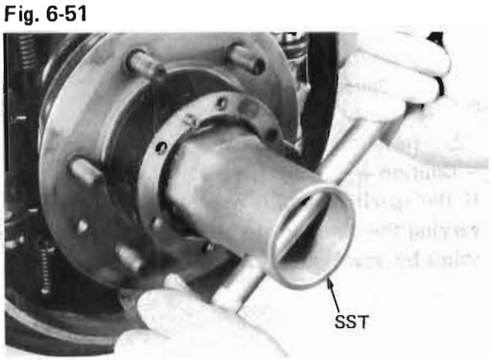
Install the nuts and lock them with the lock wire.
Tightening torque 1.5 – 2.2 kg-m (10.9 – 16.0 ft-lb)

Fig. 6-50



Pack multipurpose grease into the hub and bearing.
Apply multipurpose grease to the oil seal lip.

Fig. 6-51



1. Using SST[09607-60020], fully tighten the lock nut inner by hand.
2. Unscrew the lock nut inner 1/8th to 1/6th turn, and check the hub to see that it turns properly.
3. Lock the nut by bending inward one of the lock washer teeth.
4. Fully tighten the lock nut outer, and secure it with the lock washer.

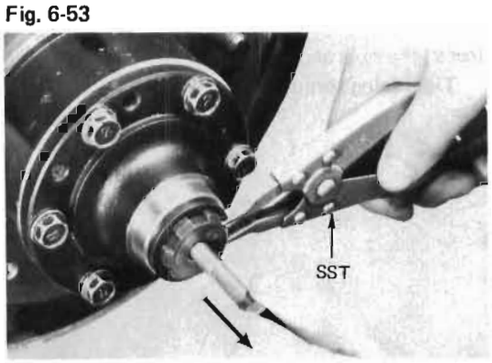
Fig. 6-52



Tighten the bolts at the specified torque.

Tightening torque **1.5 – 2.2 kg-m (10.9 – 16.0 ft-lb)**

Fig. 6-53



Use SST[09905-00010].

– Note –

Install a bolt on the axle shaft, and while pulling out the shaft, install the snap ring.

DIFFERENTIAL

REMOVAL

Remove the parts in the order numbered below.

Fig. 6-54

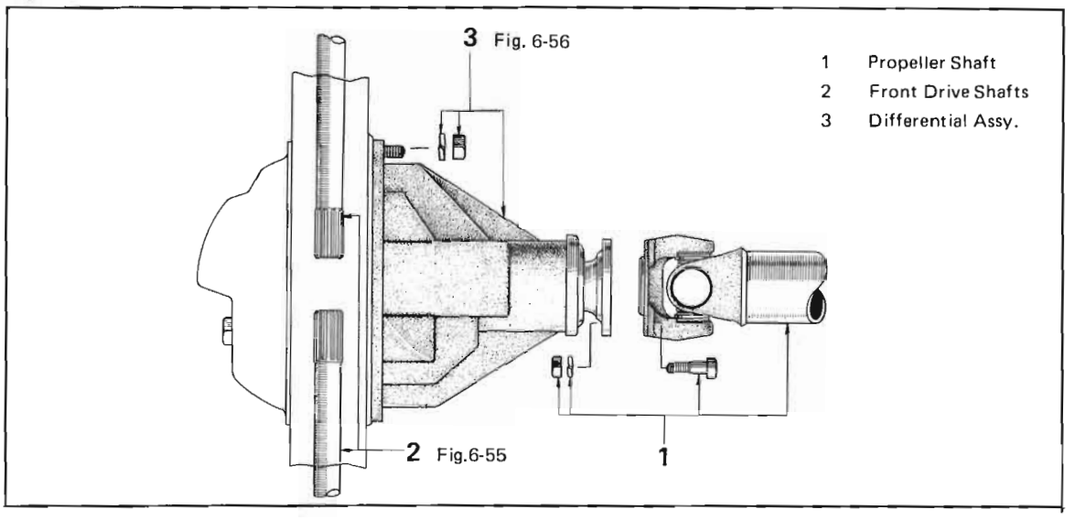


Fig. 6-55

SEE STEERING KNUCKLE AND AXLE SHAFT SECTION

Remove the axle shafts.

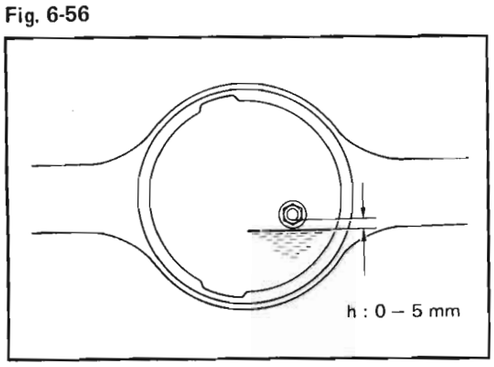
DISASSEMBLY AND ASSEMBLY

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. 6-56



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

Standard capacity

FJ, BJ & HJ series

2.5 liter

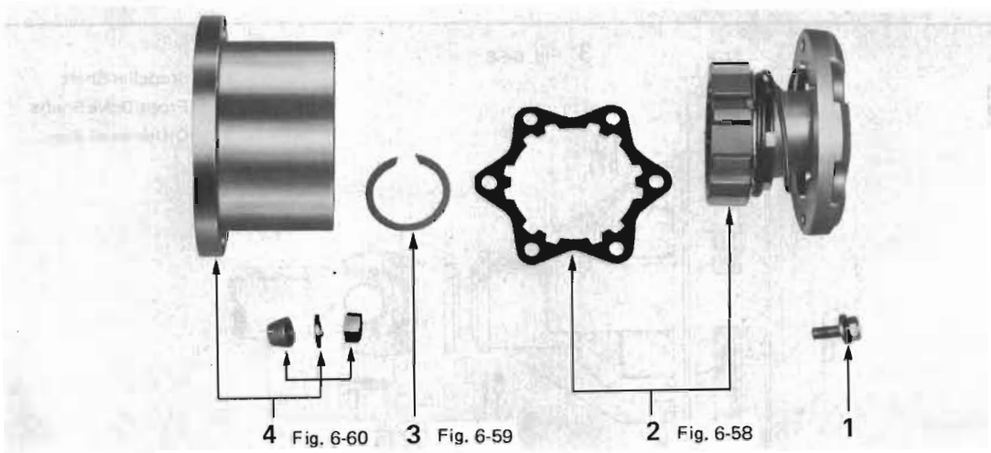
(2.6 US.qts., 2.2 Imp.qts.)

FREE WHEEL HUB

REMOVAL

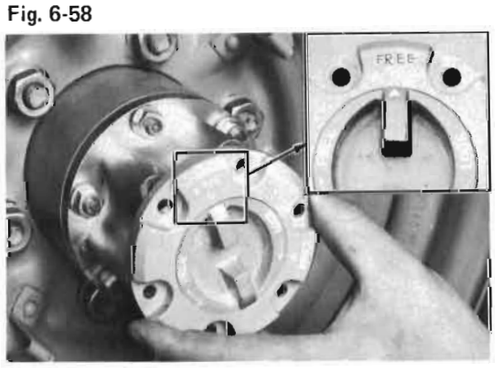
Remove the parts in the order shown below.

Fig. 6-57



1. Bolts
2. Cover Assembly & Gasket
3. Snap Ring
4. Free Wheel Hub, Nuts, Spring Washer & Cone Washer

Fig. 6-58

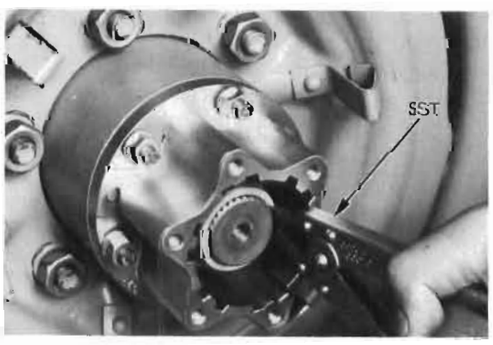


Remove the cover assembly.

– Note –

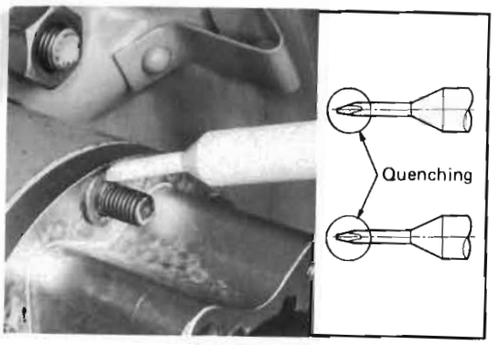
The hub control handle should be set to FREE.

Fig. 6-59



Use SST [09905-00010].

Fig. 6-60

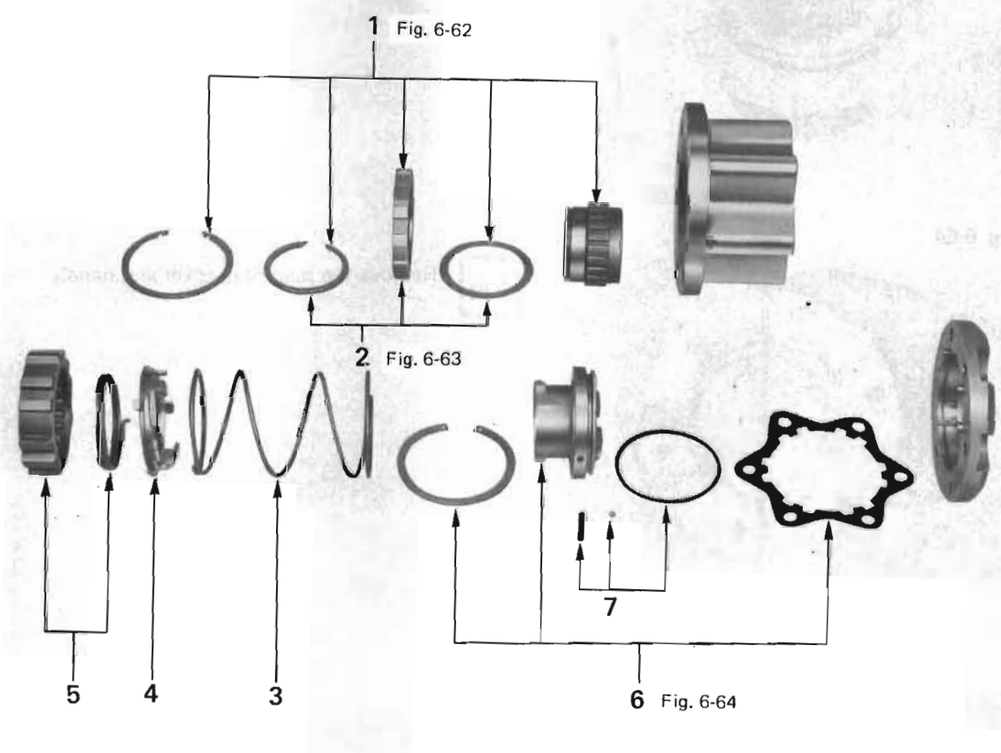


Remove the cone washer.

DISASSEMBLY

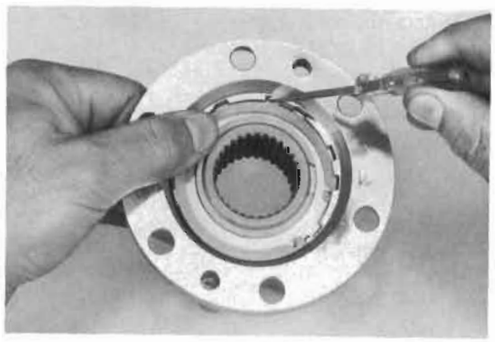
Disassemble the parts in the order shown below.

Fig. 6-61



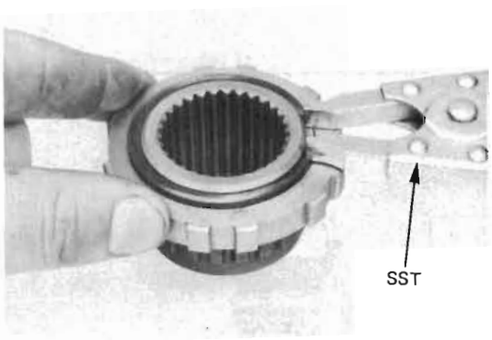
1. Snap Ring & Inner
2. Snap Ring, Free Wheel Hub Ring & Spacer
3. Compression Spring
4. Follower
5. Tension Spring & Clutch
6. Snap Ring, Handle & Cover
7. "O" Ring, Spring & Ball

Fig. 6-62



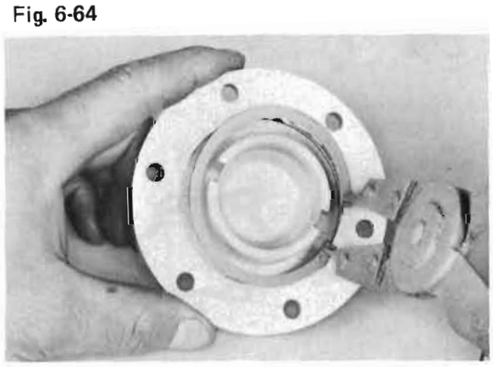
Remove the snap ring and free wheel hub ring.

Fig. 6-63



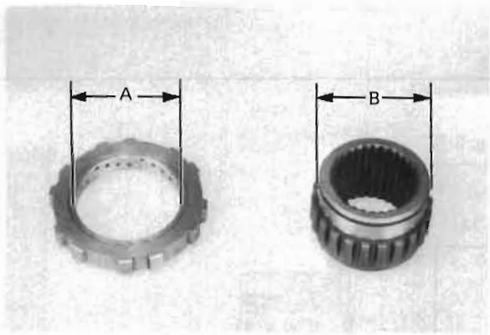
Use SST [09905-00010].

Fig. 6-64



Remove the snap ring, cover and handle.

Fig. 6-65



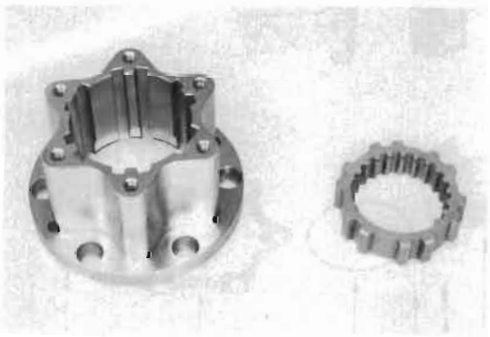
INSPECTION

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

Inner And Free Wheel Hub Ring

1. Inspect for wear or damage.
2. **Oil clearance limit (A – B)**
   0.3 mm (0.012 in.)

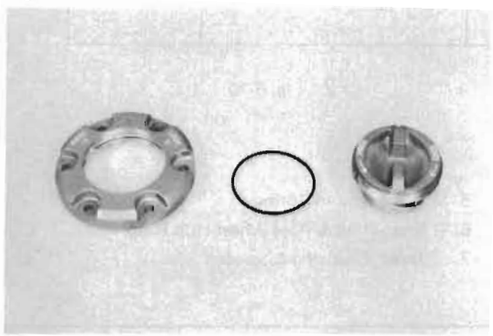
Fig. 6-66



Body And Clutch

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

Fig. 6-67



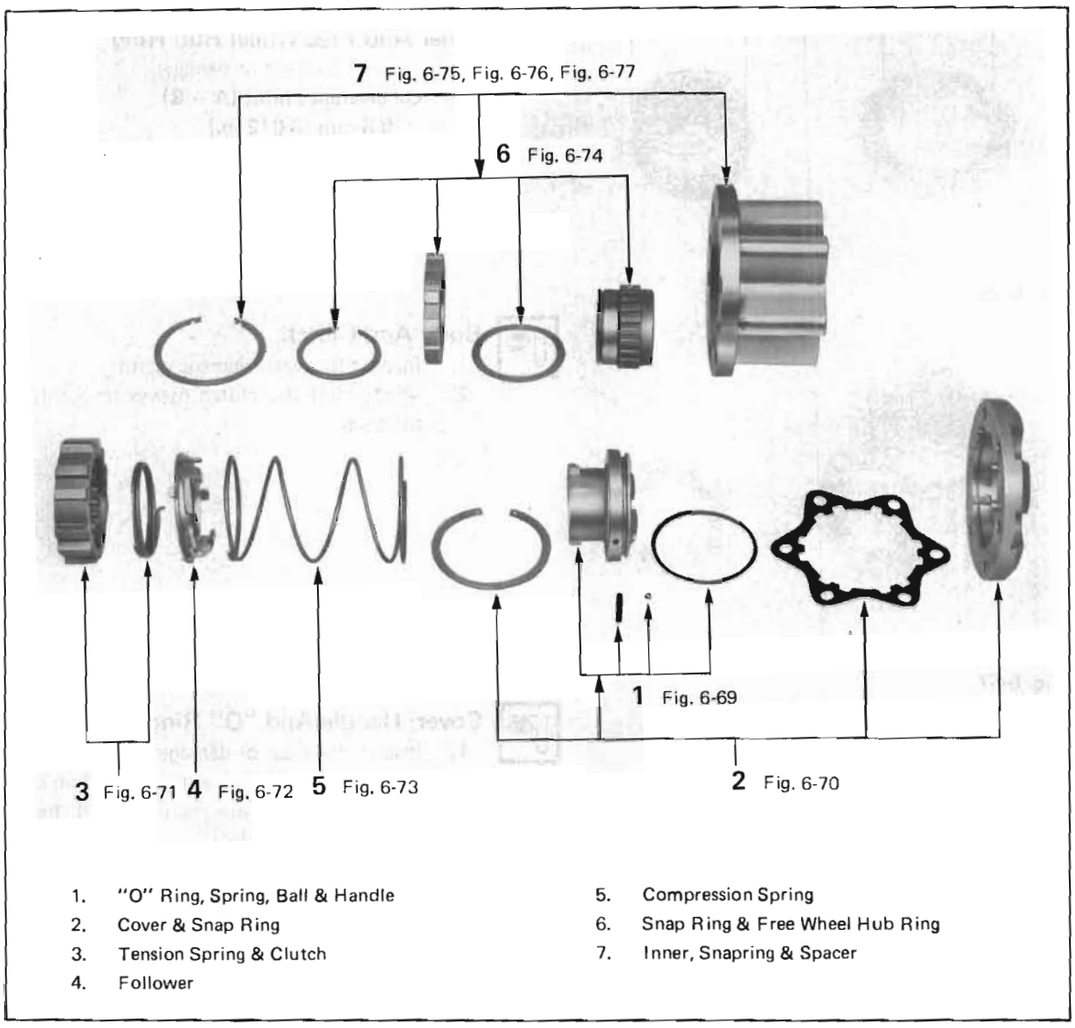
Cover, Handle And "O" Ring

1. Inspect for wear or damage.
2. Rotate the control handle of the hub back and forth to make sure that it moves smoothly and freely.

ASSEMBLY

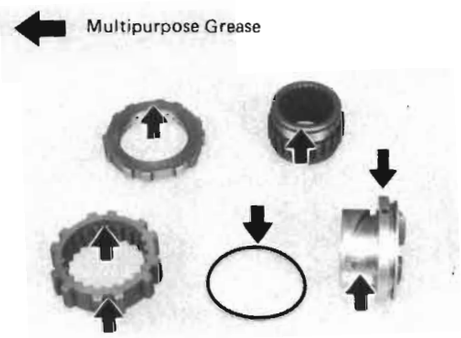
Assemble the parts in the order shown below.

Fig. 6-68



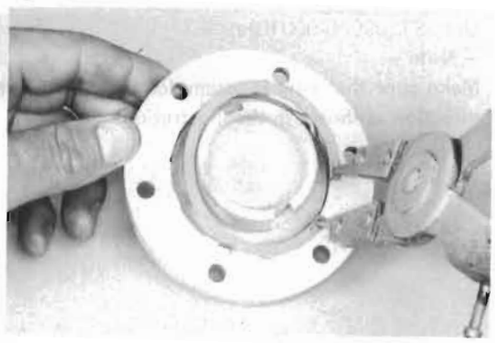
1. "O" Ring, Spring, Ball & Handle
2. Cover & Snap Ring
3. Tension Spring & Clutch
4. Follower
5. Compression Spring
6. Snap Ring & Free Wheel Hub Ring
7. Inner, Snapring & Spacer

Fig. 6-69



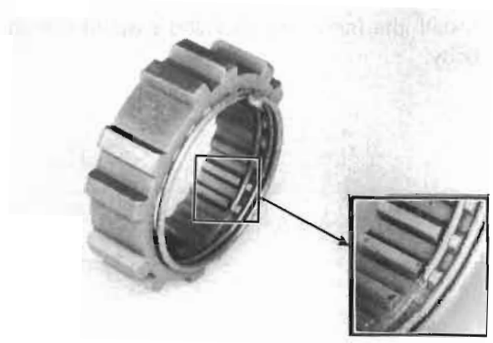
Apply MP grease on the arrow mark portion, before assembling.
Before assembly, apply MP grease as indicated on the photo.

Fig. 6-70



Install the handle in the cover.

Fig. 6-71

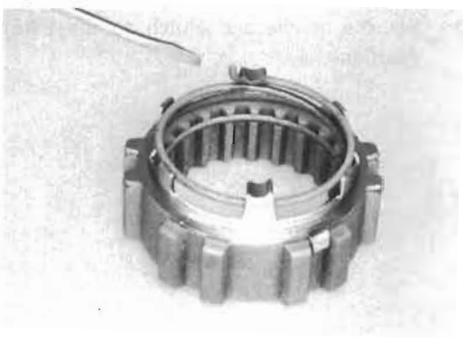


Install the tension spring in the clutch.

– Note –

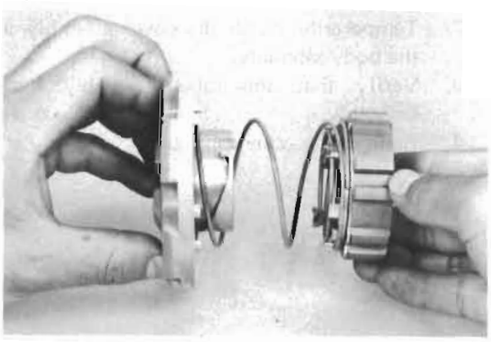
Fit the spring end into the clutch spring so as to be aligned with the initial groove.

Fig. 6-72



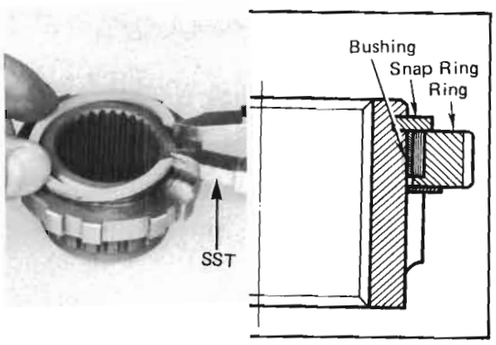
Fit follower pawl together with spring bent portion.

Fig. 6-73



Install the clutch and spring into the handle assembly.

Fig. 6-74

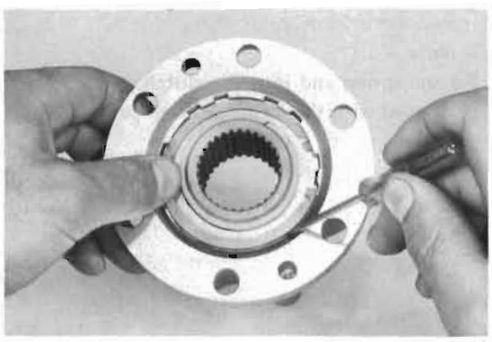


Use SST [09905-00010].

– Note –

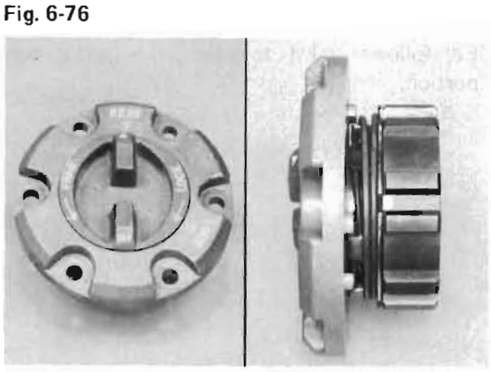
Make sure that ring is assembled in the correct direction as shown in the illustration.

Fig. 6-75



Install the inner assembly and snap ring in the body.

Fig. 6-76



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

Fig. 6-77

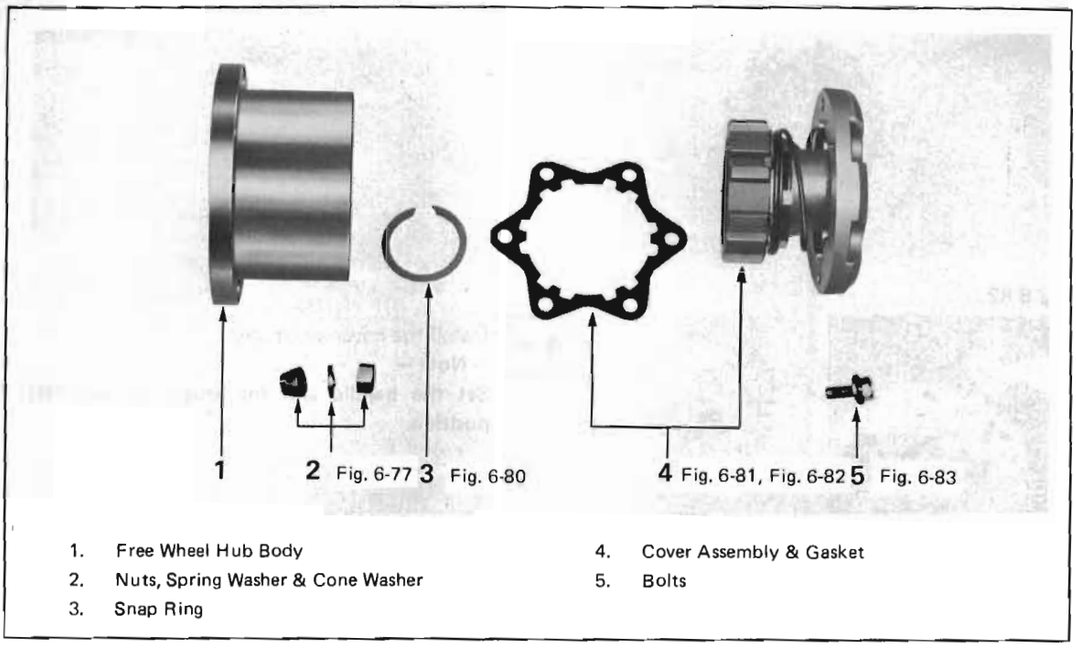


2. Temporarily install the cover assembly to the body assembly.
3. Verify that the inner assembly turns smoothly.
4. Remove the cover assembly.

INSTALLATION

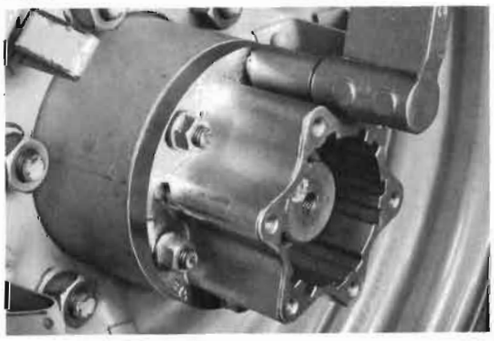
Install the parts in the order shown below.

Fig. 6-78



1. Free Wheel Hub Body
2. Nuts, Spring Washer & Cone Washer
3. Snap Ring
4. Cover Assembly & Gasket
5. Bolts

Fig. 6-79



Tighten six nuts to the specified torque.

Tightening torque **2.5 – 3.5 kg-m (18.1 – 25.3 ft-lb)**

Fig. 6-80

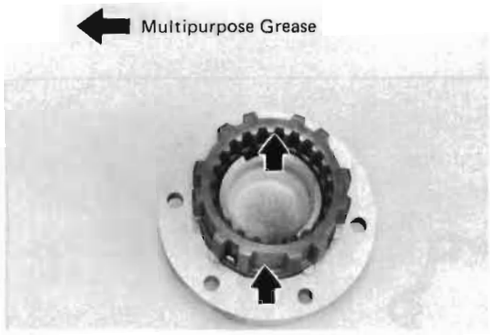


Use SST [09905-00010].

– Note –

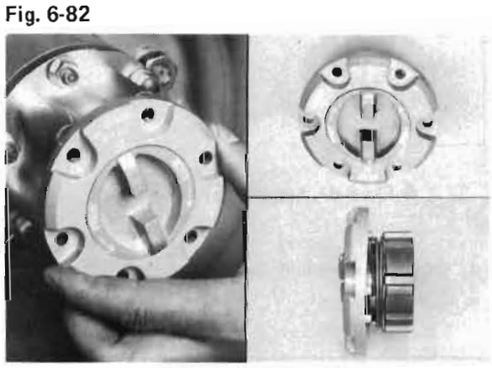
Gripping a bolt, pull the axle shaft out to install the snap ring.

Fig. 6-81



Apply MP grease on the portion indicated.

Fig. 6-82

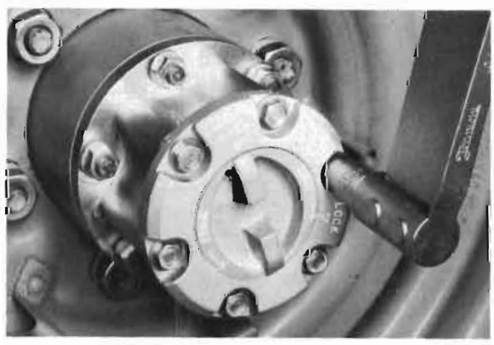


Install the cover assembly.

– Note –

Set the handle and the clutch to the FREE position.

Fig. 6-83



Tighten six bolts to the specified torque.

Tightening torque **0.4 – 0.7 kg-m (2.9 – 5.1 ft-lb)**

– Note –

Verify that the control handle rotates smoothly.

STEERING

page

STEERING WHEEL & MAIN SHAFT 7- 2

INTERMEDIATE SHAFT 7- 7

STEERING GEAR HOUSING 7-11

STEERING LINKAGE
& FRONT WHEEL ALIGNMENT 7-24

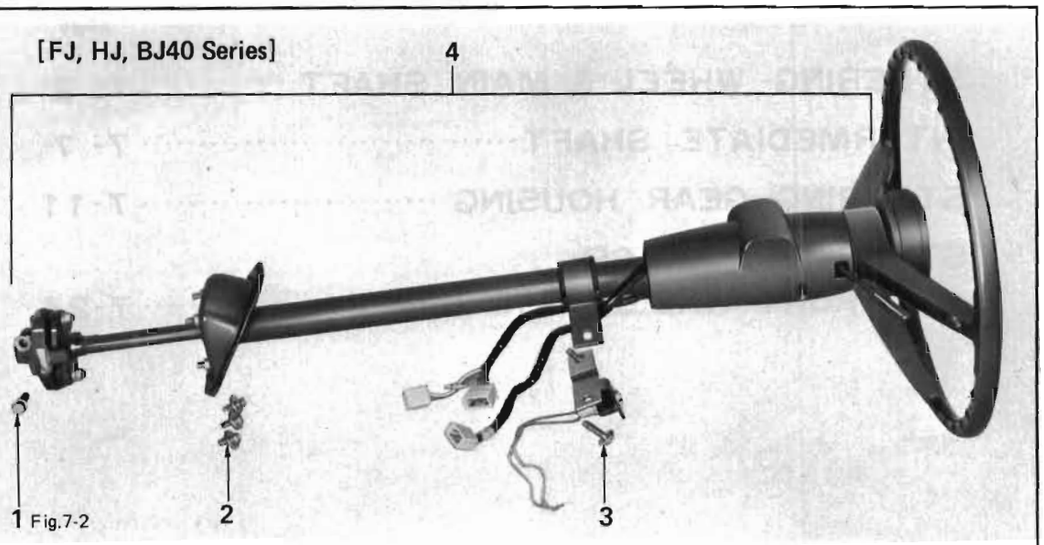
STEERING WHEEL AND MAIN SHAFT

REMOVAL

Remove the parts in the order numbered below.

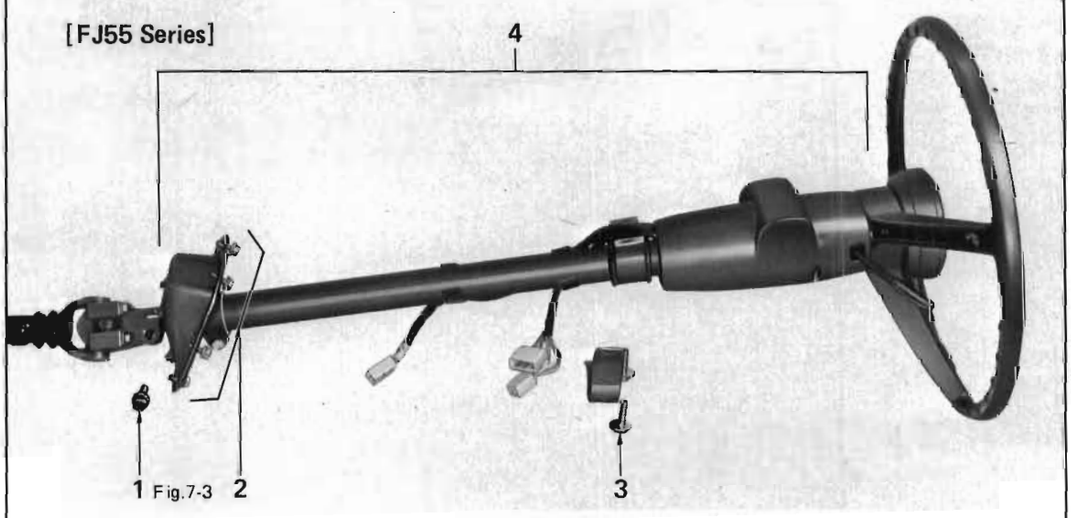
Fig. 7-1

[FJ, HJ, BJ40 Series]



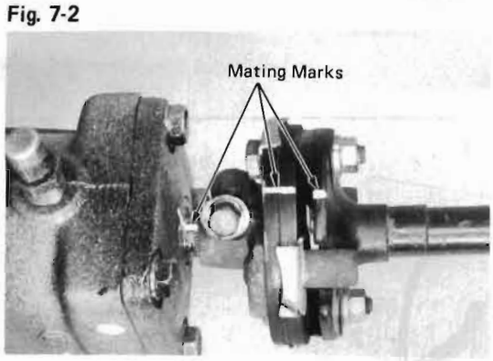
1 Lock Bolt
2 Oil Cover Bolts
3 Upper Bracket
4 Steering Column Assy.

[FJ55 Series]



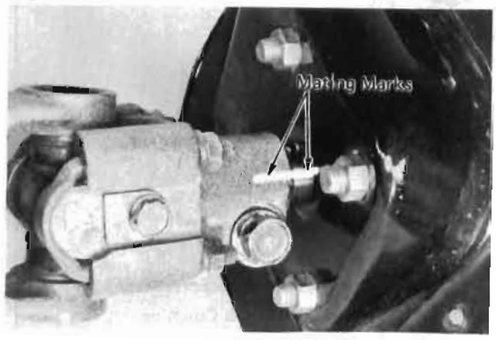
1 Lock Bolt
2 Hole Cover Bolts
3 Upper Bracket
4 Steering Column Assy.

Fig. 7-2



⚠ Place mating marks on the gear box, couplings, and main shaft.

Fig. 7-3



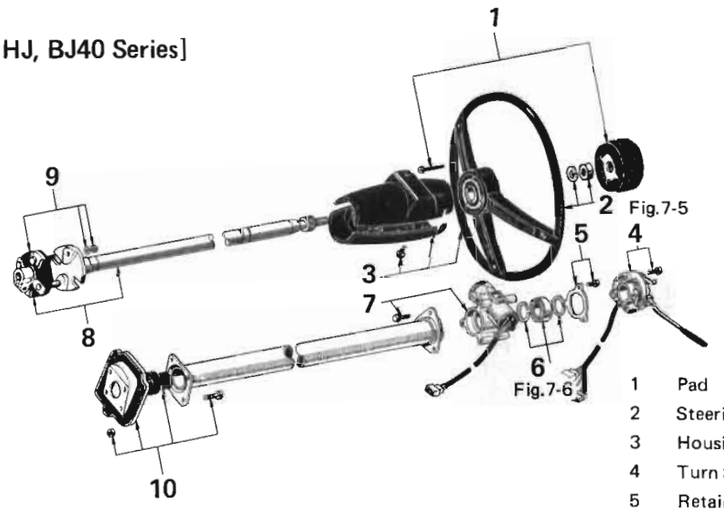
⚠ Place mating marks on the yoke and main shaft.

DISASSEMBLY

Disassemble the parts in the order numbered below.

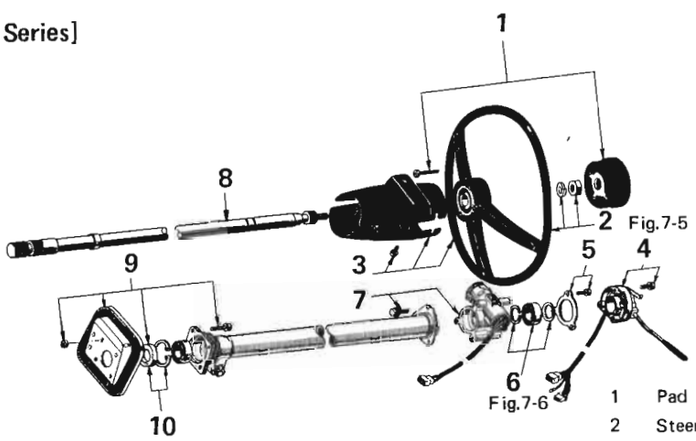
Fig. 7-4

[FJ, HJ, BJ40 Series]



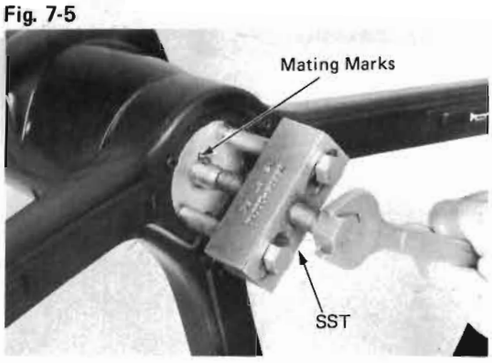
1 Pad
2 Steering Wheel Assy.
3 Housing
4 Turn Signal Switch
5 Retainer
6 Bearing
7 Upper Bracket Assy.
8 Shaft & Coupling
9 Coupling
10 Hole Cover & Seal

[FJ55 Series]



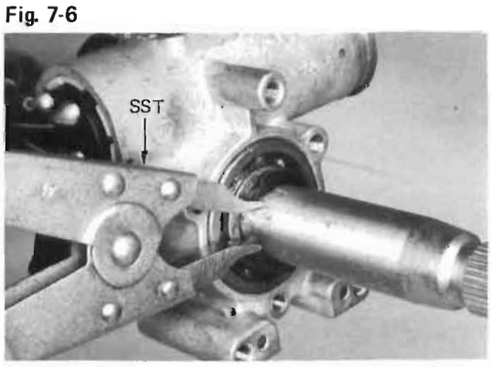
1 Pad
2 Steering Wheel Assy.
3 Housing
4 Turn Signal Switch
5 Retainer
6 Bearing
7 Upper Bracket Assy.
8 Shaft
9 Hole Cover
10 Bearing

Fig. 7-5



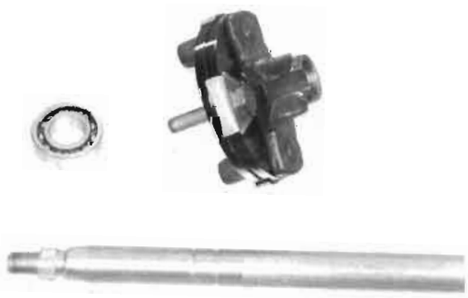
Place mating marks on the shaft and steering wheel.
Use SST [09609-20010] to remove the steering wheel.

Fig. 7-6



Use SST [09905-00010]

Fig. 7-7



INSPECTION

[FJ, HJ, BJ40 Series]
Inspect the shaft, bearing, and coupling for damage, wear, and cracks.

Fig. 7-8



[FJ55 Series]
Inspect the shaft and bearings for damage, wear, and cracks.

ASSEMBLY

Perform the disassembly in reverse order.

– Note –

1. **Pack grease into the upper bearing.**
2. **Align the mating marks when installing the steering wheel.**

INSTALLATION

Perform the removal in reverse order.

– Note –

Align the mating marks when installing the steering column assy.

INTERMEDIATE SHAFT

DISASSEMBLY

Disassemble the parts in the order numbered below.

Fig. 7-9

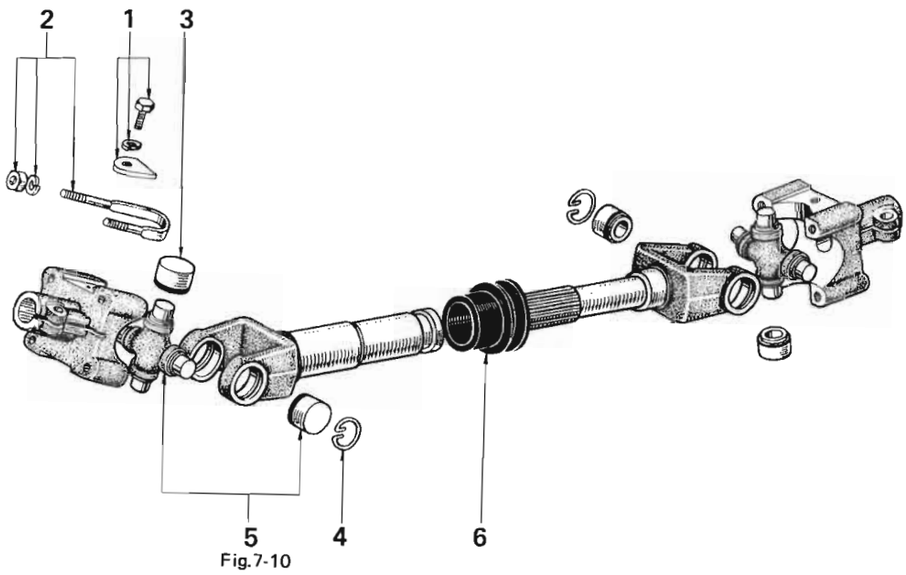
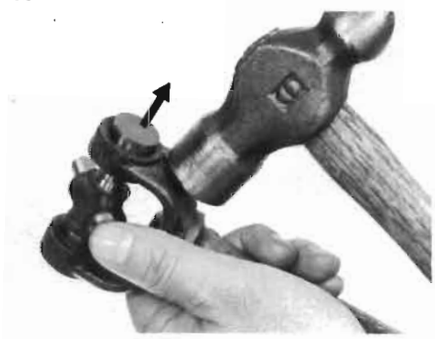


Fig.7-10

1	Plates	4	Snap Rings
2	U Bolts	5	Spider & Bearings
3	Bearings	6	Cover

Fig. 7-10

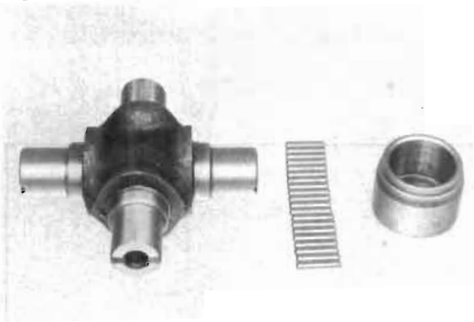


Remove the bearing cup by lightly tapping the yoke with a hammer.

– Note –

Hold downward the bearing and spider at the other end while tapping the yoke.

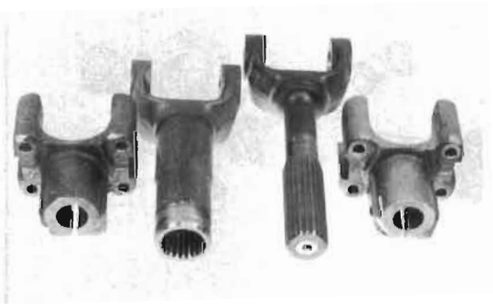
Fig. 7-11



INSPECTION

Inspect the spider and bearing for damage and wear.

Fig. 7-12

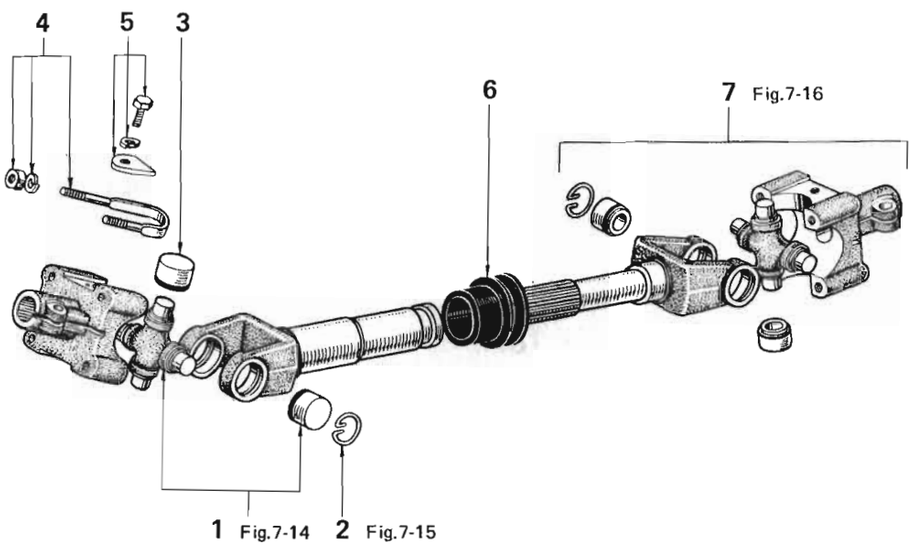


Inspect the splines for wear and damage.

ASSEMBLY

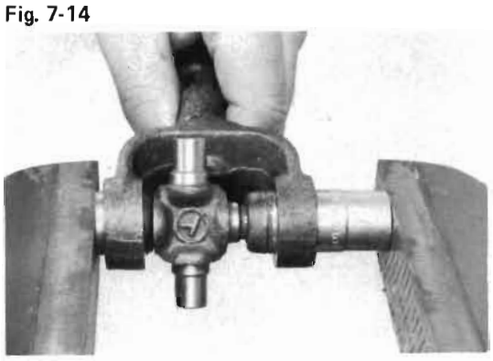
Assemble the parts in the order numbered below.

Fig. 7-13



1 Spider & Bearings
2 Snap Rings
3 Bearings
4 "U" Bolts
5 Plates
6 Cover
7 Slide Yoke Assy.

Fig. 7-14



Using a vise, assemble the bearings.

Fig. 7-15



Select snap rings of the thickness that will provide minimum thrust clearance in the joint spider but will still allow the joint spider to operate smoothly.

Snap Ring Thickness

Part No.	Thickness mm (in.)
90521-22011	1.20 (0.0424)
90521-22012	1.25 (0.0492)
90521-22013	1.30 (0.0512)

Fig. 7-16



Make the assembly so that the steering yokes will be positioned in the same direction.

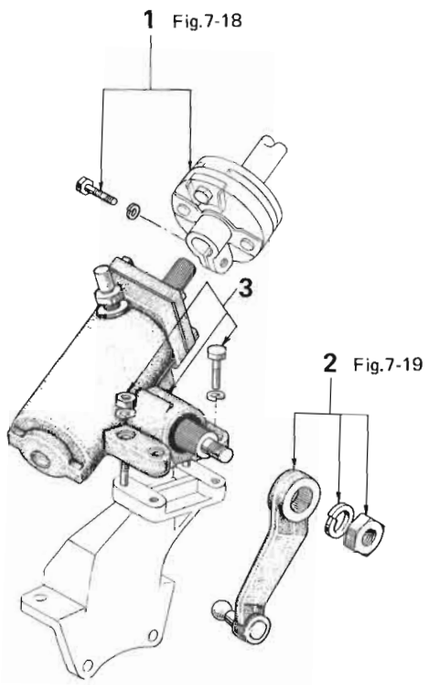
STEERING GEAR HOUSING

REMOVAL

Remove the parts in the order numbered below.

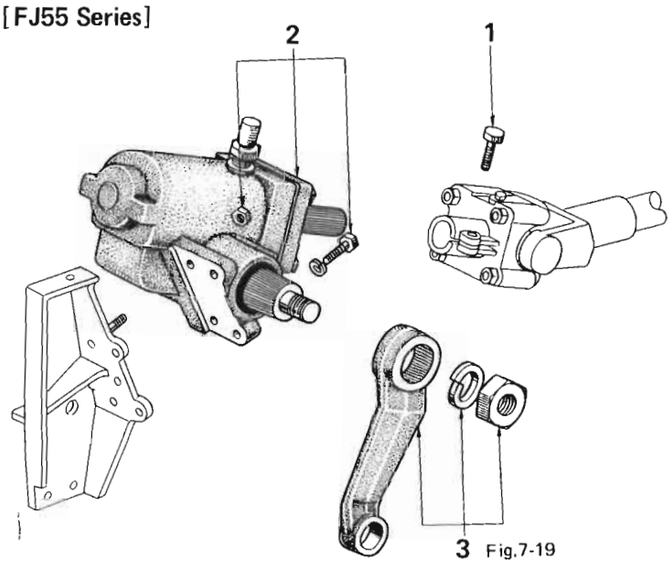
Fig. 7-17

[FJ, HJ, BJ40 Series]



1 Main Shaft Assy.
2 Pitman Arm
3 Gear Box Assy.

[FJ55 Series]



1 Bolt
2 Pitman Arm
3 Gear Box Assy.

Fig. 7-18

SEE
STEERING WHEEL AND
MAIN SHAFT SECTION

Remove the steering wheel and main shaft.

Fig. 7-19

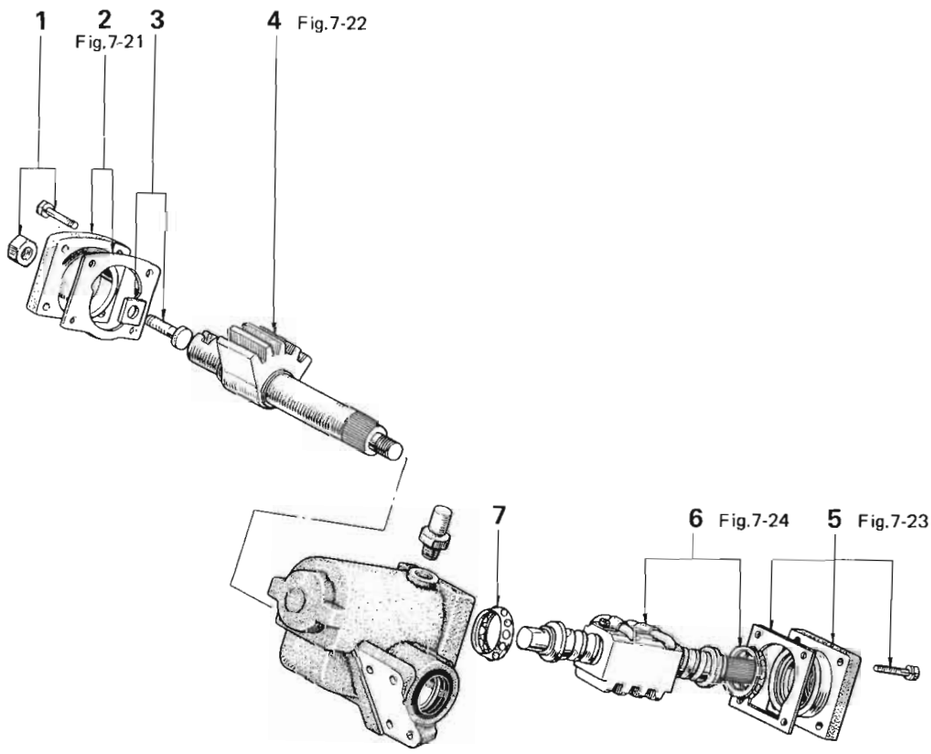


Using SST [09610-55011], remove the pitman arm.

DISASSEMBLY

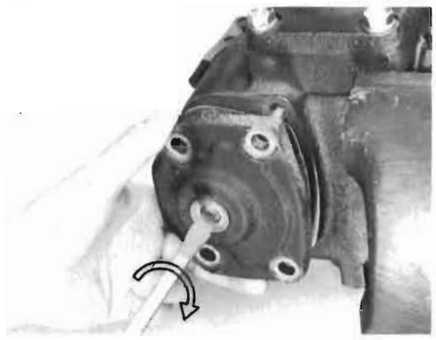
Disassemble the parts in the order numbered below.

Fig. 7-20



1 Bolt & Nut
2 Cover & Gasket
3 Screw & Washer
4 Sector Shaft
5 Cover & Shim
6 Bearing & Worm Assy.
7 Bearing

Fig. 7-21

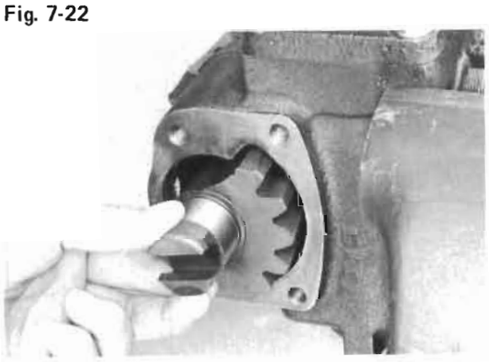


Screw in the bolt and remove the cover.

– Note –

Use a receiver to catch the oil from the gear housing.

Fig. 7-22



Pull the sector shaft out of the housing.

– Caution –

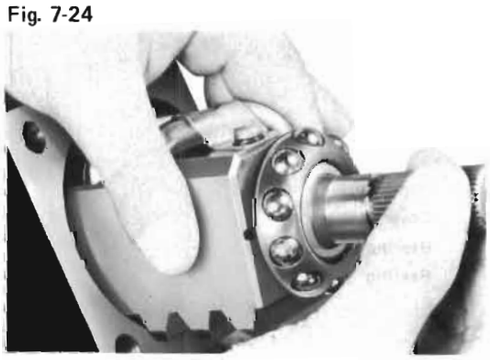
Have the sector shaft positioned at its rotational center.

Fig. 7-23



Record the number of shims used.

Fig. 7-24



Remove the worm assembly.

– Note –

1. **Keep the bearings in proper order so that they can be reassembled to their initial positions.**
2. **Do not attempt to disassemble the steering worm assembly.**
   If any part of it is defective, replace the entire assembly.
3. **Do not run the ball nut to the worm end.**

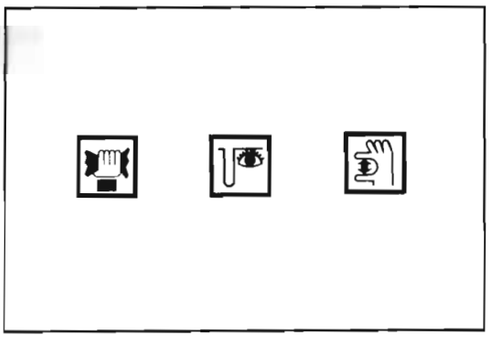
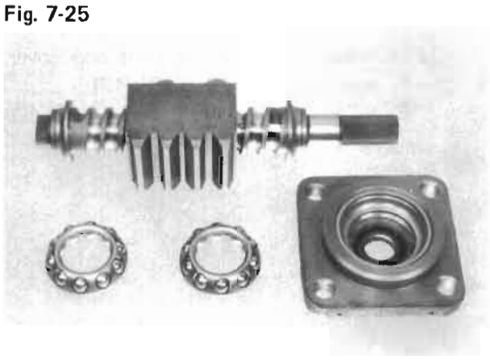


Fig. 7-25

INSPECTION

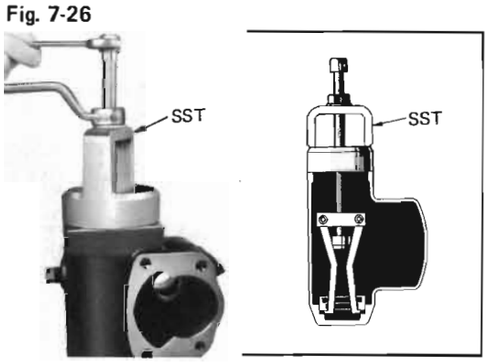
Wash the disassembled parts and inspect them on the following points.
Replace any part found defective.



Steering Worm And Bearings

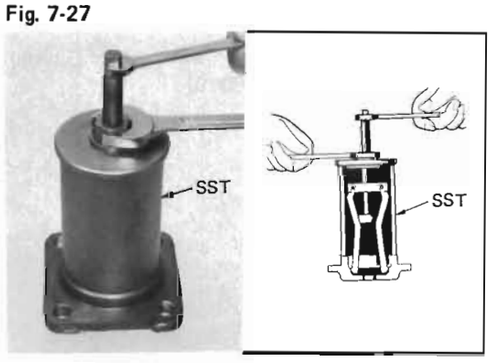
1. Inspect the bearings for damage and wear.
2. Inspect the worm threads and ball nut rack for damage and wear.
3. Check the turning condition of the ball nut.

Fig. 7-26



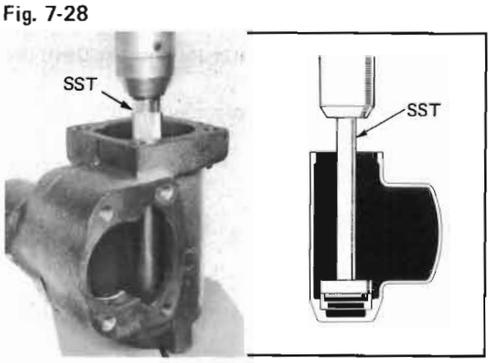
4. Outer race replacement.
   a. Remove the outer race at housing end with SST [09612-65012].

Fig. 7-27



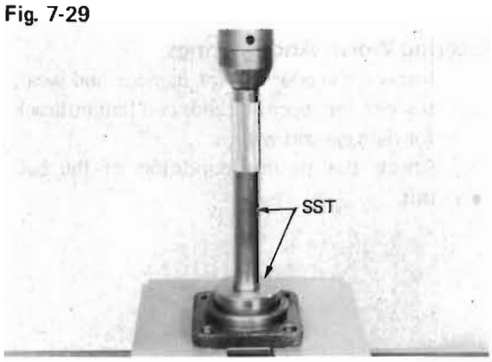
   b. Remove the outer race at end cover end with SST [09612-30011].

Fig. 7-28



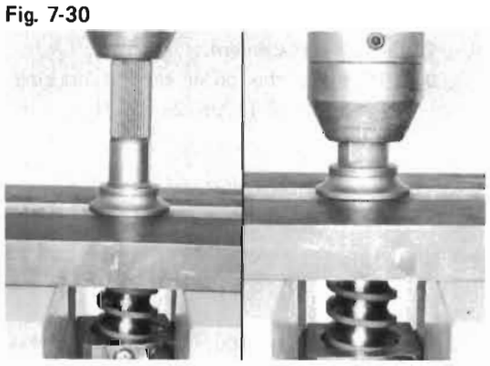
c. Install the outer race at housing end with SST [09608-35012].

Fig. 7-29



d. Install the outer race at end cover end with SST [09608-35012].

Fig. 7-30



5. Inner race replacement.
   a. Force out the inner race with a press.

Fig. 7-31



b. Press in the inner race, using SST [09620-30010].

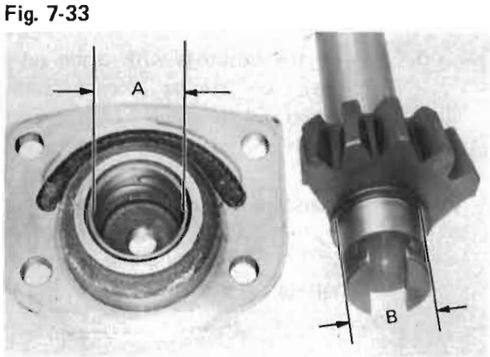
Fig. 7-32



Sector Shaft And Bushing

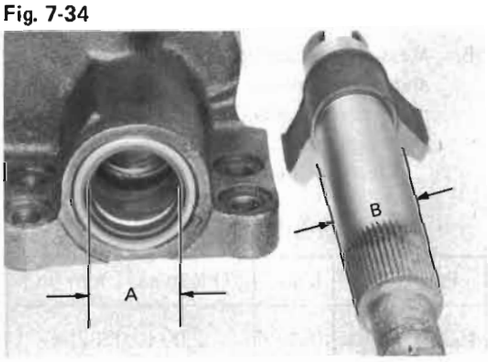
1. Inspect the shaft at bushing contacting surfaces and at gear teeth for wear and damage.
   Inspect the bushings for wear and damage.

Fig. 7-33



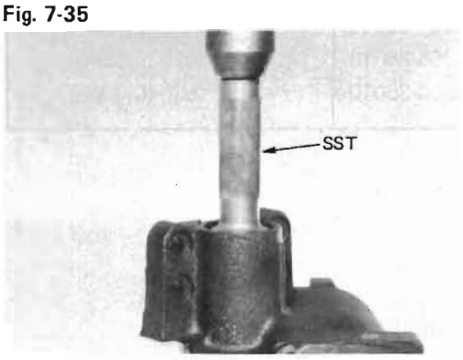
2. Check the sector shaft oil clearance (A – B).
   Limit 0.1 mm (0.004 in.)

Fig. 7-34



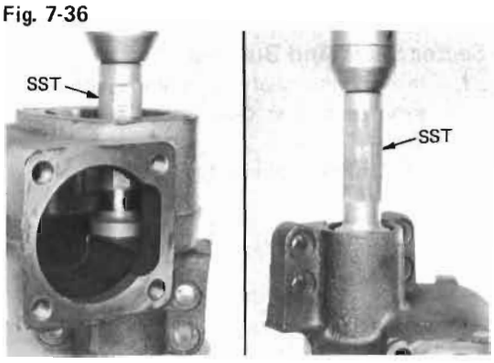
3. Check the sector shaft oil clearance (A – B).
   Limit 0.1 mm (0.004 in.)

Fig. 7-35



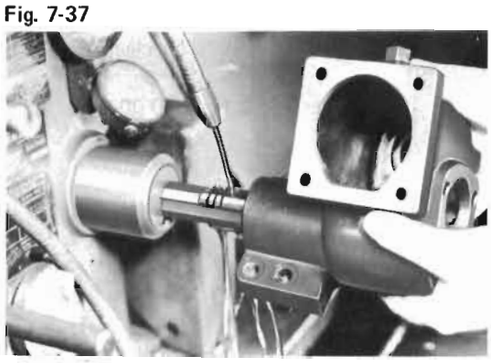
4. Replacement of gear housing bushings.
   a. Remove the oil seal.
   b. Using SST [09307-12010], press out the two bushings at the same time in the same direction.

Fig. 7-36



c. Using SST [09307-12010], press in the bushings from each end of the gear box.

Fig. 7-37



d. Hone the bushings with a pin hole grinder or similar means until standard oil clearance is obtained between the bushings and the sector shaft.

Standard clearance
0.009 – 0.060 mm
(0.0004 – 0.0024 in.)

e. Install the oil seal.

Fig. 7-38



5. Measure the sector shaft thrust clearance, and select a thrust washer that will provide minimum clearance between the sector shaft and the adjusting screw.

Clearance limit 0.1 mm (0.004 in.)

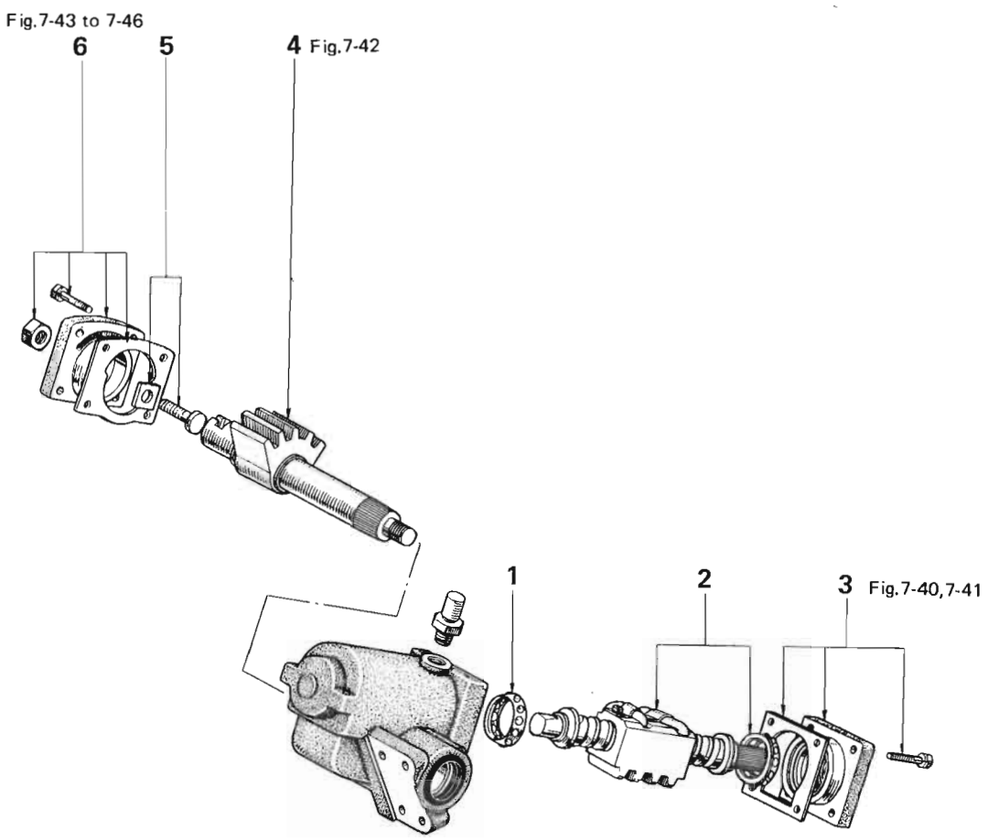
Thrust Washer Thickness

Part No.	Mark	Thickness mm (in.)
45352-36010	1	2.00 (0.0787)
45353-36010	2	2.05 (0.0807)
45354-36010	3	2.10 (0.0827)
45355-36010	4	2.15 (0.0846)
45356-36010	5	2.20 (0.0866)

ASSEMBLY

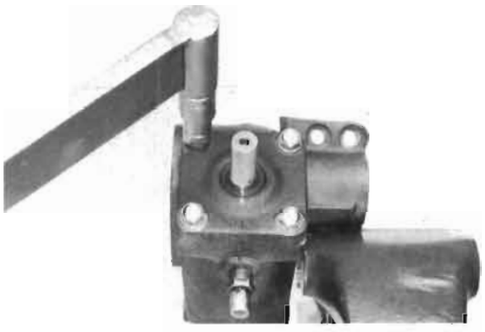
Assemble the parts in the order numbered below.

Fig. 7-39



1 Bearing
2 Bearing & Worm Assy.
3 Cover & Shim
4 Sector Shaft
5 Screw & Washer
6 Cover, Gasket, Bolt, & Nut

Fig. 7-40



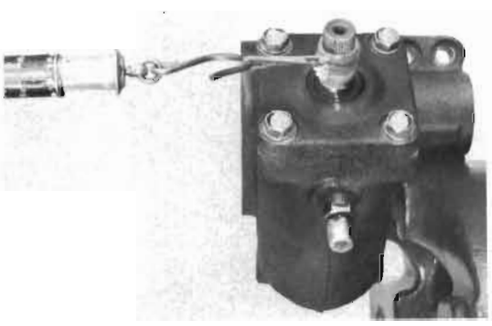
Install the cover over the same amount of shims removed at disassembly, and tighten the cover bolts at specified torque.

Tightening torque **3 – 4.5 kg-m (21.7 – 32.5 ft-lb)**

– Note –

1. **Have the worm bearing lubricated with gear oil.**
2. **While tightening the cover bolts, keep checking the worm to see that it will turn properly.**

Fig. 7-41



Measure the worm bearing preload.

Specified preload **4.0 – 6.0 kg (8.8 – 13.2 lb)**

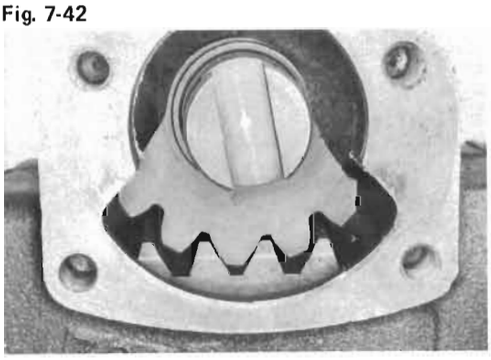
– Note –

Read the scale just when the worm starts to turn. If the preload is not within the specified limits, correct by selecting proper thickness shim.

Shim Thickness

Part No.	Mark	Thickness mm (in.)
45323-36010	1	0.05 (0.0020)
45323-36020	2	0.07 (0.0028)
45323-36030	3	0.08 (0.0032)
45323-36040	4	0.10 (0.0039)
45323-36050	5	0.12 (0.0047)
45323-36060	6	0.5 (0.020)
45323-36070	7	0.06 (0.0024)
45323-36080	8	0.09 (0.0035)

Fig. 7-42

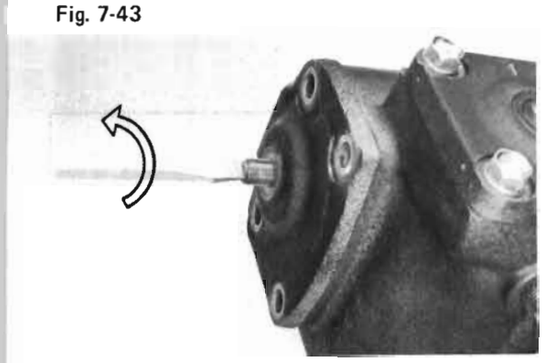


Position the worm ball nut at the center and insert the sector shaft.

– Caution –

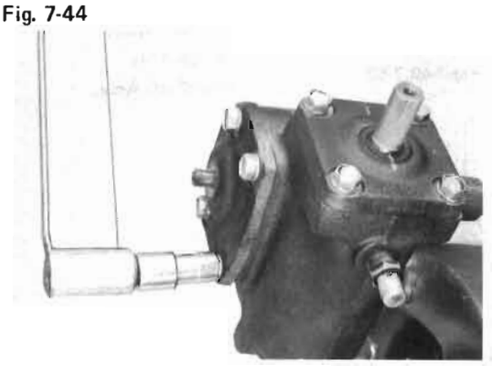
Make sure that the worm ball nut and the sector are meshing together at the center.

Fig. 7-43



Loosen the adjusting bolt all the way, and install the cover.

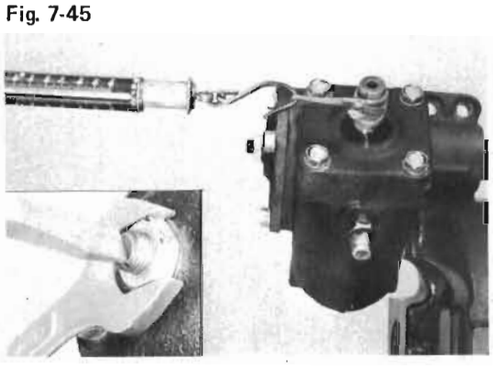
Fig. 7-44



Tighten the cover bolts at the specified torque.

Tightening torque **3.0 – 4.5 kg-m (21.7 – 32.5 ft-lb)**

Fig. 7-45



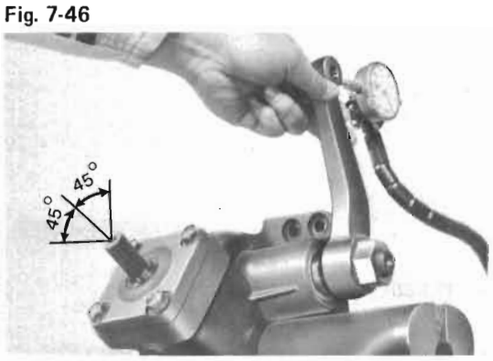
Set the worm shaft preload to the specified value by means of the adjusting bolt.

Specified preload **8.0 – 11.0 kg (17.6 – 24.2 lbs)**

– Note –

1. **Read the scale just when the worm starts to turn.**
2. **Measurement should be made with the meshing positioned at the center.**

Fig. 7-46



Install the pitman arm and check to see that there is no backlash when the worm is rotated within 45 degrees to either side from center position.

Tighten the adjusting screw lock nut.

– Note –

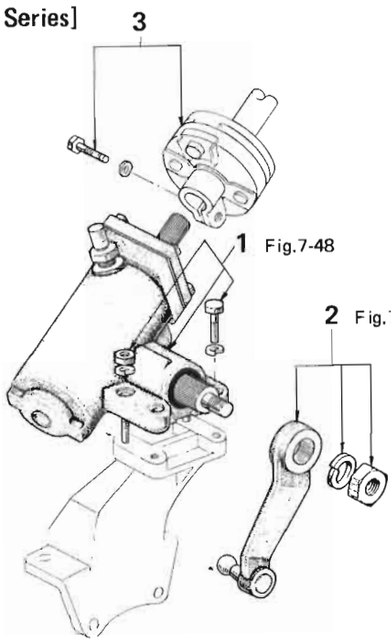
After tightening, recheck the preload.

INSTALLATION

Install the parts in the order numbered below.

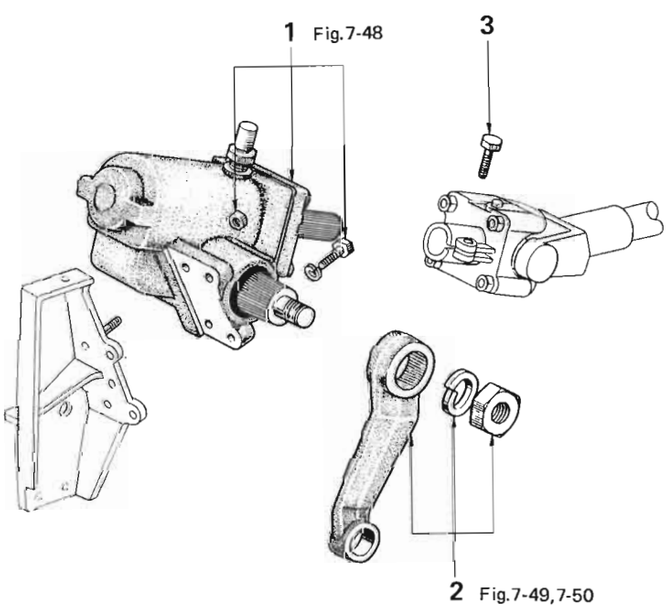
Fig. 7-47

[FJ, HJ, BJ40 Series]



1 Gear Box Assy.
2 Pitman Arm
3 Main Shaft Assy.

[FJ55 Series]



1 Gear Box Assy.
2 Pitman Arm
3 Bolt

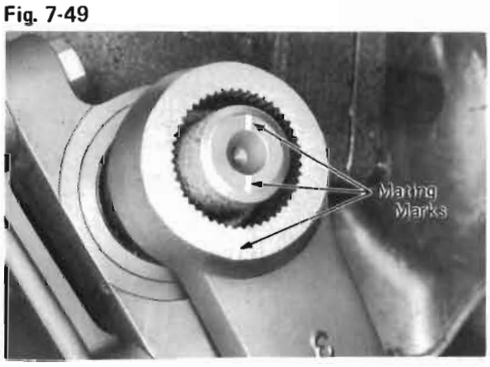
Fig. 7-48



Tighten the bolts and nuts at the specified torque.

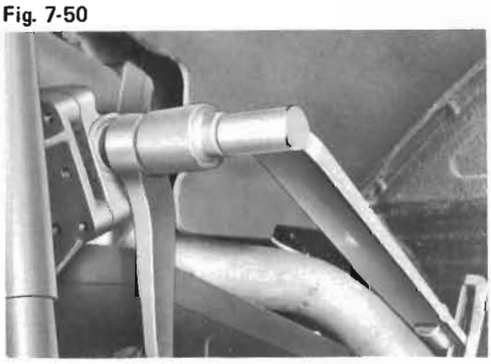
Tightening torque **4.0 – 5.5 kg-m (28.9 – 39.8 ft-lb)**

Fig. 7-49



Align the mating marks on the pitman arm and sector shaft.

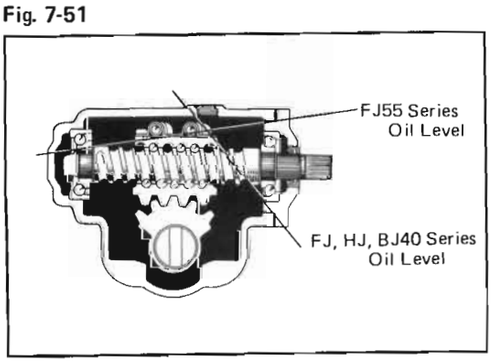
Fig. 7-50



Tighten at specified torque.

Tightening torque **16.5 – 19.5 kg-m (119 – 141 ft-lb)**

Fig. 7-51



Fill in gear oil.

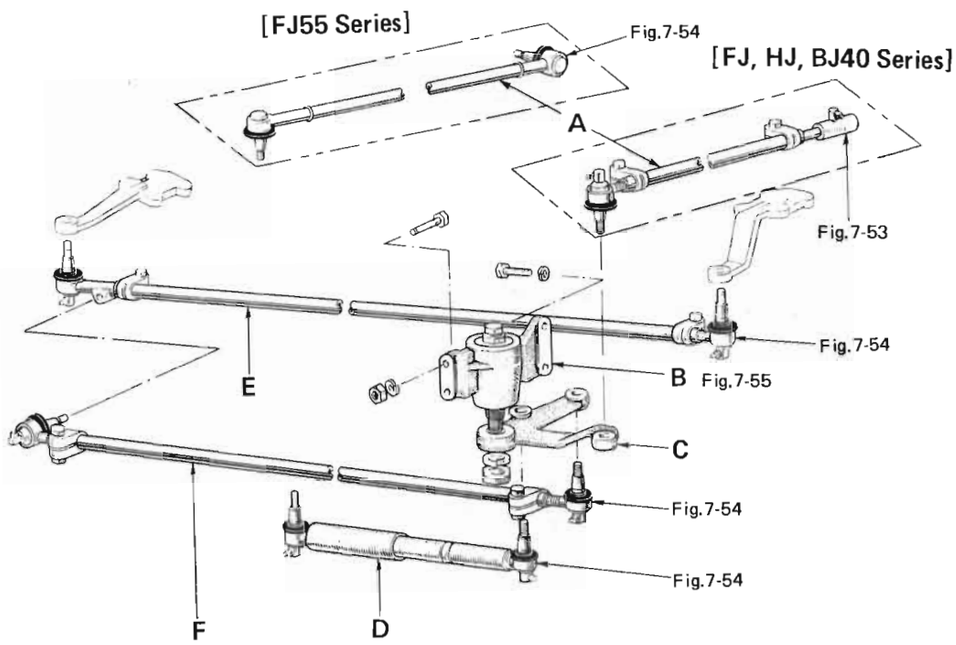
Standard capacity **0.6 liter (0.6 US qt, 0.5 Imp.qt.)**

Type SAE 90 API GL4

STEERING LINKAGE & FRONT WHEEL ALIGNMENT

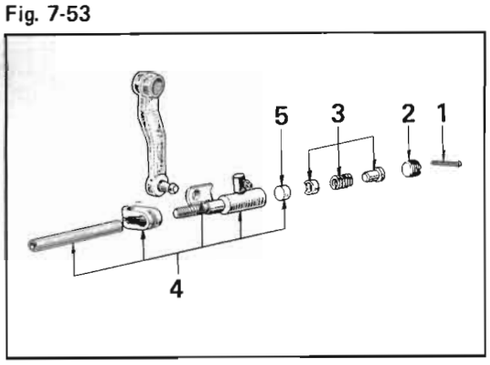
REMOVAL AND DISASSEMBLY

Fig. 7-52



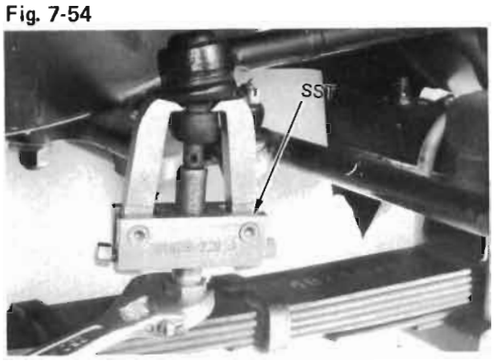
A	Drag Link	D	Shimmy Damper
B	Center Arm Bracket Assy.	E	Tie Rod
C	Center Arm	F	Relay Rod

Fig. 7-53



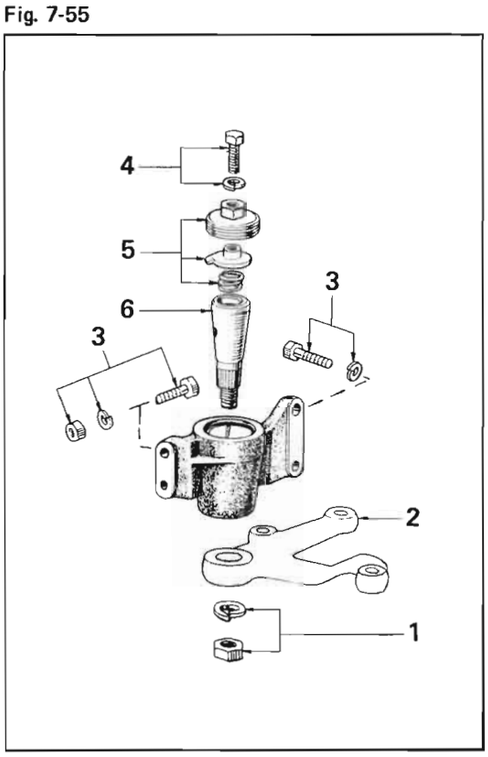
Disassemble the parts in the order shown by numbers.

Fig. 7-54



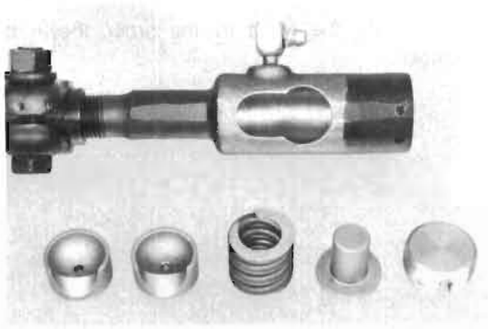
Use SST [09628-62010] or SST [09611-20014].

Fig. 7-55



Disassemble the parts in the order shown by numbers.
To remove the arm (2), use SST [09628-62010].

Fig. 7-56



INSPECTION

Seat And Spring

Inspect for damage and wear.

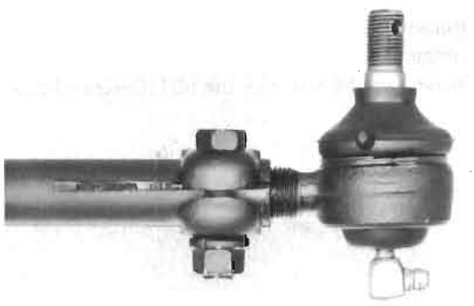
Fig. 7-57



Shaft And Bushing

Inspect for damage and wear.

Fig. 7-58

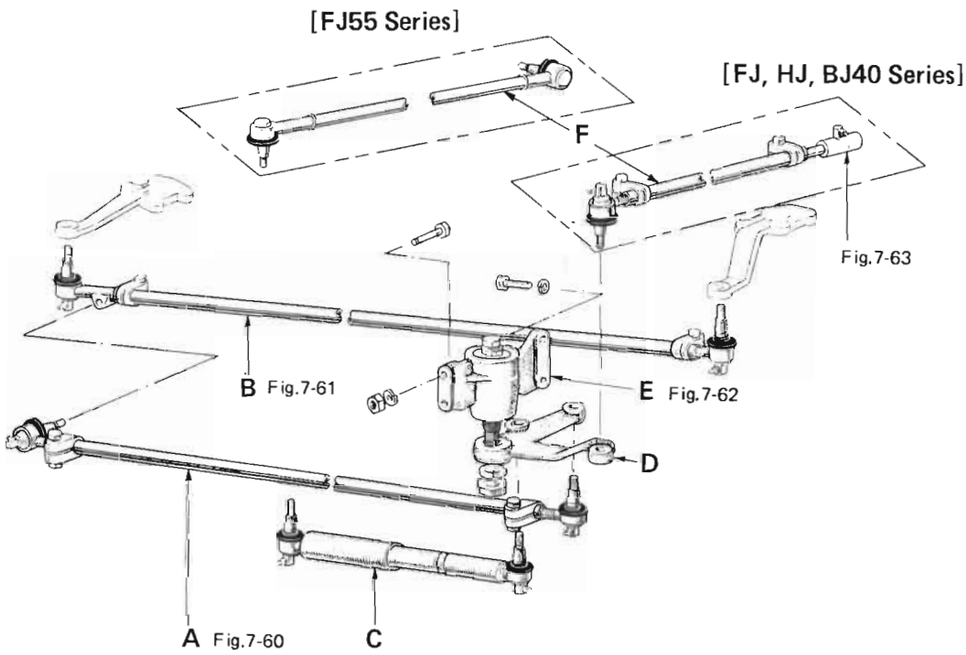


Drag Link, Tie Rod, And Relay Rod

1. Inspect the link and rod for bending and cracks.
2. Inspect the ball joint for wear.

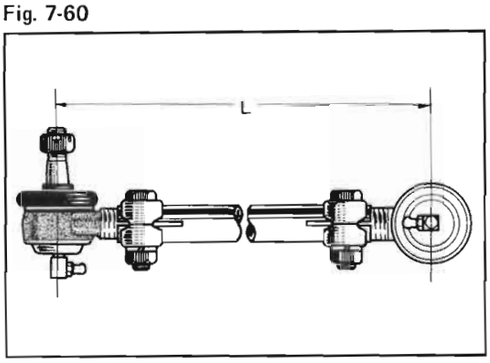
ASSEMBLY AND INSTALLATION

Fig. 7-59



A	Relay Rod	D	Center Arm
B	Tie Rod	E	Center Arm Bracket Assy.
C	Shimmy Damper	F	Drag Link

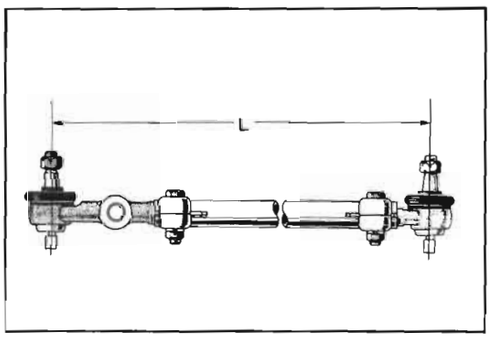
Fig. 7-60



Adjust the length (L) of relay rod to the standard value.

Standard **827 mm (32.56 in.)**

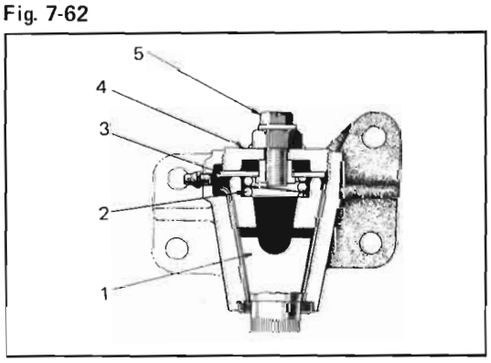
Fig. 7-61



Adjust the length (L) of tie rod to the standard value.

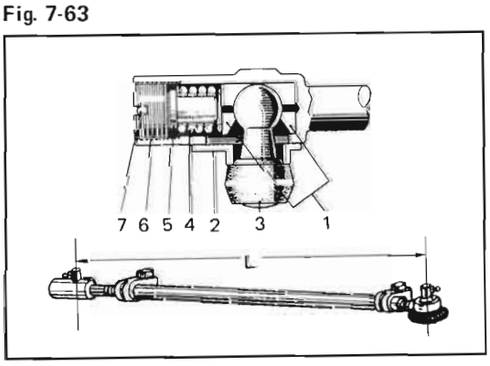
Standard **1205 mm (47.44 in.)**

Fig. 7-62



Grease the parts and assemble them in the order shown by numbers.
Tighten the nut (4) fully and then unscrew it 1/4 turn.
Tighten the bolt (5) fully.

Fig. 7-63



Grease the parts and assemble them in the order shown by numbers.
Tighten the end plug (6) fully and then unscrew it 1/2 turn.
Adjust the length (L) of drag link to the standard value.

Standard **855 mm (33.66 in.)**

FRONT WHEEL ALIGNMENT

Fig. 7-64

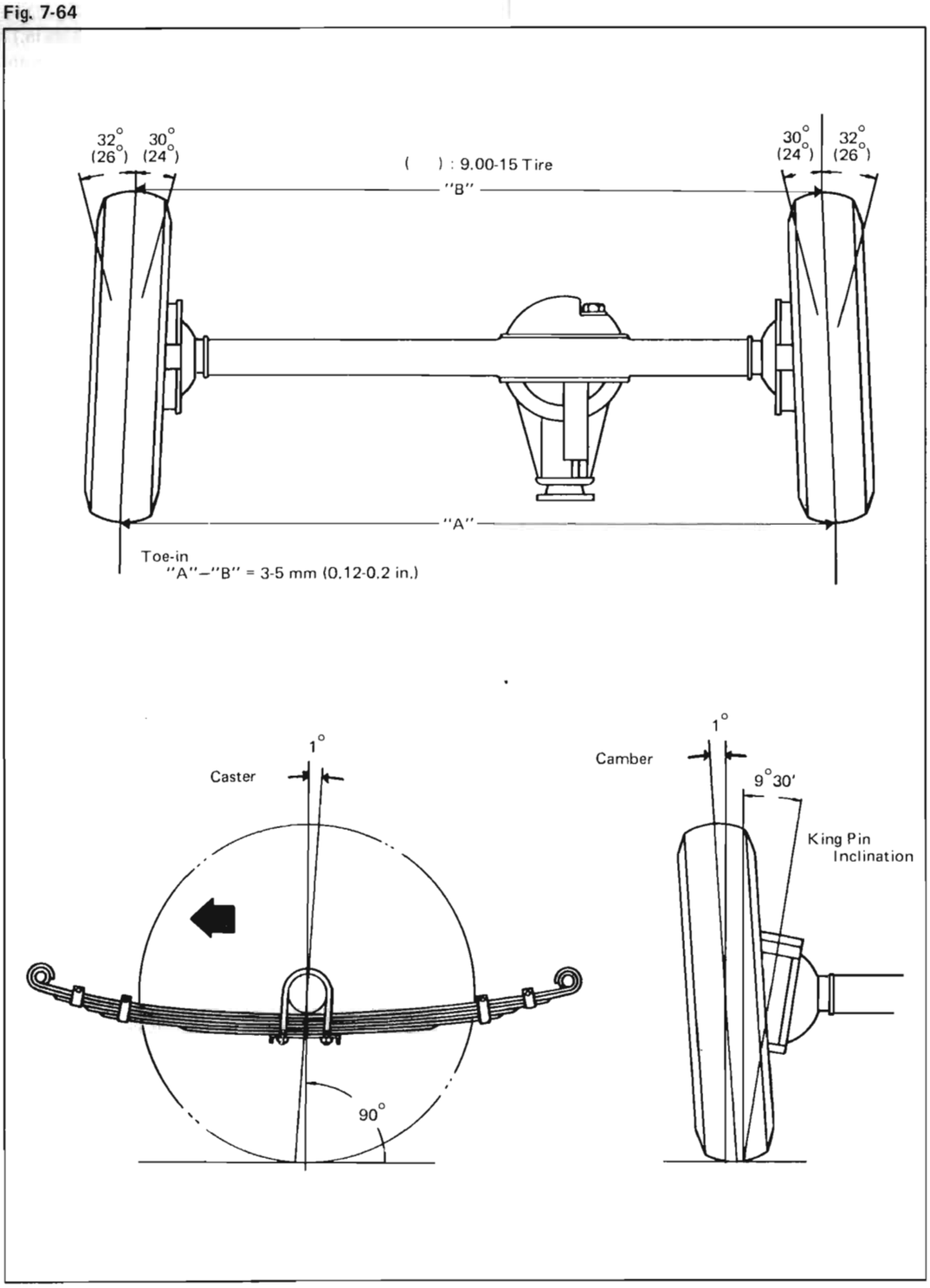
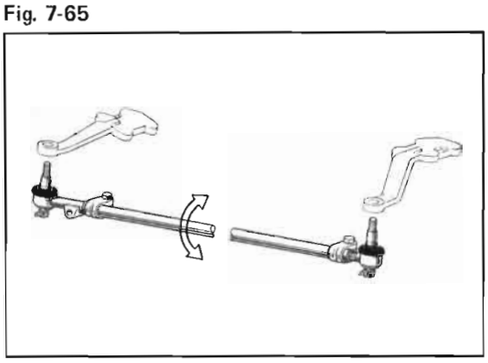


Fig. 7-65



Toe-in

Standard 3 – 5 mm (0.12 – 0.20 in.)

Adjust the toe-in by loosening the clamp bolts and turning the tie rod.

Side slip

Check the side slip with a side slip tester after adjusting the toe-in and checking the camber, caster, and king pin inclination.

The side slip should be less than 3 mm (0.12 in.) per 1 meter (3.3 ft.) running distance. If the side slip exceeds this amount, readjust the front alignment.

– Note –

1. **Before starting to adjust the front wheel alignment, inspect on the following points and correct any faults found.**
   a. **Tire pressure and abnormal tire wear.**
   b. **Wheel run-out and unbalance.**
   c. **Steering knuckle bearing wear (looseness)**
   d. **Tie-rod end wear (looseness)**
   e. **Front wheel bearing looseness.**

   Adjustment of front wheel alignment must never be attempted until all defects have been corrected.
2. **The camber and caster cannot be adjusted.**

BRAKE

page

ADJUSTMENT 8- 2
SINGLE MASTER CYLINDER 8- 5
TANDEM MASTER CYLINDER 8- 7
TANDEM MASTER CYLINDER(FOR USA & CANADA) 8-11
BRAKE BOOSTER 8-16
BRAKE BOOSTER(TANDEM TYPE) 8-25
VACUUM PUMP 8-37
FRONT BRAKE(DRUM TYPE) 8-43
FRONT BRAKE(DISC TYPE) 8-49
REAR BRAKE 8-58
PARKING BRAKE 8-64

Fig. 8-1

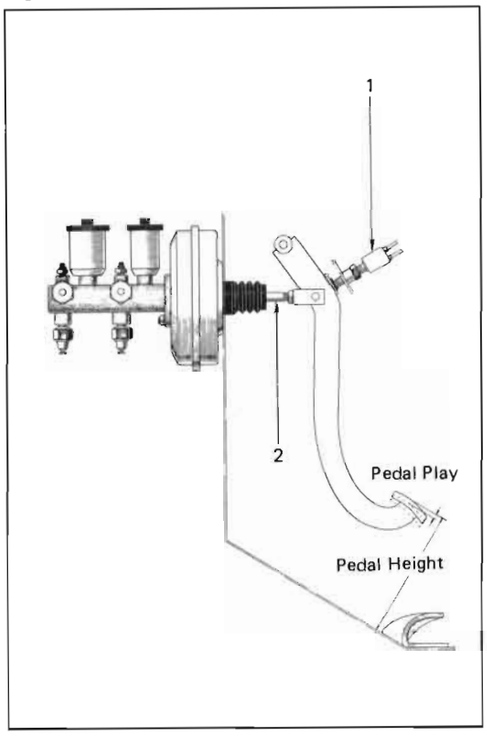
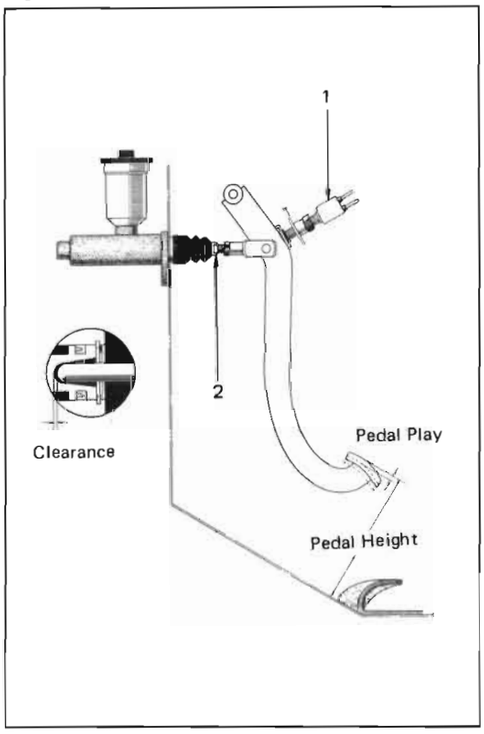


Fig. 8-2



ADJUSTMENT

BRAKE PEDAL

Pedal Height

1. Vehicles with brake booster
   a. Sufficiently loosen the stop light switch (1).
   b. Adjust the pedal height by turning the push rod (2).
   c. Return the stop light switch until its body lightly contacts the pedal stopper.
2. Vehicles without brake booster
   a. Loosen the push rod (2).
   b. Adjust the pedal height by turning the stop light switch (1).
   c. Adjust the push rod (2) while referring to the methods described in Pedal Play Adjustment.

Standard Pedal Heights

	w/brake booster mm (in.)	w/o brake booster mm (in.)
FJ, HJ, BJ40 Series	215 (8.46)	198 (7.80)
FJ55 Series	185 (7.28)	172 (6.77)

Pedal Play

1. Vehicles with brake booster
   a. Stop the engine and depress the brake pedal several times until there is no more vacuum left in the booster.
   b. Press down the pedal with fingers until initial resistance is felt. The amount of play sensed at this time should be within the specified range.
   Pedal play 3-6 mm (0.12-0.23 in.)

– Note –

1. **If the pedal play is not within the specified range, adjust the pedal height by the method described in Pedal Height so as to provide the proper amount of pedal play.**
2. **The pedal play is not the amount of stroke up to the time the booster piston starts to move.**

2. Vehicle without brake booster
   a. Adjust the pedal play by turning the push rod (2) and adjusting the clearance at push rod tip.
   Pedal play 3-6 mm (0.12-0.23 in.)

Fig. 8-3

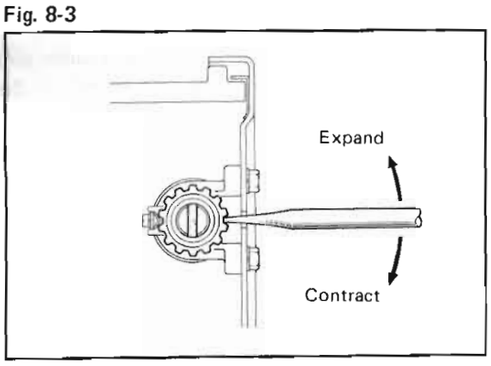
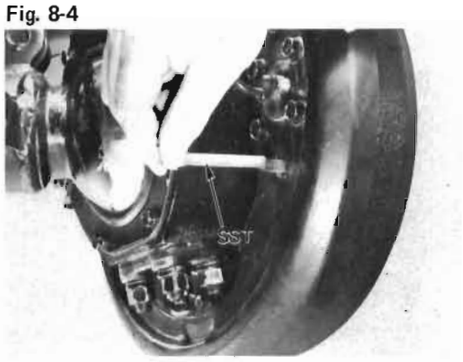


Fig. 8-4



SHOE CLEARANCE

Pedal Reserve Travel

Pedal reserve travel 80 mm (3.15) minimum
- - - FJ, HJ, BJ40 Series
70 mm (2.76) minimum
- - - FJ55 Series

If the reverse travel less than the specified value, adjust the shoe clearance.

Shoe Clearance Adjustment

1. Remove the plugs from shoe adjusting holes.
2. Check the wheel to see that it turns smoothly.
3. Insert the SST [09704-10010] through the adjusting hole, and turn the wheel cylinder adjusting nut by moving the tool tip from the wheel center toward the rim so as to expand the shoes.
4. Keep on turning the adjusting nut until the shoes are expanded and the adjusting nut cannot be turned further. Then, depress the brake pedal and try to expand the shoes further so as to insure proper contact against the drum.
5. Now, turn the adjusting nut in reverse direction, by moving the tool tip from the wheel rim toward the center, and carefully retract the shoes until the wheel can be turned lightly.
   A number of notches to be returned is from 4 to 5.
6. Install the plugs in the shoe adjusting holes.

– Caution –

Check the brake pedal to make sure that there is sufficient reserve travel.

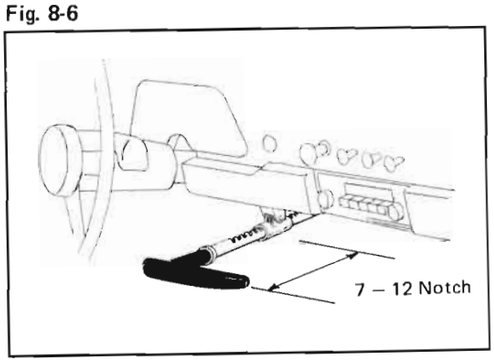
Fig. 8-5



PARKING BRAKE

1. Turn the adjuster counterclockwise until the brake shoes are fully expanded.
2. Return the adjuster one notch.
3. Check the brake drums to see that the brakes are not dragging after pulling the parking brake lever all the way back and then releasing it. If dragging, return the adjuster another notch.

Fig. 8-6



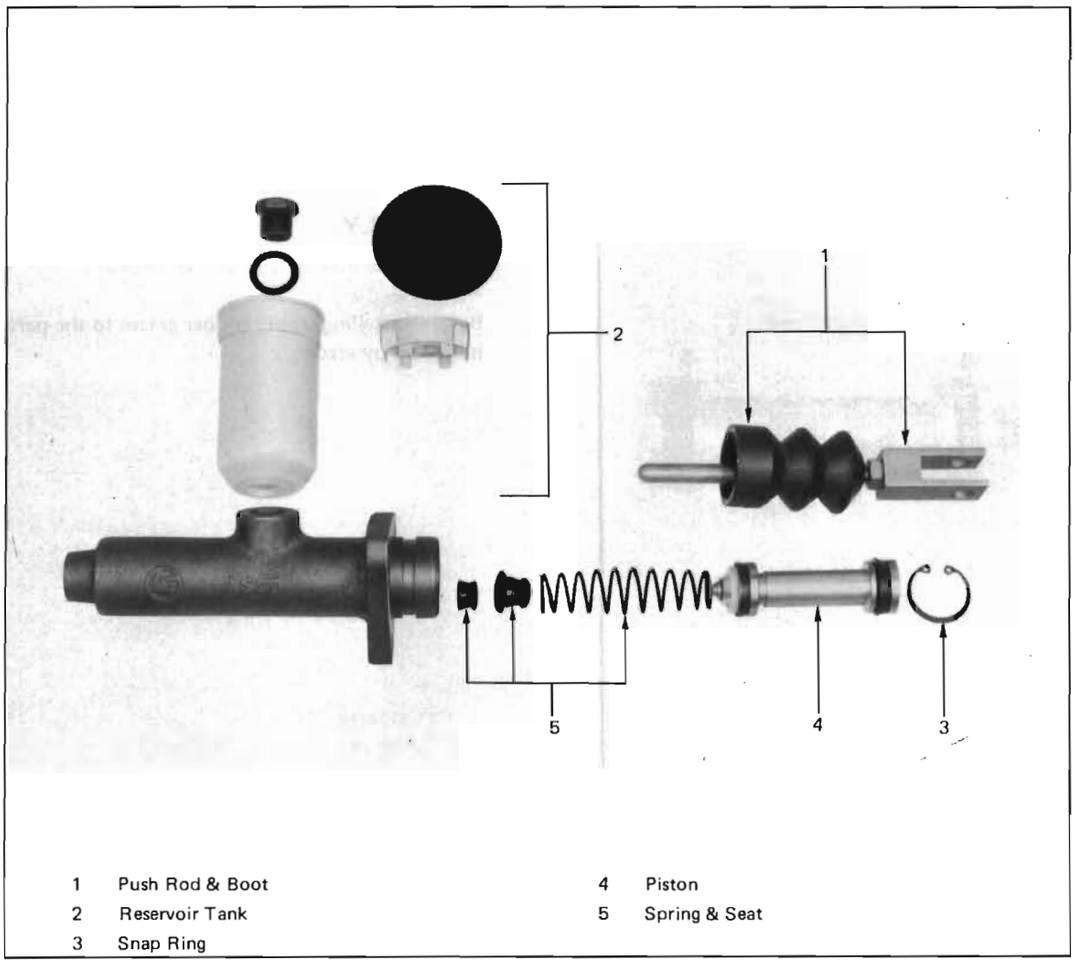
4. Adjust the parking brake lever reserve pull by means of the turnbuckle (FJ55) or the cable end nut (FJ, HJ, BJ40).
   Standard 7 – 12 notch

SINGLE MASTER CYLINDER

DISASSEMBLY

Disassemble the parts in the order numbered below.

Fig. 8-7



1 Push Rod & Boot
2 Reservoir Tank
3 Snap Ring
4 Piston
5 Spring & Seat

Fig. 8-8



INSPECTION

Check the disassembled parts on the following points, and repair or replace all defective parts found.

Master Cylinder Body

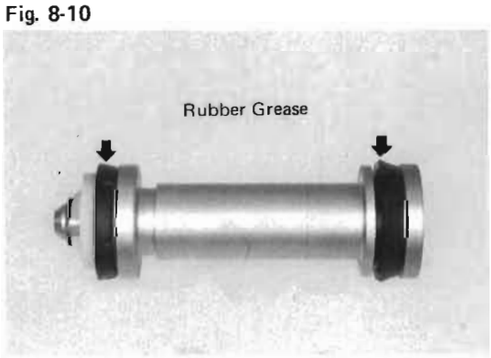
Inspect for wear and scores.

Fig. 8-9



Piston Assembly And Check Valve
Inspect for wear and scores.

Fig. 8-10



ASSEMBLY

Perform the disassembly in reverse order.

– Note –

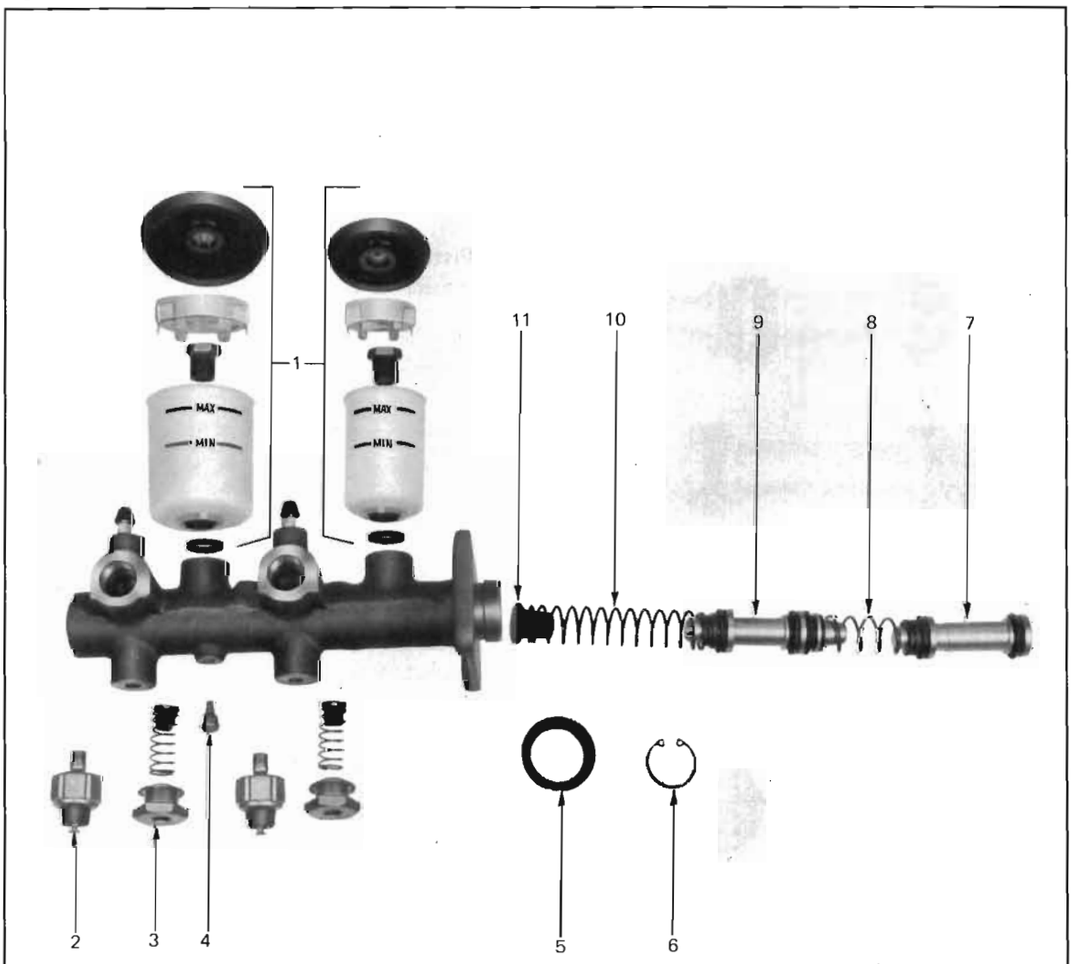
Before installing, apply rubber grease to the parts indicated by arrows.

TANDEM MASTER CYLINDER

DISASSEMBLY

Remove the parts in the order numbered below.

Fig. 8-11



1	Reservoir Tank	7	Piston No.1
2	Oil Pressure Switches	8	Spring
3	Plugs & Check Valves	9	Piston No.2
4	Bolt	10	Spring
5	Boot	11	Piston Stopper
6	Snap Ring		

Fig. 8-12



INSPECTION

Inspect the disassembled parts on the following points, and repair or replace all defective parts found.

Master Cylinder Body

Inspect for wear and scores.

Fig. 8-13



Piston Assembly

Inspect for wear and scores.

Fig. 8-14



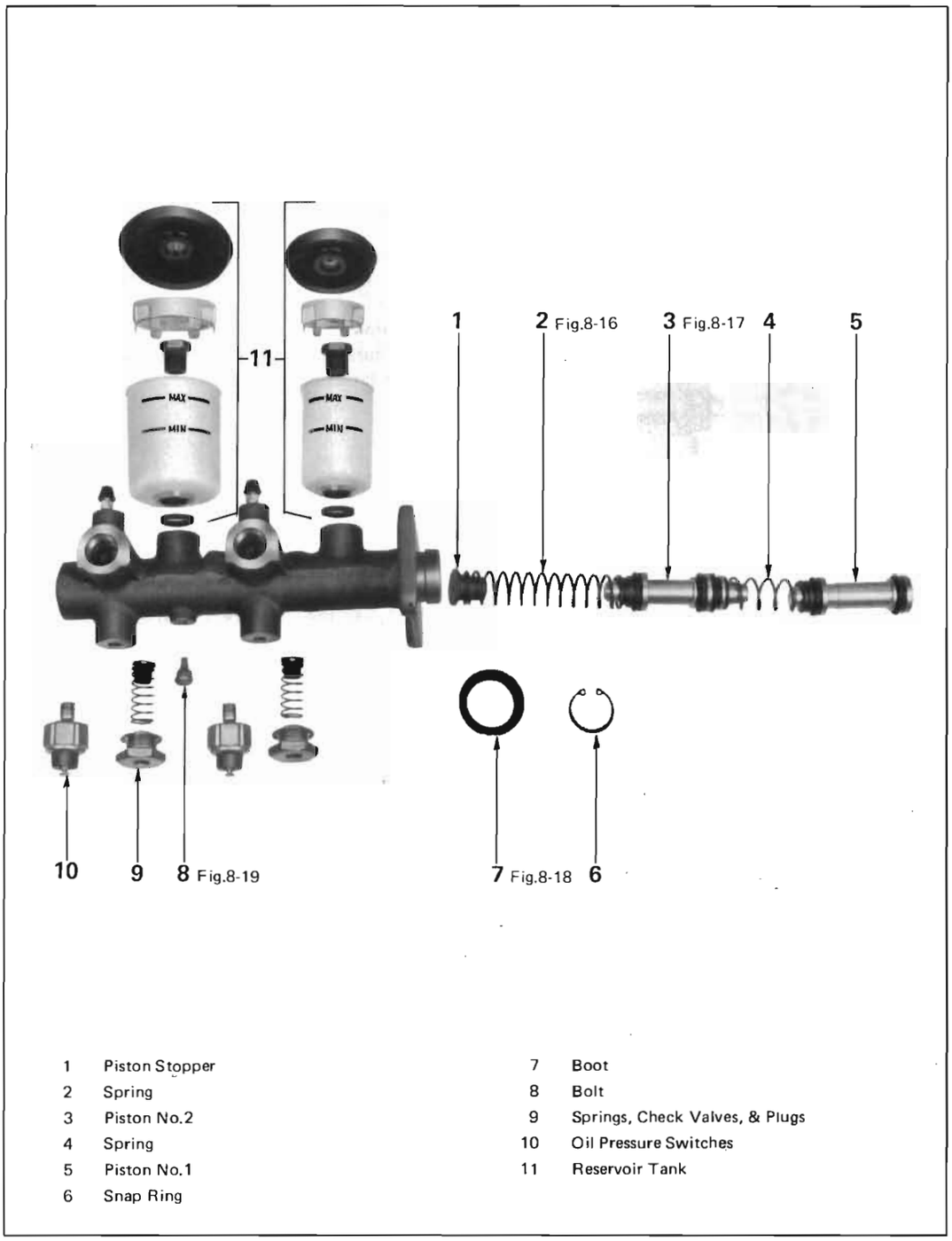
Outlet Check Valve

Inspect for damage.

ASSEMBLY

Assemble the parts in the order numbered below.

Fig. 8-15



1	Piston Stopper	7	Boot
2	Spring	8	Bolt
3	Piston No.2	9	Springs, Check Valves, & Plugs
4	Spring	10	Oil Pressure Switches
5	Piston No.1	11	Reservoir Tank
6	Snap Ring		

Fig. 8-16

Assemble the long spring at the front side.

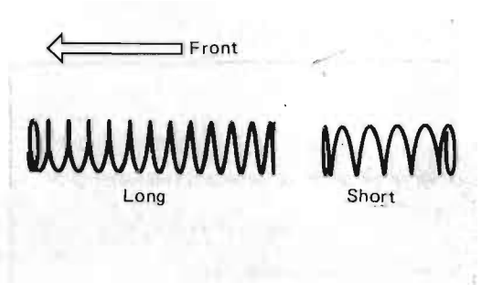


Fig. 8-17

Before assembling, apply rubber grease to the parts indicated by arrows.

– Caution –

Make sure that the pistons are assembled in correct directions.

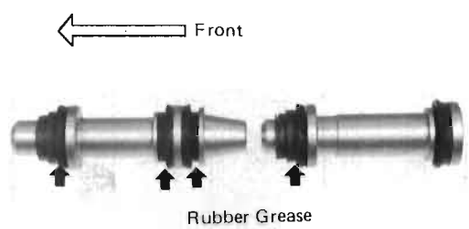


Fig. 8-18

Install with the UP mark positioned at the upper side.

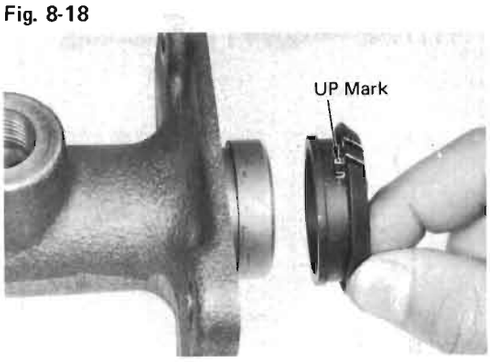
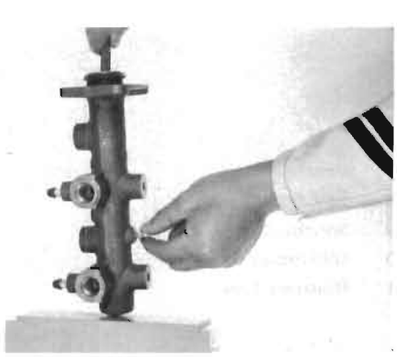


Fig. 8-19

With the pistons pushed in all the way, install the bolt.



TANDEM MASTER CYLINDER(FOR USA & CANADA)

DISASSEMBLY

Remove the parts in the order shown below.

Fig. 8-20

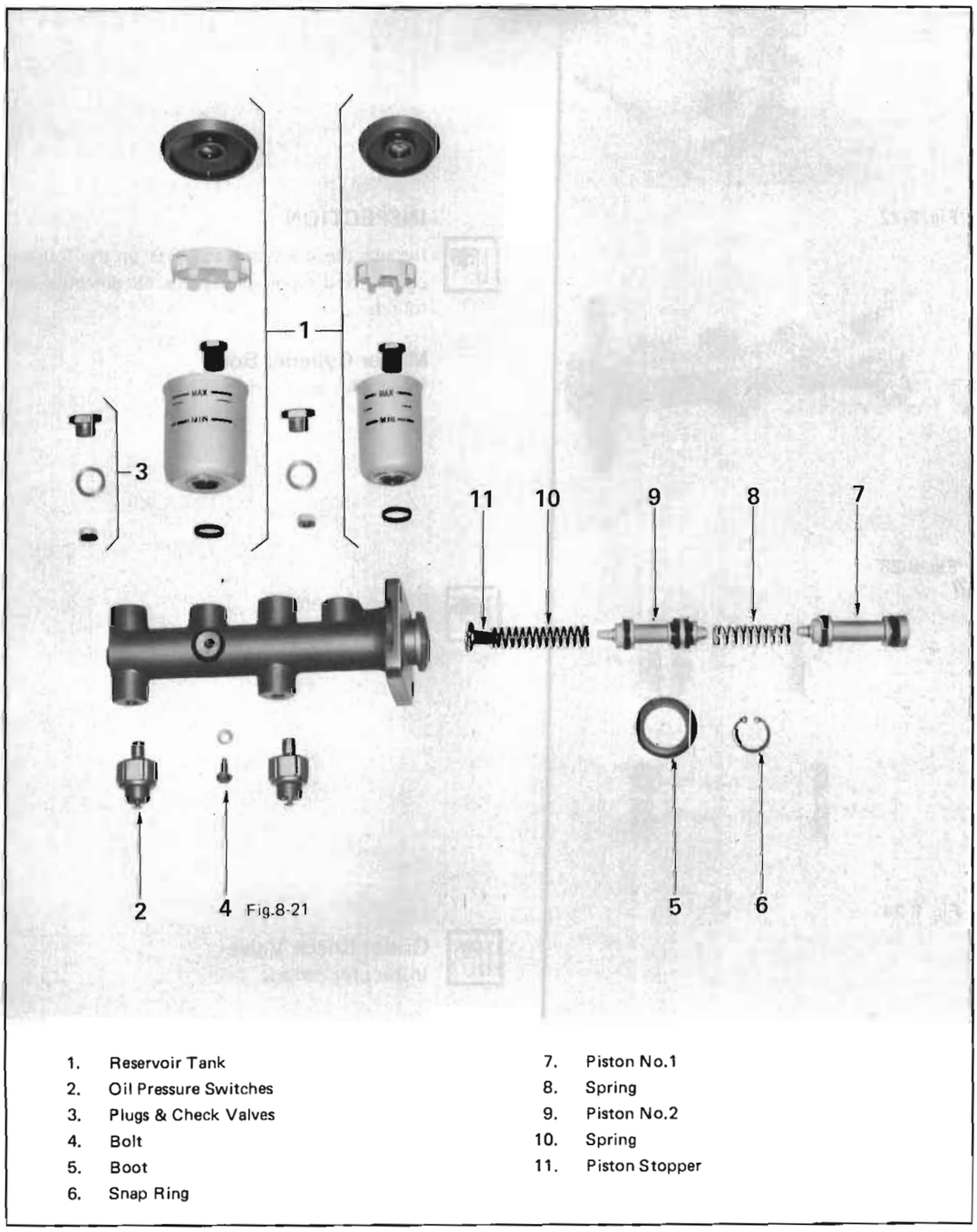
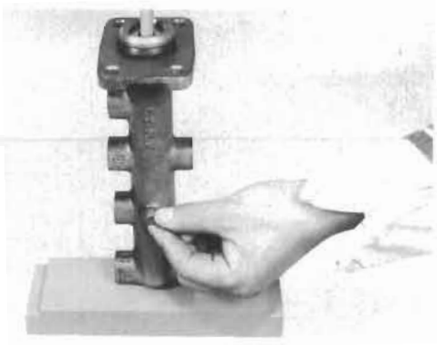


Fig.8-21

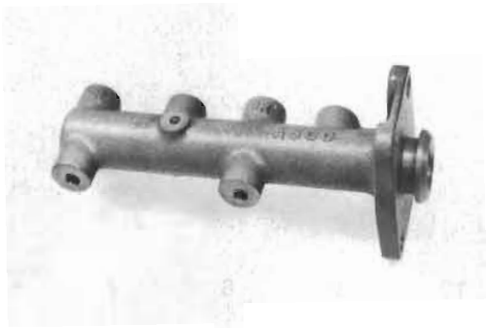
1. Reservoir Tank
2. Oil Pressure Switches
3. Plugs & Check Valves
4. Bolt
5. Boot
6. Snap Ring
7. Piston No.1
8. Spring
9. Piston No.2
10. Spring
11. Piston Stopper

Fig. 8-21



With the pistons pushed in all the way, remove the bolt.

Fig. 8-22



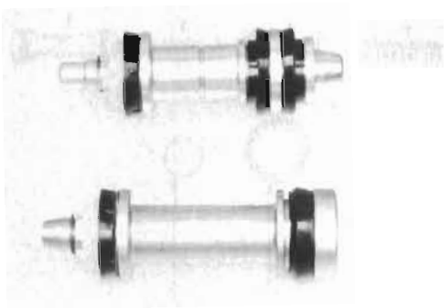
INSPECTION

Inspect the disassembled parts on the following points, and repair or replace all defective parts found.

Master Cylinder Body

Inspect for wear or scores.

Fig. 8-23



Piston Assembly

Inspect for wear or scores.

Fig. 8-24



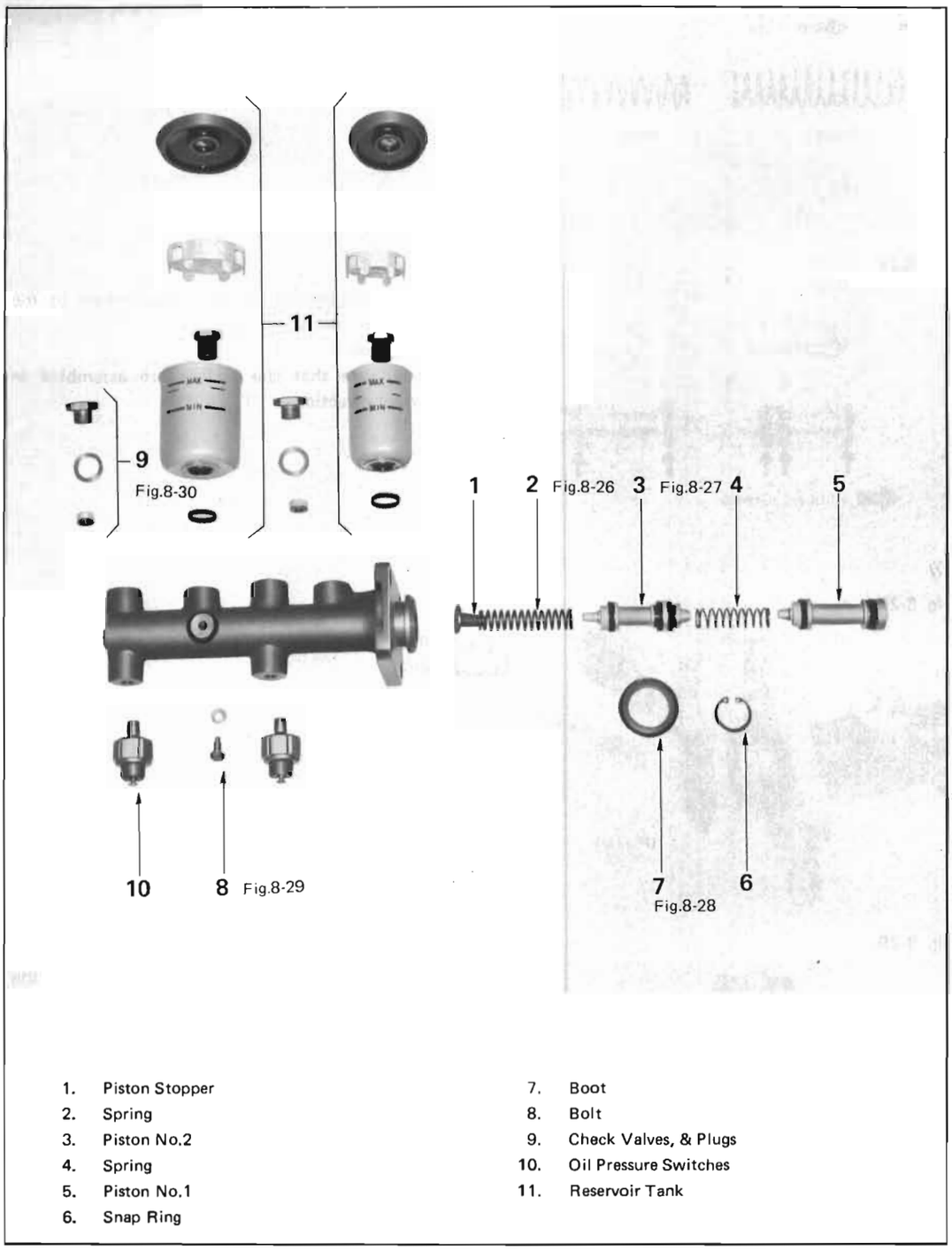
Outlet Check Valve

Inspect for damage.

ASSEMBLY

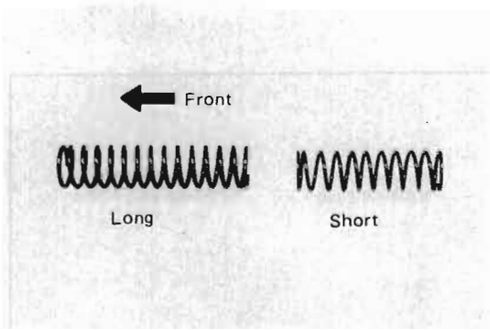
Assemble the parts in the order shown below.

Fig. 8-25



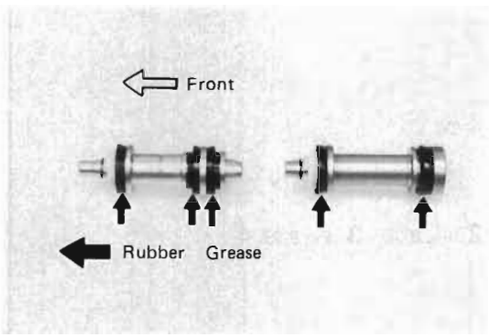
1. Piston Stopper
2. Spring
3. Piston No.2
4. Spring
5. Piston No.1
6. Snap Ring
7. Boot
8. Bolt
9. Check Valves, & Plugs
10. Oil Pressure Switches
11. Reservoir Tank

Fig. 8-26



Assemble the long spring at the front side.

Fig. 8-27

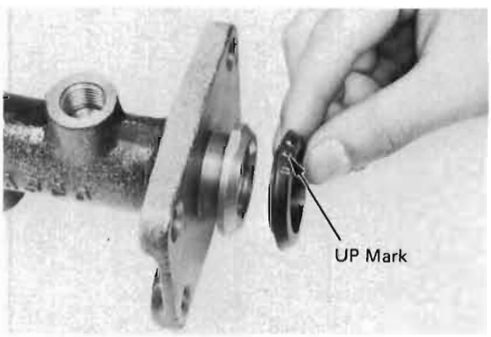


Before assembling, apply rubber grease to the parts indicated by arrows.

– Caution –

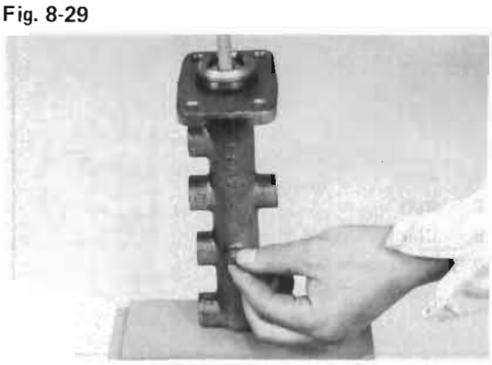
Make sure that the pistons are assembled in correct directions.

Fig. 8-28



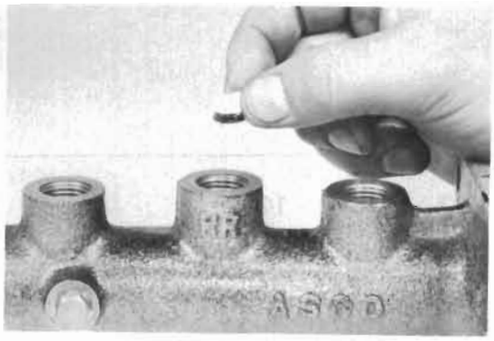
Install with the UP mark positioned at the upper side.

Fig. 8-29



With the pistons pushed in all the way, install the bolt.

Fig. 8-30



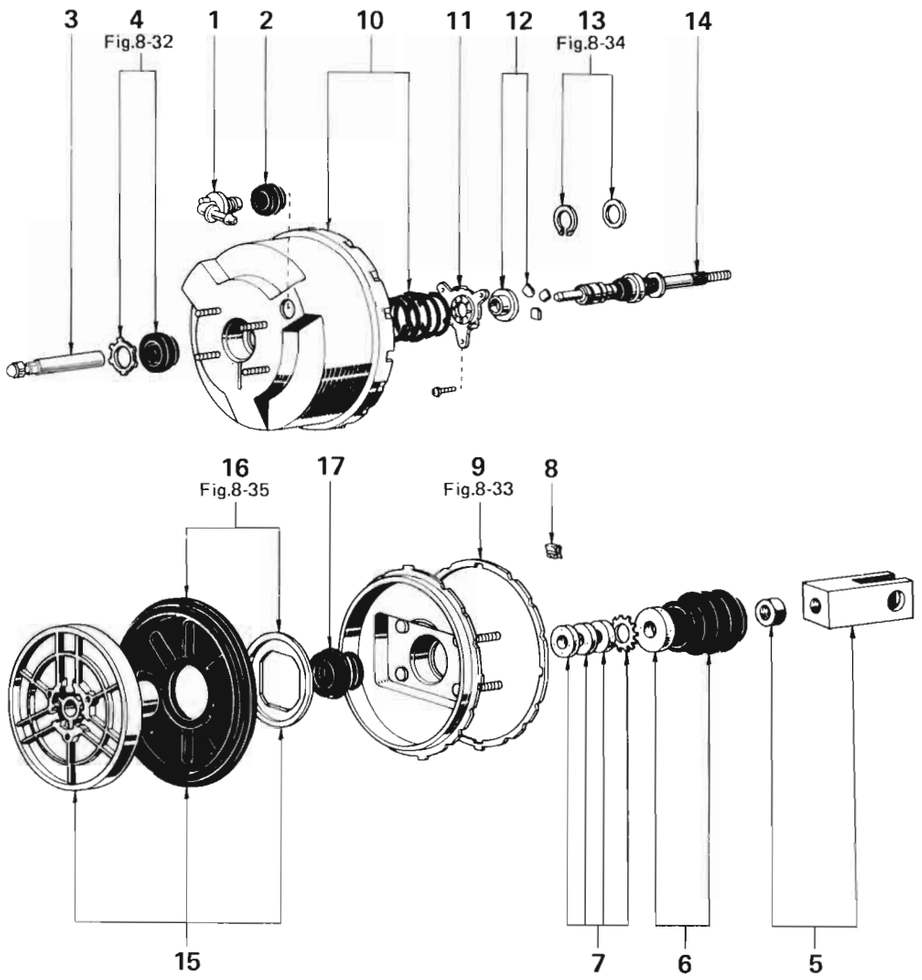
Install the check valve with bakelite positioned on the upper side.

BRAKE BOOSTER

DISASSEMBLY

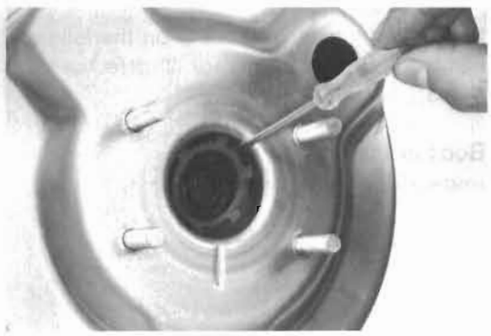
Disassemble the parts in the order numbered below.

Fig. 8-31



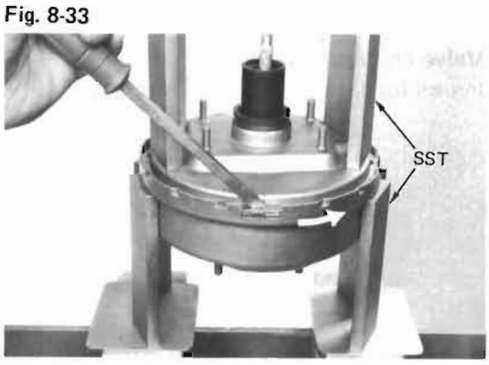
1	Check Valve	10	Front Body & Spring
2	Grommet	11	Retainer
3	Push Rod	12	Reaction Plate & Levers
4	Retainer & Seal	13	Snap Ring & Washer
5	Clevis	14	Valve Operating Rod
6	Boot & Silencer	15	Piston Assy.
7	Retainer, Separator, & Element	16	Retainer & Diaphragm
8	Lock	17	Bearing
9	Connector		

Fig. 8-32



Remove the retainer with a screwdriver.

Fig. 8-33



Using SST [09738-20010] and a press, remove the body connector by turning it counterclockwise.

Fig. 8-34



Remove the snap ring.

Fig. 8-35



Remove the retainer by turning it counterclockwise with SST [09736-30020].

Fig. 8-36



INSPECTION

Inspect the disassembled parts on the following points, and repair or replace all defective parts found.

Booster Piston

Inspect for damage and cracks.

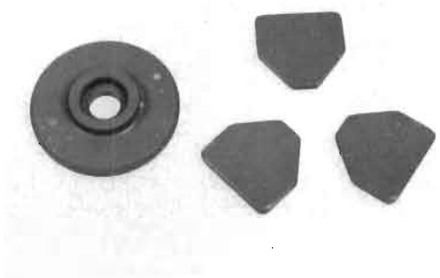
Fig. 8-37



Valve Operating Rod

Inspect for damage, wear, and corrosion.

Fig. 8-38



Reaction Levers And Plate

Inspect for wear and deformation.

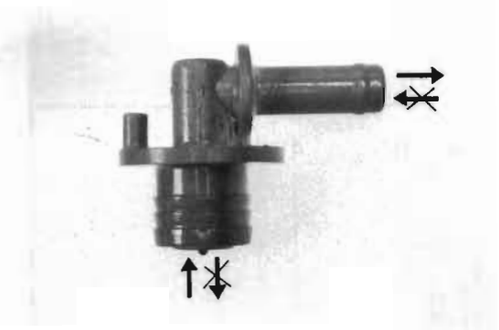
Fig. 8-39



Diaphragm, Bearing, And Seal

Inspect for wear, damage, and cracks.

Fig. 8-40



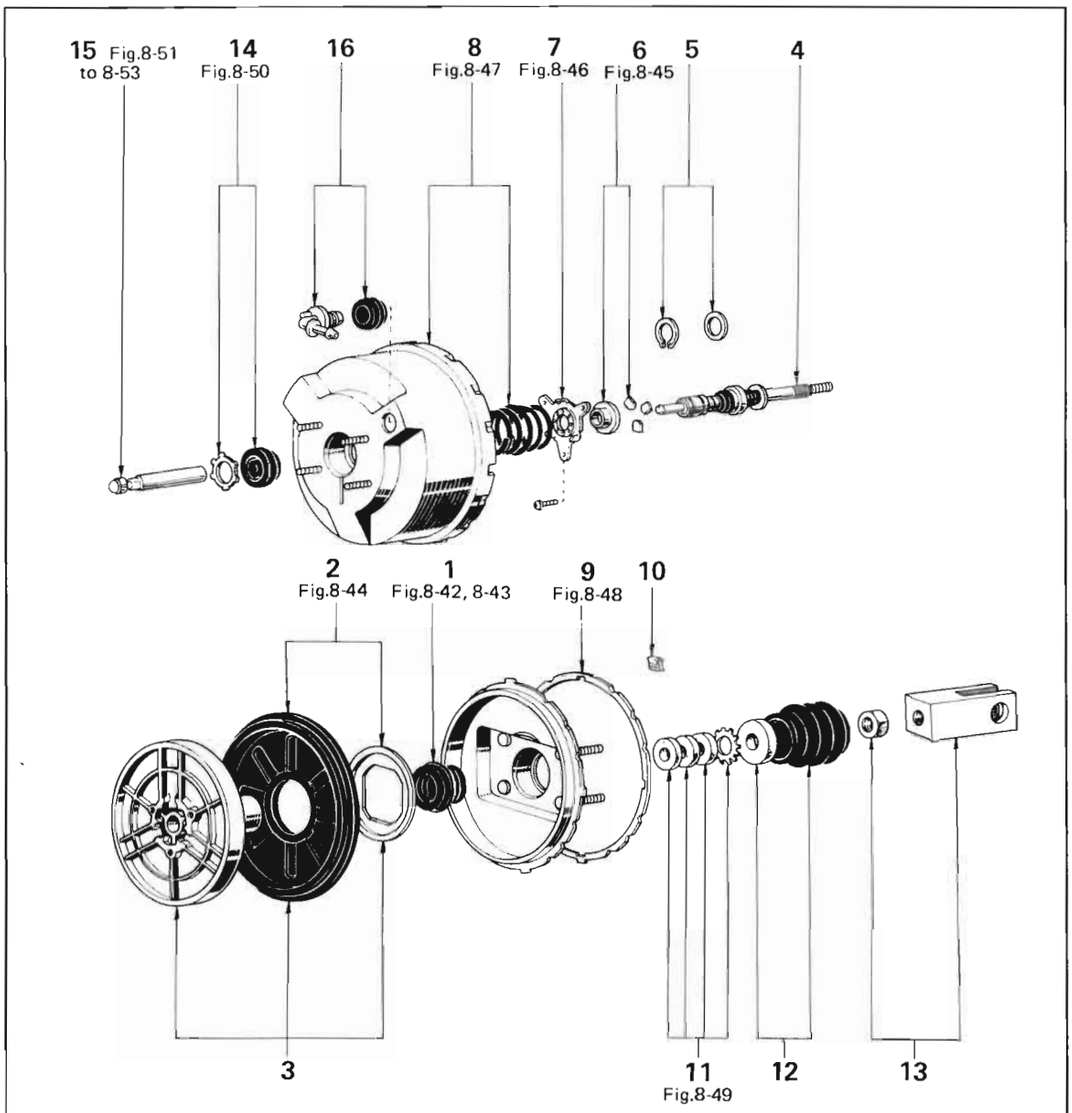
Vacuum Check Valve

Check the operation of valve.

ASSEMBLY

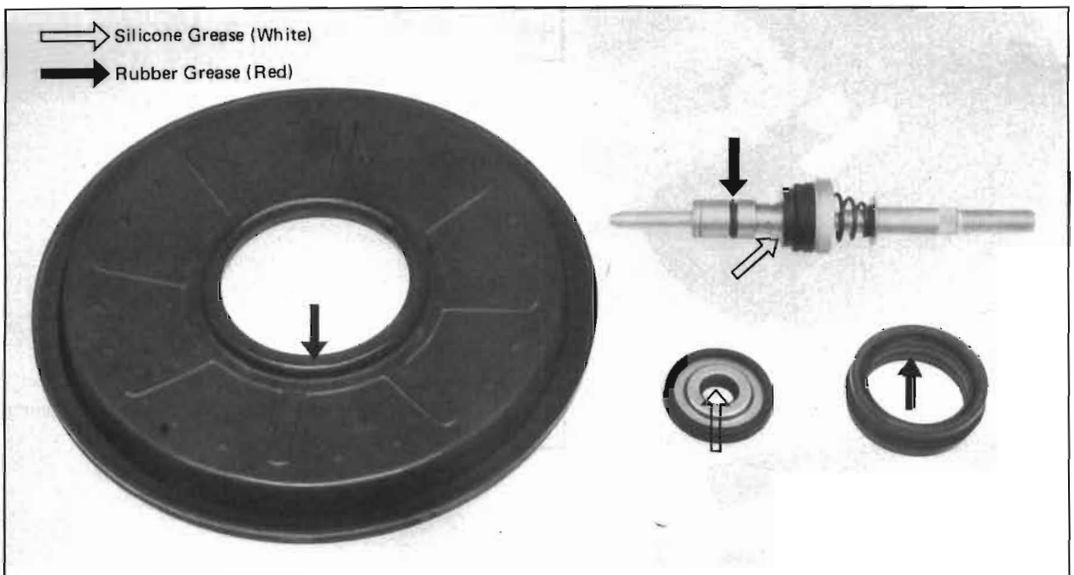
Assemble the parts in the order numbered below.

Fig. 8-41



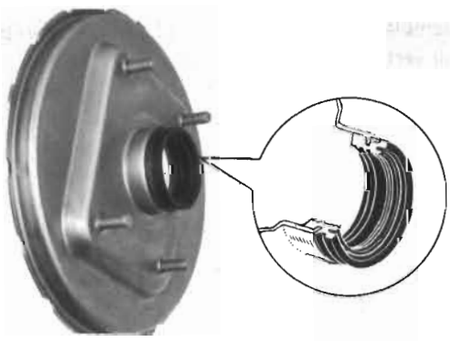
1	Bearing	9	Connector
2	Diaphragm & Retainer	10	Lock
3	Piston Assy.	11	Elements & Retainer
4	Valve Operating Rod	12	Boot & Silencer
5	Washer & Snap Ring	13	Clevis
6	Reaction Levers & Plate	14	Seal & Retainer
7	Retainer	15	Push Rod
8	Spring & Front Body	16	Grommet & Check Valve

Fig. 8-42



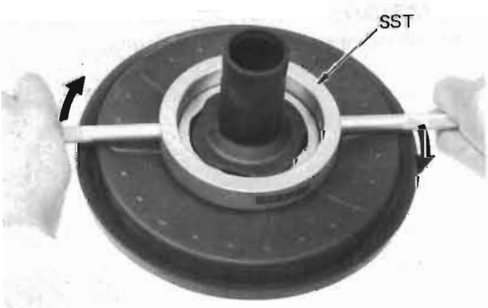
– Note –
Before starting assembly, coat the parts indicated in illustration with rubber grease and silicone grease (furnished with the repair kit).

Fig. 8-43



Install the bearing into the rear body.

Fig. 8-44



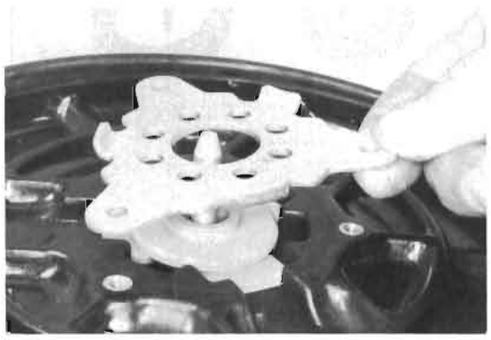
Install the retainer by turning it clockwise with SST [09736-30020].

Fig. 8-45



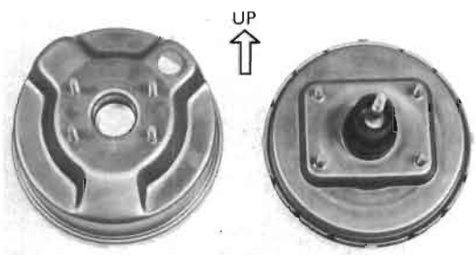
Install the plate with its protrusion directed upward.

Fig. 8-46



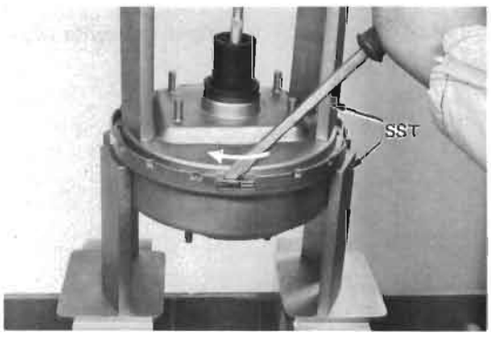
Install the retainer with the lipped part facing outward.

Fig. 8-47



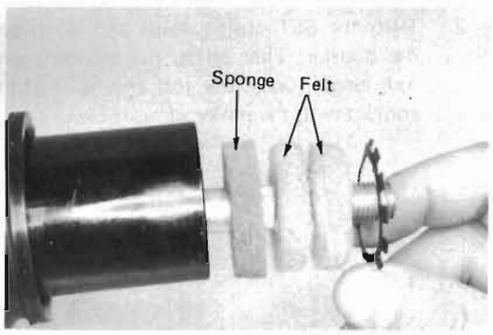
Assemble together the front and rear bodies with their vertical directions aligned.

Fig. 8-48



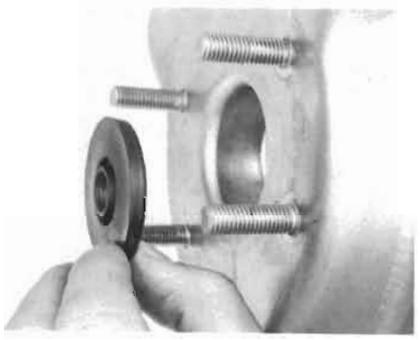
Using SST [09738-20010] and a press, install the body connector by turning it clockwise.

Fig. 8-49



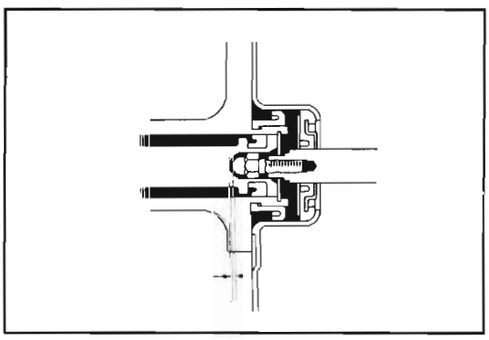
Install the elements and retainer in the order shown.

Fig. 8-50



Install the body seal and retainer as shown.

Fig. 8-51

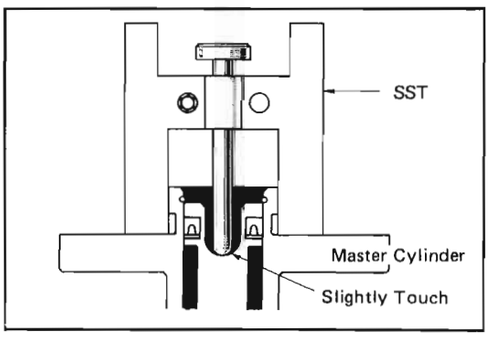


Booster Push Rod Length Adjustment

The length of booster push rod is adjusted to provide the specified clearance between the push rod end and the master cylinder piston.

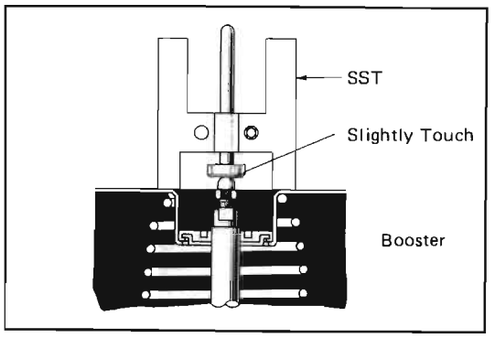
Standard Clearance (Without Vacuum)
0.6 – 0.65 mm (0.024 – 0.026 in.)

Fig. 8-52



1. Set the SST [09737-00010] on the master cylinder, and lower the pin until its tip comes in light contact with the piston.

Fig. 8-53



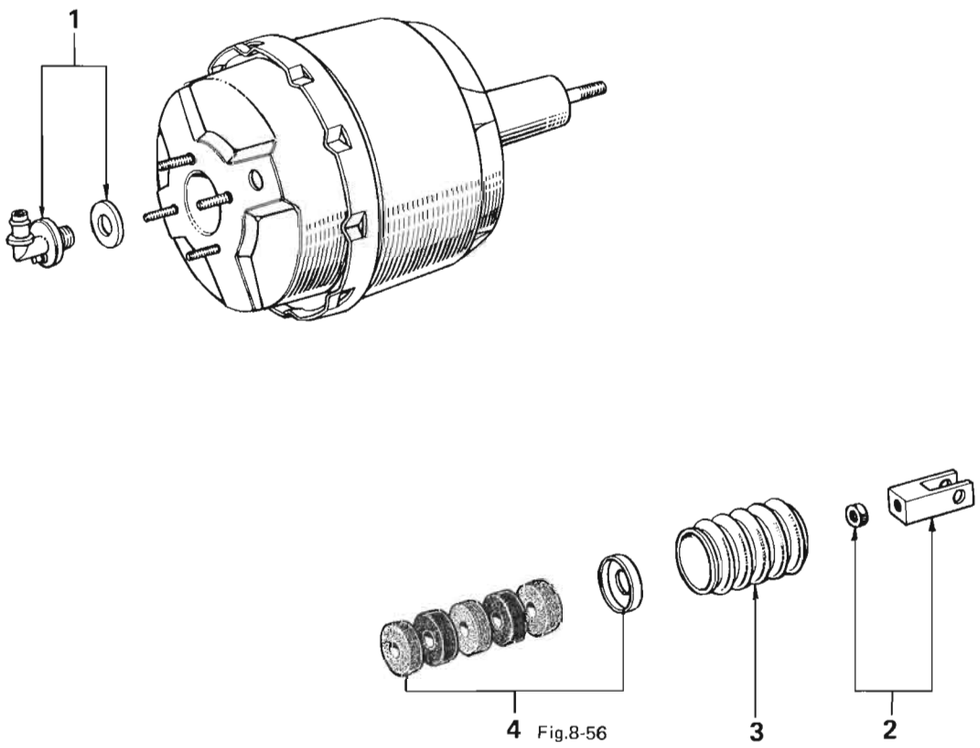
2. Turn the SST upside down and set it on the booster. Then adjust the booster push rod length until the rod end is in light contact with the pin head.

BRAKE BOOSTER(TANDEM TYPE)

DISASSEMBLY

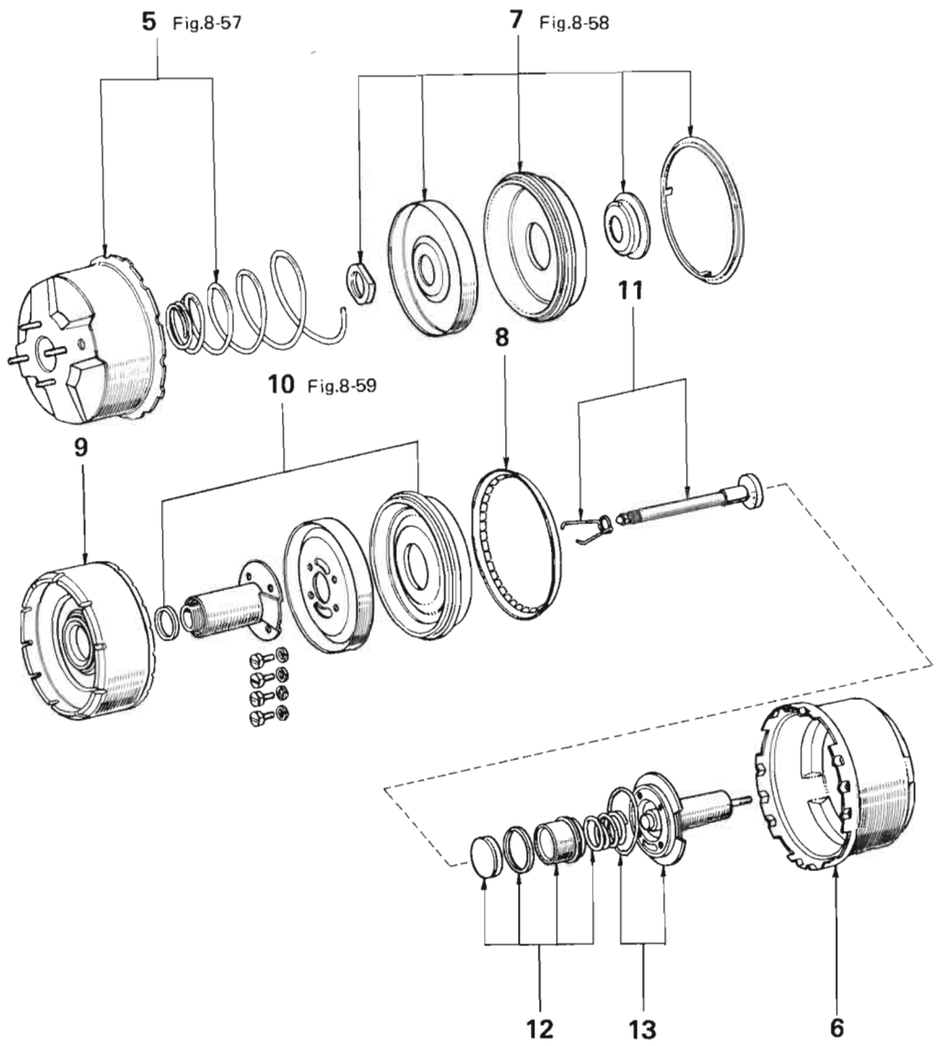
Disassemble the parts in the order shown below.

Fig. 8-54



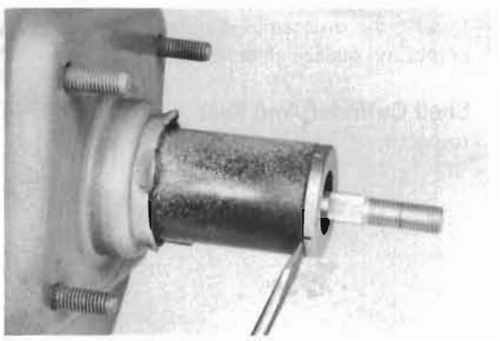
1. Check Valve & Grommet
2. Clevis
3. Boot
4. Retainer, Filter & Silencer

Fig. 8-55



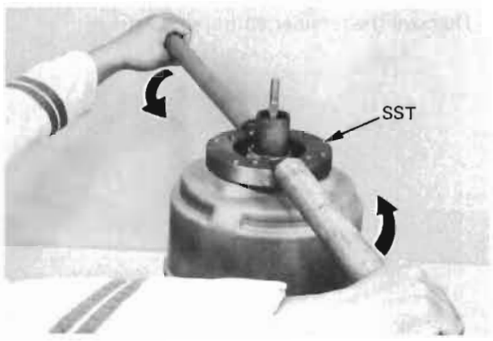
5. Front Shell Cylinder & Spring
6. Rear Shell Cylinder
7. Nut, Front Diaphragm Plate, Front Diaphragm & Front Diaphragm Retainer
8. Rear Diaphragm Retainer
9. Center Plate
10. Hub, Bolts, Rear Diaphragm Plate & Rear Diaphragm
11. Rod
12. Reaction Disc, Reaction Disc Hub & Spring
13. Valve Body & "O" Ring

Fig. 8-56



Remove the retainer before disassembly.

Fig. 8-57



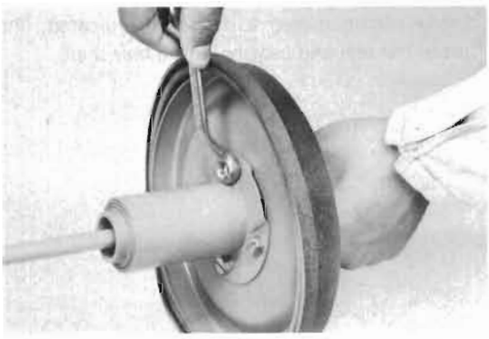
Remove the front shell cylinder and spring using SST [09738-22012] and [09753-22010].

Fig. 8-58



Remove the nut.

Fig. 8-59



Remove the hub, rear diaphragm plate, and rear diaphragm.

Fig. 8-60



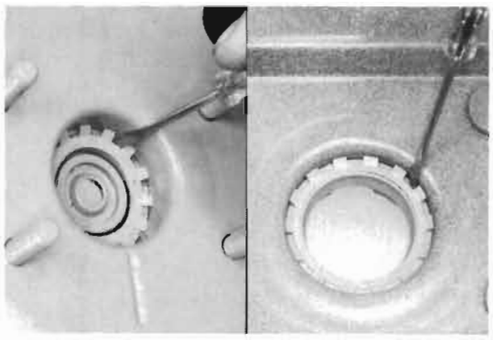
INSPECTION

Inspect the disassembled parts on the following points and replace all defective parts found.

Shell Cylinder And Seal

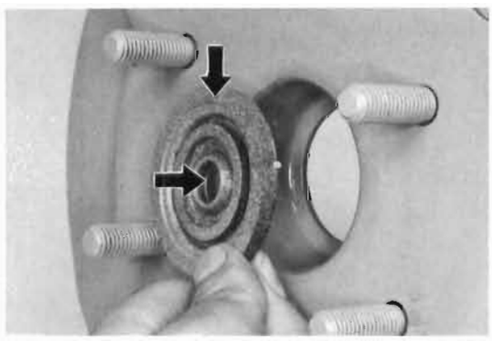
Inspect for cracks, damage, or wear.

Fig. 8-61



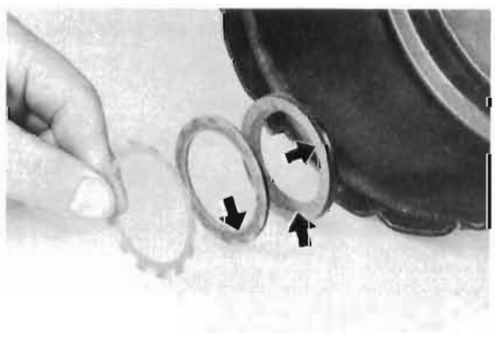
Remove the retainer with a screw driver.

Fig. 8-62



Apply silicon grease to the face indicated, and install the plate and seal in the front shell.

Fig. 8-63



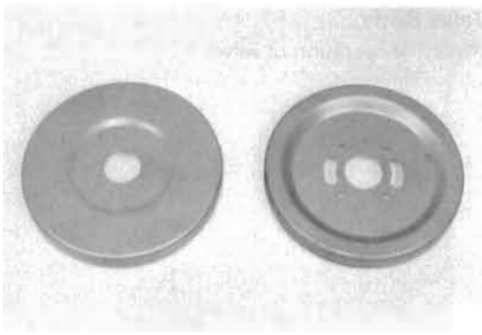
Apply silicon grease to the face indicated, and install the seal and bearing in the rear shell.

Fig. 8-64



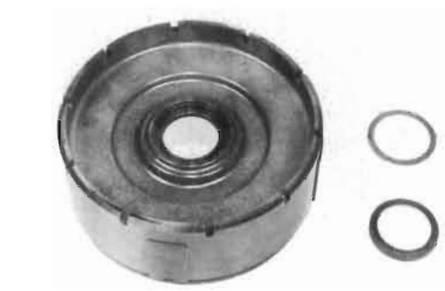
Diaphragm
Inspect for damage.

Fig. 8-65



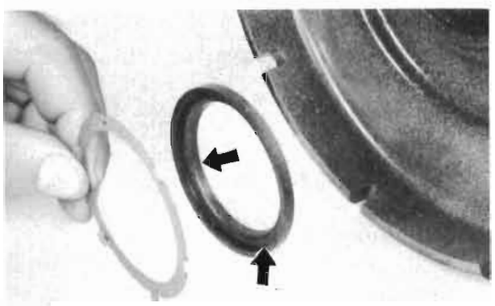
Diaphragm Plate
Inspect for cracks or damage.

Fig. 8-66



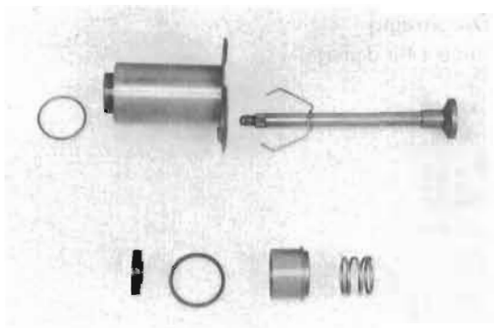
Center Plate And Seal
Inspect for cracks or damage.

Fig. 8-67



Apply silicon grease to the face indicated, and install the seal in the center plate.

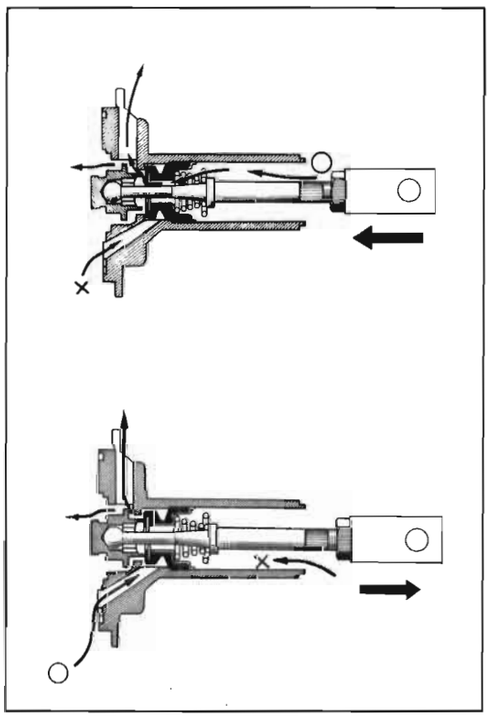
Fig. 8-68



Hub, Rod, Reaction Disc And Reaction Disc Hub

Inspect for cracks, damage, wear, bending or corrosion.

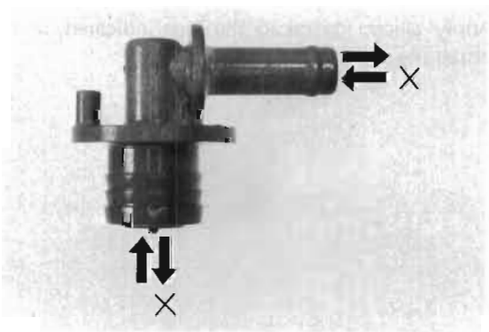
Fig. 8-69



Valve Body

Check the operation of valve.

Fig. 8-70



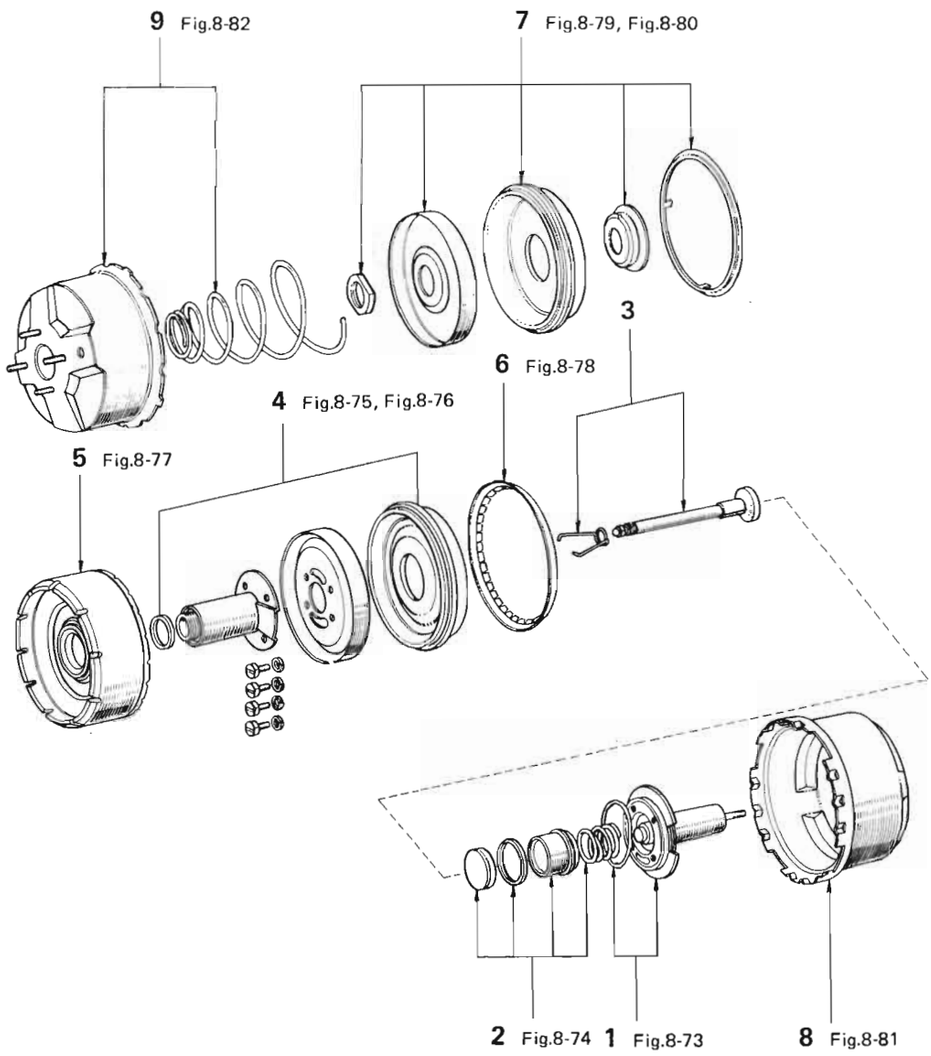
Vacuum Check Valve

Check the operation of valve.

ASSEMBLY

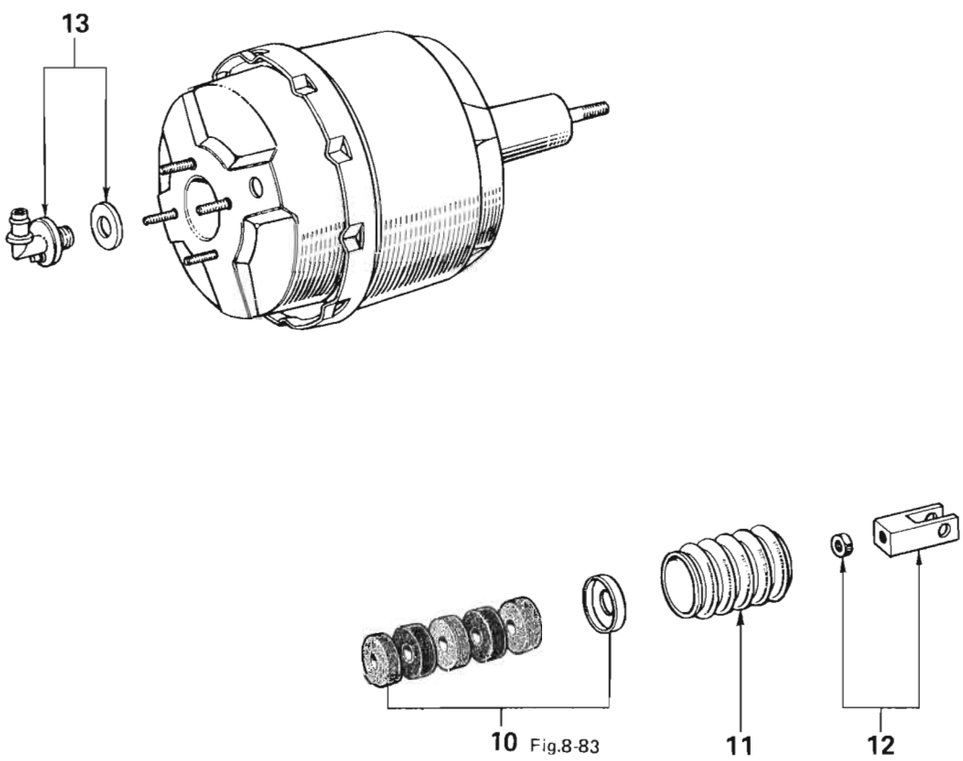
Assemble the parts in the order shown below.

Fig. 8-71



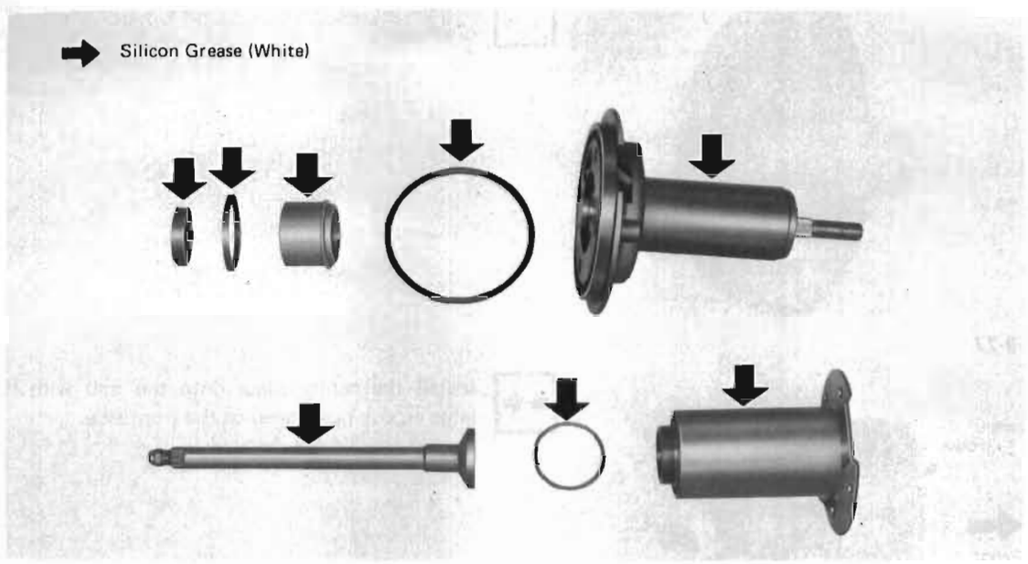
1. Valve Body & "O" Ring
2. Reaction Disc, Reaction Disc Hub & Spring
3. Rod
4. Hub, Bolts, Rear Diaphragm Plate & Rear Diaphragm
5. Center Plate
6. Rear Diaphragm Retainer
7. Nut, Front Diaphragm Plate, Front Diaphragm & Front Diaphragm Retainers
8. Rear Shell Cylinder
9. Front Shell Cylinder & Spring

Fig. 8-72



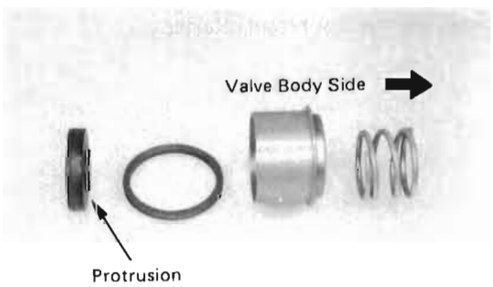
10. Retainer, Filter & Silencer
11. Boot
12. Clevis
13. Check Valve & Grommet

Fig. 8-73



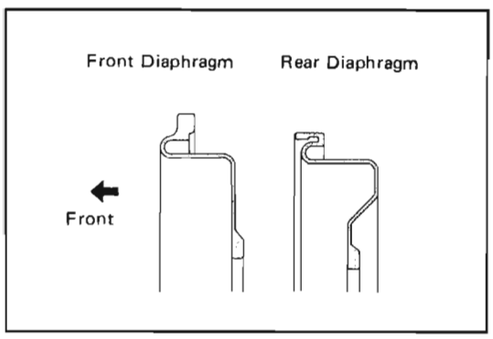
– Note –
Before starting assembly, coat the parts indicated in illustration with silicon grease (furnished with the repair kit).

Fig. 8-74



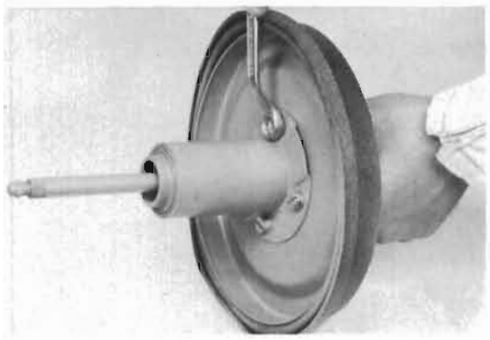
Install the reaction disc with its protrusion directed toward the valve body.

Fig. 8-75



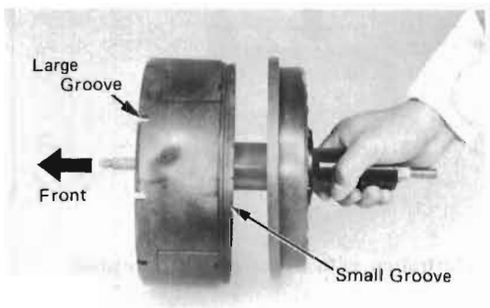
– Note –
Do not confuse rear diaphragm with front diaphragm.

Fig. 8-76



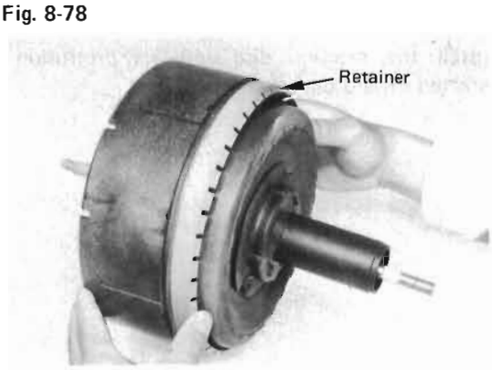
Install the hub, rear diaphragm plate and rear diaphragm.

Fig. 8-77



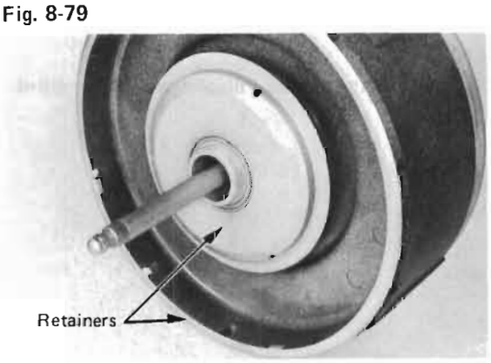
Install the center plate onto the hub with its large groove positioned to the front side.

Fig. 8-78



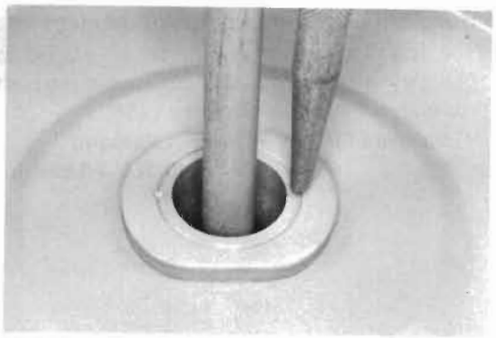
Install the rear diaphragm retainer.

Fig. 8-79



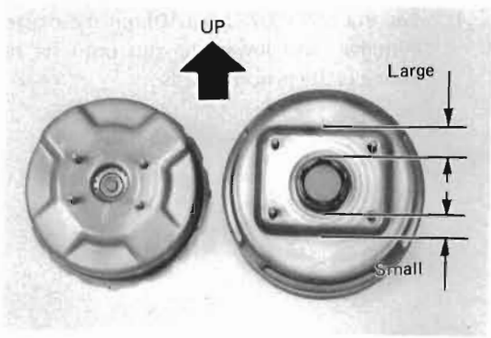
Install the front diaphragm retainers as shown.

Fig. 8-80



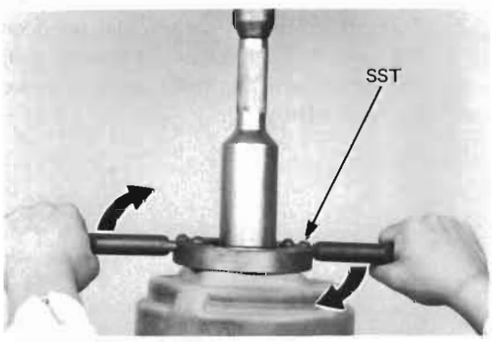
Tighten the nut, then stake the nut.

Fig. 8-81



Assemble together the front and rear shell cylinders with their vertical directions aligned.

Fig. 8-82

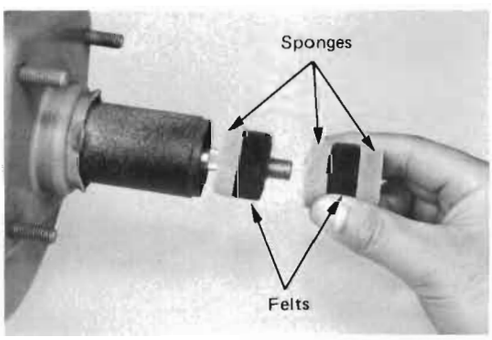


Using SST [09738-22012], [09753-22010], and a press, install the shell cylinder and stud assembly until the rear shell cut is securely against the stopper.

– Note –

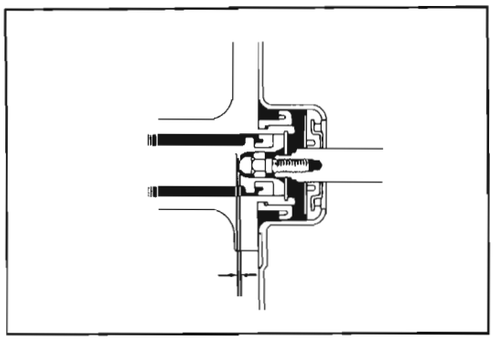
If the rear shell is too tight and cannot be turned, re-apply oil on the diaphragm edge which contacts with the front and rear shells.

Fig. 8-83



Install the sponges and felts as shown.

Fig. 8-84

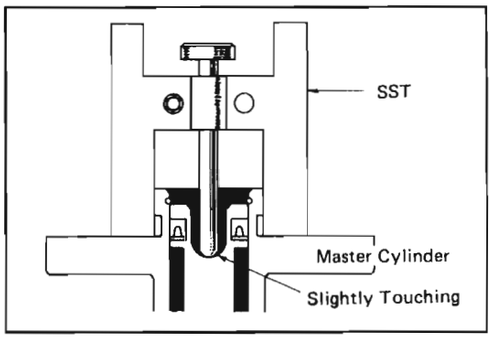


Booster Push Rod Length Adjustment

The length of booster push rod is adjusted to provide the specified clearance between the push rod end and the master cylinder piston.

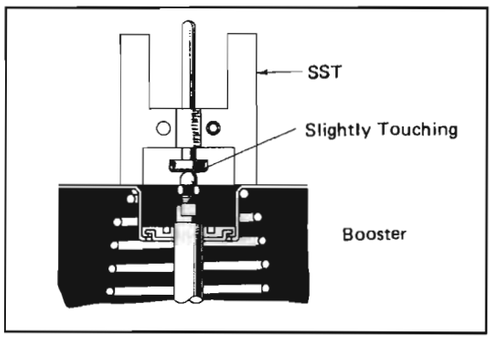
Standard Clearance (Without Vacuum)
0.6 – 0.65 mm (0.024 – 0.026 in.)

Fig. 8-85



1. Set the SST [09737-00010] on the master cylinder, and lower the pin until its tip contacts the piston slightly.

Fig. 8-86



2. Turn the SST upside down and set it on the booster. Then adjust the booster push rod length until the rod end contacts the pin head slightly.

VACUUM PUMP

REMOVAL

Remove the parts in the order numbered below.

Fig. 8-87

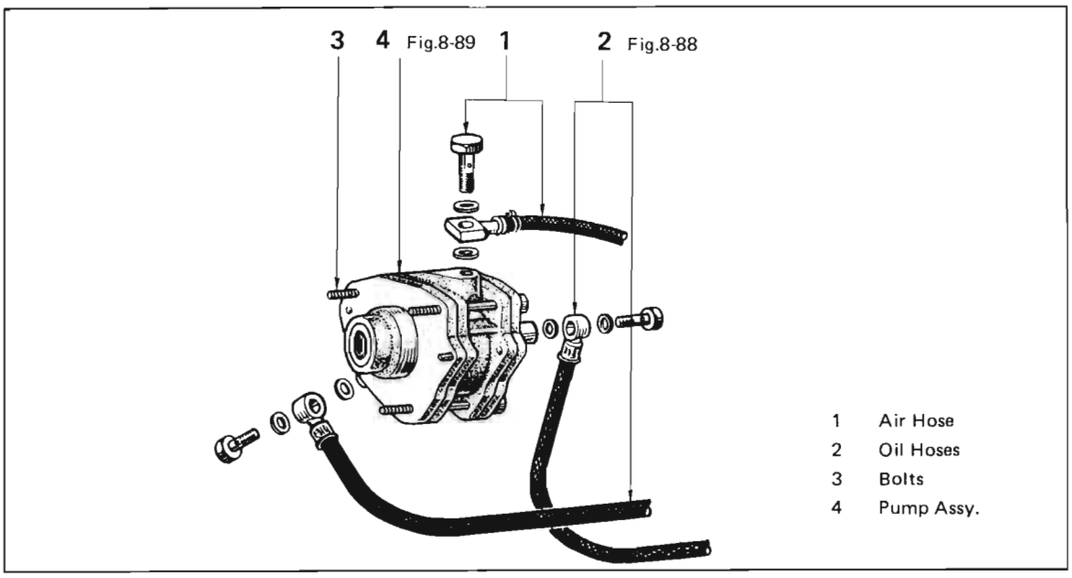
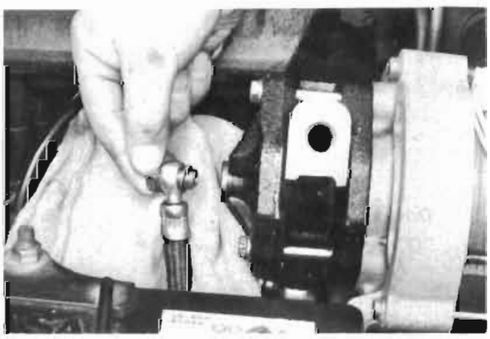


Fig. 8-88

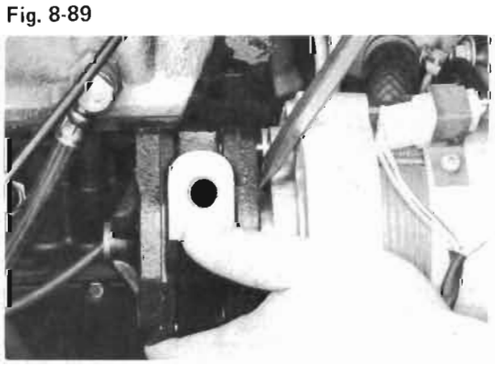


Disconnect the oil hoses.

– Caution –

Oil hose is contained in the hoses so avoid spilling it out when removing the hoses.

Fig. 8-89

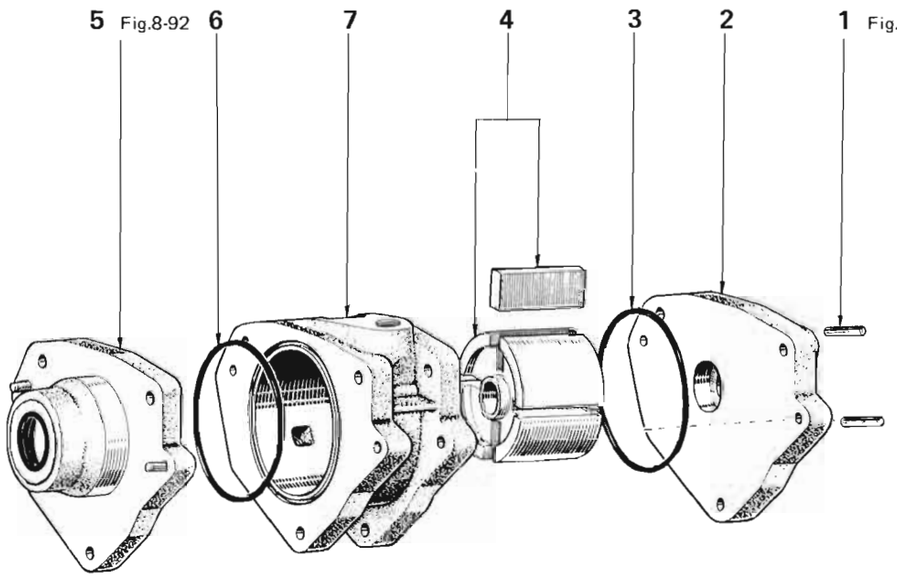


Remove the vacuum pump assembly.

DISASSEMBLY

Remove the parts in the order numbered below.

Fig. 8-90



1 Pins
2 End Cover
3 "O" Ring
4 Rotor & Blades
5 Drive End Frame
6 "O" Ring
7 Casing

Fig. 8-91



Drive out the pins from the end cover into the casing.

Fig. 8-92



Drive out the pins from the casing until flush with the inner face of end frame, and remove the end frame with the pins attached.

Fig. 8-93



INSPECTION

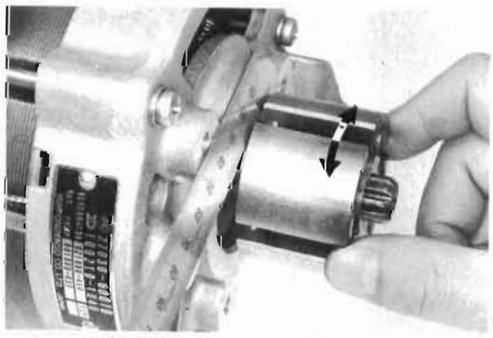
Inspect the disassembled parts on the following points, and replace all parts found defective.

End Cover And Casing

Inspect for damage and wear.

Casing bore wear limit 58.19 mm (2.291 in.)

Fig. 8-94

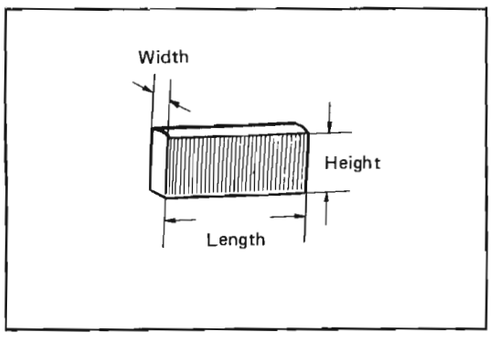


Alternator Shaft And Rotor

Check the rotor-to-spline play

Limit (on rotor) 2.4 mm (0.095 in.)

Fig. 8-95

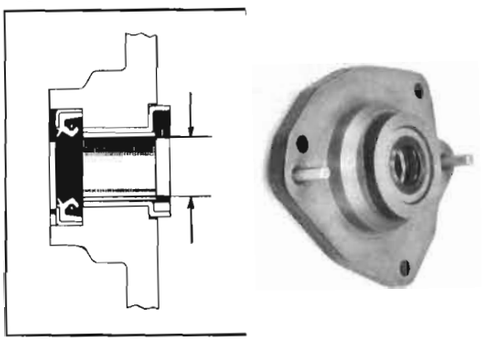


Blades

Inspect for damage and wear.

Height limit mm (in.)	12 (0.47)
Width limit mm (in.)	0.92 (0.272)
Length limit mm (in.)	34.98 (1.377)

Fig. 8-96

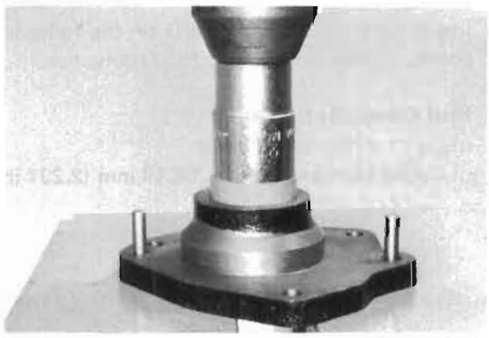


Drive End Frame

1. Inspect the end frame for damage and wear.
2. Inspect the oil seal and bushing for damage and wear.

Bushing bore wear limit
16.14 mm (0.6354 in.)

Fig. 8-97



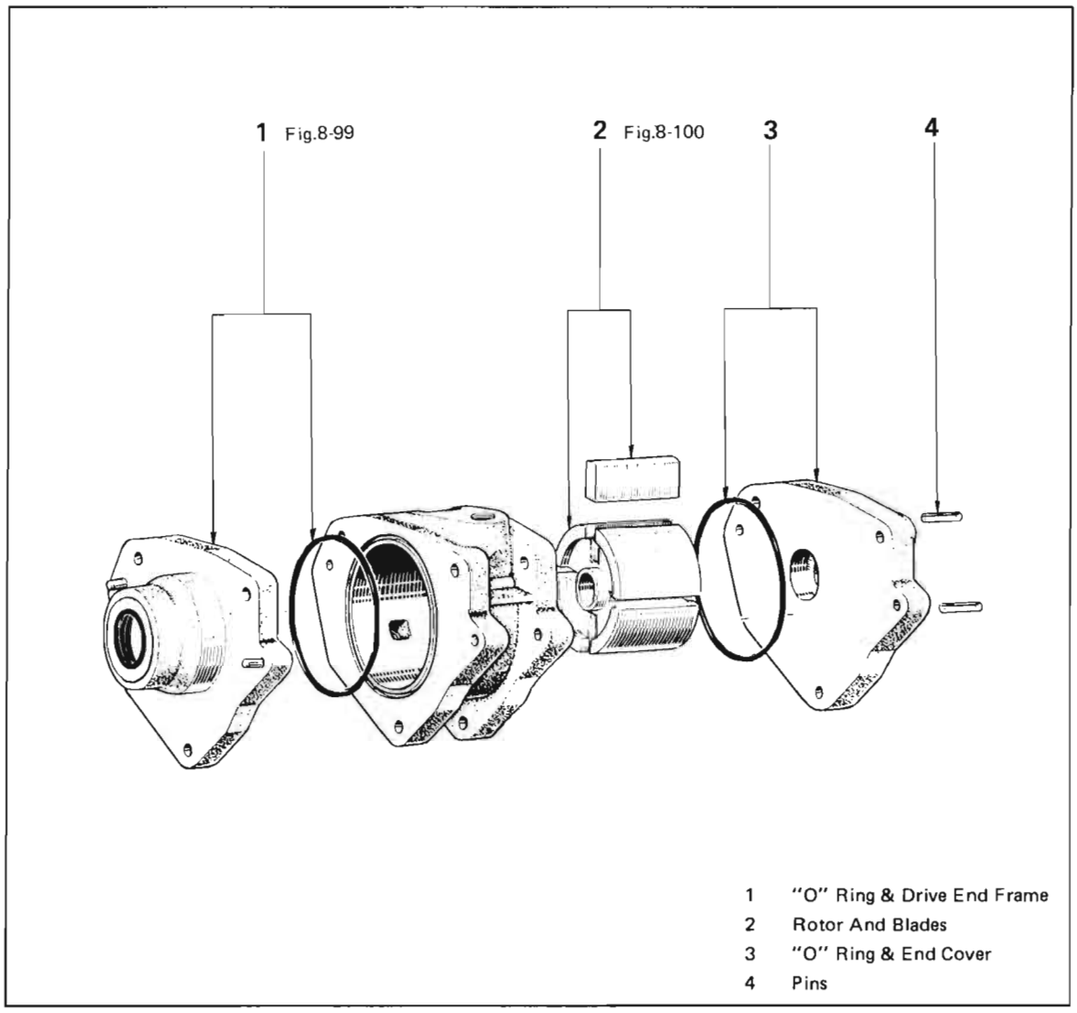
Oil Seal Replacement

1. Remove the oil seal by prying it out with a screwdriver.
2. Press in the new oil seal with a press.

ASSEMBLY

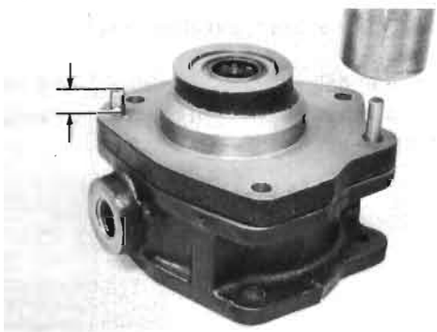
Assemble the parts in the order numbered below.

Fig. 8-98



1 "O" Ring & Drive End Frame
2 Rotor And Blades
3 "O" Ring & End Cover
4 Pins

Fig. 8-99



Drive in the pins until their end are protruding out only about 8 mm.

– Note –

Apply engine oil on the "O" ring and light coat of grease on the oil seal before installing.

Fig. 8-100



Install the rotor and blades.

– Note –

1. **Make sure that the blades are positioned in correct direction.**
2. **Coat engine oil on the blades and rotor before installing.**

INSTALLATION

Install the parts in the order numbered below.

Fig. 8-101

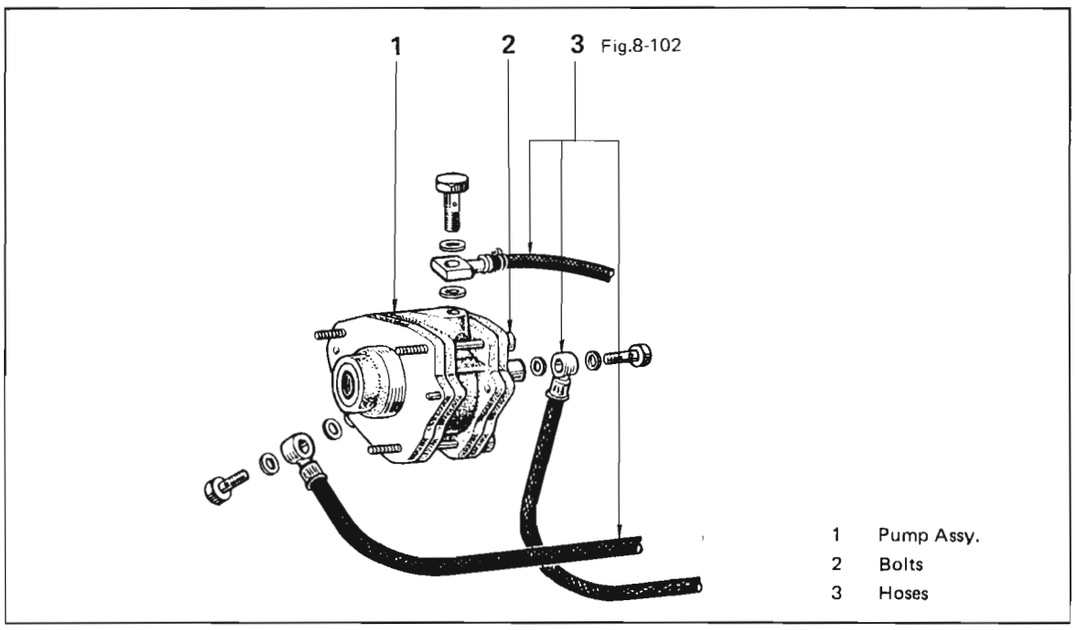
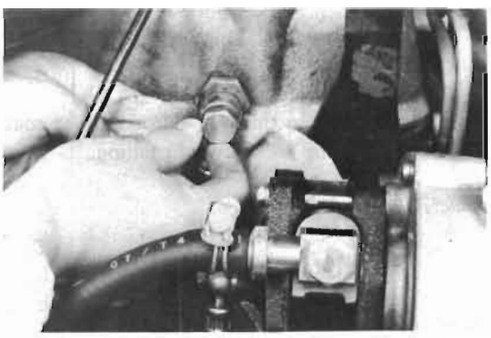


Fig. 8-102



Run the engine at low speed after completing the installation.

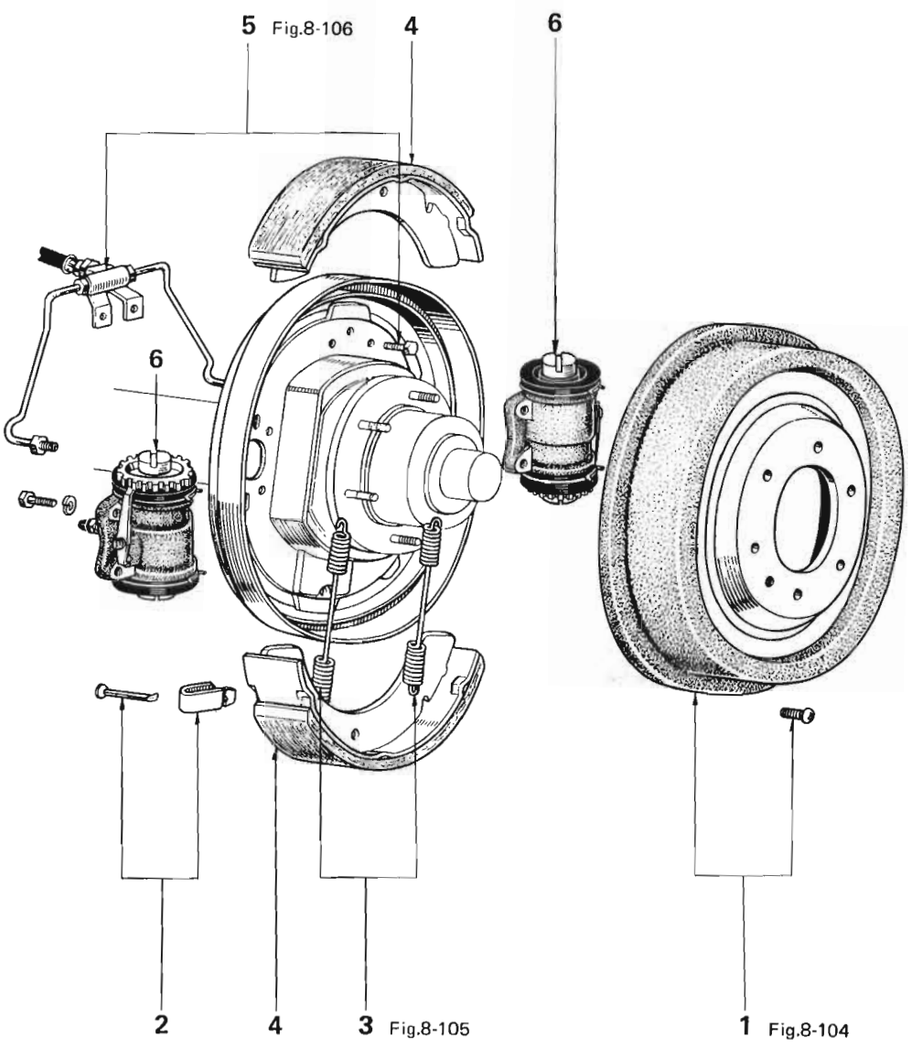
Loosen the hollow screw at delivery end of vacuum pump and check if oil is circulating within the pump.

FRONT BRAKE(DRUM TYPE)

REMOVAL

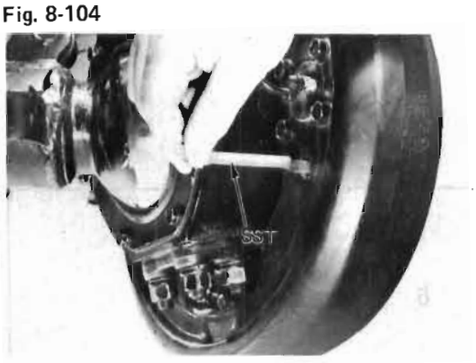
Remove the parts in the order numbered below.

Fig. 8-103



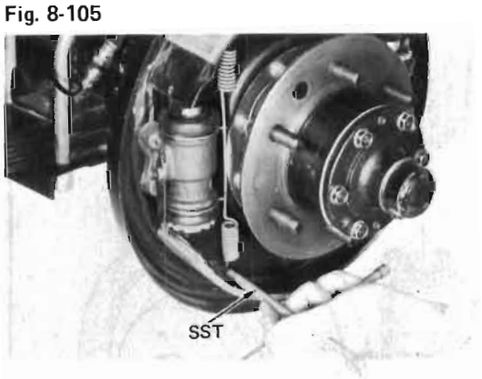
1 Brake Drum
2 Shoe Hold Down Springs & Pins
3 Shoe Return Springs
4 Shoe Assemblies
5 Brake Tube
6 Wheel Cylinders

Fig. 8-104



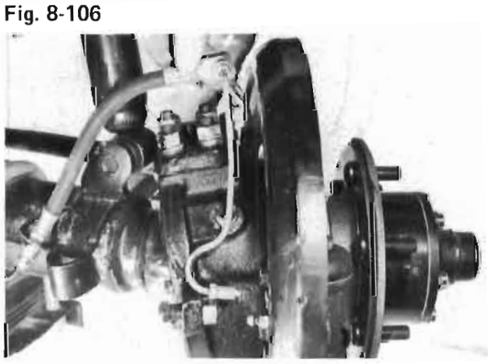
Return the wheel cylinder adjusting nut with SST [09704-10010] and then remove the drum.

Fig. 8-105



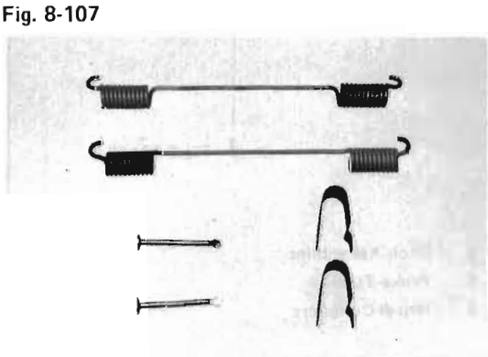
Remove with SST [09703-30010].

Fig. 8-106



Disconnect the brake tube and 3-way fitting from the backing plate.

Fig. 8-107



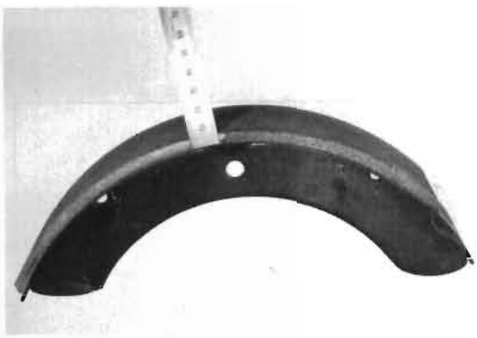
INSPECTION

Inspect the disassembled parts on the following points, and repair or replace all defective parts found.

Springs And Pins

Inspect for damage and deformation.

Fig. 8-108

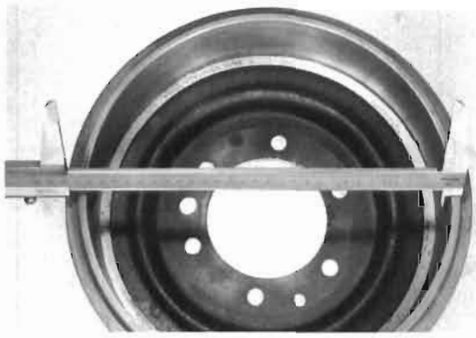


Shoe And Lining

Inspect for wear, damage, and deformation.

Lining thickness limit 1.5 mm (0.06 in.)

Fig. 8-109



Brake Drum

Inspect for wear, damage, and cracks.

Drum inner diameter limit
297 mm (11.70 in.)

Fig. 8-110



Wheel Cylinder

1. Inspect the cups for damage and deformation.
2. Inspect the boots for damage and cracks.
3. Inspect the cylinder body bore and piston for wear, damage, rust, and corrosion.
4. Inspect the adjusting nut and bolt for damage and deformation.

Fig. 8-111



Backing Plate

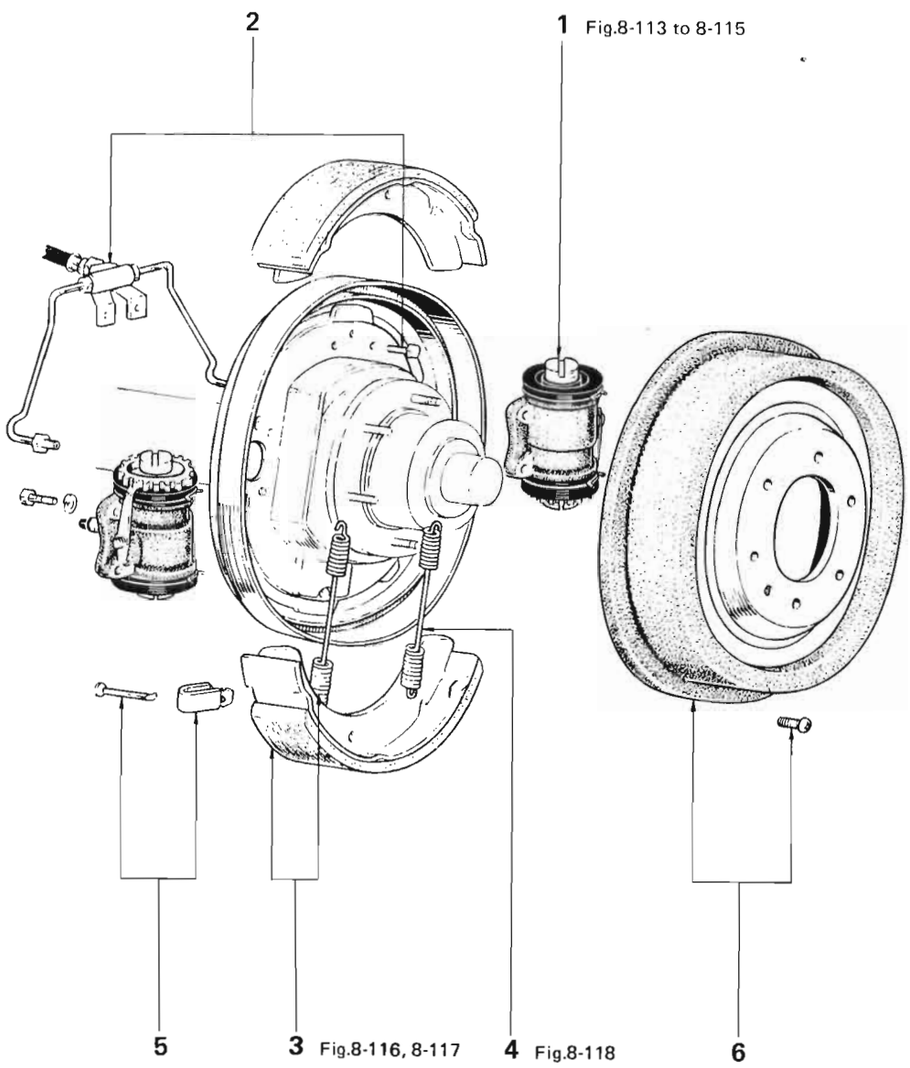
Inspect for damage, cracks, and deformation.

For removal and reinstallation, refer to the Front Axle Section.

INSTALLATION

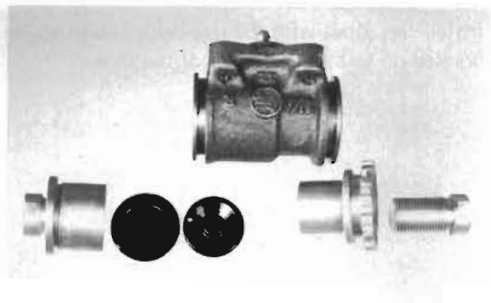
Install the parts in the order numbered below.

Fig. 8-112



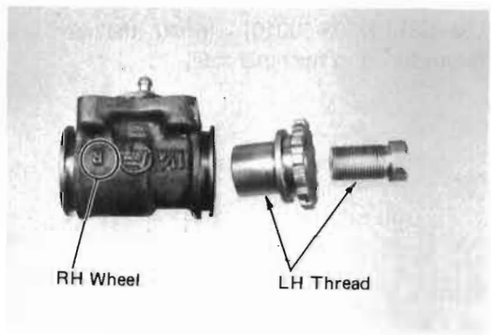
1 Wheel Cylinders
2 Brake Tubes
3 Shoe Assy. & Shoe Return Spring
4 Shoe Return Spring
5 Shoe Hold Down Springs & Pins
6 Brake Drum

Fig. 8-113



Apply rubber grease on the piston and cup.
- Apply non-melt type grease on the adjusting nut and bolt.

Fig. 8-114



⚠ Install the left hand thread adjusting nut and bolt at the right wheel brake.
Install the right hand thread adjusting nut and bolt at the left wheel brake.

Fig. 8-115



Install the wheel cylinders.

Fig. 8-116



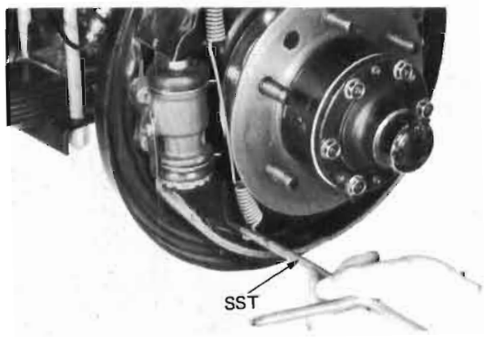
Apply non-melt grease to the place indicated by the arrow.

Fig. 8-117



Install the shoes with the front side return spring hooked on to the inner sides of the shoes.

Fig. 8-118



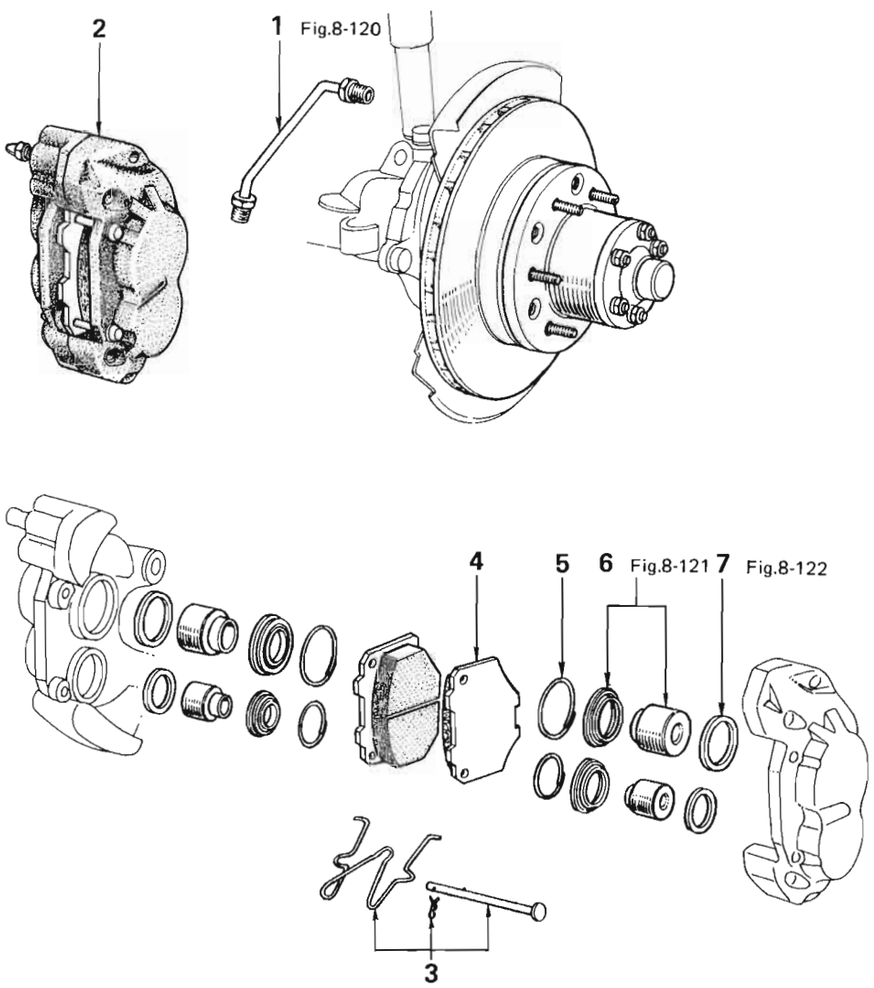
Use SST [09703-30010]. Install the rear side return spring to the outer side.

FRONT BRAKE(DISC TYPE)

REMOVAL

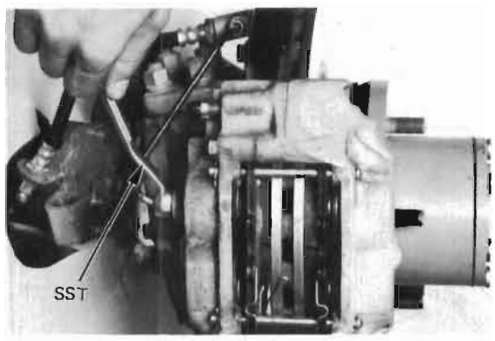
Remove the parts in the order shown below.

Fig. 8-119



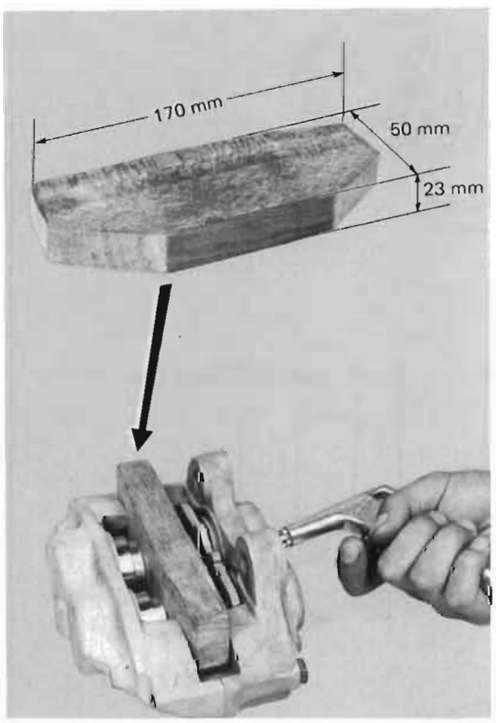
1. Brake Tube
2. Disc Brake Caliper Assembly
3. Clip, w/Hole Pin & Anti-Rattle Spring
4. Disc Brake Pad
5. Set Ring
6. Cylinder Boots & Disc Brake Piston
7. Seal Ring

Fig. 8-120



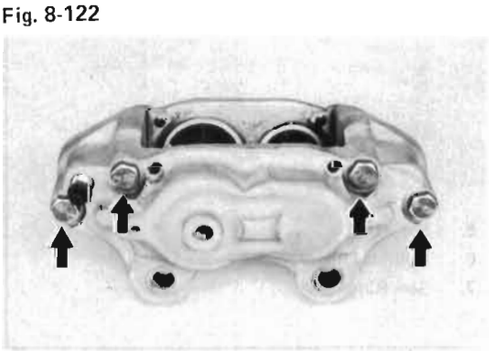
Remove the brake tube using SST[09751-36010].

Fig. 8-121



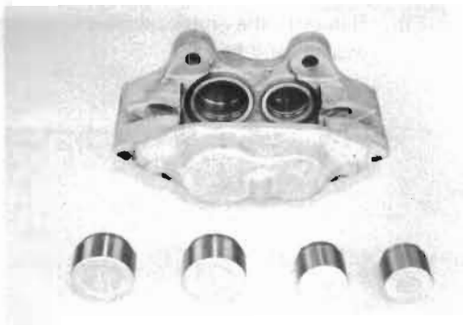
1. Place a backing board, such as shown in illustration, into the caliper slot, and insert a pad on one side.
2. Blow in compressed air through the tube connection hole.
3. Remove alternately.

Fig. 8-122



– Caution –
Never loosen the caliper bolts attaching the caliper halves.

Fig. 8-123

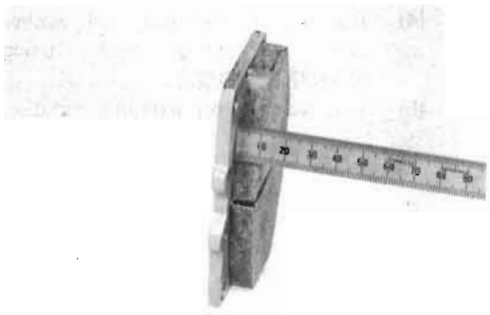


INSPECTION

Caliper And Piston

1. Inspect the caliper for deformation or cracks.
2. Inspect the cylinder bore and piston for eccentric wear, damage or corrosion.

Fig. 8-124

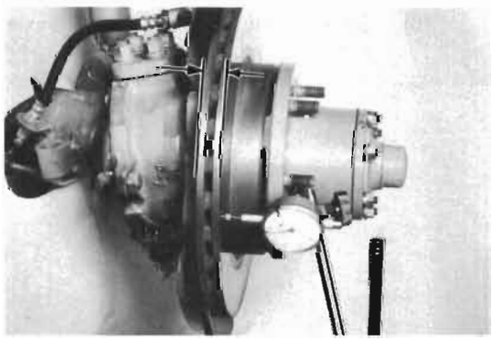


Pad

Inspect for thickness and one-sided wear.

Standard Thickness
10 mm (0.39 in.) at lining
Limit
1 mm (0.04 in.) at lining

Fig. 8-125



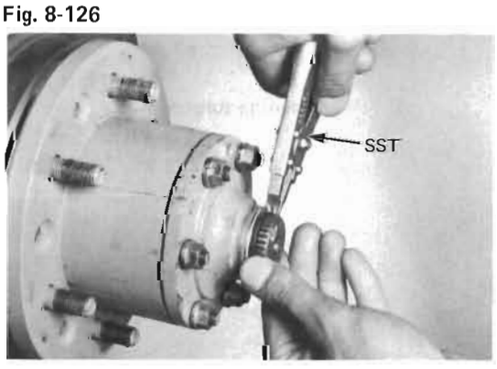
Disc

1. Inspect for thickness and runout.

Standard Thickness
20 mm (0.79 in.)
Thickness Limit
19 mm (0.74 in.)
Runout Limit
0.12 mm (0.005 in.)

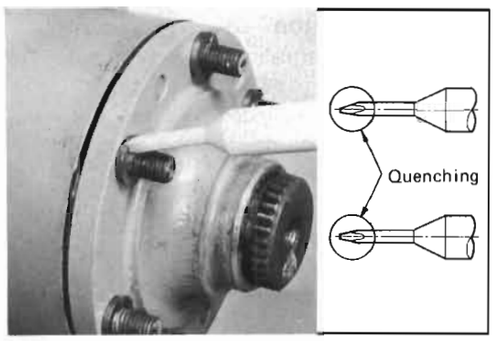
– Note –
There must not be any excessive looseness in the front wheel bearings when the runout is measured.

Fig. 8-126



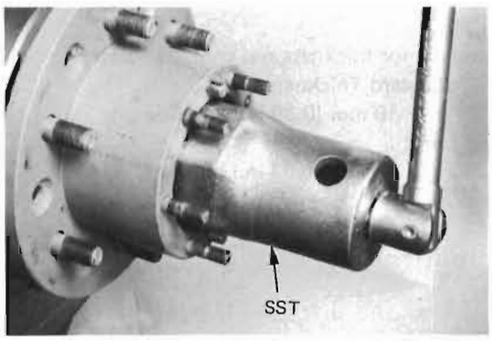
2. Replacement of disc.
   (1) Remove the front hub grease cup.
   (2) Remove the snap ring using SST [09905-00010].

Fig. 8-127



(3) Remove the nuts, washers, cone washers and flange.

Fig. 8-128



(4) Remove the lock nut, lock washer and adjusting nut using SST[09607-60020].

(5) Remove the front axle hub and disc.

Fig. 8-129



(6) Separate the disc from the front axle hub.

Fig. 8-130



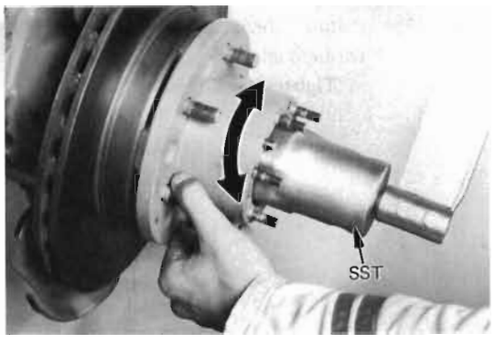
(7) Assemble the disc and front axle hub.

Tightening torque

4.0 – 5.5 kg-m

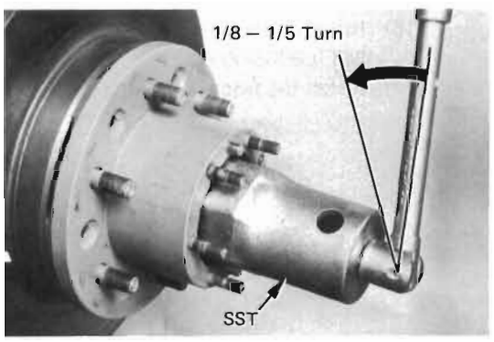
(28.9 – 39.8 ft-lb)

Fig. 8-131



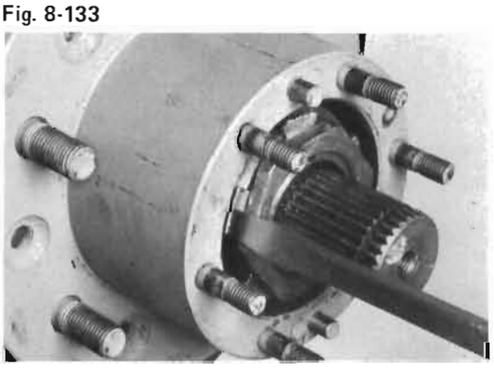
(8) Install the front axle hub and disc.
(9) Tighten the adjusting nut to 6 kg-m (43 ft-lb), using SST[09607-60020].
(10) Rotate the hub back and forth about three times to snug down the bearing.

Fig. 8-132



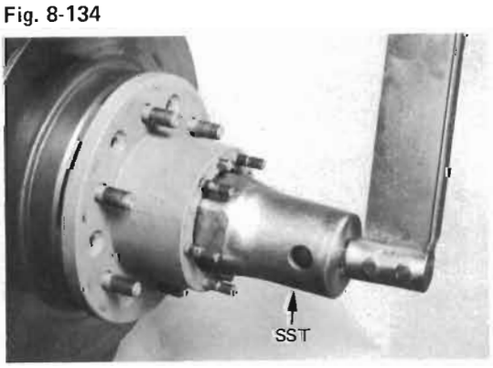
(11) Retighten the adjusting nut to 6 kg-m (43 ft-lb), then unscrew it nut 1/8th to 1/5th turn.

Fig. 8-133



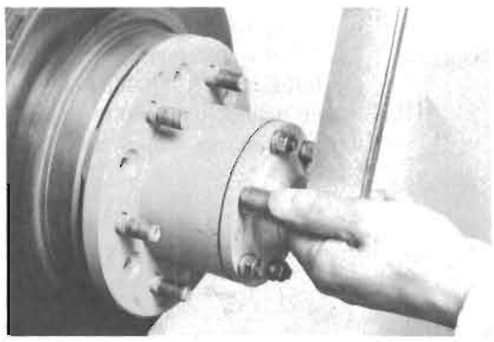
(12) Lock the nut by bending inward one of the lock washer teeth.

Fig. 8-134



(13) Tighten the lock nut to the specified torque.
Tightening torque
8 – 10 kg-m
(58 – 72 ft-lb)
(14) Secure the lock nut with the lock washer.

Fig. 8-135



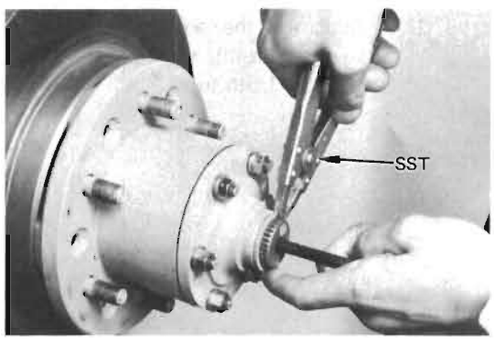
(15) Install the flange, cone washers, washers and nuts.

Tightening torque

2.8 – 3.5 kg-m

(20.3 – 25.3 ft-lb)

Fig. 8-136



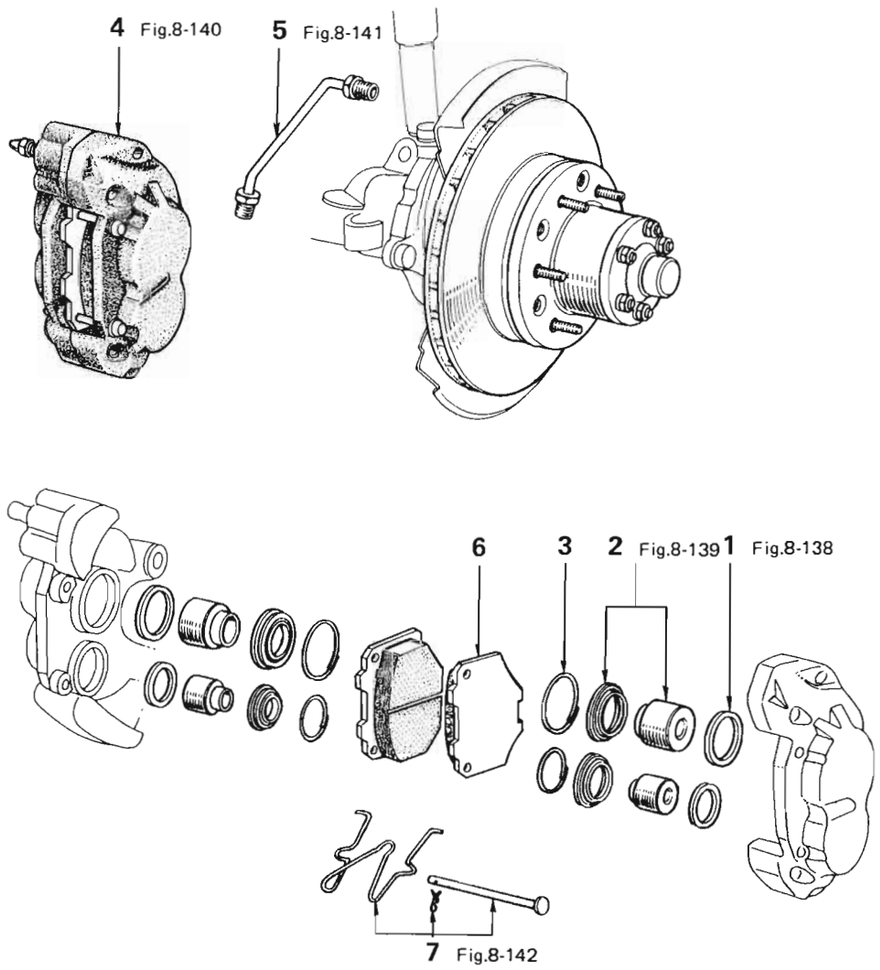
(16) Install the snap ring using SST [09905-00010].

(17) Install the front hub grease cup.

INSTALLATION

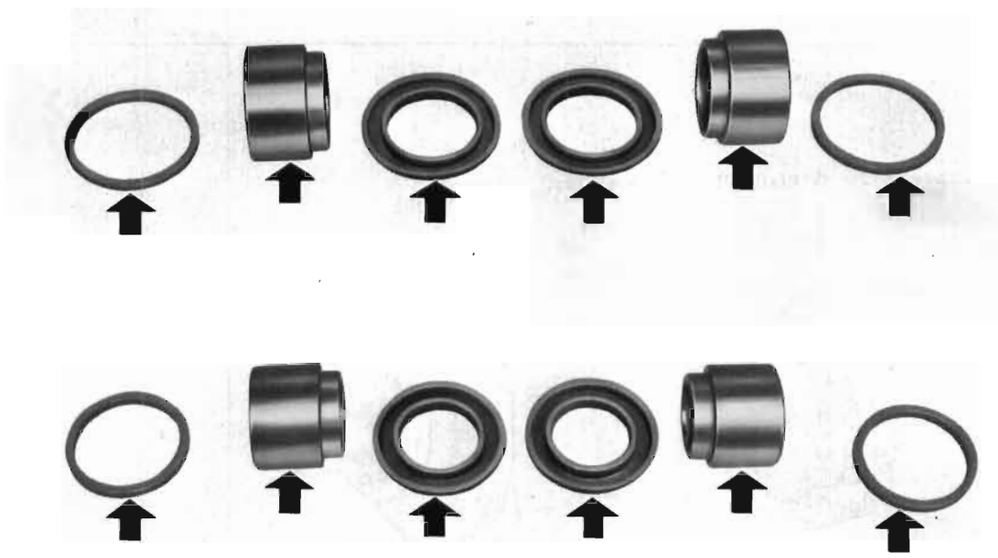
Install the parts in the order shown in the figure below.

Fig. 8-137



1. Seal Ring
2. Disc Brake Piston & Cylinder Boots
3. Set Ring
4. Disc Brake Caliper Assembly
5. Brake Tube
6. Disc Brake Pad
7. Anti-Rattle Spring, w/Hole Pin & Clip

Fig. 8-138



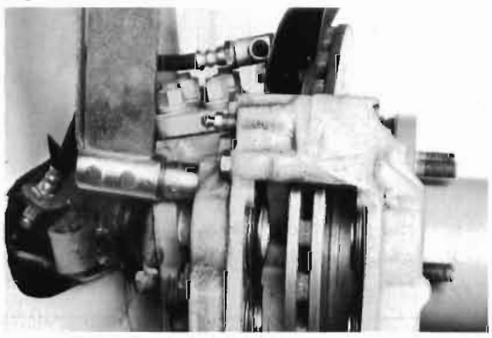
– Note –
Before starting assembly, coat the parts indicated with rubber grease.

Fig. 8-139



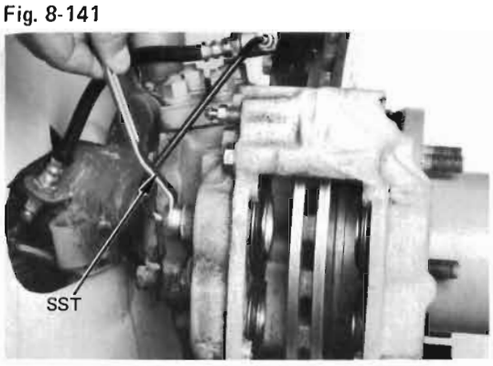
Install the disc brake piston.
– Caution –
Do not pry the piston into the cylinder.

Fig. 8-140



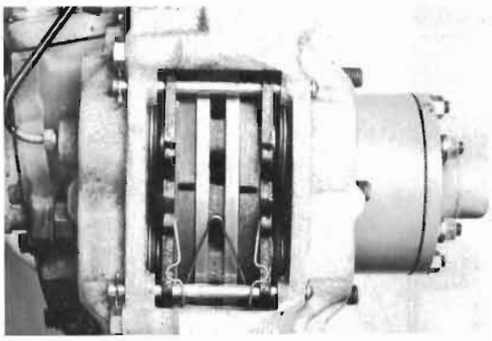
Install the disc brake caliper assembly.
Tightening torque **7.5 – 10.5 kg-m (54.2 – 76.0 ft-lb)**

Fig. 8-141



Install the brake tube with SST [09751-36010].

Fig. 8-142



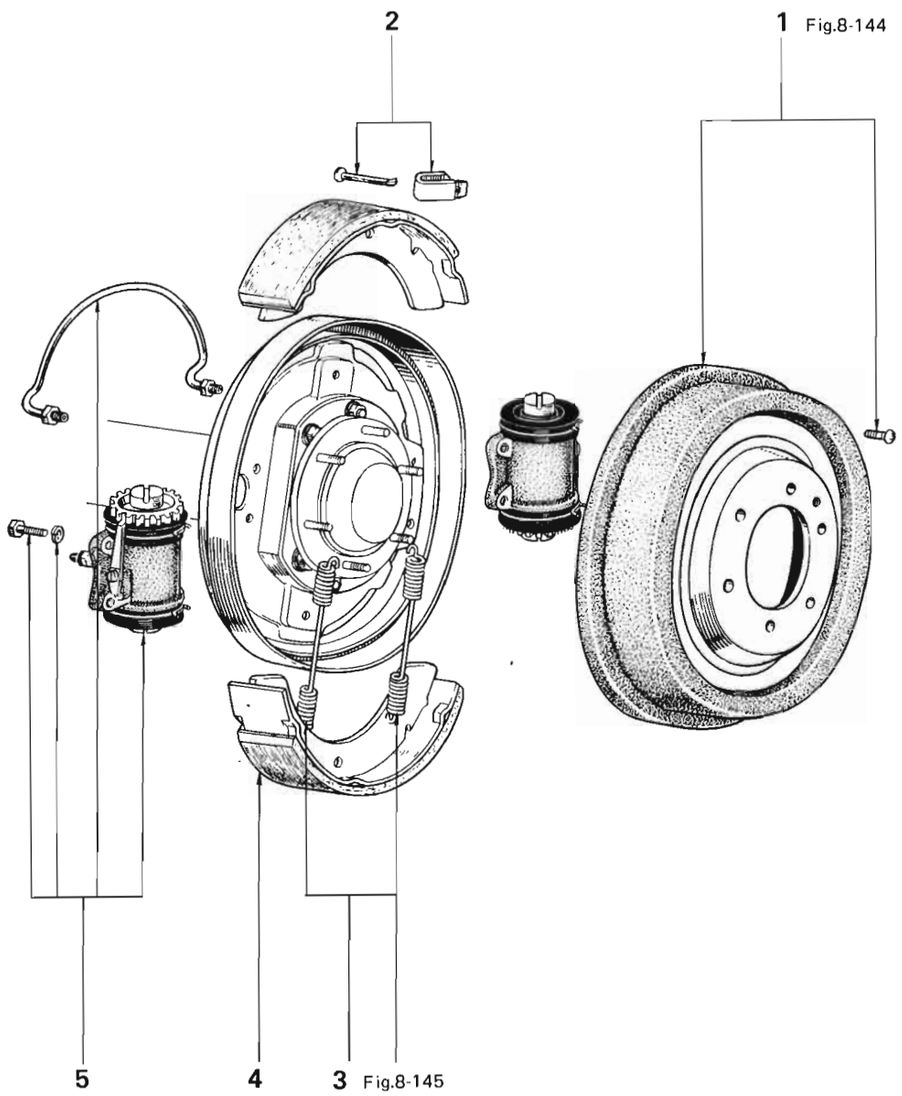
Install the anti-rattle spring as shown.

REAR BRAKE

REMOVAL

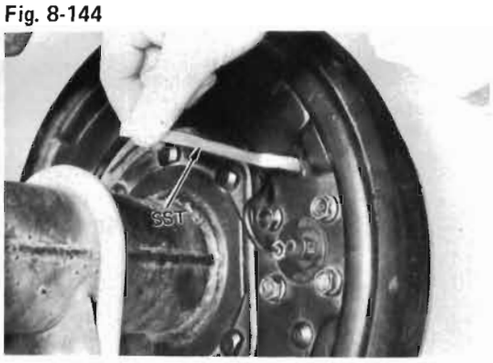
Remove the parts in the order numbered below.

Fig. 8-143



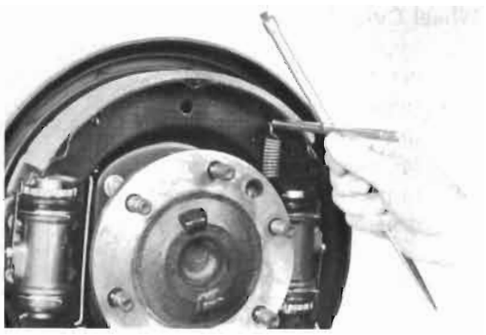
1 Brake Drum
2 Shoe Hold Down Springs & Pins
3 Shoe Return Springs
4 Shoe Assemblies
5 Wheel Cylinders

Fig. 8-144



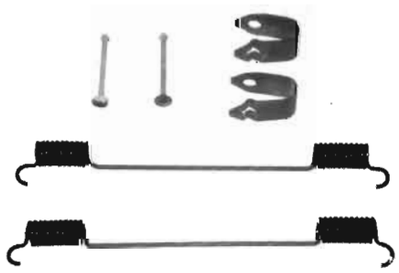
Return the wheel cylinder adjusting nut with SST [09704-10010] and then remove the drum.

Fig. 8-145



Remove with SST [09703-30010].

Fig. 8-146



INSPECTION

Inspect the disassembled parts on the following points and replace all defective parts found.

Springs And Pins

Inspect for damage and deformation.

Fig. 8-147

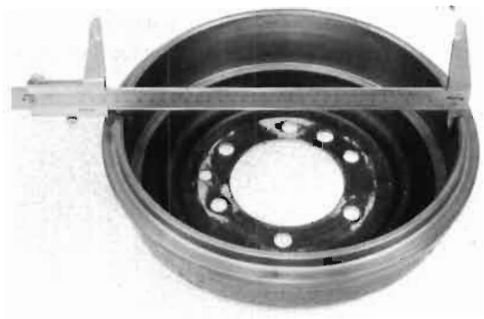


Shoes And Linings

Inspect for wear, damage, and deformation.

Lining thickness limit 1.5 mm (0.06 in.)

Fig. 8-148



Brake Drum

Inspect for wear, damage, and cracks.

Drum inner diameter limit

FJ45, HJ45 & FJ55 (Fire truck)
297 mm (11.70 in.)

Except FJ45, HJ45 & FJ55 (Fire truck)
292 mm (11.50 in.)

Fig. 8-149



Wheel Cylinder

1. Inspect the cups for damage and deformation.
2. Inspect the boots for damage and cracks.
3. Inspect the cylinder body bore and piston for wear, damage, rust, and corrosion.
4. Inspect the adjusting nut and bolt for damage and deformation.

Fig. 8-150



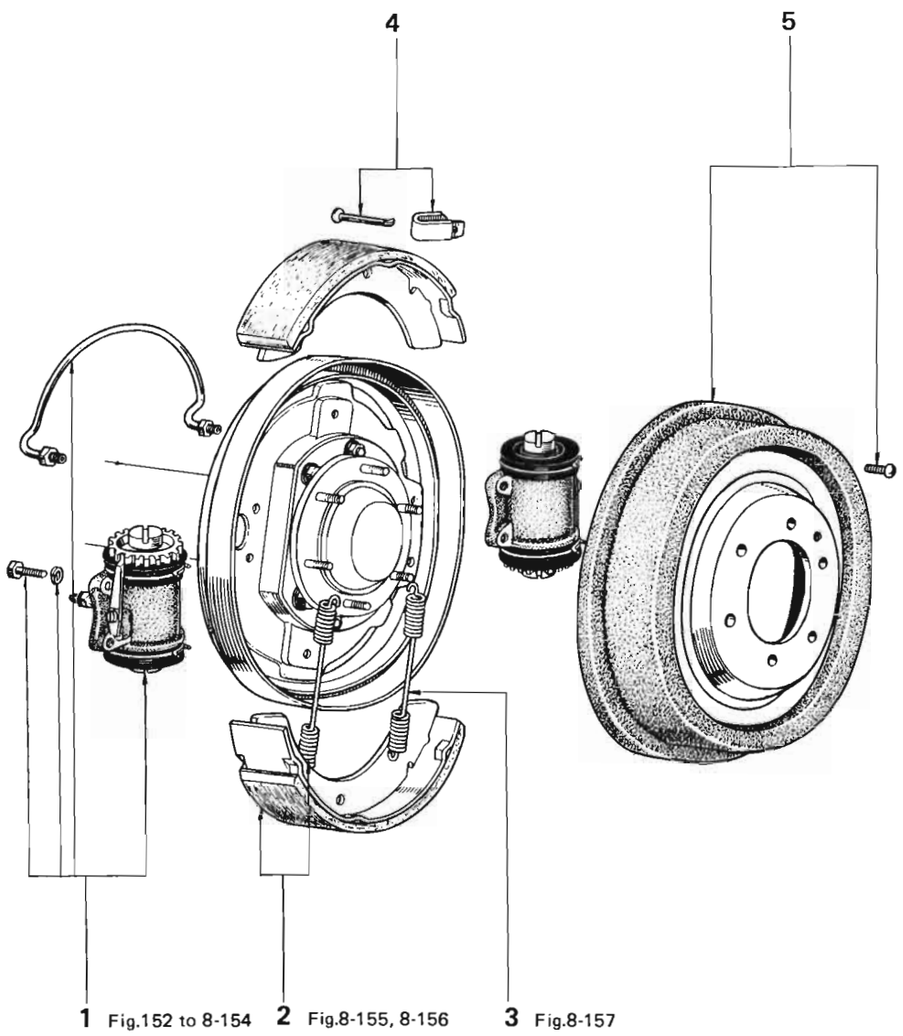
Backing Plate

Inspect for damage, crack, and deformation.

INSTALLATION

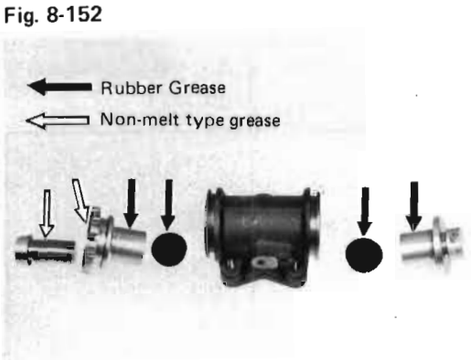
Install the parts in the order numbered below.

Fig. 8-151



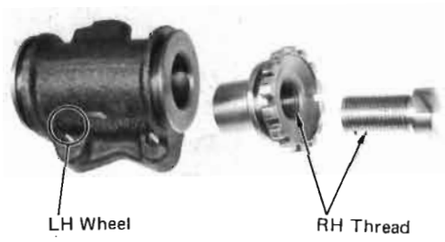
1 Wheel Cylinders
2 Shoe Assemblies & Shoe Return Spring
3 Shoe Return Spring
4 Shoe Hold Down Springs And Pins
5 Brake Drum

Fig. 8-152



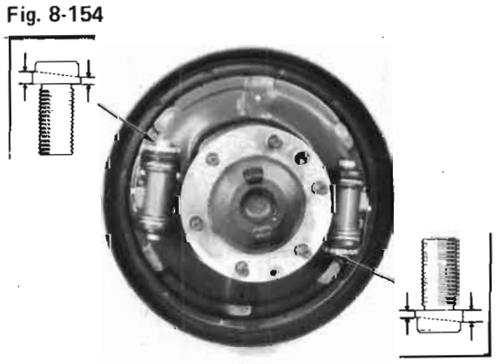
Apply rubber grease on the piston and cup.
Apply non-melt type grease on the adjusting nut and bolt.

Fig. 8-153



⚠ Install the left hand thread adjusting nut and bolt at the right wheel brake.
Install the right hand thread adjusting nut and bolt at the left wheel brake.

Fig. 8-154



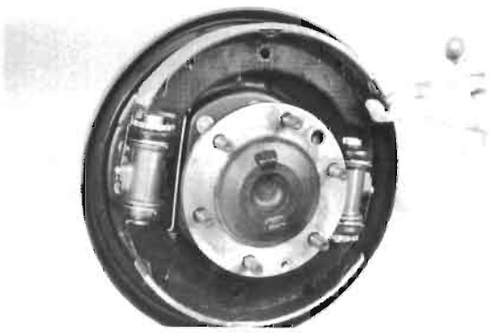
⚠ Install the adjusting bolt in the direction shown. [Except FJ45, HJ45 & FJ55 (Fire Truck)]

Fig. 8-155



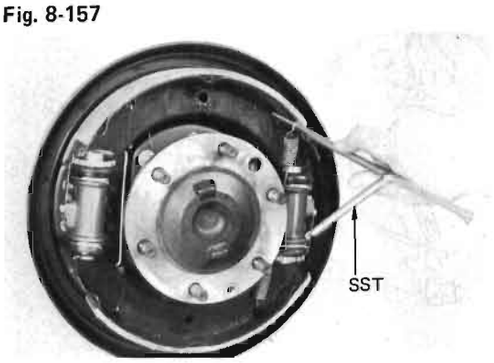
Apply non-melt type grease to the place indicated by the arrow.

Fig. 8-156



Install the shoes with the front side return spring hooked on to the inner sides of the shoes.

Fig. 8-157



Using SST [09703-30010], install the rear side return spring to the outer side.

PARKING BRAKE

REMOVAL

Drain out the oil from the transfer case, and remove the parts in the order numbered below.

Fig. 8-158

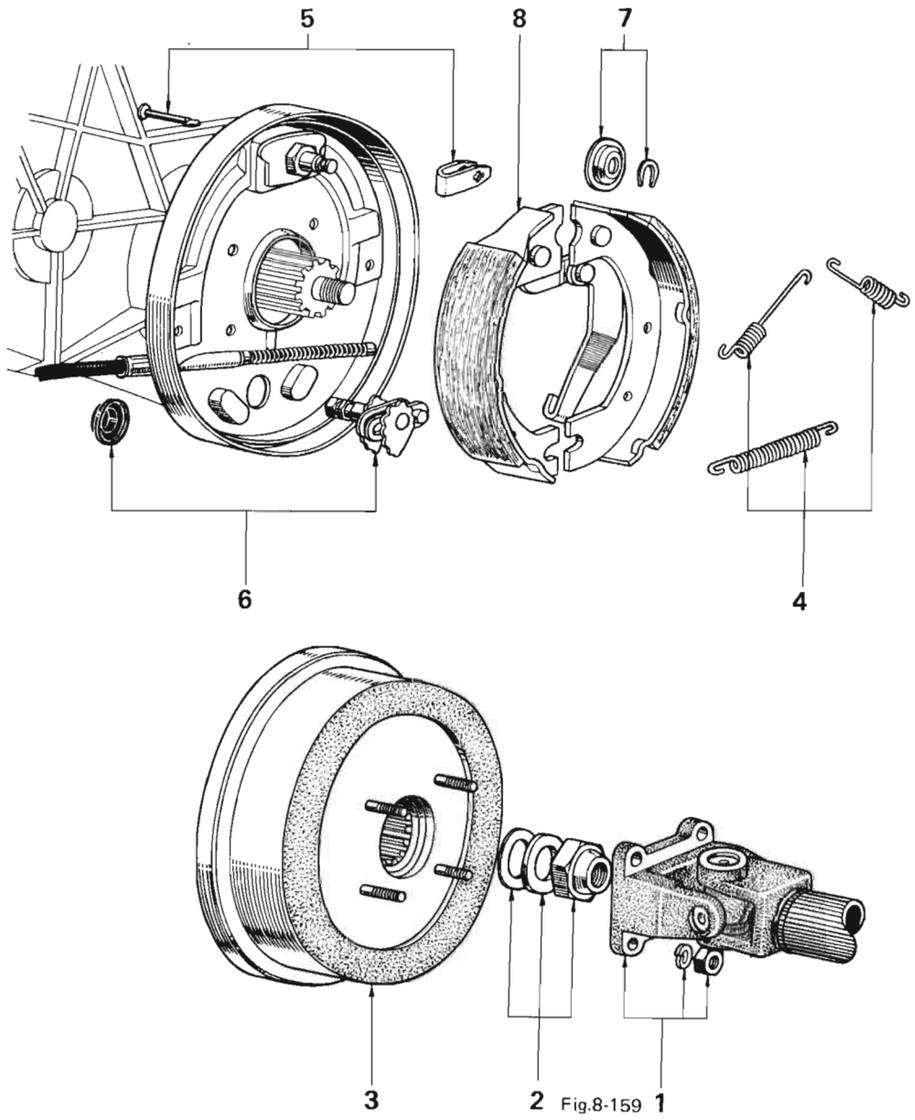
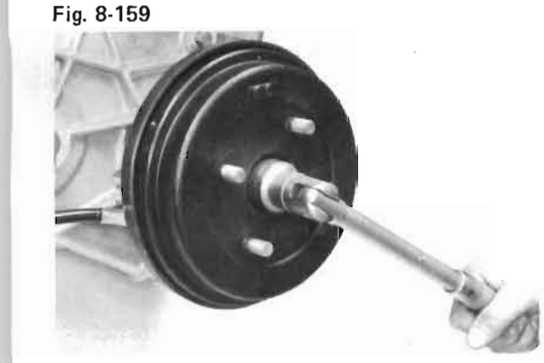


Fig.8-159

1 Propeller Shaft
2 Nut, Washer, & Shim
3 Brake Drum
4 Tension Springs
5 Hold Down Springs & Pins
6 Cover & Shoe Adjuster
7 "C" Washer & Washer
8 Shoe Assemblies & Levers

Fig. 8-159



1. With the vehicle in front drive, engage the parking brake and foot brake.
2. Remove the nut after unlocking its staked parts.

Fig. 8-160



INSPECTION

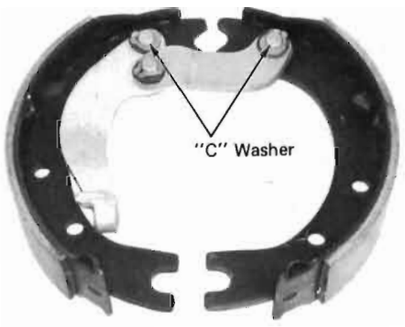
Inspect the removed parts on the following points, and repair or replace all parts that are found defective.

Brake Shoe And Lining

Inspect for wear, damage, and deformation.

Lining thickness limit 1.5 mm (0.06 in.)

Fig. 8-161



Shoe Replacement

1. Remove the "C" washers and replace the shoe.
2. Coat non-melt type grease on the pins, and install the shoe assembly.

– Note –

Illustration shows LH model vehicle.

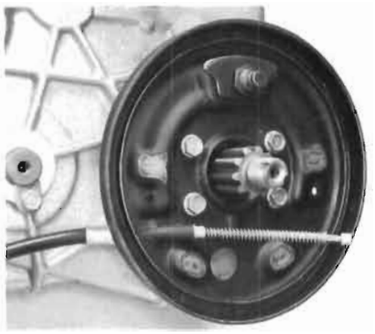
Fig. 8-162



Brake Drum

Inspect the inner surface for wear and damage.

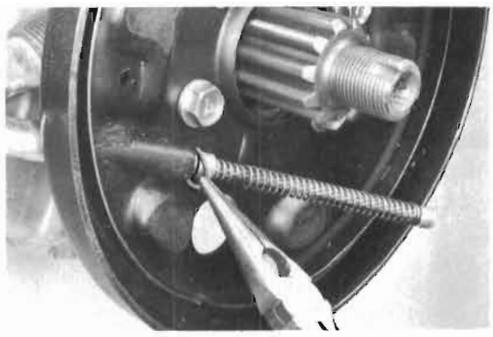
Fig. 8-163



Backing Plate And Parking Brake Cable

1. Inspect the backing plate for wear and cracks.
2. Inspect the parking brake cable for damage and its sliding condition.

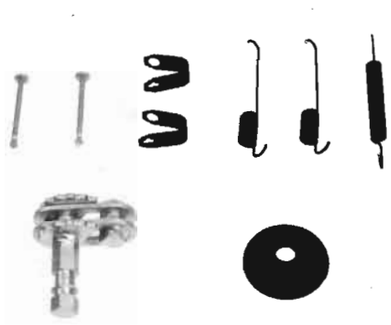
Fig. 8-164



Parking Brake Cable Replacement

1. At the backing plate, remove and reinstall the "C" washer.
2. At the parking brake lever, refer to the procedures described in Transmission Removal and Installation.

Fgi. 8-165



Adjuster, Springs And Pins.

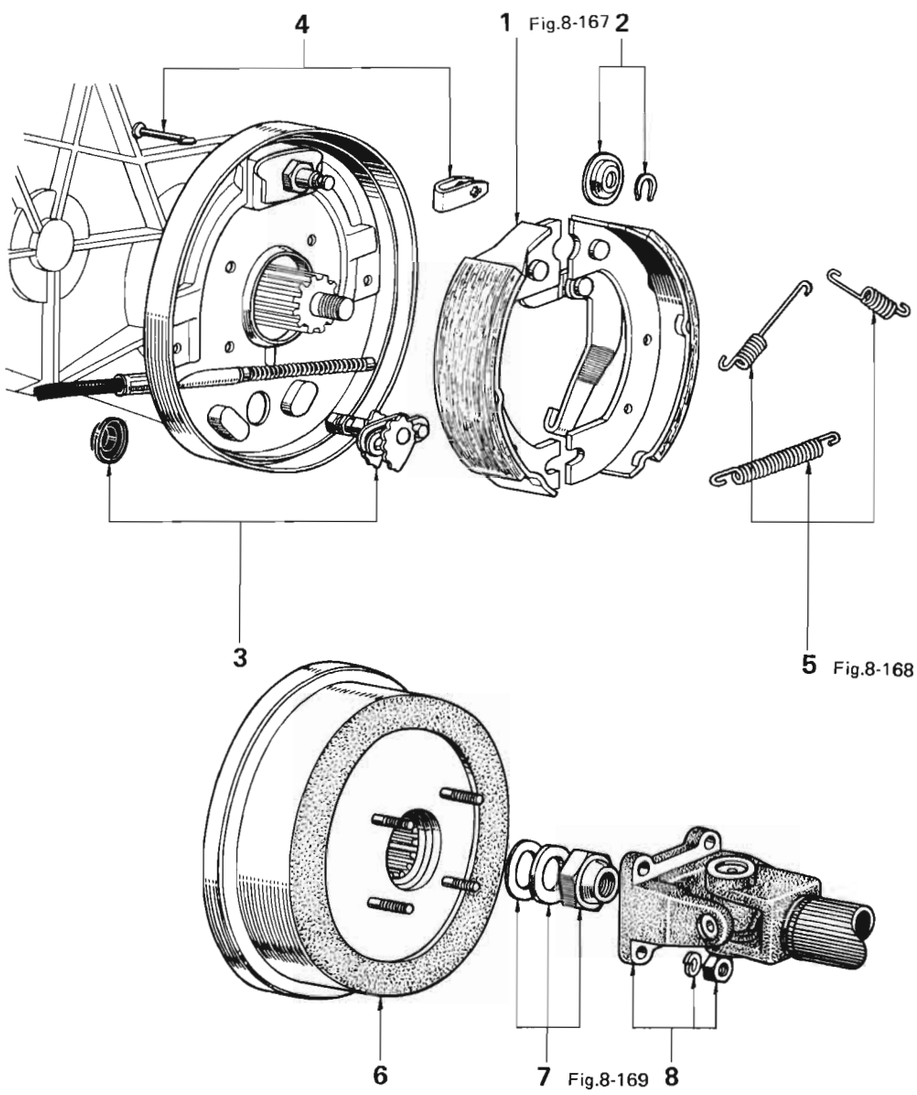
Inspect for damage and wear.

INSTALLATION

1. Install the parts in the order numbered in the figure below.
2. Fill oil into the transfer case.

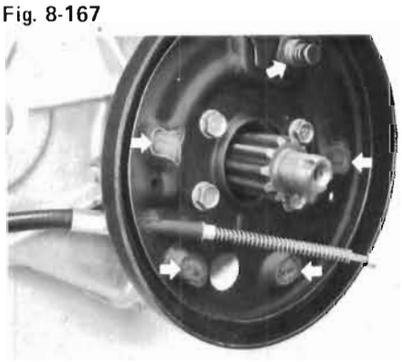
Type	**SAE 90 (API GL–4)**
Capacity	**1.7 liter (1.8 US qt., 1.5 Imp.qt.)**

Fig. 8-166



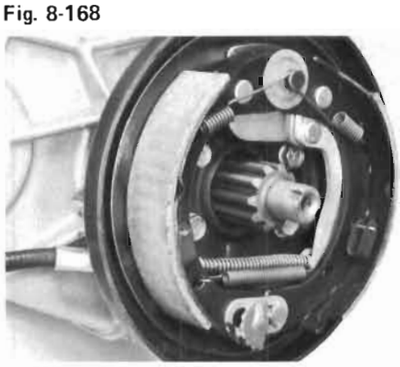
1	Shoe Assemblies & Levers	5	Tension Springs
2	Washer & "C" Washer	6	Brake Drum
3	Shoe Adjuster & Cover	7	Shim, Washer, & Nut
4	Hold Down Springs & Pins	8	Propeller Shaft

Fig. 8-167



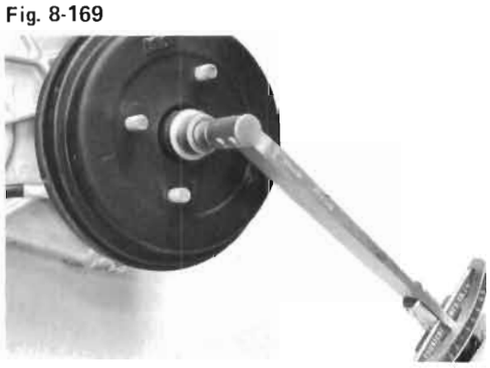
Apply non-melt type grease to the place indicated by arrow.

Fig. 8-168



Install the lower side tension spring from the inner side.

Fig. 8-169



Tighten the nut at the specified torque, and stake the nut to prevent loosening.

Tightening torque **11-14 kg-m (80-101 ft-lb)**

Adjust the parking brake after installation by methods described under Adjustment.

FRONT WINCH

page

CUTAWAY VIEW 9- 2

POWER TAKE-OFF 9- 3

WINCH 9-10

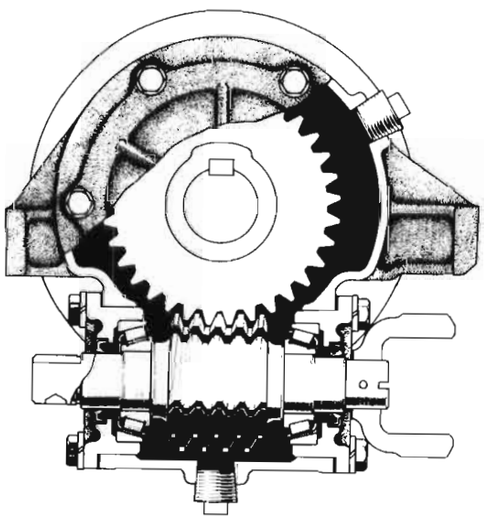
CUTAWAY VIEW

Fig. 9-1

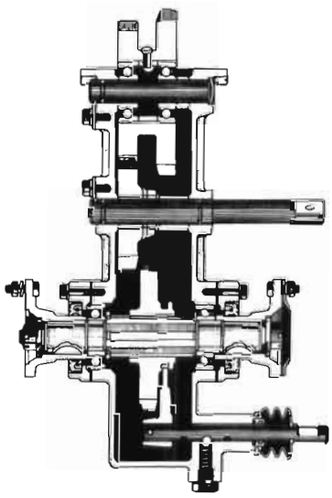
POWER TRAIN



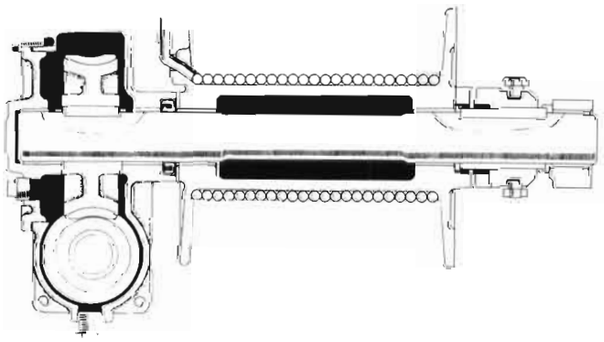
WINCH GEAR CASE



POWER TAKE-OFF



WINCH

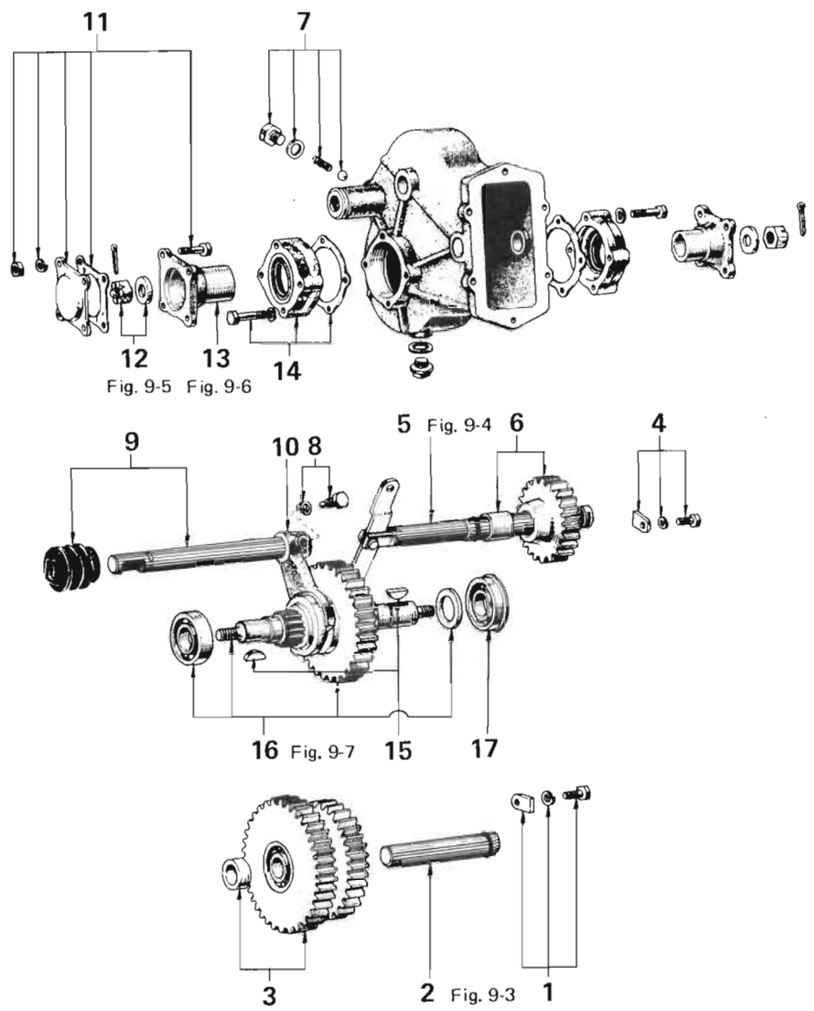


POWER TAKE-OFF

DISASSEMBLY

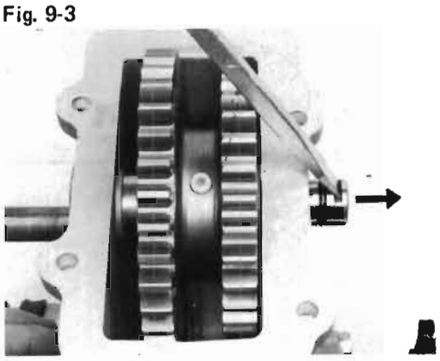
Dissassemble the parts in the order numbered below.

Fig. 9-2



1	Lock Plate	10	Shift Fork
2	Input Gear Shaft	11	Retainer Cap
3	Spacer, Input Gear & Bearings	12	Nuts & Plates
4	Lock Plate	13	Joint Flanges
5	Reverse Idler Shaft Assy.	14	Bearing Retainers
6	Reverse Idler Gear & Spacer	15	Woodruff Keys
7	Lock Ball & Spring	16	Output Shaft, Bearing & Spacer
8	Lock Bolt	17	Bearing
9	Fork Shaft & Boot		

Fig. 9-3

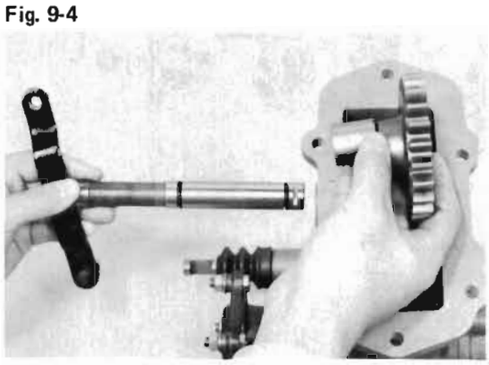


Remove the input gear shaft.

– Note –

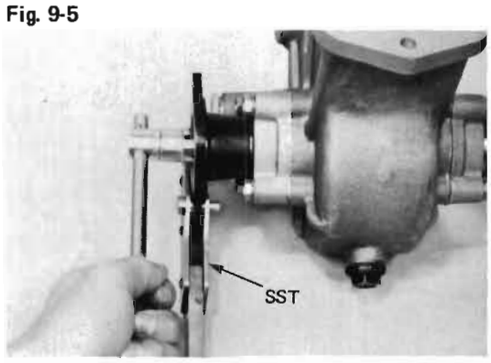
If difficult to remove the shaft, first tap the shaft lightly towards the rear, and remove the expansion plug.

Fig. 9-4



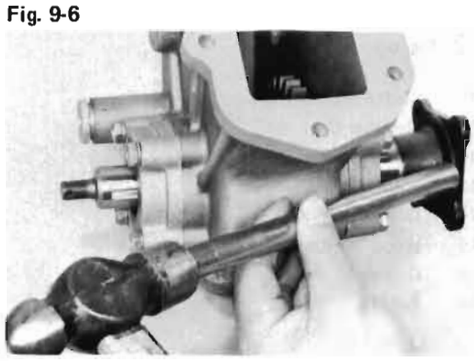
Remove the reverse idler shaft assembly.

Fig. 9-5



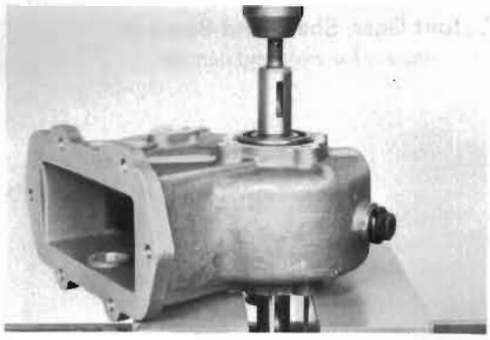
Use SST [09330-00020].

Fig. 9-6



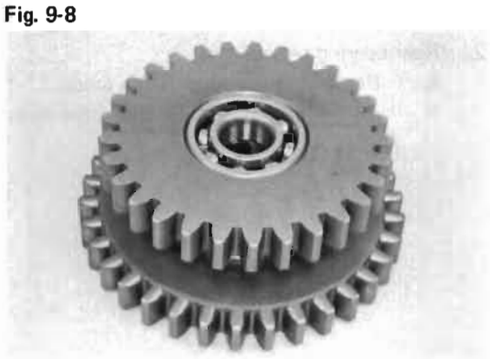
Remove the joint flange by lightly tapping its portion of woodruff key groove.

Fig. 9-7



Remove the output shaft with the rear bearing using a press.

Fig. 9-8



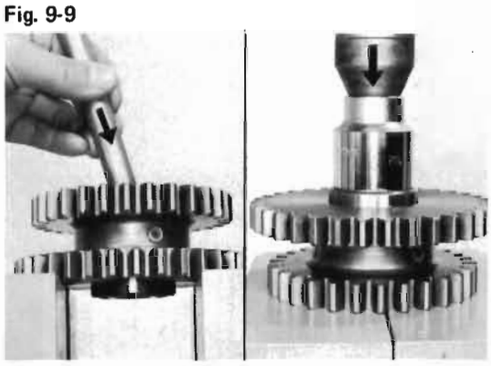
INSPECTION

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

Input Gear And Bearings

1. Inspect the gears for teeth wear or damage.
2. Inspect the bearings for damage and wear.

Fig. 9-9



3. Bearings replacement.
   a. Remove the bearings with drift pin.
   b. Install the bearings with socket wrench.

Fig. 9-10



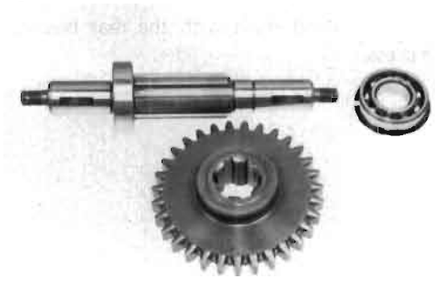
Reverse Idler Gear And Shaft

Inspect for wear and damage.

– Note –

For the bushing replacement, use a socket wrench.

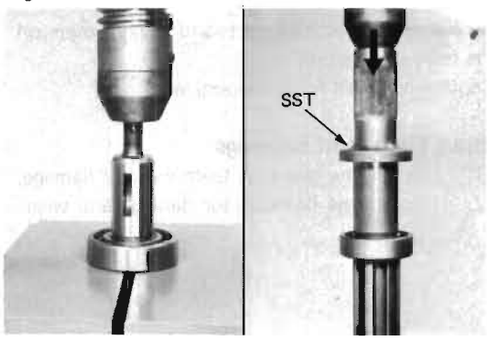
Fig. 9-11



Output Gear, Shaft And Bearings

1. Inspect for wear and damage.

Fig. 9-12

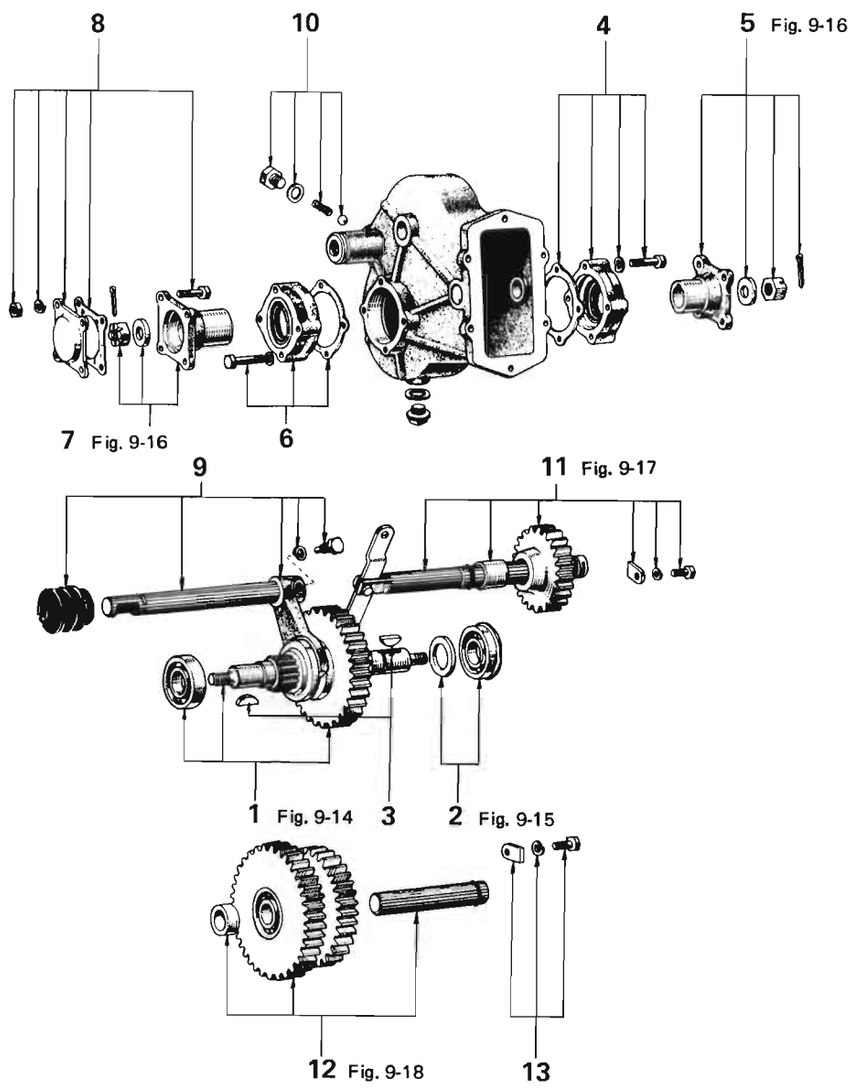


2. Rear bearing replacement.
   a. Remove the bearing with a press.
   b. Install the bearing with a press and SST [09325-12010].

ASSEMBLY

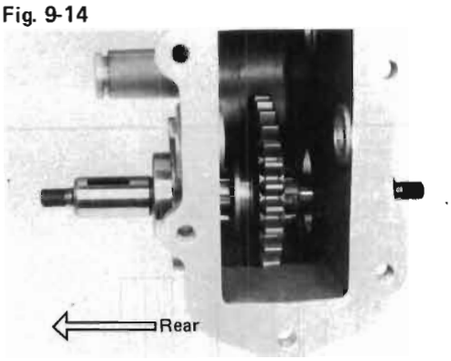
Assemble the parts in the order numbered below.

Fig. 9-13



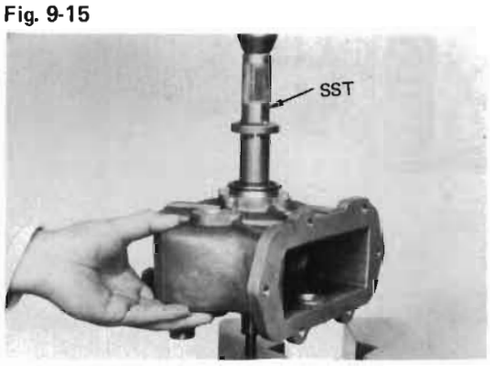
1	Output Shaft & Bearing	8	Retainer Cap
2	Spacer & Bearing	9	Shift Fork, Shaft & Boot
3	Woodruff Keys	10	Lock Ball & Spring
4	Bearing Retainer	11	Reverse Idler Gear, Spacer & Shaft
5	Joint Flange	12	Input Gear & Shaft
6	Bearing Retainer	13	Lock Plate
7	Joint Flange		

Fig. 9-14



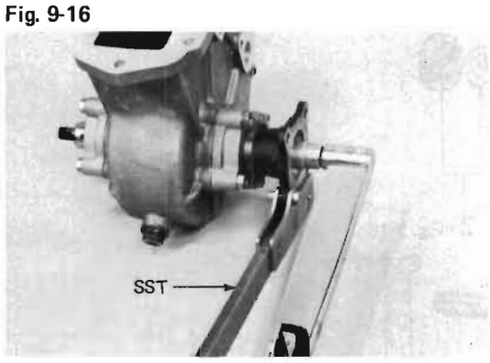
Position the output gear into the case with the shift fork groove towards the rear.

Fig. 9-15



Install the bearing with a press and SST [09325-12010].

Fig. 9-16

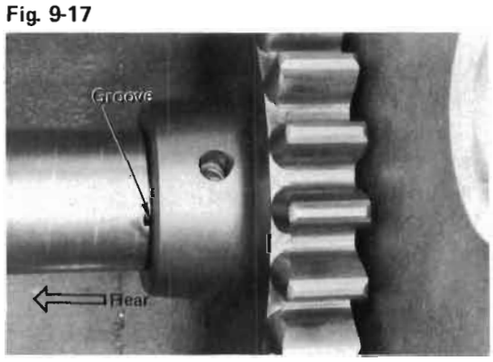


Using SST [09330-00020] to keep the output shaft from turning, tighten the nut.

Tightening torque

1.5 – 2.2 kg-m (10.9 – 15.9 ft-lb)

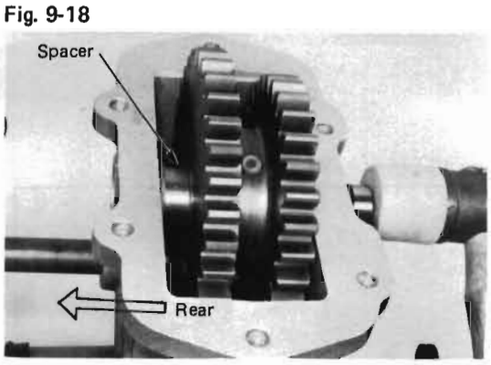
Fig. 9-17



Place the reverse idler gear and the idler gear spacer into the case with the gear hub to the rear side.

The spacer should be installed between the gear hub and the case.

Fig. 9-18



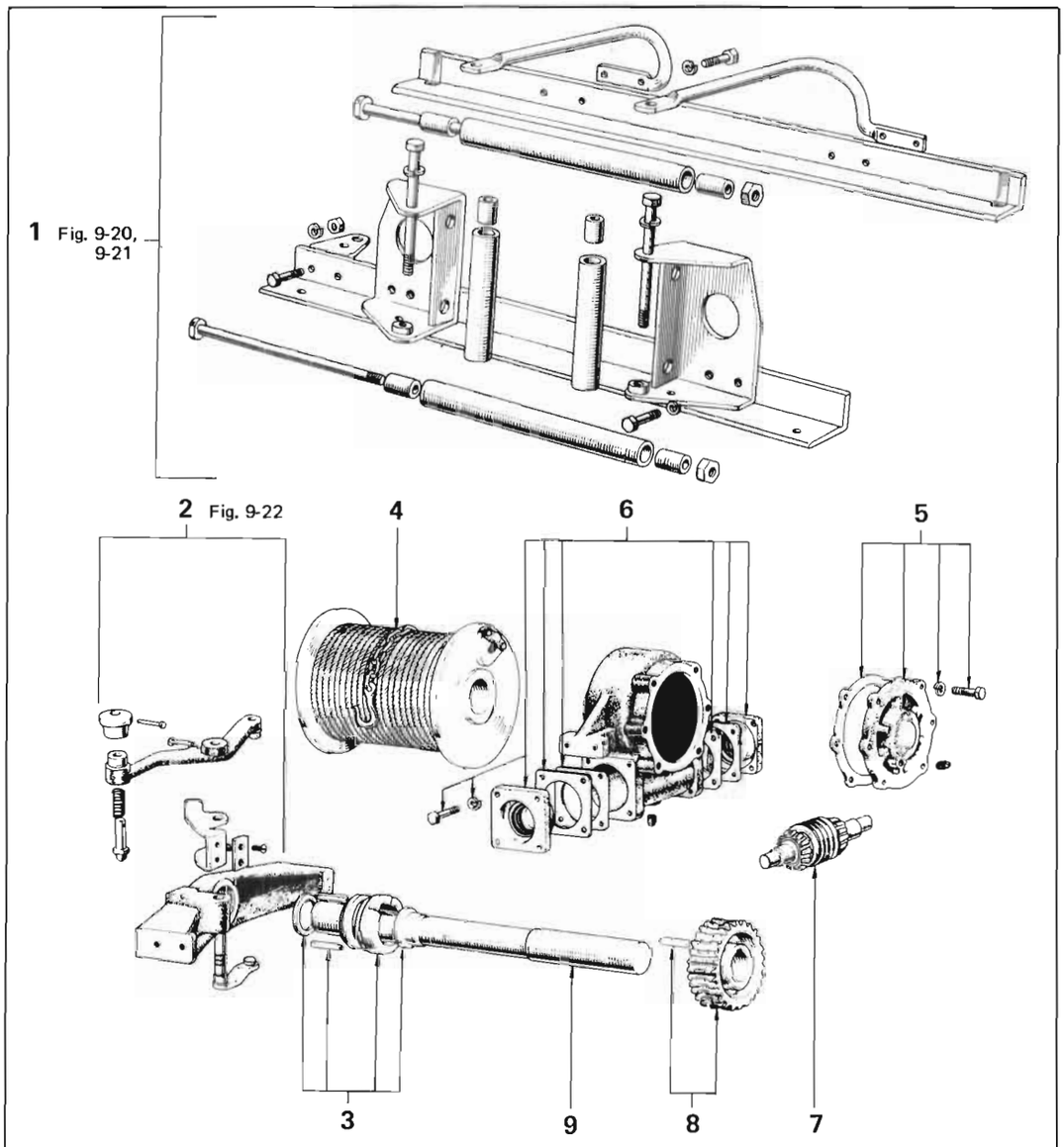
Place the input gear into the case with the larger gear towards the rear, and mesh with the reverse idler gear. Install the spacer.

WINCH

DISASSEMBLY

Dissassemble the parts in the order numbered below.

Fig. 9-19



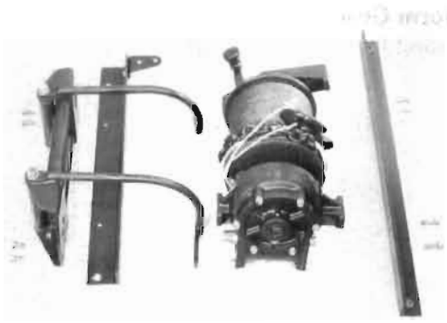
1	Member & Bracket Assy.	6	Retainers & Shims
2	End Bracket & Clutch Lever Assy.	7	Worm
3	Spacers, Keys & Clutch	8	Worm Gear & Key
4	Winch Drum Assy.	9	Shaft
5	Case Cover		

Fig. 9-20



Keep the wire rope end tied together with a wire as shown in the photo.

Fig. 9-21



Remove the front and rear base members, and the roller bracket supports.

Fig. 9-22



Remove the winch end bracket assembly.

Fig. 9-23



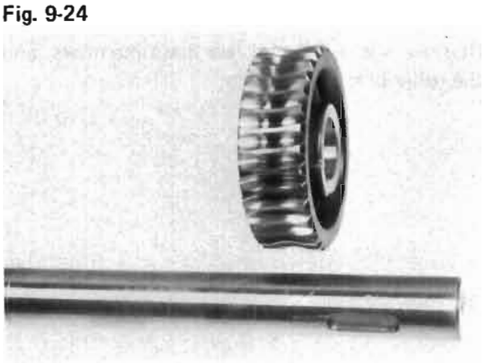
INSPECTION

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

Worm And Bearing

Inspect for wear and damage.

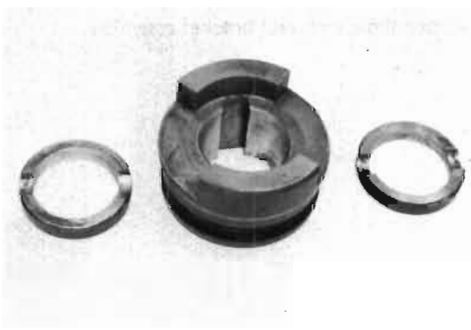
Fig. 9-24



Worm Gear And Shaft

Inspect for wear and damage.

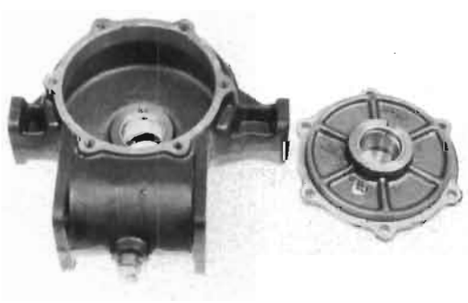
Fig. 9-25



Clutch And Spacer

Inspect for wear and damage.

Fig. 9-26



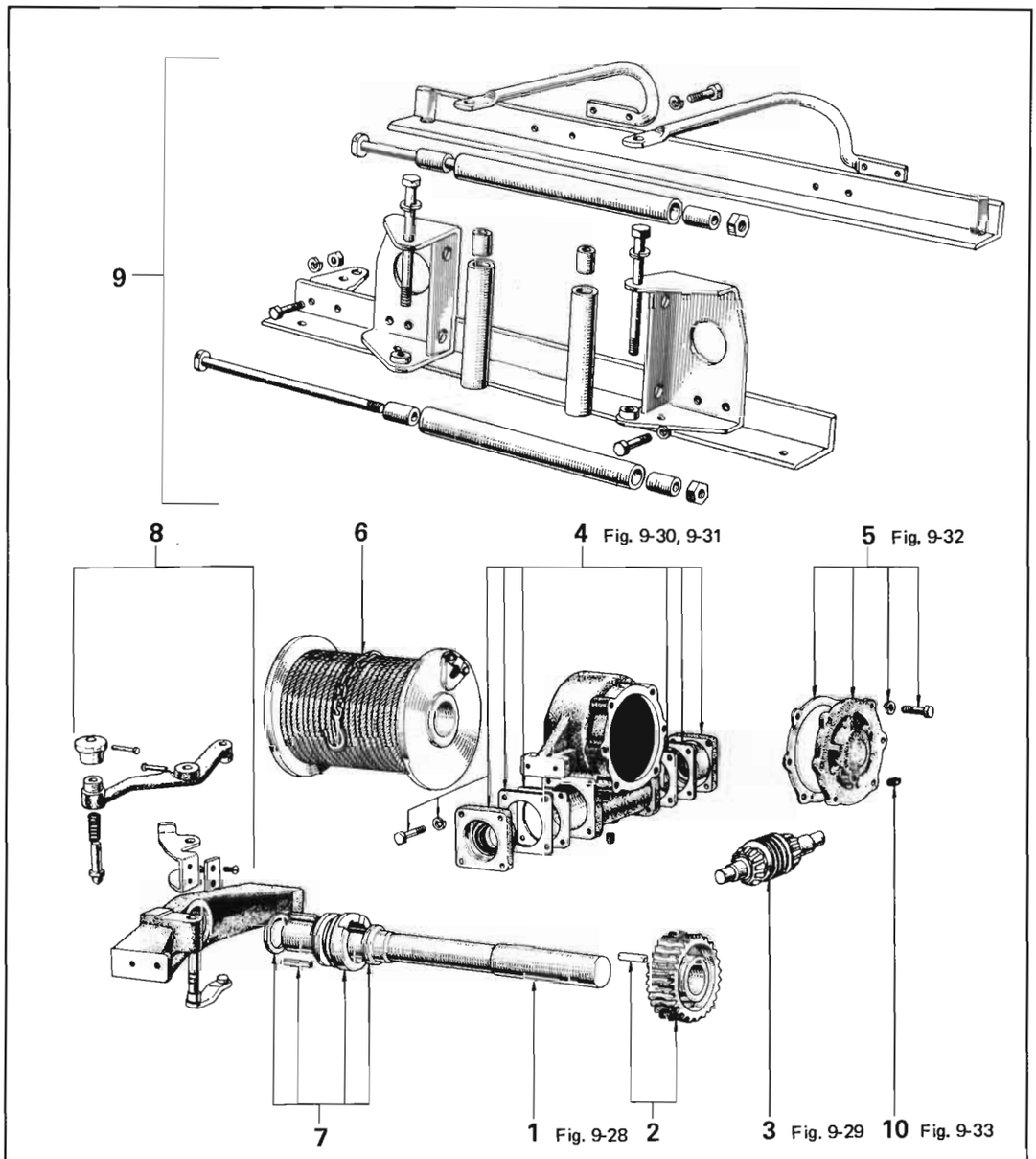
Gear Case And Cover

Inspect for cracks and the bushing wear.

ASSEMBLY

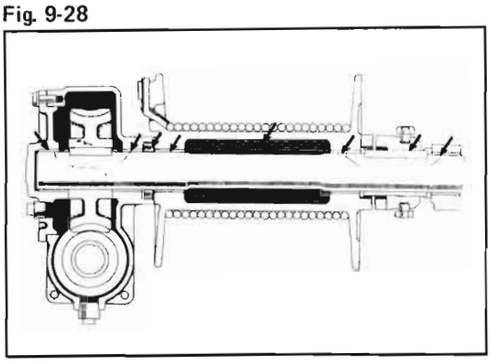
Assemble the parts in the order numbered below.

Fig. 9-27



1	Shaft	6	Winch Drum Assy.
2	Key & Worm Gear	7	Spacers, Keys & Clutch
3	Worm	8	End Bracket & Clutch Lever Assy.
4	Retainers & Shims	9	Member & Bracket Assy.
5	Case Cover	10	Plug

Fig. 9-28



Apply multipurpose grease on all bushings, shaft and the clutch mechanism when assembling, and pack multipurpose grease into the drum to about three-fourth of the drum volume.

Fig. 9-29



Place the worm into the case with the straight pin hole towards the rear.

Fig. 9-30



Install the worm bearing retainers with the adjusting shims and tighten the bearing retainer attaching bolts to 1.9 – 3.1 kg-m (14 – 22 ft-lb) torque.

– Note –

Apply liquid sealer onto the gasket surfaces to prevent oil leak.

Fig. 9-31



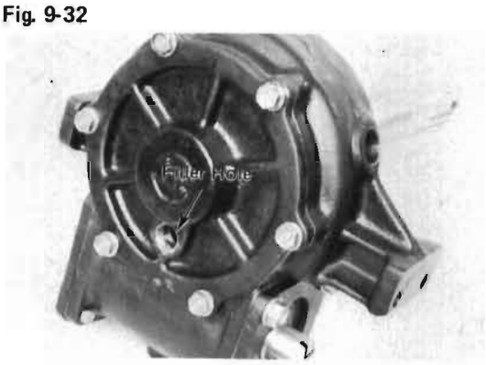
Rotate the worm, and check the condition for looseness or tightness, and also rock the worm to-and-fro, and check the worm end play.
The worm end play should be zero and it should rotate smoothly.

Adjusting Shim Thickness

Part No.	Thickness mm (in.)
38123-60010	0.228 (0.009)
38124-60010	0.5 (0.020)

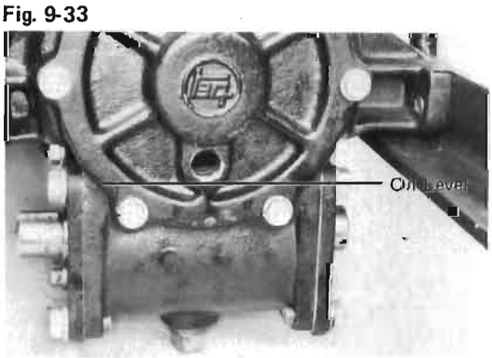
If necessary, adjust the worm bearing pre-load by selecting the adjusting shims to obtain the proper condition.

Fig. 9-32



Install the case cover with its filler hole positioned downward.

Fig. 9-33



Fill the gear case with gear oil.

Gear case oil capacity
0.6 liter (US qt. 0.6, Imp.qt. 0.5)
Type SAE 90, API GL–4

FRAME

page

IMPORTANT DIMENSION OF FRAME

FJ40, BJ40 SERIES 10-2

FJ43, BJ43 SERIES 10-3

FJ45, HJ45 SERIES 10-4

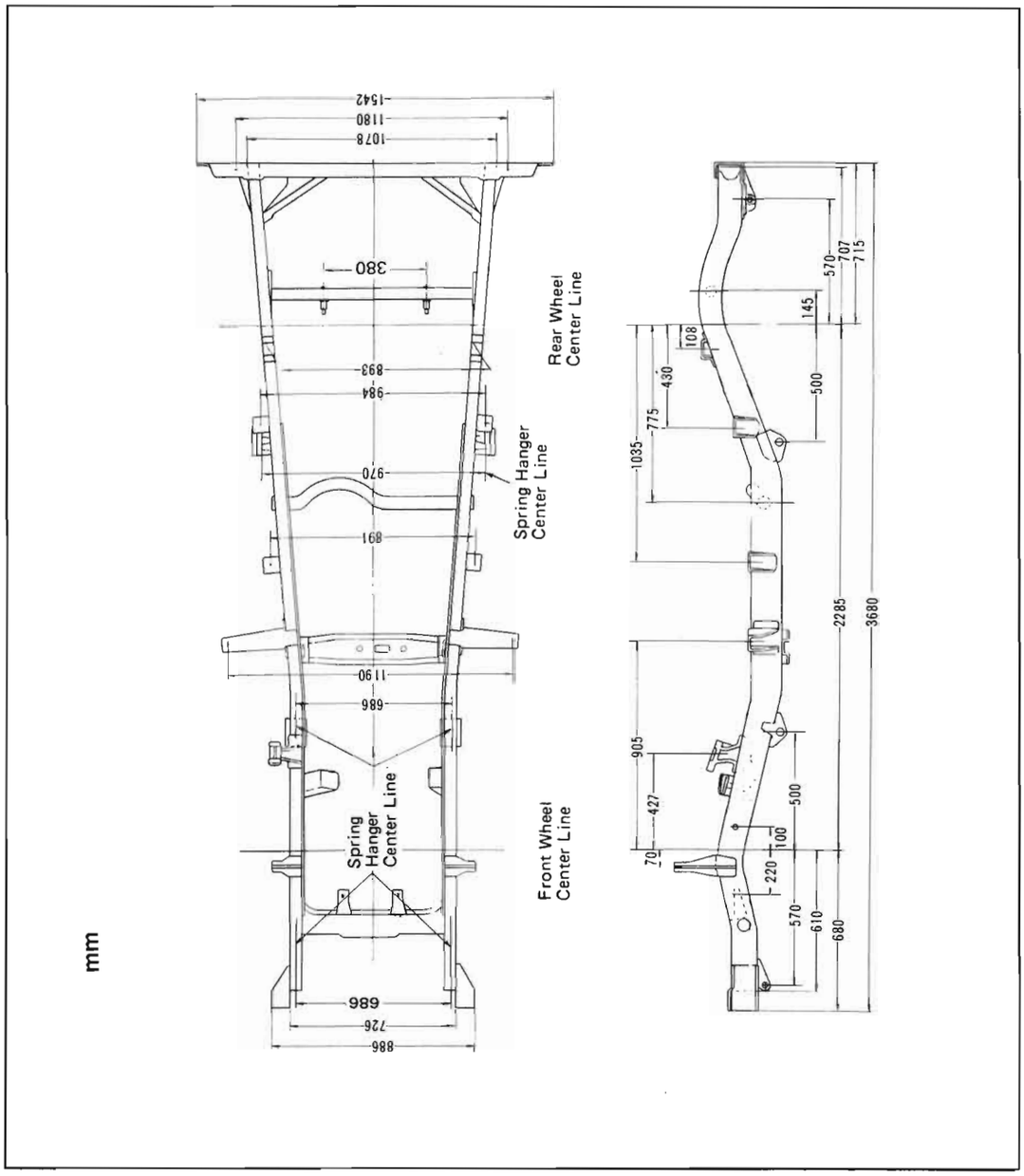
FJ55 SERIES 10-5

IMPORTANT DIMENSION OF FRAME

In case the vehicle has crashed or overturned in an accident, the frame could have become twisted. At such time, make the repairs by referring to the important dimensions of the frame.

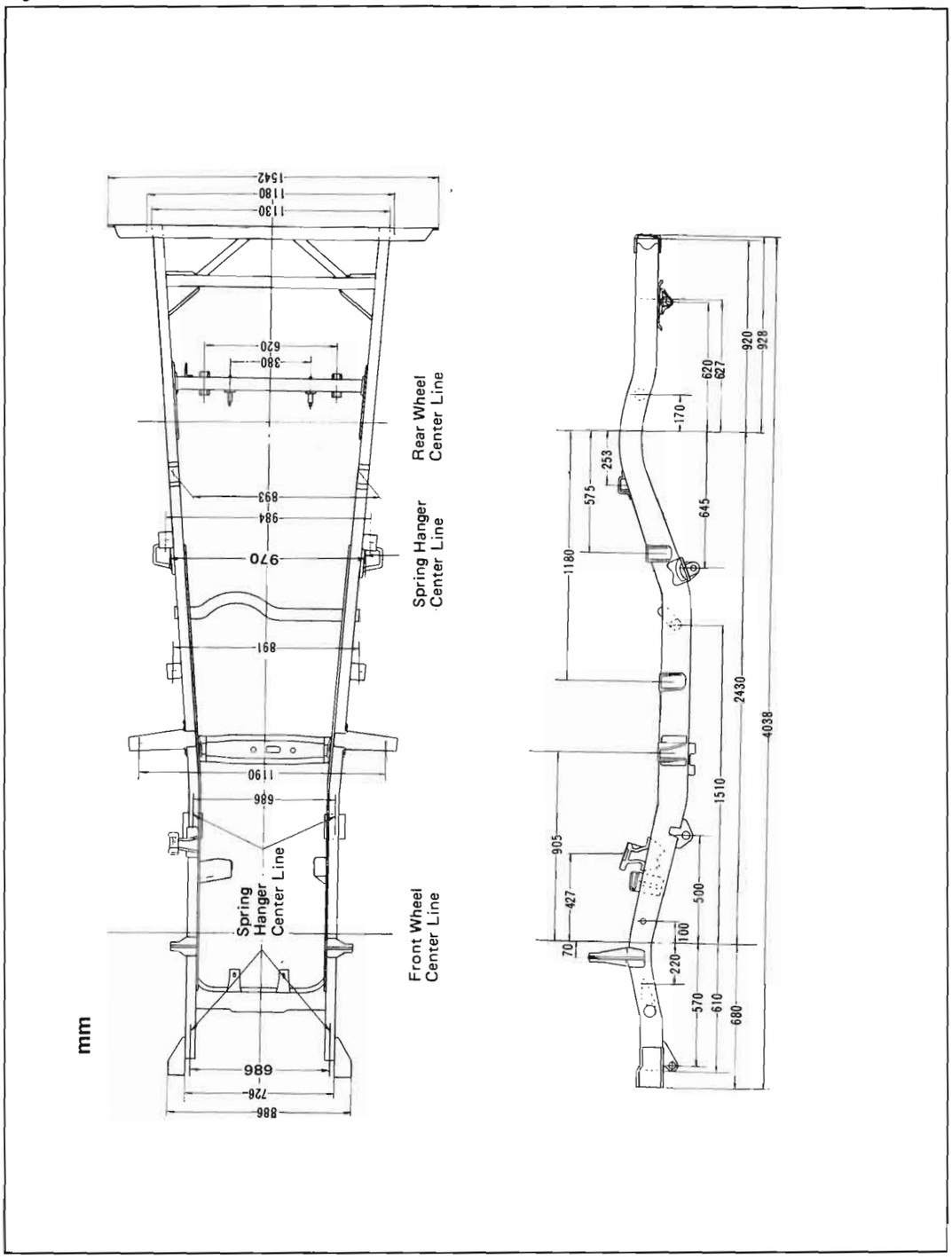
FJ40, BJ40 SERIES

Fig. 10-1



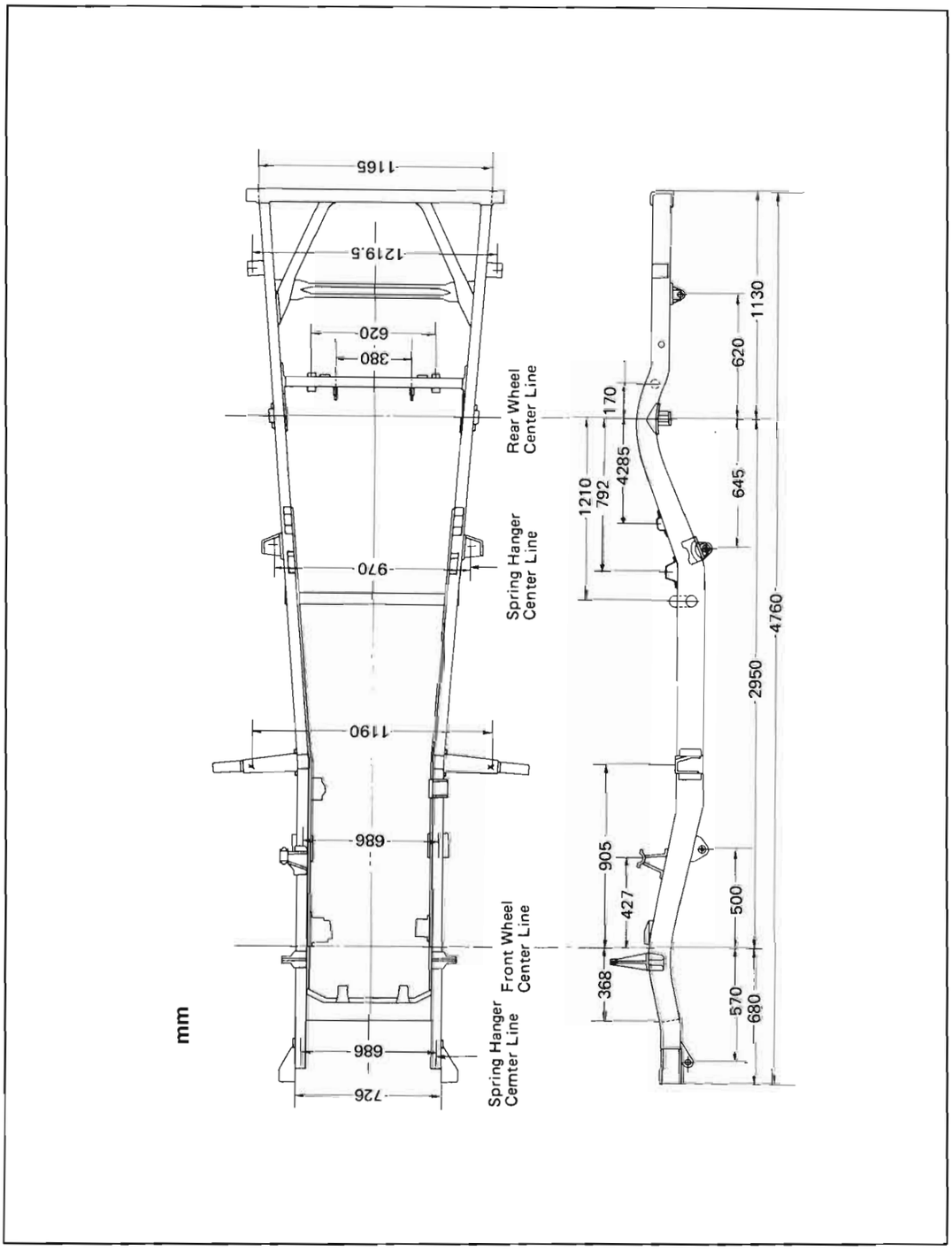
FJ43, BJ43 SERIES

Fig. 10-2



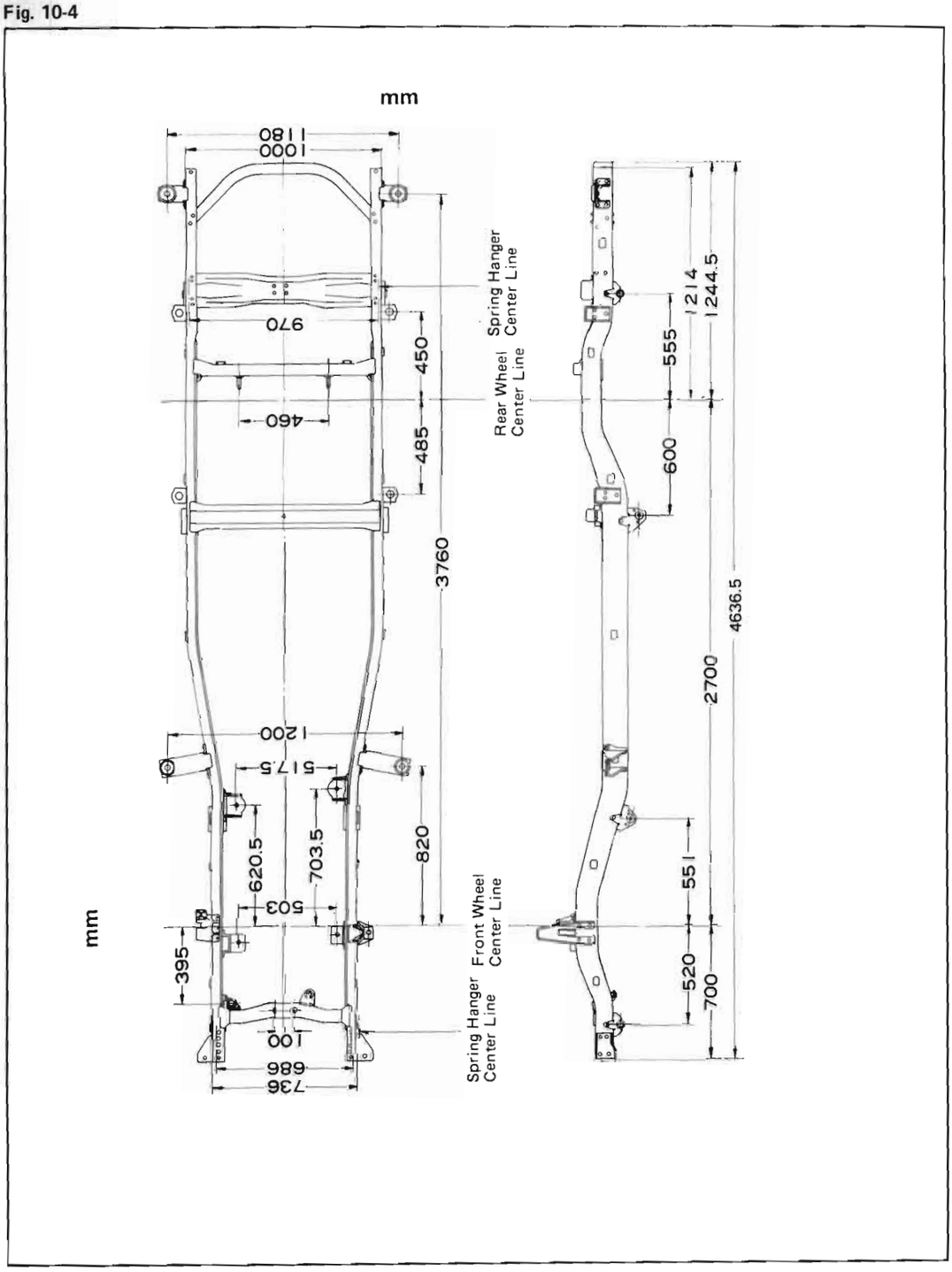
FJ45, HJ45 SERIES

Fig. 10-3



FJ55 SERIES

Fig. 10-4



BODY

FJ55 SERIES page

HOOD 11- 2

FRONT DOOR 11- 4

REAR DOOR 11- 8

WINDSHIELD 11-10

TAIL GATE 11-14

ROOF HEADLINING 11-23

FJ40 SERIES

HOOD 11-27

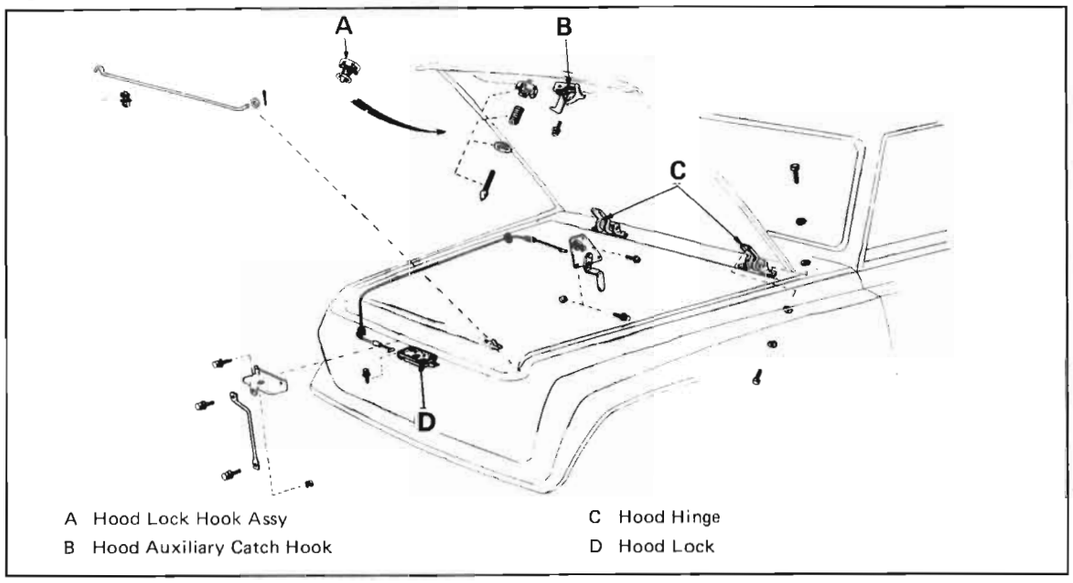
DOOR 11-28

BACK DOOR 11-33

FJ55 SERIES

HOOD

Fig. 11-1



A Hood Lock Hook Assy
B Hood Auxiliary Catch Hook
C Hood Hinge
D Hood Lock

Fig. 11-2

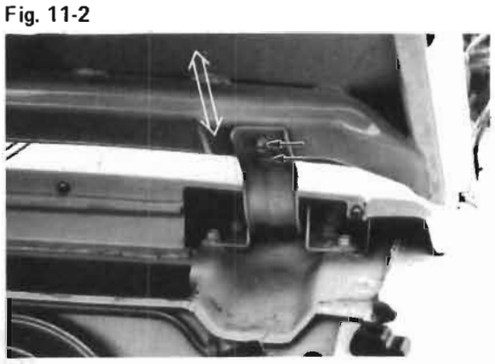
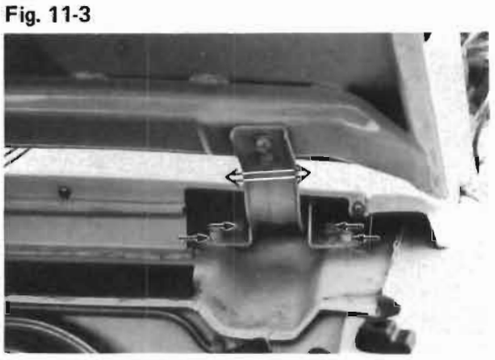


Fig. 11-3



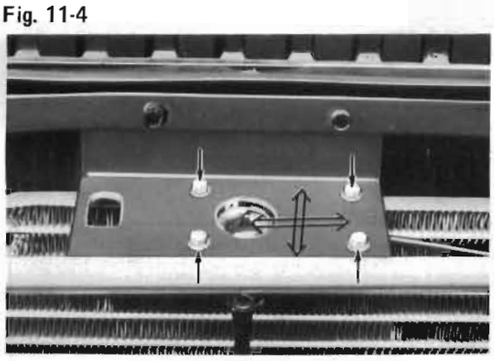
ADJUSTMENT

Hood

1. Adjust the hood in front-rear direction by loosening the bolts attaching the hood to the hood hinges.

2. Adjust the hood in lateral direction by loosening the bolts attaching the hood hinges to the body.

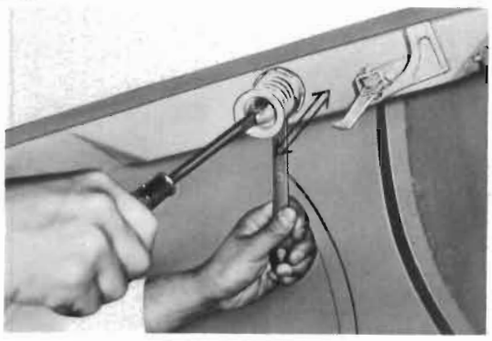
Fig. 11-4



Hood Lock

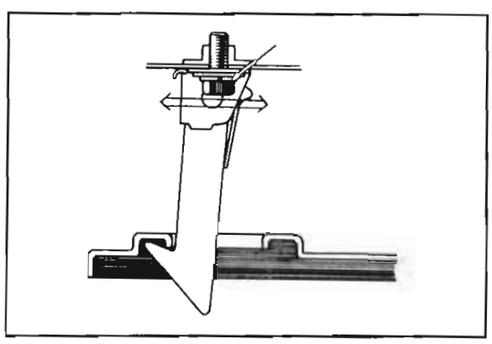
1. If the hood lock dowel and hood lock are out of alignment with each other, correct by loosening the mounting bolts.

Fig. 11-5



2. If the hood is loose in vertical direction, or the hood lock does not catch properly correct by adjusting the hood lock hook.

Fig. 11-6



Hood Auxiliary Catch Hook

If the catch hook does not latch on properly, correct by loosening the bolts.

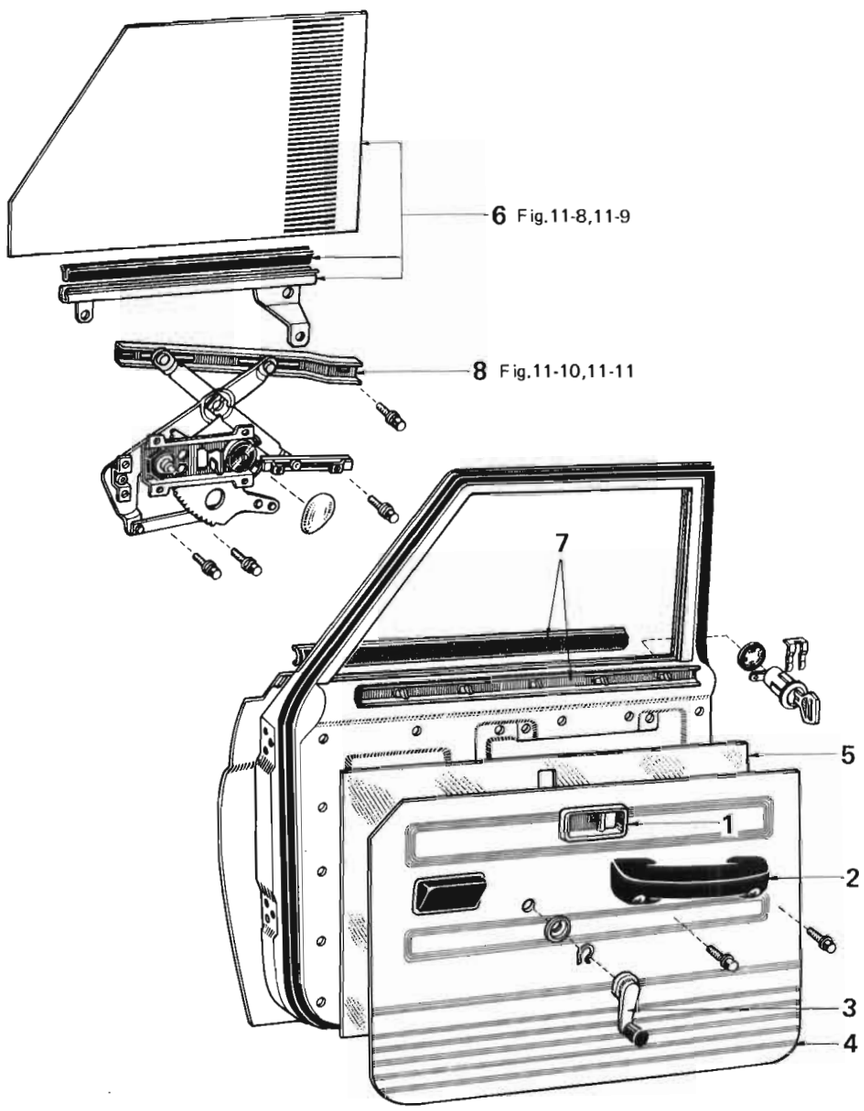
FRONT DOOR

REMOVAL

Door Window Glass and Regulator

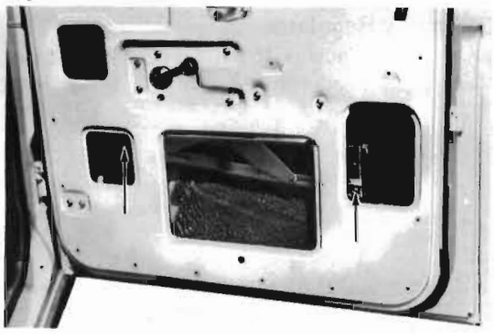
Remove in the order of the numbers shown.

Fig. 11-7



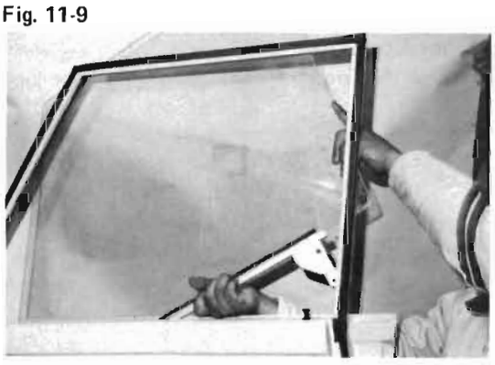
1	Inside Handle Bezel	5	Service Hole Cover
2	Arm Rest	6	Window Glass
3	Regulator Handle	7	Glass Weatherstrip
4	Door Trim	8	Window Regulator

Fig. 11-8



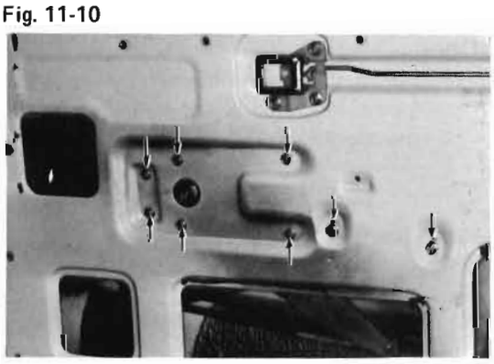
1. Remove the two bolts attaching the glass channel.

Fig. 11-9



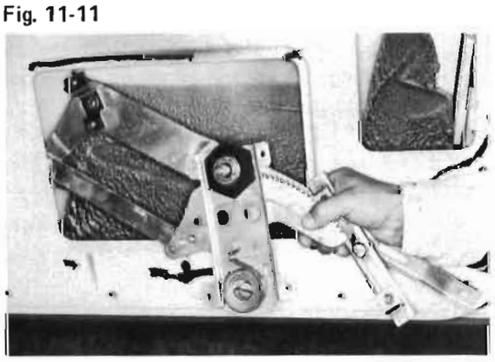
2. Pull out the window glass (with the glass channel attached) toward the top.

Fig. 11-10



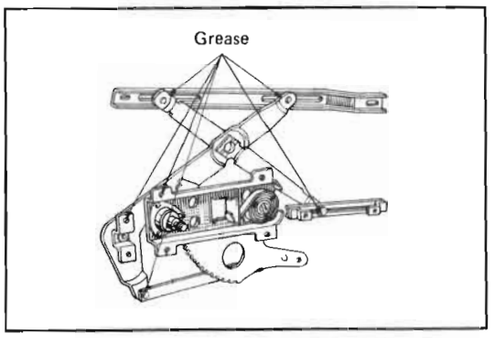
3. Remove the bolts attaching the window regulator.

Fig. 11-11



4. Take out the window regulator through the service hole.

Fig. 11-12

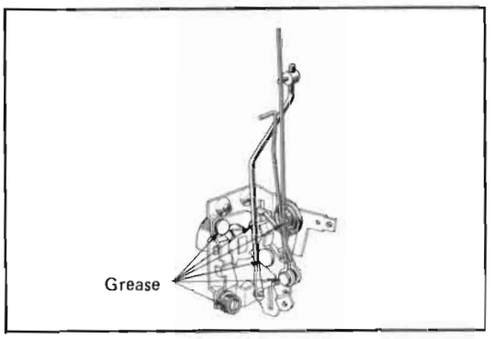


INSPECTION

Window Regulator

Check the regulator to see if properly lubricated, and apply grease if found insufficient.

Fig. 11-13



Door Lock

Grease the frictional surfaces of the door lock.

Fig. 11-14

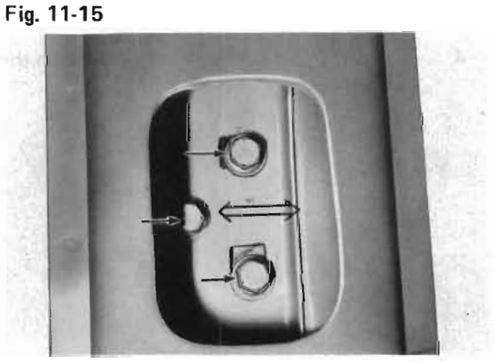


ADJUSTMENT

Door

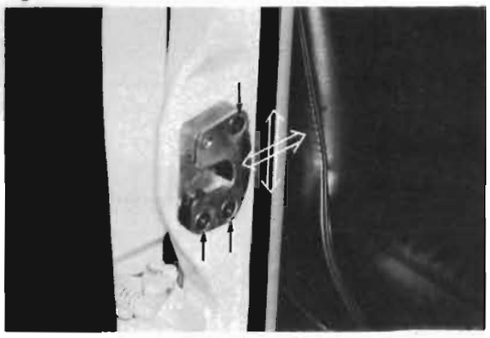
1. Adjust the door in front-rear direction by loosening the bolts attaching the door to the door hinges.

Fig. 11-15



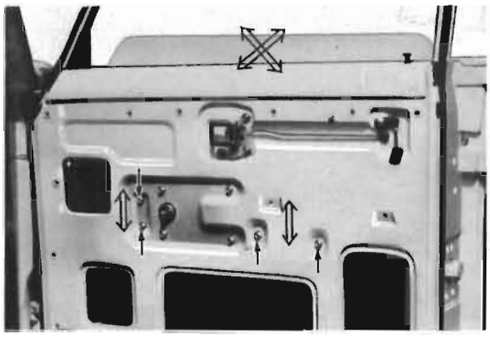
2. Correct surface difference with fender by loosening the bolts attaching the door hinges to the body.

Fig. 11-16



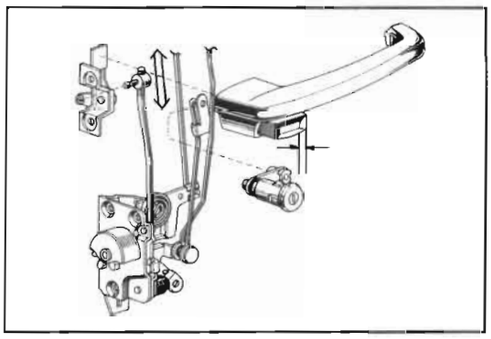
3. If the door does not close properly, correct by adjusting the door lock striker.

Fig. 11-17



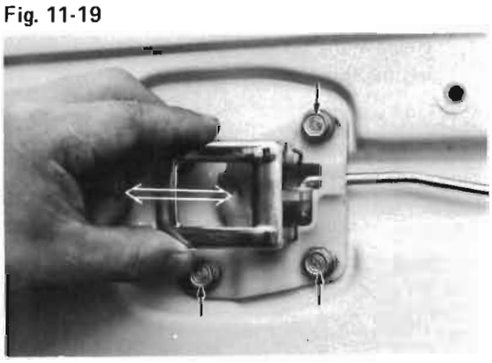
4. Adjust the window glass tilt.

Fig. 11-18



5. Adjust the outside door handle play.

Fig. 11-19



6. Adjust the inside door handle play.

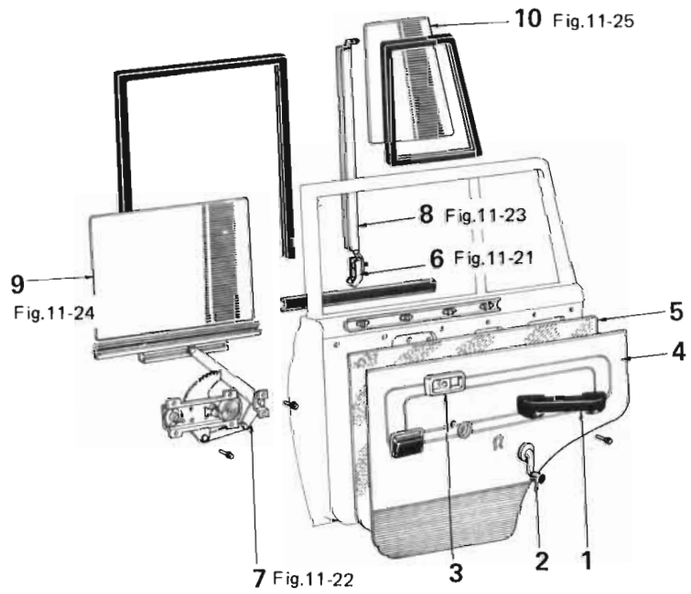
REAR DOOR

REMOVAL

Window Glass and Quarter Window Glass

Remove in the order of the numbers shown.

Fig. 11-20



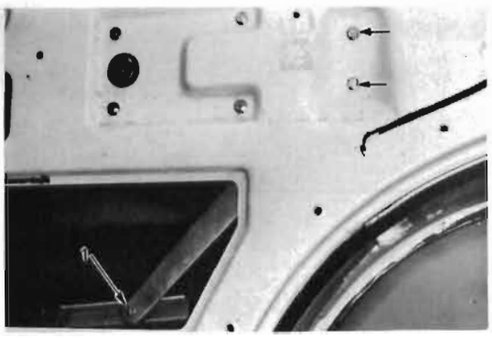
1	Arm Rest	6	Division Bar Support
2	Regulator Handle	7	Window Regulator
3	Bezel	8	Division Bar
4	Trim Board	9	Window Glass
5	Service Hole Cover	10	Quarter Window Glass

Fig. 11-21



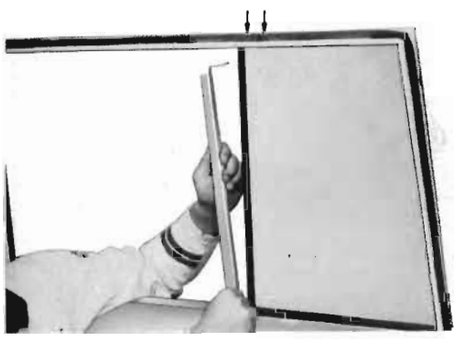
1. Remove the division bar support by loosening the three attaching bolts.

Fig. 11-22



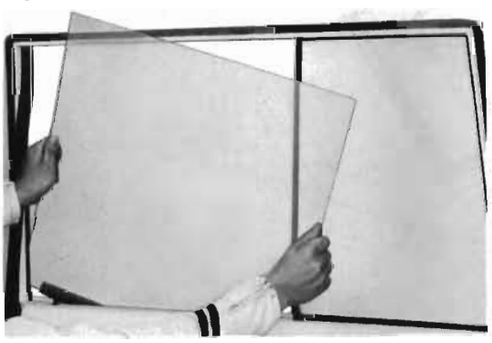
2. Remove the two bolts attaching the window regulator and disconnect the roller (1) from glass channel.

Fig. 11-23



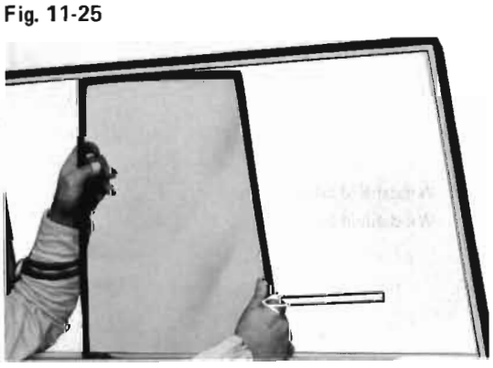
3. Remove the division bar by loosening the two screws from upper part of door.

Fig. 11-24



4. Remove the window glass or quarter window glass.
   (1) Remove the window glass.

Fig. 11-25



   (2) Remove the quarter window glass after shifting it to the center.

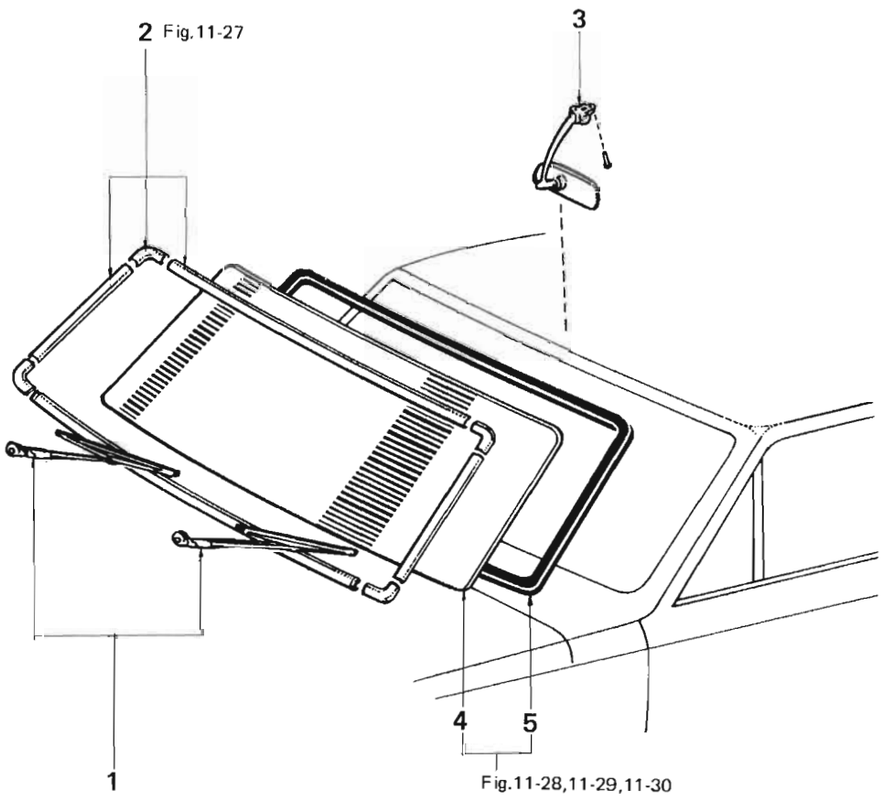
WINDSHIELD

REMOVAL

Windshield Glass

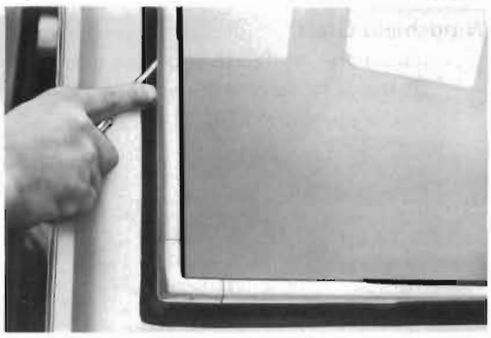
Remove in the order of the numbers shown.

Fig. 11-26



1 Wiper Arm
2 Windshield Moulding
3 Inner Rear View Mirror
4 Windshield Glass
5 Windshield Weatherstrip

Fig. 11-27



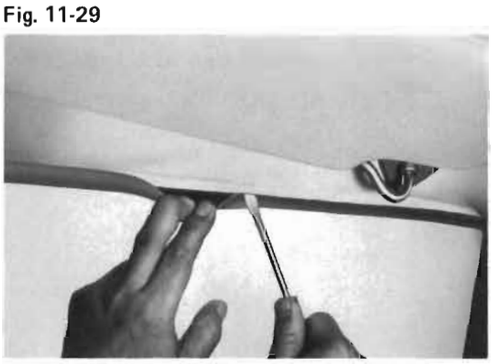
1. Remove the moulding with a screwdriver or similar tool.

Fig. 11-28



2. Using a screwdriver, remove the adhesive attaching the weatherstrip to the body.

Fig. 11-29



3. From inside the car, push out the weatherstrip upper side toward the outside with a screwdriver.

Fig. 11-30



4. Push the glass surface near the upper side of the weatherstrip toward the outside, and remove the glass with the weatherstrip attached.

– Note –

Apply force uniformally on the glass when pushing it out.

INSTALLATION

Windshield Glass

1. Mount the weatherstrip on the glass, and fit the work cord in the weatherstrip body groove as shown in Fig. 11-31.

Fig. 11-31

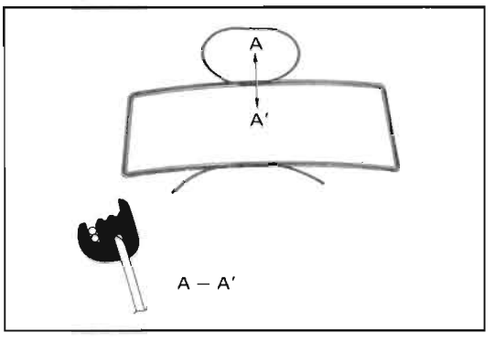
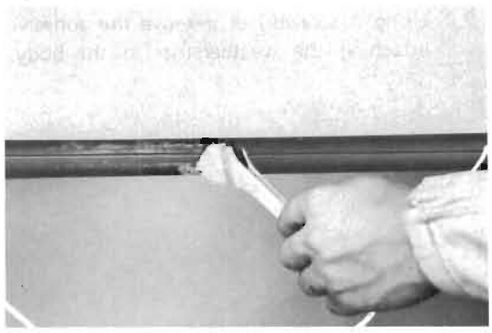
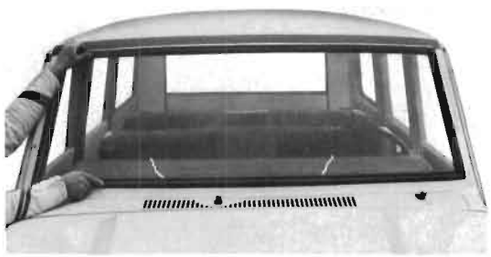


Fig. 11-32



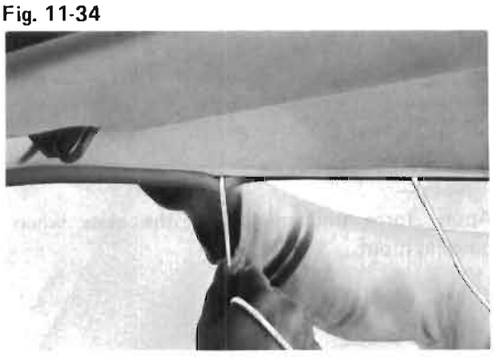
2. Apply soapy water on the weatherstrip and body contacting surfaces.

Fig. 11-33



3. Set the windshield glass accurately on to body.

Fig. 11-34



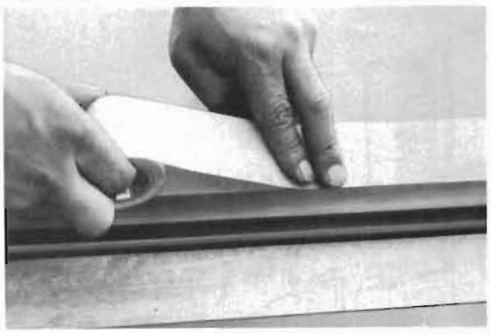
4. Pull the cord ends from inside the body, and at the time, tap the glass surface near the weatherstrip with palm of hand from the outside, and start installing from the lower center.

Fig. 11-35



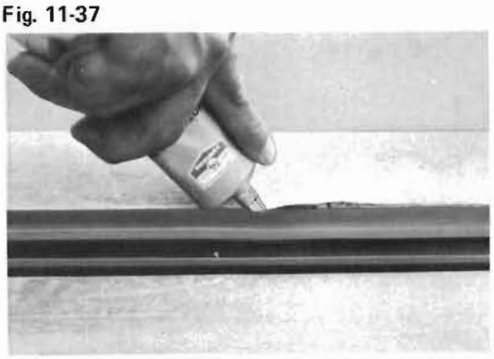
5. After installing the glass, tap it from the outside with the palm of hand so as to settle it down.

Fig. 11-36



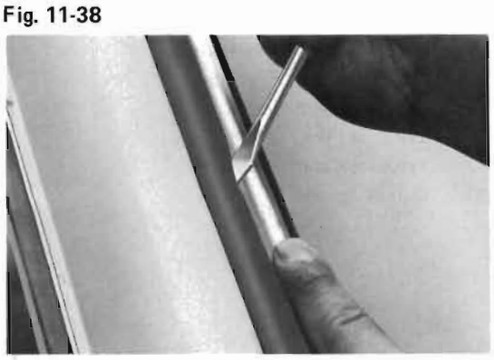
6. Fill adhesive into the space between the weatherstrip and body, and between the weatherstrip and glass.
   (1) Place masking tape on the windshield glass and body beforehand so as to allow easy removal of adhesive that had oozed out.

Fig. 11-37



   (2) Fill in the adhesive from the outside.

Fig. 11-38



7. Install the windshield moulding.
   Install the wiper arm.

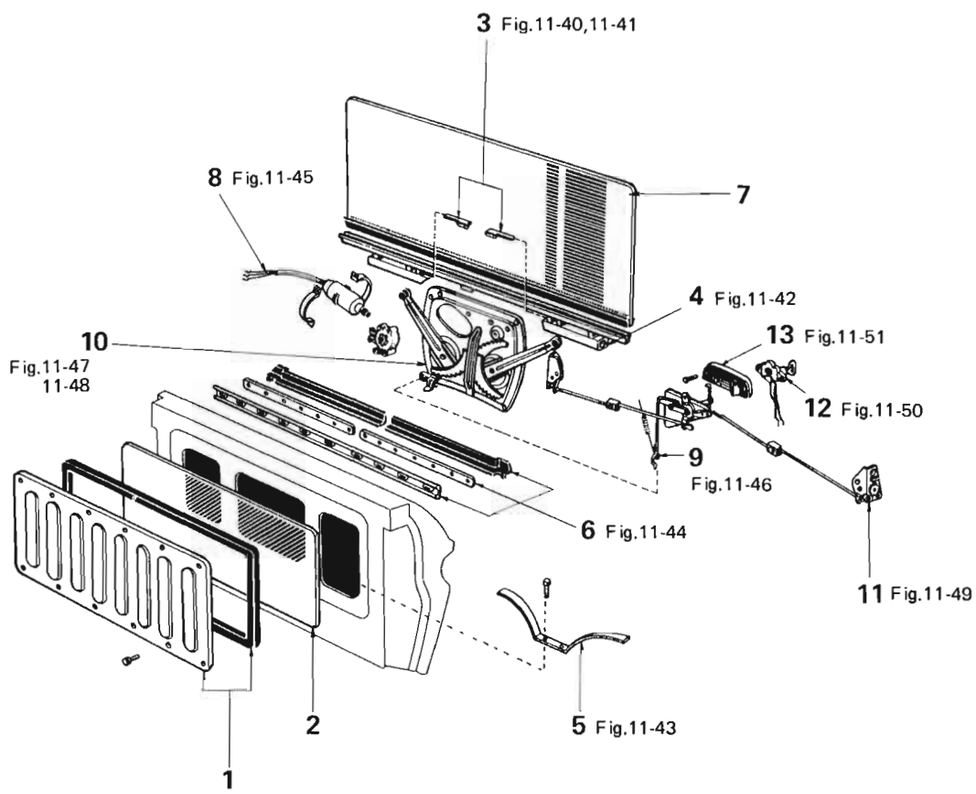
TAIL GATE

TAIL GATE GLASS, REGULATOR, AND TAIL GATE LOCK

Removal

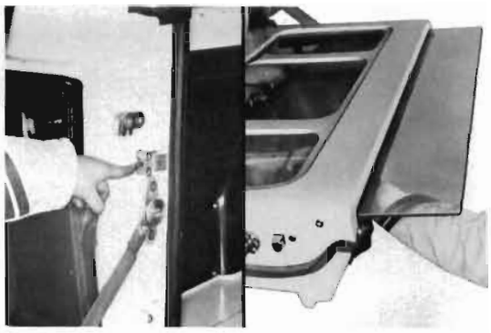
Remove in the order of the numbers shown.

Fig. 11-39



1	Back Door Trim Board	8	Regulator Motor Wire Harness
2	Service Hole Cover	9	Lock Off Lever Connecting Rod
3	Stopper Plate	10	Tail Gate Regulator
4	Roller Hinge	11	Tail Gate Lock
5	Glass Damper	12	Tail Gate Control Switch
6	Weatherstrip	13	Outside Handle
7	Tail Gate Glass		

Fig. 11-40



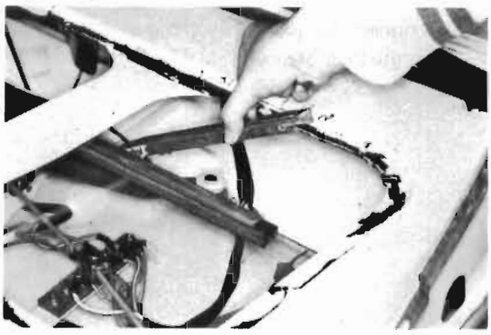
1. Stopper plate removal
   (1) Press the safety switch when taking out the glass.

Fig. 11-41



(2) After letting out the glass about half way, remove the stopper plate.

Fig. 11-42



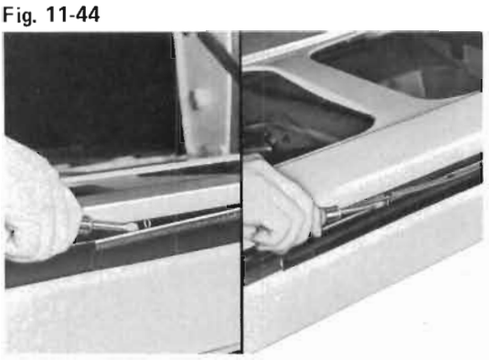
2. Remove the roller hinge from the glass holder.

Fig. 11-43



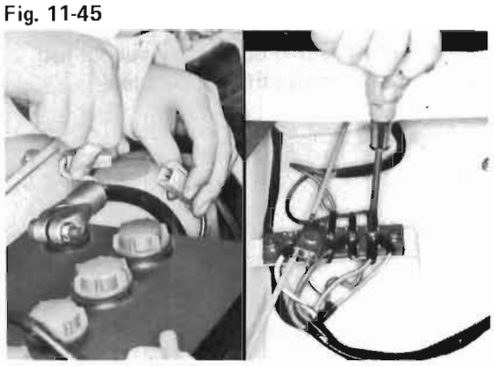
3. Remove the glass damper, and have the glass all the way down.

Fig. 11-44



4. Remove the inner and outer weatherstrips, and take out the glass.

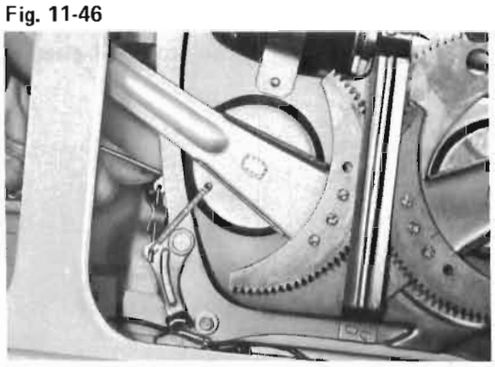
Fig. 11-45



5. Disconnect the wire harness.

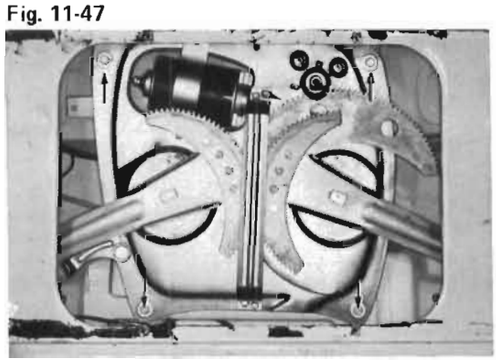
– Note –
Have the battery fusible link disconnected beforehand.

Fig. 11-46



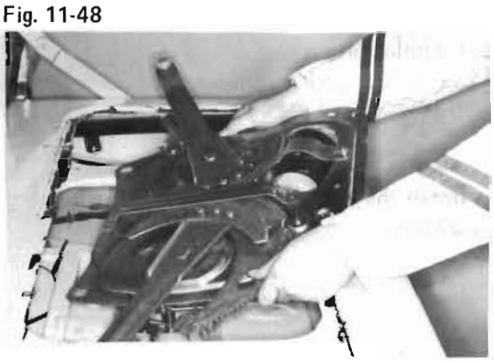
6. Disconnect the connecting rod and spring from the lock off lever.

Fig. 11-47



7. Regulator removal.
   (1) Remove the four bolts.

Fig. 11-48



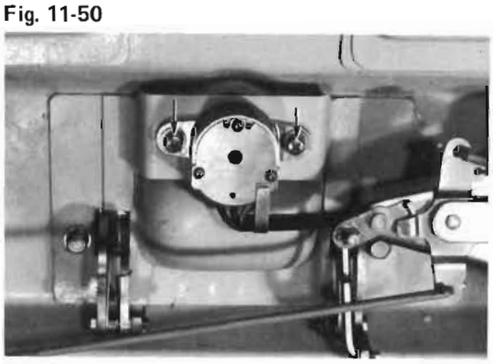
(2) Remove the regulator.

Fig. 11-49



8. Remove the tail gate lock.

Fig. 11-50



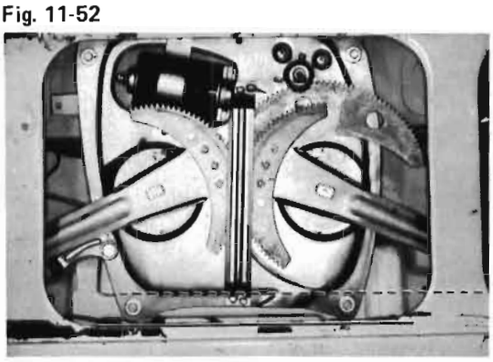
9. Remove the tail gate control switch.

Fig. 11-51



10. Remove the outside handle.

Fig. 11-52



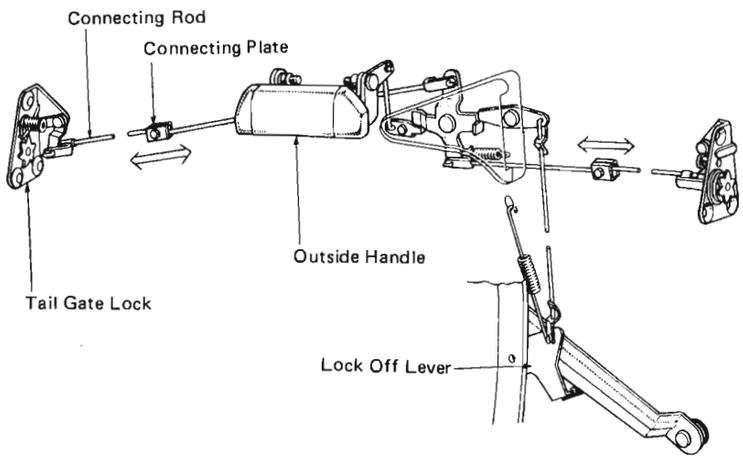
Installation

Install by performing the removal in reverse order.

– Note –

Install the regulator positioned parallel with the tail gate.

Fig. 11-53



Adjustment

1. In case the parts pertaining to the tail gate lock had been removed, pull the tail gate handle and verify that the tail gate lock turns freely.
   If the tail gate lock does not turn freely, correct by adjusting the length of the connecting rod.

2. In case the parts pertaining to the regulator had been removed, verify the lock off lever operation.
   (1) With the glass lowered all the way down, pulling the tail gate should allow the tail gate lock to turn freely.

   (2) At conditions other than above, the tail gate handle should be such that it cannot be pulled.

TAIL GATE ASSEMBLY, HINGE, AND TORSION BAR

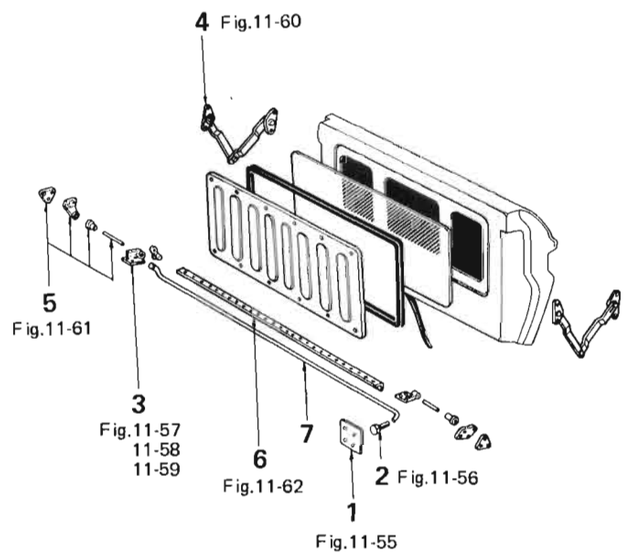
Removal

1. Remove the tail gate glass. (Refer to Pg. 11-14).

2. Disconnect the battery fusible link, and disconnect the wire harness. (Refer to Fig. 11-45).

3. Remove in the order of the numbers shown.

Fig. 11-54



1	Torsion Bar Adjust Bolt Cover	5	Tail Gate Hinge
2	Torsion Bar Adjust Bolt	6	Torsion Bar Cover
3	Tail Gate Hinge	7	Torsion Bar
4	Tail Gate Support Stay		

Fig. 11-55



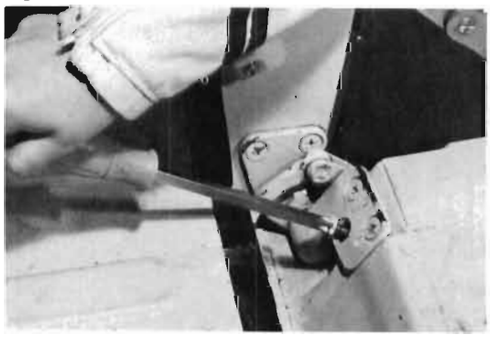
4. Remove the torsion bar adjust bolt cover.

Fig. 11-56



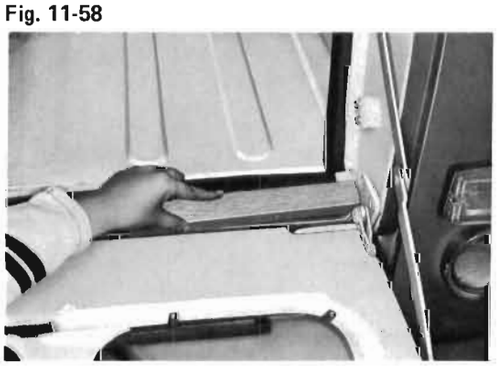
5. Completely loosen the torsion bar adjust bolt.

Fig. 11-57



6. Tail gate hinge removal.
   (1) Among the screws attaching the hinges to the tail gate, remove one screw (at lower side).

Fig. 11-58



(2) Insert wood piece between the torsion bar and body.

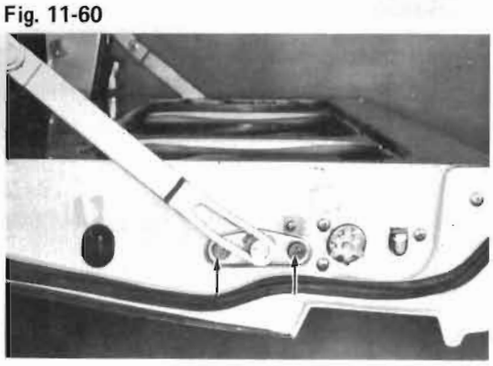
– Note –
Insert the wood piece in securely.

Fig. 11-59



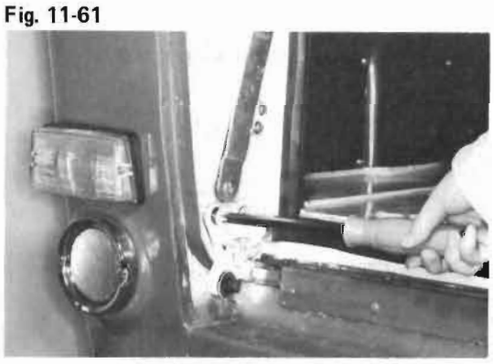
(3) While holding up the tail gate, remove the screws attaching the hinges to the body.

Fig. 11-60



7. Remove the tail gate support stay from the tail gate, and take off the tail gate.

Fig. 11-61



8. Remove the hinges from the body.

Fig. 11-62



9. Remove the torsion cover (1), and pull out the torsion bar (2).

Fig. 11-63



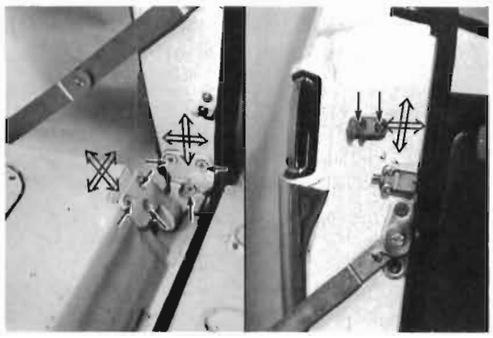
Installation

Install by performing the removal in reverse order.

– Note –

When attaching the tail gate to the hinges, insert a wood piece between the torsion bar and body.

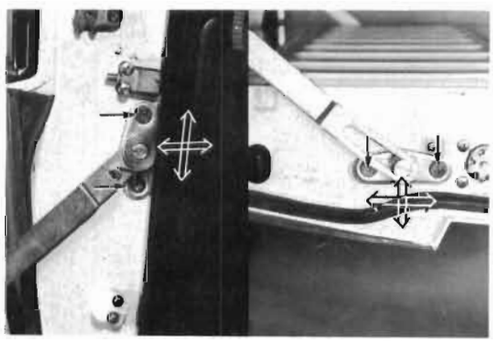
Fig. 11-64



Adjustment

1. Adjust the tail gate alignment and its closing action.

Fig. 11-65



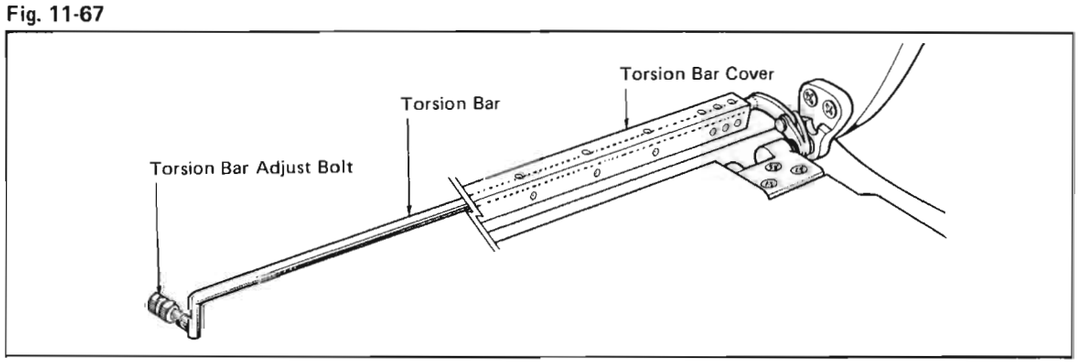
2. Adjust the tail gate support stay.

Fig. 11-66



3. Adjust the torsion bar.

Fig. 11-67

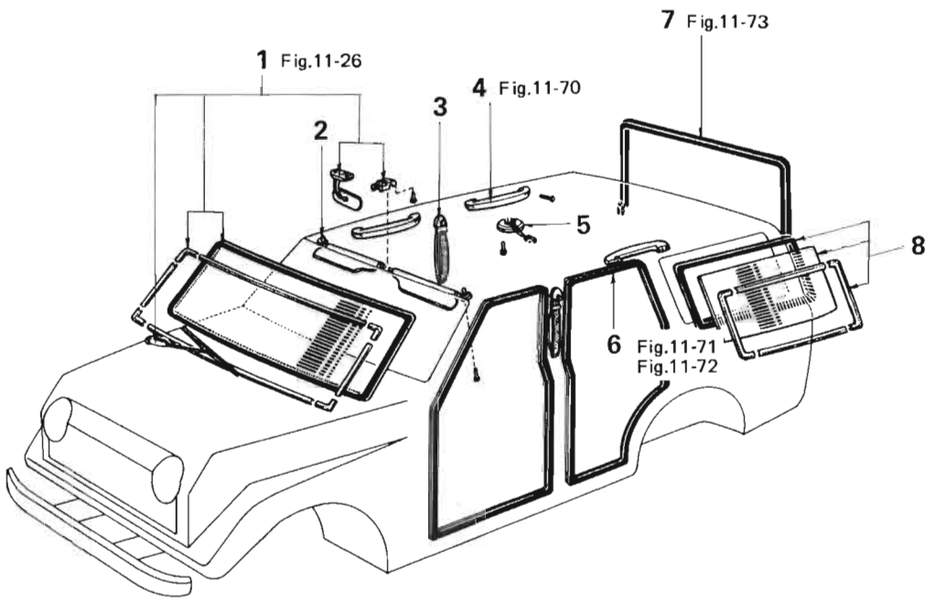


ROOF HEADLINING

REMOVAL

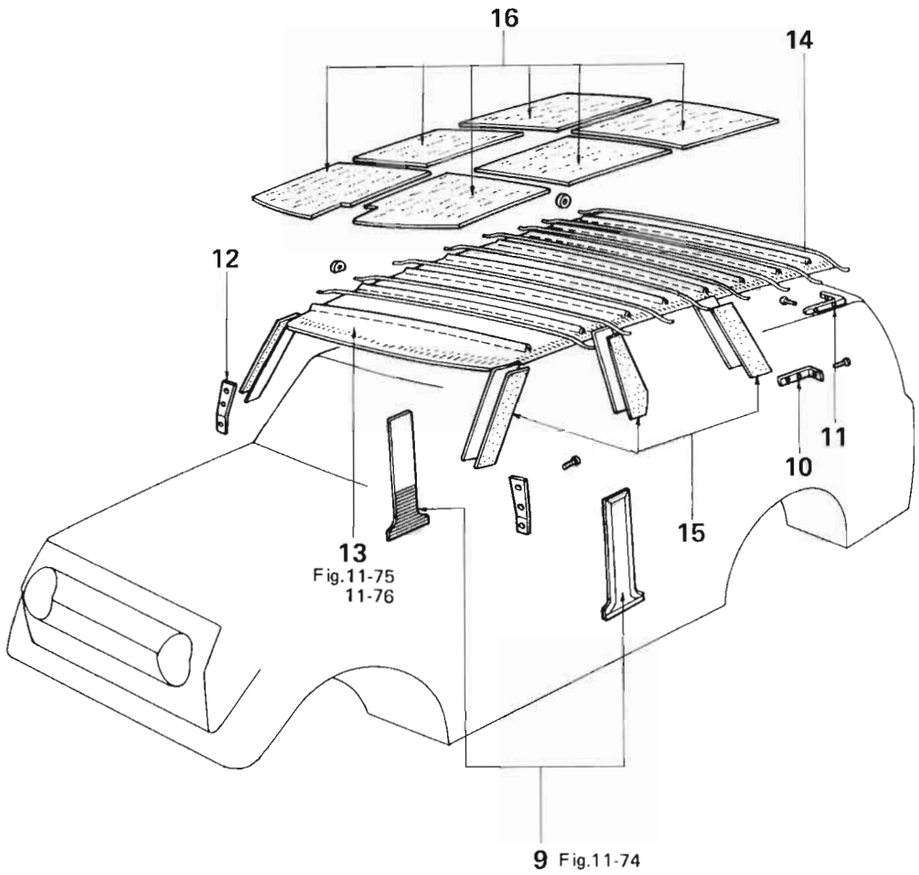
Remove in the order of the numbers shown.

Fig. 11-68



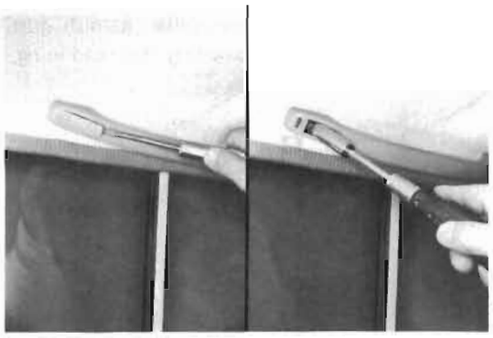
1 Windshield Glass
2 Sun Visor
3 Seat Belt Anchor
4 Assist Grip
5 Interior Light
6 Door Opening Trim And Weatherstrip
7 Back Door Glass Weatherstrip
8 Side Window Glass

Fig. 11-69



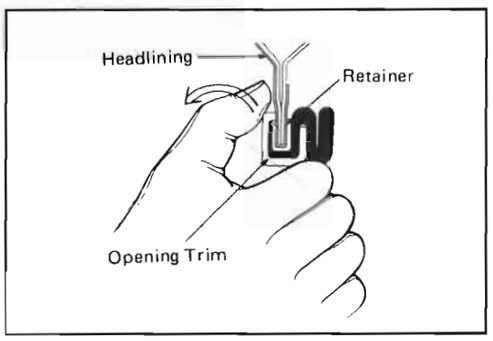
9	Center Pillar Garnish Panel	13	Headlining
10	Headlining Front Side Garnish	14	Headlining Support
11	Headlining Rear Side Garnish	15	Pillar Garnish Pad
12	Instrument Panel Outside Garnish	16	Roof Silencer Pad

Fig. 11-70



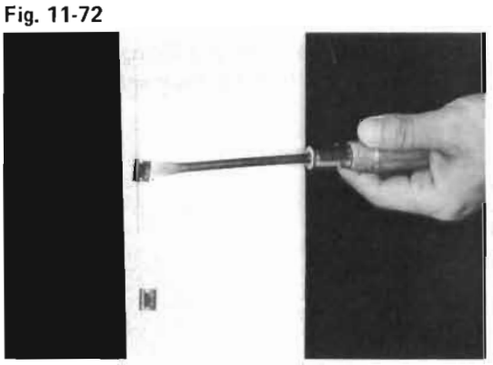
1. Remove the assist grip.

Fig. 11-71



2. Remove the door opening trim and weatherstrip at the parts attached to the headlining.
   (1) Remove the door opening trim.

Fig. 11-72



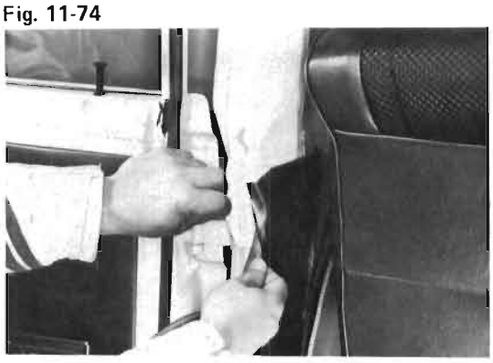
   (2) Remove the opening trim retainer.

Fig. 11-73



3. Remove the back door glass weatherstrip.

Fig. 11-74



4. Peel off the center pillar garnish just enough to allow removing the headlining.

Fig. 11-75



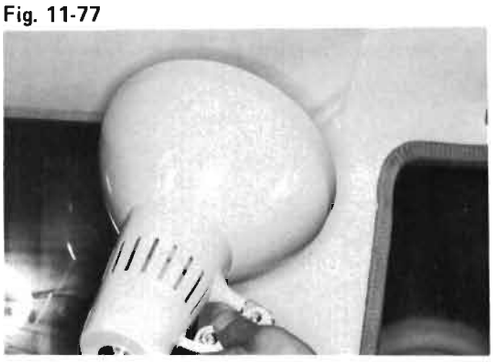
5. Remove the headlining.
   (1) Peel off the adhered part of the headlining.

Fig. 11-76



   (2) Remove the headlining supports, starting from the front side.

Fig. 11-77



INSTALLATION

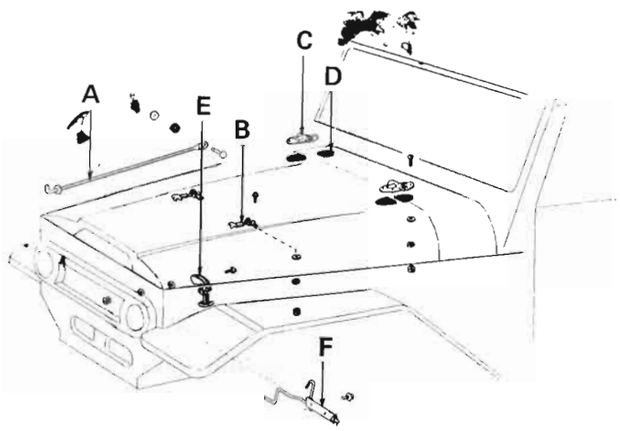
Install by performing the removal in reverse order.

– Note –
If there are any wrinkles after installing the headlining, heating about one-half to one minute with infra-red light or similar means will help remove the wrinkles.

FJ40 SERIES

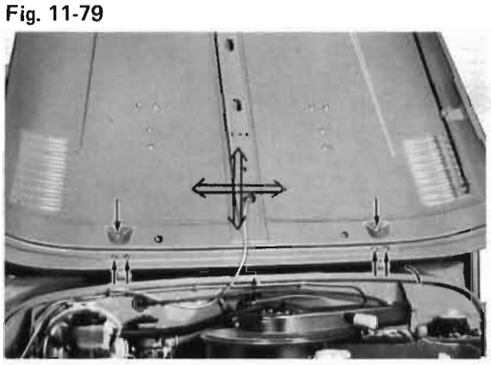
HOOD

Fig. 11-78



A	Hood Stopper	D	Hood Hinge Seal
B	Hood Fastener	E	Side Auxiliary Catch Hook
C	Hood Hinge	F	Front Auxiliary Catch Hook

Fig. 11-79

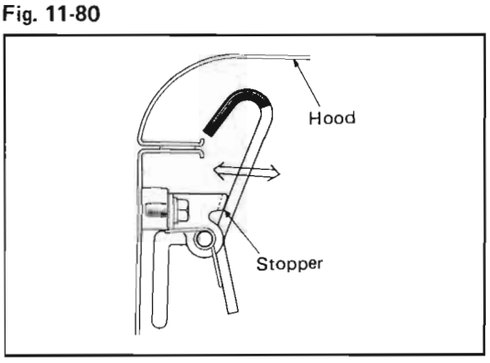


ADJUSTMENT

Hood

Adjust the hood in front-rear direction by loosening the nuts at the hood.

Fig. 11-80



Hood Auxiliary Catch Hook

If the catch hook does not latch on properly, correct by bending the stopper.

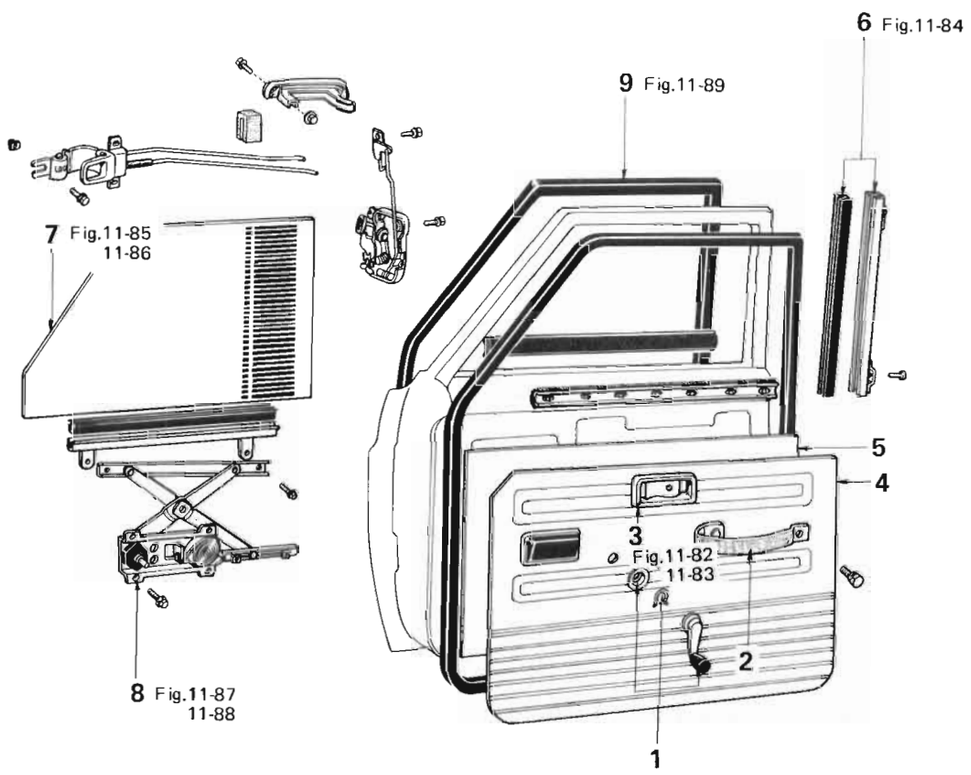
DOOR

REMOVAL

Door Window Glass, Regulator, and Glass Run

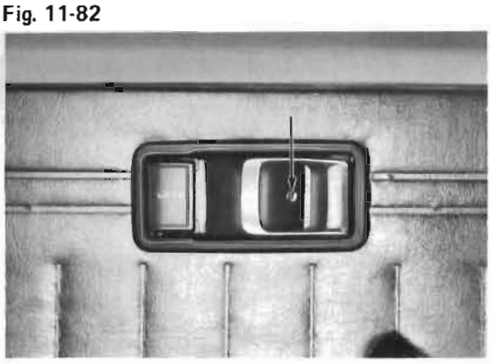
Remove in the order of the numbers shown.

Fig. 11-81



1	Regulator Handle	6	Glass Run Rear Channel
2	Pull Handle	7	Window Glass
3	Bezel	8	Window Regulator
4	Trim Board	9	Glass Run
5	Service Hole Cover		

Fig. 11-82



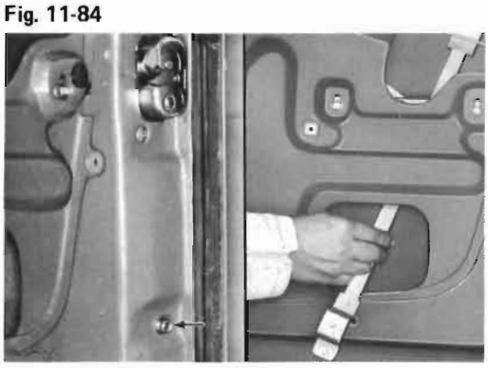
1. Remove the bezel.
   (1) Remove the screws.

Fig. 11-83



(2) Remove in the order of arrow marks.
   → 1. Pull out the rear end.
   → 2. Pull the bezel toward the rear.
   → 3. Remove by pulling out the front end.

Fig. 11-84



2. Remove the glass run rear channel.

Fig. 11-85



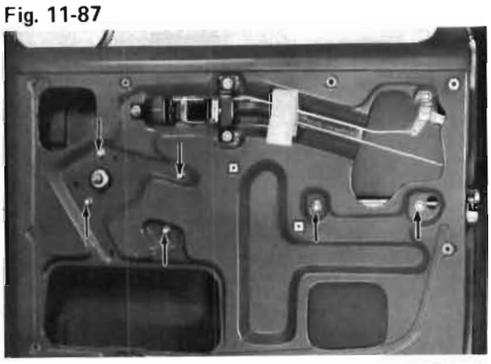
3. Remove the glass.
   (1) Remove the bolts.

Fig. 11-86



(2) Remove the glass with the glass holder.

Fig. 11-87



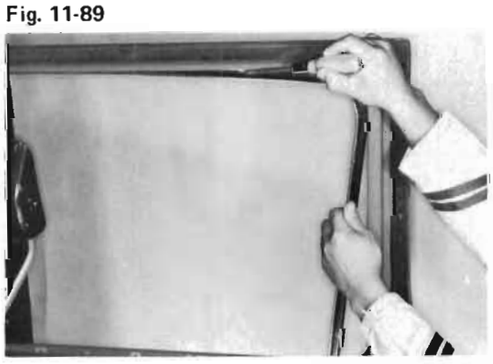
4. Remove the window regulator.
   (1) Remove the bolts.

Fig. 11-88



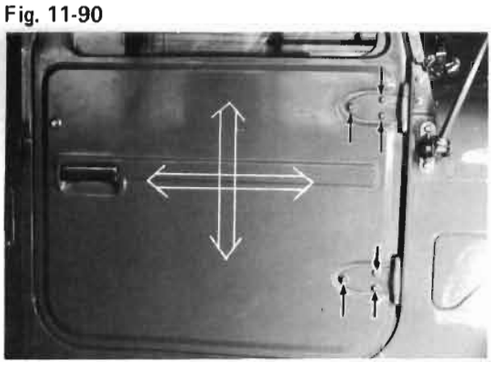
(2) Take out the regulator.

Fig. 11-89



5. Remove the glass run.

Fig. 11-90

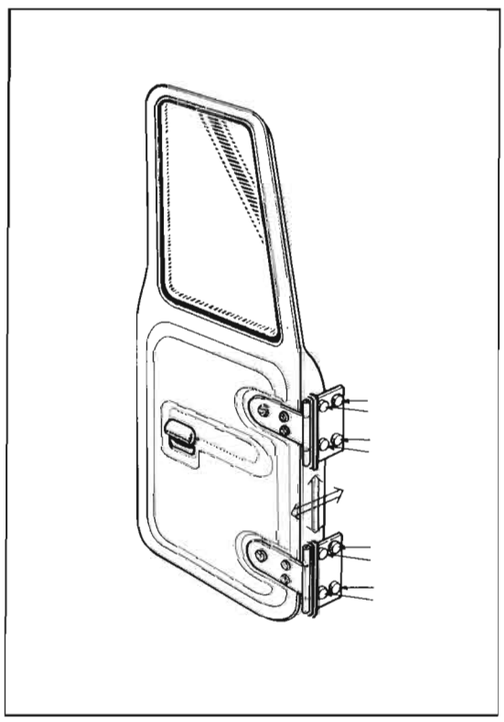


ADJUSTMENT

Door

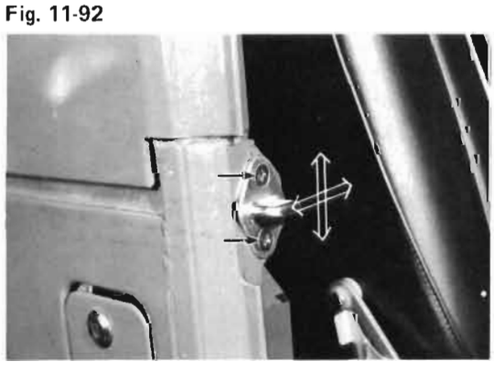
1. Adjust the door in front-rear and vertical directions by loosening the door hinges at the door.

Fig. 11-91



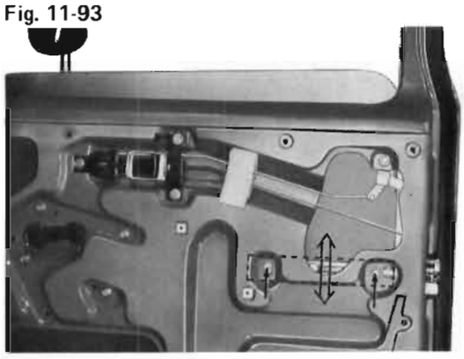
2. Adjust the surface difference with fender and in vertical direction by loosening the door hinges at the body.

Fig. 11-92



3. Correct improper door closure by adjusting the door lock striker.

Fig. 11-93



4. Adjust the window glass tilt.

Fig. 11-94



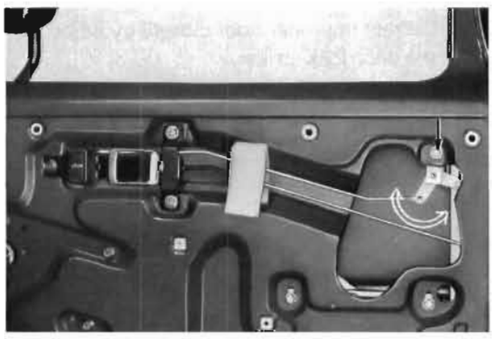
5. Adjust door outside handle play.

Fig. 11-95



6. Adjust door inside handle play.

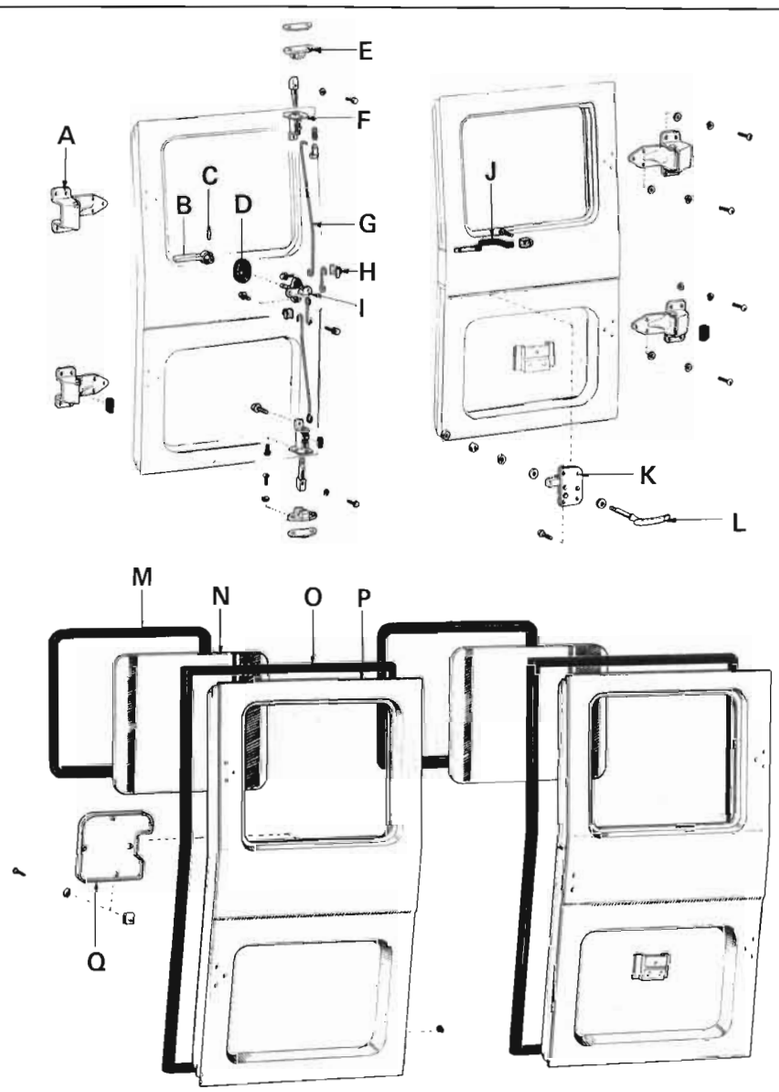
Fig. 11-96



7. Adjust the door lock.

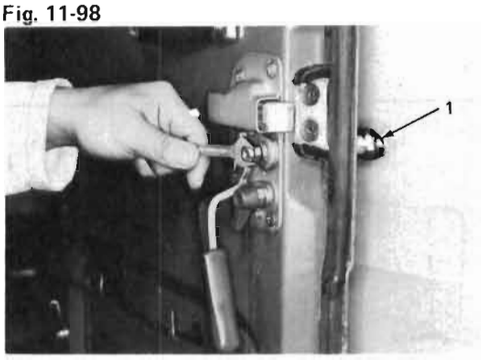
BACK DOOR

Fig. 11-97



A	Back Door Hinge	J	Safety Grip
B	Inside Handle	K	Tail Gate Lock Assy
C	Lock Pin	L	Tail Gate Lock Handle
D	Inside Handle Seat	M	Weatherstrip
E	Lock Catch	N	Glass
F	Lock Catch Base	O	Weatherstrip
G	Lock Control Rod	P	Panel
H	Control Plate	Q	Cover
I	Lock Control Assy		

Fig. 11-98



REMOVAL

Tail Gate Lock and Handle

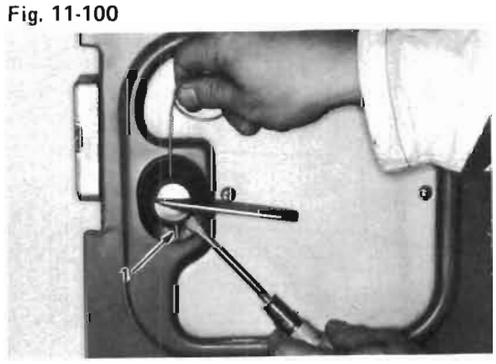
1. Remove the tail gate handle (1) by unscrewing the mounting nuts.

Fig. 11-99



2. Remove the tail gate lock by removing the screws.

Fig. 11-100



Back Door Inside Handle

1. Pull out the lock pin (1) with a wire or other means, and take off the handle.

Fig. 11-101



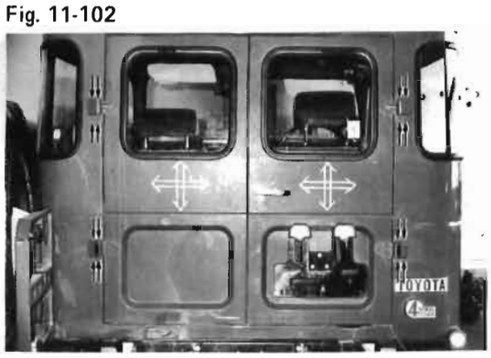
INSTALLATION

Perform the removal in reverse order.

– Note –

Install the back door inside handle with the slot in handle seat (shown by arrow) positioned upward.

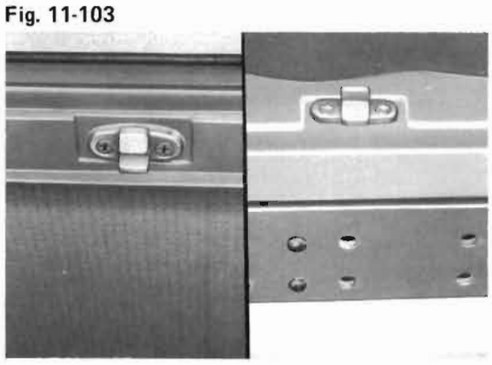
Fig. 11-102



ADJUSTMENT

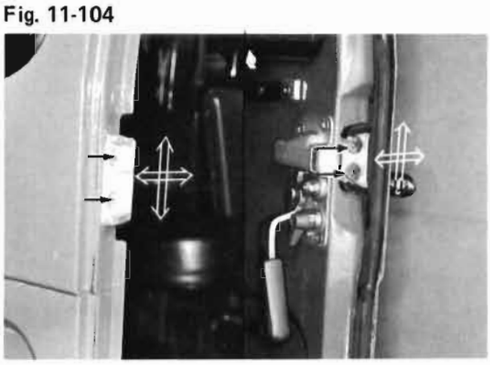
1. Adjust the door alignment by shifting the positions of the door hinges at the body.

Fig. 11-103



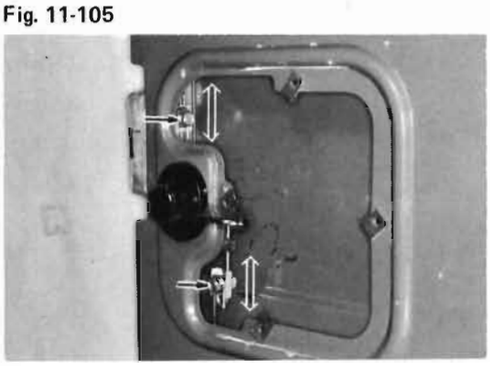
2. Adjust the door closing action.
   (1) Right side door.

Fig. 11-104



   (2) Left side door.

Fig. 11-105



3. Adjust the inside handle play.

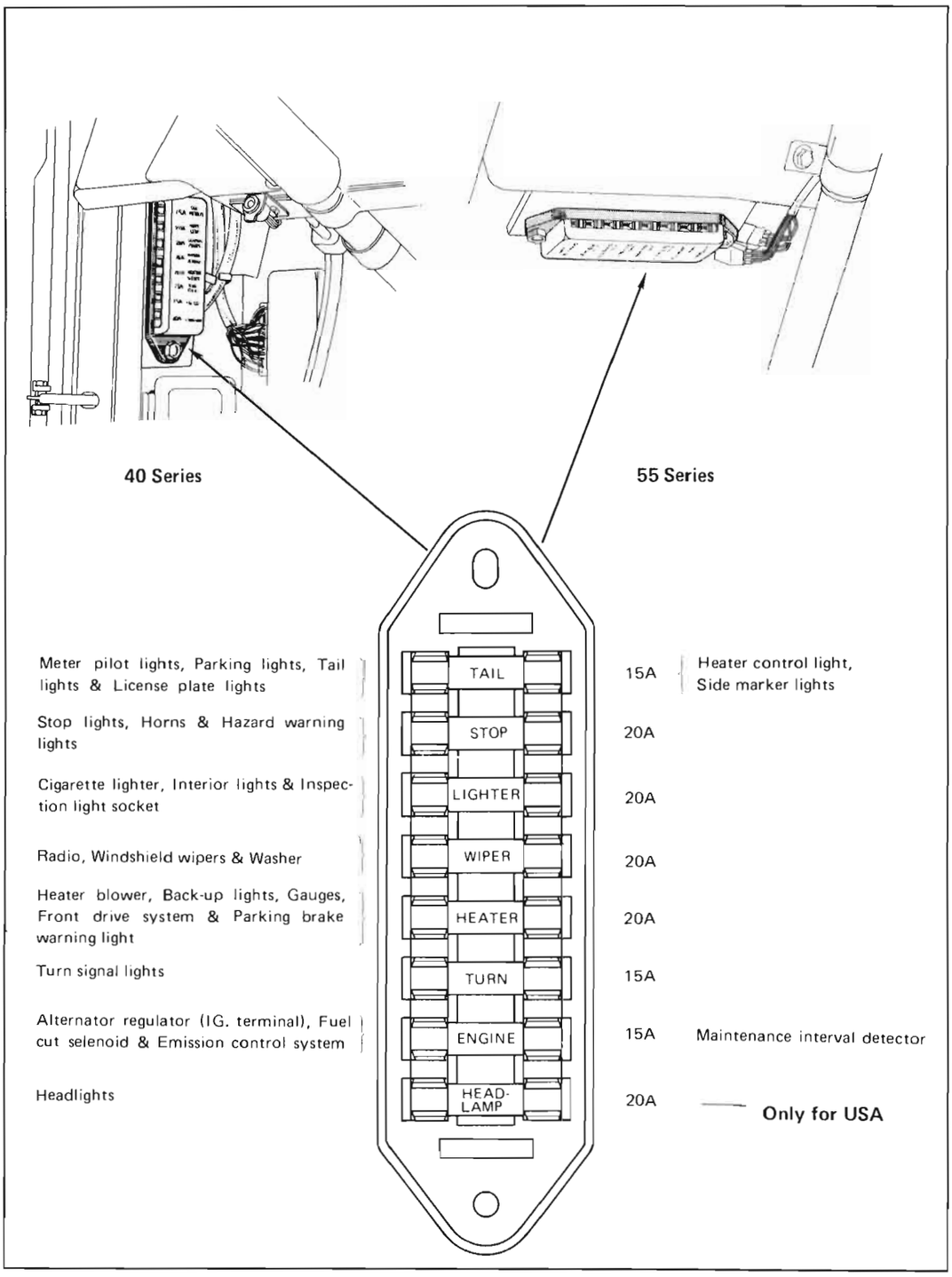
BODY ELECTRICAL

page

FUSE BLOCK 12- 2
IGNITION SWITCH 12- 3
STARTER SWITCH 12- 5
HEADLIGHT & TAIL LIGHT 12- 6
TURN SIGNAL & HAZARD LIGHT 12- 8
TRAILER SOCKET SWITCH 12-13
WIPER 55 SERIES 12-14
40 SERIES 12-18
COMBINATION METER 12-21
FUEL GAUGE & WARTER TEMPERATURE GAUGE ... 12-26
OIL PRESSURE GAUGE 12-29
AMMETER 12-30
BRAKE WARNING LIGHT 12-31
FRONT DRIVE VACUUM CONTROL 12-32
POWER WINDOW TAIL GATE 12-38
HEATER 55 SERIES 12-44
40 SERIES 12-51

FUSE BLOCK

Fig. 12-1

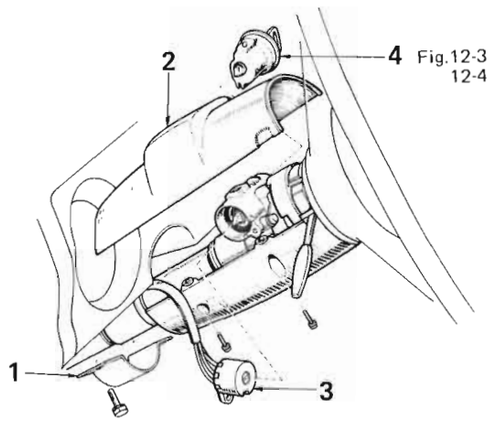


IGNITION SWITCH

REMOVAL

Remove the parts in the order numbered below.

Fig. 12-2



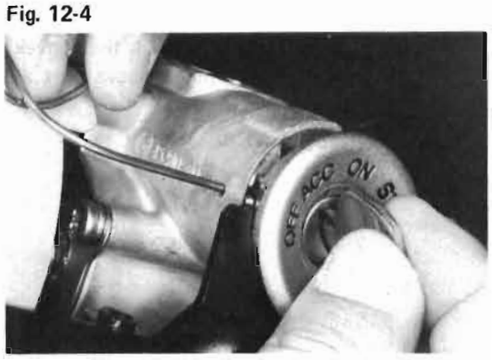
1 Steering Column Bracket
2 Contact Ring Housing Upper
3 Ignition Switch Assembly
4 Ignition W/O Switch And Key

Fig. 12-3



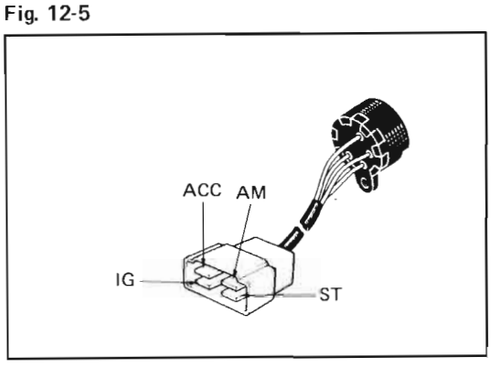
Removing ignition w/o switch and key.
(1) Turn the ignition key to "ACC".

Fig. 12-4



(2) Hold down the pin with a wire and pull out the switch.

Fig. 12-5



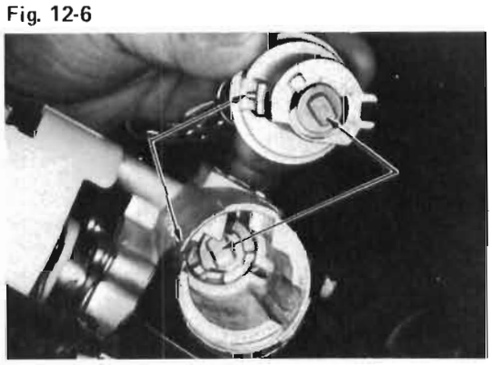
TERMINAL / SWITCH POSITION	AM	ACC	IG	ST
OFF				
ACC	○	○		
ON	○	○	○	
START	○		○	○

INSPECTION

Terminal connections

AM .... To battery fusible link (power source)
IG .... To ignition coil
fuse (heater) 20A
fuse (turn) 15A
fuse (engine) 15A
ACC .... To fuse (wiper) 20A
ST .... To starter "ST" terminal

Fig. 12-6



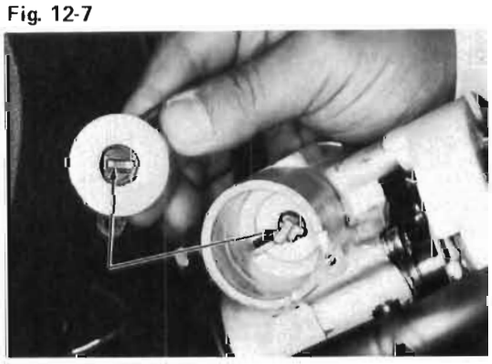
INSTALLATION

Perform the removal in reverse order.

– Note –

1. **In installing the ignition w/o switch & key, turn the key to "ACC" and align the convex part with the concave part as shown in Fig. 12-6.**

Fig. 12-7



2. **Install the ignition switch with the convex part aligned against the concave part as shown in Fig. 12-7.**

STARTER SWITCH

Fig. 12-8

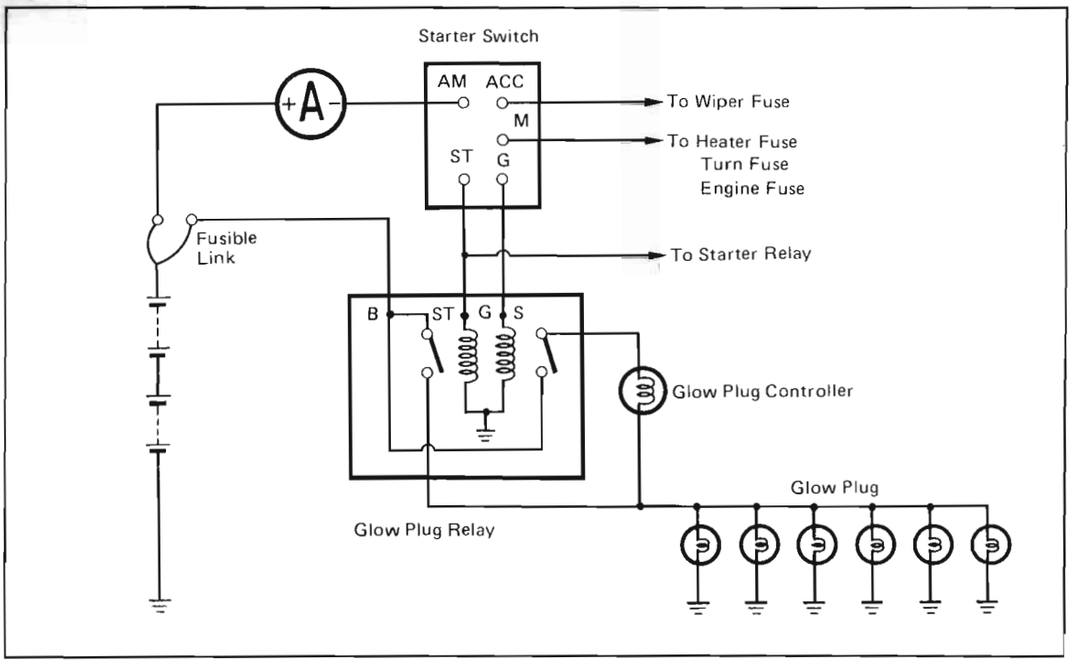
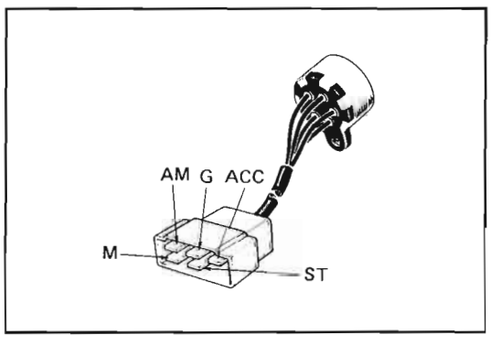


Fig. 12-9



TERMINAL / SWITCH POSITION	AM	ACC	M	ST	G
GLOW	○				○
LOCK					
ACC	○	○			
ON	○	○	○		
ST	○		○	○	

INSPECTION

Terminal connections

AM .... To ammeter (–) terminal (Power source)
M .... To fuse (heater) 20A
fuse (turn) 15A
fuse (engine) 15A
ACC .... To fuse (wiper) 20A
ST .... To starter relay "ST" terminal
glow plug relay "ST" terminal
G .... To glow plug relay "G" terminal

HEADLIGHT & TAIL LIGHT

Fig. 12-10

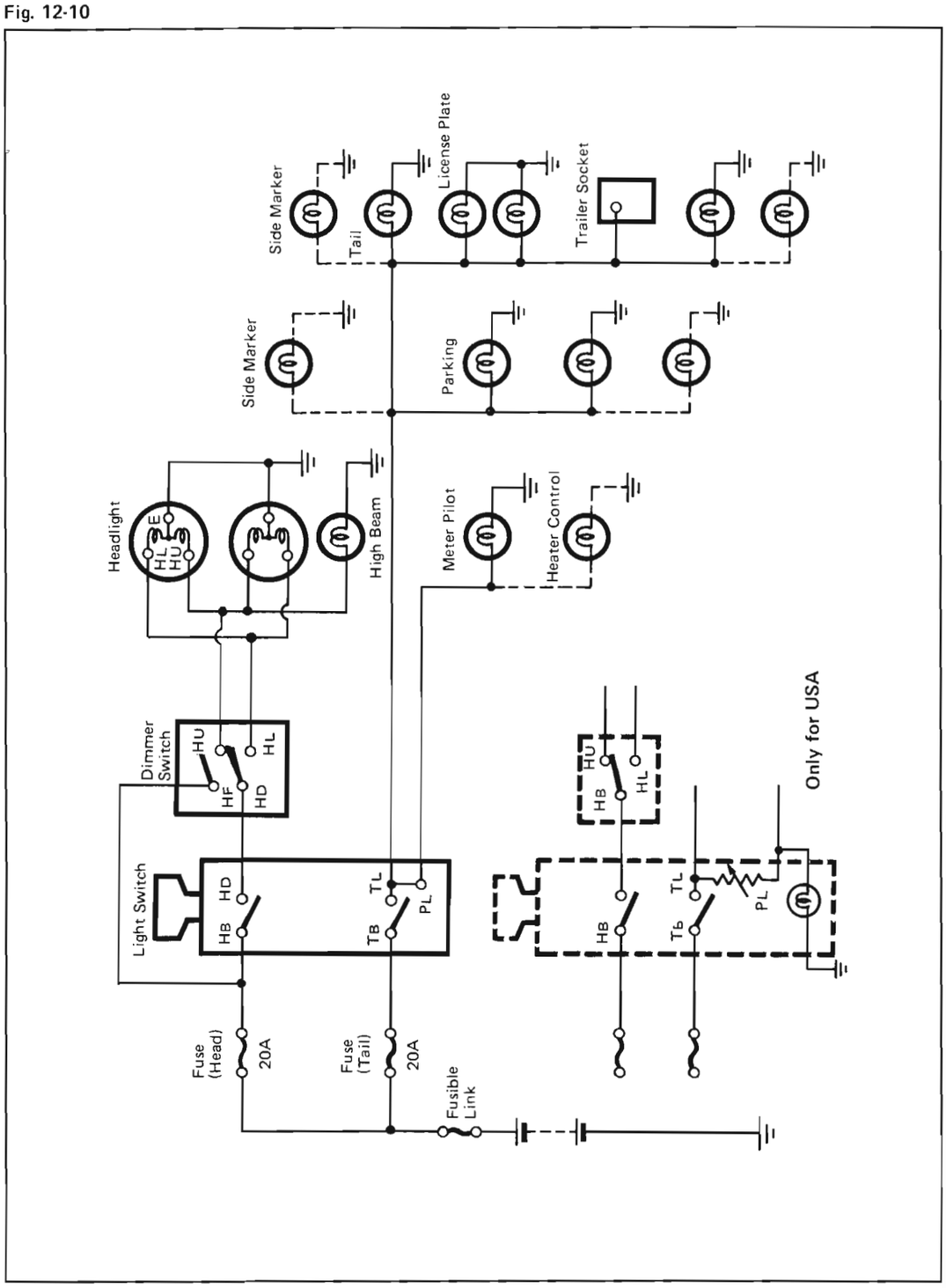
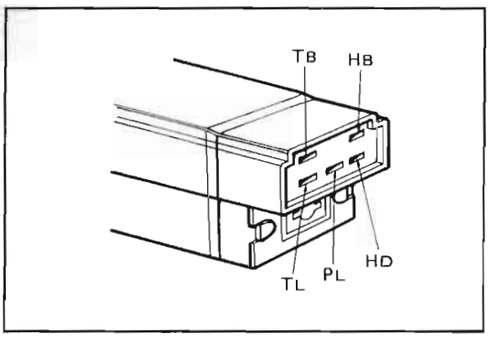


Fig. 12-11



TERMINAL / SWITCH POSITION	TB	TL	PL	HB	HD
OFF		○—○			
1ST STEP	○—○	○—○			
2ND STEP	○—○	○—○		○—○	

INSPECTION

Light Switch

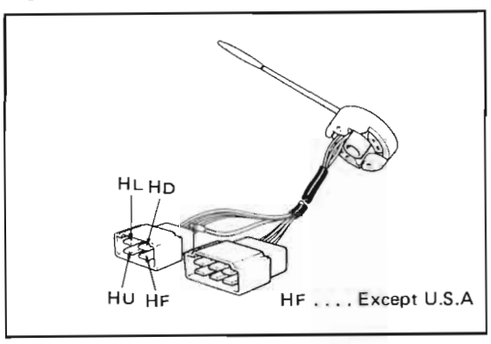
Terminal connections

- TB .... To fuse (tail) 15A (tail light power source)
- HB .... To fuse (head) 20A (headlight power source)
- TL .... To tail light
- PL .... To meter pilot light
- HD .... To dimmer switch

– Note –

In the vehicles to U.S.A., turning the light switch knob will cause the resistance between TL and PL to change from infinity and 0-10Ω.

Fig. 12-12



Dimmer Switch

Terminal connections

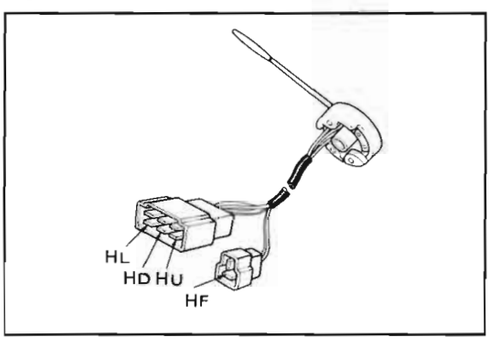
- HD .... To light switch (Power source)
- HL .... To headlight low beam
- HU .... To headlight high beam
- HF .... To fuse (head) 20A (headlight flasher)

– Note –

Fig. 12-12 shows terminals for vehicles other than BJ series.

Fig. 12-13 shows terminals for BJ series only.

Fig. 12-13

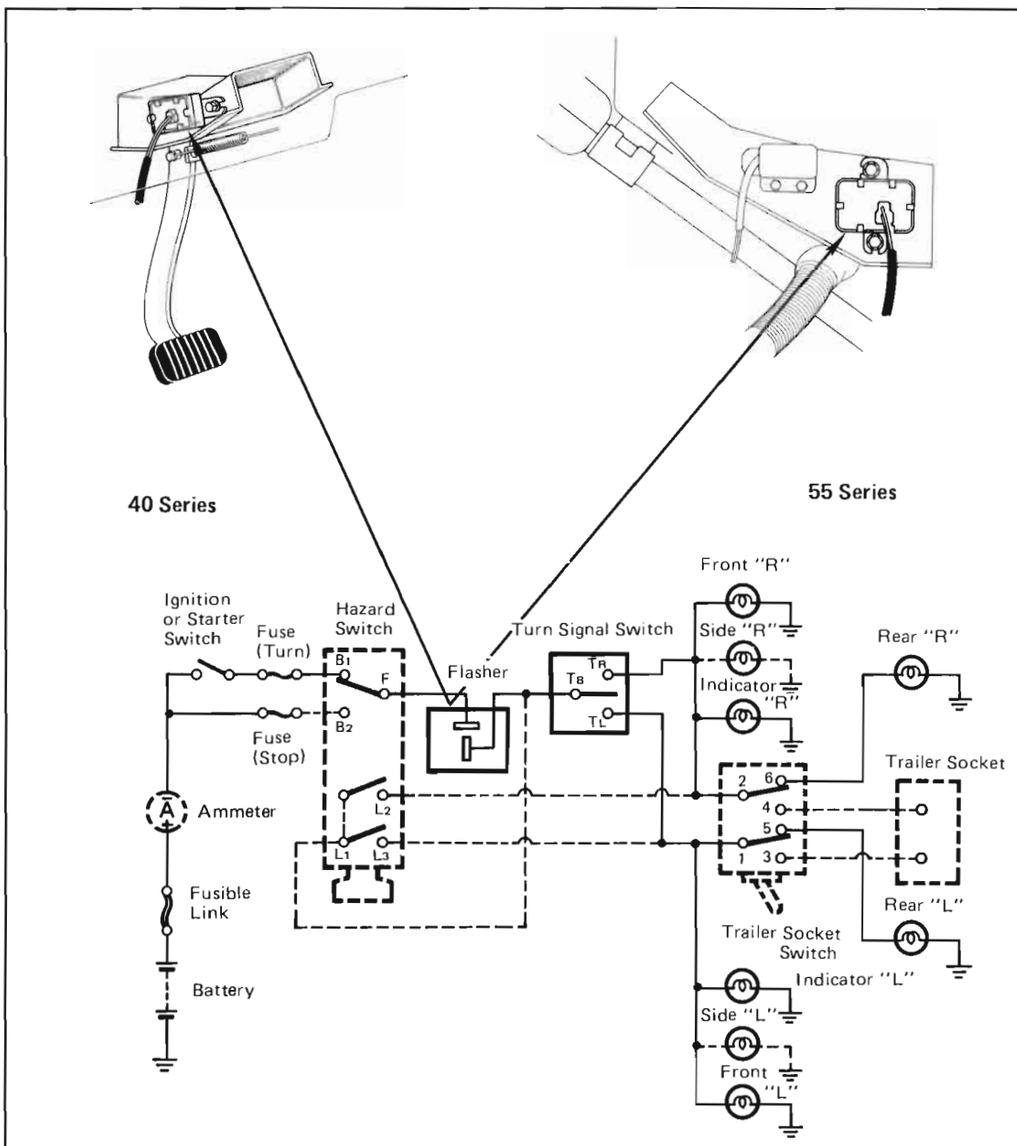


TERMINAL / SWITCH POSITION	HD	HL	HU	HF
LOW BEAM	○—○			
HIGH BEAM	○—	—○		
HEADLIGHT FLASHER			○—○	

TURN SIGNAL & HAZARD LIGHT

FJ55 vehicles except those with U.S.A. specs.

Fig. 12-14



– Note –

- BJ series shall be equipped with 24V batteries.
- For vehicles without ammeter, connect (+) to (–).
- For vehicles without hazard switch, connect B_1 to F.
- Vehicles with U.S.A. specs. shall not be equipped with side turn signal lights.
- For vehicles without trailer socket switch and trailer socket, connect 1 to 5 and 2 to 6.

FJ55 vehicles with U.S.A. specs.

Fig. 12-15

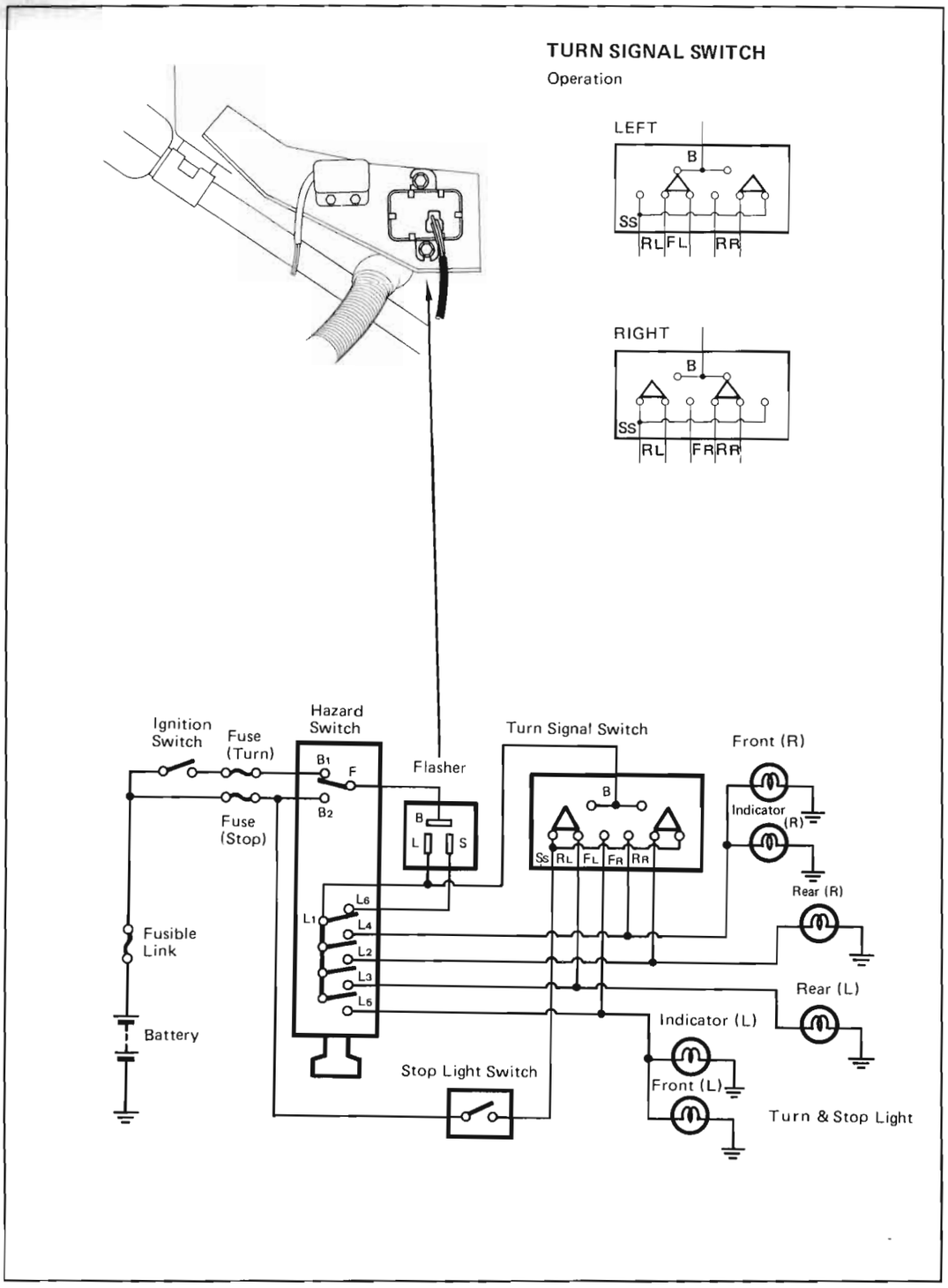
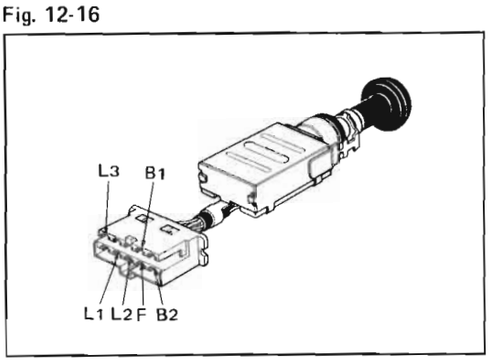


Fig. 12-16



TERMINAL / SWITCH POSITION	B_1	F	B_2	L_1	L_2	L_3	L_4
OFF	o—o						
ON		o—o	o—o	o—o	o—o		

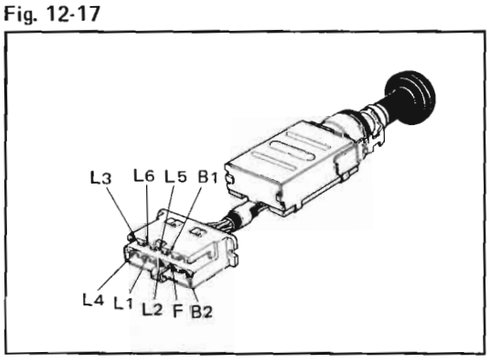
HAZARD SWITCH

Inspection

Terminal connections (For vehicles other than U.S.A. specs.)

- B_1 .... To fuse (turn) (turn signal light power source)
- F .... To flasher "B" terminal
- B_2 .... To fuse (stop) (hazard light power source)
- L_1 .... To flasher "L" terminal and turn signal switch "B" terminal
- L_2 .... To right side turn signal light
- L_3 .... To left side turn signal light

Fig. 12-17

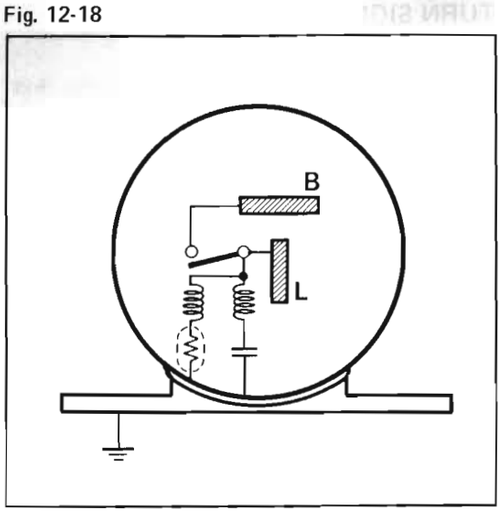


TERMINAL / SWITCH POSITION	B_1	F	B_2	L_1	L_2	L_3	L_4	L_5	L_6
OFF	o—o			o——	———	———	———	———	——o
ON		o—o	o—o	o—o	o—o	o—o	o—o	o—o	

Terminal connections (For U.S.A. spec. vehicles only)

- B_1 .... To fuse (turn) (Turn signal light power source)
- F .... To flasher "B" terminal
- B_2 .... To fuse (stop) (hazard light power source)
- L_1 .... To flasher "L" terminal and turn signal switch "B" terminal
- L_2 .... To turn signal switch "R_R" terminal and rear right light
- L_3 .... To turn signal switch "R_L" terminal and rear left light
- L_4 .... To turn signal switch "F_R" terminal and front right light
- L_5 .... To turn signal switch "F_L" terminal and front left light
- L_6 .... To flasher "S" terminal

Fig. 12-18



FLASHER

Inspection

Flasher without hazard light

Terminal connections

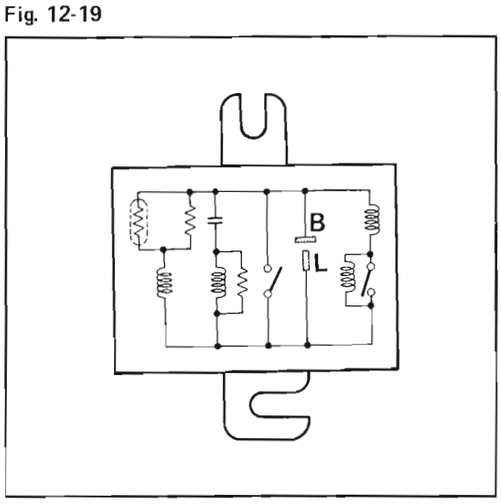
B .... To fuse (turn) (power source)

L .... To turn signal switch "T_B" terminal

– Note –

Make sure to ground the flasher body.

Fig. 12-19



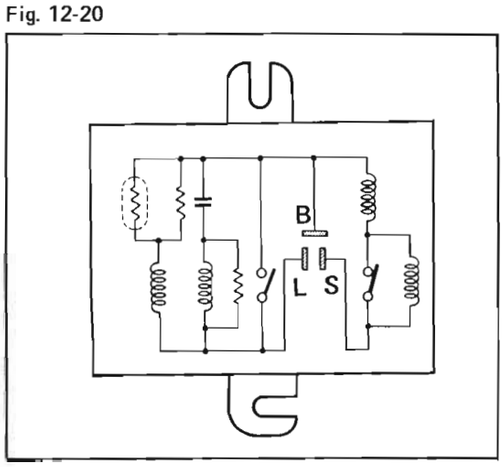
Combined flasher and hazard (Except U.S.A. spec. Vehicles)

Terminal connections

B .... To hazard switch "F" terminal (power source)

L .... To turn signal switch "T_B" terminal and hazard switch "L_1" terminal.

Fig. 12-20



Combined flasher and hazard (U.S.A. spec. vehicles only)

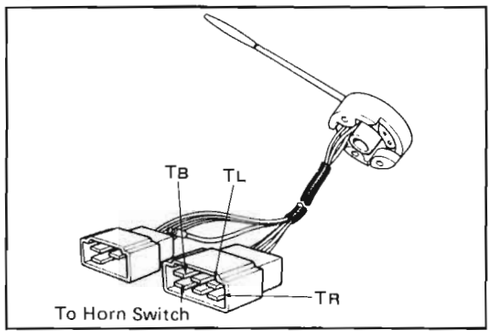
Terminal connections

B .... To hazard switch "F" terminal (power source)

L .... To turn signal switch "T_B" terminal and hazard switch "L_1" terminal

S .... To hazard switch L_6 terminal

Fig. 12-21



TURN SIGNAL SWITCH

Inspection

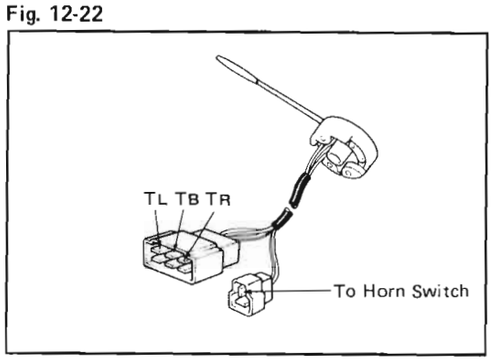
Fig. 12-21 shows terminals for BJ series and vehicles without U.S.A. specs.

Fig. 12-22 shows terminals for BJ series only.

Terminal connections

- TB .... To flasher "L" terminal and hazard switch "L_1" terminal
- TL .... To left side turn signal light
- TR .... To right side turn signal light

Fig. 12-22



TERMINAL / SWITCH POSITION	TL	TB	TR
LEFT	○——	——○	
NEUTRAL			
RIGHT		○——	——○

Fig. 12-23

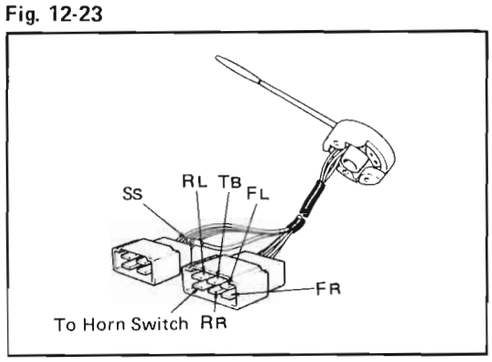


Fig. 12-23 shows terminals for U.S.A. spec. vehicles only.

Terminal connections

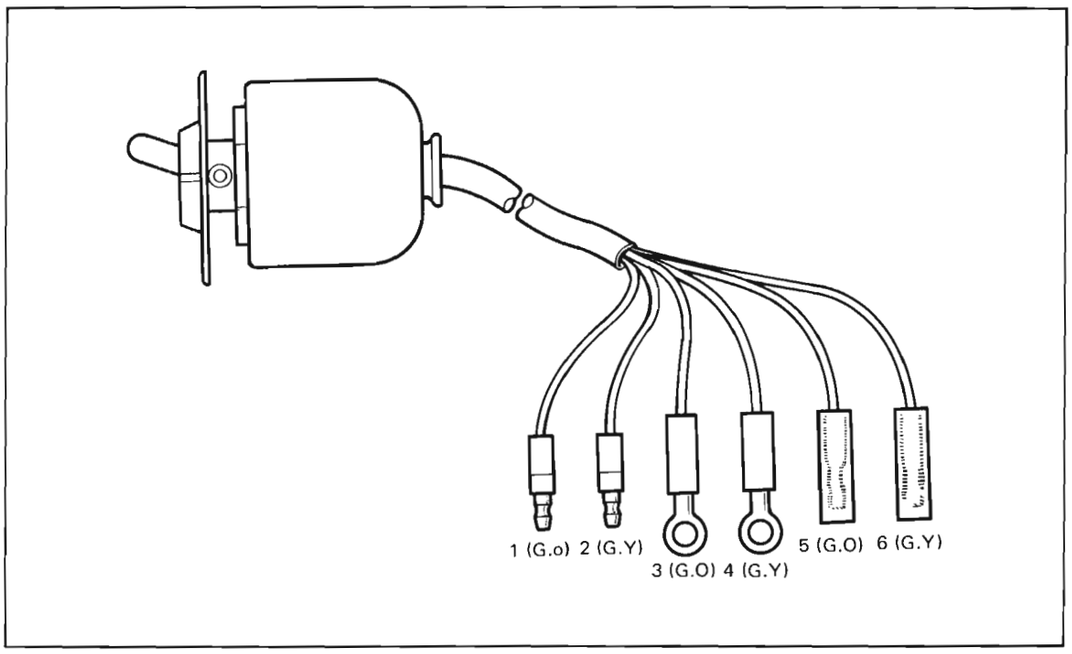
- TB .... To flasher "L" terminal and hazard switch "L_1" terminal
- SS .... To stop light switch (power source)
- FL .... To front left turn signal light
- FR .... To front right turn signal light
- RL .... To rear left turn signal light
- RR .... To rear right turn signal light

TERMINAL / SWITCH POSITION	FL	RL	B	FR	RR	SS
LEFT	○——	——○	——○		○——	——○
NEUTRAL		○——	———————	———	——○	——○
RIGHT		○——	——○	——○	——○	——○

TRAILER SOCKET SWITCH

INSPECTION

Fig. 12-24



TERMINAL / SWITCH POSITION	1	3	5	2	4	6
ON	o—o			o—o		
OFF	o		o	o		o

Terminal connections

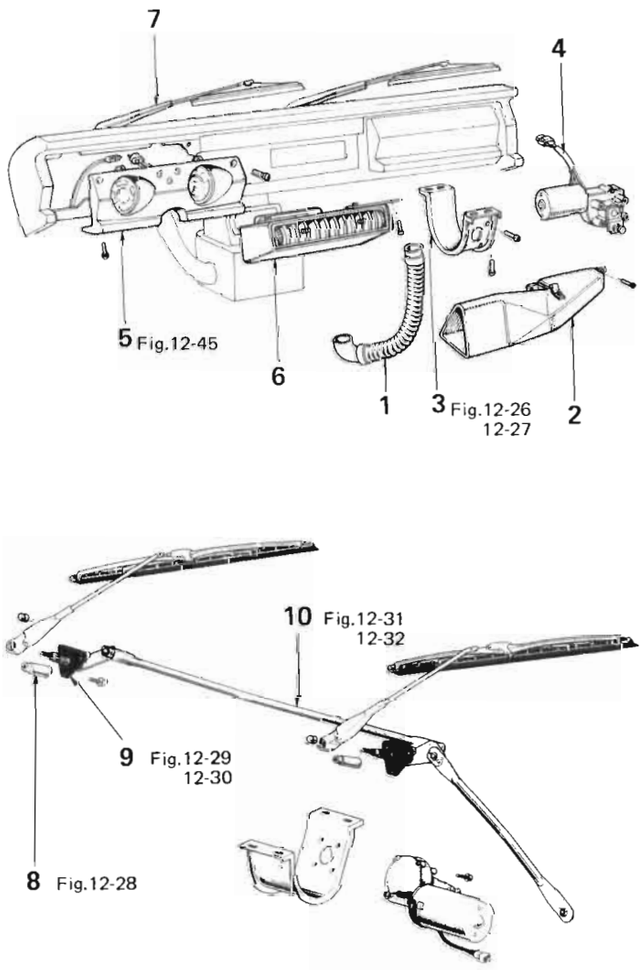
1 .... To turn signal switch TL terminal
2 .... To turn signal switch TR terminal
3 .... To trailer socket (left side turn signal light)
4 .... To trailer socket (right side turn signal light)
5 .... To rear left turn signal light
6 .... To rear right turn signal light

WIPER (55 SERIES)

REMOVAL

Remove the parts in the order numbered below.

Fig. 12-25



1	Heater Defroster Hose	6	Ventilation Louver
2	Heater Air Duct	7	Wiper Blade
3	Wiper Braket	8	Wiper Pivot Cap
4	Wiper Motor	9	Wiper Pivot At Combination Meter Side
5	Combination Meter	10	Windshield Wiper Link

Fig. 12-26



1. Wiper bracket removal
   (1) Disconnect the wiper link from the wiper motor.

Fig. 12-27



   (2) Remove the four bolts and take off the bracket with the motor attached.

Fig. 12-28



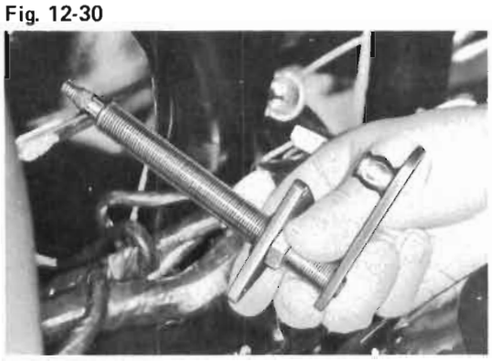
2. Remove the wiper pivot cap.

Fig. 12-29



3. Wiper pivot removal at combination meter side.
   (1) Remove the three bolts and disconnect the wiper link from the pivot.

Fig. 12-30



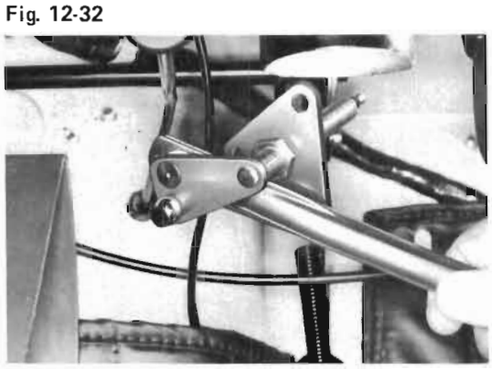
(2) Take out the pivot.

Fig. 12-31



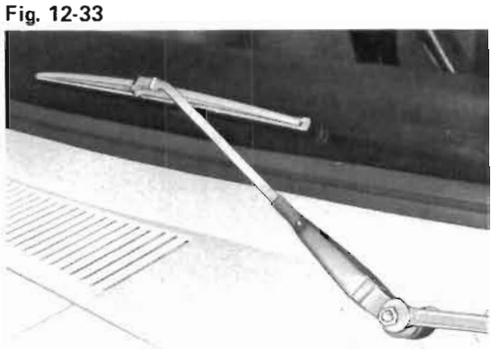
4. Wiper link removal
   (1) Disconnect the wiper link and pivot.

Fig. 12-32



(2) Remove the three bolts attaching the pivot, and take off the wiper link.

Fig. 12-33



INSTALLATION

Perform the removal in reverse order.

– Note –

Install the wiper blades after installing the wiper motor and verifying the auto stop position.

INSPECTION

Fig. 12-34

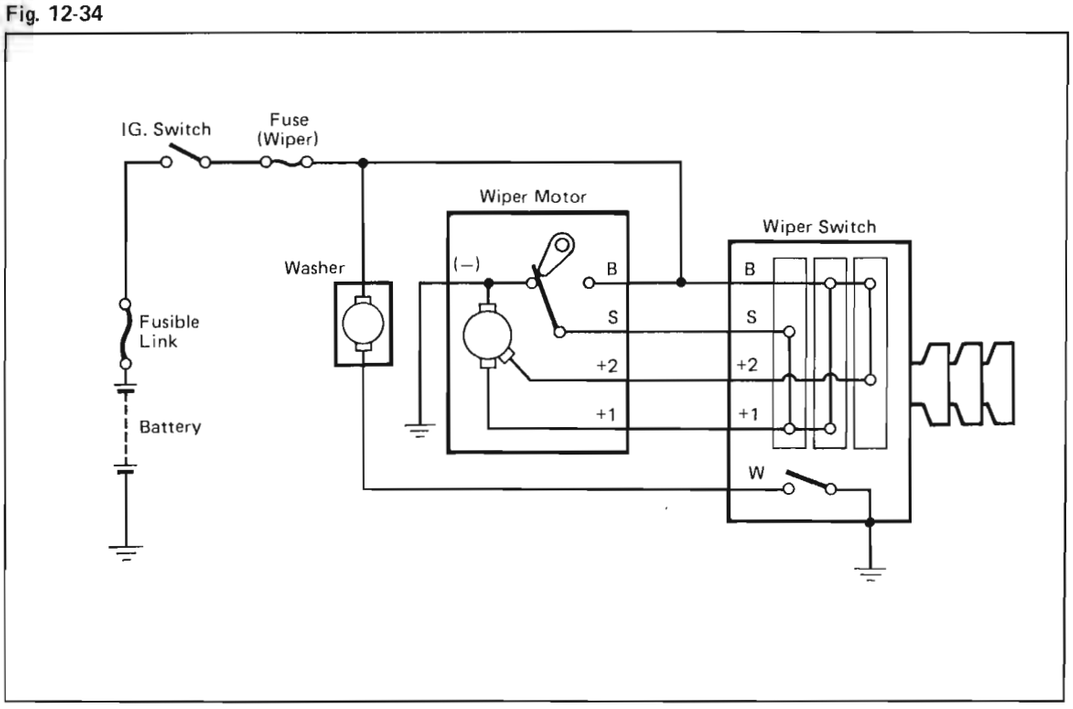
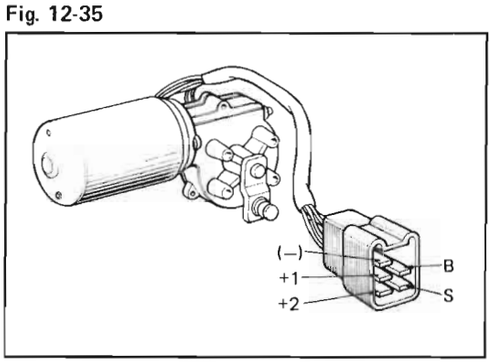


Fig. 12-35

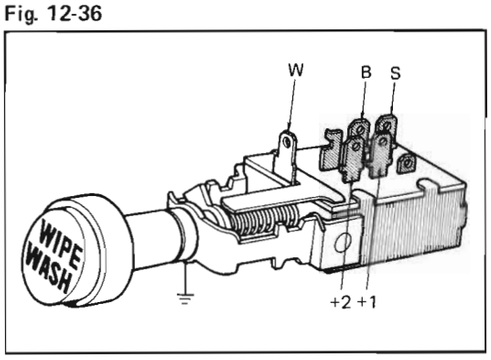


Wiper Motor

Terminal connections

(–) .... Ground
+1 .... To wiper switch "+1" terminal
+2 .... To wiper switch "+2" terminal
B .... To fuse (wiper) (auto stop power source)
S .... To wiper switch "S" terminal

Fig. 12-36



Wiper Switch

Terminal connections

W .... To washer motor

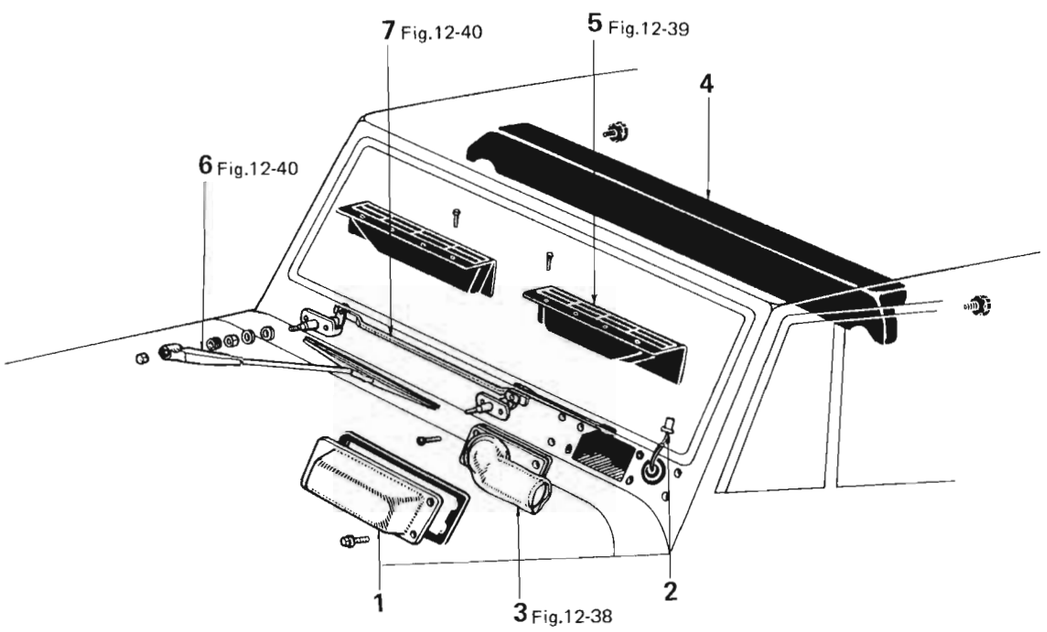
SWITCH POSITION \ TERMINAL	S	+1	+2	B	W	⏚
OFF	○—○				○ - - ○	
1ST STEP		○——	——○		○ - - ○	
2ND STEP			○—○		○ - - ○	

WIPER (40 SERIES)

REMOVAL

Remove the parts in the order numbered below.

Fig. 12-37



1 Wiper Motor Cover
2 Wiring Harness
3 Wiper Motor
4 Safety Pad
5 Defroster Nozzle
6 Wiper Arm
7 Wiper Link

Fig. 12-38



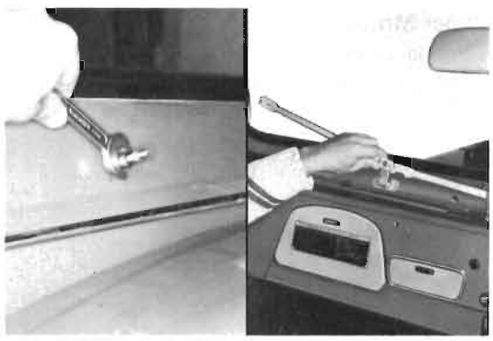
1. Disconnect the link from the wiper motor.

Fig. 12-39



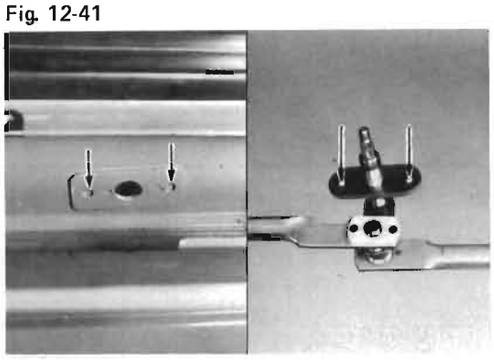
2. Remove the defroster nozzle at the front passenger seat side.
   Position the wiper arm upward, and remove the defroster nozzle in the order shown by numbered arrows.

Fig. 12-40



3. Remove the wiper blades and wiper pivots, and take out the wiper link.

Fig. 12-41



INSTALLATION

Perform the removal in reverse order.

– Note –

Install the wiper link with the link convex part fitted into the body concave part.

INSPECTION

Fig. 12-42

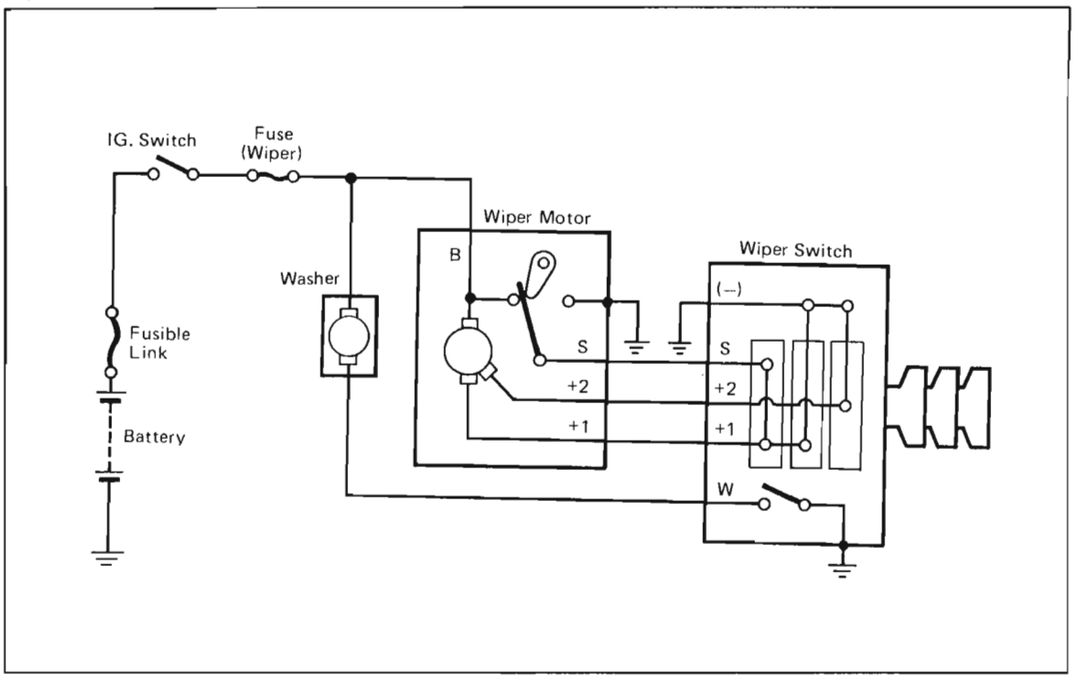
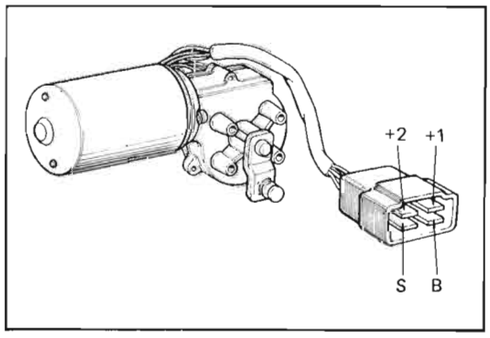


Fig. 12-43

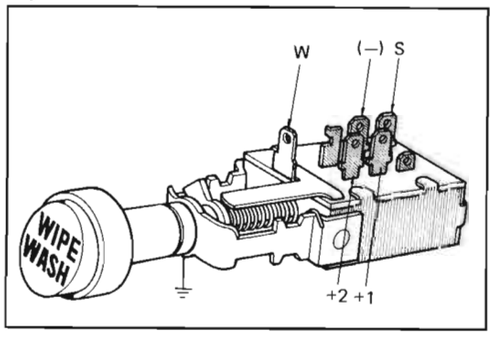


Wiper Motor

Terminal connections

+1 .... To wiper switch "+1" terminal
+2 .... To wiper switch "+2" terminal
B .... To fuse (wiper) (power source)
S .... To wiper switch "S" terminal

Fig. 12-44



Wiper Switch

Terminal connections

W .... To washer motor
(–) .... Ground

TERMINAL / SWITCH POSITION	S	+1	+2	–	W	⏚
OFF	○—○				○···○	
1ST STEP		○—○		○—○	○···○	
2ND STEP			○—○	○—○	○···○	

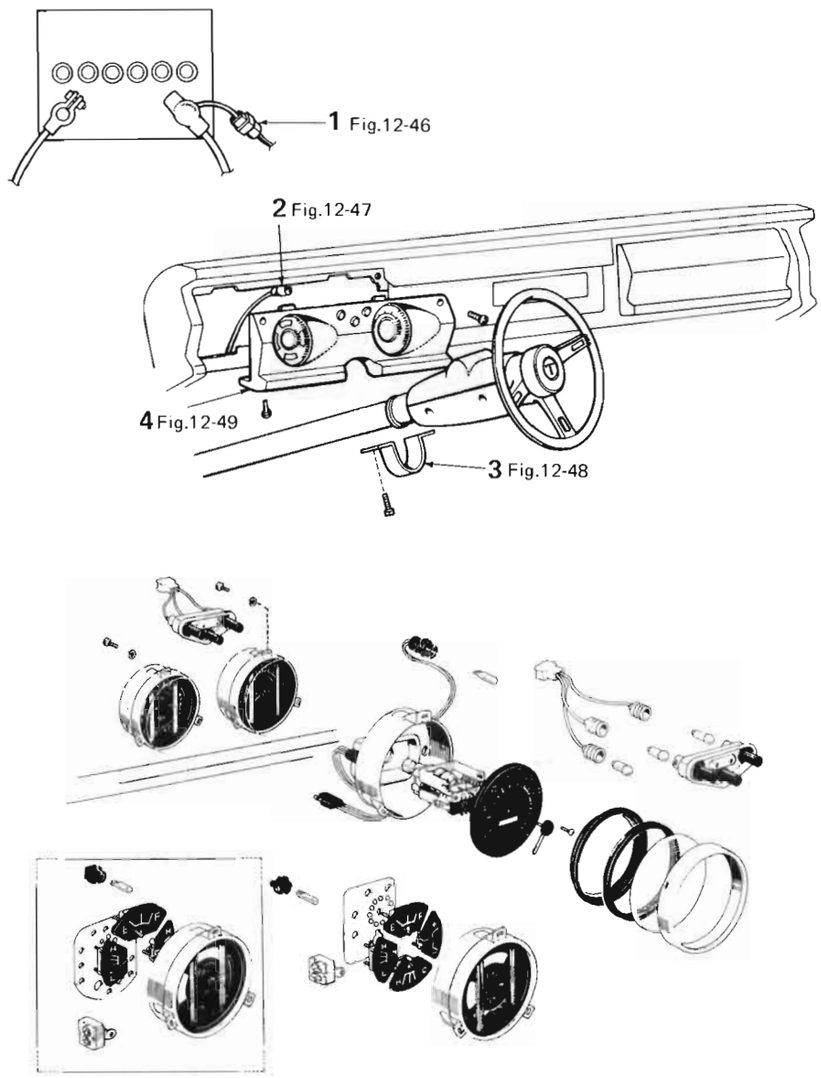
COMBINATION METER

REMOVAL

55 Series

Remove the parts in the order numbered below.

Fig. 12-45



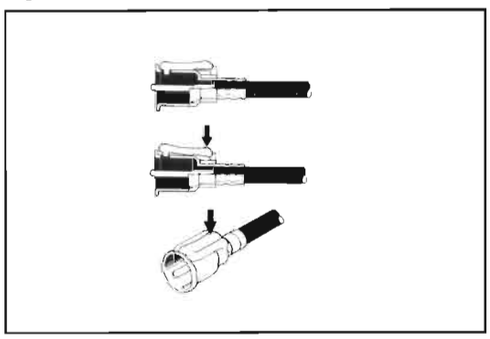
1 Fusible Link
2 Speedometer Cable
3 Steering Column Bracket
4 Combination Meter

Fig. 12-46



1. Disconnect the fusible link from the battery.

Fig. 12-47



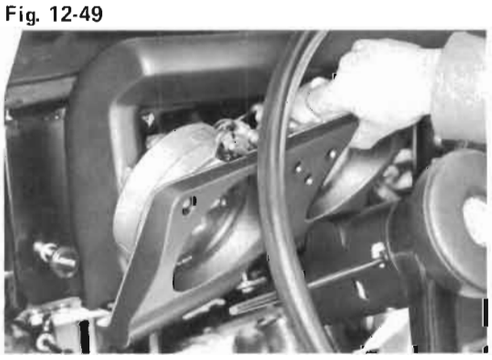
2. Disconnect the speedometer cable from the speedometer.

Fig. 12-48



3. Loosen the steering column bracket so as to make it easier to draw out the combination meter.

Fig. 12-49

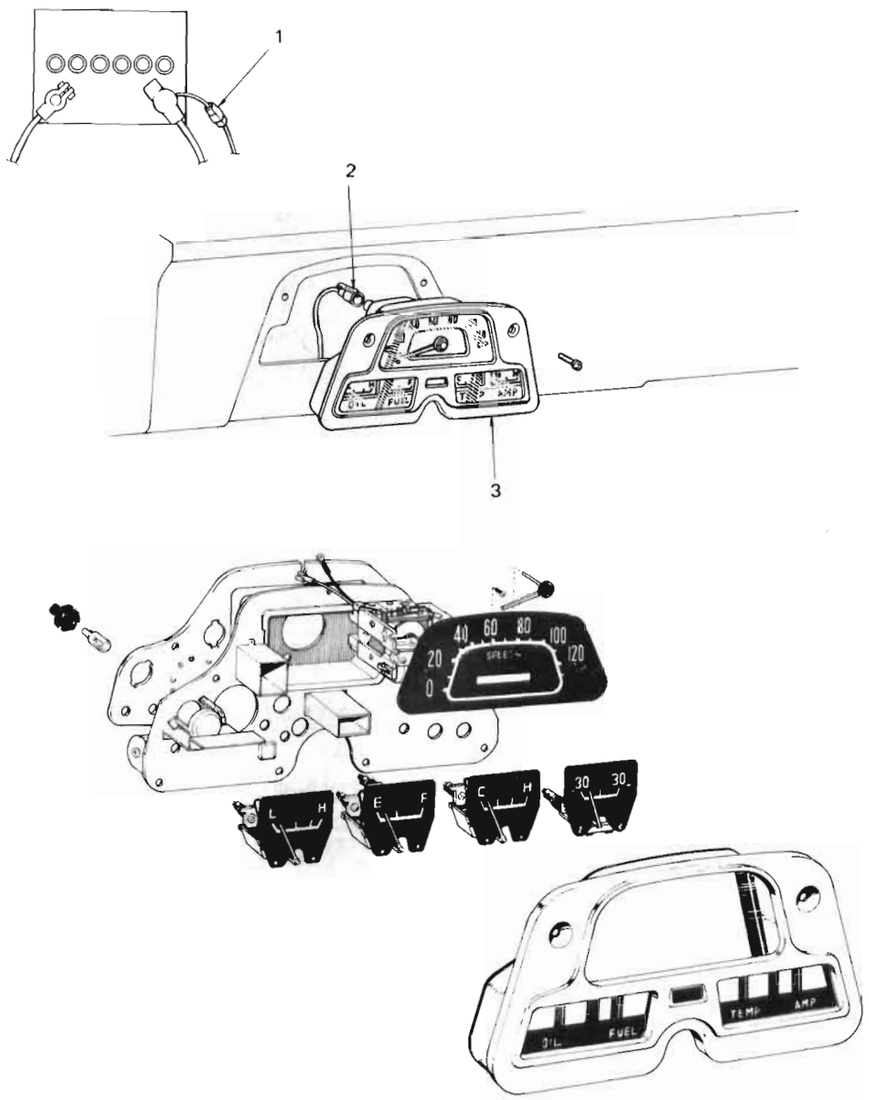


4. Disconnect the wiring to the combination meter and draw out the combination meter.

40 Series

Remove the parts in the order numbered below.

Fig. 12-50



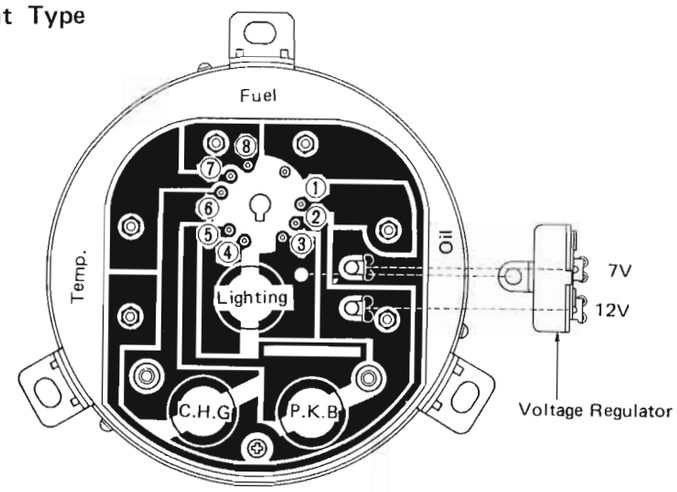
1 Fusible Link
2 Speedometer Cable
3 Combination Meter

INSPECTION

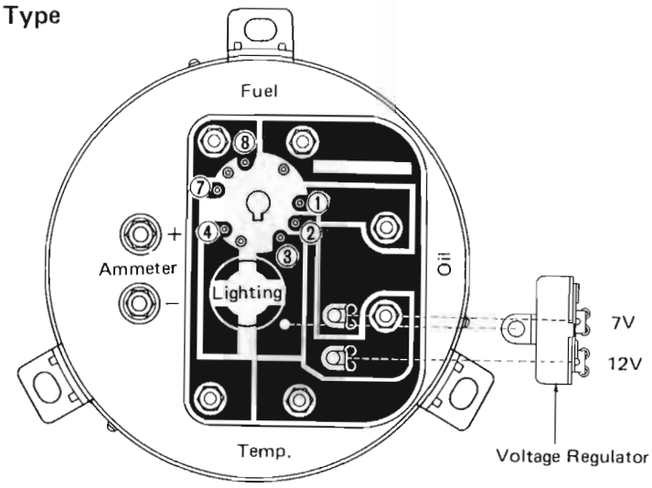
55 Series

Fig. 12-51

W/ C.H.G. Light Type



W/ Ammeter Type

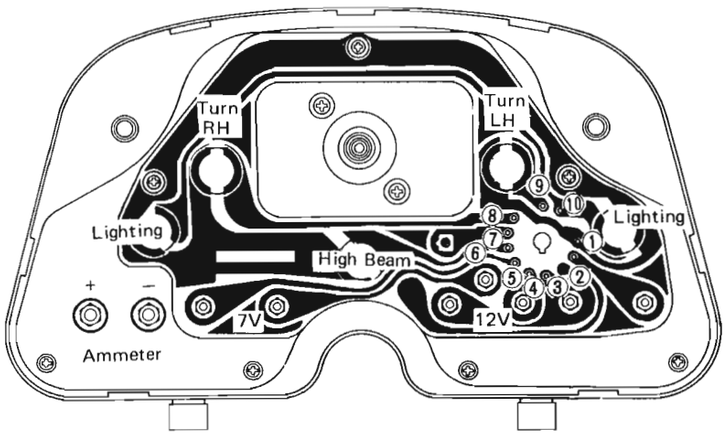


Terminal No.	Connection	Terminal No.	Connection
1	To Oil Pressure Gauge ↔Oil Pressure Sender Gauge	6	To CHG Light ↔Alternator Regulator "L" Terminal
2	From Ignition Switch (Power Source)	7	To Temperature Gauge ↔Temperature Sender Gauge
3	Ground	8	To Fuel Gauge ↔Fuel Sender Gauge
4	To Meter Pilot Light ↔Light Switch		
5	To PKB Light ↔Parking Brake Switch & Stop Light Switch		

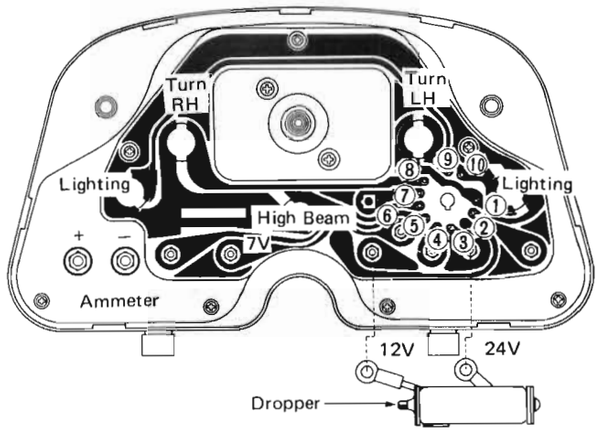
40 Series

Fig. 12-52

12V Series



24V Series



Terminal No.	Connection
1	Ground
2	To Oil Pressure Gauge ↔ Oil Pressure Sender Gauge
3	From Ignition Or Starter Swtich (Power Source)
4	To Fuel Gauge ↔ Fuel Sender Gauge
5	To Water Temperature Gauge ↔ Water Temperature Sender Gauge
6	To High Beam Indicator Light ↔ Headlight Dimmer Switch
7	To Reed Switch ↔Emission Control Computer (USA & ECE Specs. Only)
8	To Turn Signal Indicator Light (RH) ↔ Turn Signal Switch
9	To Turn Signal Indicator Light (LH) ↔ Turn Signal Switch
10	To Meter Pilot Light ↔ Light Switch

FUEL GAUGE & WATER TEMPERATURE GAUGE

INSPECTION

Fig. 12-53

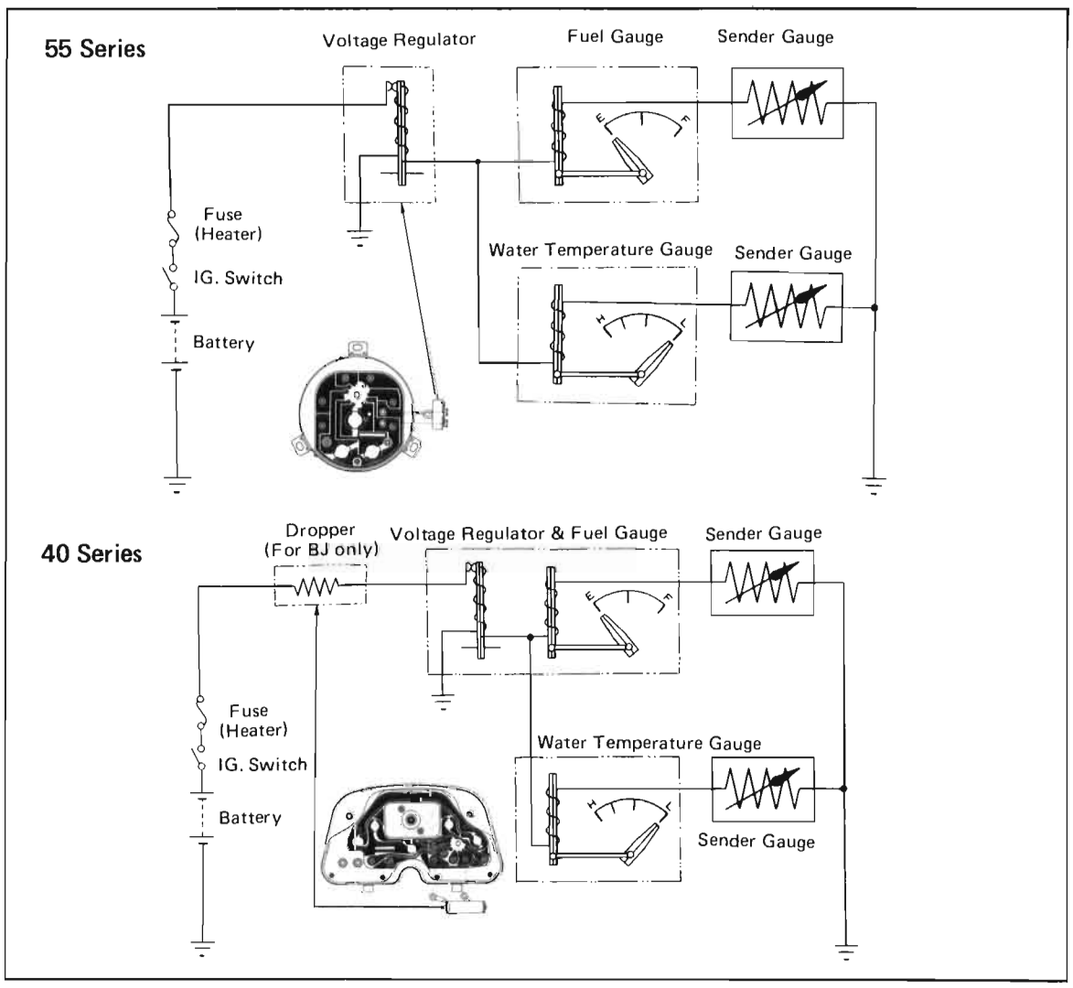
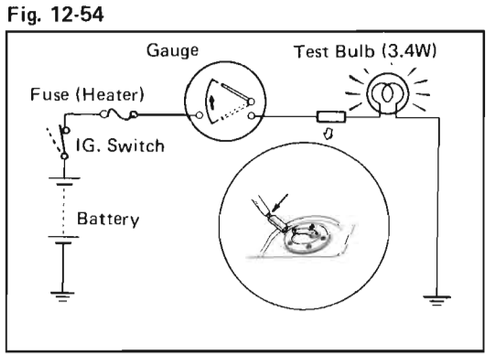


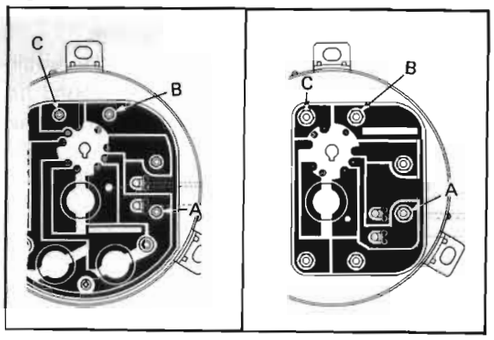
Fig. 12-54



Fuel Receiver Gauge

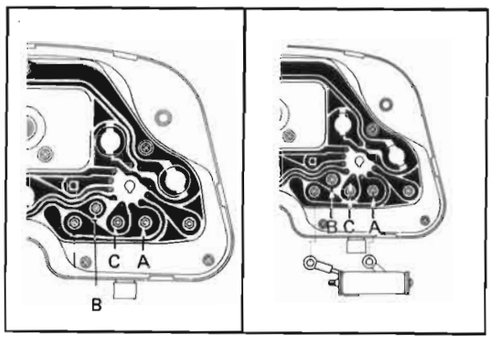
1. Pull out the connector from the fuel sender gauge and ground the terminal through a 3.4W bulb. When the ignition switch is turn on, the bulb should light (but start to flash after few seconds) and the gauge pointer should deflect, if the gauge is in proper condition.

Fig. 12-55



2. If the above test shows defective condition, remove the combination meter assembly and check on the following points.
   (1) With the multi-terminal connector plugged in to the combination meter, turn on the ignition switch and verify that battery voltage is present at terminal (A).
   (2) At the above condition, there should be a constantly varying voltage at terminal (B) that is fluctuating between 2V and 7V.

Fig. 12-56

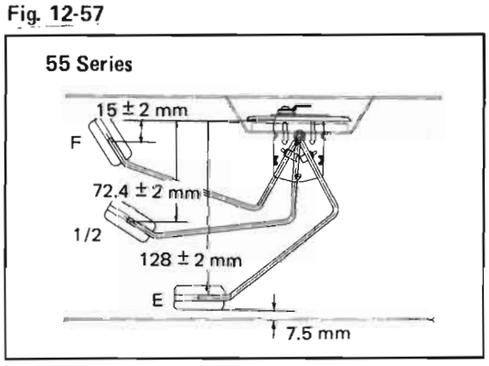


– Note –
When the ignition switch is turned on, the 12V battery voltage will be indicated but after a few seconds, the voltage will drop down to between 2V and 7V.

   (3) Measure the resistance between terminals (B) and (C).
   Standard resistance 25 Ω

– Caution –
Do not check the 7V terminal at 12V or 24V.

Fig. 12-57



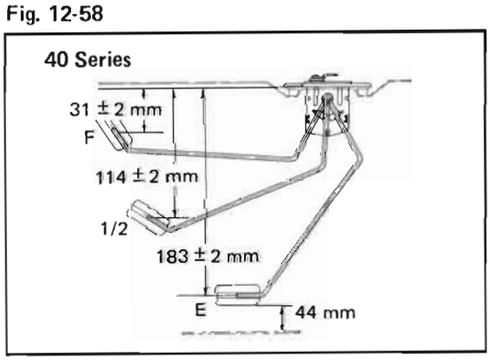
Fuel Sender Gauge

Remove the sender gauge and measure the resistance between the terminal and ground with a circuit tester. The resistance should change smoothly when the float arm is moved, and be of the values shown in following table.

55 Series

Float Position	Resistance (Ω)
F	17 ± 2.1
1/2	40 ± 4.5
E	120 ± 6.5

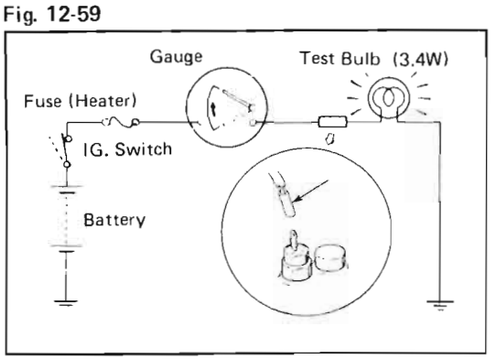
Fig. 12-58



40 Series

Float Position	Resistance (Ω)
F	17 ± 2.1
1/2	45 ± 4.5
E	120 ± 6.5

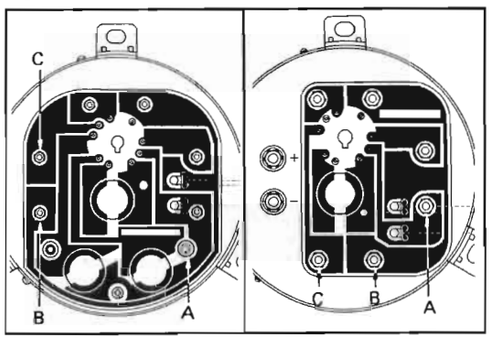
Fig. 12-59



Water Temperature Receiver Gauge

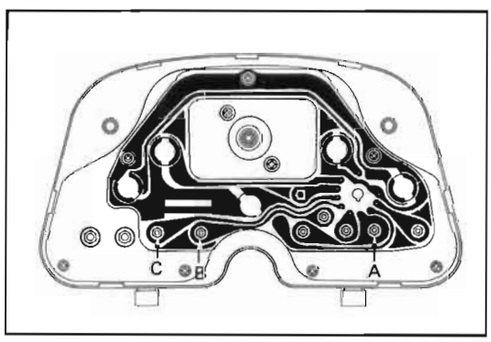
1. Pull out the connector from the water temperature sender gauge and ground its terminal through a 3.4W bulb. When the ignition switch is turned ON, the bulb should light (but start to flash after few seconds) and the gauge pointer should deflect, if the gauge is in proper condition.

Fig. 12-60



2. If the above test shows defective condition, remove the combination meter assembly and check on the following points.
   (1) With the multi-terminal connector plugged in to the combination meter, turn on the ignition switch and verify that battery voltage is present at terminal (A).
   (2) At the above condition, there should be a constantly varying voltage at terminal (B) that is fluctuating between 2V and 7V.

Fig. 12-61



– Note –

When the ignition switch is turned on, the 12V battery voltage will be indicated but after a few seconds, the voltage will drop down to between 2V and 7V.

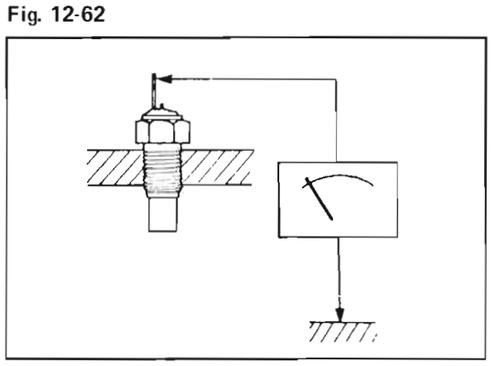
(3) Measure the resistance between terminals (B) and (C).

Standard resistance 25 Ω

– Caution –

Do not check the 7V terminal at 12V or 24V.

Fig. 12-62



Water Temperature Sender Gauge

Measure the resistance between the terminal and ground with a circuit tester. The resistance should vary with the water temperature as shown in the table below.

Temperature	Resistance
60°C (140°F)	90 Ω app.
80°C (176°F)	50 Ω app.
100°C (212°F)	27 Ω app.
105°C (221°F)	23 Ω app.

OIL PRESSURE GAUGE

INSPECTION

Fig. 12-63

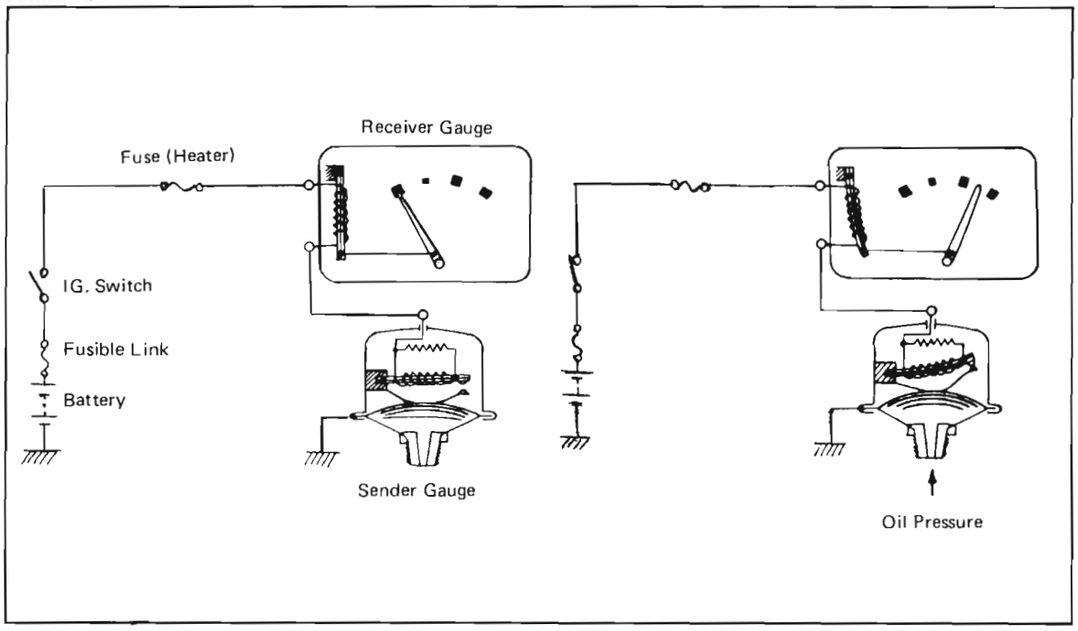
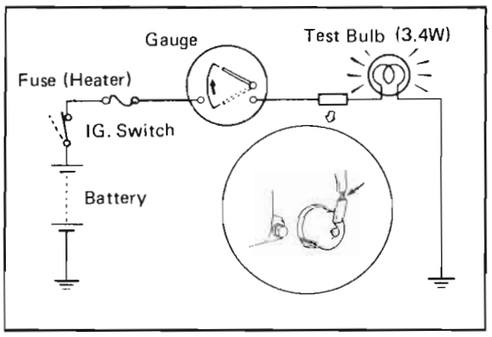


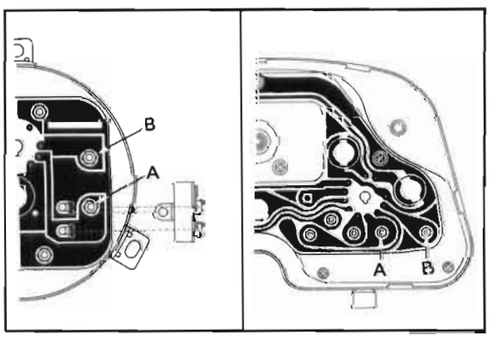
Fig. 12-64



Oil Pressure Receiver Gauge

1. Pull out the connector from oil pressure sender gauge and ground the terminal through a 3.4W bulb. When the ignition switch is turned on, the bulb should light and gauge pointer should deflect.

Fig. 12-65

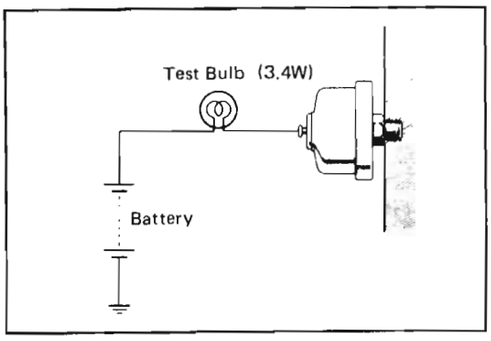


2. If the above test shows defective condition, remove the combination meter assembly and check on the following points.
   (1) With the multi-terminal connector plugged in to the combination meter, turn on the ignition switch and verify that battery voltage is present at terminal (A).
   (2) Measure the resistance between terminals (A) and (B).

Standard resistance

44 Ω . . . . Except BJ
66 Ω . . . . BJ

Fig. 12-66



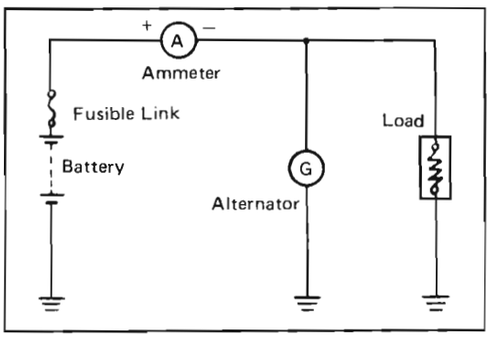
Oil Pressure Sender Gauge

Pull out the connector from the sender gauge, and impress battery voltage on the gauge terminal through a 3.4W bulb. The bulb should not light when the engine is stopped, and should flash when the engine is running. The number of flashes should also vary with the engine speed.

– Note –

Even when the engine is stopped, the bulb may light for an instant when the battery voltage is impressed, but this is no trouble.

Fig. 12-67



AMMETER

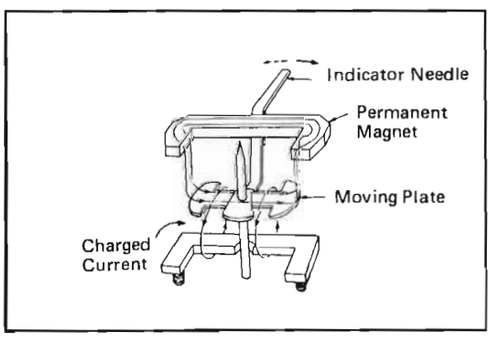
INSPECTION

The ammeter is in good condition if it indicates charging and discharging of the battery.

– Note –

The wiring from battery must be connected to the ammeter (+) terminal and the wiring from the alternator and load to the ammeter (–) terminal. If reversed, the ammeter will indicate in reverse direction.

Fig. 12-68



BRAKE WARNING LIGHT

INSPECTION

Fig. 12-69

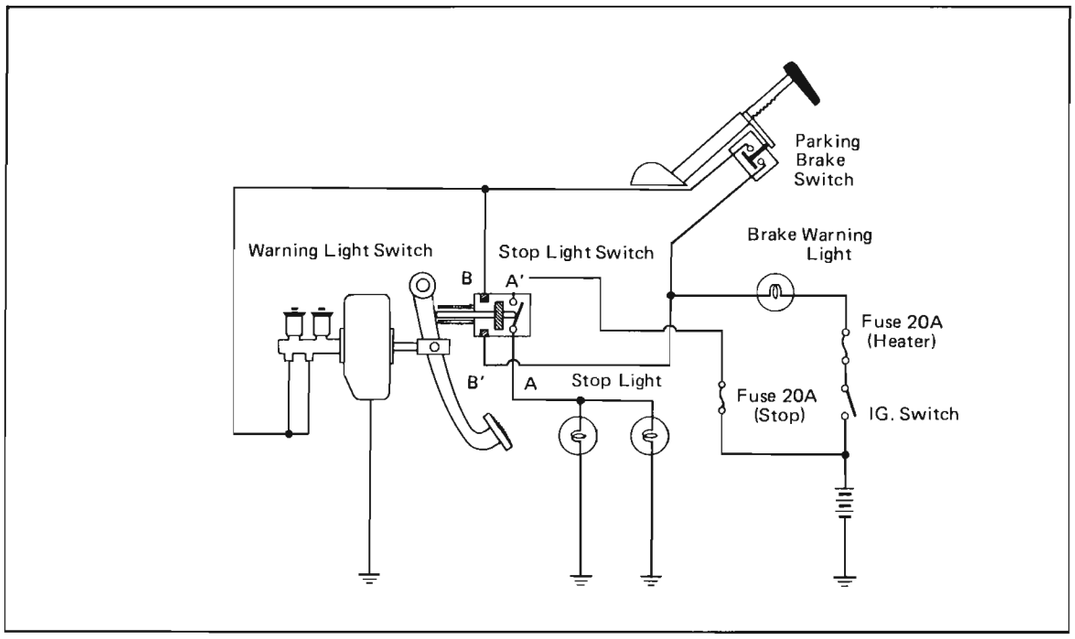
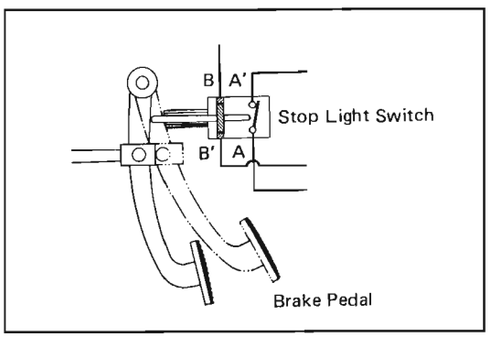


Fig. 12-70

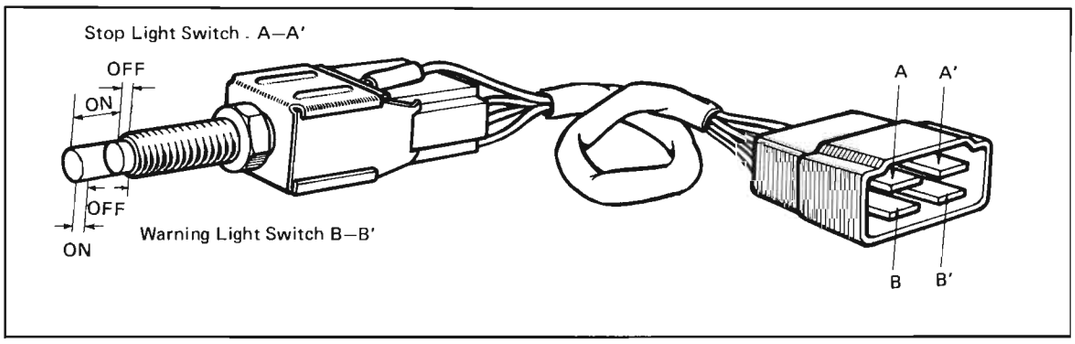


Stop Light Switch

Terminal Connections

A . . . . To stop light
A' . . . . To fuse (stop) (power source)
B . . . . To brake warning light switch
B' . . . . To brake warning light (power source)

Fig. 12-71



FRONT DRIVE VACUUM CONTROL

OPERATION

Fig. 12-72

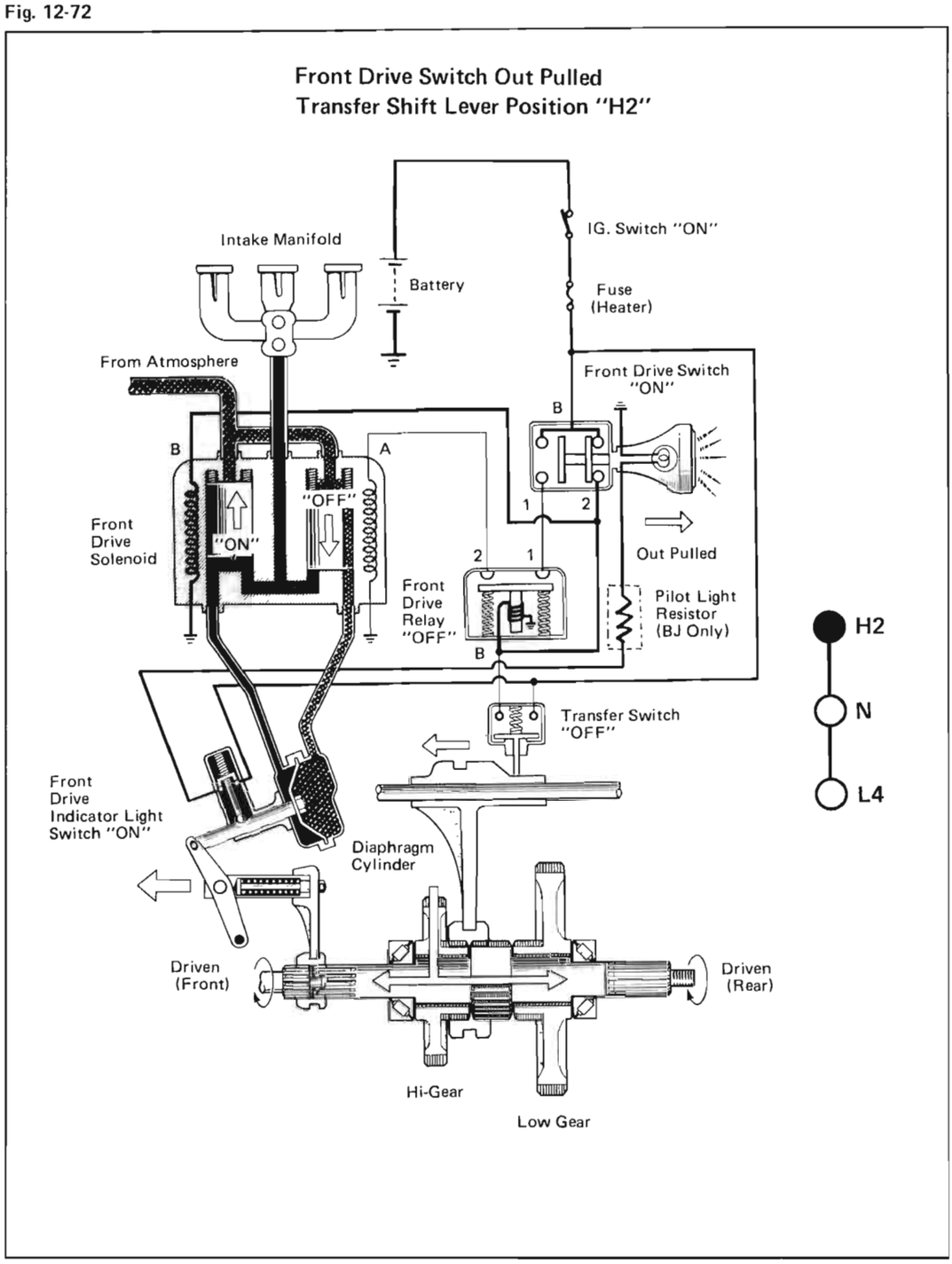


Fig. 12-73

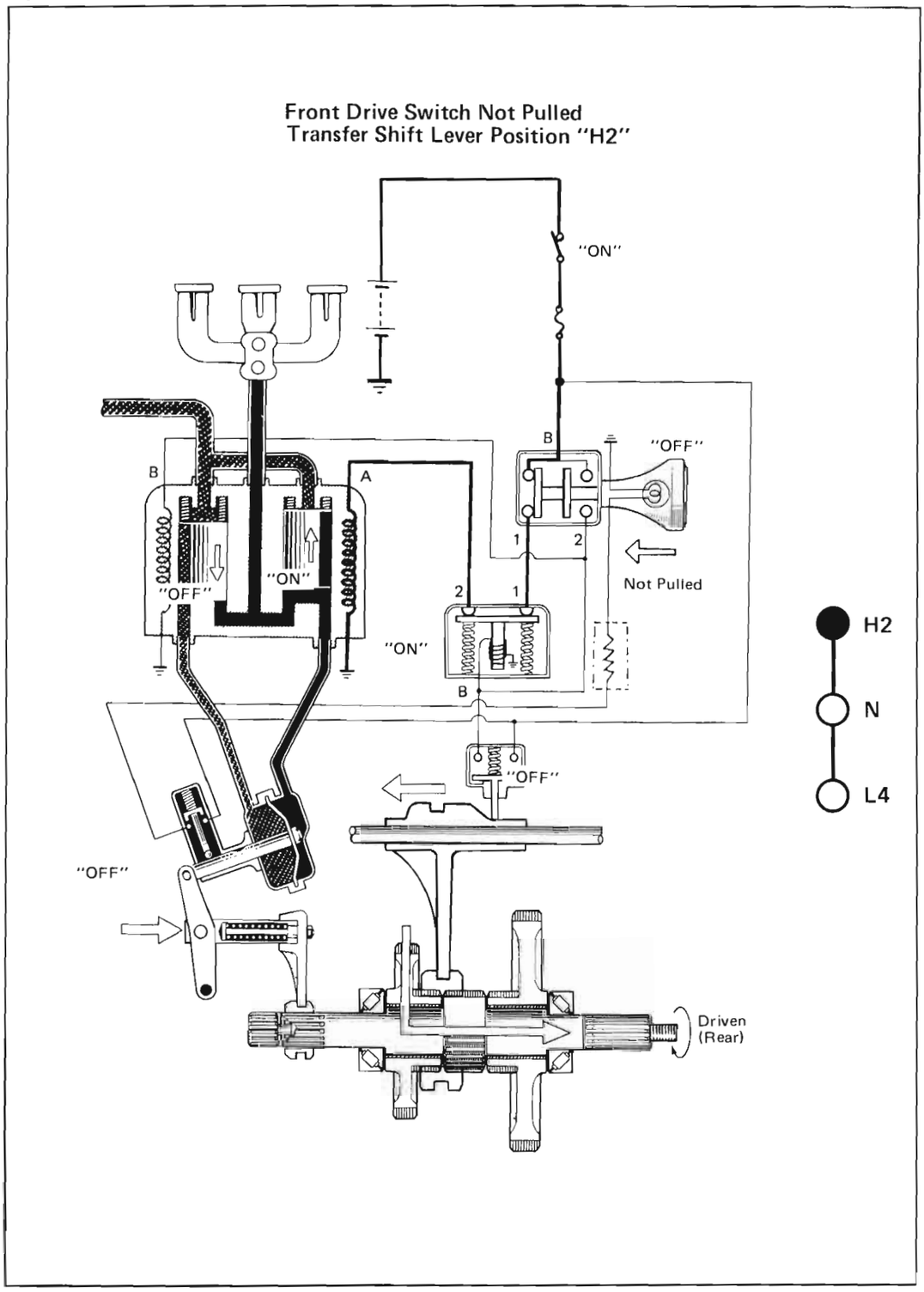

Front Drive Switch Not Pulled
Transfer Shift Lever Position "H2"
"ON"
B
"OFF"
A
1
2
Not Pulled
"OFF"
"ON"
2
1
"ON"
B
H2
N
L4
"OFF"
"OFF"
Driven
(Rear)

Fig. 12-74

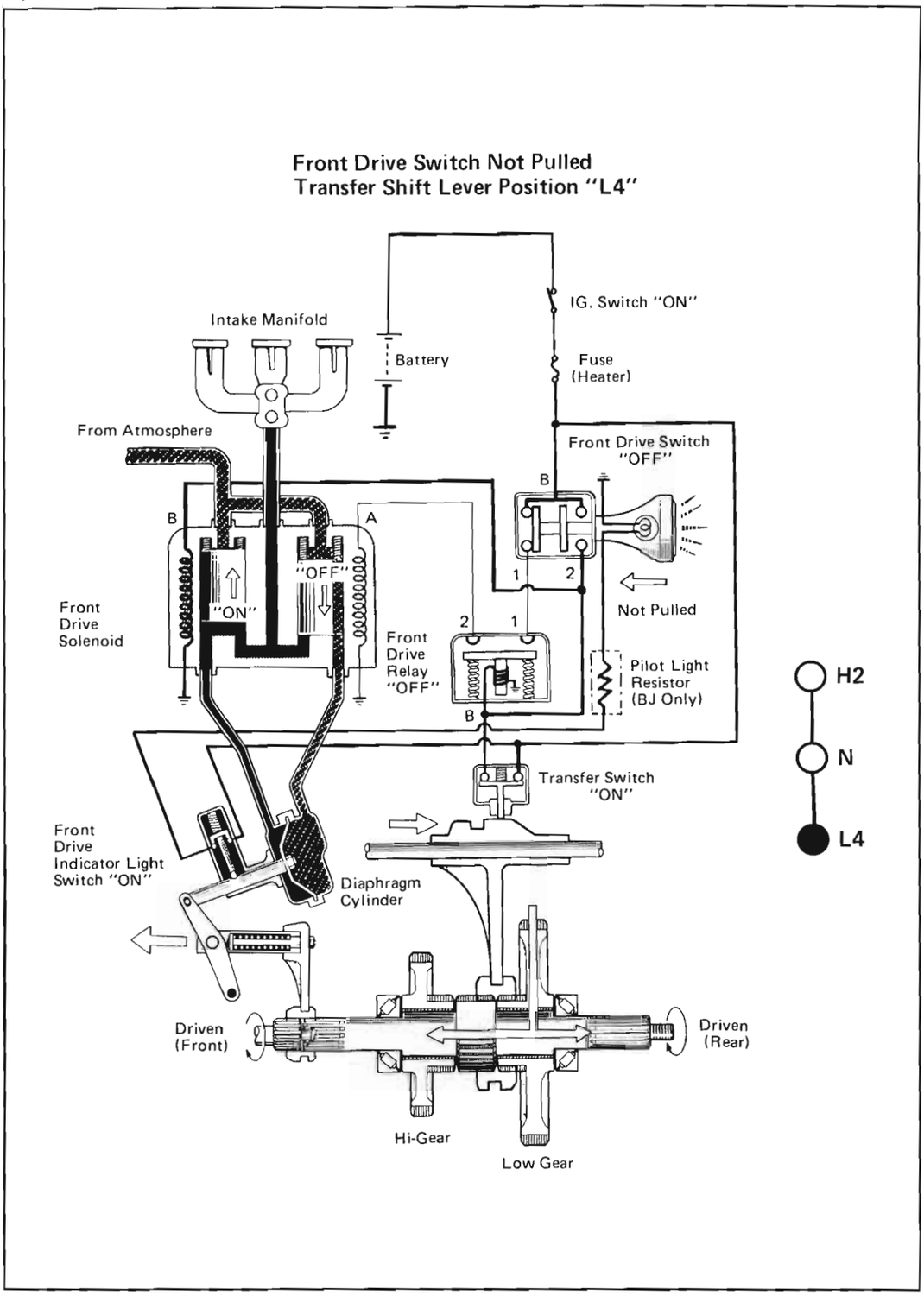
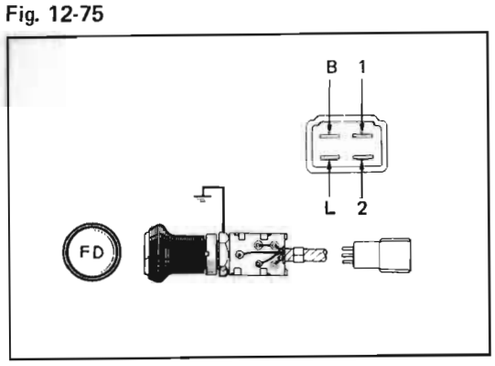

Front Drive Switch Not Pulled
Transfer Shift Lever Position "L4"
Intake Manifold
Battery
IG. Switch "ON"
Fuse (Heater)
From Atmosphere
Front Drive Switch "OFF"
B
A
"ON"
"OFF"
1
2
Not Pulled
Front Drive Solenoid
Front Drive Relay "OFF"
Pilot Light Resistor (BJ Only)
Transfer Switch "ON"
Front Drive Indicator Light Switch "ON"
Diaphragm Cylinder
Driven (Front)
Driven (Rear)
Hi-Gear
Low Gear
H2
N
L4

Fig. 12-75



INSPECTION

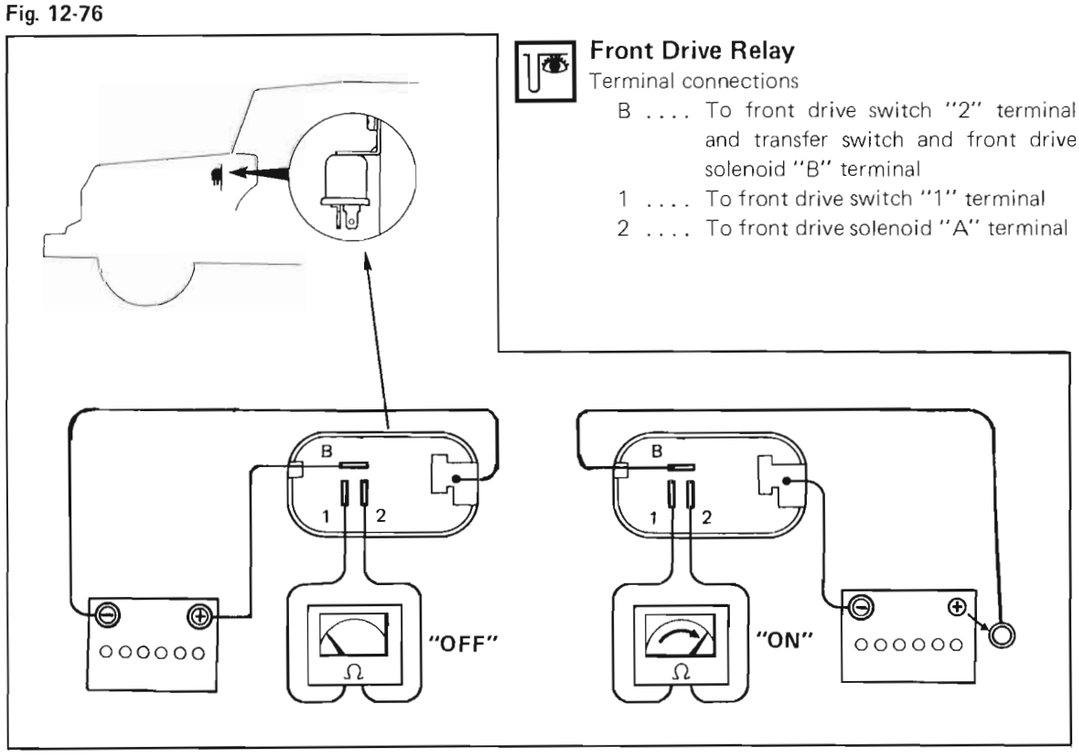
Front Drive Switch

Terminal connections

B .... To fuse (heater) (power source)
1 .... To front drive relay "1" terminal
2 .... To front drive relay "B" terminal and transfer switch and front drive solenoid "B" terminal.
L .... To indicator light switch

TERMINAL / SWITCH POSITION	B	1	2	L		⏚
OFF	○—○			○—(≀)—○		
ON	○—○		○—○	○—(≀)—○		

Fig. 12-76

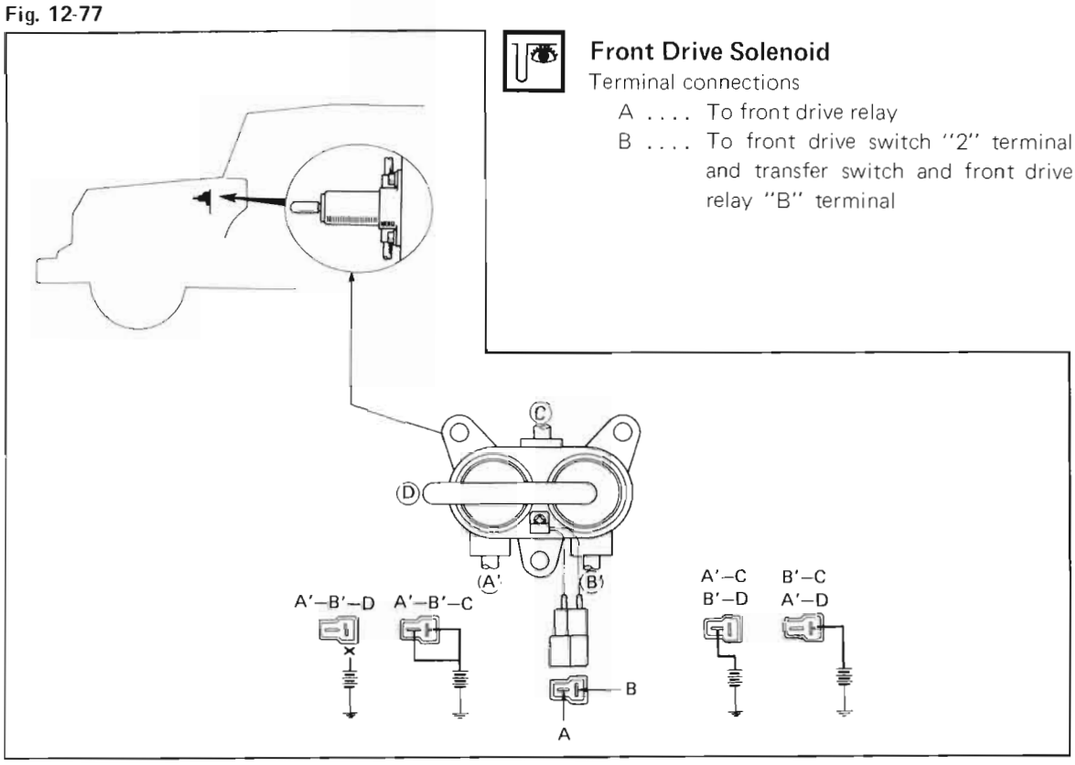


Front Drive Relay

Terminal connections

B .... To front drive switch "2" terminal and transfer switch and front drive solenoid "B" terminal
1 .... To front drive switch "1" terminal
2 .... To front drive solenoid "A" terminal

Fig. 12-77



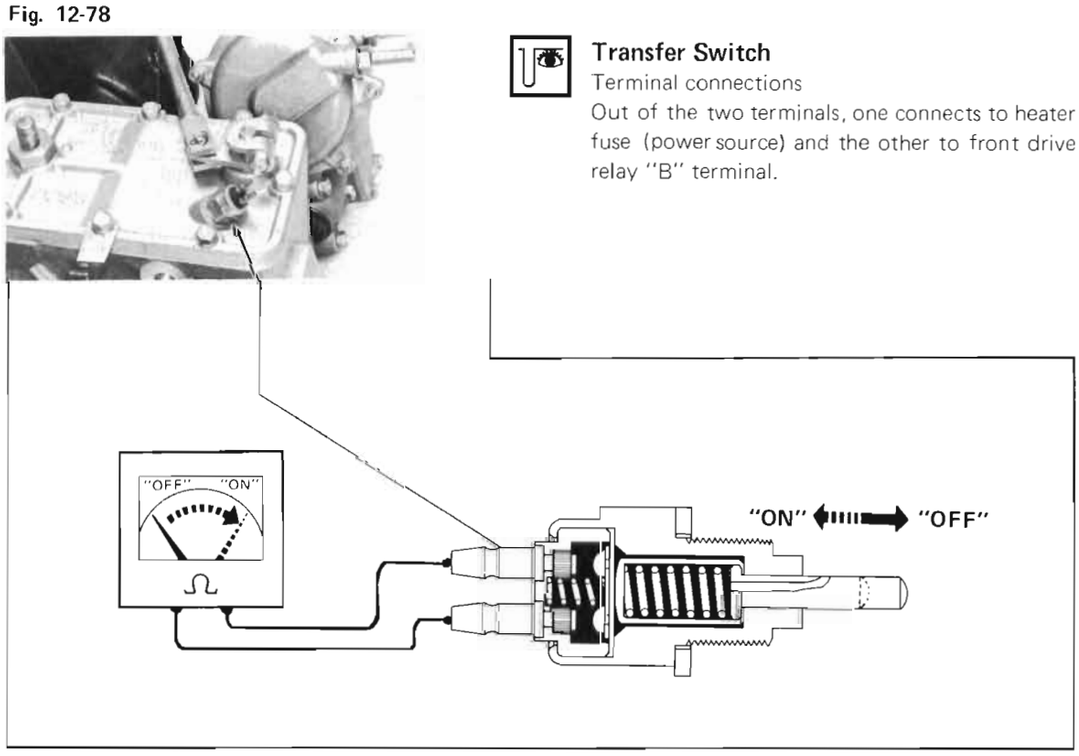
Front Drive Solenoid

Terminal connections

A .... To front drive relay

B .... To front drive switch "2" terminal and transfer switch and front drive relay "B" terminal

Fig. 12-78

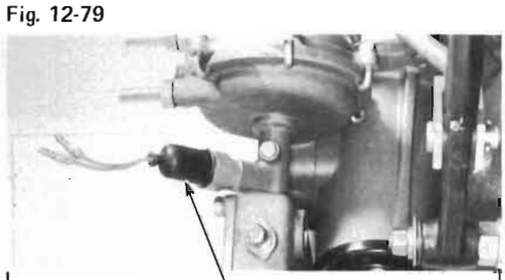


Transfer Switch

Terminal connections

Out of the two terminals, one connects to heater fuse (power source) and the other to front drive relay "B" terminal.

Fig. 12-79



Indicator Light Switch

Terminal connections

Out of the two terminals, one connects to heater fuse (Power source) and the other to front drive switch "L" terminal.

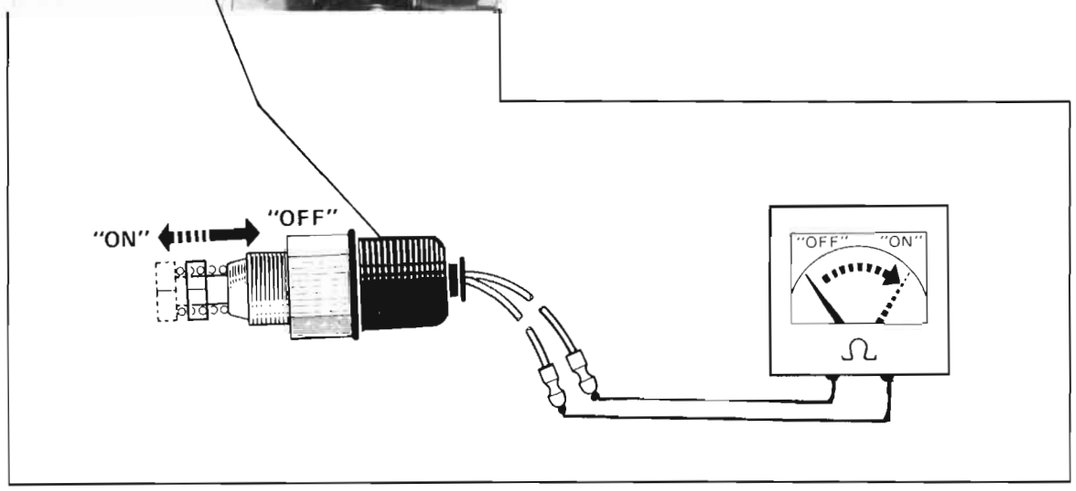
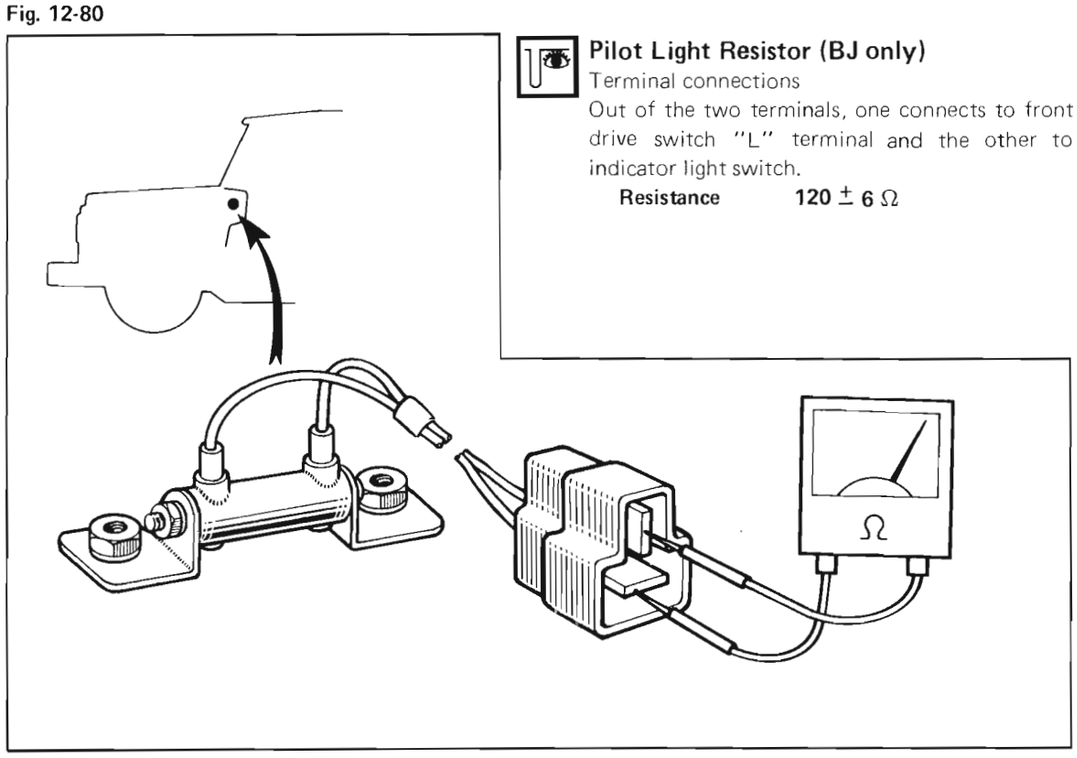


Fig. 12-80



Pilot Light Resistor (BJ only)

Terminal connections

Out of the two terminals, one connects to front drive switch "L" terminal and the other to indicator light switch.

Resistance **120 ± 6 Ω**

POWER WINDOW TAIL GATE

INSPECTION

Fig. 12-81

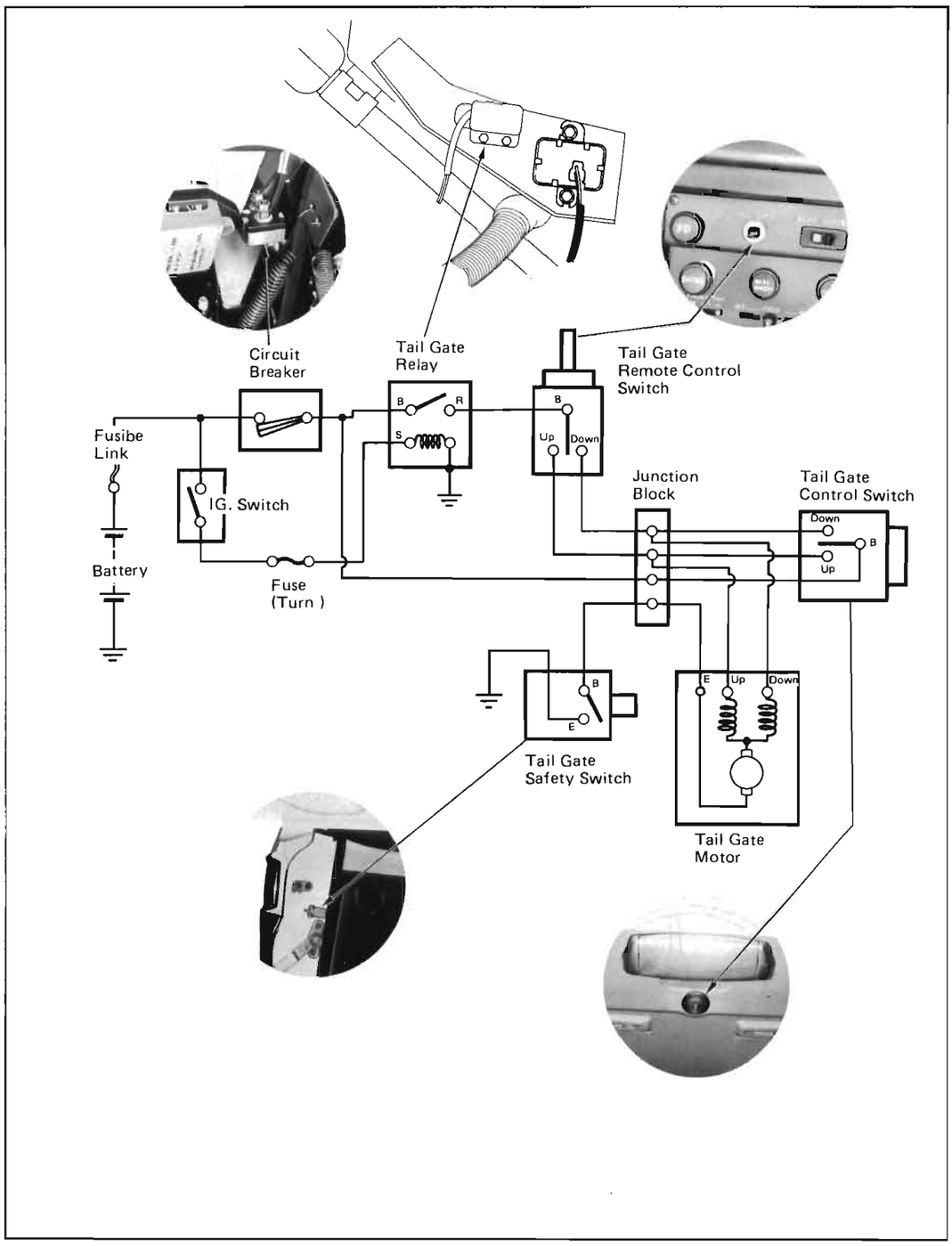
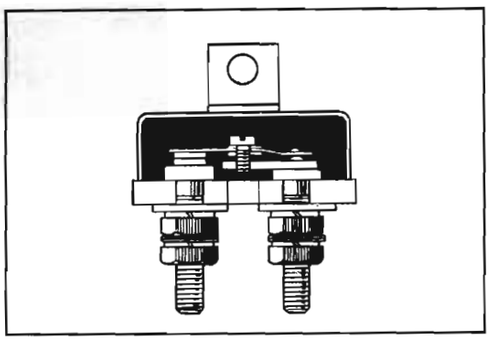


Fig. 12-82



Circuit Breaker

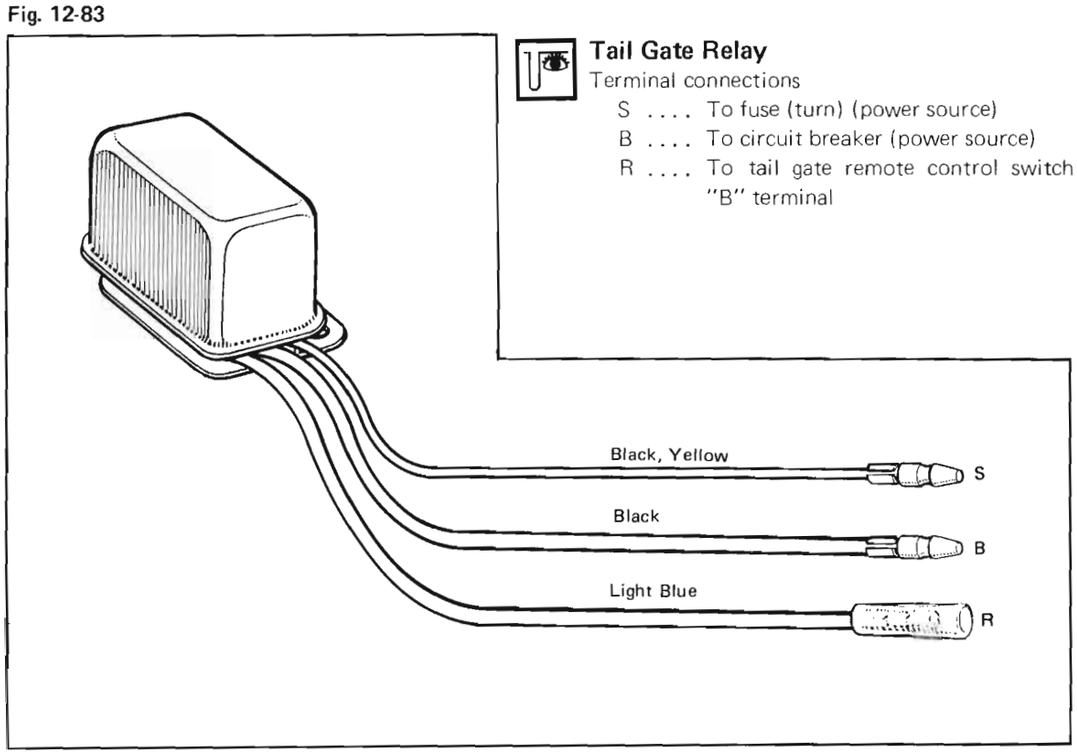
Terminal connections

Out of the two terminals, one connects to fusible link (power source) and the other to tail gate relay "B" terminal and tail gate control switch "B" terminal.

Circuit Breaker Specifications

Ambient Temperature	Load	Time for Contacts to Open	Time for Contacts to Closs
55°C (131°F)	12V, 24A	2 – 10 sec.	Within 80 sec.
20°C (68°F)	12V, 24A	3 – 13 sec.	Within 30 sec.
20°C (68°F)	12V, 20A	Within 60 sec.	Within 30 sec.

Fig. 12-83



Tail Gate Relay

Terminal connections

S .... To fuse (turn) (power source)

B .... To circuit breaker (power source)

R .... To tail gate remote control switch "B" terminal

WIRING COLOR CODE / SWITCH POSITION	L	L · W	L · B
Up	○——	——○	
N			
Down	○——		——○

Tail Gate Remote Control Switch

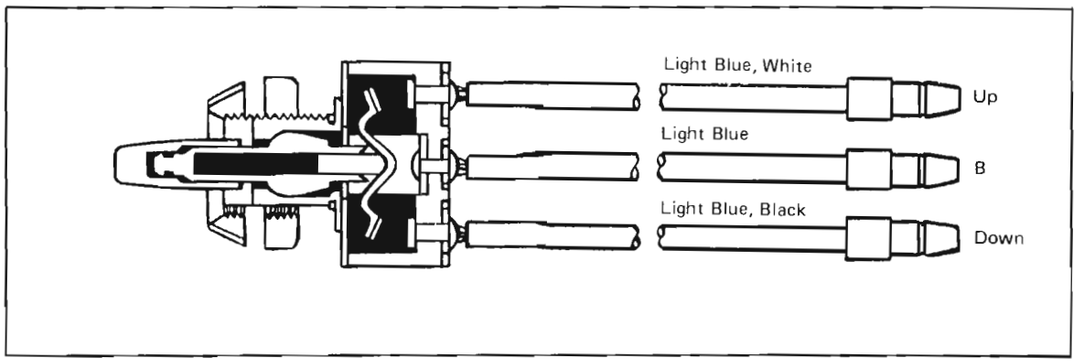
Terminal connections

B (L) .... To tail gate relay "R" terminal (power sourse)

Up (L · W) .... To tail gate motor "Up" terminal and tail gate control switch "Up" terminal

Down (L · B) .... To tail gate motor "Down" terminal and tail gate control switch "Down" terminal.

Fig. 12-84



WIRING COLOR CODE / SWITCH POSITION	L	L · W	L · B
Up	○——	——○	
N			
Down	○——		——○

Tail Gate Control Switch

Terminal connections

B (L) .... To circuit breaker (power source)

Up (L · W) .... To tail gate motor "Up" terminal and remote control switch "Up" terminal.

Down (L · B) .... To tail gate motor "Down" terminal and remote control switch "Down" terminal.

Fig. 12-85

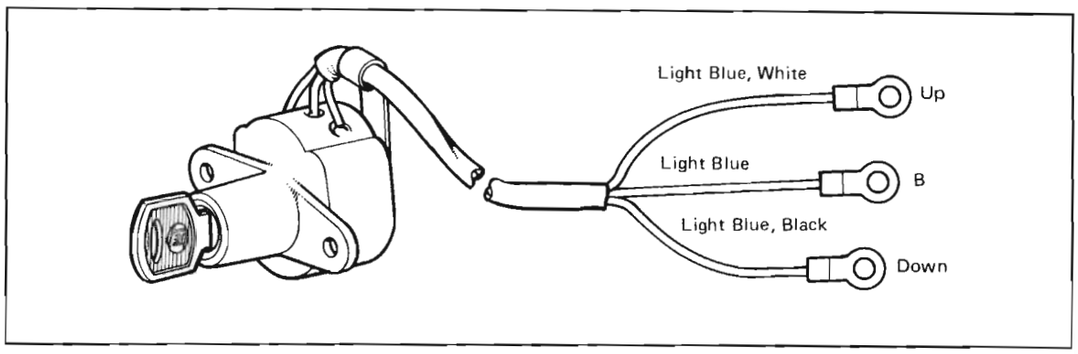
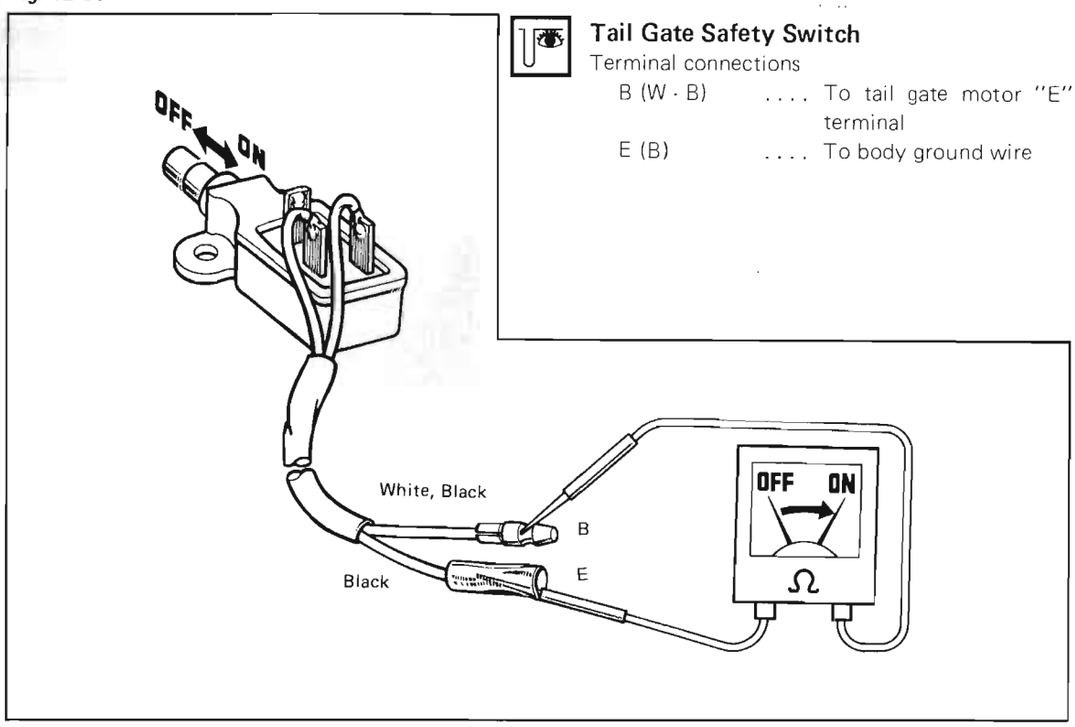


Fig. 12-86



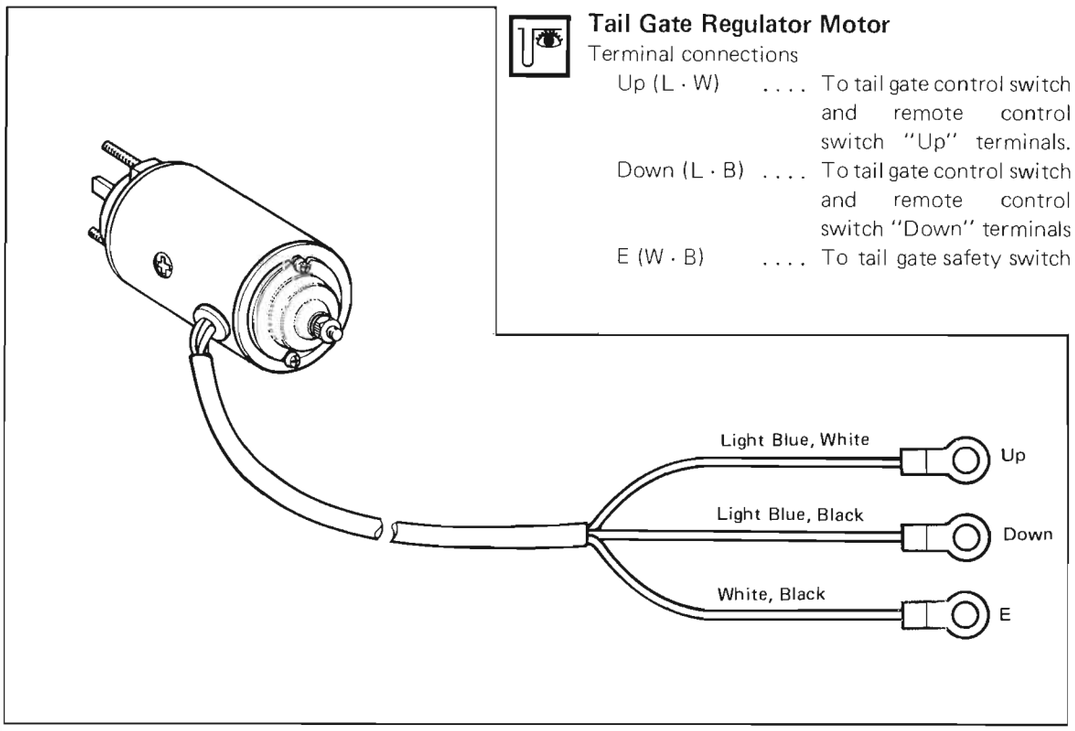
Tail Gate Safety Switch

Terminal connections

B (W · B) .... To tail gate motor "E" terminal

E (B) .... To body ground wire

Fig. 12-87



Tail Gate Regulator Motor

Terminal connections

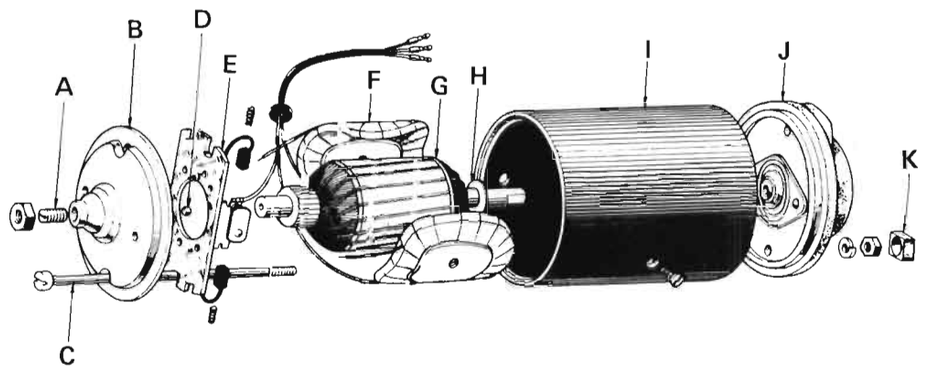
Up (L · W) .... To tail gate control switch and remote control switch "Up" terminals.

Down (L · B) .... To tail gate control switch and remote control switch "Down" terminals

E (W · B) .... To tail gate safety switch

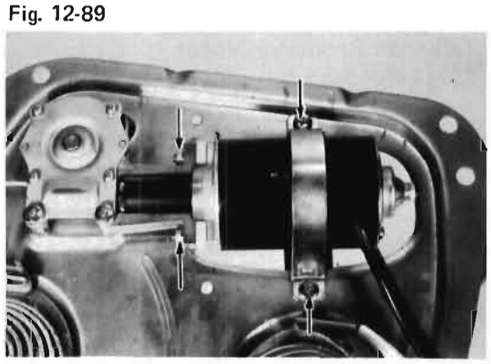
TAIL GATE REGULATOR MOTOR

Fig. 12-88



A Set Screw
B End Frame
C Bolt
D Ball
E Brush Holder
F Field Coil
G Armature
H Thrust Washer
I Yoke
J Bearing Holder
K Space Collar

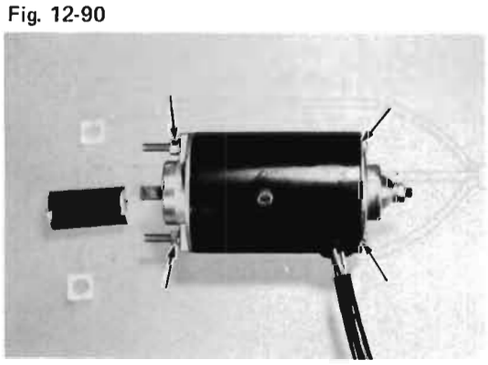
Fig. 12-89



Removal

1. Remove the regulator from the tail gate (refer to P11-14).
2. Remove the screw and nut from the regulator, and take off the motor.

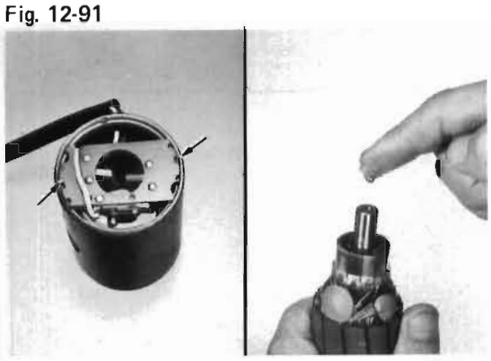
Fig. 12-90



Disassembly

Remove the nuts and bolts and disassemble the motor.

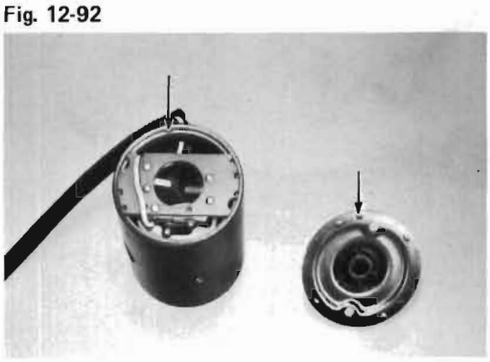
Fig. 12-91



Assembly

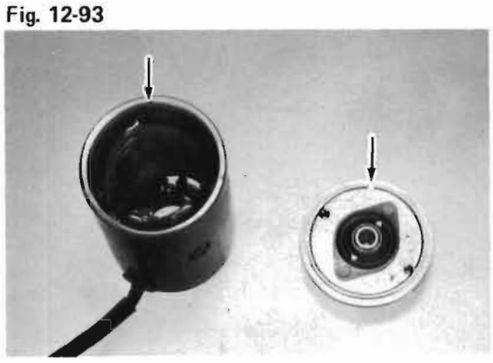
1. Fit together the convex and concave parts of the yoke and brush holder.
2. The ball will be easier to install if coated with grease.

Fig. 12-92



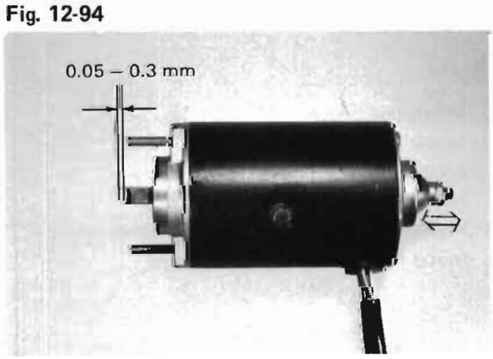
3. Fit together the protruded and slotted parts of the end frame and yoke.

Fig. 12-93



4. Assemble the bearing holder to the yoke with the convex part fitted into the concave part.

Fig. 12-94

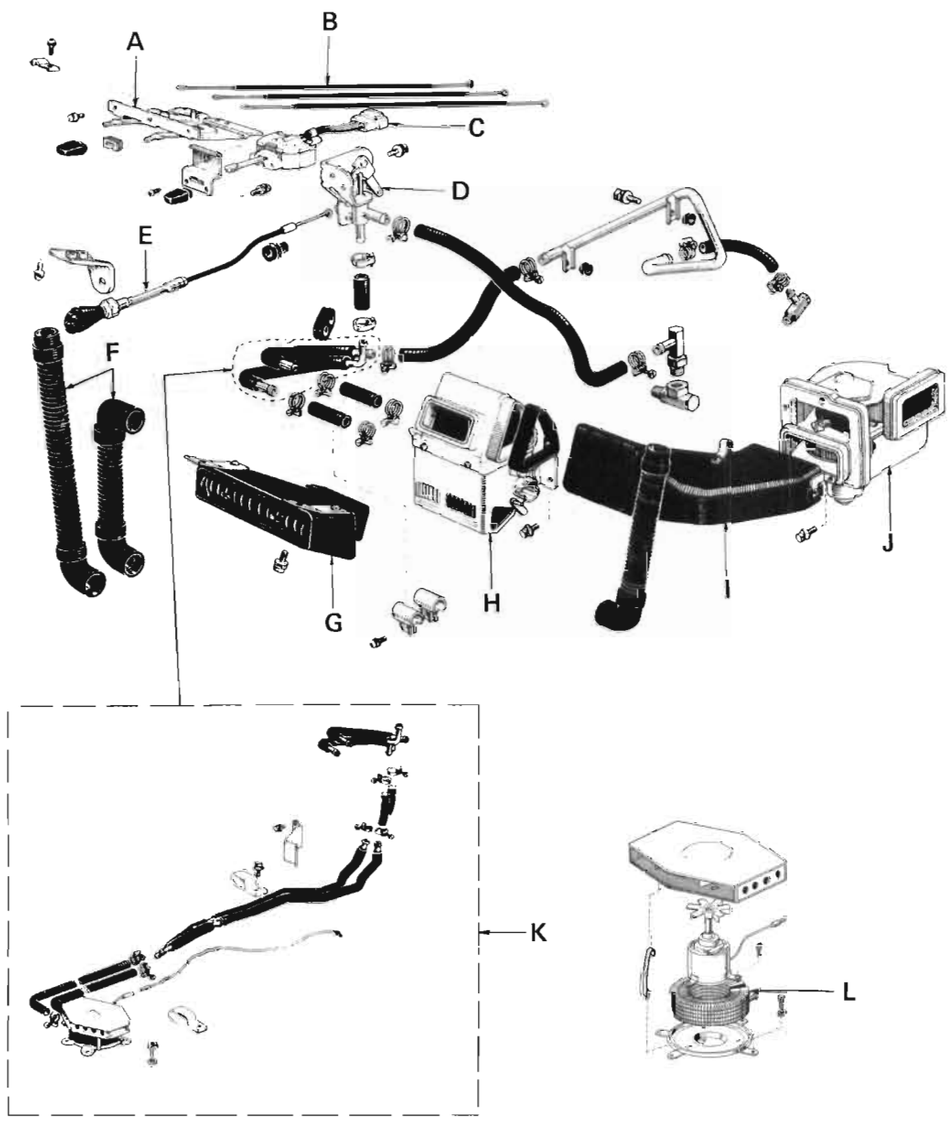


Adjustment

Adjust the armature thrust gap with thrust washer and set screw so that it will be in the range of 0.05 to 0.30 mm (0.002 to 0.012 in.)

HEATER (55 SERIES)

Fig. 12-95



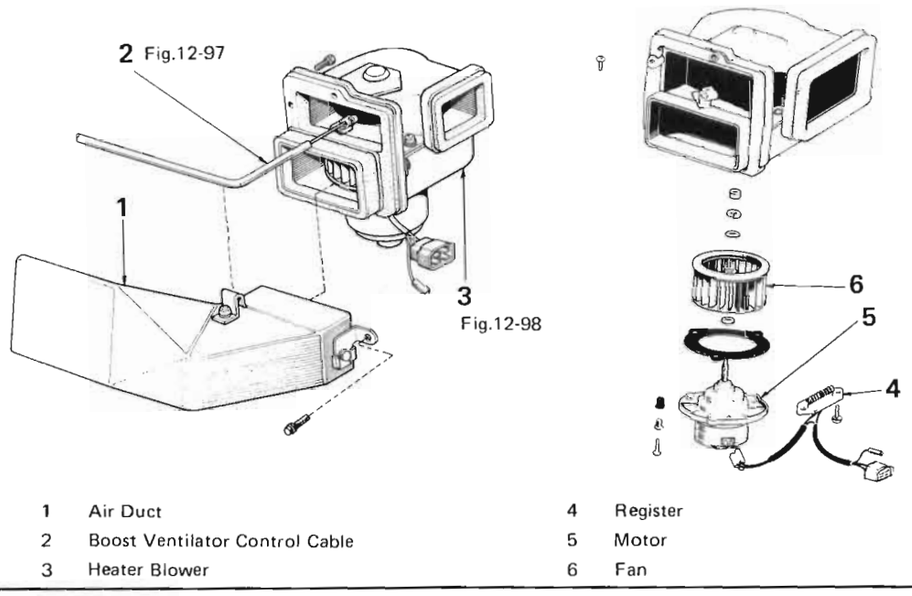
A Heater Or Boost Ventilator Control
B Cable
C Heater Blower Switch
D Water Heater Valve
E Heater Control Cable
F Heater Defroster Hose
G Ventilation Louver
H Heater Radiator
I Air Duct
J Heater Blower
K Rear Seat Heater
L Heater Radiator Unit

HEATER BLOWER

Removal

Remove the parts in the order numbered below.

Fig. 12-96



1	Air Duct	4	Register
2	Boost Ventilator Control Cable	5	Motor
3	Heater Blower	6	Fan

Fig. 12-97



1. Disconnect the boost ventilator control cable at the heater blower end.

Fig. 12-98



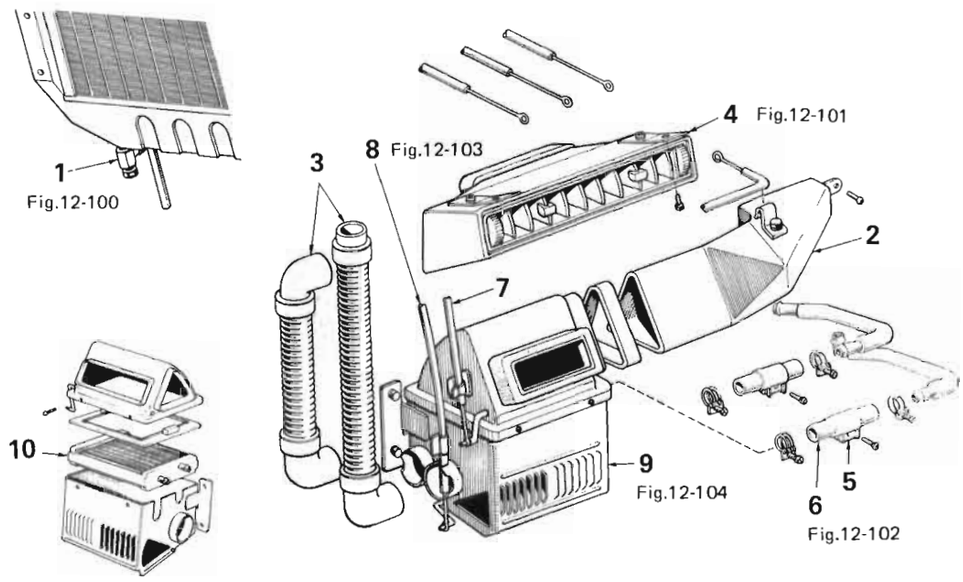
2. Unplug the motor wiring at the connector, remove the three mounting bolts, and take off the blower assembly.

HEATER RADIATOR

Removal

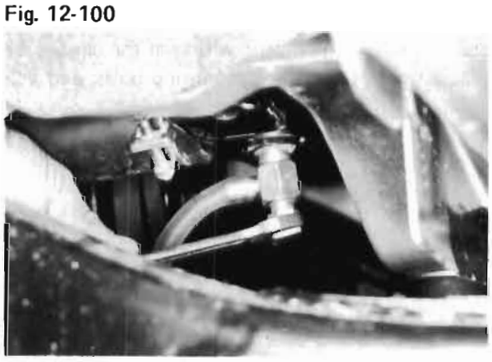
Remove the parts in the order numbered below.

Fig. 12-99



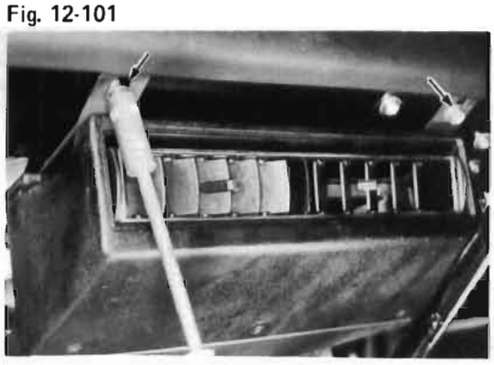
1	Radiator Drain Cock	6	Water Hoses
2	Air Duct	7	Air Inlet Butterfly Cable
3	Defroster Hose	8	Defroster Control Cable
4	Ventilation Louver	9	Heater Radiator
5	Hose Protector	10	Radiator Unit

Fig. 12-100



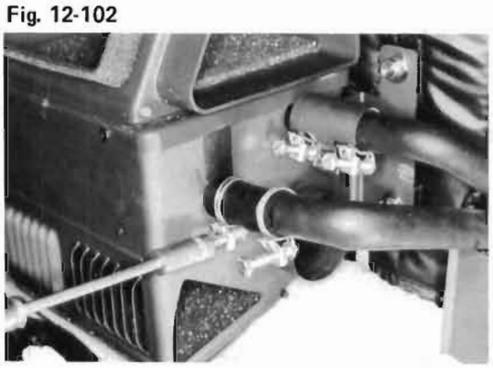
1. Drain out the coolant through the radiator drain cock.

Fig. 12-101



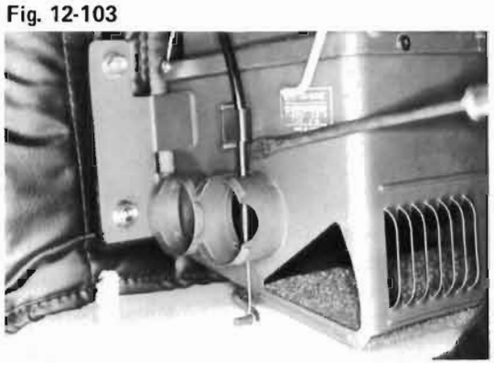
2. Remove the two bolts attaching the ventilation louver, and take of the louver.

Fig. 12-102



3. Disconnect the two water hoses from the heater radiator.

Fig. 12-103



4. Disconnect the defroster control cable from the heater radiator.

Fig. 12-104



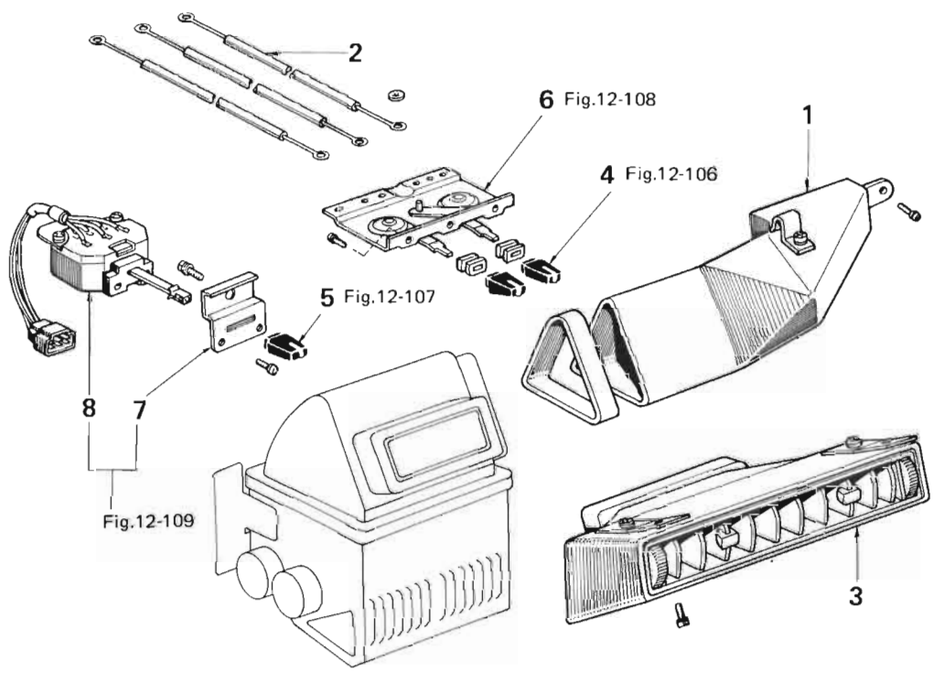
5. Remove the four bolts attaching the heater radiator assembly, and take off the assembly.

HEATER CONTROL & SWITCH

Removal

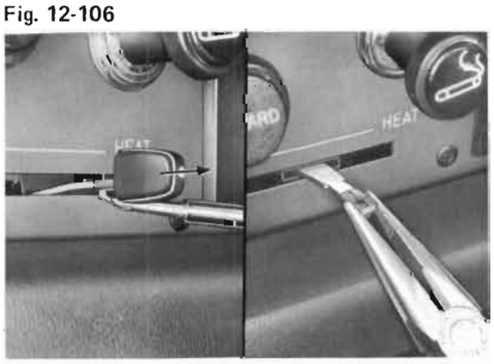
Remove the parts in the order numbered below.

Fig. 12-105



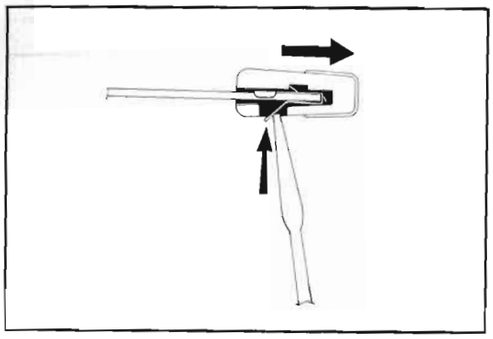
1	Air Duct	5	Heater Switch Knob
2	Cable	6	Heater Or Boost Ventilator Control
3	Ventilation Louver	7	Heater Switch Bracket
4	Heater Control Knob	8	Heater Switch

Fig. 12-106



1. Remove the heater control knob.

Fig. 12-107



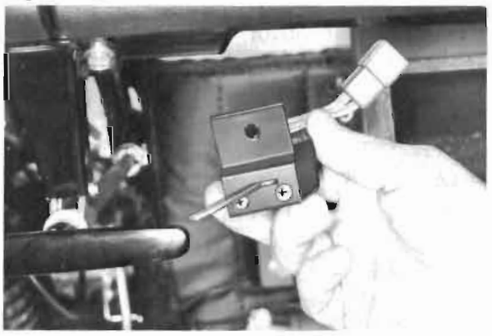
2. Remove the heater switch knob.

Fig. 12-108



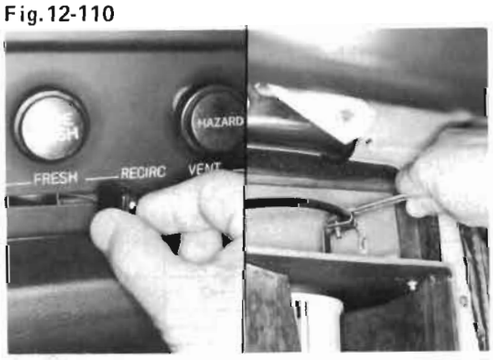
3. Remove the three screws attaching the heater control, and take off the heater control together with control cable.

Fig. 12-109



4. Remove the screw attaching the heater switch bracket, and take off the heater switch together with bracket.

Fig. 12-110



Adjustment

After installing the heater or boost ventilator control, make sure to check that it operates properly. If faulty, correct by adjusting the installed position of the cable.

INSPECTION

Fig. 12-111

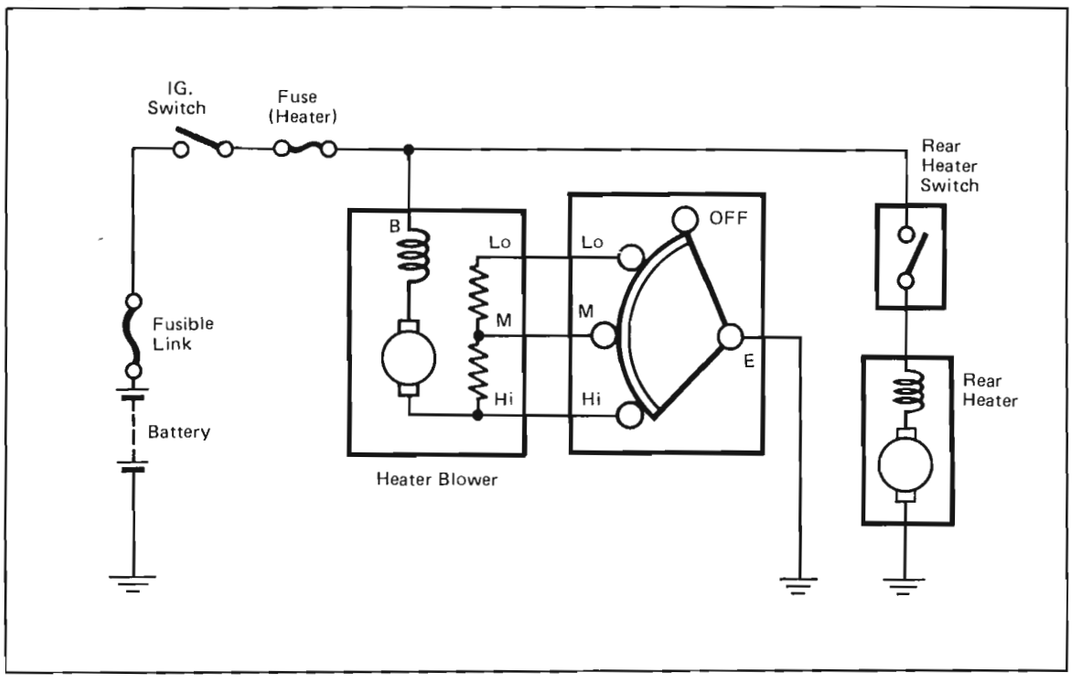
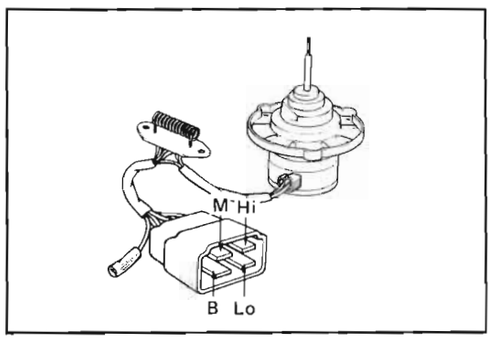


Fig. 12-112

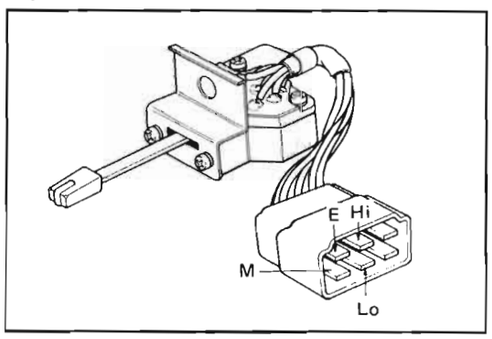


Heater Blower Motor

Terminal connections

B .... To heater fuse (power source)
M .... To heater switch "M" terminal
Hi .... To heater switch "Hi" terminal
Lo.... To heater switch "Lo" terminal

Fig. 12-113



Heater Switch

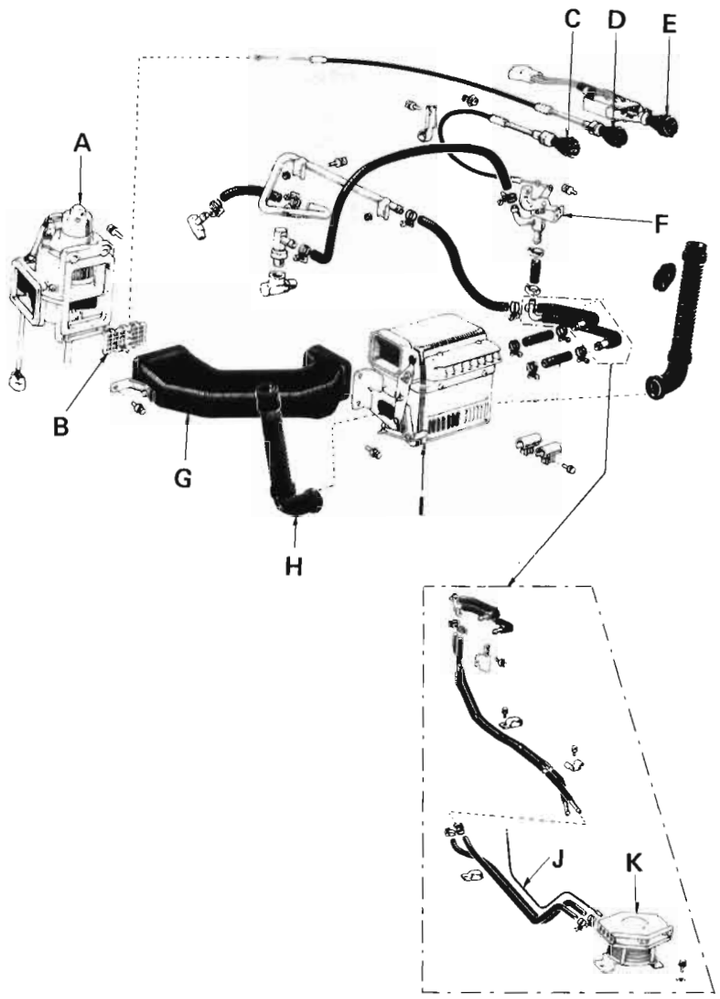
Terminal connections

E .... Ground

TERMINAL / SWITCH POSITION	E	Lo	M	Hi
OFF				
1ST STEP	o	o		
2ND STEP	o		o	
3RD STEP	o			o

HEATER (40 SERIES)

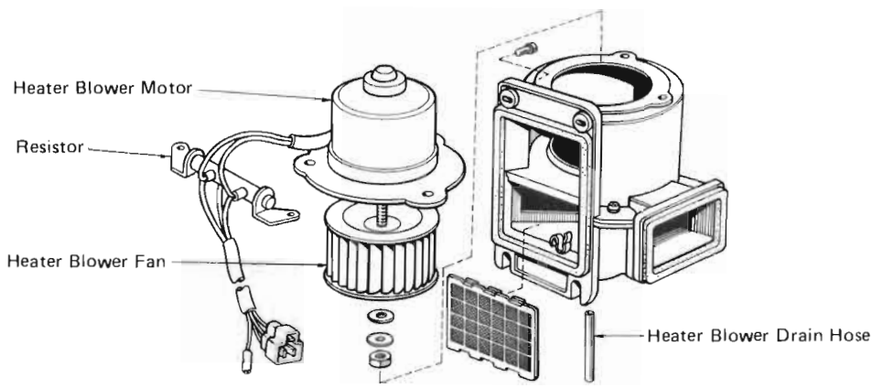
Fig. 12-114



A Heater Front Blower
B Air Duct Net
C Heater Control Cable
D Air Inlet Butterfly Cable
E Heater Blower Switch
F Water Heater Valve
G Heater Air Duct
H Heater Defroster Hose
I Heater Radiator
J Rear Heater Blower Motor Wire
K Rear Heater

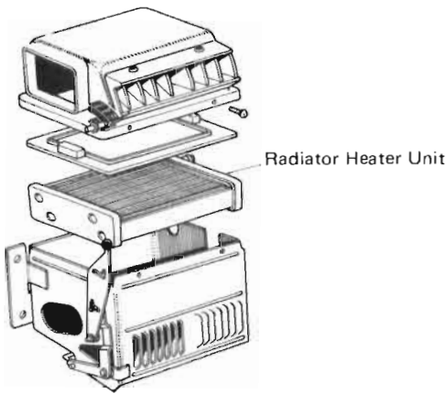
HEATER FRONT BLOWER

Fig. 12-115



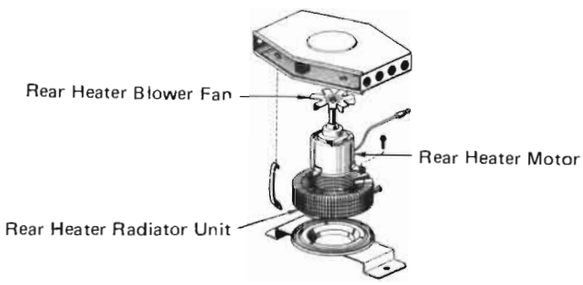
HEATER RADIATOR

Fig. 12-116



REAR HEATER

Fig. 12-117



INSPECTION

Fig. 12-118

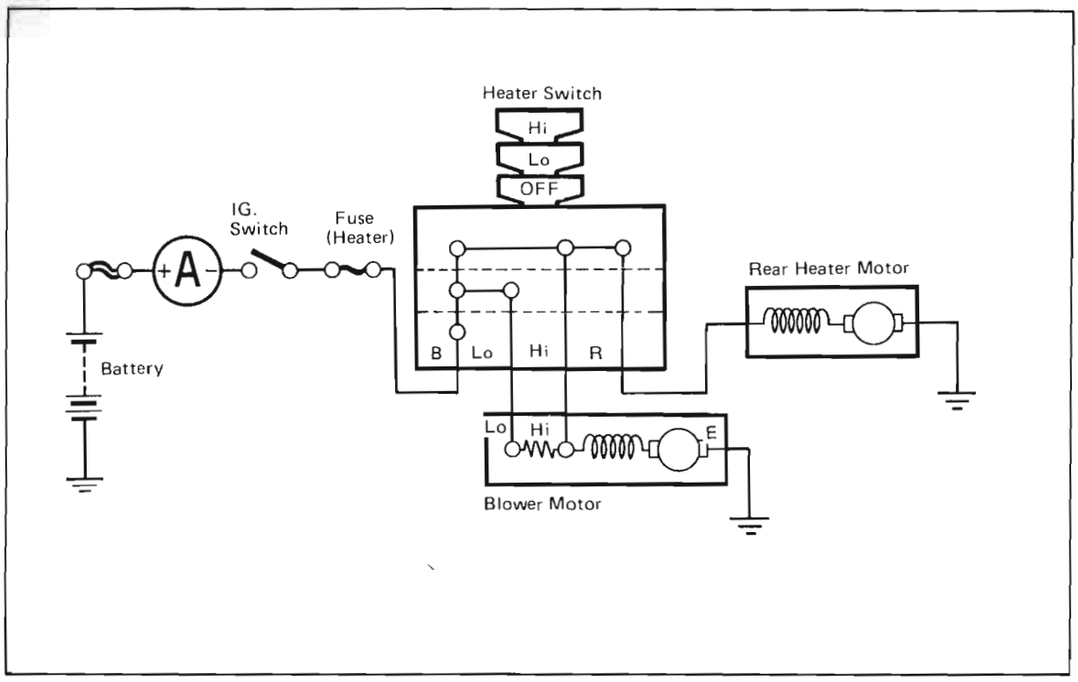
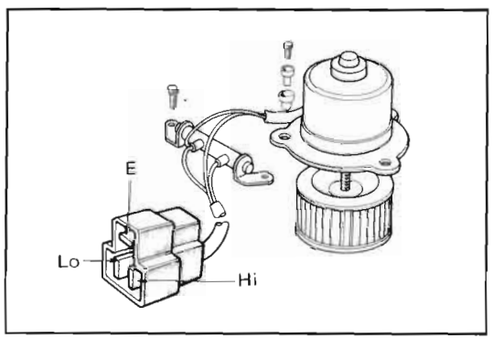


Fig. 12-119

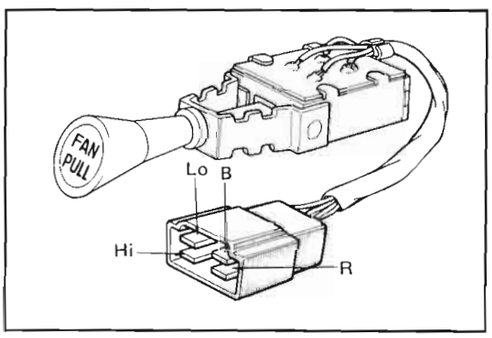


Blower Motor

Terminal connections

E .... Ground
Lo.... To heater switch "Lo" terminal
Hi.... To heater switch "Hi" terminal

Fig. 12-120



Heater Switch

Terminal connections

B .... To heater fuse (power source)
R .... To rear seat heater

TERMINAL / SWITCH POSITION	B	Lo	Hi	R
OFF				
1ST STEP	o	o		
2ND STEP	o		o	o

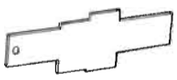
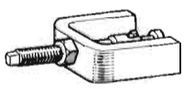
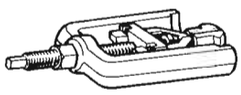
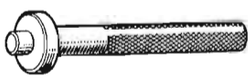
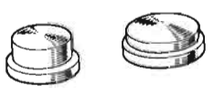
SST & SERVICE SPECIFICATIONS

page

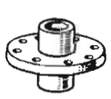
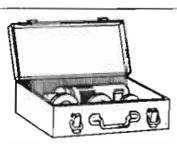
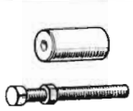
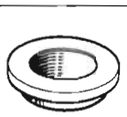
SPECIAL SERVICE TOOL 13- 2
STANDARD BOLT TIGHTENING TORQUES ... 13-10
MAIN PARTS TIGHTENING TORQUES 13-12
SERVICE SPECIFICATIONS 13-14
LUBRICANT 13-23

SPECIAL SERVICE TOOL

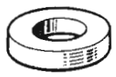
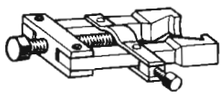
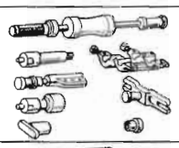
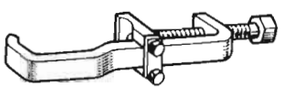
CLUTCH

Illustration	Tool No.	Tool Name
	09301-55022	Clutch Guide Tool
	09302-25010	Clutch Pressure Lever Height Gauge
	09303-35010	Input Shaft Front Bearing Puller (For BJ Series)
	09303-55010	Input Shaft Front Bearing Puller (For FJ, HJ Series)
	09304-30012	Input Shaft Front Bearing Replacer (For BJ Series)
	09304-47010	Input Shaft Front Bearing Replacer (For FJ, HJ Series)
	09315-00021	Clutch Release Bearing Remover & Replacer

TRANSMISSION & TRANSFER

Illustration	Tool No.	Tool Name
	09305-60010	Gear Shift Lever Remover
	09309-36020	Transmission Rear Bearing Replacer
	09311-60010	Counter Gear Needle Roller Guide Shaft (For 3-Speed Transmission)
	09314-36010	Output Shaft Front Retainer (For 4-Speed Transmission)
	09316-60010	Transmission & Transfer Bearing Replacer
	09318-60011	Transfer Low Speed Gear Holding Tool (For Transfer)
	09319-60010	Transfer Idler Gear Shaft Remover (For Transfer)
	09323-60010	Transfer Guide Shaft (For 3-Speed Transmission)
	09330-00020	Companion Flange Holding Tool
	09506-35010	Differential Drive Pinion Rear Bearing Replacer (For 4-Speed Transmission)

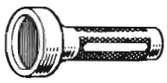
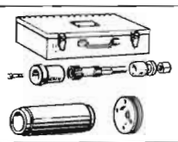
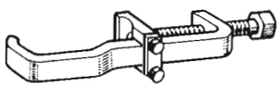
TRANSMISSION & TRANSFER (Cont'd)

Illustration	Tool No.	Tool Name
	09515-21010	Rear Axle Shaft Bearing Replacer (For 4-Speed Transmission)
	09602-10010	Front Axle Inner Bearing Puller (For 4-Speed Transmission)
	09905-00010	Snap Ring No.1 Expander
	09910-00013	Puller Set (For 3-Speed Transmission)
	09950-20010	Universal Puller
	09956-00010	Tightening Piece

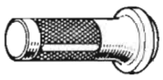
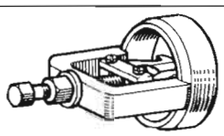
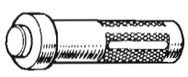
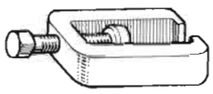
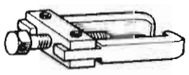
REAR AXLE & DIFFERENTIAL

Illustration	Tool No.	Tool Name
	09330-00020	Companion Flange Holding Tool
	09504-00010	Differential Side Bearing Adjusting Nut Wrench

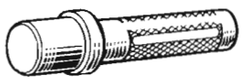
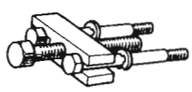
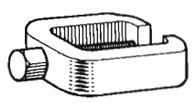
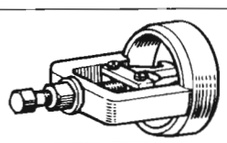
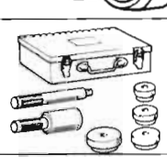
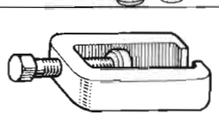
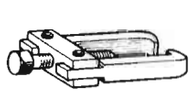
REAR AXLE & DIFFERENTIAL (Cont'd)

Illustration	Tool No.	Tool Name
	09505-20010	Differential Side Bearing Replacer
	09506-35010	Differential Drive Pinion Rear Bearing Replacer
	09514-35010	Rear Wheel Bearing Puller
	09515-35010	Rear Wheel Bearing Replacer
	09530-35010	Differential Drive Pinion Adjusting Gauge
	09607-60020	Front Wheel Adjusting Nut Wrench
	09608-35012	Axle Hub & Drive Pinion Bearing Tool Set
	09950-20011	Universal Puller
	09956-00010	Tightening Piece

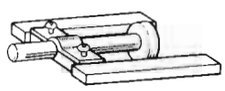
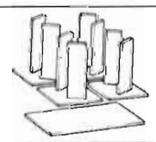
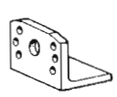
FRONT AXLE

Illustration	Tool No.	Tool Name
	09605-60010	Steering Knuckle Bearing Cup Replacer
	09606-60010	Steering Knuckle Bearing Cup Remover
	09607-60020	Front Wheel Adjusting Nut Wrench
	09612-65012	Steering Worm Bearing Puller
	09618-60010	Front Axle & Drive Shaft Bearing Replacer
	09611-20014	Tie Rod End Puller
	09628-62010	Ball Joint Puller
	09634-60012	Steering Knuckle Centering Gauge
	09905-00010	Snap Ring No.1 Expander

STEERING

Illustration	Tool No.	Tool Name
	09307-12010	**Extension Housing Bushing Replacer** (For Gear Housing Bushing Replacement)
	09608-35012	**Axle Hub & Drive Pinion Bearing Tool Set**
	09609-20010	**Steering Wheel Puller**
	09610-55011	**Pitman Arm Puller**
	09612-30011	**Steering Worm Bearing Puller**
	09612-65012	**Steering Worm Bearing Puller**
	09620-30010	**Steering Gear Box Replacer Set**
	09611-20014	**Tie Rod End Puller**
	09628-62010	**Ball Joint Puller**
	09905-00010	**Snap Ring No.1 Expander**

BRAKE

Illustration	Tool No.	Tool Name
	09607-60020	Front Wheel Adjusting Nut Wrench
	09703-30010	Brake Shoe Return Spring Tool
	09704-10010	Brake Adjusting Tool
	09736-30020	Booster Diaphragm Retainer Remover & Replacer
	09737-00010	Brake Booster Push Rod Gauge
	09738-20010	Booster Overhaul Tool Set
	09738-22012	Booster Overhaul Tool
	09751-36010	Brake Tube Union Nut Wrench 10 x 12
	09753-22011	Booster Overhaul Stand
	09905-00010	Snap Ring No. 1 Expander

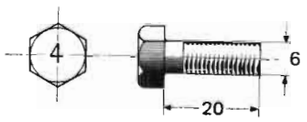
FRONT WINCH

Illustration	Tool No.	Tool Name
	09325-12010	Transmission Oil Plug
	09330-00020	Companion Flange Holding Tool

STANDARD BOLT TIGHTENING TORQUES

9 1 1 1 1 - 4 0 6 2 0 ——— Part Number

- Length of Bolt: 20 mm
- Basic Major Dia. of Thread: 6 mm
- Bolt Head Mark*



* Bolt Head Mark has the following indications.

SPECIFIED TORQUE FOR STANDARD BOLT

Class	Basic Dia. mm	Pitch mm	Standard Torque kg-m (ft-lb)	Torque Limit kg-m (ft-lb)
4T	6	1	0.47 (3.4)	0.4 – 0.6 (2.9 – 5.0)
	8	1.25	1.11 (8.0)	1.0 – 1.6 (7.3 – 11.6)
	10	1.25	2.25 (16.3)	1.9 – 3.1 (13.7 – 22.4)
	10	1.5	2.14 (15.5)	1.8 – 3.0 (13.0 – 21.7)
	12	1.25 (ISO)	4.40 (31.8)	3.5 – 5.5 (25.3 – 39.8)
	12	1.5	3.89 (28.1)	3.5 – 5.0 (25.3 – 36.2)
	12	1.75	3.74 (27.0)	3.0 – 5.0 (21.7 – 36.2)
	13	1.5	5.08 (36.8)	4.5 – 7.0 (32.5 – 50.6)
	14	1.5	6.33 (45.8)	5.0 – 8.0 (36.2 – 57.8)
	14	2	5.93 (42.8)	4.7 – 7.7 (34.0 – 55.7)
	16	1.5	9.57 (69.2)	7.5 – 11.0 (54.2 – 79.6)
	16	2	9.10 (65.8)	7.1 – 10.6 (51.3 – 76.7)
5T	6	1	0.71 (5.1)	0.6 – 0.9 (4.4 – 6.5)
	8	1.25	1.66 (12.0)	1.5 – 2.2 (10.9 – 15.9)
	10	1.25	3.34 (24.1)	3.0 – 4.5 (21.7 – 32.5)
	10	1.5	3.22 (23.3)	2.7 – 4.2 (19.5 – 30.4)
	12	1.25 (ISO)	6.60 (47.7)	5.0 – 8.0 (36.2 – 57.8)
	12	1.5	5.84 (42.2)	5.0 – 7.0 (36.2 – 50.6)
	12	1.75	5.61 (40.6)	4.8 – 6.8 (34.7 – 49.2)
	13	1.5	7.63 (55.2)	6.5 – 9.0 (47.0 – 65.1)
	14	1.5	9.50 (68.7)	7.5 – 11.0 (54.2 – 79.6)
	14	2	8.90 (65.3)	7.0 – 10.5 (50.6 – 75.9)
	16	1.5	14.36 (103.8)	12.0 – 17.0 (86.8 – 123.0)
	16	2	13.58 (98.1)	11.5 – 16.5 (83.2 – 119.2)
6T	6	1	0.71 (5.1)	0.6 – 0.9 (4.4 – 6.5)
	8	1.25	1.66 (12.0)	1.5 – 2.2 (10.9 – 15.9)
	10	1.25	3.37 (24.0)	3.0 – 4.5 (21.7 – 32.5)
	10	1.5	3.20 (23.1)	2.7 – 4.2 (19.5 – 30.4)
	12	1.25 (ISO)	6.60 (47.7)	5.0 – 8.0 (36.2 – 57.8)
	12	1.5	5.84 (42.2)	5.0 – 7.0 (36.2 – 50.6)
	12	1.75	5.61 (40.6)	4.8 – 6.8 (34.7 – 49.2)

SPECIFIED TORQUE FOR STANDARD BOLT

Class	Basic Dia mm	Pitch mm	Standard Torque kg-m (ft-lb)	Torque Limit kg-m (ft-lb)
7T	6	1	0.94 (6.9)	0.8 – 1.2 (5.8 – 8.6)
	8	1.25	2.21 (16.1)	2.0 – 3.0 (14.5 – 21.7)
	10	1.25	4.49 (32.5)	4.0 – 5.5 (28.9 – 39.8)
	10	1.5	4.29 (31.0)	3.7 – 5.2 (26.8 – 37.6)
	12	1.25 (ISO)	8.80 (63.6)	7.5 – 10.5 (54.2 – 75.9)
	12	1.5	7.78 (56.2)	7.0 – 9.0 (50.6 – 65.1)
	12	1.75	7.48 (54.1)	6.0 – 8.5 (43.3 – 61.4)
	13	1.5	10.17 (73.5)	8.0 – 12.0 (57.8 – 86.8)
	14	1.5	12.67 (91.6)	10.0 – 15.0 (72.3 – 108.5)
	14	2	11.86 (85.8)	9.5 – 14.0 (68.7 – 101.2)
	16	1.5	19.15 (138.5)	15.0 – 23.0 (108.5 – 166.2)
	16	2	18.11 (131.0)	14.0 – 22.0 (101.2 – 159.0)

– Note –
The above specified tightening torque is applicable only for female threads in steel material. If the female threads are for materials other than steel, and tightening surface are subjected to heat or vibrations, these specified tightening torque must be reconsidered.

TRANSMISSION & TRANSFER

Location	kg-m (ft-lb)
Transmission Case X Transmission Case Cover (For 4-Speed)	3.0 – 4.5 (21.7 – 32.6)
Transmission Case X Transfer Case	5 – 8 (36 – 58)
Transmission Case X Clutch Housing	5 – 8 (36 – 58)
Transmission Output Shaft X Nut (For 4-Speed)	11 – 14 (80 – 101)
(For 3-Speed)	14 – 15 (101 – 109)
Transfer Output Front Shaft X Nut	11 – 14 (80 – 101)
Transfer Case X Parking Brake Backing Plate	2 – 3 (14 – 22)
Transfer Output Shaft X Parking Brake Drum X Nut	11 – 14 (80 – 101)

DIFFERENTIAL

Location	kg-m (ft-lb)
Differential Case X Ring Gear	10.5 – 12.0 (75.9 – 86.8)
Differential Carrier X Bearing Cap	9 – 11 (65.1 – 79.6)
Drive Pinion X Flange X Nut	20 – 24 (144 – 173)

REAR AXLE

Location	kg-m (ft-lb)
Rear Axle Shaft X Rear Axle Hub	2.8 – 4.0 (20.3 – 28.9)
Rear Axle Housing X Lock Nut	8 – 10 (58 – 72)

FRONT AXLE

Location	kg-m (ft-lb)
Steering Knuckle Arm X Steering Knuckle	6 – 7.5 (43 – 54.3)
Steering Knucle X Knuckle Spindle X Backing Plate	1.5 – 2.2 (10.9 – 16.0)
Front Axle Hub X Free Wheel Hub Body	2.5 – 3.5 (18.1 – 25.3)
Front Axle Hub X Axle Outer Shaft Flange	2.8 – 3.5 (20.3 – 25.3)
Free Wheel Hub Body X Free Wheel Hub Cover	0.4 – 0.7 (2.9 – 5.1)
Steering Knuckle Sprindle X Lock Nut	8 – 10 (58 – 72)

STEERING

Location	kg-m (ft-lb)
Steering Gear Housing X Gear Housing End Cover	3.0 – 4.5 (21.7 – 32.5)
Steering Gear Housing X Sector Shaft End Cover	3.0 – 4.5 (21.7 – 32.5)
Steering Gear Housing X Gear Housing Bracket	4.0 – 5.5 (28.9 – 39.8)
Sector Shaft X Pitman Arm	16.5 – 19.5 (119 – 141)

BRAKE

Location	kg-m (ft-lb)
Transfer Output Shaft X Parking Brake Drum X Nut	11 – 14 (80 – 101)
Disc Brake Disc X Front Axle Hub	4.0 – 5.5 (28.9 – 39.8)
Disc Brake Caliper X Steering Knuckle	7.5 – 10.5 (54.2 – 76.0)

FRONT WINCH

Location	kg-m (ft-lb)
Power Take–Off Output Shaft X Universal Joint Flange X Nut	1.5 – 2.2 (10.9 – 15.9)
Front Winch Worm Bearing Retainer X Winch Gear Case	1.9 – 3.1 (14 – 22)

SERVICE SPECIFICATIONS

CLUTCH

Pedal Height (From Asphalt Sheet Top Surface)	w/Brake Booster mm (in.)	w/o Brake Booster mm (in.)
FJ, HJ, BJ40 Series	215 (8.46)	198 (7.80)
FJ55 Series	185 (7.28)	172 (6.77)

Pedal Play (At Pedal Top)		mm (in.)	0.5-3.0 (0.02-0.12)
Release Fork Tip Play	FJ, HJ Series	mm (in.)	3 – 4 (0.12 – 0.16)
	BJ Series	mm (in.)	2 – 3.5 (0.08 – 0.14)
Clutch Disc	Rivet Head Depth Limit	mm (in.)	0.3 (0.012)
	Run-Out Limit	mm (in.)	1.0 (0.04)

Compression Spring		Installed Length mm (in.)	Installed Load kg (lb)	Installed Load Limit kg (lb)
HJ Series	Small Spring	42.9 (1.689)	42.5 (93.5)	40 (88)
	Large Spring	43.5 (1.713)	62.2 (137)	53 (117)
BJ Series		37.1 (1.461)	44.6 (98.3)	39 (86)

Clutch Dia Phragm Spring (For FJ Series) Unequal Height Limit	mm (in.)	1.0 (0.04)
Clutch Lever Height (Except FJ Series)		Standard mm (in.)
HJ Series		14.2 (0.559)
BJ Series		12.0 (0.472)

4-SPEED TRANSMISSION (H41, H42)

Gear Ratio	Transmission Type	H41 (Except USA & Canada)	H42 (For USA & Canada)
	1st	4.925	3.555
	2nd	2.643	2.292
	3rd	1.519	1.410
	4th	1.000	1.000
	Reverse	4.925	4.271

Clearance	Standard mm (in.)	Limit mm (in.)
Thrust Clearance, 3rd Gear	0.13-0.28 (0.0051-0.0110)	0.35 (0.0138)
Oil Clearance, 3rd Gear	0.07-0.12 (0.0028-0.0047)	0.12 (0.0047)
Reverse Idler Gear	–	0.16 (0.0063)
Synchronizer Ring, 3rd & 4th Gears	–	0.8 (0.032)
Hub Sleeve And Shift Forks	–	0.8 (0.032)
Reverse Idler Gear Slot And Shift Arm Shoe	–	0.7 (0.028)

Synchronizer Ring No.1 Dimension		Limit mm (in.)
	1st	2.8 (0.110)
	2nd	1.8 (0.071)

Reverse Shift Arm Shoe Thickness	Limit mm (in.)	8.0 (0.319)

Snap Ring Thickness	Part No. or Size Mark	Thickness mm (in.)
Input Shaft Bearing	90520-36015	3.31-3.42 (0.1303-0.1346)
	90520-36016	3.20-3.31 (0.1260-0.1303)
Output Shaft Front	0	2.40-2.45 (0.0945-0.0965)
	1	2.45-2.50 (0.0965-0.0984)
	2	2.50-2.55 (0.0984-0.1004)
	3	2.55-2.60 (0.1004-0.1024)
	4	2.60-2.65 (0.1024-0.1043)
	5	2.65-2.70 (0.1043-0.1063)
Counter Shaft Front	0	2.05-2.10 (0.0807-0.0827)
	2	2.15-2.20 (0.0846-0.0866)
	4	2.25-2.30 (0.0886-0.0906)

3-SPEED TRANSMISSION (J30)

Gear Ratio	1st 2nd 3rd Reverse	2.757 1.691 1.000 3.676
Clearance	Standard mm (in.)	Limit mm (in.)
Thrust Clearance, 2nd Gear	0.08-0.23 (0.0032-0.0091)	0.4 (0.016)
Counter Gear	0.05-0.02 (0.0020-0.0079)	0.4 (0.016)
Oil Clearance, 2nd Gear	–	0.09 (0.0035)
Synchronizer Ring, 2nd & 3rd Gears	–	0.8 (0.032)
Hub Sleeve And Shift Forks	–	0.8 (0.032)
Snap Ring And Washer Thickness	Part No.	Thickness mm (in.)
Input Shaft Bearing	90520-33010 90520-33011	2.43-2.57 (0.0957-0.1012) 2.30-2.42 (0.0906-0.0953)
Output Shaft Front	90520-33132 90520-33172	2.35-2.40 (0.0925-0.0945) 2.25-2.30 (0.0886-0.0906)
Counter Gear Thrust Washer	33441-61010 33442-61010 33443-61010	1.45-1.50 (0.0571-0.0591) 1.50-1.55 (0.0591-0.0610) 1.55-1.60 (0.0610-0.0630)

TRANSFER

Gear Ratio	Transfer Type	For 3-Speed	For 4-Speed
	High	1.000	1.000
	Low	2.313	1.992

Clearance	Standard mm (in.)	Limit mm (in.)
Transfer Idler Gear Thrust	0.1-0.3 (0.004-0.012)	0.4 (0.016)
Output Gears Oil Clearance	0.035-0.081 (0.00138-0.00319)	0.09 (0.0040)
Hub Sleeve And Shift Fork	–	1.0 (0.04)

Transfer Output Shaft Bearing	Preload (While Rotating) kg (lb)
New Bearing	1.2-4.1 (2.6-9.0)
Original Bearing	More Than 0.47 (1.04)

Thrust Spacer And Adjust Shim Thickness	Part No.	Thickness mm (in.)
Idler Gear Thrust Spacer	36261-60010	1.2-1.3 (0.047-0.051)
	36262-60010	1.3-1.4 (0.051-0.055)
	36263-60010	1.4-1.5 (0.055-0.059)
Output Shaft Bearing Adjust Shim	90564-64017	0.10 (0.0039)
	90564-64023	0.15 (0.0059)
	90564-64024	0.20 (0.0079)
	90564-64025	0.25 (0.0098)

PROPELLER SHAFT

Spider Thrust Play mm (in.)	Less Than	0.05 (0.002)
Spider Snap Ring Thickness	Part No.	Thickness mm (in.)
	90520-29286	1.48-1.53 (0.0583-0.0602)
	90520-29287	1.53-1.58 (0.0602-0.0622)
	90520-29288	1.58-1.63 (0.0622-0.0642)

DIFFERENTIAL

Gear Ratio	Except USA And Canada For USA And Canada (Except USA And Canada OPT)	3.700 4.111
Backlash	Standard mm (in.)	
Pinion Gear or Side Gear Ring Gear	0.02-0.20 (0.0008-0.0079) 0.15-0.20 (0.0059-0.0079)	
Rear Axle Shaft End Clearance	Standard mm (in.)	0.016-0.46 (0.0006-0.0181)
Ring Gear Run-Out	Limit mm (in.)	0.1 (0.004)
Preload (Starting)	New Bearing	Original Bearing
Drive Pinion Bearing kg-cm (in-lb) Total Preload kg-cm (in-lb)	19-26 (16.5-22.6) 4-6 (3.5-5.2) + Drive Pinion Preload	9-13 (7.8-11.3)
Washer, Spacer And Shim Thickness	Part No.	Thickness mm (in.)
Side Gear Thrust Washer	41361-35010 41362-35010 41363-35010 41364-35010	1.60 (0.063) 1.75 (0.069) 1.90 (0.075) 2.05 (0.081)
Pinion Shaft Spacer	41344-35010 41345-35010 41346-35010 41347-35010 41348-35010	29.8 (1.173) 30.2 (1.189) 30.6 (1.204) 29.0 (1.142) 29.4 (1.157)
Drive Pinion Adjusting Shim (For Protrusion)	90564-70101 90564-70102 90564-70103 90564-70104 90564-70121	0.25 (0.0098) 0.30 (0.0118) 0.35 (0.0138) 0.45 (0.0177) 0.40 (0.0158)
Drive Pinion Adjusting Shim (For Prelord)	90564-30035	0.25 (0.0098)
Drive Pinion Adjusting Washer (For Prelord)	90560-30184 90560-30185 90560-30186 90560-30187 09560-30188 09560-30190 09560-30191 09560-30192 90560-30199	2.75 (0.1083) 2.78 (0.1094) 2.81 (0.1106) 2.84 (0.1118) 2.87 (0.1130) 2.90 (0.1142) 2.93 (0.1154) 2.96 (0.1165) 2.99 (0.1177)

FRONT AXLE

Steering Knuckle Bearing Preload (While Rotating)		Standard kg (lb)
		1.8-2.3 (3.9-5.0)
Steering Knuckle Adjusting Shim Thickness	Part No.	Thickness mm (in.)
	43233-60010	0.2 (0.008)
	43234-60010	0.5 (0.020)
	43233-60020	1.0 (0.040)
Free Wheel		Limit mm (in.)
Free Wheel Hub Inner To Hub Ring Oil Clearance		0.3 (0.012)
Front Wheel Alignment		
Toe-In	3-5 mm (0.12-0.2 in.)	
Camber	1°	
Caster	1°	
King Pin Inclination	9°30′	
Steering Angle	Inside	32° (26° For 9.00-15 Tire)
	Outside	30° (24° For 9.00-15 Tire)

STEERING

Gear Ratio	20.5 – 23.5	
Steering Wheel Free Play	0 – 25 mm (0 – 0.98 in.)	
Clearance	Standard mm (in.)	Limit mm (in.)
Sector Shaft Oil	0.009-0.060 (0.0004-0.0024)	0.1 (0.004)
Sector Shaft Thrust	–	0.1 (0.004)

Preload (Starting)	Standard kg (lb)
Worm Bearing w/o Sector Shaft	4.0- 6.0 (8.8-13.2)
w/ Sector Shaft Preload	8.0-11.0 (17.6 24.2)

Length	Standard mm (in.)
Steering Relay Rod	827 (32.56)
Tie-Rod	1205 (47.44)
Steering Drag Link (Except FJ55)	855 (33.66)

Intermediate Shaft Snap Ring Thickness (For FJ55 Series)	Part No.	Thickness mm (in.)
	90521-22011	1.20 (0.0424)
	90521-22012	1.25 (0.0492)
	90521-22013	1.30 (0.0512)

Washer And Shim Thickness	Part No.	Mark	Thickness mm (in.)
Sector Shaft Thrust Washer	45352-36010	1	2.00 (0.0787)
	45353-36010	2	2.05 (0.0807)
	45354-36010	3	2.10 (0.0827)
	45355-36010	4	2.15 (0.0846)
	45356-36010	5	2.20 (0.0866)
End Cover Shim (For Worm Bearing Preload)	45323-36010	1	0.05 (0.0020)
	45323-36020	2	0.07 (0.0028)
	45323-36030	3	0.08 (0.0031)
	45323-36040	4	0.10 (0.0039)
	45323-36050	5	0.20 (0.0079)
	45323-36060	6	0.50 (0.0197)
	45323-36070	7	0.06 (0.0024)
	45323-36080	8	0.09 (0.0035)

BRAKE

Master & Wheel Cylinder Inner Diameter Standard mm (in.)	40 Series	45 Series	43, 55 Series
Single Master Cylinder	25.4 (1.0000)	←	←
Tandem Master Cylinder	25.4 (1.0000)	28.57 (1.1248)	25.4 (1.0000)
Tandem Master Cylinder (For U.S.A. And Canada)	22.22 (0.8748)	28.57 (1.1248)	22.22 (0.8748)
Front Wheel Cylinder	31.75 (1.2500)	←	←
Front Disc Brake Caliper	42.85 (1.6870) & 33.96 (1.3370)	———	42.85 (1.6870) & 33.96 (1.3370)
Rear Wheel Cylinder	22.22 (0.8748)	28.5 (1.1220)	23.81 (0.9374)

Pedal Height (From Asphalt Sheet Top Surface)	w/Brake Booster mm (in.)	w/Brake Booster mm (in.)
FJ, HJ, BJ40 Series	215 (8.46)	198 (7.80)
FJ55 Series	185 (7.28)	172 (6.77)
Pedal Play (At Pedal Top) mm (in.)		3 – 6 (0.12 – 0.23)
Pedal Reserve Distance FJ, HJ, BJ40 Series mm (in.)		More Than 80 (3.15)
Pedal Reserve Distance FJ55 Series mm (in.)		More Than 70 (2.76)
Parking Brake Lever Travel	Standard	7 – 12 Notches
Adjustment	Number Of Notches To Be Returned	
Foot Brake	4 – 5 Notches	
Parking Brake	1 – 2 Notches	
Lining Thickness Foot & Parking Brake Lining Limit mm (in.)		1.5 (0.06)
Front Drum Inner Diameter Limit mm (in.)		297 (11.70)
Rear Drum Inner Diameter Limit mm (in.) FJ45, HJ45 & FJ55 Fire Truck		297 (11.70)
Rear Drum Inner Diameter Except FJ45, HJ45 & FJ55 (Fire Truck)		292 (11.50)
Disc Brake Pad Thickness	Standard mm (in.)	Limit mm (in.)
	10 (0.39)	1 (0.04)
Disc Brake Disc Thickness	Standard mm (in.)	Limit mm (in.)
	20 (0.79)	19 (0.74)
Disc Brake Disc Runout Limit mm (in.)		0.12 (0.005)
Booster Push Rod To Master Cylinder Piston Clearance Standard (Without Vacuum) mm (in.)		0.6 – 0.65 (0.024 – 0.026)

BRAKE (Cont'd)

Vacuum Pump	Limit mm (in.)
Rotor To Spline Shaft Play (On Rotor)	2.4 (0.095)
Pump Casing Inner Diameter	58.19 (2.291)
Pump Drive End Frame Bushing Inner Diameter	16.14 (0.6354)
Pump Blad Heigh	12 (0.47)
Width	6.92 (0.272)
Length	34.98 (1.377)

FRONT WINCH

	Part No.	Thickness mm (in.)
Winch Worm Bearing Prelord Adjusting Shim Thickness	38123-60010	0.228 (0.009)
	38124-60010	0.5 (0.020)

LUBRICANT

Place Used	Oil Capacity			Classification
	Liter	US qt	Imp.qt	
Transmission 4-Speed	3.1	3.3	2.7	SAE90, API GL–4
3-Speed	1.7	1.8	1.5	
Transfer	1.7	1.8	1.5	
Front Differential FJ, BJ, HJ Series	2.5	2.6	2.2	SAE90, API GL–5
Rear Differential FJ40 & BJ40	2.4	2.6	2.1	
FJ43 & BJ43	2.7	2.9	2.4	
FJ45, HJ45 & FJ55	2.9	3.1	2.6	
Steering	0.6	0.6	0.5	SAE90, API GL–4
Front Winch	0.6	0.6	0.5	
Ball Joint & Propeller Shaft Spider Grease				NLGI No.1 or No.2
Wheel Bearing Grease				NLGI No.2
Steering Knuckle & Axle Shaft Grease				Molybdemum Disulphide Lithium Base Grease
Brake Fluid				For USA : DOT 3 Other : DOT 3 or SAEJ 1703 (SAE 70R-3)

LAND CRUISER (FJ40, 43, 45) ELECTRICAL WIRING DIAGRAM (Except U.S.A & CANADA)
No. 98878

GRIDE LOCATION	COMPONENTS
E-2	ALTERNATOR
C-4	AMMETER
C-20	ANTENNA (OPT)
D-4	BATTERY
C-19	CIGARETTE LIGHTER (OPT)
C-4	COMBINATION METER
G-23	DISTRIBUTOR
	EMISSION CONTROL SYSTEM (For ECE No. 15):
E-22	EMISSION CONTROL COMPUTER
G-22	SPEED SENSOR
D-22	VACUUM SWITCHING VALVE
D-14	FLASHER, TURN SIGNAL & HAZARD
C-23	FUEL CUT SOLENOID
F-4	FUEL GAUGE
G-5	FUEL SENDER
B-4	FUSE BOX
C-4	FUSIBLE LINK
G-12	HORNS, LO – HI
E-23	IGNITION COIL
F-20	INSPECTION LIGHT SOCKET
	LIGHTS:
G-9	BACK-UP, LH · RH
E-17	COMBINATION METER
G-19	HEADLIGHT, LH · RH
E-19	HIGH BEAM INDICATOR
E-20	INTERIOR DOOM
D-16	LICENSE PLATE
C-9	PARKING BRAKE (OPT)
D-15	PARKING, FRONT
G-13	SIDE TURN SIGNAL
G-10	STOP, LH · RH
G-17	TAIL, LH · RH
F-13	TURN SIGNAL, FRONT, LH · RH
G-15	TURN SIGNAL, REAR, LH · RH
H-14	TURN SIGNAL INDICATOR, LH · RH

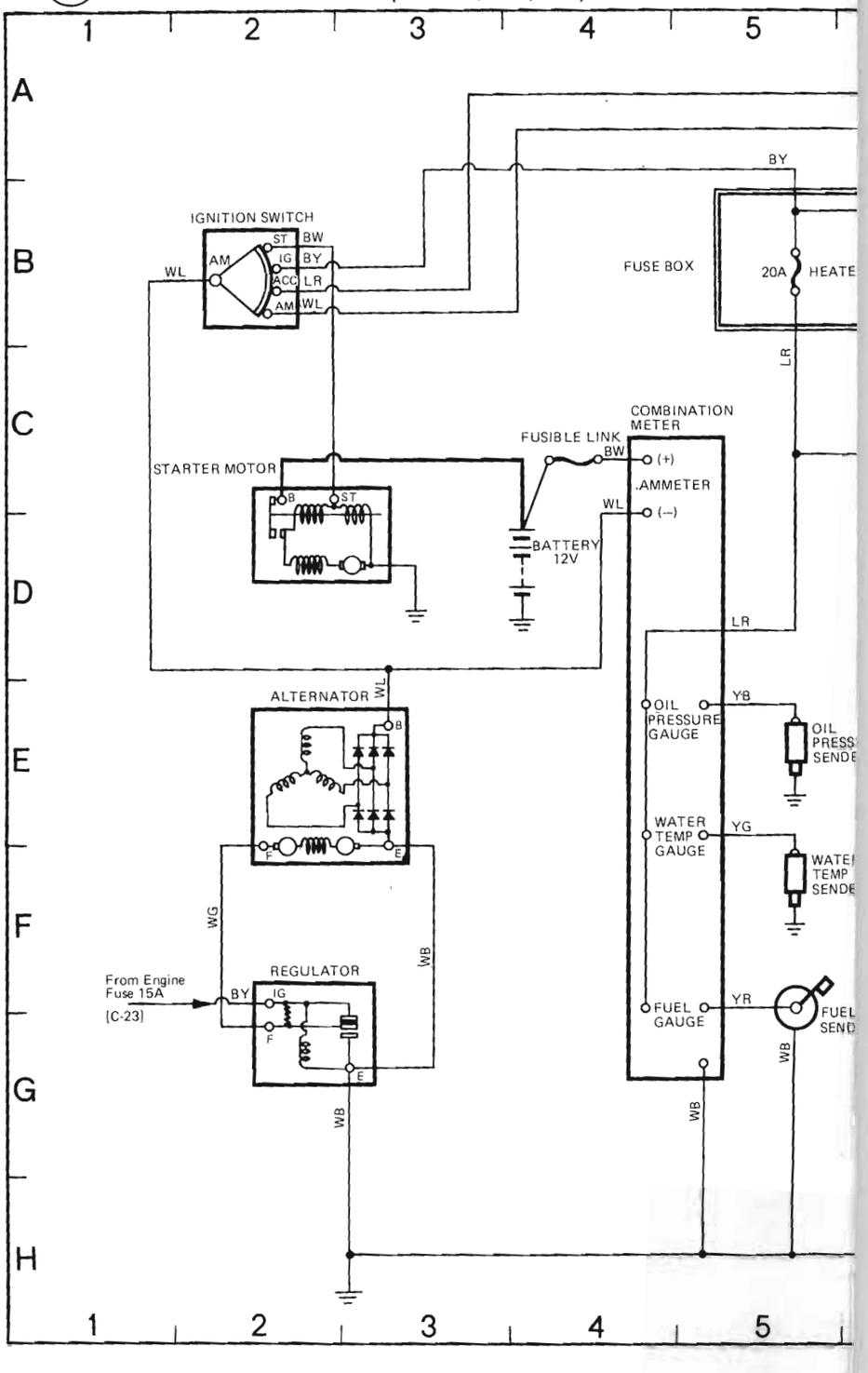
GRIDE LOCATION	COMPONENTS
	MOTORS:
E-6	HEATER BLOWER, FRONT (OPT)
E-6	HEATER BLOWER, REAR (OPT)
C-2	STARTER
C-21	WINDSHIELD WASHER (OPT)
G-21	WINDSHIELD WIPER
E-4	OIL PRESSURE GAUGE
E-5	OIL PRESSURE SENDER
C-21	RADIO (OPT)
F-2	REGULATOR
	RELAYS:
F-8	FRONT DRIVE (OPT)
C-12	HORN
E-21	SPEAKER (OPT)
	SWITCHES:
C-8	BACK-UP LIGHT
F-9	BRAKE WARNING LIGHT (OPT)
D-18	DIMMER
F-8	FRONT DRIVE (OPT)
E-8	FRONT DRIVE INDICATOR LIGHT
C-13	HAZARD
C-6	HEATER BLOWER MOTOR (OPT)
E-11	HORN
B-2	IGNITION
E-20	INTERIOR LIGHT
C-17	LIGHT CONTROL
E-9	PARKING BRAKE (OPT)
E-10	STOP LIGHT
F-16	TRAILER SOCKET CHANGE OVER (OPT)
C-7	TRANSFER INDICATOR (OPT)
E-14	TURN SIGNAL
E-21	WINDSHIELD WIPER AND WASHER
F-17	TRAILER SOCKET
G-7	VACUUM SWITCHING SOLENOID (OPT)
E-4	WATER TEMPERATURE GAUGE
F-5	WATER TEMPERATUR SENDER

– Note –

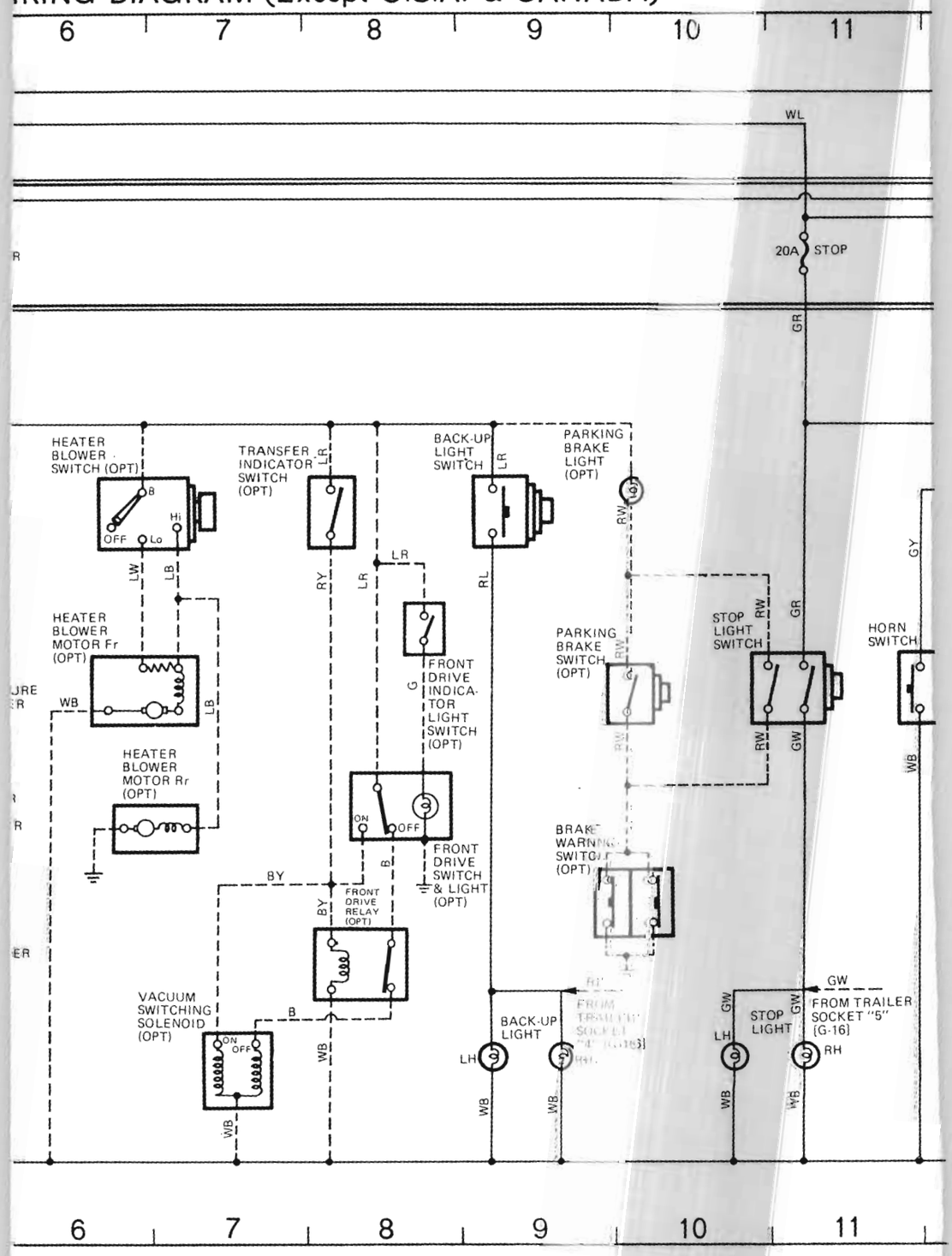
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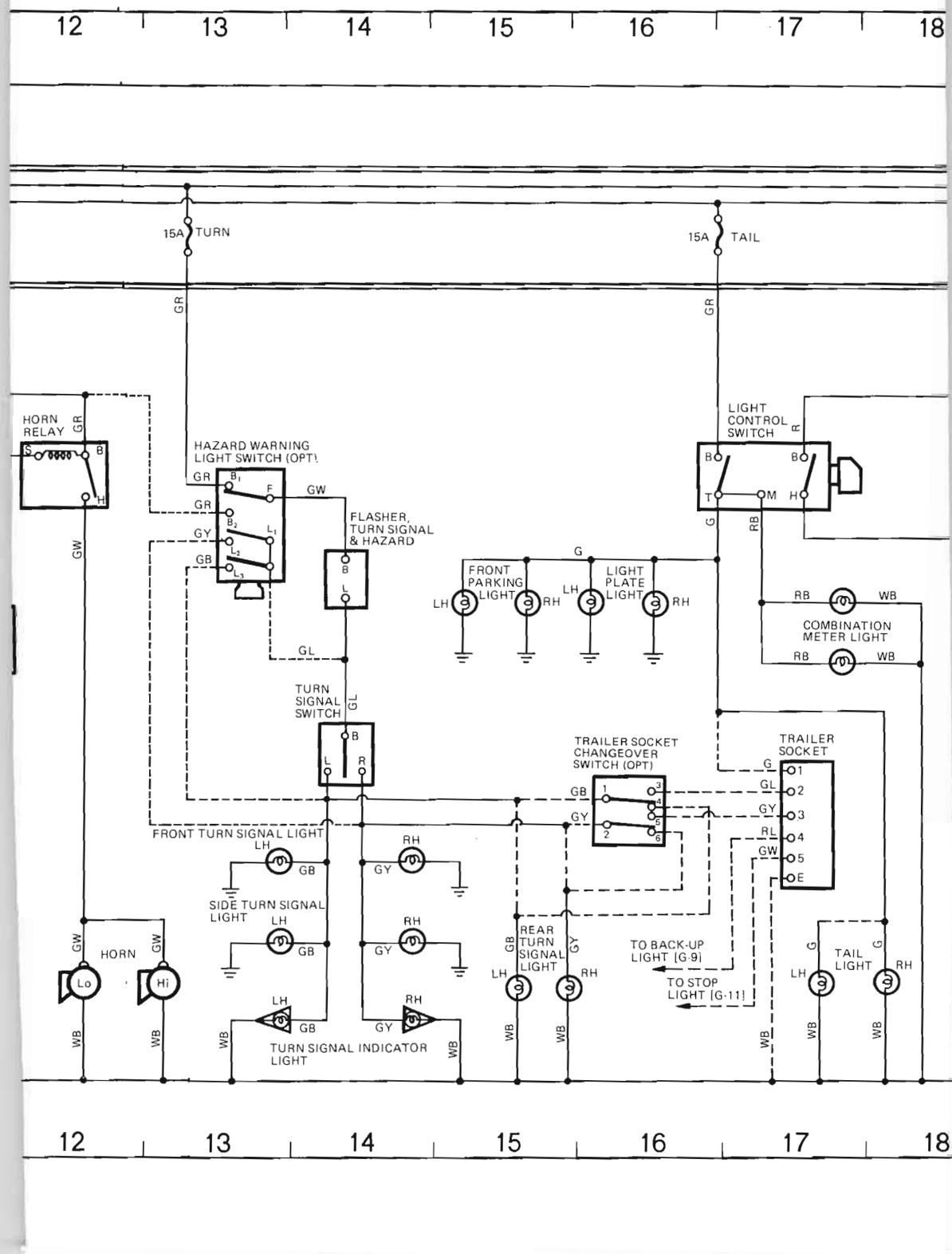
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   G = GREEN R = RED Y = YELLOW
   L = LIGHT BLUE
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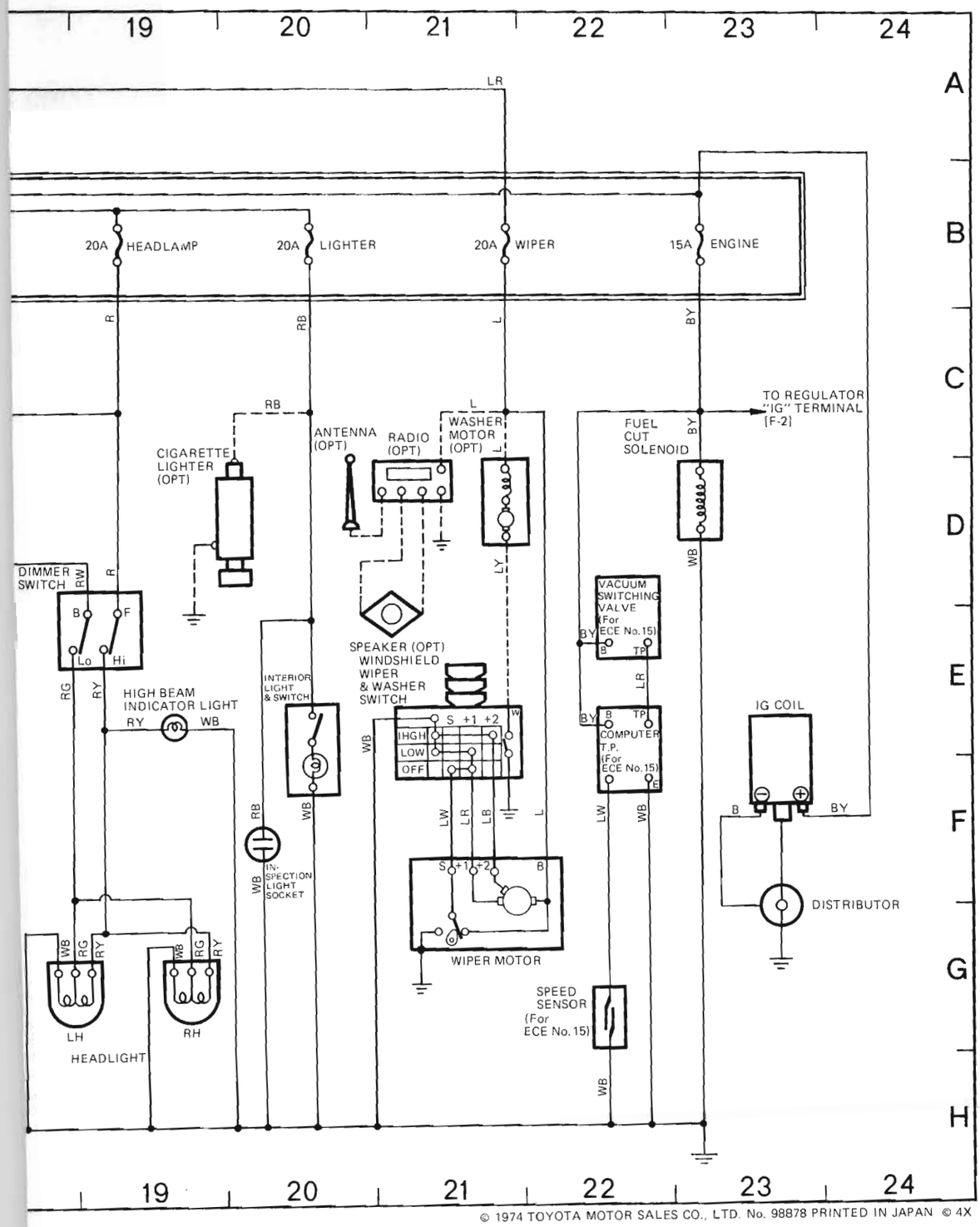
LAND CLUISER (FJ40,43,45) ELECTRICAL W



IRING DIAGRAM (Except U.S.A. & CANADA)




12
13
14
15
16
17
18
15A TURN
15A TAIL
GR
HORN RELAY
S
B
H
HAZARD WARNING LIGHT SWITCH (OPT)
B1
F
B2
L1
L2
L3
GW
GY
GB
FLASHER, TURN SIGNAL & HAZARD
B
L
GL
TURN SIGNAL SWITCH
B
L
R
LIGHT CONTROL SWITCH
R
B
T
M
H
G
RB
FRONT PARKING LIGHT
LH
RH
LIGHT PLATE LIGHT
COMBINATION METER LIGHT
WB
TRAILER SOCKET CHANGEOVER SWITCH (OPT)
TRAILER SOCKET
1
2
3
4
5
E
RL
FRONT TURN SIGNAL LIGHT
SIDE TURN SIGNAL LIGHT
HORN
Lo
Hi
TURN SIGNAL INDICATOR LIGHT
REAR TURN SIGNAL LIGHT
TO BACK-UP LIGHT [G-9]
TO STOP LIGHT [G-11]
TAIL LIGHT



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LAND CRUISER (FJ55 Series) ELECTRICAL WIRING DIAGRAM (Except U.S.A & CANADA) No.98878

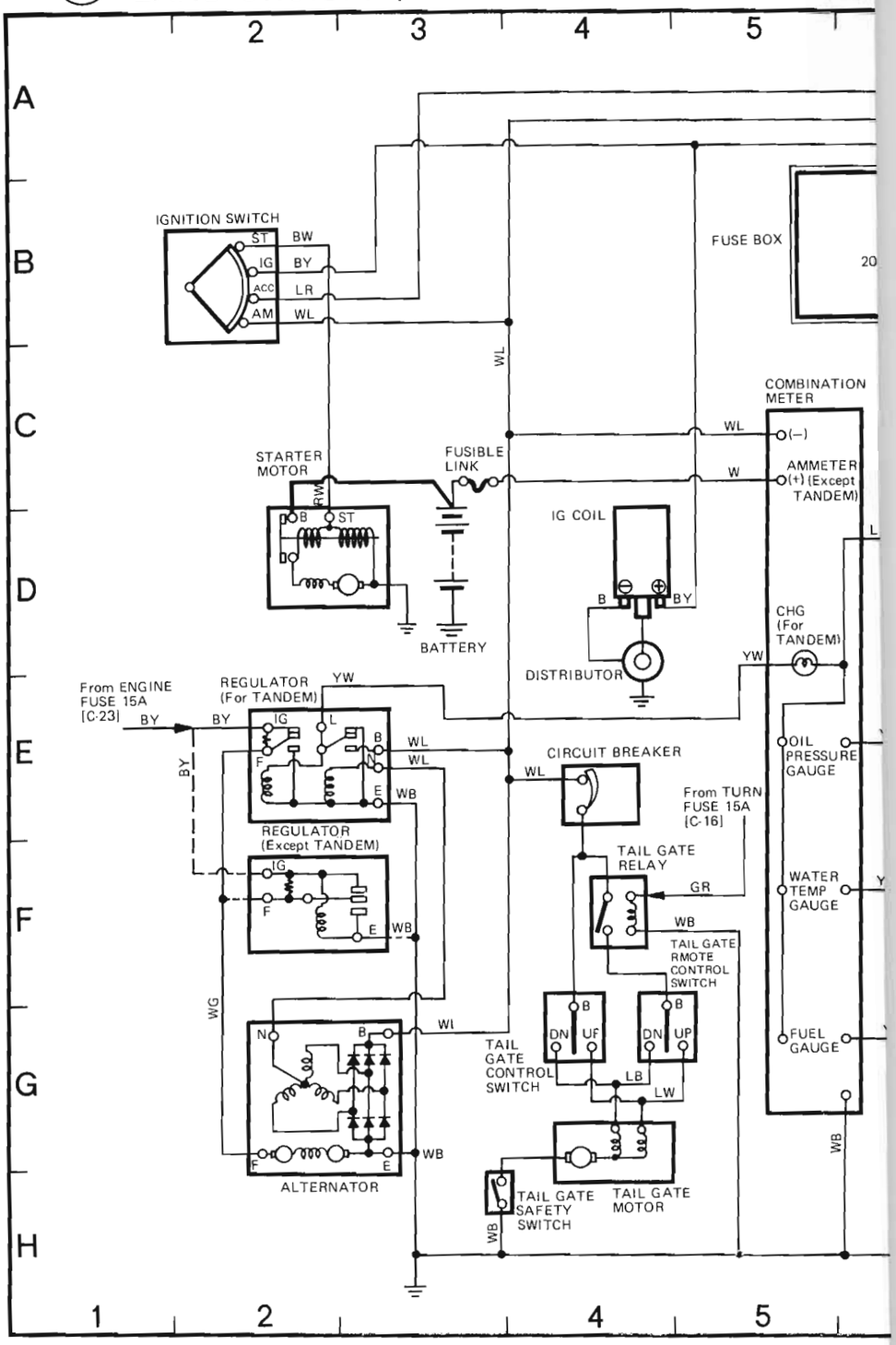
GRIDE LOCATION	COMPONENTS
G-2	ALTERNATOR
C-5	AMMETER (Except Tandem)
C-20	ANTENNA (OPT)
D-3	BATTERY
D-22	CIGARETTE LIGHTER (OPT)
E-4	CIRCUIT BREAKER
C-5	COMBINATION METER
D-4	DISTRIBUTOR
	EMISSION CONTROL SYSTEM:
G-23	SPEED SENSOR (For ECE)
E-23	THROTTLE POSITION COMPUTER (For ECE)
G-23	VACUUM SWITCHING VALVE (For ECE)
D-14	FLASHER, TURN SIGNAL & HAZARD
C-24	FUEL CUT SOLENOID (For ECE)
G-5	FUEL GAUGE
G-6	FUEL SENDER
B-5	FUSE BOX
C-3	FUSIBLE LINK
E-13	HORNS, LO-HI
D-4	IGNITION COIL
G-22	INSPECTION LIGHT SOCKET
	LIGHTS:
G-11	BACK-UP, LH.RH
C-12	BRAKE WARNING INDICATOR (For Tandem)
G-19	COMBINATION METER
D-5	DISCHARGE WARNING (For Tandem)
E-10	FRONT DRIVE INDICATOR
G-20	HEADLIGHT, LH.RH
E-20	HIGH BEAM INDICATOR
G-22	INTERIOR
E-18	LICENSE PLATE
F-18	PARKING FRONT
G-13	STOP, LH. RH
G-18	TAIL, LH.RH
F-15	TURN SIGNAL, FRONT, LH.RH
F-17	TURN SIGNAL, REAR, LH.RH
G-15	TURN SIGNAL, INDICATOR, LH.RH
G-15	TURN SIGNAL, SIDE, LH.RH
	MOTORS:
C-7	HEATER BLOWER, FRONT (OPT)

GRIDE LOCATION	COMPONENTS
E-8	HEATER BLOWER REAR (OPT)
C-2	STARTER
G-4	TAIL GATE
C-21	WINDSHIELD WASHER (OPT)
F-21	WINDSHIELD WIPER
E-5	OIL PRESSURE GAUGE
E-6	OIL PRESSURE SENDER
D-20	RADIO (OPT)
E-2	REGULATOR (For Tandem)
F-2	REGULATOR (Except Tandem)
	RELAYS:
F-9	FRONT DRIVE (OPT)
C-13	HORN
F-4	TAIL GATE
E-20	SPEAKER (OPT)
	SWITCHS:
C-11	BACK-UP LIGHT
E-12	BRAKE WARNING (For Tandem)
E-19	DIMMER
E-10	FRONT DRIVE (OPT)
D-10	FRONT DRIVE INDICATOR LIGHT (OPT)
D-15	HAZARD WARNING LIGHT
C-18	LIGHT CONTROL
E-7	HEATER BLOWER, FRONT (OPT)
D-8	HEATER BLOWER, REAR (OPT)
E-14	HORN
B-2	IGNITION
G-22	INTERIOR LIGHT
D-12	PARKING BRAKE (For Tandem)
C-13	STOP LIGHT
G-4	TAIL GATE CONTROL
F-5	TAIL GATE REMOTE CONTROL
H-4	TAIL GATE SAFETY
F-16	TRAILER SOCKET CHANGEOVER (OPT)
C-9	TRANSFER INDICATOR (OPT)
E-15	TURN SIGNAL
D-21	WINDSHIELD WIPER AND WASHER
D-17	TRAILER SOCKET (OPT)
G-9	VACUUM SWITCHING SOLENOID (OPT)
F-5	WATER TEMPERATURE GAUGE
F-6	WATER TEMPERATURE SENDER

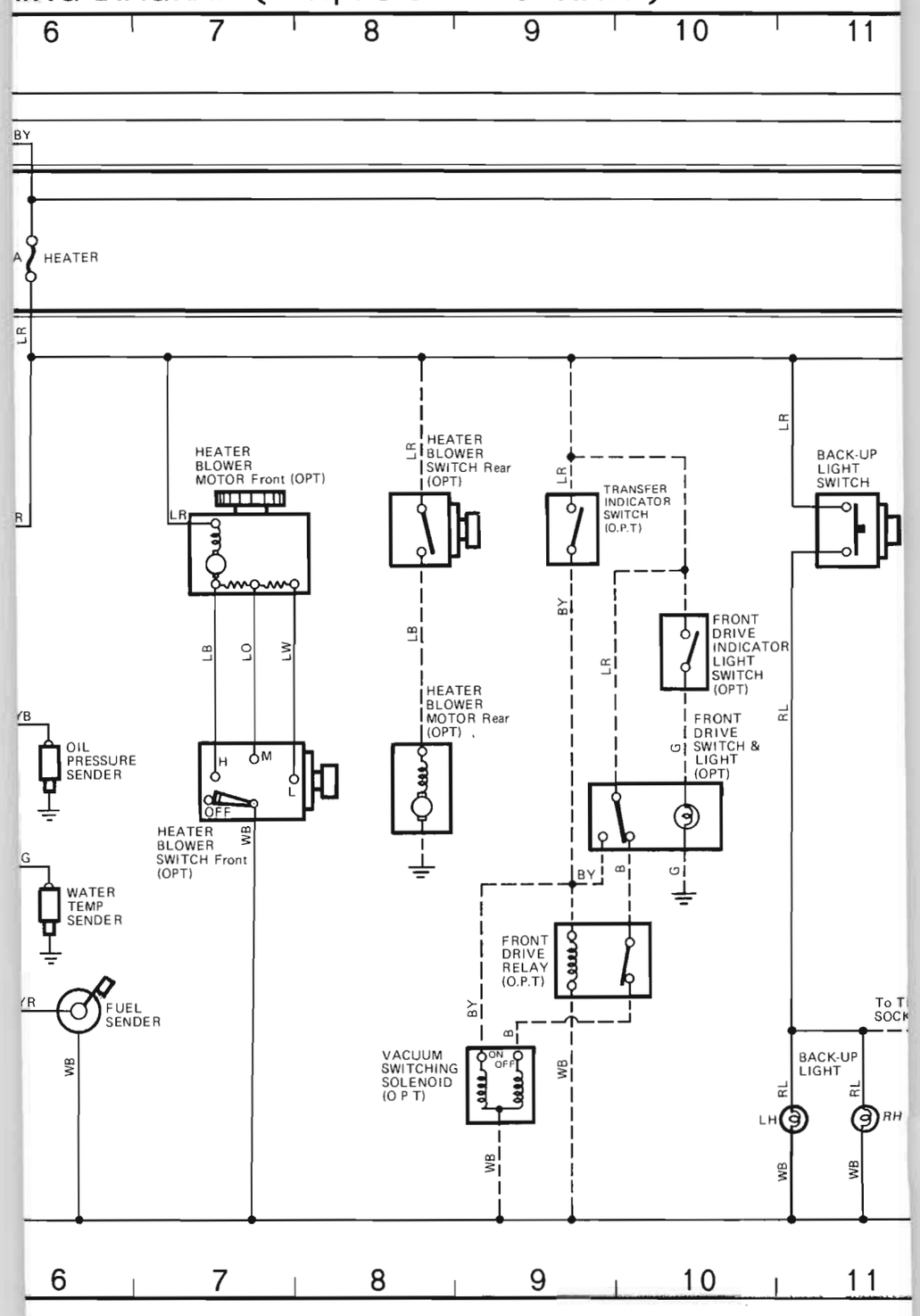
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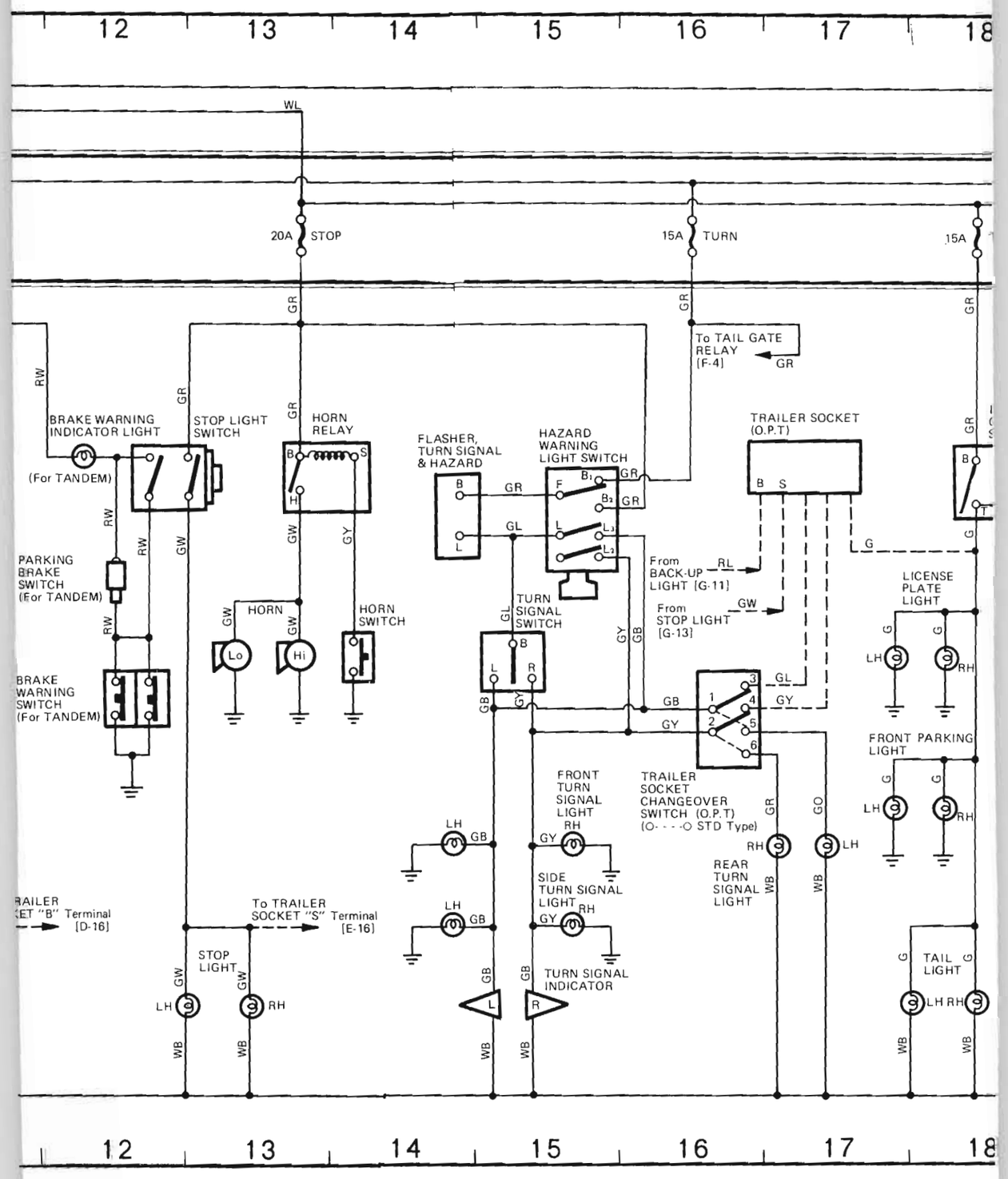
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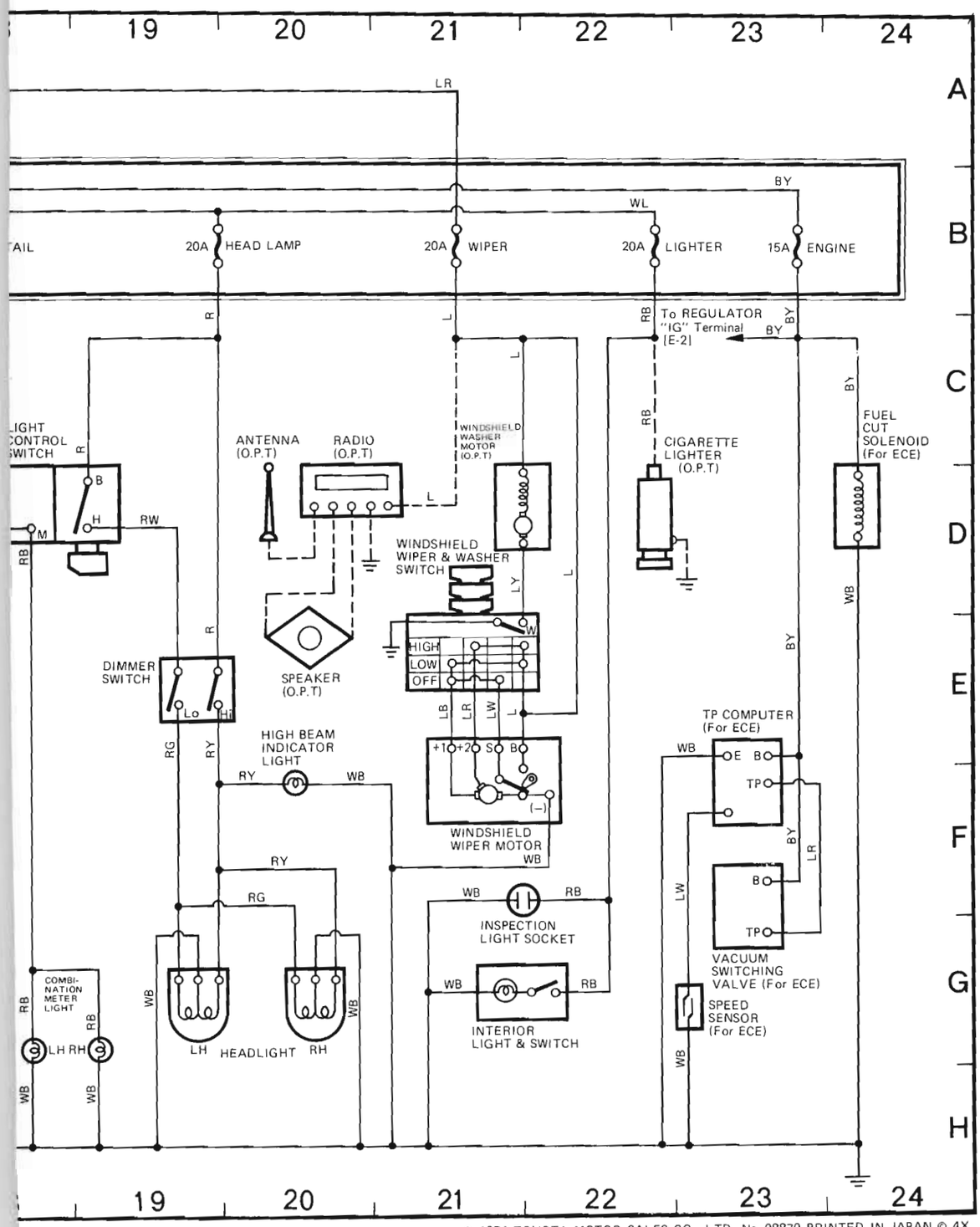
LAND CRUISER (FJ55 Series) ELECTRICAL WIR



RING DIAGRAM (Except U.S.A. & CANADA)




12
13
14
15
16
17
18
WL
20A STOP
15A TURN
15A
GR
RW
GW
GY
GB
GL
G
BRAKE WARNING INDICATOR LIGHT
(For TANDEM)
STOP LIGHT SWITCH
HORN RELAY
To TAIL GATE RELAY [F-4]
PARKING BRAKE SWITCH (For TANDEM)
BRAKE WARNING SWITCH (For TANDEM)
HORN
Lo
Hi
HORN SWITCH
FLASHER, TURN SIGNAL & HAZARD
HAZARD WARNING LIGHT SWITCH
TURN SIGNAL SWITCH
From BACK-UP LIGHT [G-11]
From STOP LIGHT [G-13]
TRAILER SOCKET (O.P.T)
LICENSE PLATE LIGHT
FRONT PARKING LIGHT
FRONT TURN SIGNAL LIGHT
SIDE TURN SIGNAL LIGHT
TURN SIGNAL INDICATOR
TRAILER SOCKET CHANGEOVER SWITCH (O.P.T)
(O- - - -O STD Type)
REAR TURN SIGNAL LIGHT
TAIL LIGHT
STOP LIGHT
To TRAILER SOCKET "B" Terminal [D-16]
To TRAILER SOCKET "S" Terminal [E-16]
LH
RH



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LAND CRUISER (HJ45) ELECTRICAL WIRING DIAGRAM (Except U.S.A & CANADA)
No. 98880

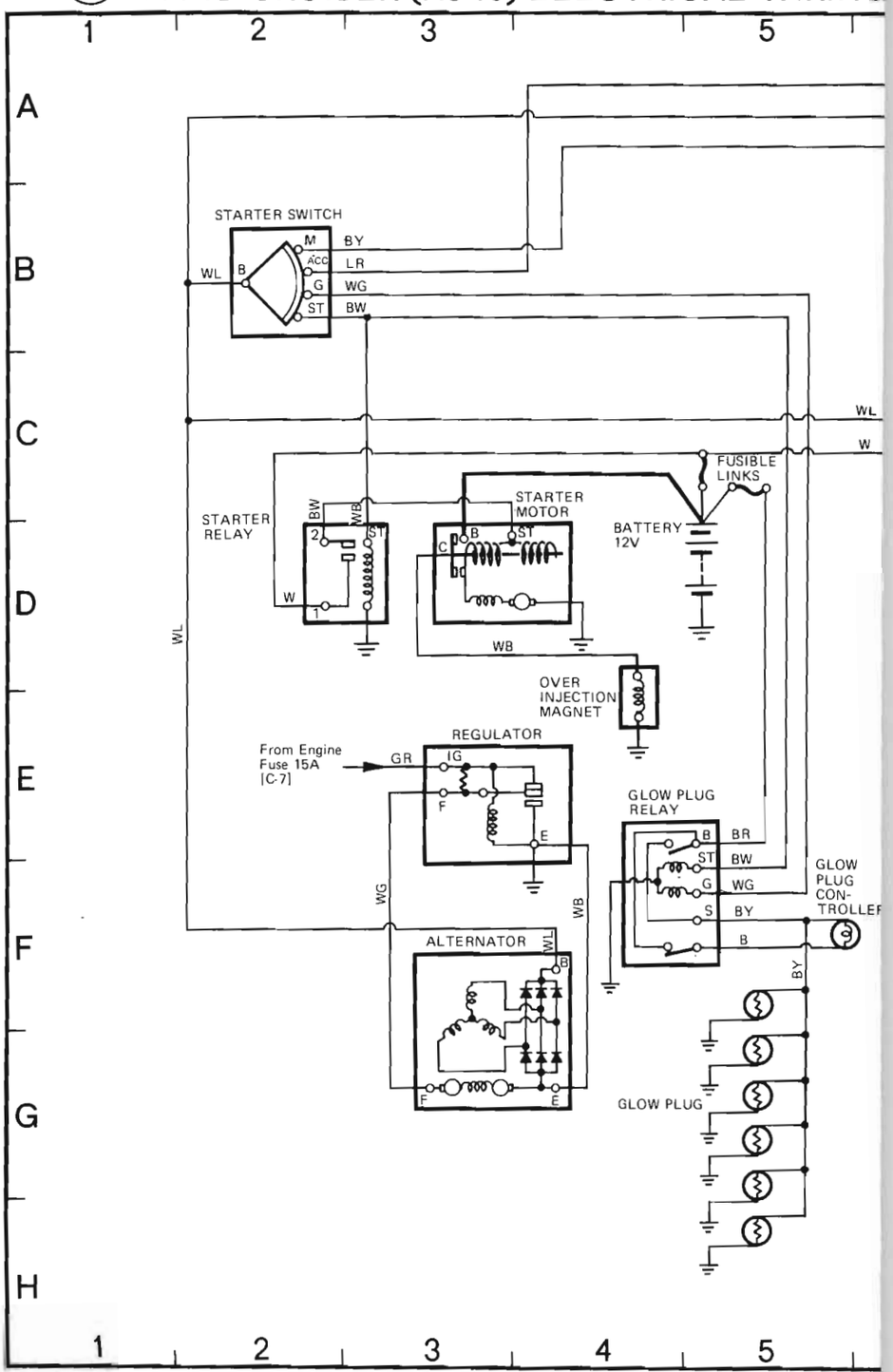
GRIDE LOCATION	COMPONENTS
F-3	ALTERNATOR
C-6	AMMETER
C-24	ANTENNA (OPT)
D-4	BATTERY
C-20	CIGARETTE LIGHTER(OPT)
C-6	COMBINATION METER
D-15	FLASHER, TURN SIGNAL
F-6	FUEL GAUGE
F-7	FUEL SENDER
E-6	FUSE BOX
C-4	FUSIBLE LINK
G-5	GLOW PLUG
F-5	GLOW PLUG CONTROLLER
F-13	HORNS, LO-HI
E-20	INSPECTION LIGHT SOCKET
	LIGHTS:
G-7	BACK-UP, LH.RH
G-18	COMBINATION METER PILOT
G-19	HEADLIGHT, LH.RH
E-19	HIGH BEAM INDICATOR
C-21	INTERIOR
E-18	LICENSE PLATE
D-12	PARKING BRAKE (OPT)
E-16	PARKING, FRONT
G-12	STOP, LH.RH
G-17	TAIL, LH.RH
F-15	TURN SIGNAL, FRONT, LH.RH
G-15	TURN SIGNAL, REAR, LH.RH
H-15	TURN SIGNAL, INDICATOR, LH.RH
G-15	TURN SIGNAL, SIDE, LH.RH
	MOTORS:
E-8	HEATER BLOWER (OPT)
C-4	STARTER
C-22	WINDSHIELD WASHER (OPT)
G-22	WINDSHIELD WIPER

GRIDE LOCATION	COMPONENTS
D-6	OIL PRESSURE GAUGE
E-7	OIL PRESSURE SENDER
E-4	OVER INJECTION MAGNET
C-23	RADIO (OPT)
E-3	REGULATOR
	RELAYS:
F-9	FRONT DRIVE (OPT)
E-4	GLOW PLUG
C-13	HORN
D-2	STARTER
E-23	SPEAKER (OPT)
	SWITCHES:
D-7	BACK-UP LIGHT
F-11	BRAKE WARNING (OPT)
E-18	DIMMER
E-10	FRONT DRIVE (OPT)
D-11	FRONT DRIVE INDICATOR LIGHT (OPT)
D-15	HAZARD WARNING LIGHT (OPT)
C-8	HEATER BLOWER (OPT)
E-13	HORN
C-21	INTERIOR LIGHT
C-17	LIGHT CONTROL
D-11	PARKING BRAKE (OPT)
B-2	STARTER
D-12	STOP LIGHT
C-10	TRANSFER INDICATOR (OPT)
E-15	TURN SIGNAL
E-22	WINDSHIELD WIPER AND WASHER
G-9	VACUUM SWITCHING SOLENOID (OPT)
E-6	WATER TEMPERATURE GAUGE
E-7	WATER TEMPERATURE SENDER

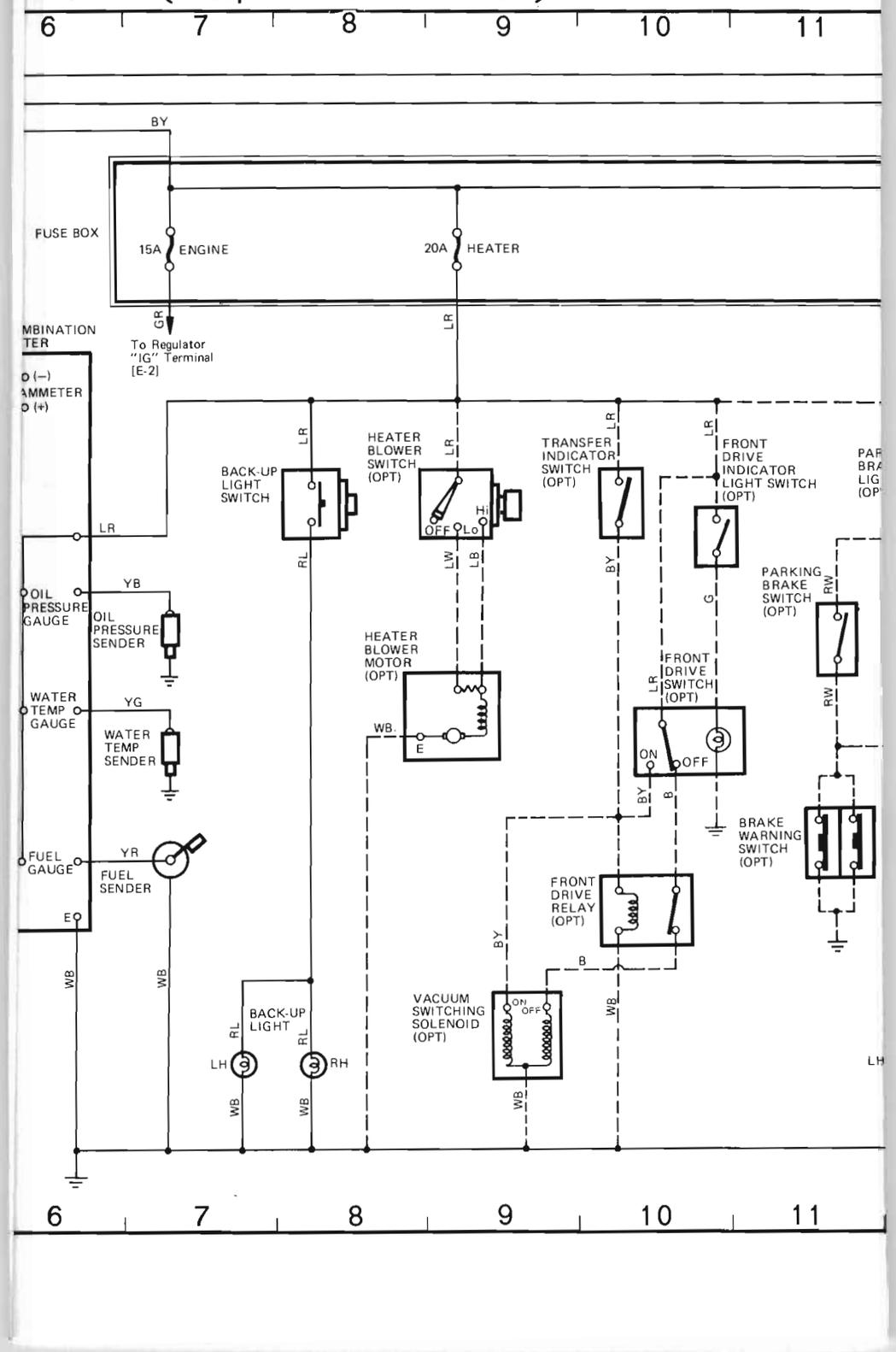
Note :
When reading the wiring diagram, following should be noted.

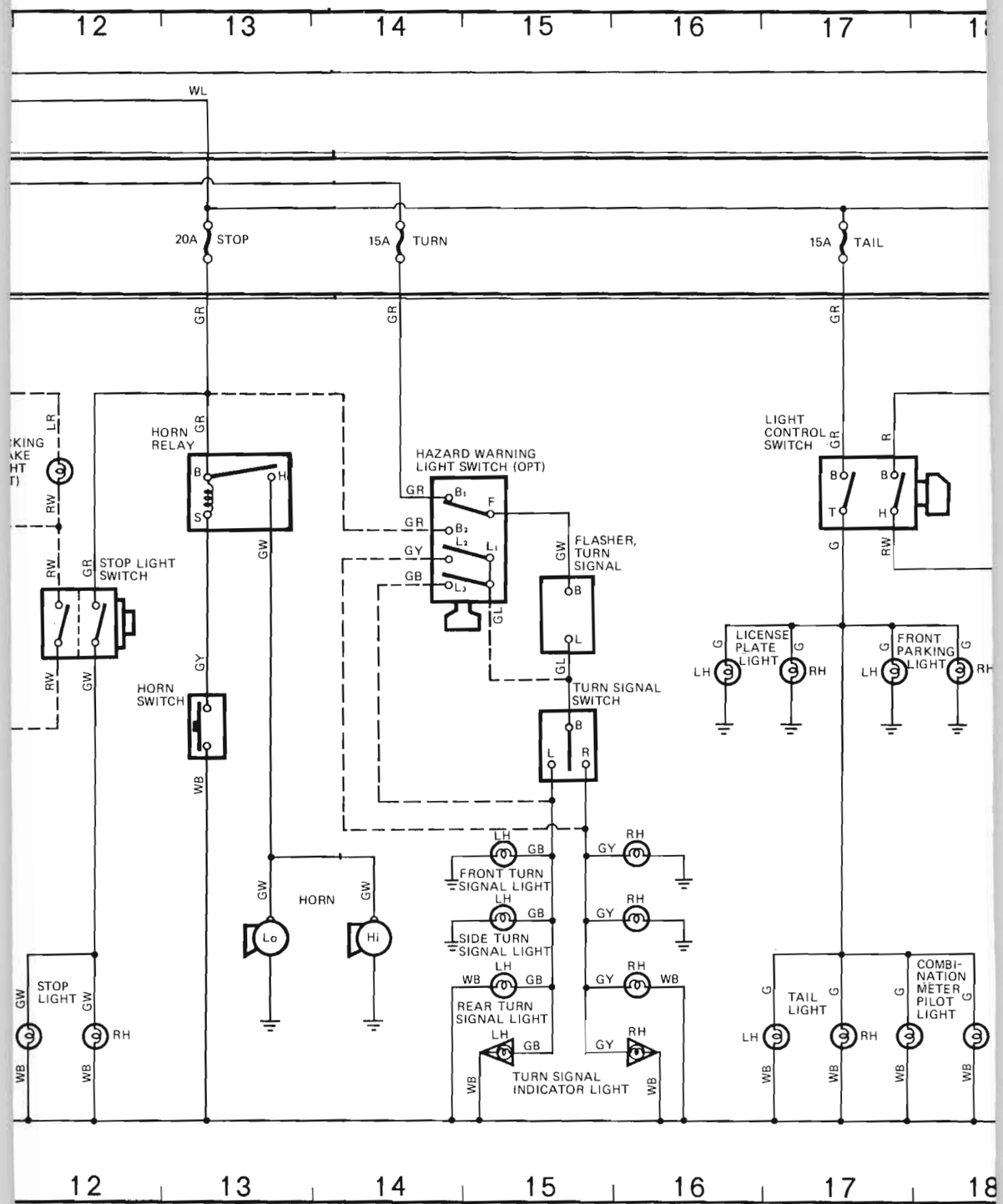
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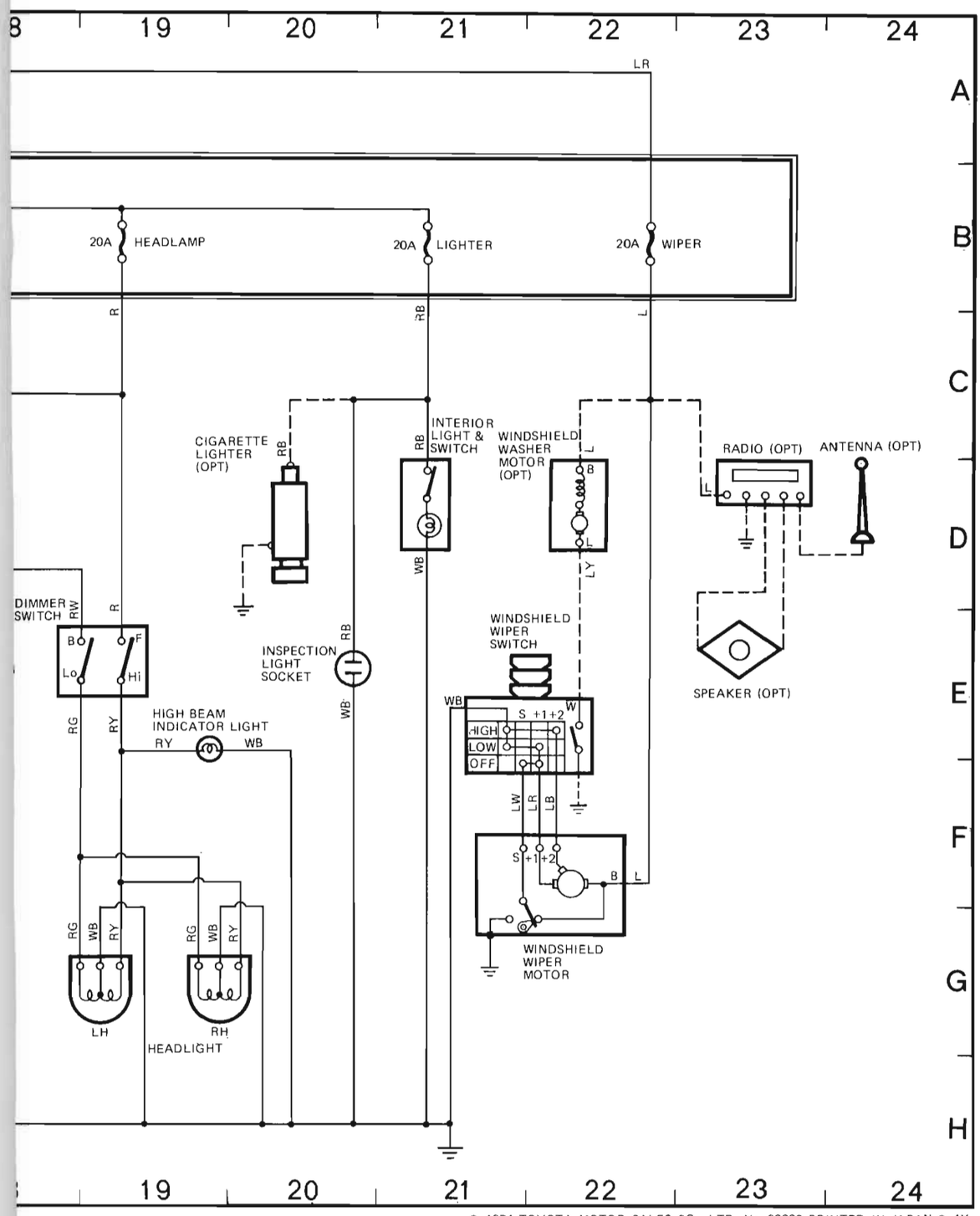
LAND CRUISER (HJ45) ELECTRICAL WIRING



)IAGRAM (Except U.S.A. & CANADA)




12
13
14
15
16
17
WL
20A STOP
15A TURN
15A TAIL
HORN RELAY
HAZARD WARNING LIGHT SWITCH (OPT)
LIGHT CONTROL SWITCH
STOP LIGHT SWITCH
FLASHER, TURN SIGNAL
HORN SWITCH
TURN SIGNAL SWITCH
LICENSE PLATE LIGHT
FRONT PARKING LIGHT
HORN
Lo
Hi
FRONT TURN SIGNAL LIGHT
SIDE TURN SIGNAL LIGHT
REAR TURN SIGNAL LIGHT
TURN SIGNAL INDICATOR LIGHT
STOP LIGHT
TAIL LIGHT
COMBI-NATION METER PILOT LIGHT
LH
RH



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LAND CRUISER (BJ40, 43) ELECTRICAL WIRING DIAGRAM (Except U.S.A & CANADA)
No. 98881

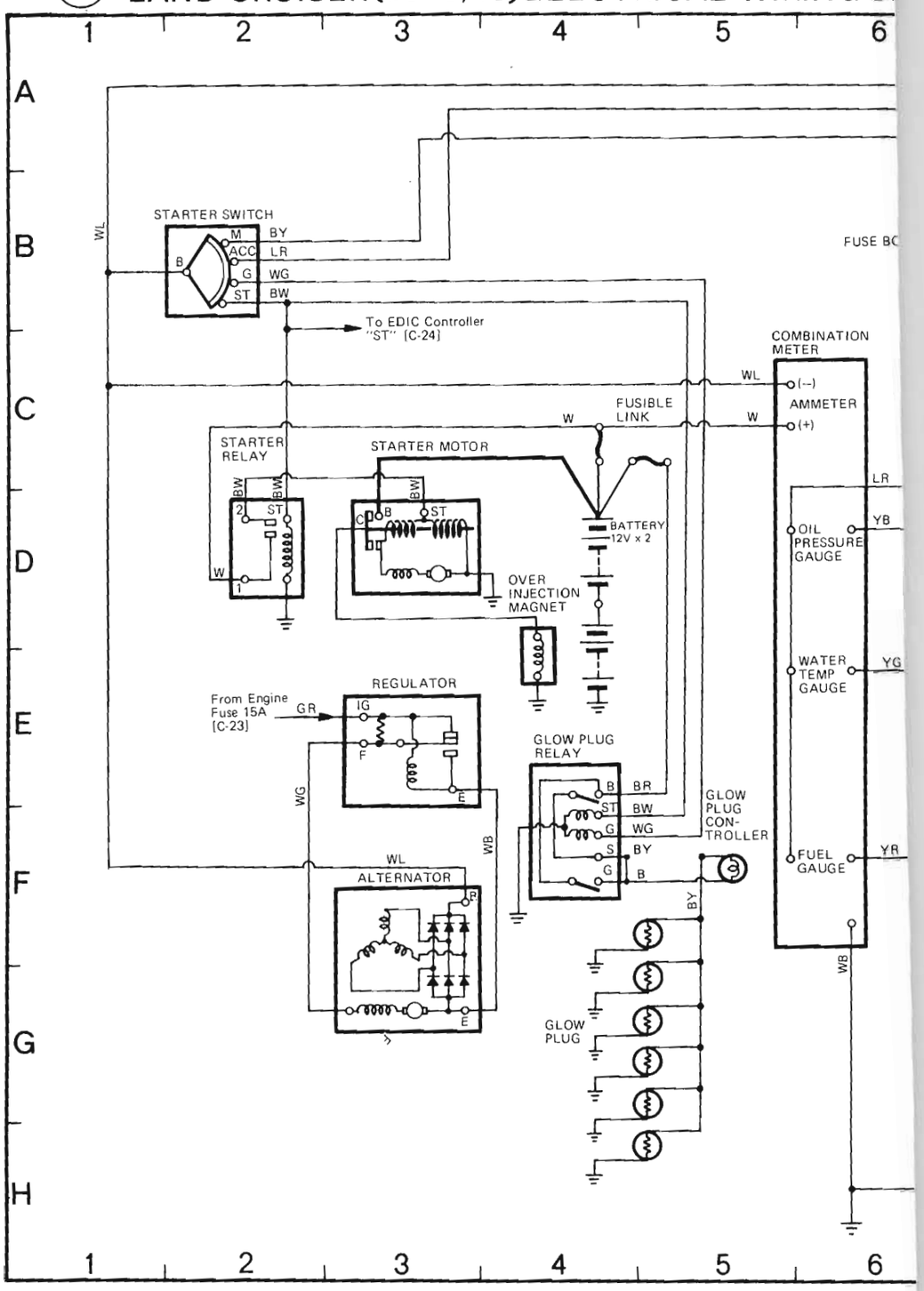
GRIDE LOCATION	COMPONENTS
F-3	ALTERNATOR
C-6	AMMETER
C-20	ANTENNA (OPT)
D-4	BATTERY
E-22	CIGARETTE LIGHTER (OPT)
C-6	COMBINATION METER
D-22	EDIC CONTROLLER ASSY.
F-23	EDIC RELAY ASSY.
G-23	EDIC MOTOR ASSY.
D-23	ENGINE SPEED SENSOR
D-14	FLASHER, TURN SIGNAL
F-6	FUEL GAUGE
E-7	FUEL SENDER
B-6	FUSE BOX
C-4	FUSIBLE LINK
G-4	GLOW PLUG
F-5	GLOW PLUG CONTROLLER
F-13	HORNS, LO-HI
C-23	INSPECTION LIGHT SOCKET
	LIGHTS:
G-10	BACK-UP, LH.RH
D-18	COMBINATION METER PILOT
D-15	FOG LIGHT (Except ECE OPT)
G-9	FRONT DRIVE INDICATOR (OPT)
G-19	HEADLIGHT, LH.RH
E-20	HIGH BEAM INDICATOR
G-21	INTERIOR
D-17	LICENSE PLATE
C-17	LIGHT CONTROL SWITCH
C-11	PARKING BREAK (OPT)
D-16	PARKING, FRONT
G-12	STOP, LH.RH
G-17	TAIL, LH.RH
F-14	TURN SIGNAL, FRONT, LH.RH
G-15	TURN SIGNAL, REAR, LH.RH
H-14	TURN SIGNAL INDICATOR, LH.RH
G-14	TURN SIGNAL, SIDE, LH.RH
	MOTORS:
E-8	HEATER BLOWER (Except ECE OPT)
C-3	STARTER
C-21	WINDSHIELD WASHER (OPT)
F-21	WINDSHIELD WIPER

GRIDE LOCATION	COMPONENTS
D-6	OIL PRESSURE GAUGE
D-7	OIL PRESSURE SENDER
D-4	OVER INJECTION MAGNET
C-20	RADIO (OPT)
E-3	REGULATOR
E-9	RESISTOR (For Front Drive Indicator Switch)
D-16	RESISTOR (For Light Control Switch)
D-22	RESISTOR (For Cigarette Lighter)
D-23	RESISTOR (For EDIC Controller)
E-23	RESISTOR (For EDIC Controller)
	RELAYS:
F-8	FRONT DRIVE (OPT)
E-4	GLOW PLUG
C-12	HORN
C-2	STARTER
D-20	SPEAKER (OPT)
	SWITCHES:
C-10	BACK-UP LIGHT
F-11	BRAKE WARNING (OPT)
F-22	COLD START
E-19	DIMMER
G-22	ENGINE OIL PRESSURE
C-15	FOG LIGHT (OPT)
E-9	FRONT DRIVE (OPT)
D-9	FRONT DRIVE INDICATOR LIGHT
D-14	HAZARD WARNING SIGNAL (OPT)
C-8	HEATER BLOWER (Except ECE OPT)
E-12	HORN
G-21	INTERIOR LIGHT
C-17	LIGHT CONTROL
E-11	PARKING BRAKE LIGHT (OPT)
B-2	STARTER
D-12	STOP LIGHT
E-16	TRAILER SOCKET CHANGEOVER (OPT)
C-9	TRANSFER INDICATOR (OPT)
E-14	TURN SIGNAL
E-10	VACUUM WARNING
D-21	WINDSHIELD WIPER & WASHER
E-17	TRAILER SOCKET (OPT)
G-8	VACUUM SWITCHING SOLENOID (OPT)
C-10	VACUUM WARNING BUZZER
E-6	WATER TEMPERATURE GAUGE
E-7	WATER TEMPERATURE SENDER

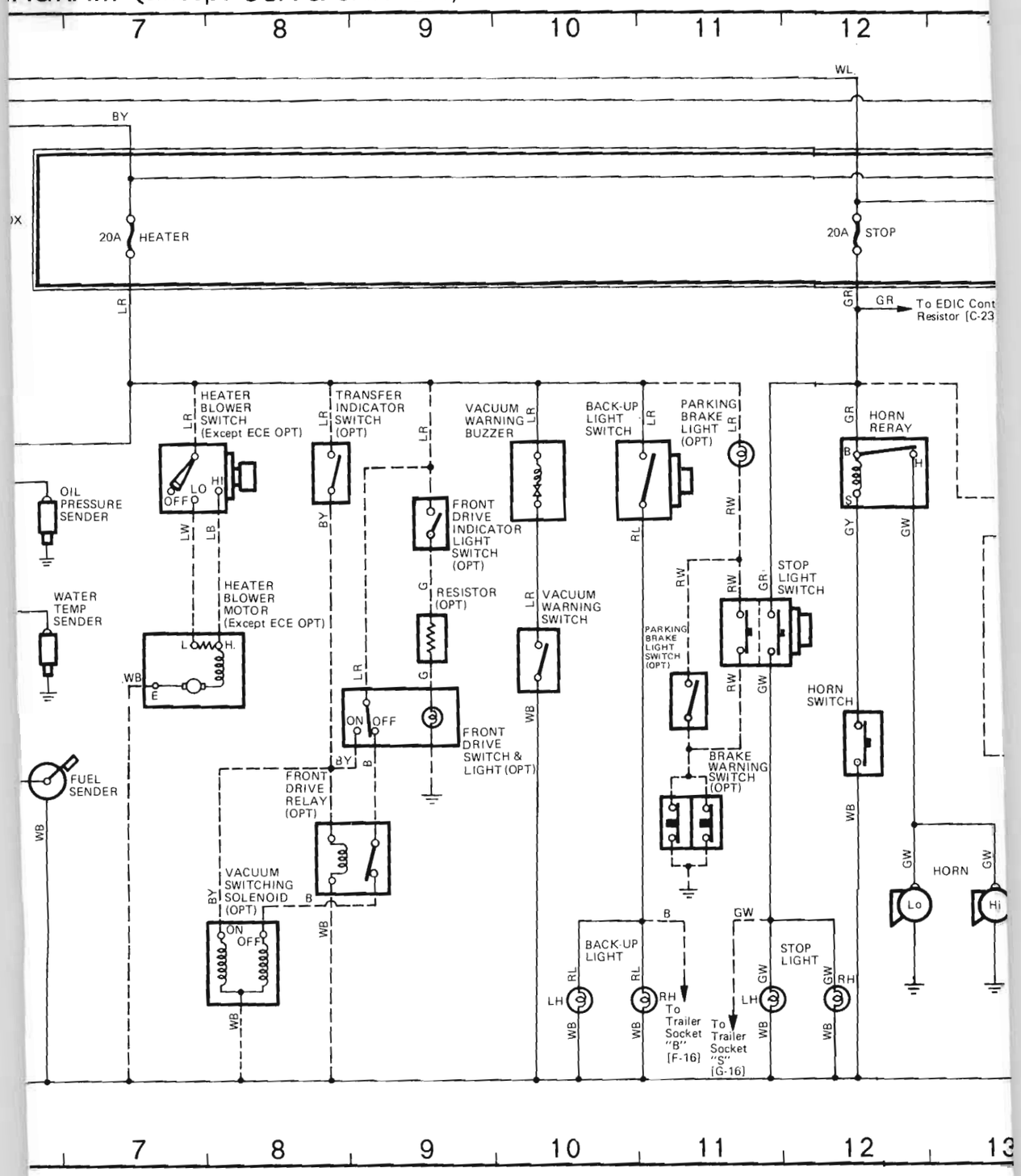
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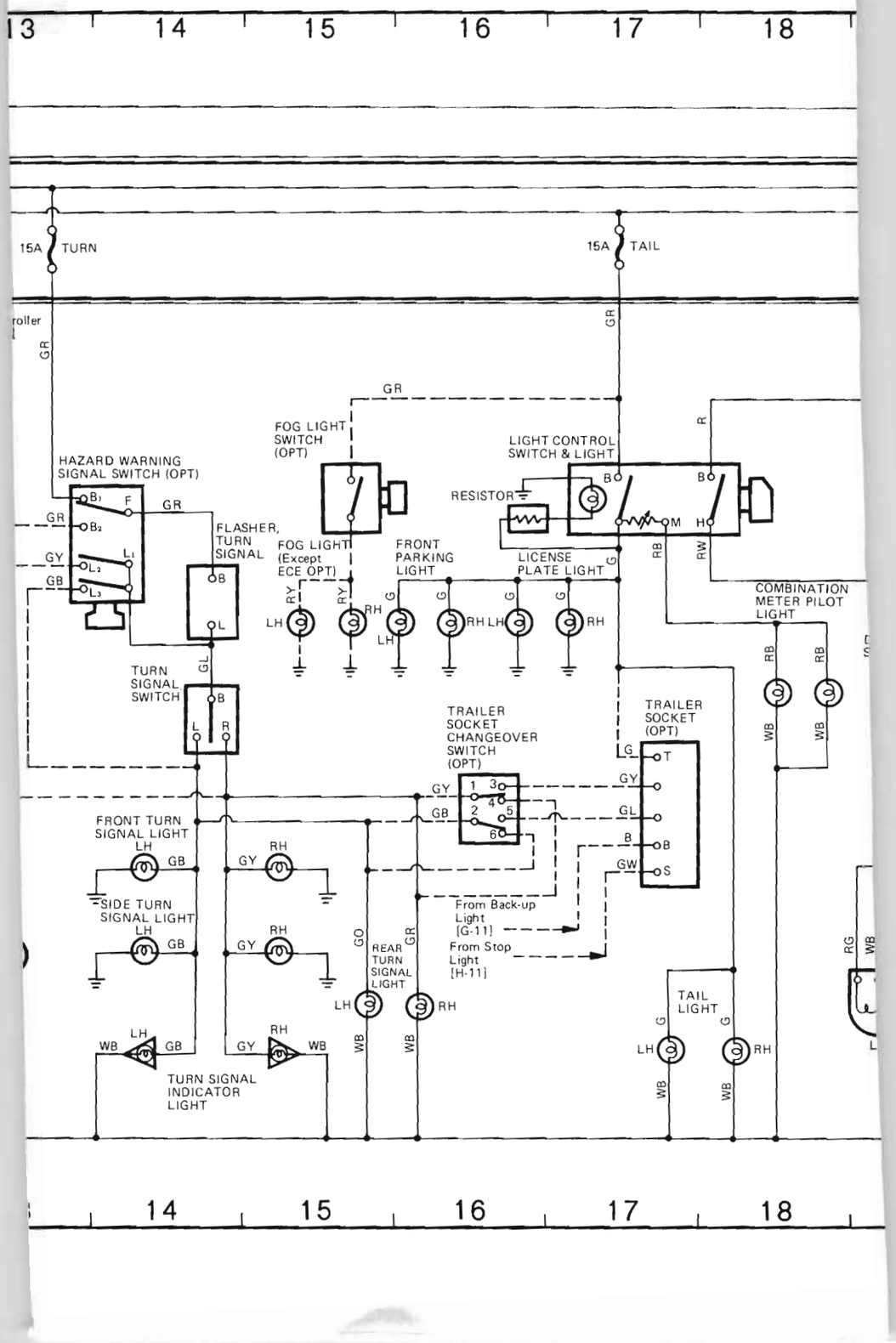
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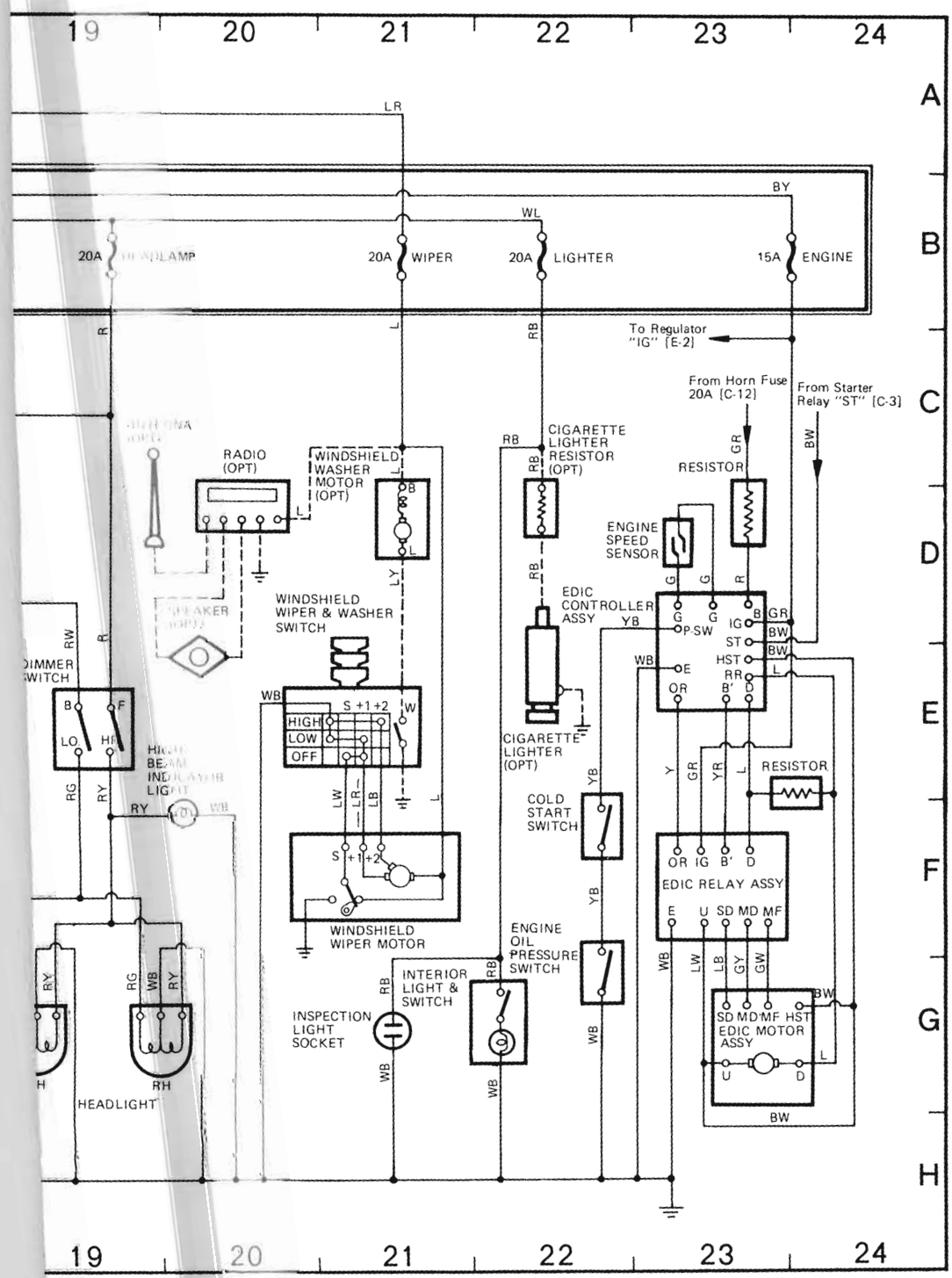
LAND CRUISER(BJ40,43)ELECTRICAL WIRING DI



AGRAM (Except USA & CANADA)




13
14
15
16
17
18
15A TURN
15A TAIL
GR
HAZARD WARNING SIGNAL SWITCH (OPT)
FLASHER, TURN SIGNAL
FOG LIGHT SWITCH (OPT)
FOG LIGHT (Except ECE OPT)
LIGHT CONTROL SWITCH & LIGHT
RESISTOR
FRONT PARKING LIGHT
LICENSE PLATE LIGHT
COMBINATION METER PILOT LIGHT
TURN SIGNAL SWITCH
TRAILER SOCKET CHANGEOVER SWITCH (OPT)
TRAILER SOCKET (OPT)
FRONT TURN SIGNAL LIGHT
SIDE TURN SIGNAL LIGHT
REAR TURN SIGNAL LIGHT
TAIL LIGHT
TURN SIGNAL INDICATOR LIGHT
From Back-up Light [G-11]
From Stop Light [H-11]
LH
RH



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LAND CRUISER (FJ 40 Series) ELECTRICAL WIRING DIAGRAM (For U.S.A. & CANADA) – 1975 Model No. 98876

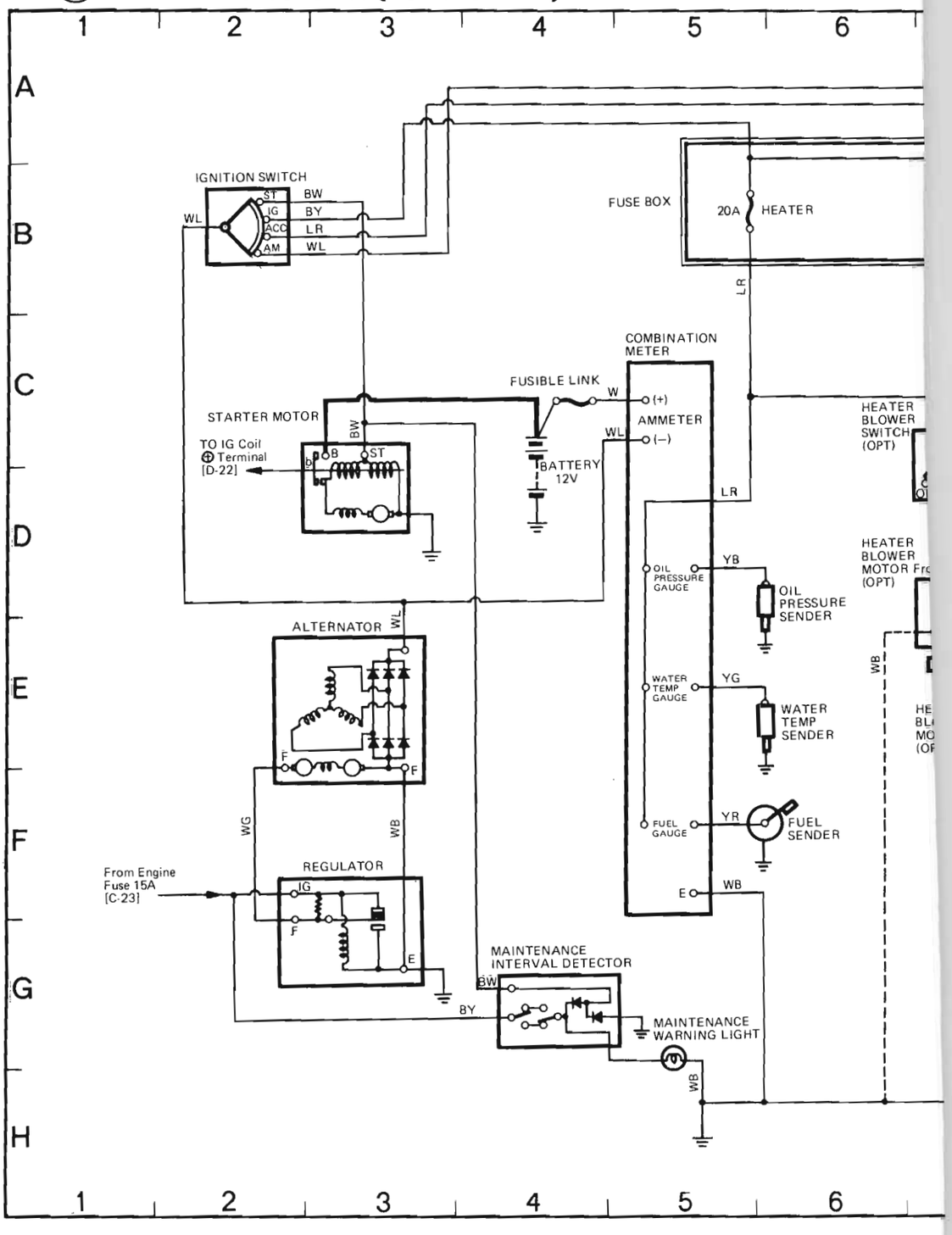
GRIDE LOCATION	COMPONENTS
E-3	ALTERNATOR
C-5	AMMETER
D-21	ANTENNA (OPT)
C-4	BATTERY
E-21	CIGARETTE LIGHTER (OPT)
C-5	COMBINATION METER
D-23	DISTRIBUTOR
	EMMISSION CONTROL SYSTEM:
F-23	EMISSION CONTROL COMPUTER
E-24	EMISSION INSPECTION CONNECTOR
H-22	SPEED SENSOR
H-22	THERMO SENSOR at EGR Valve
H-23	THERMO SENSOR at Carburetor
H-23	THERMO S/W for Coolant Temp.
H-22	THROTTLE POSITION SWITCH
E-22	VACUUM SWITCHING VALVE
C-15	ELASHER, TURN SIGNAL & HAZARD
C-23	FUEL CUT SOLENOID
F-5	FUEL GAUGE
F-6	FUEL SENDER
B-4	FUSE BOX
C-4	FUSIBLE LINK
G-13	HORNS, LO-HI
D-22	IGNITER
C-23	IGNITION COIL
G-20	INSPECTION LIGHT SOCKET
	LIGHTS:
G-7	BACK-UP, LH · RH
C-10	BRAKE WARNING INDICATOR
D-18	COMBINATION METER
D-9	FRONT DRIVE (OPT)
G-16	HEADLIGHT, LH · RH
E-18	HEATER CONTROL INDICATOR
F-15	HIGH BEAM INDICATOR
G-21	INTERIOR
E-17	LICENSE PLATE
C-16	LIGHT CONTROL SWITCH
G-5	MAINTENANCE WARNING
F-18	MARKER, FRONT SIDE, LH · RH
G-18	MARKER, REAR SIDE, LH · RH
E-17	PARKING, FRONT

GRIDE LOCATION	COMPONENTS
G-11	STOP, LH · RH
G-18	TAIL, LH · RH
F-15	TURN SIGNAL, FRONT, LH · RH
F-15	TURN SIGNAL, REAR, LH · RH
G-15	TURN SIGNAL INDICATOR, LH · RH
G-4	MAINTENANCE INTERVAL DETECTOR
	MOTORS:
D-6	HEATER BLOWER, FRONT (OPT)
E-7	HEATER BLOWER, REAR (OPT)
C-2	STARTER
C-19	WINDSHIELD WASHER
F-20	WINDSHIELD WIPER
D-5	OIL PRESSURE GAUGE
D-6	OIL PRESSURE SENDER
C-20	RADIO (OPT)
F-3	REGULATOR
	RELAYS:
E-9	FRONT DRIVE (OPT)
C-12	HORN
D-20	SPEAKER (OPT)
	SWITCHES:
C-7	BACK-UP LIGHT
F-10	BRAKE WARNING LIGHT
E-16	DIMMER
E-10	FRONT DRIVE (OPT)
C-10	FRONT DRIVE INDICATOR LIGHT
C-14	HAZARD WARNING LIGHT
C-6	HEATER BLOWER MOTOR (OPT)
D-12	HORN
B-2	IGNITION
G-21	INTERIOR LIGHT
C-16	LIGHT CONTROL
D-17	PANEL LIGHT CONTROL
E-10	PARKING BRAKE
D-11	STOP LIGHT
C-8	TRANSFER INDICATOR (OPT)
E-14	TURN SIGNAL
D-19	WINDSHIELD WIPER AND WASHER
F-8	VACUUM SWITCHING SOLENOID (OPT)
E-5	WATER TEMPERATURE GAUGE
E-6	WATER TEMPERATURE SENDER

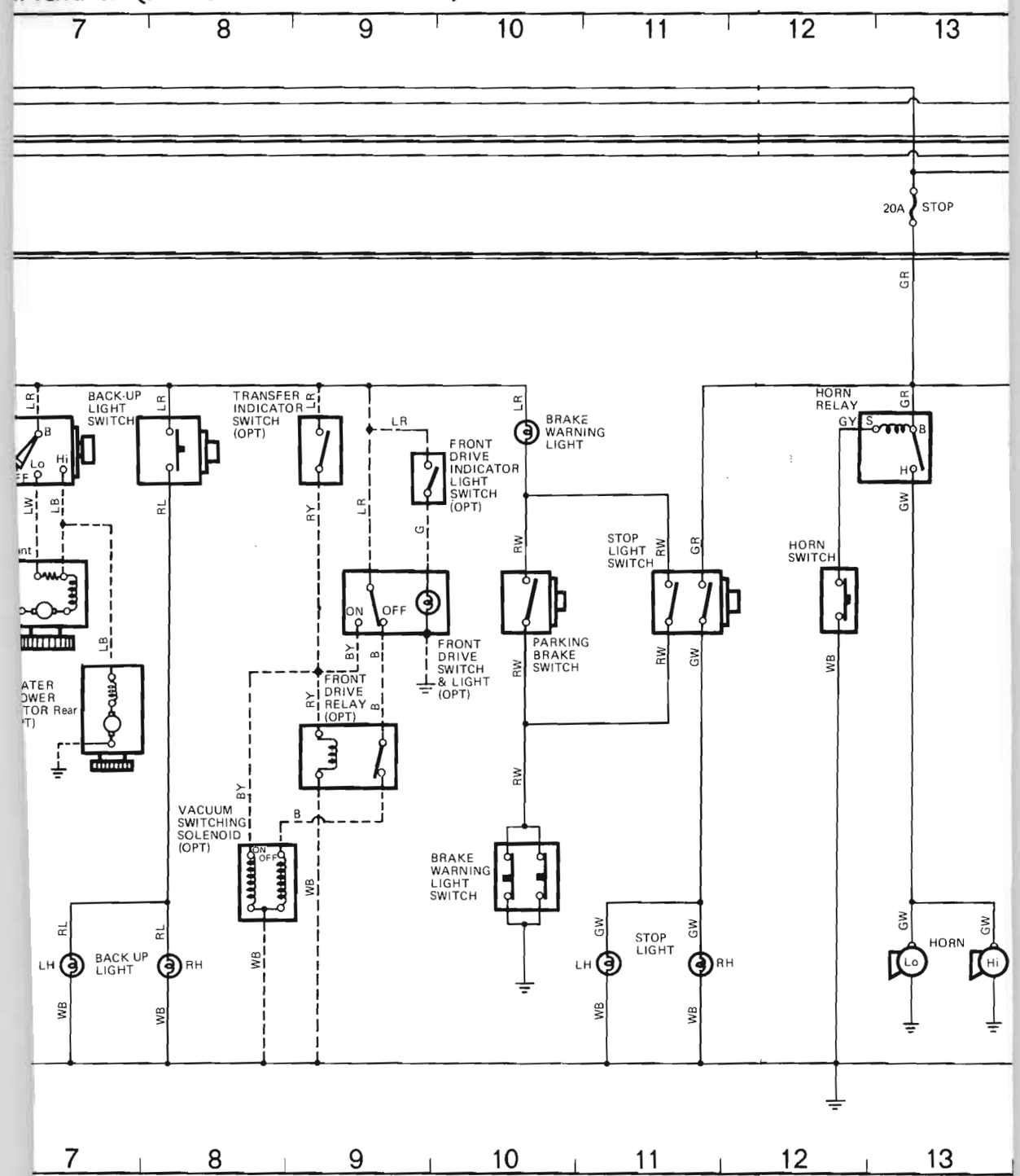
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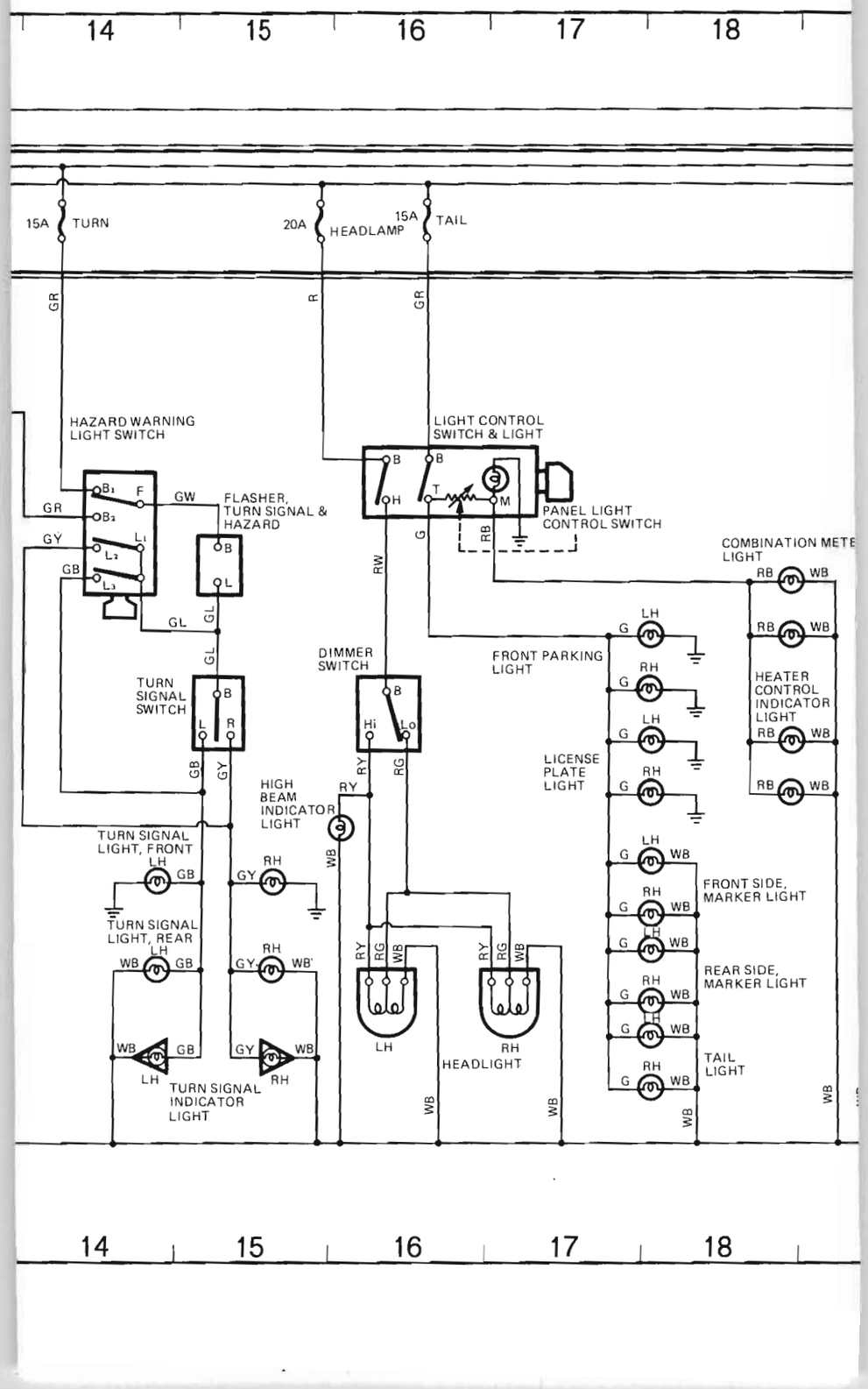
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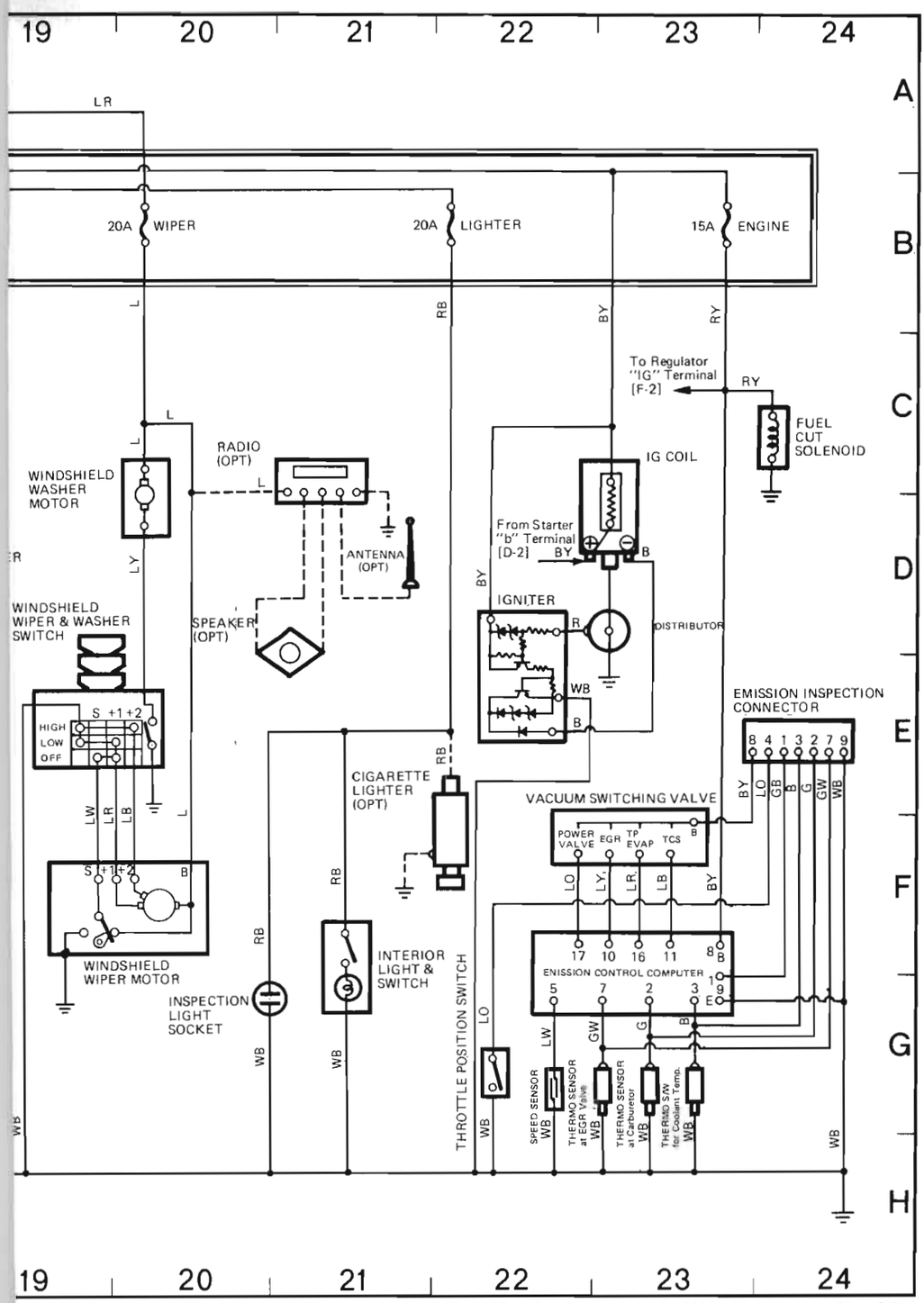
LAND CRUISER (FJ40 Series) ELECTRICAL WIRING D



IAGRAM (For U.S.A. & CANADA) —1975 Model




14
15
16
17
18
15A TURN
20A HEADLAMP
15A TAIL
GR
R
GR
HAZARD WARNING LIGHT SWITCH
LIGHT CONTROL SWITCH & LIGHT
B1
F
GW
FLASHER, TURN SIGNAL & HAZARD
B2
GR
L1
GY
L2
GB
L3
B
L
GL
GL
B
H
T
M
PANEL LIGHT CONTROL SWITCH
RB
G
RW
COMBINATION METE LIGHT
RB
WB
TURN SIGNAL SWITCH
B
L
R
GB
GY
DIMMER SWITCH
B
Hi
Lo
RY
RG
FRONT PARKING LIGHT
LH
RH
G
HEATER CONTROL INDICATOR LIGHT
LICENSE PLATE LIGHT
HIGH BEAM INDICATOR LIGHT
RY
WB
TURN SIGNAL LIGHT, FRONT
LH
RH
GB
GY
TURN SIGNAL LIGHT, REAR
WB
GB
GY
WB
FRONT SIDE, MARKER LIGHT
REAR SIDE, MARKER LIGHT
TAIL LIGHT
LH
RH
HEADLIGHT
TURN SIGNAL INDICATOR LIGHT
14
15
16
17
18



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LAND CRUISER (FJ55LG) ELECTRICAL WIRING DIAGRAM (For U.S.A & CANADA) – 1975 Model No. 98877

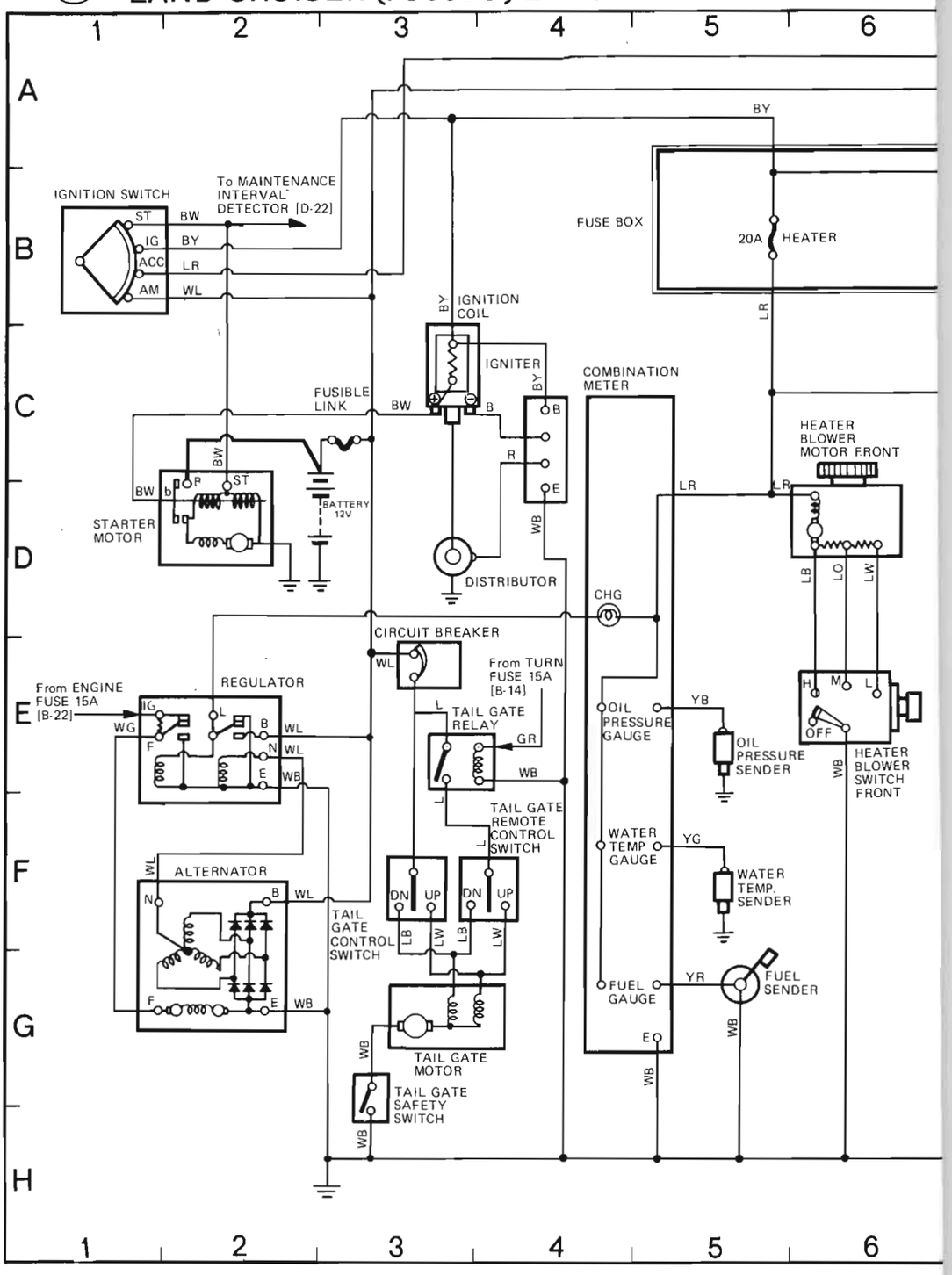
GRIDE LOCATION	COMPONENTS
F-2	ALTERNATOR
D-18	ANTENA (OPT)
D-3	BATTERY
C-20	CIGARETTE LIGHTER (OPT)
E-3	CIRCUIT BRAKER
C-4	COMBINATION METER
D-4	DISTRIBUTOR
	EMISSION CONTROL SYSTEM:
G-22	EMISSION CONTROL COMPUTER
E-21	EMISSION INSPECTION CONNECTOR
C-22	MAINTENANCE INTERVAL DETECTOR
F-23	MAINTENANCE WARNING LIGHT
G-21	SPEED SENSOR
G-21	THREMO SENSOR at EGR Valve
G-21	THERMO SEN SOR at Carburetor
F-21	THERMO SWITCH for Coolant Temp
G-22	THROTTLE POSITION SWITCH
F-23	VACUUM SWITCHING VALVE
D-13	FLASHER, TURN SIGNAL & HAZARD
C-23	FUEL CUT SOLENOID
G-4	FUEL GAUGE
G-5	FUEL SENDER
B-4	FUSE BOX
C-3	FUSIBLE LINK
D-12	HORNS, LO-HI
C-4	IGNITER
C-3	IGNITION COIL
E-21	INSPECTION LIGHT SOCKET
	LIGHTS:
G-9	BACK-UP, LH, RH
D-10	BRAKE WARNING INDICATOR
E-17	COMBINATION METER PILOT
D-4	DISCHARGE WARNING
E-9	FRONT DRIVE INDICATOR
G-18	HEADLIGHT, LH.RH
E-17	HEATER CONTROL INDICATOR
F-18	HIGH BEAM INDICATOR
D-21	INTERIOR
D-15	LICENSE PLATE
D-16	LIGHT CONTROL SWITCH
E-16	MARKER, FRONT SIDE, LH.RH
F-16	MARKER, REAR SIDE, LH.RH
E-15	PARKING, FRONT
G-15	STOP, LH.RH
G-16	TAIL, LH.RH

GRIDE LOCATION	COMPONENTS
F-13	TURN SIGNAL, FRONT, LH.RH
G-15	TURN SIGNAL, REAR, LH.RH
G-13	TURN SIGNAL INDICATOR, LH.RH
	MOTORS:
C-6	HEATER BLOWER, FRONT
E-7	HEATER BLOWER, REAR (OPT)
D-2	STARTER
G-3	TAIL GATE
C-20	WINDSHIELD WASHER
F-20	WINDSHIELD WIPER
E-4	OIL PRESSURE GAUGE
E-5	OIL PRESSURE SENDER
C-19	RADIO (OPT)
E-2	REGULATOR
	RELAYS:
F-8	FRONT DRIVE (OPT)
C-12	HORN
E-4	TAIL GATE
E-19	SPEAKER (OPT)
	SWITCHS:
D-10	BACK-UP LIGHT
E-11	BRAKE WARNING
F-17	DIMMER
E-9	FRONT DRIVE (OPT)
D-9	FRONT DRIVE INDICATOR LIGHT
D-14	HAZARD WARNING LIGHT
E-6	HEATER BLOWER, FRONT
C-7	HEATER BLOWER, REAR (OPT)
D-12	HORN
B-1	IGNITION
D-21	INTERIOR LIGHT
D-16	LIGHT CONTROL
D-11	PARKING BRAKE
C-11	STOP LIGHT
F-3	TAIL GATE CONTROL
F-4	TAIL GATE REMOTE CONTROL
G-3	TAIL GATE SAFETY
C-8	TRANSFER INDICATOR (OPT)
E-13	TURN SIGNAL
E-19	WINDSHIELD WIPER AND WASHER
G-7	VACUUM SWITCHING SOLENOID (OPT)
F-4	WATER TEMPERATURE GAUGE
F-5	WATER TEMPERATURE SENDER

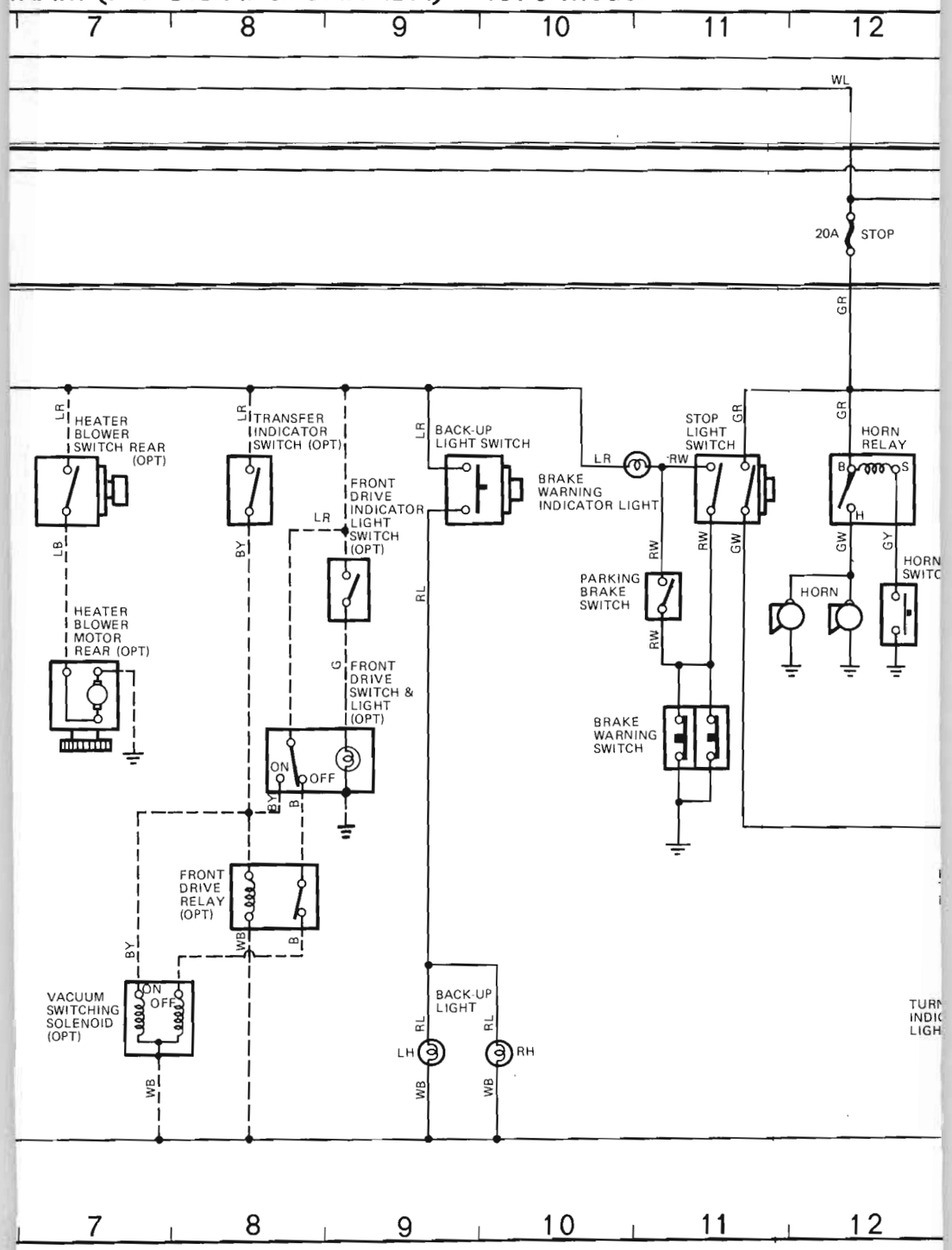
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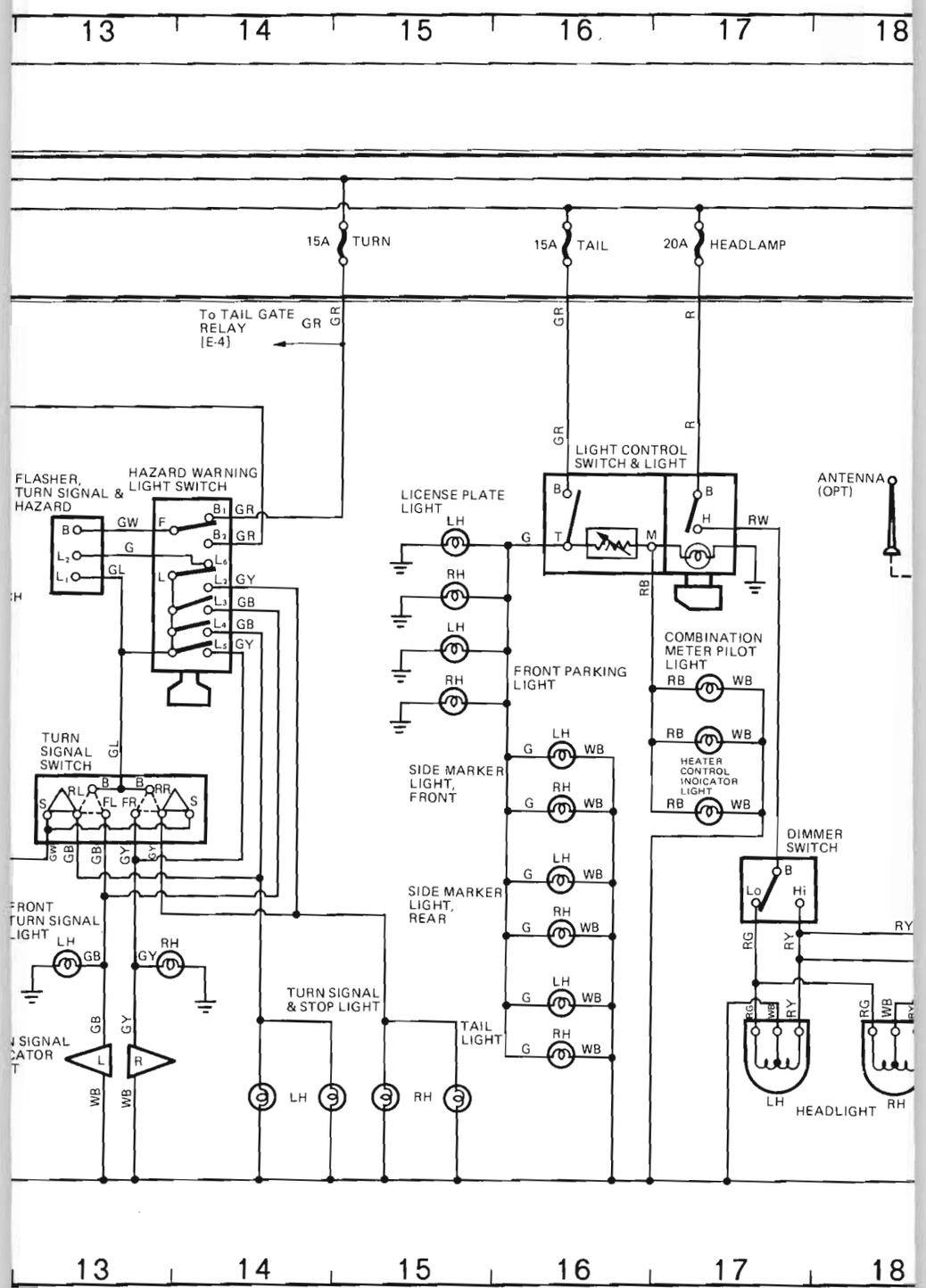
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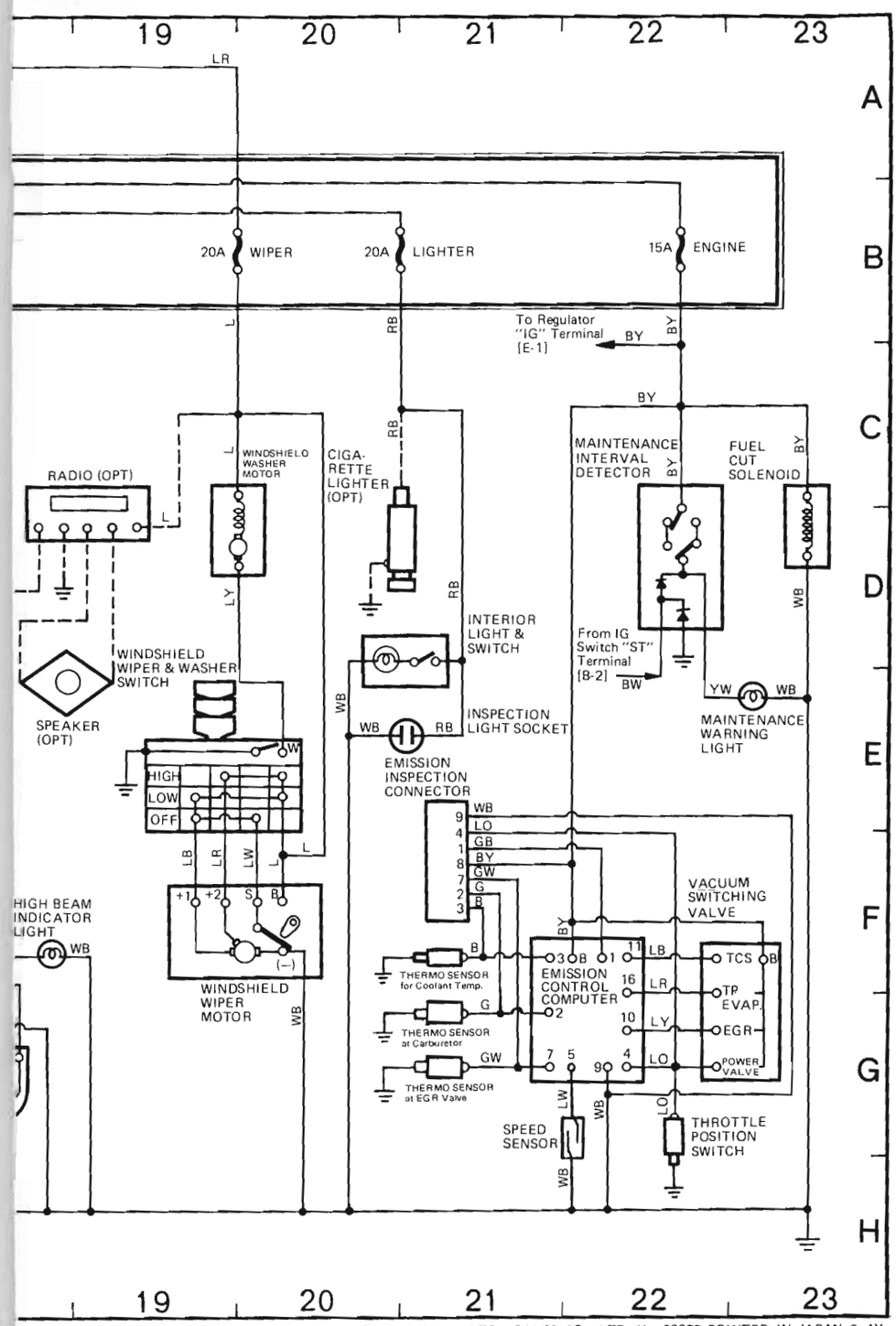
LAND CRUISER (FJ55LG) ELECTRICAL WIRING DIAG



GRAM (For U.S.A. & CANADA) — 1975 Model




13
14
15
16
17
18
15A TURN
15A TAIL
20A HEADLAMP
To TAIL GATE RELAY [E-4]
GR
R
FLASHER, TURN SIGNAL & HAZARD
HAZARD WARNING LIGHT SWITCH
LIGHT CONTROL SWITCH & LIGHT
ANTENNA (OPT)
LICENSE PLATE LIGHT
LH
RH
FRONT PARKING LIGHT
COMBINATION METER PILOT LIGHT
HEATER CONTROL INDICATOR LIGHT
TURN SIGNAL SWITCH
SIDE MARKER LIGHT, FRONT
SIDE MARKER LIGHT, REAR
DIMMER SWITCH
Lo
Hi
FRONT TURN SIGNAL LIGHT
TURN SIGNAL & STOP LIGHT
TAIL LIGHT
HEADLIGHT
GW
GB
GY
GL
RW
RB
WB
RG
RY



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TOYOTA

SERVICE

No. 8154

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